This fall, doctoral student Amanda Parry comes to Tufts as the inaugural Abriola Fellow. She will work on geotechnical research with Research Professor Jack Germaine in the Tufts Advanced Geomaterials Laboratory. Parry met Germaine in MIT’s Rock Mechanics group where she investigated fracture patterns in granite and applications for hydraulic fracturing. As part of her senior capstone project, Parry looked at what the micro-fracturing mechanisms in granite might mean for slope stability design problems.

During her junior year at MIT, Parry took an introduction to structures and soils class, and she was “especially drawn to the soils half of the semester. I liked thinking about how every infrastructure project, in one way or another, needs to be supported by some kind of earth material.”

Continued on page 3
Dear CEE Alumni and Friends,

As we begin the 2016–2017 academic year, it is my pleasure to share with you some of our activities and accomplishments from the past year. Currently, we are in the midst of construction for the new Science and Engineering Complex (SEC), which includes a total renovation of Robinson Hall and improvements to Anderson Hall. The anticipated completion date is June 2017, and we are looking forward to the new facilities, as well as less dust and noise.

The department continues to be recognized nationally, with the environmental/environmental health program ranked #38 and the civil engineering program ranked #51 by U.S. News and World Report. These rankings reflect the achievements of our faculty and students, which are highlighted throughout the newsletter. To further bolster our environmental health program, the department successfully recruited two tenure track faculty members. Dr. Amy Pickering, currently at the Stanford University Center for Global Health, will join the department as an Assistant Professor in June 2017. Dr. Pickering’s research combines social science, microbiology, and engineering to improve sanitation practices and access to clean water. Additionally, Dr. Helen Suh, currently in the Department of Health Sciences at Northeastern University, will join the department in September 2016. Dr. Suh is an internationally recognized expert in air pollution health effects, and has conducted multidisciplinary research on environmental exposure assessment and epidemiology for more than 20 years. In other faculty news, I am pleased to announce that Dr. Luis Dorfmann was promoted to the rank of full professor.

At the annual Alumni and Student Awards dinner in May, Professor of the Practice Brian Brenner received the Faculty Member of the Year award from the Tufts ASCE chapter, and we recognized the achievements of our graduating students and alumni, including Mr. Christopher Hagger and Dr. Michelle Williams, who was recently appointed Dean of the School of Public Health at Harvard University. We are grateful for the continued alumni support that allows us to provide our students with scholarships and awards to conduct independent research and to recognize their achievements. We are especially pleased to have named Ash Venkat as our first recipient of the N. Bruce and Lorry Hanes Endowed Fellowship. With the guidance of Bruce’s daughter, Vicki Hanes-Siarnacki, Professor David Gute, and Professor Emeritus Lin Brown, we have raised gifts and pledges totaling $187,000 toward our goal of $250,000. Thank you again for your support.

Please visit our departmental web page or Facebook page to follow department activities throughout the year. I hope to see you at our next Alumni and Student Awards Dinner to be held on Saturday, May 6, 2017.

With warm regards,

Kurt
Parry Named Abriola Fellow  Continued from page 1

But Parry’s interest in large-scale infrastructure dates back to a vacation out west. “My family took a road trip when I was in high school, and I remember being fascinated by the Glen Canyon Dam and the tunnels carved straight through the Rocky Mountains—and I thought it would be cool to be able to work on designing and constructing similar kinds of projects.”

Parry will join Germaine’s UT Geofluids Consortium team and says she looks forward to developing a specific thesis research topic. She would like to learn more about a particular kind of soil property and what kind of variables affect it. “For example, if temperature has an effect on the consolidation and strength properties of clays,” says Parry.

After completing her degree program, Parry says she hopes to earn her professional licensure and work for an engineering consulting company. “I’ve worked for two summers and love that environment and working on real-world infrastructure projects,” she said. Read more about Parry: go.tufts.edu/abriolafellow

RESEARCH HIGHLIGHTS

Viesca in Nature Geoscience

Assistant Professor Rob Viesca published a paper in the November issue of Nature Geoscience. Analysis of the amount of energy released during earthquakes globally suggests that heat-induced pressurization of pore fluids can weaken faults during earthquakes of all sizes.

