Dean’s Message
The University of Colorado School of Medicine continues to thrive because of the dedication of its faculty and staff, and with the support from the community we serve.

In 2019, we have provided outstanding care to our patients, created exceptional learning opportunities for our students, and achieved notable discoveries in our laboratories. As we work to improve human health and reduce suffering now, we also must focus on the future.

Key developments in 2019 include:

- **Groundbreaking of the new Anschutz Health Sciences Building**, which will house key programs in personalized medicine, translational science, mental and behavioral health programs, and our patient simulation center. That project on the Anschutz Medical Campus remains on time and on budget with a target opening of mid-2021.

- **Developing an updated curriculum for medical students** that enhances the integration of scientific knowledge with clinical care. We also are expanding learning in longitudinally integrated clerkships to prepare our students to provide comprehensive care that spans health care settings and patient needs.

- **Partnering with Colorado State University** to offer medical education in Fort Collins. To start, we plan to enroll 12 students from our 184-person medical school class there in 2021 in a program that will cover the comprehensive education of our physicians.

- **Working with Salud Family Health Centers** to create a medical home for some of the 80,000 underserved residents in Aurora. Our goal is provide service in a primary care setting that affordably and effectively catches medical needs before they develop into conditions that require emergency room visits.

We are able to look forward because we are standing on a strong foundation.

Our faculty practice, CU Medicine, continues to achieve results that provide outstanding support for the School of Medicine. An important outcome of a healthy practice is that it allows CU Medicine to reinvest resources in complementary missions of the School. This year, for example, the faculty will be providing $1 million in scholarships to students in the medical, physician assistant, physical therapy, and anesthesiology assistant programs.

Our scientists are securing major grants to allow continued research that will inform the care we provide. In the fiscal year ending June 30, 2019, researchers on the Anschutz Medical Campus secured $553.5 million in sponsored research funding, with most of that amount awarded to members of the School of Medicine faculty.

Our benefactors are steadfast partners in our success. Private financial support for the Anschutz Medical Campus totaled $324.3 million for the year ending June 30, 2019, with more than 6,600 benefactors giving to the University in support of the work we do. These donations provide essential funding for faculty leaders and academic programs.

Substantial achievements by our clinicians and researchers, and outstanding financial support from our community make it possible for the School to recruit leaders who keep our programs vibrant.

Key recruitments to faculty and senior administrative staff in 2019 include:

- **Orthopedic surgeon and stem cell researcher Jason Dragoo, MD**, from Stanford University;

- **Physical Therapy Program Director Michael Harris-Love, PT, MPT, DSc**, from George Washington University and the VA Medical Center in Washington, D.C.;
Brian T. Smith, senior associate dean for administration and finance for the School and executive director of CU Medicine, from the Icahn School of Medicine at Mount Sinai and Mount Sinai Doctors; and

Julia Cooper, PhD, from the National Cancer Institute to lead our Department of Biochemistry and Molecular Genetics.

With the addition of Cooper as a department chair, the School of Medicine now has nine women leading its 23 departments, which is the most in the history of the School. The School now ranks among the top in the country in terms of having women as department chairs. The national average is 19 percent, while we now have 39 percent of our chairs held by women.

According to data compiled by the Association of American Medical Colleges, there were 618 women serving as department chairs at year-end 2018. That’s out of a total 3,274 chair positions at all U.S. medical schools. Only seven other medical schools have nine or more women serving as department chairs.

The recruitment and retention of faculty and the investments in programs and equipment are raising the level of achievement on our campus, attracting more highly qualified applicants to receive their training at our School, and bringing additional external funding to our researchers.

For the MD class of 184 students matriculating in August, the School received 8,666 applications. For next year’s class, we have received more than 10,000 applications.

Research by our faculty continues to attract significant funding from the National Institutes of Health and other agencies and foundations.

This fall, investigators on our campus were awarded 12 grants totaling about $9 million from the NIH’s Investigation of Co-occuring Conditions Across the Lifespan to Understand Down Syndrome project. The announcement is a major breakthrough in funding research for people with Down syndrome and CU is poised to be a leader in this effort, receiving more grants than any other institution.

Our campus was one of only five institutions to receive a grant from the NIH Research and Evaluation and Commercialization Hub program this fall. The five institutions will split $20 million in grants. This grant connects us to a network of 34 academic institutions developing best practices to translate innovations into public benefit.

The National Cancer Institute’s Cancer Moonshot Research Initiatives program awarded a $4.2 million, five-year grant to researchers at our Adult and Child Consortium for Health Outcomes Research and Delivery Science program to support a new center for cancer prevention and control in rural areas.

We witness the benefits of our work in the compelling stories of the people we help.

In 2018, Brian McNeill suffered a heart attack due to an infection. He ultimately had an aortic valve replacement, an aortic root replacement, and a bypass. His heart stopped after extensive surgery. He had to depend on life support. He survived because of the attentive care from our faculty, including cardiac surgeon Muhammad Aftab, MD, and the team at UCHealth University of Colorado Hospital.

“The cardio, neuro, vascular surgery… We got here and immediately they came together with their specialties,” Brian said. “It’s amazing because, with so many disciplines coming together, there could have been a lot of egos in the room. But that all went away. What matters to them is taking somebody who is sick and making them better.”
On Oct. 1, 2019, Brian’s wife Kelsey wrote: “Today, in honor of one year since one of the hardest days of our lives, Brian and I, with family, are going to find some beautiful place to stand among the changing aspens. And with us, we will carry the deepest gratitude known to humans, for the fact that we are still here. We carry gratitude, too, for the amazing village that surrounded us then, and continues to surround us today. You are our strength.”

As we strive to build and maintain a School of Medicine community with many diverse parts, Brian’s story is a reminder of our responsibility to work together, that our strength stems from our ability to synthesize the talents of so many for a shared purpose. It is a privilege to help others and we remain dedicated in our service.

John J. Reilly, Jr., MD
Richard Krugman Endowed Chair
Dean, University of Colorado School of Medicine
Vice Chancellor for Health Affairs
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Mission Statement

Approved by the Executive Committee and Faculty Senate in January 1993

The mission of the University of Colorado School of Medicine is to provide Colorado, the nation and the world with programs of excellence in:

- **Education** - through the provision of educational programs to medical students, allied health students, graduate students and housestaff, practicing health professionals and the public at large;
- **Research** - through the development of new knowledge in the basic and clinical sciences, as well as in health policy and health care education;
- **Patient Care** - through state-of-the-art clinical programs which reflect the unique educational environment of the University, as well as the needs of the patients it serves; and,
- **Community Service** - through sharing the School’s expertise and knowledge to enhance the broader community, including our affiliated institutions, other healthcare professionals, alumni and other colleagues, and citizens of the state.
The University of Colorado School of Medicine works actively to:

- Advance science through research on the biological mechanisms that underlie illness.
- Improve both the medical care and science of the uniquely human components of health and disease.
- Provide specialized and personalized medical care in an efficient environment.
- Support positive wellness and clinical prevention programs that promote health across the lifespan and lower early mortality.
- Transmit a high level of primary and specialty clinical expertise to the coming generations of health professionals.
- Provide a welcoming, challenging, and diverse atmosphere of growth for those who answer the call to careers in health science and service.
- Develop a diverse funding portfolio that provides the means to develop, attract, and retain nationally competitive research faculty members.
- Advance competitive medical research productivity through increased external support for innovative research ideas.
- Enhance the cooperative relationships with affiliate hospitals toward common goals in education, research, and clinical care.
- Develop a common infrastructure with the affiliate institutions on the new Anschutz Medical Campus to improve the efficient use of joint resources.
- Expand scholarly collaborations across disciplines within the School of Medicine that stimulate research innovation and increase competitive research funding.
- Support productive faculty and institutional collaborations with its sister Schools within the University of Colorado Denver to maximize bioscience research potential.
- Expand productive working relationships with local communities outside the University but within the state and region, whether for clinical, teaching, or research efforts.
- Pursue entrepreneurial development both in education and in research through collaborations with the private business communities in Colorado and the western region.
- Further improve working relationships with State and federal government entities to provide direct investment and support for research and education.
- Build collaborative relationships with medical schools and universities around the globe to enhance mutual growth in medical expertise, scholarship and stature.
The University of Colorado School of Medicine believes that diversity is a value that is central to its educational, research, service and health care missions. Therefore, the SOM is committed to recruiting and supporting a diverse student body, faculty and administrative staff. The SOM adopts a definition of diversity that embraces race, ethnicity, gender, religion, socioeconomic status, sexual orientation and disability. The definition of diversity also includes life experiences, record of service and employment and other talents and personal attributes that can enhance the scholarly and learning environment.

The SOM shall strive to admit qualified students and appoint qualified residents, fellows, faculty, staff and administrators who represent diversity.

The SOM also shall develop programs that are designed to: Promote the academic advancement and success of minority students, house officers and faculty; enhance cultural and diversity instruction throughout the curriculum; break down racial and ethnic stereotypes and promote cross-cultural understanding; and promote unexplored research agendas and new areas of scholarship.

The SOM’s diversity programs also seek to enhance diversity and cultural competency in the health care workforce, improve access to health care for poor, minority and underserved populations and, ultimately, eliminate racial, ethnic and socioeconomic disparities in health and health services.

The SOM will work with all departments and programs within the SOM, and with other University of Colorado campuses and their leaders, to achieve the goals outlined above and to promote a culture of inclusiveness, respect, communication and understanding.

The SOM will support the goals of the University’s Vision 2020, which seek to develop a University culture in which diversity and academic excellence are seen as interdependent.
The Anschutz Medical Campus announced a philanthropic commitment of $135 million from the Anschutz Foundation, the largest gift in campus history.

Chancellor Don Elliman delivered the annual State of the Campus address on October 30. The University of Colorado Anschutz Medical Campus is "strong and growing stronger," he said, noting robust growth in clinical revenues and outpatient visits, boosts in enrollment of students underrepresented in health care professions, growth in total research funding, and unprecedented gains in philanthropic support.

Students, faculty, and staff participated in the third annual "Sie n" to commemorate the anniversary of the ratification of the 13th Amendment to the U.S. Constitution.

Dean John Reilly, Jr., MD, delivered the State of the School address in February.

U.S. News and World Report released its annual rankings of medical schools in March. The CU School of Medicine was listed No. 12 on the primary care list and No. 30 on the research list. On the listings of programs, the Department of Pediatrics ranked No. 6 and Department of Family Medicine No. 7.

The School of Medicine announced that it is working with Colorado State University to open a branch of the CU School of Medicine in Fort Collins on the CSU campus. Initial plans call for maintaining the MD class size of 134 students each year, with about a dozen students attending a four-year program based in Fort Collins. The first class would enroll in 2021.
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
How we are organized
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Administration and Business Affairs

Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Academic Enrichment Fund Expenditures
Fiscal Years 1983 - 2019

Total AEF Expenditures: $560,763,060

School of Medicine Commitment Expenditures
Fiscal Years 2015 - 2019

In Millions of Dollars

- FY 14-15
- FY 15-16
- FY 16-17
- FY 17-18
- FY 18-19
Sponsored Research Award Trend
Fiscal Years 2015 — 2019

Source of School or Medicine Faculty Compensation
Fiscal Year 2018 — 2019
Comparison of Faculty Fixed Salaries to AAMC Benchmarks for Basic Science Departments

Source: AAMC Faculty Salary Survey 2017-2018

Comparison of Faculty Salaries to AAMC Benchmarks of Clinical Science Departments

Source: AAMC Faculty Salary Survey 2017-2018
## CU School of Medicine Endowed Chairs

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<thead>
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<td>Anschutz Health and Wellness Center</td>
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<tr>
<td>Barbara Davis Center for Diabetes</td>
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<tr>
<td>Center for Women’s Health Research</td>
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</tr>
<tr>
<td>Charles C. Gates Center for Regenerative Medicine and Stem Cell</td>
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<tr>
<td>Colorado Prevention Center</td>
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<td>Linda Crnic Institute for Downs Syndrome</td>
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<td>University of Colorado Cancer Center</td>
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<td>Webb-Waring Center for Cancer, Aging, Antioxidant Research</td>
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<td>University of Colorado Hospital</td>
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Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Clinical Affairs

The Office of Clinical Affairs partners with clinical leaders to strengthen the clinical practice of the faculty in the CU School of Medicine. Program integration with the School’s affiliated partners promotes our collective ability to improve access to faculty expertise and provide safer, patient-centered care at the lowest possible cost. Our affiliated partners include: UCHealth University of Colorado Hospital, the UCHealth system, Children’s Hospital Colorado, Denver Health, Veterans Affairs Eastern Colorado Health Care System, and National Jewish Health.

Anne Fuhlbrigge MD, M5, serves as senior associate dean for clinical affairs. Fuhlbrigge partners with Associate Deans Karen Chacko MD, Christina Finlayson MD, Jeffrey Glasheen MD, and Adel Younoszai MD.

Chacko leads clinical outreach initiatives, including the CU Medicine-UCHMG collaborative task force.

Glasheen serves as a leader in quality and safety education for the University of Colorado and as Chief Quality Officer for the UCHealth system.

Finlayson and Younoszai in leadership roles with University of Colorado Medicine, which is the faculty practice plan. Finlayson is associate medical director of the adult health practice and Younoszai is associate medical director of the child health practice.

The Clinical Leadership Council, comprised of the School of Medicine vice chairs and associate center directors for clinical affairs, provides additional clinical leadership.

With the Office of Value Based Performance, these physicians identify opportunities for clinical, quality, and patient-safety improvements, and help unify and drive projects across the Anschutz Medical Campus to benefit patient outcomes. Practice improvement initiatives focus on crucial areas, such as team-based care and development of dashboards measuring quality of ambulatory care. The Coordinating Optimal Referral Experience program strives to increase access to specialty care, decrease overall cost of care, and improve patient and provider experience. The program, which includes both asynchronous provider-to-provider consults (e-consults) and enhanced referrals, has exceeded expectations in adoption and impact. Continued expansion across adult and child health specialties was realized in 2019. Inclusion of external e-consults and collaboration with ECHO Colorado to develop a robust Peer Mentored Care Delivery system across the state is anticipated in 2020. With affiliated partners, UCHealth and Children’s Hospital Colorado (CHCO), we continue to partner to develop clinically integrated networks, committed to the quadruple aim of improving health outcomes for the patient, provider, and staff experience, while reducing the total cost of care.

In the adult health practice, the number and variety of community-based practices continue to grow. We added two Family Medicine practices in 2018 and a third Family Medicine practice in 2019, bringing the total number of Community Primary Care Practices to four in locations from Broomfield to Centennial. Specialty practice locations were also added, including Orthopedics in Broomfield and Inverness, and Urology and OB/GYN in the south metro area. These community-based practices bring access to care closer to where our patients live and work. The FY2019 opening of Highlands Ranch Hospital, including a multispecialty medical office building, allows for a variety of services in that community.

We have engaged the community and state of Colorado in several clinical areas over the past year. Virtual health has been an active clinical frontier for our faculty as we partner with UCHealth, CHCO, and their virtual health teams to help provide services in areas in Colorado that cannot easily access traditional face-to-face specialty care. The School of Medicine is partnering with Salud Family Health Centers to open the Aurora Community Health Center (ACHC). On the ACHC campus, the partners will open a new Federally Qualified Health Center (FQHC), where interdisciplinary trainees will work together to provide full-spectrum medical, dental, and behavioral care. Faculty and residents from multi-field primary care disciplines will develop a primary health care model integrating community, social, and clinical services addressing influencers of health to increase health equity and improve health at lower cost. Finally, working with the UCHMG practices, we continue to find alignment and ways to provide the best care possible to all patients in the UCHealth system through improved communication, safety and sharing of best practices.

The child health practice continued to grow in 2019 after the successful opening of the new Children’s Hospital Colorado in Colorado Springs and the Children’s Colorado Health Pavilion in Aurora. In addition, there is significant expansion of the Children’s Colorado North Campus in Broomfield, which is expected to open in early 2020. The pediatric specialty faculty increasingly partner with health systems in Colorado and the surrounding states to provide subspecialty care to the patients throughout the Mountain West region closer to their home when possible and at the Anschutz Medical Campus when necessary.
University of Colorado physicians, nurse practitioners, and physician assistants, in conjunction with Children’s Hospital Colorado, provide telehealth-enabled specialty care to children in Colorado and beyond. Telehealth volume and breadth of services continue to grow rapidly year over year, enhancing access to CU’s expert care for children and families in our region. In 2018, more than 3500 telehealth encounters were completed by more than 30 child health specialties ranging from fetal care to psychiatry.

The Institute for Healthcare Quality, Safety, and Efficiency (IHQSE) resides in the Office of Clinical Affairs and offers six distinct training programs. The Certificate Training Program (CTP) is a yearlong, intensive leadership training program in quality and safety, which has trained over 90 clinical teams from both University and Children’s Hospitals since 2013. This training and practical project experience has led to significant improvements in outcomes, reductions in length of stay, enhanced clinic flow, and less medical and surgical harm. Since 2014, both a one-day Introductory Training Program and a two-day Clinical Leadership Development (CLD) course have brought organizational leadership skills and process-improvement knowledge to almost 860 additional participants. Finally, in 2018, the Institute added four programs in patient safety, process improvement, and leadership training. The Quality and Safety Academy (introduction to case review, just culture, and safety-based improvement work was developed for learners, as well as the creation of the Lean Training Program (process improvement skills course focused on workflow) and 6S Training Program (process improvement skills course focused on physical workspace optimization). IHQSE also added a more rigorous leadership training program that builds on principles taught in both CTP and CLD. This two-day leadership course, called Facilitative Leadership, which helps leaders lead sustainable change and generate greater engagement, is now offered in place of CLD.
University of Colorado Medicine (CU Medicine) is a 501(c)(3) practice organization that supports the clinical practice of the School of Medicine by providing business infrastructure services. The President of CU Medicine is John Reilly, Jr., MD, and the Executive Director is Brian T. Smith.

CU Medicine services include managed care contracting, revenue cycle management, compliance, business development and financial services for physicians and advanced practice professionals, and infrastructure for population health. All faculty of the CU School of Medicine are members of CU Medicine. The organization is governed by a Board of Directors chaired by the Dean of the CU School of Medicine. The Board is comprised of the chairs of clinical departments, a basic science chair, elected faculty representatives, and designees of the Children’s Hospital Colorado and University of Colorado Hospital.

In October 2016, the UPI board approved using University of Colorado Medicine as the name of the practice plan to recognize that the organization represents all faculty of the University of Colorado School of Medicine, including physicians and advanced practice providers.

On the following page is a current organization chart.
Diversity and Inclusion
The CU School of Medicine’s Office of Diversity and Inclusion (SOMODI) is led by Associate Dean Shanta M. Zimmer, MD, and Director Regina Richards, MSW. Stephanie Flores, MA, continues to provide administrative and program support in her role as the Office of Diversity and Inclusion Business Profession and Program Coordinator for the BA/BS-MD Program. The addition of Janet Meredith in 2017, strengthens SOMODI’s opportunities for student community engagement efforts in partnership with 2040 Partners in Health and CSTAHR (Community-Students Together Against Healthcare Racism).

Diversity continues to be a value central to the School’s educational, research, community service, and health care missions. Therefore, the SOM is committed to recruiting and supporting a diverse student body, house staff, faculty, and senior administration. The SOM has adopted a definition of diversity that embraces race, ethnicity, sexual orientation, gender identity, disability, religion, political beliefs, rural upbringing, and socioeconomic status. The SOMODI continues to serve as the central point of responsibility for coordinating, developing, and evaluating the School’s diversity initiatives and programs spanning pipelines to practice and community engagement.

The Dean-appointed School of Medicine Diversity Council serves as the guiding committee for the work of the office and includes members from throughout the Anschutz Medical Campus and external community members. The council meets monthly to support the implementation of the December 2015 Diversity Plan. [http://staging.ucdenver.edu/academics/colleges/medicalschool/administration/diversity/aboutus/Documents/DiversityPlan2015.pdf](http://staging.ucdenver.edu/academics/colleges/medicalschool/administration/diversity/aboutus/Documents/DiversityPlan2015.pdf)

Diversity Council initiatives in 2017-2018 included monitoring strategies to continually measure and enhance the diversity, inclusiveness, and climate of the SOM, enhancing recruitment and retention efforts of students, residents, faculty, staff, administrative leadership, and fundraising. Accomplishments of the council include:

- Expansion of membership to the Physician Assistant and Physical Therapy Programs
- Strengthening and restructuring the Lesbian Gay Bisexual Transgender (LGBT) curriculum from the student perspective
- Community engagement - Since 2012, 94 medical students have participated in CSTAHR community-based participatory research projects
- Faculty search guidelines implemented
- Cultural Accommodations Policy
- Strengthening partnership with the University of Colorado’s Office of Equity
- Women in Medicine – hosting the Women Leaders at Anschutz Medical Campus Networking Event
- Continuous review of campus pipeline programs, including Post baccalaureate and BA/BS-MD programs
- Diversity in higher education

Pipeline Programs

Pipeline development and local, regional, and national recruitment continues through partnerships with the SOM Office of Admissions, the Anschutz Medical Campus Office of Inclusion and Outreach, and other CU System networks to recruit under-represented in medicine (URiM) students.

The SOMODI in partnership with the SOM Office of Admissions continues to participate and co-sponsor the Annual Pre-Admissions Workshop in partnership with and the Four Corners Alliance (University of New Mexico, University of Arizona, University of Utah, University of Colorado, and the Association of American Indian Physicians). Twenty-Five American Indian and Alaskan Native pre-med students attend the three-day workshop.

The BA/BS-MD Program housed in the University of Colorado Denver and the SOMODI is a diversity pipeline program recruiting highly qualified Colorado high school students from broadly diverse backgrounds to participate in a combined eight-year program that assists students in developing a commitment to serve the healthcare needs of Colorado in the future. Directed on the SOM campus by Matthew Taylor, MD, PhD, and assistant director, Julia Brandt, MD, the program admits 10 high school students each year. The first matriculates graduated from the program from the CU School of Medicine in May 2018 and matched in programs across the country in Internal Medicine and Ophthalmology. Nationally, Regina Richards was elected as Vice Chair of the Association of American Medical Colleges BA-MD Affiliate Group.
Students

The Office of Diversity and Inclusion continues to collaborate closely with the holistic admissions process to help matriculate a diverse and inclusive student body within the School of Medicine. Our medical students are representative and inclusive of all the various components of diversity such as race, ethnicity, first-generation students, and students from rural communities. For the past five years, the entering class of the School of Medicine consistently has included 25-30 percent URiM students. Office leadership continues to host informal meet and greets throughout the academic year for all URiM first-year medical students to increase SOMODI’s visibility and share information about resources available to students.

The CU Chapter of the Student National Medical Association (SNMA) is co-advised by Richards and Brandi Freeman, MD, Department of Pediatrics. This year, SNMA faculty recognition awards were presented to Freeman for her leadership in diversity and inclusion efforts both nationally and locally. The student recognition award for leadership was presented to Eduardo Javier Carrera, SNMA Class President for the Class of 2018.

SNMA’s national impact areas are community outreach, engaging in pipeline programs, and medical education. The Colorado chapter of SNMA provides an inclusive community of support for medical students from diverse backgrounds in addition to volunteer community service opportunities throughout Colorado. SOMODI continues to be engaged in the 2040 Partners in Health Community Advisory Network. Projects include:

- Collaboration with CU UNITE Track medical students to explore intervention strategies with providers to understand and reduce discrimination in health care;
- Collaboration with the Community-Campus Partnership to develop and implement a leadership curriculum for 12 to 18 year olds; and
- Expansion of the Mentored Scholarly Activity project reviewing School of Medicine curriculum regarding Unconscious Bias.

The School of Medicine chapter of White Coats for Black Lives held the second annual eighteen-minute die-in, representing opposition to police violence and killings of African Americans and Latinos in the United States. Participants include students, faculty, and staff from the School of Medicine, Skaggs School of Pharmacy and Pharmaceutical Sciences, and Child Health Association/Physician Assistant and Physical Therapy programs.

The SOMODI developed FirstUP, a mentoring program designed to support first-generation medical students. Fourteen mentor/mentee partnerships matched and the program will launch with the Class of 2022. Mentors are current faculty members and CU alumni practicing physicians.

Graduate Medical Education

The Departments of Emergency Medicine, Pediatrics, Family Medicine, and Surgery hosted a second-look day for prospective residents at the Hyatt Regency Aurora-Denver Conference Center in February 2018. This event increased the visibility of all Graduate Medical Education programs. Participating programs successfully recruited URiM residents to their entering intern classes in 2018.

SOMODI continues to provide guidance and support for multiple NIH T32 training grants within departments and programs to enhance their efforts to increase diversity in the grantee pool and to support mentorship and retention of scientists from URiM backgrounds.

Faculty and Staff

Recruitment and retention of a diverse faculty continues to be a priority within the School of Medicine. The Dean supports a hiring initiative that provides salary support for highly qualified URiM recruits in all departments of the School.

Development of a community for faculty and staff continues with the University of Colorado Organization for Racial and Ethnic Support (UCOLORES) led by Amira Del Pino-Jones, MD, and Brandi Freeman, MD. In 2017-18, UCOLORES hosted a series of faculty development activities and a leadership book club to develop relationships for mentoring partnerships and supportive relationships among diverse faculty and staff.
The Departments of Medicine, Surgery, Radiology, Obstetrics and Gynecology, and Otolaryngology have created and granted protected time to the position of Vice Chair of Diversity and Inclusion, which are mentored by the Associate Dean for Diversity and Inclusion.

**Community**

Support of the community around the Anschutz Campus is an important priority to the SOMODI. Students from medicine, pharmacy, nursing, dentistry, and physical therapy work in Aurora’s DAWN clinic where they provide multidisciplinary care and serve as health care navigators to uninsured patients.

The Toast to Diversity and Call to Action is an annual event that builds community among faculty, residents, and students. This event catalyzes efforts for continued engagement, mentorship, and retention of our talented faculty, students and trainees.

The Office of Diversity and Inclusion continues to focus on service, coordination, and collaboration with colleagues on the Anschutz Medical Campus and University of Colorado Denver campus. [https://medschool.cuanschutz.edu/deans-office/diversity-inclusion](https://medschool.cuanschutz.edu/deans-office/diversity-inclusion)
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
“…Nothing you do is billable, so make the most of it.”
Reade Tillman, MD, Class of 2019

“It is those moments when patients have entrusted me with their greatest secrets and fears that leave me in awe. In awe of their strength and resilience, and their ability to be so open and rawly human.”
Danielle Pite Burton, MD, Class of 2019

“Not every day will be a magical day in which you forged a lasting bond with a patient and saved his life. In fact, no day may feel like that. But glimmers of what makes what we do so amazing will shine through, and you must hold onto those moments when other days seem to drag on, or you feel like your presence doesn’t matter. You’re learning more than you think…”
Meryl Colton, MD, Class of 2019

“…I was in the room with three other people. One knew he had less than 24 hours to live. And he was the one cracking jokes. Sure, some of that is a defense mechanism. But a lot of it is a testament to how truly resilient and inspirational your patients are. It illustrates just how insightful their outlook on life is, which you will have the honor to learn.”
Colton Ladbury, MD, Class of 2019
The previous page highlights essays from “Letters to a third year student” by the Class of 2019 School of Medicine. A complete listing of essays is posted at http://www.ucdenver.edu/academics/colleges/medicalschool/centers/BioethicsHumanities/Documents/Letters%20to%20third%20year%202019v3.25.pdf.
The education programs at the School of Medicine are under the leadership of Shanta M. Zimmer, MD, Senior Associate Dean for Education. The University of Colorado School of Medicine is committed to lifelong and interdisciplinary learning for health care professionals. We have many programs to serve the needs of undergraduate, graduate, and post-graduate students, beginning with pipeline programs in middle schools to attract and prepare a diverse and talented applicant pool to the health professions. Students graduating from the MD program will be able to compete for positions in our Graduate Medical Education programs that offer outstanding training for residents and fellows. Once graduates complete their training as physicians, physician assistants, physical therapists, and anesthesia assistants, the Office of Continuing Medical Education offers lifelong educational programs designed to improve competence, performance, and health outcomes. Included in this section is information on the Academy of Medical Educators, which was created to support and enhance all educational programs and teachers at the University of Colorado School of Medicine. The following pages reflect information on all of the school’s programs including Anesthesiology; Center for Advancing Professional Excellence; Child Health Associate/Physician Assistant; Genetic Counseling; Graduate Medical Education; Office of Continuing Medical Education and Professional Development; Physical Therapy; and Undergraduate Medical Education.

Academy of Medical Educators

The Academy of Medical Educators (AME), under the leadership of Shanta M. Zimmer, MD, seeks to create a community of dedicated educators who work together to promote excellence in teaching and curriculum throughout the health sciences community. To support this goal, AME inducted four new members in 2018 for a total of 94 members who serve the campus through a series of programs that provide faculty development, coaching, recognition, small grant and other scholarship opportunities, and advocacy in medical education.

In 2018-19, the AME continued to provide regular faculty development opportunities through workshops, online education, and a growing number of individual sessions to departments and programs. The longstanding and highly successful Teaching Scholars Program, under the leadership of Janet Corral, PhD, and Chad Stickrath, MD, graduated 14 interprofessional participants who are now trained in curriculum development, program evaluation, and medical education scholarship. For faculty development, the AME continues to run the biannual Residents and Fellows as Teachers Elective, led by Mel Anderson, MD, and Eric Young, MD, and the iTEACH coaching program. The latter program provides faculty with one-on-one direct observation and coaching on their teaching skills.

In addition to faculty development and career advancement for educators, the AME has worked hard to promote education and educators on campus. The AME hosted the Seventh Annual Education Scholarship & Innovation Symposium on May 13, 2019. Six awards were given for excellence in education and four grants, for a total of $16,008, to improve educational innovation and scholarship on campus. The AME has increased its role in supporting the scholarship of education, and it serves as a Best Evidence Medical Education Review Site. In addition, we provide a core research infrastructure to provide advice, research assistant support, and mentorship for medical education research projects.

Funding for the AME is provided through the School of Medicine Dean’s Office and Graduate Medical Education, with additional support for the small grants programs from the Rymer Family and the Office of Faculty Affairs. Please visit the website for detailed information on each of the above: http://www.ucdenver.edu/academics/colleges/medicalschool/education/academy/Pages/default.aspx

Anesthesiologist Assistant Program

The University of Colorado’s Master of Science Program in Anesthesiology is a rigorous, 28-month graduate level program housed within the Department of Anesthesiology located at the Anschutz Medical Campus. When the first class matriculated in the fall of 2013, it became only the ninth program of its kind in the United States. There are now 12 accredited Anesthesiologist Assistant programs in the United States offering similar education; the University of Colorado is the only program in the western half of the country.
The program is divided into two phases: a 16-month integrated didactic and clinical curriculum, followed by a 12-month clinical program. Prior to transitioning into the clinical portion, students must have successfully completed four semesters of basic science, as well as general and advanced anesthesia curriculum. Upon graduation, students have more than 2,700 clinical training hours, not including simulation. Students sit for the national certifying exam provided by the National Commission for Certification of Anesthesiologist Assistants (NCCAA) prior to graduation. Students who successfully complete the program requirements are awarded a Master of Science Degree in Anesthesiology from the University of Colorado School of Medicine.

Mission
The mission of the Master of Science in Anesthesiology Program is to educate and train highly skilled Anesthesiologist Assistants in the cognitive, psychomotor, and affective learning domains to prepare them to work with anesthesiologist-led Anesthesia Care Teams providing quality patient care.

Leadership
Vesna Jevtovic-Todorovic, MD, PhD, MBA – Chair, Department of Anesthesiology
Brenda Bucklin, MD – Vice Chair of Education, Department of Anesthesiology
Stacy Fairbanks, MD – Medical Director
Erik Nelson, MD – Associate Medical Director
Ann-Michael Holland, CAA, MMSc – Program Director
David Dunipace, CAA, MS – Associate Program Director
Steven Winterbach – Lead Program Coordinator
Marisa Ligons – Program Coordinator

Website
Our website has recently been updated to show changes in staff and the new class: [www.medschool.ucdenver.edu/aaprogram](http://www.medschool.ucdenver.edu/aaprogram)

Student Overview
When the Fall 2019 Semester begins, the MS-Anesthesiology Program will have a total of 39 students enrolled. The program admissions process is extremely competitive, with the last application cycle producing 422 applicants. Only 14 were admitted. The MS-Anesthesiology Program has now had four graduating classes, producing a total of 34 graduates.

Total Number of Applicants Per Year

![Total Applicants](image)
Recent Accomplishments

Curriculum and Instruction
The MS-Anesthesiology Program offers a 28-month didactic curriculum designed by expert faculty and complemented by clinical rotations. The curriculum features didactic courses taught primarily by attending anesthesiologists, allowing students to interact with members of the anesthesiology team from the beginning of training. Senior-year didactics include a project in research or quality improvement to supplement clinical requirements, and an interactive Senior Seminar where students lead Problem-Based Learning D sessions covering cases and subject matter. In addition to classroom didactics, students begin clinical hours within the first month of the program so that MS-Anesthesiology students become comfortable in the operating room environment even before completing the didactic portion of the program. This experience transforms into self-sufficiency as students rotate through a clinical subspecialties, including pediatrics, trauma, cardiothoracic, regional, neuroanesthesia, and obstetrics. While the Anschutz Medical Campus provides excellent learning opportunities, program leaders also have established affiliation agreements with multiple outside clinical sites allowing students rotations in clinical settings along the Front Range and nationwide.

Simulation Lab
The Simulation Lab, which is integral to the overall curriculum, is comprised of three semesters. The students are taught skills and concepts using both low-fidelity simulators for task training and a high-fidelity simulator, the SimMan 3G, for scenario-based training. Task training exercises include basic and advanced airway management, anesthesia machine operation, setup and use of anesthetic agents, invasive monitor placement and regional anesthesia techniques. Crisis Resource Management skills are taught using the SimMan 3G with scenario-based training. Crisis Management training includes ACLS protocols, local anesthetic toxicity management, difficult airway management, treatment of severe bronchospasm and many other scenarios. The concepts of TeamSTEPPS (team performance strategies and tools) are incorporated in all scenarios.

Diversity Scholarship
The Department of Anesthesiology has established its first Diversity Scholarship to provide support to students who are traditionally underrepresented in health science graduate programs. Scholarship funds will cover $39,475 of tuition over the final four semesters of the MS-Anesthesiology Program. Jonathan London was our inaugural recipient and we have awarded a second scholarship to Fabienne Haas.

Community Outreach
MS-Anesthesiology students have completed community service projects every semester of the program’s existence. Students have prepared meals for Ronald McDonald House Charities of Denver; raised money by making and selling scrub caps to benefit Lifebox, an organization that sends pulse oximeters to low-resource and lower-middle income countries at no or reduced cost; helped to collect used medical supplies for Project Cure, the largest provider of donated medical supplies and equipment to developing countries around the world; and staffed booths at local fundraising events, such as Strides for Epilepsy 5K and University health fairs. Students participated as a team in the Tuberous Sclerosis Alliance walk to raise money for that organization.
Center for Advancing Professional Excellence

The Center for Advancing Professional Excellence (CAPE) is a state-of-the-art standardized patient and simulation center. Current and future health care professionals work alongside faculty through simulation experiences, where learners have the opportunity to learn, develop, and improve patient-centered care. With 18,000 square feet, the CAPE is a unique resource in the Rocky Mountain region. In this education environment, learners gain real-world experience working with patients, handling clinical situations, and collaborating with fellow health care professionals. The CAPE promotes excellence in health professions through education and assessment of clinical skills including communication, physical examination, clinical reasoning, and teamwork. We continue to grow and innovate while accommodating more learners and health care professionals. Our community of supporters fuels our efforts to bring a world-class education within reach for current and future health professionals in the Denver metro area, the region, and beyond.

Annual Achievements Include:

• Ongoing accreditation by the Society for Simulation in Healthcare. The accreditation further establishes CAPE as an international leader within the simulation community in the areas of Teaching, Assessment, Research, and Education.

• Attracting new external partners such as the Society for Pediatric Sedation, Aurora Courts, and the Aurora Police Academy. CAPE was successful in training 81 administrative and IT staff, detention officers, probation officers, and marshals from Aurora Courts, in the areas of communication, teamwork, roles and responsibilities and medical emergencies using simulated clients and high-fidelity mannequins.

• Continued advanced training of standardized patients capable of providing a broad array of portrayals, evaluation, and feedback.

• The CAPE employs 75 Standardized Patients (SPs), Standardized Teaching Associates (TAs), Communication Coaches and Facilitators, and Simulation Technologists who represent the diverse population of Colorado. In the past year, the SP pool provided 27,210 hours of simulation work. This is an increase of approximately 2,230 hours from the previous year. The CAPE provided over 44,000 learner contact hours for schools on the Anschutz Medical Campus

• Hosting a campus-wide virtual reality demonstration to assess the needs and capabilities of virtual reality technology in health care education and assessment.

• Continued partnership with the Colorado Department of Public Health and Environment to administer a competency-based skills assessment for health navigators who serve a diverse population across the state of Colorado. In the last year, 67 health navigators have successfully completed the assessment and added to the CDPHE registry for current and potential employers to access. Additionally, CAPE is collaborating with the Colorado Area Health Education Center program to administer the assessment in Durango to be accessible by health navigators practicing in and around the southwest region. CAPE is also in the process of organizing additional sites.

• Continued partnership with College of Nursing faculty to integrate simulated patients in mental health curriculum for undergraduate nursing students.

• Partnership with Children’s Hospital Colorado Simulation Lab to integrate simulated patients in additional boot camp trainings for interns, residents, and fellows.

• Partnership with the Center for Personalized Education for Physicians (CPEP) and faculty from the Departments of Emergency Medicine, Anesthesiology, Obstetrics and Gynecology, and the Department of Pediatrics Section of Neonatology to offer competency assessment, re-entry to clinical practice, and education services for health care professionals. In the past year, CAPE administered 17 assessments from CPEP referrals.

IV training—photo courtesy of Medical student @kevin-who108 from @cuanschutz Instagram.
• Under the leadership of Kirsten Broadfoot, PhD, and in partnership with all health professions on campus, ongoing implementation, evaluation, and dissemination of a Communication Toolbox for the purpose of improving and standardizing assessment of communication skills across all health care professions.

• Ongoing community engagement through connections with campus partners and local organizations.

Program Information

<table>
<thead>
<tr>
<th>Elshimaa Basha, MPH, CHSE</th>
<th>Kirsten Broadfoot, PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>Communication Skills Development, Research &amp; Remediation Specialist</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Melissa Giardina, BA</td>
<td>Larry Armstrong, BS</td>
</tr>
<tr>
<td>Business Specialist</td>
<td>IT Senior Professional</td>
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<tr>
<td>donnie betts, BS, Jocelyn Blake, BA, Donahue Hayes, and Brian Kelly, MS</td>
<td>Jedidiah Jensen, BA</td>
</tr>
<tr>
<td>Simulation Education Specialists</td>
<td>Simulation Specialist</td>
</tr>
</tbody>
</table>

Program website: https://medschool.cuanschutz.edu/cape

The Child Health Associate/Physician Assistant Program

The University of Colorado Physician Assistant Program has gained national recognition for its curriculum in primary care medicine. The Program confers a Professional Master’s Degree (MPAS). In accordance with the mission of the program, the CHA/PA Program curriculum provides comprehensive physician assistant education in primary care medicine with expanded training in pediatrics and care of disadvantaged, at-risk and medically underserved populations. Graduates are well prepared to perform in primary care practice with patients across the lifespan.

Mission Statement

The mission of the Child Health Associate/Physician Assistant Program is to provide comprehensive physician assistant education in primary care across the lifespan, with expanded training in pediatrics and care of the medically underserved.

Program Curriculum

The Colorado Curriculum is a cutting-edge, learner-centered educational platform designed to foster clinical decision-making and lifelong learning skills. The curriculum is based on clinical presentations rather than traditional courses. This approach mimics how patients present for care and how clinicians practice medicine. The Colorado Curriculum uses an iterative approach to learning: clinical presentations that are introduced in the first year are revisited at a more advanced level during second year. The program curriculum aims to provide a strong foundation to equip students for a lifetime of learning, clinical care, and service. Students are expected to be self-directed, motivated, and responsible for their own learning, using critical thinking and reasoning. Courses emphasize the integration of basic sciences and clinical medicine through the presentation of information in clinical context, employing the use of small group experiences, case-based learning, patient “actors,” patient simulators, lectures, and collaborative sessions to build knowledge, skills, and attitudes important for physician assistants. Interdisciplinary training is woven throughout to facilitate the development of a collaborative approach to patient care. The University of Colorado PA Program is a nationally recognized leader in physician assistant education.

Educational content is enhanced by including family-centered care, behavioral and psychosocial perspectives, and social and community initiatives for health and wellness. The program has integrated content in public health, oral health, professionalism, and interprofessional education. Students with a personal area of interest have the opportunity to participate in specialized tracks to enhance learning in Rural, Global Health, and Pediatric Critical and Acute Care.

The curriculum includes a fully integrated clinical curriculum across all three years, with clinical rotations in hospital and community settings. During clinical experiences, students participate in history-taking, physical examination and assessment, development of a differential diagnosis, and clinical decision-making and planning of treatments and interventions.
Students work closely with preceptors and other members of the health care team and they are evaluated on skills and competencies required for patient care.

As a part of the University of Colorado School of Medicine, the faculty of the entire school and its affiliates contribute to the quality of the learning experiences.

Affiliations with the UCHealth University of Colorado Hospital, Children’s Hospital Colorado, and Denver Health and Hospitals in addition to community centers and clinics provide a network of clinical rotations to enhance the training of students. The faculty within the departments of Pediatrics, Family Medicine, Surgery, the Department of Medicine Division of General Internal Medicine, and others regularly participate in classroom and clinical training of the CHA/PA Program students.

Program Faculty and Leadership

The education, scholarship, and service roles of the principal faculty of the CHA/PA Program provide students with experienced faculty mentors from clinical practices in general pediatrics, family medicine, and pediatric subspecialties. Program faculty serve in national leadership roles in the Physician Assistant Education Association (PAEA). PAEA is the only national organization representing PA educational programs in the United States. The CHA/PA Program is highly respected nationally as a leader among PA programs. Our faculty currently serve in various roles within PAEA: Amy Akerman, MPAS, PA-C, is on the Government Relations Committee; Jonathan Bowser, MS, PA-C, is President-Elect and will serve his presidential term in 2019.

Our faculty are also involved in teaching national workshops for PAEA. These are attended by faculty from programs around the country. Jackie Sivahop, MS, PA-C, and Joyce Nieman, MHS, PA-C, have led several workshops for clinical educators. Rebecca Maldonado, MSHPE, PA-C, has taught a workshop on learner remediation.

International Connections

The University of Colorado Child Health Associate/Physician Assistant Program continues its partnership with the Trifinio Clinic in Guatemala. CHA/PA students engage in clinical experiences in this clinic site in rural northwestern Guatemala. Our global partnerships continue to offer us new perspectives on our educational program and the work we do here, helping us provide better care for our patients in the United States and abroad.

Student Overview

The CHA/PA Program has a competitive admissions process and continues to attract top students from across the country. During the 2018-19 admission cycle, the program received 1,593 applications, of which 144 were interviewed to admit 44 students.

