

Bringing Health Care Innovations to Market

The Small Business Innovation Research Program
Innovation Awards for Progress



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Today's Presentation

- The Innovation Imperative
- Role for Public Private Partnerships
 - Overcoming Market Failures
 - Limits of the Venture Capital market
- Innovation Awards: The SBIR Program
 - Key Features
 - National Academies Assessment
 - SBIR and Health Innovation
- Conclusions
- **Caveat: Views expressed are not necessarily those of the National Academies**

Three Interrelated Topics

- Financial Crisis and Innovation
- Innovation and Health
- Practical Steps forward for the Integration of Private Sector's Most Dynamic Players in Global Health



The Innovation Imperative

- 3 Key Points
 - Innovation is Key to Improving Global Health
 - Small Businesses and Universities Play a Key Role in the Innovation Process—essential for progress
 - New Institutions and New Incentives are Required to Address Global Health Challenges

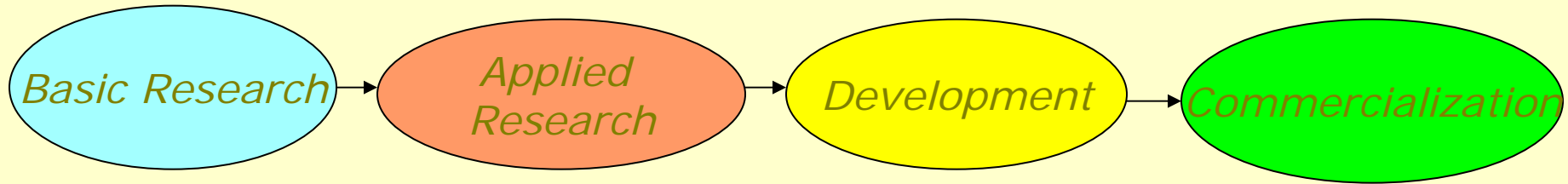
Public Private Partnerships
Create the Incentives and are an
Important Source of Funding for
Innovation

They Help Overcome National
Myths and Failures of the
Capital Market

But Popular Myths about
Innovation remain a Barrier to
Urgently Needed Innovation

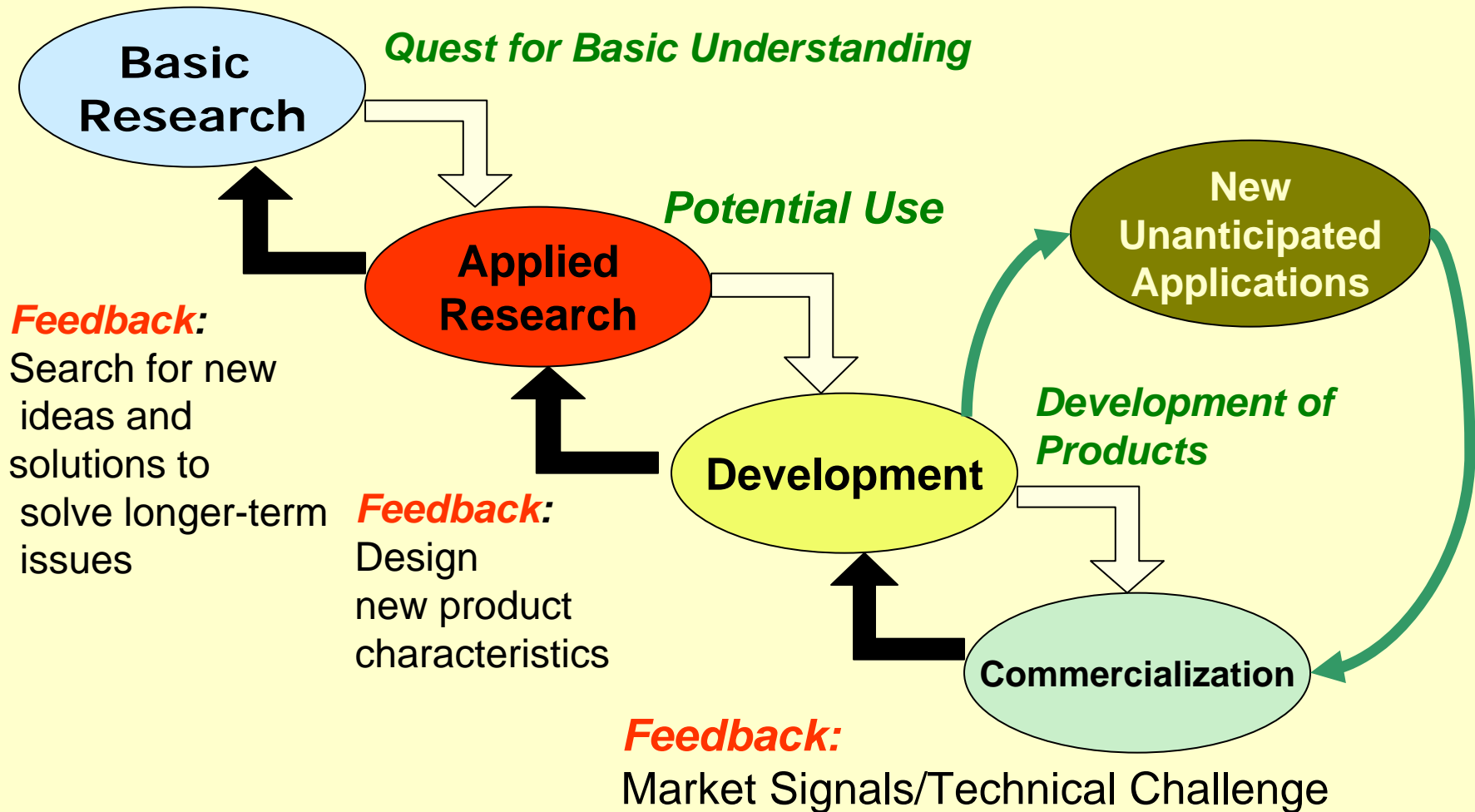
What are some of these myths?

