

The Creative Destruction of Medicine

# How Technology is Shaping the Future of Healthcare

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Director of Precision Medicine

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$$\text{DISAPPOINTMENT} = \frac{\text{EXPECTATION}}{\text{REALITY}}$$

EXPECTATIONS





A teal-tinted photograph of a city skyline, likely San Francisco, featuring a prominent bridge (the Bay Bridge) crossing a body of water. The word "YES" is overlaid in large, bold, white capital letters in the center of the image.

**YES**





# 1700s

1<sup>st</sup> INDUSTRIAL  
REVOLUTION  
Steam  
Mechanical  
production

# 1800s

## 2<sup>nd</sup> INDUSTRIAL REVOLUTION

Electricity

Mass production





# 1960s

3<sup>rd</sup> INDUSTRIAL  
REVOLUTION

Electronics

Information

Technology

Automation



The background image shows two men in white lab coats and ties, looking intently at a large screen. The screen displays a complex, colorful visualization of data, likely a DNA sequence or a network graph, with glowing lines in yellow, orange, and green. The overall scene is set in a laboratory or research environment with a blue-tinted background.

# 2014

## 4<sup>th</sup> INDUSTRIAL REVOLUTION

Convergence of digital,  
physical and biological  
innovations

The background image shows two men in white lab coats, likely doctors, looking at a computer monitor. The man on the left is wearing glasses and a blue shirt with a yellow tie. The man on the right has a mustache and is wearing a blue shirt with a patterned tie. The screen displays a complex data visualization with multiple lines in yellow, green, and red, and various markers. The overall scene is set in a clinical or laboratory environment with a blue-tinted lighting.

# 2014

## 4<sup>th</sup> INDUSTRIAL REVOLUTION

Improving our world  
through big data,  
connectivity and  
enhanced computing

A man's profile is shown in silhouette, looking upwards and to the right. The background is a dark blue field filled with glowing digital data, including various charts, lines, and alphanumeric characters like '67E', '23A', '5C45', 'A129A2', '5DR', 'B', 'EF6D', 'ABC4BC3', '8E', '078', '5', '3A', 'BCA', '6', '7', '6', '23A', '67E', '5C45', 'A129A2', '5DR', 'B', 'EF6D', 'ABC4BC3', '8E', '078'.

# 4<sup>th</sup> INDUSTRIAL REVOLUTION DEFINED

Interoperability

Virtualization

Decentralization

Real-time Capability

Service Orientation



The logo for UF Health, University of Florida Health, is displayed on the upper left corner of a multi-story building facade. The logo features the letters 'UF' in orange with a curved line above them, followed by 'Health' in blue. Below this, 'UNIVERSITY OF FLORIDA HEALTH' is written in smaller blue capital letters.

UF Health  
UNIVERSITY OF FLORIDA HEALTH

The image shows a large, modern academic medical center building with a blue tint. The building has many windows and a prominent entrance area. In the foreground, there are some trees and a street lamp. The overall scene is a wide-angle shot of the building's exterior.

Region's Premiere Academic Medical Center

# We Are Inventors

**DRIVING CHANGE THROUGH  
INNOVATION**

# We have a history of innovation...



## RESTORING RHYTHM

03

**Sustaining Patient Satisfaction**

UF Health Jacksonville and UF Health North receive seven Excellence in Healthcare awards.

04

**COVER STORY**

A UF Health cardiologist is the first in the world to implant a regenerative bio envelope he helped create.

06

**Overcoming Childhood Obesity**

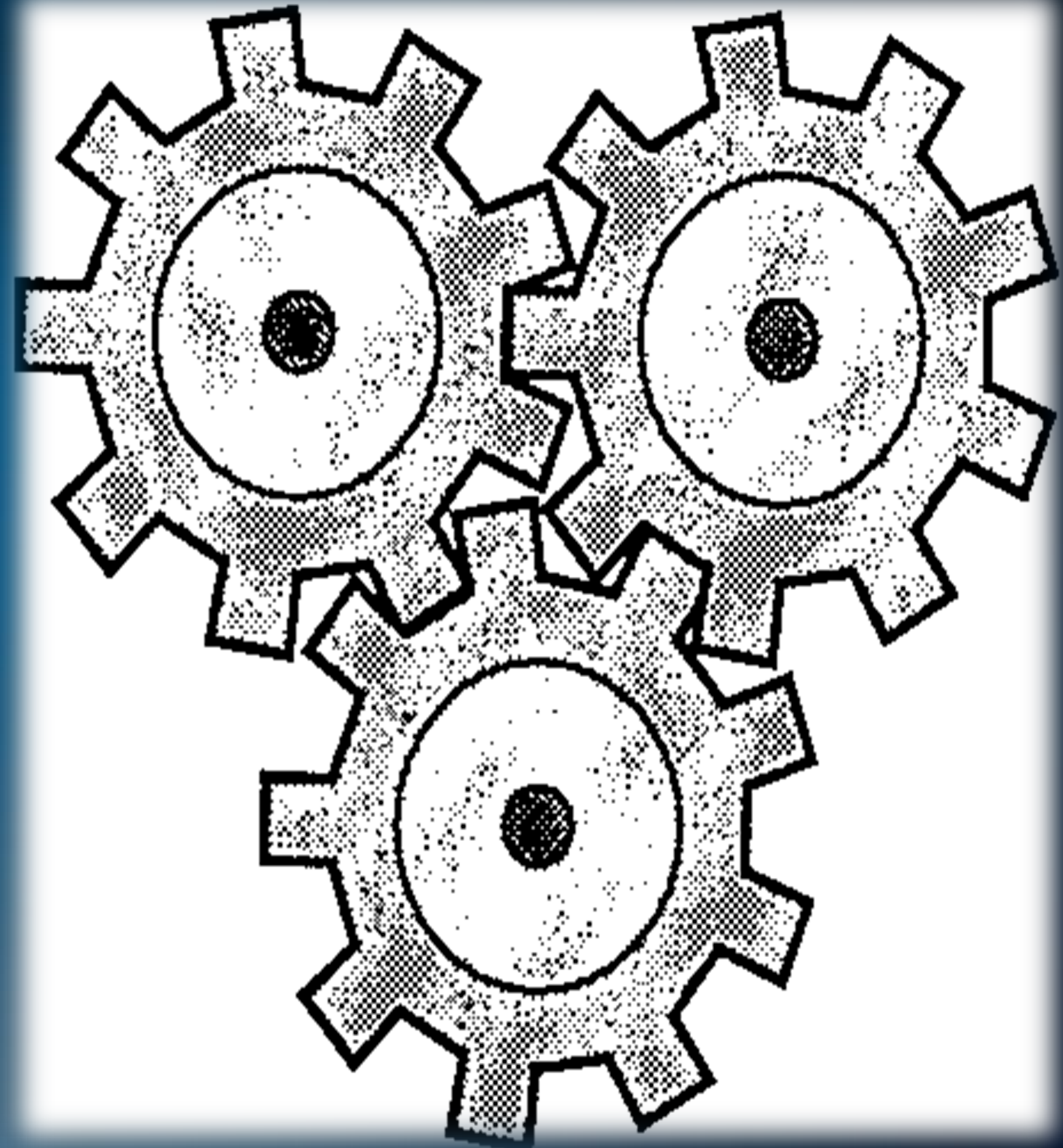
UF Health Pediatric Weight Management Center taps into a child's motivation in order to encourage weight loss.

