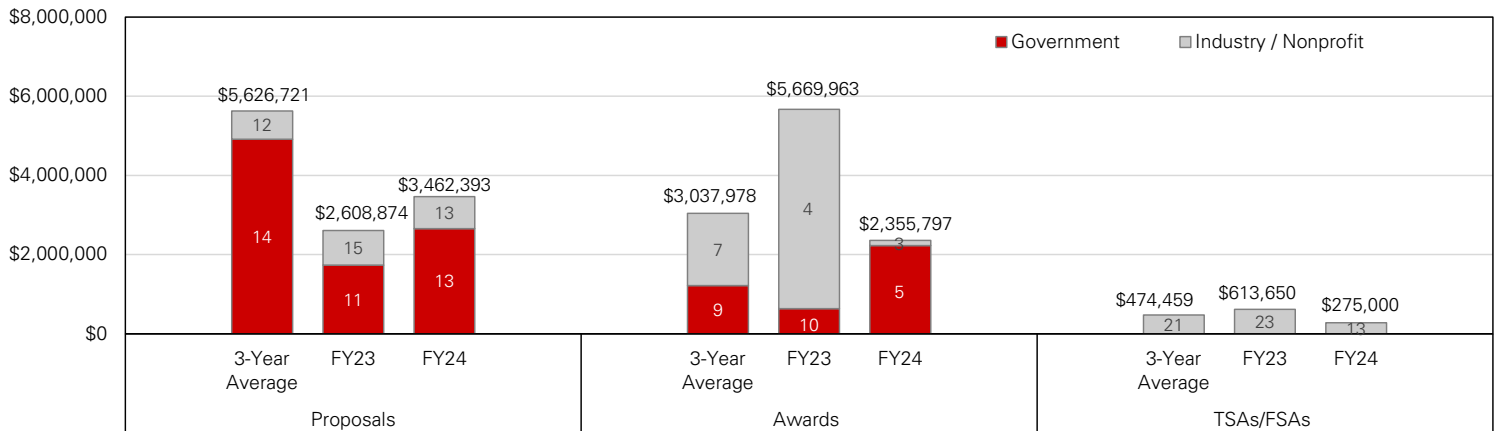


The research programs in the Wilson College of Textiles at NC State University are innovative, life-saving, creative, global and thriving. The college also provides tech service to all stakeholders and supports the economic development of the State and beyond. This newsletter gives a brief overview on the research and tech service activities of the faculty, staff and students during the first quarter of Fiscal Year 2024.

FY24 vs. FY23 vs. Three-Year Average (Q1)

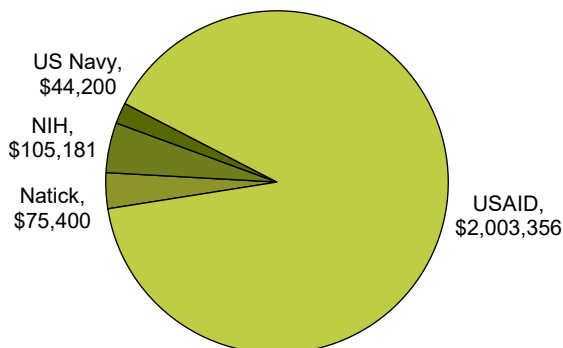


NUMBERS TO DATE (FY24 Q1)

Research Awards Received (\$2,355,797)

- Federal: \$2,228,137 | Natick, NIH, US Navy, USAID
- Industry/Nonprofit: \$127,660 | Chancellor's Innovation Fund, NC State Data Science Academy, Solugen

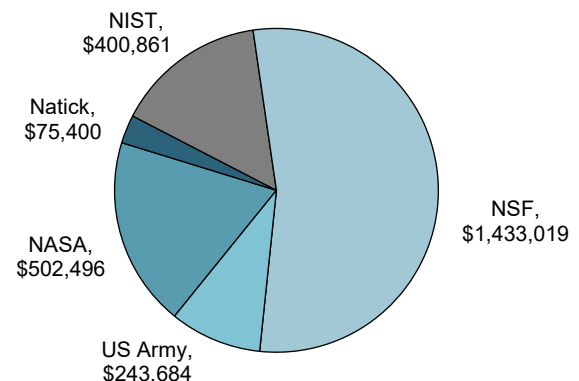
FY24 Q1 Federal Awards by Agency



Research Proposals Submitted (\$3,462,393)

