



ARIZONA'S
BIOSCIENCE
ROADMAP

BIOSCIENCES IN ARIZONA

The Latest in Arizona Biosciences

April 14, 2021



Eve Ross, J.D.

Chair

Arizona's Bioscience Roadmap Steering Committee

Elected Officials

Austin Aslan

Flagstaff City Council

Walter Blackman

Arizona House of Representatives

Rosanna Gabaldon

Arizona Senate

Laurin Hendrix

Gilbert Town Council

Daniel Hernandez

Arizona House of Representatives

Amber Liermann

Maricopa City Council

Bob Marsh

Maricopa City Council

Russell McCloud

Yuma County Board of Supervisors

Douglas Nicholls

Mayor, City of Yuma

David Ortega

Mayor, City of Scottsdale

Lynne Pancrazi

Yuma County Board of Supervisors

Jeronimo Vasquez

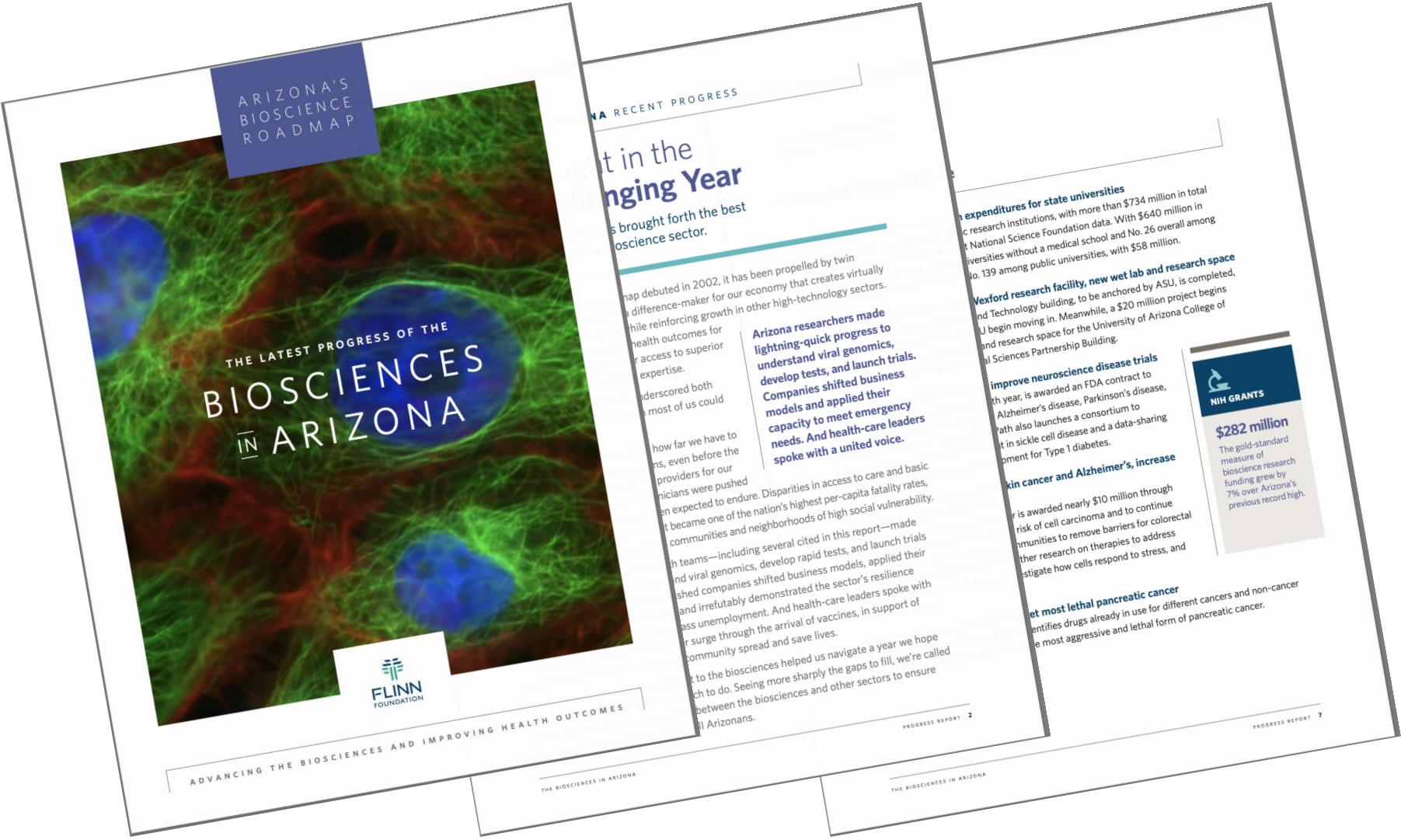
Coconino County Board of Supervisors

Corey Woods

Mayor, City of Tempe

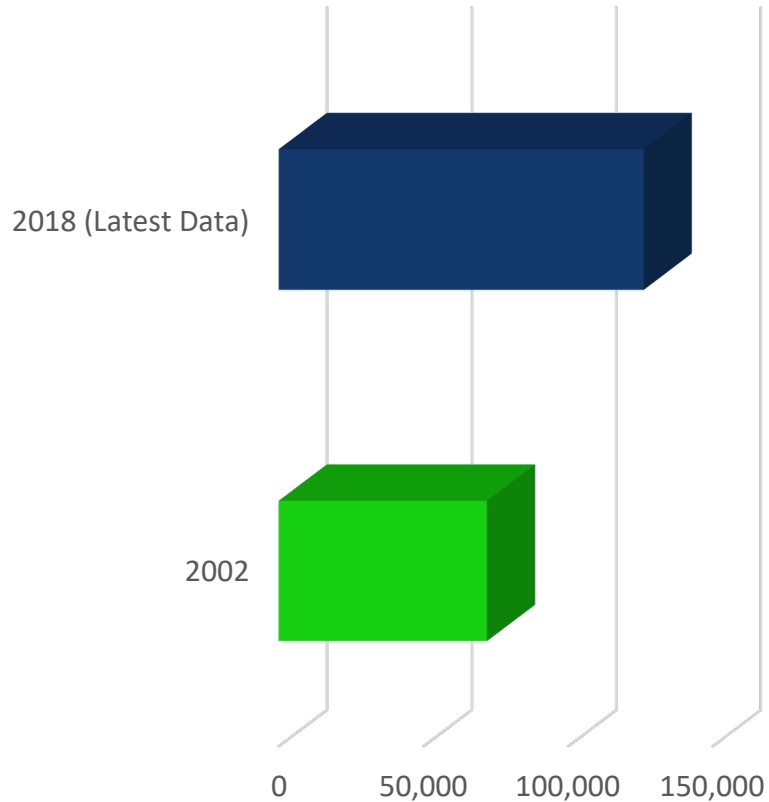




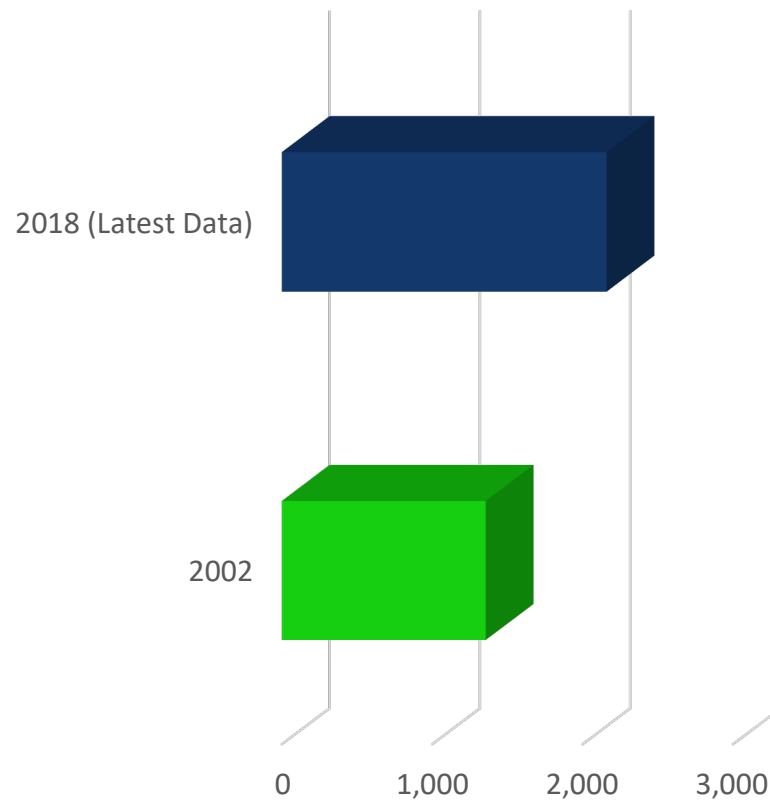


How We've Grown: Industry

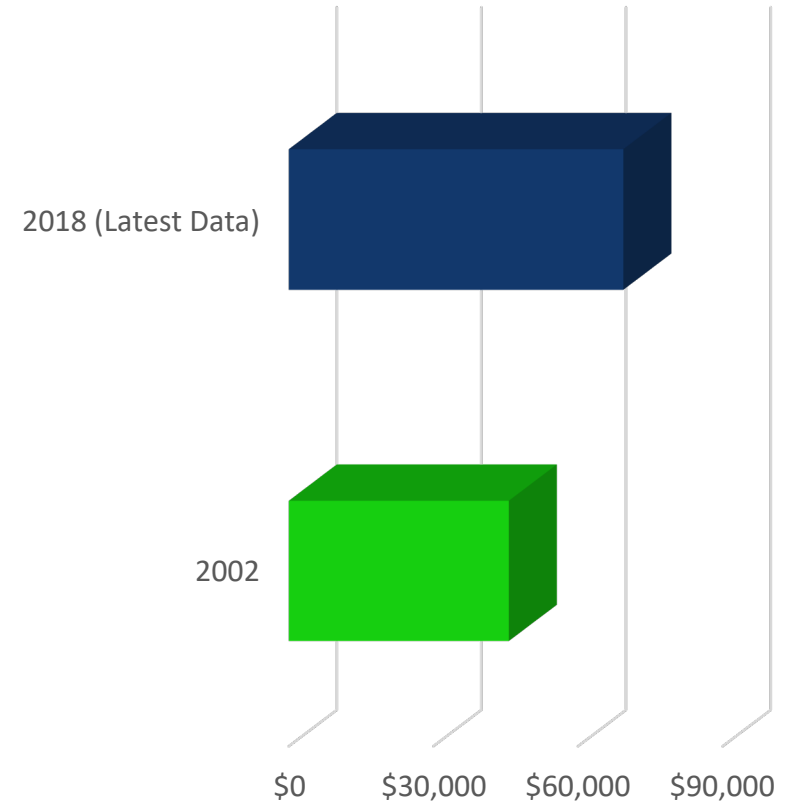
Jobs



Firms

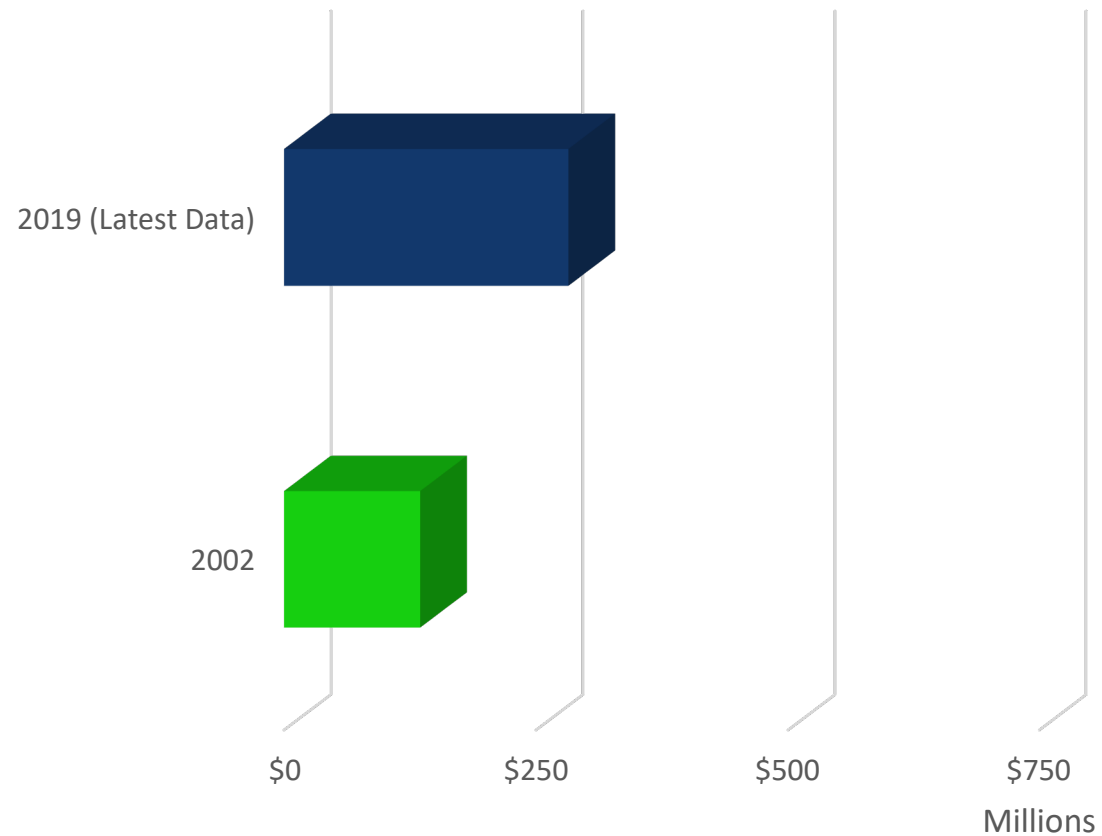


Average Annual Wages

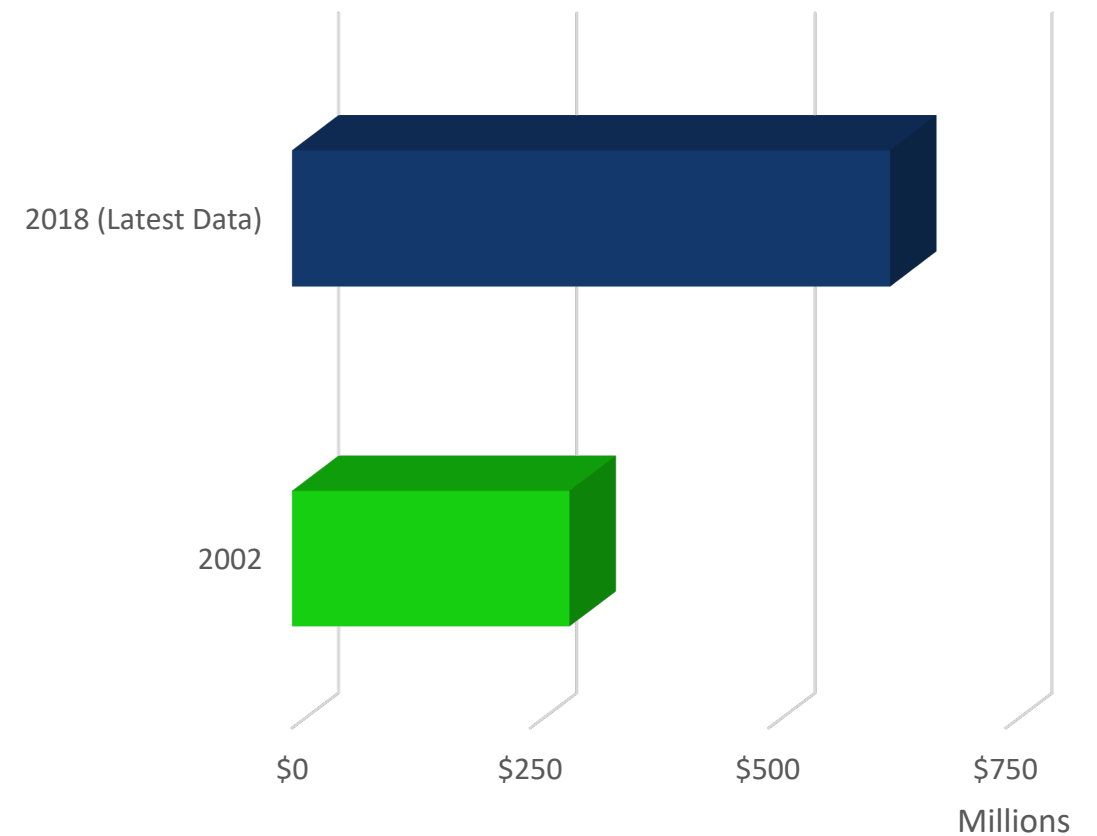


How We've Grown: Research

National Institutes of Health Funding



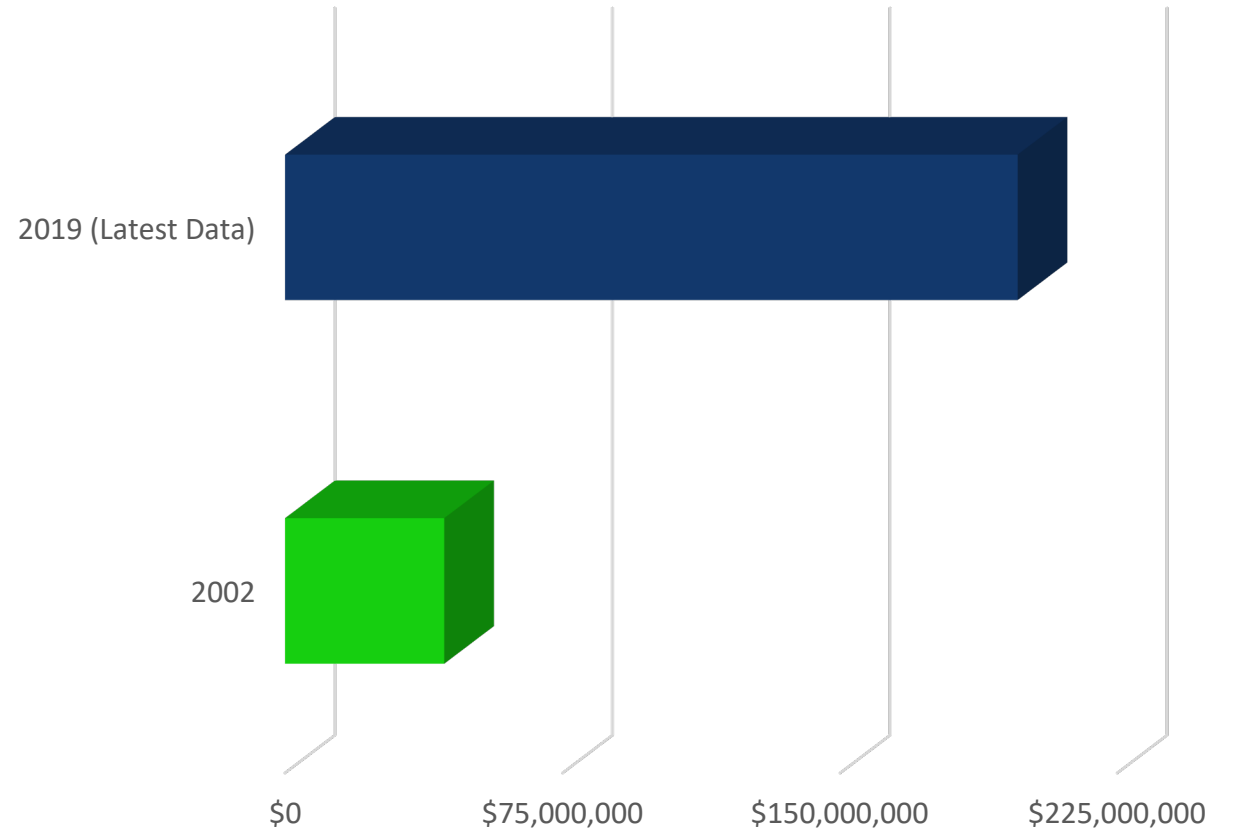
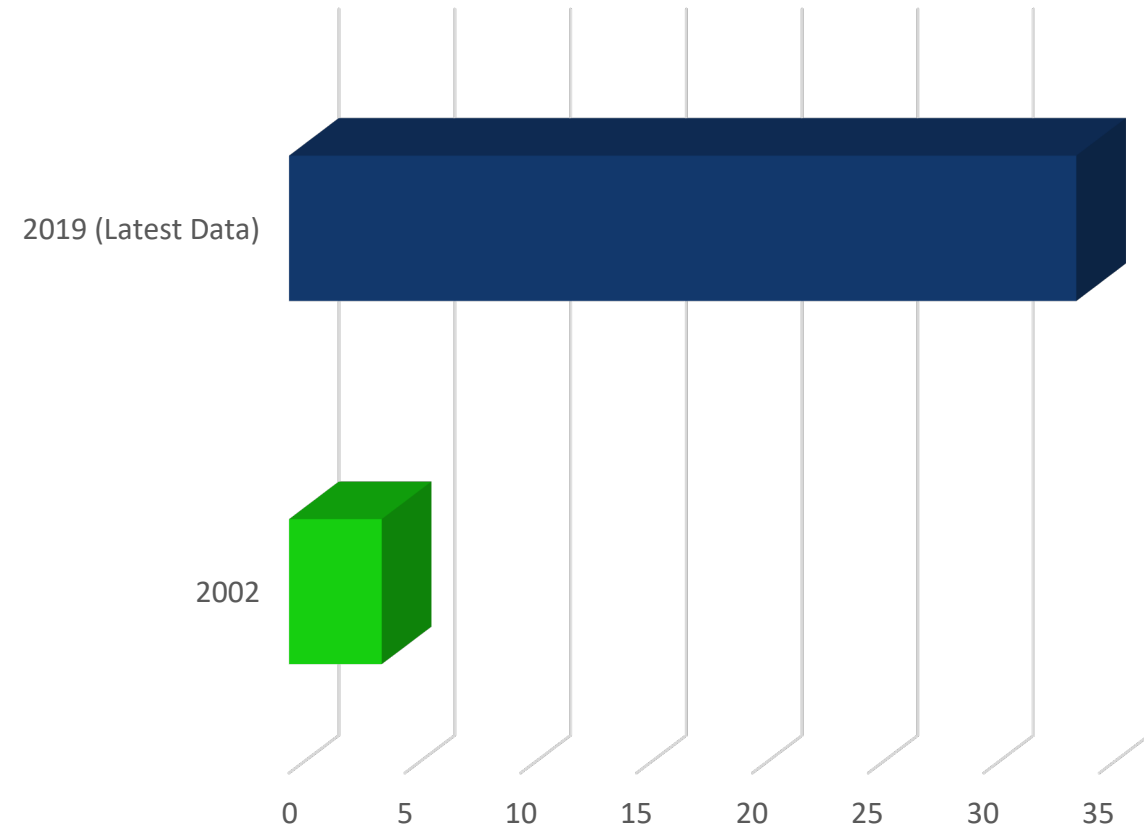
Academic R&D Expenditures



