



**CFAES**

# **ANNUAL REPORT 2020**

**RESEARCH & GRADUATE  
EDUCATION**





# MISSION

To advance research and graduate education in our college and to help faculty, staff and students strive to seek solutions to the economic, social and environmental problems of our time.



# RESEARCH IN REVIEW FY 2020

## AWARDS & SUBMISSIONS

# \$50 M

363 Awards Valued at \$50 M  
553 Proposals Submitted



## GRANT EXPENDITURES

# \$45 M

Funds spent on personnel, supplies, and services.



## CAPACITY FUNDS

# \$8.7 M

Federal support allocated to each state as a land-grant institution.



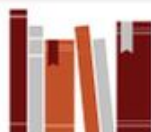
## PROJECTS

# 1057

Sponsored programs

## INTELLECTUAL PROPERTY

7 Active Startups



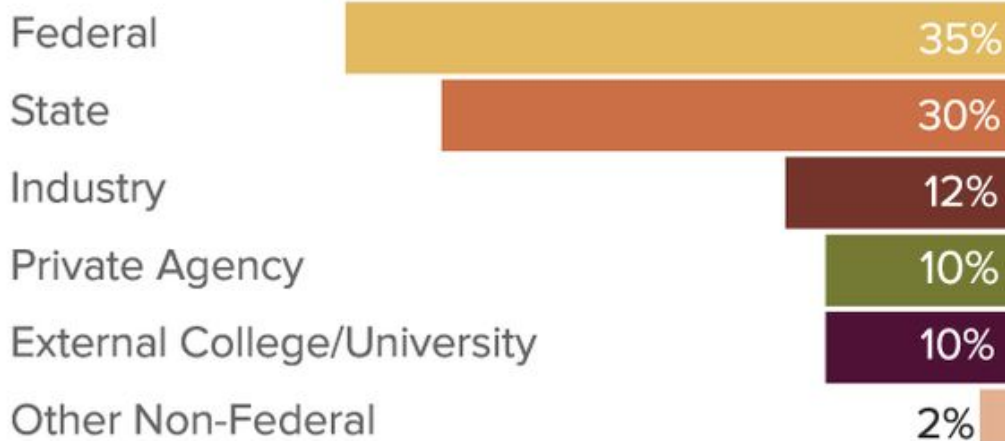
5 Patents Issued

33 Invention Disclosures



27 New Inventors

## SPONSORED PROGRAM FUNDING SOURCES



## LEAN ON YOUR LAND-GRANT



As a land-grant institution, the College of Food, Agricultural, and Environmental Sciences supports the industry by conducting research, training the next generation of agricultural leaders, and engaging stakeholders via OSU Extension.

## NEW INVENTIONS BY TYPE

4 SOFTWARE  
1 PLANT VARIETY  
3 RESEARCH TOOLS  
25 TECHNOLOGY







# A Message from Dr. Pierzynski

Associate Dean for Research & Graduate Education,  
Director, Ohio Agricultural Experiment Station

To say that 2020 was an unusual year would be a major understatement, and we are hopeful that we will not need to have a similar one ever again. My sympathies to all who were directly impacted by COVID-19. One of the highlights of the year was obtaining permission to grant exemptions to the stay-at-home orders such that we could continue some research. We did lose some work but we managed to avoid a complete loss of research for a field season and were able to get people back into the labs fairly soon without any indications we were contributing to the spread of COVID.

Our faculty made significant contributions in research helping us understand and develop control methods for COVID, as highlighted in this report. Outside of COVID, we still managed to have an extraordinary year. For the first time, a CFAES faculty member, Dr. Rattan Lal, was the recipient of the World Food Prize, one of the premier global awards for agricultural research. This led to the renewal of the newly named Dr. Rattan Lal Carbon Management and Sequestration Center.

Two other centers, the Center for Food Animal Health and the Ohio Controlled Environment Agriculture Center, were initiated and are off to great starts. The Center for Foodborne Illness Research and Prevention, created in 2019, made great strides and received a significant grant for work in Kenya. Continued progress was made on implementation of the Water Quality Task Force report recommendations.

Our research metrics held steady or increased compared to recent years. The future looks bright with an increased emphasis on research promoted by our new president, Dr. Kristina Johnson, and the new Executive Vice President for Research, Innovation and Knowledge, Dr. Grace Wang. Construction of the Interdisciplinary Research Facility, which will eventually house some of our faculty, began in 2020 with a target completion date in 2023. I have complete confidence that our faculty, staff, and students will continue to excel in research. Thank you to all of you that support the sustained excellence of the CFAES research enterprise.



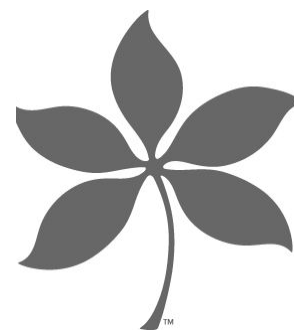
# MEET THE TEAM



**Gary Pierzynski**  
Associate Dean for  
Research and Graduate  
Education



**Luis Canas**  
Interim Director of  
International Programs



**Poppy Thornton**  
Administrative Associate,  
IPA



**Melissa Burant**  
Grants and Contracts  
Specialist, IGP Coordinator



**Alexis Didinger**  
Administrative Associate,  
GDSU



**Pam Schlegel**  
Grants and Contracts  
Specialist, Senior, Pre-Award



**Kayla Arnold**  
Graduate Education  
Coordinator



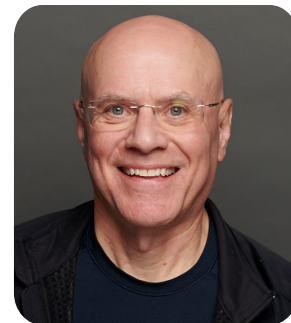
**Amy Glaze**  
Administrative Associate,  
R&GE



