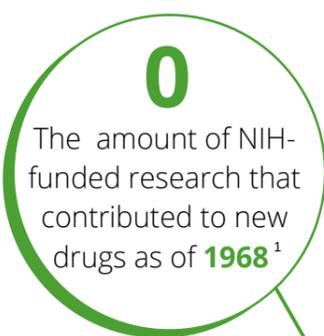


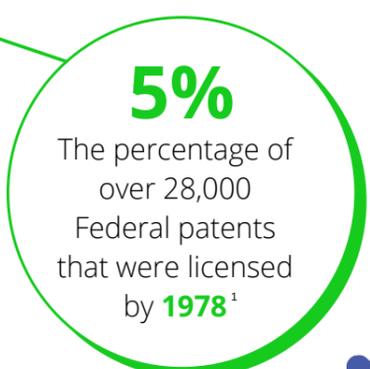
# RESEARCH INNOVATION'S LEGISLATIVE LEGACY

## Research Ecosystem Before 1980

Licensing of patents used to be a centralized process. What happened with the invention was up to the government.<sup>1</sup> Usually, findings were published in the literature and effectively forgotten about, leading to a gap in U.S. global competitiveness and innovation that was beginning to grow in the 1970's.<sup>1</sup>



1970



## The Importance of Bayh-Dole

**The Bayh-Dole Act (1980)** enabled the decentralization of patent management. Academic institutions, nonprofits, and businesses now had ownership of any intellectual property (IP) that arose in part from federal funding.<sup>1</sup> These entities could then license that IP to industry, enabling commercial development.<sup>1</sup> This new method of technology transfer incentivized researchers to pursue commercialization of their innovations.

Under Bayh-Dole, the government retains non-exclusive, non-transferrable rights and a provision known as march-in authority ensures that patent holders commercialize their inventions.<sup>1,3</sup> The U.S. experienced a 10-fold increase in patenting in the first two decades after Bayh-Dole was enacted.<sup>1</sup> Without the reliable patent protections included in Bayh-Dole, innovators couldn't risk decades and billions of dollars in R&D for the next treatment or cure.

## Additional Legislation Ushering in Innovation

### 1980- Stevenson-Wydler Technology Innovation Act

Provides a pathway for federal labs to share inventions with state and local governments and the private sector.<sup>4</sup>

### 1981- R&D credit

25% tax credits given to entities that invest a certain amount in R&D. Aims to solidify private investments in R&D.<sup>5</sup>

### 1986- Federal Technology Transfer Act

Cooperative Research and Development Agreements (CRADA) were strengthened, ensuring federal researchers retain patent rights and receive reimbursement.<sup>6</sup>

### 1988- Manufacturing Extension Partnership

Assists U.S. small and medium sized manufacturers in adopting new technologies and enhancing product innovation.<sup>7</sup>

## Impacts of Technology Transfer

Between 1996 and 2017:



**\$1.7T** contributed to Gross Industrial Output<sup>2</sup>

**100,000+** patents issued<sup>2</sup>



**420,000+** inventions<sup>2</sup>

**13,000+** start-ups formed<sup>2</sup>



**5.9M** jobs supported<sup>2</sup>

**\$865B** contributed to U.S. GDP<sup>2</sup>



1980



The number of universities that had been granted a patent.<sup>1</sup>

1990



U.S. Patents Awarded to Universities<sup>1</sup>

In **1980:** **390**      In **2015:** **6,680**

2000

2010

## R&D Spending

**Industry**  
**66.7%**  
\$129.5B<sup>9</sup>



**Federal Agencies**  
**22.2%**  
\$43B<sup>9</sup>



**Academic & Research Institutions**  
**8.1%**  
\$15.7B<sup>9</sup>



**\$194.2B** =  
Medical and Health R&D Spending in **2018**<sup>9</sup>

2020

**\$2.6B**

The estimated mean investment needed to bring a new drug to market in **2016** (using 2013 dollars)<sup>10</sup>