The Myth of the Linear Model of Innovation



- **Reality: Innovation is a Complex Process**
 - Major overlap between Basic and Applied Research, as well as between Development and Commercialization
 - Principal Investigators and/or Patents and Processes are Mobile, i.e., not firm-dependent
 - Many Unexpected Outcomes
 - Technological breakthroughs may precede, as well as stem from, basic research
- **Many of our policies and institutions remain based on this linear model**

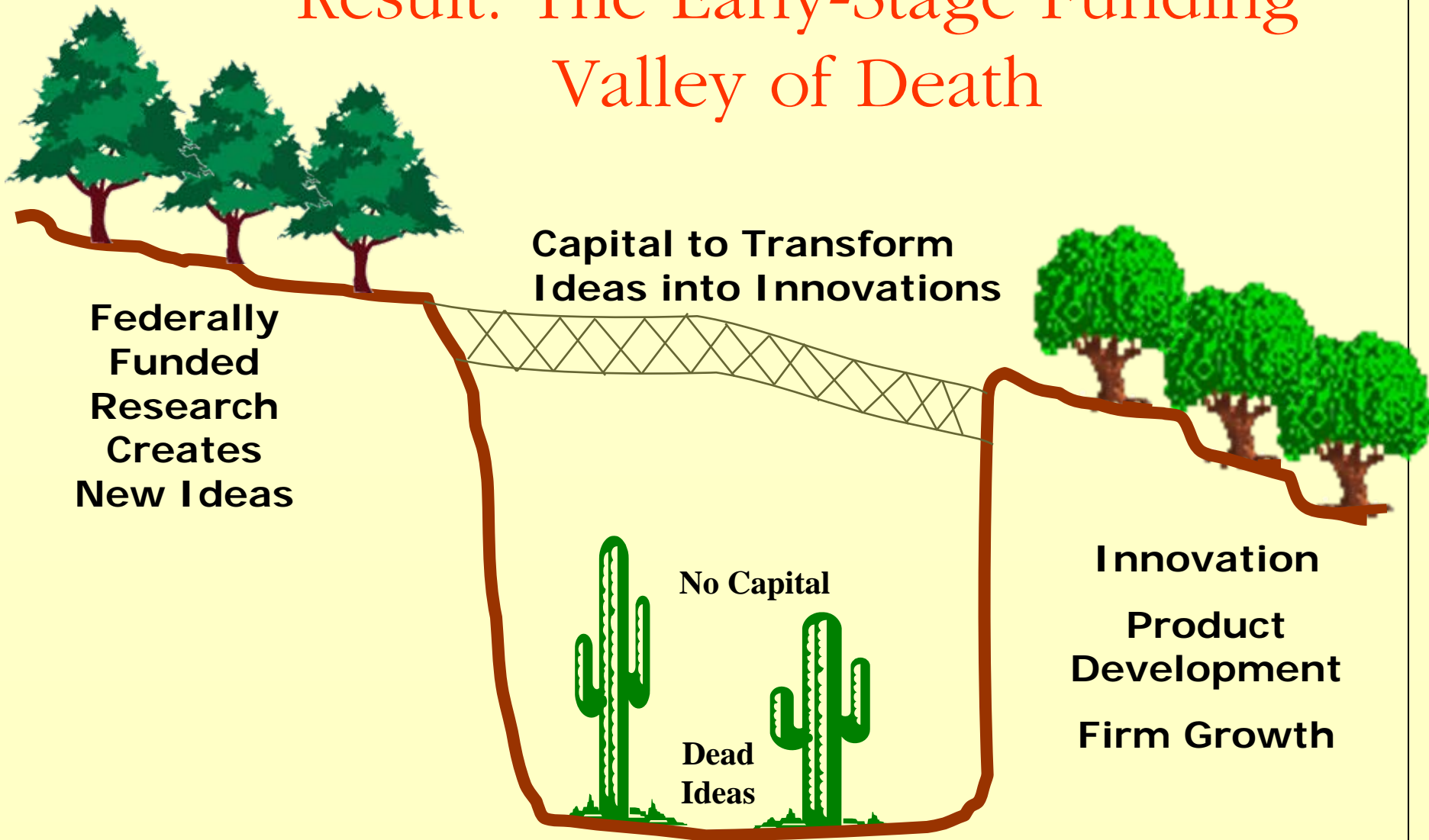
Non-Linear Model of Innovation



