



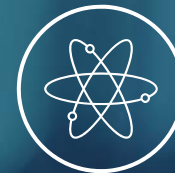
The National Institute for Innovation in Manufacturing Biopharmaceuticals

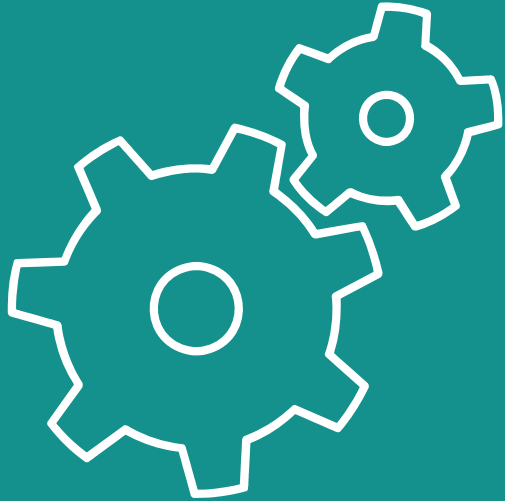
AMERICAN INNOVATION AT WORK

info@niimbl.org

Our Mission

The NIIMBL mission is to accelerate biopharmaceutical manufacturing innovation, support the development of standards that enable more efficient and rapid manufacturing capabilities, and educate and train a world-leading biopharmaceutical manufacturing workforce, fundamentally advancing U.S. competitiveness in this industry.

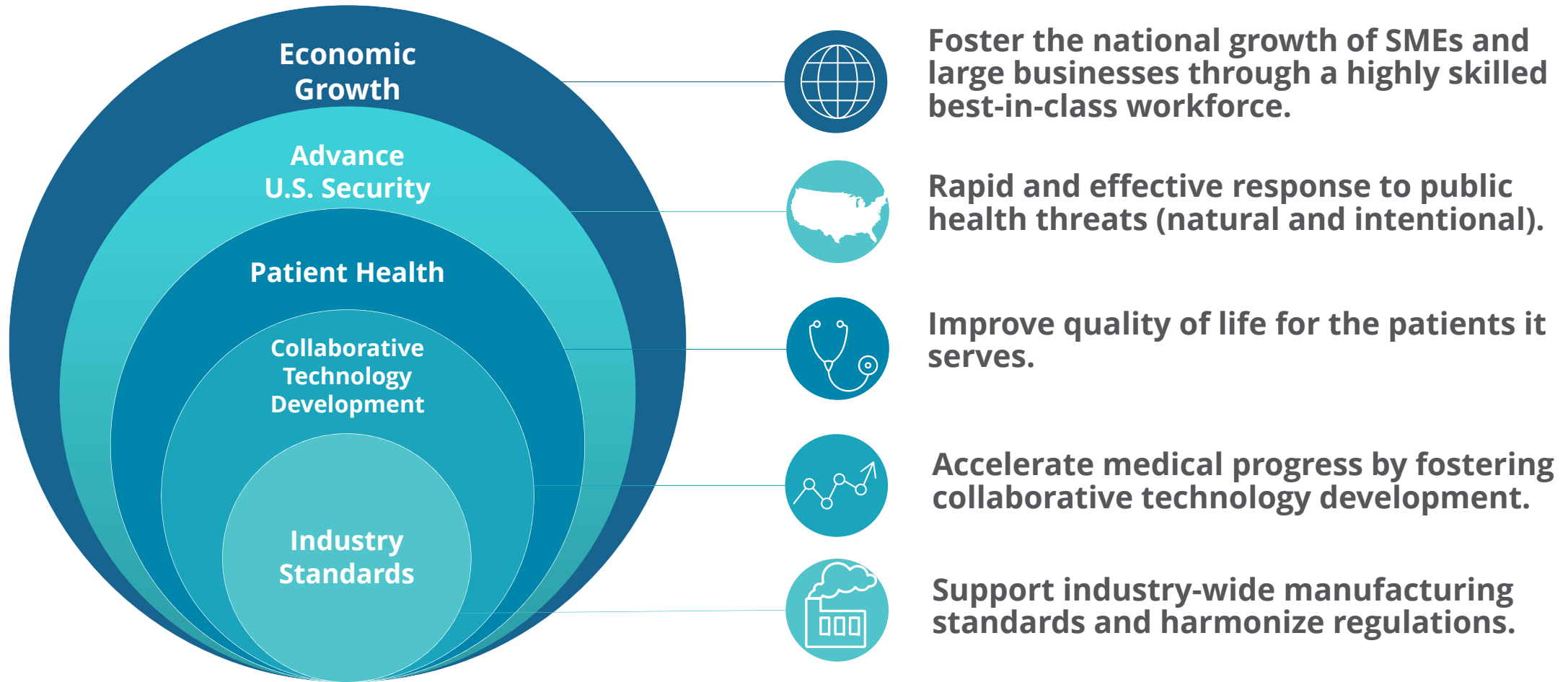




What is biopharmaceutical manufacturing?