Program graduates are employed in all areas of primary and subspecialty areas of practice including pediatrics, family medicine, surgery, internal medicine, emergency medicine, dermatology, and many more. The program has a 98 percent five-year average NCCPA board pass rate.
### Admissions - Student Demographics

<table>
<thead>
<tr>
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<th>Class of 2020</th>
<th>Class of 2021</th>
<th>Class of 2022</th>
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<tbody>
<tr>
<td>Total Students</td>
<td>44</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>CO Resident</td>
<td>22</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>22</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Overall GPA</td>
<td>3.74</td>
<td>3.75</td>
<td>3.67</td>
</tr>
<tr>
<td>Science GPA</td>
<td>3.69</td>
<td>3.71</td>
<td>3.62</td>
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<tr>
<td>Diversity including rural students, students who are first in college, and those from traditionally underrepresented racial and ethnic groups</td>
<td>30%</td>
<td>23%</td>
<td>36%</td>
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<tr>
<td>Rural Track</td>
<td>4</td>
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<td>Pending</td>
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<tr>
<td>Global Health Track</td>
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<td>2</td>
<td>Pending</td>
</tr>
<tr>
<td>Pediatric Critical Care</td>
<td>4</td>
<td>4</td>
<td>Pending</td>
</tr>
<tr>
<td>Average Age</td>
<td>25</td>
<td>26</td>
<td>26</td>
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</tbody>
</table>

### Program Information
Program Director: Jonathan Bowser MS, PA-C  
Medical Director: Tai Lockspeiser MD, MHPE  
Associate Director: Rebecca Maldonado MS, PA-C  
Associate Director: Jacqueline Sivahop MS, PA-C  
Program website: [http://medschool.ucdenver.edu/paprogram](http://medschool.ucdenver.edu/paprogram)
Genetic Counseling Program

The Master of Science in Genetic Counseling Program prepares students for professional practice and board certification as genetic counselors. The program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC). Upon graduation, alumni are eligible to sit for the national certification exam administered by the American Board of Genetic Counseling (ABGC). Established in 1971, the CU Anschutz Genetic Counseling Program is the third-oldest training program for genetic counselors in North America and one of only three such programs in the Rocky Mountain region.

Mission Statement
The mission of the Genetic Counseling Program is to train competent, compassionate, and innovative graduates who will effectively integrate professional practice and human genomics to deliver quality, client-centered genetic counseling services, promote informed health policy, and engage in scholarship, advocacy, and leadership activities throughout their careers.

Program Curriculum
The intensive 21-month curriculum integrates extensive coursework in human clinical and laboratory genetics and genomics, psychosocial and counseling theory, research, and ethical, legal, social, and professional practice issues with more than 1,000 hours of direct, supervised clinical training in pediatric, metabolic, reproductive, oncology, adult, and specialty genetics clinics. During the second year, students complete a scholarly mentored capstone project addressing a current clinical practice, laboratory, educational, policy or service delivery issue in genetic counseling. Students are encouraged to submit abstracts for presentation of their projects at national meetings and to publish their findings in peer-reviewed journals.

Professional Practice of Program Alumni
Genetic counselors play a critical, expanding role in the health care system. They are at the forefront of precision genomic medicine initiatives. As genetic risk assessment and genetic testing become integral components of virtually all medical specialties, genetic counselors help to ensure quality, informed, client-centered delivery of these services. The Bureau of Labor Statistics identifies genetic counseling as one of the fastest-growing health care fields.

CU Anschutz Genetic Counseling Program alumni practice throughout Colorado and the nation. Sixty percent of the genetic counselors currently in Colorado trained in the CU program. Practice settings of alumni include hospitals, academic genetics centers, private genetics centers, diagnostic laboratories, clinical research programs, biotechnology companies, state public health departments, and patient advocacy organizations.

As members of multidisciplinary health care teams, genetic counselors provide scientific expertise, education, risk assessment, non-directive support for decision making and psychosocial needs, and community resources. Genetic counselors are central to the provision of quality, comprehensive care of individuals and families affected with or at risk for specific genetic conditions, or with genetic predispositions to cancer, or cardiovascular or other diseases. Genetic counselors in clinical settings use a client-centered approach to ensure that patients and their medical providers can understand and appropriately utilize genetic information and laboratory tests to promote informed health care choices. Laboratory-based genetic counselors serve as professional liaisons to hospital systems, individual health care providers and their patients. They help providers and patients understand new testing modalities and appropriate testing options, conduct utilization management review to promote cost-effective use of genetic testing, and provide individualized results interpretation. Genetic counselors in both clinical and laboratory roles utilize their scientific expertise to research genomic variants and ensure that clinical interpretation of often novel findings of genomic testing reflects current knowledge. Many program alumni are faculty at their institutions, promoting genomic literacy as educators of trainees, other healthcare professionals and the public, and conducting clinical and translational research. Many alumni facilitate support and advocacy groups for genetic conditions, engage in health care policy development regarding genetic services, and provide consulting to biotechnology and other industries. It is an exciting time for the program’s graduates to be entering the genetic counseling field, as professional roles and opportunities continue to expand and evolve in the context of precision genomics-based health care.

Student Profile
Admission to the Genetic Counseling Program is highly competitive and is conducted through a national match program. Applications to the program increase each year. In the spring 2019 admissions cycle, nearly 200 individuals applied for the six available positions in the incoming Class of 2021, a 16 percent increase from the previous year. The mean GPA of the incoming students is 3.72.
The mean GPA of the incoming students is 3.72. The mean GRE scores of this group are: Verbal – 79%ile, Quantitative – 65th percentile and Analytical – 80 percentile. Students in the Class of 2021 come from five states, including Colorado. They include 6 women ranging in age from 22 years to 28 years (median 24 years). Prior professional experiences include ABA behavioral technician for individuals with autism spectrum disorder, laboratory manager and researcher in neurobiology, genetic counseling assistants for an academic clinical genetics center and a commercial genetic testing laboratory, clinical trials coordinator for a cardiology research program, and a hospital health unit coordinator. All come with client advocacy and counseling experience in settings including hospice, domestic violence shelters, crisis counseling phone services, STEM student mentorship programs, and Special Olympics.

**Notable Accomplishments - 2018-2019 Academic Year**

- 100 percent of the program’s 2018 graduates taking the American Board of Genetic Counseling Certification Exam achieved certification on their first attempt. Nationally, 83 percent of examinees achieved passing scores during the same period.
- Capstone research projects of several students in the 2018 and 2019 graduating classes were selected for poster or platform presentations at national meetings, including the 2018 and 2019 National Society of Genetic Counselors Annual Education Conferences, the 2018 and 2019 American College of Medical Genetics Conferences, and the 2019 Cure SMA Conference.
- All students in the May 2019 graduating class were employed prior to graduation and entered clinical practice in the specialties of pediatrics, oncology, and genomic medicine.

**MS Genetic Counseling Program Information**

Program Director: Carol Walton, MS, CGC  
Assistant Director, Clinical Training: Kathleen Brown, MS, CGC  
Medical Director: Peter Baker II, MD

Website: [www.ucdenver.edu/geneticcounseling](http://www.ucdenver.edu/geneticcounseling)

**Graduate Medical Education**

The Graduate Medical Education (GME) Office is under the leadership and direction of Carol M. Rumack, MD, Associate Dean for GME at the University of Colorado School of Medicine (CUSOM) and Designated Institutional Official (DIO) for the Accreditation Council for Graduate Medical Education (ACGME). Ashley Walter, BA, is the Director of Finance and Administration.

Rumack and staff are responsible for the oversight of ACGME accreditation and educational environment as well as payroll, benefits, and administrative issues for all residency and fellowship training programs.

Mission: The GME Office will achieve the highest level of accreditation for the CUSOM institution and residency and fellowship programs, and provide leadership, education, and support to its residency and fellowship programs to educate residents and fellows to be outstanding physicians.

The GME Office implements policies of the Graduate Medical Education Committee (GMEC) of the School of Medicine. The ACGME charges the GMEC with responsibility for monitoring and advising on all aspects of residency education including compliance with ACGME work hours, patient safety, and quality improvement requirements, and in maintaining a strong learning environment.

The GMEC is composed of program directors, designated representatives of the major teaching hospitals and officers of the Housestaff Association. GMEC reports to the Dean of the School of Medicine through the Associate Dean for GME and Senior Associate Dean for Education. The website is: [www.medschool.ucdenver.edu/gme](http://www.medschool.ucdenver.edu/gme)
2018-19 GME HIGHLIGHTS

- The University of Colorado School of Medicine GME
- Trains 76 percent of the total residents and fellows in Colorado
- Is the largest of 14 sponsoring institutions in the state of Colorado
- Is the 20th largest sponsoring institution of 844 nationally
- Oversees and provides support to approximately 125 Program Directors, 75 Program Coordinators, and ~1,700 Faculty
- Has no ACGME institutional citations
- Anticipates its ACGME Institutional Self-Study Date in October 2025

7th Annual GME Outstanding Program Coordinator Awards
The Graduate Medical Education Committee, in collaboration with the Program Coordinator Council (PCC), awarded Michael Benge, MHA, as an outstanding program coordinator. Michael was also the CUSOM GME Nominee for the ACGME 2019 National Program Coordinator Award.

CUSOM RESIDENT & FACULTY SURVEY RESULTS
Residents and faculty of all ACGME-accredited programs are required to complete this annual survey. Results of the surveys are utilized by ACGME as a key performance indicator for program quality and compliance with work and training environment requirements and for CUSOM institutional performance. One hundred two programs were surveyed.

RESIDENT SURVEY RESULTS: 92 percent response rate
Duty Hours Faculty Evaluation
Educational Content Resources Patient Safety/Teamwork

FACULTY SURVEY RESULTS: 88 percent response rate
Faculty Supervision & Teaching Educational Content Teamwork
Resources Patient Safety
INSTITUTION IS AT OR ABOVE NATIONAL MEAN FOR ALL SURVEY QUESTIONS AND CATEGORIES

GMEC – OVERSIGHT & EDUCATION

NEW ACGME PROGRAMS APPROVED

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<th>Programs</th>
<th>Positions</th>
<th>Length of Training (years)</th>
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<td>Molecular Genetic Pathology</td>
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<tr>
<td>Pediatric Nephrology</td>
<td>3</td>
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NEW NON-ACGME FELLOWSHIP PROGRAMS APPROVED

- Fetal Cardiac Fellowship
- Obstetrics and Gynecology Hospitalist Fellowship
- (EM) Administration, Operations, and Quality Fellowship
- (EM) Climate & Health Science Policy Fellowship
- Advanced Fellowship in Pediatric QI
- Pediatric American Board of Pediatrics Fellowship
- (EM) Global Emergency and Public Health Fellowship
- (EM) Wilderness & Environmental Medicine Fellowship

New Program Directors (PDs) & Program Coordinators (PCs)

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<td>13</td>
<td>12</td>
<td>10</td>
<td>11</td>
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<tr>
<td>New PCs (and/or transferred to another program)</td>
<td>18</td>
<td>14</td>
<td>20</td>
<td>15</td>
<td>11</td>
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</table>

2018-19 average turnover rate: PDs = 10%  PCs = 17%

2019-20 GME Enrollment Data & Trends (Numbers reflect enrollment as of August 1, 2019)

[Graph showing enrollment data]
Number of ACGME Accredited GME Programs

<table>
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<th>Year</th>
<th>ACGME Residency</th>
<th>ACGME Fellowship</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>28</td>
<td>65</td>
</tr>
<tr>
<td>2016-17</td>
<td>30</td>
<td>69</td>
</tr>
<tr>
<td>2017-18</td>
<td>30</td>
<td>74</td>
</tr>
<tr>
<td>2018-19</td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td>2019-20</td>
<td>30</td>
<td>78</td>
</tr>
</tbody>
</table>

International Medical Graduate Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>J-1 Visa</th>
<th>E-3 Visa</th>
<th>F-1</th>
<th>H1B Visa</th>
<th>US Citizen/Perm Resid/Work Permit (EAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>17</td>
<td>16</td>
<td>11</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2016-17</td>
<td>13</td>
<td>14</td>
<td>24</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>2017-18</td>
<td>28</td>
<td>28</td>
<td>24</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>2018-19</td>
<td>30</td>
<td>15</td>
<td>15</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2019-20</td>
<td>32</td>
<td>14</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Primary Care vs Specialty Enrollment

Under-Represented Minority Enrollment
% of Total Enrollment (N=1207)
For the 2018-19 academic year 387 residents and fellows graduated from ACGME and Non-ACGME approved programs. All graduates completed the 2018-19 GME Graduate Survey.

Graduates - Overall Satisfaction with Training Program

Graduates Who Would Recommend Program
Graduates - Professional Plans

Where will all Graduates Practice?
Graduates Planning to Practice in Colorado

![Chart showing the percentage of graduates planning to practice in Colorado from 2014-15 to 2018-19. The percentages are as follows: 2014-15: 49%, 2015-16: 51%, 2016-17: 51%, 2017-18: 53%, 2018-19: 51%. The sample sizes are (326), (337), (363), (374), and (387) respectively.]

Reasons for Leaving CO

![Chart showing the reasons for leaving Colorado for the years 2014-15 to 2018-19. The reasons include Loan Repayment, Travel Opportunities, Salary, No CO Job Opportunity, Family, and Other. The percentages for each reason vary across the years.]

55
Graduates Staying in Colorado Will Serve:

Where Will Primary Care Graduates Practice?
(105/387) FM, IM, IM/Peds, Peds
Where Will Specialty Graduates Practice?
(282/387)

- **US - not CO**: 48%
- **Colorado**: 47%
- **Denver Metro**: 40%
- **Internat'l**: 1%
- **Other CO**: 7%

**Graduates Across the Country**

2018-2019 GME Graduates:
198/387 stayed in Colorado
45% Denver Metro – 6% Other
Office of Continuing Medical Education

The Office of Continuing Medical Education (OCME) is led by Brenda Bucklin, MD, Professor of Anesthesiology and Associate Dean for Continuing Medical Education. The office is staffed by Pam Welker (Administrator), Carolyn Wieber and Ellen Ricker (Conference Managers). The mission of the office is to enhance “learners’ knowledge, competence, performance, or patient outcomes through continuing medical education and professional development activities that are linked to practice and focused on health care quality gaps.” Learners are expected to “apply new knowledge and skills in order to improve performance and patient outcomes in their practice settings.”

Additional information can be found at https://medschool.cuanschutz.edu/education/cme. In 2018, the OCME office reached more than 23,000 MD/DO and 16,000 non-MD learners. In addition, 2,797 hours of instruction were certified for AMA PRA Category 1 Credit™. In 2018, the OCME certified 3 activities for ABIM MOC Medical Knowledge Points. Six activities have been certified or certification is in progress for ABIM MOC Medical Knowledge Points in 2019. An Enduring Material is a non-live continuing medical education activity that endures over time. Three of these activities have also been certified. The office is preparing for ACCME accreditation in 2021 and has developed an electronic course application and evaluation. For more information, contact Pam.Welker@cuanschutz.edu or Brenda.Bucklin@cuanschutz.edu.

Physical Therapy Program

The University of Colorado School of Medicine Physical Therapy Program in the Department of Physical Medicine and Rehabilitation is home to three educational programs: Physical Therapy Program, Pediatric Physical Therapy Residency Program, and PhD Program in Rehabilitation Science.

The Physical Therapy Program prepares each student to become a Doctor of Physical Therapy (DPT). Physical therapists are recognized as experts in movement and function treating patients of all ages in multiple settings. Graduates of the CU Physical Therapy Program are prepared to collaborate with other health care providers to meet the musculoskeletal, cardiovascular, and neuromuscular needs of patients through direct access to care.

The CU Physical Therapy Program most recently was ranked 15th of 217 accredited physical therapy programs in the United States by the U.S. News and World Report (2016) and is one of the first 25 educational programs still in existence in the United States. This program has been continuously accredited since its inception in 1947, receiving an unconditional ten-year accreditation in 2010. The program celebrated its 70th Anniversary in 2017 with events attended by alumni, colleagues, and business leaders.
Mission: To lead discovery and innovation to improve movement, participation, health and wellness for individuals and society through excellence in education, research, clinical care, and service.

Vision: To transform health and foster wellness in individuals and society through education, discoveries, engagement, and innovation.

Values: To support our mission and vision, shape our culture, and reflect the physical therapy profession’s vision and core values.

Applicants to the CU Physical Therapy Program
Applicants to CU Physical Therapy Program come from a wide range of academic backgrounds. There are prerequisites similar to those for the MD Program that emphasize basic sciences, quantitative ability, and humanities. In addition, many of the applicants have substantial experience in health care professions. Some have advanced degrees and all have volunteered or worked in paid health care positions in physical therapy settings in preparation for application to the CU Physical Therapy Program.

Physical Therapy Program

Application Data 2018-2019

- Completed Applications: 919
- Interviewed: 144
- Enrolled: 71
- GPA: 3.64
- GRE Verbal: 155 (56%)
- GRE Quantitative: 155 (68%)
- GRE Written: 4.2 (67%)

Students of the CU Physical Therapy Program

Approximately 65-70 students enter the CU Physical Therapy Program each year. Approximately half of the students are from Colorado, while other students are accepted to the program from across the United States and from other countries. Students enter this program with high qualifications and graduates of the program pass a national licensure examination with scores well above the average for the United States. The program is innovative and the faculty members are among the leaders in physical therapy education.

The 2019 entering class of physical therapy students has many unique life experiences that enhance and enrich the body of students who are exceptionally qualified academically. Among this cohort, many students have had extraordinary research accomplishments and valuable volunteer experiences with individuals around the world, including Ecuador, Spain and Uganda. Some of these experiences include working with cancer survivors, both adults and children, and working with individuals with physical or behavioral challenges. This cohort also has noteworthy physical endeavors such as mountain climbing, long distance running, cycling and college basketball, as well as honorable service to their communities and with the U.S. military. Some students come from professions, including advertising, accounting, teaching, playing as a Denver Bronco and serving as an athletic director for Google. In addition, there are students who excel in singing, dancing, acting, and guiding others in fitness. Several first-generation college students joined this class.
Ethnically, 11 students have Hispanic backgrounds, four students identify as black, and three students are Vietnamese.

### Demographics of Admitted Students

<table>
<thead>
<tr>
<th>Class:</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>74%</td>
<td>69%</td>
<td>62%</td>
</tr>
<tr>
<td>Male</td>
<td>26%</td>
<td>31%</td>
<td>38%</td>
</tr>
<tr>
<td>CO Resident</td>
<td>62%</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>38%</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>Minority</td>
<td>10%</td>
<td>21%</td>
<td>25%</td>
</tr>
<tr>
<td>Average Age</td>
<td>24</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Cumulative GPA</td>
<td>3.77</td>
<td>3.7</td>
<td>3.64</td>
</tr>
<tr>
<td>Math/Science GPA</td>
<td>3.73</td>
<td>3.65</td>
<td>3.61</td>
</tr>
</tbody>
</table>

Graduates of the CU Physical Therapy Program

Graduates from the CU Physical Therapy Program perform exceptionally well on the national licensure examination, administered by the Federation of State Boards of Physical Therapy (FSBPT). Since 2011, 99 percent of program graduates have passed the exam on their first attempt, with 100 percent of the program’s previous two years of graduates passing the exam on their first attempt. Graduates are employed in settings that range from outpatient to inpatient facilities and include patient populations that span pediatrics to geriatrics.

### FEDERATION OF STATE BOARDS OF PHYSICAL THERAPY

Summary of scaled results based on FSBPT criterion-referenced passing score of 600.

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**Note:** Due to curricular changes, there were two graduating classes in 2016: May and December. Data for the Class of 2019 will be post-December 2018 graduation.

Faculty

Faculty of CU Physical Therapy Program are experienced educators, many of whom contribute to clinical care. Faculty members have been recognized nationally and internationally for scholarship. All are members of the American Physical Therapy Program Association (APTA) where they serve in leadership roles, e.g., on the Board of Directors of APTA; President of the Cardiovascular and Pulmonary Section of APTA. They also serve other professional organizations, e.g., members of NIH grant review sections and committees, as well as service to the community, e.g., President of Colorado State PT Board, DORA; DAWN Clinic; Stout Street Clinic for individuals who are homeless. Since 2008, the faculty have developed a robust and substantial research agenda with a current research portfolio of over $11 million.
Curriculum

In 2011, the CU Physical Therapy Program was one of the leaders among physical therapy education providers to revise its curriculum to accommodate a yearlong paid internship. This new curriculum, which launched in 2014, prepares students for graduation in two and a half years, compared with the previous three-year curriculum. This change was initiated to reduce the financial burden to students by decreasing the amount of time without income and to assure that graduates are prepared to work in the increasingly complex health care environment.

The curriculum specifically addresses four issues currently affecting entry-level physical therapy education:

Workforce readiness: In the current health care environment, clinical enterprises do not have the time and flexibility to assist the new graduate to develop the necessary skills to fulfill all the roles of a practicing clinician beyond those associated with direct day-to-day patient management. The internship includes time allocated for structured learning.

Mentoring time: Because of challenges in the current health care system, experienced clinicians have insufficient time to mentor new graduates. The internship model provides a mechanism to adjust for unreimbursed time that experienced clinicians spend mentoring the new graduate.

Billing restrictions: In some settings, clinical enterprises are limited in their ability to bill for student-provided services to patients with Medicare, and in some cases, Medicaid. In addition, students in these settings face more stringent supervision requirements. The billing and supervision restrictions limit the ability of clinical sites with high Medicare census to educate students in their clinics, and prevent students from reaching independence, which is the goal of clinical education. This difficulty is obviated because the intern is a licensed clinician for three-quarters of the internship.

Student Debt: Education is increasingly expensive and salaries for new graduates are not commensurate. In this new model of education, the student will begin to receive a salary at least six months earlier than in the previous curricular model, substantially reducing the time without income.

The curriculum is comprised of two-and-a-half years of pre-graduation didactic and clinical experiences followed by eight months of post-graduation clinical experience. The pre-graduation phase includes seven semesters of didactic coursework and 38 weeks of clinical experiences. Curricular content is divided into foundational and clinical sciences, patient management and clinical skills, professional topics, and clinical education experiences. Patient management includes orthopedic, cardiovascular, and neurological physical therapies, as well as physical therapy for patients with other medical conditions. Professional topics include courses focused on professional skills and behavioral attributes, as well as courses in evidence-based practice, research design and methods, and clinical reasoning.

The curriculum has been highly successful, with a 100 percent pass rate on the physical therapy licensure board exams. Faculty of the CU Physical Therapy Program review and revise the curriculum annually to ensure that content and emphasis are consistent with the ever-changing health care needs.
Curricular Threads
The curriculum is carefully designed to integrate five content areas that are threaded throughout the curriculum:
- Patient-Centered Care
- Clinical Reasoning and Evidence Based Practice
- Movement for Participation
- Teamwork and Collaboration
- Quality Improvement and Safety

Center for Advancing Professional Excellence
The Center for Advancing Professional Excellence provides an environment for students to practice physical therapy examination, intervention, and communication skills. These experiences include learning in an ICU environment and two comprehensive examinations/assessments. The Doctor of Physical Therapy Program is one of the few physical therapy programs in the United States where students work with standardized patients and mannequin simulation in conjunction with a full-service Center of Excellence.

Interprofessional Education
The CU Physical Therapy Program participates in the longitudinal Interprofessional Education and Development curriculum, which is designed to prepare students for interprofessional collaborative practice. The curriculum focuses on developing competencies in teamwork/collaboration, values/ethics, and quality/safety. Each student is assigned to an interprofessional student team, which includes students from these schools/programs: School of Medicine (Physical Therapy, Medicine, Child Health Associate/Physician Assistant, Anesthesiologist Assistant), School of Pharmacy, College of Nursing, and School of Dental Medicine. Over the first two years of the curriculum, the interprofessional student team meets to understand and apply fundamental content in teamwork/collaboration, quality/safety, and values/ethics. In years two and three, students participate in team simulations/standard patient encounters at the Center for Advancing Professional Excellence. Finally, DPT students are evaluated on collaborative practice competencies during their final clinical experience.

Clinical Reasoning Capstone Project
The didactic curriculum culminates in a capstone project, which includes writing and presenting a patient case report that synthesizes didactic content of the curriculum with the student’s clinical experiences, while highlighting the application of evidence-based practice and clinical reasoning.

Research initiatives
Entry-level DPT students are encouraged to participate in research under the guidance of faculty mentors and to present their findings through national scientific conferences and peer-reviewed publications. Several research facilities are available that enhance the ability of faculty to conduct rehabilitation research and to mentor students who seek to develop research skills while completing their physical therapy education. The Interdisciplinary Movement Science Laboratory contains state-of-the-art equipment for motion analysis of gait and other functionally relevant tasks. A sister facility in the Geriatric Research, Education, and Clinical Center contains an instrumented treadmill with a motion analysis system that allows intervention and outcome research for populations with walking dysfunction. These motion analysis facilities are also equipped for studies involving electromyography and transcranial magnetic stimulation. The Rehabilitation Science Consortium houses graduate students, postdoctoral fellows, research assistants, and physical therapy students who assist with research projects.

Scholarships
The CU Physical Therapy Program is committed to providing sustainable scholarship support to help offset the cost of education to students. Scholarships are available, emphasizing merit, commitment to working in rural areas, and service to medically underserved communities with health disparities. The CU Physical Therapy Scholarship and Endowment Board was formed in 2012 and has successfully increased the PT Program’s committed funds from less than $300,000 in 2011 to over $5 million in 2019. Together, the Board, CU Physical Therapy Program leadership, and the Alumni Association have increased the endowment and current use funds to distribute over $200,000 in scholarships annually.
**Pediatric Physical Therapy Residency Program**
The University of Colorado Physical Therapy Pediatric Residency Program is an accredited post-professional clinical and didactic education program for licensed physical therapists who have graduated from an accredited DPT program and seek to specialize in pediatric physical therapy. The mission of this residency program is to provide a comprehensive program of didactic, clinical, and professional experiences to develop pediatric physical therapy specialists. Through clinical care experiences, educational excellence, exposure to research, and active engagement in scholarship, teaching opportunities, professional, and community service, and participation in collaborative teamwork, residents will become future leaders in the profession.

The residency program is designed to advance preparation of the physical therapist as a pediatric board-certified clinical specialist through experiences and mentorship in multiple pediatric clinical settings. Future leaders in pediatric physical therapy are developed through coursework and clinical experiences during the 13-month residency program. In addition to clinical opportunities with structured mentorship, the program also includes participation in the Leadership and Education in Neurodevelopmental Disabilities program through JFK Partners and access to the resources of the University of Colorado Physical Therapy Program. The American Board of Physical Therapy Residency and Fellowship Education accredits all residency and fellowship programs, and the University of Colorado Pediatric Residency Program received its most recent 10 year reaccreditation in 2018.

The eighth Pediatric PT Resident Graduate successfully completed the residency in July 2018. The applicant pool continues to be exceptionally strong with applicants from across the United States vying for a single position in this residency during the 2019-2020 application cycle. Accomplishments of the residency graduates include leadership positions in clinical care, professional organizations, and several published manuscripts in *Pediatric Physical Therapy*.

All graduate residents have taken and passed the clinical specialist examination to be recognized as Pediatric Clinical Specialists by the American Board of Physical Therapy Specialists. The earliest this exam can be taken is the year following completion of the residency. Clinical sites during the residency include the ENRICH Early Intervention team through JFK Partners, Highlands Ranch Therapy Care Clinic of Children’s Hospital Colorado, Rise School of Denver, Cherry Creek School District, acute care and inpatient rehabilitation in Children’s Hospital Colorado and Adam’s Camp.

**PhD Program in Rehabilitation Science**
Rehabilitation Science is an interdisciplinary and translational field of study that integrates knowledge from the basic and clinical sciences to improve our understanding of human movement, physical function, and disability across the lifespan. Students receive individual mentorship from nationally recognized rehabilitation scientists in state-of-the-art research facilities, with a customized curriculum to meet the unique interests of each student. Breadth of knowledge is acquired through foundational coursework in research design, biostatistics, and rehabilitation science, whereas depth of knowledge is gained through elective coursework in one of five areas of focus: clinical trials research, health services research, translational research, mechanical research, and implementation science. This approach prepares students to become independent research scientists who integrate knowledge from multiple perspectives, ranging from the molecular to the systems level to solve complex problems of physical disablement that will advance clinical practice in the field of physical rehabilitation.

Students of the PhD Program in Rehabilitation Science are highly successful. Their accomplishments include grants and fellowships during their pre-doctoral studies and their contributions as co-investigators on projects that are funded by foundations and NIH. Students regularly publish peer-reviewed manuscripts, either as first or contributing authors. In the eight years since this program began admitting students, eight have completed doctoral work, and they are all either currently completing postdoctoral fellowship training or they have secured faculty positions.

**Program Leadership**
**Michael Harris-Love, PT, MPT, DSc, FGSA**
Associate Dean for Physical Therapy Education
Director, Physical Therapy Program

**Mary Jane Rapport, PT, DPT, PhD, FAPTA**
Director, Pediatric PT Residency Program
Undergraduate Medical Education

The Undergraduate Medical Education (UME) office oversees students working toward the Doctor of Medicine degree. Students dedicate four or more years to an intensive period of study, clinical rotations, and personal growth. The Undergraduate Medical Education office is responsible for guiding the students through their journey to become a doctor of medicine. The process begins with selecting students who are personally and academically prepared. The students receive counseling, financial/career advising, a rigorous curriculum in basic and clinical sciences, state-of-the-art experiences in simulation, rigorous assessments, and technological support throughout their medical school experience. This section of the Facts and Figures book will review some activities in each of these areas for the 2018-2019 academic year.

Following the successful visitation by the Liaison Committee on Medical Education (LCME) in March 2017, the undergraduate medical education team, with encouragement from Dean John J. Reilly, Jr., MD, embarked on a process to revise our curriculum, focusing on preparing graduates for the future of medicine, science and health systems. On Oct. 30, 2017, Senior Associate Dean for Education, Shanta M. Zimmer, MD led a kickoff retreat for the process. With about 150 participants, this introductory event served as a catalyst to share ideas and begin the work of deciding how the curriculum can be redesigned. We chose the principles of **leadership, curiosity, and commitment**, which are required for our future graduates to compassionately and skillfully practice as superb clinicians, innovative educators and creative investigators in the ever-changing health care systems and communities. Following the retreat, more than 25 committees have been planning an innovative new curriculum focusing on the pillars of Leadership, Curiosity, and Commitment. Faculty throughout the School of Medicine led these committees, with membership of students, staff, clinicians, scientists, and community members, who worked diligently to build the Trek curriculum. Trek integrates basic science elements longitudinally throughout the academic careers of our students to prepare them and to enhance their personal and professional development as clinicians. The figure below outlines the longitudinal structure of the new curriculum and includes a short description of each phase. The Plains comprises foundational experiences that take students through pre-clerkship integrated basic science curriculum, clinical skills training, preceptorship, and coaching. After completing their summer discovery period, students transition to the Foothills, where they will participate in Longitudinal Integrated Clerkships (LICs). In the Treeline portion of the curriculum, students will work through advanced science courses and USMLE 2 and 1. Students will then find more individualized paths, called trails, which include electives, dedicated research and discovery, internships, critical care experiences and preceptorship in the Alpine Ascent. Lastly, our students will reach the Summit of their undergraduate medical education, where they transition to residency preparation and the match process.

The TREK curriculum revision team is excited to transition work from big picture components of the curriculum to working with stakeholders to implement specific details of each phase. We are visiting departments, divisions and educational groups to describe the plans in detail and hear important feedback around potential challenges along the way. In order to do this as productively and inclusively as possible, new committees will be created focusing on base camps, electives, and student organizations, individualized curriculum (Trails and Pathways). The curriculum reform team is also working together to integrate the basic science, health and society, and clinical components of the Plains phase.
Undergraduate Medical Education Committee Structure

Dean School of Medicine

Faculty Senate

Executive Committee

Curriculum Steering Committee (CSC)

- Longitudinal Curriculum Committee (LCC)
- Essential Core Block Directors Committee (ECBD)
- Clerkship Block Directors Committee (CBD)

Sub-I Committee

Electives

Student Life Steering Committee (SLSC)

- Advisory College Committee
- Student Promotions
- Scholarship Committee
- Clinical Requirements Committee

Student Professionalism Committee

Student Honor Council

Admissions Committee

Medical students are elected/appointed/volunteer on all committees. Ask the Office of Student Life for additional information on participation.
Medical Education Resources

The Trek curriculum reform website provides updates on curriculum planning and pilots: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/Curriculum%20Reform/Pages/curriculum%20reform.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/Curriculum%20Reform/Pages/curriculum%20reform.aspx)

Curriculum Steering Committee

a. **Chair:** Stu Linas, MD

b. The Curriculum Steering Committee (CSC) is responsible for the oversight, design, implementation, integration, evaluation, review, and revision of the medical school curriculum. With appropriate faculty input, the CSC will:

   - Oversee the medical education program as a whole, including design, integration, evaluation, and improvement;
   - Guide, review, approve course, block and thread content and educational formats;
   - Systematically establish the evaluation procedures for curriculum, student, and faculty assessment;
   - Focus on helping achieve specific curricular outcomes associated with graduating superior physicians;
   - Periodically review and amend educational policies; and

   **Recommend, facilitate, and develop procedures to assure that suggested changes to the curriculum are implemented.**

c. The Curriculum Steering Committee posts all of its materials on a Sharepoint site available to its users.

d. Specific accomplishments are outlined in the table below:

   **CSC Accomplishments**

| New Members | ● New Faculty-Senate Approved Voting Members: Kristen Nadeau, MD  
|             | ● Class of 2021 representatives: Alec Kerins, Abby Leibowitz  
|             | ● MSTP representative: Wells Lariviere  
|             | ● Ex-Officio Members: Brian Dwinnell, MD; Matthew Rustici, MD; Erik Wallace, MD; |

| Continuous Quality Improvement (CQI) and Phase Reports | ● Presented to CSC every 2-3 years  
|                                                      | ○ Phases 1 and 2 Report  
|                                                      | ○ Phase 3 Report  
|                                                      | ○ Longitudinal Curriculum Report  
|                                                      | ○ CQI reports from several Individual Blocks |

| Key Change(s) to Curriculum | ● New Cumulative Final Exam for Each Block In Phases 1/2  
|                            | ● Changed grading to Pass/Fail in Phases 1/2  
|                            |   No Honors in Phases 1/2  
|                            | ● Approved recommendations of the Healthcare Disparities Task Force  
|                            |   New Course:(CHES) Culture, Health, Equity, and Society Curriculum  
|                            |   Encompasses Medicine and Society, Culturally Effective Medicine, and First Course  
|                            | ● Changed criteria for awarding Honors and High Pass in Phase 3  
|                            |   Honors awarded if meet criteria rather than fixed percentage  
|                            | ● Changed criteria for ranking students for MSPE (Dean’s) letter for Internship  
|                            |   More emphasis on Phase 3  
|                            | ● Updated White Book  
|                            | ● Changed timing of 4th year electives to accommodate students who are not on track  
|                            | ● Centralized process for International Electives |

| Task Forces | ● Admissions Prerequisites  
|            | ● Reflective Writing in the Curriculum  
|            | ● Colorado Springs Branch  
|            | ● Competency  
|            | ● Healthcare Disparities |
Student Life Steering Committee
Chair: Jenny Soep, MD

Overview
The medical school faculty has responsibility for overseeing the medical school curriculum and for contributing significant input and oversight into noncurricular aspects of medical student life. Constructive and systematic evaluation by faculty can be expected to result in thoughtful, consistent, and constructive oversight of selected student life issues such as selection, promotion, advising, including financial counseling, mentoring, professionalism, health and well-being, record-keeping, and visiting students. Such oversight may also result in creativity and innovation in adapting to changing aspects of medical student life which will enhance medical student professional development.

In view of a central role of the faculty and the dynamic nature of student life issues, the Student Life Steering Committee (SLSC) is charged with oversight of noncurricular student professional life policies and procedures. The SLSC will work closely with the Senior Associate Dean for Education (SADE), the Associate Dean for Student Life (ADSL), and the Committees of Undergraduate Medical Education to develop, guide, revise, adjudicate, and implement policies and procedures relevant to medical student professional life. Actions of the SLSC will be reviewed by the SADE and the ADSL and reported annually to the Faculty Senate.

Charge
To oversee, review, guide, evaluate, recommend changes, review new policies and procedures when appropriate and assure consistent implementation of established policies and procedures regarding noncurricular aspects of medical student professional life.

- Recommend to the Faculty Senate and Senior Associate Dean for Education changes in policies and procedures relevant to noncurricular aspects of medical student professional life.
- Assist with the development and implementation of policies and procedures that stimulate evolutionary change that optimize medical student professional life and professional development.
- Monitor and constructively respond to data obtained from evaluation and outcome instruments regarding medical student noncurricular professional life.
- Apply relevant Liaison Committee for Medical Education Standards and Elements to ensure that medical student noncurricular issues are monitored, addressed, and updated to ensure standard compliance and to enhance medical student professional development and well-being.
- Address special student life- and policy/procedure-related issues that arise that are relevant to medical students and are outside the purview of established UME and School of medicine oversight committees.

Reporting Procedures
- SLSC will receive timely reports and updates from the Student Promotions Committee (including the Sub-committee on Student Professionalism), the Scholarship Committee, the ADSL, the Clinical Requirements Committee, and the Admissions Committee.
- SLSC will inform the SADE of ongoing issues and activities and report to the Faculty Senate.

Voting Membership
- Clinical and basic science faculty member involved with medical student activities
- President, Medical Student Council
- MTSP student
- Medical student representing Phases I or II
- Faculty Senate representative (recommended by the President of the Faculty Senate)
- Director of Evaluation for Undergraduate Medical Education
- Community-based physician-educator faculty member
- Faculty Advisor from one of the School of Medicine’s Advisory Colleges
- Associate Dean for Diversity & Inclusion
Nonvoting Membership

- Senior Associate Dean for Education
- Associate Dean for Student Life
- Associate Dean for Curriculum
- Assistant Dean for Student Affairs
- Assistant Dean for Admissions
- Director of Student Life
- Director of Finance & Administration, UME
- Director of Educational Technology
- Associate Dean for Colorado Springs Branch
- Other faculty, students or administrators with expertise as needed

Leadership

The SLSC will be chaired by a senior faculty member with experience in student life activities and appointed by the Senior Associate Dean for Education.

Terms of Appointment

Faculty members to this committee are appointed for three-year terms. Terms are renewable for one additional cycle of three years. Medical and MSTP students are appointed by Medical Student Council to a term of one year to four years. For more information, visit: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx)

Clinical Block Directors Committee

The Clinical Block Directors Committee is responsible for the design, implementation, and assessment of the Phase III and IV medical student curriculum. The committee meets regularly to develop and implement the curriculum. The Clinical Block Directors in 2018-19 were Jennifer Adams, MD, Brandy Deffenbacher, MD, Todd Guth, MD, Christopher King, MD, Meghann Kirk, MD, Pearce Korb, MD, Paul Montero, MD, Tyler Muffly, MD, Jason Papazian, MD, Kelley Roswell, MD, Joe Sakai, MD, Frank Scott, MD, Roberto Silva, MD, Jennifer Soep, MD, and Chad Stickrath, MD. Assistant block directors were Austin Butterfield, MD, Mark Deutchman, MD, Vera Fridman, MD, Teresa Jones, MD, Vishnu Kulasekaran, MD, Juan Lessing, MD, Jill Liss, MD, Mike Overbeck, MD, Meghan Treitz, MD, and Scott Vogel, MD.

Jennifer Adams, MD, is Assistant Dean of the Clinical Curriculum and is responsible for planning, management, and leadership of Phases III and IV. Jennifer Adams, MD, is also the Director of Electives for Phase III and IV. Adam Trosterman, MD, is Director of Sub-Internships. Jennifer Soep, MD, is the Chair of the Phase IV Task Force overseeing curricular aspects in Phase III and IV and reports major policy changes to Clinical Block Directors.

For more information, visit our website at: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx)

Essentials Core Block Directors Committee

The Essentials Core Block Directors (ECBD) committee (comprised of 19 block directors, student representatives from each phase and the Medical Scientist Training Program, and ex officio members) meets on a monthly basis to review block challenges, performance, innovations, evaluations, and summaries along with Essential Core policies. Each Block undergoes continuing quality improvement review on an annual basis. This past year, the ECBD implemented new pass/fail standards and cumulative, proctored exams. They continued to work on improving assessments and providing National Board of Medical Examiners-style practice questions for students. Anatomy and microbiology labs were revised and updated in response to student feedback and recommendations from a Curriculum Steering Committee task force, and all blocks increased active learning and formative assessments. In addition, an online content resource and Step 1 question bank was piloted and reviewed, and will be integrated into the Essentials Core for the upcoming year.

In collaboration with a student-led initiative, block directors examined curriculum content for evidence of bias and stereotypes, with respect to racial, ethnic, LGBT, religious, and socioeconomic communities, and adopted guidelines and best practices to address these concerns. ECBD continues to work with the Office of Student Life to identify and support struggling students and to improve the learning environment.
ECBD is well-represented on curriculum reform committees and members will be piloting new educational and assessment strategies in preparation for implementation of the next generation integrated CUSOM Trek curriculum. The ECBD committee continues to be an excellent venue for communication between block directors, faculty, staff and students. ECBD will continue to have regular meetings between the Essentials Core, Clinical Core, Advanced Studies, and Longitudinal Curriculum leadership, as well as provide communication, coordination, and oversight of curriculum issues across the four phases of the curriculum. For more information visit the website at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/Pages/UMECommittees.aspx

**Essentials Core: Phase I and Phase II**
The Essentials Core curriculum consists of nine integrated, interdisciplinary blocks that present basic science in a clinical context and are each directed by a basic scientist and a clinician. Andrew Bradford, PhD, Assistant Dean, oversees the Essentials Core. Each block lasts approximately 8-10 weeks and consists of lectures, team centered learning, problem-based learning sessions, laboratory exercises, and small group discussion sections to prepare students for entry in the clinical blocks in their third year. Students also begin working on their Mentored Scholarly Activity during Phases I and II, and are able to choose from electives to personalize the curriculum. Students begin to learn basic communication and physical exam skills during the Foundations of Doctoring course that provides early exposure to clinical practice and emphasizes a humanistic approach to medical care. Woven through the Essentials Core blocks, and the clinical blocks that follow, are longitudinal elements or threads that integrate behavioral and social sciences, informatics, evidence-based medicine, health care policy, culturally effective medicine and ethics, and professionalism into the curriculum. Marsha Anderson, MD, Assistant Dean of Longitudinal Curriculum, oversees the longitudinal curriculum. The overarching goal of the Essentials Core is to provide the scientific foundation and critical thinking skills for future medical education and to equip students for a lifetime of learning, research, clinical care, and community service. (Website: http://medschool.ucdenver.edu/essentialscore).

**Clinical Core: Phase III**
The Clinical Core Curriculum consists of competency-based clerkships that provide opportunities for mastery of the core knowledge, skills, and attitudes required of physicians. The curriculum provides intensive clinical experiences in the hospital, ambulatory clinics, emergency room, labor and delivery suite, and operating rooms. Several opportunities are available for third-year students to increase continuity and authenticity of clinical experiences. These include: the Longitudinal Integrated Clerkship at Denver Health, the Colorado Springs Branch Longitudinal Integrated Clerkship, the Integrated Longitudinal Medical Clerkship in rural Colorado, and the VA Sequential Training Program. For each clerkship (both block and longitudinal), goals and learning objectives have been developed by the clinical block directors to reflect the clinical experiences and are mapped to Accreditation Council for Graduate Medical Education competencies. In addition, overarching medical education program objectives have been developed by a consensus-based process. These objectives are defined in outcome-based terms that allow assessment of progress in developing competencies to be achieved at the time of graduation. These objectives reflect the expectations of physicians by the profession and the public.

Students use learning logs to record conditions observed, diseases, and procedures. Low and high-stakes assessments have been incorporated into each clerkship or block. Shelf exams or block-developed medical knowledge exams, clinical evaluations, mid-point feedback sessions, mid- or end-of-block standardized patient exams and clinical practice exams provide additional opportunities for assessment of clinical performance and opportunities for feedback on student performance. Clinical block directors monitor clerkship experiences at all clinical sites. More information about Phase III can be found at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/clinicalcore/Pages/default.aspx

**Clinical Core: Phase IV**
The Phase IV curriculum consists of 32 weeks of educational requirements, including a required four-week sub-internship, two integrated clinician courses, 24 weeks of elective time, and a capstone presentation of Mentored Scholarly Activity projects. Phase IV is designed to foster the development of graduates who are knowledgeable, skillful, and ethical, as well as broaden and balance the overall education of each student. It serves the purpose of career exploration and focuses students in preparation for graduate medical education. Working with the Office of Student Life, Phase IV is designed to foster knowledge base development, career preparation/development, and vocational mentorship while meeting the needs of students. More information about Phase IV can be at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/electives/Pages/Phase-IV-Electives.aspx
Group Accomplishments

During the 2018-19 academic year, the clinical block directors committee accomplished the following initiatives:

1. Development of policies and procedures to allow Phase III students to participate in a newly created elective block. This process was implemented in April 2019 with ongoing evaluation and process improvement.

