

Penn Center for Musculoskeletal Disorders Pilot & Feasibility Grants
(all grants awarded since inception of Center)

Awarded 2025-2026

Suradip Das, Ph.D., Department of Neurosurgery: “Vascularized Innervated Tissue Engineered Muscle for Regeneration following Nerve Compression.”

Liane Miller, M.D., Department of Orthopaedic Surgery: “Targeting Pathologic Synovial Fibrosis in Post-Traumatic Osteoarthritis Using Precision Biologics in a Small Animal Model.”

Awarded 2024-2025

Damaris Lorenzo, Ph.D., Department of Cell and Developmental Biology: “Contribution of Cytoskeleton Components and Adaptors to Structural and Energetic Adaptations of Skeletal Muscle During Exercise.”

Lachlan Smith, Ph.D., Department of Orthopaedic Surgery: “Extended Release of Therapeutic mRNA to Treat Joint Disease in the Mucopolysaccharidoses.”

Jennifer Kalish, M.D., Ph.D., Department of Pediatrics and Genetics, CHOP: “Mechanisms of Tongue Skeletal Muscle Overgrowth in Beckwith-Wiedemann Syndrome.”

X. Sherry Liu, Ph.D., Department of Orthopaedic Surgery: “Interactions Between Bone and Marrow Adipose Tissue during Lactation and Post Weaning.”

Awarded 2023-2024

Kyle Vining, Ph.D., Department of Preventive and Restorative Sciences, PDM and Materials Science and Engineering, School of Engineering and Applied Science: “Exploring Molecular and Mechanical Mechanisms of Myelofibrosis in Bone Marrow Diseases”

Joel Boerckel, Ph.D., Departments of Bioengineering/Orthopaedic Surgery, Perelman School of Medicine: “Determining the Effects of Maternal Exercise on Fetal Akinesia-Impaired Skeletal Development” (*awarded extramural funding from NIH/NIAMS R01HD113596-01A1*)

Foteini Mourkioti, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Mechanosensing Regulation in Skeletal Muscles”

Awarded 2022-2023

Chider Chen, Ph.D., Department of Oral and Maxillofacial Surgery/Pharmacology, School of Dental Medicine: “mTOR Mediated Ribosome Biogenesis Regulates CD4+ T Cell Activation in Osteoporotic Mice”

Carla R. Scanzello, M.D., Ph.D., Department of Medicine, Perelman School of Medicine: “Biophysical Regulation of Macrophage Fate and Function in OA” (*awarded extramural funding from NIH/NIAMS R01AR0075737 and VA BLR&D: I01-BX004912*)

Eiki Koyama, D.D.S., Ph.D., Translational Research Program in Pediatric Orthopaedics, Division of Orthopaedic Surgery, CHOP: “The Molecular Mechanisms Underlying Osteophyte Onset and Growth and its Pharmacologic Intervention”

Awarded 2021-2022

Christop Thaiss, Ph.D., Department of Microbiology, Perelman School of Medicine: “Microbiome Control of Musculoskeletal Physiology”

Melike Lakadamyali, Ph.D., Department of Physiology, Children’s Hospital of Philadelphia, and Perelman School of Medicine: “Chromatin Structural Regulation of Chondrocyte Fate in Cell Therapy” (*awarded extramural funding from NIH/NIAMS R01AR0079224*)

Michael Hast, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Development of Load-Bearing Trauma Implants Using Bioresorbable Zinc Alloy Scaffolds” (*Awarded extramural funding from the DOD CDMRP*)

Awarded 2020-2021

Kyu Sang Joeng, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “The Function of Mtorc1 Signaling in the Regulation of the Provisional Matrix During Tendon Healing” (*awarded extramural funding from NIH/NIAAMS R01AR079486*)

Patrick Seale, Ph.D., Department of Cell and Developmental Biology, Institute for Diabetes, Obesity and Metabolism, Perelman School of Medicine: “Fat and Synovial Tissue Development and Disease Remodeling in Joints” (*awarded extramural funding from NIH/NIAAMS R21 AR078650-01A1*)

Josh R. Baxter, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Stimulating Muscle-Tendon Healing by Prescribing Mechanical Loading” (*awarded extramural funding from NIH/NIAAMS R21 AR081497-01*)

