Mechanical and Aeronautical Engineering Department
University of California Davis
Davis, California 95616-5294

2006-2007 Monthly Seminar Series on Space Research

19 October, 16 November, **18 January**, 15 February, 19 April, 17 May
3rd Thursday 4:00-5:00 pm

SKELETAL PROBLEMS ASSOCIATED WITH SPACE FLIGHT

R. Bruce Martin, Ph.D.
Department of Orthopaedic Surgery, UC Davis Medical Center

Date: **18 January 2007 Thursday** Time: **4:10-5:00 pm** Location: **1062 Bainer**
Refreshments will be provided at 4:00 p.m.

ABSTRACT

Hosted by: Professor Nesrin Sarigul-Klijn

It is known that astronauts lose bone mass as a result of being subjected to a weightless environment for periods of time measured in months. The purpose of this talk is not to review such bone loss in astronauts, but to explore what is known about bone that is relevant to such losses with a view toward a) better understanding the skeletal system in the context of weightlessness and b) eventually finding a means of more effectively preventing such losses. Basic aspects of the problem include the fact that bone weighs twice as much as other body tissues, and the amount of food energy needed for survival is a direct function of body weight. Consequently, bones have evolved to "shrink" if they are not loaded. This feedback system has a "set point" and it would perhaps be useful to reset an astronaut's "mechanostat set point." Recently, two families have been found whose set points appear to be abnormally high. This offers a peek into the skeletal system that may have implications for astronauts as well as bone loss disorders here on earth.

ABOUT THE SPEAKER

Professor Bruce Martin performs research in the Lawrence J. Ellison Musculoskeletal Research Center and is interested in biomechanics of skeletal system, with particular interest in the relationship between biology and structure and between structure and mechanical properties. He is also interested in the mathematical analysis of bone biology and how the skeleton adapts to its mechanical environment. Other specific interests include postmenopausal and disuse osteoporoses, fatigue of bone, stress fracture etiology. Dr. Martin served as the director of Ortho Research laboratories for many years. At present, he is a professor of Orthopaedic Surgery, Medicine.

For more information about
SpaceED (Space Engineering Research and Graduate Program) or the seminars please contact
Professor Nesrin Sarigul-Klijn at (530)-752-0682 or nsarigulklijn@ucdavis.edu
Members of the campus community and visitors from the region are welcome to attend the seminar series.
Sign-in is required at the event. SpaceED seminar will replace MAE297 seminar on 3rd Thursdays.

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