How We've Grown: Venture Capital

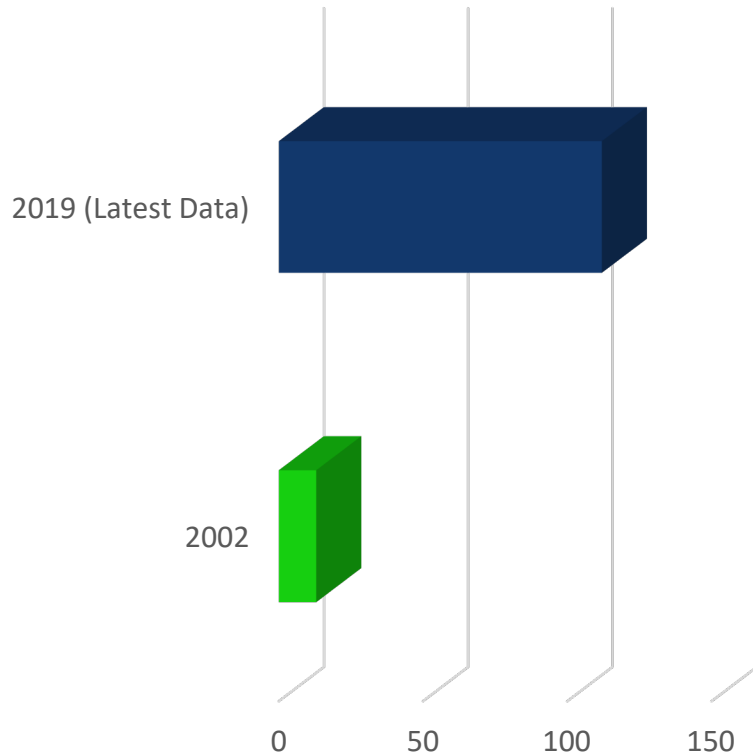
Deals

Dollars

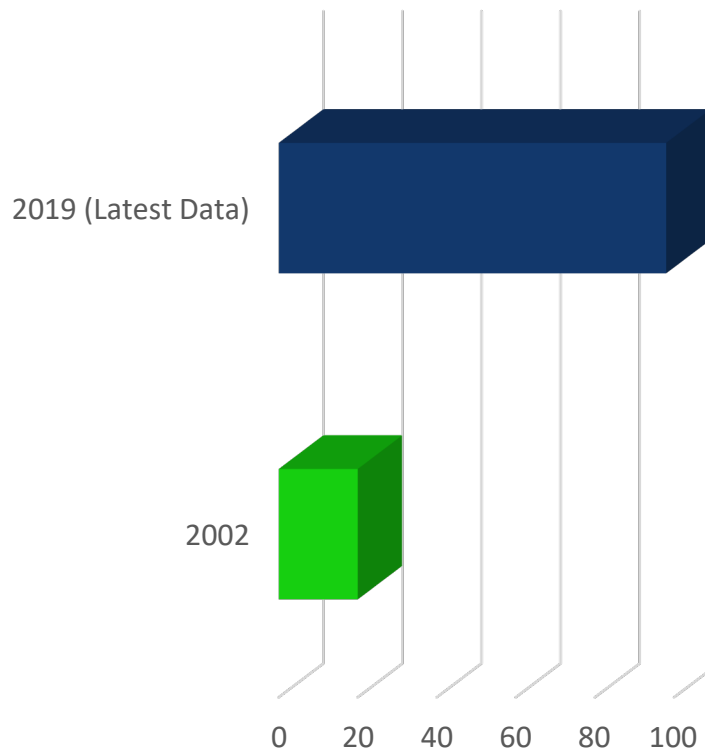


How We've Grown: University Tech Transfer

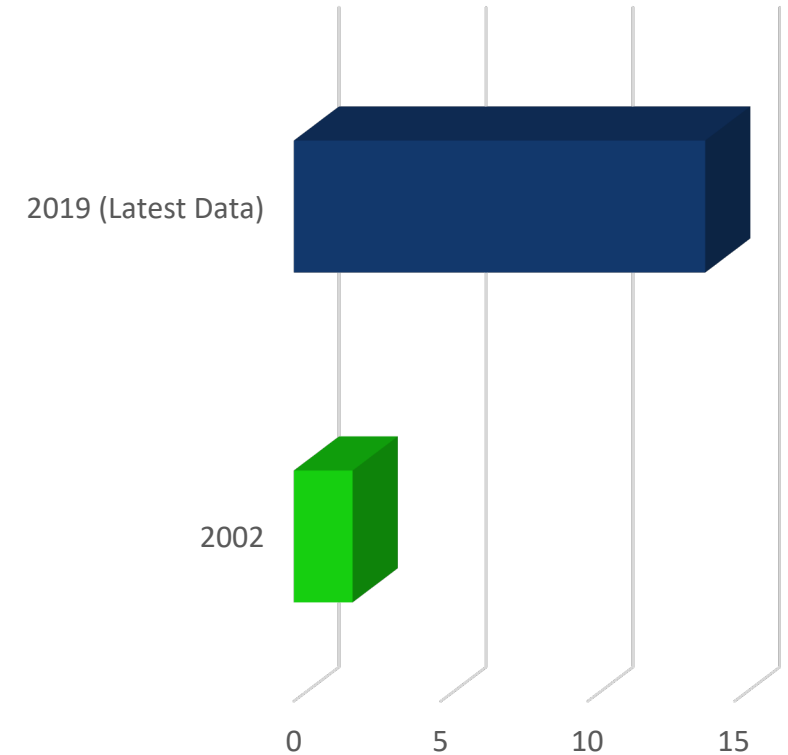
Bioscience Patents Issued



Licenses/Options Executed



Bioscience Startups





Leave a comment

Health Jan 6, 2021 5:42 PM EDT

novel coronavirus

Bloomberg Opinion

After The Crisis

Telemedicine Will Be Great After Covid, Too

Pandemic-fueled innovations like remote consultation and licensing reform are good for doctors, patients and public health.

By [Virginia Postrel](#)

March 31, 2021, 5:30 AM MST



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FUNDING NEW HUMAN FUTURES

[Learn more](#)

Covid drives tech research in Arizona, from food robots to an app for loneliness

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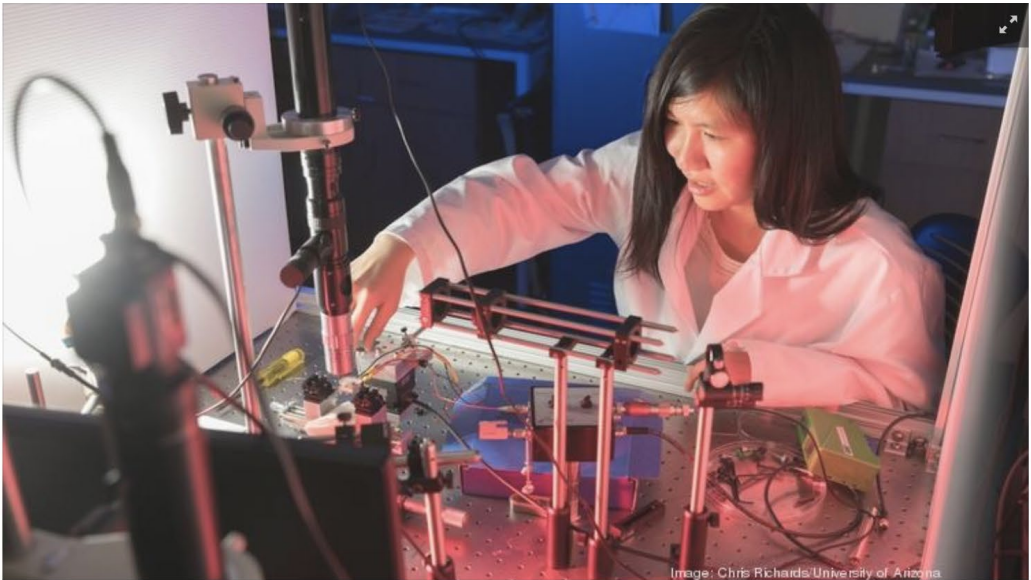


Image: Chris Richards/University of Arizona

Judith Su, an assistant professor of biomedical engineering, runs the Little Sensor Lab at the University of Arizona. She's working to develop ways to detect trace amounts of biomarkers for diseases – including Covid-19.

