

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

AGENDA

“Economic Outcomes of Investments in R&D and S&E”

Government-University-Industry Research Roundtable Meeting

October 17, 2005

Room 100 Keck Building

The National Academies

500 Fifth St., NW, Washington, D.C. 20001

- 7:30–8:00 Continental Breakfast Available
- 8:00–8:15 Welcome and Introduction of New Co-Chair
- Marye Anne Fox, Chancellor, University of California, San Diego introducing:
 - Lydia Thomas, President and CEO, Mitretek

UPDATES ON CURRENT GUIRR ACTIVITIES

- 8:15–8:35 **GUIRR “Coalition of the Concerned” Activities on Deemed Exports**
- GUIRR volunteers:* Sam Armstrong, Artie Bienenstock, Jim Bloedel, Claude Canizares, Ed Furtek, John Hunt, Wayne Johnson, Eva Pell, Frank Pita, Kelly Sullivan
- Collaborators:* Todd Willis (Commerce), Greg Doerrler and Jim Short (DOD), Stephanie Tennyson (DHS), Deborah Wilson (NIH), Antoinette Betschart (USDA), Pete Cseke (AFOSR)
- Sam Armstrong, NASA, retired.
Gen. Armstrong will report on this working group’s activities, including its recent involvement in the DOD DFARS clause.
- 8:35–8:55 **GUIRR-IRI-NCURA “University-Industry Partnership” Intellectual Property Project**
- GUIRR volunteers:* Larry Rhoades, Wayne Johnson, Roberto Peccei
- Collaborators:* Bob Killoren (NCURA); Susan Butts (IRI), Ken Lynn (Kauffman)
- Larry Rhoades, Chief Executive Officer, The Ex One Company
Mr. Rhoades will give an updated progress report on this project. At present, the guiding principles for university-industry partnerships are being distributed to other organizations and institutions for their “sign-on” at a Spring Summit. Implementation tools that allow practitioners to design agreements aligned with these principles are also currently under development.

8:55–9:10 **BASIC Update**

- Wayne Johnson, Vice President, University Relations Worldwide, Hewlett Packard
The Bay Area Science Innovation Consortium has been conducting a regional intellectual property project not unlike the national project being conducted under the auspices of GUIRR, IRI, and NCURA. Dr. Johnson will update the GUIRR membership on the findings of the BASIC effort, and how they integrate with the GUIRR-IRI-NCURA effort.

9:10–9:25 **GUIRR Models for Alaska**

- Pramod C. Karulkar, President's Professor & Director, Office of Electronic Miniaturization, University of Alaska, Fairbanks
The University of Alaska faces unique challenges in promoting government-university-industry collaborations. Dr. Karulkar comes to GUIRR to describe his experiences in these attempts, and to solicit advice from GUIRR members.

9:25–9:40 **Federal Demonstration Partnership (FDP)**

- Joe Konstan, Professor, Computer Science & Engineering, University of Minnesota
Dr. Konstan is the vice-chair of the Federal Demonstration Partnership, a longstanding GUIRR-founded initiative to streamline the administration of federal research grants. Dr. Konstan will give an update on the FDP's current activities.

9:40–10:10 **Corporate Investment in R&D: A Question of Here or There?**

GUIRR volunteer: Harold Schmitz

Collaborators: Marie Thursby (Georgia Tech) and Jerry Thursby (Emory U.)

- Jerry Thursby, Professor, Dept. of Economics, Emory University

Dr. Jerry Thursby, one of the project's two PIs, will give an update on the GUIRR-IRI-EIRMA-ACS sponsored survey of corporate decision makers in U.S. and European companies. The data collection activity for this survey is nearing a close.

10:10–10:30 **Break**

ECONOMIC OUTCOMES OF INVESTMENTS in R&D and S&E

10:30–10:50 **What is the difference in stock market performance of firms having patents with high science value?**

- Francis Narin, Vice President, Research & Equity Markets ipIQ
Dr. Narin will discuss the research and philosophy behind the Tech-Line stock portfolio, in which he successfully invested a portion of the employee pension plan of his former company, CHI Research. This portfolio invested in companies with “high quality” patents. It has substantially outperformed the market, even during economic downturns, and continues to today. The monetary discrepancy between Tech-Line and market performance is one indicator of the economic value of strong science and technology.

10:50–10:55 Q&A

10:55–11:35 **To what extent do other nations reap the benefits of U.S. investment in science?**

- Adam Jaffe, Dean of Arts and Sciences and Fred C. Hecht Professor in Economics, Brandeis University.
Dr. Jaffe will discuss the geographic pattern of knowledge spillovers as derived from analyses of patent citation data. His careful and insightful work on this topic is described in his 2002 book, Patents, Citations, and Innovations. According to one reviewer, this book is “A useful book full of careful measurement of the incentives, institutions, and causal flows in the knowledge economy. [The book] shows both the importance of the knowledge economy (now denied by fools on Wall Street) and how sound economic analysis applies to it (recently denied by the same fools.)”
- David Coe, Senior Advisor, Asia and Pacific Department, International Monetary Fund
Dr. Coe’s work examines international R&D spillovers, and how they may be affected by trading patterns. His work has important implications for the ability of developing nations to take advantage of international science.

