



Workshop on Systems Biology for Innovative Bioeconomy
14 – 16 February 2018
Auditorium, Sirindhorn Science Home, Pathum Thani

Organized by: National Center for Genetic Engineering and Biotechnology
National Science and Technology Development Agency
Ministry of Science and Technology

In collaboration with : Wageningen University & Research, the Netherlands
SAFE-Aqua project

Rationale and background:

Systems biology is an interdisciplinary field striving to reveal complex biological processes in an integrated and holistic approach. This newly emerged subject in modern biology has markedly gained increasing interest as a promising strategy to give in-depth insights on molecular mechanisms responsible for driving complex biological processes of lives. With such insights, engineering novel biological systems with desirable functions becomes possible. However, strong background in biology, computational modelling and mathematics are required to understand a complicated dataset extracted from dynamic processes in biology. Various multi-omics tools can be applied to study interactions between components of biological systems in different levels from genomics, proteomics, metabolomics and phenomics to give answer on how these interactions can give rise to functions of specific bio-systems from molecules, cells, organisms, or entire species through a sophisticated modelling strategy. Systems biology is undoubtedly now considered as central to all areas of biology and medicine, highlighting its importance in today's research in life sciences.

Objectives:

1. To update knowledge and information on systems biology from world-class experts and leading researchers from local institutes, focusing from its basic concept, multi-omics tools, and applications of systems biology on different biological questions for bioeconomy
2. To share experience on bioinformatics and computational analysis of bio-dataset in systems biology in the hand-on workshop by experts from WUR
3. To strengthen and expand research network in systems biology among researchers in academic and industrial sectors for further and future collaboration

Language: The whole course will be given in English

Registration Deadline: 2 February 2018

Registration fee:

Lecture (14 February 2018)	Student	1,500 Baht
	General	2,000 Baht
Lab (15 – 16 February 2018)	Student/General	2,000 Baht

****Participants of workshop session are requested to bring their own laptop which already installed RStudio program.**

General information:

Public transportation to the venue

Air-conditioned bus routes:

- No. 29 (Bangkok Railway Station - Thammasart University, Rangsit)
- No. 39 (Grand Palace - Thammasart University, Rangsit)
- No. 510 (Victory Monument - Thammasart University, Rangsit - Thai Market)

Air-conditioned van routes:

- No. 118 (Mo Chit BTS Sky Train Station - Thailand Science Park)
- No. 85 (Victory Monument - Thammasart University, Rangsit)

Accommodation

You are responsible for making your own arrangements.

Suggested accommodation:

- Institute of East Asian Studies (A 10-minute-walk from Thailand Science Park)
Twin room (2 beds) 950 Baht/ night not include Breakfast
Tel: (66) 2564 5000 – 3
Website: http://www.asia.tu.ac.th/ieas/ieas_buiding.htm

For more information please contact

Technical Training Unit, BIOTEC

113 Thailand Science Park, Phahonyothin Rd.,
Klong Nueng, Klong Luang, Pathum Thani, Thailand 12120
Tel: (66) 2564 6700 ext. 3379 – 82 Fax: (66) 2564 6574
E-mail: ttu@biotec.or.th

Tentative program:**Day 1: 14 February 2018**

- 08.00 – 09.00 Registration & Opening
- 09.00 – 09.40 **Introduction to NGS technologies**
By Dr. Sithichoke Tangphatsornruang
National Center for Genetic Engineering and Biotechnology
- 09.40 – 10.20 **Systems biology**
By Prof. Dr. Vítor Martins dos Santos
Wageningen University & Research, the Netherlands
- 10.20 – 11.00 Coffee Break
- 11.00 – 11.30 **Bioinformatics for systems biology**
By Assist. Prof. Dr. Varodom Charoensawan
Mahidol University
- 11.30 – 12.00 **Metabolomics technology and its applications**
By Dr. Umaporn Uawisetwathana
National Center for Genetic Engineering and Biotechnology
- 12.00 – 13.00 Lunch

Systems biology for industrial microbial technology

- 13.00 – 13.40 **Topic to be announced**
By Dr. Peter Schaap
Wageningen University & Research, the Netherlands
- 13.40 – 14.10 **Synthetic biology for microbial cell engineering**
By Dr. Weerawat Runguphan
National Center for Genetic Engineering and Biotechnology
- 14.10 – 14.40 **Metagenomic / Microbiome**
By Dr. Pattanop Kanokratana or Dr. Niran Roongsawang
National Center for Genetic Engineering and Biotechnology
- 14.40 – 15.10 **Topic to be announced**
By Dr. Anavaj Sakuntabhai
Institut Pasteur, France
- 15.10 – 15.30 Coffee break

Systems biology for agriculture

- 15.30 – 16.00 **Topic to be announced**
By Dr. Apiradee Hongsthong
National Center for Genetic Engineering and Biotechnology
- 16.00 – 16.30 **Exploring bacterial diversity in intestines of the black tiger shrimp *Penaeus monodon***
By Dr. Wanilada Rungrassamee
National Center for Genetic Engineering and Biotechnology
- 16.30 – 17.00 **Topic to be announced**
By Asst. Prof. Dr. Treenut Saithong
King Mongkut's University of Technology Thonburi

Day 2: 15 February 2018:

- 09.00 – 12.00 Data analysis: a detailed program can be suggested by Wageningen
The following topics might be included if appropriate:
 - Standard and guidelines for data analysis
 - Introduction to GALAXY and demo (Galaxy is an open, web-based
platform for data intensive life science research that enables non-
bioinformaticians to create, run, tune and share their own bioinformatic
analyses.)
- 12.00 – 13.00 Lunch
- 13.00 – 16.30 Data analysis (a detailed program can be suggested by Wageningen)
Proposed topic: hand-on on data analysis with R/Bioconductor (this might
be merged to Day 3)

Day 3: 16 February 2018:

- 09.00 – 16.30 Hand-on on data management
Propose topics: semantic web for bioinformatics, Apache Hadoop and
Spark framework for processing big data

Speaker for workshop: Mr. Jasper Koehorst
 Wageningen University & Research, the Netherlands