CHRIS RICHARDS/UNIVERSITY OF ARIZONA

By Claire Spinner – Cronkite News
Apr 10, 2021, 8:00am EDT



Thomas Osha

Board Chair

Global Institute on Innovation Districts

Senior Vice President, Innovation and Economic Development
Wexford Science and Technology

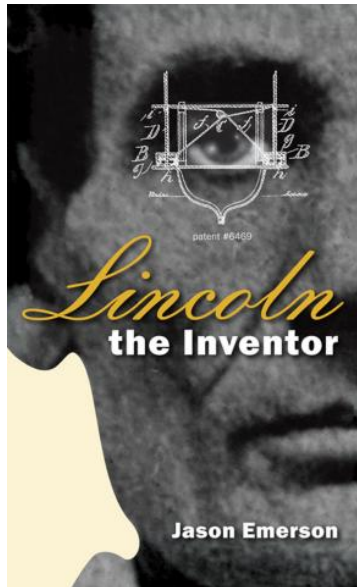


FLINN FOUNDATION **ARIZONA BIOSCIENCE ROADMAP**

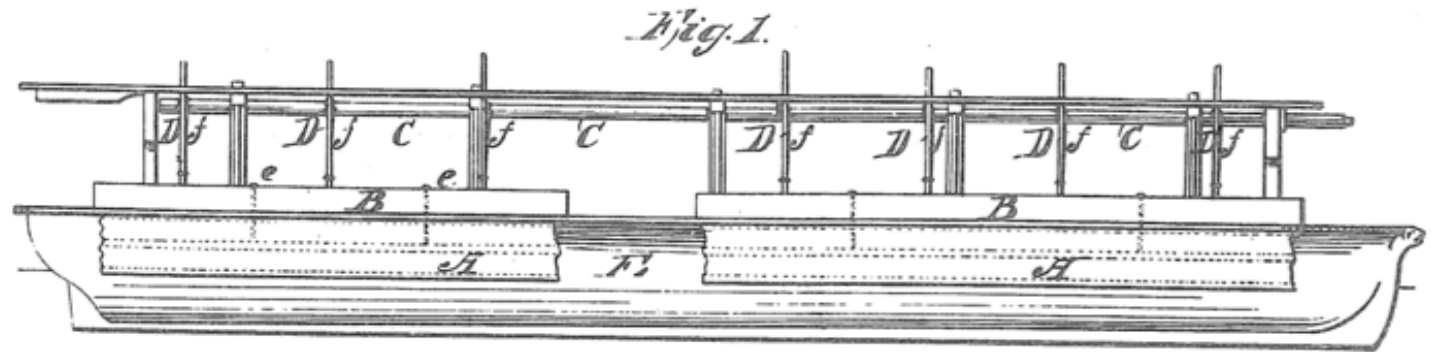
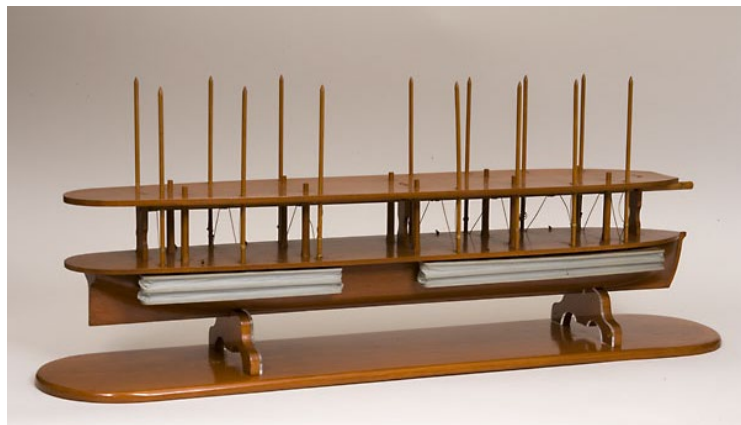
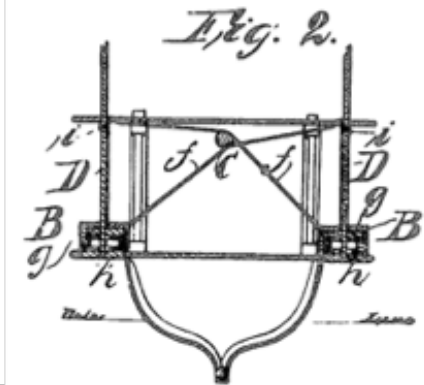
Annual Progress Report 2021 | April 14, 2021

WEXFORD
SCIENCE+TECHNOLOGY

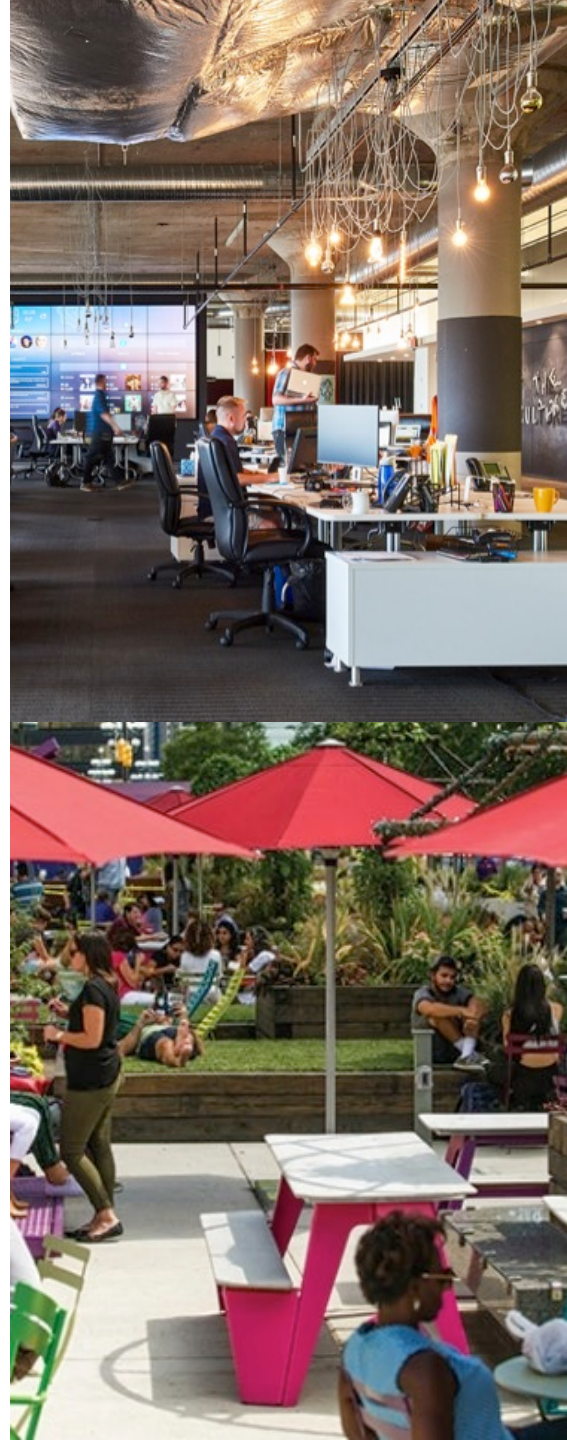
“...the Discovery and Production of New and Useful Things”



ABRAHAM LINCOLN
MANNER OF BOUYING VESSELS
No. 6,469 Patented May 22, 1849



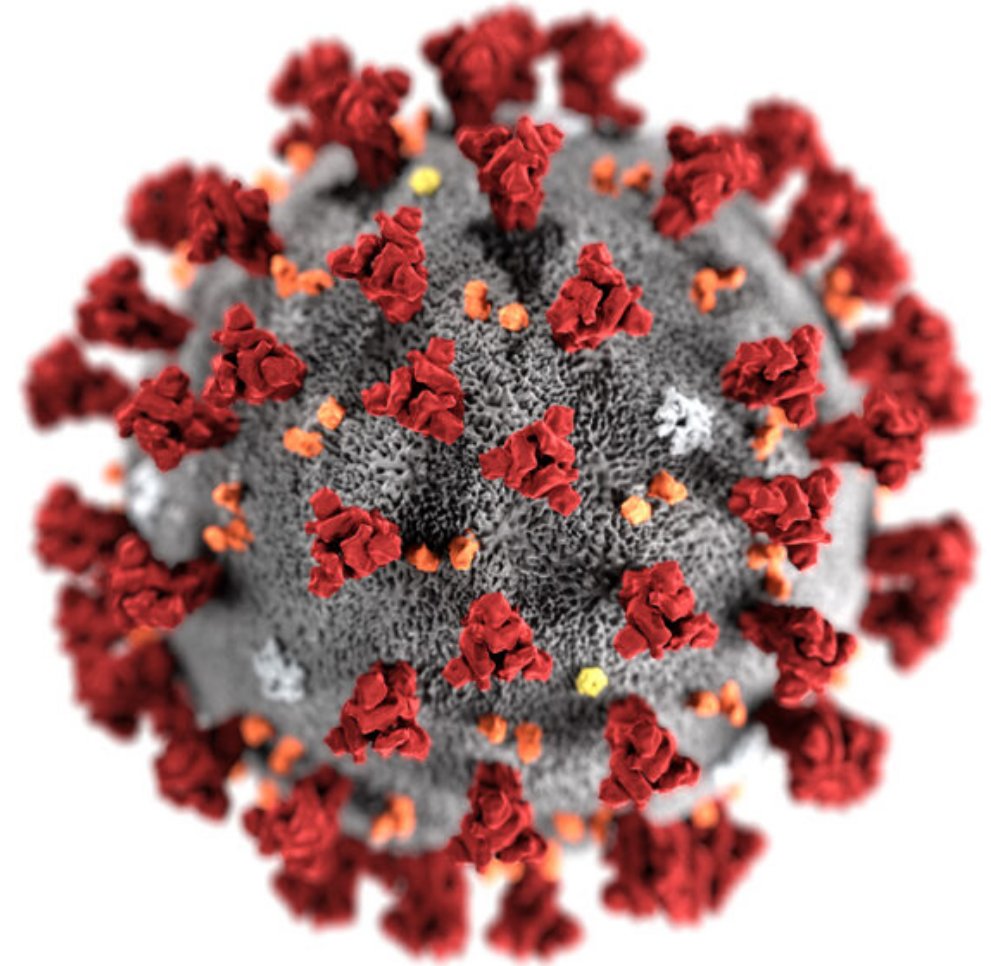
Today's Innovation Environment



- Talent is the Real Currency of Innovation; Nothing Can Substitute for It and Everything Follows It
- Innovation Has Become Almost Entirely a Social Enterprise; Impacting the Nature and Environment of Research and Development
- Today's Employees Desire to Live, Work, Play, Learn in the Same Spatial Geography
- Capital Efficiency Demands Resource Concentration
- Creative and Productive Value of Real Estate Outperforms Economic Value
- Density is Destiny; Especially in Proximity to Intellectual Capital
- Innovation ~~Can~~ **Must** Create Social Equity and Economic Mobility

What Are The Impacts of COVID on Innovation Ecosystems?