2. Creation of a new Phase IV task force to bring together curriculum leaders involved in curriculum reform, electives, and sub-internships, and tasked with review of policies, oversight of curriculum, and collaboration with curriculum reform initiatives. This task force reports to clinical block directors for major policy changes.

3. In collaboration with the Assessment Committee, the grading policy was revised and new grading classifications were defined to better capture the success of the medical students in a clinical setting. A decision was made to increase transparency in grading by providing students a report of numerical data as well as narrative comments in their grade reports.

4. The Feed Forward Policy was developed to assist students in need of additional remediation and support as they transition from one clerkship or phase to another and facilitate academic success.

5. Changed the name of the Women’s Care clerkship to OB/GYN in response to student concern about inclusiveness.

6. Reconfigured the Adult Ambulatory Care/Rural Community Care clerkships into a combined clerkship called Community and Primary Care under new leadership with goals to increase ambulatory preceptors in General Internal Medicine, support the development of longitudinal teaching faculty and eliminate challenges related to overlapping courses and limited rural placements.

7. Conducted a major revision of the clerkship course evaluation and continuous quality improvement process resulting in triennial reports from the Office of Assessment, Evaluation, and Outcomes, to allow real time changes in response to student feedback, face-to-face meetings with clerkship directors to develop goals related to areas of clerkship weakness, and bimonthly working meetings of clinical block directors to address aspects clinical curriculum across courses and evaluation items. This process is now being adopted by all curriculum committees.

8. Improvement in student involvement and faculty engagement in clinical block directors meetings with increased numbers of student members, a successful retreat of clinical block directors resulting in team-building and goal-setting for the year, and smaller meetings with more dialogue and improved attendance from clerkship directors.

9. Changes to the Phase III orientation to make it less focused on logistics that students will receive at the beginning of each clerkship and more focused orientation to key concepts in clinical learning environments, a positive introduction to the clinical clerkship directors, and Q&A with clinical block directors.

10. Developed a new process for course and objective updates to allow organized transfer of this information to LIC directors and ensure comparability between traditional blocks and LICs is maintained as changes to courses occurs each year.

11. The Medical Student Duty Hours Policy was revised to collect snapshots of student experiences and end of clerkship reporting, and increase the reporting response rate.

12. Revision of student assessment tools used in Phase III with goals to collect more detailed information about student performance in narratives and with defined criteria for grade levels. Clerkship directors were encouraged to individualize forms to meet the needs of their faculty and learning environments. Ongoing evaluation of these differing tools will help to inform decisions around assessment in the curriculum reform process.
Foundations of Doctoring Curriculum

The Foundations of Doctoring Curriculum (FDC) is a three-year longitudinal experience beginning in Phase I of medical school that teaches communication, physical examination, clinical reasoning, and professional development skills. The vision of FDC is to prepare medical students to be outstanding physicians who will care for a diverse society. Standardized patient encounters and regular clinical exposure in a physician preceptor’s practice are key components of this curriculum. The Course Director, David Ecker, MD, and the Associate Course Directors, Deb Seymour, PsyD (Communication), Brandy Deffenbacher, MD (Physical Exam), Todd Guth, MD (Clinical Skills), and Kristin Furfari, MD (Preceptorship) continue to develop and produce a dynamic, integrated curriculum of foundational clinical and professional skills and experiences that equip students for their clinical years. Changes in 2018-2019 included a shift to teaching the Core Physical Exam in the fall of Phase I and integrating additional physical examination elements starting in the spring of Phase I in order to improve alignment with material taught in the Essential Core Curriculum. The communication and clinical reasoning sessions continue to be further integrated and weekly just-in-time faculty education has been added to the preceptorship curriculum. For more information, visit http://medschool.ucdenver.edu/FDC.

Those interested in volunteering as a preceptor for the Foundations of Doctoring Curriculum should email Foundations.Doctoring@ucdenver.edu. The table below provides data on the FDC preceptors for the academic year 2018-2019:

<table>
<thead>
<tr>
<th>Preceptor Specialty by Practice Setting</th>
<th>Private Practice</th>
<th>Clinics for Underserved plus Denver Health</th>
<th>Kaiser Permanente</th>
<th>UCH Health, CHCO, VA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Medicine</td>
<td>43</td>
<td>15</td>
<td>22</td>
<td>32</td>
<td>112</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>23</td>
<td>28</td>
<td>16</td>
<td>63</td>
<td>130</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>23</td>
<td>14</td>
<td>15</td>
<td>70</td>
<td>122</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>36</td>
<td>12</td>
<td>4</td>
<td>31</td>
<td>83</td>
</tr>
<tr>
<td>Other*</td>
<td>11</td>
<td>6</td>
<td>7</td>
<td>109</td>
<td>133</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>78</td>
<td>66</td>
<td>320</td>
<td>606**</td>
</tr>
</tbody>
</table>


**141 Preceptors have 2 or more students

Integrated Clinicians Course

First implemented in 2008, the Integrated Clinicians Course (ICC) is an eight-week longitudinal curriculum that takes place in blocks of one to two weeks throughout Phases III and IV. The course is designed to integrate multiple concepts into clinical experiences, such as advanced clinical and communication skills, translational basic science, medical-legal topics, medical errors and quality improvement, ethics and professionalism, scholarly activities, and career development and exploration. Led by David Ecker, MD, and Amira del Pino-Jones, MD, the ICC curriculum continues to undergo revisions to ensure content remains timely, valuable, and aligned with other curricular elements. Changes in 2018-2019 included significant expansion of specialty-specific offerings dedicated to residency preparation. The course appreciates its 400 instructors that donate over 1,200 hours of direct teaching time. Hidden Curriculum sessions also occur within the clinical blocks and ICC in Phase III and Phase IV. For more information visit the ICC website at http://medschool.ucdenver.edu/icc.
Medical Student Research Track
http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/tracks/researchtrack/Pages/default.aspx

Leadership: Allan Prochazka, MD, MSc, Director of Medical Student Research Track, Professor of Medicine

The Research Track aims to foster development of an identity as a physician capable of being involved with and completing all aspects of a research project, from the identification of a health care-related scientific question to the written dissemination of scientific information as a first author on a manuscript developed for submission. Since its inception in 2007, 215 students have completed the track, with 72 currently enrolled: 2019 with 15 students, 2020 with 23, 2021 with 15, and 2022 with 19. One hundred nine graduates have published 77 papers. Seventy percent of Research Track graduates have published at least one paper. Thirty-three students who graduated in the last three years have published 42 papers.

Students work with an experienced faculty mentor through all four phases of the School of Medicine curriculum, including two full time research months in the summer after the first year, and two additional full time research months during their fourth year. Preliminary and final results are presented locally, regionally, and nationally. In addition, the track provides seminars related to research ethics, and teaches students how develop polished, professional research presentations, and papers. Research Track students will be prepared to continue to work as researchers during their residencies and future medical careers.

The Research Track relies on the generous funding support from the following departments and endowments. Funding sources commit to support a student through their four years as a Research Track student, which includes four months of stipends for full time work, as well as travel to present at the Western Student Medical Research Forum and one national meeting in the student’s area of specialty.

<table>
<thead>
<tr>
<th>Funding Department or Source</th>
<th>Students sponsored in 2018-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology</td>
<td>6</td>
</tr>
<tr>
<td>Biochemistry and Molecular Genetics</td>
<td>2</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>6</td>
</tr>
<tr>
<td>Center for Regenerative Medicine</td>
<td>1</td>
</tr>
<tr>
<td>Child Psychiatry</td>
<td>2</td>
</tr>
<tr>
<td>Data Science to Patient Value (D2V)</td>
<td>1</td>
</tr>
<tr>
<td>Dermatology</td>
<td>0</td>
</tr>
<tr>
<td>Immunology and Microbiology</td>
<td>1</td>
</tr>
<tr>
<td>Medicine</td>
<td>9</td>
</tr>
<tr>
<td>Neurology</td>
<td>3</td>
</tr>
<tr>
<td>Obstetrics and Gynecology</td>
<td>3</td>
</tr>
<tr>
<td>Orthopedic</td>
<td>7</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>5</td>
</tr>
<tr>
<td>Pathology</td>
<td>1</td>
</tr>
<tr>
<td>Pediatrics (some partially funded by Pediatric Pulmonology Grant)</td>
<td>4</td>
</tr>
<tr>
<td>Physical Medicine and Rehabilitation</td>
<td>1</td>
</tr>
<tr>
<td>Regenerative Medicine and Stem Cell Biology Center</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatology Grant</td>
<td>0</td>
</tr>
<tr>
<td>Schweppe Endowment</td>
<td>9</td>
</tr>
<tr>
<td>Substance Abuse Grant</td>
<td>3</td>
</tr>
<tr>
<td>Surgery</td>
<td>8</td>
</tr>
</tbody>
</table>
Health Sciences Student Research Forum
The 34th Annual Student Research Forum was held on Dec. 11, 2018. The forum was organized and funded by the School of Medicine Dean’s Office and overseen by Allan Prochazka, MD, MSc, Director of the Research Track. Over 50 students presented their research from across the Anschutz Medical Campus, representing the schools of medicine, nursing, pharmacy, public health, dental medicine, and the graduate degree programs. Over 40 faculty members volunteered to judge posters. About 325 first-year and third-year medical students also evaluated posters as student judges. A total of $4,800 in award money was given to the 15 highest-scoring presentations in the form of $320 monetary prizes.

Research Track Student Awards and Honors
Western Student Medical Research Forum
15 Research Track Students from the Class of 2021 presented at the Western Student Medical Research Forum in January 2019 in Carmel, Calif., along with 460 medical students and residents from western U.S. states. A Research Track student was honored with the award below:

| Jacob Michalski                      | Edwin E. Osgood Award (Best Medical Student Abstract presentation) |

Schweppe Outstanding Scholars
The Schweppe Scholars Program, funded by the Schweppe Foundation, is designed to support outstanding CU School of Medicine students from each class cohort in the Research Track. Support continues through all four years at the School of Medicine. 2018-2019 Schweppe Scholars were:

| Amanda Glickman and Kaitlin Gorman   | Class of 2019 |
| Diana Clabots, Tiffany Cung, Derek George, and Pierce Lewien | Class of 2020 |
| Claire Koljack, Alexis Sunshine       | Class of 2021 |
| Christian Curran, Alyssa Shepherd, Sophia Wolfe | Class of 2022 |

Class of 2019
MSA Projects by Methodological...

- Critical Analysis of Text: 52%
- Historical Analysis: 26%
- 1%
- 5%
- 12%
- 4%
Problem-Based Learning

Maurice C. Scott, Jr., MD, is the director for Problem-Based Learning (PBL). The PBL curriculum runs over the first two years of medical school. Each class is divided into groups of eight students who meet with one facilitator for 30 sessions. Each session lasts two hours. The PBL cases are designed to answer skills in clinical reasoning, communication of medical information, self-directed learning, and research strategies to answer clinical questions. Groups also discuss how ethics, professionalism, cultural differences, and medical systems affect the care delivered to patients. PBL helps students develop skills in a safe and constructive environment where they are able to learn how to “walk and talk like a doctor” before they start their clerkships. Faculty and volunteer community clinicians facilitate the PBL group discussions and are recruited prior to the start of a new academic year. For further questions, contact the PBL at maurice.scott@ucdenver.edu or visit http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/pbl/Pages/default.aspx.

Educational Technology

The Office of Educational Technology is responsible for the education technology support of the MD program and the Offices of Medical Education, including Curriculum, Evaluation, and Student Life. The team is led by Helen Macfarlane, Director of Educational Technology and includes the expertise of Michele Doucette, PhD, Director of Curriculum Innovation and Instructional Design. The Ed Tech Office collaborates closely with the School of Medicine Director of Information Technology, colleagues in the School of Medicine Office of Information Technology Support Services, CU Online, Technology Support Services, and University Information Services to form the Medical Education Technology Alliance (META). META’s goal is to provide outstanding tech support for medical students, the MD program, and collaborate in the innovative reform of the MD curriculum. The Education Technology office supports the admissions process; the electronic curriculum; the applications and data infrastructure of UME; integrations between university, school, and vendor systems; student technology use, including developing laptop requirements; implementation and ongoing support of electronic assessment system in Essentials Core; support and development of the UME website; systems of student registration management and evaluation and assessment; and guidance on best practices, mobile device support, and laptop troubleshooting and repair.

• Major accomplishments of the office this year include:
  • Continued development of the student data warehouse, process implementation to support the data integrity, and participation in governance of the data, development of data dictionary and data model, reporting and training for reporting
  • Systems integration between a vendor system and CU SIS to transfer student course registrations
  • Implementation of processes for data extraction, transformation and loading (ETL) of student data
  • Leaders in the implementation of data visualization tools in UME
  • Development of predictive models of student success in collaboration with education leaders
  • Learning Management System support for Essentials Core, Clinical Core, and Sub-Internship courses and development and maintenance of standardization for optimized student experience
  • Support of a clinical site scheduling system for Phase III
  • Support of evaluation and assessment using a vendor system in collaboration with the Office of Evaluation
  • Support of student Apple and Windows laptops and mobile devices, and the development of good digital practices
  • Maintenance and continued development of ExamSoft electronic assessment system and continued support of medical student use of system on personal devices
  • Implementation of a vendor system for student clinical experience logging
  • Continued development of visualizations to track and report student use of clinical experience logger for student grade, student performance, phase administration, and LCME purposes
  • Curriculum inventory and curriculum roadmap system development for program use and curriculum upload to the Association of American Medical Colleges Curriculum Inventory
  • Implementation of a vendor system to support the admissions process
  • Continued development of a scheduling system to provide personal calendar subscriptions for students in the Essentials Core and Integrated Clinician Courses; including student and administration interfaces

For more information on education technology go to medschool.ucdenver.edu/meta.
Office of Assessment, Evaluation, and Outcomes

In 2019, the UME Evaluation Office was expanded to provide expertise and oversight in the area of student assessment, and is now called the Office of Assessment, Evaluation, and Outcomes (AEO). The overarching mission of the office is to create a data-driven culture that promotes growth and improvement of students, faculty, curricula, and the learning environment. Assessment and evaluation now will be tightly intertwined to provide a more rigorous evaluation of the undergraduate medical education and experience that students receive.

To support the continuous quality improvement of the educational program, the AEO Office collects, synthesizes, and reports de-identified, quantitative and qualitative student data to promote faculty growth and curricular improvement. Faculty and students are often involved in identifying important questions and areas of the educational program needing evaluation. During 2018-2019, students completed 9,648 course and 66,007 teaching evaluations administered by the AEO. Routine reporting activities included

- Producing Continuous Quality Improvement (CQI) reports
  During 2018-2019, the AEO Office generated 35 CQI reports, one for each required course, block, clerkship, and thread, for annual presentation at one of the three curriculum sub-committees and biannual presentation at the Curriculum Steering Committee (CSC). The AEO Office continued to incorporate additional student feedback in the Essentials Core CQI reports by including a student-written portion of the report. Additionally, the AEO Office generates phase-level CQI reports for the Essentials Core and Clinical Core, thus allowing comparisons across courses. In recent years, reporting has been extended to include reporting for the 22 Sub-Internships and more than 200 elective courses.

- Generating and Distributing Faculty Teaching Reports through PRiSM
  All faculty teaching in any phase of the curriculum receive a report if they have been evaluated by a minimum of three students. For university-affiliated faculty who teach students, the AEO Office uploads the summary teaching evaluation directly into PRiSM. Because of its quality and maintenance, the evaluation database supports the Office of Community-Based Medical Educators to identify faculty needing an official appointment in the School of Medicine per LCME standards.

- Generating and Distributing Resident Teaching Reports to Residency Programs
  During 2018-2019, the AEO Office distributed approximately 640 resident evaluation reports to residents and their program directors at the 58 residency programs at the School of Medicine, Denver Health, Exempla St. Joseph’s, and HealthOne-PSL. School of Medicine residency program directors also received a formative teaching report on their residents’ mid-year.

The AEO Office supports program development efforts and provides special analyses to assist educational activities and curricular program decision-making. During 2018-2019, other evaluation activities included

- Evaluating the Impact of the MD Program Experience
  The AEO Office collects outcome data annually from Program Directors of PGY-1s and PGY-1 School of Medicine graduates on critical areas of competence. The AEO Office also administers “end of phase” evaluations to students on their attitudes and perceptions of skills and behaviors and on an array of desired outcomes, including competencies, professional identity formation, and career interests. These findings are presented annually to the Curriculum Steering Committee in conjunction with the data collected as part of the AAMC’s Medical Student Graduation Questionnaire.

- Evaluating innovative efforts to improve the curriculum
  Additional evaluation work continues as the School of Medicine prepares for curriculum reform. The AEO Office supported evaluation of several curricular pilots including a coaching pilot, addition of health systems science content, and changes to assessment in the Essentials Core. Other work includes a longitudinal quantitative analysis to understand the factors that place students at risk for underperforming in our curriculum and on national board exams.

- Providing technical support to student and faculty studies
  The AEO Office support in this arena is broad-ranging. Studies include surveys of student issues, preferences that reform committees are considering, and evaluation of assessment quality in the Essentials Core Blocks. The AEO Office, in conjunction with the Data Warehouse Governance Committee, works with students and faculty to support their research projects and collect high-quality data from medical students while protecting anonymity.
Leveraging processes to improve data access, quality and usefulness
The AEO office has leveraged technology to automate reports, resulting in increased and enhanced reporting efforts. Data quality is ensured by careful accounting of instructional and teaching hours in CQI Reports, and by the constant review of teacher and student evaluation assignments. The AEO Office monitors changes in surveying techniques and approaches, and continually incorporates best practices into all evaluation processes.

Oversite of assessment is a new focus of the AEO Office, with the primary goal being to create a coordinated program student assessment that promotes best practice and clearly facilitates student growth. During 2018-2019, Assessment activities included:

- **Introducing pass/fail grading in the Essentials Core**
  Based on a literature review and analysis of national grading practices in the preclinical years, a policy to change grading in the Essentials Core from honors/pass/fail to pass/fail was created and implemented for the class of 2022. The goal of this change was to improve student well-being, emphasize learning rather than grading, and promote student collaboration rather than competition.

- **Introducing cumulative exams in the Essentials Core**
  In line with educational best practices, cumulative exams were introduced in each of the Essentials Core blocks to promote deeper understanding and retention of the material covered.

- **Improving the quality of exam items**
  Considerable work has been done over the last several years to improve the quality of the assessment items on the Essentials Core block exams. The steps taken to improve item quality support best practices while also creating exams that better reflect the type and quality of items that students will see on USMLE Step 1 exam.

- **Changing the grading policy for Phase III**
  Grades in the clinical years are a primary determinant in whether a residency program interviews a student. Prior to 2018-2019, the grading policy had strictly limited the number of students eligible for honors. Therefore, this year the policy was changed to allow more students to achieve honors and high pass grades if their performance merited it.

### Summary of AY 2018 - 2019 Student Ratings of Courses and Faculty by Phase

<table>
<thead>
<tr>
<th>Essentials Core Curriculum (Phases I &amp; II)</th>
<th>Mean Phase I</th>
<th>Mean Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Rate the overall quality of the block”</td>
<td>3.67</td>
<td>3.93</td>
</tr>
<tr>
<td>“Overall teaching” rating for lecturers</td>
<td>4.29</td>
<td>4.24</td>
</tr>
<tr>
<td>“Overall teaching” rating for small group facilitators</td>
<td>4.55</td>
<td>4.58</td>
</tr>
</tbody>
</table>

(5-point scale, e.g., 1=Unacceptable; 5=Excellent)
<table>
<thead>
<tr>
<th>Clinical Curriculum (Phases III &amp; IV)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Curriculum (Phase III)</td>
<td></td>
</tr>
<tr>
<td>“What was the quality of the clerkship as a whole?”</td>
<td>4.23</td>
</tr>
<tr>
<td>Advanced Studies (Phase IV)</td>
<td></td>
</tr>
<tr>
<td>“What was the quality of the sub-internship rotation as a whole?”</td>
<td>4.47</td>
</tr>
<tr>
<td>“Rate the quality of this elective as a whole.” (Clinical Electives)</td>
<td>4.47</td>
</tr>
<tr>
<td>Clinical Teaching Evaluations (combined Phase III and IV)</td>
<td></td>
</tr>
<tr>
<td>“Overall, how effective is this attending’s teaching?”</td>
<td>4.59</td>
</tr>
<tr>
<td>“Overall, how effective is this resident/fellow’s teaching?”</td>
<td>4.08</td>
</tr>
</tbody>
</table>

(5-point scale, e.g. 1=Poor; 5=Excellent)

Assessment, Evaluation, and Outcomes Office staff
Tai Lockspeiser, MD, MHPE – Assistant Dean of Medical Education – Assessment, Evaluation and Outcomes
Rachael Tan, PhD – Director of Office of Assessment, Evaluation, and Outcomes
Brooke Parsons, MPA, Evaluator
Susan Peth, Senior Evaluation Specialist

The AEO Office website is [www.medschool.ucdenver.edu/evaluation](http://www.medschool.ucdenver.edu/evaluation).

Office of Student Life

The Office of Student Life, which includes Admissions and Student Affairs, experienced a transition this year as Nichole Zehnder, MD, assumed the position of Assistant Dean of Student Affairs in addition to her role as Assistant Dean of Admissions. She joined Jeff Druck, MD, as the other Assistant Dean of Student Affairs. In the admissions process, Zehnder implemented a revamped interview day, which includes a team-based exercise and group interviews. She added CASPer, a situational judgment tool, to the pre-interview screening process. The goal in these changes is to aid in the holistic review of applicants so that reviewers can consider factors in addition to academic merit. Druck serves as the co-Director of the Office of Professional Excellence and he has an active role in addressing student mistreatment and improving the culture of wellness on campus. In May 2019, Haylee Shacklock was appointed Program Director of the Office of Medical Education and Student Affairs. This new dual role will allow staff functions across OME and Student Affairs to be more effectively integrated.

The mission of the office is to provide support for applicants and students throughout their cycle with the School of Medicine and to specifically provide multiple levels of support to a diverse group of students in order to help ensure their academic success and to support their personal well-being. The office provides services for prospective students, current students, and graduates. The office provides guidance, advice, and administrative assistance to applicants and students. The office is responsible for the admissions interview and selection process, monitoring student registration, student progress, and graduation. The office is responsible for organizing and managing the scholarship process, through the School’s scholarship committees. The office organizes and manages events, including the second look day, the first-year orientation, the white coat/stethoscope ceremony, Match Day, and the hooding and oath ceremony at graduation.

The office provides organization and support for the Student Promotions Committee and the Data Warehouse Governance Committee. The Student Life Steering Committee (SLSC) provides faculty input and oversight of functions related to the office. There is a separate Student Life Advisory Committee, comprised of students from all levels that serves as an advisory group to the Associate Dean of Student Life and the SLSC.

For more information visit our website at: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx)
Scholarship Committees

- During the 2018-2019 academic year, the office continued to manage the School of Medicine scholarship committees, the Adler Scholarship Committee, the ARCS scholarship process and several other scholarships. In this year, the School of Medicine provided scholarships to over 175 medical students, 43 of whom were entering students and 132 continuing. The amount of scholarship money awarded was $3.4 million.
- The Dean’s Distinguished Medical Scholarship program, a four-year half- and full-tuition recruitment scholarship, was awarded to 15 incoming medical students who matriculated in 2019 as members of the class of 2023. Named Dean’s Distinguished Scholarships included the following: McGlone, Laurie Odom, Mile High Medical Society, Barbara Smith Reilly, Nancy Nelson, Cogen Family, and School of Medicine Classes of 1969, 1982, and 1987. In the 2018-19 academic year this program provided $2 million in scholarship funding.
- Merit and Diversity scholarships were awarded to an additional 61 current students for a total of $724,998.
- Four seniors from the class of 2019 received a total of $76,566 in Adler MSA Scholarship in recognition of excellence for their completed MSA projects.

Ten students received ARCS Scholarships based on research excellence of $6,500 each, totaling $65,000.

For more information: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx)

Student Affairs

There was a leadership transition in Student Affairs in July 2018, Nichole Zehnder, MD, was named an Assistant Dean of Student Affairs, complementing her role in the Office of Student Life as the Assistant Dean of Admissions. The dual Student Affairs and Admissions role provides new opportunities for longitudinal tracking of students. The other Assistant Dean of Student Affairs, Jeffrey Druck, MD, serves as co-Director of the Office of Professional Excellence, which allows for improvements in the learning environment, particularly as it relates to wellness and student mistreatment. The office also welcomed a new Director of the Office of Student Life as well as the staff in the Office of Medical Education, Haylee Shacklock.

The Office of Student Life (OSL) is responsible for the oversight of the majority of student support services including academic, career, and personal advising; financial aid; residency applications; support and referrals for struggling students; and USMLE Step Exam preparation. Our long-serving Learning Resource Specialist, Carol Lay, will be retiring at the end of this academic year. In addition our clinical remediation specialist, Jeannette Guerrasio, left the academic center to join a private practice. The office will be hiring two remediation specialists. Step 1 performance will be a major focus over the next year. OSL is also responsible for the coordination of major student activities including the Advisory College Program (ACP), student interest groups, orientation, the match process, Match Day, graduation, visiting externs, student scheduling, and the Student Promotions Committee.

In 2012, Student Affairs kicked off a student-led initiative to establish Advisory Colleges in the School of Medicine. Eight colleges were established, and were named after Colorado’s Fourteeners. The colleges were designed to develop and foster mentoring and advising relationships with peers and faculty throughout phases. In the current academic year, leadership in the colleges included 16 Faculty Mentors with 0.1 FTE support, over 70 Resident Advisors, two student directors and 32 Fourth Year Student Advisors. The program focuses on student wellness, mentoring, and career and academic advising. Faculty Mentors participate in monthly faculty development sessions to assure appropriate instruction on student mentoring. This year, the office is working with our ACP advisors on Step 1 preparation for students at risk. As the School progresses through curricular reform, the office anticipates the ACP and associated faculty advisors will take a more prominent role in the curriculum, with the addition of teaching and coaching roles.

Two years ago, the University approved the creation of a Master’s in Medical Science, a project spearheaded by Jeffrey Druck, MD. This degree is for students who complete the first two years of medical school but are otherwise unable to continue. This degree recognizes the significant amount of effort and discrete knowledge students obtain during this time period and may assist those students in obtaining employment. We have had 10 students receive the Master’s in Medical Science since the initiation of the program. Druck will be working on a survey to monitor the outcomes of those receiving the Master’s degree.
Areas of responsibilities and service for the office include

- Working with students who are having academic or personal struggles and connecting them with our learning resource experts and making appropriate referrals;
- Overseeing major events, including Orientation, Match Day, and Graduation;
- Overseeing USMLE Step 1 preparation;
- Providing programming and support for students in the areas of personal and professional development, career exploration and planning, stress and burn-out, student wellness, study/time management skills, and preparation for the Match;
- Providing programming and support for Advisory Colleges, and other faculty who are mentoring or advising students;
- Working with specialists in the financial aid office to support student debt management;
- Working with donors and departments to provide and administer scholarships and awards;
- Scheduling Phase III and Phase IV students;
- Confirming grades for all four phases;
- Managing the visiting student (extern) process, for the home school and the host school;
- Tracking student data including grades, evaluations, absences, clinical requirements;
- Advocating for students by sitting on the various curriculum committees at the School of Medicine;
- Overseeing and providing support for student groups, visiting students, and externs, AOA, and Gold Humanism Honor Society; and Working with the Student Promotions Committee for successful transitions and remediation and when necessary, working with students to facilitate the decisions of the Student Promotions Committee.

On Match Day, March 15, 2019, 166 students matched into residency positions. The table below shows the list of specialty matches, where 41.4 percent matched in primary care specialties (Family Medicine, Internal Medicine, Medicine – Primary track, Med-Peds and Pediatrics). Some of these students may ultimately choose to specialize. The top residency choices included Internal Medicine (22 categorical matches), Emergency Medicine (17 matches), and Family Medicine (27 matches), Pediatrics (13 matches), Anesthesiology (23 matches), Obstetrics-Gynecology (5) and Medicine-preliminary, Transitional Year, Surgery Prelim (combined 23 matches).

Colorado will retain 36.7 percent of the class. California will receive 14.8 percent of the class, Texas, North Carolina, and New York will each receive 4.7 percent of the class. The remaining 34.4 percent of the class will be spread throughout 31 other states.

<table>
<thead>
<tr>
<th>2019 Residency Match Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Students</strong></td>
</tr>
<tr>
<td>23</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>2</td>
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<td>0</td>
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<td>5</td>
</tr>
<tr>
<td>13</td>
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<tr>
<td>3</td>
</tr>
<tr>
<td>13</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>0</td>
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</tbody>
</table>

May 24, 2019, 163 students graduated with MD degrees. For more information visit our website at: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx)
Admissions
The Office of Admissions team is led by Nichole Zehnder, MD, Assistant Dean for Admissions and Associate Professor, Department of Medicine. Vaughn Browne, MD, PhD, Associate Professor, Department of Emergency Medicine served as Chair of the Admissions Committee. During the 2017-2018 application cycle, the School of Medicine received 8,666 primary applications for a class of 184. Of these 184 entering students, 10 students entered the MD/PhD Program and 24 will participate in the Colorado Springs Branch Campus Longitudinal Integrated Clerkship during their third year of medical school. Additionally, the Office of Admissions recruited and interviewed applicants for multiple pipeline programs, accepting students into the University of Colorado Denver BA/BS-MD Program and the University of Colorado Denver Post-Baccalaureate Program. The Office of Admissions continues to employ a holistic admission process. Grades and MCAT scores are significant variables in deciding who is invited for interviews, but greater emphasis is placed on the total application which includes letters of recommendation, both the primary and supplemental essays, and the applicant’s experiences and attributes.

Demographics

<table>
<thead>
<tr>
<th>Class of</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Size</td>
<td>184</td>
<td>184</td>
<td>184</td>
</tr>
<tr>
<td>Female</td>
<td>90</td>
<td>97</td>
<td>104</td>
</tr>
<tr>
<td>Male</td>
<td>93</td>
<td>87</td>
<td>79</td>
</tr>
<tr>
<td>CO Resident</td>
<td>119</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>65</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>URIM*</td>
<td>52</td>
<td>52</td>
<td>50</td>
</tr>
<tr>
<td>Average Age</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Cumulative GPA</td>
<td>3.69</td>
<td>3.76</td>
<td>3.73</td>
</tr>
<tr>
<td>Math/Science GPA</td>
<td>3.66</td>
<td>3.72</td>
<td>3.67</td>
</tr>
<tr>
<td>MCAT (total)</td>
<td>32/511</td>
<td>511</td>
<td>512</td>
</tr>
</tbody>
</table>

* Under-Represented in Medicine as defined by CUSOM Diversity Plan

Applicant Data 2018-19

- Primary AMCAS Applications: 8,666
- Completed Secondary Applications: 5,504
- Interviewed: 653
- Offered Admission: 353
- Cumulative GPA: 3.73
- Math/Science GPA: 3.67
- MCAT (total): 512

Annual achievements include:

- Vaughn Browne, MD, PhD and Karina Goodwin, MS led the office’s recruitment and outreach efforts, reaching prospective applicants at multiple local, regional, and national events.
- In partnership with the Child Health Associate/Physician Assistant Program, the Office of Admissions refined and launched a model for an innovative interview process that includes situational judgment testing and increased observation of applicants’ personal attributes. This novel interview process was well received by both applicants and the interview sub-committee.
- Updated applicant tracking and servicing technology platforms were developed and launched, allowing applicants to track applications in real-time during the screening process, and admissions committee members to have remote access to applicant files through a secure web-based platform.

The office continues to seek faculty for committee membership. If interested, contact the Office of Admissions (303-724-6407) for an appointment.

Additional detailed information may be found at: [http://www.ucdenver.edu/academics/colleges/medicalschool/education/Admissions/Pages/admissions.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/Admissions/Pages/admissions.aspx)

Senior Program Leadership
Nichole Zehnder, MD
Assistant Dean for Admissions and Student Affairs
Vaughn Browne, MD, PhD
Chair, Admissions Committee
Brian Dwinnell, MD
Associate Dean for Student Life
Faculty Affairs
Mission: The mission of the Office of Faculty Affairs is to provide services and support to faculty members, departments, and programs, in order to advance the teaching, research, patient care, and service missions of the School of Medicine.

Specific Objectives: The Office of Faculty Affairs will work collaboratively with School of Medicine, campus, and university leaders to promote faculty and organizational success. Specifically, the Office of Faculty Affairs will:
• Assist departments and divisions to recruit, develop, promote, and retain outstanding teachers, clinicians, and scholars;
• Assist faculty, department chairs, and administrators to understand and comply with the rules of the university and the School of Medicine;
• Develop and implement policies and practices that promote diversity, equity, and inclusiveness, professionalism, collaboration, and academic integrity across the School of Medicine;
• Develop and implement policies and practices that ensure fair and consistent treatment of faculty, according to the rules of the university and the School of Medicine;
• Develop and implement policies and practices to build and sustain faculty vitality and success, through faculty development, mentorship, coaching, leadership training, and resiliency;
• Develop and maintain a comprehensive faculty evaluation and post-tenure review system that uses valid and relevant measures of faculty performance, ensures faculty accountability, is linked to faculty self-improvement, provides reliable data for promotion and tenure decisions, and reflects the missions and values of the School of Medicine;
• Assist faculty members to participate effectively in the shared governance of the School of Medicine;
• Conduct periodic faculty surveys to measure faculty satisfaction, vitality, and career success, and develop and implement policies to address challenges and guide change; and
• Provide administrative support for faculty appointments, promotions, tenure awards, post-tenure, and annual performance reviews and other activities.

Office of Faculty Affairs Leadership
Steven R. Lowenstein, MD, MPH, Associate Dean for Faculty Affairs
Heather Cassidy, MD, FACP, Assistant Dean for Community Based Medical Education
Cheryl Welch, MPA, Director, Office of Faculty Affairs

Dr. Norma Wagoner, Professor of Modern Human Anatomy.
Photo courtesy of @modhumanatcu from @cuanschutz Instagram.
Full-Time (≥50% FTE) Faculty, Listed by Department
(Instructor and Above)
July 1, 2019

<table>
<thead>
<tr>
<th>Total Full-Time Faculty Count</th>
<th>University Paid</th>
<th>Affiliate Paid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3,662</td>
<td>950</td>
<td>4,612</td>
</tr>
</tbody>
</table>

Basic Science Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>University Paid</th>
<th>Affiliate Paid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry &amp; Molecular Genetics</td>
<td>34</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>Cell &amp; Developmental Biology</td>
<td>29</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Immunology and Microbiology</td>
<td>38</td>
<td>17</td>
<td>55</td>
</tr>
<tr>
<td>Pathology</td>
<td>80</td>
<td>22</td>
<td>102</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>30</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>Physiology &amp; Biophysics</td>
<td>14</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>225</strong></td>
<td><strong>41</strong></td>
<td><strong>266</strong></td>
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Clinical Science Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>University Paid</th>
<th>Affiliate Paid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology</td>
<td>295</td>
<td>26</td>
<td>321</td>
</tr>
<tr>
<td>Dermatology</td>
<td>39</td>
<td>5</td>
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</tr>
<tr>
<td>Emergency Medicine</td>
<td>120</td>
<td>44</td>
<td>164</td>
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<tr>
<td>Family Medicine</td>
<td>143</td>
<td>81</td>
<td>224</td>
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<tr>
<td>Medicine</td>
<td>744</td>
<td>370</td>
<td>1,114</td>
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<tr>
<td>Neurology</td>
<td>92</td>
<td>6</td>
<td>98</td>
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<tr>
<td>Neurosurgery</td>
<td>56</td>
<td>4</td>
<td>60</td>
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<tr>
<td>Ob/Gyn</td>
<td>119</td>
<td>20</td>
<td>139</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>46</td>
<td>9</td>
<td>55</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>124</td>
<td>18</td>
<td>142</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>71</td>
<td>6</td>
<td>77</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>974</td>
<td>91</td>
<td>1,065</td>
</tr>
<tr>
<td>Physical Medicine &amp; Rehabilitation</td>
<td>75</td>
<td>27</td>
<td>102</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>206</td>
<td>129</td>
<td>335</td>
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<tr>
<td>Radiation Oncology</td>
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<td>27</td>
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</tr>
<tr>
<td>Radiology</td>
<td>92</td>
<td>38</td>
<td>130</td>
</tr>
<tr>
<td>Surgery</td>
<td>214</td>
<td>35</td>
<td>249</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>3,437</strong></td>
<td><strong>909</strong></td>
<td><strong>4,346</strong></td>
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</table>
### Full-Time (≥50% FTE) Faculty, Listed by Rank
(Instructor and Above)  
July 1, 2019

<table>
<thead>
<tr>
<th>Rank</th>
<th>University Paid Faculty</th>
<th>Affiliate Paid Faculty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
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<td>257</td>
<td>1,749</td>
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<tr>
<td>Assistant Prof.</td>
<td>945</td>
<td>319</td>
<td>1,264</td>
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<tr>
<td>Associate Prof.</td>
<td>700</td>
<td>234</td>
<td>934</td>
</tr>
<tr>
<td>Professor</td>
<td>525</td>
<td>140</td>
<td>665</td>
</tr>
<tr>
<td><strong>Total Full-Time Faculty Count</strong></td>
<td><strong>3,662</strong></td>
<td><strong>950</strong></td>
<td><strong>4,612</strong></td>
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</tbody>
</table>

### Clinical Faculty  
July 1, 2019

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer</td>
<td>2,957</td>
</tr>
<tr>
<td>Paid (&lt;.50 FTE)</td>
<td>365</td>
</tr>
<tr>
<td><strong>Total Clinical Faculty Count</strong></td>
<td><strong>3,322</strong></td>
</tr>
</tbody>
</table>
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Medical Scientist Training Program
Medical Scientist Training Program

The Medical Scientist Training Program is a multidisciplinary, inter-institutional MD/PhD dual degree training program educating students in clinical medicine and biomedical research. Its mission is to provide students with the breadth and depth of training necessary to excel as a physician scientist. Post-baccalaureate students are recruited from a national pool of ~450 applicants, and those selected have proven exceptional talents in research science, a curiosity to solve mechanisms of disease, a drive for discovery, a well-thought-out motivation to pursue a career in medicine, and exceptional leadership.

The program was formed in 1983, and in 1992 it received MSTP status by successfully competing for NIH T32 funding (currently ~$1M/year to support 19 trainees per year). The Program has strong leaders and mentors. Arthur Gutierrez-Hartmann, MD, who has directed the MSTP since 1994, has been selected for numerous local and national mentor awards, and for national leadership roles in MD/PhD and graduate education. Patricia Ernst, PhD, serves as the pre-clinical Associate Director and provides individualized guidance to each student via regular meetings and interactions. The Program has been competitively reviewed and funded by NIH for each of the past five cycles.

The MSTP has been a campus and national leader in recruiting students from diverse backgrounds, and has received Diversity Awards from CU and commendations from the National Institute of General Medical Sciences (NIGMS), which highlighted the MSTP on the NIGMS diversity website.

There are approximately 200 faculty mentors in 17 PhD Programs at the Anschutz Medical Campus, National Jewish and the CU-Boulder Campus. There are currently 85 students in the program: 10 in the first year (MS-I), 11 in the second year (MS-II), 53 in the PhD research years, and 11 in the Medical School Clinical years (MS-III and MS-IV). Since 1983, 256 students have matriculated in the MSTP. Graduates of the MSTP obtain residencies at the nation’s elite programs and about 75 percent of those completing training are now employed in academic medicine, government (NIH or CDC), or industry, including starting up their own biotech companies. Importantly, we have an increasing number of MSTP graduates who are now faculty at the University of Colorado Anschutz Medical Campus. The Colorado MSTP and its leaders have been key in establishing the National Association of MD/PhD Directors and Administrators, the MD/PhD Section of the Association of American Medical Colleges Graduate Research, Education, and Training Group, and the Annual National MD/PhD Student Conference. Finally, we have taken the initiative to bring together, via social and academic venues, all MD/PhDs on the Anschutz Medical Campus, across all stages of training, from student to faculty status, to establish an interactive, supportive cadre of physician-scientists. Additional details of the Medical Scientist Training Program can be found at http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/mstp/Pages/MSTP.aspx.
The Research Advisory Committee (RAC) was established by the Research Strategic Plan of 2003 to advise the Dean of the School of Medicine on matters related to research, and it now also advises the Vice Chancellor for Research. The committee meets monthly. RAC has previously recommended that a center for stem-cell biology and regenerative medicine be established and that a campus child-care facility be constructed as a means of retaining research faculty—and as the right thing to do. RAC deliberations this year included a comprehensive review of the current core facilities on campus. The RAC updated the core list and created a proposed definition of a core facility. A recommendation regarding core support was provided to the Dean. The RAC also conducted a campus-wide survey to collect projected animal space needs in order to help with space development plans. A recommendation to reevaluate the master plan for campus development to address expanding animal space needs was provided to the Dean.

[https://medschool.cuanschutz.edu/research/research-development/research-advisory-committee](https://medschool.cuanschutz.edu/research/research-development/research-advisory-committee)

### Research Advisory Committee

| Mary Weiser-Evans, PhD – Committee Chair | Edward Janoff, MD |
| Steve Abman, MD | Craig Jordan, PhD |
| Kathleen Barnes, PhD | Jeff Kieft, PhD |
| Peter Buttrick, MD | Doug Novins, MD |
| Robert Eckel, MD | Suzann Ruedeman |
| Thomas Flaig, MD | Jill Slansky, PhD |
| Eva Grayck, MD | Fred Suchy, MD |
| Jay Hesselberth, PhD |

### Clinical-Translational Research Advisory Committee

Clinical-Translational Research Advisory Committee (CTRAC) membership represents the research leadership of the entities that make up the Colorado Clinical and Translational Sciences Institute (CCTSI): School of Medicine, College of Nursing, Skaggs School of Pharmacy and Pharmaceutical Sciences, School of Dental Medicine, University of Colorado Denver (UCD), National Jewish Health, UCH Health University of Colorado Hospital, and Children’s Hospital Colorado, and the Regulatory Compliance/Clinical Research Support Center. CTRAC meets quarterly and advises the Dean and the Vice Chancellor for Research on matters related to the conduct of patient-related and community-based research. Its other major mission is to educate members and their constituencies about activities, opportunities, and needs across the programs of the CCTSI and the Anschutz Medical Campus (AMC) and to promote collaboration and exchange of ideas. This academic year, CTRAC efforts have included framing possible responses to changes in National Institutes of Health funding of the CCTSI, priorities for strengthening campus infrastructure for patient- and population-directed research, and improved collaborations across all components of the Anschutz Medical Campus and UCD.

[https://medschool.cuanschutz.edu/research/research-development/clinical-translational-research-advisory-committee](https://medschool.cuanschutz.edu/research/research-development/clinical-translational-research-advisory-committee)
## Bridge Funding

The bridge funding program of the School of Medicine was established in 2006 when reductions in the National Institutes of Health (NIH) budget threatened the viability of faculty research projects. The program’s purpose is to provide support to principal investigators while they re-apply for funding. The Bridge Funding Committee is advisory to the Dean. Applications are reviewed in April and November.

From the first review in 2006 through April 2018, 205 awards have been made to 167 faculty members in a total amount of $10 million. From the start through April 2016, 136 of these awardees, who received $8.18 million in bridge awards, have gained $111.0 million in total research dollars, a more than 13.5-fold return on investment on bridge funding grants.

