

Seminar Announcement

- All Are Welcome -

Speaker: **Associate Professor Matthew Chang**
Department of Biochemistry,
Yong Loo Lin School of Medicine,
and Synthetic Biology Research Consortium,
National University of Singapore



Title: “Synthetic biology for therapeutic applications”

Date : 8 July 2014 (Tuesday)

Time : 11.00am – 12.00pm

Venue: Creation Theatre, Matrix Level 4, Biopolis

Host : Prof Maurice van Steensel

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Abstract of the Seminar:

Synthetic biology aims to engineer genetically modified biological systems that perform novel functions that do not exist in nature, with reusable, standard interchangeable biological parts. The use of these standard biological parts enables the exploitation of common engineering principles such as standardization, decoupling, and abstraction for synthetic biology. With this engineering framework in place, synthetic biology has the potential to make the construction of novel biological systems a predictable, reliable, systematic process. While the development of most biological systems remains largely ad hoc, recent efforts to implement an engineering framework in synthetic biology have provided long-awaited evidences that engineering principles can facilitate the construction of novel biological systems. In this talk, our recent efforts to develop therapeutic microbes with programmable functionalities will be presented. In particular, an emphasis will be placed on our development of synthetic commensal microbes, equipped with clinically relevant functionalities such as pathogen detection, autonomous therapeutic molecule release, directed movement, and biofilm reduction, that showed effective antimicrobial and anticancer activities. This development suggests the possibility that commensal microbes could be reprogrammed for prevention and treatment of target diseases, which may provide novel therapeutic strategies that are complementary to current clinical regimens.

About the Speaker:

Matthew Chang has made contributions in the fields of synthetic biology and biochemical engineering, publishing over 50 peer-reviewed articles. His research interests lie in synthetic biology of microbial systems, with particular emphasis on the development of synthetic microbes that perform programmable functions for engineering applications such as infection treatment, functional probiotic development, and biochemical production. In particular, he has pioneered the development of synthetic microbes that show novel programmable therapeutic behaviors. His work has received international recognition and is featured in leading media agencies worldwide. He has been honored with the Scientific and Technological Achievement Award from U.S. Environmental Protection Agency, and serves as an editorial board member for ACS Synthetic Biology, Microbial Informatics and Experimentation, and Biotechnology Journal.

<http://synbiolab.org/>