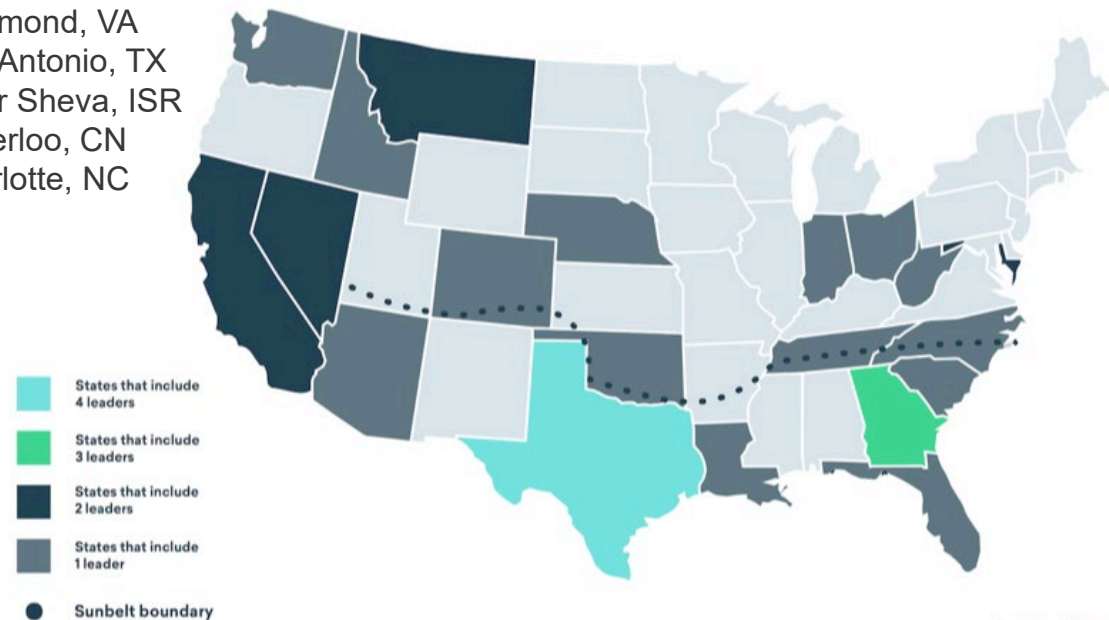
- Accelerant for Already Emerging Trends
- Exposed Disparities in Health, Wealth, and Opportunity
- Forced Collaboration Simultaneously to Hyper-Local and Trans-National Scale
- Engaged Full Breadth of University Capabilities
- Highlighted Weakness in Research Supply Chain Design
- Reinforced the Criticality of Research and Scientific Inquiry to Global Safety and Well-being
- Prefaced the Effort Required to Tackle Grand Challenges



TREND 1: Talent Migrating Beyond Superstar Cities

- Outstanding University and Intellectual Anchors
- Robust Talent Markets
- Highly Collaborative Institutions and Companies
- Affordable Housing and Quality Schools for Millennial Families
- Cool Spaces and Activated Places
- Strong Transportation Connectivity to Major City
- Engaged Ecosystem Intermediaries
- Attractive Quality of Life and Appealing Amenities
- Favorable Tax/Regulatory Policies

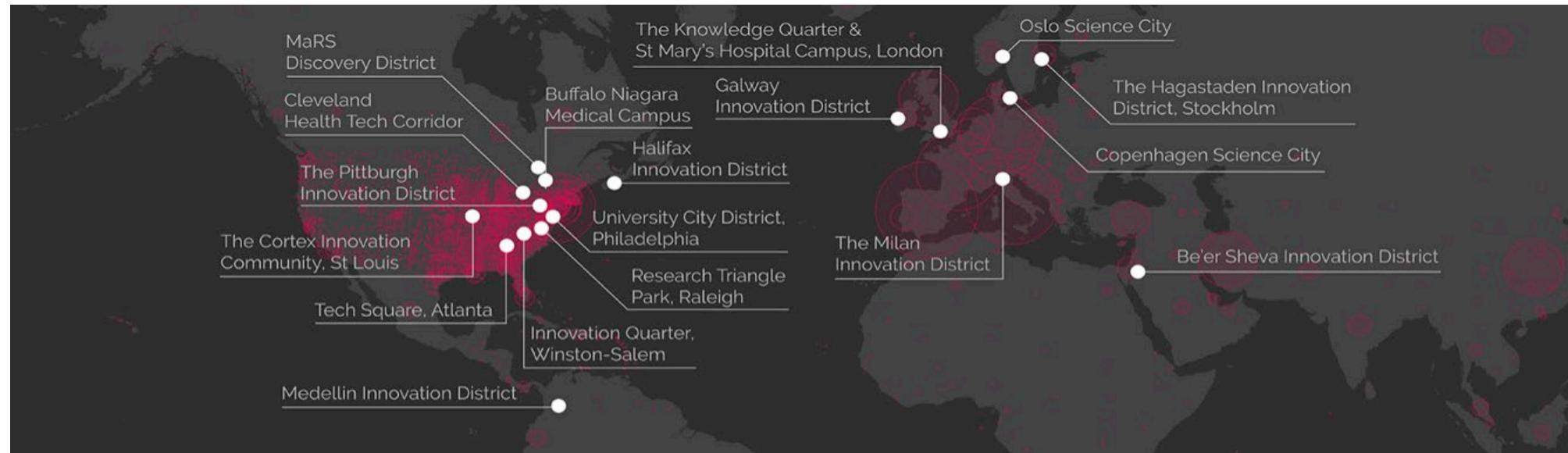
Eindhoven, NL
Phoenix, AZ
Sacramento, CA
Lyon, FR
Manchester, UK
Providence, RI
Richmond, VA
San Antonio, TX
Be'er Sheva, ISR
Waterloo, CN
Charlotte, NC



Emsi Labor Market Analytics, 2019

TREND 2: Life Sciences Becomes Port in the Storm

- COVID heightened awareness of life sciences research as national security imperative
- Lab-based research cannot be conducted in remote environments
- NIH, NIAID, BARDA funding expected to increase for foreseeable future
- Speed-to-market will be enhanced through renewed focus on partnership + regulatory easing
- Supply chains will be shortened to prevent COVID-style disruption
- Ideation-research-cGMP-clinical trials in singular geography



TREND 3: Digital and Remote Medicine Moving to the Mainstream

- COVID era proved market acceptability (11% - 76%)*
- Payer/insurance recognition will drive explosion of investment in services for:
 - Enhanced care coordination
 - Improved outcomes and disease management
 - Better patient experience and convenience
 - Cost efficiency for provider and payer
 - Expanded access to care, resources, and expertise
- Potentially \$250 billion in care could be virtualized in coming years*



TREND 4: Universities Improving Programs/Resources to Help Their Companies Become Investment Ready

- Venture Catalyst
- Deshpande Center (MIT)
- Core Labs – Washington University in St Louis
- Entrepreneurial Resource Centers
 - VentureLab (Penn)
 - Foundry (Purdue)
 - LaunchPad (U of Miami)
 - ONRAMP (U of Toronto)
- Living-Learning Communities – Lassonde Institute (U of Utah)
- Duke Ventures
- Polsky Center/Booth NVC (U of Chicago)
- ASU Knowledge Enterprise
- McGuire Center for Entrepreneurship
- Moonshot @ NACET



TREND 5: Innovation Districts Highlighted as Platforms for Sustainable, Inclusive Economic Recovery

- **University Engagement**
 - Access to Talent (faculty & student)
 - Research and Technology Transfer
 - CORE Facilities, Labs and Equipment
 - Intellectual Capital
- **Innovation Infrastructure**
 - Wexford FlexLabs
 - Adaptable Lab
 - Flexible Office
 - Maker Spaces
 - Public Convening Spaces
- **Built Environment**
 - Strong Public Realm and Commons Spaces Suited to Innovation Clusters
 - Space Matriculation for Growth and Scale
 - Lobbies and Public Spaces that Promote Collisions
 - Vibrant, Mixed-use Community Elements
 - Robust Events and Programming
- **Community Building and Engagement**
 - Community College and Work Force Development Pathways
 - Welcoming Community Spaces
 - Integrated with Adjacent Community Fabric



Innovation is NEVER about buildings.
**IT IS ALWAYS ABOUT DIVERSE PEOPLE
AND IDEAS.**

