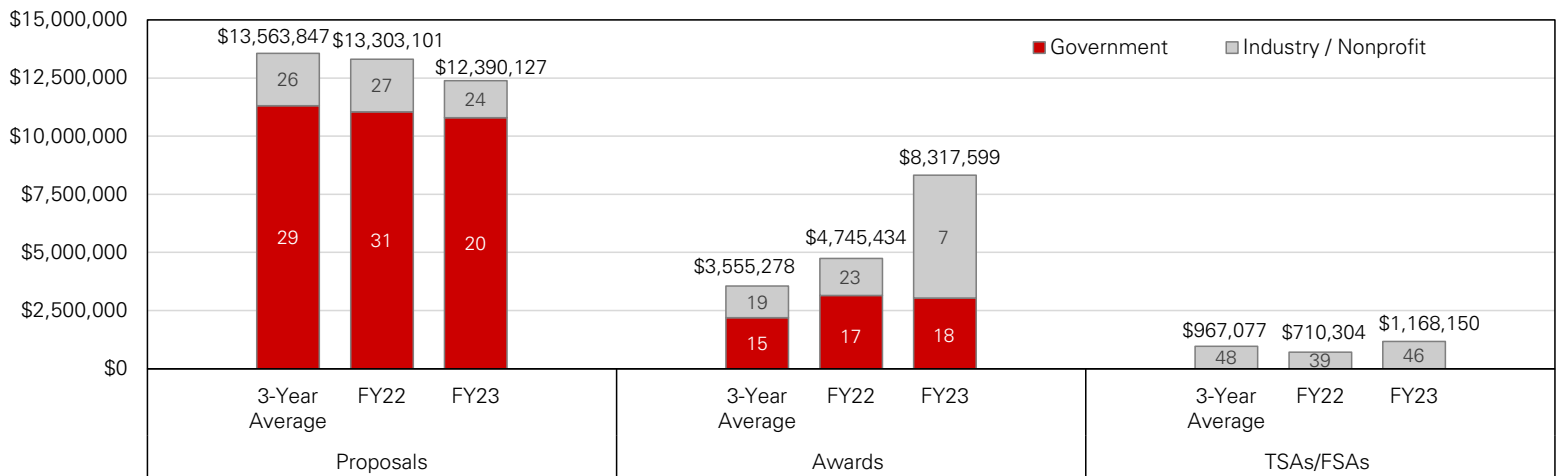


The research programs in the Wilson College of Textiles at NC State University are innovative, life-saving, creative, global and thriving. The college also provides tech service to all stakeholders and supports the economic development of the State and beyond. This newsletter gives a brief overview on the research and tech service activities of the faculty, staff and students during the second quarter of Fiscal Year 2023.

FY23 vs. FY22 vs. Three-Year Average (Q1 + Q2)



NUMBERS TO DATE (FY23 Q2)

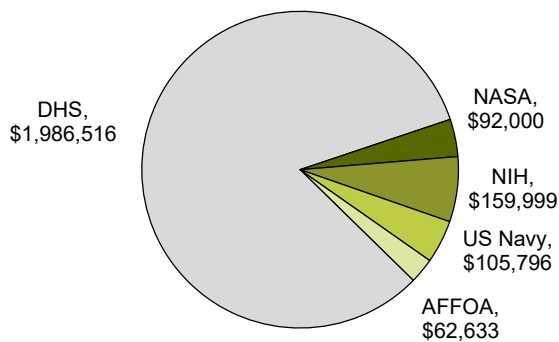
Research Awards Received (\$2,647,636)

- Federal: \$2,406,944 | AFFOA, DHS, NASA, NIH, US Navy
- Industry/Nonprofit: \$240,692 | Academy of Finland, Aja Labs Inc., Celularity Inc.

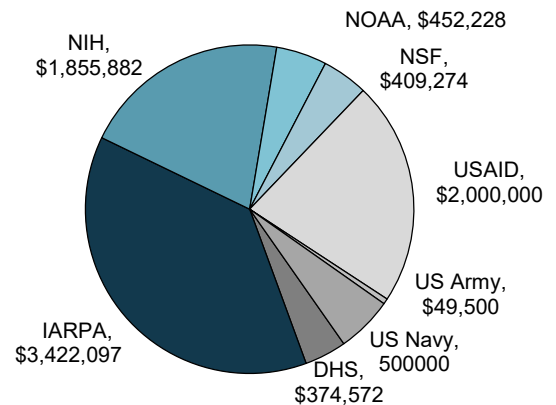
Research Proposals Submitted (\$9,781,253)

- Federal: \$9,063,553 | DHS, IARPA, NIH, NOAA, NSF, USAID, US Army, US Navy
- Industry/Nonprofit: \$717,700 | Center for Human Health and the Environment, Daisy Cutter, Foundation for Food and Agriculture Research, Johnson & Johnson, NC Policy Collaboratory, RISF, Searle Scholars Program, VentureWell

FY23 Q2 Federal Awards by Agency



FY23 Q2 Federal Proposals by Agency



NUMBERS TO DATE (FY23 Q2) Cont.

