May 20th, 7:30 AM

Mini Symposia Program: 2016 UMass Center for Clinical and Translational Science Research Retreat

UMCCTS Research Retreat

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### MINI SYMPOSIA PROGRAM

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1. BIOMECHANICAL GAIT ANALYSIS FOR IMPROVING CLINICAL OUTCOMES: APPLICATIONS FOR ORTHOPEDICS, GERIATRICS AND COMMUNITY BASED RESEARCH

Moderators: Katherine Boyer, PhD, Assistant Professor, Department of Kinesiology, University of Massachusetts Amherst

Patricia Franklin, MD, MBA, MPH, Professor, Department of Orthopedics, University of Massachusetts Medical School

Presenters:

• Patricia Franklin, MD, MBA, MPH, Professor, Department of Orthopedics, University of Massachusetts Medical School
  
  PROs in TJR Clinics - Surrogate for Measures of Activity?

• David Ayers, MD, Professor and Chair, Department of Orthopedics and Physical Rehabilitation, University of Massachusetts Medical School
  
  Measures of Activity/Mobility in TJR Practice - Where Are We Now?

• Katherine Boyer, PhD, Assistant Professor, Department of Kinesiology, University of Massachusetts Amherst
  
  Examining Movement Function in Patients with Knee Osteoarthritis

• Catrine Tudor-Locke, PhD, Professor, Department of Kinesiology, University of Massachusetts Amherst
  
  Increasing Physical Activity Amounts and Intensity in Older Adults Using Low Cost Wearable Devices – “Cadence Training”

A research partnership between the UMass-Amherst Kinesiology and UMMS - Orthopedics has developed over the last five years and culminated with the completion of the Motion Analysis Clinic at UMassMemorial Hospital on the Memorial campus. The goal of this new facility is to foster and support across campus collaborations and to incorporate biomechanical testing and monitoring of joint mechanics into the standard clinical care both through use of the gait analysis lab and through the development of new monitoring devices as part of the UMass-Amherst Center for Personal Health Monitoring in the Institute of Applied Life Sciences. The initial focus will be on osteoarthritis and other orthopedic conditions to enhance physical function, mobility and patient reported outcomes. This is the expertise of junior faculty member Katherine Boyer. We seek to expand this to other conditions that impact physical functioning and mobility including obesity, diabetes, peripheral artery disease, multiple sclerosis, and aging to enhance evidence based medical treatment development and prescription for management of chronic conditions.

This symposium will provide an overview of the new shared research facilities at the UMass Memorial Hospital Campus and an introduction to the ongoing collaborative research related to mobility and physical function in clinical populations. Presenters from UMass Medical School will provide insight into the key clinical issues related to mobility and patient reported outcomes associated with Osteoarthritis, Obesity and Diabetic patient populations. Presenters from UMass-Amherst will follow with presentations on possible biomechanical tools and solutions to address the underlying source of mobility limitations and poor outcomes.

The presentation will be 7 minutes with 3 minutes for questions. Following the presentations there will be a 20 minute panel discussion on the potential for objective measures of neuromuscular health, physical function and mobility to enhance clinical practice. The goal of this discussion is to generate new ideas and facilitate inter-campus interactions.
2. INNOVATIONS FOR VULNERABLE POPULATIONS IN MASSACHUSETTS

Moderator: Melissa Clark, PhD, Professor, Epidemiology of Chronic Diseases and Vulnerable Populations, Department of Quantitative Health Sciences, University of Massachusetts Medical School

Presenters:
- Arlene Ash, PhD, Professor and Division Chief, Biostatistics and Health Services Research, Department of Quantitative Health Sciences, University of Massachusetts Medical School
- Karen Clements, MPH, ScD, Assistant Professor, Biostatistics and Health Services Research, Department of Quantitative Health Sciences, University of Massachusetts Medical School
- Wen-Chieh Lin, PhD, Assistant Professor, Department of Family Medicine and Community Health, University of Massachusetts Medical School