[https://medschool.cuanschutz.edu/research/research-development/bridge-funding](https://medschool.cuanschutz.edu/research/research-development/bridge-funding)
The Strategic Infrastructure for Research Committee (SIRC), created in 2003, reviews proposals to fund research infrastructure that can be available as a core facility or program to all appropriate users on campus. One of the major benefits of the SIRC process is critical peer review and the return of constructive comments that have strengthened the quality and productivity of the School of Medicine’s research and have improved the cost-effectiveness of the Dean’s Academic Enrichment Fund (AEF). Applications for ongoing cores must include a plan for sustainability. This committee is advisory to the Dean.

SIRC applications are solicited quarterly. Through the May 2019 review, the SIRC process has made 98 awards totaling $17 million in Dean’s funds, and six additional two-to-five-year awards to projects from the 2009 research retreat totaling $7.3 million.

SIRC-approved research infrastructure includes:

Core facilities in high-throughput genomics and metabolomics, biomedical informatics, advanced light microscopy, tissue banking, small-animal imaging, mouse behavior, and the Clinical-Translational Research Imaging Core.
Core programs granting an MS or PhD in medical science for medical and graduate students and faculty, year-long mentorship in outcomes research, biostatistics support, patient databases in pregnancy & developmental disabilities, and a biorepository.

https://medschool.cuanschutz.edu/research/research-development/strategic-infrastructure-for-research-committee

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<td>Paul Jedlicka MD</td>
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<td>Karyn Goodman, MD</td>
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<td>Craig Jordan, PhD</td>
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<td>Anne Libby, PhD</td>
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<td>Lori Sussel, PhD</td>
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<td>Peter Buttrick, MD</td>
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<td>Andrew Fontenot, MD</td>
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<td>Sue Kinnamon, PhD</td>
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<td>Laurel Lenz, PhD</td>
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Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
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<td>Steven H. Abman, MD</td>
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<td>Ricardo Battaglino, PhD</td>
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<td>Bryan Bergman, PhD</td>
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<td>Daniel Bessesen, MD</td>
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<td>Brianne Bettcher, PhD</td>
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<td>Robert Booth, PhD</td>
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<td>Daniel Bowles, MD</td>
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<td>Lisa Brenner, PhD</td>
<td>Facilitating Assessment of At-Risk Sailors with Technology (FAAST)</td>
<td>Denver Research Institute - VA Hospital</td>
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<td>Amy Brooks-Kayal, MD</td>
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<td>Todd M. Bull, MD</td>
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<td>Ellen Burnham, MD</td>
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<td>David Ross Camidge, MD</td>
<td>207675 Ph I, open-label, dose-escalation study to investigate the safety, pharmacokinetics, pharmacodynamics and clinical activity of GSK3368715 in participants with solid tumors and DLBCL</td>
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<td>David Ross Camidge, MD</td>
<td>MK-3475-782-00 Ph II Trial to Investigate Genetic Markers of Immune Response to Pembrolizumab (MK-3475, SCH 900475) Combined with Chemotherapy as a First-line Treatment for Non-Small Cell Lung Cancer (KEYNOTE-782)</td>
<td>Merck Sharp &amp; Dohme Corp</td>
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<td>Katherine L. Casillas, PhD</td>
<td>SafeCare® Colorado Program Intermediary Services</td>
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<td>Jose Ramon Castillo-Mancilla, MD</td>
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<td>Victoria A. Catenacci, MD</td>
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<td>Susan B. Childress, MD</td>
<td>A Phase II, Randomized, Double-Blind, Placebo-Controlled Dose-Ranging Study To Evaluate the Safety and Efficacy of M2951 in Subjects with Systemic Lupus Erythematosus (SLE)</td>
<td>Emd Serono, Inc.</td>
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<td>Michel B. Chonchol, MD</td>
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<td>Sanofi US Services, Inc</td>
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<td>Bradley R. Corr, MD</td>
<td>MK-7902-005 Multicenter, Open-label Ph 2 Study of Lenvatinib (E7080/MK-7902) Plus Pembrolizumab (MK-3475) in Previously Treated Subjects with Selected Solid Tumors</td>
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<td>Bradley R. Corr, MD</td>
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<td>Clovis Oncology</td>
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<td>Dana M. Dabelea, MD, PhD</td>
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<td>Stacie L. Daugherty, MD</td>
<td>Using values affirmation to reduce the effects of perceived discrimination on hypertension disparities</td>
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<td>Sarah Lindsey Davis, MD</td>
<td>GO30140 Open-label, multicenter PH IB study of the safety and tolerability of ATEZOLIZUMAB (ANTI–PD-L1 ANTIBODY) administered in combination with Bevacizumab and/or other treatments in patients with solid tumors.</td>
<td>Genentech, Inc.</td>
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<td>James DeGregori, PhD</td>
<td>Microenvironment-mediated Clonal Evolution and Risk of Lung Adenocarcinoma</td>
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<td>Mark Dell’Acqua, PhD</td>
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<td>Jennifer R. Diamond, MD</td>
<td>MK-3475-756-00 Randomized, Double-Blind, Phase III Study of Pembrolizumab versus Placebo in Combination with Neoadjuvant Chemotherapy and Adjuvant Endocrine Therapy for the Treatment of High-Risk Early-Stage Estrogen Receptor-Positive, Human Epidermal Growth Factor Receptor 2-Negative (ER+/HER2-) Breast Cancer (KEYNOTE-756)</td>
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<td>Cornelia N. Drees, MD</td>
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<td>Breck Duerkop, PhD</td>
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<td>Anthony D. Elias, MD</td>
<td>NCI National Clinical Trials Network - Lead Academic Participant Sites</td>
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<td>Kristine M. Erlandson, MD</td>
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<td>Christopher Evans, PhD</td>
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<td>Stacy M. Fischer, MD</td>
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<td>Thomas Flaig, MD</td>
<td>MK-3475-921 Ph III, Randomized, Double-blind Study of Pembrolizumab (MK-3475) plus Docetaxel Plus Prednisone versus Placebo Plus Docetaxel Plus Prednisone in Participants with Chemotherapy-naive Metastatic Castration-Resistant Prostate Cancer (mCRPC) who have Progressed on a Next Generation Hormonal Agent</td>
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<td>Thomas Flaig, MD</td>
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<td>Andrew Fontenot, MD</td>
<td>T cell epitopes in sarcoidosis</td>
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<td>Heide Ford, PhD</td>
<td>Role of Eya3 in regulating the immune microenvironment to promote breast tumor progression</td>
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<td>Heide Ford, PhD</td>
<td>Deciphering Mechanisms by which Tumor Cells Collaborate to Mediate Metastasis</td>
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<td>Peter Forsberg, MD</td>
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<td>Karyn Goodman, MD</td>
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<td>Antonio Jimeno, MD, PhD</td>
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<td>Matthew J. Kennedy, PhD</td>
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<td>Melanie Koenigshoff, MD, PhD</td>
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<td>Mary Kohn, MD</td>
<td>BiliCam exploratory data collection</td>
<td>BiliCam LLC</td>
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<td>Nancy Krebs, MD</td>
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<td>Nancy Krebs, MD</td>
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<td>Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS</td>
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<tr>
<td>Mamuka Kvaratskhelia, PhD</td>
<td><em>Multimeric HIV-1 Integrase Inhibitors</em></td>
<td>National Institute of Allergy and Infectious Diseases/NIH/DHHS</td>
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<tr>
<td>Ethan Lange, PhD</td>
<td><em>Sequence analysis of hematological traits in African Americans</em></td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<tr>
<td>Myron Levin, MD</td>
<td><em>Progress Report, Part D Women, Infants, Children, and Youth (WICY) Services, FY 2016</em></td>
<td>Health Resources and Services Administration/DHHS</td>
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<tr>
<td>Myron Levin, MD</td>
<td><em>NICHD International, Domestic, Pediatric, Maternal HIV/AIDS Coordinating Center</em></td>
<td>Westat, Inc.</td>
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<tr>
<td>Jean Mulcahy Levy, MD</td>
<td><em>Optimization of Autophagy Inhibition as a Clinical Target for Brain Tumors</em></td>
<td>Department of Defense</td>
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<tr>
<td>Karl Lewis, MD</td>
<td><em>16-214-05 Ph1B, Open-Label, Multicenter Study to Investigate the Safety and Preliminary Efficacy of NKTR-214 In Combination with Anti-PD-1 (Pembrolizumab) for Patients with Locally Advanced or Metastatic Melanoma, Locally Advanced or Metastatic Urothelial Bladder Cancer, or Metastatic Non-Small Cell Lung Cancer or NKTR-214 in Combination with Anti-PD-L1 (Atezolizumab) in Patients with Locally Advanced or Metastatic Urothelial Bladder Cancer, or Metastatic Non-Small Cell Lung Cancer</em></td>
<td>Nektar Therapeutics</td>
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## New Research Grants > $500,000
### Awarded 2018-2019

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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Funding Agency</th>
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<tbody>
<tr>
<td>Karl Lewis, MD</td>
<td>MK-3475-587-00  Multicenter, Open label, Ph III Extension Trial to Study the Long-term Safety and Efficacy in Participants with Advanced Tumors Who Are Currently on Treatment or in Follow-up in a Pembrolizumab Trial</td>
<td>Merck Sharp &amp; Dohme Corp</td>
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<tr>
<td>Karl Lewis, MD</td>
<td>MK-3475-716  Adjuvant Therapy with Pembrolizumab versus Placebo in Resected Highrisk Stage II Melanoma: A Randomized, Double-blind Phase 3 Study</td>
<td>Merck Sharp &amp; Dohme Corp</td>
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<tr>
<td>Karl Lewis, MD</td>
<td>MK-7902-003  Ph III Randomized, Placebo-controlled Trial to Evaluate the Safety and Efficacy of Pembrolizumab and Lenvatinib Versus Pembrolizumab Alone as First-line Intervention in Participants with Advanced Melanoma</td>
<td>Merck Sharp &amp; Dohme Corp</td>
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<tr>
<td>Karl Lewis, MD</td>
<td>MK-3475-630  Ph III, Randomized, Double-Blind, Placebo-Controlled Study to Evaluate Pembrolizumab versus Placebo as Adjuvant Therapy Following Surgery and Radiation of High-Risk Locally Advanced Cutaneous Squamous Cell Carcinoma (LA cSCC)</td>
<td>Merck Sharp &amp; Dohme Corp</td>
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<tr>
<td>Ken Liechty, MD</td>
<td>Modulation of Inflammation and Oxidative Stress in Diabetic Wound Healing</td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<td>Christopher Lieu, MD</td>
<td>170466  Ph II study of pembrolizumab in combination with binimetinib and bevacizumab in patients with refractory RAS mutant colorectal cancer</td>
<td>Merck Sharp &amp; Dohme Corp</td>
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<tr>
<td>Name</td>
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<tr>
<td>Wendy Macklin, PhD</td>
<td><em>The role of mTOR signaling in oligodendrocyte differentiation and CNS myelination</em></td>
<td>National Institute of Neurological Disorders and Stroke/NIH/DHHS</td>
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<td>Paul S. Maclean, PhD</td>
<td><em>Colorado Nutrition Obesity Research Center</em></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<tr>
<td>Tomer Mark, MD</td>
<td><em>A Phase I study of FOR46 administered every 21 days in patients with relapsed or refractory multiple myeloma (RRMM)</em></td>
<td>Fortis Therapeutics Inc.</td>
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<td>Daniel Matlock, MD, MPH</td>
<td><em>A Multicenter Trial of a Shared Decision Support Intervention for Patients offered implantable Cardioverter-Defibrillators: DE-CIDE – ICD Trial</em></td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<tr>
<td>Daniel Matlock, MD, MPH</td>
<td><em>Implementation of Effective Shared Decision-Making (SDM) Approaches in Practice Settings</em></td>
<td>Patient-Centered Outcomes Research Institute</td>
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<tr>
<td>Timothy McKinsey, PhD</td>
<td><em>Screening and Development of Small Molecule HDAC11 Inhibitors to Treat Obesity and Diabetes</em></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<td>Timothy McKinsey, PhD</td>
<td><em>Deacetylase-Dependent Control of Diastolic Dysfunction and HFpEF</em></td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<td>Theresa Medina, MD</td>
<td><em>CA045-001-0051 Ph III, Randomized, Open-label Study of NKTR-214 Combined with Nivolumab Versus Nivolumab in Participants with Previously Untreated Unresectable or Metastatic Melanoma</em></td>
<td>Bristol Myers Squibb Pharmaceutical</td>
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<td>Edward Melanson, PhD</td>
<td><em>The impact of estrogen status on the biological function of brown adipose tissue in women measured using quantitative PET/CT</em></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<tr>
<td>Wells Messersmith, MD</td>
<td>Developing Novel Approaches to Detect and Treat Early Pancreatic Cancer</td>
<td>General Hospital Corporation</td>
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<td>Wells Messersmith, MD</td>
<td>D6070C00005 Ph 1b/2 Study to Evaluate the Safety, Pharmacokinetics, and Clinical Activity of Oleclumab (MEDI9447) with or without Durvalumab in Combination with Chemotherapy in Subjects with Metastatic Pancreatic Ductal Adenocarcinoma</td>
<td>MedImmune, LLC</td>
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<td>Shelley Miyamoto, MD</td>
<td>Myocardial Effects of PDE5 Inhibition in Single Ventricle Heart Disease</td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<td>Kerrie Moreau, PhD</td>
<td>Cardiovascular Consequences of Hypogonadism in Men</td>
<td>National Institute on Aging/NIH/DHHS</td>
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<tr>
<td>Thomas Morrison, PhD</td>
<td>Impairment of B cell Responses by Pathogenic Chikungunya Viruses</td>
<td>National Institute of Allergy and Infectious Diseases/NIH/DHHS</td>
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<td>Maria Acena Nagel, MD</td>
<td>A major contributor of serious multisystem disease in the elderly: varicella virus-induced inflammation</td>
<td>National Institute on Aging/NIH/DHHS</td>
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<tr>
<td>Michael Narkewicz, MD</td>
<td>Longitudinal Study of Cystic Fibrosis Liver Disease (CFLD)</td>
<td>Cystic Fibrosis Foundation</td>
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<tr>
<td>David Norris, MD</td>
<td>Molecular Analysis, Modeling and Correction of Skin Diseases Core Center</td>
<td>National Institute of Arthritis &amp; Musculoskeletal and Skin Diseases/NIH/DHHS</td>
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<tr>
<td>Steven Ojemann, MD</td>
<td>AADC in Advanced PD Trial – ADAPT</td>
<td>Voyager Therapeutics, Inc</td>
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## Award Trends - Fiscal Year to Date 2018 and 2019

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Funding Agency</th>
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<tbody>
<tr>
<td>David Olds, PhD</td>
<td><em>Research and development services for nurse-family partnership-innovation</em></td>
<td>Nurse-Family Partnership National Service Office</td>
</tr>
<tr>
<td>Sean T. O’Leary, MD, MPH</td>
<td><em>Evaluation of the Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing (PIVOT with MI) Intervention</em></td>
<td>Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS</td>
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<tr>
<td>Scott C.N. Oliver, MD</td>
<td><em>A Phase III, multicenter, randomized, double-masked, active-comparator-controlled study to evaluate the efficacy and safety of RO6867461 in patients with diabetic macular edema (RHINE)</em></td>
<td>Genentech, Inc.</td>
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<tr>
<td>Brent Palmer, PhD</td>
<td><em>Diet/gut Microbiome Interaction Influence Inflammatory Disease in HIV Patients</em></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<tr>
<td>Sonali S. Patel, MD, PhD</td>
<td><em>Do It</em></td>
<td>New England Research Institutes</td>
</tr>
<tr>
<td>Eric Poeschla, MD</td>
<td><em>Novel Approaches to Innate Immunity Against HIV-1 and Other Co-infection Viruses</em></td>
<td>National Institute on Drug Abuse/NIH/DHHS</td>
</tr>
<tr>
<td>Huntington Potter, PhD</td>
<td><em>Neuropathology and Immune Biomarker Discovery in a Rat Model of Alzheimer’s Disease, Tgf344-AD, with Single or Repetitive Traumatic Brain Injury</em></td>
<td>Department of the Army</td>
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<tr>
<td>Martha Powell, PhD</td>
<td><em>Long Term Care Survey Process Operational Support and Analysis</em></td>
<td>Insight Policy Research</td>
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<tr>
<td>Stefan Pukatzki, PhD</td>
<td><em>The Role of Type VI Secretion in Cholera Pathogenesis</em></td>
<td>National Institute of Allergy and Infectious Diseases/NIH/DHHS</td>
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<tr>
<td>Enkhtsetseg Purev, MD, PhD</td>
<td><em>A global randomized multicenter Phase III trial to compare the efficacy and safety of JCAR017 to standard of care in adult subjects with high-risk, transplant eligible relapsed or refractory aggressive B-cell non-Hodgkin’s Lymphoma (TRANSFORM)</em></td>
<td>Celgene Corporation</td>
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New Research Grants > $500,000
Awarded 2018-2019

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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Funding Agency</th>
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</thead>
<tbody>
<tr>
<td>Dianna Quan, MD</td>
<td><strong>HELIOS-A: A Phase III Global, Randomized, Open-label Study to Evaluate the Efficacy and Safety of ALN-TTRSC02 in Patients with Hereditary Transthyretin Amyloidosis (hATTR Amyloidosis)</strong></td>
<td>Alnylam Pharmaceuticals, Inc.</td>
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<tr>
<td>Neda Rasouli, MD</td>
<td><strong>Glycemia Reduction Approaches in Diabetes: A comparative effectiveness study (GRADE)</strong></td>
<td>George Washington University</td>
</tr>
<tr>
<td>Judith Regensteiner, PhD</td>
<td><strong>The Colorado Building Interdisciplinary Research Careers in Women’s Health Program</strong></td>
<td>Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS</td>
</tr>
<tr>
<td>Diego Restrepo, PhD</td>
<td><strong>Controlled neuronal firing in vivo using two photon spatially shaped optogenetics</strong></td>
<td>National Institute of Neurological Disorders and Stroke/NIH/DHHS</td>
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<tr>
<td>Marian Rewers, MD, PhD</td>
<td><strong>Natural History of Pre-diabetic Autoimmunity (DAISY)</strong></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<tr>
<td>Marian Rewers, MD, PhD</td>
<td><strong>Autoimmunity Screening for Kids (ASK)</strong></td>
<td>Juvenile Diabetes Research Foundation</td>
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<tr>
<td>Marian Rewers, MD, PhD</td>
<td><strong>The Teddy Study-Colorado Clinical Center</strong></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
</tr>
<tr>
<td>Marian Rewers, MD, PhD</td>
<td><strong>The Environmental Determinants of Diabetes in the Young (TEDDY)</strong></td>
<td>University of South Florida</td>
</tr>
<tr>
<td>Marian Rewers, MD, PhD</td>
<td><strong>The Environmental Determinants of Diabetes in the Young (TEDDY) PU and PBMC</strong></td>
<td>University of South Florida</td>
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<tr>
<td>Marian Rewers, MD, PhD</td>
<td><strong>Single Persistent Islet Autoantibody (SPIA) Phenotype: Personalized Risk Assessment</strong></td>
<td>Leona M. And Harry B. Helmsley Charitable Trust</td>
</tr>
<tr>
<td>Angeles Ribera, PhD</td>
<td><strong>Rocky Mountain Neurological Disorders Core Center</strong></td>
<td>National Institute of Neurological Disorders and Stroke/NIH/DHHS</td>
</tr>
<tr>
<td>Dennis Roop, PhD</td>
<td><strong>Developing an iPS Cell-based Therapy for Epidermolysis Bullosa Simplex</strong></td>
<td>Epidermolysis Bullosa Research Partnership</td>
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</tbody>
</table>
## Office of Grants and Contracts
### University of Colorado at Denver Awards by School
#### Award Trends - Fiscal Year to Date 2018 and 2019

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Funding Agency</th>
</tr>
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<tbody>
<tr>
<td>Cordelia R. Rosenberg, PhD</td>
<td>Component A: CADDRE: Study to Explore Early Development (SEED) 3</td>
<td>Centers for Disease Control and Prevention/DHHS</td>
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<tr>
<td>Paul Rozance, MD</td>
<td>Nutrient coordination of pancreatic vasculature and B-cells</td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<tr>
<td>Paul Rozance, MD</td>
<td>Physiological Ramifications of Chorionic Somatomammotropin Deficiency</td>
<td>Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)/NIH/DHHS</td>
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<tr>
<td>Mario Santiago, PhD</td>
<td>Role of Type I IFNs in Mucosal HIV-1 Immunity and Pathogenesis</td>
<td>National Institute of Allergy and Infectious Diseases/NIH/DHHS</td>
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<tr>
<td>Lisa Mary Schilling, MD</td>
<td>Biologics Effectiveness and Safety (BEST) Initiative: Data, Tools and Infrastructure for Surveillance of Biologics</td>
<td>IQVIA, Inc.</td>
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<td>Eric Schmidt, MD</td>
<td>Shedding of alveolar heparan sulfate mediates epithelial dysfunction in experimental and human ARDS</td>
<td>Department of the Army</td>
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<tr>
<td>Richard Schulick, MD, MPH</td>
<td>Cancer Center Support Grant-Year 31</td>
<td>National Cancer Institute/NIH/DHHS</td>
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<tr>
<td>David Schwartz, MD</td>
<td>Role of Genetics in Idiopathic Pulmonary Fibrosis (IPF)</td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<td>David Schwartz, MD</td>
<td>Mechanisms of Familial Pulmonary Fibrosis</td>
<td>Vanderbilt University</td>
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<tr>
<td>David Schwartz, MD</td>
<td>MUC5B, a novel therapeutic target for Idiopathic Pulmonary Fibrosis (IPF)</td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<tr>
<td>David Schwartz, MD</td>
<td>Sponsored Research and License Agreement</td>
<td>Eleven P15, Inc.</td>
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<tr>
<td>David Schwartz, MD</td>
<td>Multidisciplinary Research Training in Respiratory Disease</td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<tr>
<td>Rebecca Schwepe, PhD</td>
<td>Targeting FAK and Src in thyroid cancer</td>
<td>National Cancer Institute/NIH/DHHS</td>
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<tr>
<td>Sunita Sharma, MD, MPH</td>
<td>MicroRNAs and Early Life Exposures in the Developmental Origin of Asthma</td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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### New Research Grants > $500,000
#### Awarded 2018-2019

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<tr>
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<tbody>
<tr>
<td>Christopher Silliman, MD</td>
<td><em>Mechanisms of Trauma Induced Coagulopathy</em></td>
<td>National Institute of General Medical Sciences/NIH/DHHS</td>
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<tr>
<td>Andrea K. Steck, MD</td>
<td><em>Developing Pediatric Diabetes Investigators for the Future</em></td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<td>Kurt Stenmark, MD</td>
<td><em>Adaptation to Hypoxia</em></td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<tr>
<td>Jennifer L. Stevens, PhD</td>
<td><em>Movement pattern biofeedback training after total knee arthroplasty</em></td>
<td>National Institute on Aging/NIH/DHHS</td>
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<tr>
<td>Christopher Stiille, MD, MPH</td>
<td><em>Health System Research Network for Children and Youth with Special Health Care Needs (CYSHCNet)</em></td>
<td>Health Resources and Services Administration/DHHS</td>
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<tr>
<td>Stanley Szefler, MD</td>
<td><em>Colorado Comprehensive School-Centered Asthma Programs (AsthmaCOMP)</em></td>
<td>Colorado Department of Public Health and Environment/COLO</td>
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<tr>
<td>Darcy Ann Thompson, MD</td>
<td><em>Factors influencing screen media use in low-income Mexican American toddlers</em></td>
<td>National Institute of Nursing Research/NIH/DHHS</td>
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<tr>
<td>Daniel J. Tollin, PhD</td>
<td><em>Developmental effects of early hearing loss on auditory information processing</em></td>
<td>National Institute on Deafness and Other Communication Disorders/NIH/DHHS</td>
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<tr>
<td>Daniel J. Tollin, PhD</td>
<td><em>The contributions of age related changes in the sound localization pathway to central hearing loss</em></td>
<td>National Institute on Deafness and Other Communication Disorders/NIH/DHHS</td>
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<td>Raul Martin Torres, PhD</td>
<td><em>Humoral Immunity by Anergic B cells</em></td>
<td>National Institute of Allergy and Infectious Diseases/NIH/DHHS</td>
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<td>Livia A. Veress, MD</td>
<td><em>Alteplase for Sulfur Mustard Gas (SMG) Inhalation</em></td>
<td>Genentech, Inc.</td>
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<tr>
<td>Rajeev Vibhakar, MD, PhD</td>
<td><em>SIRT2 as a Epigenetic vulnerability in Atypical Teratoid Rhabdoid Tumors</em></td>
<td>Department of the Army</td>
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<tr>
<td>Jing Hong Wang, MD, PhD</td>
<td><em>Elucidating Mechanism of Immune Evasion in Head and Neck Cancers</em></td>
<td>National Institute of Dental and Craniofacial Research/NIH/DHHS</td>
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<tr>
<td>Name</td>
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<tr>
<td>Xiao-Jing Wang, PhD</td>
<td>Mechanisms of dual inhibition of TGFbeta/PD-L1 in HNSCC</td>
<td>National Institute of Dental and Craniofacial Research/NIH/DHHS</td>
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<td>Adriana Weinberg, MD</td>
<td>Persistence of protection conferred by SHINGRIX against herpes zoster in older adults</td>
<td>National Institute of Allergy and Infectious Diseases/NIH/DHHS</td>
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<td>Richard Weir, PhD</td>
<td>Development of a Bidirectional Optogenetic Minimally Invasive Peripheral Nerve Interface with Single Axon Read-in &amp; Read-out Specificity</td>
<td>National Center for Advancing Translational Sciences/NIH</td>
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<td>Mary Weiser-Evans, PhD</td>
<td>Reprogramming of mature smooth muscle cells to vascular progenitor cells</td>
<td>National Heart, Lung, and Blood Institute/NIH/DHHS</td>
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<td>Stephanie Wesolowski, PhD</td>
<td>Nutrient and insulin metabolic actions in IUGR fetal liver</td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases/NIH/DHHS</td>
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<td>Michael Weyant, MD</td>
<td>Eleven P15</td>
<td>Eleven P15, Inc.</td>
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<td>Carl White, MD</td>
<td>New Developments in Chemical Countermeasures: CounterACT 2018</td>
<td>National Institute of Environmental Health Sciences/NIH/DHHS</td>
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<tr>
<td>Liping Yu, MD</td>
<td>Establish a Data Coordinating Center (DCC) for the Consortium for Identification of Environmental Triggers of Type 1 Diabetes</td>
<td>University of South Florida</td>
</tr>
<tr>
<td>Liping Yu, MD</td>
<td>NIDDK Type 1 Diabetes TrialNet Data Coordinating Center</td>
<td>University of South Florida</td>
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<tr>
<td>Linda Kay Zittleman</td>
<td>Implementing Technology and Medication Assisted Team Training and Treatment in Rural Colorado (IT MATTTRs Colorado)</td>
<td>Agency for Healthcare Research and Quality/DHHS</td>
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<td>School/College/Center's Office</td>
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<td>Center for Behavioral Health Initiatives</td>
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<td>Center on Aging</td>
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<td>Barnes-Jewish Institute</td>
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<td>Colorado Center for Personalized Medicine (NEETY 1B)</td>
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<td>Total FMA Centers and Institutes (Anschutz)</td>
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<td>College of Business</td>
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<td>College of Education and Human Development</td>
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Office of Grants and Contracts
University of Colorado Denver Awards by School
Award Trends - Fiscal Year to Date 2018 and 2019
The Office of the Dean proudly presents the
2019-2020 Dean's Distinguished Seminar Series

All seminars are held 4:00-5:00 pm on the Anschutz Medical Campus, in the Research 1 North building, Hensel Phelps West Auditorium, with a reception for the guest and attendees immediately following in the first-floor atrium outside the lecture hall. Lecture topics are announced a few weeks prior to each seminar. For questions about the series contact Judy Sherman, 303-724-5375, judy.sherman@cuanschutz.edu

Tuesday, September 10, 2019
BLOSSOM A. DAMANIA, PhD
Boehmer Distinguished Professor of Microbiology & Immunology
Vice Dean for Research
University of North Carolina At Chapel Hill

Tuesday, October 8, 2019
ELIZABETH M. JAFFEE, MD
Deputy Director
The Sidney Kimmel Comprehensive Cancer Center
Professor of Oncology
The Johns Hopkins University
School of Medicine

Tuesday, November 12, 2019
CATHERINE DULAC, PhD
Higgins Professor of Molecular and Cellular Biology
Harvard University
Investigator, Howard Hughes Medical Institute

Tuesday, December 10, 2019
ANGELA BELCHER, PhD
James Mason Crafts Professor of Biological Engineering and Materials Science and Engineering
Massachusetts Institute of Technology

Tuesday, January 14, 2020
DIANE F. MEIER, MD
Professor, Geriatrics and Palliative Medicine
Director, Center for Advanced Palliative Care
Icahn School of Medicine at Mount Sinai

Tuesday, February 11, 2020
CONSTANCE CEPKO, PhD
Professor, Genetics and Ophthalmology
Harvard Medical School
Investigator, Howard Hughes Medical Institute

Tuesday, March 10, 2020
ADRIAN KRAIWER, PhD
St. Giles Professorship of Neuroscience
Professor of Molecular Genetics
Cold Spring Harbor Laboratory

Tuesday, April 14, 2020
DONALD E. INGBER, MD, PhD
Founding Director
Wyss Institute for Biologically Inspired Engineering
Harvard University
Judah Folkman Professor, Vascular Biology
Harvard Medical School
Vascular Biology Program, Boston Children’s Hospital
Professor of Bioengineering
Harvard John A. Paulson School of Engineering and Applied Sciences

Tuesday, May 12, 2020
TERESA K. WOODRUFF, PhD
Associate Provost for Graduate Education
Dean of The Graduate School
Vice Chair for Research
Department of Obstetrics and Gynecology
Director, Women’s Health Research Institute
Thomas J. Watkins
Professor of Obstetrics and Gynecology
Northwestern University
Feinberg School of Medicine
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
The University of Colorado School of Medicine is home to numerous centers, institutes, and programs. They range in categories from diabetes to cancer to surgical innovation. Also covered are women’s health research and health outcomes. On the following pages, you can read a more detailed description of many of the centers and institutes. A complete list can be found at medschool.cuanschutz.edu/departments-centers-institutes.
The Adult and Child Consortium for Health Outcomes Research and Delivery Science (ACCORDS) encompasses T3-T4 research across the life spectrum for the Anschutz Medical Campus, with infrastructure support provided jointly from the Dean’s Office of the School of Medicine and Children’s Hospital Colorado (CHC). The program was first established in 1998 as Colorado Health Outcomes (COHO), but was renamed and became fully collaborative in 2014 with Allison Kempe, MD, as the Center Director. The name highlights the focus on the entire life spectrum as well as on “delivery science,” encompassing comparative effectiveness, patient-centered outcomes and implementation and dissemination research.

ACCORDS is a group of investigators from multiple disciplines. Some have primary offices on campus, while a much larger group maintain off-site research homes. Currently, over 50 investigators, 15 biostatisticians/analysts, 39 research assistants, four instructors, and 11 administrative personnel have office space with ACCORDS. In FY2019, 32 grants were awarded totaling $14 million, reflecting a 33 percent success rate for submitted proposals. ACCORDS provided 490 consultations to 28 departments/division in the School of Medicine and assisted with 63 recruitments. ACCORDS houses three fellowship programs focusing on primary and subspecialty clinician scientists and currently has a K12 training grant focused on Dissemination and Implementation science. During FY2019 ACCORDS, hosted four seminar series, two distinguished lecturers, and four educational workshops.

ACCORDS is focused on bringing together researchers across the campus. Collaborating investigators represent all School of Medicine departments, as well the Colorado School of Public Health, the Skaggs School of Pharmacy and Pharmaceutical Sciences, and the College of Nursing. ACCORDS also has strong research affiliations with the Colorado Clinical and Translational Sciences Institute, Denver Health, Kaiser Permanente, the U.S. Department of Veterans Affairs, and the Colorado Departments of Public Health and Environment and Health Care Policy and Financing. ACCORDS serves as an incubator for research ideas, fosters interdisciplinary collaboration, and the development of focused areas of research of national prominence.

The mission of ACCORDS is to improve health, locally and nationally, by supporting state-of-the-art outcomes and community translational research to guide clinical practice and health policy.

The objectives of ACCORDS are to

- Increase competitiveness of the School of Medicine/CHC for funding from multiple research and education or training program sponsors, especially Patient-Centered Outcomes Research Institute, Agency for Healthcare Research and Quality and the National Institutes of Health
- Strengthen affiliations with key external partners, including Denver Health, Veterans Affairs, Kaiser Permanente, and Colorado Department of Public Health and Environment, to increase access to populations and collaborators necessary for certain grants
- Improve faculty development for both senior and junior faculty interested in outcomes and delivery research by providing an interdisciplinary home for developing research, a mentored training ground and substantial educational activities
- Improve the ability of the School of Medicine/CHC to recruit senior and junior faculty interested in health outcomes, health services research, dissemination, and implementation science, comparative effectiveness and patient-centered outcomes research
- Achieve greater national visibility for the School of Medicine/CHC as leaders in the areas of outcomes, dissemination, and comparative effectiveness research and training

ACCORDS is organized into programmatic areas: (1) Research; (2) Implementation and Dissemination Science; (3) Education; (4) Research Training; (5) Practice Transformation; and (6) Community Engagement and Outreach.

ACCORDS also has methodological cores in qualitative science, practice-based research networks, biostatistics and analysis, patient-centered decisions/shared decision-making, and health informatics/mobile health. These cores provide support to the programmatic areas and consultative support to investigators. A major focus of these cores is to provide support for the development of new projects and grant proposals.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/ACCORDS/Pages/welcome.aspx
The CU Anschutz Health and Wellness Center was officially established within the School of Medicine and opened in April 2012 with the vision of creating a world empowered by wellness. This campus resource is a hub of innovation and collaboration for top researchers, practitioners, students, campus employees, and community members in the areas of physical activity, nutrition, and mental well-being. The center’s experts lead health and wellness programs in partnership with an array of campus and community organizations in the Denver metro. The center is led by Director Daniel Bessesen, MD; Associate Director Marc Cornier, MD; Director of Research and Development John Peters, PhD; Director of Finance and Administration Jeanne Paradeis, MBA; and Assistant Director of Finance and Administration Luciana Smith, MSO, MCPH. More information can be found at anschutzwellness.com.

Some of the center’s functional areas and programs include:

- **The 94,000-square-foot Fitness Center** features advanced equipment technology, over 75 weekly group exercise classes, personal training services, massage, and motivational support for nearly 4,000 members from the campus and the surrounding community. The fitness center also runs a physician-referred supervised exercise program designed to assist with chronic disease management and post-rehab needs. In collaboration with the CU Cancer Center and UCHealth, the center offers BfitBwell, a research-based exercise program for cancer patients to support recovery.

- **The Wellness Clinic** offers results-oriented weight loss and wellness services, including physician-supervised wellness assessments and weight loss management, expert nutritional advising, psychological consultations, body composition testing, and mind-body treatments. A clinical obesity medicine fellowship training program will start in 2020. Several other campus clinics housed within the Wellness Clinic complete a full range of care and services available to the public. One of the center’s primary occupants is the Marcus Institute for Brain Health, which provides specialty care for military veterans and retired athletes struggling with mild to moderate traumatic brain injuries, including concussion, and changes in psychological health.

- **The center offers a full spectrum of Weight Loss Programs**, including:
  
  ⇒ **Weight Loss 4 Life**, a half-day workshop and bi-monthly ongoing support that gives participants the foundational tools and accountability needed to sustain weight loss long term.
  
  ⇒ **State of Slim**, a 16-week program focused on mindset transformation and improving metabolism by following structured diet and increasing activity.
  
  ⇒ **My New Weigh**, a Registered Dietitian-led program for those needing significant weight loss, utilizing behavior change and a highly structured meal plan for quicker weight loss.

- **Metabolic and Demonstration Kitchens** serve as the hub for our culinary medicine team of Registered Dietitians, who blend the art of food and cooking with the science of culinary medicine to help campus and community members make good decisions about accessing and eating high-quality meals through an array of campus and community programs, including weekly cooking classes.

- **The center is home to the following Research groups**:
  
  ⇒ The **Colorado Nutrition Obesity Research Center (NORC)** (funded by NIH/NIDDK grant P30 DK048520) fosters collaboration among members of its research base, promotes interdisciplinary research and develops young investigators. NORC researchers are successful in attracting funding and in publishing research results. NORC’s research base, comprised of more than 115 researchers and principal investigators, the center’s core laboratories (Clinical Intervention and Translation, Energy Balance Assessment, Molecular, and Cellular Analytic).
• The **Obesity and Cardiovascular Disease Training Grant** (funded by NIH/NHLBI T32HL116276) is an interdepartmental training program that provides research training in areas of hypertension, diabetes, obstructive sleep apnea and asthma, congestive heart failure, coronary heart disease, cerebrovascular disease, and sudden death. The intent of the program is broad-based and comprehensive, including basic, clinical, and population science opportunities on how obesity relates to cardiovascular disease. Focused training also includes the treatment and prevention of obesity.

• The **Clinical Trials Division** conducts industry-sponsored research with a focus on nutrition. Areas of study include weight loss, weight maintenance, metabolic syndrome, and diabetes. The division specializes in behavioral approaches to weight loss, delivered through group classes and/or one-on-one counseling.

• **Look AHEAD** (Action for Health in Diabetes; funded by NIH/NIDDK grant U01 DK057151) was recently re-funded through 2021. Look AHEAD is a multicenter, randomized clinical trial to examine the effects of a lifestyle intervention designed to achieve and maintain long-term weight loss.

• **Investigator-Initiated Research.** Our center faculty are engaged in investigator-initiated research studies funded by the NIH and other organizations. Many studies are focused on better understanding of body weight regulation and the treatment of obesity.

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**Barbara Davis Center for Childhood Diabetes**

The Barbara Davis Center for Childhood Diabetes (BDC) is one of the largest centers in the world specializing in type 1 diabetes research and care for children and adults. Clinicians, clinical researchers, and basic biomedical scientists work at the BDC to find the most effective treatment, prevention, and cure for type 1 diabetes.

**Clinical Care**

The center clinics provide state-of-the-art care for over 7,500 children and adults with diabetes. Barbara Davis Center clinics offer extensive education and support for patients and their families as well as specialized programs, such as the Pregnancy and Diabetes Clinic, the Hispanic/Latino Diabetes Care Program, and a model Telemedicine program serving residents in Wyoming and remote parts of Colorado.

- BDC serves > 90 percent of Colorado children diagnosed with Type 1 Diabetes
- Patients from 46 out of 50 U.S. states receive care at the BDC
- Patients from over 33 countries receive care at the BDC
- >50 percent of patients use insulin pumps and >60 percent use continuous glucose monitors
- BDC clinics accept > 700 new patients annually
- BDC’s Telemedicine visits grew by 13 percent in 2018 and is on track to increase an additional 28 percent in 2019

**Research**

BDC research goals include investigation of the causes of type 1 diabetes (T1D), the early detection of autoimmunity, prevention and early intervention. BDC clinical faculty members are developing new strategies and treatments for improved outcomes of care including prevention strategies for complications of both type 1 and type 2 diabetes. Investigators of the BDC were awarded $15 million in direct cost competitive funding and published over 150 peer reviewed papers in the past year. **Clinical Research Highlights**

BDC investigators continue to increase the body of knowledge around the identification, cause, treatment, and outcomes of T1D. Recent contributions include

- BDC clinical trials pivotal for FDA approval of the first hybrid closed-loop system to automate insulin dosing
- Diabetic ketoacidosis (DKA) at diagnosis predicts poor diabetes control
- SGLT adjunctive therapy improves outcomes in T1D patients
- Vitamin D levels and respiratory infections predict islet autoimmunity
- Autoimmunity Screening for Kids (ASK) study finds 1 percent of children in Denver have early T1D and 2 percent have undiagnosed celiac disease
Basic Science Highlights
BDC investigators contributed to several high profile studies that focused on the pancreatic islet in T1D. Contributions include

- Determination that methyldopa blocks the diabetes-specific activation of HLA-DQ8 molecules
- The contribution of novel non-coding RNAs in regulating islet function
- The modification of insulin B-chain fragments create superagonists for T cells in T1D
- Higher order cellular aggregation promotes maturation and functionality of human stem cell-derived beta cells
- CAR-T cells targeting a pathogenic MHC Class II peptide complex modulate progression of T1D
- Leadership
- BDC investigators sit on planning and leadership committees for organizations including the American Diabetes Association, the American Heart Association, and the T1D Exchange Clinic Registry.

Service Centers
The BDC Research Division provides cytometry and islet preparation services for local clientele. The Molecular Biology Service center provides basic molecular biology support, DNA sequencing, cell line authentication, and mycoplasma testing. The Autoantibody/HLA Service Center performs studies, which include assays for islet autoantibodies and markers of other autoimmune disorders, including celiac and Addison’s disease. This laboratory serves as the core laboratory for numerous national and international trials for the prevention of type 1 diabetes.

Education
The BDC provides an outstanding training environment for developing physician-scientists, clinicians, and basic science researchers. Faculty members provide laboratory and clinical research training opportunities for young investigators from around the world, including participants in the highly successful T32 Pediatric Endocrinology Fellowship Training Program and K12 Pediatric Endocrinologist Career Development Program. The annual Keystone Conference remains the center’s flagship in the area of continuing medical education (CME) in Management of Diabetes, regularly selling out with over 600 participants.

The Barbara Davis Center is led by Marian Rewers, MD, PhD, Executive Director; Robert Slover, MD, Director of Pediatric Diabetes Division; Satish Garg, MD, Director of Adult Diabetes Division; Lori Sussel, PhD, Director of Basic and Translational Research Division; and Janet Snell-Bergeon, PhD, Director of Clinical Epidemiology Division. Website: www.barbaradaviscenter.org

Cardiovascular Institute
The University of Colorado Cardiovascular Institute is co-directed by Peter M. Buttrick, MD, and Leslie Leinwand, PhD, with a focus on the integration of cardiovascular research, treatment, and discovery through a collaboration of the University of Colorado Anschutz Medical Campus and the University of Colorado Boulder. Michael R. Bristow MD, PhD, is the Director of the Pharmacogenomics Section and Matthew R.G. Taylor MD, PhD, and Luisa Mestroni, MD, are co-directors of the Molecular Genetics Section. Timothy A. McKinsey, PhD, also provides leadership in both of these sections.

The scientific goals of the institute are to understand the genetic basis and specific molecular mechanisms responsible for heart muscle disease and heart failure and to produce new diagnostic techniques and treatments for patients. By integrating the effort of those committed to curing heart muscle disease and heart failure, the collaborative nature of the institute encourages the sharing of findings and data, which ultimately translates into improved diagnosis and therapies for patients.

In molecular genetics, our mission is to investigate and identify causes of heart muscle disease and heart failure; in pharmacogenomics, our mission is to 1) investigate and identify pathologic gene expression responsible for heart muscle disease and heart failure, and 2) identify and develop therapies that favorably affect pathologic myocardial gene expression or the clinically important consequences of variant gene products.

In the past year Cardiovascular Institute sections and members have published over 50-peer reviewed papers, submitted three patents, secured over 15 funding awards, not including over 20 funding awards in process and garnered several academic honors.

http://www.ucdenver.edu/academics/colleges/medicalschool/institutes/CardiovascularInstitute/Pages/CardiovascularInstitute.aspx
Center for Bioengineering

Leadership
Robin Shandas, PhD, Professor and Founding Chair, Department of Bioengineering
University of Colorado Denver | Anschutz Medical Campus
Professor of Pediatrics (cardiology) and Surgery
Director, Center for Bioengineering
University of Colorado School of Medicine

Mission
The Center for Bioengineering aims to support, catalyze and grow research, training and entrepreneurship at the intersection of clinical medicine and engineering on the Anschutz Medical Campus.