The Building Blocks of *Innovation District* Life



UNIVERSITY ENGAGEMENT

The Building Blocks of *Innovation District* Life

UNIVERSITY ENGAGEMENT

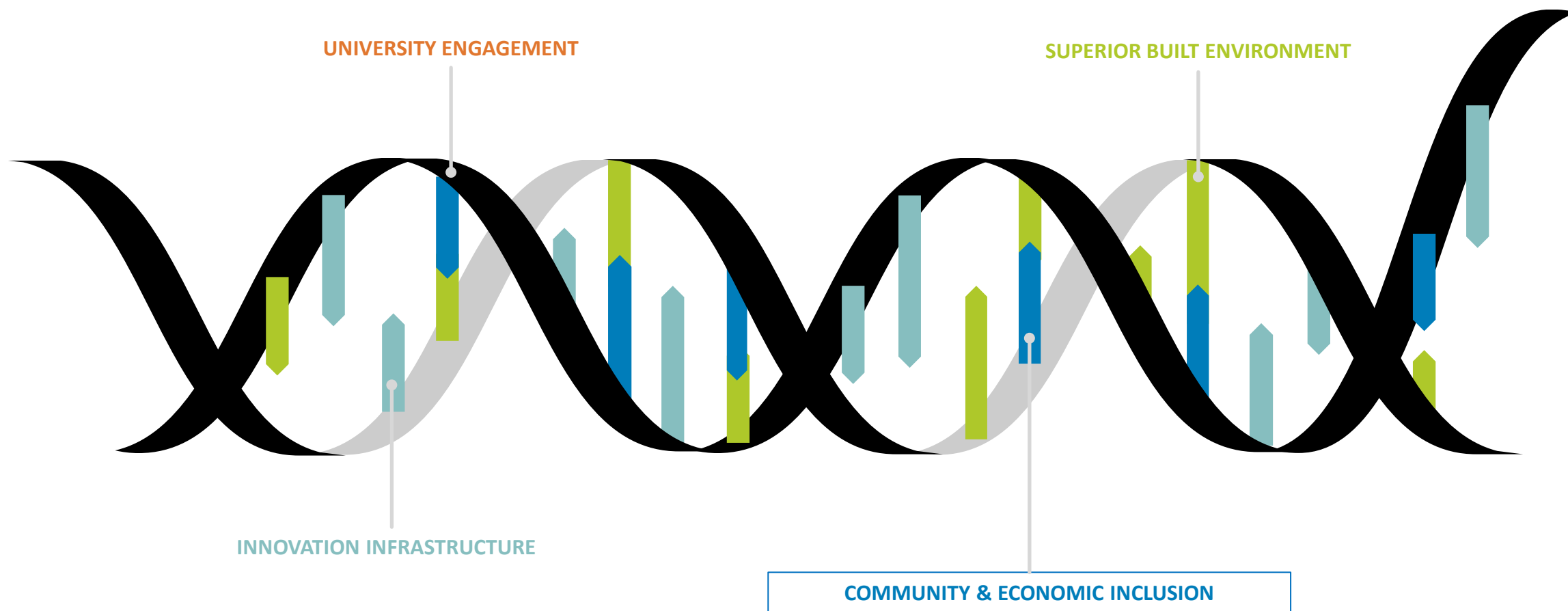
SUPERIOR BUILT ENVIRONMENT



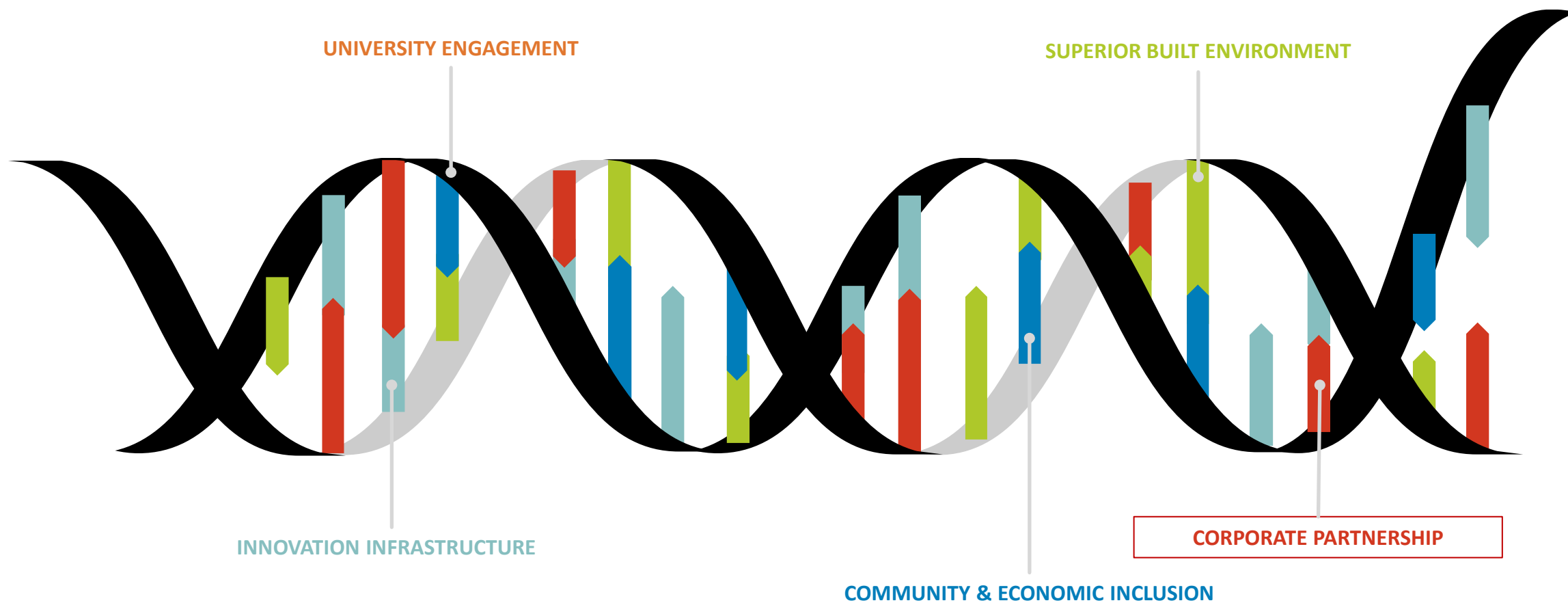
The Building Blocks of *Innovation District* Life



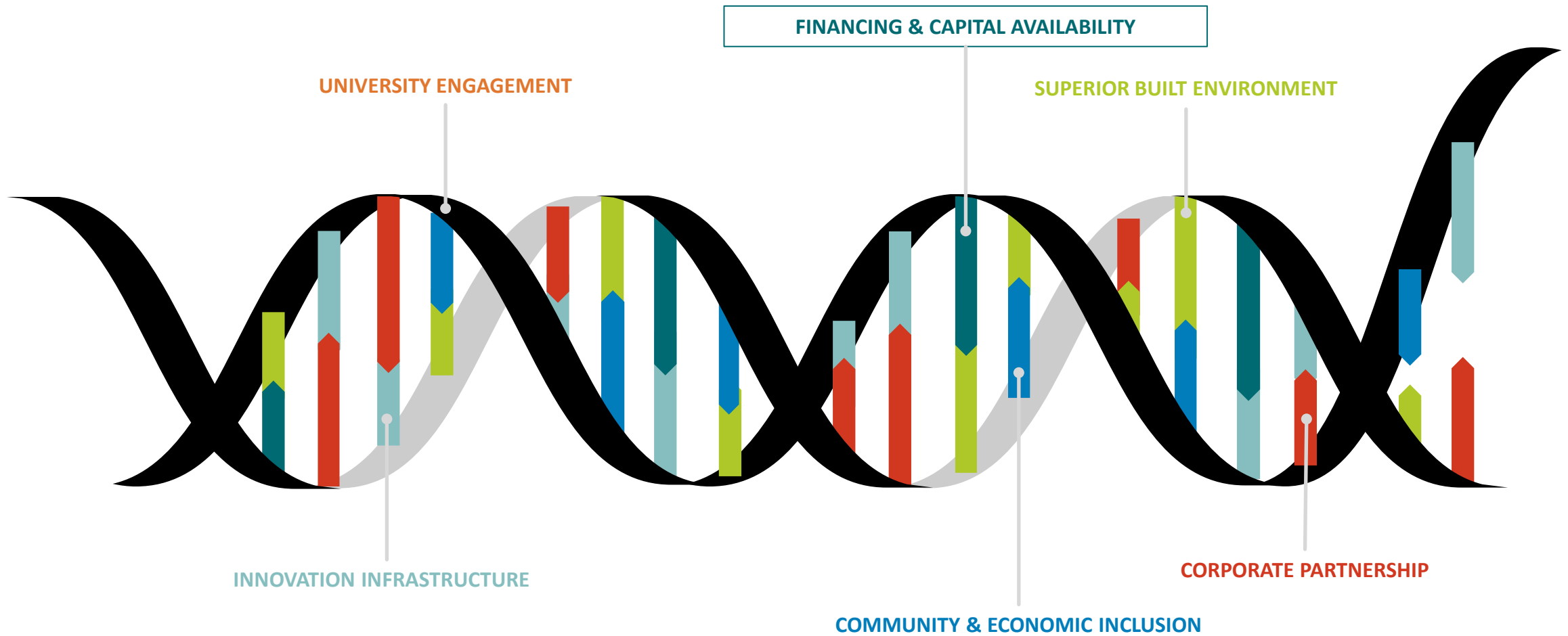
The Building Blocks of *Innovation District* Life



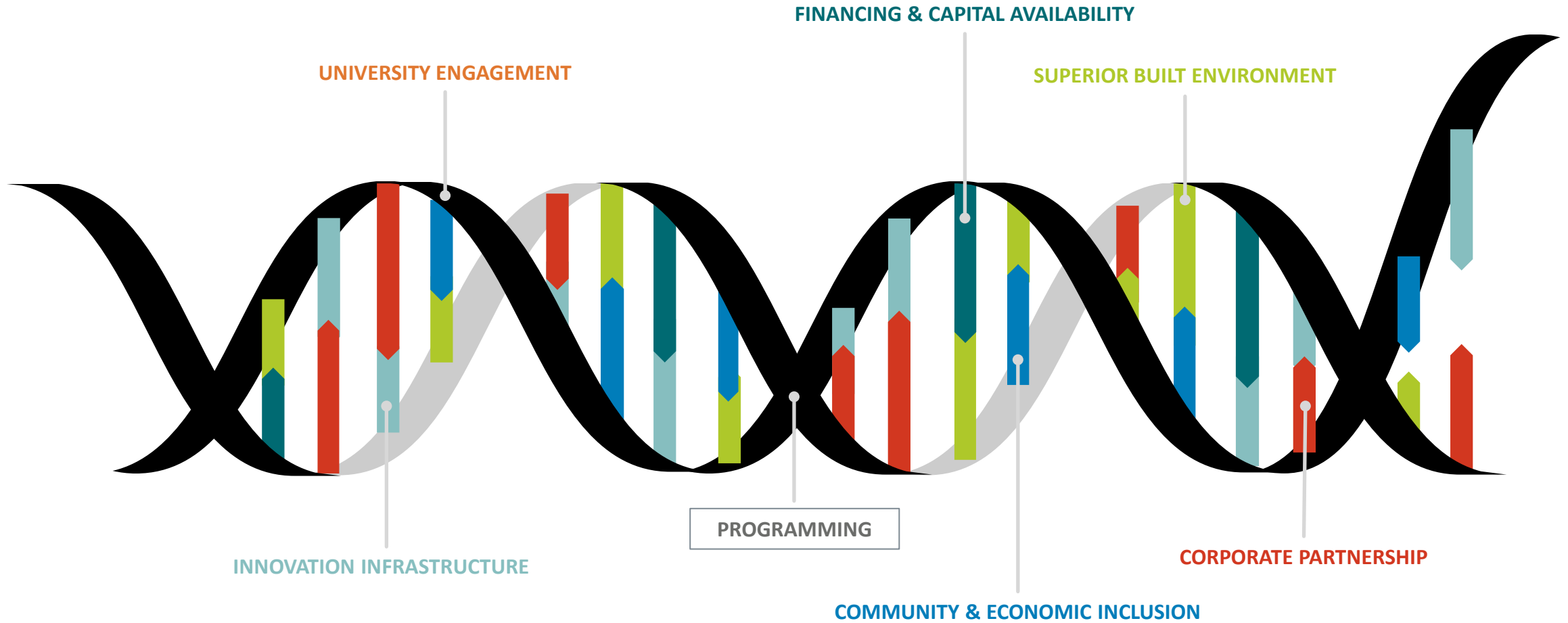
The Building Blocks of *Innovation District* Life



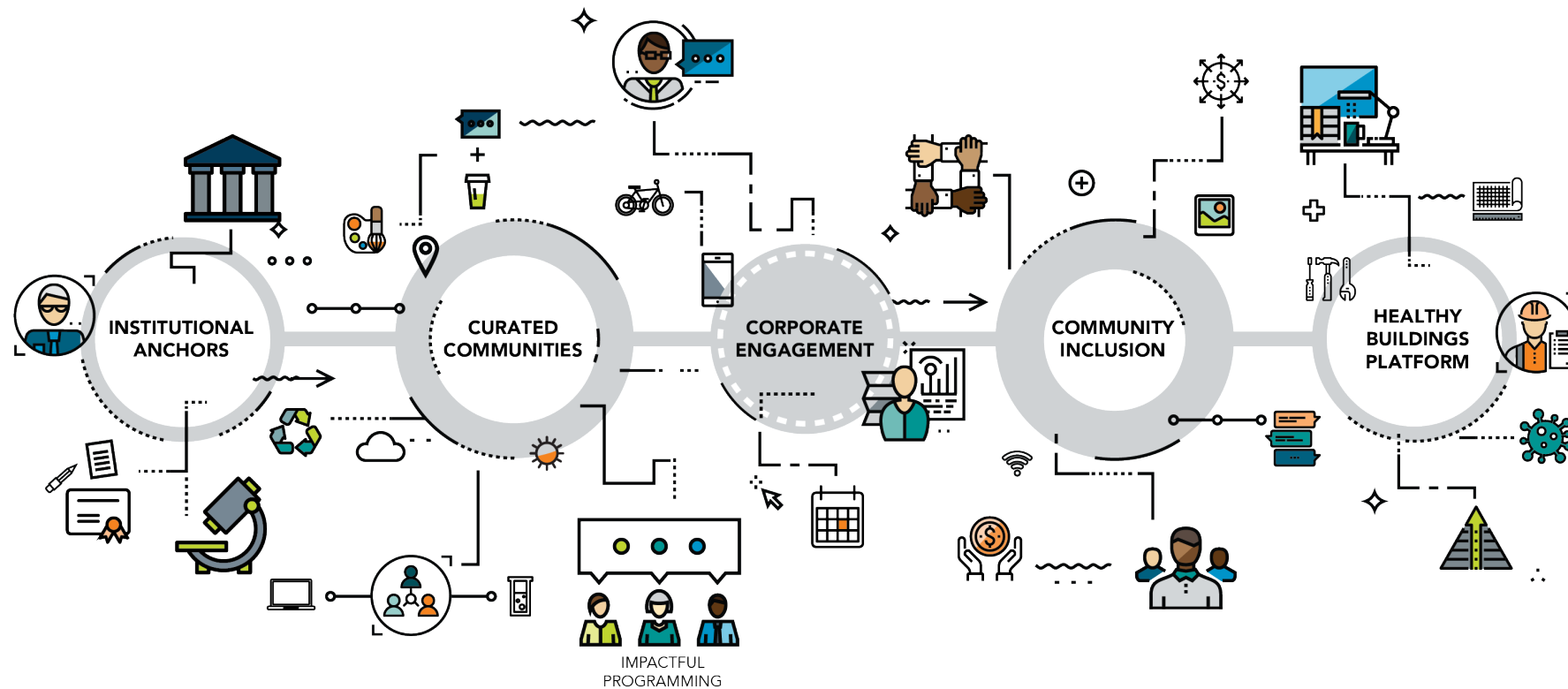
The Building Blocks of *Innovation District* Life



The Building Blocks of *Innovation District* Life



Knowledge Community Elements



If you've seen one
INNOVATION DISTRICT...