**Shannon Hollis**  
Grants & Contracts Specialist,  
Senior



**David Mackie**  
Grants and Contracts  
Specialist, Senior, Post-Award



**Chip Styer**  
Resource Planning Analyst



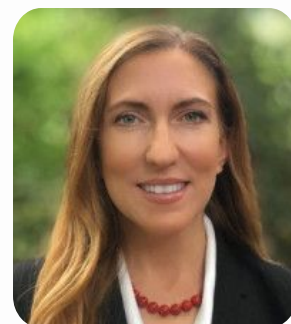
**Lori Kaser**  
Grants and Contracts  
Administrator



**Laura Keesor**  
Grants and Contracts  
Specialist, Post-Award



**Brian Gwin**  
Special Projects



**Heather Raymond**  
Water Quality Initiative  
Director





# Dr. Rattan Lal

## 2020 World Food Prize Laureate

Soil scientist Dr. Rattan Lal with The Ohio State University, whose research spans five continents, has been awarded \$250,000 for increasing the global food supply by helping small farmers improve their soil.

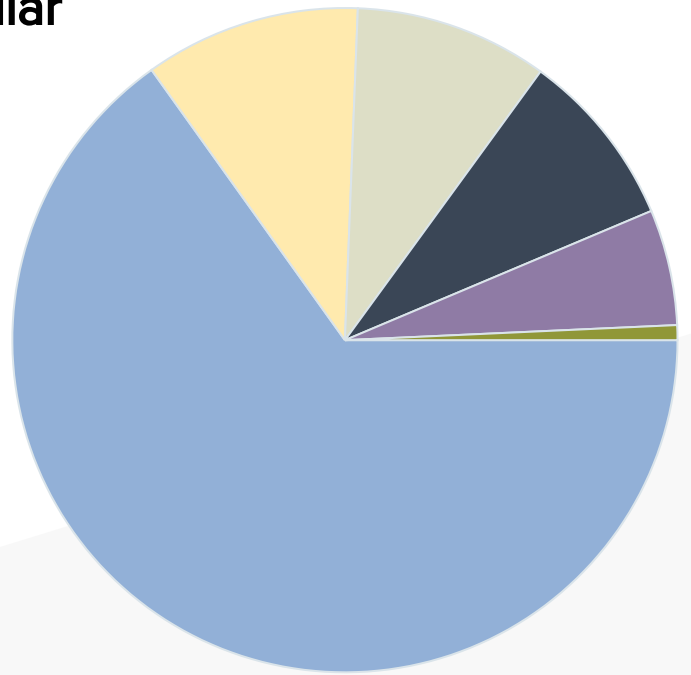
[www.worldfoodprize.org/en/laureates/2020\\_lal/](http://www.worldfoodprize.org/en/laureates/2020_lal/)

Lal serves as Distinguished University Professor at Ohio State's College of Food, Agricultural, and Environmental Sciences (CFAES) and is the founding director of what will now be known as the CFAES Rattan Lal Carbon Management and Sequestration Center (C-MASC). - *[Naming of Ohio State center cements Lal's legacy](#), Sherrie R. Whaley*



