

Wei Group 2023

Year in Review



New Members



Mahsa Bagi (G)

MS, Univ South Carolina
MS, Amirkabir Univ of
Technology
BS, Kurdistan University



Belinda Mativenga (G)

BS, Pennsylvania State
University

Jenna Kolbe (U)
Ariana Gomez (U)
John Vargas (U)
Aidan Sunris (U)
Clare Lee (H)
Sam Nguyen (H)
Maddy Bowers (H)

P: postdoc
G: graduate
U: undergraduate
H: high school student

Members Finished/Graduated



Yan Wang, Postdoc

Current position:
Faculty, China
Agricultural University



Noah Lott, MS

Current position:
Consultant,
Sequence



Yan's farewell lunch



Noah is a student keynote speaker at BTEC's graduation ceremony

Awards

- Qingshan, Goodnight Early Career Innovator award
- Noor, 1st place oral presentation, Student Competition in Sensors, 2023 AIChE
- Jenna (U), 2nd place poster competition, Food, Pharmaceutical, and Biotechnology VI, 2023 AIChE
- Sina, 3rd place 2-minute pitch, BASF NextGen Student Innovation Event
- Noor, 2022-23 Vivian Stannett Early Publication Award, CBE
- Noor, 2023 GSA Travel Award, CBE
- Sina, travel award, Foundations of Process/product Analytics and Machine learning (FOPAM) 2023 conference
- Aditi, COE Graduate Enhancement Award
- Sina, Associate Member Scholarship, division of Emerging & Infectious Diseases (EID), Comparative Medicine Institute (CMI)
- Noor, Group Service Appreciation Award
- Emily (U, lab alumna), NSF Graduate Research Fellowship (GRF)
- Ariana (U), COE REU Award

U: undergraduate



Awards

Noor Mohammad and Sherafghan Iftikhar!!!
Vivian T. Stannett Award Winners for Outstanding Early Publication!



NC STATE UNIVERSITY Chemical and Biomolecular Engineering



Service Appreciation Award for Noor



Sina won 3rd place in 2-min pitch competition at BASF Innovation Day

Congratulations to our new CBE Goodnight Early Career Innovators!!!



Adriana San Miguel



Qingshan Wei

NC STATE
UNIVERSITY

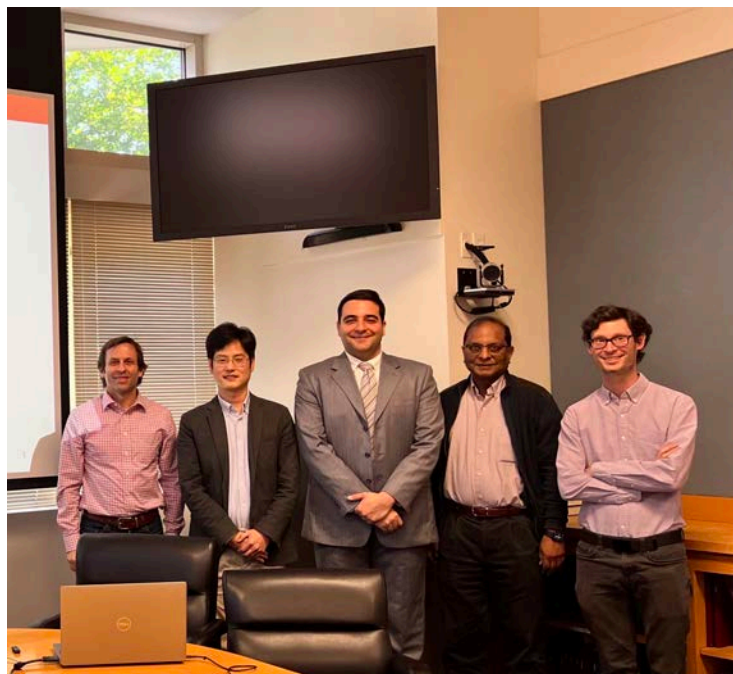
Chemical and
Biomolecular Engineering



Jenna won 2nd place in undergraduate student poster competition at AIChE 2023



Career Milestones/Promotions



Sina passed prelim defense



Qingshan's tenure



The best tenure gift



Global One Health Academy

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Infectious Diseases

Increase awareness of the global burden of infectious diseases by promoting prevention, detection, and response strategies that save lives, improve public health, and foster sustainable development worldwide.



