

Center for Musculoskeletal Research Newsletter

FEBRUARY 2024

EVENTS

ECI Webinar Series

Sponsored by the **ISBM Early Career Investigator Committee*

February 2, 2024 • 10:00 to 11:00am EST

[Register Here](#)

"Cutting-edge imaging of Calcified Tissues, Mouse Genetics, and Lymphatic Vessels in Bones"

Dr. Anjali Kusumbe

PhD and group leader at University of Oxford

This webinar will present a new and efficient pipeline for clearing and immunolabeling intact calcified tissues, allowing for superfast, single-cell resolution, and quantitative 3D imaging of skeletal elements and discovery of lymphatic vessels in bones. The application of this rapid imaging technique revealed unexpected lymphatic vascular networks in bones, challenging the conventional belief that bones lack lymphatic vessels. Using high-resolution light-sheet imaging and cell-specific mouse genetics, demonstrated the presence of lymphatic vessels in both mouse and human bones. Furthermore, this research uncovers that lymphatic vessel expand in response to genotoxic stress, driven by VEGF-C/VEGFR-3 signaling and stress-induced IL6. During lymph angiogenesis, the secretion of CXCL12 from proliferating lymphatic endothelial cells emerged as a crucial factor for hematopoietic and bone regeneration. Additionally, lymphatic vessel derived CXCL12 induced the expansion of mature Myh11+ CXCR4+ pericytes, which differentiate into bone cells and contribute to both bone and hematopoietic regeneration. The study suggests that targeting bone lymphatics could serve as a therapeutic strategy to stimulate hematopoietic and bone regeneration, particularly in the context of stress and injury, with implications for age-related impairment of bone regeneration.

CSR Friday Research Seminar

Friday, February 9, 2024 • 3:30-5:00 pm ET

Occurs every first or second Friday of the month. [Click here](#) for full schedule.

"Bone vascular deficits in older adults with type 1 diabetes: preliminary findings"

Adina E. Draghici, PhD

Instructor in Physical Medicine and Rehabilitation,
Harvard Medical School, Spaulding Rehabilitation
Hospital

&

"Bioinspired Therapies For Regenerative Medicine"

Benjamin R. Freedman, PhD

Beth Israel Deaconess Medical Center Dept of
Orthopaedic Surgery, Harvard Medical School

Contact CSRmail@partners.org for Zoom information

CSR Grant Writing Workshop II: Specific Aims



Sponsored by the **CSR Early Stage Investigators Committee*
Wednesday, February 14, 2024 • 4:00 – 5:00 pm ET

April Craft, PhD

Assistant Professor of Orthopedic Surgery
Boston Children's Hospital
Director, CSR Directed Differentiation Core

Contact CSRmail@partners.org for Zoom information

CSR Journal Club

Wednesday, February 28, 2024 • 4:00 – 5:00 pm ET

Karl J. Lewis, PhD

Assistant Professor
Meinig School of Biomedical Engineering, Cornell University

*Nicotinic Acetylcholine Receptors on Osteocytes Impact Bone Mechanoadaptation
in a Sexually Dimorphic Manner*

[Read journal article here](#)

Contact CSRmail@partners.org for Zoom information

CSR Visiting Speaker Series

Friday, March 1, 2024 • 12:00 – 1:00 pm ET

In person event: MGH O'Keefe Auditorium

55 Fruit St, Boston, MA

Lunch will be provided starting at 11:30am

Matt Greenblatt, MD PhD

Associate Professor of Pathology and Laboratory Medicine
Weill Cornell Medicine

"Skeletal stem cells as drivers of localized skeletal pathology"

CSR Meet the Editor

**Sponsored by the CSR Early Stage Investigators*

Thursday, March 7, 2024 • 4:00 – 5:00 pm ET

“Don’t lose the forest for the trees, an approach to constructive reviews”

Deborah Veis, MD, PhD

Editor-in-Chief of JBMR® Plus

Contact CSRmail@partners.org for Zoom information

SAVE THE DATE!

Musculoskeletal Research Symposium

Monday, May 6, 2024 • 8:00 am – 5:00 pm ET

In person event: MGB Assembly Row, 440 Foley Street Somerville, MA 02145

REGISTER for the event [HERE](#). Submit an abstract [HERE](#)

KEYNOTE SPEAKERS:

Alison Boyce, MD

Chief, Metabolic Bone Disorders Unit

Lasker Clinical Research Scholar

National Institute of Dental and Craniofacial Research

National Institutes of Health

and

Sundeep Khosla, M.D.

Dr. Francis Chucker and Nathan Landow Research Professor

Mayo Foundation Distinguished Investigator

Mayo Clinic College of Medicine and Science

CSR Directed Differentiation Core Mini Grant RFA

Center for Musculoskeletal Research Core mini-grants (up to \$2,000 direct costs only) will be awarded for the purpose of obtaining critical preliminary data for an upcoming grant submission. Funds must be used for CSR Core services.

