

# Workshop on Dynamics and Regulation of Biomolecular Networks

10-14 December 2012, Institute for Computational and Theoretical Studies,  
Hong Kong Baptist University

Organizers: Jade Shi, Leihan Tang and Changsong Zhou

The focused workshop on the Dynamics and Regulation of Biomolecular Networks will take place at the Institute for Computational and Theoretical Studies at the Hong Kong Baptist University during the period 10-15 December, 2012. The main theme of the workshop is to communicate among the participants on the recent developments in the quantitative modeling of biological phenomena, from molecular circuits to population level behavior, with a view to foster future collaborations in the area of metabolic regulation, brain modeling and p53 dynamics. Seminars and topical discussions will be organized in the first four days of the workshop, followed by a conference on the last day.

## Invited Speakers:

Luonan	Chen	(SIBS, CAS)
Ruiwang	Huang	(Guangzhou)
Sandeep	Krishna	(NCBS)
Yueheng	Lan	(Tsinghua U)
Feng	Liu	(Nanjing U)
Namiko	Mitarai	(Niels-Bohr Inst)
Hyunggyu	Park	(KIAS)
Matt	Scott	(Waterloo U)
Yue	Shen	(BGI, Shenzhen)
Ni	Shu	(BNU)
Jianwei	Shuai	(Xiamen U)
Greg	Stephens	(VU, Amsterdam & OIST)
Jiayi	Zhang	(Fudan U)
Xiaopeng	Zhang	(Nanjing U)

All are welcome!

### Invited Participants:

Zhengjia Dai (BNU)  
Pan-jun Kim (APCTP)  
Vimal Kishore (India/IISER)  
Xuhong Liao (BNU)  
Anqi Ling (Tsinghua U)  
Xiaqing Shi (Soochow U)  
Qingyuan Tang (Nanjing U)  
Jiangfeng Xu (Tsinghua U)

### Tentative Schedule:

Date	Topics	Facilitator
Mon, 10/12	Small molecular circuits (mostly p53)	Jade Shi
Tue, 11/12	Systems modeling, with focus on metabolic regulation	Leihan Tang
Wed, 12/12	Neural dynamics and brain imaging	Changsong Zhou
Thu, 13/12	Outing/discussion	
Fri, 14/12	Conference	

# Workshop Program

Ho Sin Hang Campus, Hong Kong Baptist University

**Monday, 10 December (Room 909, 9/F, Cha Chi-ming Science Tower)**

**Topics: Small molecular circuits (mostly p53)**

## Morning Session

- 10:00 – 11:00 **Jade Shi** (Hong Kong Baptist University)  
"Bimodal p53 dynamics modulated by DNA damage strength in cell fate control"
- 11:00 – 11:15 Coffee Break
- 11:15 – 12:15 **Xiaopeng Zhang** (Nanjing University)  
"The connection between p53 dynamics and cell-fate decision in the DNA damage response"
- 12:15 – 14:00 Lunch Break

## Afternoon Discussion

**Tuesday, 11 December (Room 716, 7/F, Cha Chi-ming Science Tower)**

**Topics: Systems modeling, with focus on metabolic regulation**

## Morning Session

- 10:00 – 10:45 **Matthew Scott** (University of Waterloo)  
"Indirect regulation of bacterial gene expression imposed by growth and division"
- 10:45 – 11:30 **Sandeep Krishna** (National Centre for Biological Sciences)  
"Regulatory strategies in the control of galactic metabolism"
- 11:30 – 11:45 Coffee Break
- 11:45 – 12:30 **Namiko Mitarai** (Niels Bohr Institute)  
"Control translation in bacteria"
- 12:30 – 14:00 Lunch Break

## Afternoon Session

- 14:30 – 15:00 **Xue-Fei Li** (Hong Kong Baptist University)

	"Reconstruction of in silico model for the metabolic network of Mycoplasma Pneumoniae"
15:30 – 16:00	<b>Yue Shen</b> (Beijing Genomics Institute, Shenzhen) TBA
16:00 – 18:00	<b>Discussion</b>

## Wednesday, 12 December (Room 909, 9/F, Cha Chi-ming Science Tower)

### Topics: Neural dynamics and brain imaging

#### Morning Session

09:30 – 10:10	<b>Changsong Zhou</b> (Hong Kong Baptist University) "Brain as a dynamical complex system"
10:10 – 10:50	<b>Jiayi Zhang</b> (Fudan University) "Optogenetics tools for studying circuits in neonatal mice"
10:50 – 11:10	Coffee Break
11:10 – 11:50	<b>Ruiwang Huang</b> (South China Normal University) "fMRI/DWI data acquisition and image quality"
11:50 – 12:30	<b>Ni Shu</b> (Beijing Normal University) "White matter structural brain network: application in neurodegenerative diseases"
12:30 – 14:00	Lunch Break

#### Afternoon Discussion

## Thursday, 13 December

08:50 – 09:00	<b>Gathering at Royal Plaza Hotel in Mongkok</b>
09:00 – 10:00	<b>Bus to Lantau Island</b>
10:00 – 15:30	<b>Outing and discussions</b>
17:30 – 18:30	<b>Bus to Yau Yat Chuen Garden City Club (Kowloon Tong)</b>
19:00 – 21:00	<b>Dinner and discussions</b>

**Friday, 14 December (Lecture Theatre 1, 5/F, Cha Chi-Ming Science Tower)**

09:00 – 09:15 Opening

**Morning Session**

Chair: **Lei-Han Tang**

09:15 – 10:00 **Hyunggyu Park** (Korea Institute for Advanced Study)  
"Recent developments in the NEQ statistical physics of small systems"

10:00 – 10:45 **Luonan Chen** (Shanghai Institutes for Biological Sciences)  
"Early diagnosis on complex diseases and their driving networks by dynamical network biomarkers"

10:45 – 11:10 Coffee Break and Photo-taking

Chair: **Changsong Zhou**

11:10 – 11:55 **Greg Stephens** (Vrije Universiteit Amsterdam & Okinawa Institute of Science and Technology)  
"Do we click? Speaker-listener brain coupling underlies successful communication"

11:55 – 12:40 **Matthew Scott** (University of Waterloo)  
"Coupling growth and division to bacterial decision making"

12:40 – 14:00 Lunch Break

**Afternoon Session**

Chair: **Jade Shi**

14:00 – 14:45 **Namiko Mitarai** (Niels Bohr Institute)  
"Emergence of diversity in a model ecosystem"

14:45 – 15:30 **Sandeep Krishna** (National Centre for Biological Sciences)  
"Benefits of cooperation and communication in bacteria"

15:30 – 15:50 Coffee Break

Chair: **Luonan Chen**

15:50 – 16:20 **Jianwei Shuai** (Xiamen University)  
"Stochastic localized calcium releases from clustered IP3R channels"

16:20 – 16:50 **Feng Liu** (Nanjing University)  
"The dynamics and functions of the p53 pathway in response to DNA damage and glucose starvation"

16:50 – 17:20 **Yueheng Lan** (Tsinghua University)  
"Graph decomposition of cell regulation networks"

17:20 – 17:30 **Closing**

18:00 – 18:30 **Bus to Yung-Kee Restaurant (Departure at AC Hall)**

18:30 – 21:00 **Conference Dinner**

## Tour Information:

Ngongping 360 Cable car → Ngongping Village →  
Tian Tan Buddha Statue → Tai O fishing Village → Return



<http://www.np360.com.hk/en/>

<http://www.discoverhongkong.com/canada/attractions/outlying-tai-o-fishing-village.html>