RESEARCH RISING

FLORIDA ATLANTIC UNIVERSITY

MOMENTUM REPORT

2022

Art of Science Winners

Over the last three years the Division of Research Art of Science photography contest received almost **500** submissions. Displayed above are four of the winners.

From left: 2021 first place, Understanding Cholesterol Imbalance by Maciej Stawikowski, Ph.D., research professor, Charles E. Schmidt College of Science; 2021 second place, Hydrogel by Satviki Singh, student, FAU High School; 2019 honorable mention, Skate Skeleton by Marianne Porter, Ph.D., assistant professor, College of Science; and 2020 first place, Web Spinner by Tricia Meredith, Ph.D., assistant research professor, College of Education and director of Research, FAU Lab Schools

24%

Research Expenditures Increase

Total research expenditure increase (external and internal) from fiscal year 2018 through 2022.

**Fiscal year 2022 expenditures were not final at the time of this publication.*

FLORIDA ATLANTIC UNIVERSITY
DIVISION OF RESEARCH

The Division of Research supports and promotes Florida Atlantic research, creative and scholarly activities by providing faculty tools and resources to be competitive, setting strategic directions in research, ensuring responsible research practices and communicating the importance of research within and beyond the university. In addition, the division oversees four university-wide research institutes and is responsible for economic development and entrepreneurial activities involving faculty, staff, students and the broader university community.

The division is comprised of the following research administration offices:

- Comparative Medicine
- Export Control
- Innovation and Business Development
- Postdoctoral Affairs
- Research Accounting
- Research Communications
- Research Cores
- Research Development
- Research Finance
- Research Integrity
- Sponsored Programs
- Technology Development

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www.fau.edu/research/research-daily

FAU is designated a Hispanic-serving Institution, ranked as a top public university by the U.S. News and World Report and a High Research Activity institution by the Carnegie Foundation for the Advancement of Teaching.

For more information, visit **www.fau.edu/research** or email **fauresearch@fau.edu.**

Welcome

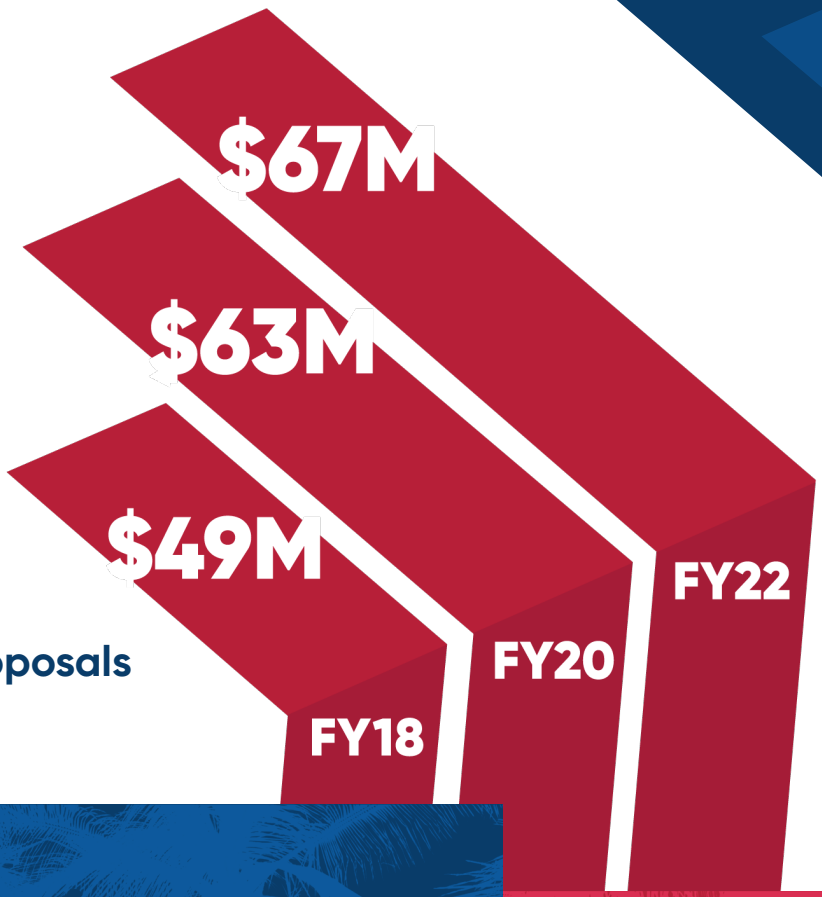
The Division of Research's 2021-22 Annual Momentum Report underscores Florida Atlantic's meteoric growth in total research expenditures over the last five years, which is driven by extraordinary faculty expertise, best-in-class facilities, and innovative collaborations with premier partners. This ascent is also spawning unmatched training opportunities for the most ethnically and culturally diverse student body in Florida's State University System. FAU's research community is thriving as our "Race to Excellence" 2015-2025 strategic plan successfully comes to fruition. Join us as we build a robust culture of nationally respected research and scholarship.