Please see the What is Biomanufacturing?
video hosted at www.niimbl.org

The NIIMBL Impact



Funding

\$70,000,000
National Institute of
Standards and Technology

NIST

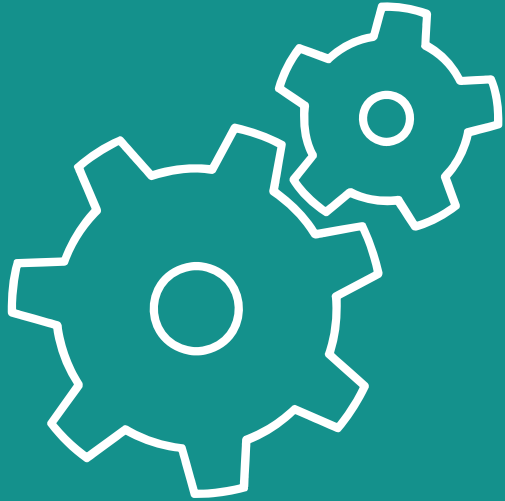


\$180,000,000
Other Commitments



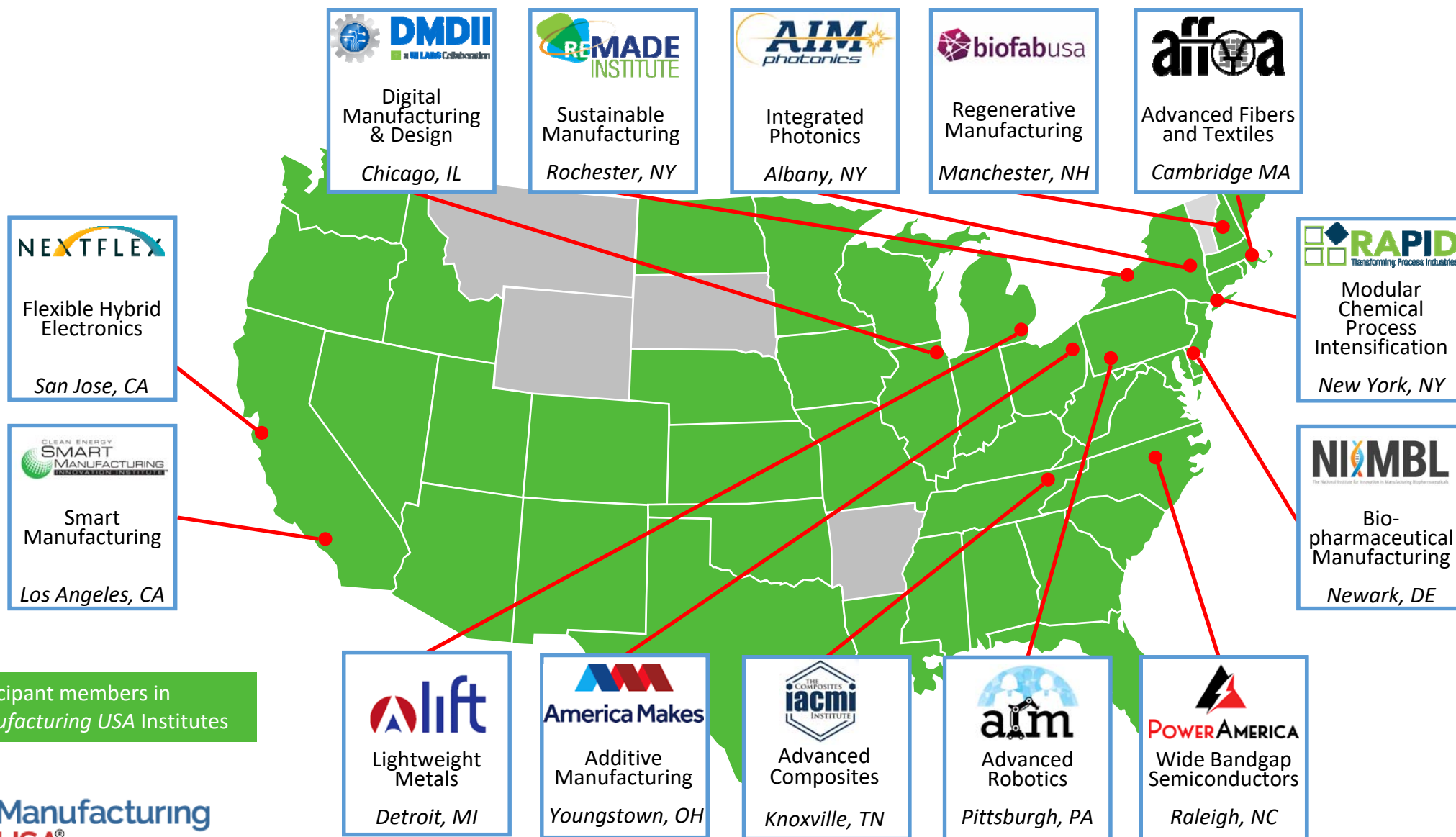
NIIMBL is funded by a \$70,000,000 cooperative agreement from the National Institute of Standards and Technology and leverages >\$180,000,000 in other commitments.

