A Few Words From Our Chair  Roger Enoka

Over the past five years, the faculty has worked hard to develop a science-based curriculum that is rigorous, flexible, and relevant to the career goals of students interested in public health issues. The highlights of our major include the popular courses in human anatomy and physiology and a core curriculum that can be customized to meet the goals of the student.

One of the less-obvious strengths of the curriculum is the work performed over the last three years by the teaching fellows (Franny Benay, Kate Semsar, and Teresa Foley) and most of the faculty to improve our teaching effectiveness. Our efforts have focused on determining what students should know, identifying what they do know, and improving how we teach them so that they learn what we think they should. Our courses are now more interactive, there is greater cohesion in the development of knowledge from lower to upper division courses, and the learning goals for each course are more clearly defined.

As Miguel de Cervantes stated in Don Quixote, however, the proof of the pudding is in the eating. Are we providing an effective product for the students? Although the major is too young and our revised teaching strategies are too new to reach any firm conclusion, the biographical sketches of alumni (see below) confirm that our graduates are succeeding in a range of professions. Nonetheless, there is a significant gap in our ability to meet the curricular needs of many students. The deficit is in the opportunities for students to obtain a research experience in a laboratory. This semester, for example, the research-active faculty are providing one- and two-semester research experiences for 88 undergraduates, but have been unable to accommodate requests by another 105 students. One of reasons we cannot engage more students in research is the lack of funds to provide them with a stipend for the semester. One of our fundraising goals, therefore, is to increase our capacity to support students who want a research experience. We hope to meet this high-priority need as soon as possible so that our students are more informed and more competitive for the career choices they are considering. A gift of $86,000 by the John K. Everson Trust this semester will help us meet some of these needs.
Sports Medicine at CU  Robert Mazzeo

Eric McCarty (B.S. 1988-Cum Laude, M.D. 1993) is currently Chief of Sports Medicine and Shoulder Surgery in the Department of Orthopaedics at the University of Colorado School of Medicine. His affiliation with CU Boulder began in 1983 when he was recruited to CU by head football coach Bill McCartney. He won numerous honors both on and off the football field including First Team All-Big Eight Conference Linebacker as well as First Team Academic All-American Linebacker. His only mistake as an undergraduate was to enroll in Exercise Physiology taught by a new, inexperienced assistant professor (Dr. Bob Mazzeo). The setback was temporary, however. After graduating from CU medical school in 1993, he completed an orthopedic residency at Vanderbilt Medical Center (1993–98) and then did a sports medicine fellowship at the Hospital for Special Surgery in New York City (1998–99).

He was an assistant professor at Vanderbilt University for four years (1999–2003) before being lured back to his alma mater to assume the position as the head team physician for the University of Colorado and University of Denver athletic programs. His specialized practice involves the care of these collegiate athletes as well as recreational and highly competitive athletes from the Boulder community. In addition to his busy clinical practice, Dr. McCarty is active in research, teaching, and writing articles in the field of sports medicine and knee and shoulder surgery. He has received grants for his research and has given numerous talks at both the national and international level. Dr. McCarty is married with four children and continues to maintain an active lifestyle including hiking, cycling, climbing, and skiing.

Forensic Sciences  David Norris

Professor David Norris and Senior Instructor Ruth Heisler conducted a three-day forensic science workshop (June 8–10, 2009) for secondary school teachers who include forensic science among the topics they teach in public schools. Awards from the American Academy of Forensic Sciences (AAFS), CU Continuing Education and Professional Studies, and the CU Biological Sciences Initiative provided support for the workshop. Dr. Norris is an elected member of AAFS and, along with Ms. Heisler, teaches elective courses in forensic biology (IPHY 3800, 3801, and 4660). Seventy-four teachers from Hawaii to Florida, but mostly from Colorado, participated in lectures and hands-on laboratory activities covering forensic anthropology, botany, DNA analyses, entomology, fingerprinting, geology, as well as the roles of crime scene investigators, coroners, and judges. Presenters included
forensic scientists, two detectives, a coroner, a judge, and four CU undergraduate and graduate assistants supported the presentations. There were also special forensic presentations on Alferd Packer, the famous Colorado cannibal, and on the nonprofit organization called NecroSearch International that comprises a group of Colorado scientists (including Prof. Norris) and law enforcement personnel who specialize in research and training of law enforcement personnel around the world in the location of clandestine graves.