Daniel C. Flynn, Ph.D.
Vice President, FAU Division of Research

Research Growth

When it comes to research, there is no better indicator of success than earning the confidence of federal, state and private sponsors through grant awards. These funders have invested millions in Florida Atlantic's proposals that ultimately seek solutions to benefit society. The ingenuity and growing synergy of the university's research-engaged faculty and students across 10 colleges, coupled with the overarching efforts of four interdisciplinary research institutes, are a driving force behind this success.

Value of Research Awards Received



Number of Research Proposals and Awards Received
FY21-22

Career Awards Skyrocket

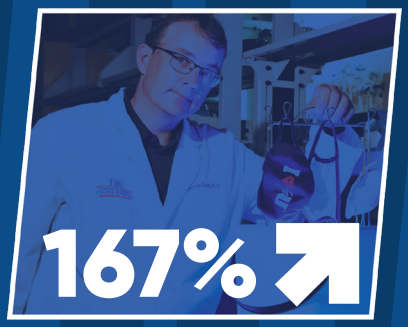
Throughout Florida Atlantic's history, **19** researchers have earned coveted National Science Foundation (NSF) Early Career awards - and more than half of those awards were earned in the last five years. This award supports early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.

Discoveries Move to Market FY21-22

The Division of Research promotes, manages and protects intellectual property created by FAU faculty, staff and students.

Patent Applications Filed

Gross Intellectual Property Revenue



Patents Issued

Colleges Drive Research

Faculty members throughout Florida Atlantic's esteemed colleges drive the university's teaching mission and conduct scholarly research across a broad range of disciplines. Their successful work, coupled with FAU's four research institutes (pages 8-11), make up an exciting and growing portfolio funded by major agencies such as the NSF, National Institutes of Health, US Department of Education and more.

Right: College-based awards for fiscal year 2022.

College of Education	$12.2M
College of Engineering and Computer Science	$11.7M
Charles E. Schmidt College of Science	$8.7M
Charles E. Schmidt College of Medicine	$8.5M
Christine E. Lynn College of Nursing	$2.2M
College of Social Work and Criminal Justice	$1.3M
Harriet L. Wilkes Honors College	$1.1M
Dorothy F. Schmidt College of Arts and Letters	$812K
College of Business	$134K
Graduate College	$46K

Florida Atlantic's Research Institutes

Florida Atlantic's six locations stretch across 100 miles of Southeast Florida coastline covering a unique stretch of municipalities, industry clusters, cultures, communities and natural environments. This creates an amazing living laboratory, and the university's research portfolio closely reflects both its pressing needs and exciting industry trends.

The university's "Race to Excellence" 2015-2025 strategic plan established four research institutes to connect talented faculty, staff and students from a range of disciplines and foster cutting-edge approaches to these important research priorities.

Stiles-Nicholson Brain Institute

The FAU Stiles-Nicholson Brain Institute team stimulates advanced neuroscience research that promotes superior neuroscience education, facilitates the translation of research discoveries for the benefit of society, and enhances the public understanding of the many dimensions of brain research and its benefits. This transformational work yields profound insights into major neurological and mental illnesses, such as Alzheimer's disease and dementia, bipolar disorder and schizophrenia, mood and anxiety disorders, substance abuse and addiction.

Recent highlights and accomplishments include:

- Inaugurated state's second doctoral program in neuroscience, spanning four campuses, five colleges and six research institutes
- Created MobileMinds, a mobile hands-on classroom that transports brain science experiences to children who would not have the opportunity otherwise
- Established FAU's Center for the Future Mind, a collaborative effort dedicated to exploring scientific and philosophical innovations to better understand emerging technologies, like artificial intelligence and the future of the mind
- Launched the David and Lynn Nicholson Center for Neurodegenerative Disease Research

Co-created Journey Through the Human Brain exhibit at the Cox Science Center and Aquarium, West Palm Beach, Fla.

