A Workshop on

RISING ABOVE THE GATHERING STORM
Developing Regional Innovation Environments

RISING ABOVE THE GATHERING STORM
Energizing and Employing America for a Brighter Economic Future

WISCONSIN INSTITUTES FOR DISCOVERY
Madison, Wisconsin
September 20-22, 2011

Committee on Science, Engineering, and Public Policy

NATIONAL ACADEMY OF SCIENCES,
NATIONAL ACADEMY OF ENGINEERING, AND
INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES
RISING ABOVE THE GATHERING STORM
Developing Regional Innovation Environments

The 2005 National Academies report Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future argued that America’s global leadership in innovation is crucial to its prosperity and security in the 21st century, and advanced a compelling case that this leadership is in a precarious state. That report provided an action plan to revitalize U.S. capabilities, and six years after its release, components of that plan have been implemented through federal legislation. Nonetheless severe challenges remain.

The workshop on Rising Above the Gathering Storm: Developing Regional Innovation Environments will examine how states and regions can address today’s challenges for strengthening leadership in innovation. It will explore how concerted efforts at the state or regional level can foster development of a thriving knowledge-based economy. What practices are effective for strengthening innovation environments? What strategies will foster the creation of high quality 21st century jobs? Workshop participants will share their diverse experience and knowledge to explore answers to these critical questions.

ACKNOWLEDGEMENTS
The workshop is being held at the Wisconsin Institutes for Discovery (WID), a visionary public-private partnership that provides a hub for interdisciplinary research, STEM education and community engagement. WID founders include donors John and Tashia Morgridge, the state of Wisconsin, the University of Wisconsin-Madison and the Wisconsin Alumni Research Foundation (WARF). The partnership embraces the public Wisconsin Institute for Discovery and the private Morgridge Institute for Research, both world-class biomedical research institutes. Funding for this workshop was provided by generous contributions from WARF, the Morgridge Institute for Research and the National Research Council.
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Developing Regional Innovation Environments
Wisconsin Institutes for Discovery, Madison, Wisconsin     September 20-22, 2011

Tuesday, September 20

Arrival and Opening Session
Noon          Registration opens
1:00 pm       Tours of Wisconsin Institutes for Discovery (on the hour)
5:30          Reception
6:30          Dinner
6:50          Welcome from Workshop Chair / Judith Kimble, Vilas Professor and HHMI Investigator, University of Wisconsin
6:55          Welcome to the Wisconsin Institutes for Discovery / Carl Gulbrandsen, Managing Director, WARF
7:00          Welcoming Remarks / John P. Morgridge and Tashia F. Morgridge, Founding Trustees, Morgridge Institute for Research
7:10          Evening keynote: Creating a Regional Innovation Environment / Duane Roth, CEO, CONNECT
7:45          Discussion
8:30          Adjourn

Wednesday, September 21

Regional Innovation Environments: Key Elements and Examples
8:30 am       Welcome/Introduction: Workshop challenges and goals / Judith Kimble
8:35          Setting the stage: Five Years of Rising Above the Gathering Storm / C.D. Mote, Jr., Regents Professor and former President, University of Maryland
8:45          Plenary Session One: Revitalizing K-12 Science and Mathematics Education.
               Session chair, Tom Luce
8:45          The Foundation of Innovation: K-12 STEM Education / Tom Luce, CEO, National Math and Science Initiative
9:00          Ensuring Quality: A New Framework for Science Education Standards / Helen Quinn, Professor Emerita, SLAC
9:15          Delivering Value: Why K-12 STEM Education Matters in the Current Economy / Michael Lach, Special Assistant for STEM education, U.S. Department of Education
9:30          Discussion on Revitalizing K-12 STEM Education
10:00         BREAK
10:30         Plenary Session Two: Strengthening Undergraduate Education in Science and Engineering.
               Session chair, Lorrie A. Shepard
10:30         Why Changing How we Teach Introductory Undergraduate Science Courses is Critical for Our Nation’s Future / Bruce Alberts, Editor-in-Chief, Science, and Professor Emeritus, Department of Biochemistry and Biophysics, University of California, San Francisco
10:45         Innovation in Teaching Undergraduate Biology / Robin Wright, Associate Dean, Department of Genetics, Cell Biology and Development, University of Minnesota
11:00         Improving Undergraduate Science and Engineering Education / Lorrie A. Shepard, Dean of Education, University of Colorado, Boulder
11:15         Discussion on Strengthening Undergraduate STEM Education
11:45  BREAK

Noon  Working lunch: How can education help regional innovation environments thrive? What are the key strategies for implementation?

