

NSF-funded Research: Translational Impact and Innovation

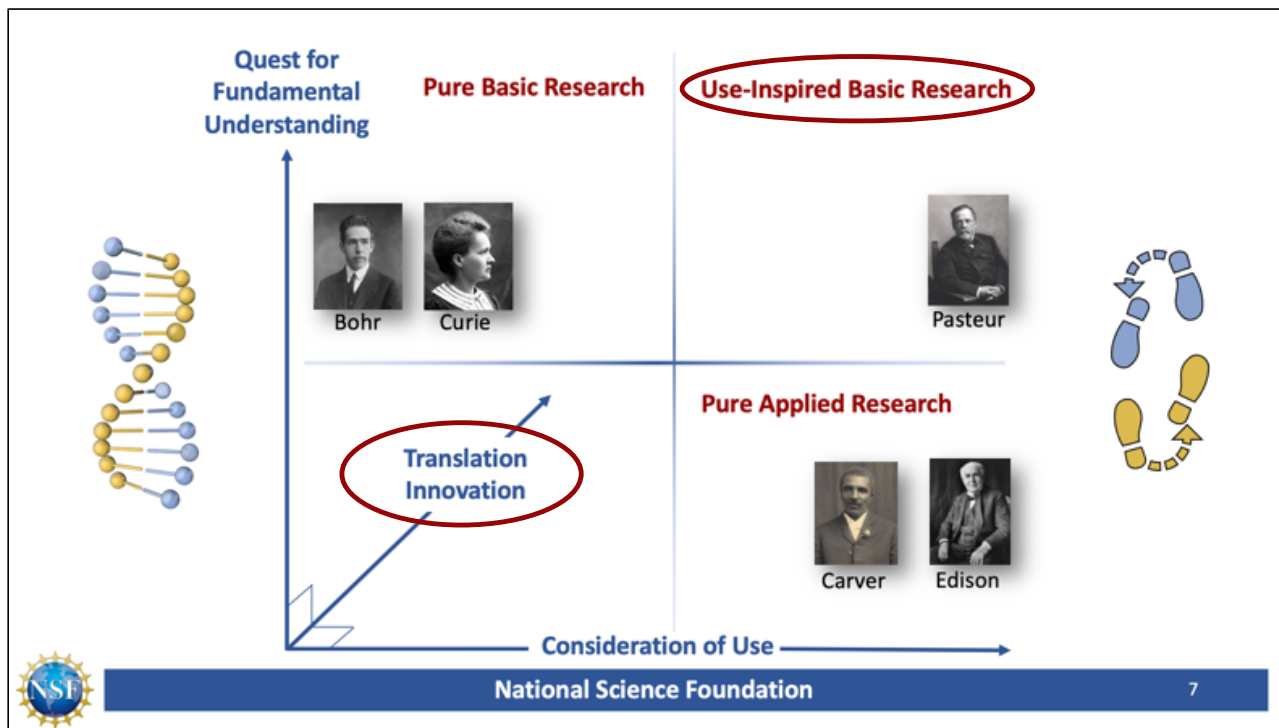
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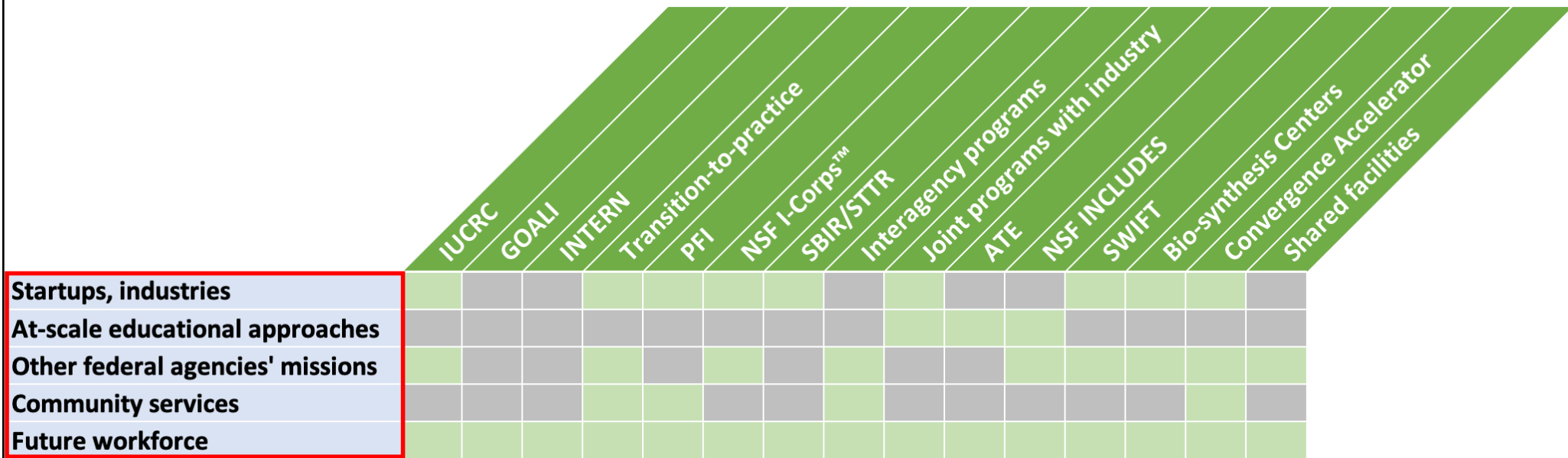


