

# **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	<b>Continental Breakfast</b>
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8:00	<b>Welcome</b>
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Charles Vest, President, The National Academy of Engineering

8:10	<b>Meeting Global Challenges</b>
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**Moderator:** Pamela Silver, Harvard Medical School

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

9:00	<b>Overview of Research in Key Application Areas</b>
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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	<b>Discussion with Participants</b>
10:15	<b>Break</b>
10:30	<b>Organizational Strategies in Support of Synthetic Biology</b>

**Moderator:** Rob Carlson, Biodesic

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

11:30	<b>Discussion with Participants</b>
11:45	<b>Lunch</b>
1:00	<b>National Strategies for Advancing Synthetic Biology</b>

**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	<b>Discussion with Participants</b>
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2:15

**Perspectives on Synthetic Biology from within the Political System**

**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**

3:30

**Break**

3:45

**Roundtable Discussion - Rebuilding the Social Contract**

**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**

5:00

**Adjourn**

5:15

**Reception in Great Hall**

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## ***AGENDA***

**Wednesday, June 13, 2012**

7:30	<b>Continental Breakfast</b>
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8:00	<b>Welcome</b>
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Ralph Cicerone, President, The National Academy of Sciences

8:10	<b>Roundtable Discussion - Exploring Fundamental Questions in Biology</b>
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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	<b>Discussion with Participants</b>
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9:45	<b>Roundtable Discussion – Advancing Fundamental Needs in Engineering</b>
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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	<b>Discussion with Participants</b>
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11:00	<b>Break</b>
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11:15	<b>Enabling the Next Generation of Leadership and Community</b>
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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	<b>Discussion with Participants</b>
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12:15	<b>Lunch</b>
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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**