Thematic Area Leadership



Qingshan Wei

Assistant Professor of Chemical and Biomolecular Engineering || College of Engineering

qwei3@ncsu.edu



Jessica Gluck

Assistant Professor of Textile Engineering, Chemistry, and Science || Wilson College of Textiles

jmgluck@ncsu.edu

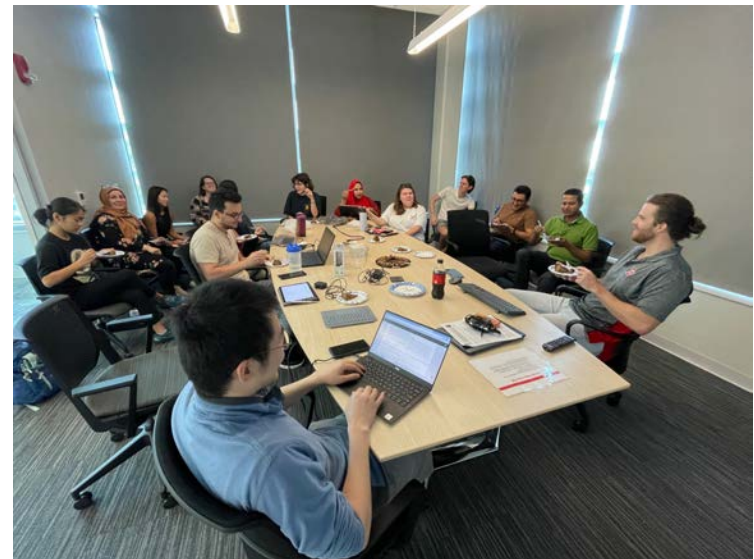
Life Milestones



May birthday – Sina, Aditi, Shengwei, and Mingzhuo



July birthday – Zach





September birthday – Noor



October birthday – Qingshan



December birthday – Selen, Oindirla

Summer Fun



Occoneetchee Hiking



Conference Presentations

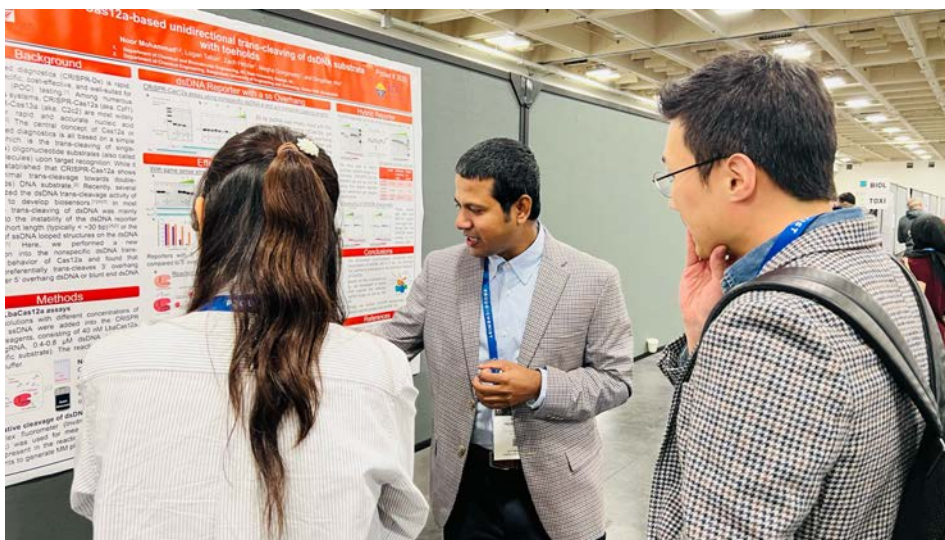
ACS Fall 2023:



Zach presenting



Oindrila presenting



Noor presenting



Celebration

2023 AIChE:



Zach presenting



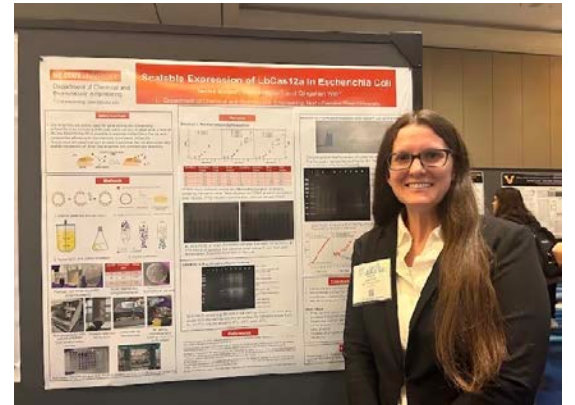
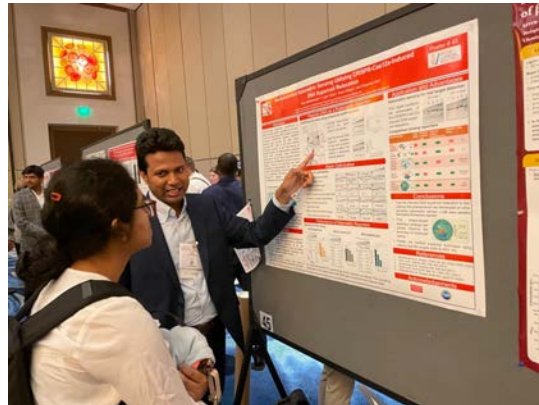
Oindrila presenting



