



2017年7月3日

日本機械学会北海道支部 バイオメカニクス懇話会

第29回講演会

(共催：日本機械学会北海道支部)

主査 大橋 俊朗

下記の要領にて第29回講演会を開催いたします。本講演会は日本機械学会北海道支部特別講演会と共催いたします。皆様のご参加をお待ちしております。

#### 記

日時：2017年7月10日(月), 16:30~18:00

場所：北海道大学大学院工学研究院・工学部 大会議室 A1-17 室

<http://www.eng.hokudai.ac.jp/building/?place=outer>

講演：

16:30~17:15

「Biotribology of Natural Synovial Joint and Joint Prosthesis」

Prof. Yoshinori Sawae, Professor, Faculty of Engineering, Kyushu University, Japan

The word “Biotribology” was defined in 1971 to embrace “all aspects of tribology (friction, wear and lubrication) concerned with biological systems”. It covers many events encountered during our daily life as research interests, for example, friction between a glass and fingers for gripping, wear of teeth during brushing and so on. Among them, the lubrication mechanism of natural synovial joint is a popular research topic in biotribology. The smooth movement of human diarthrodial joints has attracted huge interests of researchers not only in biomedical field but also in engineering field, since the typical friction coefficient of synovial joints is extremely lower, around 0.001, compared with that of man-made bearing systems, those friction coefficient is usually 0.1 to 0.01. The wear of prosthetic joint materials is another important issue for biotribology. Metal ions and polymer wear particles released from sliding surfaces of joint prosthesis implanted in human body are usually very toxic and exert adverse reactions in the surrounding living tissue. Therefore, it is recognized as a main factor restricting the lifetime of current artificial joints. This presentation attempts to present recent progress of biotribology research on the natural synovial joint and joint replacements.

17:15~18:00

「Biomechanics can Induce Soft Tissue Remodeling: A Strategy for Cartilage Tissue Engineering」

Dan Bader DSc, Faculty of Health Sciences, University of Southampton, UK and Department of Biomedical Engineering, Eindhoven University of Technology, The Netherlands

It is well established that in the healthy state of soft tissues, appropriate levels of physical activity are important in providing mechanical stimuli for cells to remodel their extracellular matrix. This motivates the use of biomechanical conditioning of cell-seeded constructs in the tissue-engineered functional repair of articular cartilage. This presentation will describe the relative success of such a strategy, involving both compressive and shear loading of chondrocyte-seeded 3D hydrogel constructs. In addition, it will highlight some of the signalling pathways associated with these mechanotransduction events.

問い合わせ先：

大橋 俊朗 北海道大学大学院工学研究院人間機械システムデザイン部門

Tel&Fax: 011-706-6424, Email: ohashi@eng.hokudai.ac.jp