# ...and a very bright future



**We Work  
Together**

**Education  
Research  
Practice**



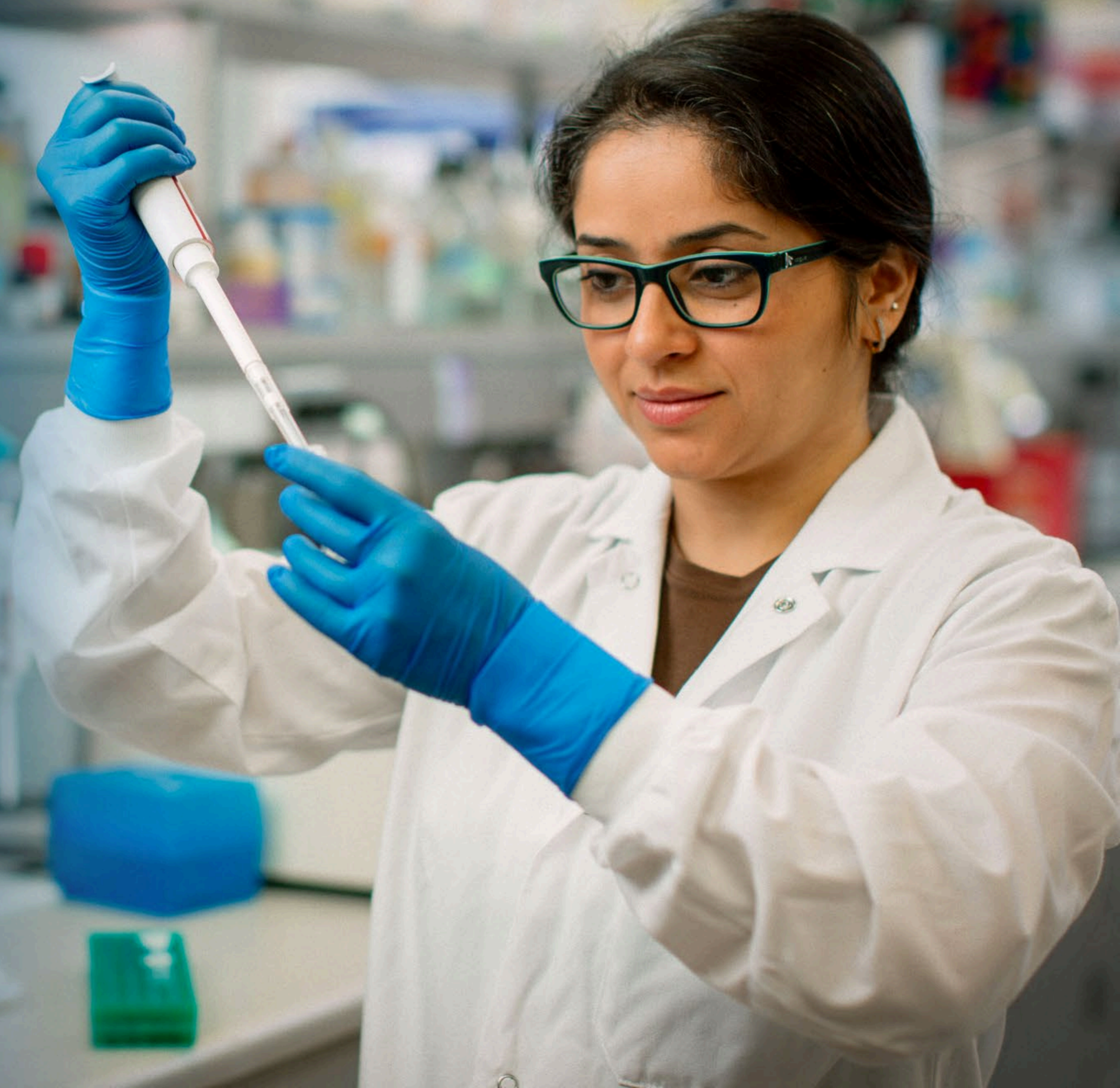


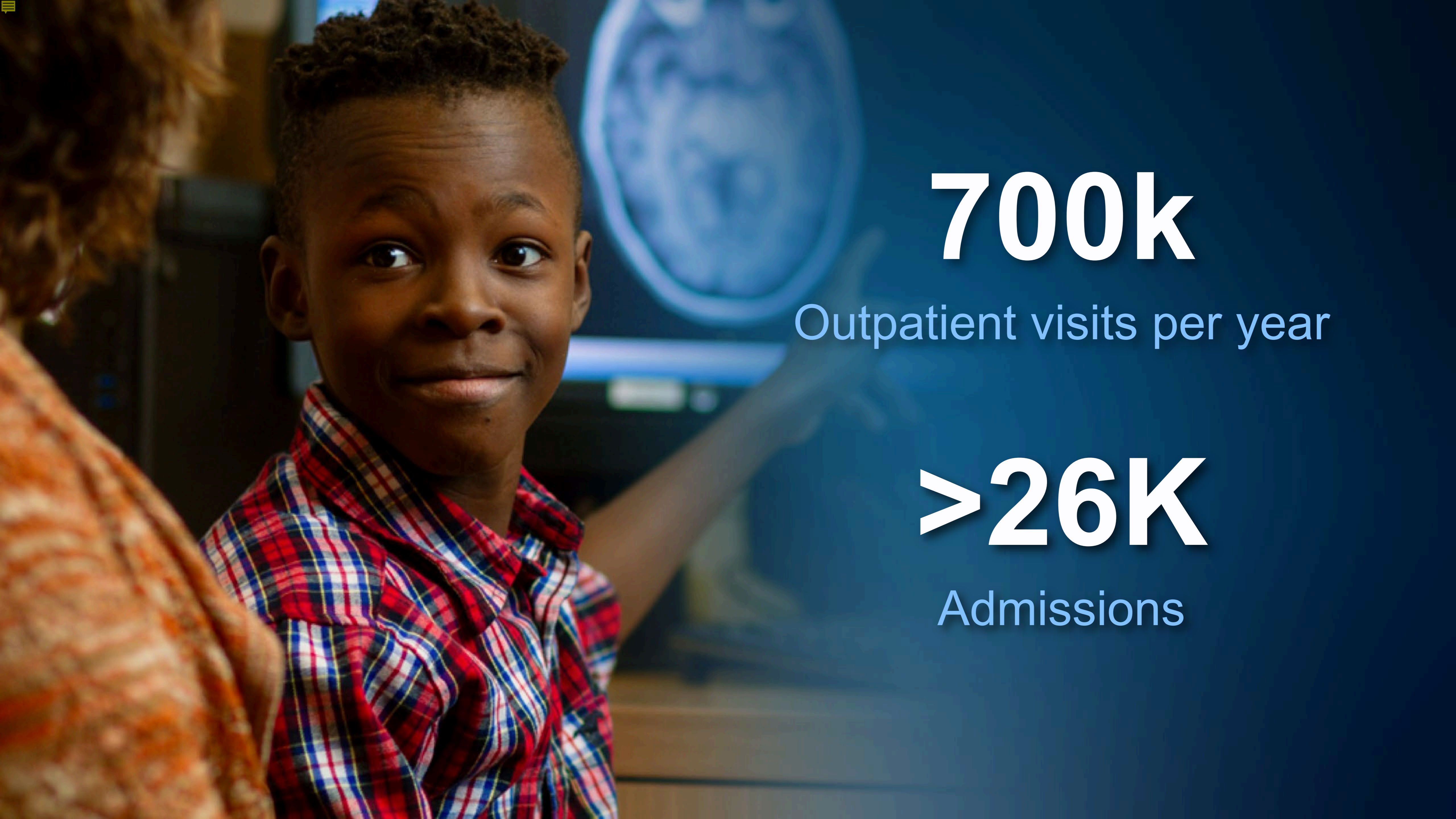
# Advancing

Medical Education to Train  
the Next Generation  
of Caregivers

# Investing

in Innovative Research  
to Transform Medicine  
and Public Health





**700k**

Outpatient visits per year

**>26K**

Admissions





**What are some of the  
key technologies  
driving change?**



# GENOMICS AND PRECISION MEDICINE

# Impacting Healthcare TODAY

Whole-exome sequencing (WES) for patients with...



...advanced cancer



...rare disease

Pharmacogenomics



Non-invasive prenatal testing



Gene panels: Neurology and Gastroenterology



Predictive genomics



Infectious disease

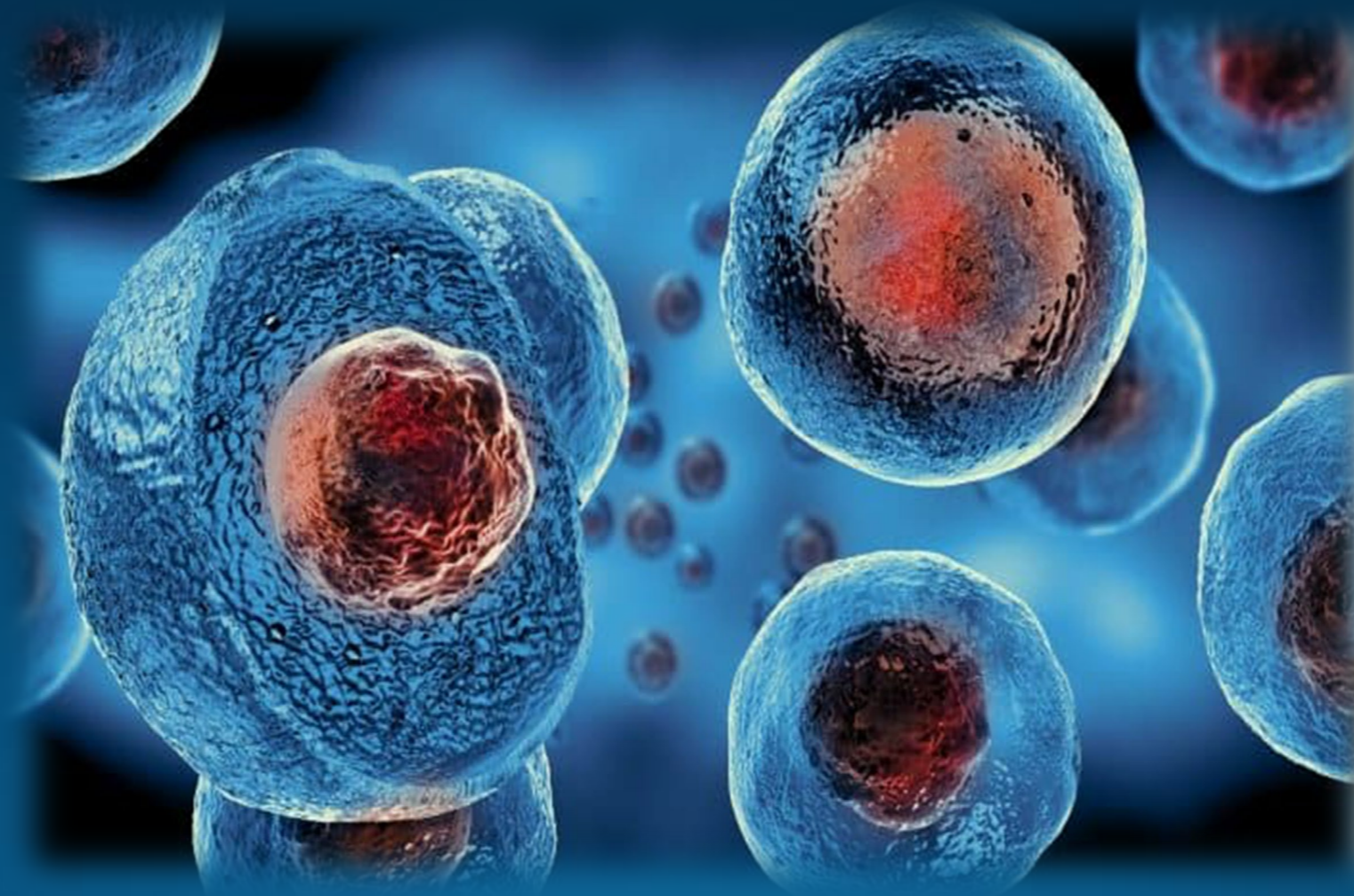




# Biotherapeutics

Products derived from  
patients for patients





## New Stem Cell Research



# Mobile Connectivity and Health Apps

Interpretation of data tailored to individuals





HOME

ABOUT

BLOG

CLINICAL RESEARCH

HealthSteps



## YOUR CARE PLAN



### Personalized Care Plan

Intuitive care plan that is customized by the healthcare provider



### Instructions & Reminders

Detailed care instructions for medications, symptom tracking, and links to educational information



