2014
FACTS AND FIGURES
University of Colorado
School of Medicine

1883-2014
Celebrating 131 years
The University of Colorado School of Medicine had an eventful and remarkable year in 2014 setting the stage for expanded opportunities to teach and learn, research and discover, cure and care here on the Anschutz Medical Campus and around the world.

The financial security provided by the excellent clinical work of our faculty is bolstered by solid research funding and generous gifts from many donors. We have assembled in this Facts and Figures report the details of many of our wonderful programs to show how we are responding to the health needs of our community. Here are just a few highlights:

This year, the Center for Personalized Medicine and Biomedical Informatics was established and created a new division in the Department of Medicine to focus on the abundant, detailed information we now can gather from individual genomes. This campus-wide effort should lead to significant changes in how we understand and treat many ailments.

The CU Alzheimer’s Disease Research and Clinical Center, also newly created during the past year, will become a major hub for addressing an incurable ailment that affects so many people. Director Huntington Potter, PhD, professor of neurology, took that message to the state capital earlier this year, warning that Alzheimer’s disease is a “tsunami which will sink us if we don’t solve the problem.” Lawmakers earmarked $250,000 to help us get the program going.

The departments of Immunology and Microbiology were reunified and consolidated on the Anschutz Medical Campus. John Cambier, PhD, was named chair of the newly renamed Department of Immunology and Microbiology. This move will promote excellent collaboration between our scientists.

The Department of Emergency Medicine established University of Colorado Travel, Expedition and Altitude Medicine (TEAM) clinic and attracted patients right away, from climbers heading to Mount Kilimanjaro to visitors coping with Colorado’s altitude. The Department also established a new section on Wilderness and Environmental medicine for that growing academic discipline.

These activities are prime examples of our School’s leadership in offering the best opportunities for learning and providing the best place to apply the knowledge we gain. The good work we do every day on this campus is often focused directly on students, patients, experiments and other specific endeavors, but taken together, our individual efforts on this campus have a huge impact on our community and on the Colorado economy.

A report released earlier this year showed that the CU Anschutz Medical Campus infused $2.6 billion in direct spending into the state economy in the fiscal year ending June 30, 2013, and provided 21,954 jobs. Our productivity is supported by generous donors who gave $69.5 million last year to endeavors on our campus.
Those gifts make great achievements possible. With a $2 million gift from philanthropist Frederic C. Hamilton we are buying equipment for a new state-of-the-art eye care facility. With $2 million – $1.5 million from an anonymous donor and $500,000 from The Battin Trust – we are supporting groundbreaking diabetes research by Marian Rewers, MD, PhD. With a $5 million anonymous gift, we are helping William Robinson, MD, PhD, search for more targeted therapies for melanoma.

The research at our School is supported primarily by grants that our faculty work hard to earn. For example, our School shared with Duke University’s medical school a $10 million grant from the National Institute for Nursing Research (NINR), part of the National Institutes of Health, to continue the development of the Palliative Care Research Cooperative Group (PCRC) over the next five years. Jean Kutner, MD, MSPH, professor of medicine who recently became Chief Medical Officer for University of Colorado Hospital, helps lead that effort.

And our faculty members have been winning attention for their work. In between performing surgeries, Omer Mei-Dan, MD, assistant professor of orthopedics, coordinated a major international symposium on treating sports injuries and developed a television program, Cutting Edge MD, that appeared on Fox Sports. Holly Wyatt, MD, associate professor of medicine, Division of Endocrinology, Metabolism, and Diabetes, was prominently featured as the medical advisor on ABC’s Extreme Weight Loss program, which films here at the Anschutz Health and Wellness Center.

These kinds of achievements will continue even as we make transitions in the School’s leadership. In January I announced that I will step down as Dean when my successor is hired. That process has been moving along this year and should be completed soon. I am confident that we as a School that will continue to thrive because we have remained true to the cause outlined by our School’s founders in 1883 when they said the goal is to “secure a higher standard of medical education for those who may, in the future, be entrusted with the lives and with the health of our citizens.”

Even as science and technology advances and as we recruit accomplished faculty and ever-more talented students, there is continuity with that original mission: We remain concerned with making life better.

We see it in our medical staff at the clinic in Guatemala that opened this year and we see it in the planning for our new Colorado Springs branch, where 24 medical students will soon receive clinical training.

We see it in the work of David Olds, PhD, professor of pediatrics, who announced this summer the outcomes of a research project that began in 1990. He studied a way to help save the lives of low-income mothers and their first-born children with in-home nurse visits.

And we see it in the work of Roberta Capp, MD, assistant professor of emergency medicine, who this year developed “Hot Spotters,” an educational summer program for college students and recent graduates. These prospective health care professionals help frequent users of the emergency room address their living needs, which may reduce their future dependence on emergency rooms for primary care.

We will continue to see great successes like these due to the dedication of our faculty and staff, the excellence of our students and our combined commitment to learning and service. I will be conducting research and building support for the Kempe Center for the Prevention and Treatment of Child Abuse and Neglect and I will be watching my colleagues with pride.

Thanks to everyone who has made this a terrific place to be. I’ve loved every minute of it.

Richard Doughman
To see Faculty Awards and Accomplishments, go to medschool.ucdenver.edu/factsfigures
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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.

Vision Statement

Approved by the Executive Committee (October 2008) and Faculty Senate (November 2008)

The University of Colorado School of Medicine will accelerate its growth at the new Anschutz Medical Campus from its status as the premier medical school in Colorado and the western region to its place in the top ten percent of American medical schools by the year 2020.
Values Statement

Approved by the Executive Committee (October 2008) and Faculty Senate (November 2008)

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.
Diversity Values Statement

Approved by the Executive Committee (October 2008) and Faculty Senate (November 2008)

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.
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ADMINISTRATION AND BUSINESS AFFAIRS
CU School of Medicine Trend in Revenue Sources

Trend in State Funding
Trend in Academic Enrichment Funds (AEF)

In Thousands of Dollars

Revenue
Expenses
Balance

$0
$5,000
$10,000
$15,000
$20,000
$25,000
$30,000
$35,000
$40,000
$45,000
$50,000

84-85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14

Total AEF Expenditures: $348,244,715

1 Figures are based on expenditures through June 30, 2014
University Physician, Inc. Income Summary 2013-2014

CU School of Medicine Grant Funding Trend 2006-2014

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Total Federal Awards</th>
<th>Total Non-Federal Awards</th>
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<td>2006</td>
<td>$220,032,670</td>
<td>$100,338,972</td>
<td>$320,371,642</td>
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<td>2007</td>
<td>$211,006,101</td>
<td>$112,533,841</td>
<td>$323,539,942</td>
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<tr>
<td>2008</td>
<td>$195,686,356</td>
<td>$130,667,368</td>
<td>$326,353,724</td>
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<tr>
<td>2009</td>
<td>$186,757,269</td>
<td>$126,741,145</td>
<td>$313,498,414</td>
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<tr>
<td>2010</td>
<td>$217,573,907</td>
<td>$126,768,607</td>
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<td>2011</td>
<td>$220,880,197</td>
<td>$112,714,400</td>
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<tr>
<td>2012</td>
<td>$217,833,943</td>
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<td>$197,445,273</td>
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<td>2014</td>
<td>$184,210,137</td>
<td>$151,880,910</td>
<td>$336,091,047</td>
</tr>
</tbody>
</table>

* Note ARRA
Clinical Science Faculty

- Unrestricted State + Tuition: 74.9%
- UPI Clinical & Contract: 6.5%
- Grants & Contracts: 5.1%
- Other Revenue: 0%

Basic Science Faculty

- Unrestricted State + Tuition: 49.3%
- UPI Clinical & Contract: 35.7%
- Grants & Contracts: 13.0%
- Other Revenue: 2.0%

Total Faculty

- Unrestricted State + Tuition: 71.6%
- UPI Clinical & Contract: 15.1%
- Grants & Contracts: 6.8%
- Other Revenue: 6.5%

*Pathology PhD/MS/BS is included in Basic Science Faculty

Source: Table I 2013-14 data - Centers/Institutes excluded
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The Office of Clinical Affairs supports initiatives and interdisciplinary collaborations to strengthen the School of Medicine’s clinical group practice. Program integration with the School’s hospital partners, including University of Colorado Hospital (UCH), Children’s Hospital Colorado (CHCO), Denver Health, and Veterans Administration Hospital, promotes our collective ability to provide safer, patient-centered care at the lowest possible cost.

M. Douglas Jones Jr., MD, serves as Senior Associate Dean for Clinical Affairs, and partners with Associate Deans Christina Finlayson, MD, Jeffrey Glasheen, MD, Benjamin Honigman, MD, and Michael Narkewicz, MD. Drs. Finlayson and Narkewicz serve dual roles with University Physicians, Inc., as Associate Medical Directors of the Adult- and Child-Health Practices respectively. Additional clinical leadership is provided by the Clinical Leadership Council, made up of the Vice Chairs and Associate Center Directors for Clinical Affairs and Quality appointed within each clinical SOM Department. These physician leaders work together to extend clinical quality and patient safety improvements across the Anschutz Medical Campus. These broad-based practice improvement initiatives focus on refined primary care and referring provider communication, enhanced patient access to the healthcare they need, and interdisciplinary, systems-based clinical case review to improve patient outcomes and to eliminate all potential risk of harm.

In January 2013, the Institute for Quality, Safety and Efficiency (IHQSE) launched the Certificate Training Program (CTP) with 11 interdisciplinary adult- and child-health teams participating in this yearlong program. This training and practical project experience deepens their capabilities within their practices or units to drive ongoing improvements in clinical quality, safety and process efficiency. In 2014, 14 new teams, from across UCH and CHCO, started in the CTP. In late 2014, a two-day Clinical Leadership Development module will be introduced to further strengthen organizational leadership skills and knowledge within faculty physicians.

University Physicians, Inc. (UPI)

University Physicians, Inc., is a 501©3 practice organization that supports the clinical practice of the School of Medicine by providing business infrastructure services. The President of UPI is Richard D. Krugman, MD and the Executive Director is Jane Schumaker. UPI services include managed care contracting, revenue cycle management, compliance, business development and financial services for physicians and advanced practice professionals.

All faculty of the CU School of Medicine are members of UPI. 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.

On the following page is a current organization chart for UPI.
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The School of Medicine’s Office of Diversity and Inclusion (SOMODI) was established in March 2009 and is led by Associate Dean Ann-Christine Nyquist MD, MSPH and Director Regina Richards, MSW. The office serves as the central point of responsibility for coordinating, developing and evaluating the School’s diversity initiatives and programs. Our focus ranges from institutional climate, faculty and staff, graduate and undergraduate medical education and pipeline programs. The Dean-appointed SOM Diversity Council serves as the guiding committee for the work of the office and is comprised of internal members from throughout the school and external community members. The council meets 3-4 times per year and is co-chaired by Ann-Christine Nyquist, MD, MSPH, and the Assistant Dean of Admissions of the School of Medicine (SOM). Current Diversity Council initiatives include developing a SOM survey to assess more comprehensive diversity demographics within the school, revising and updating the Diversity Plan, enhancing recruitment and retention efforts of students, residents, faculty, staff, administrative leadership, and fundraising. Future work includes development of matrixes for departmental and institute reports of efforts regarding diversity and inclusion.

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

http://www.ucdenver.edu/about/departments/DiversityAndInclusion/programs/Pages/default.aspx

The SOMODI in partnership with the SOM Office of Admissions continues to participate in the Four Corners Alliance (University of New Mexico, University of Arizona, University of Utah, University of Colorado, and the Association of American Indian Physicians) to provide American Indian and Alaskan Native students with information that will have a positive impact on their decisions to pursue a career as a physician or other health care professional. The 2014 Pre-Admissions Workshop (PAW) was hosted by the University of Utah in Salt Lake City and engaged more than 20 American Indian and Alaskan Native pre-med students in a variety of panel discussions, informational sessions, interactive health-related experiences and mock interviews to further encourage their pursuit of a health profession.

Additional pipeline program partnerships include the BA/BS-MD Program partnering the University of Colorado Denver and the SOM. This diversity pipeline program is designed to admit a group of 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. Each year, ten high school students are admitted to the program. www.cudenver.edu/babsmd.

Students
The Office of Diversity and Inclusion continues to collaborate closely with the holistic admissions process to matriculate a diverse 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 rural upbringing. For the last four years we have consistently matriculated 25-30% URiM students to our class.

The CU Chapter of the Student National Medical Association (SNMA) is co-advised by Regina Richards, Director of SOMODI. SNMA’s national impact areas are: community outreach, engaging in pipeline programs and medical education. The Colorado chapter of SNMA provides a 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. A highlight of this collaboration continues to be the mentored scholarly activity project of CU-UNITE Track medical students exploring intervention strate-
gies to help providers understand and to reduce occurrences of discrimination in healthcare.

Graduate Medical Education
The Department of Pediatrics and the Department of Medicine continue to increase the pool of URiM medical students who interview and ultimately match into these highly competitive residency programs with hopes of ultimately meeting workforce needs in Colorado. The grassroots committee, Diversity in Pediatrics Committee, continues to support and recruit underrepresented in medicine (URiM) fourth-year students who are interested in working with underserved populations through their one month 4th year elective summer externship program. http://www.ucdenver.edu/academics/colleges/medicalschool/departments/pediatrics/people/diversity/Pages/diversityhome.aspx The Department of Medicine (DOM) has implemented several initiatives to continue to increase the diversity of their internal medicine residency program. The DOM has developed a five-year diversity plan and amassed a group of faculty members and residents to tackle the issue. http://www.ucdenver.edu/academics/colleges/medicalschool/departments/medicine/intmed/diversity/Pages/default.aspx The SOM Offices of Diversity along with Departments of Pediatrics, Internal Medicine, and Emergency Medicine annually attend the SNMA and Latino Student association meetings to increase the visibility of the entire School’s undergraduate and graduate medical programs.

A very successful GME second look day led by the Department of Emergency Medicine with collaborations with Pediatrics and Internal Medicine was held at Denver Health in the spring. This event increased the visibility of our GME programs. The Emergency Medicine residency program was very successful in increasing the total number of URiMs interviewed from 6.3% of their total pool in 2012 to 17.6% interviewed in 2013.

SOModi continues to provide guidance and support for multiple NIH T32 training grants within departments and programs to enhance their efforts to increase diversity and inclusion.

Faculty and Staff
Recruitment and retention of a highly skilled diverse faculty continues to be a priority within the School of Medicine. The Dean has continued to provide short term salary support for multiple highly qualified URiM recruits to the School who have been successfully retained to further enhance our climate of inclusion and diversity.

Development of a community for faculty and staff continues with the University of Colorado Organization for Racial and Ethnic Support (UCOLORES) bi-monthly community dinners. These community engagement activities help build bridges and develop relationships by creating informal mentoring partnerships and supportive relationships among diverse faculty and staff.

♦ In partnership with the Kempe Center, the office co-developed and hosted the inaugural Diversity Lunch and Learn Series included the following topics: The Art of Cultural Responsiveness
♦ Effective Co-Cultural Communication
♦ Understanding the Impact of Religious Diversity

The Diversity Lunch and Learn Series will continue in 2014-2015.

The Office of Diversity and Inclusion continues to focus on service, coordination and collaboration with colleagues on the AMC and UCD campuses as we work toward an institutional climate of diversity and inclusiveness that appreciates what our talented students, trainees, faculty and staff bring to the University of Colorado School of Medicine. The SOM Diversity web site www.medschool.ucdenver.edu/diversity provides useful links for students, faculty, and staff regarding current programs, recruitment information and community collaborative events.
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The education programs at the School of Medicine are united under the leadership of Robert Anderson, MD, Senior Associate Dean for Education (SADE). The University of Colorado School of Medicine is deeply 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. Students graduating from the MD program can compete for positions in our Graduate Medical Education (GME) program, which offers outstanding training for residents and fellows. Once graduates complete their training as physicians, physician assistants, physical therapists or anesthesia assistants, our Office of Continuing Medical Education and Professional Development (OCME&PD) offers lifelong educational programs designed to improve knowledge, competence, performance and health outcomes. The following pages present information on the school’s Center for Advancing Professional Excellence, our state-of-the-art standardized patient and simulation center that bridges the education programs, followed by Undergraduate Medical Education, Graduate Medical Education, Continuing Medical Education, the Child Health Associate/Physician Assistant program, the Doctor of Physical Therapy program and the Anesthesia Assistant program. Included in this section is information on the Academy of Medical Educators, created to support and enhance all educational programs and teachers at the University of Colorado School of Medicine.

**Academy of Medical Educators (AME)**

The Academy of Medical Educators (AME), under the leadership of Eva Aagaard, 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 has inducted 56 members who serve the campus through a series of programs that provide faculty development, coaching, recognition, small grant opportunities and advocacy in medical education.

In 2013-14, the AME continued to provide regular faculty development opportunities through workshops, online education via Crowd Wisdom and individual sessions to departments and programs. The AME also delivered new content focused on leadership skills. The Teaching Scholars Program, under the leadership of Janet Corral, PhD, Chad Stickrath, MD, and Mary Jane Rapport, DPT, enrolled 16 interprofessional participants who will be trained in curriculum development and medical education scholarship; with the Office of Faculty Affairs, the AME published 6 newsletters to promote academic development of faculty; we hosted the Second Annual Educational Scholarship & Innovation Symposium; four awards were given for excellence in education; four grants for a total of over $1,200 were awarded to improve educational innovation and scholarship on campus. In addition, the Residents and Fellows as Teachers Elective enrolled to maximum capacity and excellent reviews under the leadership of Melver Anderson, MD. Funding is provided through the School of Medicine Dean’s office as well as a donation from the Rymer Family. Website with detailed information on each of the above: http://www.ucdenver.edu/academics/colleges/medicalschool/education/academy/Pages/default.aspx.
*Anesthesiology Assistant Program*

The University of Colorado Anesthesiology Assistant Program is a 28 month program that awards a Master of Medical Science in Anesthesiology degree upon graduation. This is the ninth program of its kind in the nation and the first located in the western half of the country. The program received Board of Regents and CCHE approval winter of 2012, followed by CAAEP Accreditation in May 2013. The program matriculated its first class in August 2013. The program, under the directorship of Elizabeth Block, is housed on the Anschutz Medical Campus under the Department of Anesthesiology.

*Center for Advancing Professional Excellence (CAPE)*

The Center for Advancing Professional Excellence (CAPE) is a state-of-the-art standardized patient and simulation center under the directorship of Eva Aagaard, MD. The CAPE promotes excellence in the health professions through education and assessment of clinical skills including communication, physical examination, clinical reasoning and teamwork.

Annual achievements include:

- Transition to new team-based organizational structure
- Advanced training of standardized patients capable of providing a broad array of clinical portrayals, physical exam teaching, including training in sensitive exams, simulation technologist capabilities, and communication and remediation coaching
- Revision of the costing structure to align costs with services and make CAPE financially accessible, resulting in a stable financial model and improved pricing for events
- Partnership with the Vice Chancellor’s Office, WELLS, Children’s Hospital Colorado, College of Nursing, Center for Surgical Innovation, departments and programs on campus for the simulation summit; an effort to align the simulation units on campus
- Full redesign of several assessments on campus in the Medical Student Programs, Child Health Associate/Physician Assistant and Physical Therapy to improve validity and reliability and to create alignment with school goals

Detailed information about our programs is available at: at http://medschool.ucdenver.edu/cape.

*Child Health Associate/Physician Assistant Program (CHA/PA)*

The Child Health Associate/Physician Assistant (CHA/PA) Program has gained national recognition for its curriculum in primary care medicine. One of the first programs in the country, it remains the only program to offer a Professional Master’s Degree with an expanded curriculum in Pediatrics (MPAS-Pediatrics). In accordance with the mission of the program, the curriculum provides comprehensive physician assistant education in primary medical care with additional training in pediatrics and a focus on service to disadvantaged, at risk and medically underserved populations. Program graduates are prepared to provide medical care to patients of all ages and are employed in settings ranging from managed care organizations to school based clinics and international sites.

**Program Curriculum**

This three-year program has frequently been recognized for curriculum excellence and innovation. The problem-based learning, evidence-based medicine, psychosocial courses, and clinical rotations are successful components of the curriculum. Clinical experience in the first year of the training program has been an integral part of the curriculum since its inception. In cooperation with the School of Medicine’s Center for Advancing Professional Excellence, the program has increased the use of standardized patients and patient simulations throughout the curriculum in both the educa-
tion and assessment of students. The rural track clinical curriculum has been available for students who wish to live and practice in rural areas since 1995. Partnerships with the School of Medicine have allowed student participation in other tracks for those with specific interests in patient advocacy and health policy (LEADS), care of the urban underserved (CU UNITE), and global health. The University of Colorado School of Medicine campus was designed to enhance interprofessional collaboration, allowing increased participation in student-driven interest groups.

Our students continue to be leaders within the profession. The Silver Society, the CHA/PA Program chapter of the Student Academy of the American Academy of Physician Assistants, is very active within the community and nationally in promoting the PA profession through service activities to improve the health of underserved communities. They were awarded the 2013 Excellence Award for Outstanding Student Society on the Anschutz Medical Campus and the 2013 University of Colorado Chancellor’s Diversity Award.

As a part of the University of Colorado School of Medicine, the faculty of the entire school of medicine and affiliates contribute greatly to the quality of the learning experiences provided at the CHA/PA Program. Affiliations with the 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 Division of General Internal Medicine, and others regularly participate in both classroom and clinical training of the CHA/PA Program students. CHA/PA program graduates are welcomed by physicians, other health care providers, and patients, which is a testament to the rigorous program curriculum.

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 with clinical practices in general pediatrics, family medicine, and pediatric subspecialties. Program faculty serve in national leadership roles in the Physician Assistant Education Association the National Certification Commission for Physician Assistants Foundation and the Interprofessional Initiative on Oral Health (NIIOH).

International Connections
In 2014, the University of Colorado Child Health Associate/Physician Assistant Program, in partnership with the University of Francisco Marroquín Medical School in Guatemala City provided Spanish immersion and clinical experiences in rural clinics and urban hospitals. Our global partnerships offer us a new perspective on our educational program and the work we do here, helping us provide better care for our patients in the US and abroad.

Student Overview
The CHA/PA Program has a very competitive admissions process and continues to attract top students from across the country. During the 2013-14 admission cycle, the program received 1,034 applications, of which 168 were interviewed to admit 44 students.