Celebration



Noor presenting

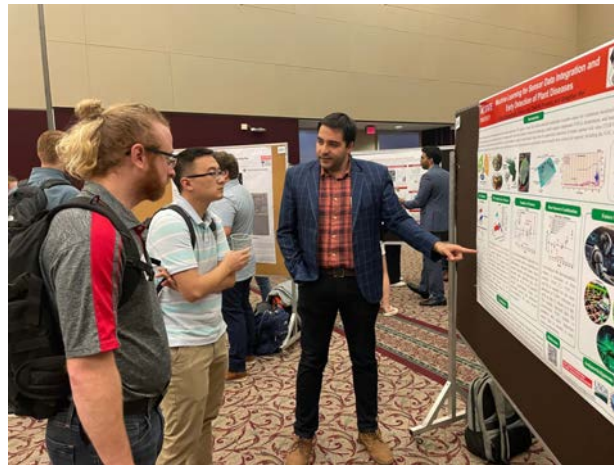


Jenna in front of poster

2023 Schoenborn Graduate Research Symposium:



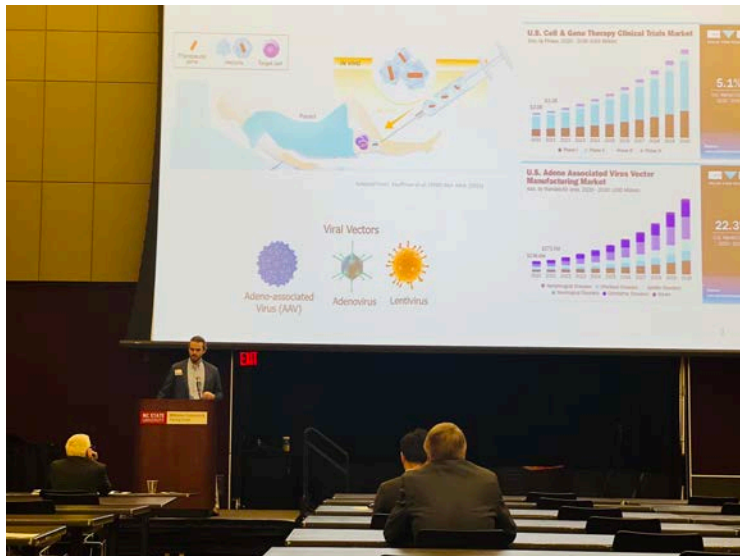
Noor presenting



Sina presenting



Jenna presenting

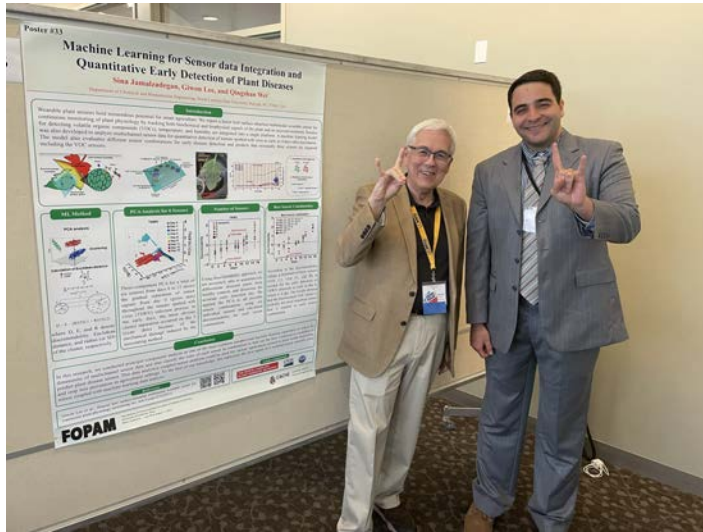


Zach presenting



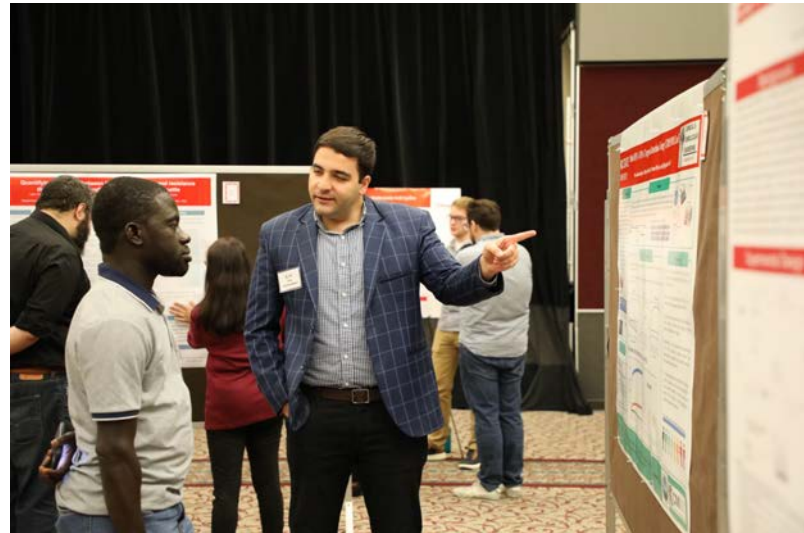
Oindrila presenting