Role of Environment in Autism

Professor and Chair Kurt Pennell and collaborators received an NIH/NIMH grant for an environment-wide association study in autism spectrum disorders (ASD), using novel bioinformatics methods and metabolomics via mass spectrometry. ASD is influenced by both genetic and environmental risk factors. The research team includes Dr. Sek Won Kong at Boston Children’s Hospital and Professor Dean Jones at Emory University, as well as experts in pediatrics, environmental epidemiology/chemistry, toxicology, metabolomics, and bioinformatics to address environmental contributions to ASD.

Nanoparticles and Gas Recovery in ACS

Engineered nanoparticles could improve oil and gas recovery by acting as contrast agents to detect, image, or modify subsurface conditions of oil and gas reservoirs. However, nanoparticle mobility can be limited by saline solutions and porous materials. Chemistry Views magazine reports Professor and Chair Kurt Pennell and colleagues’ examination of the ability of polymers and surfactants to enhance the mobility of polymer-coated magnetite nanoparticles. Read the research paper published in ACS’ journal Energy & Fuels.

QUICK HITS

University Professor and Dean Emerita Linda Abriola was named one of five Science Envoys by the U.S. Department of State. As a Science Envoy, Abriola will engage internationally at the citizen and government levels to develop partnerships, improve collaboration, and forge mutually beneficial relationships between other nations and the United States to stimulate increased scientific cooperation and foster economic prosperity. Abriola will focus on STEM education and engineering in the Middle East and North Africa and South and Central Asia. Abriola was also appointed director of the Tufts Institute of the Environment, with the goal of raising the institute’s profile both within and outside the university.

Professor Steven Chapra received the ASCE Environmental and Water Resources Institute’s 2016 Wesley W. Horner Award for his paper “Sed2K: Modeling Lake Sediment Diagenesis in a Management Context.” Chapra also received this award in 2015, making him only one of two first-author recipients who has received the award in consecutive years. The paper was considered to have “the most valuable contribution to the environmental engineering profession” in the past year.

Professor Luis Dorfmann was chosen to give the Plenary Broberg Lecture at the Joint Symposium of Irish Mechanics Society & Irish Society for Scientific & Engineering Computation. His lecture, “Nonlinear Mechanics of Soft Fibrous Materials,” presented new data showing the mechanical response in uniaxial and planar biaxial extension.

Research Professor Jack Germaine was chosen as the inaugural speaker for the Boston Society of Civil Engineers Section’s first Charles C. Ladd Memorial Lecture. His lecture covered trends in mechanically compressed sediment behavior with stress and plasticity.

Professor and Chair Kurt Pennell was elected fellow of the American Society of Civil Engineers (ASCE) for “his contributions to the development and advancement of in situ remediation technologies designed to treat contaminated soil and groundwater.” Fewer than 3.5% of ASCE members hold the position of fellow.
Marcet Research Wins Best Paper/Poster

Doctoral candidate Tyler Marcet has won Geosyntec’s seventh annual student paper contest for 2016, with a paper titled “Impacts of Low Temperature Thermal Treatment on the Activity of PCE-to-ethane Dechlorinating Consortium.” The Geosyntec contest “recognizes and rewards students performing cutting-edge research related to the assessment and treatment of chemical contaminants in soil and groundwater.” Marcet also won first place in a student poster competition for his research, “Coupling thermal treatment with microbial reductive dechlorination for the enhanced remediation of chlorinated ethenes,” with his advisors, Research Assistant Professor Natalie Cápiro and Professor Kurt Pennell. He presented the research at the Association for Environmental Health and Sciences (AEHS) Foundation’s 31th Annual International Conference on Soils, Sediments, Water, and Energy.

Brooks Receives Presidential Award

Adam Brooks, E16, received a Tufts Presidential Award for Citizenship and Public Service. The awards honor exceptional graduating students from all undergraduate and graduate programs who have exhibited civic leadership and participated in outstanding community service during their time at Tufts. Brooks was recognized for being the president of the American Society of Civil Engineers (ASCE) student chapter at Tufts and being the driving force behind the chapter’s Habitat for Humanity build day in 2015.