Program graduates are employed in all areas of primary and subspecialty practice including pediatrics, family medicine, orthopedics, surgery, emergency medicine, urgent care, oto-
laryngology, allergy and asthma, neurology, neonatology, child protection and advocacy, and many more. The program has a 97 percent five-year average NCCPA board pass rate.

<table>
<thead>
<tr>
<th>Current Student Demographics</th>
<th>Class of 2015</th>
<th>Class of 2016</th>
<th>Class of 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Students</td>
<td>44</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>CO Resident</td>
<td>30</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>14</td>
<td>14</td>
<td>19</td>
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<tr>
<td>Overall GPA</td>
<td>3.66</td>
<td>3.65</td>
<td>3.62</td>
</tr>
<tr>
<td>Science GPA</td>
<td>3.65</td>
<td>3.68</td>
<td>3.61</td>
</tr>
<tr>
<td>Diverse Students</td>
<td>6</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Regular Track</td>
<td>35</td>
<td>27</td>
<td>36</td>
</tr>
<tr>
<td>Rural Track</td>
<td>5</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>CU UNITE Track</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Global Health Track</td>
<td>2</td>
<td>2</td>
<td>Pending</td>
</tr>
<tr>
<td>LEADs</td>
<td>4</td>
<td>1</td>
<td>Pending</td>
</tr>
<tr>
<td>Average Age</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
</tbody>
</table>

**Program Information**
Program Director: **Jonathan Bowser MS, PA-C**
Medical Director: **Tai Lockspeiser MD, MHPE**
Associate Director – Clinical: **Rebecca Maldonado MS, PA-C**
Associate Director – Didactic: **Cathy Ruff MS, PA-C**
Program website: [http://medschool.ucdenver.edu/paprogram](http://medschool.ucdenver.edu/paprogram)

**Genetic Counseling Program**
The Master of Science Program in Genetic Counseling, with **Carol Walton, MS, CGC**, serving as the Program Director, integrates extensive coursework in human and clinical genetics, psychosocial and counseling theory, clinical research and ethical, legal, social and professional practice issues with more than 1,000 hours of direct, supervised clinical work with patients in pediatric, prenatal, cancer, adult and specialty genetics clinics. During the second year, students complete a capstone project or thesis addressing a current research, policy or clinical practice issue in genetic counseling. The Program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC) and its graduates are eligible to apply for certification from the American Board of Genetic Counseling (ABGC). Program alumni practice in hospitals, academic and private genetics centers, clinical research programs, diagnostic laboratories, biotechnology companies, and public health departments, among other settings. As members of multidisciplinary health care teams, genetic counselors provide information, risk assessment and support for individuals and families affected with or at risk for genetic conditions hereditary predispositions to disease so that they can understand and appropriately utilize genetic information and testing to promote informed health care choices. They serve as professional liaisons for laboratories to ensure that health care providers order and interpret genetic tests appropriately. They serve as educators and resource people for other health care professionals and for the general public, facilitate support groups, and engage in health care policy development regarding genetic services and issues. Many engage in research activities related to the field of medical genetics and genetic counseling.
Graduate Medical Education (GME)

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). 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.

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 duty 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. More information on the GME Office can be found at: www.medschool.ucdenver.edu/gme.

The University of Colorado School of Medicine GME:
♦ 76% of total residents and fellows in CO are trained at CUSOM.
♦ Is the largest of 13 sponsoring institutions in the state of Colorado.
♦ The 27th largest institution of 687 nationally. [2012-13 ACGME Data Resource Book].
♦ Oversees and provides support to approximately 142 Program Directors, 84 Program Coordinators, and 1500 Faculty.
♦ Has proudly maintained consecutive 5-year ACGME accreditation cycle lengths for the past 16 years.
♦ ACGME Next Accreditation System Institutional Self-Study date – October 2023.

2013-14 GME Highlights

2013-14 GME Training Programs
142 residency and fellowship programs with 1030 residents and fellows:
   26 ACGME residency programs - (741 residents)
   61 ACGME fellowship programs - (243 fellows)
   55 Non-ACGME fellowship programs - (46 fellows)
*Numbers reflect enrollment as of August 1st, 2013

2nd Annual GME Outstanding Program Coordinator Awards
The Graduate Medical Education Office, in collaboration with the Program Coordinator Council (PCC), recognized four outstanding program coordinators at the April 17, 2014, GME PC Meeting.

<table>
<thead>
<tr>
<th>Patricia Braund*</th>
<th>Christine Raffaelli</th>
<th>Michele Bialkowski</th>
<th>Jeanette Starkey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathology</td>
<td>OB/GYN</td>
<td>Pediatric Critical Care</td>
<td>Pediatric Cardiology</td>
</tr>
</tbody>
</table>

*Patricia Braund is also the CUSOM GME Nominee for the National 2015 ACGME Program Coordinator Award.
2013-14 ACGME
CU SOM 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. 84 programs were surveyed.

**Resident Survey Results (6 content areas):**
- Duty Hours
- Faculty Evaluation
- Educational Content
- Resources
- Patient Safety/Teamwork

1. 90% response rate
2. 100% of all questions are at or above national means

Questions to Monitor/Address Across the Institution:
- 78% Satisfied that program uses evaluations to improve
- 78% Satisfied with feedback after assignment
- 75% Education (not) compromised by service
- 60% Provided data about practice habits

Figure 1

**Faculty Survey Results (5 content areas):**
- Faculty Supervision & Teaching
- Educational Content
- Resources
- Patient Safety
- Teamwork

1. 79% response rate
2. 3 questions were slightly below national means:
   - Sufficient time to supervise residents/fellows (pgm = 4.5; nat’l = 4.6)
   - Faculty satisfied with personal performance feedback (pgm = 4.1; nat’l = 4.3)
   - Satisfied with faculty development to supervise and educate residents/fellows (pgm = 4.0; nat’l = 4.1)

Questions to Monitor/Address Across the Institution:
- 75% Worked on scholarly project with residents/fellows

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### 2013-14 ACGME Program Site Visits

<table>
<thead>
<tr>
<th>Programs</th>
<th>Site Visit Date</th>
<th>Self-Study</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pediatric Pathology</td>
<td>September 9, 2013</td>
<td>4/2023</td>
<td>0</td>
</tr>
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</table>

### New ACGME Programs Approved
**Accreditation July 1, 2014**

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Positions</th>
<th>Filled</th>
<th>Length of Training</th>
<th>Site Visit</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epilepsy (Pediatric)</td>
<td>2</td>
<td>2</td>
<td>2 years</td>
<td>5/2016</td>
<td>5</td>
</tr>
<tr>
<td>Spinal Cord Injury Medicine</td>
<td>1</td>
<td>0</td>
<td>1 year</td>
<td>5/2016</td>
<td>0</td>
</tr>
</tbody>
</table>

### GMEC Program Actions – Special Focused Reviews

<table>
<thead>
<tr>
<th>2013-14 Program Schedule</th>
<th>Review Date</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedural Dermatology</td>
<td>September 25, 2013</td>
<td>3</td>
</tr>
<tr>
<td>Neurology</td>
<td>December, 18, 2013</td>
<td>3</td>
</tr>
<tr>
<td>Urology</td>
<td>April 23, 2014</td>
<td>3</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>May 12, 2014</td>
<td>2</td>
</tr>
<tr>
<td>Surgical Critical Care</td>
<td>May 30, 2014</td>
<td>5</td>
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</table>

### New Non-ACGME Programs

<table>
<thead>
<tr>
<th>Program Name</th>
<th>GMEC Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction Medicine</td>
<td>Oct, 2013</td>
</tr>
<tr>
<td>Pediatric Trauma Surgery</td>
<td>May, 2013</td>
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</table>

### Programs Transferred to GME from School of Public Health

<table>
<thead>
<tr>
<th>Program Name</th>
<th>GMEC Approved</th>
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</thead>
<tbody>
<tr>
<td>Preventive Medicine</td>
<td>Dec, 2013</td>
</tr>
<tr>
<td>Occupational Medicine</td>
<td>Dec, 2013</td>
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</table>

### New Program Directors (PDs)/Program Coordinators (PCs)

<table>
<thead>
<tr>
<th>ACGME Accredited Programs</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>New PDs</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>New PCs</td>
<td>15</td>
<td>16</td>
<td>13</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Patient Safety</td>
<td>Quality Improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ Patient Safety Network reporting by residents</td>
<td>♦ QI/PS activities are reported by every program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ M&amp;M Conferences with root cause analysis education (14)</td>
<td>♦ Residents are integrated into each hospital’s reporting of patient safety events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ QI &amp; Patient Safety IHI Modules (2) – all residents &amp; faculty</td>
<td>♦ Quality, Patient Safety &amp; Cost Reduction Resident Incentive Program at CHCO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Care Transitions</th>
<th>Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Education on care transitions</td>
<td>♦ Supervision policies are active in all programs</td>
</tr>
<tr>
<td>♦ Transitions of Care policies in all programs</td>
<td>♦ All ACGME &amp; GME survey results show that supervision is extensive</td>
</tr>
<tr>
<td>♦ Majority of core programs are evaluating resident handoffs</td>
<td></td>
</tr>
<tr>
<td>♦ Standardized verbal communication directly observed periodically</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duty Hours, Fatigue Management &amp; Mitigation</th>
<th>Professionalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Duty Hours are monitored in MedHub &amp; programs receive monthly violation notifications</td>
<td>♦ Resident &amp; faculty education on professionalism</td>
</tr>
<tr>
<td>♦ All residents log Duty Hours</td>
<td>♦ Resident attitudes, beliefs, &amp; skills related to professionalism</td>
</tr>
<tr>
<td>♦ Quarterly Duty Hour reports are presented to Affiliated Hospital Steering Committee</td>
<td>♦ Faculty engagement in training on professionalism</td>
</tr>
<tr>
<td>♦ 2014 ACGME Resident Survey: Institutional mean meets national mean</td>
<td>♦ Clinical site monitoring of professionalism</td>
</tr>
<tr>
<td>♦ Residents &amp; faculty complete the required module</td>
<td></td>
</tr>
</tbody>
</table>
GME Enrollment Data and Trends

2014-15 GME Training Programs—Current Academic Year

139 residency and fellowship programs with 1070 residents and fellows:

- 28 ACGME residency programs - (764 residents)
- 62 ACGME fellowship programs - (259 fellows)
- 59 Non-ACGME fellowship programs - (47 fellows)

*Numbers reflect enrollment as of August 1st, 2014
For the 2013-14 academic year 367 residents and fellows graduated from ACGME and Non-ACGME approved programs. All graduates completed the 2014 GME exit survey.
Practice in Colorado After Completion of Training

Where Will 2014 Graduates Practice?

- Colorado: 41%
- US not CO: 52%
- Denver Metro: 34%
- Other CO: 7%
- Intern'l: 3%
- Other: 4%

% of All Graduates Planning to Practice in Colorado

- 2009-10 (291): 53%
- 2010-11 (345): 60%
- 2011-12 (334): 54%
- 2012-13 (286): 49%
- 2013-14 (367): 41%
2014 Primary Care Physician Graduates Plans

80 of the 367 residents/fellows completed training in primary care programs
*Internal Medicine (41), Pediatrics (18), Family Medicine (21) – Rose (6), Swedish (5), UCH (10)*
Office of Continuing Medical Education and Professional Development (OCME&PD)

The Office of Continuing Medical Education & Professional Development (OCME&PD) has a mission to improve knowledge, competence, performance and health outcomes using lifelong learning integrating undergraduate, graduate and continuing medical education. Since 2007, Ronald Gibbs, MD, has served as Associate Dean for Continuing Medical Education & Professional Development; Pam Welker (Administrator), Rose Kennedy (Conference Manager), Carolyn Wieber (Conference Manager), Alan Bowser (Accountant) and Donna Jones (Faculty Liaison) complete the staff. On July 2, 2014, Brenda Bucklin, MD, Professor of Anesthesiology, joined the office as Assistant Dean for Continuing Medical Education & Professional Development. The OCME&PD is funded by administrative fees, tuition, grants and to a small extent, administrative support. For calendar year 2013, 1,047 hours of instruction were certified for AMA PRA Category 1 Credit™. Ninety-seven percent of course attendees rate these certified hours of instruction as “very good” or “excellent.” We enjoy Accreditation with Commendation from the Accreditation Council for Continuing Medical Education. Plans for the future include aligning CME activities even more with the quality improvement enterprise, increasing interprofessional education, and continuous improvement of our CME process.

For more information, visit our website at http://www.ucdenver.edu/academics/colleges/medicalschool/education/continuingmedicaleducation/Pages/CME.aspx or email Pam.Welker@ucdenver.edu.

Physical Therapy Program

The University of Colorado School of Medicine Physical Therapy Program, under the directorship of Margaret L. Schenkman, PT, PhD, FAPTA, prepares students to become doctors of physical therapy (DPT). Physical therapists are experts in movement and function. Graduates of the CU Physical Therapy Program are prepared to collaborate with other healthcare providers to meet the musculoskeletal, cardiovascular, and neuromuscular needs of patients.

The CU Physical Therapy Program was one of the first 25 educational programs in the United States and has been continuously accredited since its inception in 1947, receiving an unconditional ten-year accreditation in 2010. Graduates pass a national licensure examination with scores well above the U.S. average. The Physical Therapy Program faculty are recognized nationally and internationally for scholarship. Each year, the faculty review and revise the curriculum to ensure the content and emphasis are consistent with current health care needs. In 2011, the CU Physical Therapy Program, joining other leaders in physical therapy education, revised the curriculum substantially to allow a year-long paid internship that begins in the pre-graduation phase of education and continues post-graduation.

Student Overview

Each year, about 65 students enter the CU Physical Therapy Program. Most students are from Colorado, but students accepted to the program are from across the United States and from other countries.

Applicants

Applicants to CU Physical Therapy Program come from a range of academic backgrounds. There are minimum 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 healthcare-related professions. Some have advanced degrees and all have worked clinically as volunteers or in paid positions.
Demographics

<table>
<thead>
<tr>
<th>Class of *</th>
<th>2015 May</th>
<th>2016 May</th>
<th>2016 Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>75%</td>
<td>78%</td>
<td>77%</td>
</tr>
<tr>
<td>Male</td>
<td>25%</td>
<td>22%</td>
<td>23%</td>
</tr>
<tr>
<td>CO Resident</td>
<td>59%</td>
<td>58%</td>
<td>55%</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>41%</td>
<td>42%</td>
<td>45%</td>
</tr>
<tr>
<td>Minority</td>
<td>8%</td>
<td>6%</td>
<td>12%</td>
</tr>
<tr>
<td>Average Age</td>
<td>26</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Cumulative GPA</td>
<td>3.57</td>
<td>3.66</td>
<td>3.70</td>
</tr>
<tr>
<td>Math/Science GPA</td>
<td>3.46</td>
<td>3.52</td>
<td>3.63</td>
</tr>
</tbody>
</table>

*With the conversion to a yearlong internship, two classes will graduate in 2016.

Applicant Data 2013-14

Completed Applications: 554

Interviewed: 154

GPA: 3.69
GRE Verbal: 156
GRE Quantitative: 155
GRE Written: 4.27

Offered Admission: 107

GPA: 3.71
GRE Verbal: 156
GRE Quantitative: 155
GRE Written: 4.3

Student Body, Class of 2016

This year’s entering class of students is exceptionally qualified, with particularly high academic achievement prior to matriculation. Several students bring international experiences to the student body. Examples include a student who spent a year in Africa living in the jungle, a volunteer with a marine mammal conservation project in Peru, and a volunteer with a community garden project in a small village outside Kathmandu, Nepal. Other students have brought advanced academic experiences including a Boettcher scholar who deferred matriculation to complete a funded MBA at University of Denver, and students who have published articles in research journals. Two international students joined this year’s class, a student from the Czech Republic, now with dual citizenship, and a student from Haifa, Israel.
Graduates of the PT 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). The mean score for the CU PT students is well above the national average and above the average for all schools in Colorado. From the first CU DPT graduating in 2007, every graduate who have taken the exam has passed, with over 95 percent of graduates passing the first time they took the examination. Graduates are employed in a variety of settings, e.g. outpatient, inpatient, from pediatrics to geriatrics.

FEDERATION OF STATE BOARDS OF PHYSICAL THERAPY

Summary of scaled results based on FSBPT criterion-referenced passing score of 600. Effective January 2013, the National Physical Therapy Exam (NPTE) scale was revised to correspond with changes in the examination construction.

National Licensure Exam for 2014 Graduates

Pass Rate Comparison
(First Time Test Takers)

Mean Score Comparison
(First Time Test Takers)
Education Programs

Doctor of Physical Therapy Program Curriculum
The Class of 2016 was the first class to enter the new DPT curriculum that includes a paid year-long internship. The new curriculum was designed to address 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 those skills necessary 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 the new graduate. The internship model provides a mechanism to adjust for unreimbursed time that experienced clinicians spend mentoring the new graduate.

Billing restrictions: Clinical enterprises can no longer bill for patients on Medicare (and in some cases for Medicaid) when students work with clients. This type of billing restriction limits the ability of clinical sites with high Medicare census to educate students in their clinics. Furthermore, the requirement for direct supervision prevents students from reaching independence, which is the goal of clinical education. Because the intern is a licensed clinician for ¾ of the internship, this difficulty is obviated.

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 almost a year earlier than in the previous model, substantially reducing the time without income.

The curriculum is comprised of 2-½ years of pre-graduation didactic and clinical experiences followed by 8 months of post-graduation clinical experience. The pre-graduation phase includes nine 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 a variety of 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.
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 Academic Excellence
The Center for Advancing Academic Excellence (CAPE) provides an outstanding environment for our students to practice certain physical therapy examination, intervention, and communication skills. Two experiences focus on learning and two comprehensive examinations take place in this setting. CU Physical Therapy Program is one of the few physical therapy programs in the United States in which students have the opportunity to work with standardized patients in conjunction with a full-service Center of Excellence.

Interprofessional Education
CU Physical Therapy Program participates in the longitudinal Interprofessional Education and Development (IPED) curriculum that is designed to develop competencies in teamwork, communication, and collaborative practice. Each student is assigned to a team of students, which may include some or all of the following schools/programs: School of Medicine (Physical Therapy, Medicine, Child Health Associate/Physician Assistant), Skaggs School of Pharmacy and Pharmaceutical Sciences, College of Nursing, and School of Dental Medicine. The interprofessional team meets several times in the three-year curriculum. Over the first two years of the curriculum, the teams meet to understand and apply fundamental content in team building, communication, and ethics. In their last year, students spend an afternoon in the Center for Advancing Professional Excellence to take part in two team simulations/standardized patient encounters. Additionally, physical therapy students build on existing interprofessional educational offerings through the Student Academic Communities and various didactic course work.

Capstone Project
A capstone project consists of a written case report that is based on evidence and reasoning. This project serves to synthesize the didactic content and clinical experiences.

Research initiatives
Entry-level DPT students are encouraged to participate in research under the guidance of nationally recognized faculty mentors, and present their findings through national scientific conferences and peer-reviewed publications. A number of 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. One facility is the Interdisciplinary Movement Science Laboratory, which contains state-of-the-art equipment for motion analysis of gait and other functionally relevant tasks. In addition, this facility is equipped for studies involving electromyography (EMG) and transcranial magnetic stimulation (TMS). Secondly, the Gersten Education and Research Office houses graduate students, post-doctoral fellows, research assistants, and physical therapy students who assist with research projects.

Scholarships
CU Physical Therapy Program made a commitment to develop robust scholarship support to help to offset the cost of education to students. Three types of scholarships now are available, emphasizing general merit, commitment to working in rural Colorado and Wyoming, and service to medically underserved communities with health disparities. A Student Scholarship Endowment Advisory Board was formed in 2012 that has successfully increased both the PT Program Endowments
and current use funds from less than $300,000 in 2011 to nearly $750,000 in 2014. Scholarships have increased from $1,000-$2,000 per year in 2011-12 to $11,000 in 2012-13 and $80,000 committed in 2013-14. The Board, CU Physical Therapy Program leadership, and the Alumni Association are working together to increase the endowment and current use funds with a goal of being positioned to distribute over $200,000 in scholarships annually.

Faculty
Faculty of CU Physical Therapy Program are experienced with education, scholarship, and service roles and are members of the American Physical Therapy Program Association (APTA). CU Physical Therapy Program faculty are involved in key organizations, such as Arthritis Foundation, Multiple Sclerosis Foundation, and also serve on national committees, including NIH grant review sections. Members of the Physical Therapy faculty were awarded $2,014,415 in grants within the budget year of July 2013-June 2014.

Pediatric Physical Therapy Residency Program
The University of Colorado Physical Therapy Pediatric Residency Program consists of planned post-professional clinical and didactic education for licensed physical therapists who have graduated from an accredited DPT program. The program is designed to significantly advance preparation of the physical therapist as a pediatric specialist through experiences in multiple pediatric clinical practice settings. Potential as a future leader in pediatric physical therapy is developed through coursework and 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 (LEND) program through JFK Partners (www.jfkpartners.org) and access to the resources of the University of Colorado Physical Therapy Program. The American Board of Physical Therapy Residency and Fellowship Education accredits the program.

PhD Program in Rehabilitation Science
Rehabilitation Science is an interdisciplinary 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. Since its inception in 2011, the PhD Program in Rehabilitation Science has been preparing students for careers as independent research scientists in academia, industry, and health care settings, with nine students currently in the program. In 2013-14, Rehabilitation Science students were awarded $38,500 in graduate training scholarships and awards from the Foundation for Physical Therapy, the American Physical Therapy Association, the Neurobiology of Stress Workshop, and the UCD Graduate School.
The Undergraduate Medical Education (UME) office oversees students entering medical school with the goal of earning the degree of Doctor of Medicine. These students dedicate four or more years to an intensive period of study and personal growth. The Undergraduate Medical Education (UME) office is charged with several responsibilities to guide this process: selection of students who are personally and academically prepared to make this journey; support of these students through counseling, financial and career advising, and academic enhancements; development and presentation of a rigorous curriculum in basic and clinical sciences; provision of state of the art experiences in simulation; evaluation of students and faculty; and technological support of students and faculty throughout their medical school experience and afterwards. This section of the Facts and Figures book will review some activities in each of these areas for the 2013-2014 academic year. (Website: http://medschool.ucdenver.edu/MDDegree).