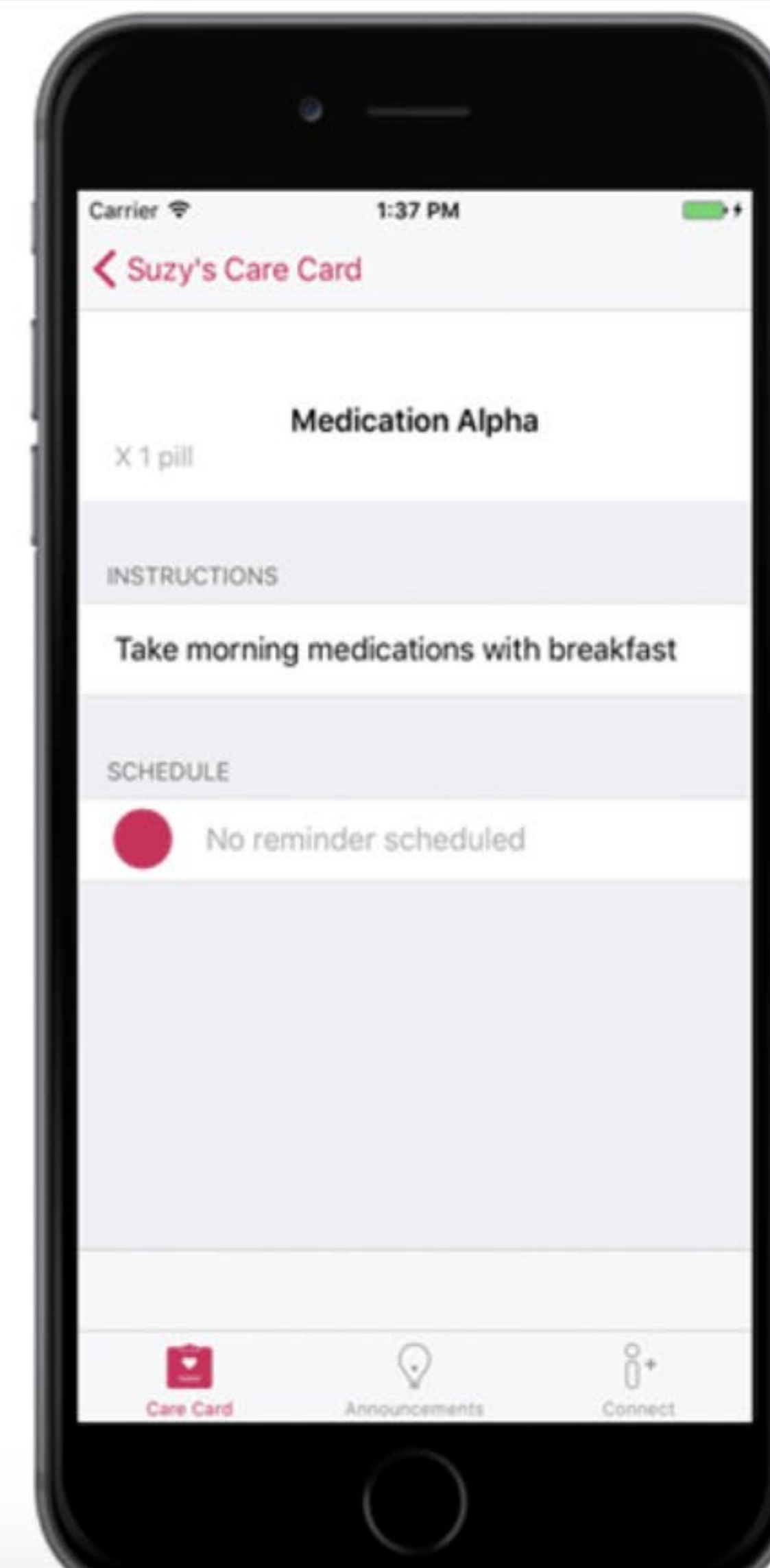
### Share & Sync

Coordinate care between the doctor, parents, and family members, including caregivers or friends