$1M

Palm Health Foundation donates **$1M** to launch new program in Computational Neuroscience

$10M

A generous **$10M** contribution by David J. S. Nicholson named the Institute and welcomes an era of unprecedented research, education and discovery on the Jupiter Campus. This gift expands on an initial **$35M** investment from the State of Florida

I-SENSE
(Institute for Sensing and Embedded Network Systems Engineering)

I-SENSE serves as an innovation hub for sensing, computing, communication, AI, connected autonomy and cryptography, providing technical expertise and engineering support. I-SENSE is tackling some of society's most pressing challenges, from safeguarding water systems and agricultural resources, to managing growing cities, to supporting health and wellness.

$10M

The Center for Connected Autonomy and Artificial Intelligence, founded in 2020 through a gift from the Schmidt Family Foundation, is focused on cutting-edge research in autonomy and artificial intelligence. The Center leads active grants in excess of **$10M**, including a new **$1M** grant from the NSF to establish the nation's first mmWave, connected robotic testbed.

$52M

Creating the Engineering Research Center for Smart Streetscapes, built on real-time and hyper-local streetscape intelligence, supported by a five-year **$26M** grant from the National Science Foundation, renewable for an additional five years for a total of up to **$52M**

137

U.S. National Mesonet Program continues.

Lead technology provider for the South East Atlantic Econet, a large regional network of **137** weather monitoring stations and other environmental sensors managed in cooperation with Coastal Carolina University. The volumes of data collected are used by NOAA's weather modeling systems to increase the accuracy of its weather forecasting systems along the Atlantic coast.

Harbor Branch Oceanographic Institute

FAU Harbor Branch prioritizes solution-oriented research addressing critical issues affecting coastal zones, oceans and human well-being. Research scientists take a global approach, conducting studies around the world in varying climates, ecosystems and cultures.

The institute collaborates with the Department of Defense (DoD) partners.

As a leader in developing applied technology for national security initiatives, FAU Harbor Branch launched its Center for Marine Applied Technology and Engineering (C-MATE) to foster corporate and DoD partnerships.

1 of 4

Established as one of EPA National Estuary Program's Regional Restoration Centers for seagrass restoration in the Indian River Lagoon (IRL)

$215K

Enabled by a $215K grant from NextEra Energy Foundation, Inc. to develop improved seagrass cultivation through aquaculture techniques that can supply IRL-wide restoration efforts and address the Florida manatee starvation issue

3D

Culturing sponge cells in 3D to increase their usefulness for production of sponge-derived chemicals with human health applications

$21M

An initial **$11M**, five-year contract from the U.S. Office of Naval Research to examine the dynamics of bioluminescence in oceanic waters was recently expanded by an additional **$10M** contract awarded to FAU and University of Miami. This collaboration develops new sensing technology for CubeSats and small satellites.

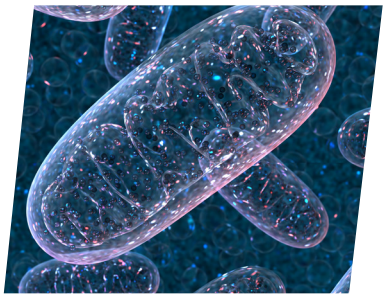
I-Health
(Institute for Human Health and Disease Intervention)

I-Health leads paradigm-shifting research groups focused on cancer, human health, infectious diseases and dementia fueled by multidisciplinary collaborations across Florida Atlantic's colleges and with regional clinical partners.

Members oversee research at all stages of human development and afflictions, including those that impact the neurons of the human brain, resulting in diseases that are presently incurable, in addition to examining the psychological impacts of the pandemic and engaging in numerous SARS-CoV-2/COVID-19-based initiatives. Technological innovations include the development of microfluidic devices for monitoring sickle cell anemia and malaria and using artificial intelligence to predict outcomes of gene mutations.