In addition to the regular work of the various divisions within the UME office, several initiatives have dominated UME activities through the 2013-2014 and early in the 2014-2015 academic years. A major initiative over the past 12-18 months has been planning for the opening of the School of Medicine’s first branch in Colorado Springs. Development of the Colorado Springs Branch (CSB) is made possible through a commitment of $120 million over 40 years by Memorial Hospital in Colorado Springs and University of Colorado Health. The Colorado Springs Branch (CSB) will have 24 students completing their third-year clerkships in Colorado Springs starting in April 2016. These 24 students were identified from 184 students that are matriculating at the School of Medicine in August 2014. Effective April 2017, an additional 24 students will be taking fourth-years electives at our CSB. Erik Wallace, MD, was appointed Associate Dean, CSB in January 2014 after a national search. Subsequently, administrative space for our CSB was opened in the newly built Lane Center. Currently, a number of individuals are working to recruit faculty and to develop a curriculum for our CSB students.

Another major educational initiative underway is the development of a curriculum inventory and searchable curriculum map. The map is needed to improve our curriculum by determining our curricular gaps and redundancies as well as to assist our students in personalizing their medical education. During the past year, we have added a new (Bioengineering) dual degree (MD/Masters) program to two existing dual-degree programs (MBA and Masters in Public Health). These programs, along with our Medical Scientist Training Program, which leads to an MD/PhD degree and has been in existence for 25 years, increases educational opportunities for our medical students.

Nichole Zehnder, MD, has recently been selected to be our new Assistant Dean for Admissions and is in the process of revising our admissions processes. We were fortunate to obtain generous funding from the University of Colorado Health and the Dean’s Office that enabled us to solicit proposals from clinical departments to improve education in the third year of medical school. We have utilized a peer-review process to fund four proposals up to $170,000/year and are currently soliciting additional proposals.

A longitudinal integrated curriculum for Phase III medical students was started at Denver Health in April 2014. A First Course for entering medical students, emphasizing longitudinal components of the curriculum, was piloted in August 2013 and extended for 2014.
Undergraduate Medical Education Committee Structure

Dean
School of Medicine

Faculty Senate

Executive Committee

Curriculum Steering Committee (CSC)

Essentials Core Block Directors Committee (ECBD)

Clinical Block Directors Committee (CBD)

Longitudinal Curriculum Committee (LCC)

Clinical Requirements Committee

Electives Director

Sub-I Director

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

Represents Reporting

Represents Communication
Committees
The activities of the Undergraduate Educational Program are overseen by two committees: The Curriculum Steering Committee and the Student Life Steering Committee.

The SharePoint® intranet houses information on all the UME education committees, at: https://mysom.ucdenver.edu/education/CurrComm/SitePages/Home.aspx.

If you do not have access and would like to, please contact the Office of Educational Technology at SOM.IT@ucdenver.edu.

Curriculum Steering Committee (CSC)
The CSC is charged with oversight of the curriculum and its evolution, guided by systematic evaluation of the entire curriculum. The CSC is also charged with ensuring the curriculum meets the goals and objectives set by the SOM strategic plan and mission, recognizing these objectives are derived from the knowledge, experience, and commitment of the faculty.

Chair: Stuart Linas, MD

| New members | Faculty Senate President: Nichole Reisdorph, PhD  
| Class of 2017 representatives: Sonny Nguyen, Matt Becker  
| Erik Wallace, Assistant Dean as a non-voting member |

| Reports Presentations | Mentored Scholarly Activity report  
| Phase One, Phase Two reports  
| Problem Based Learning report  
| Final approval for “First Course”  
| Inter professional Education report  
| Culturally Effective Medicine report  
| Humanities, Ethics and Professionalism Thread report  
| Medicine and Society report  
| Program Directors’ Survey  
| Graduate Questionnaire results for class of 2012 |

| Policies approved | Longitudinal Integrated Curriculum at Denver Health approved  
| Colorado Springs student access to resident teaching & prioritization for Sub-internship in Denver  
| Medical student competencies to be attained prior to graduation  
| Revised policy for CSC to ensure reports are followed up on after initial presentations  
| Approval for new dual degree MD / MS Bioengineering |

| Collaborations | LCC and ECBC will collaborate to implement student workload policy  
| LCC and ECBC will assist threads to include content and access to assessment data located in other courses |
The Clinical Block Directors (CBD) Committee is responsible for the design and implementation of the Phase III medical student curriculum. This committee is also responsible for curricular innovation, assessment, and data driven quality assurance. Jennifer Adams, MD, Brian Berman, MD, MS, Alison Brainard, MD, David Gaspar, MD, Pearce Korb, MD, Caroline Le-Clair, DO, David Matero, MD, Chantal O’Brien, MD, Kelley Roswell, MD, Frank Scott, MD, Jennifer Soep, MD, William Sullivan, MD, Kristina Tocce, MD, Michael Weissberg, MD, Kelly White, MD, Thomas Whitehill, MD, and Nichole Zehnder, MD, served as block directors in 2013-2014. Assistant block directors included: Chris King MD, Jane Limmer, MD, Paul Montero, MD, and Meghan Treitz, MD. The committee meets regularly to develop, implement, and evaluate the clinical core curriculum. Under the leadership of Jennifer Adams, MD, a longitudinal integrated clerkship pilot was implemented at Denver Health in 2014. In addition, a longitudinal rural clerkship is underway and led by Caroline LeClair, DO. Work is also underway in the planning for the Third-Year blocks/clerkships* at the Branch in Colorado Springs. Brenda Bucklin, MD, Assistant Dean of the Clinical Core Curriculum is responsible for planning, management, and leadership of Phases III and IV.

*Clerkship: A course of clinical medical training in one specialty. Block: A course of clinical medical training within more than one specialty.

Essentials Core Block Directors Committee (ECBD)

The Essentials Core Block Directors (ECBD) committee meets on a monthly basis to review block evaluations and summaries along with Essential Core policies. All of the Phase I and Phase II blocks have been reviewed at least seven times since the launch of the new curriculum and changes have been implemented when necessary. This past year the ECBD continued to test the efficacy of using computers for on-line testing in blocks; completed the transition from paper to paperless for all learning resources; updated extended academic calendars; implemented new reporting policies that will hopefully identify at-risk students as early as possible; and began planning for the increased class size with the approval of the Colorado Springs branch. Block Directors and staff also reviewed and updated Block and Session learning objectives, as part of the curriculum inventory and mapping project. Following a successful pilot year, support for two ‘Content Stewards,’ representing Pharmacology and Pathology, was continued with the goal of continuing to assess and improve their respective disciplines across the Essentials Core and the subsequent clinical curriculum. The ECBD also adopted a new Block report format and approval process, to include a review of previous and ongoing challenges and action plans for the coming year to address them, with the goal of continuous quality improvement. The ECBD committee continues to be an excellent venue for communication between block directors, faculty and students. In addition, regular meeting times have been established between the Essentials Core, Clinical Core, Advanced Studies, and Longitudinal Curriculum leadership to provide better communication, coordination and oversight of curriculum issues across all four phases of the curriculum.

Scholarship Committee

During the 2013-2014 academic year, the Scholarship Committee and the Adler Scholarship Committee provided scholarships to more than 164 medical students.

♦ The President’s Medical Scholarship, a four-year scholarship, was awarded to 24 students who started in 2013 as members of the class of 2017. Scholarships were at the level of $20,000 to $30,000 per student per year, with the goal of increasing the educational benefit derived from a diverse student body. A total of $1,722,500 was awarded for Academic Year 2013-2014 to the four cohorts of President’s Medical Scholarship recipients.

♦ Six first-year students were awarded Distinguished Scholarships at $10,000 per year for four years. These were the Justina Ford Scholarship for Commitment to the Underserved, the
Florence Sabin Scholarship for Commitment to Community Health, the COPIC Foundation Scholarship, the National Western Stock Show Scholarship, the Jones Federico Scholarship and the Mary Ann Johnston Scholarship. Two additional students received a one-year Colorado Medical Society scholarship in the amount of $10,000 each.

♦ Merit and Diversity scholarships were awarded to an additional 52 current students for a total of $345,000. A generous donation from University Physicians, Inc., made many of these awards possible.

♦ Twenty-one seniors from the class of 2014 received a total of $384,000 in Adler Mentored Scholarly Activity Scholarship in recognition of excellence for their completed projects. Three seniors received scholarships totaling $40,000 from the Roland J. Perlmutter and Frank McGlone scholarship funds.

UME Curriculum

Essentials Core: Phase I and Phase II
Following the departure of Robin Michaels, PhD, in August 2013, to assume a new position out of state, Matthew Taylor, MD, PhD, agreed to serve as the Interim Assistant Dean for Phase I and Phase II, the Essentials Core, until the post could be filled. In February 2014 Andrew Bradford, PhD, was appointed as the new Assistant Dean. 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. 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 (MSA) during Phases I and II and are able to choose from a variety of electives to personalize their curriculum, and explore interests outside the standard curriculum. They also 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 them, are longitudinal elements or threads that integrate behavioral and social sciences, informatics, evidence-based medicine, healthcare policy, culturally effective medicine and ethics, and professionalism into the curriculum. The longitudinal elements are overseen by Marsha Anderson, MD, the Assistant Dean of Longitudinal Curriculum. The overarching goal of the Essentials Core is to provide the scientific foundation and critical thinking skills for our students’ future medical education and to equip them for a lifetime of learning, research, clinical care, and community service. (Website: http://medschool.ucdenver.edu/essentialscore).

Clinical Core Curriculum summary:
Clinical Core: Phase III
The Clinical Core Curriculum consists of competency-based clerkships and blocks* that provide opportunities for mastery of the core knowledge, skills, and attitudes required of physicians. Phase III provides intensive clinical experiences in the hospital, ambulatory clinics, emergency room, labor and delivery suite and operating rooms. Integrated Clinician Courses (ICC) punctuates the clerkships and blocks with a focus on advanced clinical skills, translational clinical science, and communication. Clinical Core goals and learning objectives have been developed and are mapped to general and block-specific competencies. These will be used to focus students’ learning. Students also use learning logs to record conditions, diseases, and procedures. Students receive formative and summative feedback during each clerkship or block. Shelf exams or block-developed medical knowledge exams, clinical evaluations, mid- or end-of-block standardized patient exams and clinical practice exams provide additional opportunities for assessment of students’ clinical performance. Clinical block directors monitor students’ clerkship experiences at all clinical sites. A guide to 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 (4th-year) 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 students' Mentored Scholarly Activity projects. More than 150 electives are offered in Phase IV. Working with the Office of Student Life, Phase IV is designed to foster knowledge base development, career preparation/development, and vocational mentorship all while meeting the needs of students. Brenda A. Bucklin, MD, Assistant Dean for the Clinical Core, Adam Trosterman, MD, Director of Sub-Internships, and Tai Lockspeiser, MD serve as the leadership for the Phase IV curriculum. During this past academic year, strategic objectives of Phase IV included improving two-week course offerings, exploring concurrent curriculum, and reviewing/revamping career development and advising. Ongoing efforts are being made to explore potential curriculum at the Colorado Springs Branch.

A guide to Phase IV can be found at: http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/advancedstudies/Pages/default.aspx

Longitudinal Curriculum

Foundations of Doctoring Curriculum

The Foundations of Doctoring Curriculum (FDC) is a three year longitudinal experience beginning in Phase I of medical school which teaches communication and physical examination skills, and professional development. Standardized patient encounters and regular clinical exposure in a physician preceptor’s practice are key components of this curriculum. Wendy Madigosky, MD, MSPH directs the curriculum. Associate Directors include: Kirsten Broadfoot, PhD (Communication), Todd Guth, MD (Physical Exam and Clinical Skills) and Kristin Furfari, MD (Preceptorship). Changes in 2013-2014: clinical reasoning content was implemented in Phase I & II, preceptorship goal setting (Focus Four) was piloted with a portion of the class, and interprofessional activities were separated from FDC course requirements into the Interprofessional Education and Development (IPED) course for Phase I students. http://medschool.ucdenver.edu/FDC
If you are interested in volunteering as a preceptor for the Foundations of Doctoring Curriculum, please email Foundations.Doctoring@ucdenver.edu. The table below provides data on the FDC preceptors:

<table>
<thead>
<tr>
<th>Position Specialty</th>
<th>Private Practice</th>
<th>Clinics for Underserved plus Denver Health</th>
<th>Kaiser Permanente UCH, CHCO, VA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Medicine</td>
<td>32</td>
<td>16</td>
<td>6</td>
<td>69</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>20</td>
<td>44</td>
<td>7</td>
<td>113</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>25</td>
<td>11</td>
<td>5</td>
<td>108</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>29</td>
<td>18</td>
<td>0</td>
<td>76</td>
</tr>
<tr>
<td>Other*</td>
<td>5</td>
<td>11</td>
<td>2</td>
<td>74</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>101</td>
<td>22</td>
<td>456**</td>
</tr>
</tbody>
</table>

*Anesthesiology, Cardiology, Dermatology, Endocrinology, Gastroenterology, Geriatrics, Neurology, Oncology, Ophthalmology, Orthopedic, Otolaryngology, Pathology, Plastic Surgery, Psychiatry, Pulmonary Research, Radiology, Rheumatology, Spinal Injury, Surgery & Urology

**118 Preceptors have 2 or more students

Integrated Clinicians Course (ICC)

Students experience the Integrated Clinicians Course in one-to-two-week blocks of time throughout Phase III and Phase IV of the curriculum. The course is designed to integrate multiple concepts into students’ growing 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 ICC Director Jeff Druck, MD, and Associate Director Nichole Zehnder, MD, all ICC curriculum has been successfully developed and implemented since May 2008. Feedback from the students has been positive. The course undergoes continued modifications to ensure valuable content and remain aligned with other curricular changes. Hidden Curriculum sessions 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

The Research Track debuted in 2007 (first recruitment from the class of 2011). The track contains curriculum with activities in all four phases of medical school, and matches students with an experienced faculty mentor. The student develops and works with the mentor for two intensive rotations, each two months in duration, plus part-time contact across all four phases of medical school. Students receive a stipend for their intensive rotation the summer between Phase I and Phase II and a second intensive rotation in Phase IV. The track provides seminars related to research ethics, how to write an abstract, how to create a research poster, and how to give an oral research presentation. The track is directed by Randy Ross, MD, Director of Medical Student Research Track. (Website: www.coloradoresearchtrack.org).

The School of Medicine Student Research Committee selects and oversees the progress of students selected for research awards.
### 2013-2014 Student Research Awards

<table>
<thead>
<tr>
<th>Scholarship</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARCS Scholarships</strong></td>
<td>The Colorado Chapter of the national ARCS Foundation, Inc. (Achievement Rewards for College Scientists) awarded ten $5,000 scholarships to the AMC Health Sciences schools. The awards go to MD, PhD or DDS degree students who have demonstrated superior research accomplishments and who are expected to continue making contributions in scientific research. Eight awards were given to School of Medicine students, one award to a Graduate School student, and one award to a School of Dental Medicine student for a total of ten awards.</td>
</tr>
<tr>
<td><strong>The Neil and Catherine Hamilton Research Fel-lowship</strong></td>
<td>This award is for a medical student engaging in outstanding research in the fields of cancer or multiple sclerosis.</td>
</tr>
<tr>
<td><strong>The K. Louise Coulter Research Award</strong></td>
<td>An award to a medical student engaged in outstanding pulmonary research.</td>
</tr>
<tr>
<td><strong>The Schweppes Award</strong></td>
<td>This award is for medical students completing outstanding research during medical school.</td>
</tr>
<tr>
<td><strong>The Western Student Medical Research Form (WSMRF)</strong></td>
<td>Research track students are encouraged to submit their research to the WSMRF as part of an eight-state American Federation for Clinical Research Symposium in Carmel, California.</td>
</tr>
<tr>
<td><strong>Glaser Award</strong></td>
<td>One award is given to a graduating medical student who has carried out meritorious research during medical school.</td>
</tr>
</tbody>
</table>
Health Sciences Student Research Forum
The 28th Annual Research Forum was held Dec. 17, 2013. The forum was organized and funded by the School of Medicine Dean’s Office and overseen by Randy Ross, MD, Director of Medical Student Research Track. There were 94 students presenting their research, representing the School of Medicine, School of Pharmacy, School of Dental Medicine, College of Nursing, Colorado School of Public Health, and Graduate School. Over 65 faculty members volunteered to judge posters during the forum, and 160 first-year medical students evaluated posters. Cash awards, $290 each, totaling $14,210, were given to the 49 highest-scoring presentations. Donors of the cash awards were Center for Bioethics & Humanities, College of Nursing, Department of Anesthesiology, Department of Biochemistry & Molecular Genetics, Department of Emergency Medicine, Department of Family Medicine, Department of Immunology, Department of Medicine, Department of Microbiology, Department of Neurology, Department of Obstetrics and Gynecology, Department of Ophthalmology, Department of Otolaryngology, Department of Pathology, Department of Pediatrics, Department of Pharmacology, Department of Physiology and Biophysics, Department of Psychiatry, Department of Radiation Oncology, Department of Radiology, Department of Surgery, Division of Medicine Gastroenterology, Division of Medicine Hematology, Division of Pediatrics Neonatology, Division of Pediatrics Pulmonary, Graduate School, JFK Partners, School of Pharmacy, School of Public Health, Sickle Cell Treatment and Research Center, UME, University of Colorado Cancer Center, Vice Chancellor for Research.

Mentored Scholarly Activity Program
The Mentored Scholarly Activity program (MSA), a longitudinal curriculum across all phases, encourages scholarship and fosters life-long learning. The MSA team is Allan Prochazka, MD, Director and Associate Director, Clinical Research; Jennifer Bellows, MD, Associate Director, Global Health; Jackie Glover, PhD, Associate Director, Humanities, Social Sciences & Education; Rita Lee, MD, Associate Director, Epidemiology/Public & Community Health; and Robert Sclafani, PhD, Associate Director of Basic Science Research. The MSA program has a wide definition of scholarship, and students can choose a project that represents their interests. The timing of the project is also flexible, with some students doing most of the work the summer between phases I and II, other students working throughout all phases, and some doing the majority of the work in phase IV. MSA associate directors and mentors work with the students across all phases. Within the Anschutz Medical Campus as well as the downtown campus, over 350 faculty members formally volunteered to serve as mentors. MSA has continued to join forces with the Colorado School of Public Health and established a biostatistics lab assisting medical students with their study design and data analysis. Librarian liaisons provide literature review expert consultations tailored to the student’s project topic. Projects culminate with a capstone presentation in March of students’ graduating year. For the graduating class of 2014 capstone event, approximately 60 faculty members volunteered to evaluate the posters of 140 student presenters, and each student evaluated posters of their peers. The keynote address was given by Dean Richard Krugman, MD.

For more information on becoming a volunteer faculty mentor, please contact the MSA program, at MSA.SOM@ucdenver.edu. (Website: http://medschool.ucdenver.edu/msa)

Figure 1: MSA Projects by Thematic Area, Class of 2014
Project by Methodological Approach

Table 1: Class of 2013: Percent Participating in Public Presentations and Publications (n=138)

<table>
<thead>
<tr>
<th>Activity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Published or have a manuscript accepted for publication</td>
<td>23</td>
</tr>
<tr>
<td>Submitted manuscript for review</td>
<td>9</td>
</tr>
</tbody>
</table>

Problem-Based Learning (PBL)

Matthew Rustici, MD, is the director for Problem-Based Learning. Its principal goals are to bring basic science content to clinical scenarios and to encourage first- and second-year students to think “clinically.” The PBL cases are designed to facilitate discussion of clinical reasoning, ethics, professionalism, multicultural medicine, evidence-based medicine, and community health. PBL helps students develop skills in a safe and nurturing environment where they are able to direct their own learning. The skills students acquire will prepare them to work collaboratively, pursue life-long learning, present patient cases to other professionals, and develop clinical problem-solving skills. Faculty and volunteer community clinicians facilitate the PBL group discussions and are recruited each spring prior to the start of a new academic year.

For further questions, please contact the PBL director Matt Rustici matthew.rustici@ucdenver.edu or visit our website at: http://www.ucdenver.edu/academics-colleges/medicalschool/education/degree_programs/MDProgram/longitudinal/pbl/Pages/default.aspx

Educational Technology

The core responsibilities of the Education Technology Office are the technology support of UME, CAPE, and the Office of Student Life including: the admissions process, and scheduling; support of the electronic curriculum; support and development of the UME website; support of the applications and data infrastructure of the UME office; and support of student technology use including developing laptop requirements, guidance on best practices, mobile device support and laptop repair. Projects of the office this year include developing data collection and upload capabilities to meet the requirements of the AAMC Curriculum Inventory, planning and development of a comprehensive student data repository, transitioning medical student online curriculum to the new learning management system, and developing and implementing a new online and mobile clinical encounter logger to record student accomplishment of required core clinical conditions. For more information on education technology go to medschool.ucdenver.edu/meta.
Evaluation
The mission of the UME Evaluation Office is to enhance the quality of medical education at the School of Medicine by evaluating the effectiveness of the educational program and contributing to the continuous quality improvement efforts of the School.

To accomplish its mission, the Evaluation Office (1) collects and provides quality information about the process and impact of educational experiences; (2) supports teaching faculty, curriculum developers and decision-makers to use data as they assess program results, identify ways to improve program quality, and test innovative endeavors; and (3) document program activities and outcomes to assess the extent to which the educational program has met its objectives and the accreditation standards of the Liaison Committee on Medical Education.

The Evaluation Office collects data and reports results of analyses to course directors, teaching faculty, and the Curriculum Steering Committee (CSC) on a regular basis. School of Medicine members can view reports via https://mysom.ucdenver.edu/education/CurrComm. Data sources and reporting activities are described below.