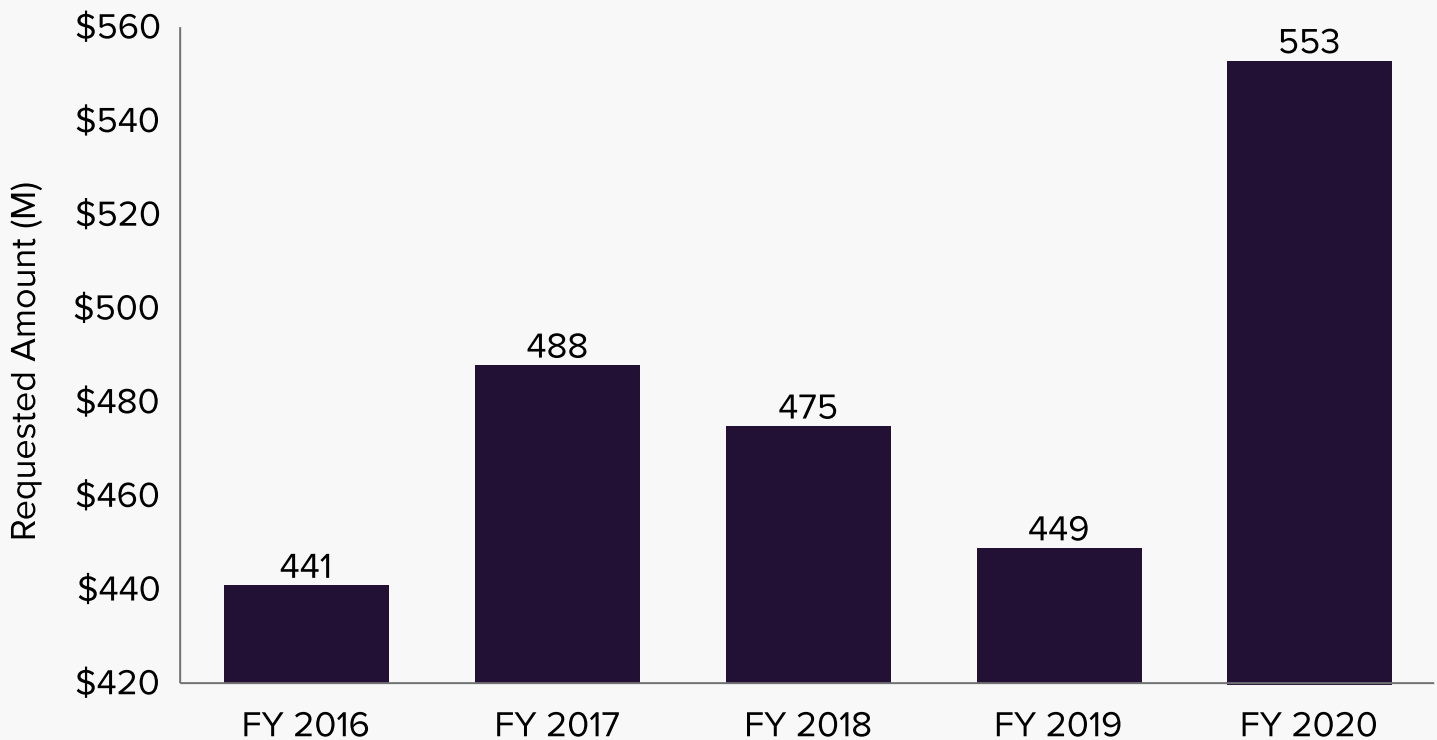
# By The Numbers | Proposals Submitted

## Total Proposal Submissions by Dollar Amount | FY20

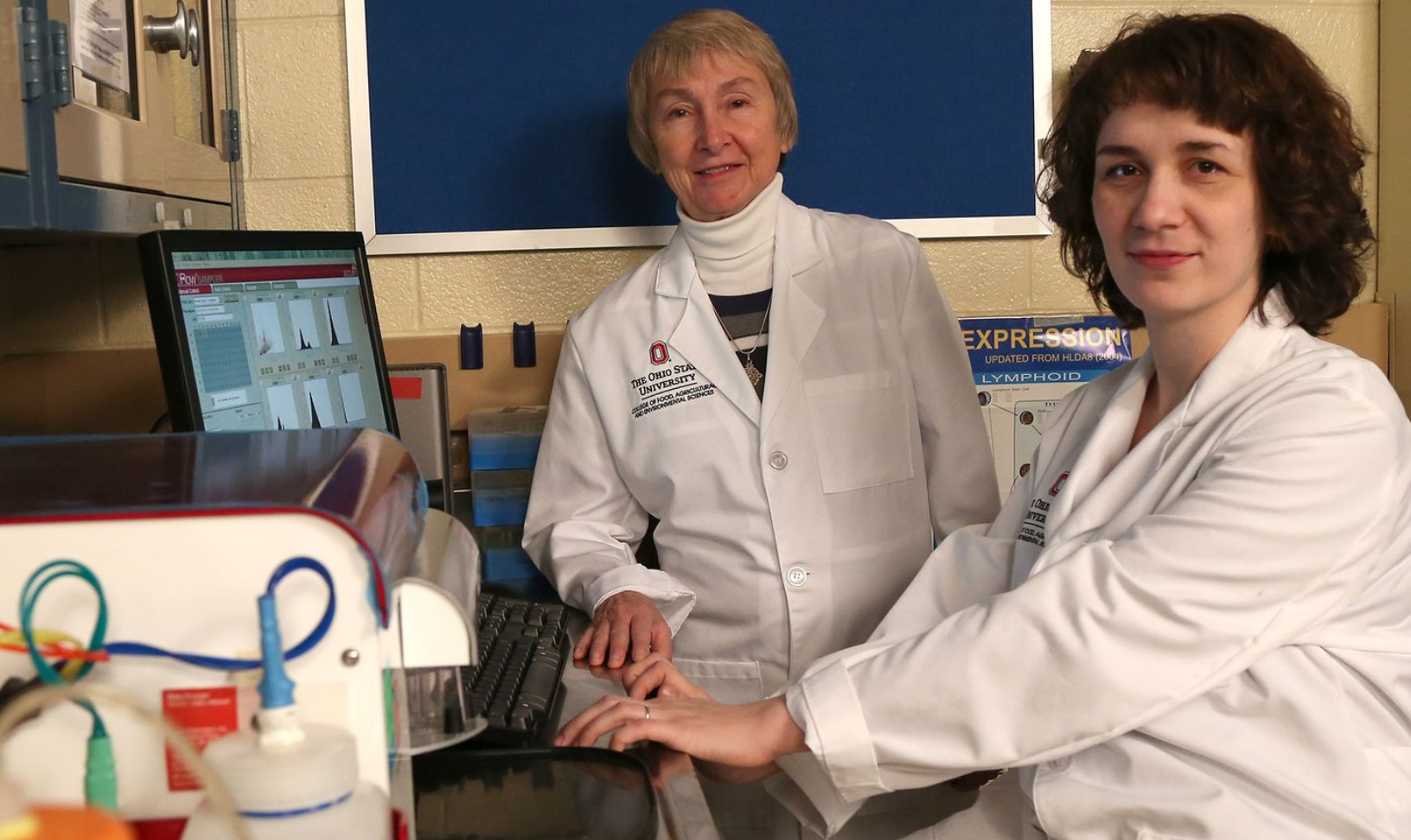


## Proposal Submissions | FY 2016-2020

By Dollar Requested, Number of Proposals







# The Fight Against COVID-19

Dr. Linda Saif (Left) and Dr. Anastasia Vlasova

As the COVID-19 pandemic swept Ohio, CFAES faculty, staff and students moved swiftly to research new ways to combat the novel coronavirus. Linda Saif and Anastasia Vlasova, both of the Center for Food Animal Health (CFAH), will be part of a new Ohio State center that will study the long-term, longitudinal impact of COVID-19 on first responders, healthcare workers, and the general population. The new effort, called the Center for Serological Testing to Improve Outcomes from Pandemic COVID-19 (STOP-COVID), a new