Wexford Science + Technology

15

Years of
Experience
Working with
Universities

15

Knowledge
Communities
(Developed or
Under
Development)

27

Institutional
Relationships

8.2 M+ SF

Developed or Under
Development





850 NORTH
FIFTH STREET

DOWNTOWN PHOENIX ARIZONA

Phoenix Biomedical Campus

- Arizona State University
- University of Arizona
- Northern Arizona University
- T-Gen

\$1.3 billion in 2018
research
expenditures



850 PBC

Part of 30-acre
Phoenix
Biomedical
Campus

First of
Multiple
Development
Phases

227,113 SF of
wet lab and
research,
support, and
collaboration
space



Innovation Anchors

- Arizona State University – Edson Entrepreneurship + Innovation Institute
- CEI LabForce
- Growth Companies
- Market Leaders
- University Start-ups



Platform for Growth and Integration



Knowledge Community Success Factors

- Viewed as critical element of university strategy: (faculty and student recruitment, expanded research enterprise and commercialization, corporate collaboration, entrepreneurial activity, etc.)
- Functions as central element of region's innovation ecosystem
- Creates/leverages urban elements (housing, retail, hotel, green space) into walkable community and activated public realm
- Upwardly scaleable (150,000SF - >1 million SF) to create density and amenities
- Vision shared by civic, governmental, business, and private support structure
- Governance structure provides for swift decision-making, sustainable financial performance, advocacy activities, community engagement and place making
- Represented by a visible, dedicated leader committed to the project's success and growth
- Delivers pathways and programs to ensure participation for all



An architectural rendering of a modern, multi-story office building with a glass and metal facade. The building is illuminated from within, and the sky is a deep blue. In the foreground, there are trees and a street with cars.

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SCIENCE+TECHNOLOGY

801 W. Baltimore Street, Suite 505
Baltimore, MD 21201
410-649-5629

wexfordscitech.com

THOMAS OSHA
Senior Vice President, Innovation and Economic
Development
thomas.osha@wexfordscitech.com

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Tammy McLeod, Ph.D.

President & CEO
Flinn Foundation

Southern Arizona

Flinn Bioscience Roadmap Meeting

April 14, 2021

Southern Arizona Update

Integration & Coordination Driving Progress in Southern Arizona

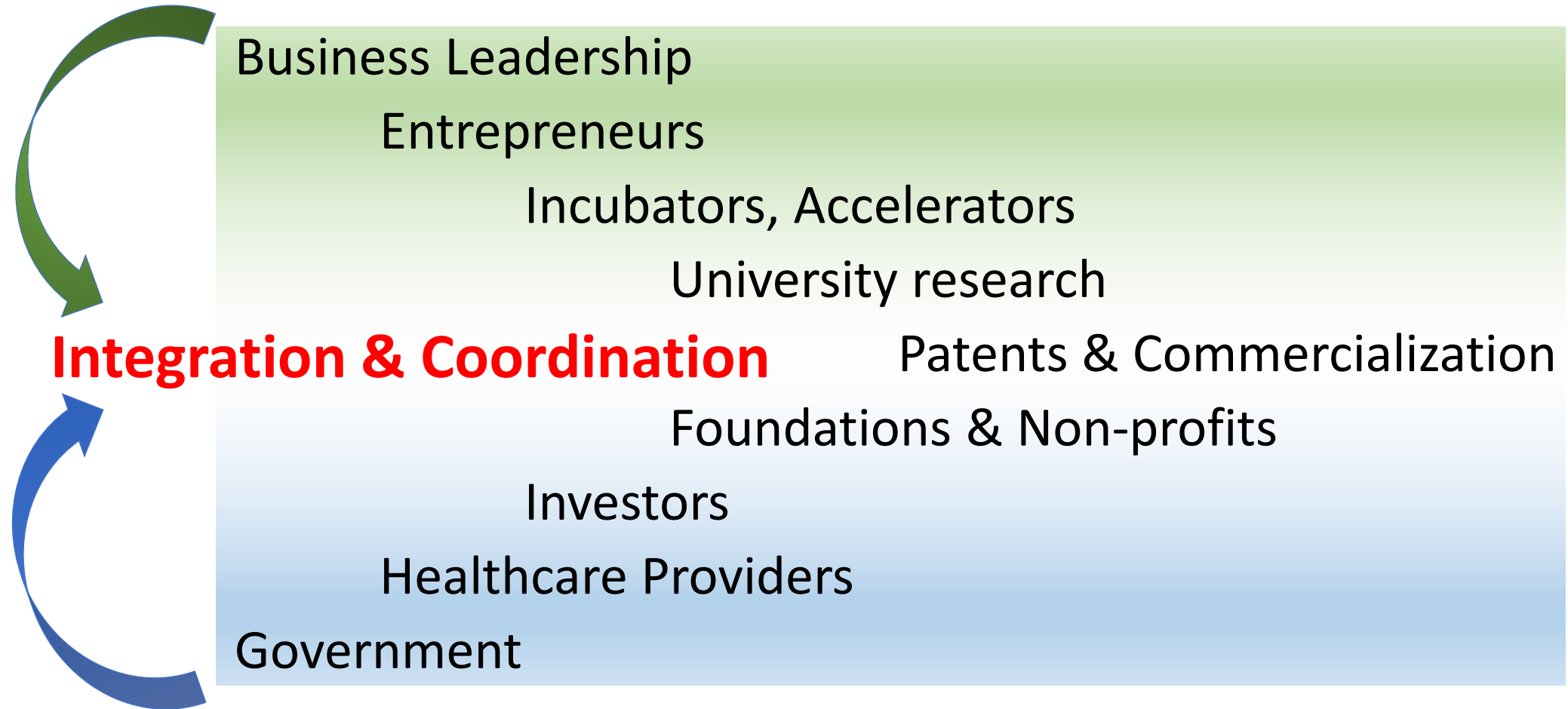
Matt Lingard, PhD

Bayer Crop Science's Marana, AZ

Corn Product Development Center



Southern Arizona Integration & Coordination Goal



Southern Arizona Integration & Coordination Goal

Venture
Capital

Mature STEM
Business

Startup &
Incubation

University
Research

IBM Tucson
Local Inventors achieved
400 U.S. patents in 2020.





Venture Capital



Local Investors

Bluestone Ventures

Desert Angels

DVI Equity Partners

UA Venture Capital

Examples of Local Investments

Pyx Health – Lawlytics – Lunewave – Croptrak – OTHERS

STARTUP ECOSYSTEM GUIDE

A user-friendly guide to organizations and groups that support the growth of small businesses and startups in Tucson, AZ

startuptucson.guide

Brought to you by:



Southern Arizona Leadership Council



75+

UNIQUE ORGS

SMALL BUSINESS ASSOCIATION
2021 LAB-TO-MARKET
SUPER CONNECTOR
AWARDEE

STARTUP TUCSON

A COMMUNITY HUB SERVING ALL TYPES OF
ENTREPRENEURS

Discovery Events & Networking

Education & Mentorship

Resources & Referrals

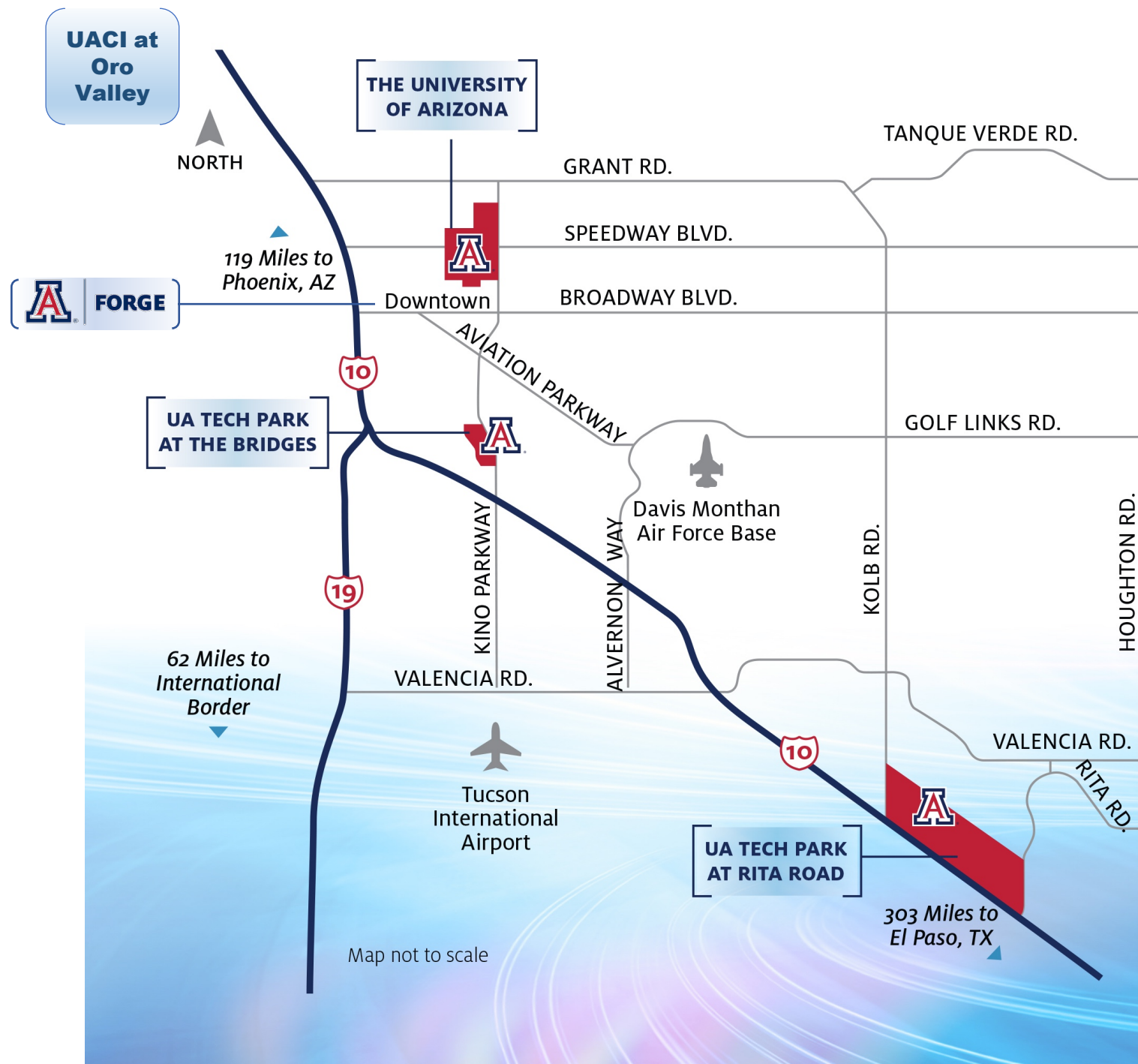
Responsive Special Initiatives

START SOMETHING AMAZING!

