



UNIVERSITY of  
DENVER

# RESEARCH & SCHOLARSHIP MATTERS

Winter 2018

Publication of the  
Vice Provost for Research &  
Graduate Education,  
Corinne Lengsfeld

## IN THE NEWS

**BBC** - "Do Psychopaths Really Make Better Leaders?" research and quotes by Leanne ten Brinke, Assistant Professor, AHSS

**CPR News** - "Venerated Square Dance Caller's Story Lives on at DU Dance Library" quotes by Katherine Crowe, Curator and Associate Professor, ULIB

**NBC News** - "How Your Brain Changes After Baby" research and quotes by Pi-lyong Kim, Associate Professor, AHSS

**NPR News** - "Why it will be Tough to Hold Hotel Legally Responsible for the Vegas Shooting" quotes by Tom Russell, Professor, SCOL

**CNN News** - "Passports for Purchase: Open Citizenship Doors Around the World" quotes from George DeMartino, Professor, JKIS

**Fox News** - "Hurricanes, Wildfires Hit Construction Industry Hard" interview with Eric Holt, Assistant Professor, DCB

**9News** - "A DU Professor's Take on Terrorism" interview with Nader Hashemi, Associate Professor, JKIS

**Denver Post** - "As Neil Gorsuch's 2nd Supreme Court Term Starts, How Far to the Right Will He Go?" quotes by Alan Chen, Professor, SCOL



**Bonnie Clark, Associate Professor—Anthropology**  
Examining pigments on an Egyptian sarcophagus using a portable X-ray Fluorescence instrument at the Denver Museum of Nature and Science.

## Echo Lake, Mount Evans Laboratory Dedicated as Historic Physics Site

Providing evidence to prove an Einstein theory true is not an everyday occurrence but one of the significant contributions DU's Department of Physics and Astronomy has made to the world of Physics. Known for their research and work in the field of cosmic rays and radiation, the department located in the Division of Natural Sciences and Mathematics (NSM) has made great strides in the world of physics through research performed at DU's Echo Lake complex and Mount Evans laboratory. On October 19, 2017 the American Physical Society (APS) recognized the significance of the work done at these labs by dedicating the Echo Lake complex and Mount Evans Laboratory as a Historic Physics Site. In a memorable day for DU's Department of Physics and Astronomy, members of the department, the dean of NSM and the vice provost for research and graduate studies joined prominent members of the physics and science community for the dedication ceremony at Echo Lake. DU and the Echo Lake lab are part of the Inter-University High Altitude Laboratory, conducting research both on campus and at the lab, providing evidence for many findings regarding cosmic radiation. DU Physics and Astronomy professor, Steven Iona states the High Altitude Laboratory on top of Mount Evans and a collection of buildings at Echo Lake were home to important work that helped verify early conclusions about cosmic radiation. This included establishing Einstein's time dilation for the mean lifetime of the  $\mu$ -meson is true, that radiation is primarily made up of protons, and that the shower of collision products includes electrons, neutrons, positrons, muons and some anti-matter particles.

### FOR MORE INFORMATION

Division of Natural Sciences & Mathematics  
Department of Physics & Astronomy

**Mailing Address**  
Physics Building, Room 211  
2112 E Wesley Ave  
Denver, CO 80208

## Why Countries Imprison Migrants

Associate Professor César García Hernández is currently working on a Fulbright-supported research project comparing immigration policing practices in Slovenia and the United States. His objective is to understand how migratory patterns and political dynamics interact with legal norms to produce a reliance on confinement as a means of enforcing migration laws. While the United States confines upwards of half a million people annually due to migration-related violations, Slovenia has traditionally taken a starkly different path. However, in recent years Slovenian authorities have increased the country's reliance on confinement. In coordination with the Institute of Criminology at the University of Ljubljana's Faculty of Law and the Ljubljana-based nongovernmental organization Mirovni Inštitut, Professor García Hernández is studying why Slovenia has traditionally adopted a different strategy from the United States, and whether recent developments portend a more closely aligned future regarding policing of migration activity. In comparing legal regimes and law enforcement practices across substantially different contexts, his goal is to identify key triggers that affect the development of migration policies.



