

## *Looking Forward to the 2024 PCMD Annual Scientific Symposium - November 20, 2024*



Preparations are underway for the 20th Annual Penn Center for Musculoskeletal Disorders Scientific Symposium in the Smilow Rubinstein Auditorium and Commons to be held on Wednesday, November 20, 2024. The year's keynote speaker will be 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.

The day will begin at 8am with registration and poster set-up followed by scientific presentations from new Center Full and Affiliate members and PCMD Pilot Grant recipients. The symposium will also include lunch and a judged poster session with prizes awarded in four categories. The day will

conclude with a reception in the commons area of Smilow. Registration is free but is required.

## *2024 PCMD Pilot Grant Recipients Announced*

### **PCMD Pilot Grant Program**

The Penn Center for Musculoskeletal Disorders Pilot and Feasibility Grant Program has awarded four investigators with one year of funding for their pilot grant projects with a start date of July 1, 2024.

Damaris Lorenzo, Ph.D. will receive funding for his grant titled "Contribution of cytoskeleton components and adaptors to structural and energetic adaptations of skeletal muscle during exercise"

X. Sherry Liu, Ph.D. will receive funding for her grant titled "Interactions between bone and marrow adipose tissue during lactation and post weaning"

Jennifer Kalish, Ph.D. will receive funding for her grant titled "Mechanisms of tongue skeletal muscle overgrowth in Beckwith-Wiedemann Syndrome"

Lachlan Smith, Ph.D. will receive funding for his grant titled "Extended Release of Therapeutic mRNA to Treat Joint Disease in the Mucopolysaccharidoses"

## *PCMD Core News*

### ***Histology Core Updates:***

The Histology Core is pleased to announce the addition of RNA Fluorescence In Situ Hybridization using hybridization chain reaction as a full service offering. (HCR-FISH [www.molecularinstruments.com](http://www.molecularinstruments.com)) The service includes HCR-RNA FISH labeling performed by the core technical director, and all the necessary buffers and hairpin probes needed to label

your samples in three wavelengths. Users provide the core with slides mounted with OCT (regular or cryofilm) or paraffin sections, and the HCR-RNA Molecular Instruments probe for your gene of interest. The core can provide advice on probe selection and design. The cost of performing RNA FISH is \$250 + \$5 per slide for one experiment. The core is also able to provide additional processing services, including RNase-free fixation, embedding and sectioning, for a reasonable fee if the user provides freshly isolated samples.

The core also has three new items of equipment available to self-service users:

- A dental X-ray camera/machine that can be used for animal procedures such as bone fracture experiments, assessing bone calcification during fixation and decalcification studies, as well as any other research needs involving X-ray imaging.
- A low profile-blade paraffin microtome
- Hybridization oven

Please contact the Core Technical Director, Edgardo Arroyo ([arroyoe@pennmedicine.upenn.edu](mailto:arroyoe@pennmedicine.upenn.edu)) for further information on HCR-FISH, or to arrange access and training for equipment.

## *Spotlight News/Publications From Our Members*

### ***Congratulations to Rob Mauck, Ph.D. and Carla Scanzello, MD, PhD on the opening of the Cartilage Regeneration Advanced Technologies to Enable Motion Center (CReATE)!***

The Department of Veterans Affairs announced the opening of the Cartilage Regeneration using Advanced Technologies to Enable Motion Center — the CReATE Motion Center — at the Philadelphia VA Medical Center. For full article and more information on the center please visit the link below.

<https://news.va.gov/press-room/va-cartilage-regeneration-create-philadelphia/>

### ***Congratulations Team!***



### ***Latest Affiliate Member Core Funding awarded to Ani Ural, Ph.D., Associate Professor in the Department of Mechanical Engineering at Villanova University.***

Dr. Ural's research is focusing on characterizing the mechanical properties of human femoral bone using medical imaging and biomechanical testing. This project is a collaborative effort with Villanova and the University of Pennsylvania. The team aims to



verify and validate finite element models of human femora using experimental strain measurements that are captured with strain gauges and Wheatstone bridges. Dr. Ural will utilize the Biomechanics Core.

