

Synthetic Biology for the Next Generation

A Symposium Under the Auspices of

The National Academy of Sciences and The National Academy of Engineering

in conjunction with

**The Royal Society, The Royal Academy of Engineering,
The Chinese Academy of Sciences, and The Chinese Academy of Engineering**

June 12-13, 2012

The National Academy of Sciences Building
Auditorium

2101 Constitution Avenue, NW
Washington, DC 20418

AGENDA

Tuesday, June 12, 2012

7:30	Continental Breakfast
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8:00	Welcome
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Charles Vest, President, The National Academy of Engineering

8:10	Meeting Global Challenges
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Moderator: Pamela Silver, Harvard Medical School

Speakers: Daniel P. Schrag, Harvard University
Saul Griffith, Engineer and Entrepreneur

9:00	Overview of Research in Key Application Areas
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Moderator: Guo-ping Zhao, Shanghai Institutes for Biological Sciences

Speakers: Jindong Zhao, Institute of Hydrobiology, Chinese Academy of Sciences
(Agriculture and Environment)
Gregory Stephanopoulos, Massachusetts Institute of Technology
(Industrial Applications)
Alexandra Daisy Ginsberg, Designer, Artist, and Writer
(Arts/Humanities)
Christina Smolke, Stanford University (Health and Medicine)

10:00	Discussion with Participants
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10:15	Break
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10:30	Organizational Strategies in Support of Synthetic Biology
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Moderator: Rob Carlson, Biodesic

Speakers: Lionel Clarke, Shell
Ian Fotheringham, Ingenza
Jason Kelly, Ginkgo BioWorks
Meagan Lizarazo, iGEM
Darlene Solomon, Agilent
Guo-ping Zhao, Shanghai Institutes for Biological Sciences

11:30	Discussion with Participants
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11:45	Lunch
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1:00	National Strategies for Advancing Synthetic Biology
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Moderator: Jonathan Margolis, U.S. Department of State

Speakers: Gerardo Jiménez-Sánchez, Organisation for Economic Cooperation
and Development
John Perkins, Department for Business, Innovation & Skills, U.K.
Government
Xian-en Zhang, Ministry of Science and Technology of China

2:00	Discussion with Participants
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2:15	Perspectives on Synthetic Biology from within the Political System
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Moderator: Aristides Patrinos, Synthetic Genomics

Speakers: David Uffindell, Department for Business, Innovation & Skills, U.K. Government
 Jetta Wong, U.S. House of Representatives
 Guo-ping Zhao, Shanghai Institutes for Biological Sciences

3:15	Discussion with Participants
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3:30	Break
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3:45	Roundtable Discussion - Rebuilding the Social Contract
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Moderator: Jonathan Moreno, University of Pennsylvania

Speakers: Jaydee Hanson, International Center for Technology Assessment
 Thane Kreiner, Santa Clara University
 Renzong Qiu, Chinese Academy of Social Sciences Institute of Philosophy
 Nikolas Rose, Kings College London
 Edward You, Federal Bureau of Investigation
 Laurie Zoloth, Northwestern University

4:45	Discussion with Participants
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5:00	Adjourn
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5:15	Reception in Great Hall
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7:30	Continental Breakfast
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8:00	Welcome
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Ralph Cicerone, President, The National Academy of Sciences

8:10	Roundtable Discussion - Exploring Fundamental Questions in Biology
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Moderator: Peter Leadlay, University of Cambridge

Keynote Address: Michael Elowitz, California Institute of Technology

Respondents / Discussants:

Maitreya Dunham, University of Washington
Paul Freemont, Imperial College London
Jason Micklefield, University of Manchester
Weiwen Zhang, Tianjin University

9:30	Discussion with Participants
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9:45	Roundtable Discussion – Advancing Fundamental Needs in Engineering
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Moderator: Richard I. Kitney, Imperial College London

Discussants:

Peter Carr, Massachusetts Institute of Technology (Measures and System Performance)

Todd Peterson, Life Technologies Corporation (DNA Synthesis, Assembly, and Strain Engineering)

Cesar Rodriguez, Genome Compiler Corporation (Computer-Aided Design/ Data Exchange)

Reshma Shetty, Ginkgo BioWorks (Metrology)

Zhihua Zhou, Shanghai Institutes for Biological Sciences (Genetically Encoded Sensors)

10:45	Discussion with Participants
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11:00	Break
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11:15	Enabling the Next Generation of Leadership and Community
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Moderator: Megan Palmer, Synthetic Biology Engineering Research Center (SynBERC) and Stanford University

Discussants:

James Field, Imperial College London

Karmella Haynes, Arizona State University

Michael Jewett, Northwestern University

Chenli Liu, Guangzhou Institute of Advanced Technology

12:00	Discussion with Participants
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12:15	Lunch
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Roundtable Discussions – Governance: Needs Beyond the Bench

1:30

Session A: Prudent Practice - Lessons from Real World Case Studies

Moderator: David Rejeski, Woodrow Wilson International Center for Scholars

Discussants:

Patrick Boyle, Harvard University
Nikki Kapp, Imperial College London
Chris Schoene, Imperial College London
Gautam Mukunda, Harvard University
Zhongjun Qin, Shanghai Institutes for Biological Sciences

2:30

Discussion with Participants

2:45

Session B: Ownership, Sharing, and Innovation

Moderator: Drew Endy, Stanford University

Opening Remarks:

Linda Kahl, Synthetic Biology Engineering Research Center
(SynBERC) and Stanford University

Discussants:

Arti Rai, Duke University
Daniel Kevles, Yale University
Nita Farahany, Vanderbilt University Law School
Mark Lemley, Stanford University

3:45

Discussion with Participants

4:00

Break

4:15

Roundtable Discussion – Critical Issues for Success

Moderator: Rick Johnson, Global Helix LLC

Discussants:

François Képès, Le Centre national de la recherche scientifique

Carlos Olguin, Autodesk

Sohi Rastegar, National Science Foundation

Marc Salit, National Institute of Standards and Technology

Robert Wells, Organisation for Economic Co-operation and
Development

Youli Xiao, Shanghai Institutes for Biological Sciences

5:15

Discussion with Participants

5:30

Adjourn