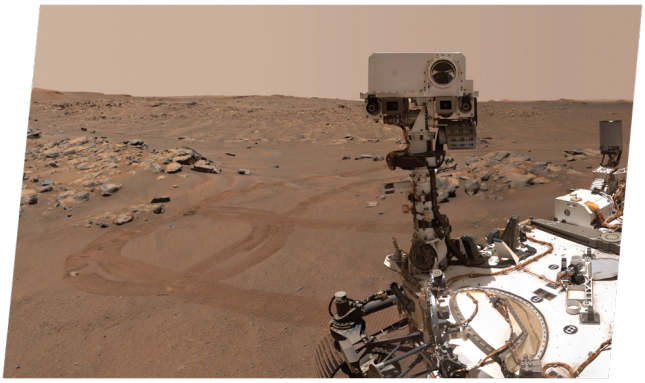
The Florida Department of Health awarded the Cancer Center of Excellence designation to the Memorial Cancer Institute (MCI) Florida Atlantic University partnership.

CANCER CENTER *of* EXCELLENCE
Florida HEALTH



$1.5M

Awarded $1.5M for Alzheimer's disease research. One of three institutions to receive funding from Governor's State Health Improvement Plan for clinical trials of Alzheimer's drug delivery technology



Engaged in the Planetary Protection Center of Excellence Mars Sample Return project.

$400K

Supported by a total of $400K in grants from the Community Foundation of Broward, building a biobank of unprecedented cancer specimens from minority populations; working with MCI and Cold Spring Harbor Laboratories to support and develop a pancreatic cancer organoid repository to be used for development of new therapeutic approaches.

Road to R1

Florida Atlantic is on the precipice to achieve Carnegie Classification of Institutions of Higher Educaiton's highest and most coveted Very High Research Activity status (R1) for the next adjustment in 2024.

What is the significance to R1/Tier One designation?

The R1 designation indicates a truly comprehensive university that spurs economic development, attracts high-quality students and faculty, and increases external funding. R1 universities meet benchmarks in research, educational activity and vital research staffing including postdoctoral fellows, as measured by the Carnegie Classification of Institutions of Higher Education.

The classification measures universities across multiple indicators, including:

- Research expenditures in STEM and non-STEM fields
- Doctorates awarded in science, technology, engineering and math (STEM) fields; social sciences, humanities; and other fields with a research emphasis
- Number of Ph.D. - holding research staff, including postdoctoral researchers

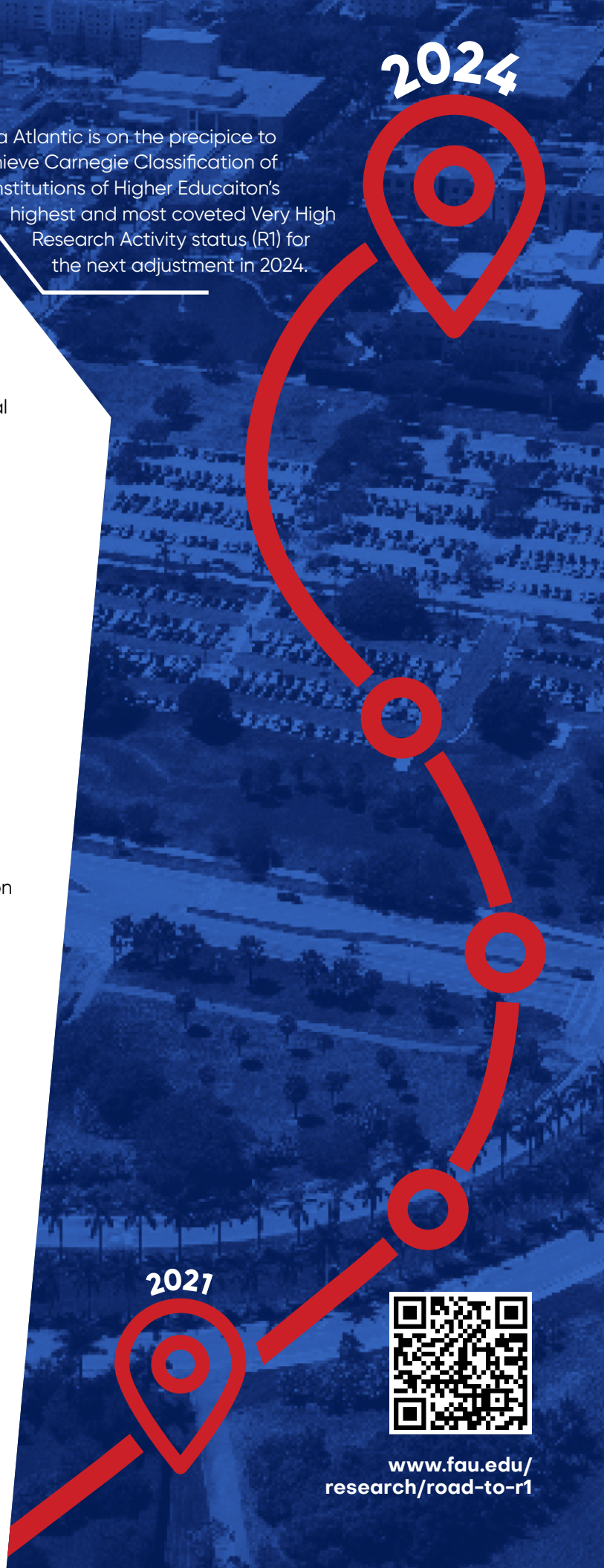
How can FAU get there in 2024?

