Department of Bioengineering
UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS

Biannual Newsletter
Fall 2018 Edition

Department Granted ABET Accreditation

CU Denver’s Bioengineering Department has officially received ABET accreditation in its first attempt to do so, making it the only standalone, fully-accredited Bachelor of Science in Bioengineering program in Colorado.

CU Denver applied for accreditation immediately following the graduation of the first undergraduate cohort, which is the earliest a program is allowed to apply. The department passed the site visit and review process, and received the official accreditation status in July. Read more here.

A Letter from the Department Chair
Robin Shandas, PhD

I congratulate our students and faculty on the numerous accomplishments, awards and accolades achieved over the last 12 months. Your work is truly impressive.

Ten years ago, our department was merely the vision of one. With the support of leadership at CU Denver and Anschutz Medical Campuses, the Children’s Hospital Colorado, and University of Colorado Hospital I launched Colorado’s first bioengineering department. With limited knowledge of what it would take to create a new department and degree programs, while also creating a Center for Bioengineering in the CU School of Medicine for the department’s research on the Anschutz Medical Campus, I wondered, “how hard could it really be to startup a new department?” As it turns out… (continued on p. 2)

In this issue:
Program announcements, faculty and student highlights, department events, new course offerings, and more!

Connect with us!
Stay up-to-date on all things Department of Bioengineering - Follow us on social media!
Building Partnerships for the Next Generation of Bioengineers

The Department of Bioengineering is rapidly growing and sending superbly-trained students out into the workforce. As our department grows, we strive to ensure that opportunities for students grow as well.

Here are some great ways you can help prepare bioengineers of the future!

Internships
If your company is in need of well-trained interns, look no further than our department. Students are eager for opportunities and up for the challenge! If you are interested, please contact: Cassandra.Howard@ucdenver.edu

Lectures
If you are interested in presenting a Seminar or Lunch & Learn on a relevant bioengineering-related topic, please contact: Allison.Ferreri@ucdenver.edu

Design Project Clients
If you have a project idea, our Junior or Senior design cohorts or graduate students may be able to help. Please contact: Cassandra.Howard@ucdenver.edu

BOLT Sponsorship
BOLT camp is expensive; the department offered 15 scholarships, but there were still students in need. If you or your company are interested in sponsoring an aspiring bioengineer to attend BOLT, please contact: Kate.Hoch@ucdenver.edu

A Letter from the Department Chair, continued...

...(and to no one’s surprise), it has been enormously challenging! Figuring out how to execute on my vision while maintaining high expectations has been tough, and I soon realized how many things can go wrong. Many things did go wrong. We persevered and now represent the only stand-alone ABET-accredited bioengineering department in Colorado, rapidly growing along all dimensions, with our physical presence fully integrated with the Anschutz Medical Campus.

Through this tremendous growth, I am grateful to the faculty, staff and most importantly the students who took a chance with a new program, and who helped us learn from our mistakes to continuously improve on the myriad number of issues that drive the successful operation of a complex multi-campus effort like ours. Thank you.

Bioengineering training is leadership training; the breadth of knowledge, communication, topical depth, teamwork, emotional resilience, and personal discipline needed to navigate the field provide ample opportunities for personal and professional growth. As we celebrate the success of the students, faculty and researchers in our department, let’s continue to embrace the creativity and excellence that has led us to this point. I can’t wait to see what accomplishments we celebrate next!

Robin Shandas, PhD
Professor, Founding Chair of the Department of Bioengineering

New Additions to BIOE Student Services Team

The Department of Bioengineering is excited to introduce our two newest staff members!

We are thrilled to welcome Shaun Boulier as the new Undergraduate Program Manager, working primarily on the Downtown Denver Campus, and Natalie Kersten into her position as the Graduate Program Manager and Marketing Coordinator out on the Anschutz Medical Campus.

Both Natalie and Shaun have extensive higher education experience, and are incredible assets for the department. They are strong advocates for students and are hard at work to make the Department of Bioengineering the best it can be, for students and faculty alike.
Bioengineering Opportunities and Leadership Training Camp Grows

The Bioengineering Opportunities and Leadership Training (BOLT) Camp was such a hit in Summer 2017 that two sessions were offered in 2018 to accommodate the demand. The department hosted 50 students and awarded 15 scholarships for budding bioengineers. BOLT drew students from more than 26 schools across the Colorado — and even all the way from Brazil!