Research Study Volunteers

One of the areas of strength in the department is the research that is performed on the physiology of aging. Our research includes studies on changes in vascular biology (DeSouza, Seals), declines in motor performance (Ahmed, Enoka), the determinants of longevity (Johnson), age-related diseases (McQueen), and changes in sleep and circadian rhythms (Wright). Some of these studies would not be possible without the willing participation of human volunteers. We share with you the experiences of two participants.

John Fowler (M.S. 1969, Ph.D. 1974) grew up in Harrogate, North Yorkshire, England. After receiving his diploma in physical education from Carnegie College in 1952, he taught physical education at a high school for several years. It was during this time that he became involved in an emergent method of teaching physical education, which was known as movement education. He and his wife immigrated to the US in 1967, and he completed a M.S. and Ph.D. at CU while a member of the faculty in the Women’s Department of Physical Education. His teaching took him around the world from England and the US to Nigeria and Australia. He was appointed director of the Sewall Hall Freshman Resident Academic Program in 1981 and was charged with providing a program of small classes (20 students) for freshmen each semester. He served as director from 1981 until 1990. When an opportunity for early retirement appeared in 1990, he decided to retire at the age of 62. Since retiring he has volunteered at the YMCA, served for several years on the Supervisory Committee of the Elevations Credit Union, spent time with his five grandchildren in the Boulder area, and volunteered as a research subject in the department he was a part of shaping. Regarding his experience as a research participant, John says, “It was very rewarding to be a research subject as it was encouraging and stimulating to see what graduate students are doing today. I learned a great deal. The students were very welcoming, friendly, and professional. The opportunity to make new friends and contacts as well as renewing friendships with former colleagues was very rewarding.”
Our volunteers have a variety of backgrounds and typically choose to participate because of a genuine interest in science. Such was the case with Elizabeth Landen, a 64-year old woman from Wyoming. When asked about her motivation to volunteer as a subject, she commented “I was fascinated because I have always wanted to donate my body to science.” She added that the health information offered to all subjects was also an incentive, “...we ranched for 40 years, working physically hard...but since moving down here, I have not been very active. I wanted to know what shape my body was in.” She chose to participate in two different studies conducted by the Integrative Physiology of Aging Laboratory. The studies examine the role of inflammation and free radicals in the decline of vascular function with age. The goal of these studies is to help researchers to understand the mechanism responsible for dysfunction and to develop interventions to prevent the decline in function. Ms. Landen’s experience was so positive that she has volunteered to participate in other studies and added, “Your staff was extremely kind and helpful. I didn’t realize that I got paid, which was an added bonus.”

Elizabeth Landen with daughter and granddaughter

Graduating Students

The following students were recognized with graduate degrees or bachelor degrees at our graduation ceremony on December 18, 2009:

**Doctor of Philosophy**
Mark Jesunathadas

**Master of Science**
Leah Brooks
Adam Maerz
Thomas Maslanik

**Bachelor of Arts**
Kelly Adair
Timothy Endyk
Lindsay Kallevik
Angela McGuire
Haley Stewart

Tiffany Aragon
Jeremy Fawcett*
Paige Kaufman
Ashley Meredith
Angela Taylor

Lindsey Bird
Elizabeth Foster
Emma Keenan
Toby Morin
James Thomas

Ryan Bird
Victoria
Katie King
Hoa Nguyen
Claudia Tuffanelli-

Ross Blahnik
Frangadakis
Brittany Kling
Chienyem Nweke
Narantsolmon

Lindsey Blansit
Phillip Gamber
Lauren Krowl
Caroline O’Connor

1en Brouillette
Sarah Ghorbani
Sarah
Scott Patterson

Amy Cabrera
Michael Grant
Krumenacker
Jackie Pevey

Lindsey Chao*
Kelsey Gryniewicz
Emilie Kurtz*
Robert Pierini

Michael Crosby
Chadwick Hards
Alyssa La Bate
Victoria Powis

Matthew Di Lallo
Kathryn Harlow
Austin Lauber
Brittany Poyer

Quiynh-Thu Doan
Peter Hibl
Jordan Levandoski
Brandon Ramirez

Trevor Doyle
Alex Hirose
Taylor Loen
Cole Schindler

Danielle Ehrlich
Caroline Tarolimek
Amy Long
Pranab Sharma

Corey Elliott
Shiley Johnson
Nathan Low
Alec Smith

*with distinction
Alumni News

Jesse Modica (B.A. and M.S. 2003) completed the joint degree in kinesiology by performing a master’s thesis with Dr. Rodger Kram in the Locomotion Lab where he studied the biomechanics of walking and running. In 2004, he was accepted into the Doctor of Physical Therapy (DPT) program at Regis University to continue his journey in a more clinical direction. While at Regis, Jesse served as president of his class and tutored classmates in biomechanics. He cofounded the national Student Association for the American Academy of Orthopedic Manual Physical Therapists. He earned his DPT with honors (Alpha Sigma Nu) in 2007. Jesse quickly found a job at Marin Physical Therapy in San Rafael, CA where he works as a physical therapist. His special interests include orthopedic manual physical therapy and vestibular rehabilitation.

Jesse and his wife Lisa (a Boulder native) welcomed their first child, Ruby, while Jesse studied at Regis. After moving to Petaluma, CA in 2007, they had second child, Kai, to complete their family. Ruby and Kai keep their parents thoroughly entertained, busy, and smiling with pride and joy. Jesse has since developed a love for photography. The Modica family visit good friends and close family in Boulder often.

Karyn Zorn (B.A. 2003) graduated from CU Boulder with a double major in women’s studies and kinesiology. After graduation, she moved to Guatemala to volunteer, learn to speak Spanish, and to determine if she wanted to be a midwife or a doctor. After five months of volunteer work, she returned to Boulder with her partner and worked as a research intern at Red Wagon Organic Farm and then as a medical assistant at the Boulder Valley Women’s Health Center. Her two years at the Center helped her to decide on attending medical school. After completing EMT-B and IV certifications at Front Range Community College, she worked for 3.5 years as a phlebotomist at Holy Cross Hospital in Taos, New Mexico. She moved to Albuquerque in May and began medical school at the University of New Mexico in July, 2009. Based on five years of working with Spanish-speaking, indigent, and uninsured patients, she has decided to practice primary care medicine in an underserved area of New Mexico. She is considering OB/GYN and family medicine. She tries to find time to ride her bike, cuddle with her dogs, and eat delicious, fresh food.
Lisa Jung (B.A. 2009) is currently working on enriching her experience in health-related professions to be more competitive with her application for graduate or professional school next year. She obtained EMT certification this summer and is currently seeking a position as an EMT technician in a hospital. She also intends to volunteer with a clinical endocrinologist to learn about dealing with patients and the real-world application of endocrinology, which she learned about when doing an independent study in the laboratory of Dr. Pei Tsai. Over the next few months she plans to take the GRE/MCAT tests and to apply for graduate school or medical school. The career-path decision will be based on the experiences she encounters during the planned volunteer work.

Amber Hull (B.A. 2007) began working in clinical research in the Integrative Physiology of Aging Laboratory under the mentorship of Dr. Douglas Seals. An Undergraduate Research Opportunities Program grant enabled her to work on a study of the relation between aging, endurance training, and vascular endothelial function. In addition to her work in Boulder, she helped conduct a study of opt-out HIV testing in the Emergency Department of Denver Health Medical Center under the direction of attending physician Dr. Jason Haukoos (IPHY 3500-Clinical Research). Amber continued working with Dr. Haukoos as an intern on a national study of HIV testing practices in academic and non-academic hospitals. The findings of this study are currently under review for publication in a special edition of the Annals of Emergency Medicine.