Carnegie Classification of Institutions of Higher Education currently reviews existing R1 designations and new applications every three years. The next adjustment is expected in 2024. Calculations that determine rankings are not public, therefore FAU has formulated a methodology to predict standings. Based on this calculation, in 2021 a minimum ranking of 137 granted R1 status. In 2021, FAU ranked at 185. There are strategies in place that should move FAU's ranking by 2024.

How is FAU expanding?

- Talent Acquisition
- Research Acceleration
- Infrastructure Expansion

Note: This prediction is based on R1 status equalling 137, which has a number of uncertainties, including movement/improvements of other universities and inclusion of a new social mobility factor.



www.fau.edu/research/road-to-r1

Introducing FAU's Postdoctoral Scholars Network

FAU's Postdoctoral Scholars Network is committed to building and growing a supportive program where fellows collaborate with world-renowned researchers to help change the future.

Together they tackle some of society's biggest challenges, from climate change to neurodegenerative diseases, to cancer, infectious disease and more.

As the fastest growing research university in the nation, Florida Atlantic serves as the destination for inspiration, exploration and experiences that strategically shape the path of postdoctoral success.

50+
POSTDOCS AND GROWING

Explore the network's tracks and current opportunities at:
www.fau.edu/research-admin/postdoc-affairs/fau-postdoctoral-scholars-network

FAU HEALTH NETWORK™
FLORIDA ATLANTIC UNIVERSITY

Partnering to Advance Regional Healthcare

Broward, Palm Beach and Martin counties are home to 3.2 million people, yet the region lacks a dominant health care system like those in many comparable metropolitan areas ... until now.

Florida Atlantic recently announced the formation of the FAU Health Network, an academic health network bringing together the region's leading public and private academic and medical leaders driving the future of health care in the region.

With the population of the three South Florida counties continuing to grow, and an estimated shortage of 60,000 nurses and more than 17,000 doctors in Florida, the FAU Health Network will meet these growing patient-care needs. It will also address these workforce challenges by expanding the region's health-related teaching and research infrastructure – bringing together the vital health care components that exist separately across the region.

"The FAU Health Network — a true collaboration that brings together the region's already robust health care infrastructure — will help save lives and cure diseases," said Julie Pilitsis, M.D., Ph.D., dean and vice president for medical affairs, Florida Atlantic University's Charles E. Schmidt College of Medicine. "Collectively, we are stronger. Together, we will help make our community an even greater place than it is today."

Research topics include:

- Innovations in Aging
- Chronic Pain and Opioid Use
- Genomics and Precision Medicine
- Brain Health

FAU Innovation and Business Development

Imagine, build, grow, expand and thrive with FAU's Innovation and Business Development programs:

- FAU Tech Runway
- Florida Small Business Development Center at FAU
- Office of Technology Development
- FAU Wave
- FAU's Market Validation Workshop
- NSF I-Corps at FAU
- And strategic partners, like Adam Center for Entrepreneurship and Research Park at FAU