Awarded 2019-2020

Jaimo Ahn, M.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “The Interplay of Notch Suppression and Hypoxia on Bone Regeneration”

Riccardo Gottardi, Ph.D., Department of Pediatrics, CHOP Pulmonary Medicine: “Impact of Scaffold Microporosity in Guiding Local Stem Cell Differentiation for Osteochondral Repair” (*awarded extramural funding from NIH/NHLBI R01HL161583-01A1*)

Lachlan Smith, Ph.D., Departments of Neurosurgery/Orthopaedic Surgery: “Emergent Nucleus Pulposus Cell Heterogeneity during Intervertebral Disc Development and Growth” (*awarded extramural funding from NIH/NIAAMS R21AR077261*)

Awarded 2018-2019

Miltiadis Zgonis, M.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Development, Maturation, and Function of Meniscal Radial Elements”

Joel Boerckel, Ph.D., Departments of Bioengineering/Orthopaedic Surgery, Perelman School of Medicine: “Role of Yap/Taz in Osteoprogenitor Cell-Induced Angiogenesis for Vascularized Bone Repair” (*awarded extramural funding from NIH/NIAAMS R01AR074948 and R01AR073809*)

Awarded 2017-2018

Nathaniel Dymant, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Murine Anterior Cruciate Ligament Reconstruction Model to Understand the Cellular Origins and Mechanisms of Repair” (*awarded extramural funding from NIH/NIAAMS R01 AR076381*)

Yangqing Gong, Ph.D., Department of Medicine, Perelman School of Medicine: “Role of Plasminogen in Mesenchymal Stem Cell Function and Post-Injury Bone Regeneration”

Carla Scanzello, M.D., Ph.D., Department of Medicine, Perelman School of Medicine: “Importance of Macrophage Responses in Osteoarthritis” (*awarded extramural funding from NIH/NIAAMS R01 AR075737 and T21 RX001757*)

Susan Volk, V.M.D., Ph.D., D.A.C.V.S., Department of Small Animal Surgery, School of Veterinary Medicine: “The Regulatory Roles of Type III Collagen in the Cartilage Collagen Network: Implications for Osteoarthritis Prevention and Treatment” (*awarded extramural funding from NIH/NIGMS R01 GM124091*)

Awarded 2016-2017

Joseph Baur, Ph.D., Department of Physiology Institute for Diabetes, Obesity and Metabolism, Perelman School of Medicine: “Targeting Nad Metabolism in Muscular Dystrophy” (*awarded extramural funding from Elysium Health*)

Yongwon Choi, Ph.D., Department of Pathology and Lab Medicine, Perelman School of Medicine: “Cell Adhesion Regulation of Multiple-Myeloma Induced Bone Destruction”

X. Sherry Liu, Ph.D., Department of Orthopaedic Surgery and Bioengineering, Perelman School of Medicine: “Mechanical Consequences of Modeling- vs. Remodeling-Based Bone Formation” (*awarded extramural funding from the NSF Award #1661858*)

Hongtao Zhang, Ph.D., Department of Pathology and Lab Medicine, Perelman School of Medicine: “Novel Cartilage-Targeting Fc Fusion Proteins as Novel and Effective Treatments for Osteoarthritis”

Awarded 2015-2016

Yeji Zhang, M.D., Ph.D., Department of Physical Medicine and Rehabilitation, Perelman School of Medicine: “Inhibition of Adam-8 to Reduce Intervertebral Disc Degeneration” (*Awarded extramural funding from the VA Merit; VA Competitive Pilot Fund*)

Oren Friedman, M.D., Department of Otorhinolaryngology, Perelman School of Medicine: “Effect Of Injury To Cartilage And Recovery Treatment With Fgf-18”

Harvey Smith, M.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Impact of Pre-Culture and In Vivo Remobilization on Engineered Disc Replacement” (*Awarded extramural funding from the VA RX002274-01A1*)

Tejvir Khurana, M.D., Ph.D., Department of Physiology, Perelman School of Medicine: “Role of the Il-15 / Il-15 α Axis in Modulating Muscle-Tendon-Bone Adaptation and Repair”