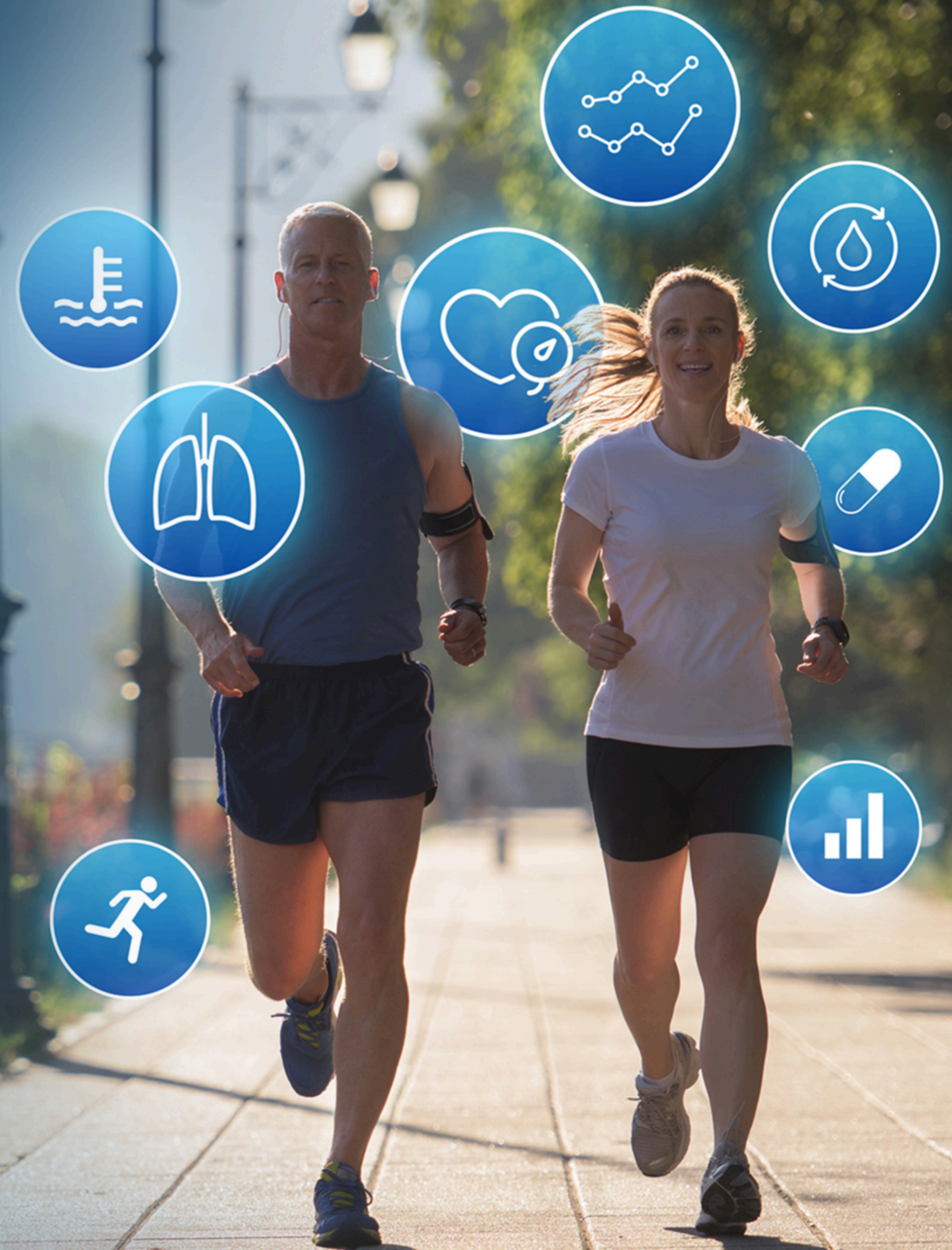
### Simple to Use

Crafted to be simple and easy to use for one less worry



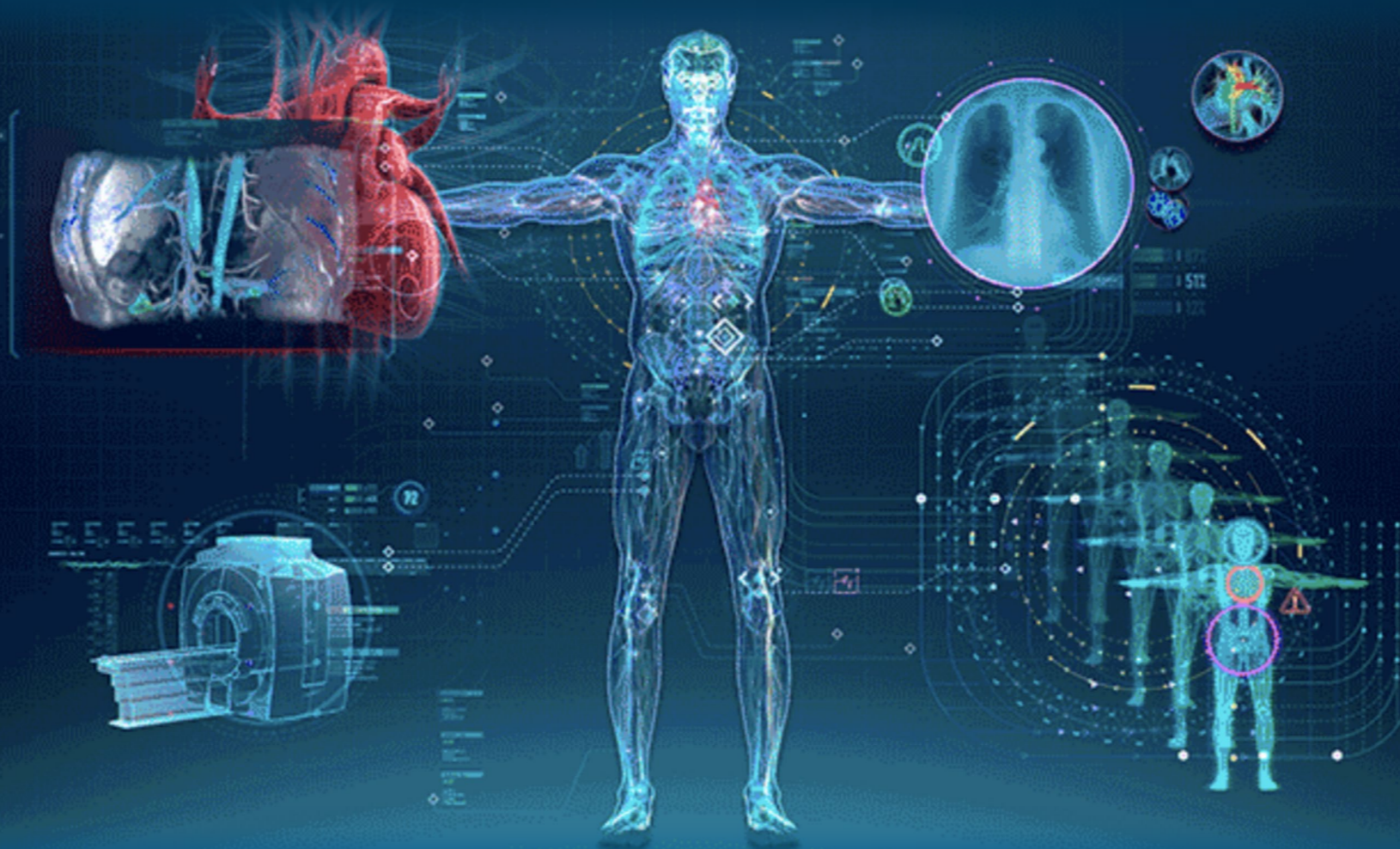
# Big Data Analytics

Interpretation and collation of data to guide patients and physicians





Sepsis



Medical Imaging and Diagnostics



Employee Wellness



Poison Control



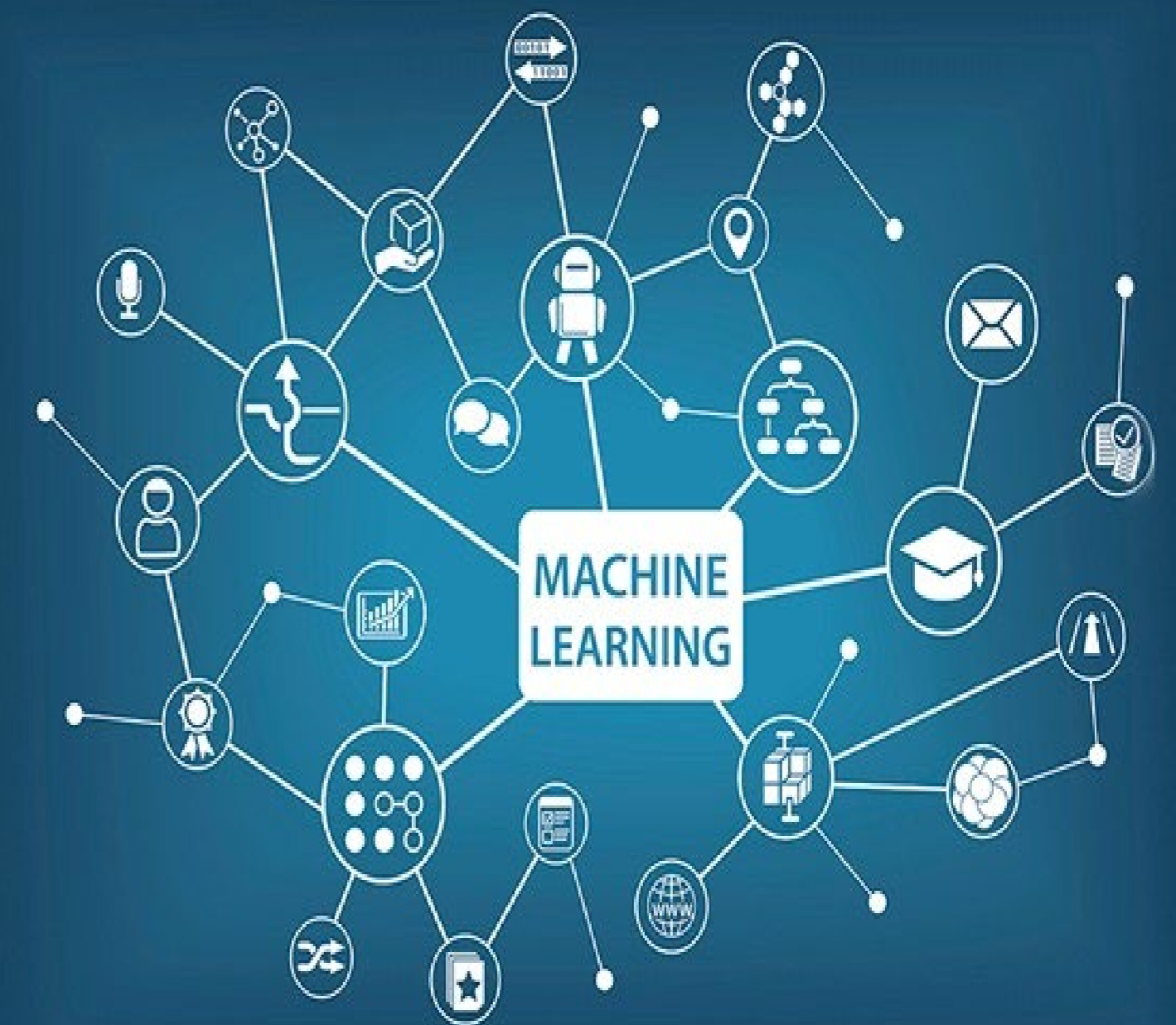
Cancer Care



Population Health

# Rethinking Colorectal Cancer Screening

Identify those under 50  
at highest risk who  
would benefit most





**ARTIFICIAL INTELLIGENCE**



**\$9.3 billion**

Invested in artificial intelligence  
start-ups in the U.S. in 2018





# Virtual and Augmented Reality

Expanding our capabilities in  
to new realms



# Molecular Imaging

Visualizing a single molecule



# Nanotechnology

Scaling diagnosis and  
treatment to true point of care

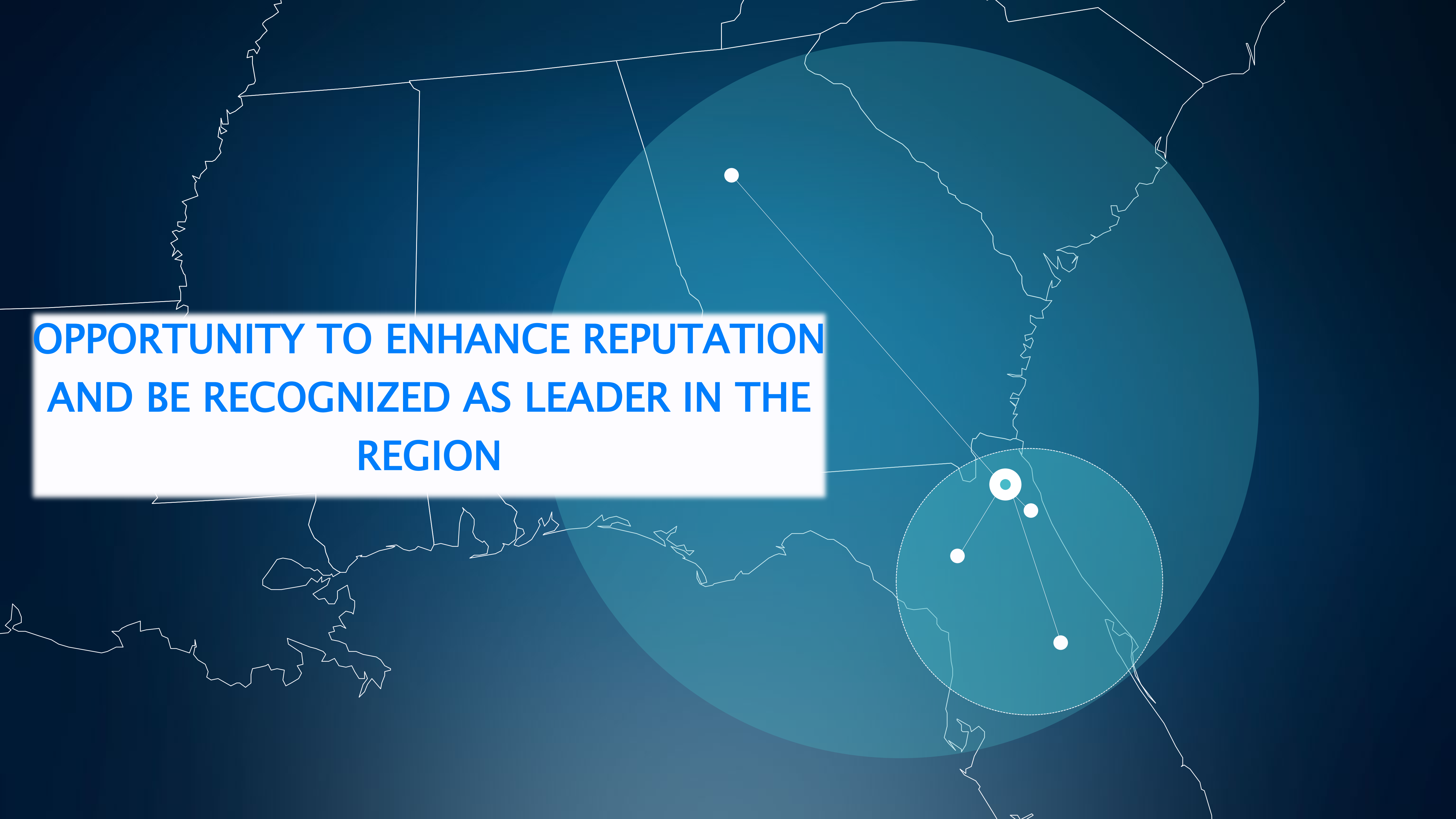


**GLOBAL**

**LOCAL**

An exciting time for  
UF Health and the College of Medicine  
in Jacksonville





**OPPORTUNITY TO ENHANCE REPUTATION  
AND BE RECOGNIZED AS LEADER IN THE  
REGION**



How Does  
Research Add  
Value to the  
Institution While  
Not Driving Up  
Costs?

