From Networks to Pattern Formation - Evolution of Biological Function

BioScience Research Collaborative
6500 Main Street
Houston, Texas 77030

Organizers
Gábor Balázsi
Ricardo Azevedo
Oleg Igoshin

Workshop
Friday, December 3, 2010
8:00 am – 12:30 pm

Tutorial lectures introducing key concepts of the symposium research areas for graduate students and postdoctoral fellows

8:00 am   Check-in and continental breakfast
9:00 am   Workshop Session 1: Networks
           Oleg Igoshin and J. Christian J. Ray
10:00 am  Networking break
10:30 am  Workshop Session 2: Pattern formation
           Jeff Tabor and Gábor Balázsi
11:30 am  Workshop Session 3: Evolution
           Ricardo Azevedo and Tim F. Cooper
### Symposium
Friday, December 3, 2010
12:30 pm – 6:30 pm

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 pm - 1:30</td>
<td><strong>Opening Lunch</strong></td>
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</tbody>
</table>
| 1:30 pm  | Symposium Lecture 1  
**Heterogeneous Diversity of Spacers within Clustered Regularly Interspaced Short Palindromic Repeats**  
Michael Deem, Rice University |
| 2:00 pm  | Symposium Lecture 2  
**Interactions between beneficial mutations effect the adaptability of evolving populations of E. coli**  
Tim Cooper, University of Houston |
| 2:30 pm  | Symposium Lecture 3  
**Dynamics of cellular decision-making in single cells**  
Gürol M. Süel, UT Southwestern – Dallas |
| 3:15 pm  | Symposium Lecture 4  
**Population-level encoding in clonal cell populations**  
Gábor Balázsi, MD Anderson Cancer Center |
| 3:45 pm  | Networking break                                                     |
| 4:00 pm  | Symposium Lecture 5 / Keck Seminar  
**From Random Walks to the Physics of Cancer: The Importance of Being Wrong**  
Robert H. Austin, Princeton University |
| 5:00 pm  | Reception                                                            |
Symposium
Saturday, December 4, 2010
8:30 am – 6:00 pm

8:30 am   Poster set-up and continental breakfast

Symposium Session 2

9:00 am   Symposium Lecture 6
Bacterial Operon Patterns Reduce Biochemical Noise
Oleg Igoshin, Rice University

9:30 am   Symposium Lecture 7
Dissecting the mitotic oscillator
James E. Ferrell, Jr., Stanford University

10:15 am  Networking break; posters preview

10:45 am  Symposium Lecture 8
Neutral evolution of robustness in Drosophila microRNA precursors
Ricardo Azevedo, University of Houston

11:15 am  Symposium Lecture 9
Distribution and Evolution of Epistatic Interaction
Zhenglong Gu, Cornell University

12:00 am  Symposium Lecture 10
Modeling the dynamics of a synthetic gene oscillator
Matthew R. Bennett, Rice University

12:30 – 1:00 pm  Lunch

1:00 – 2:00 pm  Poster session
**Symposium Session 3** (co-organized by Amina Qutub and Jeff Tabor)

2:00 pm  Symposium Lecture 11  
**Oxygen Response Networks: Intracellular to Cell-Cell Communication**  
Amina Qutub, Rice University

2:30 pm  Symposium Lecture 12  
**Redox network regulation of drug sensitivity in leukemia cells**  
Melissa Kemp, Georgia Tech

3:15 pm  Networking break; posters removed

3:45 pm  Symposium Lecture 13  
**Mapping the HIV decision-making circuit**  
Leor Weinberger, UC San Diego

4:15 pm  Symposium Lecture 14  
**Decoding biological design using synthetic gene circuits**  
Lingchong You, Duke University

5:00 pm  Symposium Lecture 15  
**Using light to pattern gene expression in bacterial populations**  
Jeff Tabor, Rice University

5:45 – 6:00 pm  **Concluding Remarks and Best Poster Awards**