

# President's Council of Advisors on Science and Technology (PCAST)

## EIGHTEENTH MEETING

March 9, 2012

MINUTES  
Washington DC

Members Present: John P. Holdren (Co-Chair), Eric Lander (Co-Chair), William Press (Vice Chair), Maxine Savitz (Vice Chair), Rosina Bierbaum, Christopher Chyba, S. James Gates Jr., Mark Gorenberg, Shirley Ann Jackson, , Chad Mirkin, Mario Molina, , Craig Mundie, Ed Penhoet, Barbara Schaal, Eric Schmidt, Daniel Schrag, David E. Shaw

Members Absent: Richard Levin, Ahmed Zewail, Ernest J. Moniz, Christine Cassel

Staff: Deborah Stine, Amber Hartman Scholz, and Danielle Evers

Public Attendance: Approximately 100 observers attended.

Video Webcast Archive: The archive of the video webcast is available at [www.whitehouse.gov/ostp/pcast](http://www.whitehouse.gov/ostp/pcast).

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The President's Council of Advisors on Science and Technology (PCAST) convened in open session at 10:00 am with Dr. John Holdren and Dr. Eric Lander presiding on Friday, March 9, 2012.

### Agenda Item 1: Welcome from PCAST Co-Chairs

Dr. Holdren greeted the PCAST members, Office of Science and Technology Policy (OSTP) staff, members of the public in attendance, and those viewing online. Dr. Holdren remarked on the diversity of work PCAST has been doing. Dr. Holdren noted the President's continuing emphasis on science and technology and STEM education, as emphasized in the State of the Union address and his FY 2013 budget request. Dr. Holdren called attention to two PCAST reports on STEM education. Dr. Holdren next reported a revision to the agenda. Remarks on the President's FY 2013 Science and Technology (S&T) budget would immediately follow the introductory remarks, and one of two public comment sessions would follow the update on the PCAST study on advancing drug development. The rest of the agenda would remain unchanged. Dr. Lander thanked PCAST for its continuing work on a wide range of issues.

Dr. Holdren next presented an overview of the President's FY 2013 S&T budget request. He described how the budget was developed, and noted some relevant trends. Dr. Holdren commented that this budget will be subject to Congressional adjustments.

PCAST members asked about budget plans for NASA and its human spaceflight program, and the balance of funding between the physical and life sciences.

### Agenda Item 2: PCAST Study Updates

Dr. Holdren introduced PCAST vice-chair Dr. Maxine Savitz to provide an update on the National Nanotechnology Initiative review report, co-chaired by Dr. Savitz and Dr. Ed Penhoet, with participation by Dr. Chad Mirkin. Dr. Savitz provided a history of the National Nanotechnology Initiative (NNI), which involves 25 Federal agencies and programs, is coordinated by a national coordination office, and is to be assessed every two years. This is the fourth assessment.

Dr. Savitz noted that progress has been made on PCAST recommendations from the 2010 assessment, and reviewed areas of concern. Dr. Savitz summarized the report recommendations for progress in the areas of strategic planning and implementation; program management; metrics for assessing the impact of nanotechnology; and environmental health and safety research. Dr. Mirkin then commented on NNI successes. He provided examples of early technologies becoming parts of public companies.

Dr. Holdren asked for and received a motion to approve the report pending editorial revisions. PCAST unanimously approved the report by a show of hands.

Following this report, PCAST vice-chair Dr. William Press was called on to provide an update on the study of the future of the U.S. science and technology research enterprise. He stated that the report is progressing well, and that a revised draft should be ready for a vote at the next PCAST meeting. He provided a brief outline of the report. Dr. Press emphasized that the nature of the research enterprise is changing. Much research is moving from private companies to university research, which in turn has moved closer to the marketplace. The report calls for Federal agencies to be the enduring foundational investor in basic and early applied research.

Next, Dr. Eric Lander presented an update on the study of advancing innovation in drug development and evaluation. Dr. Lander explained the background of the report, noting that approving new drugs through the Food and Drug Administration (FDA) is a complex process. He noted a few themes: basic scientific research has greatly advanced in the last decade; off-label prescribing of approved drugs presents opportunities and dangers; drug discovery has been declining. The PCAST report will touch on these issues. Likely recommendations include improving drug discovery and development through partnerships within the Federal Government and with other stakeholders. Drug approval mechanisms should balance rapid access and ensuring drug safety. Dr. Lander remarked that the FDA has a complex management task. The PCAST report group is considering management and communications reforms at the FDA.