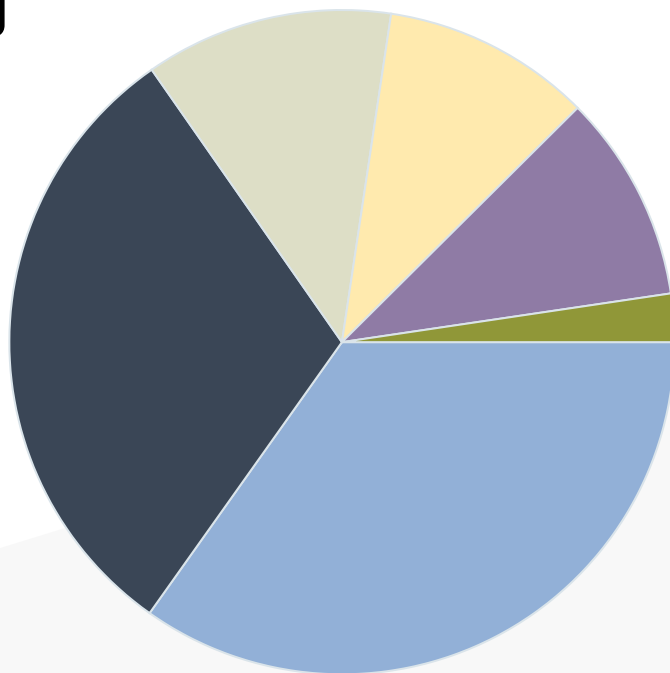
Serological Sciences Center of Excellence, is being funded by a five-year, \$10 million grant from the National Cancer Institute in the National Institutes of Health to The Ohio State University College of Medicine and The Ohio State University Wexner Medical Center. Saif, a Distinguished University Professor and a world-renowned expert on coronaviruses, is one of the center's four co-principal investigators. Vlasova, who studies emerging animal, human, and zoonotic viruses, will lead one of the center's six components. - [CFAES scientists part of effort to study COVID-19 in first responders](#)



# By The Numbers | Awards

## Total Research Awards by Funding Type for FY20 | \$50,041,845

- Federal | \$17,421,743 | 35%
- State of Ohio | \$15,260,590 | 31%
- Private Agencies | \$6,032,990 | 12%
- Colleges & Universities | \$5,090,112 | 10%
- Industry | \$5,062,537 | 10%
- Other Non-Federal | \$1,173,865 | 2%



## Total Research Awards | FY 2016-2020







# CFAES in Kenya

The Center for Foodborne Illness Research and Prevention (CFI)

The Center for Foodborne Illness Research and Prevention (CFI) at The Ohio State University has been awarded a \$770,000 grant to improve food safety and prevent foodborne illnesses in Kenya.

The 3.5-year project, “Chakula salama: a risk-based approach to reducing foodborne diseases and increasing production of safe foods in Kenya,” includes a team of researchers from The Ohio State University, the University of Florida, Kenya Medical Research Institute, and the University of Nairobi, who will work to develop and test food-safety interventions to support Kenya’s small-scale poultry producers.

This work is significant considering that foodborne diseases cause an estimated 91 million illnesses and \$16.7 billion in human capital losses annually in Africa. Barbara Kowalczyk, Assistant Professor, Department of Food Science and Technology. Photo: courtesy of Barbara Kowalczyk. - [CFAES food safety center to research food safety in Kenya, Tracy Turner](#)