BOLT is designed to help high school students explore the amazing opportunities in the field of bioengineering. Through the week, they spent time soldering, building devices, running tissue engineering experiments, 3D prototyping, and more. Students explored the greater Anschutz Campus too, even visiting the roof of Children’s Hospital to view the specially engineered pediatric Flight For Life helicopter, as well as learning in the anatomy labs with the AHEC Anatomy team. Student teams worked with clinicians, researchers, BIOE students, and faculty to design a solution to a clinical problem. Each team prototyped their solution, and the week culminated with design presentations, awards, and an ice cream social.

Students left BOLT with a greater understanding of bioengineering, applicable knowledge and practical lab skills, and hopefully even more passion for STEM than before! Click here for more information on BOLT.
Bioengineering to Improve Water Safety in Guatemala

The week after graduating with her Bachelor’s Degree in Bioengineering, Samantha “Sammi” Sharrar was on a flight to Central America, ready to put her bioengineering work to the test. She was traveling with Public Health student Gabriela Reyes to the CU Trifinio Clinic site in rural Guatemala, with the goal of implementing a water quality assessment project in collaboration with the local community.

Sharrar and Reyes trained local leaders on how to test water quality with battery-powered field incubators – incubators designed by CU Bioengineering students in their Junior Design course. Working with community members, they obtained water samples, placed them on 3M™ Petrifilms, and then incubated the films for 48 hours in the incubators to test for bacteria.

An important component of the project they tested in the field was a smartphone app Sharrar built to automate the interpretation and data storage of the water assessments. The results were then presented back to the community in a demonstration led by the youth leaders to educate community members on the presence of harmful bacteria and the importance of filtering or boiling water.

Due to the success of Sharrar’s time in Trifinio, the Department is now offering a Global Health Design course in 2019.

**Biomedical Startup Acquired by Fortune 500 Medical Technology Firm**

One of the world’s biggest medical technology companies just got a little bigger, thanks to the innovation of two University of Colorado Denver | Anschutz professors. Earlier this year, Stryker acquired a medical device company founded by Department of Bioengineering Chair Robin Shandas and Dr. Omer Mei-Dan, a sports surgeon and Associate Professor of Orthopedics at the CU School of Medicine.

The two initially collaborated to create the device they named the Pivot Guardian, the industry’s first post-free hip distraction system. They specially designed the Pivot Guardian to mitigate groin complications and heel slip associated with hip arthroscopy.

Along with CU Boulder instructor Dr. Jacob Segil and orthopedic device consultant Brett Schumer, Drs. Mei-Dan and Shandas created MITA LLC. Through their company, they brought their novel hip distraction technique to market. The terms of the sale to Stryker were not disclosed, and the total time between initial discussions and company exit was less than two years.

The successful sale shows how beneficial it is to pair the work of bioengineers with clinical faculty to bring viable innovations to the market. It also underscores the value of the Department of Bioengineering’s location on the Anschutz Medical Campus and the opportunities for collaboration it provides.

Dr. Mei-Dan agrees. “Having biomedical engineers as in-house partners who can quickly understand the clinical need, assemble a business-savvy technical team, and iterate through multiple prototypes efficiently is a huge, great asset we have here on campus,” he said. "This great success gives me much confidence for future endeavors."

**2017-2018 Student Awards**

Department of Bioengineering Outstanding Undergraduate: 
Samantha Passman, BS

Department of Bioengineering Outstanding Graduate: 
Tina Govindarajan, PhD candidate

Department of Bioengineering Outstanding Post-Doc: 
Emily Beck, PhD

College of Engineering Outstanding Undergraduate BIOE student: 
Michaela Pott, BS student

College of Engineering Outstanding Graduate BIOE student: 
Michal Schafer, PhD
11th Annual Déjà Vu Rendezvous Brings in Big Donations for Assistive Technology Partners

The 11th Annual Déjà Vu Rendezvous event was held in Denver on May 18th, 2018, and was attended by over 800 guests and members of the Colorado construction community while supporting a great cause.

Proceeds from the event support Assistive Technology Partners (ATP), a division within the CU Denver | Anschutz Department of Bioengineering.

