# "Economic Growth and Academic Entrepreneurship: Lessons Learned for University and Regional Policymakers"

SCHOOL OF BUSINESS
UNIVERSITY AT ALBANY State University of New York


**Professor Donald Siegel**

**Dean-School of Business**
**University at Albany, SUNY**

**President, Technology Transfer Society**

**Editor-*Journal of Technology Transfer***



**NY's Nanotechnology Model:**
**Building the Innovation Economy**

**April 4, 2013**

# Outline

- **Two Economic Theories Relating to University Technology Transfer/Academic Entrepreneurship**
- **Summary of Key Research Quantitative and Qualitative Results**
- **Lessons Learned For University and Regional Policymakers**
- **Shameless Self-Promotion: University at Albany, SUNY-School of Business Entrepreneurial Initiatives and Plugs For Technology Transfer Society/Journal of Technology Transfer**

**Universities, "GPTs," and The Creation of New Industries**

| Period | Technology Developed | (Primary) University | Industry Created |
|---|---|---|---|
| 1940s | Electronic Calculator | University of Pennsylvania | Computers |
| 1960s | Fiber Optics | MIT | Telecommunications |
| 1970s | rDNA | Stanford, California | Biotechnology |
| 1980s | Supercomputing | Illinois | Internet |
| 1990s | Sequencing of DNA/ Human Genome Project | Cal Tech, Johns Hopkins | Pharmacogenomics |
| 2000s | Nanotechnology | UAlbany | ????? |

# William Baumol-The Free Market Innovation Machine-Analyzing the Growth Miracle of Capitalism

- Routine/Systematic Innovation-Large Firms
- Entrepreneurial Innovation-Small Firms
- "David and Goliath Symbiosis"-Joint Efforts of Individual Entrepreneur and Large Industrial Firm $\Rightarrow$ Unprecedented Wealth Creation
- Siegel (2006)-Universities Increasingly Developing and Nurturing Startups; Also Linking Small and Large Firms Who Engage in Entrepreneurial Innovation

# Key Findings From Academic Literature

- **Bayh-Dole Type Legislation Appears to Have Been "Effective" (Siegel et al., 2012)**
- **Education/Training is Needed for Faculty Members, Post-Docs, and Graduate Students in the Specifics of the Entrepreneurial Process, the Role of Entrepreneurs, and How to Interact with the Business/Entrepreneurial Community**
- **Universities Are Becoming More "Strategic" in Technology Transfer/Academic Entrepreneurship**

# Key Results for University and Regional Policymakers (cont.)

- **Property-based Institutions (Incubators/Accelerators and Science Parks) Enhance Commercialization, Especially When They Are Focused on an Industry or Sector**
- **Insufficient Rewards for Faculty Involvement in Technology Transfer at Some Institutions, Especially w.r.t. Entrepreneurial Activity**
- **Incentives Matter (e.g., Royalty Distribution Formulas), But So Do Organizational Practices and Institutional Policies**

# Key Results for University and Regional Policymakers (cont.)

- **Universities Increasingly Focusing on the Entrepreneurial Dimension of Technology Transfer**
- **Academic Entrepreneurs Are Not Less Productive in Their Academic Research After Commercialization**
- **Foreign-Born Scientists Are More Likely to Become Academic Entrepreneurs**
- **Social Networks of Star Scientists Key for New Firm Creation and Regional Economic Development**

# Recommendations Based on Studies of Academic Entrepreneurship

- **Stressing Entrepreneurship (As Opposed to Patenting and Licensing) Promotes Technology Commercialization and Enhances Economic Impact of University**
- **Strong Need to Enhance Incentives for Faculty Members to Be Engaged in Entrepreneurial Activity (and Perhaps For Successful Ones to Serve As Mentors)-Including P&T**
- **More "Open" Immigration Policy for Scientists and Engineers Promotes Academic Entrepreneurship**

# Recommendations Based on Studies of Academic Entrepreneurship

- **Important to Increase Participation/Success of Women & Minorities in Academic Entrepreneurship (as NAS reported in its Evaluation of SBIR)**
- **Entrepreneurship Research, Education, and Community-Based Initiatives Are Key Complements**
- **Important To Develop An Entrepreneurial Culture at the University and in the Local Region (More on That Later)**
- **Corporate Partnerships Yield Better Results With Respect to Academic Entrepreneurship**
- **Entrepreneurship Growing in Prominence As An Academic Field**
- **Important for Business Schools to be Actively Engaged in Technology Transfer/Academic Entrepreneurship (work with TTO, Faculty, and Other Colleges on Campus)**

# UAlbany School of Business-Refocusing on Entrepreneurship and Regional Economic Development

- **School of Business, UAlbany, SUNY Strategies Converge**

**⇒ Strong Support From Central Administration for New Focus on Entrepreneurship (Chancellor, President, Provost)**

  - **At All Levels–Emphasis on University's Role in Job Creation, Economic Development and Entrepreneurship**

- **Key Tactic: <u>Collaboration</u> (With Other Colleges on Campus and Other Universities in the Region)**

# UAlbany School of Business Initiatives Supporting Technology Transfer/Academic Entrepreneurship

- New Undergraduate Concentration in Entrepreneurship
- Entrepreneurship Track in Full-Time MBA Program
- Nanotechnology Track in Full-Time and Part-Time MBA Program
- $500K New York State Student Business Plan Competition
- Life Sciences Entrepreneurship-RNA Institute/School of Business
  - $134K Thermo Fisher Student Venture Fund
- New Undergraduate Degree in Digital Forensics- (Partnership Involving Five Colleges at UAlbany and 8 Community Colleges in NY State)

# UAlbany School of Business Entrepreneurial Initiatives (cont.)

- **Entrepreneurial Finance Research Conferences**
- **$2.8 M Small Enterprise for Economic Development (SEED) Program (Winner of 2012 Tribeca Disruptive Innovation Award)-(MIT, Stanford, and UAlbany!!), UEDA National Award Finalist**
- **Young Entrepreneurs Academy Chapter**
- **Editorial Home of *Journal of Technology Transfer*-**


- **April 19-20, 2013-Technology Transfer Society Conference-New York Academy of Sciences**

**(Keynotes: William Baumol-NYU, David Teece-UC-Berkeley)**

# NEW $64M SCHOOL OF BUSINESS BUILDING

Elevated rendering from northeast of the New School of Business Building