# By The Numbers | OSP Expenditures

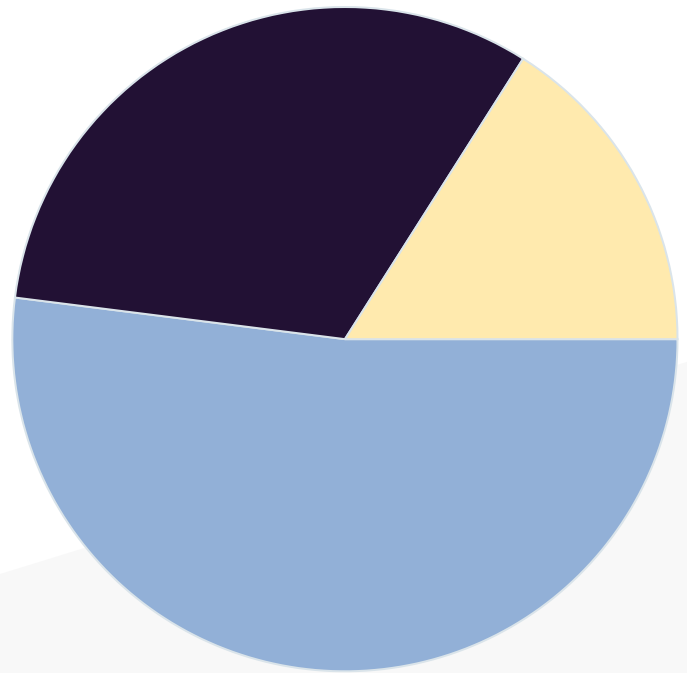
## Expense Distribution | FY20

- Personnel | 52%
- Supplies & Equipment | 32%
- Indirect Costs | 16%

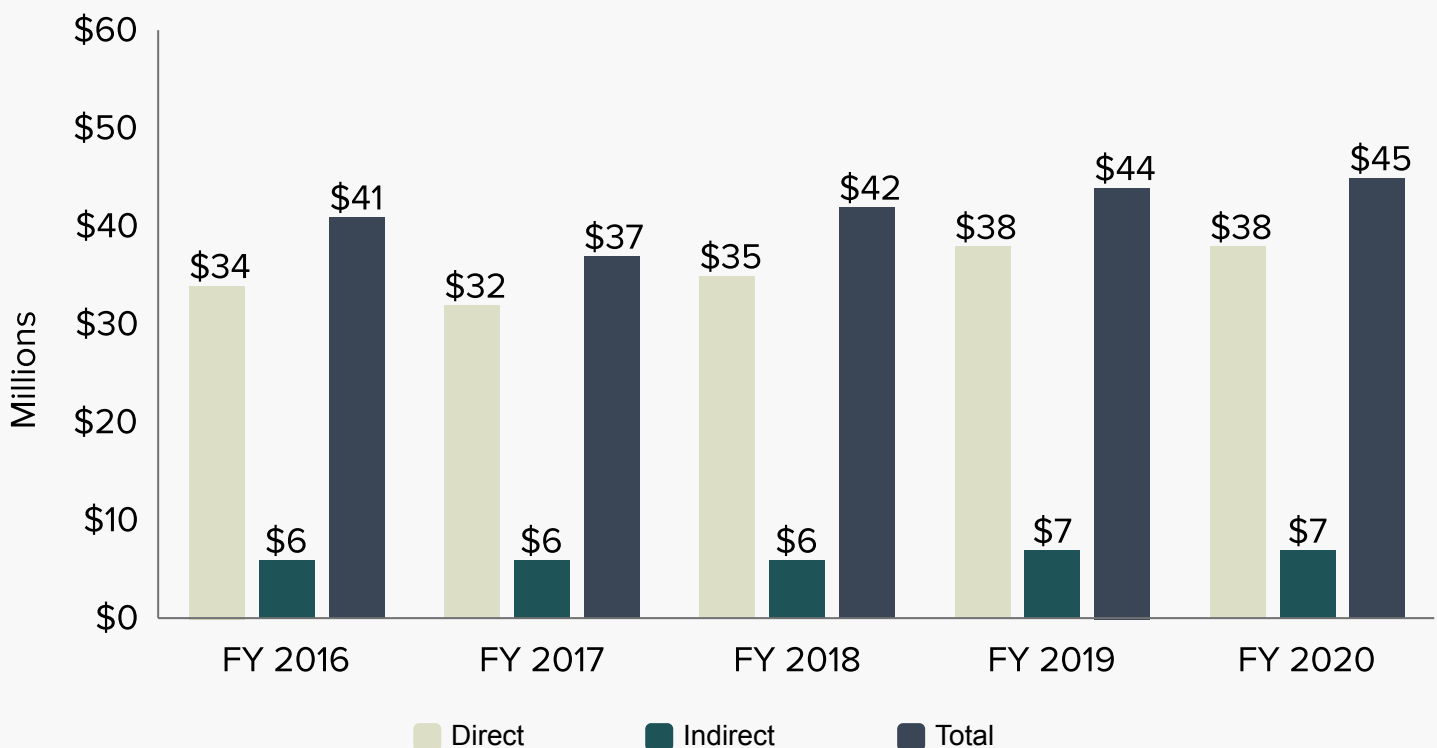
Direct Expenditures | \$37,875,814

Indirect Expenditures | \$7,289,148

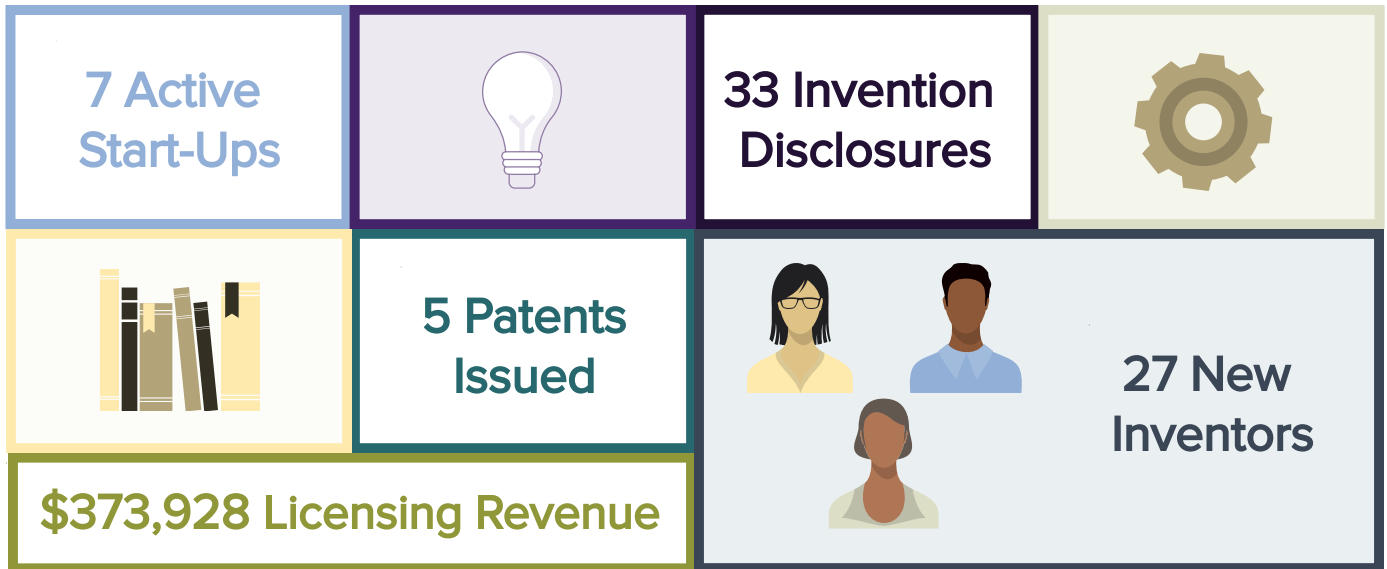
Total Expenditures | \$45,164,962



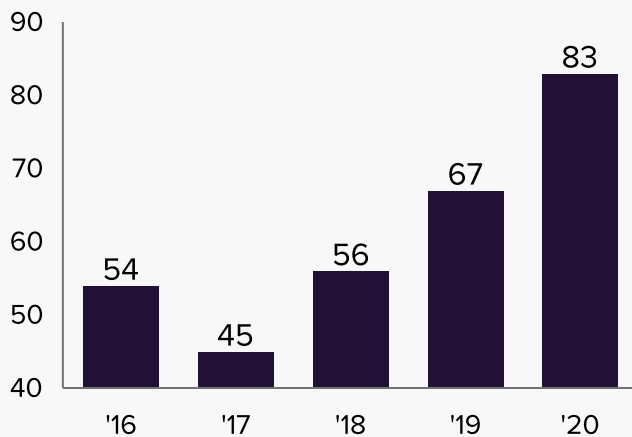
## OSP Research Expenditures | FY 2016-2020