Think Big. Take Risks. Build Smart



The University of
Arizona is critical to
the region's Bioscience
Ecosystem



UACI is expanding its footprint across Southern Arizona



The Refinery

Opens fall 2021

UArizona's Innovation & Commercialization Hub
Bridging resources & accelerating inventions



UACI at Oro Valley

Opened Dec 2020

Dedicated to advancing bioscience startups



UA Center for Innovation (UACI) – record number
of current startup in program – 47 startups





Tech Launch Arizona: Driving Impact from UArizona Research & Innovation

- *Launched 10 life science startups in the last year... and 51 since 2013*
- *Over 60% of current startup pipeline is life science related*



Botanisol Analytics: rapid optical digital virus screening



SaiOx Inc: non-invasive ventilation



BIO5[™]
Institute

**TRIF-leveraged
UArizona COVID-19
research and innovation**

Quick response

- Diagnostic test kits
- 3D-printed masks
- Statewide antibody testing
- Wastewater testing
- New respiratory-assist device
- Tracked virus evolution/transmission via sequencing
- COVID Watch exposure notification app
- Data analysis to inform COVID-19 public policy
- Drug treatment discoveries



Robust impact

- ~\$53M in new awards targeting COVID-19
- ~\$300M in new bids
- Leveraged BSL3, lab, & core infrastructure
- Rapid turnaround seed grants
- 250-member faculty working group (Immunology, virology, epidemiology)

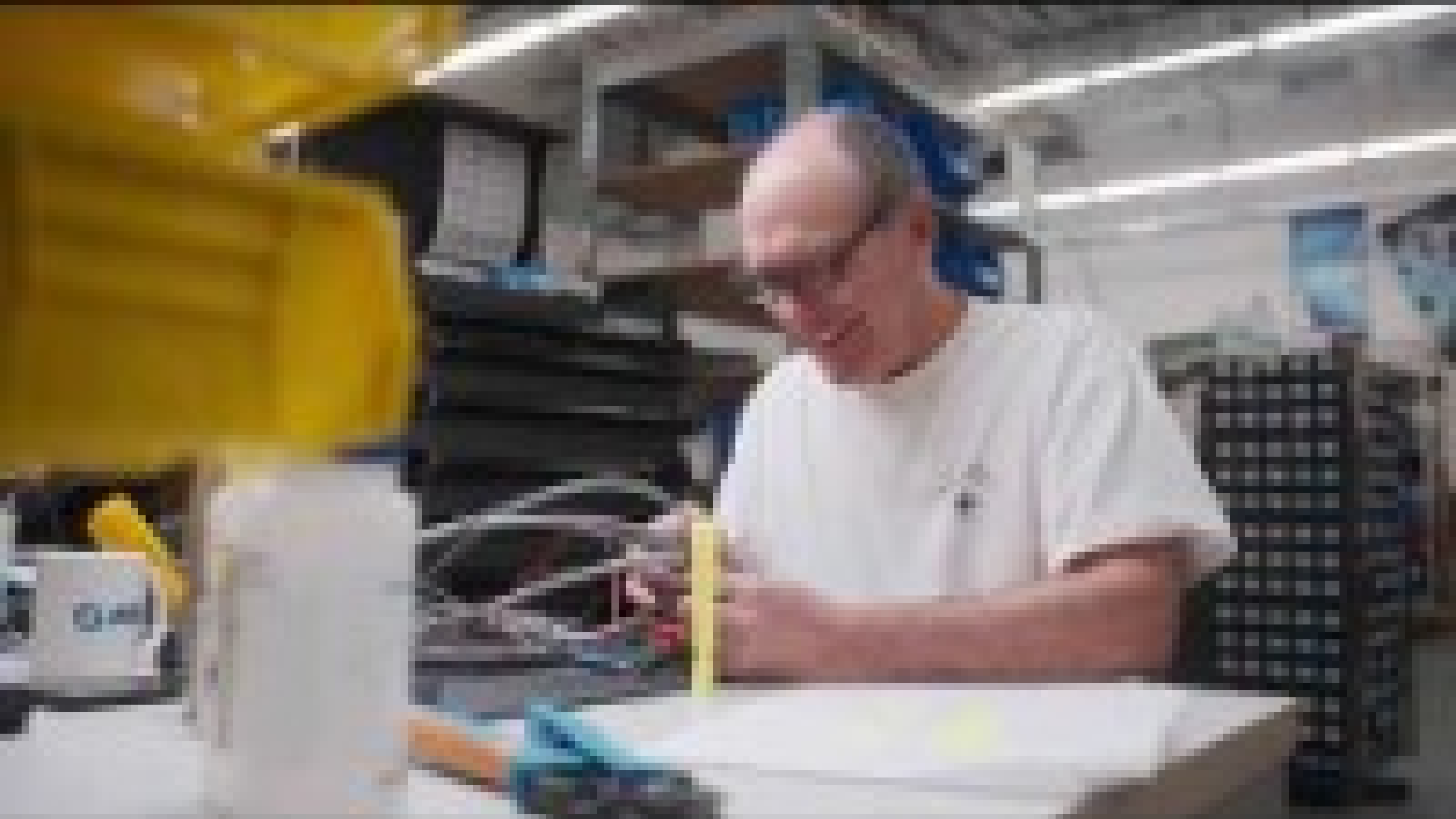
BIO5.ORG

Thank you, Flinn Foundation

Your Partnership is Critical to the success of
Southern Arizona's
Bioscience Ecosystem



Northern Arizona



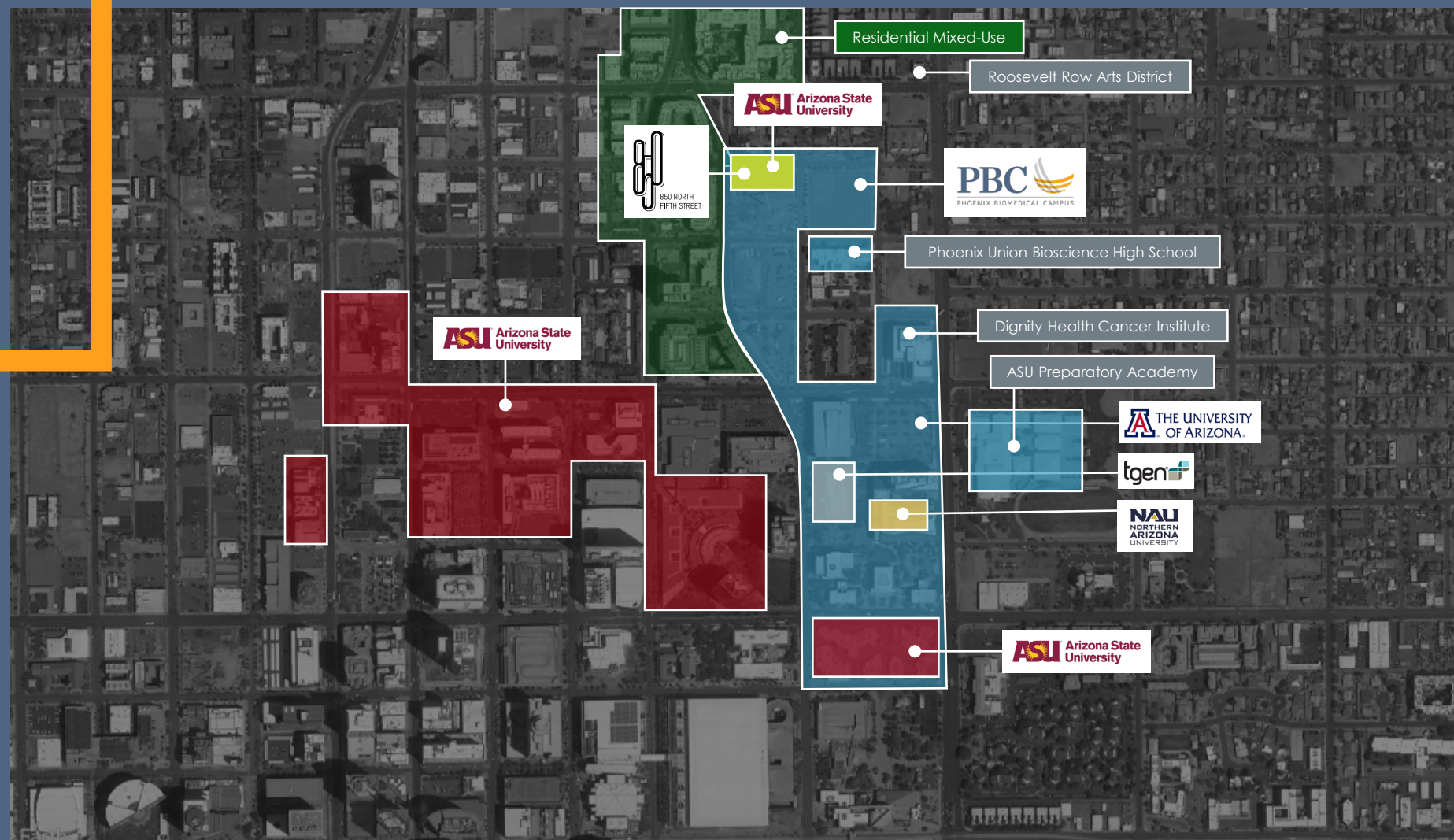
Yuma Region



Metro Phoenix



PHOENIX
BIOMEDICAL
CAMPUS
NOW







BIOSCIENCES IN ARIZONA

www.flinn.org/progress