Today's objectives



- Deeper dive into translational-impact portfolio
- Lessons learned, capacity
- Imagining tomorrow's innovation ecosystem

Translational impacts, mechanisms



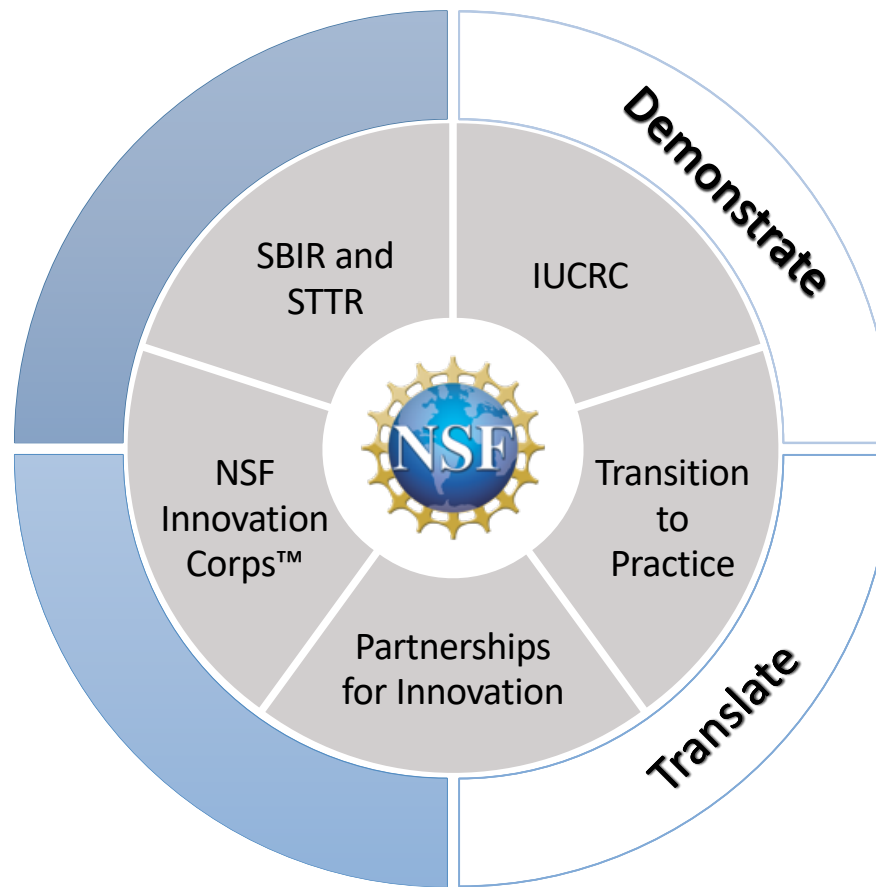
New industries

Federal enterprise

At-scale education

Community services

Future Education



In a recent 10-year period:

- **73 centers nationwide**
- **203** research sites
- **37** states
- **1,630** students hired by members



- Catalyzes pre-competitive research through sustained engagement between industry, academics and government agencies



\$20K-\$150K across Phases

\$23M/year for >73 centers

100s more centers





- Mature ideas or research results
- Demonstrate as usable capabilities
- For the research community or industry

\$150K-\$1M per project

\$12M per year

>\$500M in viable projects



New industries

Federal enterprise

At-scale education

Community services

Future Education



- Create collaborations with industry
- License NSF-funded research outputs to third-party corporations or to start-up companies

\$250K-550K per project

\$22M per year

>\$500M in viable projects





- Train NSF-funded faculty, students in innovation and entrepreneurship skills to spur translation of research to marketplace

- 8 Nodes, 99 Sites to date
- Teams focus on **Product-Market Fit**
- Curriculum/process focus
- Nearly 800 startups created to date

\$15M/Hub; \$50K/Team

\$37M/year for 200 Teams

1000s of Teams per year





- Up to \$1.75M in R&D funding to develop transformative, deep tech, high-impact technologies



- Transforms scientific discovery into products and services with commercial and societal benefit

\$250K Phase I; \$1M Phase II;
\$500K Phase IIB

\$234M per year

>\$1B in requests

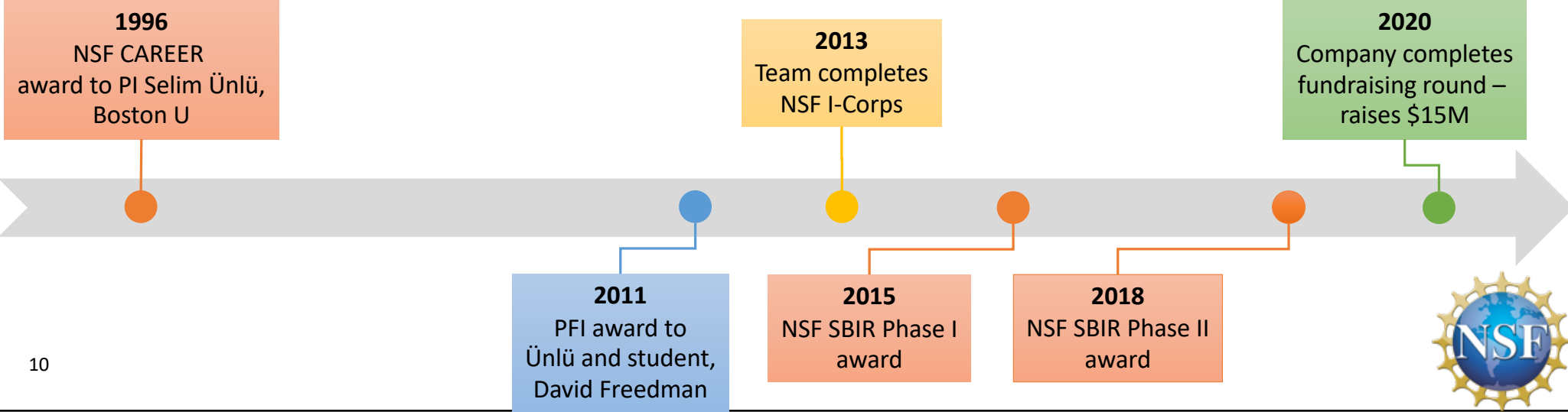
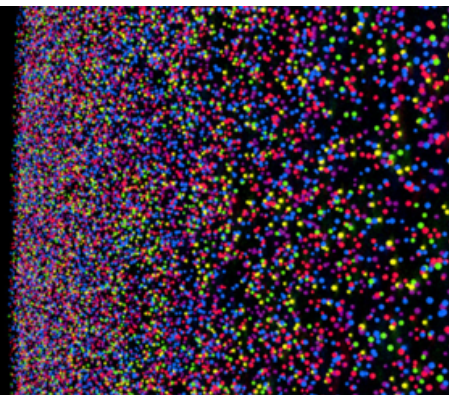