11:35–11:45 Q&A

11:45–1:15 Lunch

Expediting the Translation of University IP into Commercialize-able Products for the Public Benefit: A Philanthropic Bridge between the University and Private Industry

- Alfred E. Mann, Industrialist, Philanthropist; Chairman of the Board of Directors, Alfred E. Mann Foundation for Biomedical Engineering (AEMFBE)

Mr. Mann has articulated a vision in which permanent industrial teams on university campuses would conduct the applied research and development necessary to transition scholarly concepts and university IP to new biomedical products. The use of seasoned product development teams is intended to increase the success rate of new product releases from university campuses. The funding of these teams through AEMFBE provides a mechanism of financing product development through accelerated processes using undiluted capital. Ultimately these campus-based industrial product development organizations should reduce the risk and time horizon for new products to the point where many more university discoveries are attractive to investors and shareholders.

Mr. Mann has reinforced his vision with the announcement of his funding of the Alfred Mann Institutes. Twelve or more Alfred Mann Institutes are to be sited on university campuses, funded at minimally \$100M apiece. The University of Southern California has the first Institute. The Technion-Israel Institute of Technology recently received an award notice for the second Alfred Mann Institute. Mr. Mann expects to capitalize 2-3 self-sustaining Institutes annually via the AEMFBE.

1:15–1:35 **What is the rate of return on publicly funded research? Are these numbers credible?**

Aldo Geuna, Senior Lecturer, Science and Technology Policy Research (SPRU), The Freeman Center, University of Sussex.

Dr. Geuna was the primary author of a comprehensive UK review of existing studies on “The Economic Returns to Basic Research and the Benefits of University-Industry Relationships,” which answers this question. He has also recently completed a study on the effect of government-funded research on national production of publications and patents, with an examination of spillover effects from the U.S. to European countries.

1:35–1:40 Q&A

1:40–2:20 **What is the current wisdom on the contribution of corporate R&D investments to productivity growth?**

- Leo Sveikauskas, Research Economist, Office of Productivity and Technology, Bureau of Labor Statistics.

Dr. Sveikauskas has worked to isolate the impact of corporate R&D on U.S. productivity growth through a model that identifies the cumulative spending on R&D over time (a company’s R&D “stock”), assigns a rate of return, identifies lag times to the effect of research on sales, and specifies depreciation rates of basic and applied research. In this presentation, he will identify why he chose the assumptions he did, and how this led to a prediction of 0.1 to 0.2 % annual contribution of corporate R&D to corporate productivity growth.

- Robert Arnold, Principal Analyst, Macroeconomic Analysis Division, Congressional Budget Office.
In June of 2005, the Congressional Budget office issued a study whose aim was to determine whether R&D spending – specifically, corporate R&D spending – could be used as a component of national economic forecasts. Robert Arnold was the author of that study and will discuss the various considerations that led the CBO, in the end, not to use private R&D spending as a factor in economic forecasts. Dr. Arnold will also discuss why publicly funded research is not used in economic analyses on the impact of research.

2:20–2:30 Q&A

2:30–2:50 **What is the optimal distribution of public and private R&D?**

- Bruno Van Pottelsberghe, Vice President, Solvay Business School, Université Libre de Bruxelles, Solvay SA Chair of Technological Innovation, Director of the MBA Program. Chief Economist of the European Patent Office (effective 11/2/05)
Dr. Van Pottelberghe and co-author Dominique Guellec recently released an analysis of 16 OECD countries, in which they examine the impacts of public, private and even foreign R&D on national productivity growth. The results provide insight into the separate effects of each type of research, and give guidance for optimizing a nation’s distribution of R&D funding.

2:50–2:55 Q&A

2:55–3:15 Break

3:15–3:55 **Update on Activities Related to the National Innovation Initiative**

- Dan Mote, President, University of Maryland
Dan Mote was a leading member of the Committee on Prospering in the Global Economy in the 21st Century, which released a prominent National Academies study on Oct. 12. The study addresses the following questions: What are the top 10 actions, in priority order, that federal policy makers could take to enhance the science and technology enterprise so the United States can successfully compete, prosper, and be secure in the global community of the 21st Century? What implementation strategy, with several concrete steps, could be used to implement each of those actions?
- Kathleen Kingscott, Director Worldwide Innovation Policy, IBM Corporation
Ms. Kingscott has been working extensively with House and Senate Members on innovation issues. She will describe new legislative initiatives related to innovation policy, and suggest ways in which the S&T community may be able to self-assemble to promote awareness of the country’s innovation challenges.

3:55-4:15 Q&A

4:15-5:00

Late-Breaking News Updates

Opportunity will be given for GUIRR members to update the rest of the membership on particularly interesting issues or news originating from their home organization.

- *Data Overload Working Group*
- *Follow-up on Africa*
- *Others . . .*

5:00

Adjourn to Cocktails

Note: Included in the agenda book, but with no time for presentation, are papers addressing the following issues:

- What is the difference in stock market performance of firms that invest in employee training?
- What is the total economic value of increases in longevity and health that the nation has seen in the last decades?
- Economically speaking, are lawyers really a drain on the economy and engineers a boost?
- How does a firm's profit margin respond to increases in R&D investment vs. increases in advertising investment?