

# INVESTING IN OUR FUTURE

Iain Cockburn, Boston University

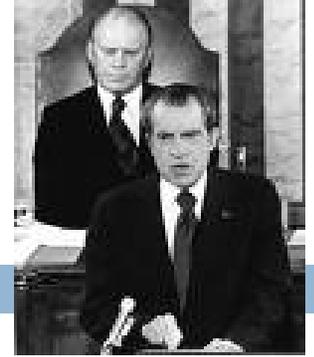
# Life Sciences Innovation System

- A “crown jewel” of the US economy
- Public investment in research is a critical driver of technological progress, delivering
  - ▣ Improvements in human health
  - ▣ Employment, returns to investors, economic growth
  - ▣ Security
- How does this work?

# Foundations of Leadership in Life Sciences Innovation

- High and relatively stable public funding of basic research
- Long term development of a large, highly-skilled specialized R&D workforce
- Public funding focused on “bottom up” peer-reviewed, investigator-initiated projects
  
- Plus:
  - High willingness to pay for innovative and differentiated new products, coupled with insurance-driven demand and stringent regulation of entry into the product market
  - “Workable” IPRs, enabling innovators to capture value and supporting an extensive market for technology
  - Intense innovation-oriented competition throughout the value chain

# Staying the course?



## The War on Cancer

- “I will also ask for an appropriation of an extra \$100 million to launch an intensive campaign to find a cure for cancer” (1971 SOTU)
- The 1971 National Cancer Act provided budget for National Cancer Institute, ushering in a sustained and substantial Federal commitment to life sciences research

## Project Independence

- Let this be our national goal: At the end of this decade, in the year 1980, the United States will not be dependent on any other country for the energy we need to provide our jobs, to heat our homes, and to keep our transportation moving... to spur energy research and development, we plan to spend \$10 billion in Federal funds over the next 5 years. (1974 SOTU)

During the 1970s, Federal programs directed significant attention and resources towards both energy and life sciences innovation....

# Why sustained funding matters

- Takes decades to see results from investment
  - ▣ Much of the payoff comes from “spillovers” – unanticipated uses of new ideas
- Instability of budgets very costly
  - ▣ **Destroys career paths**, strands other specialized investments, undermines cumulative trajectories of inquiry
- Public R&D funding “buffers” notoriously fickle private investment
- Long-term funding supports
  - ▣ development of specialized human capital
  - ▣ evolution of institutions that allow for effective public-private interaction

# Role of “academic” science

- Resource allocation through investigator-initiated and peer-reviewed processes rather than top-down “command-and-control”
- Freedom of inquiry, entrepreneurship, new players drive diversity of experimentation
- “Blue sky” projects are complements to public health priorities and product market incentives
- Bottom-up agenda directs a cumulative stream of innovation that delivers long-term breakthroughs