2016 Back to School Issue

Meet Our New PhDs in Clinical Investigation

Implementation of Daily Chlorhexidine Bathing Programs in the ICU

Jackson Musuza, MBBS, PhD, is one of the first implementation scientists to receive a degree from the graduate program in Clinical Investigation administered by UW ICTR. He earned the PhD in Clinical Investigation in summer 2016 with primary adviser Nasia Safdar, MD, PhD, and a dissertation titled Daily Bathing with Chlorhexidine Gluconate for the Prevention of Healthcare-Associated Infections: Assessment of Impact, Potential for Development of Resistance and Sustainability in the Intensive Care Unit. Members of his interdisciplinary dissertation committee included Pascale Carayon, PhD, Tonya Roberts, PhD, RN, KyungMann Kim, PhD, and Ajay Sethi, PhD, MHS. Safdar notes, “There remains a significant gap between generation of evidence and its application. Implementation science is a relatively new discipline that aims to accelerate with high fidelity translation of evidence into practice. Jackson’s work shows the importance of careful rigorous implementation and evaluation of implementation to increase the likelihood of sustainability of infection prevention practices.” Musuza’s dissertation demonstrated that daily bathing with chlorhexidine reduced the incidence of colonization by multidrug-resistant organisms, responsible for many healthcare-acquired infections, some with significant morbidity and

Angiogenesis Regulatory Pathways Offer Clues for Treatment of Age-Related Macular Degeneration

Mitra Farnoodian earned her PhD in Clinical Investigation in summer 2016 with Nader Sheibani, PhD, as her primary mentor. Her dissertation, Endogenous Inhibitors of Angiogenesis, TSP1 and PEDF, as Potential Targets for Treatment of Exudative AMD, investigated mechanisms behind age-related macular degeneration (AMD) and development of potential therapies. Barbara Blodi, MD, Peiman Hematti, MD, Michael Ip, MD, and Donna Peters, PhD, were the other members of her mentoring committee. Although AMD is a major cause of visual impairment in the elderly population worldwide, its underlying etiology remains largely unknown. The increased production of specific growth factors such as VEGF has been identified as an essential factor in the development and progression of AMD and associated choroidal neovascularization. However, safely blocking candidate growth factors has been difficult from the standpoint of short term treatment complications and also the potential for long-term systemic complications. Thus, safe and effective new treatments are needed.

Farnoodian’s doctoral research identified altered mechanisms associated with abnormal expression of endogenous angiogenesis inhibitors. She proposed that alterations in the expression of these proteins and subsequent cellular dysfunction in the eye is involved in AMD. She also investigated the utility of mimetic peptides as safe new therapeutics that effectively delay pathological progression of AMD through blocking ocular neovascularization by mimicking natural endogenous inhibitors of angiogenesis.

Sheibani notes, “The significance of Mitra’s studies stems from her delineation of a major role for
ICTR Selects Four New Pre-Doctoral Trainees

Four students have joined the ICTR TL1 career development pre-doctoral training program funded by the NIH. They are Quinton Cotton, MSSA, Katherine Luethcke, David Rutkowski, and Brian Walczak, DO.

The TL1 program has six trainees as part of the NIH Clinical and Translational Science Award. They represent the Departments of Medical Sciences, Mechanical Engineering, Medicine (Geriatrics and Infectious Disease), Orthopedics and Rehabilitation, and Population Health Sciences (Epidemiology). The other current trainees are Anna Barker and Colin Grove.

Cotton will conduct research on mechanisms that influence the development, implementation and dissemination of best practices that lead to improved health outcomes among racial and ethnic populations. He will be a full time student in the PhD CI program while working with SMPH programs to enhance diversity efforts. Cotton formerly worked in the Wisconsin Partnership Program as part of the Lifecourse Initiative for Healthy Families project.

Luethcke is earning a dual DVM/PhD degree in Comparative Biomedical Science with a focus on Clinical Translational Science (PhDCTS). Her translational research examines the interactions between genetic polymorphisms in glutathione S-transferase enzymes and exposure to environmental toxins in the development of canine bladder cancers.