1:30 pm  Plenary Session Three: Building Effective Partnerships among Governments, Universities, Companies, and Other Stakeholders for Innovation Environments.
Session chair, Arun Majumdar
1:30  The ARPA-E Model and the Innovation Ecosystem / Arun Majumdar, Director, ARPA-E
1:45  Government-university-industry partnerships: global innovation / C.D. Mote, Jr., Regents Professor and Former President, University of Maryland
2:00  New Alliances among Government, Industry and Universities / Mary Good, Donaghey University Professor, University of Arkansas
2:15  Discussion on building effective partnerships
2:45  BREAK

3:15  Plenary Session Four: Fostering Regional Technology Development and Entrepreneurship.
Session chair, William J. Spencer, Chairman Emeritus, SEMATECH
3:15  Innovative research environments for regional development / Sangtae Kim, Executive Director, Morgridge Institute for Research
3:30  Fostering entrepreneurship and venture investment in regions / Frank Samuel, Jr., President, Geauga Growth Partnership, Inc
3:45  Venture investment and regional development in the life sciences sector / G. Steven Burrill, CEO, Burrill & Company
4:00  Discussion on fostering regional technology and entrepreneurship

4:30  BREAK

5:30  Reception

6:00  Keynote speaker: Honorable Tommy Thompson, Former Governor of Wisconsin and Secretary of the U.S. Department of Health and Human Services
6:45 pm  Discussion

7:00  Working dinner: How can partnerships and entrepreneurship help regional innovation environments thrive? What are the key strategies for implementation?

Thursday, September 22

Summing Up and Next Steps

8:00 am  Breakfast: (Panelists and table leaders to be organized privately)

9:00  Panel discussion: Mary Good, Duane Roth, Julie Underwood, Dean, School of Education, University of Wisconsin-Madison
Discussion of Key Themes and Strategies for Implementation

11:00  Adjourn
Bio Sketches of Agenda Speakers and Planning Committee Members

Bruce Alberts (Plenary Session Two Speaker, Planning Committee Member) is a prominent biochemist with a strong commitment to the improvement of science and mathematics education. He is Editor-in-Chief of Science and Professor Emeritus of Biochemistry and Biophysics at the University of California, San Francisco, to which he returned after serving two six-year terms as the president of the National Academy of Sciences (NAS). He also serves as one of President Obama’s first Science Envoys. He received his AB and PhD degrees from Harvard University.

G. Steven Burrill (Plenary Session Four Speaker) is Chief Executive Officer of Burrill & Company. He has been involved in the growth and prosperity of the biotechnology industry for over 40 years. Prior to founding Burrill & Company in 1994, he spent 28 years with Ernst & Young, directing and coordinating the firm’s services to clients in the biotechnology/life sciences/high technology/ manufacturing industries worldwide. Mr. Burrill holds a BA degree from the University of Wisconsin.

Ruth David (Planning Committee Member) is President and CEO of Analytic Services Inc., a not-for-profit corporation that provides research and analytic support on national and transnational issues. She was previously Deputy Director for Science and Technology at the Central Intelligence Agency. A member of the National Academy of Engineering, Dr. David received a BS from Wichita State University, and MS and PhD degrees in electrical engineering from Stanford University.

Mary Good (Plenary Session Three Speaker, Final Panel) is the Donaghey University Professor at the University of Arkansas, Little Rock and serves as the managing member for Venture Capital Investors, LLC. Dr. Good was previously U.S. Under Secretary of Commerce for Technology and senior vice-president of technology at Allied Signal, Inc. A member of the National Academy of Engineering, she received a BS from the University of Central Arkansas and MS and PhD degrees from the University of Arkansas.

