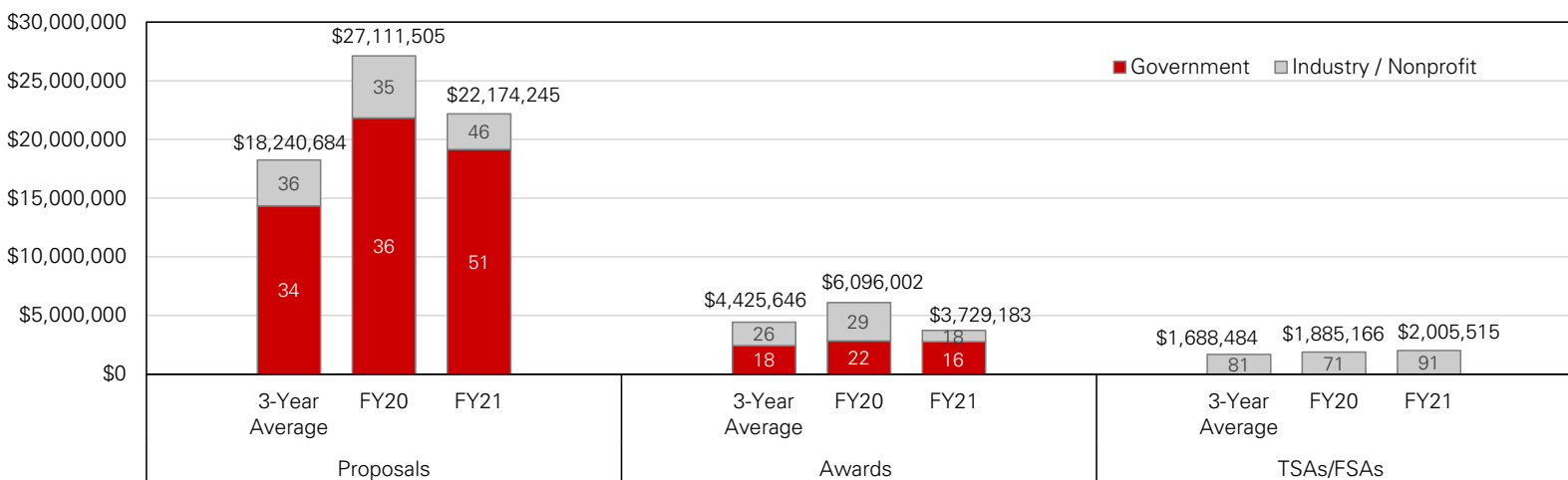


The research programs in the Wilson College of Textiles at NC State University are innovative, life-saving, creative, global and thriving. The college also provides tech service to all stakeholders and supports the economic development of the State and beyond. This newsletter gives a brief overview on the research and tech service activities of the faculty, staff and students during the third quarter of Fiscal Year 2021.

FY21 vs. FY20 vs. Three-Year Average (Q1 - Q3)

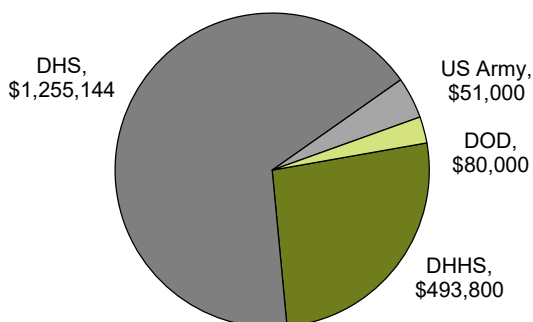


NUMBERS TO DATE (FY21 Q3)

Research Awards Received (\$2,476,774)

- Federal: \$1,879,944 | DHHS, DHS, DOD, US Army
- Industry/Non-Profit: \$596,830 | Aja Labs, Cotton Inc., Goldshield Technologies, LiteFighter Systems, SCEYE S.A., SINTX Technologies, Templeton World Charity Foundation

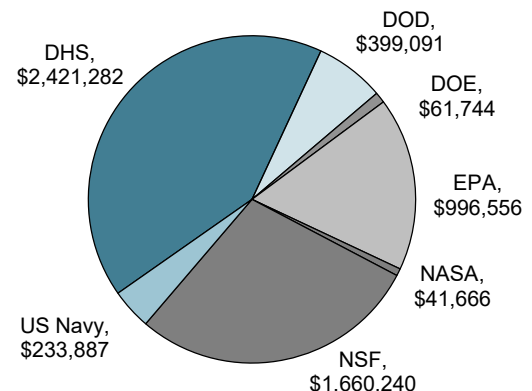
FY21 Q3 Federal Awards by Agency



Research Proposals Submitted (\$7,015,896)