Inter-college Research Proposals (6)

- Wilson College share: \$4,371,078
- With CALS, CNR, CED, COE, COS, CVM, NC Sea Grant

Inter-college Research Awards (2)

- Wilson College share: \$154,858
- With COE, CVM

Inter-department/unit Research Proposals (2) \$2,500,000

Inter-department/unit Research Awards (2) \$215,795

Graduate Student Support

- 52 Ph.D. Student RAs (Avg Stipend: \$20,078.23 / year)
- 12 M.S. Student RAs (Avg Stipend: \$14,804.17 / year)

RESEARCH AWARDS AT OR ABOVE \$50,000 (FY23 Q2)

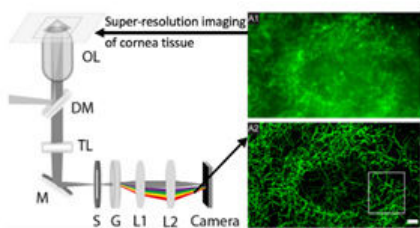
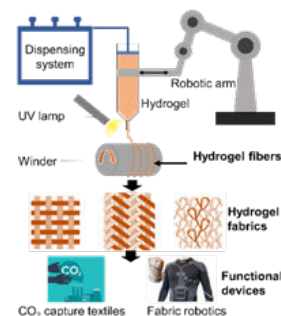
1. Roger Barker, Anthony Deaton, Marc Mathews, Emiel DenHartog, FEMA, \$1,499,580. UNSDG 3
2. Roger Barker, Marc Mathews, Protect The Force Inc (DHS), \$382,078. UNSDG 3, 16
3. Harold Freeman, Tova Williams, Gisela Umbuzeiro, Academy of Finland, \$181,594. UNSDG 9, 14
4. Andre West, Cassandra Kwon, BanfieldBio (NIH), \$159,999. UNSDG 3, 12
5. Robert Ormond, Ronald Baynes, JRAD (CWMD), \$104,858. UNSDG 3
6. Anthony Deaton, AMA (NASA), \$92,000. UNSDG 3
7. Amanda Mills, AFFOA, \$62,633. UNSDG 9
8. Rong Yin, Andre West, Technology Holding LLC (US Navy), \$55,796. UNSDG 15
9. Philip Bradford, Kara Jo Peters, US Navy, \$50,000. UNSDG 9

Note: UNSDG stands for United Nations Sustainable Development Goals.

RESEARCH HIGHLIGHTS

The Wilson College Research Opportunity Seed Fund (ROSF) targets to promote interdisciplinary, faculty-initiated research projects with potential for extramural support. The following two projects (\$10,000 each) were selected by the College Research Committee for funding in spring 2023.

Hydrogel Fibers for Functional Textiles (Xiaomeng Fang, Jialong Shen, Thomas Schroeder, and Sonja Salmon). Hydrogels have unique responsive volume change and ionic conductivity capabilities that have led to their use for biomolecular separations, ionic circuitry, and stimuli-responsive actuators. Incorporating hydrogels into knit and woven technologies as fibers would open up a large design space of advanced textiles. Drs. Xiaomeng Fang, Jialong Shen, Thomas Schroeder, and Sonja Salmon are collaborating to develop new formulations and extrusion setups that overcome prior hydrogel limitations to achieve the required properties for machine processing as fibers. The physically robust hydrogel textiles developed will be tested for multifunctionality in selected applications, including as a host medium for enzymatic CO₂ capture, and as future textile actuators.



Development of a Super-resolution Optical Imaging Method to Quantify Cell-cell Junction Tightness (Yang Zhang, and Jessica M. Gluck). Integrating new nanoscopic imaging technologies and biomedical textiles can potentially provide a theragnostic platform for treating Glaucoma – a globally leading eye disease causing blindness. Currently, 12.7 million patients are waiting for corneal transplantation, one of the major treatments for severe Glaucoma, while only 1 in 70 of the needs are covered because of the limited corneal donor. Professors Yang Zhang and Jessica M. Gluck are working together to develop a rapid nanoscopic imaging platform to study and validate the nanoscopic functions of biomedical textiles-incorporated tissue-engineered constructs to serve as artificial cornea. This new platform offers an unprecedented opportunity to translate biomedical textiles into invaluable materials for human health.