



News from the Core!



March, 2008

Highlights from 2007, a productive year for the MRRCC:

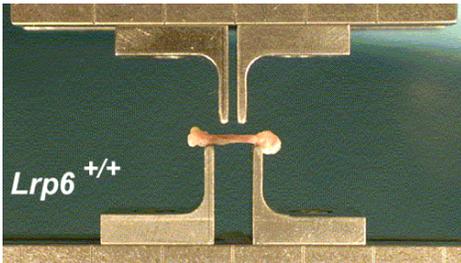
- Call for proposals garners 13 applications for funding of a new Pilot & Feasibility study
- MRCC staff speak at Yale "Workshop on Tools for Skeletal Research for Trainees & Junior Faculty"
- Usage of MRCC continues to climb with nearly 100 requests for Core facilities in 2007
- Imaging Core to receive new microCT machine through an NIH shared instrument

MRRCC Distinguished Lecturer – Mark your calendar now!

On October 17, the MRRCC will be hosting Dr. Lori Setton, Mary Milius Yoh and Harold L. Yoh, Jr. Bass Professor of Biomedical Engineering and Associate Professor of Orthopaedic Surgery. At noon that day she will be presenting a lecture to medical and research staff on her research into the role of mechanical factors in the degeneration and repair of soft tissues of the musculoskeletal system, including the intervertebral disc, articular cartilage and meniscus. Dr. Setton will spend the remainder of the visiting and critiquing the Cores.

Research News

This issue we're highlighting our second Pilot & Feasibility project, "The role of the Wnt Co-receptor Lrp6 in regulation of bone density, growth and repair," with Dr. Betsy Ross from Weill Cornell Medical College as the PI. Betsy and her colleagues have identified a mutation in the Lrp6 gene that presupposes mice to show net hyperactive Wnt signaling similar to the biochemical effect of HBM mutations in human Lrp5 genes. The proposal calls for testing of bone morphology, mechanical strength, density, and mineralization at several key ages in these animals, using techniques and equipment available in all of the MRRCC Cores. Initial mechanical testing revealed increased mechanical strength of



femurs from 6 week old Lrp6Cd/+ mice to bending. Histological processing is has revealed differences in osteoblast/osteoclast and thickness of the growth plate among samples, which so far are being evaluated while blinded to genotype. Initial microCT results have been surprising. Measures of 6 week old Cd heterozygous mice revealed decreased trabecular number and increased trabecular spacing, while 6 week old Lrp6+/- males showed decreased total mineral density, but trabecular number was elevated and trabecular spacing was diminished.

If borne out by further measures, then the impact of Lrp6 action must differ significantly from Lrp5. Therefore, hyperactive mutation of Lrp6 may well have a complex impact on bone metabolism. Initial examination of osteoclasts by TRAP staining of samples form 6 week old Lrp6Cd/+ mice suggests osteoclasts are increased in number/area; thus, the hyperactive Lrp6 mutation may have the net effect of increasing osteoclasts, driving bone modeling toward reduced trabecular number and increased spacing, as seen on microCT.

Please visit our website

Contact us for more detailed information regarding analyses of musculoskeletal tissues by our Applied Statistics, Analytical Microscopy, Imaging, and Mechanical and Material Assessment Cores:

<http://www.hss.edu/repair-regeneration-center.asp> or

<http://intranet/researchlabs/CoreFacilities.asp>