This research provides tools for an evidence base for an evaluation of Massachusetts Medicaid (MassHealth) programs. The specific research projects presented use claims data and additional MassHealth administrative files to examine important programmatic issues and innovations in MassHealth. One presentation will explore research into expanding the State’s existing risk models to include social determinants of health variables. Potential variables for inclusion in payment models (such as unstable housing, defined as having three or more addresses during a calendar year) have been identified. These models are being developed in support of alternative payment mechanisms for integrated delivery systems. A second presentation will explore the consequences of MassHealth’s determination to make new Hepatitis C treatments available to all patients with Hepatitis C and efforts to ensure adherence to these expensive regimens. Preliminary findings show surprisingly low uptake of this life-saving benefit. The third presentation, a study of high cost older dually-eligible beneficiaries and their use of multiple services, especially long-term supportive services, highlights the need for greater care coordination. The session chair will place these studies in the context of an ongoing collaboration between Commonwealth Medicine, a division of the University of Massachusetts Medical School, and MassHealth.

Three 15-minute presentations with 5 minutes for discussion after each and 10 minutes at the end for overall discussion.
Mobile health (mHealth) research is a growing research area requiring inter-disciplinary collaboration. From development of novel hardware and algorithms, to focus group work, usability testing, and clinical trials, mHealth research bridges the translational spectrum and involves computer scientists, hardware and software engineers, behavioral scientists, physician scientists, epidemiologists, patients, and families. We propose to highlight some of the mHealth investigations ongoing at UMass with a focus on discussing the importance of trans-disciplinary work in mHealth research.

Specifically, Dr. Ganesan will discuss his work in the field of mobile biosensor development and its potential clinical applications. Dr. Boyer will discuss development of novel apps for promoting medication adherence in HIV infected patients. Dr. Waring will discuss leveraging existing commercial social networks for participant recruitment and delivery of behavioral interventions. Dr. Thompson will discuss his work in mobile diabetes monitoring. Dr. Fang will discuss her work using novel methods for characterizing capacity for behavior change using Internet data. Last, Mr. Soni will discuss use of a novel smartphone app for cardiovascular screening in rural India.

We propose 10 minutes for each presenter, followed by a 10-minute period for discussion/questions. Audience participation will be encouraged at the completion of the presentations.
4. ADVANCING TRANSLATIONAL RESEARCH AT THE UMASS AMHERST CENTER FOR PERSONALIZED HEALTH MONITORING

Moderator: Patty Freedson, PhD, Professor, Department of Kinesiology, Co-Chair, Center for Personalized Health Monitoring Leadership Committee, University of Massachusetts Amherst

Presenters:
- Mark Miller, PhD, Assistant Professor, Department of Kinesiology, University of Massachusetts Amherst
- Rachel Walker, PhD, RN, Assistant Professor, College of Nursing, University of Massachusetts Amherst
- Carolina Campanella, PhD, Post-doctoral fellow, Department of Psychological and Brain Sciences, University of Massachusetts Amherst
- Juan M. Jiménez, PhD, Assistant Professor, Department of Mechanical and Industrial Engineering, University of Massachusetts Amherst

The Center for Personalized Health Monitoring (CPHM) is one of three centers in the Institute for Applied Life Science at UMass Amherst. Our mission is to advance life sciences to improve human health and we will present several examples of ongoing research supporting this mission. Presentations by several faculty members affiliated with the CPHM will highlight current research initiatives on the following topics: a) muscle function changes with aging and exercise (Miller), b) detecting and monitoring objective signs of cancer-related fatigue (Walker), c) community and environmental determinants of sleep health particularly in children (Campanella), and d) the effects of fluid flow on vascular disease and development (Jimenez).