Course evaluation data includes:
♦ Student satisfaction ratings and comments
♦ Student feedback to teaching faculty
♦ Student's course performance

Program evaluation data includes:
♦ Measures to monitor changes in student plans, attitudes and beliefs
♦ Data from focus groups to evaluate specific curricular areas of interest
♦ External performance measures assessing student performance against national standards, include the USMLE Step I and Step II, Clinical Knowledge and Clinical Skills scores, and the AAMC Graduation Questionnaire
♦ Course and site comparisons on learning climate, teaching quality and student performance

Reporting:
♦ Block evaluation data and teaching faculty summaries are reported to each curriculum block director at the completion of their course
♦ Faculty teaching in the Essentials Core receive a student evaluation report of their lecture(s) or small group facilitation from the Evaluation Office after each block ends
♦ Faculty teaching in the clinical years receive a student evaluation summary report at the end of the calendar year if they have taught at least three students. These are entered into PRiSM, a centralized data base of faculty productivity
♦ Evaluation data summary reports for all required curricular elements are presented to the appropriate curricular committee
♦ Course reports are integrated by phase or longitudinal course and presented to the CSC for approval
♦ Summaries of nationally comparative outcome data (e.g., Graduation Questionnaire) are reported to the CSC annually

Other efforts:
♦ Studies of focused innovative curricular changes are supported with assistance in study design, data collection, analyses and reporting
♦ At the request of curriculum leaders, conduct and report special analyses to assist decision making
♦ Comprehensive, annual or multi-year reports of program quality to meet University and School accreditation requirements
♦ Support UME efforts to design and implement continuous quality improvement processes
Accomplishments in 2013 -2014

♦ Collected and reported on, or are in process of reporting on, required curriculum:
  • 9 Essential Core courses, 337 lecturer and 929 small group facilitator evaluations,
  • 10 Clinical Core courses, including site comparisons within each course,
  • Report on clinical teaching quality to 669 Attendings, 590 Preceptors, and 578 Residents or Fellows
  • 9 longitudinal curricular course or unit (e.g., Foundations of Doctoring, Mentored Scholarly Activity, Problem-based Learning, and Threads content), and
  • 22 sub-internships

♦ Produced Phase reports for Phases I & II (Essential Core) and Phase III (Clinical Blocks).

♦ Collected and reported on other curricular areas including, over 200 Phase IV electives, Advisory Colleges, Clinical Psychiatry Small Groups, Orientation for New Students, Tracks (e.g., Global Health), and other courses or curricular.

♦ Collected and reported on alumni performance, annual Program Directors Survey of PGY-1s, PGY-1 Graduate Survey, and a special analysis of graduate outcomes from 1979 to 2008 using the AMA Physician Masterfile.

♦ Supported the effort to obtain grant funding and begin the development of a “student data warehouse” that will integrate student information and progress from matriculation through post-graduation

♦ Supported the review process for UME Enhancing Educational Program Grants

♦ Integrated continuous quality improvement principles into all evaluation reports for courses and curricular units (e.g., new report format)

♦ Conducted special analyses and projects (e.g., faculty survey on teaching benefits, support review of the policy and procedures handbook for students (aka White Book), created needs assessments for new Branch Campus)

♦ Supported the evaluation of innovative efforts (e.g., integrating practice questions into Phase I & II courses, active learning efforts of the Essential Core Directors, NIH-funded undergraduate summer research program)

♦ Support faculty research on curriculum (e.g., clinical interlude, sexual-history-taking communication, non-cognitive competencies needed for residency, quality of successful mentee-mentor relationships)
## Summary of AY 2013 - 2014 Student Ratings of Courses and Faculty by Phase:

### Essentials Core Curriculum (Phases I & II)

<table>
<thead>
<tr>
<th>Question</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Rate the overall quality of the block”</td>
<td>3.93</td>
<td>4.14</td>
</tr>
<tr>
<td>“Overall teaching” rating for lecturers</td>
<td>4.07</td>
<td>4.14</td>
</tr>
<tr>
<td>“Overall teaching” rating for small group facilitators</td>
<td>4.34</td>
<td>4.41</td>
</tr>
</tbody>
</table>

(5-point scale, e.g., 1=poor; 5=excellent)

### Clinical Curriculum (Phases III & IV)

<table>
<thead>
<tr>
<th>Question</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>3.96</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>4.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<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>4.40</td>
</tr>
<tr>
<td>“Overall, how effective is this resident/fellow's teaching?”</td>
<td>4.30</td>
</tr>
</tbody>
</table>

(5-point scale, e.g. 1=poor; 5=excellent)

### Evaluation Office staff includes:

**Gretchen Guiton, PhD**, Director of Evaluation  
**Jennifer Gong, PhD**, Assistant Director of Evaluation  
**Traci Yamashita, MS**, Evaluation Analyst  
**Susan Peth**, Senior Evaluation Specialist  
**Susan Claxon**, Evaluation Specialist

The Evaluation Office website can be found here:  
http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/MDProgram/administration/evaluation/Pages/default.aspx.

### Office of Student Life

The Office of Student Life, which includes both Admissions and Student Affairs is lead by **Maureen Garrity, PhD**, Associate Dean of Student Life. 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 insure their academic success and to support their personal well-being. The office provides services for prospective students, current students and graduates over the entire spectrum of their time with the School of Medicine. This starts when a candidate expresses an interest in being considered for the MD program, continues through their matriculation and time as a student. 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 Committee. The office organizes and manages many 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.

http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx

Admissions
Oswaldo Grenardo, MD, MBA, MS, served as interim Assistant Dean until June 30, 2014. Under his guidance, the Office of Admissions continued a strong recruitment plan to guide efforts in increasing and diversifying the applicant pool. The Admissions staff held several informational sessions throughout the year directed towards college/university health career advisors and interested potential applicants to increase the transparency with regard to the best medical school applicant and the process for selection. During the 2013-2014 application cycle the School of Medicine received 6,298 secondary applications for a class size that was increased from 160 to 184. This increase was to accommodate an additional 24 students who were assigned to the Colorado Springs Branch (CSB). The focus continues on 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 secondary essays, and the applicant’s experiences. In 2013-2014, each of the approximately 700 candidates selected for interview received a 30 minute interview by two committee members, one of whom was an MD or DO. The admissions process continues to rely on faculty members and students to interview and to play an important role in the final selection of applicants. 2013-2014 was the first year in which after selection for admissions, 24 students were designated to be members of the first cohort of students assigned to the CSB. At the beginning of the 2014-2015 year Nichole Zehnder, MD, was named the new Assistant Dean for Admissions. The office continues to seek faculty for committee membership. If interested, please contact the Office of Admissions (303-724-8025) for an appointment.

http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx

Student Affairs
Student Affairs is led by Terri Blevins, EdD, interim Assistant Dean, and oversees major student activities including the Advisory College program, student interest groups, orientation, Match Day, graduation, visiting externs, and scholarships.

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 Fourteeners. Leadership in the colleges includes 16 faculty mentors, over 70 resident advisors, and 32 fourth year student advisors. 2013-2014 was spent expanding this program, which focuses on student wellness, mentoring and career success.

Other areas of responsibilities and service include:
♦ Providing programming for students in the areas of professional development, career planning, stress and burn-out, and study/time management skills
♦ Providing programming and support for Advisory Colleges, and other faculty who are mentoring or advising students
♦ Working individually with students who are struggling academically, clinically, or personally; assisting them in identifying available resources
♦ Providing a part-time learning specialist to assist students with academic preparation
♦ Providing support from the Financial Aid Office to the Office of Student Affairs with a 50% dedicated financial aid officer
♦ Scheduling Phase III and Phase IV students and for working with visiting students, formerly known as externs
♦ Tracking student data including grades, evaluations, and absences

In December 2013, 6 students were awarded their MD degree, and in May 2014, 143 students from the Class of 2014 were awarded their MD degree of which five students also received PhD degrees.

On Match Day, March 21, 2014, 148 students matched into residency positions. The table below shows a full list of specialty matches. The top residency choices included Internal Medicine (26 categorical matches), Family Medicine (21 matches), and Anesthesiology (13 matches). Of the students matching in 2014, Primary Care specialties were chosen by 66 students.

Where are our matched graduates heading? Colorado will retain 30% of the class. California will receive 15% of the class followed by Washington with 7%. The remaining 48% of the class will be spread throughout 30 other states.

http://www.ucdenver.edu/academics/colleges/medicalschool/education/studentaffairs/Pages/studentaffairs.aspx

<table>
<thead>
<tr>
<th>Number of Students</th>
<th>Specialty Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Anesthesiology</td>
</tr>
<tr>
<td>0</td>
<td>Dermatology</td>
</tr>
<tr>
<td>12</td>
<td>Emergency Medicine</td>
</tr>
<tr>
<td>21</td>
<td>Family Medicine</td>
</tr>
<tr>
<td>12</td>
<td>General Surgery</td>
</tr>
<tr>
<td>26</td>
<td>Internal Medicine</td>
</tr>
<tr>
<td>4</td>
<td>Med-Peds</td>
</tr>
<tr>
<td>10</td>
<td>Obstetrics/Gynecology</td>
</tr>
<tr>
<td>6</td>
<td>Orthopedics</td>
</tr>
<tr>
<td>5</td>
<td>Ophthalmology</td>
</tr>
<tr>
<td>1</td>
<td>Otolaryngology</td>
</tr>
<tr>
<td>2</td>
<td>Neurology</td>
</tr>
<tr>
<td>2</td>
<td>Neuro Surgery</td>
</tr>
<tr>
<td>2</td>
<td>Pathology</td>
</tr>
<tr>
<td>15</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>1</td>
<td>Plastic Surgery</td>
</tr>
<tr>
<td>7</td>
<td>Psychiatry</td>
</tr>
<tr>
<td>0</td>
<td>Peds/Psych/Child Psych</td>
</tr>
<tr>
<td>1</td>
<td>PM&amp;R</td>
</tr>
<tr>
<td>4</td>
<td>Radiology, Diagnostic</td>
</tr>
<tr>
<td>2</td>
<td>Radiation-Oncology</td>
</tr>
<tr>
<td>0</td>
<td>Surgery-thoracic</td>
</tr>
<tr>
<td>0</td>
<td>Transitional</td>
</tr>
<tr>
<td>1</td>
<td>Urology</td>
</tr>
<tr>
<td>1</td>
<td>Vascular Surgery</td>
</tr>
</tbody>
</table>

Page 70
The activities of the Office of Student Life are overseen by the Student Life Steering Committee:
This page intentionally left blank.
### FULL-TIME (>50% FTE) FACULTY, LISTED BY DEPARTMENT (Instructor and Above)
#### July 1, 2014

<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><strong>Basic Science Departments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemistry &amp; Molecular Genetics</td>
<td>28</td>
<td>1</td>
<td>29</td>
</tr>
<tr>
<td>Cell &amp; Developmental Biology</td>
<td>28</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Immunology and Microbiology</td>
<td>29</td>
<td>25</td>
<td>54</td>
</tr>
<tr>
<td>Pathology</td>
<td>53</td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>28</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Physiology &amp; Biophysics</td>
<td>15</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>181</td>
<td>43</td>
<td>224</td>
</tr>
<tr>
<td><strong>Clinical Science Departments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>215</td>
<td>26</td>
<td>241</td>
</tr>
<tr>
<td>Dermatology</td>
<td>34</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>46</td>
<td>27</td>
<td>73</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>92</td>
<td>44</td>
<td>136</td>
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<tr>
<td>Medicine</td>
<td>495</td>
<td>310</td>
<td>805</td>
</tr>
<tr>
<td>Neurology</td>
<td>53</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>40</td>
<td>4</td>
<td>44</td>
</tr>
<tr>
<td>Obstetrics &amp; Gynecology</td>
<td>65</td>
<td>19</td>
<td>84</td>
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<tr>
<td>Ophthalmology</td>
<td>31</td>
<td>6</td>
<td>37</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>70</td>
<td>16</td>
<td>86</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>39</td>
<td>4</td>
<td>43</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>720</td>
<td>67</td>
<td>787</td>
</tr>
<tr>
<td>Physical Medicine &amp; Rehabilitation</td>
<td>60</td>
<td>11</td>
<td>71</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>173</td>
<td>84</td>
<td>257</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>18</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Radiology</td>
<td>72</td>
<td>27</td>
<td>99</td>
</tr>
<tr>
<td>Surgery</td>
<td>120</td>
<td>24</td>
<td>144</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>2,343</td>
<td>677</td>
<td>3,020</td>
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</table>

### FULL-TIME (>50% FTE) FACULTY, LISTED BY RANK (Instructor and Above)
#### July 1, 2014

<table>
<thead>
<tr>
<th>Instructor/Sr. Instructor</th>
<th>University Paid</th>
<th>Affiliate Paid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>901</td>
<td>169</td>
<td>1,070</td>
<td></td>
</tr>
<tr>
<td>726</td>
<td>243</td>
<td>969</td>
<td></td>
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<tr>
<td>495</td>
<td>174</td>
<td>669</td>
<td></td>
</tr>
<tr>
<td>402</td>
<td>134</td>
<td>536</td>
<td></td>
</tr>
<tr>
<td><strong>Total Full-Time Faculty Count</strong></td>
<td>2,524</td>
<td>720</td>
<td>3,244</td>
</tr>
</tbody>
</table>

### CLINICAL FACULTY
#### July 1, 2014

| Volunteer                | 2,538           |
| Paid (<.5 FTE)           | 269             |
| **Total Clinical Faculty Count** | 2,807           |
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 physician scientists.

Post-baccalaureate students are recruited from a national pool of about 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. In 1992 the program received MSTP status by successfully competing for National Institutes of Health (NIH) T32 funding. Currently, the program receives about $795,000 per year to support 16 trainees.

The program has strong leaders and mentors, with Arthur Gutierrez-Hartmann, MD, directing the MSTP since 1994 and selected for numerous local and national mentor awards, and national leadership roles in MD/PhD and graduate education, and Angie Ribera, PhD, serving as the associate director and providing 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 program has been a campus and national leader in recruiting diverse students, 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 for students to choose in 17 PhD programs at the Anschutz Medical Campus, National Jewish Health and the CU-Boulder campus. There are currently 69 students in the program: 9 in the first year (MSI), 9 in the second year (MSII), 35 in the PhD research years, and 16 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 about 75 percent of those completing all training now in academic medicine, government (NIH or Centers for Disease Control and Prevention), or industry, including starting biotech companies. Importantly, an increasing number of MSTP graduates are now faculty at the University of Colorado Anschutz Medical Campus, with hopes of recruiting more alums “back home.” 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, the program has 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, in order to optimize career success for this group. Additional details of the Medical Scientist Training Program can be found at: www.ucdenver.edu/mstp.
**Bridge Funding**
The bridge funding program of the CU School of Medicine was established in 2006 when reductions in the National Institutes of Health (NIH) budget began to threaten 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. The Office of Research Development calls for applications for reviews in April and November.

From the first review in 2006 through April 2014, 135 awards have been made to 113 faculty members in a total amount of $6.629 million. From the start through April 2013, 96 of these awardees, who received $5.6 million in bridging awards, have gained $60.4 million in total research dollars, a nearly 11-fold return on investment of bridge-funding grants.

http://www.ucdenver.edu/academics/colleges/medicalschool/research/researchdevelopment/Pages/BridgeFunding.aspx

<table>
<thead>
<tr>
<th>Bridge Funding Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kay Holmes, PhD – Committee Chair</td>
</tr>
<tr>
<td>Bob Murphy, PhD</td>
</tr>
<tr>
<td>Raphael Nemenoff, PhD</td>
</tr>
<tr>
<td>Marvin Schwarz, MD</td>
</tr>
<tr>
<td>Kurt Stenmark, MD</td>
</tr>
<tr>
<td>John Weil, MD</td>
</tr>
<tr>
<td>Richard Johnston, MD</td>
</tr>
</tbody>
</table>

**SIRC**
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 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.

Research Development solicits SIRC applications quarterly. Through the June 2014 review the SIRC process has made 64 awards totaling $12.7 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, 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 & graduate students and faculty, year-long mentorship in outcomes research, biostatistics & bioinformatics support, patient databases in pregnancy & developmental disabilities, and a biorepository.
- In FY 13-14 a total $1.28 million was allocated for 10 awards, including support for ultrasound imaging of the heart and vasculature, a cell sorter for the CU Cancer Center, preservation of campus mouse models relevant to cardiovascular disease, and an ultra-high resolution light microscope.

http://www.ucdenver.edu/academics/colleges/medicalschool/research/researchdevelopment/Pages/SIRC.aspx
The Research Advisory Committee (RAC) was established by the Research Strategic Plan of 2003 as a way 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 recommended in the past that a center for stem-cell biology and regenerative medicine should be established and that a campus child-care facility should be constructed as a means of retaining research faculty—and as the right thing to do. The RAC selected the six proposals to be presented at the research retreat of 2009, collated faculty reviews and prioritization submitted at the conclusion of the retreat, which was an important basis for funding decisions, and critiqued the budgets submitted by the retreat–proposed programs. Over this past year the RAC recommended that consideration of the proposal to reorganize the basic science departments should proceed with high priority, and the committee constructed and obtained outside input on a list of research priorities to inform the Dean, deanship candidates, and the new Dean.

http://www.ucdenver.edu/academics/colleges/medicalschool/research/researchdevelopment/Pages/RAC.aspx

### Strategic Infrastructure for Research Committee (SIRC)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scott Sagel, MD – Committee Chair</td>
<td>Peter Koch, PhD</td>
</tr>
<tr>
<td>Tom Berl, MD</td>
<td>Jennifer Richer, PhD</td>
</tr>
<tr>
<td>Richard Davis, PhD</td>
<td>Rachael Van Pelt, PhD</td>
</tr>
<tr>
<td>Holger Eltzschig, MD, PhD</td>
<td>Terri C. Carrothers</td>
</tr>
<tr>
<td>Adit Ginde, MD, MPH</td>
<td>Richard Johnston, MD</td>
</tr>
<tr>
<td>Antonio Jimeno, MD, PhD</td>
<td></td>
</tr>
</tbody>
</table>

### Research Advisory Committee (RAC)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tim Benke, MD, PhD – Committee Chair</td>
<td>Tom Purcell, MD</td>
</tr>
<tr>
<td>Bruce Appel, PhD</td>
<td>Mary Weiser-Evans, PhD</td>
</tr>
<tr>
<td>Mair Churchill, PhD</td>
<td>Spero Manson, PhD</td>
</tr>
<tr>
<td>Greg Everson, MD</td>
<td>Fred Suchy, MD</td>
</tr>
<tr>
<td>Kate Horwitz, PhD</td>
<td>Richard Traystman, PhD</td>
</tr>
<tr>
<td>Mark Johnston, PhD</td>
<td>Richard Johnston, MD</td>
</tr>
<tr>
<td>Jim McManaman, PhD</td>
<td></td>
</tr>
</tbody>
</table>

### CTRAC
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 (CON), Skaggs School of Pharmacy and Pharmaceutical Sciences (SOP), School of Dental Medicine, University of Colorado Denver downtown campus, National Jewish, University of Colorado Hospital and Children’s Hospital Colorado, and Regulatory Compliance/Clinical Research Support Center. It meets monthly 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 to promote collaboration and exchange of ideas. In the 2013-14 academic year the committee was updated about research in the CON, SOP, VA Hospital, CU Cancer Center, and downtown campus.

http://www.ucdenver.edu/academics/colleges/medicalschool/research/researchdevelopment/Pages/CTRAC.aspx

<table>
<thead>
<tr>
<th>Clinical-Translational Research Advisory Committee (CTRAC) / Colorado Clinical and Translational Sciences Institute (CCTSI) Internal Advisory Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Hiatt, MD – Committee Chair</td>
</tr>
<tr>
<td>David Badesch, MD</td>
</tr>
<tr>
<td>Warren (Cappy) Capell, MD</td>
</tr>
<tr>
<td>Bob Damrauer, PhD</td>
</tr>
<tr>
<td>Greg Downey, MD</td>
</tr>
<tr>
<td>Bob Eckel, MD</td>
</tr>
<tr>
<td>Anthony Elias, MD</td>
</tr>
<tr>
<td>Mark Geraci, MD</td>
</tr>
<tr>
<td>Jennifer Holcomb, NP</td>
</tr>
<tr>
<td>Michael Kahn, MD, PhD</td>
</tr>
<tr>
<td>Allison Kempe, MD, MPH</td>
</tr>
</tbody>
</table>

**Associate Dean for Research Education**

**Arthur Gutierrez-Hartmann, MD,** has been named associate dean for research education to provide guidance, mentorship and best-practice experiences to research-oriented pipeline trainees (MD, PhD, MD/PhD students, and postdoctoral fellows) and young faculty in the basic and clinical departments, in order to optimize their academic and funding success. He will also work to continually improve the communication of the Dean’s Office with the junior faculty to nurture a strong commitment of the new faculty to the mission of the institution and the Dean’s office. Gutierrez-Hartmann has been director of the Medical Scientist Training Program since 1994 and is the founding director of the Physician Scientist Training Program since 2012.

**Clinical Trials Webpage**

The School of Medicine Research Affairs office in 2014 rolled out a searchable Clinical Trials Webpage to help researchers advertise trials to potential participants and community physicians. The web page contains trials at the School of Medicine reviewed by the Colorado Multiple Institutional Review Board (COMIRB) and the Western Institutional Review Board (WIRB). There are 4,000 open, active human subject protocols, of which 20 percent to 25 percent are clinical trials.