Carl E. Gulbrandsen (Welcome) is the Managing Director of Wisconsin Alumni Research Foundation, the patent management organization for the University of Wisconsin Madison. He joined WARF in 1997, after practicing intellectual property law in private practice and with several high technology companies. He received his BA degree from St. Olaf College, and his PhD in physiology and JD from the University of Wisconsin-Madison.

Sangtae Kim (Plenary Session Four Speaker) is Executive Director of the Morgridge Institute for Research. Located on the University of Wisconsin-Madison campus, it is intended to become the Midwest’s premier, private medical research institute. Prior to his appointment at the Morgridge Institute, he served on the faculties at Purdue University and the University of Wisconsin-Madison, and also held positions in government and industry. A member of the National Academy of Engineering, Dr. Kim earned BS and MS degrees from the California Institute of Technology, and a PhD in chemical and biological engineering from Princeton University.

Judith Kimble (Workshop and Planning Committee Chair) is Henry Vilas Professor at the University of Wisconsin-Madison in the Departments of Biochemistry and Medical Genetics and an Investigator with the Howard Hughes Medical Institute (HHMI). Her research focuses on the molecular regulation of animal development. Over the course of her career, she has made seminal contributions in the area of how stem cells are regulated to self-renew or differentiate. A member of the National Academy of Sciences, Dr. Kimble earned her BA at the University of California-Berkeley and her PhD at the University of Colorado-Boulder.
Michael Lach (Plenary Session One Speaker) is Special Assistant for STEM education, U.S. Department of Education. Previously, he was officer of teaching and learning for Chicago Public Schools. Lach began his professional career teaching high school biology and general science in New Orleans in 1990 as a charter member of Teach for America. He earned a bachelor’s degree in physics from Carleton College, and master’s degrees from Columbia University and Northeastern Illinois University.

Tom Luce (Plenary Session One Chair and Speaker) recently stepped down as Chief Executive Officer of the National Math and Science Initiative, which was created in 2007 to implement the recommendations of Rising Above the Gathering Storm by dramatically improving U.S. K-12 math and science education. He previously served as U.S. Assistant Secretary of Education for Planning, Evaluation and Policy Development. An attorney, Mr. Luce received his undergraduate and graduate degrees from Southern Methodist University.

Arun Majumdar (Plenary Session Three Chair and Speaker) became the first Director of the Advanced Research Projects Agency - Energy (ARPA-E) in October 2009. Dr. Majumdar was previously Associate Laboratory Director at Lawrence Berkeley National Laboratory and on the faculty of the University of California, Berkeley. A member of the National Academy of Engineering, he received his BS at the Indian Institute of Technology, Bombay and his PhD from the University of California, Berkeley.

John P. Morgridge (Welcome) is a Founding Trustee of the Morgridge Institute for Research, a Trustee of the Wisconsin Alumni Research Foundation, and Chairman Emeritus of Cisco Systems. He was President/CEO of Cisco from 1988 to 1995, growing the company from $5 million to over $1 billion in sales. He previously held top management positions at several other information technology companies, and served in the U.S. Air Force. He received a BBA from the University of Wisconsin-Madison and an MBA from Stanford University.

Tashia F. Morgridge (Welcome) is a Founding Trustee of the Morgridge Institute for Research and a member of the University of Wisconsin, School of Education Board of Visitors. She and her husband John actively support a range of education, conservation, and human services initiatives, including generous support for the Morgridge Institute for Research and numerous other initiatives at the University of Wisconsin. Mrs. Morgridge was previously a special education teacher. She received a BSE from the University of Wisconsin-Madison and an MS from Lesley College.

C.D. (Dan) Mote, Jr. (Setting the Stage, Plenary Session Three Speaker, Planning Committee Member) is Regents Professor and Glenn L. Martin Institute Professor of Engineering at the University of Maryland. He served as president of the University of Maryland from September 1998 to August 2010, spurring the university to lead the state in the development of its high technology economy. A member of the National Academy of Engineering, Dr. Mote received BS, MS, and PhD degrees in Engineering, Mechanics from the University of California at Berkeley.