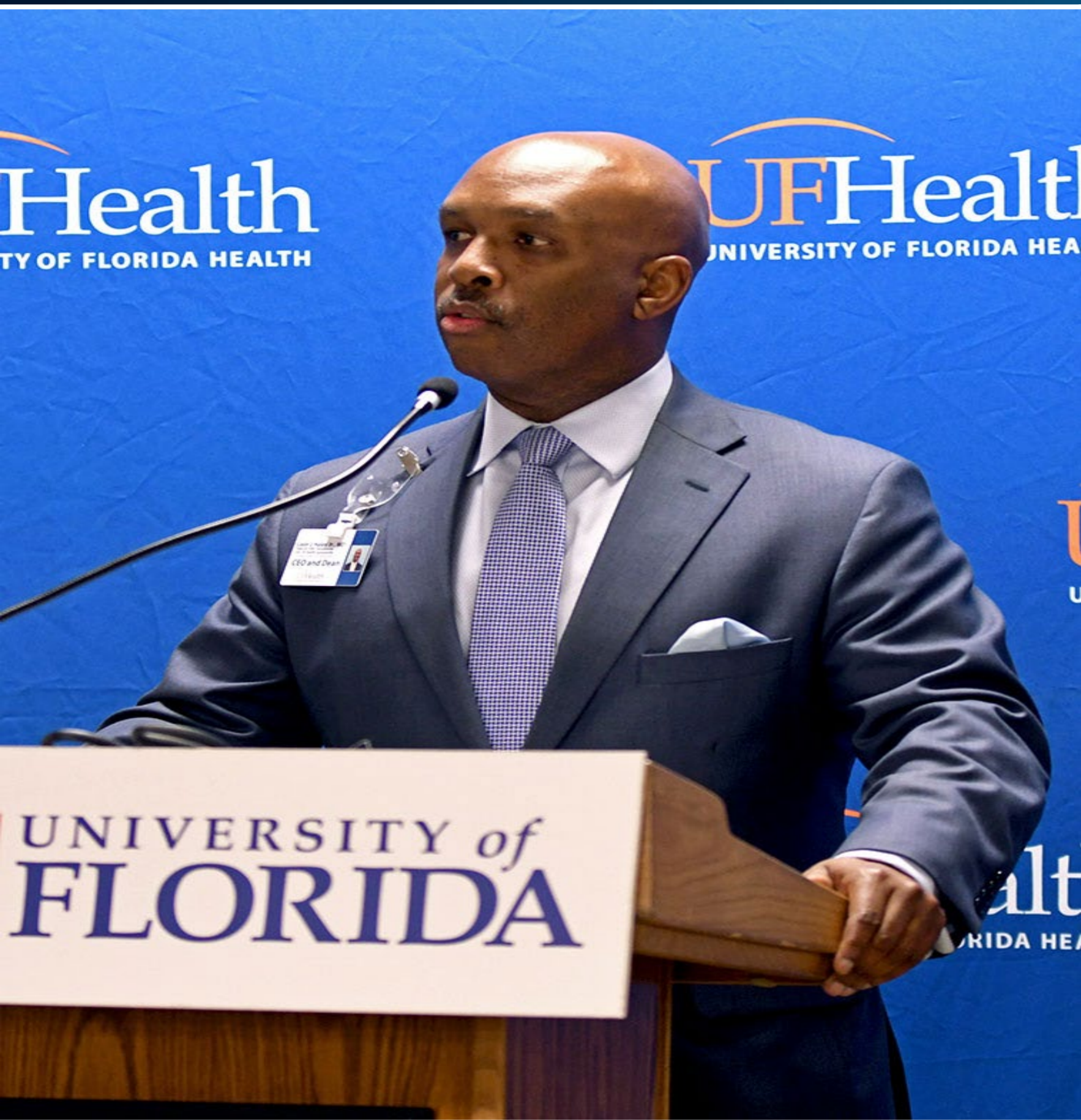




# We Must Know the Institutional Mission

**...and align with it.**

# “The Region’s Most Valued Healthcare Asset”



*To support the mission, research must capitalize on momentum and accelerate from “good to great”.*

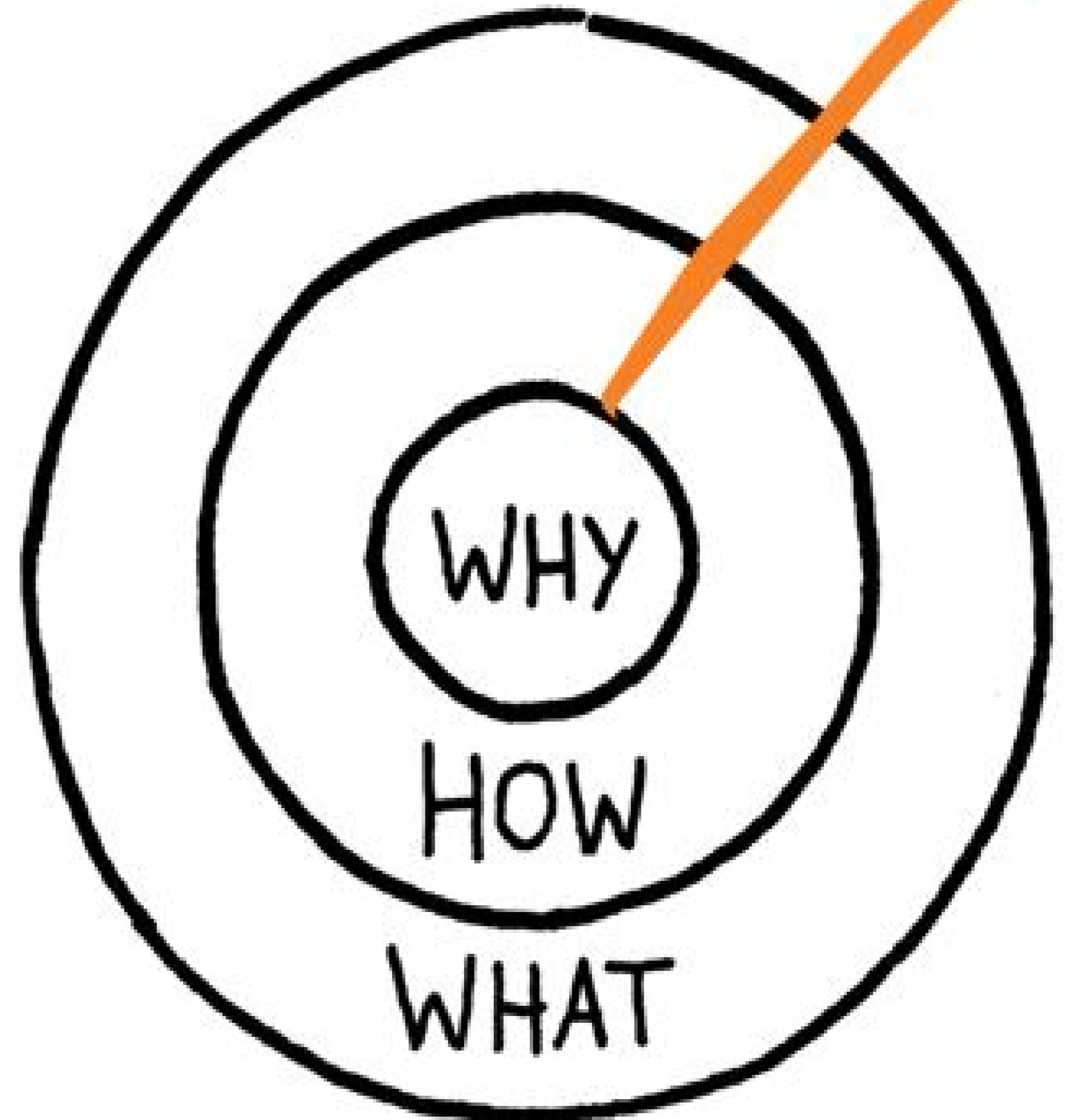


*There are several key challenges that must be overcome to move research forward on our campus.*



Starts with a  
Culture that Knows  
“Why?”

Research is the asset  
that drives  
transformation in  
healthcare and  
population health.



*“From Innovation to Transformation”*



In 2019, we are planting seeds for  
growth and change.





Must Focus on the Future

THINK **BIG**  *MOVE* **FAST**™

To secure that future we are ...