**2013-2014 Proposal Submissions**

<table>
<thead>
<tr>
<th>2013-2014 Proposal Submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposals Submitted (including non-competing continuations)</td>
</tr>
<tr>
<td>4501</td>
</tr>
<tr>
<td>New Proposals</td>
</tr>
<tr>
<td>1899</td>
</tr>
</tbody>
</table>
### Award Trends - Fiscal Year To Date 2013 and 2014

#### July-June Comparison

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>226,259,344</td>
<td>54,457,613</td>
<td>480,727,157</td>
</tr>
<tr>
<td>2014</td>
<td>322,773,090</td>
<td>68,764,232</td>
<td>491,537,322</td>
</tr>
</tbody>
</table>

**Note:** Award totals may change throughout the year depending upon sponsor revisions to funding.

---

### Funding for the University of Colorado at Denver

- **Academic and Student Affairs (AMC)**
  - **2013:** $341,813,837
  - **2014:** $354,672,770

---

### Total SOM Departments/Centers

<table>
<thead>
<tr>
<th>Department/Center</th>
<th>2013 Total</th>
<th>2014 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total SOM Departments/Centers</td>
<td>$226,259,344</td>
<td>$322,773,090</td>
</tr>
</tbody>
</table>

---

### CSA Centers and Institutes:

- **Center on Aging**
  - **2013:** $542,740
  - **2014:** $573,650

---

### SOM Institutes and Centers:

- **Barbara Davis Center**
  - **2013:** $12,493,279
  - **2014:** $14,081,710

---

### SOM Total

- **2013:** $211,751,779
  - **2014:** $262,691,124

---

### Total CSA Centers

- **2013:** $5,580
  - **2014:** $5,688

---

### Note:

- Award totals may change throughout the year depending upon sponsor revisions to funding.
2013-2014 Dean’s Distinguished Seminar Series Roster

September 17, 2013
Jean-Laurent Casanova, MD, PhD
Life-threatening Infectious Diseases of Childhood: Single-gene Inborn Errors of Immunity
Senior Attending Physician and Professor
St. Giles Laboratory of Human Genetics of Infectious Diseases
The Rockefeller University

October 15, 2013
J. Lee Nelson, MD
The Otherness of Self in Autoimmunity and Alloimmunity: Microchimerism
Professor of Medicine
Division of Rheumatology
Fred Hutchinson Cancer Research Center
University of Washington School of Medicine

November 19, 2013
David Relman, MD
Diversity, Stability and Resilience of the Human Microbiome
Thomas M. and Joan C. Merigan Professor
Departments of Medicine, and Microbiology and Immunology
Stanford University
Chief, Infectious Diseases Section
VA Palo Alto Health Care System

December 17, 2013
Michael W. Young, PhD
Genes Controlling Sleep and Circadian Rhythms
Vice President for Academic Affairs
Richard and Jeanne Fisher Professor
Laboratory of Genetics
The Rockefeller University

January 21, 2014
Jeffrey M. Friedman, MD, PhD
Leptin, Leptin Therapy and the Biological Basis of Obesity
Investigator, Howard Hughes Medical Institute
Marilyn M. Simpson Professor
Laboratory of Molecular Genetics
The Rockefeller University

February 18, 2014
Craig B. Thompson, MD
Metabolic Inputs into Cancer Epigenetics
President
Memorial Sloan-Kettering Cancer Center

March 18, 2014
Carlos L. Arteaga, MD, PhD
Pre-surgical Studies in Breast Cancer: Role in Clinical Development and Discovery of Mechanisms of Drug Resistance
Professor of Medicine, and Cancer Biology
Director, Vanderbilt-Ingram Breast Cancer Program
Donna S. Hall Chair in Breast Cancer
Vanderbilt School of Medicine

April 15, 2014
Mitchell A. Lazar, MD, PhD
Coordination of Circadian Rhythms and Metabolic Physiology
Sylvan H. Eisman Professor of Medicine and Genetics
CENTERS, INSTITUTES AND PROGRAMS
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, health outcomes and sickle cell treatment and research.

On the following pages, you can read a more detailed description of many of the medical centers and institutes. For a complete list of what the medical school has to offer, go to www.medschool.ucdenver.edu and click on the Department/Center/Institute link at the top of the page.
Altitude Research Center (ARC)

The Altitude Research Center (ARC) was established in 2003 to improve life through research on how hypoxia affects human health and performance.

ARC’s research programs focus on four key areas:

♦ Integrative physiology
♦ Cell, molecular and genomic mechanisms of hypoxia
♦ Epidemiology of altitude problems in travelers
♦ Impact of hypoxia on common diseases in residents of altitude

Three major funded research projects currently in progress at the ARC are:

♦ The design of an easy-to-use, cost-effective test that accurately predicts whether someone is likely to develop acute mountain sickness when traveling to high altitudes.
♦ The advancement of high-altitude medical research by discovering the basic molecular mechanisms of acclimatization that protect soldiers from high-altitude illness.
♦ The advancement of high-altitude medical research by discovering novel preventive measures for acute mountain sickness.

The Center’s director is Robert Roach, PhD. More information about the Center can be found at http://www.altituderesearch.org.

Alzheimer’s Disease Clinical and Research Center

The Alzheimer’s Disease Research and Clinical Center was established in November 2013 to provide expert standard and innovative clinical assessment and care for Alzheimer’s Disease patients and individuals at risk for developing Alzheimer’s Disease because of known risk factors, family history, or, in particular, Down Syndrome. The center also provides support and resources for carrying out clinical research on the diagnosis, treatment and prevention of sporadic and familial Alzheimer’s disease and Alzheimer’s disease in individuals with Down Syndrome. It also provides support and resources for carrying out basic, preclinical, and translational research directed at improving the diagnosis, treatment and prevention of sporadic and familial Alzheimer’s disease and Alzheimer’s disease in individuals with Down Syndrome.

The center’s director is Huntington Potter, PhD, professor of neurology and vice chair for basic research, and director of the Alzheimer’s Disease Program, Linda Crnic Institute for Down Syndrome. Jonathan Woodcock, MD, assistant professor of neurology and psychiatry, is co-leader of the center’s clinical core. Christopher M. Filley, MD, professor of neurology and psychiatry and neurology service chief at the Denver Veterans Affairs Medical Center, is the co-leader of the center’s clinical core.

Since its establishment, the center has been approved for a clinical trial to assess the safety and efficacy of Leukine as a treatment for Alzheimer’s disease. The trial has started and is partially funded by a grant from the Dana Foundation. The Center has also applied to the National Institute on Aging for a ~$7.4 million grant and designation as the Rocky Mountain Alzheimer’s Disease Research Center.

http://www.ucdenver.edu/academics/colleges/medicalschool/departments/neurology/clinical/AD%20Center/Pages/Alzheimer.aspx
The Anschutz Health and Wellness Center (AHWC) was officially established within the School of Medicine and opened in April 2012. This world-class facility has an industry-leading team, including top researchers, clinicians, registered dietitians, personal trainers and more, who are focused on a mission to transform the lives of individuals and communities through science-based wellness strategies. Our vision is a world empowered by wellness.

The building, which is certified by the U.S. Green Building Council for Leadership in Energy & Environmental Design, houses:

♦ Fitness Center with technologically-advanced equipment offers comprehensive programming and support for over 3,600 members from the campus and surrounding community
♦ Wellness Clinic offers the public results-oriented weight loss and nutrition services, (including the new State of Slim program), psychological consultations, body composition testing and mind-body treatments and services
♦ Human Performance Lab with a sports performance program for recreational and elite athletes to help them reach their peak potential
♦ Bistro Elaia provides healthy breakfast and lunch menus and catering services
♦ Metabolic and demonstration kitchens for research and publicly offered cooking classes

AHWC is home to the Extreme Weight Loss show, airing on ABC-TV. Holly Wyatt, MD, medical director of the Wellness Clinic, serves in the same capacity for cast members of the show who spend the first 90 day of their transformational weight loss journey at AHWC. In collaboration with Eye-works USA, the producers of the show, AHWC is introducing a new weight-loss destination program called Extreme Weight Loss: Destination Boot Camp.

The Center collaborates with many groups on campus including the CU Cancer Center offering a research-based exercise program for cancer patients to support their recovery and Advanced Reproductive Medicine offering WIFi (Wellness Interdisciplinary Fertility Initiative).

Funding for AHWC comes from a variety of sources, including federal and state government agencies, non-profit organizations, commercial industries and its membership base. It also includes the following research groups:

Clinical Trials Division, which conducts industry-sponsored research with a focus on nutrition. Areas of study include weight loss, weight maintenance, metabolic syndrome and diabetes. They specialize 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) is a multicenter, randomized clinical trial to examine the effects of a lifestyle intervention designed to achieve and maintain weight loss over the long term.

The Colorado Nutrition Obesity Research Center (NORC) (funded by NIH/NIDDK grant P30 DK048520), which has had an important impact with the University of Colorado School of Medicine by successfully fostering collaboration among members of its research base, promoting interdisciplinary research and fostering development of young investigators. NORC researchers continue to be successful in attracting funding and in publishing research results. The NORC maintains a re-
search base, which is comprised of more than 100 researchers and principal investigators who use one of our core laboratories (Energy Balance or Metabolic).

Recently published studies include:

May 2014 – A groundbreaking new study published in the June issue of *Obesity*, the journal of The Obesity Society, confirms definitively that drinking diet beverages helps people lose weight.

July 2014 – A study, supported by McCormick & Co, published in *Appetite* shows low fat foods are made more appealing by herbs and spices.

AHWC is led by James O. Hill, PhD, Executive Director, John Peters, PhD, Chief Strategy Officer, Holly Wyatt, MD, Associate Director and Dan Bessesen, MD, Associate Director. Website: www.anschutzwellness.com Phone: 303-724-9355 (WELL).

### Barbara Davis Center for Childhood Diabetes

The Barbara Davis Center for Childhood Diabetes is one of the largest centers in the world devoted to Type 1 diabetes. The Center’s executive director is Marian Rewers, MD, PhD, who also heads the clinical division. The center cares for about 3,600 children and 2,400 adults with type 1 diabetes (including 80 percent of all children with diabetes in Colorado); 1,500 of our patients are referred from throughout the United States and other countries. The center has pioneered the evaluation of devices for continuous glucose monitoring and insulin pumps with the goal of developing artificial pancreas and lowering burden of diabetic complications. The center faculty is leading the international effort of defining the environmental and immunogenetic causes of Type 1 diabetes and developing tests to predict the disease. The center’s core laboratory measures biomarkers of Type 1 diabetes risk in numerous national and international trials for the prevention of Type 1 diabetes. Investigators of the Barbara Davis Center are funded by multiple granting agencies including the National Institutes of Health, Juvenile Diabetes Research Foundation and American Diabetes Association. They provide laboratory and clinical research training opportunities for young investigators around the world. The center is also an educational hub for doctors, nurses, dietitians and other providers specializing in diabetes care. The Center is recruiting for a head of its research division.

### Cardiovascular Institute

The University of Colorado Cardiovascular Institute (CU-CVI) was co-founded in 1998 by Michael R. Bristow, MD, PhD, and Leslie Leinwand, PhD, with the idea to integrate cardiovascular research, treatment, and discovery through a collaboration of the Anschutz Medical Campus and the Boulder campuses.

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 translate into improved treatments and therapies of patients.

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

Center for Bioengineering

The Department of Bioengineering was founded in 2010 as a new University of Colorado Denver academic unit. It is the first department that crosses both the downtown Denver and Anschutz Medical Campuses. In January 2014 the Chancellor and the CU School of Medicine approved the Center for Bioengineering and groundbreaking for Bioscience 2, a new building that will be the future home of the bioengineering program, was in April 2014. Bioengineering will be on the first floor when the building opens in fall 2015. The Department of Bioengineering has graduate and undergraduate programs to support 23 full time faculty, 4 full time administrative staff, 90 graduate students, 288 undergraduate students, and 12-25 professional research staff and postdoctoral fellows at full implementation.

Robin Shandas, PhD, is the center's director. Faculty membership is representative of the diverse and translational research projects that bridge engineering and medicine. Currently, our program collaborates with more than 75 faculty and with research centers including Colorado Translational Research Imaging Center, Neuroscience, Children's Hospital Heart Institute, Children’s Hospital Breathing Institute, Children’s Hospital Gait Lab, and Cardio Vascular Pulmonary Research Lab. Grant funding for bioengineering faculty is $457,983 per 1.0 FTE.

The Department’s mission is to improve human health through the application of engineering principles, ideas, methods, and inventions to solve important clinical questions. It fulfills this mission by providing opportunities for training, research and service in bioengineering to faculty, students and residents of Colorado and the Rocky Mountain region. Our research and education focuses on the application of engineering principles in the design, analysis, construction, and manipulation of biological systems and biomedical technologies, and on the discovery and application of new engineering principles and technologies inspired by the properties of biological systems.

During the next five years the Center for Bioengineering will:
♦ Increase grant and research activity at the interface between engineering and medicine.
♦ Increase the number of patent applications for novel medical technologies, bringing Colorado and CU to the forefront for new technology development and commercialization.
♦ Increase the number of start-up companies formed from new inventions and discoveries.
♦ Help recruit outstanding faculty who work at the interface between medicine and engineering, attracting top bioengineering researchers to our state and community.

http://www.ucdenver.edu/ACADEMICS/COLLEGES/ENGINEERING/PROGRAMS/BIOENGINEERING/Pages/Bioengineering.aspx

Center for Children’s Surgery (CCS)

The Center for Children’s Surgery (CCS) was created within the School of Medicine (SOM) in 2011 to develop a robust children’s surgical practice.

The CCS leadership includes Timothy M. Crombleholme, MD, Director, and Chrissy Roll, Director of Finance and Administration. The CCS Finance and Operations Committee is comprised of Division Chiefs across nine pediatric divisions/sections: Stephen Scott, MD – Adolescent and Pediatric Gynecology; James Jaggers, MD – Cardiothoracic Surgery; Michael Handler, MD –
The Center for Research in Implementation Science & Prevention (AHRQ) that focuses on improving clinical preventive services within primary care practice. CRISP brings together 1) investigators with extensive expertise in the area of implementation of preventive services, 2) an extensive net-
work of well-established practice-based research networks to serve as laboratories for better understanding implementation and 3) national authorities in the area of innovative health information technology (HIT) to facilitate implementation in primary care settings.

CRISP consists of an administrative core and an investigator leadership core, which includes Allison Kempe, MD, MPH, center director; Elaine Morrato, DrPH, MPH, collaborative scientific lead; the leaders of three CRISP research projects; and additional experts in implementation of preventive services.

The CRISP mission is to enhance implementation of effective preventive care in diverse populations by: 1) Conducting multidisciplinary research that links primary care, public health and community prevention efforts, 2) Disseminating implementation research findings broadly and 3) Providing education and training in implementation science.

CRISP encompasses three research projects that are synergistic and unified by a thematic focus on collaboration between public health systems and private practices and methodological innovations in HIT and research in practice-based research network settings. The CRISP research projects address three top priorities of the U.S. Preventive Services Task Force and Advisory Committee on Immunization Practices: immunization delivery in children, prevention of cardiovascular disease in adults, and prevention of obesity in children and adults. The three CRISP projects are:

♦ Project 1: Comparative Effectiveness Trial of Two Reminder/Recall (R/R) Methods to Increase Immunization Rates in Young Children.
♦ Project 2: Improving Cardiovascular Screening and Management through a Bidirectional Personal and Technological Interface.
♦ Project 3: Community Outreach – Obesity Prevention Trial (CO-OPT).

Community engagement is a crucial component of CRISP and its research projects. CRISP projects use a variety of methods to engage the community, solicit feedback, and disseminate findings. CRISP works closely with university groups and local organizations to provide consultation in implementation and dissemination science and identify opportunities for future collaborations.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/crisp/Pages/default.aspx
**Center for Surgical Innovation (CSI)**

The Center for Surgical Innovation is committed to excellence in providing multi-disciplinary coursework in the latest surgical techniques and technology.

The Center for Surgical Innovation was created in 2007. Two student populations are served by our surgical training center: Anschutz Medical Campus medical students and post-graduate surgical trainees, which account for one third of our students. We also train mid-career surgeons, who travel to our training center from around the world and account for two thirds of our students.

The Center for Surgical Innovation is supported and overseen by five surgical departments on the University of Colorado Anschutz Medical Campus. The participating departments include: Surgery, Neurosurgery, Orthopedics, Obstetrics/Gynecology and Otolaryngology.

The Center for Surgical Innovation hosted 126 courses in 2014 with more than 1,200 student attendees, making it one of the busiest mid-career surgical training centers in the United States.

Surgical device research and development is a new and promising area for future growth for the Center for Surgical Innovation. Our center currently hosts strategic lab between University of Colorado faculty and industry engineers where the devices used in tomorrow’s operating rooms are currently being developed.

The CSI has had consistent growth in surgical coursework since 2009.

![Graph showing Total Trainings per Fiscal Year](image)

A major strength of CSI is the multi-specialty coursework supported by the training center.

![Graph showing FY 13 (July 1-YTD) Trainings by Specialty](image)
The CSI provides (1) regular training courses for mid-career surgeons from across the nation, (2) training for residents inside the institution, and (3) provides corporate partners opportunities to perform for research & development on new devices.
Center for Women’s Health Research (CWHR)

The Center for Women’s Health Research (CWHR) celebrated its 10-year anniversary as a center in 2014 and is led by Judy Regensteiner, PhD, and JoAnne Lindenfeld, MD. Other senior scientists include Lorna Moore, PhD, Jane Reusch, MD, and Wendy Kohrt, PhD.

In 2012, the CWHR won renewal of the prestigious 5-year $2.5 million Building Interdisciplinary Research Careers in Women’s Health (BIRCWH) grant from the National Institutes of Health, which will add new researchers to the 30 junior and 5 senior researchers currently affiliated with CWHR. This year, the CWHR established its second endowed Chair in Women’s Health Research. The Nancy Anschutz Endowed Chair in Women’s Health Research follows on the heels of the Judith and Joseph Wagner Chair in Women’s Health Research. CWHR will further develop its recruitment and mentoring program and continue to seed women’s health research in multiple departments across the University of Colorado School of Medicine. Web site: www.cwhr.org

The Center for Women’s Health Research is working to accelerate improvements in women’s health by answering key research questions about cardiovascular disease, diabetes and other diseases in women.

The CWHR Mission has 3 components:
1. Conducting rigorous basic, clinical, translational, and health services research into understudied issues in women’s health and sex differences;
2. Training the next generation of scientists and physician-scientists to be researchers in women’s health; and
3. Educating women, healthcare providers, policy makers, and the public about research findings for the benefit of women, their families, and their communities.

Research conducted by junior and senior investigators through the CWHR is primarily focused on the impact of diabetes and/or heart disease in women across their life spans. All types of research—from basic to clinical to epidemiologic—are emphasized, as is a translational, interdisciplinary, and collaborative focus. Our seed grants have been leveraged to put into action more than $27 million dollars in external funding.

Charles C. Gates Center for Regenerative Medicine and Stem Cell Biology

The Charles C. Gates Center for Regenerative Medicine and Stem Cell Biology received center status in 2010. Led by Dennis Roop, PhD, the center focuses on the biology of stem cells to develop new clinical therapies, and is open to investigators and clinicians currently conducting research in regenerative medicine and stem cell biology. The center has received $70 million in peer-reviewed funding from the National Institutes of Health, the U.S. Department of Defense, and various foundations and $30 million in donations from more than 40 donors. The Gates Center serves as a virtual hub, maintaining a web site, seminar series and services designed to promote and support its members. The center has established three core facilities: Flow Cytometry, Morphology and Pheno-typing, and Bioengineering. These cores have a combined operating budget of $1.25 million per year and are utilized by investigators in 13 departments and centers within the CU School of Medicine, the Skaggs Schools of Pharmacy and Pharmaceutical Sciences, the School of Dental Medicine, National Jewish Health, CU Boulder and Colorado State University (CSU). Additionally, the Center has established a training program in stem cell biology for graduate students and fellows. Center membership is comprised of 65 independent principal investigators within the state of Colorado, from institutions including the CU System, CSU and Colorado School of Mines. http://www.ucdenver.edu/academics/colleges/medicalschool/centers/StemCell/Pages/StemCell.aspx
Children’s Outcome Research (COR)

Children’s Outcome Research (COR) brings together resources, methodologies and researchers from multiple disciplines to focus on problems responsible for the greatest morbidity among children in the U.S. and to examine the effectiveness of health care for children at an individual, community, and national level. Such research is critical to guiding future health care practice and policy for children.

COR was initially authorized and funded by the Children’s Hospital Research Institute in 2001. Allison Kempe, MD, MPH, professor of pediatrics, has been the director since 2007. With over 25 years of health services and policy research experience, Kempe has furthered COR’s mission and greatly contributed to the growth of the program.

COR Funding
COR’s total annual funding for 2013 was more than $6 million, which included funding from the Children’s Hospital Colorado Research Institute, primary COR grants, Colorado Health Outcomes pediatric grants, and training grants. Funding from primary COR grants was $4.8 million. This represents an 18 percent increase in funding over 2012 and a quadrupling in annual grant support compared with 5 years ago. In addition, 22 additional federal grants have been submitted from January to July 2014, representing almost $19 million of funding requests. Thus far, four of these have been funded (1 National Institutes of Health (NIH), 1 Centers for Disease Control and 2 Health Resources and Services Administration grants) and two additional grants have been resubmitted to NIH after scoring well in their first submissions.

COR’s research portfolio continues to diversify, with continued strength in immunization delivery research, comparative effectiveness and implementation science, and children with special health care needs and continued growth in asthma care, mobile health, surgical outcomes, mental/developmental health, oral health and obesity prevention.

Grants and Research Activities
Research development investment in the past year and a half has been focused primarily on vaccine preventable diseases, children with special health care needs, implementation/comparative effectiveness research, surgical outcomes, and developmental/mental health research. During the past 18 months there have been 82 manuscripts published, 66 abstracts and 43 presentations nationally.

Education and Training
COR has sponsored a yearly research methods seminar series in the spring 2013 (introductory course with five sessions) and spring 2014 (qualitative and survey methods with five sessions). The courses were directed toward fellows, junior faculty, and more senior faculty interested in conducting outcomes research. Course material introduced methodological concepts in outcomes research with a focus on application in an academic or clinical setting. Average attendance was 20-30/session.

COR faculty also continues involvement in the monthly qualitative research methods forum. This forum is a community of researchers, faculty, students and organizations focused on the practice and development of qualitative health research. They support the development and implementation of translational and health disparities outcomes research.

Monthly research / work-in-progress meetings bring together junior and senior faculty who are progressing toward becoming independent child health services researchers in one of three areas: children with special health care needs, surgical and subspecialty outcomes, and obesity translational research. The groups are co-led by Allison Kempe, MD, MPH, and Beth McManus, PT, MPH, ScD.
Primary Care Research Fellowship: The National Research Service Award for Primary Care Research Training Program is a fully collaborative and integrated effort between the Department of Family Medicine, the Division of General Pediatrics in the Department of Pediatrics, the Division of General Internal Medicine in the Department of Medicine, and the Colorado School of Public Health. Continuously funded since 1993, its purpose is to identify prospective fellows in the three generalist disciplines who are committed to careers as clinician-researchers, and to provide them with a rigorous two- to three-year training program to develop the research skills necessary for their professional success.

New Training Fellowship with Denver Health: This training program is designed to train leaders in patient centered outcomes research that will be based at Denver Health and to expand the collaborative research between COR, Denver Health and Kaiser Permanente.

