

Skeletal Biology & Regeneration

Area of Concentration

UCONN Health

Biomedical Sciences PhD

Program

- Explores cellular, molecular and genetic processes related to skeletal development, skeletal diseases, injuries and their regeneration
- Basic and translational research programs addressing real human health problems including: arthritis, orthopedic injury, fracture, osteoporosis, congenital malformations of face and limbs, tooth loss, bone cancer, musculoskeletal pain, microbiome dysbiosis.
- A highly multi-disciplinary and collaborative program comprising over 30 research labs at UCONN
- A vibrant educational environment that includes scientific symposia, seminar series, social events, and opportunities for outreach

Research Areas

Stem Cells
Cartilage and Bone
Differentiation
Osteoporosis
Bone Remodeling
Fracture Repair
Biomaterials
Scaffold Design
Osteoarthritis
Biomechanics
Aging

Limb and
Craniofacial
Development
Oral Infection and
Biofilms
Osteosarcoma and
Endocrine Tumors
Drug and Stem Cell
Delivery
Rare Skeletal
Diseases

To Learn More About Our Program Please Visit:

Program Website: <https://bit.ly/35zCanA>

Introductory Video: <https://bit.ly/3qcPxlb>

Welcome

...

On behalf of the *Skeletal Biology & Regeneration* Area of Concentration faculty, welcome to UCONN Health!

It's a very exciting time to be in the field of skeletal biology and tissue regeneration. Scientific breakthroughs in a variety of disciplines, such as stem cell biology, genomics, imaging, and tissue engineering have truly revolutionized our understanding of the human skeleton.

A common misconception of visiting students regarding our program is the belief that a background in skeletal biology is needed for entering our program. In reality, we view students educated and trained outside our immediate field as a strength.

Laboratories in *Skeletal Biology and Regeneration* work in human, mouse and zebra fish systems; study transcriptional, post-transcriptional and epigenetic mechanisms regulating gene expression; utilize mouse and iPSC models of human diseases; use novel biomaterials to facilitate drug delivery and defect repair.

Our well-funded faculty are internationally recognized leaders in skeletal biology, stem cells and biomaterials. We are also leaders at the University in mentoring and teaching and maintain an active alumni network.

Please contact us if you have any questions about our program. We look forward to meeting you!

Archana Sanjay, PhD

asanjay@uchc.edu

Director of Skeletal Biology & Regeneration

Rosa Guzzo, PhD

guzzo@uchc.edu

Associate Director of Skeletal Biology & Regeneration

Versatile and flexible course curriculum

- Coursework tailored to meet *individual* goals and interests
- Basic graduate school requirements plus choice of >20 diverse offerings
- *In-depth specialty courses:*
Skeletal Biology, or Craniofacial & Oral Biology
- Cross-listed courses available from *UConn's Bioengineering Program*
- Weekly multidisciplinary journal club

Successful future careers:

Our PhD graduates have successful careers in diverse fields and institutions, working in academia, industry, health care and government, performing basic and clinical research, education, and outreach.

Faculty accepting rotation students in the 2022-2023 academic year:

[Andrew Arnold](#), M.D., Professor of Medicine and Murray-Heilig Chair in Molecular Medicine. The molecular genetic underpinnings of tumors of the endocrine glands. Role of cyclin D1 in tumorigenesis.

[Ernesto Canalis](#), M.D., Professor of Orthopaedic Surgery and Medicine. Role of growth factors and their antagonists in skeletal function, such as osteoblast cell fate and function. Role of Notch and Nuclear factor of activated T cells (NFAT) in osteoblasts *in vivo* and *in vitro*, and *in disease models* for Hajdu Cheney Syndrome and Lateral Meningocele Syndrome.

[Anne Delany](#), Ph.D., Associate Professor of Medicine. Regulation of osteoblast and osteoclast gene expression by microRNAs; Molecular mechanisms controlling bone remodeling.

[Alix Deymier](#), Ph.D., Assistant Professor of Biomedical Engineering. Elucidating the relationship between the musculoskeletal system and the acid/base balance in the body.

[Rosaria Guzzo](#), Ph.D., Assistant Professor of Neuroscience. Epigenetic mechanisms that modulate chondrocyte differentiation and endochondral bone growth.

[Liisa T. Kuhn](#), Ph.D., Associate Professor of Biomedical Engineering. Biomaterials for drug delivery and bone regeneration and repair.

[Sangamesh Kumbar](#), Ph.D., Assistant Professor of Orthopaedic Surgery. Synthesis and characterization of novel biomaterials/polymers for tissue engineering and drug delivery applications.

[Mina Mina](#), D.M.D., Ph.D., Professor of Craniofacial Sciences, Division of Pediatric Dentistry. Origin, maintenance, proliferation and differentiation of adult stem cells in dental pulp.

[Archana Sanjay](#), Ph.D., Associate Professor of Orthopaedic Surgery, Ph.D. Regulation of bone remodeling; osteoblast and osteoclast differentiation and function.

[Daniel Youngstrom](#), Ph.D., Assistant Professor of Orthopedic Surgery. Osteochondral progenitor cell biology and mechanisms of bone regeneration.