Summer Scholars

Three students working with CEE mentors were awarded funds as summer scholars in 2016. Jennifer Skerker, E17, studied “Impacts of Automobile Emissions from the Central Artery Highway Tunnel on Air Quality in Boston” with Professor John Durant. Michelle Sodipo, A17, studied “Borehole Sustainability in the Eastern Region of Ghana” with Professor Elena Naumova. David Stack, E17, studied “Residual Chlorine Effect for NaDCC and HOCl” with Assistant Professor Daniele Lantagne.

NEW FACES AMY PICKERING, DICK PLUMB, & HELEN SUH

Amy Pickering (Ph.D., Stanford University) will join the department in June 2017. She is currently a Senior Fellow in the Center for Innovation in Global Health and a Research Scientist in the Woods Institute for the Environment at Stanford University. Her previous and current research combines tools from multiple disciplines to study the sustainability and child health impacts of water, hygiene, and sanitation interventions in low-income settings. Pickering uses tools from epidemiology, microbiology, and social science to understand enteric disease transmission pathways among households in low-income countries and develop low-cost and scalable interventions to interrupt them. Before arriving at Tufts, Pickering coordinated an Initiative on Safe Water and Sanitation supported by the Blum Center for Developing Economies at the University of California, Berkeley.

Richard Allen (Dick) Plumb is a visiting scholar with the department this year. His primary research interest is to understand and predict how rocks deform in response to loads imposed by drilling and extracting fluids from reservoirs located deep in sedimentary basins. Currently, he is collaborating with Research Professor Jack Germaine in the Tufts Advanced Geomaterials Laboratory (TAG Lab) to better understand relationships between anisotropic mechanical properties, mineral composition and texture of clay-rich soils as they evolve during consolidation to high effective stresses, research that spans the domains of soil mechanics and rock mechanics.

Helen Suh (Sc.D., Harvard University) is an internationally recognized expert in air pollution health effects, having led multidisciplinary teams in environmental exposure assessment and epidemiology for more than 20 years. Her work has been published in more than 100 papers in leading environmental health journals. Suh performs advisory work in environmental health for numerous local, national, and international organizations. Currently, Suh is a member of the charter U.S. Environmental Protection Agency Clean Air Scientific Advisory Committee and the Institute of Medicine Committee to Review the Health Effects in Vietnam Veterans of Herbicide Exposure. She is also associate editor of the Journal of Exposure Science and Environmental Epidemiology.
Congratulations to Our 2015–2016 Graduates

Undergraduate Awards

Adam Brooks received the Howe Walker Award from BSCES/ASCE.
Miranda Seeley received the William P. Morse Scholarship from BSCES/ASCE and was this year’s recipient of the Max O. Urbahn, F.A.I.A. Scholarship from the Society of American Military Engineers (SAME) New York City Post.
Sara Pearce-Probst was this year’s recipient of the Michael E. Avtges Award from the SAME Boston Post and the Joseph Bocchino Award from SAME.

Cataldo Awards

Hannah Conroy
Jiepu (Bobby) Li
Sara Pearce-Probst
Liza Samy
Jennifer Skerker
David Stack

Undergraduate Littleton Awards

Amanda Baker
Alyssa Bonora
Adam Brooks
Connor Brown
Annie Levine
Miranda Seeley
Cameron Simko
Camila Solorzano-Barrera

Bachelor of Science in Civil Engineering

Nicholas J. Adams
Alyssa Marie Bonora
Adam Curran Brooks
Connor Brown
Keith E. Campbell
Elaine Marie Chestler
Adrian M. DiCorato
Kyra Nicole Gardiner
Jenna Nasser
Hassam

Elizabeth Ann Kirtland
Annie Xiaojun Levine
Barton Liang
Hugo C. Meggitt
Anthony Nguyen
Bradford R. Pineau
Miranda Quinn Seeley
Cameron H. Simko
Sydney Blair Smith

Bachelor of Science in Environmental Engineering

Amanda Beth Baker
Jessica Ann Haitz
Lucia Sbarcea Hiller

Camila Andrea Solorzano Barrera
Lidia Iris Tejada
Ruhui Zhao

Graduate Awards

Tyler Marcet was awarded the Jonathan Curtis Fellowship.
Ming Ming Song was awarded the Kentaro Tsutsumi Fellowship.
Mark Zablocki was awarded the William Edgerton Fellowship.
Jordan Weinstein received the Littleton Fellowship for continued graduate study.