Exploratory to translational: Biomarker colocalization

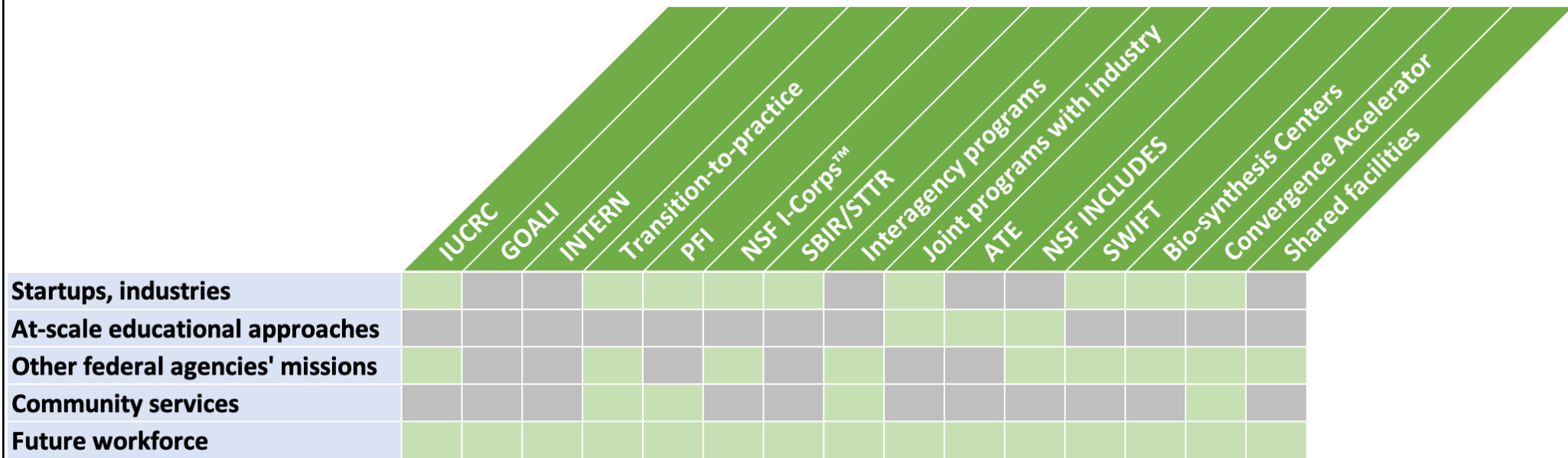


BIOMARKER COLOCALIZATION THROUGH FLUORESCENCE

The ExoView™ platform provides the ability to measure up to 4 markers on a single extracellular vesicle, with single binding event sensitivities. Measure even the smallest exosomes with confidence.



Translational impacts, mechanisms



At least \$500M per year

>10X untapped capacity



Envisioning tomorrow's innovation ecosystem



INDUSTRIES OF THE FUTURE
INSTITUTES: A NEW MODEL FOR
AMERICAN SCIENCE AND TECHNOLOGY
LEADERSHIP

“...The [Institutes] will [enable] tight coupling of multiple sectors [that] will enhance innovation across the spectrum of foundational to applied R&D by enabling rapid feedback and providing a clear pathway to translate discoveries to practice...”

“...we must take full advantage of [the] synergistic combination of philanthropic and government support for science ... government can and should cooperate and coordinate with philanthropy ... in the support of science...”



“Tackle scientific and technological challenges that cannot be efficiently addressed by standard organizational structures [and] benefit society broadly in ways that ... harbor opportunities for acceleration...”