The U.S. Myth of Perfect Markets

- Strong U.S. Myth: “If it is a good idea, the market will fund it.”
- Reality:
 - Potential Investors have less than perfect knowledge, especially about innovative new ideas
 - Market Failure: “Asymmetric Information” leads to suboptimal investments
 - George Akerlof, Michael Spence and Joseph Stiglitz received the Nobel Prize in 2001, “for their analyses of markets with asymmetric information”

Result: The Early-Stage Funding Valley of Death



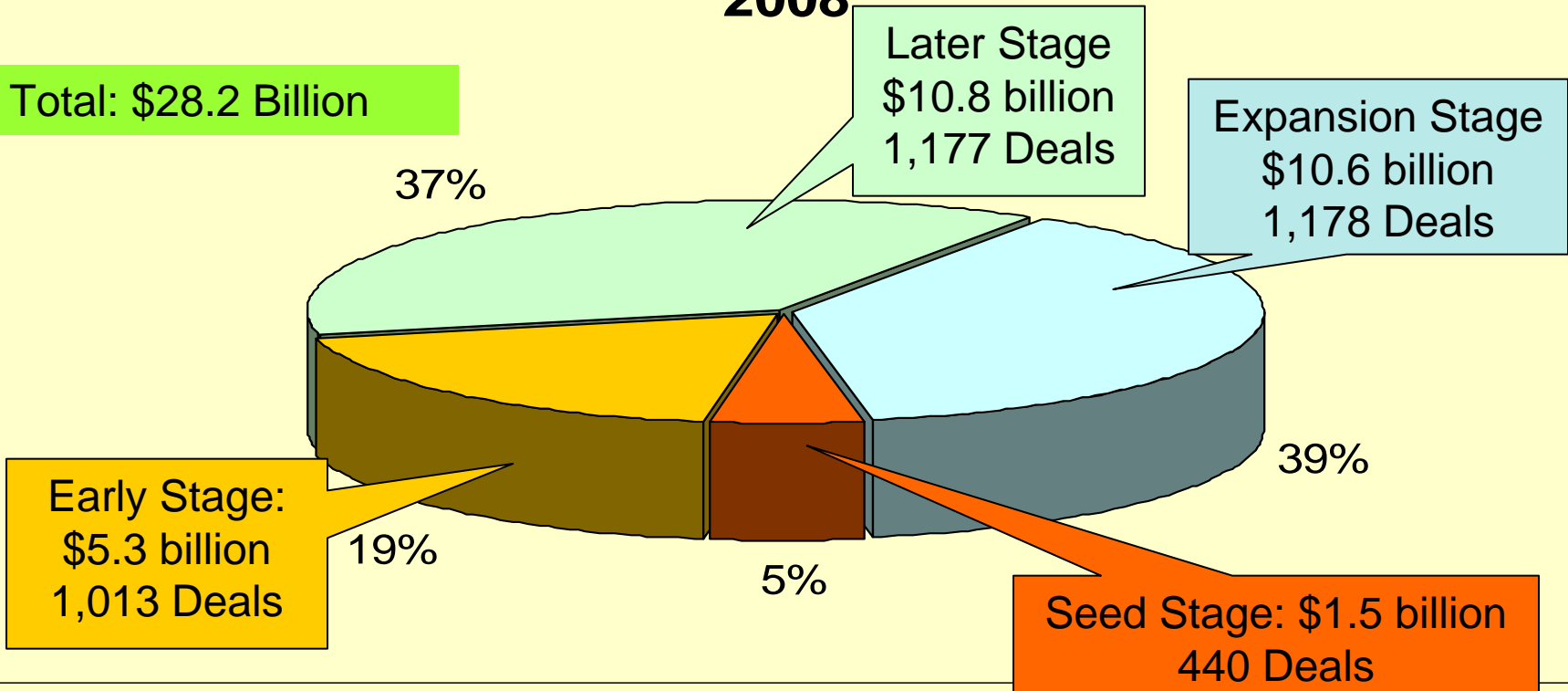
The Myth of U.S. Venture Capital Markets