Enhancing our  
access to data as  
well as our ability  
to analyze it.





# Get Funding

Find out more at the link below.

[READ MORE](#)

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904-663-0985

[datasolutions@jax.ufl.edu](mailto:datasolutions@jax.ufl.edu)



Advancing our ability to train and develop next generation of high impact, federally funded researchers.



# UF Center for Research Training

College of Medicine – Jacksonville

Search Our Site 

- Welcome
- Research Training Programs
- Lectures
- Mentorship and Scientific Review
- Grant Resources
- Faculty and Staff
- Contact Us

## Welcome



Faheem W. Guirgis, M.D.,  
FACEP

Welcome to the **Center for Research Training at the University of Florida College of Medicine – Jacksonville**. Our mission is to develop the next generation of highly collaborative clinical researchers who will advance the science of medicine and transform health care. We provide comprehensive training in clinical and translational research to UF College of Medicine – Jacksonville faculty, trainees and students.

We have developed educational programs to suit the needs of all commitment levels, from those simply interested in learning more about research to those wishing to pursue extramural funding and research as a significant portion of their career. For people who wish to advance their knowledge in research, faculty and trainees have the opportunity to pursue a certificate of completion in Research Essentials or Advanced Training in Research. We understand

Building out our  
ability to collect,  
process, store  
and analyze  
biospecimens.

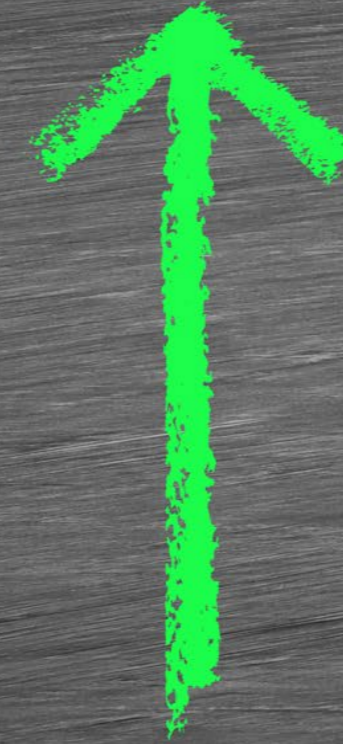


Streamlining use of the research budget and finding new sources of revenue.

EFFICIENCY



Speed



Quality



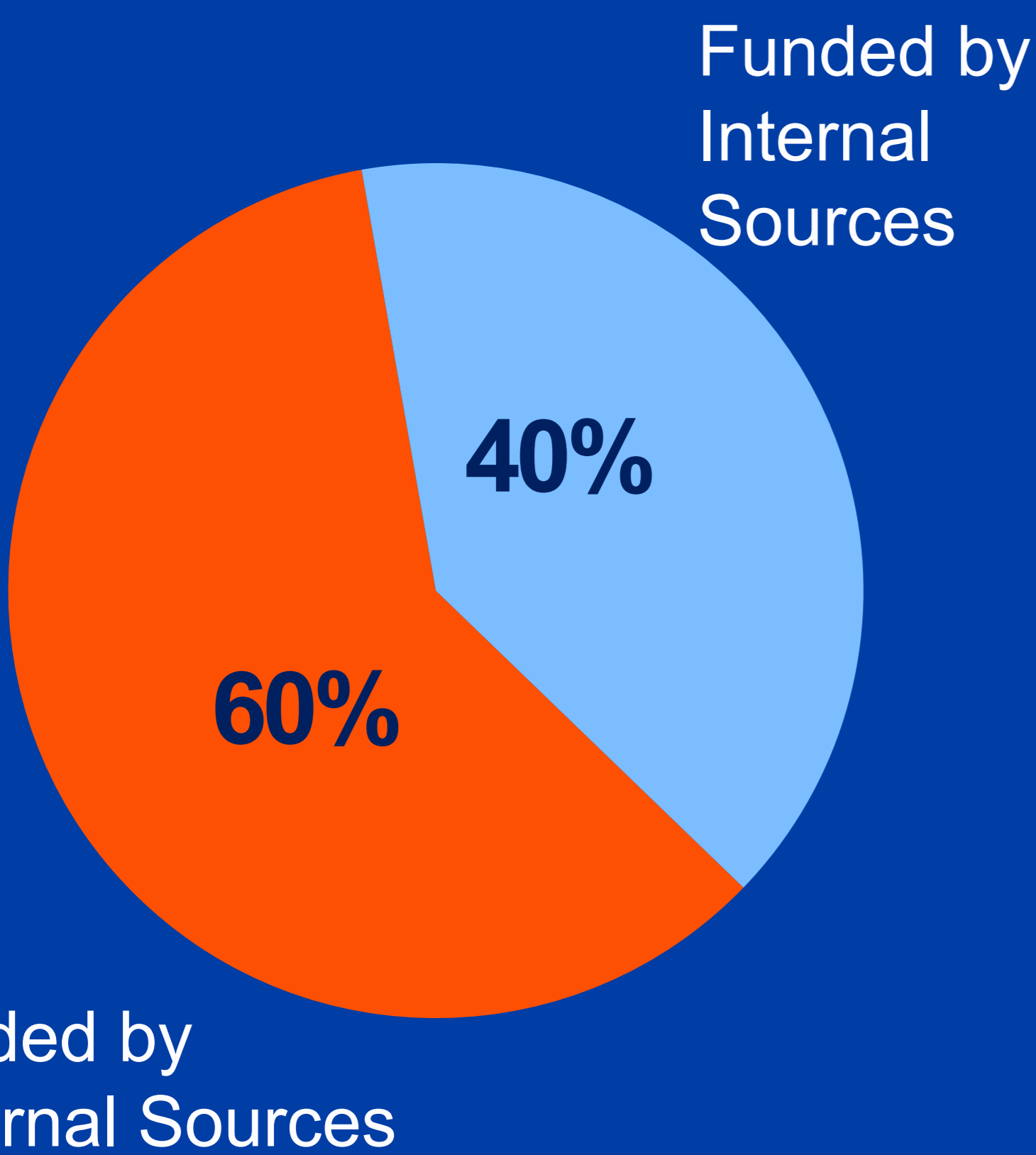
Costs



# RESEARCH METRICS

Utilizing a team science approach to innovate and transform healthcare.

**\$21.8 MILLION  
IN FY18 – 19**

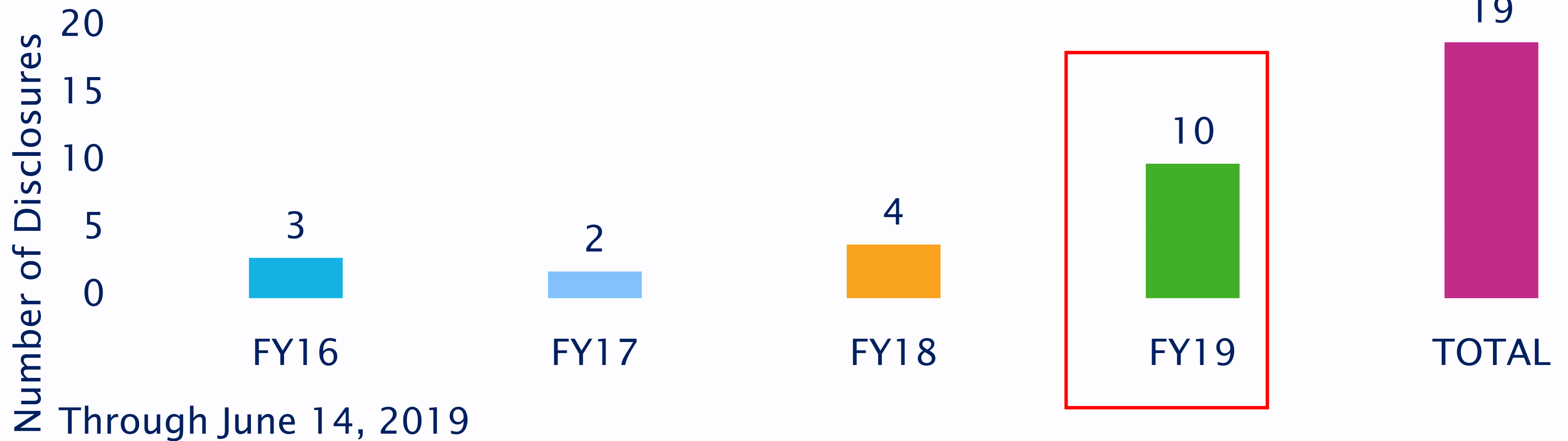


Active IRB protocols	536
Full-time research staff	81
Funded faculty engaged in research	74
Funded Clinical trials	194
Research-based publications (FY18-19)	129



# Disclosures

Disclosure Activity  
FY16 – FY19



Focusing our efforts and resources in strategic, mission-aligned areas



FOCUS



STRATEGY

VALUE-ADD IDEAS CREATIVE CHANGE BUSINESS PERFORMANCE IMPROVEMENTS OPTIMIZE FUTURE Implementation Growth

SOLUTIONS Performance PLAN OPTIMIZATION Improve VISION Creativity STRATEGIC GOAL INNOVATING INSIGHT Innovate MARKETING Inspiration High Performance Solutions Problem-Solving



# Partnerships

Making the Necessary  
Connections



Executing a communication strategy to tell people about what we are doing.



# The Big Picture



# Region's Most Valued Healthcare Asset

Precision Medicine

Health Disparities

Population Health

Cancer

Acute  
Critical  
Care

Cardiology

Mental  
Health

Aging

Center for Data  
Solutions

Center for  
Research Training

Center for  
Biospecimen  
Procurement

Office of Research Affairs


"ONE UF, ONE VISION"



**GLOBAL**

**LOCAL**



An aerial night view of a city, likely Singapore, with a prominent highway interchange. The image is overlaid with a digital network of glowing white lines and nodes, representing data flow and connectivity. The overall color palette is a deep blue, giving it a futuristic and technological feel.

