THE HEBREW UNIVERSITY OF JERUSALEM

ISRAEL INSTITUTE FOR ADVANCED STUDIES

Stochastic Processes in the Cell Cycle

June 13-17, 2016

All lectures will take place at the Israel Institute for Advanced Studies,

on the Edmond J. Safra, Givat Ram Campus

Organizers:

Ariel Amir (Harvard University)

Nathalie Q Balaban (The Hebrew University of Jerusalem)

Naama Barkai (Weizmann Institute of Science)

Program

Monday, 13 June

15:00 - 15:55 Registration

16:00-16:15 Welcome and Introduction

16:20 - 17:20 Opening Talks
Chair: **Ariel Amir** (Harvard University)

Andrew Murray (Harvard University):
How yeast fare in an uncertain world
Johan Paulsson (Harvard University):
Suppressing random fluctuations in cells

17:30 - 20:00 Reception and Poster Session

Tuesday, 14 June

09:00 - 10:15 Quantitative Analysis of Growth

Terence Hwa (University of California, San Diego): TBA
Naama Brenner (Technion Israel Institute of Technology): Exploratory Stochastic Dynamics in Cellular Regulation

10:15 - 10:30 Benjamin Towbin (Weizmann Institute of Science)

10:30-11:00 Coffee Break

11:00 - 12:30 Quantitative Analysis of Growth

Peter Swain (University of Edinburgh):
Multiple Input Pathways Mitigate Speed-accuracy Trade-offs in a MAP Kinase Signaling Network

Ulrich Gerland (Techniche Universitat Munchen):
Towards Dynamic Bacterial Growth Laws
Rami Pugatch (The Hebrew University of Jerusalem):
Temporal Organization of Cellular Self-replication

12:30 - 14:00 Lunch at The Belgium House (on campus)

14:30 - 16:00 Evolutionary Aspects of Cell-Cycle Stochasticity
Chair: **Avidor Eldar** (Tel-Aviv University)

Naama Barkai (Weizmann Institute of Science): Expression Homeostasis During S Phase
Roy Kishony (Technion, Israel Institute of Technology): Multi-step Adaptive Paths Leading to high Level Antibiotic Resistance
Lydia Robert (Université Pierre et Marie Curie [UPMC]): Dynamics of Mutation Accumulation and Mutations Fitness Effects Studied at the Single Cell Level Talks

16:00 - 16:30 Coffee Break

17:15 - 17:30 Transportation to the Israel Museum

17:30 - 19:00 Tour of the Israel Museum

19:00 - 21:00 Dinner at *Modern* Restaurant

21:00 - 21:25 Transportation to the hotel

Wednesday, 15 June

09:00 - 10:00 Cell-Cycle Control in Prokaryotes and Eukaryotes

Ariel Amir (Harvard University):
Simultaneous Regulation of Size and DNA replication in Bacteria: Is Cell Size Driver or Passenger?
Aaron Dinner (University of Chicago):
TBA

10:00 - 10:20 **Arieh Zaritsky** (Ben-Gurion University of the Negev)

10:20-11:00	Coffee Break
11:00 - 12:00	Cell-Cycle Control in Prokaryotes and Eukaryotes **Nathalie Q Balaban** (The Hebrew University of Jerusalem): TBA **Johan Elf** (Uppsala Universitet): The Coupling of Replication and Cell Division Cycles in Individual E coli Cells
12:00 - 12:15	**Bruno Martins** (University of Cambridge)
12:30 - 14:00	Lunch at The Belgium House (on campus)
14:00 - 15:30	Poster Session

15:30 - 15:55 **Transportation to Mahane –Yehuda from the IIAS Lobby**

15:55 - 19:50 Tour to Mahaneh-Yehuda Market

Thursday, 16 June

07:30 - 08:30 **Early Birds: Visit to the Jerusalem Bird Observatory**
Tour (optional)

09:00 - 10:00 Stochasticity in Decision Making
Cahir: **Ady Vaknin** (The Hebrew University of Jerusalem)

Yigal Meir (Ben-Gurion University of the Negev): Orginizing the Bacterial Chromosome of Division
Ned Wingreen (Princeton University): Building a Biofilm the Vibrio Cholerae Way

10:00 - 10:20 **Gilad Yaakov** (Weizmann Institute of Science)

10:20 - 11:00 Coffee Break

11:00 - 11:35 Stochasticity in Decision Making
Chair: **Sivan Pearl Mizrahi** (The Hebrew University of Jerusalem)

Uri Alon (Weizmann Institute of Science): The Cellular State at the Time Time of Viral Adsorption Determines the Outcome of HSV1 Infection

11:35 - 11:50 **Parth Pratim Pandey** (University of Delhi)

11:50 – 11:15 **Mor Nitzan** (The Hebrew University of Jerusalem)

12:30 - 14:00 Lunch at The Belgium House (on campus)

14:00 - 15:00 Stochasticiy in Temporal and Spatial Organization
Chair: **Michael Brandeis**

Itamar Simon (The Hebrew University of Jerusalem): The Mutation Spectrum in Genomic Late Replication Domains Shapes Mammalian GC Content
Stas Burov (Bar-Ilan University): TBA

15:00-15:15 **Jonathan Turner** (Stanford University)

15:15 - 15:45 Coffee Break

15:45 – 16:45 Stochasticiy in Temporal and Spatial Organization

Ran Kafri (University of Toronto): Negative Feedbacks Coordinate Growth and Cell Cycle Progression to Maintain Size Uniformity in Animal Cells
Boris Shraiman (University of California at Santa Barbara): TBA

16:45 – 17:00 **Benjamin Towbin** (Weizmann Institute of Science)

17:00 - 17:35 Closing Remark
Ariel Amir (Harvard University)

18:30 - 20:00 **Speakers Dinner**

Friday, 17 June

08:00 - 13:30 Tour to *Nahal David*

13:30 - 15:00 Lunch at *Ima* Restaurant