- Myth: “U.S. VC Markets are broad & deep, thus there is no role for government awards”
- Reality: Venture Capitalists have
 - Limited information on new firms
 - Prone to herding tendencies
 - Focus on later stages of technology development
 - Most VC investors seek early exit

Large U.S. Venture Capital Market is Not Focused on Seed/Early-Stage Firms: Aggregate Amounts are Falling

U.S. Venture Capital by Stage of Investment 2008

Total: \$28.2 Billion



Source: PriceWaterhouseCoopers/Thompson Venture Economics/ NVCA 2009

Venture Capital Markets are in a 'Pause' Mode

- Markets are cyclical, and so is venture capital:
Sharp drops in 4th Quarter Spending
 - Washington Post Feb 1, 2009 "Venture Investments fell back in 2008" and New York Times, Feb 3, 2009, "Angels Flee from Tech Start-ups"
- **Few Exits:** For the market to function, liquidity events, (i.e., acquisition or initial public offering) must be possible
 - Last year, Silicon Valley saw only one IPO
- **Few Entries:** Venture Capitalists are retrenching
 - VC funds are conserving Capital to preserve the existing portfolio investments
 - Few new investments are being undertaken
- **Markets are drying up: Promising New Companies with Valuable New Ideas are at Risk**

The Small Business Innovation Research (SBIR) Program

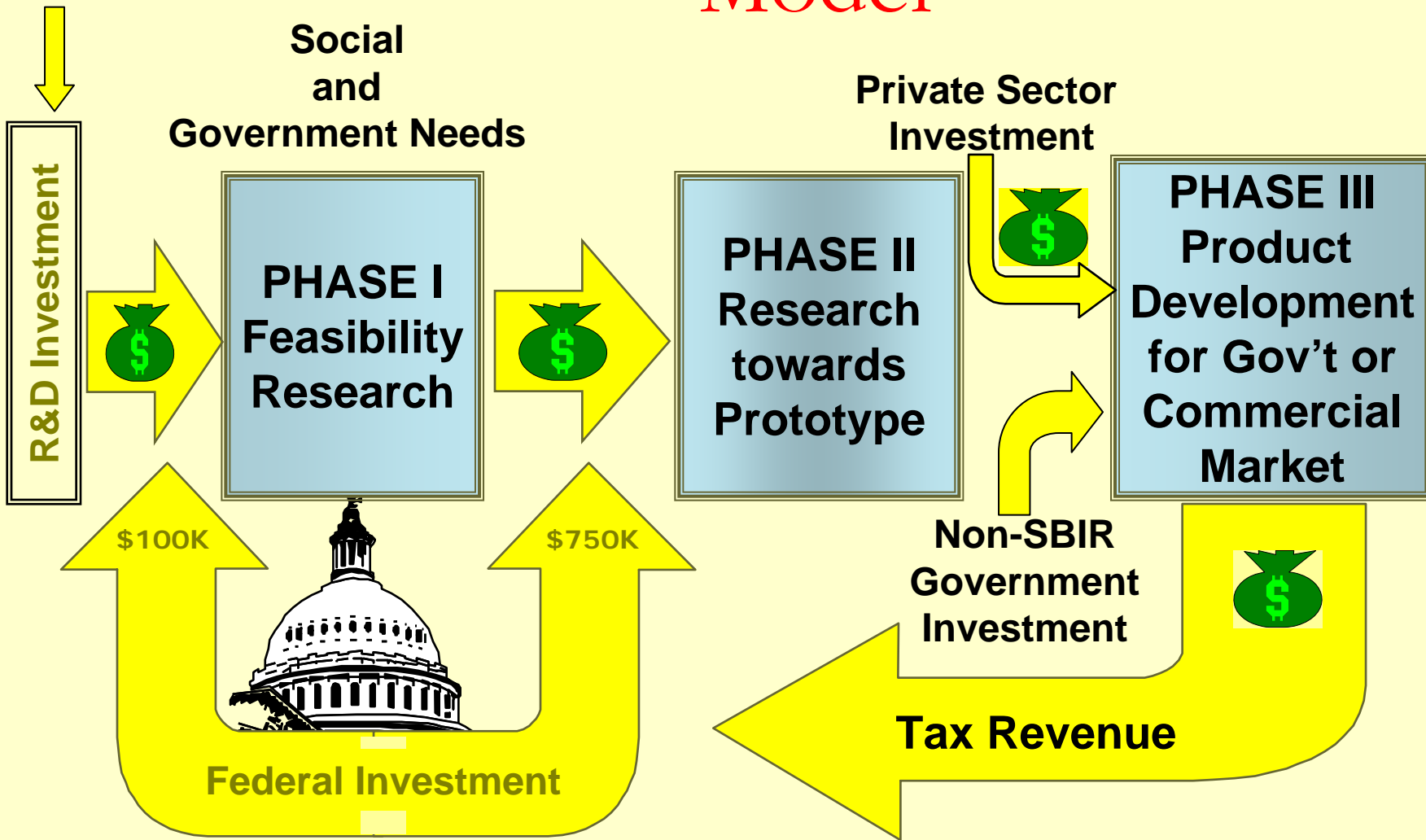
Helping Innovative Small
Businesses Cross the Valley of
Death