After graduation, Amber began working for the University of Colorado School of Medicine at The Children’s Hospital. As a Professional Research Assistant in the department of Pediatric Endocrinology, she is helping to develop new techniques to investigate the cardiovascular and metabolic complications of diabetes in youth. She also serves on the board of the Denver chapter of the CU Young Alumni where she’s working to establish a scholarship for undergraduates to help fund domestic and international service learning projects.
James R. Morrow, Jr. (M.S. 1973, Ph.D. 1976) first came in contact with our department when he enrolled in a course taught by a Boulder campus faculty member (Dr. Dale Mood) on the Colorado Springs campus. Jim, at the time, was stationed at the Air Force Academy. Jim eventually earned his M.S. in Physical Education in 1973 from our department and his Ph.D. in 1976 through an arrangement with the then School of Education's Research and Evaluation Methodology program to sponsor doctoral students. In 1976, he accepted a one-year faculty position at the University of Houston and left 17 years later as a professor to become the chair of the Department of Kinesiology, Health Promotion, and Recreation at the University of North Texas (UNT) in 1993. He has held several other administrative positions at UNT, including the director of the College of Education Center for Interdisciplinary Research and Analysis and was awarded the title of Regents Professor in 2002. His major accomplishments include the recognition as a Fellow in four professional organizations, service as an officer in several national organizations, former editor-in-chief for the Research Quarterly for Exercise and Sport (1989-1993), former Co-Editor of the Journal of Physical Activity and Health (2004-2006), authorship of ~110 journal publications, 7 books, and 12 book chapters, and delivery of ~200 international or national presentations. He has been the PI, Co-PI, or consultant on 23 external grants totaling ~$8 million in direct costs. He has taught ~20 different courses and chaired 10 doctoral committees. He has become a productive teacher and scholar and a significant member of our department’s alumni.
Leigh Anne Bakel (B.A. 1999) and Drew Kern (B.A. 1999, M.S. 2001) first crossed paths in Honors Western Civilization as undergraduate kinesiology majors. After graduation, Leigh Anne undertook a degree in medicine at the University of Colorado in Denver and Drew pursued a master’s degree as a graduate student in Dr. Enoka’s lab. After developing an interest in research as a graduate student, Drew became involved with a program on deep brain stimulation in Parkinson’s patients with Dr. Kumar at Swedish Hospital in Denver. Drew then also decided to enroll in medical school and was accepted into the program at the University of Vermont. While Drew was completing his medical studies and furthering his research experience by studying the application of stem cell transplantation in Alzheimer’s and Parkinson’s diseases, Leigh Anne completed pediatric residency at the Children’s Hospital in Denver. Once back in the same state, Leigh Anne and Drew were married in July 2007. Leigh Anne is currently pursuing a career in pediatric hospitalist medicine at the Children’s Hospital in Denver and the Network of Care. Drew is specializing in neurology and is completing a residency at the University of Colorado in Denver. Leigh Anne and Drew do manage to spend some time together with their dog Boulder, traveling, scuba diving, road biking, and skiing.

Soon after graduating from the University of Colorado in May of 2007 with a B.A. in Integrative Physiology and Biochemistry, Laura Gorsuch moved to Anchorage, Alaska, where she worked as the head personal trainer at a local health club. Her clients had a wide range of goals that ranged from decreasing blood pressure, minimizing pain from rotator cuff tears, strengthening the core, to training for a first marathon.

Many of the classes from her degree in Integrative Physiology, such as Exercise Physiology, no doubt contributed to her success as a trainer. In addition to working, she volunteered at the Anchorage Neighborhood Health Center (ANHC) and the VA Medical Center pharmacy. At the ANHC, she helped run a program that provided free colonoscopies to the uninsured and homeless populations of Anchorage.
Through this experience, she became more familiar with the health care system, while getting first hand experience with patients. At the VA center, she helped distribute the prescriptions at the pharmacy. These experiences, along with her time at the University of Colorado, helped prepare her to begin her path toward a career in medicine. In August 2009, she began the first year of medical school at the University of Minnesota – Twin Cities, and she loves every minute of it!