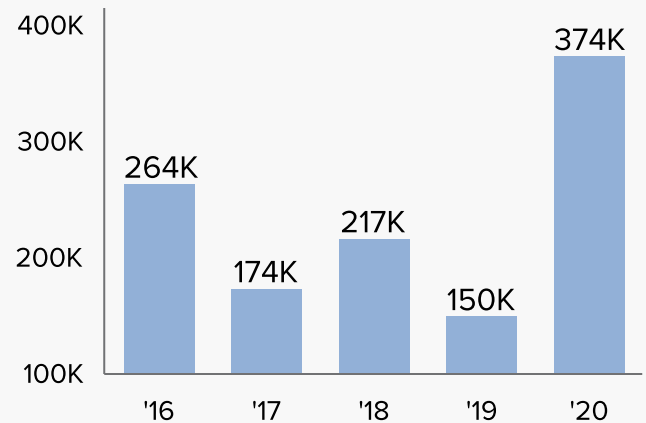
# By The Numbers | Intellectual Property



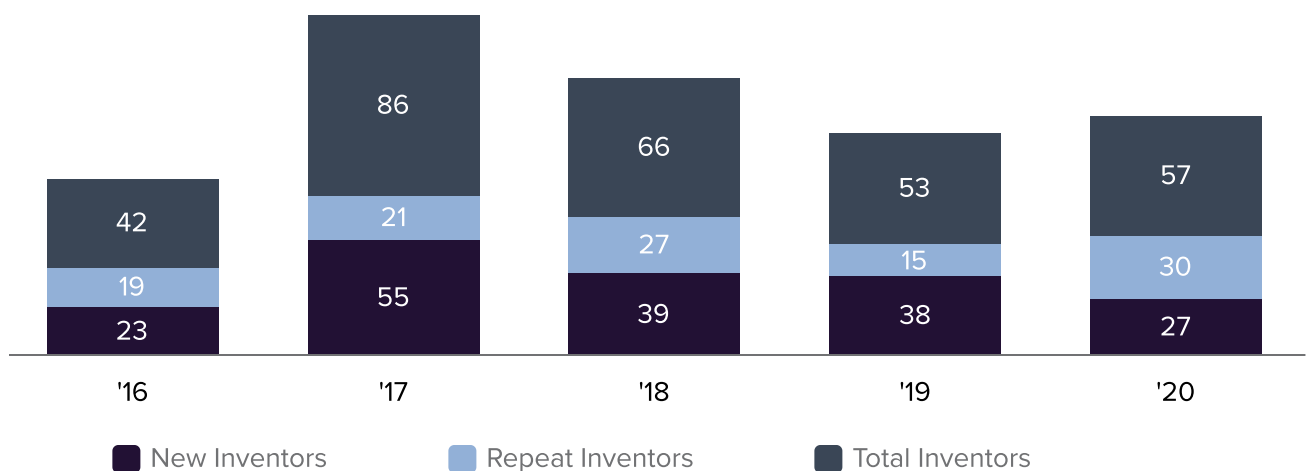
## Active Licensing Deals



## Licensing Revenue



## CFAES Inventors | FY 2016-2020







# Dr. Judit Puskas

CFAES Distinguished Professor in Polymer Science

While many people are encouraged and, in some cases, mandated to wear face masks to prevent the spread of COVID-19, there are some complaints that have become a common refrain: the mask doesn't fit correctly, it's uncomfortable, it's too hot, or the mask is hard to breathe through.

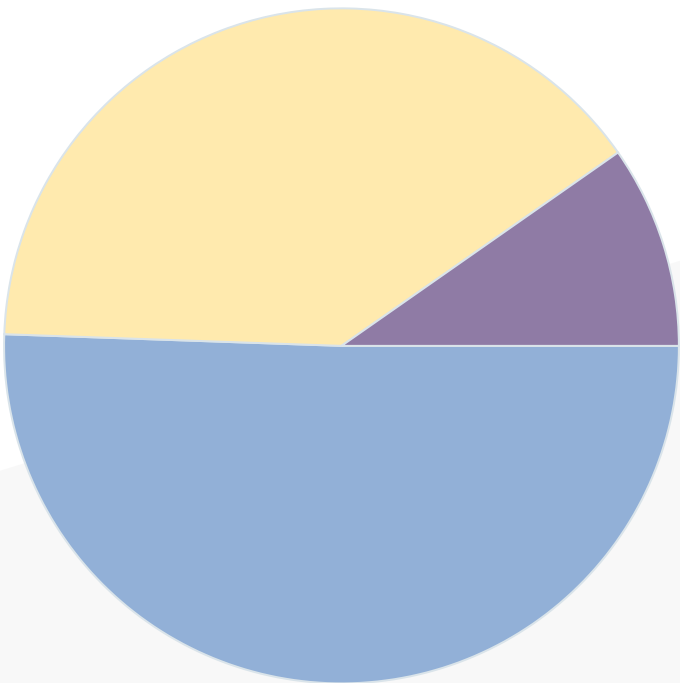
However, a material scientist at The Ohio State University College of Food, Agricultural, and Environmental Sciences (CFAES) is working to change that. Judit Puskas is in the final stages of developing a new polymer face mask that she expects will be more effective in the fight against COVID-19. Puskas, who is a Distinguished Professor in polymer science in the CFAES Department of Food, Agricultural and Biological Engineering, has a provisional patent application pending for the mask she is developing.

