

IWBDA 2009 Program

Monday, July 27

8:00 - 9:00 : **Keynote Address (Room 124)**

Opening Remarks

Douglas Densmore, Marc Riedel, and Soha Hassoun

Keynote Address

Drew Endy

9:00 - 10:30 : **Session 1 - Models and Algorithms (Chair: Jaijeet Roychowdhury, Room 124)**

Synthesizing Sequential Register-Based Computation with Biochemistry

Adam Shea, Brian Fett, Marc Riedel, and Keshab Parhi

DOMINANT-EDGE PATHWAY: A Weighted Graph Algorithm for Identifying Dominant Metabolic Pathways

Ehasn Ullah, Kyongbum Lee, and Soha Hassoun

Simplified Biochemical Models using Factor Graphs

Chris Winstead and Chris Myers

Computer-Aided Synthetic Biology: How Multiscale Models can Rationalize the Design of Synthetic Gene Networks

Vassilis Sotiropoulos, Jonathan Tomshine, Katherine Volzing, Poonam Srivastava, and Yiannis Kaznessis

10:50 - 11:30 : **Session 2: Experimental Biology (Chair: Ron Weiss, Room 124)**

Automated Design of Synthetic Ribosome Binding Sites to Control Protein Production

Howard Salis, Ethan Mirsky, and Christopher Voigt

Programmed Control of Cellular Function: An in-cell Disease Prevention Device

Sangram Bagh, Mahuya Mandal, and David McMillen

11:30 - 12:00 : **Morning Poster Session (Rm 125)**

An Adaptive Data Structure for Biological System Design

Douglas Densmore, Bing Xia, Josh Kittleson, Timothy Ham, and J. Christopher Anderson

Applying Circuit Topological Analysis Techniques to Networks in Systems Biology

Sherief Reda

A Rigorous Approach to the Design of Oligonucleotides for PCR-based Gene Synthesis

P.J. Steiner

Bridging Synthetic Biology Models and Experiments using PoBoL

Michal Galdzicki, Deepak Chandran, Herbert Sauro, Daniel Cook, and John Gennari

Contamination Aware Droplet Routing for Digital Microfluidic Biochips

Tsung-Wei Huang and Tsung-Yi Ho

Designing Single-Duplex DNA Nanostructures by Abstraction

Shogo Hamada and Satoshi Murata

From Electronic to Biological Design Automation: Building the Bridge

Giuseppe Nicosia

12:00 - 1:30 : **Lunch**

1:30 - 2:15 : **Keynote Address (Room 124)**

Keynote Address

Ron Weiss

2:15 - 3:40 : **Session 3 - Tools and Parts (Chair: Herbert Sauro, Room 124)**

Design Tools for Synthetic Virology

Dimitris Papamichail and Steven Skiena

A Framework for Modeling Modular DNA Parts: Towards the Predictable Design of Synthetic Systems

Ty Thomson

Synthetic Biology: A New Application Area for Design Automation Research

Chris Myers, Nathan Barker, Kevin Jones, Hiroyuki Kuwahara, Curtis Madsen, Nam-Phuong Nguyen, and Chris Winstead

GenoCAD

Matthew William Lux, Yizhi Cai, and Jean Peccoud

Bridging Synthetic Biology Design and Experiments using PoBoL

Deepak Chandran, Michal Galdzicki, and Alec Nielsen

3:50 - 4:30 : **Session 4 - Languages and Standardization (Chair: Yiannis Kaznessis, Room 124)**

Towards a High-Level Programming Language for Standardizing and Automating Biology Protocols

Vaishnavi Ananthanarayanan and William Thies

BioBrick Open Language: A Keystone for Efficient Development and Communication of Standard Biological Parts

Cesar Rodriguez, Doug Densmore, and Drew Endy

4:30 - 5:00 : Afternoon Poster Session (Rm 125)

Genetic Edge Detection

Jeff Tabor

JBEI Registry: Towards a Distributed Web of Registries

Timothy Ham, Zinovii Dmytriv, Paul Adams, and Jay Keasling

Overcoming Abstraction Barriers in Synthetic Biology Systems

Austin Che

PoBoL in the Lab: Structured Organization of Biological Samples for Laboratory Management and Automation

Alec Nielsen, Deepak Chandran, Michal Galdzicki, Sean Sleight, Herbert Sauro, Daniel Cook, and John Gennari

TinkerCell: a CAD application for Synthetic Biology

Deepak Chandran, Frank Bergmann, and Herbert M. Sauro

Toward Automatic Design of DNA Logic Gates and Devices

Ibuki Kawamata, Fumiaki Tanaka, and Masami Hagiya

Workflow Design for Synthetic Biology Using Clotho and Kepler

Douglas Densmore, Thien Nguyen, and J. Christopher Anderson

5:00 - 5:50 : Panel Session (Moderator: Douglas Densmore, Rm 124)

Panel Discussion

Lou Scheffer (HHMI and Cadence), Kevin Clancy (Invitrogen), Claes Gustafsson (DNA 2.0), and Ron Weiss (MIT)