### FOR MORE INFORMATION

Associate Professor César García Hernández

#### Mailing Address

Sturm College of Law, 455D  
2255 E. Evans Ave  
Denver, CO 80208

Email: [cgarcihernandez@law.du.edu](mailto:cgarcihernandez@law.du.edu)

## New Sensors Key to Zinc's Properties

Zinc ions and the human genome are intricately intertwined. Close to 3,000 genes in the human genome contain zinc finger motifs, indicating that zinc has substantial influence in controlling cellular pathways and functions. It is known that zinc imbalance leads to impaired cognition, immune dysfunction, diarrhea, and death. However, the most basic questions about zinc functions remain elusive due to limitations in the zinc sensors currently available. Yan Qin, Assistant Professor in Biological Sciences, and her team have created a new zinc sensor based on single fluorescent protein to overcome the limitations of previous zinc sensors. Qin combined protein engineering techniques with optical imaging to generate a panel of robust, large dynamic range zinc biosensors with high spatio-temporal fidelity that enabled quantitative measurement of free zinc in multiple distinct locations. These new sensors are simpler to image, require less sophisticated microscopes, and have decreased spectral bandwidth, allowing for multiple sensors to be used simultaneously. Dr. Qin's team aims to expand the toolbox of single fluorescent protein based zinc sensors with new spectral and dynamic traits and utilize these tools to address the biological questions in living cells.

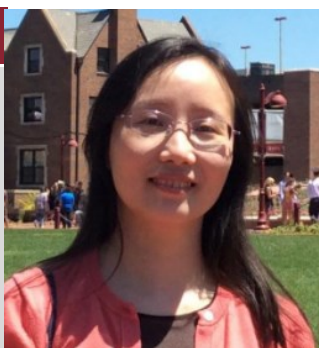
### FOR MORE INFORMATION

Assistant Professor Yan Qin

#### Mailing Address

Seeley G. Mudd Bldg, Room 330  
2101 E. Wesley Ave.  
Denver, CO 80210

Email: [yan.qin@du.edu](mailto:yan.qin@du.edu)



## GSPP Partners with Department of Corrections

The Graduate School of Professional Psychology (GSPP) and the State of Colorado have teamed up in a novel partnership to help treat and respond to prisoners with traumatic brain injury (TBI). Currently in year 4 of a 4-year contract with the Colorado Brain Injury Program, GSPP teams, under the guidance of Clinical Professor Kim Gorgens, are working with 28 justice sites (jails to specialty courts and Division of Youth Corrections) with plans to expand throughout the Department of Corrections as well. Inmates living with TBI are an understudied, vulnerable population, and are overrepresented in correctional facilities. TBI has been linked to poor impulse control, aggressive behaviors, deficits in attention span, and higher risks for substance use disorders. Symptoms often negatively impact behavior within corrections and contribute to increased recidivism rates. In addition to offering service learning opportunities and field placements for graduate students, the overarching goals of this collaboration are to increase identification of brain injury in youth and adults; to screen neuropsychological functioning and make recommendations to better support these individuals; and to develop a seamless referral protocol to ensure that, once identified with brain injury, individuals and their families will receive community care coordination and other resources necessary to be successful outside of the corrections settings.

### FOR MORE INFORMATION

Clinical Professor Kim Gorgens

#### Mailing Address:

Ammi Hyde Building, Room 229  
2450 S Vine St, Denver, CO 80208

Email: [Kimberly.Gorgens@du.edu](mailto:Kimberly.Gorgens@du.edu)



## The Center for Orthopaedic Biomechanics – a Hidden Gem in the Research World

DU is home to one of the world's most comprehensive groups of integrated laboratories available for studying issues in orthopaedics, The Center for Orthopaedic Biomechanics. Housed in the Ritchie School of Engineering and Computer Science in the department of Mechanical and Materials Engineering, the Center has received more than 20 years of continuous support from the industry, as well as NSF and NIH awards. A holistic team of faculty and student researchers from DU, lead by Professor Paul Rullkoetter, in collaboration with surgeon partners and industry representatives, work toward solutions to musculoskeletal clinical problems, improving patient function, and long-term outcomes. The Center has a long history of research relating to the development and evaluation of implants for joint replacement. Our computational tools enable virtual iterative design of total knee replacement, saving significant time during the pre-clinical development process, and enable evaluation of many more device concepts compared with traditional practices. The *in vivo* evaluations done at the Center's labs feed the development and validation of experimental and computational models to evaluate joint mechanics during simulated patient activities of daily living. These tools have been used in-house at several manufacturers, and in development of a successful commercial knee system. The