After graduating from University of Colorado with a dual degree in kinesiology and psychology, Mara Bailey (B.A. 2004, M.S. 2009) knew she wanted to pursue a career working in pediatric health but was unsure of what graduate path to take. She completed a three-month nursing research internship at St. Jude Children’s Hospital and Research Center just after graduating that triggered her interest in pediatric oncology. She entered the master’s entry program for nursing at the University of California San Francisco in 2005 and completed the three-year program with a M.S. degree in advanced-practice pediatric nursing. Throughout her graduate school experience, she worked as a registered nurse at UCSF Children’s Hospital on the pediatric hematology and oncology inpatient floor. After obtaining a degree as a pediatric nurse practitioner (PNP), she was selected to be an inpatient pediatric bone marrow transplant PNP, where she currently works today. She also has developed a strong interest in international health and has volunteered abroad in Brazil and Tanzania since graduating, and hopes to travel more in the future when not enjoying San Francisco.
Kudos to Faculty and Students

Professor Ken Wright participated in a ground-based simulation of an Exploration Class Spaceflight Mission to Mars. From March 31 to July 14, 2009, six crewmembers—four Russians and two Europeans—lived for 105 days in a simulated spacecraft of interconnected modules containing medical and scientific research areas, living quarters, a greenhouse, kitchen, and exercise facility. Crewmembers participated in experiments and realistic space flight mission scenarios, including night work operations, emergency situations, and communication delays with mission control. Prof. Wright, his graduate students, and colleagues from Harvard Medical School conducted experiments to evaluate countermeasures to improve sleep and performance during spaceflight. The research is designed to improve the health and safety of crewmembers and is supported by a grant from the National Space Biomedical Research Institute. The study was conducted in Moscow, Russia at a research facility supported by the Russian Federation Scientific Center–Institute for Biomedical Problems of the Russian Academy of Sciences.

Anthony J. Donato, Ph.D. was appointed as an Assistant Research Professor in the Department of Integrative Physiology. His current research focuses on cellular and molecular mechanisms responsible for the development of large elastic artery stiffness and impairment of endothelial function in aging humans and rodents. Dr. Donato completed a B.A. (1998) in Kinesiology at the University of Colorado at Boulder, an M.S. (2001) in Kinesiology and Applied Physiology also at CU, a Ph.D. (2004) at Texas A&M University, and postdoctoral training at the University of California in San Diego and at CU.
Professor Thomas Johnson received the Schober Award for aging research. The award is given annually to a scientist who has made significant contributions to the field of aging research. He received the award at the Biomarkers of Aging workshop in Martin Luther University, Department of Cardio-Thoracic Surgery in Halle, Germany. In his acceptance speech, Dr. Johnson spoke on *Life Span as a Biomarker of Aging: What Does It Tell Us?*

Lida Beninson spent her summer in Washington, D.C. as an intern at the National Science Foundation under Dr. Sally O'Connor. She worked with academic institutions across the country to attract and retain undergraduate and minority students to the sciences. She reported her results to the National Science Foundation and the American Association for the Advancement of Science. Her findings will be published under the title *Evaluation of the Research Experience for Undergraduates Program.* She is currently completing a master’s degree and then a doctorate in Department of Integrative Physiology under the mentorship of Dr. Monika Fleshner.

Members of the Student Board and volunteers once again staffed an aid station for the annual Buffalo Bicycle Classic (see the video on the department home page-[http://www.colorado.edu/intphys](http://www.colorado.edu/intphys)). The event was developed by Dean Todd Gleeson and is organized by the College of Arts and Sciences to raise funds that provide scholarships for students in the College. The 2,500 riders can choose distances that range from 14 to 100 miles. Since 2003, the event has raised $1M for students.
Many Thanks

The faculty and students greatly appreciate recent donations to the CU Foundation on behalf of Integrative Physiology by:

Ahmed, Alaa
Byrnes, William
Clark, Gene & Susan
Ehringer, Marissa
Enoka, Roger
Everson, John K.

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CU degree(s) and date(s)_____________________________________________________________________________________________________________________

Major profession_________________________________________________________________________________________________________________________________________________________________________________

Recent degree(s) from other school(s) and date(s)_________________________________________________________________________________________________________________________________________________

Present position, employer, location________________________________________________________________........................................................................

Awards, honors, fellowships, publications________________________________________________________________........................................................................

Other information, alumni news________________________________________________________________........................................................................

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