Of Molecules, Mice, and Men: PT Faculty-Led Basic and Translational Research

Section on Research
Saturday, January 26, 2019, 8:00 AM - 10:00 AM, Room 204C

Speakers:
Mary Beth Brown, PT, PhD
Keith Avin, DPT, PhD
Diane Damiano, PT, PhD, FAPTA
Matthew Owens, PT, DPT
Shane Phillips, PT, PhD
William Thompson, DPT, PhD

Take Home Points

I. **Welcome and introduction of session** by co-chairs Dr. Brown and Dr. Avin

   a. Relatively few of the basic science and translational studies are being conducted by rehabilitation specialists themselves.
   b. Promoting more PT Faculty-led basic/translational research in our PT programs will advance the research fields of physical rehabilitation and exercise physiology.

II. **Translational science and neurorehabilitation** by Dr. Damiano

   a. Mechanistic studies provide fundamental scientific insights that have transformed clinical research and practice in neurorehabilitation and we need far more.
   b. The NIH strives to foster impactful discovery and the importance of mechanistic scientific inquiry is reflected in NIH funding priorities.
   c. Recent NIH initiatives deliberately prioritize research that attempts to answer clinical problems from both clinical and basic science perspectives.
   d. A new NIH Center has been established that is dedicated to accelerating translation to speed up the pace of patient access to more effective treatments delivered in a more efficient (personalized) manner.
III. Growing and fostering translational research and health innovation that complements the academic missions' by Dr. Phillips

a. PT Faculty-led basic/translational research enhances the physical therapy educational program by fostering student growth in research methods and design.
b. Examples from the UIC model of new programmatic initiatives, strategic business partnerships and collaborations, and academic models including degree programs and residency programs can lead to research expertise in the rehabilitation.
c. Increasing PT Faculty-led basic/translational research requires fostering appropriate resources (e.g. space, equipment, institutional infrastructure), recruiting and supporting faculty, and maximizing student engagement. Examples from the UIC model will include clinical collaborations, registry development, and clinical practice and training models.

IV. Integrating faculty-led basic/translational research into the PT student experience, the new grad perspective by Dr. Owens

a. Participating in PT faculty-led research can play an important role in a student’s overall PT education, and can positively impact both personal and professional development.

V. Molecular biology - Making the PT connection by Dr. Thompson

a. What does basic/translational research actually look like in a PT program? In this segment, the audience will get an inside look at different types of basic and translational research labs, common methodologies, and, most importantly, what the data means in terms of answering PT-related questions.
b. An overview of methods will be discussed, moving from basic molecular biology techniques including immunohistochemistry, Western blotting and qPCR, moving to animal models to include transgenic mouse approaches, and then discussing how these assays translate to human studies.
c. Specific techniques will center around the use of mechanical loading in musculoskeletal tissues (i.e., bone, tendon, muscle), but the underlying concepts can be extrapolated to many other tissue types or other related methodologies.

VI. Everything you wanted to know about basic/translational science but were afraid to ask- A panel discussion with all speakers