Website address
www.ucdenver.edu/bioengineering

Accomplishments
- Recruitment of Keith Neeves, PhD, a senior investigator in bioengineering and hematology/oncology.
- Four NIH F31, two NIH F32 and three NSF GRFP fellowships awarded to PhD students and post-doctoral trainees.
- Bioengineering student groups worked with over 25 School of Medicine faculty to design and prototype new medical devices and technologies; three patent applications filed.
- Over 40 SOM faculty participated in Bioengineering Pitch Night where clinicians pitch ideas for engineers to solve.

Description
The Center for Bioengineering and the Department of Bioengineering represent the research and academic components of the bioengineering program at the University of Colorado Denver | Anschutz Medical Campus. Built from the ground up to fully integrate engineering principles of design with biological systems and biomedical technologies to improve patient care, the bioengineering program continues to expand at both the Anschutz Medical Campus and downtown Denver. The graduate program enrolls approximately 90 master's and PhD students, and 140 students are enrolled in the undergraduate program for fall 2019. Student enrollment continues to grow at double-digit rates. The Department of Bioengineering employs 10 tenure-track and 25 non-tenure track teaching and research faculty. Over 30 SOM faculty have affiliations with the program. Bioscience 2 in the Fitzsimons Innovation Community, adjacent to the Anschutz Medical Campus, is the primary location for the academic programs, where bioengineering students learn how to apply engineering skills and knowledge to solve clinical problems.

Total research expenditures in the Center for Bioengineering exceeded $6M in FY 2019. Research projects include studies that use cardiac cells to repair congenital heart defects; studies in ventilator-induced lung injury in pediatric patients; projects in disability and aging; projects in neuro-optics and prosthetics; and research in thrombosis and homeostasis. Research in the Center for Bioengineering is carried out in research space in Bioscience 2, and in research buildings on the Anschutz Medical Campus and at the Assistive Technology Program on the downtown campus. BioScience 3, slated to open April 2020, will house a professional design and technology development studio for medical device innovation, a clean room to support bio-fluidics research, new bioengineering research labs, and a state-of-the-art Assistive Technology research center.

Faculty in bioengineering have active collaborations with the Heart Institute, the Breathing Institute, the Gait Lab, the Cardiovascular Pulmonary Research Lab, the Pediatric Heart-Lung Center, the Colorado Fetal Care Center, and the Single Ventricle Care Program at Children’s Hospital Colorado. Faculty have active collaborations with the VA medical center, National Jewish Health, CU Boulder, Colorado State University, and Colorado School of Mines. The Department of Bioengineering and the Center for Bioengineering also collaborate with the Colorado Bioscience Institute as well as with many local industry partners, including Medtronic, Securisyn, EndoShape, Inc., EnteroTrack, LLC, Stryker, AlloSource, Inc., Couragion Corporation, mindSpark Learning and Aurora Public Schools, Sharklet Technologies, Inc., Point Designs, National Seating and Mobility, NuMotion, BenchMark Advanced Manufacturing, and Google.

The Center features strong and successful programs in medical device innovation and entrepreneurship. Faculty and students have started up 12 companies over the last 10 years, several in collaboration with School of Medicine faculty. Several technologies have been invented at the Center and over 100 patents or patent applications have been generated over the last 10 years.
Robin Shandas, PhD, is the Director of the Center for Bioengineering and also the Department of Bioengineering Chair. Faculty membership is representative of the diverse and translational research projects that bridge engineering and medicine and our program collaborates with more than 100 faculty in the CU School of Medicine. The Center for Bioengineering has active research collaborations with the Colorado Translational Research Imaging Center, the neuroscience program, the Barbara Davis Center for Diabetes, Data Science to Patient Value, the Division of Pulmonary Sciences and Critical Care, the Center for Women’s Health Research, Gates Center for Regenerative Medicine, Hemophilia and Thrombosis Center, Center for Cancer and Blood Disorders, Developmental and Behavioral Biology, Orthopedics, Geriatrics, Physical Medicine and Rehabilitation, The Linda Crnic Institute, the Clinical Translational Research Center, Organoid and Tissue Modeling program and the iPSC Core at the CU School of Medicine.

Center for Children’s Surgery

The Center for Children’s Surgery (CCS), a multi-disciplinary center housed within the School of Medicine, was established in 2011 to represent faculty who specialize in providing surgical care to children. The CCS is charged with promoting the continued growth and development of CCS members while fulfilling the multiple missions of the School of Medicine and Children’s Hospital Colorado (CHCO). The center’s continued focus on strengthening and deepening the partnership and synergies between these two entities will remain an important factor in supporting the advancement of Anschutz Medical Campus as a center of national and international preeminence.

CCS administrative leadership includes Duncan Wilcox, MBBS, MD, Director and Surgeon-in-Chief at Children’s Hospital Colorado and Professor of Surgery at the School of Medicine, Michael Handler, MD, FACS, FAAP, Associate Surgeon-in-Chief and Professor of Neurosurgery, Thomas Inge, MD, PhD, Associate Surgeon-in-Chief for Research and Professor of Surgery, and Sandra Talley, MPH, Director of Finance and Administration. The CCS is comprised of these pediatric divisions/sections: Adolescent and Pediatric Gynecology, Pediatric Cardiothoracic Surgery, Pediatric Neurosurgery, Pediatric Ophthalmology, Pediatric Orthopedics, Pediatric Otolaryngology, Pediatric Surgery, Pediatric Plastic Surgery, Pediatric Urology, Pediatric Transplant Surgery, and Pediatric Dermatology.

Duncan Wilcox, MBBS, MD will oversee the goals of the CCS in 2019-2020, which are centered on research, teaching, clinical programs, and advocacy of CCS members. Specific goals tie in directly with the CCS strategic plan, including elevating the surgical quality and safety program, formalizing the surgical oncology program, enhancing and growing the current research portfolio, and strengthening existing destination programs.
The Center for Surgical Innovation (CSI)’s mission is to provide cutting-edge surgical training courses aimed to train medical affiliates in the latest surgical techniques and technology locally, regionally, nationally and globally, and to study surgical and procedural educational methods to advance how surgical procedures are learned and taught.

CSI was created in 2007 and is supported and overseen by five surgical departments on the University of Colorado Anschutz Medical Campus. The participating departments are surgery, neurosurgery, orthopedics, obstetrics/gynecology, and otolaryngology.

The CSI leadership team is Thomas Robinson, MD, Medical Director; Sarah Massena, MBA, Business Director; Peter Mouser, MS, Lab Manager; and Sharon Durlak, Lab Coordinator, Jesse Durlak, Lab Support Tech and Bryce Jones, Lab Support Tech.

CSI is located in the Fitzsimons Innovation Community, 12635 E. Montview Blvd., Suite 170, and has a surgical lab, a dedicated auditorium and conference rooms. For more information, please visit our website at http://www.ucdenver.edu/academics/colleges/medicalschool/centers/SurgicalInnovation/Pages/CSI.aspx

We are excited to announce that CSI is building a new lab with double the amount of space in the new Bioscience 3 building. We will move in January of 2020

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**Center for Women’s Health Research**

At the Center for Women’s Health Research (CWHR), we envision a future in which research includes women and accounts for sex and gender differences, thus shaping better health care for all. Relatively little research on women’s health was conducted until the 1990s and such research has historically been underfunded. Given this research gap, the CWHR was founded in 2004 by Judy Regensteiner, PhD, JoAnn Lindenfeld, MD, and Lorna Moore, PhD. Today, the Center is directed by Judy Regensteiner, PhD, Deputy Director Jennifer Engleby and associate directors (and senior scientists) are Wendy Kohrt, PhD, and Jane Reusch, MD. Anne Libby, PhD, is also a senior faculty member, and Amy Huebschmann, MD, is lead scientist for community outreach and education.

The CWHR mission has three components:

1. **Research**: To perform cutting-edge research in women’s health and sex/gender differences across the lifespan, with a focus on cardiovascular disease, diabetes, and the intersection of mental and physical health.

Researchers are foundational to our vision of transforming women’s health. The CWHR has developed a strong reputation for success in assisting young researchers build their careers and acquire external funding. Since 2006, we have awarded over $1.7 million in seed grants to 68 researchers. These same researchers have in turn been awarded over $78 million in external funding from the NIH, American Heart Association, the American Diabetes Association, and other major organizations. Our researchers do work across the lifespan and represent 34 different departments, divisions, and centers on campus.

2. **Mentoring**: To mentor and train the next generation of researchers to build careers in women’s health and sex/gender differences research.
A successful researcher requires a specialized skill set. In addition to a strong understanding of scientific thinking and methods, there must also be skills relating to leadership as well as management. By being awarded a CWHR seed grant, our young scientists receive critical funding, and intensive mentoring, academic and career development trainings, and a community of support.

3. **Education**: To educate the public and health care providers, so that our research findings are translated into improved care.

The CWHR is actively engaged in the community, raising awareness of and support for women’s health and sex/gender differences research. Our Community Advisory Board has been key to our success, helping us to raise over $120 million in philanthropic giving since 2004.

We also work with a variety of groups on campus and in the community to provide educational outreach. Each year, we hold more than 20 events reaching a total of more than 2,400 attendees. Highlighted below are some of our program offerings.

- **Let’s Talk**: In partnership with UCHealth, the CWHR organizes this lecture-based community education series that bridges research to care. By providing evidence-based information, attendees are able to make more informed health care decisions for themselves and their families. In 2018-2019, we hosted four programs on topics ranging from heart health to self-care and allergies and asthma. We also hosted our annual Girls’ Career Day for high-school aged girls.

- **Women’s Health Research Day**: This annual event features a nationally-recognized keynote speaker and a poster session for campus researchers. In 2018, our keynote speaker was Marjorie Jenkins, MD, a leader in sex and gender research and its clinical application.

- **Women’s Health Symposium**: 2019 marked the 17th year of this annual half-day CME-accredited training. Medical professionals learned the most recent evidence-based guidelines and treatments relevant to women’s health and sex differences on topics including mental health during the perinatal period, substance abuse, non-invasive cardiovascular imaging, and the new physical activity guidelines.

- **National Conference on Women’s Health and Sex Differences Research**: The CWHR hosted its second biennial national conference in 2018 focusing on cardiometabolic health across the lifespan. The CWHR national conference features leading scientific experts, and offers a program for community members to hear from prominent researchers.

- **Community & Business Partnerships**: The CWHR is proud to partner with a variety of community organizations and companies to provide education and health care resources. From offering women’s health screenings at the Center for African American Health Fair to presenting to employees and clients of Denver-based companies, we serve a wide spectrum of the community. We also have an ongoing partnership with the Denver FACES for the Future Program, a multi-year health care internship and leadership development program for Manual and West High School students.

In 2019, the CWHR was awarded a $5 million gift from the Anschutz Foundation to support the strategic programs and expand focus areas into the intersection of mental and physical health. This gift included the creation of an endowed chair in women’s mental health, bringing the total endowed chairs for the CWHR to three.

The CWHR is proud to partner with many different groups and programs on campus including Women in Medicine and Science, the Building Interdisciplinary Research Careers in Women’s Health (BIRCWH) program, the Specialized Center of Research Excellence in Sex Differences (SCORE) grant, and the Doris Duke Foundation’s Fund to Retain Clinical Scientists.

Finally, the CWHR works closely with internationally known leaders in women’s health who are part of the CWHR’s Scientific Council. Current members include Nanette Wenger, MD (Emory); Yoel Sadovsky, MD, (Magee-Womens Research Institute); Bill Haskell, PhD (Stanford); Jill Goldstein, PhD (Harvard); Noel Bairey Merz, MD (Cedars-Sinai); Anne Peters, MD (USC); and Ginger Graham, MBA.

The CWHR is working to be a leading voice increasing awareness and change in women’s health and sex/gender differences on campus, in the community, and on a national scale. To learn more about our work or join our mailing list, visit [www.cwhr.org](http://www.cwhr.org).
Colorado Sickle Cell Treatment and Research Center

The Colorado Sickle Cell Treatment and Research Center, established over 40 years ago, is the region’s primary source of specialty expertise and facilitation of comprehensive specialty care for both children and adults living with hemoglobinopathies. Basic, clinical, and health services research conducted by the center and its collaborators serve to elucidate the pathophysiology of sickle cell disease, develop and implement treatments and systems of care that prevent or minimize complications and that prolong and improve the quality of life. The center and its collaborators are supported by funding from the NIH and other federal agencies, industry, and foundations. The center holds a long-standing contract with the State of Colorado to coordinate short-term follow-up of newborn screening for sickle cell disease and center staff continue to assist the state laboratory as it expands its testing services.

Direct patient care is also provided by our Director Kathryn Hassell, MD, for adults at UCHealth University of Colorado Hospital and by Associate Director Rachelle Nuss, MD, for pediatric patients at Children’s Hospital Colorado (CHCO). New funding was awarded to the center for FY2019 and renewed for FY2020 from state Medicaid surplus funds to support sickle cell providers as they continue their dedicated work with this underserved population. Implementation of a transition program, directed by a full-time transition coordinator, targets 12- to 26-year-olds to facilitate self-advocacy and health system navigation skills as youth move from pediatric- to adult-oriented healthcare throughout Colorado. Leveraging this expertise, center staff contribute to the development of an institutional transition program for all patients at CHCO.

A major ongoing activity is the organization of a “state plan” for sickle cell disease, with support and funding from the Pacific Sickle Cell Regional Collaborative, part of a national Health Resources and Services Administration program. This activity enhances communication between and education for providers across Colorado, facilitating collaboration between health care systems and insurers, and disseminating care guidelines, major research advances and awareness of available resources to all stakeholders including patients and their families. An expanded website will encompass this information and serve as a statewide resource and point of contact. More information about the center is available at [www.coloradosicklecell.org](http://www.coloradosicklecell.org) or [https://medschool.cuanschutz.edu/sickle-cell-center](https://medschool.cuanschutz.edu/sickle-cell-center).

Denver Institute for Psychoanalysis

The story of psychoanalysis in Denver goes back to 1923 when the Colorado Psychopathic Hospital was built for the study and treatment of patients with mental illness and for clinical teaching. The Denver Institute for Psychoanalysis was granted provisional status by the American Psychoanalytic Association (APsaA) in 1969 and was recognized as an approved provider of psychoanalytic education in 1972.

Psychoanalytic thinking began with Freud’s theorizing. Since these beginnings, the field has been informed and expanded by challenges from work in developmental psychology, neuropsychology, and psychopharmacology. The Denver Institute for Psychoanalysis and the Denver Psychoanalytic Society are dedicated to the advancement of the understanding of psychoanalysis and psychoanalytic ideas. We believe that psychoanalysis provides a unique and unparalleled perspective of the human condition based upon a deep respect for the complexity and individuality of every person. By providing educational programs to educators, scholars, and interested mental health professionals, we are helping the community to stay abreast of current developments and debate within the field of psychoanalysis.

**Mission**: The Denver Institute for Psychoanalysis is a community of psychoanalysts whose goals are to provide education in psychoanalytic thinking and treatment techniques, to advance scholarship and research, and to encourage application of psychoanalytic knowledge to related fields of study.

**Programs**:  
- **Library** - The Institute maintains a library which is a resource for mental health professionals wishing to access both old and new information and research in the field of psychoanalysis.  
- **Mentorship Program** - An elective psychoanalytic mentorship program is available for psychiatric residents and child fellows. Similar programs are being developed for graduate students in other disciplines and research in the field of psychoanalysis.
• **Post-Graduate Programs:**
  ⇒ **Psychoanalytic Program (Adult and/or Child & Adolescent)** – Post-graduate programs with a goal of the development of clinical skills necessary for analytic effectiveness as well as promote psychoanalytic scholarship and research. This experience is broadened and conceptualized through seminars, supervised clinical work, and a personal training analysis. Course work includes topics in development, theory, technique, and case conference.
  ⇒ **Psychotherapy Training Program (PTP)** – The two-year post-graduate program is designed to improve clinical skills and to demonstrate the usefulness of applying contemporary psychoanalytic thinking to a wide range of clinical, teaching, and consultative situations. In addition to a comprehensive review of theory and development, the students learn the technical application of these principles to a wide spectrum of disorders. Course work includes topics in development, theory, technique, and case conference.

• **Psychoanalytic Referral Service** - Provides evaluation, treatment, or referral to prospective patients (adults, children, and adolescents) who cannot afford private fees. The Psychoanalytic Referral Service is one source of analytic cases for candidates under supervision.

• **Research** - Because psychoanalytically oriented treatments are uniquely organized around listening to individual patients, a different sort of data can be collected and used to further our understanding of emotional difficulties. This body of research and knowledge has contributed not only to the development of psychoanalysis and psychoanalytic psychotherapy, but also to the development of many other psychological treatments

• **Teaching and Supervising** residents of the department of psychiatry at the University of Colorado School of Medicine. Our faculty are also active in teaching with students in social work and psychology at the University of Denver.

Our programs are funded by tuition, membership dues, and the generous contributions from donors in the community. Each year our faculty and society members join together to contribute over 1,000 hours to training, supervision, mentoring, and participating in community outreach projects within our community.

**This Year’s Milestone:** September 2019 marks our 50th anniversary.

Since 1972, the Institute has graduated 85 individuals in Adult Psychoanalysis, 12 individuals in Child & Adolescent Psychoanalysis as well as 85 individuals in the Adult Psychodynamic Psychotherapies Program, and 13 individuals in the Child & Adolescent Psychodynamic Psychotherapies Program.

**Executive Committee (June 2019- July 2022)**
  Director **Stacey Fry, PsyD**
  Associate Director **Rachel Norwood, MD**
  Treasurer **Paula Bernstein, PhD**
  Secretary **David Williams, MD**

**Board of Directors**
  Chair **Neil Rosen, PsyD** (2017-2020)
  Vice Chair **David Stevens, PhD** (2018-2021)
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  Member **Cal Narcisi, MD** (2018-2021)
  Public Member **Richard Hennessey, JD** (2019-2022)

**Website:** [www.denverpsychoanalytic.org](http://www.denverpsychoanalytic.org)
**Email:** office@denverpsychoanalytic.org
**Phone:** (303) 724-2666
The Gates Center for Regenerative Medicine was established in 2006 on the University of Colorado Anschutz Medical Campus with a generous gift in memory of business entrepreneur and philanthropist Charles C. Gates. Under the direction of Dennis Roop, PhD, the Gates Center’s mission is to bring together and support researchers and clinicians in stem cell biology in order to accelerate discoveries from the lab through clinical trials to therapies and cures. The Gates Center works across campus and with many other research partners, bringing together and fostering research and clinical talent, regulatory and intellectual property expertise, commercial partners and diverse funding. Facilities and benefits for our 115 medical research and clinician members, who from the Anschutz Medical Campus, CU Boulder, CU Denver, Colorado State University, Colorado School of Mines and National Jewish Health, as well as private industry, include core labs, patented cell production platforms, the best-in-class Good Manufacturing Practice (GMP) production center at the Gates Biomanufacturing Facility, business development and commercial guidance, affiliation with undergraduate and graduate education programs and more.

**FY2019 highlights**

**Collaboration and Research**

- The Gates Center teamed up with Colorado State University’s College of Veterinary Medicine and Biomedical Sciences on October 4-5, 2018, to host “Zoobiquity Colorado,” a conference focusing on the similarities between human and animal medicine and promoting collaboration between human and animal investigators and clinicians to advance the regenerative medicine field.
- The Gates Center’s newest core facility—the Stem Cell Biobank and Disease Modeling Core — worked with numerous campus investigators along with teams at Stanford and Columbia universities and in France, among others, on cures for a number of diseases. Established in 2017, this core facility uses Gates Center members Ganna Bilousova, PhD and Igor Kogut, PhD’s safe and efficient reprogramming technology (reported in *Nature Communications* in February 2017) to generate banks of pluripotent stem cells (iPSCs) as a platform. It then employs the iPSCs as tools to understand the underlying basis of diseases that affect tissues that cannot be easily biopsied, such as the brain.
- This novel reprogramming technology and new core facility led to this year’s partnership between the University of Colorado School of Medicine, Children’s Hospital Colorado, and the Gates Center to establish the new Ehlers-Danlos Syndrome (EDS) Center of Excellence. The Research Program for the EDS Center of Excellence will provide nearly $2 million to the Gates Center team over the first three years to determine the genetic basis of EDS and develop a cell-based therapy.
- The center’s ongoing collaboration with research teams from Stanford and Columbia universities — the Epidermolysis Bullosa Consortium — made steady progress toward its goal of the first combined gene editing iPSC Cell clinical trial in the country to treat this devastating, inherited skin disease and enable relevant breakthroughs toward cures for various other diseases. One of eight entities in the country to receive an award from the 21st Century Cures Act in 2017, the Consortium announced that it had achieved a 24-fold return on the original $504,598 award in spring 2019 — prior to receiving notice of a second-round Cures Act funding.

**Good Manufacturing Practice Facility**

- The center’s state-of-the-art, affiliated Gates Biomanufacturing Facility (GBF) remains key to the Center’s mission of translating innovative research discoveries into safe and effective cell therapy and protein biologic products for human clinical trials. During the year it achieved its goals of instituting a world-class quality program, bringing on new personnel in cell and gene therapy, protein biology and quality and regulation, and attracting top-level commercial and on-campus clients. An external audit in December 2018 deemed the GBF a top facility in terms of quality.

**Business Development and Commercialization**

- In fall 2018, the Gates Center and CU Innovations worked with its Scientific Investment Advisory Committee to make three $350,000 awards toward promising basic science projects with potential for commercialization and tangible benefits for patients. Awardees included Ken Liechty, MD, Kunhua Song, PhD, and Michael Verneris, MD. Since the fund launched in 2014, the cumulative $3.5 million in Grubstake awards has already produced $18 million in follow-up funding from partners seeking to help develop and commercialize the products.
Education and Outreach

- The Gates Center sponsored the fourth year of the Gates Summer Internship Program that places 20 highly qualified undergraduate students from across the country in center members’ labs to encourage them to incorporate regenerative medicine into their career plans. The center also continued to support a training program in stem cell biology for graduate students established in 2007, and host public and school tours.

Grants and Fundraising

- As of the end of 2018, the center and its members had received over $187 million in peer-reviewed funding from the National Institutes of Health, the U.S. Department of Defense and various foundations.
- Significantly, private philanthropy is an increasingly vital driver of innovative research and leading-edge education initiatives at the Gates Center. In 2018, generous gifts were directed toward the Director’s Innovation Fund in support of research and other projects, the Gates Summer Internship Program, the iPSC Discovery Platform Fund to employ induced pluripotent stem cells to study a variety of diseases and the Startup Toolbox Fund to provide center members with business resources to move discoveries to cures.

http://www.ucdenver.edu/academics/colleges/medicalschool/centers/StemCell/Pages/StemCell.aspx

Photo courtesy of @ladyscientist from @cuanschutz Instagram.
The mission of the Helen and Arthur E. Johnson Depression Center (JDC) is to improve the lives of people with depression, and mood and related disorders, through clinical excellence, innovative research, community programs, and education (www.coloradoDepressionCenter.org). The three primary goals of the JDC are to: 1) Promote mental health as key to healthy living for all Coloradans, 2) Develop, provide, and disseminate effective care for people with depression and bipolar disorder, and 3) Eliminate barriers to quality care and healthy communities. The JDC, in partnership with the Cohen Veterans Network, opened the Steven A. Cohen Military Family Clinic at the University of Colorado Anschutz Medical Campus (www.coloradoDepressionCenter.org/mfc) in April 2018.

Clinical Excellence. The JDC clinical social workers, psychologists, psychiatrists, and psychiatric nurse practitioners are members of the School of Medicine faculty and provide a range of outpatient mental health services. Depression, bipolar disorder, anxiety, and attention disorder are the most common concerns treated. The JDC provided over 8,500 in-person patient visits during the past fiscal year, with over 60 percent of patients coming from the University of Colorado community. Telehealth services have expanded to integrative health practices in Denver and throughout Colorado, and to Alaska. A new program to provide needed psychiatric services to Eagle County, Colorado, was initiated in late summer, 2017, and is now active. The Cohen Clinic provides targeted, evidence-based outpatient mental health care to Veterans and their families regardless of discharge status or military role. Family members do not need to be referred by the Veteran to receive care. The clinic has provided approximately 2,500 clinical services, with 15 percent of all sessions conducted by telehealth. Forty-five percent of patients are family members.

Innovative Research. JDC faculty served as principal investigator or collaborator on more than 10 research projects during the fiscal year and led or co-authored over 30 academic publications. As a charter member of the National Network of Depression Centers (NNDC), the JDC partners with world-renowned academics and clinicians to better understand and treat mood disorders including the Mood Outcomes Program, which is a patient registry of mood, anxiety, and suicidality ratings. The JDC continues to evaluate the benefits of integrated care delivery systems and provides nationwide leadership by disseminating integrative care best practices.

Community Programs and Education. The JDC’s community programs are designed to extend our reach into communities and organizations across the region to educate about suicide prevention, reduce stigma surrounding mental health, increase help-seeking behaviors, and view mental health as an essential component to overall health. The JDC Community and Education Programs Director has provided training for over 10,000 Coloradans, for free, since September 2016. The JDC added a new program called Working Minds, which provides suicide prevention training tailored to workplace settings. JDC staff have provided Working Minds trainings across the country. JDC faculty have also led community events in topics such as mindfulness, teen anxiety, deciphering teen behavior, school anxiety, resiliency, and social media and suicide.

Volunteerism: The JDC has an active and engaged community-based Board of Directors. Two examples of Board engagement include the Education and Events Committee, and the Luncheon Committee. The 2018 JDC Luncheon featured a moderated discussion with Jean Twenge, PhD, and Nir Eyal, MBA, discussing “Smartphones, Social Media, and Stress.” The luncheon continues to grow, and this year was attended by over 700 people and raised over $450,000 to support the JDC’s operational goals.

LEADERSHIP TEAM:
Marshall Thomas, MD, Executive Director
Matt Mishkind, PhD, Deputy Director
Christopher Schneck, MD, Medical Director
Michael Jones, MBA, Director of Finance and Administration
Jay Shore, MD, Director of Telemedicine
Lindsey Bieging, Director of Development
Alex Weber, MA, Community Programs Manager
Heather Mulvihill, MS, MA, LPC, Board of Directors Chair
Kammy Bishop, LPC, Cohen Clinic Director
The University of Colorado Hemophilia and Thrombosis Center (HTC) is one of 142 centers for the comprehensive treatment of bleeding and clotting disorders established by Congress and recognized by the U.S. Health and Human Services, Maternal Child Health Bureau. Serving nearly 2,000 pediatric and adult patients in Colorado, Wyoming, Montana, and surrounding states, the HTC operates a free-standing School of Medicine outpatient clinic specializing in congenital bleeding and clotting disorders, pediatric stroke, and women’s bleeding disorders.

The center operates its multi-disciplinary clinics on the Anschutz Medical Campus in collaboration with Children’s Hospital Colorado and University of Colorado Hospital. In addition, the HTC conducts remote clinics in Colorado Springs and Grand Junction, Colorado, and Billings, Missoula, and Bozeman, Montana. The self-sustaining center boasts clinics for bleeding and clotting disorders; hemorrhagic stroke, ischemic stroke, or fetal brain injury; and, gynecological bleeding. The HTC also manages and funds an in-house specialty pharmacy, clinical research support group, and laboratory research facilities in its mission to diagnose, treat, and improve outcomes for congenital bleeding and clotting disorders in children and adults.

Led by Marilyn Manco-Johnson, MD, the center has been at the forefront of development and adoption of a “comprehensive care” model and the prophylactic use of factor replacement products for the treatment of hemophilia, transforming bleeding disorders patients’ lives around the globe. Center physician-scientists continue this tradition, proactively seeking new treatments and therapies through research and clinical trials.

In the past year, the U.S. Food and Drug Administration approved a non-factor bypassing agent, clinically tested on the Anschutz Medical Campus, for treatment. CU HTC hematologists are in the vanguard of early prescribers for targeted patient populations. As a result, patients have experienced improved outcomes more convenient administration, and lower total cost of care in a trifecta win for patients, insurers, and health care providers.

HTC patient care is delivered by multi-disciplinary, physician-led teams, including, hematologists (doctors who specialize in blood), neurologists, gynecologists, orthopedists (doctors who specialize in bones, joints, and muscles), physiatrists (doctors who specialize in rehabilitation and a return to function), physical therapists, pharmacists, nurses, social workers, and other mental health professionals, lab medical technologists and pathologists, and other specialists by referral, (e.g., dentist, nutritionist, genetic counselor). With a staff of 68 full- and part-time professionals, including both clinical and lab research physicians, the HTC actively pursues investigator-initiated research into bleeding and clotting disorders currently centered on rare genetic causes of bleeding and clotting, the physiology of Von Willebrand Factor and platelets, pain management, and joint biomechanics. Center researchers conduct clinical trials research on new treatment options in collaboration with international pharmaceutical companies. Clinical researchers collaborate with HTCs around the world.

CU Anschutz Hemophilia and Thrombosis Center Information:

Program Director/Principal Investigator: Marilyn Manco-Johnson, MD
Clinic Medical Director: Michael Wang, MD
Pharmacy Director: Paul Limberis PharmD

Program website: medschool.ucdenver.edu/htc.

JFK Partners

Since 1964, the mission of JFK Partners has been to promote the independence, inclusion, contribution, health, and well-being of people with developmental disabilities and their families through consumer, community, and university partnerships. Central to the mission is a commitment to family and person-centered, community-based, culturally competent programs and services. This mission is implemented through interdisciplinary education and training, consultation, technical assistance, direct service, research, program development, policy analysis, and advocacy.
JFK Partners includes faculty and trainees in the disciplines of audiology, developmental behavioral pediatrics, family, nursing, nutrition, occupational therapy, physical therapy, psychology, public health, social work, speech-language, spiritual care, self-advocacy, and parents of children with intellectual/developmental disabilities. Sandra Friedman, MD, MPH, assumed leadership of the interdisciplinary program in July 2015, directing the merger of JFK Partners with Department of Pediatrics Section of Developmental Pediatrics. The merger included the integration of diagnostic assessment and treatment services with those of Developmental Pediatrics at Children’s Hospital Colorado. As a life-span program, JFK Partners continues to serve adults at the Anschutz Medical Campus. Judy Reaven, PhD serves as Associate Director of JFK Partners, as well as Director of Research.

The programs of JFK Partners are supported by federal training and research grants, clinical income, and contracts, as well as annual funding from the State of Colorado. In 2018-19, project funding totaled $3.4 million with 74 percent from federal sources, 19 percent from state sources, and 7 percent from contracts, fee for service, or foundations. Two core grants, consisting of 38 percent of funding in 2018-19, include the competitively awarded Administration on Intellectual and Developmental Disabilities, University Center for Excellence in Developmental Disabilities (UCEDD), the Maternal and Child Health Bureau, Leadership Education in Neurodevelopmental Disabilities (LEND) programs. JFK Partners is a part of a national network (www.AUCD.org) of 67 UCEDD’s university-based centers and 52 LEND programs in all U.S. states and territories. The 52 university-based LEND programs have collectively made significant strides toward improved screening and diagnosis of autism among younger children and helped train health care professionals who treat a number of developmental and intellectual disabilities. By continuing to meet the growing demand for these services, LENDs are reducing wait times for diagnostic evaluation and entry into intervention services. LENDs target underserved populations and their efforts are also helping to address disparities in early identification of autism and other developmental disabilities. Across the network, expertise is provided in almost every topic that might impact the lives of people with disabilities such as healthcare, education, disaster preparedness and response, and more. As disability is a natural part of the human condition at any age, our work supports families and neighbors in all our communities.

Accomplishments for 2018-19 include: (1) Preservice Training - 22 long-term trainees/fellows were trained in a comprehensive curriculum of coursework, clinical, and other practicum experiences in the disciplines of Audiology (3), Developmental Behavioral Pediatrics (1), Family (2), Medicine (1), Occupational Therapy (2), Physical Therapy (1), Psychology (5), Public Health Nursing (1), Speech Language Pathology (2), Self-Advocacy (2), Spiritual Care (1) and Social Work (1). In addition, 117 medium-term trainees/fellows participated in coursework, clinical practica, and other supervised projects. There also were 1,459 short-term trainees who participated in classes and clinical experiences, including expert lectures by JFK Partners faculty in 35 courses in other programs. (2) Continuing Education and Community Training - 54 events or webinars for 3,481 total participants. (3) Clinical Services - a) 63-multi-disciplinary team evaluations and single discipline evaluations; b) 144 young children, each of whom received multiple home visits; and, c) 44 individuals (children and parents) received school consultations and various other interventions. (4) Community Collaboration - Faculty reported a total of 49 consultation and technical assistance activities, with 637 participants. JFK Partners also serves as a resource for policymakers representing Colorado. (5) Research - 19 active projects that have research (or demonstration) as the primary purpose, as well as additional exploratory investigations for which funding is being sought. (6) Dissemination - faculty and staff authored 91 products, consisting of 29 refereed journal articles, 40 conference posters and presentations, three book chapters, 13 electronic/web-based products, four reports, and two fact sheets. For information is available at www.jfkpartners.org.

Kempe Center for the Treatment of Child Abuse and Neglect

Founded in 1972 by C. Henry Kempe, MD, the Kempe Center for the Prevention and Treatment of Child Abuse and Neglect is the oldest center of its kind promoting understanding, knowledge, and best practices to prevent and treat child abuse and neglect. Over the past 47 years since opening our doors, we have seen tremendous strides in the protection of children and support of families.

Kempe fulfills its mission through the four pillars of research and evaluation; training, technical assistance and education; clinical service delivery; and advocacy. Through our work across these four pillars, Kempe Center supports innovation in systems and communities that work with vulnerable children, youth, and families. The faculty and staff at Kempe number about 70 professionals.
In the past year, the Department of Pediatrics has assisted the Kempe Center by completing a search to replace recently retired Kempe Center Executive Director Desmond Runyan, MD, DrPH, adding Kathryn Wells, MD, on Feb. 1, 2019. She has initiated a strategic planning process which began with a culture and climate survey and will include retreat for all members of the Kempe Center, as well as strategic planning retreats for the Leadership Team.

Between Kempe’s medical and mental health clinical experts, we provided clinical expertise to professionals related to children across Colorado, as well as to children from Alaska, Wyoming, Idaho, Nebraska, Kansas, New Mexico, South Carolina, Florida, and Montana. Our child protection multi-disciplinary team provides medical evaluations and care for children with suspected physical and sexual abuse, injuries, sexual assault, failure to thrive, and neglect. The team participates in local and state child fatality review, and it provides expert consultation to law enforcement, child welfare agencies, and courts across the Rocky Mountain region. The 5280 Magazine recognized two of our physicians, Antonia Chiesa, MD and Andrew Sirotnak, MD, as among Denver’s top doctors. Kathryn Wells was appointed by the Colorado governor to serve on the Children’s Behavioral Health Subcommittee of the Colorado Behavioral Health Task Force. The mission of the Task Force is to evaluate and set the roadmap to improve the current behavioral health system in the state. This includes developing Colorado’s “Behavioral Health Blueprint” by June 2020, with anticipated implementation of recommendations starting in July 2020.

The Kempe Center has robust educational and training programs. The professionals at the Center are responsible for educating CU medical students, graduate students, pediatric residents, and post-doctoral fellows as well as practicing physicians, social workers, and mental health professionals across a number of programs, including one of only 31 Child Abuse Pediatrics Fellowship programs in the country. The Kempe Center houses the Colorado Child Welfare Training System, a strength-based, family-centered, competency-based training program for child welfare professionals and para-professionals that delivers specialized courses for caseworkers, supervisors, case services aides, foster parents and other child and family serving personnel. This training team was also awarded the opportunity to assist the athletic programs of the United States Olympic Committee through the development of a mandatory training program for the U.S. Center for Safe Sport. They will be designing, developing, and testing new training materials for sexual, physical and emotional abuse identification, investigation, and prevention in amateur athletic programs.

The Center also continues to be a national leader in research in the field of child maltreatment. Kempe researchers developed The Fostering Healthy Futures® Pre-Teen program (FHF), a 30-week prevention program for youth between the ages of 9-11 years old who are living in out-of-home care. FHF has a mentoring and skills group component to promote prosocial development and to decrease the adverse consequences of child maltreatment. Each youth is matched with a graduate student mentor who meets with them individually in the community to build on the child’s strengths and interests and to practice and integrate skills learned in the weekly skills group. Children’s interactions with their mentors provide a model of healthy relationships to which children can refer throughout their lives.

The Kempe Center’s Our Trauma Informed Practice Program is also currently working on developing two toolkits for COACT Colorado, based on the Statewide Trauma-Responsive Theory of Change and the Trauma-Responsive Schools Theory of Change. The Trauma-Responsive Schools Theory of Change Toolkit offers an action plan for implementing trauma-responsive practices to help address each school’s unique priorities using this Theory of Change. It contains guidance and recommendations based on the current research and the real-world experiences of teachers, administrators, staff, families, and communities. The toolkit is intended to integrate trauma-responsive approaches with other initiatives, procedures, and daily activities in the education setting.

Kempe Center faculty are helping multiple states evaluate their child welfare systems. This past year, the Kempe Center was named the independent evaluator for the Washington State Department of Children Youth and Families (DCYF) family strengthening project awarded to Health and Human Service’s Department on Children Youth and Families by the Administration for Children and Families (ACF). The Kempe Center has also been working under contract with Abt and Associates to assist ACF in establishing a Clearinghouse of evidence based practices to support the Federal implementation of The Family First Prevention Services Act (FFPSA).
Prevention is also one of our primary goals. SafeCare® Colorado at the Kempe Center and the Office of Early Childhood recently added two new SafeCare® Colorado sites in seven new Colorado counties. Kempe now oversees a total of 14 sites serving 42 counties and two Tribal Nations with 50 Parent Support Providers. SafeCare Colorado® is an evidence-based, in-home parent support program for families with children up to 5 years that provides caregivers with skills to address home safety, parenting and children’s health needs. Our version is the first to be developed and tested as primary prevention of neglect.

The Kempe Center, along with the Kempe Foundation, has also developed an agreement with the Haruv Institute in Jerusalem to support exchanges of faculty and students and to establish joint sponsorship of a new child maltreatment journal, published by Springer, that launched in the fall of 2018, The International Journal on Child Maltreatment: Research, Policy and Practice.

Kathryn (Kathi) Wells, MD, FAAP, Executive Director, Kempe Center for the Prevention and Treatment of Child Abuse & Neglect, Associate Professor and Section Head for Child Abuse and Neglect, Jack and Viki Thompson Endowed Professor of Pediatrics, Department of Pediatrics, University of Colorado School of Medicine, Andrew Sirotnak, MD, Professor and Vice Chair for Faculty Affairs Department of Pediatrics, University of Colorado School of Medicine Director, Child Protection Team, Deputy Director, The Kempe Center & Children’s Hospital Colorado, Mary Gangel, Communications and Community Relations Coordinator, The Kempe Center Website: www.kempecenter.org
Linda Crnic Institute for Down Syndrome

We are on a mission to improve the lives of people with Down syndrome. We use state-of-the-art, transformational research platforms to decipher the unique biology and disease spectrum of people with Down syndrome (DS). Our ultimate goal is to enable precision medicine approaches to improve health outcomes in DS, including the development of new diagnostic and therapeutic tools.

Founded in 2008, the Crnic Institute is led by Joaquin Espinosa, PhD, Executive Director, and Huntington Potter, PhD, Director of the Alzheimer’s Disease Program. The intramural faculty also include professors Kathleen Gardiner, PhD, Kelly Sullivan, PhD, and Michael Yeager, PhD, and are supported by an administrative team led by Monica Lintz, Director of Finance and Administration.

Each year, we award grants to qualified University of Colorado investigators from a wide variety of fields who want to apply their expertise to advance our understanding of DS. These Grand Challenge Grants are renewable $50,000-per-milestone awards meant to support extramural investigators until they can obtain independent funding for their DS research. In FY2019, we awarded CU faculty grants for nine different projects, adding to our tally of 71 awards, which have funded $6.4 million of DS research since the program’s inception in 2013. Altogether, the Crnic Institute’s intramural and extramural programs constitute the Crnic Supergroup, the largest geographical cluster of DS researchers in the world:

The Crnic Institute is also home to the most comprehensive cohort study of people with DS, called the Human Trisome Project. Launched in 2016, this project fuels a multi-dimensional biobank, enabling large pan-omics studies of DS in a way that has never before been possible. To date, the Human Trisome Project involves:

To learn more, visit us online at: www.crnicinstitute.org • www.trisome.org • Facebook and Twitter @CrnicInstitute.
Marcus Institute for Brain Health

The Marcus Institute for Brain Health (MIBH) was created in 2017 with a transformational gift from The Marcus Foundation. The institute provides specialty care for military veterans and retired elite athletes struggling with mild to moderate traumatic brain injuries, including concussion, and associated changes in psychological health.

MIBH provides innovative, interdisciplinary care through a three-day diagnostic evaluation involving neurology, imaging, physical therapy, speech and language pathology, neuropsychology, and other disciplines. This is usually followed by a three-week intensive outpatient program where these disciplines work with alternative therapies such as creative arts, canine, yoga, mindfulness, and others to create a personalized, holistic healing experience.

MIBH is led by James P. Kelly, MD, Executive Director, Wendi Pevler, Director of Finance and Administration, Daniel Wilkerson, Director of Special Projects, and Spencer Milo, Director of Veteran Relations. MIBH has its own staff of clinicians and therapists and is augmented by faculty from multiple schools on the Anschutz Medical Campus.

The MIBH team is honored to be serving America’s Veterans by building a TBI Center of Excellence where we are working hard to

- Provide state-of-the-art therapies and assist in the transition to civilian life;
- Investigate new and better ways to identify and treat TBI and its associated psychological health conditions;
- Advocate for better reimbursement for the care Veterans deserve; and
- Teach a new generation how to be world-class TBI care providers.

Additional information regarding the Marcus Institute for Brain Health can be found online at http://www.ucdenver.edu/anschutz/patientcare/marcusinstitute/Pages/marcusinstitute.aspx.

Movement Disorders Center

The Movement Disorders Center (MDC) had a landmark year under the guidance of Lauren Seeberger, MD, Center Director. Most notably, MDC was designated a Center of Excellence by the Parkinson’s Foundation and is now one of 34 Centers of Excellence in the United States and one of 48 sites internationally. MDC showcased its commitment to the criteria of a Parkinson’s Foundation Center of Excellence throughout the application process. These criteria include practicing the highest level of evidence-based patient care, conducting relevant research that serves patient priorities, leadership in professional training, and educating patients and the community through outreach programs.

The Movement Disorders Center continued to grow its clinics this year with the addition of Trevor Hawkins, MD and Michelle Fullard, MD, MSCE, and the addition of a new location in Fort Collins. Over 7,000 patients were seen in the past year.

Research encompassed 39 active studies with over 300 participants and 30 publications. Our annual Movement Disorders Center Pilot Grant program awarded three new grants totaling over $22,000. Please see the awardee list below for additional information on these grants. These awardees presented at MDC’s annual research retreat in June 2019 along with 10 other members of the Movement Disorders Center.

MDC 2018-2019 Pilot Grant Awardees

- Primary Investigator: Matthew Becker, MD, PhD Candidate, Department of Physiology & Biophysics, University of Colorado School of Medicine, Cerebellar-dependent motor learning during skilled reach behavior in mice
- Primary Investigator: Sean L. Hammond, PhD Fellow, Clinical Pharmacology, University of Colorado School of Medicine, Investigating the toxic effect cycle between microglia and alpha-synuclein aggregation in Parkinson’s disease pathogenesis
In October 2018, the center hosted its 5th Annual Parkinson Disease Symposium. This symposium was the largest to date with over 300 attendees. The 2nd annual Huntington’s Disease Patient and Family Education Conference was held in May 2019. Attendees were able to hear topics on medication management, art therapy, research, and caregiver “life hacks.” Additionally, the faculty gave 55 educational talks to patients, families, and caregivers, and 23 presentations to general neurologists and primary care providers in the community. Two editions of the MDC bi-annual newsletter reached approximately 300 households directly via mail and e-mail and an additional 150 households indirectly.