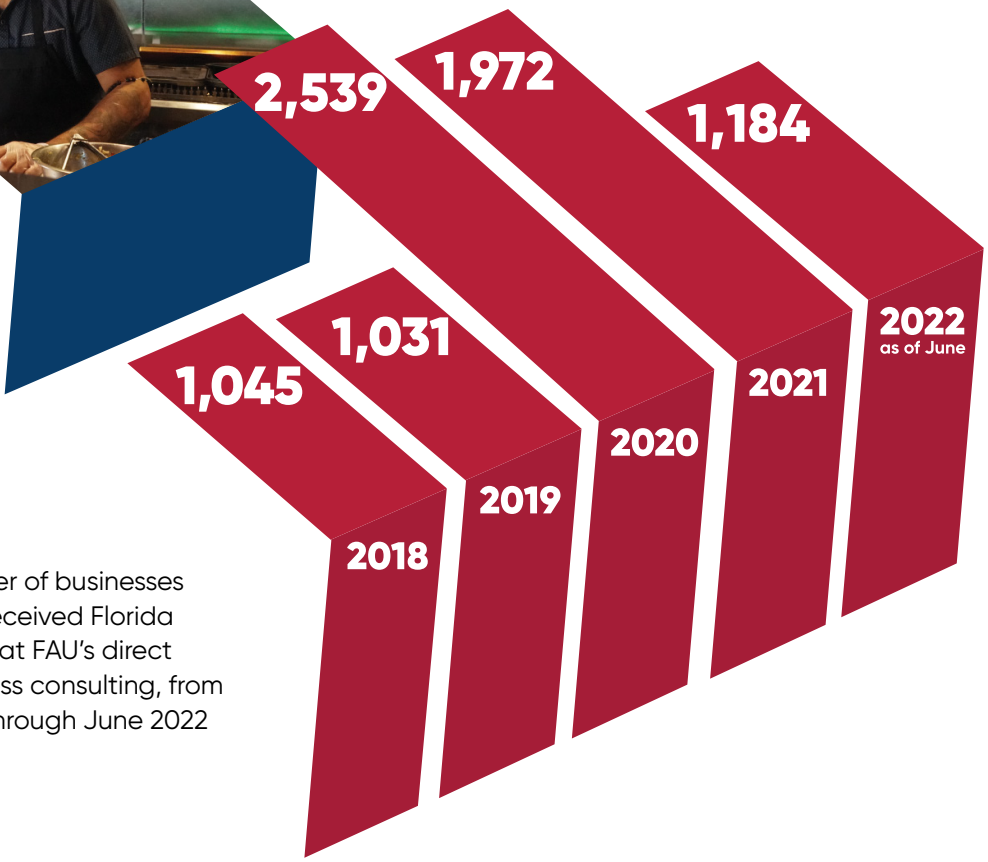
The university's wealth of resources supports regional development, entrepreneurship and business growth, global partnerships and social innovation, solidifying the university's position as a major community and state asset. From innovation to commercialization, Florida Atlantic has built a robust pipeline for growth.

Register today to gain access to the services, resources and support offered by these programs.

fau.edu/innovation-and-business-development

$620M

Florida SBDC at FAU (since 2018) and FAU Tech Runway (since 2014) helped clients acquire **$620M** through investments, loans, grants and government contracts, through June 2022.



Number of businesses that received Florida SBDC at FAU's direct business consulting, from 2018 through June 2022

323

Faculty, staff and students participating in Innovation and Business Development programs, such as FAU Wave, FAU Tech Runway and NSF I-Corps, in 2021-22.

$1.1M

123 cash awards through Innovation and Business Development programs like NSF I-Corps, FAU Tech Runway and FAU Wave, totaling more than **$1.1M**.

QUICK FACTS

1st

University-based angel investor network in state of Florida

2-Time Award Winner

SBA Award - SBDC of the Year 2022 and Florida SBDC Network Award – SBDC of the Year, 2021

11

Locations with consultants, mentors and professionals serving Florida Atlantic's Innovation and Business Development pipeline

55%

Minority representation in the FAU Wave Program – a student centric entrepreneurial initiative

150+

Specialized consultants, mentors and professionals serving the regional development fueling the pipeline of resources

500+

Community members and **15** organizations supported in 2021 by social innovation and grassroots programs

17

Foreign businesses from international SBDC networks supported by a new SBDC-FAU soft landing program in collaboration with the FAU College of Business

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