# The 4th Industrial Revolution

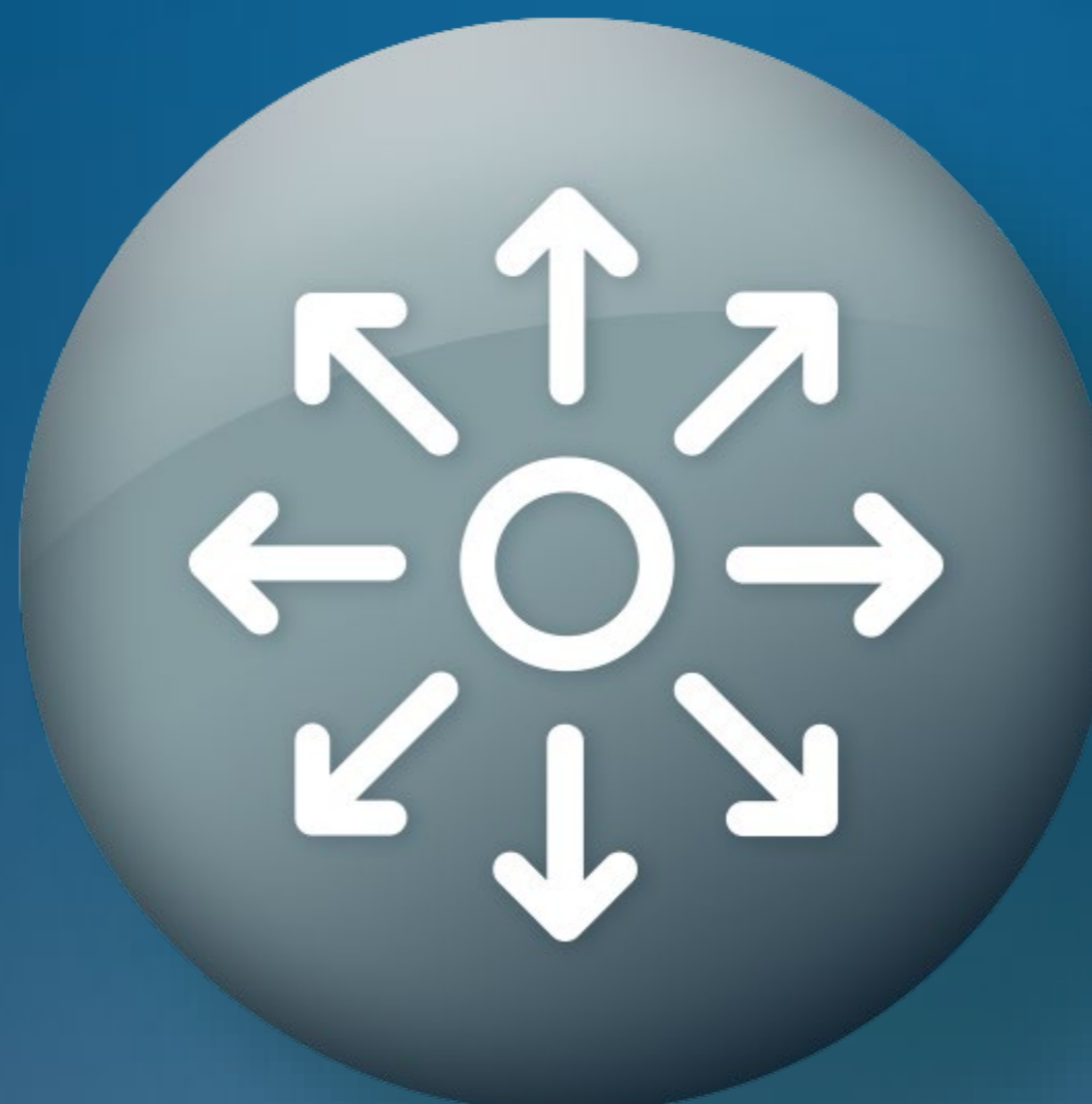
Blurring the lines between  
digital and physical worlds

# 4<sup>th</sup> Industrial Revolution

Production



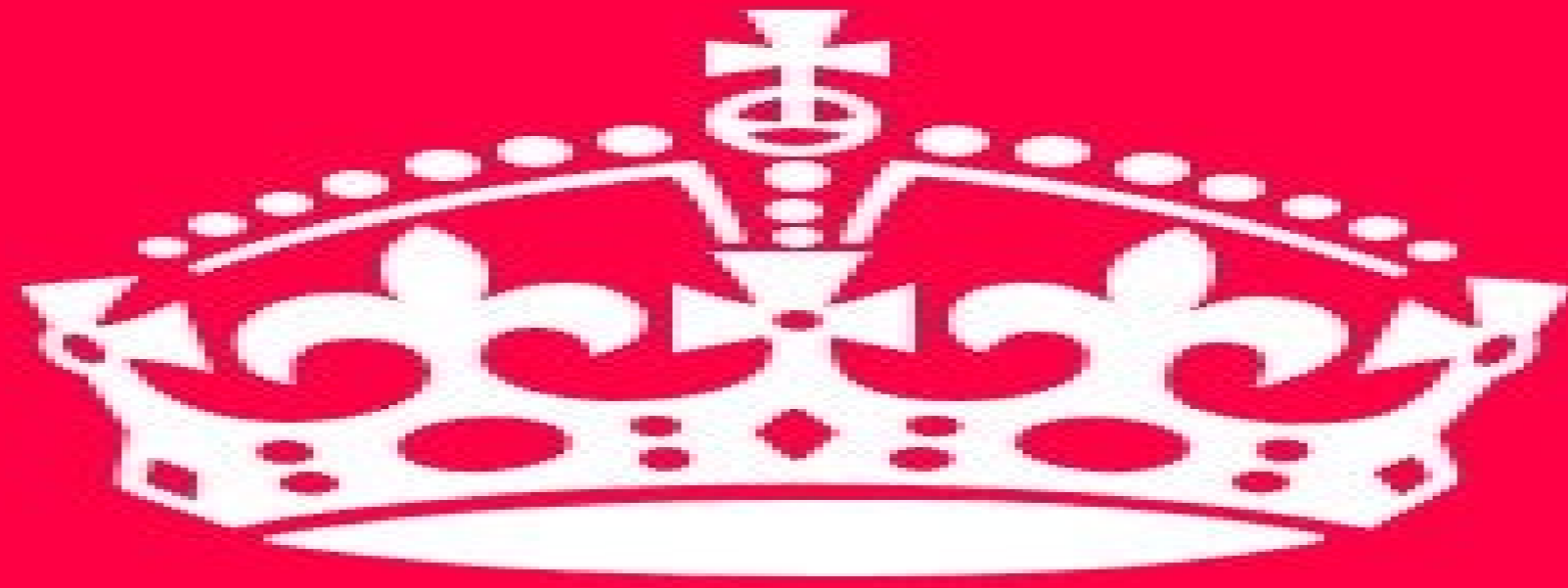
Distribution



Consumption







**KEEP  
CALM  
AND  
TAKE A  
STEP BACK**

# Disruptive Technologies

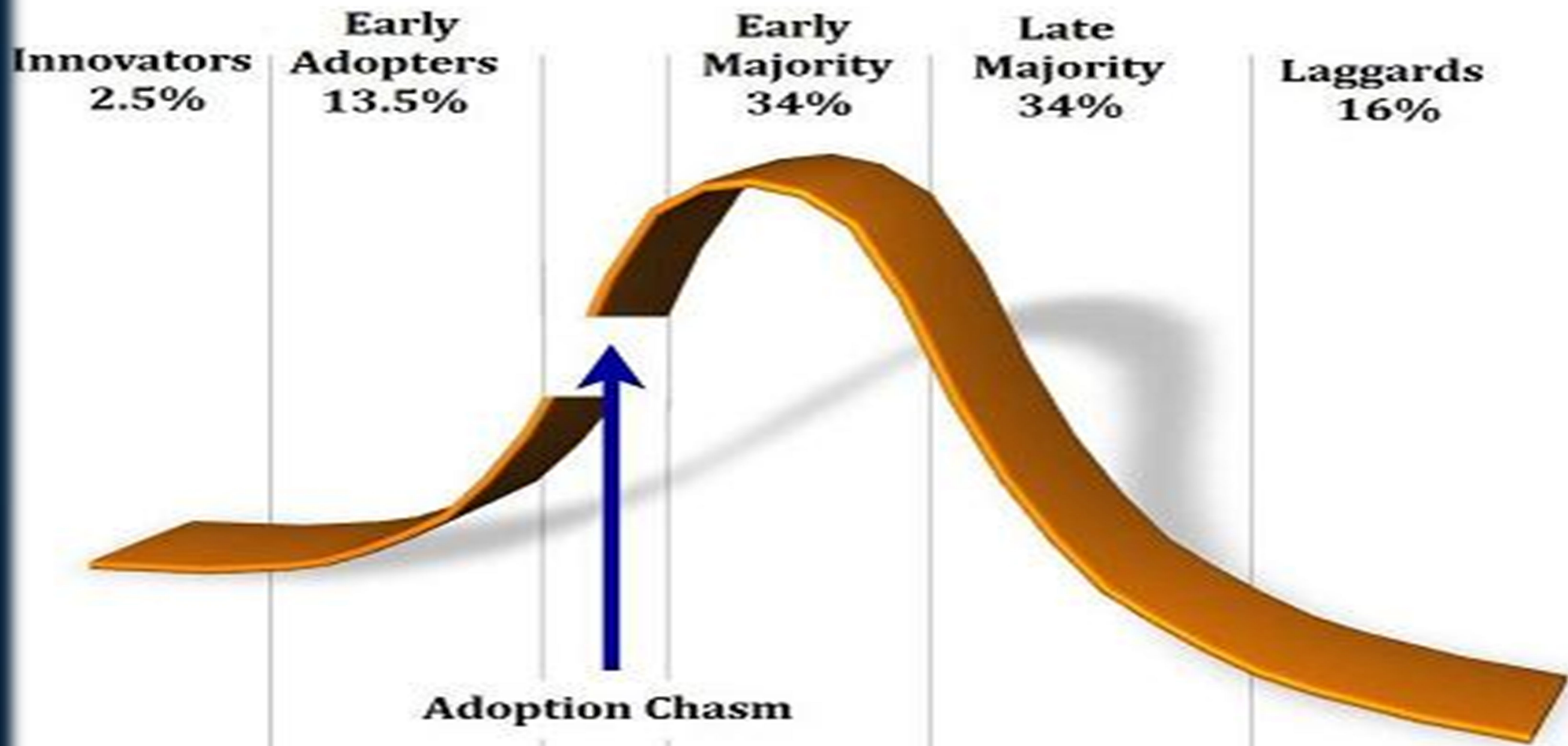


Integration of  
technology takes time...