Envisioning tomorrow's innovation ecosystem

NSF, NSB Listening Sessions



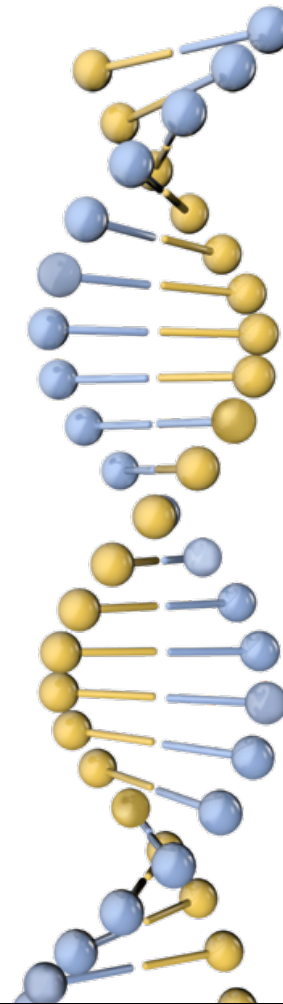
- Tackling grand societal challenges
- Diversifying the STEM workforce
- Leveraging “blended teams”



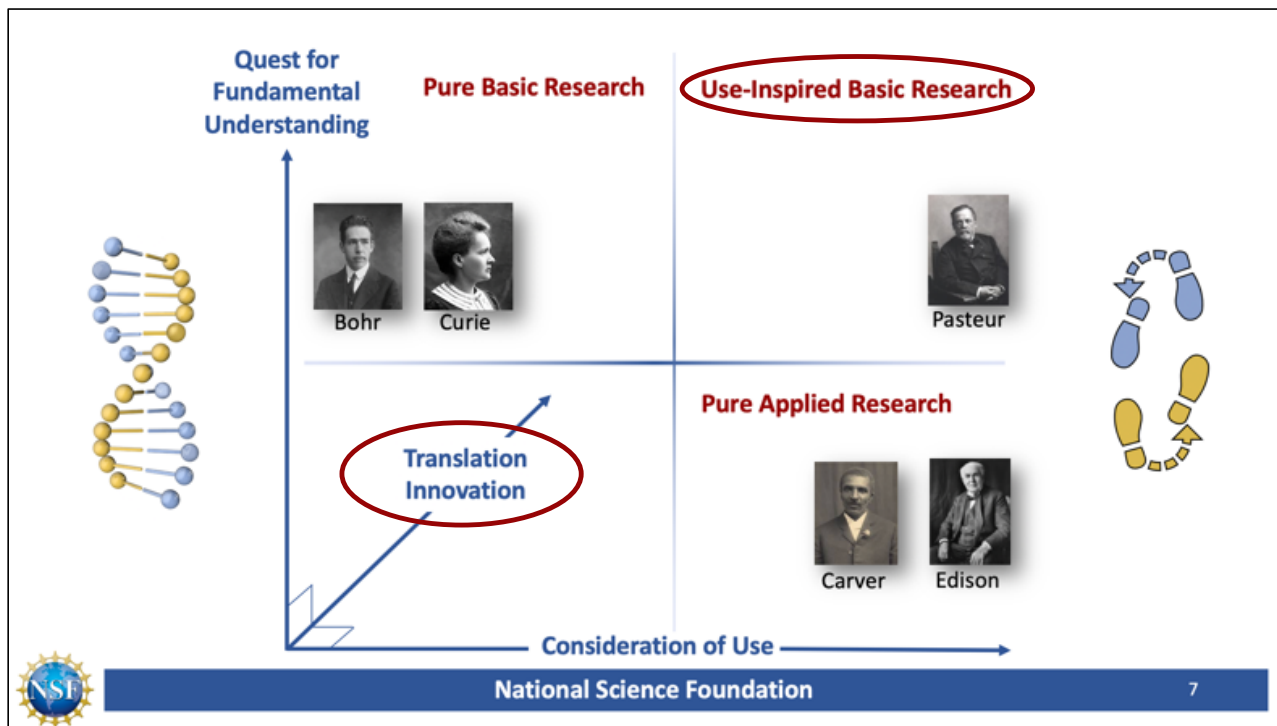
Imagining innovation accelerators

- Use-inspired, challenge-driven, convergent
- Leveraging the virtuous cycle of foundational and use-inspired research
- Long-term, large-scale
- Public-private partnerships
- Innovation and technology transfer
- Education, workforce, diversity

Scalable growth: 2, 5, 10X



The seeds of a crosscutting emphasis



- Use-inspired, translation, and innovation are all part of our DNA
- Opportunity to elevate, enhance
- Drives our mission, our S&E enterprise, our future