ATP enables persons with disabilities to reach their highest potential through assistive technologies by providing exemplary clinical services, consultation, education, research and innovative technology development. ATP functions both within the department in a teaching and training capacity, as well as commercially assisting clients from the community. The Déjà vu Rendezvous event, sponsored by over 100 corporations, brought in donations of more than $2.3 million dollars!

Cathy Bodine, PhD, Executive Director of ATP and Associate Professor of Bioengineering says, “We are so grateful to the local construction companies and our generous sponsors for choosing ATP to benefit from such a wonderful annual event.” Read story here.

Save the Date!

Fall 2018 Open House
November 2nd | 4-6 pm
Bioscience 2 Building, Anschutz Medical Campus

Come see all the Department of Bioengineering has to offer!

Prospective students: this is a great event for you. Come learn more about opportunities in the program, connect with faculty, and get your questions answered!

RSVP here.

Bioengineering Students Attend & WIN at BMES Coulter College

Four BS Bioengineering seniors were invited to attend the 2018 Coulter College National Biomedical Engineering Competition in August. The event was hosted at the Medtronic Headquarters in Minneapolis, and 12 universities were represented. In a whirlwind few days, students worked together with business, clinical, and design mentors to develop a potential solution and commercial case to improve access to stroke treatment.

Our student team won both pitch competitions in their problem area of improving the treatment of Stroke in resource constrained areas. (From left to right) Faculty member Casey Howard, and students Mikki Pott, Dylan Carlson, Kai Sabio, and Josh Volkman represented CU Denver and made up the CU Denver Stroke Crew team at BMES Coulter College.
Dr. Emily Gibson Receives National Science Foundation Partnerships for Innovation Award

Dr. Emily Gibson was recently awarded the NSF Partnerships for Innovation: Accelerating Innovation Research-Technology Translation Grant to further develop a prototype for fiber-coupled multiphoton imaging and stimulation of brain activity. The grant will help translate CU technology to the marketplace and will involve a Denver-based company, Intelligence Imaging Innovations (3i). The technology originated through collaborations between the Department of Bioengineering, CU Boulder ECEE and Mechanical Engineering, and the Neuroscience program at CU Anschutz Medical Campus.

Faculty Awarded Tenure

The University of Colorado Board of Regents approved promotion and tenure appointments for two CU Denver | Anschutz Department of Bioengineering faculty in June, Dr. Daewon Park and Dr. Cathy Bodine.

Dr. Daewon Park, PhD
Associate Professor

Dr. Cathy Bodine
CCC-SLP, PhD
Associate Professor

CU in Guatemala, Bioengineering Design Hack for Global Health

We are excited to announce a new course offering in Guatemala! This course, spearheaded by faculty member Casey Howard, will be a course abroad with a focus on the application of biomedical engineering knowledge for global health.

The program will take place at the Center for Human Development in the Trifinio region of Southwestern Guatemala. The Center for Human Development was created by the University of Colorado in partnership with AgroAmerica, a private family-owned Guatemalan banana and vegetable oils agro-business, to provide healthcare and educational services to local communities.

Students will have the opportunity to partner with local community members and healthcare professionals to identify, design, and prototype sustainable solutions for various issues impacting rural Guatemala.

This three credit technical elective for undergraduate and graduate students runs for two weeks in June, 2019. Preliminary reading assignments and content sessions will be held in advance of the trip in order to ensure that the time spent on site will be highly effective. Interested students can learn more at a Lunch and Learn session being held on Tuesday, Nov. 27th, 2018. A limited number of spots are available in the course, so there will be a competitive application process. The registration deadline for the course is in February.
Duncan Davis-Hall is a first-year PhD student in the Department of Bioengineering. Duncan earned his Bachelor of Science in Biomedical Engineering from California Polytechnic State University, in San Luis Obispo, CA. As an undergraduate, he spent his time proctoring at the Disability Resource Center and performing data management and research at the campus library. Immediately following graduation, Duncan spent 35 days hiking over 500 miles across California, Oregon, and Washington!

He then made the trek to Colorado, and began his MS in Bioengineering at CU Denver in August, 2016. He defended in April, 2018 and matriculated into the PhD program this past August. Having connected with his PI Dr. Chelsea Magin at the annual Pitch Night event, Duncan started work focusing on bioengineered hydrogel systems to model lung disease.