MDC 2018-2019 Leadership
Lauren Seeberger, MD, Associate Professor of Neurology, Movement Disorders Center Director, Director Parkinson’s Foundation Center of Excellence
Maureen Leehey, MD, FAAN, Professor of Neurology, Philanthropy Leader, Director Parkinson’s Foundation Center of Excellence, Movement Disorders Section Chief
Brian Berman, MD, MS, Associate Professor of Neurology, Research Leader, Investigator-Initiated
Michelle Fullard, MD, MSCE, Assistant Professor of Neurology, Research Leader, Multi-center Clinical Trials
Drew Kern, MD, MS, Assistant Professor of Neurology, Clinic Leader
Nicole Leith, MS, Movement Disorders Center Coordinator & Marketing Specialist, Outreach Leader

Neurotechnology Center

The mission of the Center for NeuroScience had been to foster the growth of basic and translational neuroscience research by establishing solid interactive basic, bioengineering, and clinical research bases within an environment that fosters interdisciplinary neuroscience research. From August 15, 2017, until June 30, 2019, the center was led by Sukumar Vijayaraghavan, PhD, and Associate Directors Jeffrey Bennett, MD/PhD, Angie Ribera, PhD, Ken Tyler, MD.

On July 1, 2019, the CNS was reorganized into the Neurotechnology Center (NTC), directed by Mark Dell’Acqua, PhD. The NTC mission is:
1) To support core facilities that provide School of Medicine investigators access to key, cutting-edge technologies that are essential for neuroscience research at the Anschutz Medical Campus; and
2) To work with School of Medicine departments to jointly recruit to the Anschutz Medical Campus neuroscience-focused faculty who emphasize development and/or application of novel technologies, with a goal of building strong collaborative, cross-disciplinary research teams.

Eight Anschutz Medical Campus departments have joined the NTC as members, representing both basic science and clinical programs. The NTC will continue to coordinate several campus cores as they transition away from the Rocky Mountain Neurological Disorders Core grant through an NINDS P30. The cores provide investigators with powerful transformative tools that allow them to incorporate cutting-edge approaches into their neuroscience research programs. These cores include: Optogenetics and Neural Engineering, Nanoscopy, and Behavioral and In Vivo Neurophysiology. For more information on the NTC, please visit our website: www.medschool.ucdenver.edu/CNS.
Perinatal Research Center

The Perinatal Research Center (PRC) at the University of Colorado Anschutz Medical Center is a leading center, nationally and internationally, for research in perinatal biology and medicine, including studies of maternal, placental, and fetal physiology. The PRC was built with funds from National Institutes of Health National Center for Research Resources and matching funds from the University of Colorado. Research at the PRC is funded by NIH grants and the Section of Neonatology in the Department of Pediatrics. Research at the PRC involves reproductive and developmental physiology, biochemistry, and molecular biology. Primary aims of the research are to better understand processes involved in fetal growth and development and the mechanisms that regulate such growth and development under normal and pathological conditions. **Paul Rozance, MD**, is the scientific director of the PRC. Rozance is the PI of a R01 Research Project Grant from the National Institute of Diabetes and Digestive and Kidney Diseases, currently in its ninth year, and is CO-PI of a R01 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, in its second year. Rozance is also the PI and Program Director of the NIH-NICHD T32 Training Program in Perinatal Medicine and Biology, which has been funding Neonatology fellows at the University since 1979. Collectively, PRC scientists hold five NIH R01 research project grants, 1 NIH K08 Career Development Award, and the NIH T32 Training Grant.

http://www.ucdenver.edu/academics/colleges/medicalschool/departments/pediatrics/research/programs/perinatal

Rocky Mountain Alzheimer’s Disease Center

The Rocky Mountain Alzheimer’s Disease Center (RMADC) provides standard and innovative clinical care to patients while advancing research into effective early diagnostics, preventions, treatments, and, ultimately, cures for Alzheimer’s disease and other neurodegenerative diseases and conditions. In the Memory Disorders Clinic of the RMADC, we assess and care for aging patients with late-onset Alzheimer’s disease, younger patients with early-onset Alzheimer’s disease, patients with non-memory Alzheimer’s disease, and patients with related dementias, thus serving as a premier, comprehensive Alzheimer’s disease center. Our state-of-the-art center continues to grow, helping even more patients, uncovering innovative solutions to Alzheimer’s disease, and supporting clinical, translational, preclinical, and basic science research aimed at improving the diagnosis, treatment, and prevention of Alzheimer’s disease and related dementias, including in people with Down syndrome.

The Director of the RMADC, **Huntington Potter, PhD**, is Kurt N. and Edith von Kaulla Memorial Professor of Neurology, Vice Chair for Basic Research in Neurology, and Director of the Alzheimer’s Disease Program for the Linda Crnic Institute for Down Syndrome. **Samantha Holden, MD**, is the new Director of the Memory Disorders Clinic. **Brianne Bettcher, PhD**, is the Director of Neuropsychology Research for the RMADC and has spearheaded a large observational study, called “Bio-AD,” which is focused on aging, both typical and non-memory predominant Alzheimer’s disease, and Alzheimer’s disease in people with Down syndrome.
Christopher M. Filley, MD, Professor of Neurology and Psychiatry, is Director of the Behavioral Neurology Section. Integral to both the RMADC clinical care and research are Professor of Neurology and Ophthalmology Victoria Pelak, MD, Associate Professor of Neurology and Psychiatry Jonathan Woodcock, MD, Assistant Professors of Neurology Brice McConnell, MD, and Peter Pressman, MD, and our Neurology Fellows Jakob Mrozewski, MD, Zachary Macchi, MD, and Isaiah Kletenik, MD. These clinicians are joined by a large team of RMADC clinical coordinators and laboratory researchers, including faculty, postdocs, graduate students, and research assistants.

The RMADC Memory Disorders Clinic, which saw a total of 2,736 patients last year, relocated and is now part of the Behavioral Neurology Clinics at Stapleton Medical Center, which also includes the Neurobehavior Clinic and the Neuropsychology Clinic and is staffed by five behavioral neurologists, one nurse practitioner, five neuropsychologists (including one primarily engaged in research), and one RN. Closely allied with the Memory Disorders Clinic is RMADC neuro-ophtalmologist/behavioral neurologist Victoria Pelak, MD, whose offices are located at the Anschutz Medical Campus.

The RMADC has continued its clinical trial to assess the safety and efficacy of Leukine as a treatment for mild-to-moderate Alzheimer’s disease. This year, eight out of the ten remaining subjects completed all phases of the three-week Leukine trial, and the final two subjects will complete the trial by the first week in December 2019. We anticipate beginning recruitment for the longer six-month efficacy trial for Leukine in January 2020. The RMADC also participated in the multi-site Biogen-sponsored EMERGE trial to evaluate the efficacy and safety of the drug aducanumab in subjects with mild cognitive impairment or mild Alzheimer’s disease until it was discontinued in March 2019 after it was determined to be unlikely to meet primary endpoints.

Importantly, in the past three and a half years, we have enrolled 142 individuals in an ongoing, prospective longitudinal study, called Bio-AD, which is following aging- and Alzheimer’s disease-related changes in a large cohort that will eventually include up to 400 aging adults and will offer new insights into the causes and progression of Alzheimer’s disease and related dementias while also informing the development of novel therapies. Using pilot data from the Bio-AD study, Brianne Bettcher, PhD, received both an NIH R01 grant, “Investigating the Contribution of Peripheral versus Central Nervous System Immune Dysfunction to Cognitive Aging,” and a Department of Defense Convergence Science Research Award, “An Investigation of Immune Biology and Alzheimer’s Disease-Related Biomarkers in Asymptomatic, Late Life Mild Traumatic Brain Injury.” Victoria Pelak, MD’s North American Neuro-Ophthamology Society-funded study of retinal optical coherence tomography in Alzheimer’s disease, which investigates the relationship of amyloid, cortical volumes, and visual fields, also relies on the Bio-AD cohort. Many other RMADC investigators are also using the Bio-AD cohort for their clinical research studies.

The University of Colorado Department of Neurology Lewy Body Dementia Association Research Center of Excellence (RCOE), which is directed by RMADC members Victoria Pelak, MD, and Samantha Holden, MD, was renewed this year. The CU RCOE will be hosting the 2019 Michael K. Cooper Neuropsychiatry Conference in December 2019, providing a half-day education event on Lewy Body Dementia for community members. Two clinical trials of novel cognitive enhancing drugs for Lewy Body Dementia will be active at CU by the end of the year.

Members of the RMADC Laboratory are also continuing to screen a collection of drugs that have been previously tested in phase I-III clinical trials for other indications, and thus have known safety profiles, for their ability to inhibit critical steps in the Alzheimer’s disease pathogenic pathway, in preparation for preclinical animal studies, and if those are successful, for human trials. They have recently expanded the collection of drugs they are screening in a new collaboration with the CU Anschutz High-Throughput Screening and Chemical Biology Core.

Over the last year, members of the RMADC received grant funding from the National Institutes of Health, the U.S. Department of Defense, the Alzheimer’s Association, the Colorado Clinical and Translational Sciences Institute, the Foundation for Women’s Wellness, the Benign Essential Blepharospasm Research Society, Fight for Sight, and NASA for innovative studies of Alzheimer’s disease and other related neurodegenerative diseases, traumatic brain injury, and healthy brain aging. In addition, the RMADC has received over $1 million in philanthropic gifts and pledges, and $500,000 from the State of Colorado.
Members of the RMADC published their research in many journals, including:


RMADC members presented their latest research findings at many scientific meetings this year, including at the Alzheimer’s Association International Conference, the American Neuropsychiatric Association Annual Meeting, the Trisomy 21 Research Society International Conference, and the American Academy of Neurology Annual Meeting. Members of the RMADC received many awards in 2019. Christopher M. Filley, MD, was named a 5280 Magazine Top Doc in 2019. Victoria Pelak, MD, was selected for the American Academy of Neurology Transforming Leaders Program 2018-2019, and she was also elected to a two-year term on the Executive Committee of the International Society to Advance Alzheimer’s Research and Treatment Professional Interest Area: Atypical Alzheimer’s disease and Associated Syndromes.
Members of the RMADC gave over 60 presentations to scientific, medical, and lay audiences, and several reports related to our research have appeared in the media, including in the Washington Post and the Denver Post, and in several special reports on local news channels.

The RMADC continues to focus community outreach activities toward underrepresented populations. A study group that began in 2018, called Boot Camp Translation, was renamed the African American Advisory Committee, with 18 participants. These volunteers represent the RMADC at community events such as block parties and health fairs, encouraging friends and neighbors to become more informed about Alzheimer’s disease and other dementias. They also offer panel presentation, inspiring listeners with their personal experiences as family members and care providers, educating audiences about dementia, and encouraging people to participate in RMADC research.

medschool.ucdenver.edu/rmadc

Rocky Mountain Taste and Smell Center

The Rocky Mountain Taste and Smell Center includes scientists from multiple disciplines who work together on studies of the chemical senses including taste and smell, and on chemical irritation of the oral and respiratory passageways. The overall goal of the center is to facilitate research by providing communal resources and by bringing together productive investigators in the chemical senses and allied senses of hearing and balance. The center, under the leadership of Diego Restrepo, PhD, and Thomas Finger, PhD, embraces work from 17 laboratories spread across five departments of the School of Medicine along with investigators from the School of Dental Medicine and the University of Denver. While the center provides direct support for infrastructure and multi-user research facilities, the underlying research is supported by more than 25 research and training grants from the National Institutes of Health totaling more than $5 million. Investigation of disorders of the senses of taste and smell is enhanced by cooperation and collaboration with the Sinus Clinic of UCHealth University of Colorado Hospital and the Department of Otolaryngology.
The University of Colorado Cancer Center (CU Cancer Center) is the only National Cancer Institute (NCI)-designated comprehensive cancer center in Colorado and has the distinction of also being a consortium cancer center. Nearly all academic researchers who participate in cancer-related basic, translational, clinical, population, and behavioral research in Colorado are CU Cancer Center members. This statewide inclusiveness of cancer researchers and academic institutions provides a scientific breadth and depth that strengthens the CU Cancer Center’s comprehensive cancer research and clinical care activities. The CU Cancer Center stands as a unique organization and resource in Colorado and surrounding region in cancer research, clinical care, prevention, and outreach.

The **Vision** of the CU Cancer Center is to prevent and cure cancer. Together.

The **Mission** of the CU Cancer Center is to unite our community to overcome cancer through innovation, discovery, prevention, early detection, multidisciplinary care, and education.

The Cancer Center’s history begins with the award of an NCI Cancer Center Support Grant in 1987, resulting in a clinical cancer center designation. The Cancer Center achieved comprehensive status in 1997, and a formal consortium designation was conferred in 2005. The consortium comprises six organizations that include three academic institutions, and three affiliated hospitals. The institutions bring notable research strengths and diverse clinical populations that provide the tools and materials for the pursuit of the CU Cancer Center’s vision and mission.

In 2013, the CU Cancer Center was elected as a member of the National Comprehensive Cancer Network (NCCN) and went from unranked to a top 50 cancer center over the past six years according to *U.S. News and World Report*. In February 2015, the CU Cancer Center joined the Oncology Research Information Exchange Network (ORIEN), a research partnership among top U.S. cancer centers that is designed to facilitate discoveries in precision medicine by CU scientists. In 2016, the center’s leadership, working closely with institutional legislative officials, persuaded the Colorado General Assembly to provide an annual allocation of approximately $1.7 million in Tobacco Master Settlement funds to the Anschutz Medical Campus to support cancer research.

**Richard Schulick, MD MBA,** was appointed Director of the Cancer Center July 1, 2018. He is the third Director to lead the center in its 30-year history. Schulick is a nationally recognized surgeon specializing in hepatopancreatobiliary and gastrointestinal malignancies and the use of immunotherapy to eliminate tumor burden. He earned his MD and MBA from Johns Hopkins University and was recruited to the CU School of Medicine in 2012 to serve as the Chair of the Department of Surgery. He is the author of more than 300 articles, book chapters, and other publications, and the principal investigator on multiple studies and clinical trials, including a study targeting CD112, a protein involved in the body’s ability to fight cancer. With Barish Edil, MD, Dr. Schulick pioneered the use of the laparoscopic Whipple at CU, one of the most advanced minimally invasive techniques in surgery of the pancreas.

**Key Goals** for this next era are

- Become a top 10 cancer center
- Develop top programs in
  - Tumor immunology;
  - Sarcoma research;
  - Basic cancer mechanisms;
  - Cancer prevention and control; and
  - Pediatric oncology
- Extend community engagement activities to the reduce the burden of cancer for all Coloradoans

![Tracy Lyons, PhD, examining breast cancer tissue under microscope, courtesy of @Colorado.cancer Instagram.](image)
The center fosters cancer-focused research, in part through the creation of formal scientific research programs. A program comprises the activities of a group of investigators who share common scientific interests and goals and participate in competitively funded research. Programs are highly interactive and lead to exchange of information, experimental techniques, and ideas that enhance the individual productivity of scientists and often result in collaborations and joint publications. Ultimately, the success of a program is measured by scientific excellence and the emergence of productive collaborations.

Over the past year and with the encouragement of the NCI, the CU Cancer Center revised its programs to better reflect the direction of cancer research and foster greater synergies across investigators in different disciplines. The new structure consists of four programs, rather than six, all of which are organized around mechanistic themes in cancer research. With the implementation of the revised structure, the CU Cancer Center introduced several new Program Leaders to foster continued excellence and cross-fertilization among Center members.

<table>
<thead>
<tr>
<th>Basic Sciences</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular &amp; Cellular Oncology (MCO)</td>
<td>Joaquin Espinosa, PhD, Tin Tin Su, PhD*</td>
</tr>
<tr>
<td>Translational and Clinical Sciences</td>
<td></td>
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<tr>
<td>Tumor-Host Interactions (THI)</td>
<td>Jennifer Richer, PhD*, Michael Verneris, MD*</td>
</tr>
<tr>
<td>Developmental Therapeutics (DT)</td>
<td>Lia Gore, MD, Dan Gustafson, PhD, Antonio Jimeno, MD, PhD</td>
</tr>
<tr>
<td>Population Health</td>
<td></td>
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<tr>
<td>Cancer Prevention and Control (CPC)</td>
<td>Myles Cockburn, PhD, Rajesh Agarwal, PhD</td>
</tr>
</tbody>
</table>

*New leader.
CU Cancer Center Consortium Organization (NCI-Defined)

**Academic Institutions**
University of Colorado Denver (CU Denver)
University of Colorado Boulder (CU Boulder)
Colorado State University (CSU)

**Affiliated Hospitals**
UCHealth University of Colorado Hospital (UCH)
Children’s Hospital Colorado (CHCO)
VA Eastern Colorado Health Care System (ECHCS)

**Facts**

**Membership**
- 231 Full members
- 47 Mentored members
- 68% of members are in the School of Medicine (SOM)

**Research Portfolio**
- 555 cancer related publications
- $74.9M direct costs in annual cancer-relevant sponsored research funding
- $51M (68%) held by members in the SOM

**Clinical Portfolio**
- 2,587 accruals to all types of human subject protocols
- 778 accruals to intervention treatment protocols

Investments by the CU Cancer Center - $10.6M (July 2018 – June 2019)
- Recruitment/Retention support for 12 faculty including E Davila, B Wilky, S Ramachandran, N Mukherjee, K Sullivan, M Rincon, C Lieu, S Kim, P Dahia/R Aguiar, and S Karam in the SOM; and E Borrayo and C Bradley in SPH
- Shared Resource development support including the addition of a self-sorter to the Flow Cytometry SR; upgrades to the 600 MHz NMR in the Structural Biology SR; member subsidies when using the Proteomics and Metabolomics SRs; and support for the development of an image-guided precision irradiator SR (S Karam) and an organoid SR (P Dempsey)
- Grant program commitments including support for the LLS SCOR grant (C Jordan); for a new NCI R25 award (M Reyland & J Tentler); additional support for the Cancer Biology T32 (M Reyland); as well as commitments to the renewal of the ACS IRG (J Richer & J Tentler) and UM1 (W Messersmith) awards
- Other Programmatic Investments including a commitment to develop a new joint-pilot project program with the Boulder campus; hiring of a Cancer Center-dedicated analyst in the Health Data COMPASS team; and support for a strategic planning engagement

Cancer Center Members’ Cancer-Relevant Research $s by Sponsor Type*

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Direct Cost $s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer Center Support Grant</td>
<td>2,894,449</td>
</tr>
<tr>
<td>NCI</td>
<td>18,574,317</td>
</tr>
<tr>
<td>Other NIH</td>
<td>21,137,417</td>
</tr>
<tr>
<td>Other Peer-Reviewed</td>
<td>6,658,664</td>
</tr>
<tr>
<td>Industry</td>
<td>16,234,326</td>
</tr>
<tr>
<td>Other Non-Peer Reviewed</td>
<td>9,359,691</td>
</tr>
<tr>
<td>Grand Total</td>
<td>74,858,864</td>
</tr>
</tbody>
</table>

*As reported to the NCI Dec. 2018

James DeGregori, PhD, Deputy Director of Cancer Center. Photo courtesy of @Colorado.cancer Instagram.
Distinguishing Characteristics

- Only NCI-designated Comprehensive Cancer Center in Colorado
- NCCN member, one of 27 elite cancer centers
- ORIEN Personalized Medicine Network member
- Includes nearly all academic NCI-funded cancer researchers in the State of Colorado.
- Includes UCH Health University of Colorado Hospital, which is ranked among the top 50 hospitals in the US for cancer
- Includes the 9th ranked pediatric cancer program in the US (Children’s Hospital Colorado 2018-19 USNWR rankings)
- Includes the second-ranked veterinary school with the top animal cancer center in the nation (CSU Flint Animal Cancer Center)

Major Accomplishments 2018-2019

- New Director (R. Schulick) appointed to lead the CU Cancer Center
- Significant new investment by UCH Health University of Colorado Hospital and the CU School of Medicine in the Cancer Center to propel the center to new heights
- Recruitment of E Borrayo, PhD, to serve as the inaugural of Associate Director for Community Outreach and Engagement
- Recruitment of E Davila, PhD, to serve as Associate Director for Education
- Recruitment of S Farmer, MHA, to serve as the Associate Director for Administration and Finance
- Remarkable progress in the development of therapeutics to treat elderly patients with AML based on work from the C Jordan (MCO) lab and a clinical trial overseen by D Pollyea (DT) (NCT01994837) in which venetoclax was combined with 5-azacitidine. The outcome of the trial led to the development of two new IITs to further test the combination therapy for broader use in AML (NCT03466294 and NCT03573024). In all, these studies lead to FDA approval of this therapy in November 2018 which will significantly improve outcomes for patients with AML. (PMID: 30361262; PMID: 30423294; PMID: 30420752)
- Demonstration by the H. Ford (THI) and R. Zhao (MCO) labs of the Eya3 phosphatase’s potential to promote immune suppression in breast cancers. The research was supported by two R01s (CA221282 and NS108296). (PMC5983346 and PMC5849647)
- Recent research and trials from R. Doebele (DT), D. Aisner (DT), R. Camidge (DT) and collaborators have led to the development of new targeted treatments for ALK+, TRK+ and ROS1+ lung cancers, new methods for detection of associated chromosomal rearrangements, and improved understanding of mechanisms of innate and acquired resistance. (PMID: 30280657; PMC5857389; PMC6157019; PMC6050099; PMC545456)
- L. Gore (DT) led an international trial at over 80 pediatric centers world-wide that demonstrated dasatinib as a safe, effective treatment of pediatric chronic myeloid leukemia in chronic phase in children, with good safety profiles. Progression-free survival by 48 months was 78% and 93% in the imatinib-resistant/intolerant and newly diagnosed CML-CP groups, respectively. Dasatinib is now considered a standard of care for pediatric CML. (PMCS5929218).)
- L. McKenzie (CPC, Mentored Member) developed methods of estimating the intensity of oil and gas operations in Colorado (Allshouse 2017, PMID 28715172), and applied those methods to our understanding of the potential risks for childhood cancers in the region. She built a case for substantial health risks of ambient nonmethane hydrocarbon exposures resulting from oil and gas exposures, particularly for the development of childhood cancers (McKenzie, 2018 PMID 29584423)

Twenty-three new members to the CU Cancer Center in the past 12 months including

- Full Members: S Bull PhD MPH (CPC); M Del Chiaro MD PhD (CPC); K Hutchison PhD (CPC); S Kim MD MPH (CPC); J Samet MD MS (CPC); B Wilky MD (DT); L Bao PhD (THI); L Berg PhD (THI); E Davila PhD (THI)
- Mentored Members: J Cataldi MD (CPC); S Patel MD MS (CPC); S Tevis MD (CPC); B Corr MD (DT); M Ewalt MD (DT); J Sopfe MD MS (DT); K Benam PhD (MCO); R Morgan MD MS (MCO); N Mukerjee PhD (MCO); S Ramachandran PhD (MCO); B Vobeli PhD (MCO); M Kamdar MD (THI); S Mitra PhD (THI); P Norman PhD (THI)

Twenty-one new and renewal NCI and other cancer-specific sponsored awards since July 2018 including:

- 11 new R01s (M Borden; C Bradley & M Perraillon; H Ford & M Lewis; N Foreman; B Haugen; M Laudenslager & C Bradley; R Nemenoff & J Thurman; R Rochford & N Robert; J Slansky; J Wang; and E Wellberg)
- 1 new R03 and 1 new R21 (T Hankinson; L Barlow)
1 new K08 and 1 new K99 (E Shagisultanova; Y Zhang)
An NIH Director’s New Innovator Award granted to S Spencer titled Proliferation-Quiescence Control in Single Cells: Integration of Mitogen, Nutrient, and Stress Signaling (DP2CA238330)
A new T32 in Cancer Immunotherapy and Experimental Therapeutics (CIET) awarded to A Jimeno and C Jordan (T32CA236374)
2 new U01s – one for developing CAR-T cell therapy for high-risk pediatric acute leukemias (T Fry, U01CA232486); and one for optimizing novel immunotherapy combinations targeting the tumor microenvironment in canine spontaneous osteosarcomas (S Dow, U01224182)
Renewal by A Elias of the CU Cancer Center’s status as a Lead Academic Participant Site under the NCI’s National Clinical Trials Network (UG1CA233324)
A DOD Lung Cancer Research Program (LCRP) Translational Research Partnership Award granted to L Heasley and R Doebele to investigate TKI-induced inflammatory signaling as a modulator of initial therapeutic response (W81XWH-19-1-0220 and W81XWH-19-1-0221)

University of Colorado Hearing and Balance Clinic

The University of Colorado Hearing and Balance Clinic is a program of UCHealth University of Colorado Hospital (UCH) and the Department of Otolaryngology at the University of Colorado School of Medicine.

Our vision:
Hearing and balance health for all.

Our mission:
Improving hearing and balance health for individuals, families, and communities. We advance hearing and balance healthcare for all using a personalized, comprehensive, and evidence-based approach.
We take a "cradle-to-grave" approach to hearing and balance health. We work with the youngest of children, performing infant hearing and early intervention programs, to the oldest of adults. The center also provides the following:

Clinical services that are available at three sites, UCHealth University of Colorado Hospital, Boulder Health Center, and Lone Tree Health Center
• Hearing assessment across the lifespan
• Otologic and neurotologic services
• Speech and language testing and therapy
• Vestibular (balance) testing
• Vestibular rehabilitation (canalith reposition maneuver)
• Implantable hearing devices (cochlear implants, osseointegrated devices)
• Hearing aid and assistive listening devices
• Tinnitus evaluation and management
• Telehealth services
• Facial nerve disorders evaluation and management
• Skull base surgery center and the CU Acoustic Neuroma Program
• Newborn Hearing Screening

Consumer and Outreach Programs
• Consumer seminars
• Continuing education seminars

Professional Conferences and Training Activities
• Midwinter Otolaryngology Update Conference
• Advanced Practice in Hearing and Balance Symposium
• Distance learning
• Otolaryngology residency training
• Audiology graduate extern training
• International scholar fellowship
• Medical student clerkship
• National and international presentations
• UCHealth Cochlear Implant Day

Research Programs
• NIH T-32 research training grant for physician and scientists
• Implantable hearing devices outcomes
• Blast injury to inner ear and its mitigation
• Development of new devices for assessing hearing and ossicular chain movement
• Cochlear implant candidacy and optimizing hearing outcomes
• Stem cells and regenerative therapies for hearing loss
• Sound quality perception in hearing aid users
• Clinical speech in noise assessment for non-English speakers
• Assessment of listening fatigue in new users of cochlear implants
• Contribution of aging to changes in the sound localization pathway

Program Website: https://uchealthhearingandbalance.org/locations/

Program Accomplishments
• First Annual Hearing and Balance Clinics Cochlear Implant Day
• New patient-centered event focusing on cochlear implantation with industry support and attended by over seventy individuals
• Booth at the CU Anschutz Block Party
• Hiring three new audiologists at two locations
• Hiring six audiology techs at two locations
• Continued growth of our cochlear implant program with 84 cochlear implants in 2018
• Introduction of the new Med El Bonebridge bone conduction hearing aid and implantation, the first one in the Denver area
• Service in local, state, regional and national organizations, including leadership positions: Cory Portnuff, AuD, PhD, as the President of the Colorado Academy of Audiology, Samuel Gubbels, MD, as an oral board examiner for the American Board of Otolaryngology
• >20 lectures, scientific presentations and abstracts presented in the 2018/2019 academic year

Senior Leadership - University of Colorado Hearing and Balance Clinic
Herman Jenkins, MD
Professor and Chair, Department of Otolaryngology

Samuel Gubbels, MD
Director, University of Colorado Hearing and Balance Center
Associate Professor, Department of Otolaryngology

Melinda Anderson, PhD, CCC-A
Director of Audiology, UC Health
Assistant Professor, Department of Otolaryngology

Additional information is available at http://www.medschool.ucdenver.edu/otolaryngology
Webb-Waring Center (WW) continues basic and translational investigations of inflammation and immunologic mechanisms that contribute to health and disease. This unifying focus fits the stated mission of the WW which is “to conduct and teach innovative biomedical research that improves understanding, treatment and prevention of diseases worldwide.” Led by John E. Repine, MD, the Waring Professor of Medicine, Pediatrics, and Surgery, WW’s integrated research projects are gaining a better understanding of the causes, diagnosis, treatment, and prevention of common disorders like the Acute Respiratory Distress Syndrome (ARDS), diabetes, multiple sclerosis, atherosclerosis, traumatic brain injury, and macular degeneration. Many of these efforts are also directed to learning about the importance and finding ways to combat the effect of aging on well-being and disease progression. WW’s research endeavors are also heavily focused on developing translational discoveries that have more immediate application to human health care. This orientation has led to the patenting and development of several innovations by Repine that are being supported by the Knoebel and Bonfils-Stanton Foundations. David Wagner, PhD, has secured competitive grants from the NIH Small Business Research program and the Gates Grubstake programs to advance new technologies.

WW also has an active, highly competitive training programs for undergraduate and medical students who are interested in learning about biomedical research. The WW Colorado Undergraduate Summer Program (CUSP) that was founded and directed by Repine has become nationally prominent. More than 100 top undergraduate students from more than universities nationwide apply yearly to the CUSP summer program. Following a competitive selection process, about 20 interns — half of them meeting diversity designations — are selected from Princeton University, the University of Notre Dame, University of California, San Diego, Stanford University, Williams College, Baylor University, University of Denver, University of Colorado, University of Oregon, Colorado State University, and other prestigious schools nationwide. CUSP is supported by Repine’s recently renewed five-year undergraduate diversity training grant from the NIH, the North Foundation, endowments established by Brian Fitzgerald, and generous donors. Diverse students from other programs also participate in the research training program. At the end of the summer, all students present their research in a formal campuswide poster session. WW trained students hold promise for becoming better physicians and scientists and contributing to the future of medicine and biomedical research. Repine won the Outstanding Mentor Award from the University of Colorado for his leadership in these pipeline programs.

http://www.ucdenver.edu/academics/colleges/medicalschool/centers/WebbWaring/Pages/WebbWaringHome.
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Vice Chancellor for Health Affairs

Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
The mission of the Colorado Area Health Education Center (AHEC) is to improve quality and accessibility of health care throughout the State of Colorado. We seek to increase the quantity and diversity of the healthcare workforce providing care in rural and underserved communities. We respond to the needs of Coloradans who seek to live a long and healthy life.

Colorado AHEC is jointly funded by a federal grant from the Health Resources and Services Administration (HRSA) and the Vice Chancellor for Health Affairs. Colorado AHEC is currently celebrating its 42nd year of continuous operation.

Colorado AHEC received new five-year funding from HRSA in 2017. HRSA directs us to concentrate on these areas of need:

- **Diversity**: Increase the potential for secondary, college, and health profession students from underrepresented populations, educationally disadvantaged, and rural backgrounds to successfully pursue a health profession career with an emphasis in public health;
- **Distribution**: Increase the potential for health profession students in medicine, dentistry, nursing, pharmacy, public health, and allied health to practice in a rural or urban underserved community by immersing them in rural or underserved community experiences through community-based education training programs, field placements, and interprofessional education and training; provide access to evidenced-based health information, accredited high quality continuing education programs and support for health professionals serving in rural and medically underserved areas in Colorado; and,
- **Practice Transformation**: Facilitate and support practice transformation of Colorado’s health care system by promoting a patient-centered approach, addressing social determinants of health through a team-based, data-centered approach with a focus on improving quality and community health outcomes in rural and medically underserved areas.

Colorado’s AHEC system is composed of a program office located on the Anschutz Medical Campus and six regional offices (Centennial, Central, San Luis Valley, Southeastern Colorado, Southwestern Colorado, and Western Colorado). The six regional AHECs receive oversight from the program office, which partners with the School of Medicine, School of Dental Medicine, College of Nursing, and Skaggs School of Pharmacy and Pharmaceutical Sciences, as well as the School of Medicine’s Physical Therapy and Child Health Associate/Physician Assistant programs, to meet the objectives of the HRSA grant.

**Colorado AHEC Program Office Leadership**

**Josina Romero O’Connell, MD** is an assistant professor in the Department of Family Medicine in the School of Medicine. She is a clinician for Denver Health’s Montbello Clinic and the Director of the Healthcare Interest Program (HIP), an undergraduate pipeline program through Denver Health and partnering with University of Colorado Denver, Metro State University of Denver, and Regis College. She is on faculty at each of these universities. She serves as PI on the HRSA grant and Co-PI for the Discover Health/Descubre La Salud NIH SEPA grant. She is working with the School of Medicine LIC program to develop rural LIC sites and is on faculty supporting the Rural Track Program. As a former 17-year veteran public secondary school teacher, her work’s emphasis is on educating and delivering care in underserved health care throughout Colorado, a main mission for the Colorado AHEC program.

**Cynthia Armstrong PT, DPT, CHT**, who holds an appointment with the SOM Physical Therapy program as a Senior Instructor was also a part-time employee of AHEC until April 30, 2019. Armstrong was overseeing housing for health professions students on the Anschutz Medical Campus when completing rural rotations and provided interprofessional training, coordination, and oversight for health screenings at the National Western Stock Show and the Colorado State Fair. In addition, she coordinated the biannual interprofessional ECER (Engaging Communities in Education and Research) rural health conference, and was a Co-PI for the Discover Health/Descubre La Salud NIH SEPA grant.

**Matthew Hess** who joined AHEC in February 2017 as the grant development and marketing coordinator continues as Associate Director for Colorado AHEC. Matt has been an educator for his entire career. He oversees AHEC’s pipeline programs including the AHEC Careers Exploration Program, designed to provide rural and underserved students with a chance to learn more about the many careers available in health care and the paths to these careers.
He is overseeing the on-going development and implementation of AHEC Scholars, a HRSA program initiative new to this funding cycle that connects students in health careers programs around the state in an effort to build skills in team-based healthcare. This year, he oversaw a one-year supplemental award dedicated to addressing the opioid crisis. In partnership with the Rocky Mountain Public Health Training Center and the Patient Navigator Training Center, both housed in the Colorado School of Public Health, he developed a free eight-hour online training module available for those who consider themselves a community health worker in Colorado. This is available at www.oudchw.co. Additionally, he oversees programs such as the Cadaver Experience and our annual Advisors Day that bring students and career counselors to this campus.

Willa Buswell has more than 20 years of experience in office administration and management, budget oversight and reconciliation, grant administration, and community programs. She has been the Administrator of the Colorado AHEC Program office since August 2013. Prior to that, she was the administrator of the CU School of Medicine, Office of Admissions for eleven years and administered all aspects of the application process from pipeline programs through matriculation.

Samantha Hanson has over 25 years of experience in high level Information Technology development and oversight primarily in healthcare and medical education. Previous to the transfer into information technology, she was at the leading edge of applied molecular biology for five years. For the last four years, Hanson has been instrumental in designing and developing the Salesforce platform database for Colorado AHEC, which is used by all six regional AHECs and the program office. This database is used to collect, analyze, and report all activities and clinical housing rotations for the current HRSA grant as well as all other private grants. Hanson serves as evaluator for the current HRSA grant and works to design and implement the evaluation and provide the technical support necessary for the tools used.

Patti Jo Wagner has over 20 years of experience in customer service, project management, event management, and administration for many public, private and non-profit entities. Her work has ranged from initiation and coordination of educational programs, special events, volunteer outreach to administration and support of executive level staff. She is currently the Clinical Education Program Coordinator for the Colorado AHEC state Program Office and is the COAHEC Housing Coordinator. She also coordinates our National Western Stock Show and State Fair volunteer outreach and is the AHEC biennial conference coordinator/lead.

AHEC Accomplishments during 2018-19

- Provided funding for the six regional AHEC offices across Colorado to run programming. This programming reached participants from at least 49 counties, totaled 4,440 contact hours and reached nearly 63,000 Coloradans in medically underserved and rural communities.
- Provided 24,694 total nights of housing for health professions students serving clinical rotations away from the Anschutz Medical Campus.
- Conducted training events for 77 Colorado faculty and pre-health advisors who advise nearly 15,000 high school, and two- year and four-year college students.
- Conducted interprofessional community engagement events including free health screenings, and flu shots at the National Western Stock Show, for nearly 1,000 adults and children. In addition, August 2019 will be our third year that Colorado AHEC provides health information and free health screenings for over 300 adults and children at the Colorado State Fair in Pueblo.
- The AHEC Career Exploration Program (ACEP), supported by a grant from the Daniels Fund, provided a free yearlong opportunity for 132 Colorado high school students with representation from all 6 AHEC regions. The students and their parents participated in at least seven of eight two-hour monthly meetings during the 2018-2019 school year. Sixty students who completed the curriculum then attended a free week-long summer camp in July 2019. Students were housed on the CU Boulder Campus and participate in activities held at CU Boulder and Anschutz Medical Campus for hands-on experiences associated with health careers. In addition, current health professions students volunteered as mentors. This was a successful experience for these high school students, who received a solid introduction to health professions.
- The Cadaver Experience/Obesity project continues to provide a memorable experience for over 600 high school and community college students. This experience also provides teaching experience for students in the Master of Modern Human Anatomy program as they serve as the cadaver instructors.
The Discover Health/Descubre la Salud program, is in its seventh year of an NIH SEPA grant now in a no-cost extension. It has involved a traveling interactive bilingual library health exhibit and has reached such Colorado communities as Sterling, Evans, Aurora, and Pueblo. This program’s community outreach focuses on bilingual English/Spanish education for adults and children with emphasis on obesity, diabetes and cardiovascular disease. It is focused on strengthening partnerships between the regional AHEC offices and the local libraries to provide health education to rural and underserved communities in Colorado. We look forward to our final exhibit at the Penrose Public Library in Colorado Springs. The exhibit will run there in fall 2019. We hope to extend our partnership with SEPA and the NIH on future collaboration involving library education in Colorado.

The biennial COAHEC ECER (Engaging Communities in Education and Research) Conference was held in the Breckenridge Beaver Run Conference Center in September 2018. This interprofessional conference hosted approximately 450 providers and community members from across Colorado for a weekend of continuing education and research. In addition to faculty and preceptors invited by the Schools on the Anschutz Medical Campus, AHEC welcomed the Colorado Rural Health Connectors, EvidenceNow Southwest as well as SNOCAP, CCTSI and PACT in addition to colleagues associated with Rocky Vista University, Red Rocks Community College PA program, and Regis University who are committed to supporting rural health or underserved initiatives. We held 29 sessions and awarded nearly 600 CEUs to 394 health professionals from rural, primary care and medically underserved communities.

The AHEC Program office continued to provide support and grant management for the Urban Underserved Track. The track provides students with the skills and support needed to become healthcare providers who are committed to work in urban underserved communities.

The AHEC Scholars Program is an interdisciplinary education and training program with curricula focused on rural and/or underserved populations. We have designed curricula to supplement existing health professions programs. This program is available to students in many programs dispersed throughout the state. Most AHEC Scholars will complete this program in the last two years before graduation from their undergraduate, training, or certification programs. Students in programs lasting less than 2 years will complete a modified one-year curriculum. Each year includes:

- 40 hours of training in a rural and/or underserved area. Training will be interprofessional, community based, and in a rural and/or underserved area.
- 40 hours didactic education focused on five national core topic areas Interprofessional Education, Behavioral Health Integration, Social Determinants of Health, Cultural Competency, and Practice Transformation, as well as six issues identified as important to healthcare in Colorado: the Opioid Epidemic, Marijuana, Oral Health, Access to Mental Healthcare, Suicide, and Oil and Gas Development.
- We enrolled 89 students into our first Cohort. Cohort II began in July 2019.

Since May 2019, we have enrolled 100 and graduated 25 people from a free, online, self-paced training for those working on the front lines of the opioid crisis. Trainees gain knowledge in treatment, recovery, harm reduction, and conducting outreach programs in their communities. In its entirety, this course will take about nine hours to complete. The course is available for free. It is designed for individuals who are working in their community to improve health, for example, someone with a job title of “Community Health Worker” or peer navigators, nurses, librarians, bus drivers. Training can also include family members or friends whose loved ones are at risk of or with a substance abuse disorder. Curriculum access can be found at: www.oudchw.co

AHEC maintains many collaborative relationships with other organizations and programs whose goals complement the AHEC mission. These include:

- Echo Colorado, which develops clinical learning communities to share knowledge across distances and disciplines.
- Colorado Health Extension System (CHES), which coordinates and facilitates practice transformation activities across Colorado.
- Colorado Consortium for Prescription Drug Abuse Prevention
- Rocky Mountain Public Health Training Center
- Patient Navigator Training Center
- Anschutz Marketing and Recruiting Collaborative
- National Institute of Medical Assistant Advancement
- SNOCAP
- CCTSI
Looking ahead to 2018-19

AHEC looks forward to supporting more pipeline programming for underrepresented individuals to find success in becoming the next generation of health care providers. The eventual goal of pipelines supported through AHEC will be K-16 with an emphasis on statewide reach and pipeline integrity.

HRSA has mandated that AHEC Scholars engage in 40 hours of didactic learning each year for two years. HRSA also mandates that the learning take place in five core topic areas, as well as a in a set of current and emerging topic areas. AHEC has found or developed online learning modules for the core topic areas of Practice Transformation, Integrated Behavioral Health, and Inter-Professional Education. We have developed and launched part of a module combining Social Determinants of Health and Cultural Competency. We have also found or developed curriculum for some of our current and emerging topics: Opioids, Oral Health, and Oil and Gas Extraction. In the fall 2019, we will find or develop the rest of the Social Determinants of Health and Cultural Competency module, which we are calling Health Equity. We will find or develop modules on Suicide Prevention and Marijuana. Additionally, we will determine if a separate Access to Mental Health Care module is needed or if we are comfortable that the Integrated Behavioral Health Module provides the needed information.

COAHEC will be hiring a new Office Administrator following Willa Buswell’s retirement in December 2019. Her job will be posted the beginning of September 2019 with the hire to start November 1, 2019. The new hire will be trained by Buswell in a 2-month overlap period.

In 2020, COAHEC will hire a new PI-ready employee with experience in grant writing and grant management. This AHEC contributor will be on faculty at Anschutz Medical Campus and will more than likely be part-time with AHEC. This person will also be a clinical practitioner.

This will be our last year working with the Colorado State Fair and El Pomar to deliver free health screenings and information to state fair attendees. We are in the process of training the SECAHEC regional office to take this over and deliver an event centered in their region.

COAHEC will continue its partnership with the National Western Stock Show in January 2020. There, we will deliver to NWSS attendees free health screenings, flu shot days, prescription drug take-back days, and opportunities for the health professions students at Anschutz Medical Campus to volunteer with clinicians there.

In looking ahead with Discover Health/Descubre la Salud, AHEC will work with SEPA on this NIH no-cost extension with Condit Enterprises to present the health exhibit to children and parents in the region. We will gather final data from the Penrose Public Library in El Paso County. Working with Knight-Williams, these data will be meshed and analyzed with data collected throughout the state of Colorado over the years and reported by February 2020. We then hope to use the information for a future collaboration with SEPA and NIH in library health science curriculum/exhibit development and distribution in the rural and underserved areas of Colorado.

Much of the first half of 2020 will be spent in planning and rebranding, then coordinating the AHEC biennial conference. We hope to bring this conference into a tighter cohesion to the AHEC mission and plan to bring this conference closer to our participants on a rotating basis. The newly branded conference will kick off at CU South Denver, where we hope to have a strong supportive presence from CU System administration with the theme of rural and urban underserved care.

After years of having the Anatomy in Clay™ project within our office programming, we are pleased to announce that in the 2019/2020 year, we are distributing an equal share of the Manikins and supplies to each region at their centers. This will help distribute this program more broadly and make the outreach of this valuable program complete and not limited to the urban corridor through Central AHEC.
Finally, AHEC is in the process of program mapping our initiatives and programs and we have internally hired our own program and grants manager. We will seek the advice of and model the position after the success of the physical medicine and rehabilitation grants management team with whom we worked for some months on the NIH Discover Health grant and who showed us how valuable such a position could be to a program that is grant funded. This will, in turn, make our future grants tightly managed increasing our capacity to run successful programming.