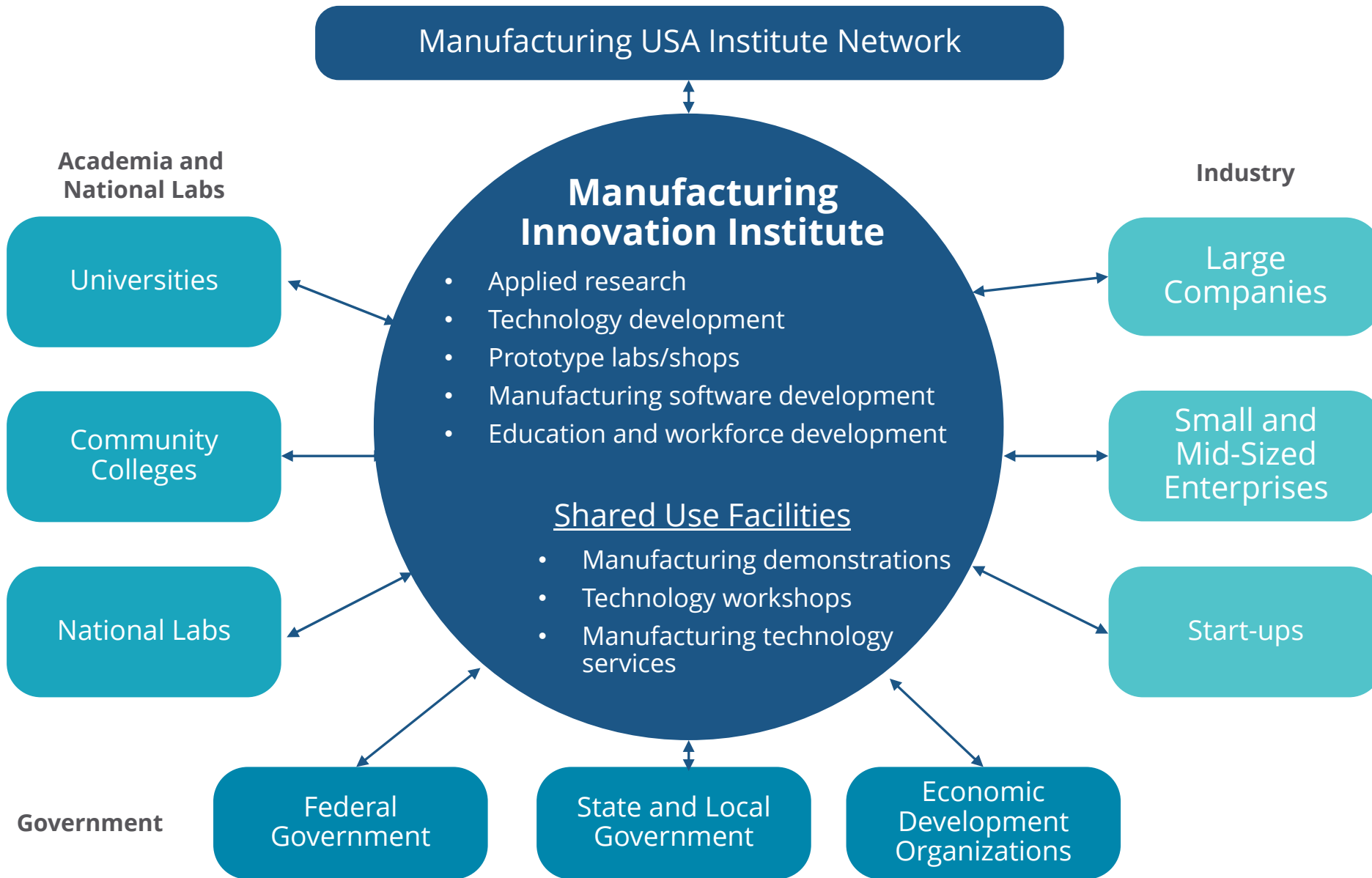
NIST is a non-regulatory federal agency within the U.S. Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.