New Score Fellowship (Launched 7/1/2014): The SCORE (Surgical/subspecialists Clinical Outcomes Research) Fellowship was modeled on the existing Primary Care Research Fellowships at the University of Colorado School of Medicine and will train surgeons and subspecialists who want to have a research focus in outcomes or health services research. The program fills a longstanding need for such training and is cost neutral to COR, in that the Division or Department sponsoring each fellow must pay for the cost of training him/her.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/outcomes/childrensoutcomesreserach/Pages/default.aspx

**Colorado Health Outcomes Center (COHO)**

The Colorado Health Outcomes Program (COHO) was formed in 1998 as a center to conduct and evaluate interventions that improve population health and the overall quality of health care, assessing the effectiveness of health care for individuals or populations, as well as the impact of changes in the organization, financing, quality, accessibility, delivery and outcomes of health care services. COHO exists as part of a partnership with the Children’s Outcomes Research Program (COR), and together these programs have become known for their lines of health services research and dedication to educational initiatives. **Edward P. Havranek, MD**, became director of COHO in 2014.

COHO works to find the most effective ways to manage, finance, and deliver high-quality care, reduce medical errors and improve patient safety and improve health care technologies and delivery systems. COHO directs resources to support methodological cores in Biostatistics, Clinical Informatics, Dissemination and Implementation, Community Engagement, Comparative Effectiveness and Safety Research, Healthcare Systems Redesign, Primary Care Research, Practice Based Research and Qualitative Research.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/outcomes/COHO/Pages/default.aspx

On Oct. 1, 2014, COHO and COR merged their administration to form ACCORDS (Adult and Child Center for Health Outcomes Research and Delivery Science) under the leadership of **Allison Kempe, MD, MPH**. ACCORDS is jointly funded by the SOM and Children’s Hospital Colorado.
Colorado Prevention Center (CPC)

CPC was founded by the University of Colorado in 1989 as an affiliate of the University to serve as a clinical trials research organization and prevention center. CPC has two divisions, CPC Clinical Research and CPC Community Health, each led by University faculty.

CPC Clinical Research is an academically led, non-profit, clinical research organization offering Phase 1-4 clinical research leadership and management services to sponsors around the world. CPC specializes in innovative research including a proprietary program, the Endpoint Quality Intervention Program (EQuIP) that helps reduce variability in the collection of endpoint data, allowing more definitive answers to address the study objectives.

In the past year, CPC Clinical Research has been involved in more than 50 multicenter clinical trials bringing academic excellence combined with the efficiency to meet industry standards to achieve great science and assist with bringing effective new products to market. Services include ongoing scientific oversight, committee management, and data quality oversight. For example, CPC is providing academic leadership and trial-management services (with Duke University) for the largest cardiovascular outcomes trial ever conducted in the peripheral artery disease population (over 900 clinical trial sites around the world and over 13,000 subjects enrolled).

CPC Clinical Research is also diversifying our academic and operational expertise. Jeff Galinkin, MD, professor of anesthesiology and director of scientific and medical affairs of CPC, is leading an initiative in pain research with a focus on improving endpoints for clinical trials and regulatory interactions between the industry, academic leaders and the U.S. Food and Drug Administration. Cecilia Low Wang, MD, associate professor, medicine-endocrinology, metabolism and diabetes and medical safety officer of CPC, is leading the effort to expand CPC into trials of new therapies to treat diabetes. William Hiatt, MD, professor of medicine-cardiology and president of CPC, is leading the vascular disease trials with support from Mark Nehler, MD, chief of vascular surgery. In addition CPC has made a major new initiative in antithrombotic drug development with the formation of ATLAS Group, an international group of thrombosis trialists combined with CPC and World Wide Clinical Trials. Michael Wang, MD, associate professor, pediatrics-hematologyoncology and clinician scientist at CPC, is assisting in these efforts. Underpinning all of CPC’s trial design work requires input from John Kittelson, PhD, professor, biostatistics and informatics and biostatistician consultant at CPC.

CPC Community Health is aimed at improving cardiovascular health in underserved communities of Colorado and is funded through state and private grants by income from CPC Clinical Research. CPC Community Health has two primary programs: Colorado Heart Healthy Solutions (CHHS) and Community Heart Health Actions for Latinos at Risk (CHARLAR). These efforts are led by Ray Estacio, MD, and Mori Krantz, MD, from Denver Health.

Colorado Heart Healthy Solutions (CHHS) is CPC’s statewide chronic disease prevention program which seeks to reduce the burden of cardiovascular disease. In partnership with local health and medical organizations, community health workers provide health assessments to identify individuals who are at-risk for chronic diseases with a focus on heart disease and diabetes. CPC provides health education and navigation to local medical and healthy living resources, and ongoing support at no cost to at-risk individuals who are ready to improve their health. CHHS is currently in 27 counties throughout Colorado, most of which have limited health resources. Since 2009, CHHS has served over 36,000 individuals in need. Most (88 percent) are underserved and 67 percent are at-risk for cardiovascular disease.

Community Heart Health Actions for Latinos at Risk (CHARLAR) is a promotor(a)-led community program in partnership with Community Research Education Awareness (CREA). The goal is to
build healthier lifestyles in adult Latinos in metro Denver by lowering risks and behaviors for cardiovascular disease and diabetes. CHARLAR, which means "to chat" in Spanish, provides an open environment that encourages ongoing dialogue and social support amongst participants as they work towards building skills, modifying lifestyle behaviors, and lowering their risks for heart disease and diabetes. The program includes 12 weeks of evidence-based skill building and education classes, cardiovascular disease and risk factor screenings, physician counseling, navigation to medical homes and services, and Zumba-inspired physical activity. Since 2009, the program has successfully enrolled more than 1,300 participants.

Both programs have demonstrated significant improvements in cholesterol, blood pressure, glucose, weight, smoking and healthy behaviors including physical activity levels and healthy eating habits. CHHS findings were published in January 2013 in the American Journal of Public Health. In addition, CHHS was selected as one of three promising programs for reducing cardiovascular disease by the Centers for Disease Control and Prevention.

**Colorado Sickle Cell Treatment and Research Center**

The Colorado Sickle Cell Treatment and Research Center is the region’s primary source of specialty expertise and coordination of comprehensive specialty care for children and adults living with hemoglobinopathies. Established 30 years ago by the State of Colorado, the center faculty and staff support comprehensive care for all persons with sickle cell disease and other hemoglobinopathies. Basic, clinical and health services research conducted by the center and its collaborators serves 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, are supported by funding from the NIH and other federal agencies, industry, and foundations. The center also conducts and supports activities to promote education and awareness about sickle cell disease. For more information about the center and the Colorado Sickle Cell Care Network please visit: [http://medschool.ucdenver.edu/sicklecell](http://medschool.ucdenver.edu/sicklecell) and [www.sicklecellcareco.org](http://www.sicklecellcareco.org)
The University of Colorado Cancer Center (CU Cancer Center) is the only National Cancer Institute (NCI)-designated comprehensive cancer center in the state of Colorado and the surrounding region, and has the distinction of being one of only a few consortium cancer centers in the nation. Nearly all 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 make worldwide impact by serving as a model for the fight against cancer, integrating basic discovery, developing and implementing new approaches in cancer medicine across patient age and species.

The mission of the CU Cancer Center is to discover, develop and deliver breakthroughs in diagnosis, treatment, and prevention that improve cancer care locally, nationally and globally. These efforts form the basis of a comprehensive spectrum of translational prevention, diagnosis, treatment, survivorship and outreach programs and provide a framework for training the next generation of cancer researchers and physicians.

The CU 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 CU 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 vision and mission.

The founding director, Paul A. Bunn, Jr., MD, led the CU Cancer Center until 2009. In 2010, Dan Theodorescu, MD, PhD, ushered the Cancer Center into a new era of discovery, development and delivery of cancer care. Under Dr. Theodorescu’s leadership the CU Cancer Center received its NCI re-designation as a Consortium Comprehensive Cancer Center for a five-year period beginning in 2012, and a grant award of approximately $18 million over that time period, was elected as a Member of the National Comprehensive Cancer Network (NCCN) and went from 44th to 15th ranked cancer center in the nation in 2014 according to U.S. News and World Report.
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.

### Cancer Center Senior Leadership

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
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<tbody>
<tr>
<td>Director</td>
<td>Dan Theodorescu MD PhD</td>
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<tr>
<td>Deputy Director</td>
<td>Andrew Thorburn PhD</td>
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<td>Associate Directors:</td>
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<td>Translational Research</td>
<td>S. Gail Eckhardt MD</td>
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<tr>
<td>Basic Research</td>
<td>James DeGregori PhD</td>
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<tr>
<td>Clinical Research</td>
<td>D. Ross Camidge MD PhD</td>
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<td>Clinical Services</td>
<td>Tom Purcell MBA MD</td>
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<td>Cancer Prevention &amp; Control</td>
<td>Tim Byers MD MPH</td>
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<td>Community Engagement</td>
<td>Mike Glodé MD</td>
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<td>Education</td>
<td>John Tentler PhD</td>
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<td>International Programs</td>
<td>Fred Hirsch MD PhD</td>
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<td>Administration &amp; Finance</td>
<td>Mark Kochevar MBA</td>
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### Cancer Center Program Leadership

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<tr>
<th>Basic Sciences</th>
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<tr>
<td>Cancer Cell Biology</td>
<td>Robert Sclafani PhD &amp; Antonio Jimeno MD PhD</td>
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<tr>
<td>Molecular Oncology</td>
<td>James DeGregori PhD &amp; Joaquin Espinosa PhD</td>
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<td>Clinical Sciences</td>
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<td>Developmental Therapeutics</td>
<td>Wells Messersmith MD &amp; Dan Gustafson PhD</td>
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<td>Hematologic Malignancies*</td>
<td>Doug Graham MD PhD &amp; Craig Jordan PhD</td>
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<td>Hormone Related Malignancies</td>
<td>Scott Cramer PhD &amp; Heide Ford PhD</td>
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<td>Lung, Head &amp; Neck Cancers</td>
<td>York Miller MD and Xiao-Jing Wang MD PhD</td>
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<td>Prevention &amp; Control</td>
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<tr>
<td>Cancer Prevention and Control</td>
<td>Tim Byers MD MPH &amp; Rajesh Agarwal PhD</td>
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*Developing program. Implementation planned with 2016 competitive submission.*
Cancer Center Consortium Organizations

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

**Affiliated hospitals**
- University of Colorado Hospital (UCH)
- Children’s Hospital Colorado (CHCO)
- Veteran’s Administration Medical Center (VAMC)

**Facts**

**Membership**
- 251 Full members
- 203 Associate members
- 64% of members are in the School of Medicine (SOM)

**Research Portfolio**
- 636 cancer-related publications in FY2013
- $98M direct costs in cancer-relevant sponsored research funding
- $62.9M held by members in the SOM

**Clinical Portfolio**
- 1077 accruals to all types of human subject protocols
- 740 accruals to intervention protocols
- Opens more than half of all clinical trials in the School of Medicine

**Rankings & Other Notable Achievements**
- #15 in US News and World Report 2014 Cancer Rankings
- Elected in 2013 as a Member institution of the National Comprehensive Cancer Network (NCCN)
- Outstanding cancer survival rates for stage 4 cancers (e.g. lung, breast, prostate, gastrointestinal)

**Investments by the CU Cancer Center into the institution (FY2013):**
- Pilot Grant funding: $599K in support of 23 projects.
- Recruitment/Retention funding: $2M in support of 3 faculty recruitments and 1 retention
- Strategic Development: $1.3M in philanthropy and academic enrichment funds to support the development of research programs and infrastructure in the Cancer Center

**Distinguishing Characteristics**

The CU Cancer Center represents a unified basic, translational, and clinical cancer research effort benefitting all citizens of Colorado and the region and offers a number of distinguishing characteristics.

*First*, the CU Cancer Center’s members include nearly all academic NCI-funded cancer researchers in the State of Colorado.

*Second*, the CU Cancer Center can focus efforts and organize resources for efficient accomplishment
of center goals through its central administrative and organizational structure based at the Anschutz Medical Campus.

Third, the consortium provides a setting for the scientific and clinical expertise of its members, including:
- a leading biomedical translational patient infrastructure (the Anschutz Medical Campus);
- the top ranked hospital in the State of Colorado (UCHospital);
- the sixth-ranked pediatric cancer program in the US (Children’s Hospital Colorado);
- the second-ranked veterinary school with the top animal cancer center in the nation (CSU Animal Cancer Center);
- outstanding basic science by its members who are recognized internationally for their accomplishments (Nobel, National Academy of Science, and Howard Hughes Medical Institute).

Fourth, the consortium encourages inter- and multidisciplinary research collaborations by facilitating conferences, multi-investigator grants and publications, and by providing CU Cancer Center-managed or co-managed cutting-edge shared resources.

Fifth, the CU Cancer Center’s vibrant rural outreach program provides clinical research, education, physician services and consultation, and patient referral support for communities across the state and region.

Recent Accomplishments
The CU Cancer Center is known for its personalized cancer treatment and robust and diverse Phase I clinical trials program. Its scientific expertise ranges from understanding how chromosome structure controls cancer cell behavior to understanding how targeted agents impact cancer. Other notable achievements:
- Ranked No. 15 by U.S. News and World Report rankings in 2014
- Awarded grant as Lead Academic Participant Site in the NCI’s National Clinical Trials Network program (1U10CA180834-01 / A. Elias) to carry out National Group clinical trials and integrate cancer clinical research across UCHhealth
- Awarded with MD Anderson Cancer Center an Experimental Therapeutics-Clinical Trials Network (ET-CTN) with Phase 1 Emphasis grant (1UM1CA186688-01 / G. Eckhardt)
- The DOD Breast Cancer Research Program Clinical Translational Grant, awarded with the Department of Pathology (W81XWH-13-1-0090 / J. Richer, Initiating PI & W81XWH-13-1-0091 / A. Elias, Partnering PI)
- Renewed the SPORE in Lung Cancer grant (2P50CA058187-19A1 / P. Bunn)
- Played key role in the selection and implementation of the enterprise grade OnCore Clinical Trial Management System
- Played key role in the selection and implementation of iLabs for the administrative management of shared resources
- Led the reconfiguration of UCHospital disease site teams, developed disease team leaders, created leadership infrastructure
- Created joint position of CU Cancer Center Associate Director of Clinical Services and UCHhealth Executive Medical Director for Oncology. Recruited first incumbent: Tom Purcell MD MBA
- Proposed the embedding of NCCN guidelines across UCHhealth to improve and monitor quality of care
- Enhanced affiliate programs in cancer:
  - Developed bone marrow transplant relationship with St. Mary’s in Grand Junction
  - Revitalized affiliate relationships with Glenwood Springs and Vail Valley health systems to promote clinical research collaborations and strengthen referral patterns to UCHhealth
Depression Center

The University of Colorado Depression Center was founded in 2008 with a mission to improve the lives of people in Colorado who suffer from depression, bipolar disorder and related conditions like anxiety and sleep disorders through evidence-based outpatient clinical care, research and a variety of community educational programs to reduce stigma and prevent suicide.

The Center employs a diverse, multi-disciplinary staff that includes psychiatrists, psychologists, nurse practitioners and public health professionals.

The Depression Center’s leadership group consists of:
Marshall Thomas, MD, executive director
Matt Vogl, MPH, deputy director
Christopher Schneck, MD, medical director
Alexis Giese, MD, community programs director
Patrick Micone, business manager
Emily Reaser, director of development

The Center has a board of directors representing communities across Colorado. Heather Mulvihill currently serves as board chair.

Accomplishments from the past year include:
Serving patients in the Center’s outpatient practice. The Center is currently undergoing a major clinical expansion through national recruitments of psychiatrists, psychologists and nurse practitioners. This expansion will more than double the Center’s current clinical capacity.

Development of a stigma-reduction campaign to encourage dialogue about depression. The campaign ran on billboards across metro Denver for three months.

More than 1,000 individuals participated in one of the Center’s education/suicide prevention programs. Programs were held in venues that included businesses, schools, yoga studios, martial arts studios and senior living facilities.

Scholarly activities for members of the Center’s faculty included presentations at numerous national meetings and a variety of publications.

Participation in a variety of research initiatives including a multi-site evaluation of Family Focused Therapy for adolescents at risk for bipolar disorder.

Partnering with AccessCare Technology to develop and implement a telebehavioral health program to deliver direct patient care and professional consultations to primary care practices.

The Center hosted a series of summit meetings on suicide prevention that eventually led to the establishment of a legislative Suicide Prevention Commission led by state Sen. Linda Newell.

More information about the Center can be found at www.coloradodepressioncenter.org
JFK Partners

JFK Partners began in 1964 as an interdisciplinary clinic serving children with disabilities. In 1993, it became an interdepartmental program under the School of Medicine, Departments of Pediatrics and Psychiatry, under the leadership of Cordelia Robinson, PhD, RN. JFK has 10 disciplines represented among its faculty. The mission of JFK Partners is to promote the independence, inclusion, contribution, health, and well-being of people with developmental disabilities and their families through consumer, community, and university partnerships. At the core of this mission is a commitment to family and person-centered, community-based, culturally competent programs and services. This mission is accomplished through the pursuit of excellence in education and training, consultation, technical assistance, direct service, research, program development, policy analysis, and advocacy. JFK has an annual budget of about $5 million made up of federal training and research grants and clinical income.

After a long history of working in close collaboration, JFK Partners and the Child Development Unit of Children’s Hospital Colorado in 2014 announced the integration of their two nationally recognized programs. The mission and status of JFK Partners within the University of Colorado School of Medicine, Departments of Pediatrics and Psychiatry will not change. The integration of diagnostic assessment services with those of the Child Development Unit will allow for greater operational efficiencies and enhance the breadth and accessibility of developmental and behavioral services to patients and their families. Both programs are committed to continue to provide the same level of service excellence to our families and community partners, whether the work is advocacy, clinical, research or training related.

More information about JFK Partners can be found at www.jfkpartners.org.

Kempe Center for Prevention and 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 has led the field in promoting understanding, knowledge and best practices to prevent and treat child abuse and neglect locally, nationally and internationally. The Kempe Center offers state-of-the-art evidenced-based clinical services and it educates and trains CU medical students, graduate students, pediatric residents, and professionals on campus and in the community. Its highly rated community-based training programs have reached more than 2,000 medical, mental health and child welfare professionals in the past year.

The Center is a leader in diagnosis and treatment research. Its Fostering Healthy Futures mentoring and skills group program for maltreated preadolescents in out-of-home care was named in 2013 as an evidence-based program by ACYF and the California Evidence-Based Clearinghouse for Child Welfare, and as a “promising practice” by the Colorado Practice Model. In recent years, the Center has expanded its work with other agencies in Colorado in collaborative efforts to end the cycle of abuse and neglect. According to the Kempe Center’s Executive Director Des Runyan, MD, Kempe has partnered with the Colorado Department of Human Services and a number of other organizations to bring both effective prevention services and improved training of child protection professionals to the state.

The Kempe Center is home to the Child Protection Team, a joint program of Children’s Hospital Colorado and The Kempe Center. This multidisciplinary team provides forensic medical evaluations for children with suspected physical and sexual abuse, injuries, sexual assault, failure to thrive and all forms of neglect. Kempe and the Children’s Hospital Colorado offer an accredited three-year American Board of Pediatrics (ABP) fellowship program to board certified or board eligible pediatri-
cians. The team participates in local and state child fatality review, provides expert consultation to
law enforcement, child welfare agencies and courts in the Rocky Mountain region and is involved in
advocacy, research, and education in many areas of child abuse and neglect.

The Kempe Center’s Imhoff Clinic is an expanded mental health service which provides behavioral
health assessments and treatment to children and families who are dealing with the mental health
consequences of child abuse or neglect. The clinic serves children and families who have experi-
enced difficult life events such as physical abuse, sexual abuse, neglect, or other traumatic loss.
Children often need help with emotion regulation, coping skills and rebuilding trust while parents
need help responding appropriately to their children and learning to keep them safe. Our staff
members have the experience and training to meet these challenges and restore hope to children
and their families.

In 2013, Kempe was awarded a contract to plan and then deliver a new version of the Colorado
Child Welfare Training Academy for all new child protection social workers in the state. This Acad-
emy provides the basic skills for child protection work as well as training in supervision for senior
staff. Kempe is also developing mandated reporter education for professionals covered by the Colo-
rado child abuse reporting laws. In 2014, Kempe opened four regional training centers around the
state to make it possible for child welfare workers and supervisors to access state-of-the-art train-
ing without the burden of traveling to Denver. The new curricula and regionalized training ap-
proach has been well-received by trainees, supervisors and the county and state departments of
human services they serve.

Kempe in 2013 was awarded a contract to develop and disseminate a home-visiting program to pre-
vent neglect and improve parenting for children less than five years old in Colorado. Kempe is set-
ting up a program to demonstrate the feasibility and impact of SafeCare Colorado, a child welfare
information and services gateway, with the goal of expanding these services statewide. The pro-
gram launched in 2013 in 18 counties and added 12 more in 2014.

The Kempe Center received the 2014 Academic Excellence Award for Outstanding Education and
Training in Human Services from the American Public Human Services Association (APHSA).
APHSA is a bipartisan, nonprofit membership association representing appointed state and local
health and human service agency commissioners. The Academic Excellence Award was established
to recognize a school of social work or other college/university program in human services for out-
standing contributions to the field.

The Committee on Psychology in the Public Interest Awards selected Gary B. Melton, PhD, as the
recipient of the 2014 Award for Distinguished Senior Career Contributions to Psychology in the
Public Interest. Melton received the award “for his influential scholarship on critical topics in psy-
chology in the public interest, especially child and family law and policy, forensic mental health ser-
vices, child advocacy, rural psychology, research ethics, and child abuse and neglect.” Melton is the
first psychologist to be honored with four awards from the committee over the course of his career.

Desmond Runyan, MD, Executive Director of The Kempe Center for the Prevention and Treat-
ment of Child Abuse and Neglect was the 2014 recipient of the Distinguished Contribution to Child
Advocacy Award, which is presented annually by the American Psychological Association (APA) to
a non-psychologist who has made significant contributions to advocacy on behalf of children, youth,
and families.