### Agenda Item 3: Science, Technology, and Innovation at the Department of Agriculture,

Dr. Holdren introduced Secretary of Agriculture Tom Vilsack, accompanied by Undersecretary of Research, Education, and Economics, Catherine Woteki. Sec. Vilsack focused his remarks on three current challenges in agriculture: national and global food production sustainability; agriculture and the bioeconomy; and invasive species, disease control, and related research. He

provided an overview of the major components of agricultural research. He reflected on major agricultural challenges related to research, ownership, redundancy, and the conflict between biotechnology and organic approaches to agriculture. Sec. Vilsack closed by proposing potential solutions to some of these challenges.

Following the presentation, PCAST members asked about private sector involvement and revitalizing venture capital for agriculture; nutrition; raising public awareness of the significance of agriculture; creating an innovative agricultural system; and educating agronomists and practitioners of agriculture.

#### Agenda Item 4: Public Comment

Eight members of the public provided comments to PCAST in person. The following individuals provided oral comment in the morning session:

*Lowell Randel, Science Policy Director, Federation of Animal Science Societies*

*Kathy Munkvold, Public Affairs Manager, American Society of Plant Biologists*

*Angela Records, Policy Fellow, American Phytopathological Society*

*Karen Mowrer, Legislative Affairs Officer, Federation of American Societies for Experimental Biology*

*Sarah Ohlhorst, Director of Government Relations, American Society for Nutrition*

*Jim Hodges, President, American Meat Institute Foundation*

The following individuals provided oral comment in the afternoon session:

*Rebecca Goldin, Associate Professor of Mathematics, George Mason University, representing the Association for Women in Mathematics*

*Ryan Shelby, Alfred P. Sloan PhD student scholar, University of California, Berkeley*

#### Agenda Item 5: Perspectives on China and U.S. Competitiveness

Dr. Holdren introduced Prof. Richard Suttmeier, Professor Emeritus in the Department of Political Science at the University of Oregon. Prof. Suttmeier spoke on China as a potentially emerging ‘supernode’ in research and innovation, and implications for the United States. He discussed China’s aspirations to advance its global S&T significance in the coming decades, and presented an overview of recent and current Chinese research spending, investments, and personnel.

Prof. Suttmeier next presented an overview of drivers of trends in Chinese R&D, and the governance structure of Chinese S&T. He remarked that Chinese concerns include controversies

over originality and innovation, issues of scientific and commercial integrity, institutional arrangements, and indigenous innovation in an age of globalization. Dr. Suttmeier closed with thoughts on what this means for the United States, and how the United States can benefit from an S&T relationship with China.

Dr. Holdren next introduced Dr. Robert Atkinson, President of the Information Technology and Innovation Foundation. Dr. Atkinson reviewed the relationship between Chinese S&T R&D and U.S. competitiveness. He stated that China has recently focused on seven strategic emerging investments, and has committed large sums of money to accomplish its S&T goals.

Dr. Atkinson noted a broad and systemic set of policies and practices in China that are designed to advantage Chinese-owned S&T enterprises in innovation over foreign enterprises, and reviewed some example cases. Dr. Atkinson described some of these practices, including China's weak and discriminatory patent system, tolerance of intellectual property (IP) theft, trade secret theft and cyber-espionage. Contrary to accepted global practice, R&D tax incentives in China benefit domestic companies, but do not apply to foreign firms in China. Dr. Atkinson next reviewed reasons why the United States may underestimate the Chinese innovation model.

Dr. Atkinson closed with the recommendations that the United States better fund and staff agencies that deal with these issues, and that it more strongly press China on its IP policies and standards.

Following the presentation, PCAST members asked about China's military R&D; public-private experiments; government tolerance of hacking by private citizens; ability to attract foreign students and workers; competitiveness strategies in light of its reliance on obtaining foreign IP for advancement; basic science strategy; and the risks and challenges posed to the United States by Chinese S&T development.

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Dr. Holdren adjourned the meeting at approximately 3:00 pm.

Respectfully Submitted:



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Deborah D. Stine  
Executive Director  
President's Council of Advisors on Science and Technology

Approved:

A handwritten signature in blue ink that reads "John P. Holdren". The signature is written in a cursive style with a long, sweeping underline.

John P. Holdren  
Co-Chair  
President's Council of Advisors on Science and Technology

A handwritten signature in black ink that reads "Eric Lander". The signature is written in a cursive style with a long, sweeping underline.

Eric Lander  
Co-Chair  
President's Council of Advisors on Science and Technology