We will then lead a discussion with attendees to identify strategies to engage UMMC partners with our work and explore opportunities for future research collaborations with clinicians and researchers at the UMass Medical Center.
5. **SHARK TANK-UMASS SPIN-OUT LIFE SCIENCES START-UPS**

Moderator: **Stephen McCarthy, PhD**, Distinguished University Professor, Director, Massachusetts Medical Device Development Center (M2D2), University of Massachusetts Lowell and Founder, Anterios

Presenters:
- **Guangping Gao, PhD**, Professor, Microbiology & Physiological Systems (MaPS), University of Massachusetts Medical School; Scientific Founder - Voyager Therapeutics  
  *UMass Worcester Spin-Out*  
  Dr. Gao will discuss the spin-out of Voyager Therapeutics from UMass Worcester technology

- **Steve Faraci, PhD**, CSO, Cyta Therapeutics  
  *UMass Amherst Spin-Out / M2D2*  
  Dr. Feraci will discuss the spin-out of Cyta Therapeutics from UMass Amherst technology

- **Shweta Purushe, PhD**, Biomedical Engineering and Biotechnology Program, University of Massachusetts Lowell; Scientist, Weave Visual Analytics  
  *UMass Lowell Spin-Out / M2D2*  
  Dr. Purushe will discuss the spin-out of Weave Visual Analytics from UMass Lowell technology

- **Abiche Dewilde, PhD**, Adjunct Professor, University of Massachusetts Lowell; Sr. Research Scientist, Cell QCM  
  *UMass Lowell Spin-Out*  
  Dr. Dewilde will discuss the spin-out of Cell QCM from UMass Lowell technology

The final step in Translational Science is the “Bedside”.

This step typically is accomplished with a start-up company getting the product to market. In order to indoctrinate researchers into exploring the idea of entrepreneurship, this panel will give examples of UMass life sciences technologies that have been spun out into start-up companies and the lessons learned.

Panel of company representatives will give 5-10 minute introduction into their technologies and the “story” of how the company was formed.

Questions from audience will take up the remaining time.
The Challenge of Maintaining Our Physician Scientist Workforce

Moderator: Heena P. Santry, MD, MS, Associate Professor, Departments of Surgery and Quantitative Health Sciences, University of Massachusetts Medical School

Presenters:

- **Tiffany A. Moore Simas, MD, MPH, MEd**, Associate Professor, Departments of Obstetrics & Gynecology and Pediatrics, University of Massachusetts Medical School
  
  *The Data on the Physician Scientist Workforce: Who Stays and Who Doesn’t*
  
  Dr. Moore-Simas will discuss the epidemiology of physician scientists in the modern era with a focus on specialty-based and demographic issues.

- **Maria M. Garcia, MD, MPH**, Associate Professor, Department of Medicine, University of Massachusetts Medical School
  
  *A National Perspective on the Crisis in Our Nation’s Physician Scientist Workforce*
  
  Dr. Garcia will present the results of the recent consensus conference of the Association of Academic Internal Medicine on this issue.

- **Terrence R. Flotte, MD**, Executive Deputy Chancellor, Provost & Dean University of Massachusetts School of Medicine
  
  *The Medical School’s Perspective on the Physician Scientist Workforce*
  
  Dr. Flotte will discuss strategies for recruiting and promoting physician scientists in the face of demands to sustain institutional funding and grow the institution’s overall research reputation.

- **Gregory Volturo, MD**, Professor and Chair, Department of Emergency Medicine
  
  *The Academic Medical Center’s Perspective on the Physician Scientist Workforce*
  
  Dr. Volturo will discuss balancing the needs of the clinical enterprise and optimizing hospital finances with the needs physician scientist workforce.

Physician scientists are crucial to sustaining research innovation in biomedicine and healthcare. Individually as principal investigators, or in collaboration with non-clinical colleagues, physician scientists, with their unique perspectives from the bedside, play a critical role in developing which questions to ask and the methods with which to answer them. The bench to beside pathway would not exist without the involvement in research. Yet, from basic science, to translational research, to clinical trials, to implementation science, to health services research, it is increasingly difficult to sustain the physician scientist workforce. The reasons for this are multiple and complex including increasing demands on physicians’ clinical efforts, thus constraining time for effective research, decreasing support from extramural resources with only a small percentage of grant applications being funded, overt and unconscious bias regarding the scientific capabilities of physicians, among others. This symposium session will identify the barriers to sustaining the physician scientist workforce and explore strategies to overcome them both institutionally and nationally.

Open Discussion with Audience: (20-24 minutes)