For additional information, visit the AHEC website at [http://www.ucdenver.edu/coahec](http://www.ucdenver.edu/coahec).

**Center for Bioethics and Humanities**

The University of Colorado’s Center for Bioethics and Humanities (CBH) offers an array of ethics, humanities, arts, and health law programs that are integral parts of the academic life and work at CU Anschutz Medical Campus, which also extend bridges to university and community-based programs across the state.

- **Education and training:** CBH faculty are involved in teaching students in all professional schools and allied health programs at CU Anschutz and in undergraduate and graduate programs on the Denver, Boulder, and Colorado Springs campuses.
- **Clinical service:** the clinical ethics consultation programs of the two campus hospitals are integral aspects of care for patients seen on our campus and also provide critical support to affiliated hospitals and others across the state.
- **Research:** CBH researchers focus on conducting world-class research on topics at the intersection of health policy and bioethics including, but not limited to, medical aid in dying, care of patients with disability, the use of artificial intelligence in medicine, medical marijuana and chronic pain, participation in research at the end of life, and metabolic bariatric surgery among adolescents with severe obesity. Our research is supported by extramural funds from the federal government, state government, and independent foundations and professional groups. Under Eric G. Campbell, PhD, we are rapidly expanding our research operations and bringing on additional faculty with the goal of becoming one of the most research intensive bioethics centers in the US.
- **Community outreach:** the intellectual and creative work of the CBH extends well beyond the University to health care professionals and citizens locally, regionally, and nationwide.

**Matthew Wynia, MD, MPH, FACP,** has been Director of the center since July 2015. Wynia is a national leader in health care ethics, having served as the head of the Institute for Ethics at the American Medical Association (AMA), President of the American Society for Bioethics and Humanities, Chair of the Ethics Section of the American Public Health Association, and Chair of the Ethics Committee at the Society for General Internal Medicine, among other elected and appointed positions. He is also recognized for his work in patient safety and quality after developing the AMA’s Center for Patient Safety and he has served on National Academy of Medicine groups addressing team-based care, transdisciplinary professionalism, catastrophic disaster response, the use of public health methods in “countering violent extremism,” and evidence-based practices in public health emergency response. Wynia’s research uses health services research methods to explore ethical issues in health care and public health policy. His training is in internal medicine, infectious diseases, public health, and health services research. He also serves as a co-lead of the Stakeholder Engagement and Governance Core for the School of Medicine’s Data Science to Patient Value (D2V) initiative, which is a $20 million program to bring CU to the forefront of using big data to improve the value of care delivered to patients with complex medical problems.

**Therese Jones, PhD,** is the Associate Director of the CBH and leads our educational and training programs. She is an Associate Professor in the Department of Medicine, Director of the Arts and Humanities in Healthcare Program, Editor of the *Journal of Medical Humanities* and, in 2015, she published a landmark textbook for those who teach health humanities, *The Health Humanities Reader* (Rutgers University Press). She teaches required and elective humanities courses for health professions students and for undergraduate students who are enrolled in the Health Humanities Minor, a collaborative curriculum between the CU Anschutz Medical Campus and the CU Denver campus. She also serves as the lead on the development of our new 15-credit hour Graduate Certificate in Health Humanities and Ethics (HEHE), which started in 2017 and now has over 30 students enrolled. Other leaders in the center’s education and training work include **Daniel Goldberg, JD, PhD**, who is the co-lead of the certificate program and leads the Values & Ethics domain in the campus-wide Interprofessional Education & Development Course.
He is also the Associate Director for Mentored Scholarly Activity in the Bioethics, Arts, Humanities & Education domain for the School of Medicine. He also maintains an active research agenda in public health ethics, law/policy, and the history of medicine, and was the 2015-2016 Helfand Fellow at the New York Academy of Medicine. In 2019, Professor Goldberg received a highly-competitive $300,000 grant from the Well Being Trust to study the effects of laws and regulations on structural stigma.

Jackie Glover, PhD, is a Professor in the Department of Pediatrics and leads the center’s work on clinical ethics case consultation. She serves as an ethics consultant for both the UCH Health University of Colorado Hospital (UCH) and Children’s Hospital Colorado and helps create shared educational, outreach, and research programs across the two hospitals and throughout their respective hospital networks. She is also Director of the Humanities, Ethics and Professionalism Thread in the School of Medicine, which integrates bioethics and humanities content throughout the four years of the medical school curriculum. Other leaders of the center’s clinical ethics work include Heather Fitzgerald, MS, RN, who is a Clinical Nurse Ethicist, co-chair of the Children’s Hospital Colorado Ethics Committee, and Director of the hospital’s Ethics Liaisons. Heather is again co-chairing the National Nursing Ethics Conference at UCLA and she has been appointed to the Advisory Board for ANA’s Center for Ethics and Human Rights. Karen Jones, MS, RNC-NIC, is a Clinical Nurse Ethicist, co-chair of the Children’s Hospital Colorado Ethics Committee, and Director of the hospital’s Ethics Liaisons. Brian Jackson, MD, MA, is a critical care physician and co-chair of the Children’s Hospital Colorado Ethics Committee. Brian was also a member of the question bank writing committee for the newly developed ethics consultation certification test of the American Society for Bioethics and Humanities. He and Jackie taught the first Clinical Ethics elective as part of the HEHE certificate in the fall of 2018 and will teach this very popular class again in 2019. Dan Reirdan, MD, is an adolescent medicine physician who serves as a lead ethics consultant at Children’s Hospital Colorado. Megan Prescott, LCSW, is a social worker with Palliative Care and also a lead consultant at UCH. Kristin Furfari, MD, is a hospitalist physician and a clinical ethics lead consultant at UCH and she and Jackie Glover serve as interim Co-Medical Directors of the Ethics Consultation Service. Kristin also is an Associate Director for medical student preceptorships as part of the Foundations in Doctoring course. In 2018, Anne Dondapati-Allen, MDiv, PhD, was brought on as the fourth lead consultant in the ethics consultation service at UCH. She is staff chaplain who does extensive work with staff resiliency. The center has the distinction of having six out of our nine ethics consultants achieve the Healthcare Ethics Consultant Certification (HEC-C) from the American Society for Bioethics and Humanities, which was introduced in 2018.

Eric Campbell, PhD, is a professor of Medicine and Director of Research at the CBH. Campbell joined the faculty of CU in April of 2018. In his role as Director of Research, Campbell is responsible for building the research infrastructure of the CBH. This includes hiring new faculty, creating a post-doctoral program for empirical researchers in bioethics and the health humanities, launching pilot grant programs and creating a culture of research excellence in CBH. Campbell maintains an active research program focused on empirical bioethics research at the intersection of health policy and bioethics. Matthew DeCamp, MD, PhD, joined the Center for Bioethics and Humanities and Division of General Internal Medicine in February 2019 as Associate Professor. With Matthew Wynia, MD, he is also co-lead of the Stakeholder Engagement core for the School of Medicine’s Data Science to Patient Value (D2V) initiative, a $20 million program that seeks to use big data to improve the value of care patients receive. A practicing internist, health services researcher and philosopher, DeCamp employs both empirical and conceptual methods to identify and solve cutting-edge problems at the interface of health care, policy, and bioethics. Special emphases of his research include engaging patients in health care organizational decision-making, ethical issues in the use of social media, big data, artificial intelligence, and global health. DeCamp is an award-winning teacher and mentor, and has more than a decade of service on Institutional Review Boards. Finally, the center has made great strides towards establishing itself as world class center for bioethics research. In the last year we:

- Promoted Ms. Julie Ressalam as research coordinator
- Hired two new professional research assistants
- Hired two new faculty (DeCamp and Baugh)
- Wrote nine new research proposals, six of which were to the NIH
- Grew our total research portfolio to $1 million
- Authored 27 articles reporting the results of original research
- Built a network of collaborators across CU
The CBH maintains an Academic Leadership Council, with one representative from each of the health professional schools on the CU Anschutz Medical Campus appointed at 0.2 FTE to help lead CBH programs. These individuals serve a liaison role for their respective programs, ensuring the relevance and reach of CBH activities across all campus programs, and they lead CBH initiatives in their particular areas of interest and expertise. 2018-19 members of the CBH Academic Leadership Council are Catherine Campisi, MSN, RN, PMHNP-BC (College of Nursing), Inge Wefes, PhD (Graduate School), Elizabeth Shick, DDS, MPH (School of Dental Medicine), Morgan Unruh, DO (School of Medicine), Carol Runyon, MPH, PhD (Colorado School of Public Health), and Jonathan Campbell, PhD, (Skaggs School Pharmacy and Pharmaceutical Sciences).

Finally, the center produces a number of programs to serve and engage key local, state and national communities.

- The CBH Art Gallery hosted five major exhibitions in 2018-19 including work by Arturo Garcia *The Art of Healing*, portraits of patients whose lives had been changed or saved by clinical faculty in the Department of Surgery. This was a commissioned exhibit by artist and former patient Arturo Garcia. *Scott Chamberlin: A Body of Work Sculptures & Drawings* included both painting and organic sculpture. *Showing: Work x Family* was a video installation of photography from 65 major U.S. artists on the daily lives of families. The gallery exhibit was combined with a photography contest that called for images from local residents of how their observations of the interplay of work and family has overlapped in their own lives, creating a companion exhibit called *Showing Our Community*, which received 100 submissions. These exhibits were supported by grants from the Hemera Foundation and the President’s Fund for the Humanities. We opened *Penumbra: Watercolors by HC Dodd* in spring 2019, which was supported by Chip Dodd, MD, Chair of Radiology and showcased the paintings of his late mother, an award-winning American watercolorist. The summer 2019 show was *Visual Distraction*, an exhibit of work from the Aurora Artists Guild. The approximate number of visitors to the Art Gallery since its opening in August 2012 is 65,000.

- In 2019, the CBH published the 12th volume of *The Human Touch*, an annual edited volume of literature and visual arts on the human aspects of health and health care, with powerful works contributed by members of the Anschutz Medical Campus community. This publication is supported by a generous gift from a School of Medicine alumnus and spouse.

- Under the leadership of Jackie Glover, PhD, and Jean Abbott, MD, MPH, our faculty offer education and training programs to individuals and ethics committees at hospitals and other care delivery organizations around the state.

- Under the leadership of Heather Fitzgerald, MS, RN, and Jean Abbott, MD, MPH, the center teams with the Colorado Healthcare Ethics Forum (CHEF) to offer an annual 2-day clinical ethics education program for area clinicians and ethics committee members.

- In spring 2019, CBH hosted their 4th annual *Holocaust Genocide and Contemporary Bioethics* program commemorating the involvement of health professionals in the Holocaust and other genocides. The program is supported by the William S. Silvers, MD, endowment in collaboration with many local philanthropic and educational organizations and expands upon a program started by Silvers and other physicians in 2008. The 2019 program featured keynote speakers Zaher Sahloul, MD, senior advisor and past president of the Syrian American Medical Society and founder of the American Relief Coalition for Syria and Len Rubenstein, JD, professor and director of the Program on Human Rights, Health and Conflict at Johns Hopkins Bloomberg School of Public Health and former President and CEO of Physicians for Human Rights. The 2019 program, *Medicine and Morality in Times of War*, incorporated new content on medical neutrality in times of war, counter-terrorism, ethical dilemmas working in war zones with mass casualty situations, and the experiences and health issues faced by contemporary refugees in the local community. The program brought presentations to all four CU campuses, including two public evening events produced in collaboration with other CU departments and many local philanthropic and educational organizations. 2019 program funding was supported by the MB Glassman Foundation as a Gold Sponsor, from Jewish Colorado, Hannah Sperber, and Jerry and Marilyn Kopelman as Silver Sponsors along with generous gifts from other individuals and families with ongoing planning support and advice from the U.S. Holocaust Memorial Museum and the Maimonides Institute for Medicine, Ethics, and the Holocaust, along with advisement and support from Physicians for Human Rights. A highlight of the 2019 program was the donation by Devorah Sperber of a collection of sculptures previously housed at the Ann Frank Museum that now reside permanently in our Strauss Health Sciences Library.

- The center helped honor the memory of those lost at Columbine High School 20 years ago with a collaborative community event with the Colorado School of Public Health, the PIPER program, and the CU Boulder Center for the Study and Prevention of Violence, bringing together almost 300 educators, advocates, and community leaders to hear nationally recognized experts on violence prevention, politicians, and Columbine principal Frank DeAngelis discuss lessons learned and prevention strategies for the future.
• The center joined in partnership with CU Boulder Radio 1190 to begin production of Season Two of the *Hard Call*® podcast series, which will focus on ethical issues around opioid addiction. In its two years, the *Hard Call*® podcasts have received nearly 10,000 listens nationally as well as internationally and are available in iTunes, Google Play, and other major podcast hosting platforms. Selective *Hard Call*® episodes have also been adapted into educational modules to be used in CU ethics curricula across the CU campuses.

• CBH faculty collaborated with the CU Law School, The Aspen Center for Social Values, the American Association of Physician Leadership, and Centura to produce the third annual *Aspen Ethical Leadership Program* in October of 2018. The Aspen program is an executive retreat that brings together leaders from hospitals, health plans, and other health care-focused companies and institutions. Participants spent three days in intimate discussions about Conscious, Culture, and Professionalism; Costly Controversies; and Organizational Responsibilities Regarding Social Determinants of Health.

• The center joined with the CU School of Medicine Physical Therapy Program to invite renowned documentary filmmaker David Iverson, modern dancer David Leventhal, and retired principal ballerina Sharon Wehner of the Colorado Ballet to host an event attended by over 200 community members on the power of dance when living with Parkinson’s Disease.

www.coloradobioethics.org

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**Center for Interprofessional Practice and Education**

As the complexity of health care has grown, the demand for new, crosscutting interprofessional competencies from health care professionals has become increasingly recognized. The University of Colorado Anschutz Medical Campus is distinguished nationally for its investment, commitment, and innovation in Interprofessional Education (IPE).

**Vision:** Transform health professionals and health care through nationally and internationally recognized interprofessional education and practice.

**Mission:** Prepare health professionals for interprofessional, collaborative practice through innovative education and scholarship.

**Overview:** The CU Center for Interprofessional Practice and Education (CU CIPE) develops, administers, and evaluates the longitudinal interprofessional education curriculum for all health professions students on the Anschutz Medical Campus. The program brings students from health professions programs on campus together to learn and practice skills during their preclinical and clinical training. The curriculum consists of several components: early exploratory opportunities, classroom team-based learning, simulation experiences, and advanced practicum experiences at clinical sites. After participating in the program as part of their health professions training, our graduates will be competent to participate as members of a collaborative interprofessional workforce.

**Background:** From 1995 to 2013, the Anschutz Medical Campus ran an interprofessional ethics course, bringing together students from all the health professions. This effort was expanded to include competencies in teamwork and collaboration from 2010-2013 through Josiah Macy Jr. Foundation and Colorado Health Foundation funding. At the termination of the grant, the program was reorganized and led by the founding IPE director, Mark Earnest, MD, PhD, and an IPE Council with designees from each degree-granting school or program on campus. Members of the inaugural council in 2014 included: Wendy Madigorsky MD, MSPH (School of Medicine), Kari Franson PharmD, PhD (Skaggs School of Pharmacy and Pharmaceutical Sciences), Diane Brunson RDH, MPH (School of Dental Medicine), Amy Nordon-Craft PT, DSc (Physical Therapy Program), Amy Barton PhD, RN, FAAN (College of Nursing), Darcy Solanyk MS, PA-C (Physician Assistant Program), and Jackie Glover PhD (Center for Bioethics and Humanities).
Leadership
Director Suzanne Brandenburg, MD, School of Medicine
IPE Assistant Directors
Amy Akerman, MS, PA-C, Physician Assistant Program
Kari Franson, PharmD, PhD, BCPP, Skaggs School of Pharmacy
Scott Harpin, PhD, MPH, RN, College of Nursing
Wendy Madigosky, MD, MSPH, School of Medicine
Amy Nordon-Craft, PT, DSc, Physical Therapy Program
Lindsey Yates, DDS, MPH, School of Dental Medicine

IPE Program Representative
Daniel Goldberg, JD, PhD, Center for Bioethics and Humanities

Interprofessional Education & Development (IPED) Course Director Wendy Madigosky, MD, MSPH, School of Medicine
Interprofessional Clinical Transformations (CT) – IPE Simulation Director Elshimaa Basha, MPH, CHSE, Center for Advancing Professional Excellence
Interprofessional Clinical Integrations (CI) – Open Campus & Interprofessional Practice Director Eric Gilliam, PharmD, BCPS, Skaggs School of Pharmacy

Interprofessional Instructional Designer Michelle Colarelli, MA, School of Medicine

Interprofessional Education Program Components

The CU CIPE Education Program consists of four curricular components:

- The overall goal of Interprofessional Clinical Integrations (CI) is to provide relevant immersion experiences focused on learning and caring for patients in interprofessional teams. These experiences occur in multiple settings including: community based organizations, hospitals, medical clinics, dental clinics, home visits, transitions in care, palliative care, and others. There are two types of CI experiences (CI-1 and CI-2) which ‘bookend’ our students interprofessional education. Students’ first exposure (CI-1) is through the Interprofessional Open Campus Program (IOCP) offering early exploratory interprofessional opportunities. IOCP is a co-curricular platform hosting a menu of professional development opportunities for students, faculty, and staff across our campus. First-year health profession students are expected to participate in at least one IOCP offering during their first semester on campus. As a co-curricular structure, IOCP offerings complement the professional education each student will receive in their home program. IOCP offerings are designed and administered by a various organizations and individuals within the CU Anschutz community. Each year, IOCP identifies a central theme and purposely develops several relevant activities.
• Interprofessional Education and Development (IPED), an introductory course developed by the IPE Council, involves first and second-year students (over 1,500 students) from six health professions in a 16-week, team-based learning experience. Students work together in a classroom setting or via on-line teams using Team Based Learning (TBL) over two semesters (eight sessions in the spring of Year 1 and eight sessions in the fall of Year 2). Three competency domains are addressed meeting national accreditation standards and participating school requirements: Teamwork & Collaboration, Ethics & Values, and Quality & Safety.

• As part of their Interprofessional Clinical Transformations (CT) experience, students spend a half-day in the Center for Advancing Professional Excellence (CAPE) simulation center. Students practice teamwork and collaboration skills, identify and discuss ethical and patient safety issues, and engage patients and family members to deliver patient-centered care during four hours of video-monitored interprofessional team simulations. Scenarios include acute care, outpatient, and home visit settings.

• CU CIPE supports learner assessment, faculty development, and site enhancement during Advanced Clinical Practicums where students interact with patients and interprofessional colleagues in authentic health care settings later in their training. The aim for this portion of the Interprofessional Clinical Integrations Program (CI-2) is to provide a mechanism by which health profession students may demonstrate their collaborative interprofessional team skills in a clinical environment. CU CIPE is working to achieve campus-wide engagement through a standardized student assessment tool aligned with the Interprofessional Education Collaborate (IPEC) 2016 competencies which are endorsed by the Liaison Committee for Medical Education (LCME), Commission on Osteopathic College Accreditation (COCA), and more than 60 other health professional organizations.

**Faculty Involvement**

Dozens of full time and many volunteer faculty members contribute to building and implementing these innovative programs, demonstrating the deep commitment to prepare a health care workforce ready to collaborate, practice and lead in an increasingly complex health care environment.

**Key Program Accomplishments 2018-2019**

The CU Center for Interprofessional Practice and Education reached over 2,000 students in 2018-19 and focused on expanding impact and increasing engagement. Initiatives in support of these efforts include:

Expansion of the Interprofessional Open Campus Program (IOCP). The theme for 2018-19 IOCP was SOAR (Strengthening Ourselves through Awareness and Resiliency). The 2018-19 IOCP featured capacity for well over 1,000 unique individual engagements. Many offerings were also popular with staff and faculty members. All first-year IPE students were able to choose their own offering despite increased engagement by non-first year students and other campus community members. CU CIPE provided robust programing centered on the primary theme of resiliency and self-awareness. This was achieved by intentionally collaborating with numerous campus units who offered several theme-focused activities.

Expansion of Clinical Transformations (CT) content and relevancy by integrating two new cases that address important common public health issues: opioid and mental health crises using an interprofessional team approach.

Planned full adoption of a common interprofessional clinical evaluation tool beginning with the cohort of CU Anschutz students matriculating in fall 2019. The Interprofessional Professionalism Assessment (IPA) was designed and validated by the Interprofessional Professionalism Collaborative (IPC) sponsored by 12 health professional organizations. CU CIPE successfully piloted the tool during 2017-18 and 2018-19.

Interprofessional Education focused Federally Qualified Health Center in Aurora, Colorado

CU CIPE is a key stakeholder and participant in the development of an Interprofessional Education focused Federally Qualified Health Center via a partnership between the University of Colorado Anschutz Medical Campus and Salud Family Health Centers.

Partnership in Education, Training, and Research Advancement (PETRA) is an NIH-funded grant awarded to the University of Zimbabwe College of Health Sciences. The CU CIPE Director is participating in grant activities focusing on two of the project aims.
These pertain to the development new interprofessional education and collaborative practice curricula, and to advances in the quality and numbers of health professionals retained in areas where they are most needed in Zimbabwe by developing, implementing, evaluating and disseminating innovative interprofessional health education initiatives.

CU CIPE Curricular Redesign is underway as part of a strategic planning process. Curricular efforts will prioritize experiential learning environments such as clinical, community based, service learning activities. Pilot activities will begin during this academic year.

Additional information on the CU Center for Interprofessional Practice and Education is available at http://www.ucdenver.edu/anschutz/education/IPE/Pages/Default.aspx

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**Center on Aging**

The multi-disciplinary Center on Aging (CoA) at the Anschutz Medical Campus was established in 1993 through an agreement between the Vice Chancellor for Health Affairs, the deans of the schools on the Anschutz Medical Campus, and the leadership of UCHealth University of Colorado Hospital. The mission of the CoA is to promote improved health for older adults through the establishment and continuation of high quality and innovative clinical programs; the education of community professionals in geriatrics and gerontology; an emphasis on multidisciplinary team care and activity; and the promotion of collaborative transdisciplinary efforts in basic, clinical, and health services research that span the university community.

The CoA has been directed by Robert Schwartz, MD, since 2000. The center in 2019 recruited a new Administrator, Jodi Waterhouse. In addition to the Director and Administrator, the CoA is guided by an Executive Committee representative of aging research across campus including: Department of Emergency Medicine Marian Betz, MD, MPH; Department of Family Medicine Jodi Holtrop, PhD; College of Nursing Catherine Jankowski, PhD, FACSM; Division of Geriatric Medicine Wendy Kohrt, PhD; Skaggs School of Pharmacy and Pharmaceutical Sciences Sunny Linnebur, PharmD; Division of Geriatric Medicine Daniel Matlock, MD; VA Geriatric Research, Education, and Clinical Center (GRECC) Kathryn Nearing, PhD; Denver Veteran’s Affairs Department of Surgery Thomas Robinson, MD; and the Colorado School of Public Health Department of Epidemiology Janet Snell-Bergeon, MPH, PhD

Faculty development and trainee mentorship have developed an outstanding pipeline of junior investigators interested in aging-related academic research careers. The CoA is the home of a successful Institutional T32 grant focusing on the applied physiology of aging, now in its 18th year. It was recently re-funded for five additional years. As part of this renewal, the T32 planned a first-in-the-nation T-Shaped Team-Oriented Training Program (T³). With support from the Department of Medicine the T³ training will be applied to all T32s within the DOM to foster investigator relations across divisions. We held our first T³ program day in April 2019. The evaluation of individual sessions examined changes in self-reported confidence to perform each of the learning objectives before and after the training. Overall, a statistically significant difference was found for all learning objectives (across all sessions). Associated effect sizes ranged from moderate to large. Comments underscore that participants planned to apply something from each of the sessions. Importantly, participants also indicated the training enhanced their capacity for team science.

The CoA has also been the home to the Hartford Center of Excellence in Geriatric Medicine since 1998. While the entire national Hartford Foundation program ended in 2016, the Chancellor, Dean of the School of Medicine, and Chair of the Department of Medicine, continue their $150,000 match to support the career development of post-doctoral fellows and junior faculty involved in aging-related work. This group of supported investigators has accounted for more than 175 non-Hartford extramural grants and over $83 million in direct cost support to the University of Colorado Anschutz Medical Campus. Our institution and its junior faculty are national leaders in receiving career development awards in the field of aging, including 10 Beeson Career Development Scholars, as well as multiple other aging-related K awards. Because of this success, the CoA has received substantial new funding from the Office of the Vice Chancellor and the School of Medicine.
The Eastern Colorado GRECC is led by Robert Schwartz, MD, (Director), Wendy Kohrt, PhD, (Associate Director for Research), Skotti Church, MD, (Director of Clinical Demonstrations) and Kathryn Nearing, PhD, (Director for Education). In only its fourth year, our GRECC is already in the middle of the pack of all of the GRECCs for overall productivity. We have been especially fruitful in establishing GRECC CONNECT and GeroFit programs, as well as our rehabilitation science research program. A new Rehabilitation Center proposal was submitted in August 2019. This interdisciplinary Center would bring $900,000/year to the VA Eastern Colorado Health Care System.

Research
Aging-related research grants presently managed through the CoA include: 1) Integrative Physiology of Aging T32 (R Schwartz, PI); 2) Specialized Center of Research Excellence (W Kohrt, PI); 3) Molecular Transducers of Physical Activity (U01; W Kohrt PI); 4) Hip Fractures in Older Women (Multi-centered R01, R Schwartz, Site PI, score 13); 5) The Colorado Health Foundation grant for Advance Care Planning (H Lum, PI); 6) NextFifty Initiative grant for Implementation and Dissemination of an Advance Care Planning Volunteer Certification Program for LGBT Individuals (H Lum, Co-PI; C Candrian, Co-PI); 7) Vascular mechanisms for the effects of ovarian suppression on cognitive function adipocytes in humans (K Gavin, PI); 8) Time restricted feeding and metabolic rhythms in humans (K01; C. Rynders, PI); and 9) Group Visits for Advance Care Planning (H. Lum, NIA Beeson K76).

Clinical Care
Clinical care within the CoA is centered on the Seniors Clinic, with sites at the Anschutz Medical Campus and in Lone Tree. In addition, geriatrics faculty members attend on the Acute Care of the Elderly (ACE) inpatient service for about six months of the year. We also run post-acute care services in three local skilled nursing facilities. In 2019, we started two new clinical services. Tyson Oberndorfer, MD, has developed a falls prevention and balance clinic and Skotti Church, MD, has started a geriatrics consultation service for the UCHealth University of Colorado Hospital Emergency Department. Our geriatrics programs are training sites for medicine (students, residents, fellows), nursing (students), nurse practitioners (students and post-grad), physician assistants (students and post-grad), social work (students and interns), psychology (interns), and pharmacy (students and interns). While additional opportunities exist, further growth is impeded by lack of clinical space.

Education
Together our CoA and Division of Geriatric Medicine are leaders in geriatric education. Our program includes four clinical geriatric medicine fellows, five pre- and five post-doctoral research trainees (T32), and three GRECC Advance Geriatric Research Fellows. Led by Skotti Church, MD, our Geriatrics Fellowship is one of a few nationally that fills all of its slots every year. Two of our accepted fellows for 2020 will have to delay entry into our fellowship program as they complete a year as chief residents. This year, Church will start a new first-in-the-nation post-graduate geriatrics training program for Advanced Practice Providers (APPs). The APPs will train side-by-side with geriatric medicine fellows and there will be an emphasis on developing clinical teams.

Outreach
Most recently, the CoA has been focusing on engagement and outreach, acting as a founding member of the Colorado Consortium on Aging Research and Education (CoCARE) and co-hosting the State of Aging summit bringing together 106 participants from approximately 85 organizations across all sectors focusing on older adults including government, non-profit, for profit, and academic institutions. Dr. Schwartz was elected to the position of CoCARE President for 2019-20 and has arranged a quarterly meeting with “Movers and Shakers” in the aging field for the State of Colorado. Working with leaders from AARP, Alzheimer’s Association, NextFifty Initiative, Rose Foundation, DRCOG, Colorado State Senior Lobby, and the Governor’s appointee to lead state efforts on aging, we are planning to enlist congressional support for 1) a loan repayment program for professionals providing care for older adults in rural areas, and 2) changes in state regulations to make Colorado the best state in the country for APPs to practice.

The CoA concluded a successful 16th Annual Rocky Mountain Geriatrics Conference in April 2019. We are already planning the 2021 program with the Eastern Colorado Geriatric Research Education and Clinical Center (GRECC), to be held in Denver.
The Colorado Center for Personalized Medicine (CCPM) is a multi-institutional collaboration that links extensive electronic medical record data to ‘omics’ information to promote the development of tools and knowledge in biomedical informatics in order to expand prognostic and diagnostic capacity using molecular diagnostics. The primary objective is to fuel research on developing predictive, personalized, preventative and participatory medicine that can integrate into the existing health care delivery system through defining risk, identifying new treatments, and improving drug efficacy. These efforts serve the center’s overarching goal to integrate these discoveries into our routine health care to improve the lives of our patients.

Accomplishments
• Completed and submitted a five-year business plan predicated on three funding models to CCPM stakeholders in January
• Held the 2nd annual CCPM retreat
• Expanded center operations to include a biotechnology and innovation unit
• Established a UCHealth-CCPM steering committee and working group for the Return of Results (RoR) of secondary findings to the first 30,000 UCHealth participants in the CCPM Biobank
• Implemented return of pharmacogenomics (PGx) results system-wide. Go-live date in the metro-Denver area was October 2018; system-wide release was subsequently halted and will resume August 26, 2019
• Developed an IT Infrastructure and released a secondary consent in MyHealthConnection specifically for the RoR (200 secondary consents signed/results returned to date)
• Developed PGx-based Clinical Decision Support (CDS) for prescribing recommendations to providers at the point of care for Clopidogrel
• Compass completed its 600th data delivery

Plans for the coming year
• Recruit Chief Research Informatics Officer (CRI) in partnership with UCHealth
• Develop a Translational Biomedical Informatics program within CCPM
• Recruit new Director of Compass with the impending retirement of Michael Kahn, MD, PhD
• Recruit new Associate Director and Director of Technology & Innovation with the impending departure of Michael Ames
• Expand the research enterprise to include (i) off the shelf GWAS generated from the first 30,000 genomes and made available to the CU research community; (ii) access to the first 30,000 genomes via the CCPM Data Access Committee; and (iii) development of novel methods for estimating polygenic risk scores (PRS) in ethnically diverse patient populations
• Expand program reach and enrollment with a goal of 50,000-100,000 UCHealth participants per year
• Establish a Personalized Medicine Clinic in collaboration with UCHealth
• Expand PGx implementation and develop a plan for release of drug-gene pair bundles in the future. By Dec. 31, 2019, the plan is to release results for three PGx genes - CYP2C19, SLCO1B1, CYP2C9. (Note, SLCO1B1 and CYP2C9 release are tentative and depend on progress of Unified Consent build).
  ⇒ CYP2C19 PGx impacts 13 drugs in a clinically-actionable way: clopidogrel, voriconazole, citalopram, escitalopram, sertraline, omeprazole, esomeprazole, pantoprazole, dexlansoprazole, lansoprazole, rabeprazole, clobazam, bivaracetam.
  ⇒ SLCO1B1 PGx impacts one drug in a clinically-actionable way: simvastatin
  ⇒ CYP2C9 PGx impacts nine drugs in a clinically-actionable way: celecoxib, flurbipron, meloxicam, piroxicam, phenytoin, siponimid, lesinurad, dronabinol, erdafitinib
• Execute 1-3 commercial partnerships focused on R&D leveraging the CCPM Biobank data & Health Data Compass
• Hold the 3rd Annual CCPM retreat in September 2019
• Continued increases in testing volume
• Expanded test menu resulted in increased clinical trial enrollment
• Launched CFTR for carrier screening and diagnosis
• Exome-based panel validations underway
• Evaluated and on-boarded state-of-the-art ultra-rapid turnaround time assays for selected genes
• Initiated validation of large-panel assays for oncology using reagents acquired through multi-institutional collaboration (co-led by University of Colorado group)
• Continued working with UCHealth clinical laboratory to identify priorities for validation
• Partnered with biobank to provide confirmatory assays for critical reportable results
• Deployed document control system across the laboratory for increased compliance

Biobank
Overview: Generate omics data to advance research, discovery and clinical implementation

Accomplishments
• Biobank sample processing to date:
  ⇒ 47,087 samples received
  ⇒ 32,489 accessioned
  ⇒ 32,189 DNA extracted
  ⇒ 30,537 genotyped
• Two oral presentations at the International Society for Biologic and Environmental Repositories conference
• Two poster presentations at the American College of Medical Genetics & Genomics National Conference
• Successful compliance with all CAP proficiency testing
• Passed CLIA inspections with no deficiencies cited
• Validated version 2 of the genotyping array
• Designed version 3 of the genotyping array
• Validated Factor V Leiden, prothrombin, and hemochromatosis "Blood Disorders Panel" for return of clinical testing to participants
• Expanded staffing to include a laboratory manager and one additional laboratory technologist
• Implemented core features of the Laboratory Information System

Plans for the coming year
• Validate version three of the genotyping array; stand up/validate Illumina’s new Global Diversity Array (DGA) pending funding
• Begin distribution of DNA for research use as requested
• CAP accreditation
• Collect and store serum for research use
• Implement additional features of the Laboratory Information System

Clinical Operations
Overview: Biobanking clinical operations refers to all operational aspects of patient recruitment, sample collection, patient and provider education and engagement (i.e., marketing), and coordination of activities between the clinical environment (hospital, clinics) and the CCPM Biobank to support the return of results to patients.

Accomplishments
• Expanded enrollment across the entire UCHealth System via My Health Connection
• Consented an additional 38,056 participants, collected 18,377 samples. Total consented=101,839 and total samples collected=47,087
• Website targeting patient education and engagement developed and launched (https://www.cobiobank.org)
• Newsletters developed and delivered (x2) to >60K participants via email and mail
• Engaged with UHealth-affiliated marketing firm to enhance uptake of participant outreach efforts
• Held first meeting of Biobank Patient Family Advisory Committee (PFAC) – January 2018
• Began to administer 2nd clinical consent to 900 participants for return of results
• Piloted return of PGx results for single gene (CYP2C19)
• Developed model for return of non-PGX results
• Developed evaluation plan for return of results
• Hired Clinician Educator, Elizabeth Kudron, MD

Plans for the coming year
• Enrollment:
  ⇒ Minimum target: 50,000 consents; 25,000 samples; Goal: 80,000 consents; 50,000 samples
  ⇒ Targeted enrollment in specialty clinics (transplant, psychiatry, behavioral health, acute medicine, cancer center
  ⇒ Increase diversity of participant population
  ⇒ Implement unified consent for research and return of results (October 2019)
• Education: provide Biobank updates and education around return of results to providers and clinical staff at primary care
  and specialty care forums across UHealth; update patient and provider education materials on website; continue dissemi-
  nation of brochures, patient information sheets; develop new patient video to support enrollment
• Patient engagement: hold quarterly Patient Family Advisory Council (PFAC) meetings
• Marketing: continue to work with marketing firm to enhance awareness of Biobank, promote education around personal-
  ized medicine, optimize enrollment and engagement; success of these efforts will be measured in terms of consent rates,
  visits to website (number of visitors and content uptake), open rates for eNewsletters, number of followers on social media
  platforms
• Patient outreach: newsletters 4x/year, develop social media platform, update website
• Return of results:
  ⇒ Administer 2nd consent to ~100K participants enrolled on primary consent
  ⇒ Return genotyping results to first 30K participants
  ⇒ Establish process for return of secondary findings; implement model, hire appropriate personnel
  ⇒ Return secondary findings to first ~300 participants
• Evaluation: implement evaluation plan for return of results

Health Data Compass
Overview: Health Data Compass is a shared, multi-institutional resource of integrated data and analytic services designed to
transform data-driven processes in clinical research, operational excellence, molecular discovery, and precision medicine. We
achieve this by maintaining a comprehensive, scalable, data integration and management system, implementing priority use
cases, providing analytic teams and services, and fostering forward-thinking approaches to technological solutions.

Accomplishments
• Deployed Eureka, a novel service for providing HIPAA-compliant, high-performance computing environments to researchers
• Accumulated 7M combined patients from UHealth, CHCO, and CU Med
• CCPM Biobank genetic variant integration underway
• Over 600 custom research data requests provisioned (lifetime), approach cadence of 300/year
• On-boarded dozens of new users to TriNetX, our self-service cohort query tool
• Launched Compass education program
• Support several high-profile UHealth clinical QI and commercialization initiatives
• Built upon our banner partnership with Google Cloud

Plans
• Roll out a fully statistically de-identified UHealth research dataset
• Free-text clinical note de-identification and targeted term extraction
• HIPAA-compliant lat/lon geocoding of patient addresses
• Continue to move toward automatable, predefined output models

Translational Informatics and Computational Resource (TICR)
Overview: Multidisciplinary, robust computing resource to foster omics-based researching using dimensionality data, development and implementation of computational methods and tools for sequence analysis and systems biology.
Accomplishments
• Developed automated mechanism to perform downstream QC on MEGA genotyping panel, and deliver product back to investigators
• Implemented a Service Center with ~40 users
• Completed Rosalind HPC Risk Assessment report to ensure system security
• Generated MEGA chip data processing pipeline
• Designed custom content for Illumina’s GDA chip
• Provided multiple IT services including data transfer and backup
• Hosted annual mini-symposium: “The Power of Informatics to Advance Health” (2019)
• Finalized Rosalind HPC backup solution onto Google Cloud
• Implemented demo environment, Wilkins, to assist with HPC recruitment and education
• Held multiple HPC and Linux boot camps
• Dynamic version of BC PIPE released 10/17/18 with PGx support and digital signing for the Biobank director
• 1,000 genotyped Biobank samples successfully loaded into BC PIPE and sent to EPIC via HL7 message ready for 2nd consent
• Developed a mechanism to return research data outside clinical pipeline to expedite research plans
• Partner with CCPM faculty to develop computational methods for Biobank research data
• Compile, QC and disseminate EMR-omics research data, in collaboration with Compass, to Anschutz Medical Campus researchers
• Partner with Compass to develop a roadmap to implement Rosalind 2.0 HPC onto the cloud in preparation for Rosalind 1.0 end-of-life event (projected February 2021)
• Establish high-throughput computational services for the Colorado Anschutz Research Genetics Organization service center (CARGO)

Colorado Anschutz Research Genetics Organization (CARGO)
Overview: A service core to assist researchers performing studies in molecular biology and genotyping. CARGO provides high quality, reproducible, economical research services to the internal and external scientific community.
Accomplishments
• Developed a strategic plan to ensure the CARGO facility is both scientifically and technologically competitive, cost efficient, and sustainable
• Established an expert advisory committee to provide well informed input on strategic decision making and customized project planning
• Utilized funds to hire new staff, new equipment, proper tools, and technology to enhance and optimize core services in alignment with our strategic mission
• Improved on the marketing and accessibility of the core facility by the creation of a live website with information regarding the core facility, points of contact, and services
• Served as a demo site for companies including TECAN and Autogen to educate internal and external investigators in the mid-west, e.g. Fluid handling and normalization, nucleic acid extractions)
• Processed >7,000 samples with 50% of total customers returning for additional service
Plans
• Provide technological training opportunities for faculty, staff, and students
• Partner with CCPM to offer training for disadvantaged summer students
• Continue to serve as a demo site, partnering with other companies in the field to improve on professional development and increase knowledge of technological innovation
• Collaborate with additional experts to further optimize decision-making and project planning.
• Offer a wider range of customizable nucleic acid extractions and genotyping arrays
• Continue to partner with the internal and external CU community in the design and execution of their projects

**BIPM Division**
Overview: Recruit faculty and staff to develop personalized medicine research and care across our campuses and health systems.

**Accomplishments**
• Recruitment of two primary faculty (including one clinician who is primary to BIPM) and three secondary faculty (for a total of 15 primary faculty and 24 secondary faculty)
• NIH Grant Submissions = $34,353,080 (n=30)
• Foundation Grant Submissions=$749,515 (n=8)
• Grant funding received FY19 – $12,342,987

**Plans**
• Continued campus outreach through weekly research seminars and journal club activities
• In collaboration with other stakeholders, recruitment of a new Director of Compass to replace Michael Kahn, MD, PhD

**Biotechnology and Innovations**
Overview: CCPM has emphasized the importance of technology innovation and industry collaboration with the designation of a dedicated Director of Technology Innovation

**Accomplishments**
• Initiated discussions with 12 potential commercial partners representing a significant possible future revenue stream for CCPM

**Plans**
• Identify and execute partnerships with one to three potential high-value, long-term commercial partners

**Personalized Ancestry Information Resource**
Overview: Personalized Ancestry Information Resource (PAIR) will provide an ancestry product for the Biobank:

**Accomplishments**
• Began analyses on pilot data (~4,000 participants) in the CCPM Biobank. PAIR serves as “Beta testers” for data QC, rollout pipelines developed by TICR. PAIR Instructor Jonathan Shortt, PhD, helping to contribute relevant metadata to TICR necessary for biobank use both within and outside the CCPM. Working closely with TICR on research data availability and access
• PAIR Director Christopher Gignoux, PhD, leading research plan to perform primary analyses from COMPASS billing code data as a resource for investigators in CCPM and campus-wide
• Began building collaborative network of biobanks, DTC companies, and large-scale research studies across the USA to perform genetic research across millions of participants
• Hired Cole Williams, PRA, who will contribute to Biobank/PAIR analyses
Developed reproducible pipelines along multiple ancestry analyses (maternal/paternal, recent relatedness, Neanderthal ancestry)

Began to characterize global patterns of ancestry for participants along with large-scale globally representative reference panels

Contributed to TICR best practices for analyses in data

Engaged with ELSI working group to ensure appropriate communication of ancestry results

Contributed to multiple newsletter updates explaining ancestry testing and basic descriptions of pilot data to Biobank participants

Developed one ancestry algorithm now used by researchers internationally, contributed to multiple published and under review manuscripts. Service on NHGRI Ancestry and Diversity Working Group, Complex Disease Working Group

Plans

Preliminary PAIR product rollout across first ~30,000 participants in the Biobank.

Release research results across major disease and trait billing codes for the first ~30,000 participants in the Biobank in collaboration with TICR.

Work with other groups (regulatory & operations) to develop appropriate access to ancestry results outside of the clinical/medical domain

Continue to develop algorithms and contribute to publications, including novel algorithms to identify family subunits within biobank-scale datasets relevant to clinicians and researchers alike.

Present results at major international meetings, including the 2019 American Society of Human Genetics Meeting

Education: develop a suite of materials to help participants understand the utility and limitations of genetic ancestry results

Marketing: work to develop written and online publicity materials, social media

Outreach: continue to contribute to the newsletter, provide slides and materials

Education

Overview: A core mission of the CCPM is to provide personalized medicine education to current and next-generation health care professionals, scientific researchers, and the community.

