

Excellence at Scale

Over 150 Years of Pursuing Innovation



National and Economic Security: Providing a safe and secure livelihood for all



Advancing Health and Life Sciences



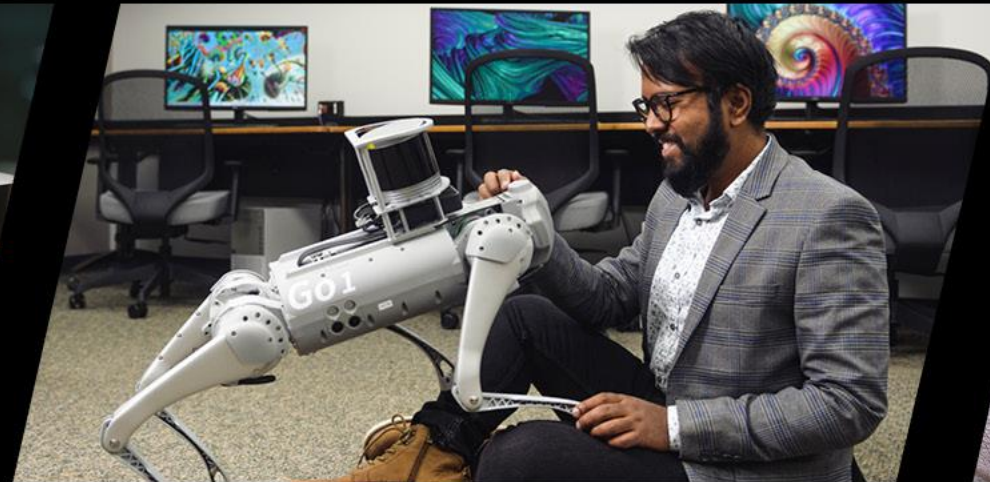
Providing National Security and Defense



Protecting the Environment



Modernizing our Infrastructure



Ensure economic prosperity through data science and AI



Feeding the world

Our mission is to support research success

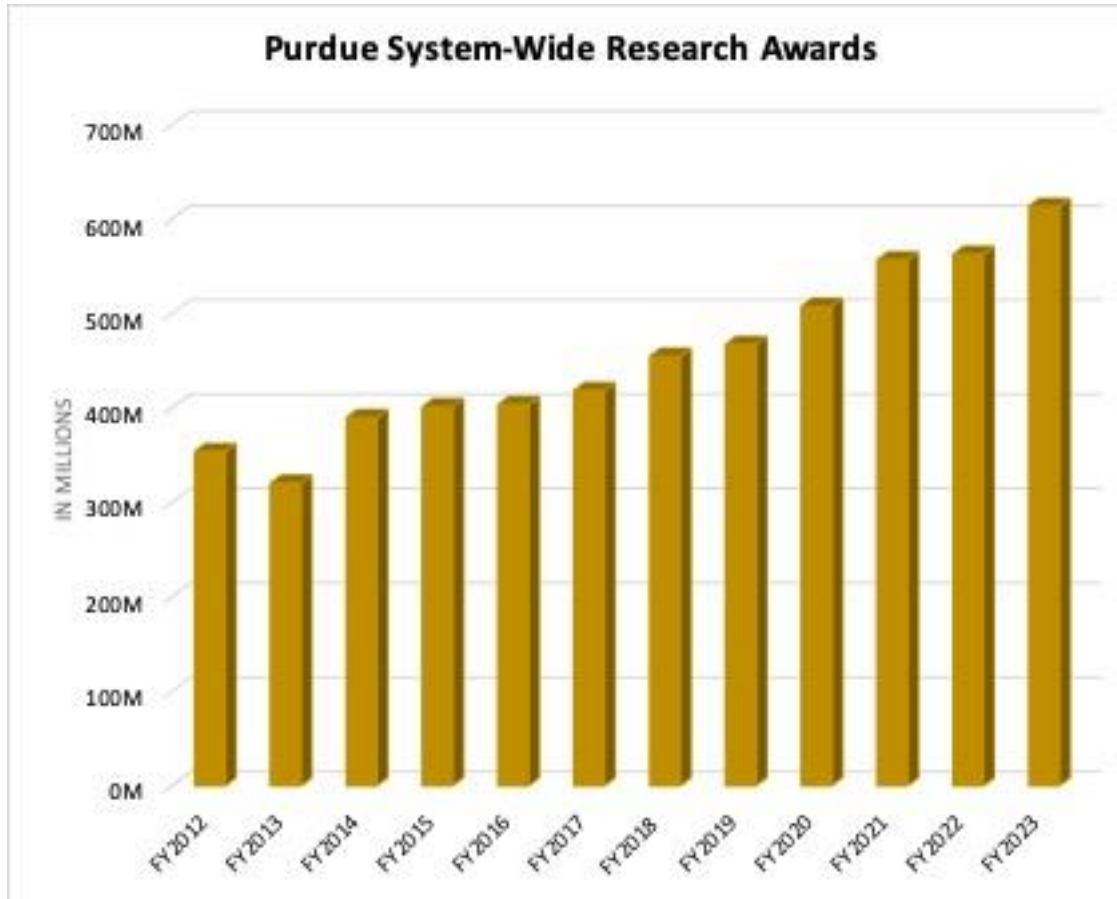
Creating an innovative ecosystem that delivers life-changing research, attracts world-class researchers, and enables teams to engage creatively around society's biggest needs:

- Pursue new opportunities for faculty
- Leverage internal funds for significant & sustained external funding
- Deliver state-of-the-art research administration services
- Foster entrepreneurship
- Reward excellence in research and researchers with major achievements
- Communicate the impact of our research



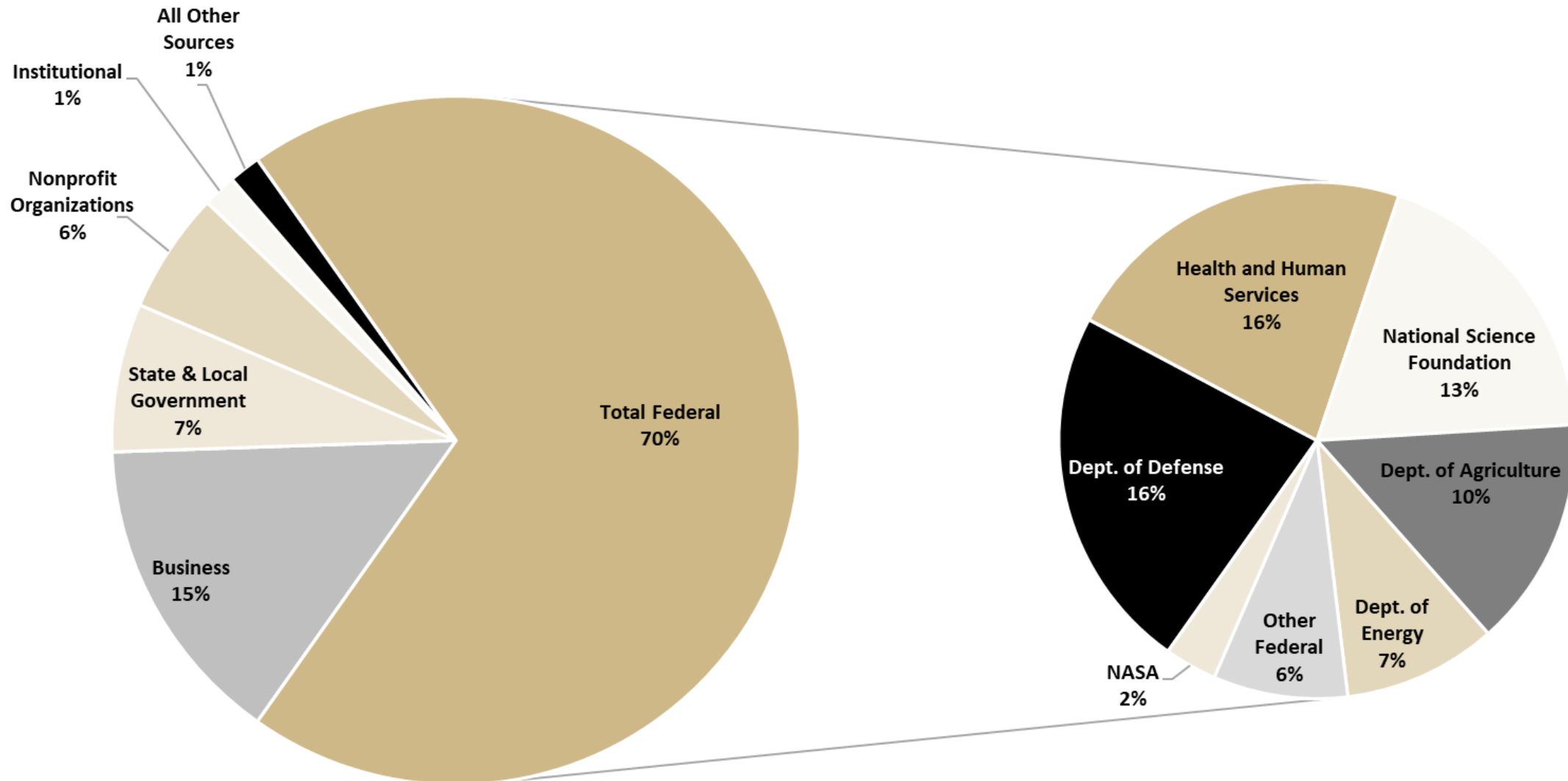
Office of Research

Purdue's external awards exceeds \$613M

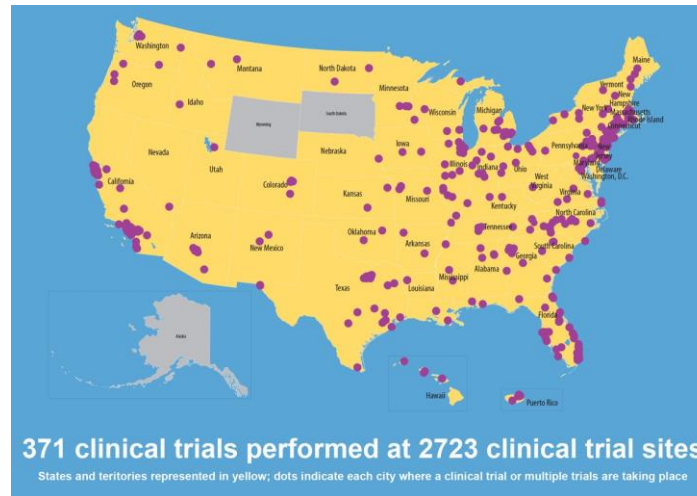
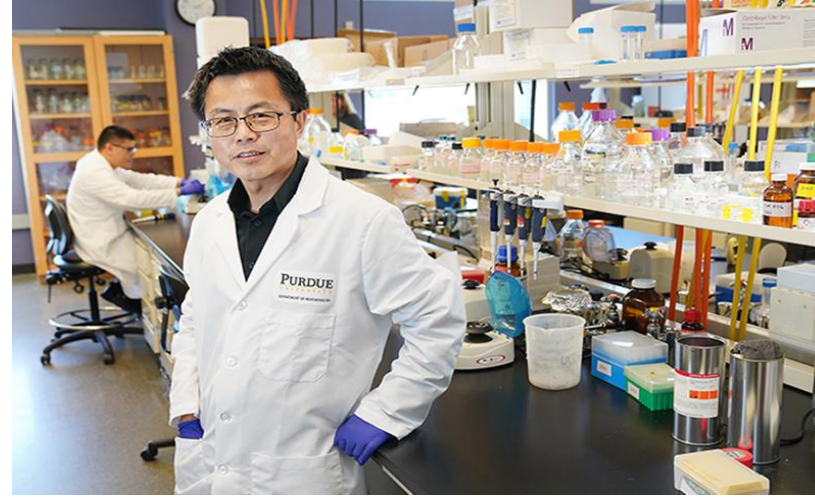
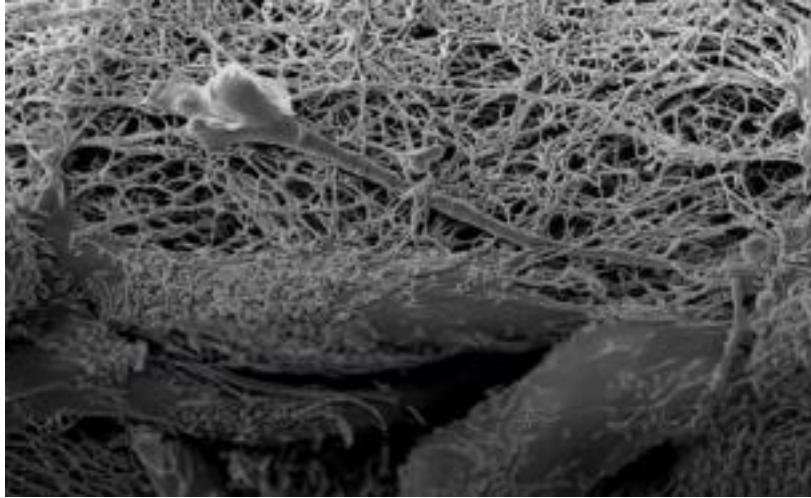