- Federal: \$2,655,460 | NASA, Natick, NIST, NSF, US Army
- Industry/Nonprofit: \$806,933 | Chan Zuckerberg Initiative, Comparative Medicine Institute, Cotton Inc., Faculty Research & Professional Development Fund, Faurecia Interieur Industrie, Solugen, TNT Development

FY24 Q1 Federal Proposals by Agency



NUMBERS TO DATE (FY24 Q1) Cont.

Inter-college Research Proposals (5)

- Wilson College share: \$721,696
- With COE, COS, CVM

Inter-college Research Awards (1)

- Wilson College share: \$27,660 | With COE

Inter-dept./unit Research Proposals (3) \$183,950

Inter-dept./unit Research Awards (3) \$2,119,600

Graduate Student Support

- 74 Ph.D. Student RAs (Avg Stipend: \$20,533 / year)
- 9 M.S. Student RAs (Avg Stipend: \$13,361 / year)

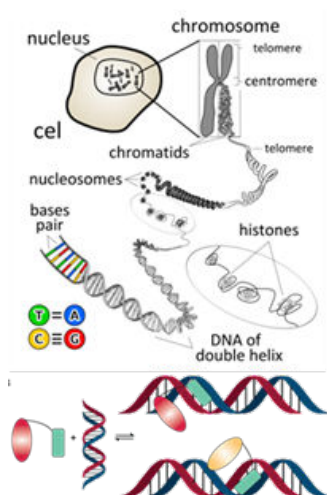
RESEARCH AWARDS AT OR ABOVE \$50,000 (FY24 Q1)

1. Melissa Sharp, Andre West, David Hinks, US Agency for International Development (USAID), \$2,000,000. UNSDG 4, 8, 17
2. Nelson Vinueza, University of California - San Francisco (NIH), \$105,181. UNSDG 3
3. Andre West, Cassandra Kwon, Emiel DenHartog, US Army - Soldier Systems Center (Natick), \$75,400. UNSDG 3
4. Ericka Ford, Solugen, \$50,000. UNSDG 8, 9
5. Sonja Salmon, Chancellor's Innovation Fund, \$50,000. UNSDG 13

Note: UNSDG stands for United Nations Sustainable Development Goals.

RESEARCH HIGHLIGHTS

3D virtual simulation stimuli can enhance older adults' spatial visualization skills. Spatial visualization is an important element of cognition and this ability in older adults influences their physical functions and psychological health. To address cognitive deficits among older adults, Drs. Chanmi Hwang (Textiles) and Jing Feng (Psychology) conducted an experimental online study with a total of 821 adults aged 60 and older with a customized 3D garment simulation intervention. Paper folding tests were administered before and after exposure to the stimuli and the results showed that the stimuli led to greater training gains in the experimental group. The activity of virtual fitting also brings opportunities for social interaction and increased enjoyment of online shopping experiences and provides insights for apparel retailers, which is significant given that older adults are a major target market due to their high purchasing power.



Structural modification of natural dyes is being explored by Professor Tova N. Williams to enhance their uptake on hydrophobic fibers such as polyester using waterless dyeing methods (e.g., supercritical carbon dioxide dyeing). This research is of interest, because there remains a need for environmentally friendly/sustainable solutions for the dyeing of textiles including methods that reduce or eliminate wastewater generated. Natural dyes have been recently heavily investigated for their potential to replace synthetic dyes in textile dyeing processes. However, there are practical limitations to utilizing the dyes in this respect, especially in waterless dyeing processes. Many natural dyes are glycosides, meaning they contain a sugar moiety attached to the dye chromogen. This attribute renders the dyes hydrophilic and less likely to be soluble in a nonaqueous medium and less likely to display affinity toward hydrophobic fibers. Consequently, structural modifications are necessary to enhance their hydrophobic character. Hence, Professor Williams' research team is currently exploring different strategies to modify natural dyes and enhance their hydrophobicity including the use of enzymatic methods.