[Click here](#) for application details. Email applications to CSRmail@partners.org

CSR Core Mini Grants

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[Click here](#) for application details. Email applications to CSRmail@partners.org

CSR Innovation Awards

Innovation awards are designed to promote the ability of Center investigators to visit outside laboratories to gain expertise in novel methodologies which can be integrated into one of the Resource Cores so our community can benefit from these new technologies. Funds (up to \$5000) are available to cover the costs of supplies and reagents required, as well as any necessary travel. Applications are accepted on a rolling basis. Discussion with the relevant Core director is highly encouraged prior to preparing an application.

[Click here](#) for application details. Email applications to CSRmail@partners.org

NEWS

CSR Flash Presentation Networking Event

**sponsored by the CSR Outreach Committee*

[Click here](#) to sign up!

Have you presented recently at a conference (e.g. ASBMR) **or recently published** and want to share your work? Or are you gearing up to present something new at an upcoming meeting (e.g. ORS) and want some practice? **Come to our in-person [Flash Presentation Networking Event](#).**

This is a great way to get some short presentation practice (3-5m) in a low stakes social environment and to meet other CSR trainees. **Open to early stage investigators (ESI) only**; this includes all graduate and medical trainees, postdoctoral scholars, and junior faculty. Sign up today if you're interested in presenting your work, or just want to make some new friends in the CSR!

Date TBD

In person: Zinner Breakout Room, Brigham and Women's Hospital, 70 Francis street, Boston 02115

Contact CSRmail@partners.org with any questions

NEW: CSR Mentorship Program

sponsored by the **Early Stage Investigator Committee*

Are you interested in finding a mentor to guide you on your academic journey? Are you facing challenges in certain aspects of your training or career?

The CSR has mentorship resources and offers valuable one-on-one mentorship experiences.

How to get started: email us at CSRmail@partners.org to let us know what you need help with!

Why Mentorship Matters

- Gain personalized guidance.
- Expand your network.
- Resolve issues.
- Elevate your academic and professional journey.

Recently Published by the CSR Community

Phosphate-induced activation of VEGFR2 leads to caspase-9-mediated apoptosis of hypertrophic chondrocytes. Yadav PS, Papaioannou G, Kobelski MM, Demay MB. Phosphate-induced activation of VEGFR2 leads to caspase-9-mediated apoptosis of hypertrophic chondrocytes. *iScience*. 2023;26(9):107548. Published 2023 Aug 7. doi: [10.1016/j.isci.2023.107548](https://doi.org/10.1016/j.isci.2023.107548)

Hussein AI, Carroll D, Bui M, Wolff A, Matheny H, Hogue B, Lybrand K, Cooke M, Bragdon B, Morgan E, Demissie S, Gerstenfeld L. Oxidative metabolism is impaired by phosphate deficiency during fracture healing and is mechanistically related to BMP induced chondrocyte differentiation. *Bone Rep*. 2023 Jan 23;18:101657. doi: [10.1016/j.bonr.2023.101657](https://doi.org/10.1016/j.bonr.2023.101657). PMID: 37425193; PMCID: PMC10323218.

Portales-Castillo I, Dean T, Cheloha RW, Creemer BA, Vilardaga JP, Savransky S, Khatri A, Jüppner H, Gardella TJ. Altered Signaling and Desensitization Responses in PTH1R Mutants Associated with Eiken Syndrome. *Commun Biol*. 2023 Jun 2;6(1):599. doi: [10.1038/s42003-023-04966-0](https://doi.org/10.1038/s42003-023-04966-0). PMID: 37268817; PMCID: PMC10238420.

Young C, Kobayashi T. Limited roles of Piezo mechanosensing channels in articular cartilage development and osteoarthritis progression. *Osteoarthritis Cartilage*. 2023 Jun;31(6):775-779. doi: [10.1016/j.joca.2023.01.576](https://doi.org/10.1016/j.joca.2023.01.576). Epub 2023 Feb 17. PMID: 36805475.

Mitchell DM, Singhal V, Animashaun A, Bose A, Carmine B, Stanford FC, Inge TH, Kelsey MM, Lee H, Bouxsein ML, Yu EW, Bredella MA, Misra M. Skeletal Effects of Sleeve Gastrectomy in Adolescents and Young Adults: A 2-Year Longitudinal Study. *J Clin Endocrinol Metab*. 2023 Mar 10;108(4):847-857. doi: [10.1210/clinem/dgac634](https://doi.org/10.1210/clinem/dgac634). PMID: 36314507; PMCID: PMC10211497.

Sato T, Andrade CDC, Yoon SH, Zhao Y, Greenlee WJ, Weber PC, Viswanathan U, Kulp J, Brooks DJ, Demay MB, Bouxsein ML, Mitlak B, Lanske B, Wein MN. Structure-based design of selective, orally available salt-inducible kinase inhibitors that stimulate bone formation in mice. *Proc Natl Acad Sci U S A*. 2022 Dec 13;119(50):e2214396119. doi: [10.1073/pnas.2214396119](https://doi.org/10.1073/pnas.2214396119). Epub 2022 Dec 6. PMID: 36472957.

Send your recently published papers to CSRmail@partners.org to be featured here!