WPI-PRIMe

Synthetic Biology Workshop

7.15 TUE
14:15–18:00

Venue Hankyu Corporation-Sanwa Bank Hall, 3F, Icho Kaikan, Suita Campus The University of Osaka

Fee Free

WHERE BIOLOGY MEETS INNOVATION

This workshop brings together global scholars in synthetic and systems biology to explore innovations in cellular engineering, regenerative medicine, and bioluminescence.

REGISTER HERE

SCAN ME

https://forms.office.com/r/SQFb2Cerkq

Application Deadline
By 12:00 noon on July 14

(Drop-in participation is also welcome)

① Nika Shakiba

14:15

Probing and programming multicellular systems for regenerative medicine

② Toshimichi Yamada

14:50

Synthetic organizer cells guide development via spatial and biochemical instructions

③ Takeharu Nagai

15:25

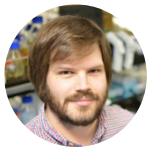
Expanding the frontier of autonomous bioluminescence: From single cells to glowing plants

-Coffee Break 16:00-

④ Carl de Boer

16:15

Towards breaking the cis-regulatory code



⑤ Matt Rich

16:50

Toward whole-animal synthetic biology in C. elegans

⑥ Kenji Kamimoto

17:25

Decode, predict, and control biological systems through single-cell omics and integrative modelling approaches

***Exchange event "WPI-PRIMe Happy Hour" will take place in room 307, 3F, CoMIT.**

Organizer： Nozomu YACHIE （WPI-PRIMe, The University of Osaka）

Contact

Research Planning and Management Office,
WPI-PRIMe, The University of Osaka

planning@prime.osaka-u.ac.jp

WPI PRIMe The University of Osaka

Program Overview: Speakers and Topics

01

Nika Shakiba

The University of British Columbia, Canada
PRIMe, The University of Osaka, Japan

Probing and programming multicellular systems for regenerative medicine

This talk will explore our ongoing work towards unraveling the rules that shape inequality in PSC populations, leveraging systems and synthetic biology tools. In doing so, we seek to open doors to engineering new tools to track and control the competition potential of cell therapies for regenerative medicine applications.

02

Toshimichi Yamada

University of California,
San Francisco (UCSF), USA

Synthetic organizer cells guide development via spatial and biochemical instructions

We engineered “synthetic” organizer cells that self-assemble around ESC aggregates with defined spatial structure and generate user-controlled WNT signaling gradients. By controlling the range and steepness of the gradients, we systematically directed tissue morphogenesis.

03

Takeharu Nagai

SANKEN, The University of Osaka

Expanding the frontier of autonomous bioluminescence: From single cells to glowing plants

Autonomous bioluminescence systems, which encode both luciferase and luciferin biosynthesis genes, enable continuous, substrate-free imaging in living cells and organisms. Recent advances include multicolor variants for cellular applications and the development of glowing plants as sustainable, electricity-free light sources with potential environmental benefits.

04

Carl de Boer

The University of British Columbia,Canada

Towards breaking the cis-regulatory code

The talk will discuss previous, current, and future work regarding efforts to combine synthetic genomics and machine learning to crack the cis-regulatory code, the code by which DNA sequences control gene expression.

05

Matt Rich

The University of Utah, USA

Toward whole-animal synthetic biology in C. elegans

The talk will present perspective and potential avenues for developing the tools required for massively-parallel synthetic biology in C. elegans.

06

Kenji Kamimoto

Research Institute for MicrobialDiseases(BIKEN),
PRIMe, The University of Osaka, Japan

Decode, predict, and control biological systems through single-cell omics and integrative modelling approaches

We aim to decipher the principles of complex biological regulation and translate them into predictive simulation models. In this talk, we will present our recent advances in integrating single-cell omics with continuous optical measurements to uncover the spatiotemporal dynamics of cellular behavior.