



# **MAXIMIZING INNOVATION AND TECHNOLOGY COMMERCIALIZATION OF FEDERAL RESEARCH INVESTMENTS**

BEST PRACTICES AT INNOVATION AND ECONOMIC PROSPERITY UNIVERSITIES

## **EXECUTIVE SUMMARY**

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**ABOUT ECONOMIC GROWTH INSTITUTE:**

The Economic Growth Institute has provided innovative economic development programming and applied research for more than 35 years. Through our work, we build more resilient businesses and communities, connect university innovations with small and medium-sized enterprises, and provide student learning experiences for the next generation of community and business leaders.

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# EXECUTIVE SUMMARY

## OVERVIEW

Research universities and Federal Research Labs (FRL) are the cornerstone of American innovation. The country's national competitiveness depends on these institutions to increasingly perform, translating research into the innovative products the country needs.

Understanding how to best facilitate translating research into the market is complex. Practitioners understand that research translation is both an art and a science, requiring a careful balancing act among research, its funding mechanisms, government, and industry. Critical to building on the successes of research translation is understanding gaps in the processes, incentives, and support systems, as well as opportunities for growth. This study explored best practices in technology commercialization across public research universities designated by the Association of Public & Land Grant Universities as "Innovation & Economic Prosperity" universities, or "IEP universities."

Fifty-nine IEP universities participated in the mixed-methods study, which included 51 faculty researcher interviews, 200 survey respondents,

and 10 interviews with Federal Research Labs. To better understand how IEP universities compared with other public institutions, the study compared IEP universities with peer universities. Among the 110 public doctoral universities in the U.S. with detailed technology commercialization output data available between 2012 and 2016, those with the IEP designation produced a significantly higher annual mean volume of new disclosures, new patents, startups initiated, and exclusive licenses and options. This demonstrates the unique qualities of this study group with its intentional focus on economic development and innovation.

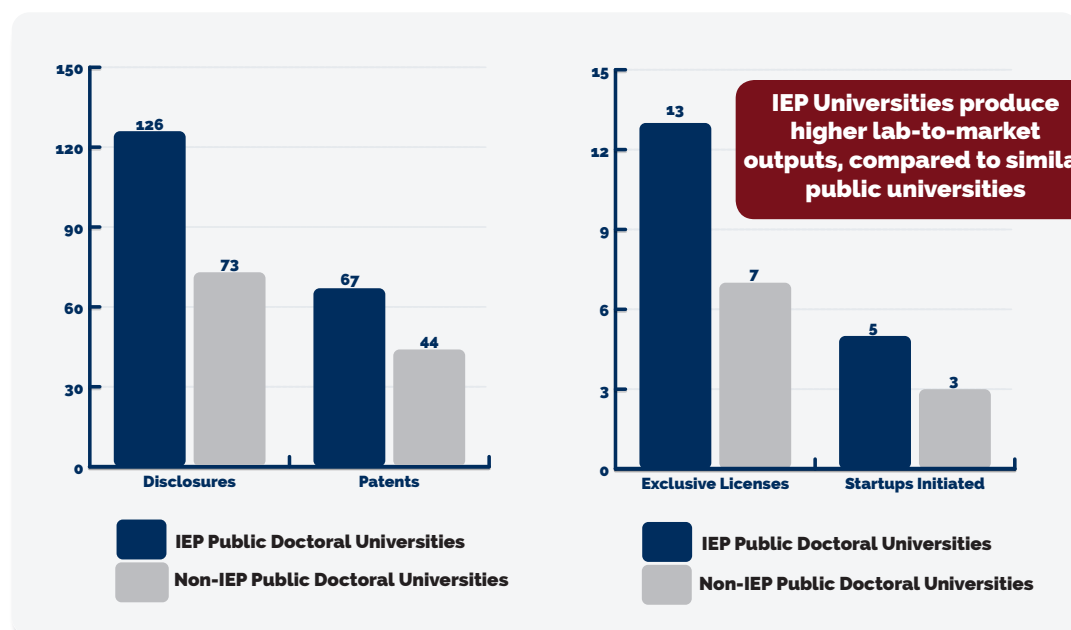
## BEST PRACTICES

When best practices are documented and embraced, it results in more information shared, gaps filled, commercialization sped up, more companies formed, and research more rapidly benefiting society. In addition to helping solve the nation's technical challenges, universities are relied upon by their regions for economic health and market diversification.

