



2019年6月23日

日本機械学会北海道支部 バイオメカニクス懇話会
第36回講演会

(共催：日本機械学会北海道支部，日本機械学会バイオエンジニアリング部門「計測と力学-生体への応用-」研究会)

主査 大橋 俊朗

下記の要領にて第36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，日本機械学会バイオエンジニアリング部門第62回「計測と力学-生体への応用-」研究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：2019年7月4日（木），16:00～17:30

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：

16:00～16:45

「Complex Adaptive Cancer Immunotherapy」

Prof. In-San Kim

Center for Theragnosis, Biomedical Research Institute, Korea Institute of Science and Technology (KIST), Korea/KU-KIST Graduate School of Converging Science and Technology, Korea University, Korea

Immunotherapy is revolutionizing the treatment of cancer. The current immunotherapeutics that work by taking the brakes off T cells have been particularly transformational, dramatically improving outcomes for some cancer patients. But we still need to answer to those patients whose cancers do not respond to these immunotherapeutics, and those whose cancers respond initially but then become resistant to the treatments. The more we study the major issues of tumors, the more we come to realize that they cannot be understood in isolation. Tumors are systemic problems, which mean that they are interconnected and interdependent. Cancer cells are present within a complex adaptive ecosystem consisted of associated cells including immune cells, connective tissue cells, endothelial cells within a scaffold of matrix altogether forming tumor microenvironment. Cancer, perhaps uniquely among human illnesses, is a disease that arises through Darwinian interactions of microenvironmental selection and phenotypic adaptation, which are both causes and consequences of its complexity and heterogeneity. Since a life has begun 3.5 billion years ago, they ensured continuous interaction between the diverse species, both cooperative and fiercely competitive in nature. So they have developed complex and sophisticated immune system to survive. Can we develop better systems to fight against cancer than our own immune system? Even though we do not understand completely our own immune systems, we could try at least to awaken our own

immune system to fight against cancer. In an attempt to trigger our own immunity against cancers, we utilized the characteristic of genetic instability to our advantage, as the expression of cancer cell neoantigens triggers immunity against cancer cells, which can be called “intrinsic cancer vaccination”. For this purpose, we designed protein nanocages or extracellular vesicles (exosomes), which hold not only ligands for enhancing cancer cell phagocytosis but also drugs for inducing immunogenic cancer cell death. This strategy will allow us to avoid using known tumor specific antigens, ex vivo manipulation and adoptive cell therapy, instead, efficiently present neoantigens of cancer cells to our immune system. This strategy could be combined with other treatment modalities to potentiate the therapeutic efficacy.

16:45~17:30

「H-TRAIN : Hongreung Biomedical Cluster」

Prof. Kuiwon Choi

Principal Investigator, H-TRAIN Program, Korean Institute of Science and Technology (KIST), Korea

H-TRAIN Program is a translational research program developed in 2018. The purpose of the program is to facilitate commercialization of the biomedical technologies developed in KIST. This program is originated from Translational Research Center (TRC) Program in KIST since 2012, then updated and renamed as H-TRAIN. Hongreung is the area where the origin of Korean R&D since 1966 when KIST was developed. KAIST has once also been located in this area, although KASIT moved to other city in late 1980's. Around this area there exist more than 10 universities, 2 major university hospitals, 2 specialized government hospitals and 3 government-sponsored research institutes including KIST. Approximately 5,000 ph.D.s are working in this area. Recently, Seoul city developed the Seoul Bio-hub in this area to promote industrialization of biomedical technologies as an accelerating organization. For now, there are more than 30 start-ups are under incubation and more start-ups will be accommodated soon. In Korea, the biomedical area is now considered as one of main future growth engine of Korean economy. Thus a lot of efforts both from the Government and local governments has been put into this area. The role of GRIs becomes more emphasized and the industrialization of the biomedical technologies is essential to the future of Korea. This is why H-TRAIN was born in KIST. In this presentation, I will introduce the H-TRAIN program along with the future of Hongreung Biomedical Cluster.

問い合わせ先：

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