She's working with the Mayo Clinic to create and test the mask to meet the same safety and efficacy standards of an N95 mask, but with more comfort and usability for the wearers. Puskas' mask is made of a nonwoven fabric comprised of biocompatible rubber composite formed into a fiber mat that can be used to create personal protective equipment including face masks. - [Ohio State researching, testing polymer face masks to protect against COVID-19, Tracy Turner](#)

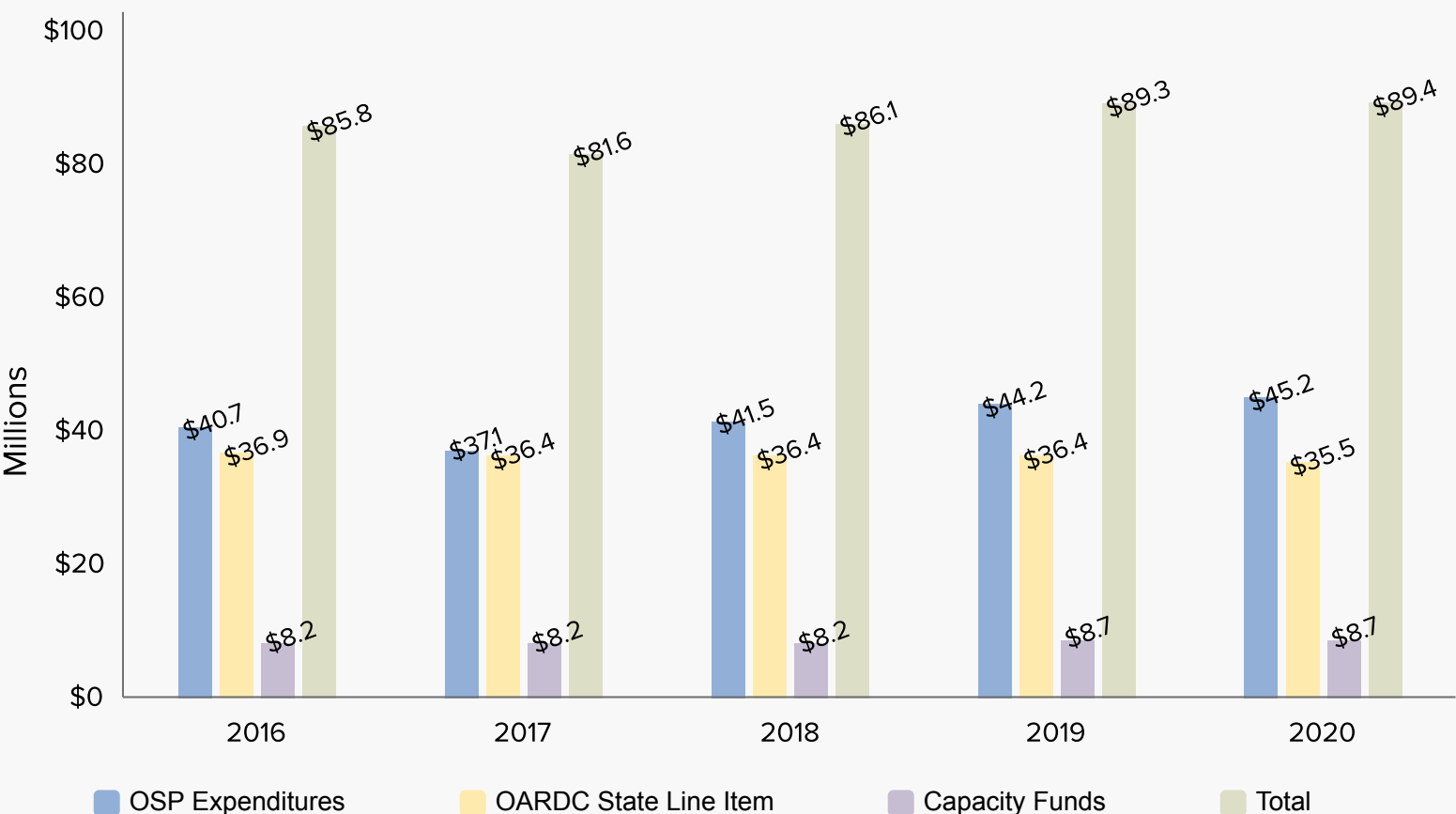
# By The Numbers | Research Funding

## Expense Distribution | FY20

- OSP Expenditures | \$45,164,961 | 50.5%
- State Line Item | \$35,493,396 | 39.7%
- Capacity Funds | \$8,700,973 | 9.7%



## Research Funding | FY 2016-2020





# Faculty Research Awards | 2020



## Dr. S. Mažeika Patricio Sullivan

### **CFAES Distinguished Junior Faculty Research Award**

Dr. S. Mažeika Patricio Sullivan, Associate Professor and Director of the Schiermeier Olentangy River Wetland Research Park, School of Environment and Natural Resources. Dr. Sullivan's work addresses some of the most pressing challenges facing water resources – a critical resource for both environmental and human health. Dr. Sullivan has maintained an active, diverse and productive research group which includes 2 post docs, 4 Ph.D., 4 M.S. and multiple undergraduate students. Dr. Mažeika Sullivan's research has positioned him as a natural leader in water quality, where he has contributed technical expertise to key scientific issues with direct impacts on legislation and policy.



## Dr. Monica Giusti

### **CFAES Distinguished Senior Faculty Research Award**

Dr. Monica Giusti, Professor in the Department of Food Science and Technology. Dr. Giusti's research is focused on the study of polyphenolics, potent antioxidants abundant in fruits and vegetables, believed to contribute to the ability of fruits and vegetables to fight chronic diseases. Dr. Giusti currently holds 7 awarded patents and 8 pending patents and has become one of the preeminent food chemists with expertise on bioactive compounds and colors in the world. She is also very active at mentoring graduate students with 15 PhD and 30 MS students. She continues to develop an outstanding research program with strong publications and patents, excellent grantsmanship and a very high level of student training.