Manufacturing USA network

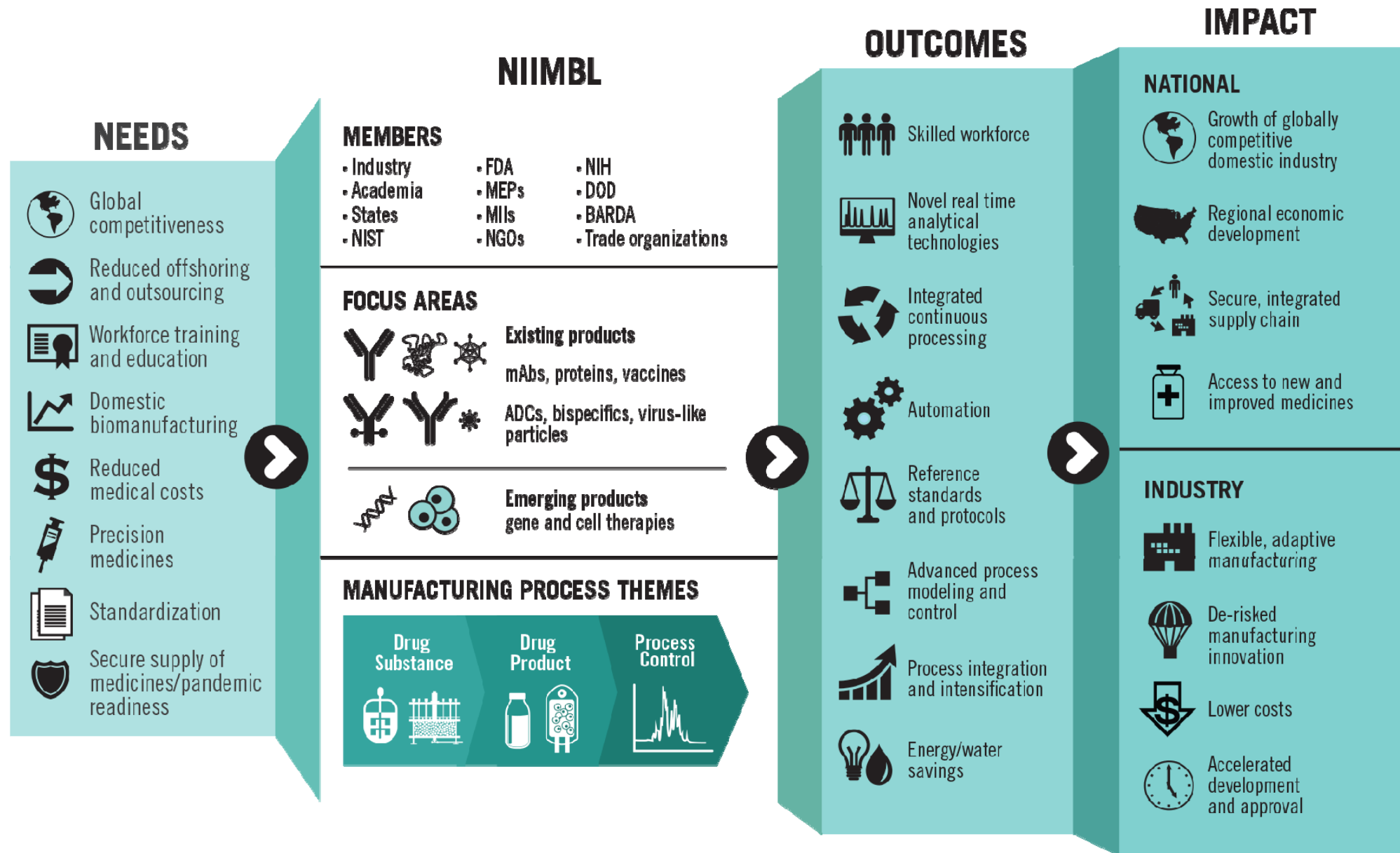
Manufacturing USA[®] Today





Other institutes:

- Flexible Hybrid Electronics
- Additive Manufacturing
- Integrated Photonics
- Digital Mfg & Design
- Light Metal Manufacturing
- Advanced Composites
- Wide Bandgap Semiconductors
- Advanced Textiles
- Smart Manufacturing
- Process Intensification
- Advanced Robotics
- Adv. Tissue Biofab.





Who are NIIMBL Stakeholders?

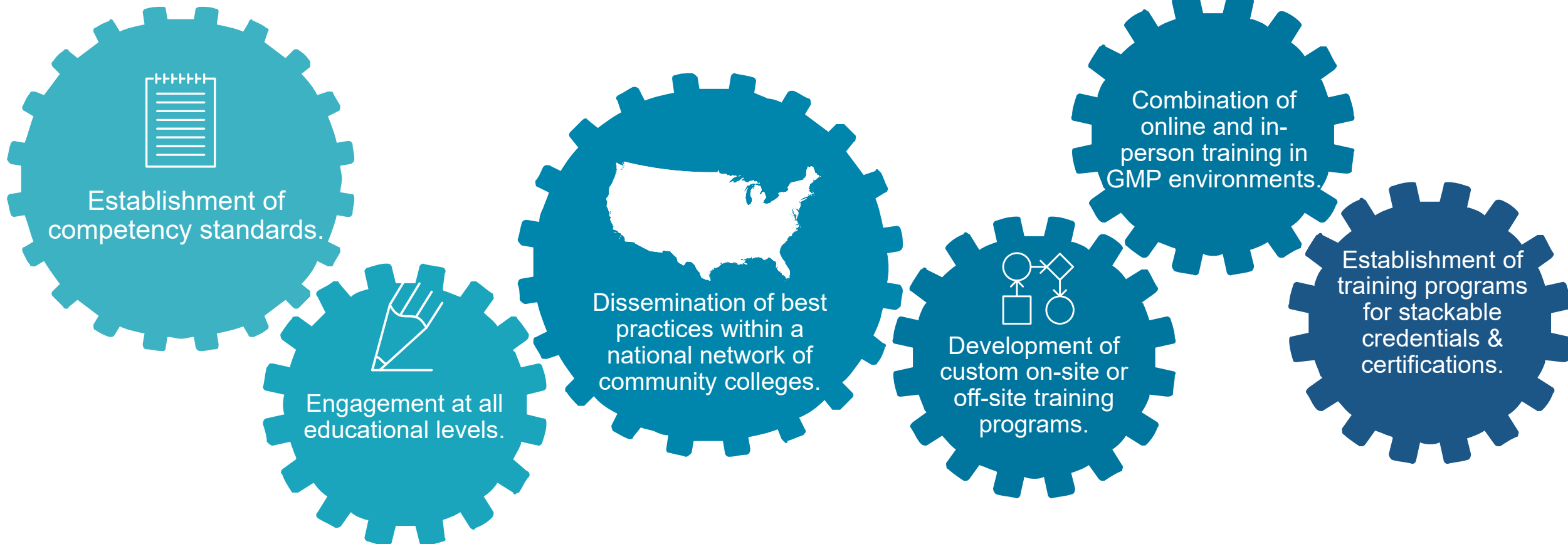
NIMBL National Map

West Midwest Northeast Southeast

NIMBL ECOSYSTEM
Partners, 60 Industry Members,
Economic Members, 35+ Non-profits

150+ Partners, 60 Industry Members,
35+ Academic Members, 35+ Non-profits

Education and Workforce Training Program



A “Cure” for Cancer !

The first FDA-approved cell therapy.
Aug 30, 2017



Notable ‘firsts’

Penicillin (first antibiotic)

Smallpox vaccine (first vaccine) ✓ NIIMBL-relevant

Insulin (first recombinant protein) ✓ NIIMBL-relevant

Kymriah™ (first cell therapy) ✓ NIIMBL-relevant

B-cell acute lymphoblastic lymphoma (ALL)

Most common type of cancer among children.