Rutkowski is pursuing a PhD in Mechanical Engineering with the PhDCTS. He will apply 4D flow MRI, computational fluid dynamics simulations, and in vitro model studies to develop a patient-specific surgical planning method that will provide surgeons with information about post-surgery hemodynamics after Living Donor Liver Transplant, and increase donor safety.

Walczak, a clinical instructor in the Department of Orthopedics and Rehabilitation, has entered the PhD CI program. He will use nanotechnology and stem cell technologies to develop novel transplant, and increase donor safety.

By Robert Lemanske, Jr, MD, ICTR Co-Director, UW SMPH Associate Dean

In my new role as Co-Director of the Institute of Clinical and Translational Research and the head of the Translational Workforce Development and Education programs, it is my extreme pleasure to welcome this year’s incoming students in the ICTR Graduate Program in Clinical Investigation. Each year we introduce these students, along with new TL1 pre-doctoral trainees, in a special “Back-to-School” issue of the newsletter. I also draw your attention to our two newest PhD recipients from the Clinical Investigation program; their profiles illustrate the breadth of investigation possible in the PhD CI and how the degree catalyzes the career development of outstanding clinical and translational researchers who will continue to focus on improving healthcare for people in the state of Wisconsin and beyond.

I look forward to meeting all of you personally and working with you and our educational team members in providing experience, knowledge, and guidance that will facilitate establishing a successful and satisfying future career in clinical and translational science. Welcome to you all and congratulations!
Who can be a TL1 trainee?

All trainees are students earning a PhD in one of the ICTR Graduate Programs. Graduate programs administered by ICTR include the MS in Clinical Investigation, the PhD in Clinical Investigation (PhD CI), and the PhD in Clinical Translational Science (PhDCTS), formerly the PhD minor in Clinical Investigation.

Trainees earn a stipend, health insurance, tuition and fees, and a travel allowance. They participate in biennial meetings with their mentors and ICTR leadership, and monthly writing workshops.

More information about the application process and the Feb 1 deadline is available online (ictr.wisc.edu/TL1RFA). The 2017 RFA will be released Dec 1, 2016.

Meet Sally Wedde:

For more information about the Graduate Program in Clinical Investigation, Certificates in the Fundamentals of Clinical Research or Clinical and Community Outcomes Research, or the TL1 training program, contact Sally Wedde, ICTR education programs administrator, sally.wedde@wisc.edu. Wedde has been with the ICTR Workforce Development program since 2013. Prior to that, she worked with UW graduate students in Molecular and Environmental Toxicology and trainees of the Chemistry-Biology Interface training grant.
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choroidal endothelial and retinal pigment epithelial cell function in AMD and the novel regulatory pathways by which TSP1 and PEDF angiogenesis inhibitors contribute to ocular vascular homeostasis and AMD pathogenesis. Her findings have a direct clinical significance to our search for new therapies to restore cellular function in the eye and prevent AMD progression.”

A native of Iran, Farnoodian came to UW-Madison in 2011 and earned an MS in Bacteriology before applying to the PhD program in Clinical Investigation. Her parents watched her defense on Skype.

Farnoodian’s career goal is to participate in development and implementation of clinical trials to improve outcomes for retinal degenerative diseases. She comments, “I envision a career which incorporates both components of scientific learning and its clinical application and which will allow me to be involved in different stages of the process of clinical and translational research.”

Farnoodian adds, “My mentors in the Clinical Investigation program made an enormous difference in my own progress and ultimately I would like to pay that forward by mentoring the next generation of young scientists.”

How to Apply to the Graduate Program in Clinical Investigation

An overview of the application process is found online (ictr.wisc.edu/GraduateProgram). The deadline for MS and PhD applications is Feb 1 for entry that fall.

In contrast, forms are accepted year-round for declaring a PhD with a Clinical and Translational Science focus (PhDCTS, formerly the PhD minor in Clinical Investigation) or pursuing a Certificate in the Fundamentals of Clinical Research, another clinical research training option sponsored by ICTR (ictr.wisc.edu/CertificatePrograms).

Information about tuition and fees, guidelines for international students, and more is available through the UW-Madison Graduate School at grad.wisc.edu/admissions/

For more information, please contact Sally Wedde, ICTR education programs administrator, rec-education@hslc.wisc.edu, or check online (ictr.wisc.edu/GraduateProgram). The graduate program is administered by the ICTR Workforce Development program.