...but technology  
waits for no one.



# Technology Adoption Curve

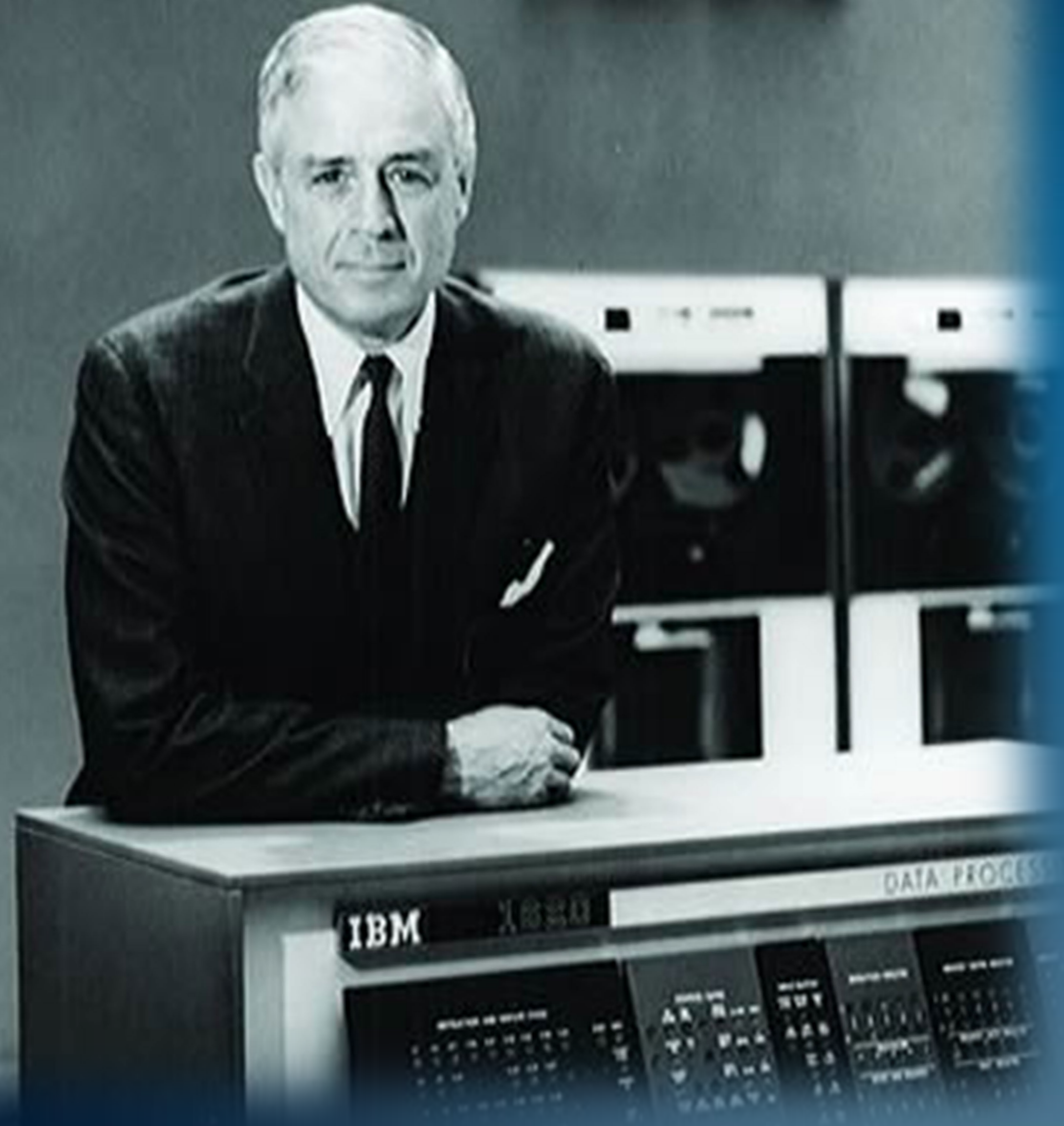


# “Disruptive Technology” Can Cut Both Ways...





IBM



*“I think there is a world market for maybe five computers.”*

*Thomas Watson,  
Chairman of  
IBM, 1943*



*“X-rays will prove to be a hoax.”*

Lord Kelvin  
President of the  
Royal Society,  
1883.

We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction.

*Bill Gates*

*www.thequotes.in*



PARKER, ALEXANDER

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SI: 1

Acc#: 5000091902

Study Desc: SHOULDER

Plate ID: 101

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Lossy

Charles A Cannon Jr. Me

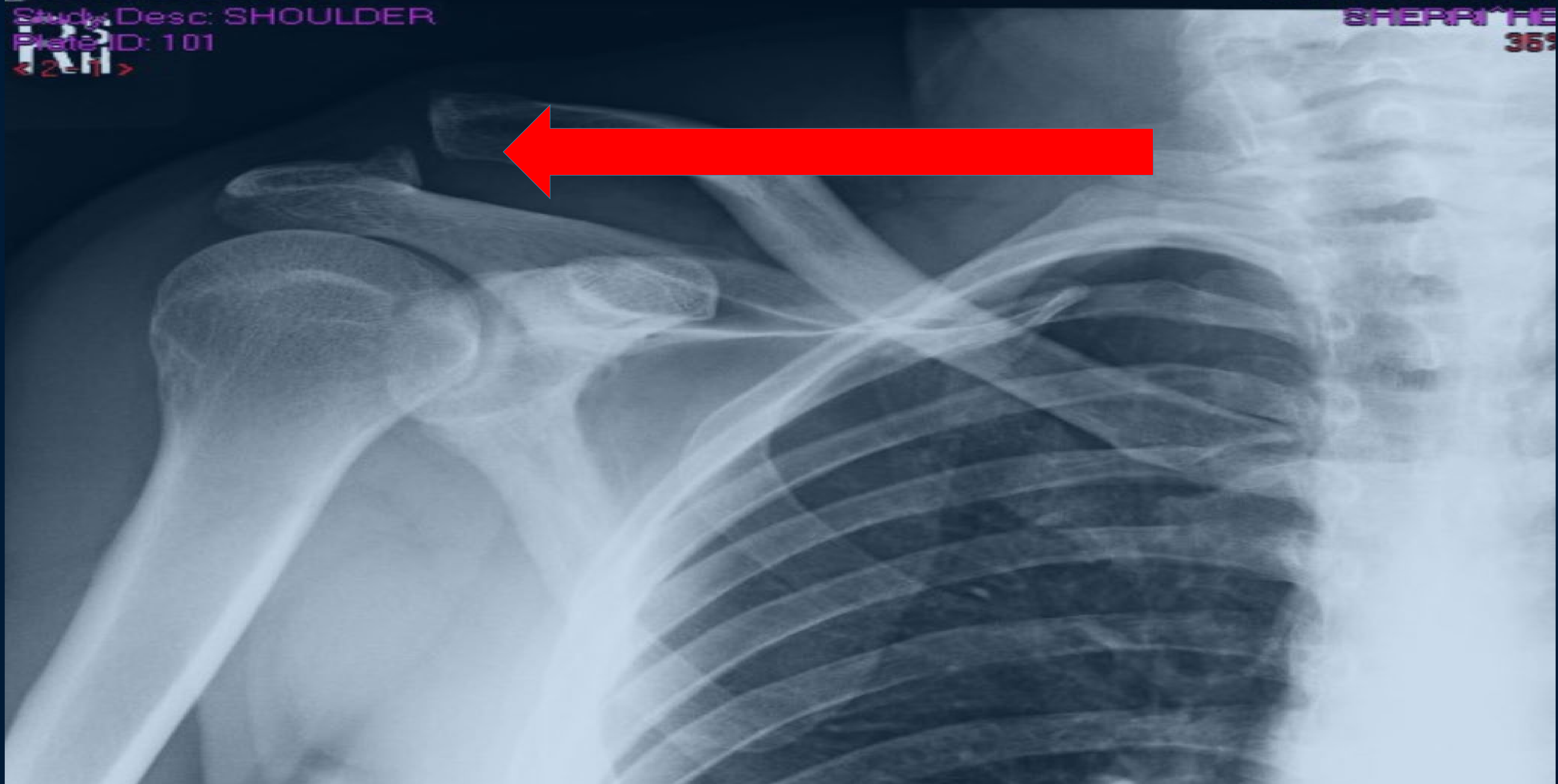
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KONICA MINOLTA

SHEPPI^HE

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When the unimaginable becomes  
the unremarkable...  
that is progress.



Thank you.