Awarded 2014-2015

Joshua F. Baker, M.D., MSCE, Department of Rheumatology & Epidemiology, Perelman School of Medicine: “Assessment of Intramyocellular Fat Accumulation in Rheumatoid Arthritis Using MR Spectroscopy” (*Awarded extramural funding from American Federation for Aging Research Foundation*)

Russ P. Carstens, M.D., Department of Renal-Electrolyte and Hypertension Division, Perelman School of Medicine: “Roles of Epithelial Splicing Regulatory Proteins in Craniofacial Development” (*awarded extramural funding NIH 1R56DE024749 and awarded R01 NIDCR*)

Foteini Mourkioti, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “A Novel Molecular Mechanism in Chronic Skeletal Muscle Injury” (*awarded extramural funding R01AR075914 NIH/NIAMS*)

Chamith Rajapakse, Ph.D., Department of Radiology, Perelman School of Medicine: “Biomechanics of Hip Fracture Assessed by MRI” (*Awarded extramural funding from the NIH R01 AR068382*)

Awarded 2013-2014

X. Sherry Liu, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Structure and Strength Recovery in Post-Lactation Bone” (*awarded extramural funding from the NIH R03 AR065145 and NSF Career Award #1653216*)

Ling Qin, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Novel Anabolic Treatment for Radiation-Induced Osteoporosis” (*awarded extramural funding from the NIH R01AR066098*)

Lachlan Smith, Ph.D., Departments of Neurosurgery/Orthopaedic Surgery, Perelman School of Medicine: “Molecular Mechanisms of Failed Vertebral Bone Formation in Mucopolysaccharidosis VII” (*awarded extramural funding from the NIH R03 AR065142 and the MPS Society*)

Hansell H. Stedman, M.D., Department of Surgery, Perelman School of Medicine: “Molecular Pattern Recognition in Acute and Chronic Injury to Muscle and Myotendinous Junction” (*awarded extramural funding from the NIH R01NS094705*)

Awarded 2012-2013

Jason Burdick, Ph.D., Department of Bioengineering, School of Engineering and Applied Science: “Acellular Fibrous Scaffolds for Stem Cell Recruitment and Cartilage Repair” (*awarded extramural funding from the NIH R01 EB008722*)

James L. Carey, M.D., MPH, Department of Orthopaedic Surgery, Perelman School of Medicine: “Development of a Large Animal Model of Osteochondritis Dissecans” (*awarded extramural funding from the NIH R01 EB008722*)

Andrew Kuntz, M.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Effects of Intra-Articular Glenohumeral Injection of a Nonsteroidal Anti-Inflammatory Drug on Shoulder Joint Mechanics in a Rat Model”

Arjun Raj, Ph.D., Department of Bioengineering, School of Engineering and Applied Science: “Single Cell Analysis of Molecular and Micromechanical Heterogeneity in Mesenchymal Stem Cells and Engineered Tissues”

Awarded 2011-2012

Struan F.A. Grant, Ph.D., Department of Pediatrics, Children’s Hospital of Philadelphia and Perelman School of Medicine: “Utilization of ChIP-seq to Identify Genes Regulated by Osterix”

Motomi Enomoto-Iwamoto, DDS, Ph.D., Department of Orthopaedic Surgery, Children’s Hospital of Philadelphia and Perelman School of Medicine: “Tendon Repair by Retinoic Acid Receptor Agonists” (*awarded extramural funding from the NIH R21 AR062193*)

Ian N. Jacobs, M.D., Department of Otorhinolaryngology: Head and Neck Surgery, Children’s Hospital of Philadelphia and Perelman School of Medicine: “A Pilot Study for the Development of a Rabbit In-Vivo Tissue- Engineered Cartilage Graft for Pediatric Laryngotracheal Reconstruction” (*awarded extramural funding from The Triological Society*)

Awarded 2010-2011

Susan W. Volk, VM.D., Ph.D., Dipl ACVC, Department of Small Animal Surgery, School of Veterinary Medicine: “The Role of Type III Collagen in Bone Repair and Regeneration”

Jaimo Ahn, M.D., Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Toward the Identification of Molecular Pathway Alterations in Aged Fracture Healing: A Pilot Study Utilizing a Genetic Model of Senescence” (*awarded extramural funding from the NIH R03 AG040670*)