Accomplishments

Hired a lead Clinician Educator for Clinical Operations – Elizabeth Kudron, MD, MPH

Awarded Online Program of Excellence award from University of Colorado’s Office of Digital Education (ODE) to develop Graduate Certificate Program in Personalized Medicine

Awarded Program for Academic Clinician Educators (PACE) grant to conduct needs assessment for and subsequently develop Graduate Certificate Program in Personalized Medicine

Created educational resources for pharmacogenetics results, specifically CYP2C19 and Clopidogrel, CYP2C19 and Voriconazole

Updated and reviewed Biobank website to include additional biobank participant and provider educational resources

Presentations to UCHealth Hospital Medicine, Clinical Chiefs, CMOs/CQOs and North Medical Executive Committees

Plans

Conduct local needs assessment among premedical students at CU affiliated undergraduate universities for Graduate Certificate Program in Personalized Medicine
• Development of Graduate Certificate Program in Personalized Medicine with goal first enrollment date Fall 2020
• Marketing and recruitment of students for Personalized Medicine certificate program
• Continue development of educational resources as needed for return of results
• Presentations scheduled: Neurology Grand Rounds, Nephrology Grand Rounds, Otolaryngology Grand Rounds, Hospital Medicine Grand Rounds, Pediatrics Grand Rounds, Medical Oncology faculty meeting, Psychiatry faculty meeting, Endocrinology faculty meeting, Psychiatry & Internal Medicine Resident Education
• Evaluation: Assess frequency of use of educational materials & knowledge gaps

**Regulatory Affairs**

**Accomplishments**

• Completed 15 COMIRB submissions from CCPM affiliated researchers
• Provided regulatory input for eight grant proposals
• Successful Biobank CLIA inspection with no deficiencies
• Policies, procedures, and forms developed for access to Biobank Resources (data, samples, participant recontact)
• New, revised unified consent developed to replace current primary and secondary consent
• Biobank new patient and provider information for clinical genetic test result return
• Consent expansion using My Health Connection to UCHealth North and South regions

**Plans**

• Unified consent approval by COMIRB and implemented across the UCHealth system
• Launch Biobank Access Committee for decisions on access to Biobank resources
• COMIRB submissions for CCPM human subjects research studies
• Grant proposals for CCPM studies

**Center Leadership**

**Kathleen C. Barnes, PhD,** Director, Colorado Center for Personalized Medicine and Division Head, Division of Biomedical Informatics and Personalized Medicine  
**Michael Ames, MBI,** Director of Technology Innovation  
**Michael Ames, MBI,** Enterprise Architect  
**Christine Aquilante, PharmD,** Associate Director, PGx  
**Monica Campbell, MS,** Associate Director, CARGO  
**Kristy Crooks, PhD,** Director, Biobank  
**Chris Gignoux, PhD,** Director, PAIR program  
**Michael Kahn, MD, PhD,** Director, Compass  
**David Kao, MD,** Associate Director, PGx  
**Sandra Logue, MBA,** Division Administrator  
**Jan Lowery, PhD,** Director, Clinical Operations  
**Tzu Phang, PhD,** Director, TICR  
**Aileen Sanders, MHA, MBA,** Director, Finance and Administration  
**Matt Taylor, MD, PhD,** Associate Director, Medical Genetics
The Colorado Clinical and Translational Sciences Institute (CCTSI) is a collaboration between the University of Colorado Anschutz Medical Campus, University of Colorado Denver, University of Colorado Boulder, Colorado State University, six affiliated hospitals and health care organizations, as well as multiple community organizations, with a goal of accelerating the translation of research discoveries into improved patient care and public health. The CCTSI partner health care institutions include UCHealth University of Colorado Hospital, Children’s Hospital Colorado, National Jewish Health, Denver Health and Hospitals, Rocky Mountain Regional Veterans Affairs Medical Center, Kaiser Permanente Colorado and the private sector.

The CCTSI is a National Institutes of Health (NIH) National Center for Advancing Traditional Sciences (NCATS)-funded research institute at CU Anschutz. It is part of the national consortium of 58 NIH Clinical and Translational Science Awards (CTSA) institutional hubs throughout the United States and is funded by one of the largest federal research grants awarded to the state of Colorado. The CCTSI also receives considerable institutional support from CU Anschutz Medical Campus, CU Boulder, Colorado State University, and its affiliated hospitals. The CCTSI has more than 5,000 individual members who benefit from its services, funding sources, and programs. The CCTSI functions through 15 major programs, each with multiple cores, including: 1) Informatics, 2) Community Engagement and Research, 3) Collaboration and Team Science, 4) Workforce Development, 5) TL1 Training Core, 6) KL2 Institutional Career Development program, 7) Pilot Translational Studies, 8) Regulatory Knowledge and Support, 9) Biostatistics, Epidemiology, and Research Design, 10) Participant and Clinical Interactions, 11) Integrating Special Populations, 12) Trial Innovation Network Hub Liaison Team, 13) Innovation Ecosystem, 14) Early Life Exposures Program, and 15) Dissemination and Implementation Science. The vision of the CCTSI is to accelerate and catalyze the translation of innovative science into improved health and patient care. To reach this vision, the mission of the CCTSI is to:

- Catalyze and enhance scientific discovery, innovation, dissemination, and translation across the lifespan,
- Educate and sustain a resilient, innovative, and diverse translational science workforce,
- Promote and ensure an efficient, safe, collaborative, and integrated research environment,
- Engage stakeholders and communities across the entire translational spectrum.

Some of the goals of the CCTSI are to:

- Develop, educate and sustain a diverse translational science workforce to ensure the highest research innovation, quality, and safety;
- Create a translational research environment in which team science and collaboration locally and nationally are facilitated, supported, and valued;
- Engage local and national communities and stakeholders in all phases of the translational research process; and
- Create novel methodologies and resources to support and integrate research in special populations, including children, the elderly, the underserved, and those with rare diseases.

A rigorous tracking, assessment, and evaluation program with a formal quality and process improvement component ensures the best use of resources while protecting the safety of research study participants. These programs are centralized at the CU Anschutz Medical Campus.

Since 2008, the CCTSI has:

- Established new infrastructure and improved resources and services for investigators.
- Tripled the number of CCTSI training and education programs supporting the lifespan of an investigational career.
- Administratively centralized and expanded the breadth of clinical research capacity and expertise.
- Provided state-of-the-art research facilities (Clinical and Translational Research Centers), personnel and testing for conduct of patient-oriented research in five locations.
- Established system-wide research informatics capabilities.
• Promoted team science and encouraged interdisciplinary research through pilot grant programs, educational opportunities and technology cores.
• Established an extensive community engagement program, from small towns to the inner city, from professors to farmers.
• Streamlined processes and reduced the regulatory burden for investigators.
• Partnered with the CU Cancer Center, Office of Regulatory Compliance and the Finance Office to implement critical new institutional software systems: 1) OnCore as a clinical research management system, 2) iLab Solutions as a core facilities management system, and 3) Health Data COMPASS as an enterprise Data Warehouse.
• Created an academic home for clinical and translational scientists and trainees.

The CCTSI was recently re-funded by NIH for the period 2018-2023 to support the full range of T0.5 through T4 translational research in a disease-agnostic manner across the breadth of the life cycle. Through the partnership with Colorado State University, which is recognized for its world-class school of veterinary medicine and other programs, the CCTSI has expanded the spectrum of translational research to include T0.5 research, translating promising pre-clinical discoveries into naturally occurring animal models (companion to domestic animals) of human disease.

The CCTSI has implemented two information systems for the research community: 1) “Colorado Profiles,” a search engine and networking tool for biomedical researchers at CU and affiliates, which receives over 20,000 monthly page views; and 2) REDCap (Research Electronic Data Capture) which is a secure, HIPAA-compliant web-based application designed for research data collection, storage and transfer. Over the past year, REDCap has supported more than 4,500 active users with more than 10,000 projects. The CCTSI provides resources and services, including five Clinical and Translational Research Centers (CTRCs), which facilitate and support more than 400 projects led by over 200 principal investigators; two clinical trials offices; Biostatistics, Epidemiology, and Research Design (BERD); research bioethics consultation services and assistance; research studios; informatics and database support; funding opportunities; and an array of educational and career development programs for clinical and translational investigators and their staff at all affiliated institutions.

CTRCs offer clinical research facilities, research nursing support, specimen and biopsy processing, bionutrition expertise, specialized laboratory assays, vascular ultrasound testing, exercise testing facilities, and other services to facilitate the conduct of patient-oriented research. Education programs include the Clinical Sciences PhD and master’s graduate program, KL2 research scholar program, and TL1 pre-doctoral and post-doctoral training program, Clinical Faculty Scholars Program, CO-Mentor training program, K-to-R transition program (mock study section), pre-K assistance program, the Leadership for Innovative Team Science (LITeS) program, and the Innovation-Corps (I-Corps) training program. A robust pilot grants program and new methods development funding program are popular CCTSI programs that have assisted numerous investigators in obtaining follow-on funding.

The Partnership for Academicians and Communities in Translation (PACT) was created by the CCTSI to transform the way communities and researchers work together to design and conduct research by building bridges between health research, clinical practice, and community health initiatives to improve the health of the people of Colorado and the Rocky Mountain region. The PACT encompasses more than 20 Colorado communities, 940 physician practices, and 28 hospitals throughout the region. The new Early Life Exposures Research Program facilitates research during pregnancy, infancy, and childhood, and emphasizes life-cycle research involving fetal and childhood precursors of adult disease. The new Innovation Ecosystem program provides early training in market evaluation (I-Corps@CCTSI) and support for commercialization for promising ideas and products. Our Research Studio Program organizes a customized team of experts to provide feedback and new ideas in a 90-minute focused session to investigators on a variety of topics chosen by the investigator.

The CCTSI is led by Ronald J. Sokol, MD, principal investigator and director of the CCTSI, and a team of associate directors and administrative staff, including Wendy Kohrt PhD, Janine Higgins, PhD, Tim Lockie, MS, MBA, Thomas Campbell, MD, Michael Kahn, MD, PhD, Nichole Carlson, PhD, Donald Nease, MD, MPH, Lisa Cicutto, PhD, Alison Lakin, JD, Thomas Flag MD, Elaine Morrato, PhD, Bethany Kwan, PhD, and Terri Hernandez, PhD, among others. Main offices are located on the third floor of the Leprino Building on the Anschutz Medical Campus and will relocate in 2021 to the Anschutz Health Sciences Building, which is currently under construction. More information and opportunities are available at https://www.cuanschutz.edu/cctsi.
Mission
Student and Resident Mental Health (SRMH) on the Anschutz Medical Campus exists to facilitate evaluation and treatment of mental health issues in students and residents/fellows of the Anschutz Medical Campus. By minimizing barriers to care, the center aims to reach as many students and residents as possible. The faculty at SRMH specialize in treating the issues students encounter and strive to provide them with optimal mental health treatment.
SMH was established in 2009 in the Department of Psychiatry and has expanded over the past 10 years to meet the needs of the students on campus. In 2015, a second SMH clinic site was opened. In 2019 SMH started offering services to residents and fellows at both CU Graduate Medical Education and Denver Health and Hospital Authority, thereby becoming Student and Resident Mental Health (SRMH). These expansions have allowed Student and Resident Mental Health to increase provider availability and ease of access by offering walk-in appointments, after-hours appointments, and same-day appointments as well as 24/7 on-call coverage by Psychiatry faculty.

AMC Student and Resident Mental Health New Evaluations

AMC Student and Resident Mental Health – Total Visits
SRMH accepts many insurance plans through CU Medicine. When utilizing on-campus care, students with the student-sponsored insurance have access to an unlimited number of visits with zero copay for covered diagnoses. Services offered at SRMH include:

- Diagnostic evaluation
- Medication management
- Psychotherapy
- Psychoeducational testing
- Group therapy

SRMH collaborates with a network of community providers and refers to this network if preferred by the student, if covered by certain insurance plans, and as needed due to provider expertise.

Students and residents/fellows present with various concerns including (but not limited to):

- acute stress management, test and performance anxiety, LGBTQIA issues, relationship difficulties, time management, ADHD, anxiety, depression, bipolar disorder, psychotic illnesses, substance use disorders, eating disorders, obsessive-compulsive disorder (OCD), post-traumatic stress disorder, personality disorders, and domestic violence.

SRMH offers several ongoing and brief groups including a cognitive behavioral therapy group for students with OCD, a skills-based ADHD group, a psychodynamic psychotherapy group, and periodic mindfulness meditation groups.

SRMH faculty collaborate with other faculty and departments on campus to provide education, outreach, and other events aimed at reducing stigma and providing education about mental health issues.

**Student and Resident Mental Health Fitzsimons Building**

*Services:* Behavioral/mental health care, on-site phlebotomy  
*Hours:* Mental health providers are available Monday - Wednesday 8 a.m. to 8 p.m. and Thursday through Friday 8 a.m. to 5 p.m.  
Walk-in appointments available Monday – Friday 8 a.m. to 4 p.m.  
*Appts.:* Schedule appointments at 303-724-4716 or smhservice@ucdenver.edu  
*Location:* Fitzsimons Building, 17th Avenue and Aurora Court, 2nd floor, #E2343  
*Website:* www.medschool.ucdenver.edu/amcstudentmentalhealth

**Current Providers and Staff**

- Rachel Davis, MD, Medical Director  
- Juan DeJesus, MD, Associate Medical Director  
- Julie Wolfe, MD, Associate Medical Director  
- Tamara Saunders, MBA, Clinic Manager  
- Matthew Pesko, MD  
- Debbie Carter, MD  
- Christian Hopfer, MD (Addictions)  
- Jane Miceli, MD (Eating Disorders)  
- Noa Heiman, PhD  
- Robert Rosenthal, PsyD  
- Janice Shire, APRN, CNS  
- Amanda Doria, LPC, Mental Health Triage Counselor, Wellness and Outreach Coordinator  
- Mallory Crouch, LCSW (Addictions)  
- Rachel Zavala, RD (Dietitian)  
- Kortney Mason, MA, Clinic Coordinator  
- Talay Salazar, Administrative Assistant  
- Cecelia Aguirre Villagomez, Administrative Assistant

**Student and Resident Mental Health at Campus Health Center**

*Services:* Behavioral/mental health care and physical health care  
*Hours:* Mental health providers are available Monday through Friday – 8 a.m. to 5 p.m.  
*Appts.:* Schedule appointments at 303-724-4716 or smhservice@ucdenver.edu  
*Location:* Anschutz Health and Wellness Center, Montview and Racine, 2nd floor  
*Website:* www.ucdenver.edu/anschutz/campushealth
Current Mental Health Providers
Ashley Perl, LCSW
Danielle Sukenik, LMFT (starting December 2019)

*24/7 crisis coverage is provided by the Department of Psychiatry faculty, fellows, and resident call system. If emergent treatment is needed, students can be seen in the UCHealth University of Colorado Hospital Emergency Department via the Student and Resident Mental Health track.

Recent Projects and Accomplishments
- Hired Intake Therapist to provide Monday-Friday walk-in availability
- Hired part-time addictions and eating disorder specialists
- Began to offer telehealth appointments for health professional students rotating within Colorado but outside of the Metro Denver area
- Centralized scheduling and administrative support to simplify access for students and residents
- Continuation of outreach project with the medical school which has resulted in increased utilization of SMH services by 100%
- Provided faculty mentorship and funding for Students Advocating for Mental Health, a student group which has hosted three student anti-stigma panels here on the AMC
- Provided faculty mentorship for this year’s Stress Fest
- Partnered with several residency programs to offer “opt-out” wellness/screening appointments
- Collaboration with the Denver Health Longitudinal Curriculum to offer prescheduled (optional) appointments for each student who will be granted a “required” mental health day
- Medical Student Mental Health Research: measuring mental health rating scales at matriculation and at the end of each academic year

Plans for 2018-2019 Academic Year
- Expand group psychotherapy options to include substance use support group, eating disorder group, dialectical behavior therapy group, and “Change in Plans” group for students needing or wanting to find a new career path
- Increase the number of clinicians offering evening hours
- Expand educational and outreach efforts, including provide talks and seminars on topics related to self-care, resilience, burn-out, and other topics relevant to health professional students
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
Graduate School Programs Partnered with the School of Medicine
**Biomedical Sciences and Biotechnology (BSBT)**
The Professional Science Master’s Program in Biomedical Sciences and Biotechnology (BSBT) at the University of Colorado Denver | Anschutz Medical Campus is an interdisciplinary and cross-campus program that provides strong training in the biomedical sciences as well as in technical and business aspects of biotechnology, including regulatory affairs, intellectual property, project management, and entrepreneurship. The two-year program (38 credits) builds a solid foundation for graduates to be competitive in the biotechnology workforce or to move on to research (PhD) or medical training. Associate Dean Inge Wefes, PhD, is the Director of this program. This Master’s Program continues to be successful. Starting in fall 2019, students will be able to select a more research focused concentration in Structural Biology or Immunology and Microbiology.

[https://gs.ucdenver.edu/biotech/](https://gs.ucdenver.edu/biotech/)

**Biomedical Sciences Umbrella (BMSC)**
The Biomedical Sciences Program (BSP) was formed at the University of Colorado Anschutz Medical Campus in 1997. The BSP serves as an umbrella program, providing incoming students with the ability to rotate with faculty across numerous disciplines and graduate programs. This provides significant flexibility for students to choose from different research areas in which to pursue their graduate degrees. Since 2017, Professor Kristin Artinger, PhD, has been the director of BSP, and has an established executive committee of faculty members representing multiple programs, to help advise students through their first year. Students who matriculate in the BSP will perform coursework and laboratory rotations in their first year. For rotations, students can choose to rotate in the labs of any of the over 160 faculty in the program. Upon successful completion of the first year of graduate school, the students will then join their laboratory of choice, as well as one of the 11 graduate programs housed at the University of Colorado Anschutz Medical Campus. It is our goal in the BSP to expose incoming graduate students to a variety of biomedical science related disciplines, train students to evaluate scientific literature, think critically, develop testable hypotheses, and guide them in their search for a biomedical discipline in which to perform thesis research.

[http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Biomedical/Pages/home.aspx](http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Biomedical/Pages/home.aspx)

**Cancer Biology (CANB)**
The interdepartmental program leading to the PhD in Cancer Biology emerged in 2006 as a result of re-organization the Department of Pathology’s graduate program in Experimental Pathology. The program has been under the direction of Professor Mary E. Reyland, PhD, since 2010 and combines training in the basic biomedical sciences with opportunities to apply clinical and translational research to studies on human cancer. The Cancer Biology Program is committed to educating PhD students in the fundamentals of modern biomedical research, but differs from more traditional programs in that it also provides opportunities for students to learn about clinical and translational aspects of cancer biology. We believe that understanding cancer from multiple perspectives will better prepare our students to compete in a biomedical research environment increasingly focused on translational applications of basic research. The goal of the Cancer Biology Program is to attract outstanding students with the highest potential and to stimulate in them the independent and creative scientific thinking necessary to develop future leaders in the multifaceted field of cancer research. The program’s highly accomplished training faculty includes over 40 basic and clinical scientists drawn from the fields of biomedical and clinical sciences. Areas of emphasis include lung, breast, head and neck, prostate, bladder and blood cancer. Our curriculum is rigorous, yet flexible, and provides opportunities for advanced study in cellular and molecular oncology, as well as the translational medical sciences. The University of Colorado Anschutz Medical Campus is home to an NIH-designated Comprehensive Cancer Center, an acknowledgment of its role as a leader in both clinical cancer treatment and basic cancer research. Our research community brings together scientists with diverse research approaches to focus on the problem of cancer. Graduate students are a vital part of this community and as a program we strive to build a vibrant and supportive learning environment. The program facilitates multiple events to build this community including journal clubs, a seminar series, poster sessions and an annual retreat in the Rocky Mountains.

[http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/cancerbiology/Pages/home.aspx](http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/cancerbiology/Pages/home.aspx)
Cell Biology, Stem Cells and Development (CSDV)
The Graduate Program in Cell Biology, Stem Cells and Development (CSD) was created in 2007 as an interdepartmental and inter-disciplinary training program, engaging students and faculty from more than 10 basic science and clinical departments and numerous members of the Gates Center for Regenerative Medicine. The CSD program provides graduate training for doctoral students in hypothesis-driven experimental approaches and cutting-edge technology to allow students to pursue important questions at the juncture between the fields of cell, developmental, and stem cell biology. CSD students and faculty have common interests in understanding how cells function and signal in development, regeneration, and disease. This common curiosity promotes extensive collaboration and interaction among labs, and creates a fantastic intellectual environment. Our students consistently say that the prime reason for selecting the CSD program is the collaborative and open nature of interactions among members of the program. The program currently comprises an interactive group of 33 students and over 50 training faculty, which is sufficiently small to provide a close-knit, supportive yet rigorous, training environment, while large enough to provide a scientifically varied set of labs and mentors with which to interact. In the past year, CSD students published 10 scientific presentations, presented their work at numerous national and international scientific conferences and organized several scientific outreach activities for middle and high school students. Professor Bruce Appel, PhD, has been leading the Program for the last several years. In 2017, he brought on a co-chair, Associate Professor Jeffrey Moore, PhD. In fall 2019, Moore will take over the directorship full time.
http://www.ucdenver.edu/academics/colleges/medicalschool/programs/CSD/Pages/home.aspx

Clinical Science (CLSC)
The Clinical Science Graduate Program (CLSC) is the primary degree-granting program for advanced training in clinical-translational research for the University of Colorado Denver | Anschutz Medical Campus and for the Colorado Clinical and Translational Sciences Institute (CCTSI). The overall goal of the University of Colorado Denver | Anschutz Medical Campus Graduate Program in Clinical Science (CLSC) is to train nationally competitive clinician/clinical translational scientists by providing a formal, structured, and rigorous educational program in the clinical and translational sciences. The Clinical Science Graduate Program was designed in response to the demand for well-qualified clinical researchers in academia and industry. The critical need for individuals capable of conducting rigorous, credible, and relevant patient-based research within stringent ethical and regulatory guidelines, and translating the evidence for community application, is expected to continue to grow. The Clinical Science program was one of the first clinical science training programs to be offered in the country and received a NIH K30 award to operate the program starting in 1999. The program offers both doctoral and master’s programs. For doctoral students, there is a selected emphasis of study in one of the following three areas: Clinical Investigation and Outcomes, Health Information Technology, or Health Services Research. These three areas of clinical science represent general directions of study for translational research activities in the evolving health care environment. The Health Services PhD is a collaborative program with the Colorado School of Public Health. Our training programs are designed to be multi-disciplinary and achieve proficiency in the areas of clinical science and translation, and include courses in biostatistics, clinical epidemiology, clinical studies design, critical appraisal, ethics and responsible conduct of research, team science, and grant writing. In addition, formal mentoring with interdisciplinary clinical and translational faculty complements the rigorous training. The Clinical Science Program has over 80 students and approximately 140 faculty members involved in the teaching, career development, and mentoring of our students. Our students and faculty are diverse and multi-disciplinary. Our environment is conducive to supporting team science approaches to address the complexity of conducting rigorous and responsive science to meet societal needs and priorities. Currently, over 70 percent of CLSC alumni hold grant support, of which about 45 percent is NIH funding, and have published over 1,000 peer-review manuscripts in journals such as Pediatrics, JAMA, Circulation, and Cancer. Lisa Cicutto, PhD, APN, RN, is the Program Director.
http://www.ucdenver.edu/research/CCTSI/education-training/clsc/Pages/default.aspx

Computational Bioscience (CPBS)
The Computational Bioscience Program of the University of Colorado Denver | Anschutz Medical Campus is dedicated to training computational biologists who aspire to achieve excellence in research, education, and service, and who will apply the skills they learn toward improving human health and deepening our understanding of the living world.
The Computational Bioscience program provides graduates with the foundation for a lifetime of continual learning. CPBS creates professionals who are prepared to conduct novel interdisciplinary research in the fields of translational bioinformatics, clinical research informatics, and computational molecular biology. Graduates have the expertise to join faculty programs in bioinformatics, medicine, or computer science, or to assume high-level research positions in government or industry. The curriculum integrates training with computation and biomedical sciences with student research and teaching activities that grow increasingly independent through the course of the program. Students begin supervised research immediately, collaborating with top scientists, working with the latest high-throughput instruments on critical biomedical problems. Research training spans computational aspects of basic translational and clinical sciences in a wide variety of disciplines and disease areas. Professor Lawrence Hunter, PhD, directs this Program.

http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/computational-bioscience/Pages/home.aspx

Genetic Counseling (GENC)

The Master of Science Program in Genetic Counseling integrates extensive coursework in human clinical and laboratory genetics and genomics, psychosocial, and counseling theory, research, and ethical, legal, social, and professional practice issues with over 1,000 hours of direct, supervised clinical training with patients in pediatric, reproductive, oncology, metabolic, adult, and specialty genetics clinics. During the second year, students complete a scholarly mentored capstone project addressing a current clinical practice, laboratory, educational, policy, or service delivery issue in genetic counseling. The program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC) and its graduates are eligible to sit for the national certification exam administered by the American Board of Genetic Counseling (ABGC). Program alumni play a critical, expanding role in the healthcare system and are at the forefront of precision genomic medicine initiatives. The Bureau of Labor Statistics identifies genetic counseling as one of the fastest-growing healthcare fields. Alumni practice in hospitals, academic, and private genetics centers, clinical research programs, diagnostic laboratories, biotechnology companies, public health departments, and patient advocacy organizations. As members of multidisciplinary health care teams, genetic counselors provide scientific expertise, education, risk assessment, non-directive support for decision making and psychosocial needs, and community resources for individuals and families so that they can understand and appropriately utilize genetic information and testing to promote informed health care choices. Laboratory-based genetic counselors serve as professional liaisons to hospital systems, individual health care providers, and their patients. They help providers and patients understand new testing modalities and appropriate testing options, conduct utilization management review to promote cost-effective use of genetic testing, and provide individualized results interpretation. Many program alumni are faculty at their institutions, promoting genomic literacy as educators of trainees, other healthcare professionals and the public, and conducting clinical and translational research. Others facilitate support and advocacy groups for genetic conditions, engage in health care policy development regarding genetic services, and provide consulting to biotechnology and other industries. Associate Professor Carol Walton is the Program Director for Genetic Counseling.

http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/genetic-counseling/Pages/default.aspx

Human Medical Genetics and Genomics (HMGG)

The Human Medical Genetics and Genomics Graduate Program at the University of Colorado School of Medicine provides training to graduate students interested in a field of research that has seen an unprecedented explosion of data, knowledge, and innovative technologies. DNA sequencing of genomes of humans and other species, discovery of genes and variations that underlie development and disease, and rapid application of these discoveries to medical practice is revolutionizing medicine by precise diagnostic tests, targeted treatments, and even disease prevention. It is anticipated that “personalized” or “precision” medicine will thereby dramatically improve human health, longevity, and quality of life. Founded in 1997, the Human Medical Genetics and Genomics PhD program teaches our students modern genetics and genomics theory and methodology, critical reading and assessment of the literature, formulation and testing of research hypotheses, advanced experimental techniques, bioinformatic and statistical analysis of genomic and other “omics” data and interpretation of results to answer key scientific questions. Our faculty includes over 50 laboratory scientists and clinicians, providing an exceptionally interactive and collaborative environment that enables quick translation of the latest genetic and genomic discoveries from the bench to the bedside. Our goal is to provide a nurturing yet rigorous training environment in which our students can thrive intellectually and be scientifically productive under the guidance of a supportive and highly collaborative faculty. As a result, our students have presented their research at national and international scientific conferences, published their research in highly respected scientific journals, and have received awards and grants from institutional and external funding agencies. Our PhD students have also been highly successful in their subsequent careers, including in academia, industry, teaching, as well as non-traditional settings like forensics and regulatory affairs. The Program Director for HMGG is Professor Tamim Shaikh, PhD.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/HumanMedicalGenetics/Pages/Genetics.aspx
Immunology (IMMU)
The Graduate Program in Immunology at the University of Colorado Denver | Anschutz Medical Campus was formed in 1989 as an interdepartmental immunology training program and whose success was a factor motivating the establishment of the Department of Immunology within the School of Medicine in 1993. While the majority of the immunology training faculty are members of the Department of Immunology and Microbiology at the University of Colorado School of Medicine, faculty trainers come from an additional 12 departments and divisions within the School of Medicine as well as National Jewish Health and the Barbara Davis Center for Diabetes. Professor Raul Torres, PhD, has been the Director of the Graduate Program in Immunology since 2006 and Ross Kedl, PhD, has served as Associate Director since 2010. In fall 2019, Professor Laurel Lenz, PhD, will succeed Torres as Program Director.

Colorado has a rich history of seminal discoveries in immunology and a primary mission of our nationally recognized graduate program in immunology is to educate and train the next generation of top immunologists to direct competitive independent research programs. However, in appreciation that not all of our graduates wish to develop the skills to lead academic or industry research programs, we further strive to provide the immunological expertise to our graduates to inform areas of public health, science policy, and education. To accomplish this, we offer our program students rigorous didactic courses in immunology and related fields, and foster intellectual development and experimental competence via faculty evaluation throughout their didactic and experimental studies and at multiple levels. As many of our major current national and global health issues result from immunological-based diseases, our graduate program further is committed to educating and exposing our basic science doctoral students to translational science approaches and clinical settings to further enrich the immunology student graduate experience in a practical and meaningful manner.

http://www.ucdenver.edu/academics/colleges/medicalschool/departments/ImmunologyMicrobiology/gradprogram/immugradprog/Pages/ImmuGradHome.aspx

Integrated Physiology (IPHY)
The Integrated Physiology graduate program offers multidisciplinary PhD training in biomedical systems biology. Students have opportunities to study how cells, organ systems, and organisms regulate complex physiological functions, with emphasis on cardiac and vascular biology, molecular nutrition and metabolism, reproductive biology, and single cell systems. Professor James McManaman, PhD, is the Program Director.


Medical Scientist Training (MSTP)
The Medical Scientist Training Program (MSTP) is a multidisciplinary, inter-institutional MD/PhD dual degree training program educating students in clinical medicine and biomedical research. Its mission is to provide students with the breadth and depth of training necessary to excel as a physician scientist. Post-baccalaureate students are recruited from a national pool of ~450 applicants, and those selected have proven exceptional talents in research science, a curiosity to solve mechanisms of disease, a drive for discovery, a motivation to pursue a career in medicine, and exceptional leadership. The program was formed in 1983, and in 1992 it received MSTP status by successfully competing for NIH T32 funding (currently ~$795K/year to support 16 trainees per year). The program has strong leaders and mentors, with Professor Arthur Gutierrez-Hartmann, MD, directing the MSTP since 1994. He has been selected for numerous local and national mentor awards, and national leadership roles in MD/PhD and graduate education. Patricia Ernst, PhD, serves as the Associate Director, and provides individualized guidance to each student via regular meetings and interactions. The program has been competitively reviewed and funded by NIH for each of the past four cycles. The Medical Scientist Training Program has been a campus and national leader in recruiting students underrepresented in medicine, and has received diversity awards from CU and commendations from the National Institute of General Medical Sciences, highlighting the Colorado MSTP on its diversity website. There are over 150 faculty mentors in 17 PhD Programs at the Anschutz Medical Campus, National Jewish, and the CU Boulder campus. There are currently 69 students in the program: nine in the first year (MSI), nine in the second year (MSII), 38 in the PhD research years, and 13 in the Medical School Clinical years (MSIII and MSIV). Since 1983, 191 students have matriculated in the program.
Graduates of the MSTP obtain residencies at the nation’s elite programs, with ~75 percent of those completing all training now in academic medicine, government (NIH or CDC), or industry, including starting up their own biotech companies. Importantly, we have an increasing number of MSTP graduates who are now faculty at the Anschutz Medical Campus. The Colorado MSTP and its leaders have been key in establishing the National Association of MD/PhD Directors and Administrators, the MD/PhD Section of the Association of American Colleges Graduate Research, Education and Training (GREAT) Group, and the annual national MD/PhD Student Conference. Finally, we have taken the initiative to bring together, via social and academic venues, all MD/PhDs on the Anschutz Medical Campus, across all stages of training, from student to faculty, to establish an interactive, supportive cadre of physician-scientists, in order to optimize career success for this group.

http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/mstp/Pages/MSTP.aspx

**Microbiology (MICB)**
The Graduate Program in Microbiology at the University of Colorado Anschutz Medical Campus is a PhD-granting education and training program designed to prepare students for outstanding careers in science. Through rigorous didactic courses and mentored experimental studies, the program trains students in diverse areas of microbiology, including molecular pathogenesis of viral, bacterial, and parasitic diseases and the role of the microbiome in human health and disease. Our program strives to provide students with the scientific expertise to become leaders in competitive independent research programs, science education, science policy, and industry.

Although based within the Department of Immunology and Microbiology, the program faculty includes members of the Departments of Medicine, Neurology, Pediatrics, and Biochemistry and Molecular Genetics. Associate Professor Tem Morrison, PhD, serves as the Program Director and is supported by committees comprised of faculty and student representatives to facilitate advising, admissions and recruitment, evaluations and promotion, and student enrichment and governance. The research interests of the faculty that participate in the Graduate Program in Microbiology are diverse and include molecular mechanisms of infectious disease pathogenesis, effects of the microbiome on human health and disease, innate and adaptive immune responses to infection, pathogen immune invasion strategies, products and metabolites associated with infectious disease outcomes, regulation of gene expression of both host and pathogen, and identification of potential vaccines and therapeutics to prevent or mitigate infectious diseases. With recent appreciation for emerging infections, human risk factors for infectious diseases, and the complexity of the microbiome, the topics of microbiology and pathogenesis of infectious disease are important fields in biomedical research.

http://www.ucdenver.edu/academics/colleges/medicalschool/departments/ImmunologyMicrobiology/gradprogram/microgradprog/Pages/Micro%20PhD%20Grad%20Program.aspx

**Modern Human Anatomy (ANAT)**
The Master of Science in Modern Human Anatomy (MSMHA) at the University of Colorado Anschutz Medical Campus is a two-year master’s degree program introduced by the Department of Cell and Developmental Biology in spring 2012. Under the leadership of the Executive Director, Thomas Finger, PhD, the program will host a total of 54 students in fall 2018. The Master of Science in Modern Human Anatomy (MSMHA) Program at the University of Colorado Anschutz Medical Campus is innovative, bridging an established anatomy/developmental biology curriculum with the foundations of digital imaging technologies now in use in medical care, biomedical research, medical illustration, and teaching. This program blends modern and classical approaches to anatomical study, with a goal of producing a new generation of anatomical professionals prepared for diverse careers. The program emphasizes an individualized, flexible approach to professional growth and career development through a student-designed Capstone Project. Extensions of the virtual 3-D human body are at the forefront of diagnostic imaging and surgical interventions that are increasingly commonplace in the medical setting. Virtual human anatomy and advanced imaging technology have also become a platform for the development of new instructional venues as well as the design of simulators and protocols for advanced procedural training. This two-year program will prepare graduates to work in a broad spectrum of educational and biomedical sub-specialties where creativity and innovation abound and knowledge of human anatomy is highly valued. The MSMHA provides this graduate level training and teaching experience in the physical and virtual anatomical sciences through human cadaver dissection, neuroanatomy, histology and embryology. All training is addressed from a modern perspective stressing quantitative imaging, modeling, informatics and clinical applications. The curriculum is translational in integrating computer and engineering technologies into the domains of anatomy and developmental biology through a project oriented curriculum. MSMHA students routinely travel to regional, national, and international conferences, delivering platform presentations and poster presentations.

http://www.ucdenver.edu/academics/colleges/medicalschool/departments/CellDevelopmentalBiology/MSMHA/Pages/default.aspx
Molecular Biology (MOLB)
The Molecular Biology Program at the University of Colorado Anschutz Medical Campus is dedicated to providing rigorous training to its students in a supportive environment. The Molecular Biology faculty are members of 11 departments who are applying the techniques of molecular biology to answer questions at the forefront of modern biology and medicine. Molecular biology, the science of how living organisms function at the molecular and cellular level, has spearheaded the recent revolution in our understanding of human disease and led to the birth of the biotechnology industry. The goal of the Molecular Biology Program at CU Anschutz Medical Campus is simple: to equip students for careers at the cutting edge of biological research. The faculty is committed to providing students with the training they need to carry out the highest-quality research using state-of-the-art techniques. The teaching philosophy is to instill the theoretical knowledge and practical experience that enables our students to identify important questions in science, to design experiments that address those questions, and to critically evaluate results. Special emphasis is placed on learning to communicate research results to others effectively by participating as featured speakers in the program’s seminar series. We believe that training students to become scientists prepares them for careers in many areas. Previous graduates of the program are now working in academic, government, and industrial biotechnology research, teaching, and public policy positions. Molecular Biology Program faculty include members of the Departments of Biochemistry and Molecular Genetics, Cell and Developmental Biology, Medicine, Immunology and Microbiology, Pathology, Pharmacology, Pharmacy, Pediatrics, Craniofacial Biology, Rheumatology, and Obstetrics and Gynecology, and include internationally recognized experts in bioinformatics, cancer, cell biology, development, gene expression, genomics, microbiology, molecular structure, and virology. Their interests provide students with a choice of areas in which to pursue their thesis research. An annual retreat to the Rocky Mountains encourages interaction between students and faculty and also familiarizes the students with the research goals and progress of each faculty member. The Molecular Biology Program has been recognized as a Center of Excellence at the CU Anschutz Medical Campus, and was honored to receive a ~$2M private endowment, the Victor and Earleen Bolie Scholarship Fund, to support student education, research, and training. Along with this funding opportunity, the program continues to be funded by a highly competitive NIH pre-doctoral T32 training grant, currently in year 19. Our students have recently been awarded Howard Hughes Medical Institute pre-doctoral fellowships, along with National Science Foundation Graduate Research Fellowships. The program, along with the University, continues its efforts to increase the number of underrepresented students, with the goal of training them to become important contributors to the biomedical research field and their communities. Professor Rytis Prekeris, PhD, is the current Director.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/Molbio/About/Pages/about.aspx

Neuroscience (NRSC)
The Neuroscience Program (NSP) was formed in the late 1980s as a PhD graduate training program within the Graduate School, based at that time in the University of Colorado School of Medicine. The CU Board of Regents awarded the NSP PhD granting status in 1992. The current NSP Director is Professor Sukumar Vijayaraghavan, PhD. The Neuroscience PhD Training Program at the University of Colorado Anschutz Medical Campus provides multidisciplinary training covering the breadth of neurobiology, from neuronal gene regulation to the development, structure, and function of the nervous system. Students receive training in cellular and molecular neurobiology, neural development, neuropharmacology, and biochemistry, as well as hands-on training in state-of-the-art laboratory techniques. Since 2001, the program has been the recipient of the prestigious Jointly Sponsored Pre-doctoral Training Program in Neuroscience. This is sponsored by nine NIH institutes and there are only 28 such awards across the nation. The program’s goal is to provide a broad and solid foundation of understanding in neuroscience, and to train critical thinkers who identify important problems, generate experimentally testable hypotheses, and who draw significant conclusions from the results of their ongoing research in a specific area of neuroscience. Students completing the requirements for the Neuroscience PhD will be independent investigators prepared to make important contributions to research and to the education of future generations of neuroscientists. The program is closely allied with other departments at the Anschutz Medical Campus, giving students the opportunity to interact and learn from researchers and teachers of many backgrounds.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/Neuroscience/Pages/Neuroscience.aspx
Pharmacology (PHCL)
The Department of Pharmacology and the Pharmacology PhD Training Program each have a long and well-established history of training biomedical sciences PhD students, medical students, and post-doctoral fellows in the School of Medicine. The NIH-funded Pharmacology pre-doctoral Training Grant (T32) is one of the longest-standing grants of its type in existence. Students enter the Training Program either directly, or via the Biomedical Sciences (umbrella) program, or the Medical Scientist Training Program (MSTP). The Pharmacology Training Program is interdisciplinary and interdepartmental with faculty members having primary appointments in the Departments of Pharmacology, Medicine, Psychiatry, Physiology, Pediatrics, and Biochemistry & Molecular Genetics. Training Program faculty are nationally and internationally renowned in the areas of neuroscience, cancer biology, cardiovascular biology, signal transduction, structural biology, and bioinformatics. One of the key defining features of the Pharmacology Program training faculty is the highly collaborative and interdisciplinary approach to their work. Laboratories, singularly or in collaboration, frequently use multiple parallel approaches including molecular biology, structural biology, genomics, and informatics, and cutting-edge methodologies employing high-powered imaging techniques including optogenetics. Another defining feature of the program is the focus on personalized medicine and translating fundamental benchtop discoveries to clinical practice. Professor David Port, PhD, directs this PhD program.

http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/Pharmacology/Pages/home.aspx

Rehabilitation Science (RHSC)
Rehabilitation Science (RHSC) is translational field of study that integrates knowledge from the basic and clinical sciences to improve our understanding of human movement, physical function, and disability across the lifespan. Students receive individual mentorship from nationally recognized rehabilitation scientists in state-of-the-art research facilities, with a customized curriculum to meet the interests of each student. Breadth of knowledge is acquired through foundational coursework in research design, biostatistics, and rehabilitation science, whereas depth of knowledge is gained through elective coursework in one of five areas of specialization: applied cellular physiology, exercise and cardiopulmonary physiology, motor control, biomechanics, and lifespan studies. This approach prepares students to become independent research scientists who integrate knowledge from multiple perspectives ranging from the molecular to the systems level to solve complex problems of physical disablement that will advance clinical practice in the field of physical rehabilitation. Professor Jennifer Stevens-Lapsley, PT, PhD, is the Director of the RHSC Program.

http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/rehabilitation-science/Pages/Overview.aspx

Structural Biology and Biochemistry (STBB)
The Structural Biology and Biochemistry Program is interdisciplinary, involving all aspects of biomedical research, particularly in the area of macromolecular structure/function, biophysics, lipidomics, and proteomics. It aims to provide students with specialized skills and a solid foundation in biomedical, biophysical, and structural sciences through course work and research training. To support the research needs of faculty and students of the Structural Biology and Biochemistry Program, the program makes use of six well-developed core facilities, each specializing in an important facet of biomedical research and essential for the advancement of research and training in Structural Biology and Biochemistry. These core facilities consist of Nuclear Magnetic Resonance spectroscopy (NMR), X-ray crystallography, Mass spectrometry/proteomics, Biophysics, and Peptide/protein chemistry, and the new CryoEM. These facilities are readily accessible to faculty, graduate students, postdoctoral fellows and other research staff, and are supported independently of the Graduate Program. The focus and interdisciplinary nature of the Program in Structural Biology and Biochemistry positively influences many other instructional and research programs at the CU School of Medicine. The program’s educational components support the research in many of the laboratories that require knowledge of the highly technical and specialized structural biology research tools, and this enhances the overall effectiveness and quality of the research and overall research productivity of the campus. Professor Mair Churchill, PhD, is the Director.

http://www.ucdenver.edu/academics/colleges/Graduate-School/academic-programs/biomol/Pages/home.aspx
Photo courtesy of Jonathan Radin, Director of Clinical Strategy & Program Development, Department of Surgery, School of Medicine
### 2018-2019 Deceased Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
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<tbody>
<tr>
<td>James Arthur, MD</td>
<td>Clinical Professor Emeritus</td>
<td>Pediatrics</td>
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<tr>
<td>Jeffrey Brown, MD</td>
<td>Clinical Professor</td>
<td>Pediatrics</td>
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<tr>
<td>Leslie Burrows, PhD</td>
<td>Founding Dean, School of Dental Medicine</td>
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<tr>
<td>Richard Deitrich, PhD</td>
<td>Professor Emeritus</td>
<td>Pharmacology</td>
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<tr>
<td>Constantine John Falliers, MD</td>
<td>Associate Clinical Professor</td>
<td>Medicine</td>
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<tr>
<td>Maureen Garrity, PhD</td>
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<tr>
<td>Robert Baer Gibbons, Col., MD</td>
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<td>Medicine</td>
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<tr>
<td>Sidney Glassman, PhD</td>
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<td>Loren Eugene Golitz, MD</td>
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<td>Jennifer Gong, PhD</td>
<td>Assistant Professor</td>
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<td>Frank Guerra, MD</td>
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<tr>
<td>Jack Humphrey, DO</td>
<td>Associate Professor Clinical Practice</td>
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<tr>
<td>Donald W. King, MD</td>
<td>Professor</td>
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<td>Jeffrey MacCollam Brown, MD</td>
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<td>Michael Manco-Johnson, MD</td>
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<tr>
<td>Mickey Mandel, MD</td>
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<td>Erich Marchand, MD</td>
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<td>Steven Perry, MD</td>
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<td>Stuart Schneck, MD</td>
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<td>Peter Shaughnessy, PhD</td>
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<td>John Strain, MD</td>
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<td>Jeffrey Wagener, MD</td>
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<td>Bruce Wallace, PhD</td>
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<tr>
<td>James Weisfeld-Adams, MD</td>
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<td>Pediatrics</td>
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<tr>
<td>Sara ‘Sue’ Zimet, MD</td>
<td>Professor Emerita</td>
<td>Psychiatry</td>
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Our condolences to the families and friends of our former colleagues.