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***Kyle Vining, Ph.D. Earns Hartwell Foundation Award to Study Childhood Leukemia.***

Dr. Vining's PCMD Pilot Grant titled "*Exploring Molecular and Mechanical Mechanisms of Myelofibrosis in Bone Marrow Diseases*" receives extramural funding from the Hartwell Foundation. The full article can be found [here](#)

**Congratulations!**



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***Welcome to our new Histology Core Technical Director!***

We are pleased to welcome Dr Edgardo Arroyo as our new Histology Core technical director. Through his PhD in Neuroscience and his postdoctoral work at Penn, Yale, and at the Gene Therapy Program he has demonstrated his 25+ years of experience and knowledge of different histological fields. These include RNA-FISH, Immunohistochemistry, Electron, confocal, two-photon microscopy, basic tissue histochemistry, among others. As technical director, Edgardo, is responsible for the projects brought to the core, and makes sure they run smoothly with a quick turnaround. Edgardo is available at the 3rd floor, 344 Stemmler, to offer some insights into histological questions you may have. Please stop by!

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**SPOTLIGHT PUBLICATION**

**A missed opportunity: A scoping review of the effect of sex and age on osteoarthritis using large animal models**

**Thomas P. Schaer, DVM**

Over the past several years I have been having casual conversations with program officers at NIH and it became evident that the SABV issue is not very clear to them other than a required metric/box. In most instances and specifically to large animals (rabbits, pigs, sheep, goats, horses), people are surprised to learn that all males are castrated, usually right after birth, certain species have seasonal estrus etc. Additionally, "AGE" does not get addressed in large animal models. Often, animals enrolled in these studies are barely skeletally mature. Biological aging is characterized by progressive age-changes in metabolism and physicochemical properties of cells, leading to impaired self-regulation, regeneration, and to structural changes and functional tissues and organs. Large animal models rarely account for biological aging.

With an invited manuscript for the 30-year anniversary issue of OAC, I took this opportunity to launch a comprehensive review with current collaborators scrutinizing the published literature for SABV and AGE specifically as it relates to large animal models and OA.

Our findings are attached in the Osteoarthritis and Cartilage paper by Stewart et al: "A missed opportunity: A scoping review of the effect of sex and age on osteoarthritis using large animal

models”.

There is much work to do. As a research community using animals, we must strive for thoughtful and rigorous study design with translational and clinical relevance. If SABV and AGE are important metrics to address in translational studies demonstrating new mechanisms or the potential towards clinical utility of new therapies, then the funding landscape also needs to change.

The full article can be found [here](#).

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## ***High Impact Publications***

### **Lefebvre Lab**

#### ***Skeletal growth is enhanced by a shared role for SOX8 and SOX9 in promoting reserve chondrocyte commitment to columnar proliferation***

Arnaud N Molin, Romain Contentin, Marco Angelozzi, Anirudha Karvande, Ranjan Kc, Abdul Haseeb, Chantal Voskamp, Charles de Charleroy, Véronique Lefebvre

- Proc Natl Acad Sci USA. 2024 Feb 20;121(8):e2316969121.

#### ***SOXC are critical regulators of adult bone mass***

Marco Angelozzi, Anirudha Karvande, Véronique Lefebvre

- Nat Commun. 2024 Apr 5;15(1):2956
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## **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](mailto: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](mailto: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 2024-2025

June  
18

**Tuesday, 130pm-230pm/CRB Austrian Auditorium**

*Title: "Rotator Cuff Tear and Repair: From Bedside to Bench"*

**Kathleen Derwin, Ph.D.**

Department Vice Chair

Associate Staff, Biomedical Engineering

Director, Musculoskeletal Research Center

Lerner Research Institute, Cleveland Clinic

September

00

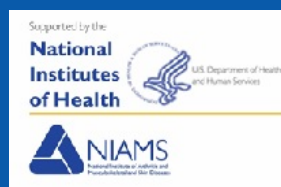
*Fall 2024-2025 Seminar Information to be announced soon*

[View All Activities...](#)

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\(ORC\) Seminars](#)

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**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.





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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\*\*](mailto:pcmd@pennmedicine.upenn.edu)

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