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Michigan Technological University
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309 Minerals and Materials Eng. Bldg.
1400 Townsend Drive
Houghton, MI 49931-1295

Publications on PubMed

Research Interests: The role of mechanical forces in bone adaptation, bone cell signaling, stress fractures, osteoporosis, and tissue engineering

Research Projects:

1. Bone Metabolism in Black Bears: Analysis of serum hormones and bone remodeling markers in hibernating bears

Hibernating bears as a model for preventing disuse osteoporosis

Parathyroid hormone may maintain bone formation in hibernating black bears (Ursus americanus) to prevent disuse osteoporosis

Article in the NewScientist
Article on ScienCentral

2. Bone Cell Mechanotransduction: Mechanically induced bone cell signaling and gene expression

Osteoblastic cells have refractory periods for fluid-flow-induced intracellular calcium oscillations for short bouts of flow and display multiple low-magnitude oscillations during long-term flow

3. Bone Tissue Engineering: Mechanical stimulation in 3-dimensional bone cell cultures

Mechanical stimulation of MC3T3 osteoblastic cells in a bone tissue-engineering bioreactor enhances prostaglandin E2 release

4. Bone Mechanics: Bone material properties and modeling of fluid flow in bone

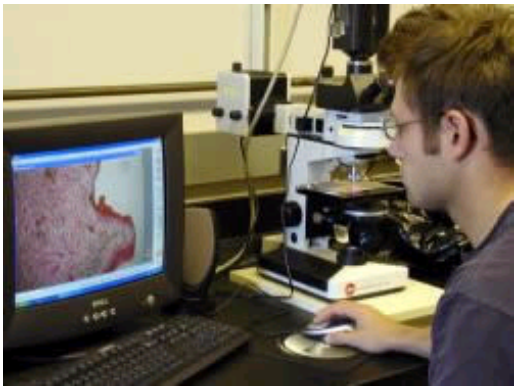
A fatigue microcrack alters fluid velocities in a computational model of interstitial fluid flow in cortical bone

The tensile strength of black bear (Ursus americanus) cortical bone is not compromised with aging despite annual periods of hibernation

View Movie of breaking bear bones 2 Mb WMV

5. Quantitative Histomorphometry of Bone: Bone remodeling and fatigue microcrodamage

Bone strain and microcracks at stress fracture sites in human metatarsals



Boneheads Softball team

Courses:

BE 3750: Human Biomechanics—Fall

BE 4100/5100: Cell and Tissue Mechanics—Spring

The other Dr. Donahue

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