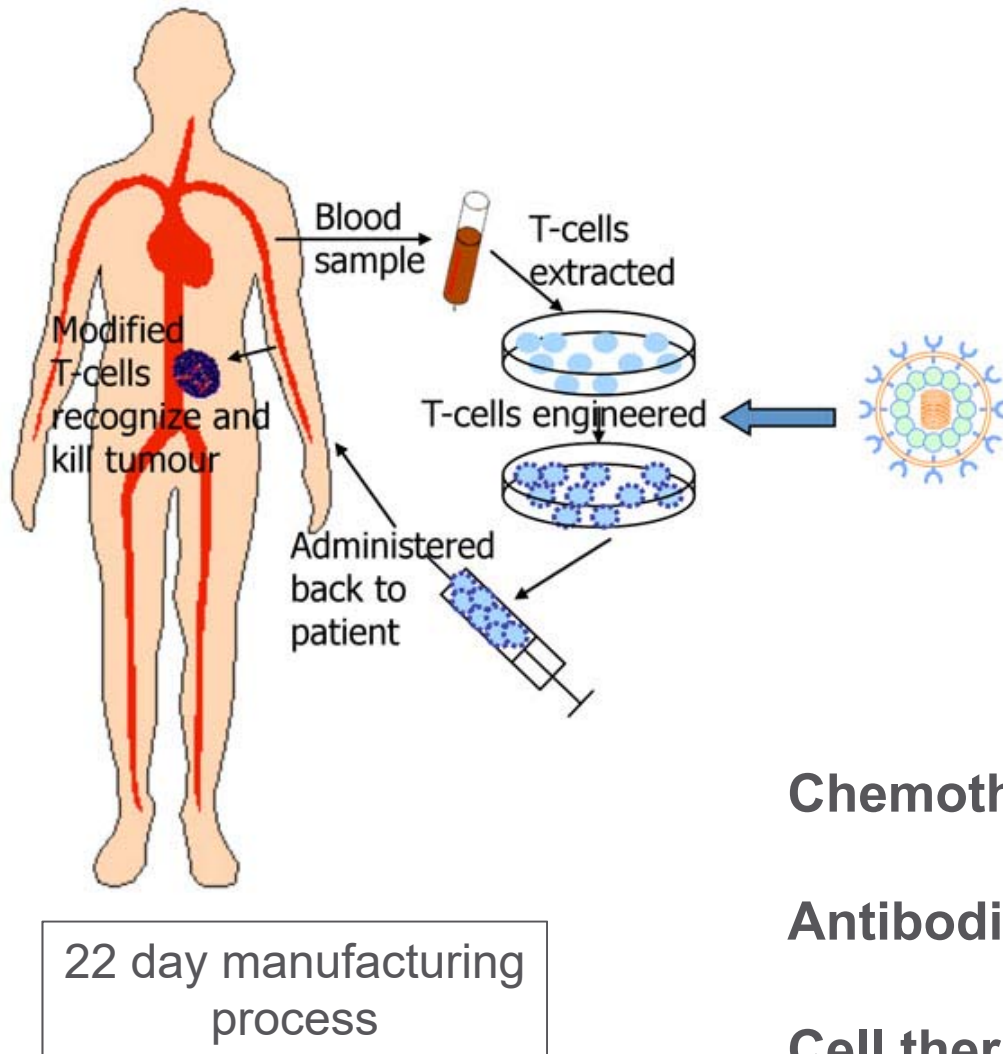
Most can be treated with existing approaches.

On relapse (or lack of response), prognosis poor for most: **2-6 weeks**.

Kymriah™: 89% live >6 months, 79% live >1 year.



Kymriah™ is a “personalized medicine” and unlike any other cancer treatment



Chemotherapy – stop cells from dividing. Many side effects.

Antibodies – target cells cancer cells more specifically.

Cell therapies – harness one’s immune system to kill cancer.

“Biopharmaceutical manufacturing provides the critical link between the discovery of a medicine and it’s availability to a patient.”

The 22 day Kymriah™ manufacturing process
Go to one of 20 approved hospitals and give blood.
Ship it to Morris Plains NJ.
NJ facility processes it.
Ship it back to hospital to dose the patient.

These medicines are a whole new future: Ava Christiansen

Please see video at:

https://www.washingtonpost.com/national/health-science/tantalizing-counterattack-offers-breakthrough-hope-for-children-with-leukemia/2016/09/30/cf19b15a-663a-11e6-be4e-23fc4d4d12b4_story.html?utm_term=.72b2218ff8dd



NIIMBL is not inventing these medicines, but is innovating the manufacturing processes, supply chain, and workforce to enable patient access to these medicines.