After his tenure, Duncan will seek to continue his research in academia. He is anxious to nurture and grow the field of bioengineering, and he has a vested interest in ensuring the necessary skills are being utilized and people are staying interested in the field. He truly believes that “Connections and relationships are more important than any tools in a lab.”

Duncan is currently the President of the Anschutz Campus Orchestra, and has played the viola since fourth grade. His time outside of the lab is spent running (he just successfully completed the San Juan Solstice - a 50 mile trail run in Lake City, CO), and experiencing all that Colorado has to offer in terms of outdoor adventure, especially swimming, camping, backpacking, and skiing.

Dr. Cristin Welle, Assistant Professor of Neurosurgery and Bioengineering at the University of Colorado Anschutz, was recently awarded a $2 million grant from the Defense Advanced Research Projects Agency (DARPA). This grant will help her to pilot the use of peripheral neuromodulation to accelerate motor learning.

The goals of Dr. Welle’s project are to understand the effects of precisely timed stimulation of the vagus nerve during motor learning on motor performance, and to utilize optogenetics, electrophysiology and in vivo two-photon imaging to investigate the mechanisms that underlie this effect. The hope is that this research will lead to translational opportunities using invasive or non-invasive vagus nerve stimulation to improve rehabilitation from stroke or to drive enhancements in the learning and performance of skilled tasks.

**Welle Awarded $2M DARPA Grant**

**Duncan Davis-Hall, MS**
PhD Candidate

**Bioengineering Student Spotlight**

**Clubs & Organizations**

**Biomedical Engineering Society (BMES)**
CU Denver | Anschutz Chapter
Contact [Amanda.2.Perras@ucdenver.edu](mailto:Amanda.2.Perras@ucdenver.edu) for more information

**Society of Women Engineers (SWE)**
CU Denver | Anschutz Chapter
Contact [Samantha.Muse@ucdenver.edu](mailto:Samantha.Muse@ucdenver.edu) for more information

**Tau Beta Pi**
CU Denver | Anschutz Chapter
Contact [Kainos.Gurung@ucdenver.edu](mailto:Kainos.Gurung@ucdenver.edu) for more information

**Bioscience Book Club**
CU Denver | Anschutz
Contact [Jeffrey.Jacot@ucdenver.edu](mailto:Jeffrey.Jacot@ucdenver.edu) for more information
BMES Annual Meeting
October 17-20, 2018
Georgia World Congress Center
Come see us at Booth #729 for some great giveaways!

WE18 Conference
October 17-20, 2018
Minneapolis Convention Center
Several CU Denver members will represent at the event!

Every First & Third Tuesday of the Month
Lunch & Learns
Bioscience 2 Rm. 1008 | Anschutz Medical Campus | 12:30-1:30pm
Hear from industry, learn about student opportunities, and more!

Every Second & Fourth Tuesday of the Month
Research in Progress Lectures
Bioscience 2 Rm. 1008 | Anschutz Medical Campus | 12:30-1:30pm
Hear graduate students from each lab present their exciting current research. RIP Lectures are free and open to the public.

November 2, 2018
Department of Bioengineering Open House
Bioscience 2 Building | Anschutz Medical Campus | 4:00pm-6:00pm
Come see the department, talk with faculty, tour labs, and more! Even is free and open to the public.

April 12, 2019
BMES Symposium
Research 2 Building | Anschutz Medical Campus | 8:00am-4:00pm
BMES invites professionals in medicine, industry, and academia to attend and present, providing networking opportunities and equipping students for the future.

Seminar Series
Academic Year 2018-2019

Sept. 14: Jennifer Stevens-Lapsley, PT, PhD
University of Colorado Anschutz

Sept. 28: Svenja Knappe, PhD
University of Colorado Boulder

November 9: Wei Tan, PhD
University of Colorado Boulder

November 16: Kevin Park, PhD
University of Miami

December 5: Marilyn Wolf, PhD
Georgia Institute of Technology

February 1: Melissa Krebs, PhD
Colorado School of Mines

February 15: Alex Barker, PhD
University of Colorado Anschutz

March 1: Karen Christman, PhD
University of California San Diego

March 15: Eric Seibel, PhD
University of Washington

April 12: Mark Brown, PhD
Colorado State University

All seminars are 12:30-1:30pm in the Bioscience 2 Room Y18-1008. Please contact Dr. Jeff Jacot if you are interested in presenting a seminar.