SBIR Program—Key Features

- **Long-lived:** In place for 25 years
 - Created by the Small Business Innovation Act of 1982 & renewed in 1992 & 2001
- **Decentralized:** Each Agency uses its funds to support research by small companies to meet its mission needs
- **No New Money:** 2.5% of Agency R&D budgets set-aside for small business awards
 - This provides budget stability
- **Large Scale:** Largest U.S. Innovation Partnership Program
 - Currently a \$2.3 billion per year
- **Focus:** Funds Proof of Concept and Prototype
- **Helps firms across the Valley of Death and attract private capital or public contracts**

The SBIR “Open Innovation” Model

\$147 billion



“The SBIR program is sound in
concept and effective in
practice.”

Key Finding of the National
Academies' Recently Concluded
Assessment of SBIR

Academies' Research Reveals SBIR Impact on Firm Formation and Growth

- **Company Creation:** 20% of responding companies said they were founded as a result of a prospective SBIR award (25% at Defense)
- **Research Initiation:** SBIR awards played a key role in the decision to pursue a research project (70% claimed as cause)
- **Company Growth:** Significant part of firm growth resulted from award
- **Partnering:** SBIR funding is often used to bring in Academic Consultants & to partner with other firms

SBIR and Health Research

- At NIH, SBIR funds projects that have a positive impact on health
 - NIH awards are selected for their potential to advance knowledge and provide new solutions in health care and bio-medicine
- SBIR companies bring new products to Market, including:
 - Improved Dialysis catheters
 - Safe mass inoculation technologies
 - High throughput screening assay to identify specific inhibitors of smallpox variola virus

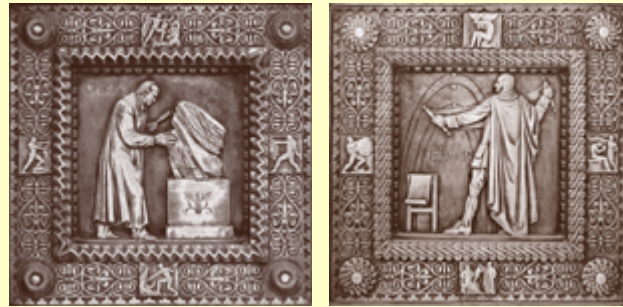
Conclusions

- To Address the Health Innovation Challenge:
 - Use Proven Programs
 - Draw on the Bottom of the Pyramid
 - Provide Incentives, Not Mandates for Catalytic, collaborative, results oriented action

“Innovation” is the Key to how Nations Improve Health in the 21st Century

- Supporting innovation should be recognized as a central function of the government
 - Key to a nation’s wellbeing and competitiveness
- Successful Innovation policies require sustained attention & regular review
 - Sustained, policy attention
 - Requires an understanding of the innovation ecosystem
- Learning from each other is a must

Thank You



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