	FY 2023
	Research Award Amount
U.S. Federal Government	
Dept. of Defense	98,007,754
Dept. of Health and Human Services	95,552,153
National Science Foundation	80,576,487
Dept. of Energy	41,137,235
Dept. of Agriculture	61,581,572
National Aeronautics and Space Admin	13,991,847
Other Federal	19,057,264
Dept. of Education	2,365,117
Dept. of Interior	3,442,697
Environmental Protection Agency	1,468,675
Dept. of Transportation	3,660,531
Agency for International Development	5,975,789
Total U.S. Federal Government	426,817,121
State and Local Government	42,771,671
Business	89,997,045
Nonprofit Organizations	34,965,659
All Other Sources	9,122,102
Total Non-Federal	176,856,477
Total Purdue System-Wide	\$603,673,598
Other Research Funds Administered by SPS	
Institutional (PRF)	9,661,596
Total Purdue System-Wide	\$613,335,193

Purdue has a balanced portfolio of research



Advanced Facilities, Multiple Locations for Research



Research Involves Undergrad and Grad Students



Federal Funding enables us to impact health

Role of lipid droplets in muscle stem cell function

Shihuan Kuang – Animal Science

- Research on muscle development

Christina Ferreira – Bindley BioScience

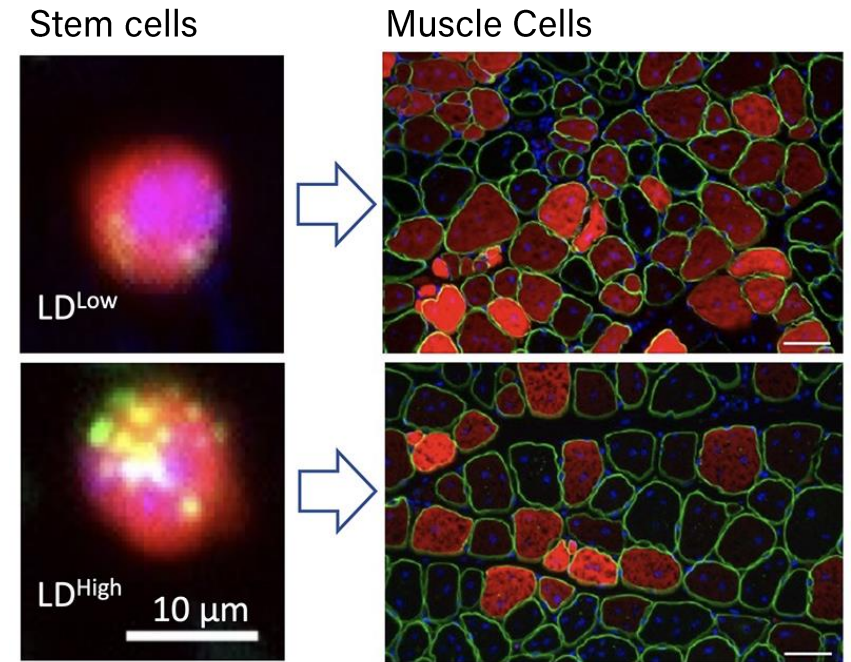
- Analytical chemistry of nanoscale lipid droplets