### FOR MORE INFORMATION

Professor Paul Rullkoetter

#### Mailing Address:

Engineering & Computer Science Bldg, Room 427  
2155 E Wesley Ave  
Denver, CO 80208

Email: [paul.rullkoetter@du.edu](mailto:paul.rullkoetter@du.edu)



Center for Orthopaedic Biomechanics' work has expanded into hip, spine, and shoulder, with the goal to continue to grow and provide patients, surgeons, and industry with the tools needed to enhance the longevity and quality of life for joint replacement patients.

## Innovations in Peacebuilding

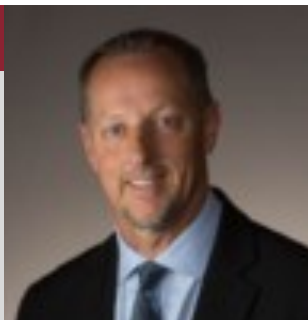
Professor Timothy Sisk, JKSI, is one of four principal investigators in the Innovations in Peacebuilding project, a two-year project by an international coalition working to creating peacebuilding in conflict-affected countries by focusing on the human rights of the citizens in those locals. The project is part of an overall set of activities supported by the joint Innovations in Peacebuilding initiative of the Carnegie Corporation of New York and the Royal Norwegian Ministry of Foreign Affairs. Innovations in Peacebuilding is a partnership of the Josef Korbel School of International Studies, University of Denver, the Chr. Michelsen Institute (CMI) in Bergen, Norway, the Nepal Peacebuilding Initiative (NPI), and the Center for the Study of Violence and Reconciliation (CSV), South Africa. The “Innovations in Peacebuilding” project seeks to advance knowledge of the social dynamics of rights-based peacebuilding at the national and local level. Specifically, the project explored new social movements that have emerged in Nepal and South Africa, and regionally in South and Southeast Asia, East Africa and the Americas, and that have organized around human rights norms. Research teams in the project examined the effects of such mobilization and of global-norm advocacy on the effectiveness of local peacebuilding in terms of avenues towards social awareness, social inclusiveness, reconciliation and conflict. The research design featured structured, focused comparison in two principal country cases – Nepal and South Africa – and in six secondary cases: Myanmar and southern Thailand in Southeast Asia, Kenya and Rwanda in East/Southern Africa, and Colombia and El Salvador in the Americas. The project’s seven major findings and five recommendations are being disseminated to policy makers within the United Nations and among key international development assistance providers, to include the United States and the government of Norway.

### FOR MORE INFORMATION

Professor Timothy Sisk

Mailing Address:  
2201 S Gaylord St. Room 1140  
Denver, CO 80208

Email: [timothy.sisk@du.edu](mailto:timothy.sisk@du.edu)



## 2017

## A RECORD BREAKING YEAR ...

### \$109,000

IN LICENSING ROYALTY  
REVENUE

### \$28,613,885

RESEARCH & DEVELOPMENT  
EXPENDITURES

### \$1,020,496

INDIRECT COST PAID BACK  
TO DIVISIONS

## And...2018 is tracking 6% higher!



## ELPS - Leader in Principal Preparation Programs

The Educational Leadership and Policy Studies (ELPS) department in Morgridge College of Education (MCE), under the guidance of Department Chair and Associate Professor, Susan Korach, has been awarded two subcontracts for their preeminent work in principal preparation programs. ELPS was selected to partner with universities seeking guidance on redesign efforts in recruitment/selection, curriculum, pedagogy, assessment, district partnerships, and clinical practice. Currently, ELPS is working with the Florida Atlantic University and North Carolina State University as mentor and support for their redesign processes. This award resulted in two \$200 thousand subcontracts to MCE and has provided opportunity for faculty and graduate assistants to engage in research and development. The goal is to help establish a national evidence-based norm for how principals are prepared. The ELPS program has prepared 279 leaders in partnership with Denver Public Schools – 82 have served as school principals and 107 as assistant principals, and others currently serving in dean and central office leadership positions. Many of these leaders have served as principals for over five years (some of the longest tenure in DPS), have led successful turnaround efforts, were pioneers in innovation status and have continued to promote leadership development throughout DPS and as adjuncts for the ELPS program.