Graduate Littleton Awards

Margaret Garcia
Madeline Wrable
Zhiyong (Derrick) Zhao
Jing Zhu

Master of Engineering

Nellie Patricia Bennett
Rachel Giovanna Brown
Matthew Jacob Haringa
Samantha J. Kendrick
Sondra Lipshutz
Richard Andrew Matson
Joseph C. Sposato
Maria Sol Ucciani
Feng Wang

Master of Science

Touhid Ahamed (August 2015)
Cameron Reid Bradley (February 2016)
Irina Gumennik (August 2015)
Ayman A. Halaseh (August 2015)
Yuchen Huang (February 2016)
Mojdeh Karkhanehchi (August 2015)
Mehar Kaur
Anthony A. Kmetz II (August 2015)
Margaret Helen Kurth (August 2015)
Karen A. Levine (August 2015)
Daniel J. Litton (August 2015)
Rhiana Davida Meade (February 2016)
Andrea Ribaya Mercado (February 2016)
Jake Mikel Serago
Danielle F. Sylvia (February 2016)
Ercan Yavuz (August 2015)

Doctoral Recipients

Na Jin
Study of the Elastic Behavior of Synthetic Lightweight Aggregates (SLAs)
Advisor: Chris Swan

Katherine Anne Muller
An Experimental and Modeling Investigation on the Use of Particle-Containing Oil-in-Water Emulsions for Controlled Release of Alkalinity in the Subsurface Environment
Advisor: Andrew Ramsburg

Laura K. Read
Planning and Communicating Risk for Nonstationary Natural Hazards
Advisor: Richard Vogel
At the 2016 Student and Alumni Awards dinner, master’s student Aishwarya “Ash” Venkat was named the first recipient of a fellowship created by the N. Bruce and Lorry Hanes Endowed Fellowship Fund. Venkat is currently performing research on mapping soil and groundwater vulnerability to agricultural pesticides in Vellore, India. Professor Emeritus N. Bruce Hanes was instrumental in establishing Tufts University School of Engineering’s Environmental Health Engineering program. He was a past president of the Association for Environmental Engineering Professors and the American Academy of Environmental Engineers. His research on contamination in the Aberjona River watershed laid the groundwork for the remediation of the Mystic Lakes described in the non-fiction work, A Civil Action.

Hanes retired from Tufts University after 32 years on the faculty, 12 of them as chair of the Tufts School of Engineering’s Department of Civil and Environmental Engineering. He was an advocate for environmental engineering education, committed to public and professional service, and an exemplary educator of scores of leaders in environmental engineering and health. He passed away in spring 2014, but will always be remembered for his warmth, generosity, encouragement, and friendliness. In honor of Hanes’ commitment to students and their growth as engineering professionals and leaders, the department established the Hanes Fellowship Fund. With the help of his daughter, Vicki Hanes-Siarnacki, Professors David Gute and Lin Brown, and alumni support, the department has raised gifts and pledges totaling $187,000 toward the goal of $250,000. Make a gift today to support student research in Environmental Health Engineering and honor Hanes’ legacy:
gotofts.edu/hanesfellowship

Hanes gives an interview on environmental health, circa 1970s.
CELEBRATING THE CEE ALUMNI
AND STUDENT AWARDS DINNER

Top row, left: Elisa Jarzan receives the department’s Chair Fellowship; Right: Mark Zablocki receives the William Edgerton Fellowship.

Second row, left: Ming Ming Song receives the Kentaro Tsutsumi Fellowship; Middle: Christopher Hagger receives the department’s Distinguished Alumni Service Award; Right: Michelle Williams receives the department’s Outstanding Alumni Achievement Award.

Third row, left: CEE alumni review student research: Right: Amanda Baker, Alyssa Bonora, Adam Brooks, Connor Brown, Annie Levine, Miranda Seeley, Cameron Simko, Camila Solorzano Barrera receive the undergraduate Littleton awards.

Fourth row: Margaret Garcia, Madeline Wrable, Zhiyong (Derrick) Zhao, and Jing Zhu receive the graduate Littleton awards.
BBC News reported on Professor Luis Dorfmann and colleagues’ research on the ballistic projection of the chameleon tongue. In a paper in the Royal Society journal, *Proceedings of the Royal Society of London A*, the team proposed a mathematical model, based on large deformation elasticity.