James Markworth – Animal Science

- Research on muscle, inflammation and aging

Chi Zhang – College of Science

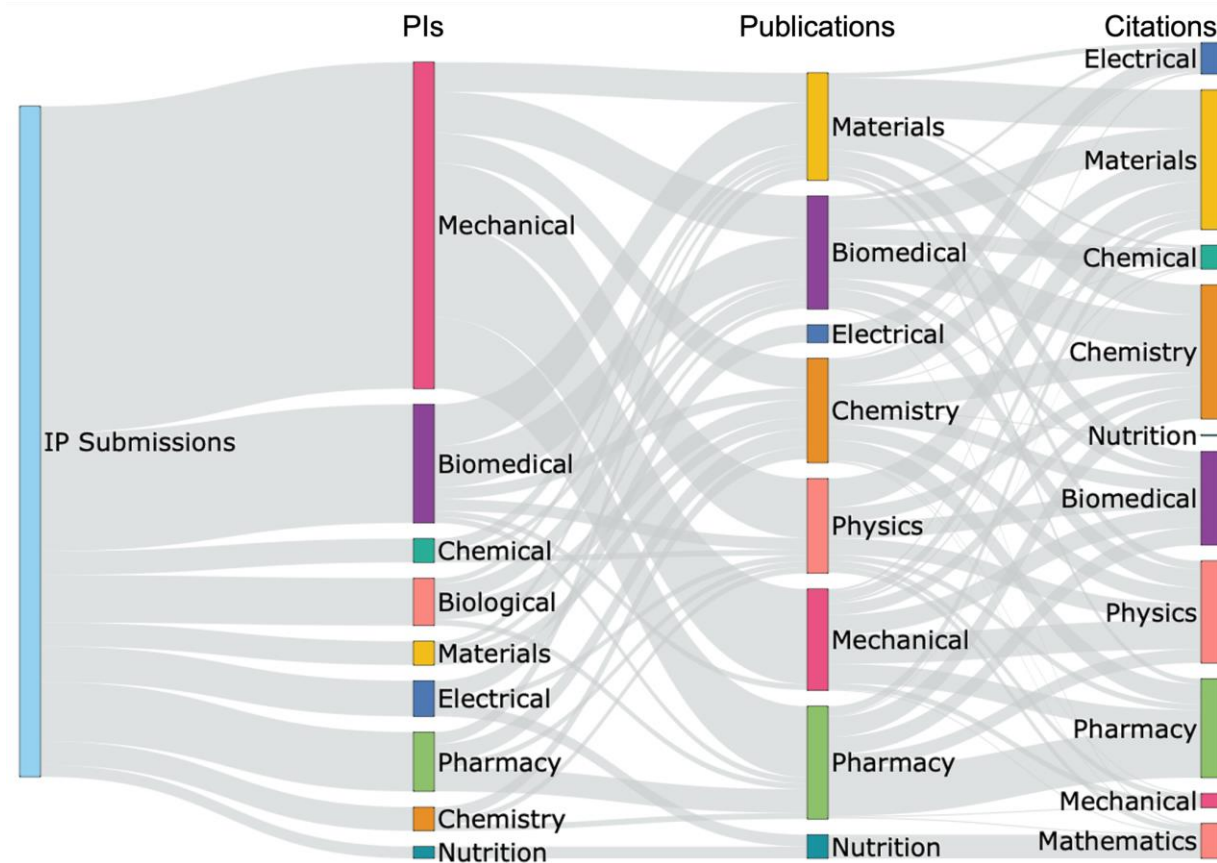
- Specialized Raman spectroscopy to measure composition in live cells while they convert to muscle cells



The lipid droplets are the yellow dots. A stem cell with less lipid can repair muscle. Image provided by Shihuan Kuang.

Industry partnerships impact scholarship and people

Interdisciplinary Team Science → Talent → Scholarship → Platforms → Portfolio → Impacts



Scholarship

- 126 publications
- >50 in-progress submissions
- 112 IP disclosures
- 11 Patents

People

- 42 undergraduates
 - Internships, degrees, jobs
- 15 post-docs completed training
- 41 graduate students received degrees

Lilly Partnership

Fed & State partnerships revolutionizes transportation

- **Advancing Sustainability thorough powered infrastructure for roadway electrification**
 - Construct a quarter-mile test bed to provide power to heavy-duty trucks on U.S. Highway 231/U.S. Highway 52 in West Lafayette



(Photo provided by Consensus Digital Media)



How electrified roads could help fix America's EV charging problem (cnbc.com)