Shannon Fisher, M.D., Ph.D., Department of Cell and Developmental Biology, Perelman School of Medicine: “Requirement for Osterix in Skull Formation and Maintenance of Adult Bone in Zebrafish” (*awarded extramural funding from the NIH R21 DE021509*)

Awarded 2010-2011 (Jointly with IOA)

Olena Jacenko, Ph.D., Department of Animal Biology, School of Veterinary Medicine: “Aging of the Hematopoietic Niche” (*awarded extramural funding from the NIH R01 DK088334-01*)

Eileen M. Shore, Ph.D., Departments of Orthopaedic Surgery and Genetics, Perelman School of Medicine: “Modulation of Progenitor Cell Differentiation through BMP Signaling” (*awarded extramural funding from the NIH R01 AR041916-15*)

Kurt D. Hankenson, DVM, Ph.D., Department of Animal Biology, School of Veterinary Medicine: “Notch Signaling in Bone Regeneration” (*awarded extramural funding from the DOD CDMRP*)

Awarded 2009-2010

Ling Qin, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Mechanisms of EGFR Action on Bone” (*awarded extramural funding from the NIH R01 DK095803*)

Steven Scherer, M.D., Ph.D., Department of Neurology, Perelman School of Medicine: “Are N-cadherin and L1 Adhesion Molecules Required for Recovery of Muscle Strength after Nerve Injury?”

Nader M. Hebel, M.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “A Pre-Clinical Rodent Model of Intervertebral Disc Autograft Transplant” (*awarded extramural funding from the DOD/CDMRP/PROP OR090090*)

Awarded 2008-2009

Sunday O. Akintoye, BDS, DDS, MS, Department of Oral Medicine, School of Dental Medicine: “Orofacial Bone Marrow Stromal Cells Promote Bisphosphonate-Associated Jaw Osteonecrosis” (*awarded extramural funding from the NIDCR R21 DE022826*)

Margaret M. Chou, Ph.D., Departments of Cell and Developmental Biology, Perelman School of Medicine: “Mechanisms of TRE17/USP6 Function in the Etiology of Aneurysmal Bone Cyst” (*awarded extramural funding from the NIH-NCI R01 CA168452 and R21-CA18601*)

Kenneth W. Leichty, M.D., Department of Surgery, Perelman School of Medicine: “The Role of Inflammation in Regenerative Fetal Tendon Wound Healing” (*awarded extramural funding from the NIH DP2 DK083085*)

Kathleen M. Loomes, M.D., Department of Pediatrics, Children’s Hospital of Philadelphia: “The Role of Jag1 in Osteogenesis”

Eileen M. Shore, Ph.D., Departments of Orthopaedic Surgery and Genetics, Perelman School of Medicine: “Analysis of an ACVR1 Knock-in Mouse Model for FOP” (*awarded extramural funding from the NIH R01 AR041916-15S1*)

Awarded 2007-2008

Sherrill L. Adams, Ph.D., Department of Biochemistry, School of Dental Medicine: “Collagen III-deficient Mice as a Model for Musculoskeletal Wound Repair”

Kurt D. Hankenson, DVM, Ph.D., Department of Animal Biology, School of Veterinary Medicine: “Regulation of Bone Formation by Novel Activators of Canonical Wnt Signaling”

Awarded 2006-2007

Robert J. Pignolo, M.D., Ph.D., Department of Medicine, Perelman School of Medicine: “Stem Cell Rescue of the Osteoporotic Phenotype in a Mouse Model of Accelerated Aging” (*awarded extramural funding from the NIH R01 AG028873*)

Robert L. Mauck, Ph.D., Department of Orthopaedic Surgery, Perelman School of Medicine “Meniscus Repair with a Novel Aligned Nanofiber Scaffold” (*awarded extramural funding from the NIH R01 AR056624 and the VA RR & D*)

Christopher S. Chen, M.D. Ph.D., Department of Bioengineering, School of Engineering and Applied Science: “Mechanotransduction in Mesenchymal Stem Cells” (*awarded partial funding as Co-Investigator on NIH P41 EB001046*)

Pedro K. Beredjiklian, M.D., Department of Orthopaedic Surgery, Perelman School of Medicine: “Role of Hyaluronic Acid Receptors in Tendon Healing” (*awarded extramural funding from the NIH R21 AR052393*)