The best practices emerging from this study are based on the interviews and surveys from IEP universities. The study groups practices into four areas: **culture, champions, incentives, and collaboration**. Many universities were strong in at least one of these areas, with the most productive cohesively harnessing three or four best practices to promote lab-to-market activities.

### IEP Universities produce higher commercialization outputs

Mean Annual Count from 2012 - 2016 for 110 Public Universities



Source: AUTM STATT (2012–2016)

Sample included 110 public doctoral universities with AUTM data available.



## VALUE TECHNOLOGY INNOVATION AND LAB-TO-MARKET ACTIVITIES AT ALL LEVELS THROUGH CULTURAL NORMS

While universities have always been powerhouses of knowledge and invention, the translation of research into the marketplace is still a relatively new venture. Often universities struggle to balance all the priorities of education, job preparation, research and more. However, many of the IEP universities have balanced these as well as proven their ability to promote innovation and technology commercialization<sup>1</sup> as a priority. This, in turn, has created an environment for lab-to-market activities to thrive through strong cultural support. Effective lab-to-market university cultures:

- Value translational research and commercialization activities as academic activities
- Reward commercialization activities through career advancement and public recognition
- Support people, programs and innovations through funding

Best practices for cultural norms include:

- Valuing technology commercialization at all levels of leadership and recognition of the activity through rewards and funding
- Reducing administrative barriers through streamlining of processes, reducing departmental duplication, or mitigating conflicts
- Supporting faculty as researchers and not as CEOs (only 5% of faculty interviewed wanted to be the CEO of a spinout)



## SUPPORT INNOVATION AND COMMERCIALIZATION AT ALL LEVELS THROUGH 'CHAMPIONS'

Moving innovations from the lab into the market is best facilitated by the right people in the right places that can translate and connect academic and industry needs. This support varies from university to university and could include university tech commercialization staff, academic leaders or departmental peers.

Effective programming utilizes champions with strong industry and commercialization experience to guide faculty and other stakeholders through the lab-to-market process. Universities with lab-to-market programs

led by industry professionals produced, on average, higher commercialization outputs, such as patents and exclusive licenses. Additionally, effective mentorship-in-residence programs were utilized to a greater degree by IEP universities producing greater average commercialization outputs.

The department chairs and peers also championed a researcher on a daily basis, by providing direction and valuable mentoring in beginning translational research.

## \$ INCENTIVES AND RESOURCES FOR TECHNOLOGY COMMERCIALIZATION

The policies impacting lab-to-market incentives are broad, from legal and intellectual property agreements and conflict of interest to faculty leave time and standards for promotion and tenure. Effectively structuring these all provided key incentives for researchers.

Funding was vital in the process for the forward progression of the technology. Federal funding was the most common source for translational research, but internal-university funding, external investor funding, industry funding and state funding were also utilized by researchers in the lab-to-market process.

Infrastructure provided support for commercialization activities. Technology or Research Parks were common among IEP universities. Additionally, formal business engagement centers and incubators or accelerators were more common at IEP universities with higher commercialization outputs.



## COLLABORATION FOCUSED ON TECHNOLOGY COMMERCIALIZATION

Key collaborations are necessary throughout the process to foster ideas and to access resources throughout the ecosystem. Faculty researchers reported utilizing internal collaborations, university-to-university collaborations, and cross-sector collaborations in lab-to-market activities. Survey respondents at IEP universities with a higher commercialization outputs reported more confidence in their collaborations versus other IEP universities.

<sup>1</sup> Throughout the study, technology commercialization and lab-to-market will be used interchangeably. These terms refer to the process of taking an initial innovation from a "lab" into the marketplace for an end consumer. Translational research refers to the initial process of shifting from basic research into applied research.