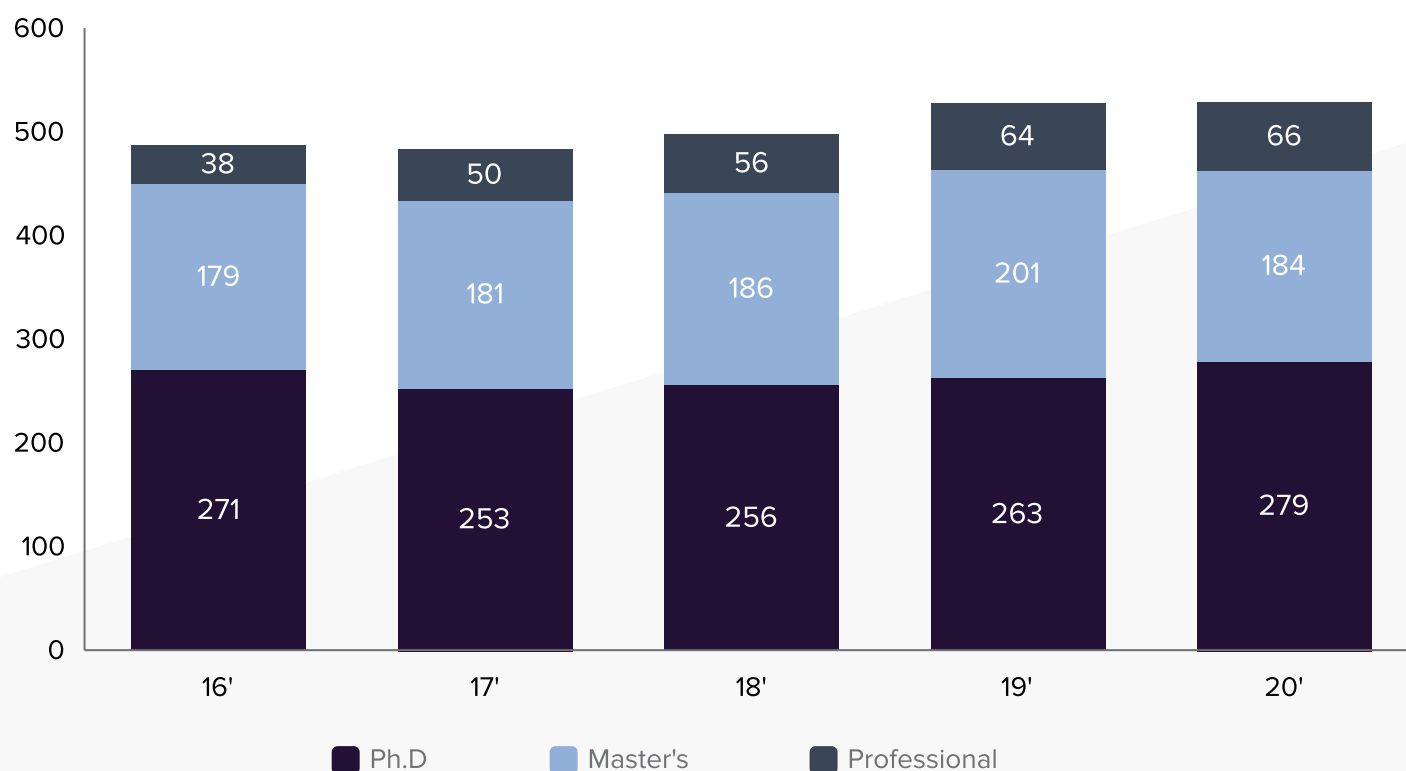
## Dr. Luis Rodriguez-Saona

### **CFAES Innovator of the Year**

Dr. Luis Rodriguez-Saona, Professor in the Department of Food Science and Technology. Through collaboration with leading optical sensing companies, Dr. Rodriguez-Saona's molecular vibrational program has pioneered the application of portable and micro-devices combined with chemometrics for rapid detection and characterization of important quality traits and potential food contaminants. Dr. Rodriguez-Saona works with the OSU Technology and Commercialization Office (TCO) to protect intellectual property of algorithms as they are being field deployed by partner companies. Dr. Rodriguez-Saona inspires innovation by mentoring his students in product development competitions and award-winning scholarly presentations at national and international conferences.

# By The Numbers | Graduate Education

## Total Graduate Student Enrollment



## Our Programs

The Ohio State University is one of the world's best public research universities, offering about 280 graduate study programs. The College of Food, Agricultural and Environmental Sciences (CFAES) has 23 degree options to choose from across 8 academic departments, 3 interdisciplinary programs, and School of Environment and Natural Resources.

Research is a key component of graduate education. CFAES – made of the Ohio Agricultural Research and Development Center (OARDC) and OSU Extension – translates cutting edge research to stakeholders across the state. By engaging with our stakeholders, we provide research, technology, and knowledge to support safe, sustainable, and viable agricultural practices across Ohio and the world.

At CFAES, students can perform research at a range of research stations and field sites across Ohio. Our faculty have broad research interests, ranging from bioengineering sustainable materials to international agricultural trade and policy. - [grad.cfaes.ohio-state.edu/](https://grad.cfaes.ohio-state.edu/)





# Research & Graduate Education | Annual Report 2020

CFAES provides research and related educational programs to clientele on a nondiscriminatory basis. For more information, visit [cfaesdiversity.osu.edu](https://cfaesdiversity.osu.edu). For an accessible format of this publication, visit [cfaes.osu.edu/accessibility](https://cfaes.osu.edu/accessibility).



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