### FOR MORE INFORMATION

Associate Professor Susan Korach

Mailing Address:  
Karen Ruffatto Hall  
1999 E Evans Ave, Room 356  
Denver, CO 80208

Email: [Martin.Margittai@du.edu](mailto:Martin.Margittai@du.edu)



### RECENT MAJOR GRANTS AWARDED

**Assistant Professor Cedric Asensio (NSM) \$1,463M**

Formation of the Regulated Secretory Pathway: a View from the Cytosol, funded by National Institutes of Health

**Executive Director Charlotte Granholm-Bentley (KIHA) \$435K**

International Brain Bank for Down Syndrome-related Alzheimer's Disease, funded by BrightFocus Foundation

**Associate Professor Michele Hanna (GSSW) \$1,920M**

CLIMB@DU, funded by Health Resources and Services Administration

**Professor Kimon Valavanis (RSECS) \$425K**

Modeling and Control of a NextGen Circulation Control Based UAV, funded by National Science Foundation

**Assistant Professor John Latham (NSM) \$1,419M**

Elucidating the Biosynthesis of Mycofactocin, an Unknown Molecule Essential for M. Tuberculosis, funded by National Institutes of Health

**Assistant Professor Scott Horowitz (NSM) \$745K**

Investing the Chaperone Activity of Nuclei Acids, funded by National Institutes of Health

**Professor Barry Zink (NSM) \$428K**

Long-distance Spin Transport in Disordered Insulators and Low-damping Metals, funded by National Science Foundation

**Associate Professor Inna Altschul (GSSW) \$462K**

Transactional Family Processes Supporting Father Involvement and Child Soci-emotional Wellbeing, funded by National Institutes of Health

**Assistant Professor Timothy Sweeny (AHSS) \$445K**

Emergent Gaze Perception in Autism Spectrum Disorder, funded by National Institutes of Health

**Professor Wenzhong Gao (RSECS) \$340K**

GOALI: Distributed Control, Optimization and State Estimation of Networked Microgrids with Enhanced Stability, funded by National Science Foundation

**Director of Research & Evaluation Margaret Franko (GSSW) \$299K**

Regional Early Childhood Home Visiting Workforce Study, funded by Washington State Department of Education

**Associate Professor Todd Blankenship (NSM) \$440K**

Mechanisms of Membrane Ratcheting During Cell Intercalation, funded by National Institutes of Health

## Events

*Events that showcase DU faculty, staff, and student excellence in research and scholarship*

April 13, 2018	Internationalization Summit
May 9, 2018	Undergraduate Research & Scholarship Symposium
May 11, 2018	IRISE Showcase

## Deadlines

*Deadlines for internal funding opportunities intended to support research and scholarship*

March 7, 2018	Spring PinS Application
March 30, 2018 (tentative)	FRF
April 4, 2018	Summer PinS Application
April 16, 2018 (tentative)	INTZ Grants

### ABOUT THE PUBLICATION

Research and Scholarship Matters is a quarterly newsletter produced on behalf of the faculty of the University by the Associate Provost for Research.

Faculty with notable accomplishments or images suitable to the front panel of the next issue are encouraged to send them to Corinne Lengsfeld, Vice Provost for Research and Graduate Education. Not all submissions can be included, but every attempt will be made to be inclusive of all high quality research, scholarship and creative works.

For back issues access:

[www.du.edu/research-scholarship/](http://www.du.edu/research-scholarship/)

### WANT MORE INFORMATION?

Want to receive emails regarding resources, celebrations, opportunities, and upcoming deadlines related to research and scholarship? Join the DU-Research list serve by clicking <https://listserv.du.edu/mailman/listinfo/du-research> and subscribing.