Novartis: B-cell acute lymphoblastic leukemia

Kite: aggressive non-Hodgkin lymphoma (NHL)

Juno: chronic lymphocytic leukemia (CLL)

Celgene: relapsed/refractory multiple myeloma

many others



The background of the slide features a large, semi-transparent blue seal of the University of Delaware. The seal contains the text "GRAMM PHILOLOGICA RHETOR MATHESIS ETHICA PHYSICA" and the year "1743".

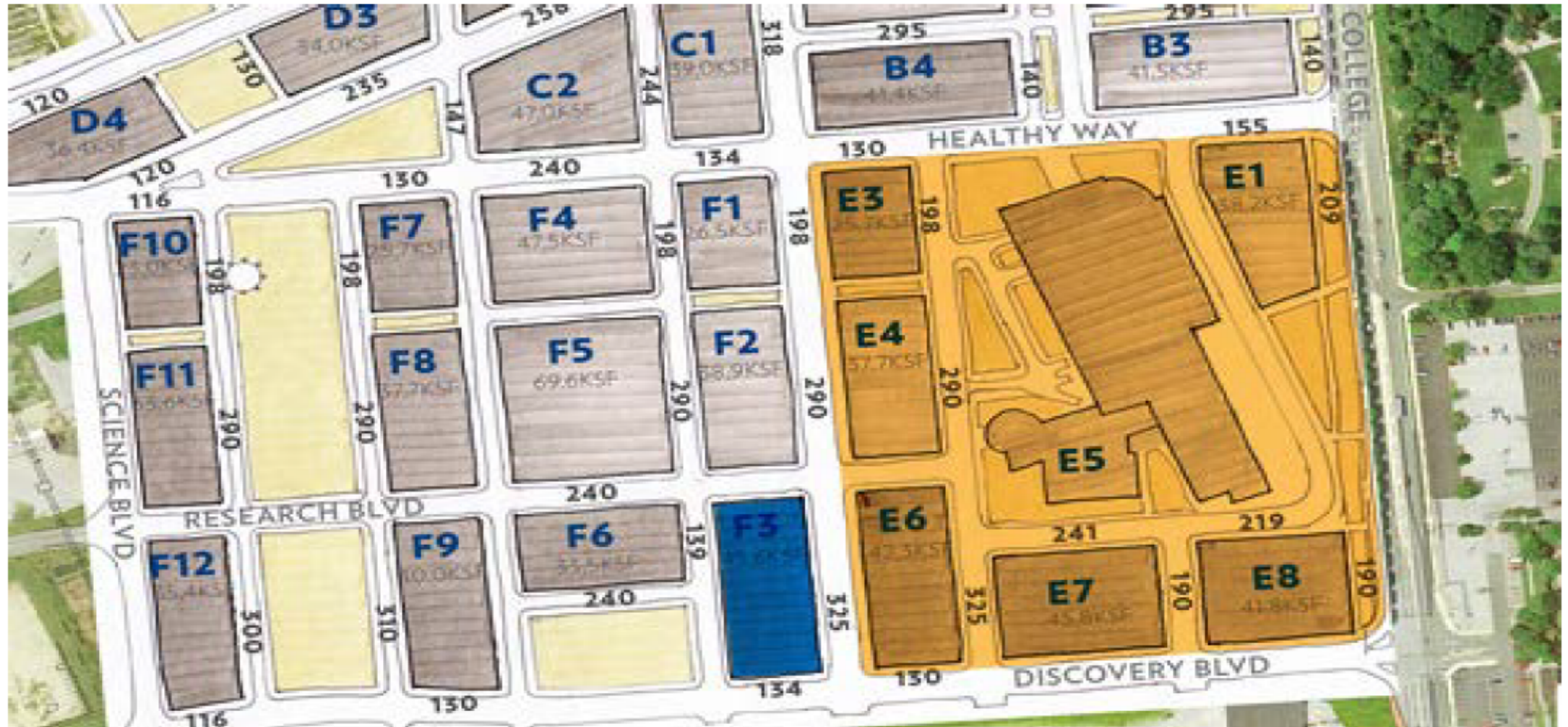
Breaking New Ground on Biopharmaceutical Innovation @STAR: A Nexus where the National Institute for Innovation in Manufacturing of Biopharmaceuticals (NIIMBL) Meets the STAR Campus Vision

