Penn Center for Musculoskeletal Disorders
University of Pennsylvania

## *Looking Back on the 2024 PCMD Annual Scientific Symposium - November 20, 2024*

The 20th Annual Penn Center for Musculoskeletal Disorders Scientific Symposium was a great success. The symposium was held in the Smilow Rubinstein Auditorium on Wednesday, November 20, 2024. The keynote speaker, Dr. Marie B. Demay, Professor of Medicine, Harvard Medical School; Physician Investigator, Mass General Research Institute and Physician of Medicine-Endocrinology at Massachusetts General Hospital gave a well received lecture titled "Regulation of Post-Natal Growth Plate Maturation". Symposium attendees enjoyed scientific presents from new Center members Drs. Kallish, Lee and Marks. While at the symposium, attendees had the opportunity to view more than 80 posters which were judged in four categories. The following posters presenters received awards: Biomechanics Core Winners: Afua Nkansah-andoh, Andre Roots, Nat Thurlow; Histology Core Winners: Samantha Whipple, Kevin Burt, Bonhyeock Koo, Qiushi Liang, Carly Smith; MicroCT Core Winners: Wonsae Lee, Maha Essaidi; Other Research: Reem Azar, Nada Kamona, Ji-Hyung Lee, Tyler Blanch.

Stayed tuned for information on the 21st PCMD Symposium to be held on November 12, 2025.

## *Penn Center for Musculoskeletal Disorders Grant Renewal*

### Announcement - PCMD Renewal

Later this spring the PCMD center will be submitting the application for renewal and we need your help with the required NIH information. In the coming months we will be reaching out to each member to request the following information.

1) NIH biosketch in the new format
2) Your NIH Other Support Information: (with signature)
   - -Supporting Organization & Grant Number
   - -Title
   - -Project Period (Total Years)
   - -Current Annual Amount (Direct)
   - -Major Goals
3) A 1-3 paragraph description of your research program
4) A brief summary/listing of actual or potential uses of the 3 Cores we will be proposing:
   - Musculoskeletal Histology *(frozen, paraffin, plastics, also including bone histomorphometry)*
   - Biomechanical Testing *(including both small and large samples).*
   - CT Imaging *(including micro-CT).*

## *Spotlight News/Publications From Our Members*

### *Congratulations to Casey Humbyrd, MD, MBE!*

Congratulation to Casey Humbyrd on being named treasurer of the Board of Directors for the **American Orthopaedic Foot & Ankle Society** (AOFAS), the leading organization for lower extremity medicine and foot and ankle surgery.

### *Congratulations to Sue Shapses, PhD!*

Dr. Shapses was invited to be the co-author of the first of a series of articles on the topic of nutrition in medicine by the New England Journal of Medicine and the American Medical Society. There are many questions about metabolism and nutrients on bone/cartilage that are important. You can find the full publication **here**.

### *SPOTLIGHT PUBLICATION*

Tgfβ Signaling Stimulates Glycolysis to Promote the Genesis of Synovial Joint Interzone in Developing Mouse Embryonic Limbs.

**Fanxin Long, Ph.D.**


Abstract

The initial interzone cells for synovial joints originate from chondrocytes, but such critical transition is minimally understood. With single-cell RNA sequencing (scRNA-seq) of murine embryonic knee joint primordia, we discovered that heightened expression of glycolysis genes characterized developing interzone cells when compared to flanking chondrocytes. Conditional deletion of the glucose transporters *Glut1* and/or *Glut3*, in either the incipient pre-skeletal mesenchyme with *Prx1Cre* or in chondrocytes with *Col2Cre*, disrupted interzone formation dose-dependently. In contrast, deletion of *Glut1/3* in established interzone cells with *Gdf5Cre* did not have similar severe disruption of joint development. scRNA-seq revealed that *Glut1/3* deletion by *Prx1Cre* impeded Tgfβ signaling in the developing interzone cells. Direct elimination of Tgfβ signaling with *Prx1Cre* partially phenocopied the deletion of *Glut1/3* in impairing interzone formation. Tgfβ stimulated glycolysis in chondrocytes via activation of mTOR and Hif1α in vitro. The data support that the essential conversion of chondrocytes to interzone cells requires a transient elevation of glycolysis partly dependent on Tgfβ signaling.