- Federal: \$5,814,466 | DHS, DOD, DOE, EPA, NASA, NSF, US Navy
- Industry/Non-Profit: \$1,201,403 | AFFOA, Aja Labs, American Heart Association, CIF, Cotton Inc., Directed Vapor Technologies Int'l, Env. Research & Ed. Fdn., Goldshield Technologies, Knights Templar Eye Fdn., LiteFighter Systems, Nat'l Rsch. Fdn. of Korea, OGE, OOE, RISE, SINTX Technologies, United Soybean Board, Wake Forest University

FY21 Q3 Federal Proposals by Agency



NUMBERS TO DATE (FY21 Q3) Cont.

Inter-college Research Proposals (7)

- Wilson College share: \$660,137
- With CALS, CHASS, CNR, COE

Inter-college Research Awards (1)

- Wilson College share: \$117,563
- With PCOM

Inter-department/unit Research Proposals (4) \$546,635

Inter-department/unit Research Awards (4) \$216,216

Graduate Student Support

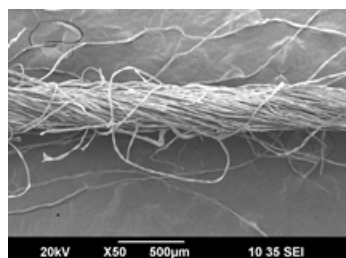
- 66 Ph.D. Student RAs (Avg Stipend: \$16,096 / year)
- 18 M.S. Student RAs (Avg Stipend: \$13,333 / year)

RESEARCH AWARDS ABOVE \$50,000 (FY21 Q3)

1. Robert Ormond, Fire Protection Research Foundation (US Dept. of Homeland Security), \$1,058,144.
2. Roger Barker, Robert Ormond, Donald Thompson, Anthoney Deaton, Centers for Disease Control & Prevention, \$493,800.
3. Robert Ormond, Wildfire Conservancy (US Dept. of Homeland Security), \$197,000.
4. Abdel-Fattah Seyam, SCEYE S.A., \$193,938.
5. Robert Handfield, Timothy Kraft, Marguerite Moore, Templeton World Charity Foundation, \$117,563.
6. Andre West, Kun Luan, Donald Thompson, Advanced Cooling Technologies, Inc. (US Dept. of Defense), \$80,000.
7. Nelson Vinueza Benitez, Cotton Inc., \$72,718.
8. Emiel DenHartog, Andre West, Kun Luan, US Army - Soldier Systems Center (Natick), \$51,000.
9. Roger Barker, Jessica Gluck, Robert Ormond, Kavita Mathur, Donald Thompson, Goldshield Technologies, \$50,000.

RESEARCH HIGHLIGHTS

Globalization and unrelenting downward pressure on market prices for apparel have shaped supply chains that are perilous for factory workers in low-income countries such as Bangladesh, India and Cambodia. Growing demand for accountability is evident among younger generations of consumers as well as investors. In response, western apparel and footwear brands implement codes of conduct in supply chains which can be voluntary or enforced by auditing agencies. The International Labor Organization (ILO) provides broadly-accepted standards for labor practices; however, interpretation and measurement of ILO rules vary widely among contexts (companies, industries, countries). Prof. Marguerite Moore is collaborating with Prof. Robert Handfield and Tim Kraft in the Poole College of Management to promote free markets and individual freedoms for both workers and consumers. The project is funded (\$2.25 million USD) by the Templeton World Charity Foundation for three years (2021-23) and involves collaboration with internal & external academics, apparel and footwear companies at various levels of the supply chain, global labor bodies, and multi-stakeholder initiatives to protect factory workers.



A SEM image of modified yarn.

Ring spinning is a major yarn manufacturing method due to its high yarn quality and flexibility in materials and yarn counts. With the increasing demand of novel features or further improving qualities, many modifications have been developed. High-performance modified ring-spun yarn developed by Prof. Rong Yin and his team has recently been demonstrated to exhibit supreme properties and functionalities. The modified yarn is achieved physically in a single step on a ring-spinning machine by changing the yarn structure. Prof. Yin's team modified the fiber tension and twist distributions in the spinning triangle to better control the fibers. The modified yarn has high strength, low hairiness and high abrasion resistance. This method is applicable to many fiber types including cotton, polyester, viscose, etc. Fabrics made of these yarns are strong and durable.



An unregulated "shadow factory" in the Keraniganj district of Bangladesh, which provides sub-contracting to first and second-tier factories.