Website: www.thekempecenter.org
Linda Crnic Institute for Down Syndrome

The Linda Crnic Institute for Down Syndrome is the first medical and research institute with the mission to provide the best clinical care to people with Down syndrome, and to eradicate the medical and cognitive ill effects associated with the condition. Established in 2008, the Linda Crnic Institute is a partnership between the University of Colorado School of Medicine, the University of Colorado Boulder, and Children’s Hospital Colorado. Based on the Anschutz Medical Campus, the Linda Crnic Institute includes the Anna and John J. Sie Center for Down Syndrome at the Children’s Hospital Colorado. It partners both locally and globally to provide life-changing research and medical care for individuals with Down syndrome. The Linda Crnic Institute is made possible by the generous support of the Anna and John J. Sie Foundation, and relies on the Global Down Syndrome Foundation for fundraising, education, awareness and government advocacy. Tom Blumenthal, PhD, the Anna and John J. Sie Professor in Genomics, joined the Linda Crnic Institute in 2012 as Executive Director. Blumenthal, a specialist in mechanisms of gene expression, was formerly the Chair of Biochemistry and Molecular Genetics in the School of Medicine and then the Chair of Molecular, Cellular and Developmental Biology at the Boulder campus.

The institute is performing research into the molecular biology, genetics and genomics of Down syndrome in an effort to determine how an extra copy of chromosome 21 causes the many characteristics associated with the condition. The LCI leadership team also includes Huntington Potter, PhD, a specialist in Alzheimer's disease, and Kathleen Gardiner, PhD, a longtime Down syndrome researcher. The Linda Crnic Institute is providing funds for Down syndrome research grants on the Denver and Boulder campuses. Grants totaling $1.3 million were awarded 2012 and again in 2013, and at least $1 million will continue to be awarded each year. The Linda Crnic Institute is building a strong community of researchers to tackle the most significant and tractable problems in the field. All grant recipients and member of their laboratories participate in monthly “supergroups” for in-depth discussion of Down syndrome research projects. The institute’s clinical and basic research is integrally related to the Sie Center at Children’s Hospital Colorado, the most comprehensive clinical care center for people with Down syndrome. In addition, the LCI operates an education and outreach service with goals that include facilitating integration of children with Down syndrome into mainstream classrooms.

http://www.ucdenver.edu/academics/colleges/medicalschool/institutes/lindacrnic/Pages/lindacrnic.aspx

Marion Downs Hearing Center

The Marion Downs Hearing Center (MDHC) is recognized worldwide for unique leadership, stellar service provision and progressive innovations in the realm of hearing and deafness. Under the guidance of the center’s director, Herman A. Jenkins, MD, Professor and Chair University of Colorado School of Medicine Department of Otolaryngology, the MDHC promotes and provides an interdisciplinary, collaborative approach of working with infant hearing programs, early intervention programs, family-centered support programs, and geriatric hearing concerns in order to meet the needs of individuals with hearing loss.

Our programs fill service gaps in the community with patients able to access programs ranging from infant hearing detection and intervention to care of presbycusis in the elderly. We offer audiology services that include hearing assessments and amplification, speech and language testing, telehealth services and therapy, and the full range of medical and surgical otological services in care of the ear.
The Perinatal Research Center (PRC) at the University of Colorado Anschutz Medical Center has been for many years one of the leading centers, 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. William Hay, MD, is the Scientific Director of the Perinatal Research Center, an internationally recognized leader in fetal physiology. Hay has been NIH funded for his entire career. He is now the

The Marion Downs Hearing Center is actively involved in the development and dissemination of research for the purpose of better understanding the implications of hearing loss, balance and dizziness issues, language and communication delays related to hearing loss, implantable hearing devices, and other topics related to hearing sciences. Our research involves all ages, from the speech perception of infants with hearing aids to the viability of implantable microphones in adults. Researchers are drawn from many affiliated departments within the University of Colorado Boulder and the University of Colorado School of Medicine.

Current research topics in adult and pediatric populations include:
1. Determining frequency modulation (FM) needs using varying noise levels to aid in setting FM gain
2. Assessment of infant speech perception (discrimination) in typical and hard of hearing listeners
3. Examining the relationship of the development of the brain’s auditory cortex and speech perception
4. Hierarchical ranking of speech perception for adults and children in order to optimize outcomes
5. Clinical trials examining the safety and efficacy of active middle ear prosthesis
6. Longitudinal study of infant speech perception in young cochlear implant candidates
7. Tinnitus management
8. Identifying a valid screening tool for autism in the deaf and hard of hearing pediatric population
9. A comparison of the efficacy and tolerability of two home exercises, the Epley maneuver and the Half Somersault, in the treatment of benign positional vertigo
10. Evaluating the effect of cochlear implantation on hearing preservation and loss of balance function

Additional translational research is conducted in our basic science laboratories:
1. Determination of parameters of active middle ear prostheses implantation in the human ear
2. Effect and mitigation of blast injury in the human ear
3. Transmission of bone conduction and its effect on intracochlear pressure changes
4. Evaluation of effectiveness of various methods of coupling in vibratory bone conducted sound
5. Assessment of vestibular transduction and effects of gentamycin
6. Central mechanisms of presbycusis in human and animal models.

The Marion Downs Hearing Center provides conferences and workshops to educate professionals and consumers on the best strategies for managing the effects of hearing loss. These programs include assisted listening device demonstrations, consumer seminars and continuing education seminars, distance learning, student and intern pre-service training in audiology and mental health, volunteer programs as well as national and international presentations.

For additional information please visit: medschool.ucdenver.edu/mariondownshearingcenter

**Perinatal Research Center (PRC)**

The Perinatal Research Center (PRC) at the University of Colorado Anschutz Medical Center has been for many years one of the leading centers, 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. William Hay, MD, is the Scientific Director of the Perinatal Research Center, an internationally recognized leader in fetal physiology. Hay has been NIH funded for his entire career. He is now the
The Rocky Mountain Multiple Sclerosis Center is a patient- and family-centered nonprofit organization that provides a comprehensive and integrated wellness approach to MS and related diseases, life-changing support services, and cutting-edge research.

Our mission is to improve the quality of life of individuals and their families living with MS and related neurological diseases through care, support, education and research. We are committed to providing innovative, specialized, comprehensive and interdisciplinary care to treat, support and rehabilitate people living with MS. We educate people diagnosed with MS, their families, healthcare professionals, and the general public about multiple sclerosis. In collaboration with the University of Colorado Anschutz Medical Campus, we are leading the way in MS research by developing new, effective treatments now and for the future.

Our research drives an approach that maximizes and enhances the brain’s ability to protect and repair itself and to promote quality of life. We incorporate wellness, exercise, supportive services, diet and stress management, in addition to the most progressive medical care available.

The Rocky Mountain MS Center leadership team includes Gina Berg, Chief Executive Officer; Timothy L. Vollmer, MD, Medical Director of the Rocky Mountain MS Center and Co-Director of the Rocky Mountain MS Center at Anschutz Medical Campus; and John R. Corboy, MD, Professor of Neurology and Co-Director of the Rocky Mountain MS Center at Anschutz Medical Campus.

The Rocky Mountain MS Center was founded in 1978 by Jack Burks, MD, and N. Daren Writer, who was diagnosed with MS in 1974. The Rocky Mountain MS Center was initially affiliated with the University of Colorado Health Sciences Center and the Denver Veteran’s Administration Medical Center. In 1992, the Rocky Mountain MS Center broadened its continuum of care by merging with MS Community Resources. This merger enhanced community services with the addition of hydrotherapy and a specialized adult day program, the King Adult Day Enrichment Program (KADEP) located in Westminster, Colo. This program is the only one of its kind along the Front Range and serves as a national model of care. Our scope of care also includes counseling and legal disability guidance.

In 2008, the Rocky Mountain MS Center partnered with the University of Colorado and the University of Colorado Hospital to create the Rocky Mountain MS Center Clinic at Anschutz Medical Campus. By bringing together the experience and exceptional work in patient care and cutting-edge research that have distinguished these organizations for many years, we created a world-class and comprehensive center for patient care and research that serves the Rocky Mountain region and has a national and international reach.

Our unique, integrated approach allows us to meet and assist those who come to us no matter where they are at in their MS journey.

http://www.mscenter.org/
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, smell, and 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 Denver University. While the center provides direct support for infrastructure and multiuser 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 University of Colorado Hospital and the Department of Otolaryngology.

Trauma Research Center

Trauma is the leading cause of death for those under 44 years old. Civilian and military trauma cause more loss of productive years than cancer and heart disease combined. The Trauma Research Center is one of six national centers investigating death and complications after traumatic vehicular, weapons and industrial accidents. Starting in 1992 as the first such research center, in 2011 the National Institutes of Health renewed our $10 million Center for 5 years. The Center consists of investigators in the Departments of Surgery, Hematology/Oncology, Epidemiology, and Biochemistry and active partnerships between the University of Colorado, Denver Health and Hospital Authority and Bonfils Blood Center.

We analyze patterns of injury and outcomes from our database and develop experiments to assess the mechanisms of post-traumatic death or complications. In the past decade we chronicled delayed death after trauma due to multiple organ failure and its virtual eradication by improved practices obtained from research. However, death within 24 hours remains very high (greater than 25 percent).

In this cycle (years 16 - 21), we are assessing links between blood clotting and inflammation, the molecular properties of stored blood products and ways of controlling systemic inflammation after traumatic injury. Our discovery engines use mass spectrometry proteomics, fluorescent imaging and newer dynamic measurements of blood clotting at the point of care in emergency departments and operating rooms. We are conducting a clinical trial on whether inhaling salty air is beneficial for controlling inflammation in ventilated trauma patients. Looking to the future as we are in year 20, we must examine the primary causes of patient death and what we can do today to prevent it.

In 2012 the Trauma Research Center was selected by the U.S. Department of Defense (DoD) for a $6.25 million contract, to evaluate plasma resuscitation in the field. Two other national efforts centered in Pittsburgh and Virginia are supported. After obtaining FDA approval and community consent in 2013, ambulances in the Denver citywide trial can offer plasma, enrolling 19 patients since April 2014. We have used the DoD support to install a unique team to assess blood clotting at the point of care in emergency departments and operating rooms to study and guide therapy. Above all, the 24/7 team can capture and store these precious and evolving human samples for in-depth analysis by our discovery engines.

Extending our in depth approach, the DoD has partnered with National Heart, Lung, and Blood Institute to create a large consortium of national experts representing 26 universities and hospitals to study trauma-induced coagulopathy. We have been conferred a large share of responsibility with an award of $2.6 million over 5 years to provide data and leadership.
The Webb-Waring Center is named after Gerald B. Webb, MD, and James J. Waring, MD. Webb was a famous immunologist who coined the word “immunology” and who practiced for many years in Colorado Springs. Waring, a pulmonary medicine and tuberculosis specialist, was the first chairman of the Department of Medicine at the University of Colorado School of Medicine and the first Director of the Webb-Waring.

The mission of the Webb-Waring Center is to conduct and teach innovative biomedical research that improves health and prevents disease. The Webb-Waring Center is focused on inflammation, immunology, antioxidant deficiency and oxidative stress – fundamental processes that underlie a variety of common detrimental diseases.

Research: Webb-Waring scientists are currently studying the causes and better ways to treat and prevent many diseases including diabetes; metabolic syndrome (a form of diabetes associated with aging); acute respiratory distress syndrome, which is a critical, highly fatal, pulmonary illness that complicates infection, trauma and many other predisposing conditions; age-related macular degeneration, which is the leading cause of blindness in the elderly; breast cancer and many autoimmune disorders like multiple sclerosis, which are characterized by the immune system mistakenly attacking one’s body. The latter often results in arthritis and related inflammatory disorders. Woven within this structure are many investigations that are relevant to learning and countering the causes of aging and age-related disorders.

Education: The Webb-Waring Center has created a unique and competitive summer program for introducing students to research. The program is called the Webb-Waring-Colorado Undergraduate Summer Program or (WW-CUSP). Supported by an NIH R23 Undergraduate Diversity Training Grant, the North Foundation, the CLIMB Program, the Fitzgerald Princeton University endowment, and generous donors, the program recruits highly talented students from Princeton University, the University of Notre Dame, Yale University, Northwestern University, the University of Colorado and Colorado State University. The WW-CUSP Program also attracts highly talented high schools students from the Denver area. The WW-CUSP Program exposes students to biomedical research in a modern setting and integrates this exposure with an introduction to medicine involving opportunities to meet key medical school faculty and see medical school operations such as the visible human project, the standardized patient teaching facilities and the emergency room. The Webb-Waring Center is also the home to the Department of Medicine DREAM Program which supports the research training of second-year University of Colorado diversity medical students in the summer between their first and second years of medical school.

The Center’s director is John E. Repine, MD, professor of medicine and pediatrics, associate dean for student advocacy, and head, division of experimental medicine. The leadership team includes David H. Wagner, PhD, associate professor of medicine and head of the Division of Immunology, and Richard M. Wright, PhD, associate professor of medicine and head of the Division of Biochemistry.

The Center’s accomplishments during the past year include:
♦ Development of a diagnostic test that distinguishes Type I and Type II diabetes and which may be useful for evaluating patients with multiple sclerosis;
♦ Development of a unique animal model that does not develop acute respiratory distress syn-
drome, metabolic syndrome, obesity or diabetes and that has an increased exercise capacity and longevity;
♦ Identification of the contribution of macrophage xanthine oxidase to the development of acute respiratory distress syndrome;
♦ Development of a novel peptide that decreases diabetes, acute respiratory distress syndrome and cardiac arrest related to brain abnormalities in animal models;
♦ Research training for 18 high school, undergraduate and medical students.

http://www.ucdenver.edu/academics/colleges/medicalschool/centers/WebbWaring/Pages/WebbWaringHome.aspx
Center for Bioethics and Humanities (CBH)

The Center for Bioethics and Humanities (CBH) benefits patients, families, professionals, and communities through creative exploration of the human experience and engagement in structured deliberation about ethical issues in healthcare in order to inform clinical care and health policy; advance knowledge in bioethics and humanities; and educate healthcare students, professionals, and the community.

Matthew Wynia, MD, MPH, FACP, became Director of the Center in April 2014. His training is in internal medicine, infectious diseases, public health and health services research. Currently, he is splitting his time between administrative and research responsibilities at CBH and the American Medical Association (AMA) where he developed the AMA Institute for Ethics, a research institute with training programs focusing on bioethics, professionalism and policy issues, and founded the AMA’s Center for Patient Safety. In July 2015, he will begin serving full-time as CBH Director.

CBH faculty are involved in teaching students in all professional schools and allied health programs on the Anschutz Medical Campus, and their research and scholarship focus on innovations in interprofessional education, development of health humanities curricula, and ethical implications of advances in genomics.

Therese Jones, PhD, is Associate Professor in the Department of Medicine, Director of the Arts and Humanities in Healthcare Program and Editor of the Journal of Medical Humanities. She currently serves as Associate Director of CBH. She teaches both required and elective humanities courses for health profession students and for undergraduate students who are enrolled in the new Health Humanities Minor, a collaborative curriculum between the Anschutz Medical Campus and the Denver campus. Jackie Glover, PhD, is Professor in the Department of Pediatrics and Director of the Humanities, Ethics and Professionalism Thread in the School of Medicine which integrates bioethics and humanities content throughout the four years. She has also taken a leadership role in expanding the interprofessional curriculum in ethics and serves on the council for the new Interprofessional Education Program. Marilyn Coors, PhD, is Associate Professor in the Department of Psychiatry and does research and teaching on advances in genetics and the implications of providing healthcare in the age of genetic medicine. She directs the Clinical Research Ethics Core for the Colorado Clinical and Translational Sciences Institute. Dayna Matthew, JD, is Professor of Law at CU-Boulder and has developed a health law curriculum for the School of Medicine and the School of Public Health. She directs the Colorado Health Equity Partnership, which provides medical-legal partnerships for vulnerable populations in Colorado.

In addition, CBH directly supports ethics consultation, policy development and the education of clinicians by working with ethics committees at the University of Colorado Hospital, Children’s Hospital Colorado, Denver Health Medical Center, and National Jewish Health. CBH faculty offer education in consultation to ethics committees around the state, and teams with the Colorado Healthcare Ethics Forum to offer clinical ethics education sessions to area clinicians and ethics committees.

Center on Aging (CoA)

The University of Colorado Multi-disciplinary Center on Aging (CoA) 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 the 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/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 efforts in basic, clinical and health services research that span the university community.
The CoA was directed by Dennis Jahnigen, MD, for its first 6 years and has been directed by Robert Schwartz, MD, since 2000. In addition to the director, the CoA is led by associate directors from the School of Medicine, Jean Kutner, MD; Skaggs School of Pharmacy and Pharmaceutical Sciences Sunny Linnebur, PharmD; School of Dental Medicine Gerald R. Berg DDS; Colorado School of Public Health Lucinda Bryant, PhD; and the College of Nursing Jacqueline Jones, PhD.

With support from the Center, faculty and fellows doing aging-related work have received more than 130 grants and contracts worth more than $50 million in direct costs to the University of Colorado Denver. These have included awards from the National Institutes of Health, the U.S. Department of Defense and the U.S. Department of Veterans Affairs (VA). Faculty development and mentorship play a large role in the Center on Aging and it has played a central role in developing an outstanding pipeline of junior investigators interested in aging-related research careers. The Center on Aging is the home for our Institutional T32 grant focusing on the physiology of aging, which is now in its 14th year. It is also home to the Hartford Center of Excellence in Geriatric Medicine. Our institution and its junior faculty are national leaders in receiving career development awards in the field of aging including nine Beeson Career Development Scholars. Most recently, the Center was crucial in submitting a proposal for a new Geriatric Research Education and Clinical Center (GRECC) for the Eastern Colorado Health Care System (Denver) VA. This was the first competition for a new GRECC in more than 20 years and in September the VA announced that there will be a new GRECC at the newly constructed VA facility adjacent to the Anschutz Medical Campus.

http://www.ucdenver.edu/academics/colleges/medicalschool/departments/medicine/geriatrics/Pages/geriatrics.aspx

Colorado Area Health Education Centers (AHEC)

Our Mission
The mission of the Colorado Area Health Education Center (AHEC) Program is to improve the quality and accessibility of education for health care professionals in Colorado in order to enhance the delivery of health care services throughout the state, with special emphasis on frontier, rural, urban communities and underrepresented groups.

Our Vision
The vision of the Colorado AHEC Program is a healthy Colorado. We are committed to helping provide education and training to increase the number and quality of health care professionals working in underserved and rural communities throughout Colorado as well as providing community health programs that are responsive to the needs of Coloradans seeking to live a long and healthy life.

History and structure
The AHEC (Area Health Education Centers) program was developed by Congress in 1971 to recruit, train and retain a health professions workforce committed to underserved populations. Nearly every state has an AHEC program. The Colorado AHEC system was established in 1977. Today, the State of Colorado is divided into six regions (Centennial, Central, San Luis Valley, Southeastern Colorado, Southwestern Colorado and Western Colorado) with an AHEC office in each region. The six regional AHECs partner with the Schools of Medicine, Dentistry, Nursing and Pharmacy, as well as the School of Medicine’s Physical Therapy and Physician Assistant programs to meet the goals of the Health Resources and Services Administration Model grant.
Goals
The Colorado AHEC Program works to build statewide network capacity and strengthen academic-community linkages in four core mission areas: Health Careers and Workforce Diversity, Health Professions Student Education, Health Professions Continuing Education and Public Health and Community Education. Specifically, the goals and aims of the Colorado AHEC Program are to:

Increase the potential for minority/disadvantaged students in elementary and secondary schools from rural and medically underserved areas to pursue career pathways in the health professions;

Increase the potential for health professions students enrolled in degree programs in medicine, dentistry, nursing, pharmacy and allied health to practice in rural and urban medically underserved areas in Colorado AHEC Program regions upon graduation;

Increase access to evidence-based health information and accredited, high-quality continuing education programs for health professionals serving in rural and urban medically underserved areas;

Increase access to health education for community residents in rural and urban medically underserved areas in Colorado AHEC regions.

Key Personnel:

Mark Deutchman, MD, is a professor in the Department of Family Medicine, director of the rural track for the School of Medicine, associate dean for rural health and director of the Colorado AHEC Program Office. His work emphasis is on preparation for rural practice, which is a main mission for the Colorado AHEC Program.

Jennifer L. Hellier, PhD, is an assistant professor in the Departments of Family Medicine and Cell & Developmental Biology, the director of CREATE Health, and the associate director of pre-professional education in the AHEC Program Office.

Mary Jane Rapport PT, DPT, PhD, FAPTA PT, is a professor in the physical therapy program and director of the pediatric physical therapy residency program. She is associate director of professional education in the AHEC Program Office.

Willa Buswell serves as Administrator of the AHEC Program office. She has more than fifteen years of experience in office administration and management, budget oversight and reconciliation, grant administration, and community programs.

Accomplishments in 2013-2014

♦ Provided funding for the six regional AHECs (Centennial, Central, San Luis Valley, Southeastern, Southwestern, and Western) across Colorado to run programming (totaling 6,873.5 contact hours or 286 contact days) in their communities that reach over 16,000 Coloradans of underserved populations.
♦ Provided over 21,600 nights of housing for health professions students serving clinical rotations away from their central campuses.
♦ Conducted training events for 56 Colorado faculty and pre-health advisors who advise over 22,400 high school, 2-yr and 4-yr college students.
♦ Conducted community engagement events such as the National Western Stock Show which provides medical evaluation for over 1,400 underserved rural community members as well as educating over 1000 children (2-18 yrs. old) about heart health.
The Colorado Clinical & Translational Sciences Institute (CCTSI) is a collaborative enterprise between University of Colorado Denver | Anschutz Medical Campus, University of Colorado Boulder, Colorado State University, six affiliated hospitals and healthcare 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 institutions include University of Colorado Hospital, Children’s Hospital Colorado, National Jewish Health, Denver Health, Denver Veterans Affairs Medical Center and Kaiser Permanente Colorado groups and the private sector.

The CCTSI is a National Institutes of Health (NIH)-funded research institute at CU-Denver. It is part of the national consortium of 62 CTSA institutions throughout the United States and is one of the largest federal research grants awarded to the state of Colorado. The CCTSI also receives considerable institutional support from CU-Denver, CU Boulder, CSU and the affiliated institutions. The CCTSI has more than 3,400 individual members who benefit from its services and programs. The CCTSI functions through its five pillar programs each with multiple cores and programs: 1) Translational Pilot Program, 2) Enhanced Research Environment, 3) Clinical & Translational Resources and Services, 4) Education, Training and Career Development, and 5) Translational Informatics.

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 further enrich and expand our integrated statewide academic home and research environment for clinical and translational science in order to enhance the quality, efficiency, safety and innovation of research and training across our institutions and communities.