Paul S. Peercy (Discussion Leader) is Dean of the College of Engineering at the University of Wisconsin-Madison. He was previously President of SEMI/SEMATECH, a non-profit technical R&D consortium of U.S.-owned and operated companies that comprise the equipment and supplier infrastructure for the semiconductor industry. A member of the National Academy of Engineering, Dr. Peercy earned a BS from Berea College, and MS and PhD degrees in physics from the University of Wisconsin.
Helen R. Quinn (Plenary Session One Speaker) is a Professor of Physics Emerita at Stanford University where she also served as Education and Public Outreach Manager at the Stanford Linear Accelerator Center. She chairs the National Research Council’s Board on Science Education, and chaired the 2011 study A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. A theoretical physicist and National Academy of Sciences member, Dr. Quinn received her BS, MS, and PhD degrees in physics from Stanford University.

Duane J. Roth (First Evening Keynote, Final Panel) is Chief Executive Officer and member of the Board of CONNECT, a nonprofit organization dedicated to creating and sustaining the growth of innovative technology and life science businesses in San Diego. Prior to joining CONNECT he founded Alliance Pharmaceutical Corp., where he serves as Chairman of the Board, and held senior management positions at Johnson & Johnson and American Home Products (now Pfizer) operating companies. Mr. Roth earned a BS from Iowa Wesleyan College.

Frank Samuel (Plenary Session Four Speaker) is President of the Geauga Growth Partnership, Inc., a business-led economic development organization in Geauga County (northeastern Ohio). He was Science and Technology Advisor to the Governor of Ohio from 2000 – 2007, where he was a principal architect of Ohio’s Third Frontier Project. Mr. Samuel is a graduate of Hiram College and Harvard Law School.

Lorrie A. Shepard (Plenary Session Two Chair and Speaker) is University Distinguished Professor and Dean of the School of Education at the University of Colorado at Boulder. Her research focuses on psychometrics and the use and misuse of tests in educational settings. She was elected to the National Academy of Education in 1992 and served as its President from 2005 to 2009. She earned her BA from Pomona College, and her MA and PhD from the University of Colorado at Boulder.

William J. Spencer (Plenary Session Four Chair, Planning Committee Member) is Chairman Emeritus of International SEMATECH, having served as Chairman of the SEMATECH and International SEMATECH Boards, and previously as SEMATECH’s President and Chief Executive Officer. He also held key research and management positions at Xerox Corporation, Bell Laboratories and Sandia National Laboratories. A member of the National Academy of Engineering, Dr. Spencer received an AB degree from William Jewell College an MS degree in mathematics and a PhD in physics from Kansas State University.

The Honorable Tommy G. Thompson (Keynote Speaker) is currently a Partner at Akin Gump Strauss Hauer & Feld LLP. Before entering the private sector in 2005, Secretary Thompson enjoyed a long and distinguished career in public service, including service as U.S. Secretary of Health and Human Services and 14 years as Governor of Wisconsin. Secretary Thompson received both his BS and JD from the University of Wisconsin-Madison.

Julie Underwood (Final Panel) is Dean of the School of Education at the University of Wisconsin-Madison. She was previously dean of Miami University’s School of Education and Allied Professions. Dr. Underwood has a bachelor’s degree in political science and sociology from DePauw University, a law degree from Indiana University, and a PhD in educational leadership from the University of Florida.

Robin Wright (Plenary Session Two Speaker) is Associate Dean for Faculty and Academic Affairs in the College of Biological Sciences (CBS) and professor of Genetics, Cell Biology, and Development a the University of Minnesota. Her major goal as Associate Dean is to catalyze the development of the nation’s best biology curriculum. Her research focuses on the genetics and physiology of cold adaptation in yeast. Dr. Wright earned a BS degree from the University of Georgia and a PhD from Carnegie-Mellon University.
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