The full publication can be found **here**

## PENN CENTER FOR MUSCULOSKELETAL DISORDERS FUNDS AVAILABLE:

**PCMD FUNDS AVAILABLE:**

*Summary Statement Driven Funding Request*

If you have a recent summary statement from an NIH grant (eligible NIH mechanisms include all "R" grants such as R03, R21 and R01 and "K" grants such as K01, K08 on their first submission—please inquire regarding eligibility of other proposal mechanisms) which requires you to run additional experiments, gather additional data, provide feasibility for an approach, or similar, we can provide small funds ($1,000-$15,000) with a very short turn-around time in order to allow you to complete these experiments and resubmit your proposal with the best chance of success. Requests for funding will be evaluated on a rolling basis and priority will be given to Assistant Professors with encouraging initial review priority scores better than ~30-35%. The format of the "Summary Statement Driven Funding Request", which is limited to **one page**, is as follows:

¨ Name of PI (must be a PCMD full member)
¨ Title of Project Request
¨ Specific Purpose of Request with Stated Outcome/Goal Referring Explicitly to the Summary Statement for Justification
¨ Research Design and Methods
¨ Budget with Brief Justification
Funding through this mechanism is available by submitting the one page proposal to **pcmd@pennmedicine.upenn.edu**

## Affiliate Member Core Funding - Now Available

***PCMD Funds Available for Affiliate members:***

Affiliate members are now eligible for financial and intellectual support for PCMD core use. Center facilities and intellectual guidance are available to learners at all levels (e.g., faculty, trainees, staff) at other institutions. To a large extent, this effort is to provide increased opportunities to engage investigators at affiliate institutions (defined broadly) that do not have extensive resources supporting musculoskeletal research.

All potential requests for support should start with an email to either a Core Director/s or to Lou Soslowsky at **soslowsk@upenn.edu** to discuss your needs. For more information on this please visit the Affiliate Member Core Funding page at
**https://www.med.upenn.edu/pcmd/affiliate-member-core-funding.html**

# Upcoming Seminars 2025

February
25

**Tuesday, February 25, 2025, 1:00 pm-2:00 pm / CRB Austrian Auditorium - NOTE TIME CHANGE**
*A Series of Local Stem Cells Governing Skeletal Diseases*
**Matt Greenblatt, MD, PhD**
Associate Professor of Pathology and Laboratory Medicine
Weill Cornell Medical College

March
4

**Wednesday, March 4, 2025, 1:30pm-2:30pm / CRB Austrian Auditorium**
*The Regulation of Musculoskeletal Disease Pathogenesis by Actin Reorganization*
**Justin Parreno, PhD**
Assistant Professor of Biological Sciences and Biomedical Engineering
University of Delaware

March

**Tuesday, March 11, 2025, 1:00 pm-2:00 pm / CRB Austrian Auditorium - NOTE TIME CHANGE**
*Bone Building and Breakdown from the City of Brotherly Love to the Lone Star State*

11

**Benjamin Levi, MD**
Dr. Lee Hudson-Robert R. Penn Chair
Director, Center for Organogenesis Regeneration & Trauma
Professor in Surgery and Bioengineering
University of Texas Southwestern Medical Center

View All Activities...

**Orthopaedic Research Club (ORC) Seminars**

**Membership Page**

**IMPORTANT INFORMATION**
**Remember to include reference to support from the Center** in your abstracts and publications. Cite Grant NIH/NIAMS P30AR069619 from the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the NIH.
Support has also been provided by the Perelman School of Medicine at the University of Pennsylvania.

Penn Center for Musculoskeletal Disorders
University of Pennsylvania

Supported by the National Institutes of Health
U.S. Department of Health and Human Services
NIAMS

Penn Center for Musculoskeletal Disorders
University of Pennsylvania
3rd Fl Stemmler Hall, 3450 Hamilton Walk
Philadelphia, PA 19104-6081
Phone: 215-898-8654
www.med.upenn.edu/pcmd

If you have any news or information that you would like included in the next issue of the Musculoskeletal Messenger newsletter, please email the information to: **pcmd@pennmedicine.upenn.edu**