Some of the goals of the CCTSI are to:
- Expand the statewide academic home for clinical and translational research.
- Implement new clinical research management strategies to improve quality, safety, efficiency, cost-effectiveness and innovative team science as well as introduce new software systems and workflows.
- Centralize the delivery of resources, services and technologies.
- Incorporate key concepts of community engagement into the full spectrum of translational research.
- Increase the translational research workforce capacity through a broad curriculum of education, training and career development opportunities.

A rigorous tracking, assessment and evaluation program with a formal quality and process improvement component will ensure 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 training and education programs supporting the lifespan of an investigational career
- Administratively centralized and expanded the breadth of clinical research capacity and expertise
- Established system-wide informatics capabilities
- Promoted team science and encouraged interdisciplinary research through pilot grant programs 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

Created an academic home for clinical and translational scientists and trainees

The CCTSI was funded again in 2013 and will continue 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 new partnership with CSU, which is recognized for its world class school of veterinary medicine, the CCTSI will expand 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 supports “Colorado Profiles,” a search engine and networking tool for biomedical researchers at UC-Denver and affiliates.

The CCTSI provides resources and services including five Clinical and Translational Research Centers (CTRCs); two Clinical Trials Offices; Biostatistics, Epidemiology and Research Design; Research Bioethics, Core Analytics and Biobehavioral Laboratories, consultation services and assistance, informatics and database support (REDCap), funding opportunities, and a vast array of educational and career development programs for clinical and translational investigators and their staff at all of the affiliated institutions. The CTRCs offer incomparable facilities, research nursing support, specimen processing, bionutrition, vascular ultrasound testing, scheduling and other services to facilitate the conduct of patient-oriented research. Education programs include the Clinical Sciences PhD and Masters Graduate Program, a KL2 research scholar program ad TL1 pre-doctoral training program, the Clinical Faculty Scholars Program, the CO-Mentor training program, the K-to-R transition program, the Pre-K Assistance program and many others. The
Inter-professional Education and Development (IPE)

As the complexity of health care has grown, the demand for new, cross-cutting inter-professional 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 inter-professional education. For 17 years, this campus has run an inter-professional ethics course that pulls together students from all the health professions. For the past five years the campus has been working to expand that effort to include core competencies in collaboration and teamwork, and quality and safety. Startup for this expansion was funded by the Josiah Macy Jr. Foundation and the Colorado Health Foundation. As the grants expired, the effort was reorganized and is now led by director, Mark Earnest, MD, PhD, and an IPE Council with designees from each degree-granting school or program on campus. The introductory course involves nearly 700 first-year students in a 16-week, team-based learning experience. Those students later spend a half-day in the campus’ Center for Advancing Professional Excellence simulation center participating in simulated inter-professional clinical experiences. The long-term goal is to provide each student with inter-professional learning experiences as a part of their clinical requirements. Dozens of faculty members contribute to building and implementing these innovative programs, demonstrating this university’s deep commitment to prepare a health care workforce ready to collaborate, practice and lead in an increasingly complex health care environment.

http://www.ucdenver.edu/academics/colleges/medicalschool/administration/alumni/cumedtoday/features/ipe/Pages/IPE.aspx
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Bioengineering

Bioengineering is one of the fastest growing job markets this decade, according to the Bureau of Labor Statistics. An advanced degree in this field provides numerous opportunities to work in health care, biomedical industry, government regulatory agencies and academia. To prepare graduates for careers in this exciting field, Robin Shandas, PhD, professor and chair, established the graduate program in Bioengineering in 2010 within the only Department of Bioengineering in Colorado. Our mission is to improve human health through the application of engineering principles, ideas, methods and inventions to solve important clinical problems. We matriculated our first MS, PhD and MD-PhD students in Fall 2010 and since that time have welcomed 98 new graduate students and have graduated 12 MS students and 4 PhD students.

Located on the Anschutz Medical Campus, our program is well integrated with the CU School of Medicine and its world-class affiliated hospitals. In addition to the MS and PhD degrees, we also offer a dual MS-MBA in collaboration with the CU Denver Business School and an MD-MS and MD-PhD in collaboration with the CU School of Medicine. Our students work with top faculty and researchers in the field on projects that range from basic research to clinical applications and commercialization of medical technologies through our entrepreneurship pathway. Research areas of emphasis include polymers and biomaterials; neuromuscular control and prosthetic limbs; prototyping and 3D modeling; rehabilitation and assistive technology; cardiovascular biomechanics and hemodynamics; surgery and urological sciences; and neuroscience engineering and diabetes.

All of our graduates have gone on to reputable positions in academia and industry, with MS students reporting starting annual salaries between $50,000 to $75,000. In close collaboration with the CU School of Medicine we have established the new dual MD-MS degree. This exciting new opportunity is designed for medical students to incorporate one year of training in bioengineering between Phases III and IV of their medical school training. Our first dual MD-MS student will begin the bioengineering specialty training in fall 2014.

Biomedical Sciences Program

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. Heide Ford, PhD, has been the director of the BSP since 2010, with Kristin Artinger, PhD, serving as associate director since 2014.

Students who matriculate into BSP will perform coursework and laboratory rotations in their first year. For rotations, students can choose to rotate in any of the over 100 labs 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 different graduate programs housed at the University of Colorado Anschutz Medical Campus. It is our goal in 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.

Cancer Biology Program

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 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 we also provide 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 more than 40 basic and clinical scientists drawn from various 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.

Clinical Science Program

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 and for the Colorado Clinical and Translational Sciences Institute (CCTS). 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 masters 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. The 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 more than 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, more than 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.

**Computational Bioscience Program**

The Computational Bioscience Program brings a pioneering new approach to computation that advances human health and the molecular understanding of life. Founded and directed by Lawrence Hunter, PhD, the Program is globally recognized for its research and teaching of computational biology and bioinformatics at the University of Colorado’s Anschutz Medical Campus. The Program is designed to produce graduates with depth in computational methods and molecular biomedicine, an intimate familiarity with the science and technology that synthesizes the two, and the skills necessary to pioneer novel computational approaches to significant biomedical questions.

Outstanding biomedical research now requires inventive computational tools to harness the torrent of post-genomic data. Our computational innovations have led to significant insights across a broad spectrum of biomedicine. Deeper insight, arrived at more quickly, is what medicine needs today.

Learning how to make such contributions is hard. Our award-winning PhD in Computation Bioscience and post-doctoral training programs create productive, interdisciplinary scientists in a relatively short period of time. Our students begin supervised research immediately, collaborating with top scientists, working with the latest high-throughput instruments on critical biomedical problems.

**Cell Biology, Stem Cells and Development Program**

The newly reorganized Graduate Program in Cell Biology, Stem Cells and Development (CSD) was created in 2007, as the natural merger between an historically successful graduate program in Cell and Developmental Biology, and the training program of Gates Center of Stem Cell Biology and Regenerative Medicine. Since that time, Linda A. Barlow, PhD, has served as the director of the program.

Overall, our 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 alike 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. One of the fundamental goals of the CSD program faculty is to train students to be our future peers. Thus, expectations of student performance are high, yet members of our faculty are approachable and readily willing to take time to meet with students.

The University of Colorado Anschutz Medical Campus is a new, state-of-the-art biomedical research campus with numerous cutting edge core facilities, all of which are available for student use toward the PhD. The design of the office and lab space is open, prompting more cooperation and collaboration.

The program currently comprises an interactive group of 24 students and 38 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.
Epidemiology Program

The MS program in epidemiology provides graduate-level training the causes, distribution, and control of disease in populations, with an emphasis on epidemiologic methods and training in human diseases in populations.

The degree provides training in the scientific foundations of epidemiology and prepares individuals to address complex public health issues. Students develop sophisticated analytic and research skills, as well as an understanding of the environment, social and ethnic factors that contribute to health and wellness in the community. As scientists trained in this program, our students graduate prepared for careers in epidemiologic research, and development and evaluation of new approaches to public health surveillance, risk assessment and epidemic investigation.

The PhD program in Epidemiology trains highly skilled individuals in epidemiologic research and its application to public health to prepare graduates for research and teaching careers in the health sciences. The curriculum provides training in epidemiologic methods for clinical, observational and community-based research including study design, statistical analysis, biological principles and disease etiology to meet the rigors of the scientific community.

The program’s etiologic orientation is based on the premise that knowledge of genetic, behavioral, environmental, and physiologic factors contribute to understanding the underlying causes of complex human diseases needed to develop effective preventive measures. The epidemiology faculty have a strong base of funded research projects providing students with many opportunities for research support and data for dissertation projects.

Human Medical Genetics Program

The Human Medical Genetics and Genomics Program provides PhD training in all aspects of Human and Medical Genetics and Genomics, a field which has seen a recent explosion of knowledge and innovative technologies. As genomic DNA sequences of humans and other species become available, genes and genetic variations critical to development and disease are being rapidly discovered, leading to the development of better diagnostic tests and therapies to treat or even prevent these diseases, further enabling, “Personalized Medicine,” which will bring about improved health, longevity, and quality of life. The Human Medical Genetics and Genomics PhD program provides students an outstanding interdisciplinary, interdepartmental faculty as thesis mentors, and teaches students fundamental aspects of genetics and genomics theory and methodology, critical reading and assessment of the literature, formulation and testing of research hypotheses, and interpretation of results to answer key scientific questions. Our PhD students have been successful in academia, industry, teaching, and other settings.

Health Services Research Program

The Health Services Research (HSR) PhD Program is a collaborative program between the Clinical Science (CLSC) Graduate Program and the Health Systems Management and Policy (HSMSP) Department within the Colorado School of Public Health (CSPH). The PhD in HSR is designed for students interested in research. Students receive training in HSR, with a set of specialized skills suitable to conducting rigorous quantitative analysis. Studies focus on efficacy, outcomes, access to care, patient satisfaction, and cost efficiency of diagnostic, preventive, interventional, and therapeutic approaches. The HSR PhD Program includes formal training in the following cross disciplines:

- Biostatistics
- HSR Methodologies
- Study design
- Health policy
The curriculum is designed to provide students with the methodological training to conduct applied research in health care organization, financing, and policy. The HSR PhD Program requires a minimum of 35 credits of course work and 30 credits for thesis. An important complement to the rigorous training in the HSR PhD Program is the formal mentoring with interdisciplinary faculty working in the HSR PhD Program, CLSC Program and the CSPH. Graduates of our program are highly qualified and well-trained researchers who will be nationally competitive for grant funding and career advancement in the health sciences.

**Immunology Graduate Program**

The Graduate Program in Immunology at the University of Colorado Denver 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 within the School of Medicine at the University of Colorado, faculty trainers come from an additional 12 Departments and Divisions within the School of Medicine. **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.

Colorado has a rich history of seminal discoveries in immunology and the Graduate Program in Immunology strives to train our students to continue in this tradition. Thus, the 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.

**Integrated Physiology Program**

Integrated Physiology is a multidisciplinary PhD training program that prepares students for careers in biomedical research. Students in Integrated Physiology have opportunities to explore how cells, organ systems and organisms regulate complex physiological functions through integration of molecular, cellular and physiological mechanisms. Research Tracks are Cellular Physiology, Molecular Nutrition & Metabolic Systems, Reproductive Sciences, and Cardiac & Vascular Systems Biology. With more than 30 training faculty, representing 11 academic disciplines and including internationally recognized experts, each of these research tracks provides students with diverse research and learning experiences, and unique opportunities to develop thesis projects that incorporate multidisciplinary approaches and translational applications.

**Medical Scientist Training Program**

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 about 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 National Institutes of Health (NIH) T32 funding (currently about $795K/year to support 16 trainees per year). The Program has strong leaders and mentors, with Arthur Gutierrez-Hartmann, MD, directing the MSTP since 1994 and selected for numerous local and national mentor awards, and national leadership roles in MD/PhD and graduate education, and Angie Ribera, PhD, serving as the associate director, and providing 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 MST Program has been a campus and national leader in recruiting diversity students, 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 for students to choose from in 17 different 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), 35 in the PhD research years, and 16 in the Medical School Clinical years (MSIII and MSIV). Since 1983, 191 students have matriculated in the MSTP.

Graduates of the MSTP obtain residencies at the nation’s elite programs, with about 75 percent of those completing all training now in academic medicine, government (NIH or Centers for Disease Control), or industry, including starting up their own biotech companies. Importantly, we have an increasing number of MSTP graduates who are now faculty at UC/AMC, with hopes of recruiting more alums “back home.” 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 AAMC 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 AMC campus, across all stages of training, from student to faculty status, to establish an interactive, supportive cadre of physician-scientists, in order to optimize career success for this group. Additional details of the Medical Scientist Training Program can be found at: www.ucdenver.edu/mstp.

**Microbiology Graduate Program**

The Microbiology Graduate Program at the University of Colorado is a PhD program preparing students for careers in research and teaching in the molecular pathogenesis of infectious diseases in both microbiology and virology. Close individual attention is given by the faculty to the needs and training of each graduate student. Based within the Department of Immunology and Microbiology, the program faculty also includes members of the departments of Medicine, Neurology, Pediatrics and Biochemistry and Molecular Genetics. Linda van Dyk, PhD, serves as the Microbiology Graduate 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.

Faculty research interests include the molecular mechanisms of bacterial and viral pathogenesis, including effects of the microbiome on health and disease, microbial pathways, products and metabolites associated with disease outcomes, regulation of gene expression of both host and pathogen in infectious disease, and identification of potential therapeutics to modulate infectious disease out-
comes. With recent appreciation for emerging infections, human risk factors for infectious diseases and the complexity of the microbiome, the topic of microbiology and pathogenesis of infectious disease is a critical field in biomedical research. Our PhD graduates have gone on to successful careers in academic biomedical research, biotech and pharmaceutical research, and teaching.

**Modern Human Anatomy Program**

The Master of Science in Modern Human Anatomy (MSMHA) at the University of Colorado Anschutz Medical Campus is a newly developed two-year Master’s degree program introduced by the Department of Cell and Developmental Biology in the spring of 2012. Under the leadership of the Executive Director, Claude Selitrennikoff, PhD, the inaugural class of four students received their degrees in May 2014, and the program will host a total of 42 students in fall 2014.

The MSMHA is an innovative and unique program that brings together the strengths of an established anatomy/developmental biology curriculum with the foundations of technology of the Visible Human Project. It is an evolving vision with the flexibility to generate a bridge between rigorous traditional training in anatomy and new technical demands in science and clinical medicine in the 21st Century. The program provides both graduate level training in the anatomical sciences and teaching experiences in the physical and virtual anatomical sciences through human cadaver dissection, neuroanatomy, histology and embryology; all 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.

Through its project emphasis, the MSMHA is designed to engage students in the intellectually creative processes necessary to develop applications that link virtual technology to human biological structure. The technical aspect of the curriculum is designed to extend the traditional aspects of the anatomical curriculum. The Capstone Project, completed during the second year of the program, suffices as the means by which students demonstrate scholarly achievement at the end of the Master’s program. The Capstone Project requires scholarship in the most current and clinically relevant elements of Human Anatomy under the tutelage of a faculty mentor.

**Molecular Biology Program**

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 eleven different departments who are applying the techniques of molecular biology to answer questions in diverse areas at the forefront of modern biology and medicine. The Program offers a unique opportunity to study a wide variety of research areas in a student-centered environment, all in the inviting setting of Aurora, Colorado, located along the Front Range of the Rocky Mountains.

Molecular biology, the science of how living organisms work at the molecular level, has spearheaded the recent revolution in our understanding of human disease and led to the birth of a major new industry based on biotechnology. The goal of the Molecular Biology Program at CU is simple: to equip students for careers at the cutting edge of biology. The faculty are 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 here 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 excellent seminar series. Previous graduates of the program are now working in academic, government, and biotechnology research positions.
Molecular Biology Program faculty include members of the Departments of Biochemistry and Molecular Genetics, Cell and Developmental Biology, Medicine, Microbiology, Immunology, Pathology, Pharmacology, Pediatrics, Craniofacial Biology, Rheumatology, and Obstetrics/Gynecology and include internationally recognized experts in genetics, immunology, virology, developmental biology, cancer biology, molecular endocrinology, cell signaling, and structural biology. Their diverse interests provide students with an enormous 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 University of Colorado School of Medicine. In 1999, the Program was awarded a highly competitive National Institutes of Health pre-doctoral training grant that was renewed in 2004 and 2010, providing the funding to support and train students for years to come. Our program was recently honored by a ~$2M endowment, the Victor and Earleen Bolie Scholarship Fund, to support students in the Molecular Biology Program.

Neuroscience Program

The Neuroscience Program (NSP) was formed in the late 1980s as a PhD graduate training program within the Graduate School, which was based within the School of Medicine at the University of Colorado. The UC Regents awarded the NSP PhD granting status in 1992. Previous directors have included Nicholas Seeds, PhD; Curt Freed, MD; Diego Restrepo, PhD; and Angie Ribeira, PhD. The current NSP director is Sukumar Vijayaraghavan, PhD.

The Neuroscience PhD Training Program at the University of Colorado Denver 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 a variety of state-of-the-art laboratory techniques. The program is supported by the National Institutes of Health (T32).

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. NSP is also a component of the Center for Neuroscience (CNS), which brings together researchers, physicians and community members with a common interest in neuroscience to collaborate and share valuable resources.

Pharmacology Training Program

The Department of Pharmacology and the Pharmacology Training Program have a long and well established history of training biomedical sciences PhD students, medical students, and postdoctoral fellows in the School of Medicine. The National Institutes of Health-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, via the Biomedical Sciences (umbrella) program, or via the Medical Scientist Training Program. Pharmacology Training Program Faculty members come from a number of departments including pharmacology, medicine, psychiatry, immunology, and biochemistry. Departmental and training program faculty are nationally and internationally renowned in the areas of neuroscience, drugs of abuse, cancer biology, signal transduction, structural
biology, and bioinformatics.

One of the key defining features of the Pharmacology 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.

Pharmaceutical Sciences Program
The Pharmaceutical Sciences graduate program is made up of three tracks: Pharmaceutical Biotechnology, Clinical Pharmaceutical Sciences and Pharmaceutical Outcomes Research. The Pharmaceutical Biotechnology track is committed to the application of pharmaceutics, biophysics and medicinal chemistry to solving problems arising in the field of pharmaceutical biotechnology. As such, the program focuses on the formulation, synthesis, manufacture, development, stability, biophysical analysis, characterization, delivery, and biodistribution of biopharmaceutical agents and vaccines. Given the analytical aspects implicit in many of these areas, the research tends to be quantitative and mechanistic in nature, with an emphasis on macromolecular systems (e.g., proteins, nucleic acids, viruses, polymers). In addition to more applied pharmaceutical problems, many of our faculty are investigating more fundamental questions involving the regulation of gene transcription, immunology, pharmacology and cancer.

The goal of the Clinical Pharmaceutical Sciences track is to provide the individual with the knowledge base and skills needed to conduct patient-oriented clinical research in drug disposition and response including, pharmacokinetics, pharmacodynamics, and pharmacogenomics. Upon completion of the graduate program, students will be trained for careers in academia, the pharmaceutical industry or government agencies.

The goal of the pharmaceutical outcomes research (POR) track is to provide competent and highly skilled researchers for the evaluation of health care interventions and their economic, clinical, and humanistic outcomes. Areas of focus available to students undertaking this course of study include pharmacoeconomics, pharmacoepidemiology, health services research, and drug policy.

Rehabilitation Science Program
Rehabilitation Science 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 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 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.

Reproductive Sciences Program
The Program in Reproductive Sciences was founded in 2004 as an interdepartmental Graduate Program. Its basic science and clinical faculty are drawn from 10 different Departments and Divisions, bringing an integrated, translational, multidisciplinary approach to the study of reproductive develop-
development, biology and pathophysiology. **Andrew Bradford, PhD**, has served as program director since 2008.

The mission of the Program in Reproductive Sciences is to train students to address the fundamental basis of the pathogenesis and treatment of reproductive problems such as infertility, dysmenorrhea, uterine fibroids, adverse pregnancy outcomes, including preterm birth and intrauterine growth restriction, as well as cancers of reproductive organs and gender based diseases of the immune and other systems. Research interests include: signal transduction and transcriptional regulation; reproductive endocrinology and metabolism; neuroendocrinology; breast, ovarian and uterine cancers; mammary gland development and lactation; placental development and function; and obesity and fetal developmental programming.

The program is unique among graduate programs associated with schools of medicine in its focus on the mechanisms that govern human reproductive development and disease from molecules to the organism. Our goal is to provide the fundamental knowledge and technologies necessary for research into the complex processes that lead to the development of reproductive organs, their maintenance, function and pathology in the adult and, in the female, the development and birth of the infant. To do this we must integrate knowledge from several disciplines including molecular and cellular biology, developmental biology, physiology epidemiology, pathology, endocrinology, immunology, and cancer biology.

Both basic and clinical scientists are part of the faculty of this program, offering students a real opportunity to learn how fundamental research can be translated to the clinic and how to identify clinical problems that will benefit by targeted fundamental research. Seminars and journal clubs help us to develop approaches that go from the bench to the bedside and back again. This interdisciplinary program interfaces with the strong programs on this campus in cell and developmental biology, clinical endocrinology, immunology, molecular biology, pathology and physiology as they relate to reproductive systems.

**Structural Biology and Biochemistry Program**

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 five 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 five core facilities consist of Nuclear Magnetic Resonance spectroscopy (NMR), X-ray crystallography, mass spectrometry/proteomics, biophysics, and peptide/protein chemistry. 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 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.
Toxicology Program

The molecular toxicology graduate program focuses on the molecular mechanisms underlying the toxic effects of therapeutic agents, industrial chemicals and environmental toxins. An integral component of this program is investigation and characterization of the genetic components that underlie an organism's or tissue's resistance or susceptibility to toxic agents.

The PhD program in Toxicology trains graduate students to become proficient and successful investigators who are able to demonstrate a basic knowledge of central concepts in the biomedical sciences; understand the current concepts in toxicology; read and critically evaluate the scientific literature; generate hypotheses based on current concepts in the field and then design, conduct, and interpret their own research projects; communicate research results effectively through oral presentations at scientific seminars, conferences, and other venues; present research results in national meetings, peer-reviewed publications and in a dissertation; and write a grant proposal.
In 2013-2014 we said goodbye to some dear friends and colleagues.