

Workshop on Stochasticity in Biochemical Reaction Networks

September 13th-15th, 2013

MEALS

Coffee Breaks: As per daily schedule, in the foyer of the TransCanada Pipeline Pavilion (TCPL) (*included in workshop*)

For meal options at the Banff Centre, there are food outlets on The Banff Centre campus such as Vistas Main Dining Room on the 4th floor of Sally Borden Building (breakfast: 7:00-9:30am; lunch: 11:30am-1:30pm; dinner: 5:30-7:30pm), Le Cafe (ground floor, Sally Borden Building) and the Maclab Bistro (Kinnear Centre). You will also find a good selection of restaurants in the town of Banff which is a 10-15 minute walk from Corbett Hall.

MEETING ROOMS

All lectures will be held in the new lecture theater in the TransCanada Pipelines Pavilion (TCPL). LCD projector and blackboards are available for presentations.

SCHEDULE

Friday 9/13

16:00 **Check-in begins** (Front Desk - Professional Development Centre)

17:00 Opening Remarks

Ido Golding – Quantitative adventures in gene regulation

18:00 **Dinner (Vistas Main Dining Room)**

19:30 Jie Xiao – Gene regulation at the single molecule level

Michael Assaf – Extrinsic noise driven phenotype ...

Narendra Maheshri – An underappreciated role for the cell cycle ...

21:00 **Social Hour:** Beverages and a small assortment of snacks are available in the lounge on a cash honor system.

Saturday 9/14

7:00-9:00 **Breakfast (Vistas Main Dining Room)**

9:00 Daniel Zenklusen – A single molecule view of gene expression

Arjun Raj – Spatial analysis of stochastic gene expression ...

Elizabeth Read – Stochasticity in host-pathogen interaction networks

10:30 **Coffee Break,**

11:00 Steve Abel – Signal transduction at the cell membrane ...

Steven Altschuler – Reverse engineering polarity networks

Pieter Rein ten Wolde – Protein clustering improves signaling reliability

12:30 **Lunch (Vistas Main Dining Room)**

13:30 Open time discussion / collaboration / recreation

14:30 **Coffee Break,**

15:00 Jeff Moffitt – Experimental constraints on the minimal complexity ...

Michal Komorowski – From sensitivity analysis to information processing ...

Mustafa Khammash - Cybergenetics: manipulating the dynamic behavior ...

Johan Paulsson - Analytical and experimental methods to quantify complex ...

17:00 Interactive discussion to identify major challenges in the field.

17:30 **Dinner (Vistas Main Dining Room)**

19:30 Hyun Youk - Synthetic multicellularity: Using yeast to explore design ...

Bastian Drees – A Biophysical taxonomy of quorum sensing ...

Pankaj Mehta – Dictyostelium populations exploit noise ...

21:00 **Social Hour:** Beverages and a small assortment of snacks are available in the lounge on a cash honor system.

Sunday 9/15

Checkout by 12 noon.

7:00-9:00 **Breakfast (Vistas Main Dining Room)**

9:00 Stanislav Shvartsman – Reconstructing developmental dynamics ...

Elisa Franco – Dynamical diversity of a programmable molecular oscillator ...

10:00 **Coffee Break / Checkout if not already**

11:00 Jane Kondev – Chromosome refolding in DNA damage repair

Christoph Zimmer – Deterministic inference for stochastic models

Seelig, Georg – A microRNA-based single-gene circuit buffers protein ...

12:30 **Lunch (Vistas Main Dining Room)**

13:30 Activities around Banff and/or departure

Activities in Banff

Banff National Park is a mecca for wilderness enthusiasts, and has a broad range of opportunities for hiking, rock climbing, biking, hot springs and more. Several trails leave right out of the Banff center. Enjoy Sunday afternoon to catch up with colleagues and form new friendships in the relaxing atmosphere of a wilderness walk. Additional information on park activities is available here: <http://www.pc.gc.ca/eng/pn-np/ab/banff/activ.aspx>.

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Presentations (in alphabetic order by speaker surname)

Speaker: **Abel, Steve** (University of Tennessee)

Title: *Signal transduction at the cell membrane: understanding the roles of dimensionality, protein mobility, and spatiotemporal correlations*

Filmed: Y

Speaker: **Altschuler, Steven** (UT South Western)

Title: *Reverse engineering polarity networks*

Filmed: N

Speaker: **Assaf, Michael** (Hebrew University of Jerusalem)

Title: *Extrinsic noise driven phenotype switching in a self-regulating gene*

Filmed: Y

Speaker: **Drees, Bastian** (University of Heidelberg)

Title: *A Biophysical Taxonomy of Quorum Sensing Architectures*

Filmed: N

Speaker: **Franco, Elisa** (UC Riverside)

Title: *Dynamical diversity of a programmable molecular oscillator in droplet microreactors*

Filmed: N

Speaker: **Golding, Ido** (Baylor)

Title: *Quantitative adventures in gene regulation*

Filmed: TBD

Speaker: **Khammash, Mustafa** (ETH Zurich)

Title: *Cybergenetics: manipulating the dynamic behavior of living cells through feedback control*

Filmed: N

Speaker: **Komorowski, Michal** (IPPT Polish Academy of Sciences)

Title: *From sensitivity analysis to information processing in noisy biomolecular systems*

Filmed: Y

Speaker: **Kondev, Jane** (Brandeis)

Title: *Chromosome refolding in DNA damage repair*

Filmed: TBD

Speaker: **Maheshri, Narendra** (MIT)

Title: *An underappreciated role for the cell cycle in steady-state transcriptional fluctuations and the kinetics of gene activation*

Filmed: N

Speaker: **Mehta, Pankaj** (BU)

Title: *Dictyostelium populations exploit noise to control collective behavior*

Filmed: Y

Speaker: **Moffitt, Jeffrey** (Harvard University)

Title: *Experimental Constraints on the Minimal Complexity of Kinetic Models for Enzymatic Dynamics*

Filmed: Y

Speaker: **Paulsson Johan** (Harvard University)

Title: *Analytical and experimental methods to quantify complex reaction networks*

Speaker: **Raj, Arjun** (U Penn)

Title: *Spatial analysis of stochastic gene expression and its implications*

Filmed: Y

Speaker: **Read, Elizabeth** (UC Irvine)

Title: *Stochasticity in host-pathogen interaction networks*

Filmed: N

Speaker: **Seelig, Georg** (University of Washington)

Title: *A microRNA-based single-gene circuit buffers protein synthesis rates against perturbations*

Filmed: N

Speaker: **Shvartsman, Stansilav** (Princeton University)

Title: *Reconstructing developmental dynamics from snapshots*

Filmed: Y

Speaker: **ten Wolde, Pieter Rein** (AMOLF)

Title: *Protein clustering improves signaling reliability*

Filmed: Y

Speaker: **Xiao, Jie** (John Hopkins University)

Title: *Gene regulation at the single molecule level*

Filmed: Y

Speaker: **Youk, Hyun** (UCSF)

Title: *Synthetic multicellularity: Using yeast to explore design principles of multicellular communication*

and structures

Filmed: Y

Speaker: **Zenklusen, Daniel** (University of Montreal)

Title: *A single molecule view of gene expression*

Filmed: N

Speaker: **Zimmer, Christoph** (University of Heidelberg)

Title: *Deterministic inference for stochastic models*

Filmed: N