Advancing Sustainability through
Powered Infrastructure for Roadway
Electrification (ASPIRE) - Purdue
University

Entrepreneurship grows impact and saves lives

Fight against drug-resistant strains of malaria

- Phil Low – College of Science
 - More than 600 patents across 24 countries
 - 213 research grants - \$43.5 M
- Combining two drugs (imatinib and anti-malaria drugs) to clear malaria
- Prevent drug resistance
- Early results indicate that it clears all malaria parasites from 90% of patients within 48 hours
- Saving lives

Source: Purdue researcher awarded \$1.3 million for malaria drug trials in Southeast Asia and Africa - Purdue University News



Phil Low testing treatment protocols in a malaria infested region of Vietnam.

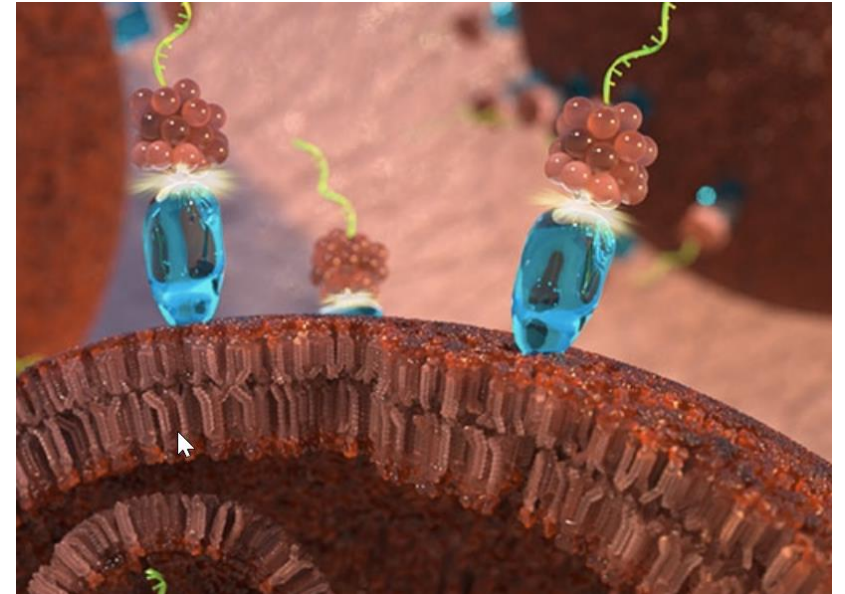
Research investment grows scholarly activities

- SPARK – Supporting activities to promote large (greater than \$7M) grant submissions
- Funding for author of high impact review papers, monographs or books
- Use AI to improve administrative services
- Support Open Access publishing
- Foster new initiatives in Life and Health Sciences
- Launch the Institute for Physical AI



Capitalizing on strength in life and health sciences

- Life Sciences Town Hall – Spring 2023
- Life Sciences Summit scheduled for October 19, 2023
- **Competitive process:**
 - What is the impact and benefit for the world?
 - Why Purdue uniquely positioned lead this effort?
 - How are we leveraging Purdue's strengths?
- Presentations and discussions of 4-6 research areas at the summit
- Seed funding of \$250-\$500K for each project



Using microRNA to stop tumor cells

Grow opportunities in Physical Artificial Intelligence

Physical AI – Where bytes meets atoms

Science, engineering, and responsible implementation of AI systems that are embedded within and strongly interact with elements of the physical world.

Physical AI Town Hall
OCTOBER 30



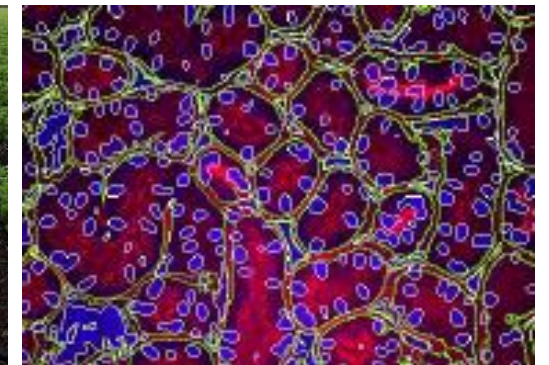
Manufacturing



Transportation



Agriculture



Healthcare

Hiring a Director and Additional Faculty through Purdue Computes



Office of Research