Impact of Biopharmaceutical Innovation Building

- Enhanced academic reputation, rankings and societal impact.
- New graduate programs: Ph.D., M.S. in pharmaceutical sciences; longer-term Pharm.D.
- New undergraduate programs
- Seed new public-private partnerships & accelerate growth of STAR Campus
- Philanthropy: \$50M
- By 2024, generate ~2000 new jobs in Delaware and accelerate growth of STAR Campus (estimated 660,000 to 1.1M new jobs generated nationally due to NIIMBL)

STAR Campus

F3 Site



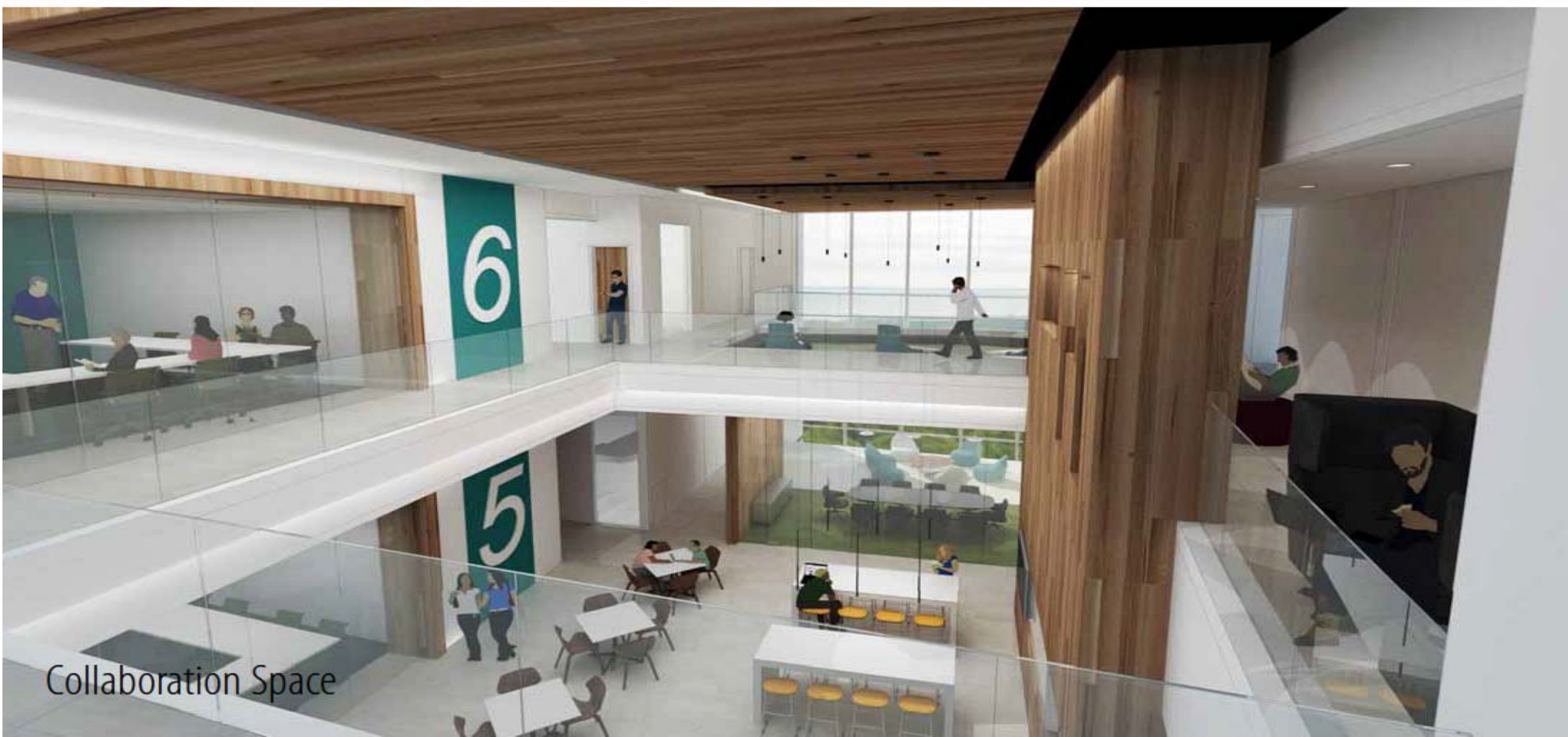


200,000 GSF
\$156M
6 floors

Groundbreaking: Oct. 2017
Opening: Jan. 2020







Collaboration Space