2023 POPAM:



Sina in front of poster

2023 CMI Summit:



Sina presenting

2023 BioLunch:



Noor presenting

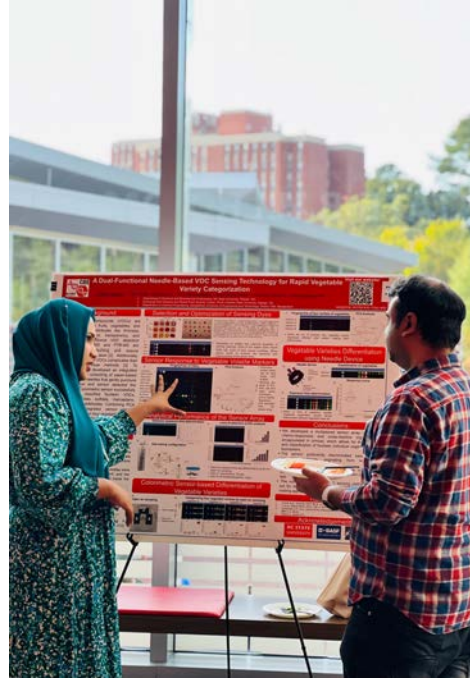


Zach presenting

2023 IConS

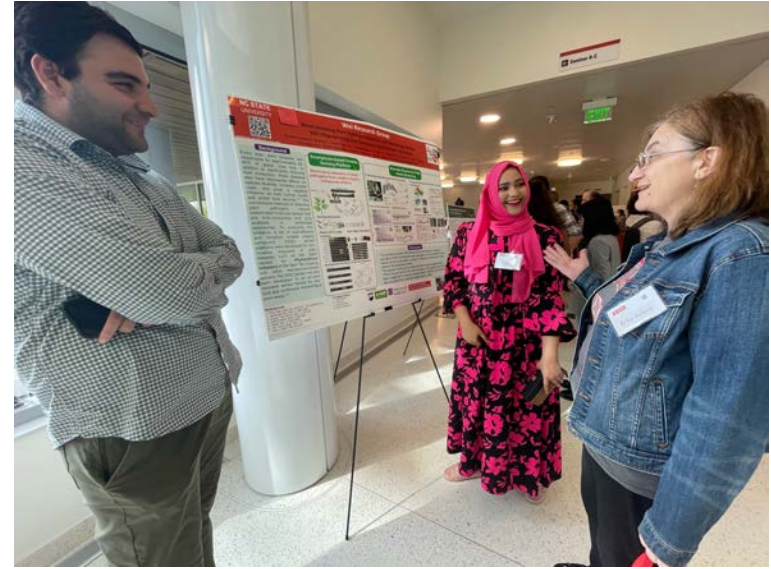


Sina presenting



Oindrila presenting

2023 NSF PIPP workshop



Oindrila presenting

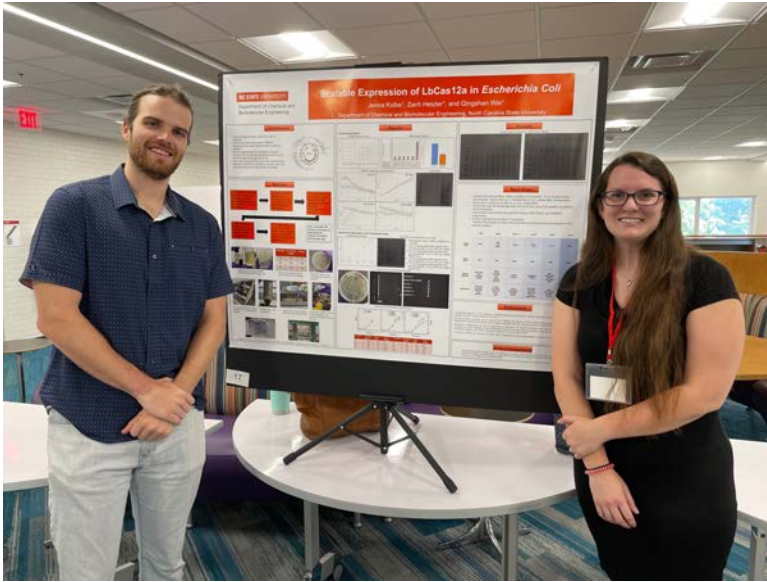


Oindrila demo VOC sensor

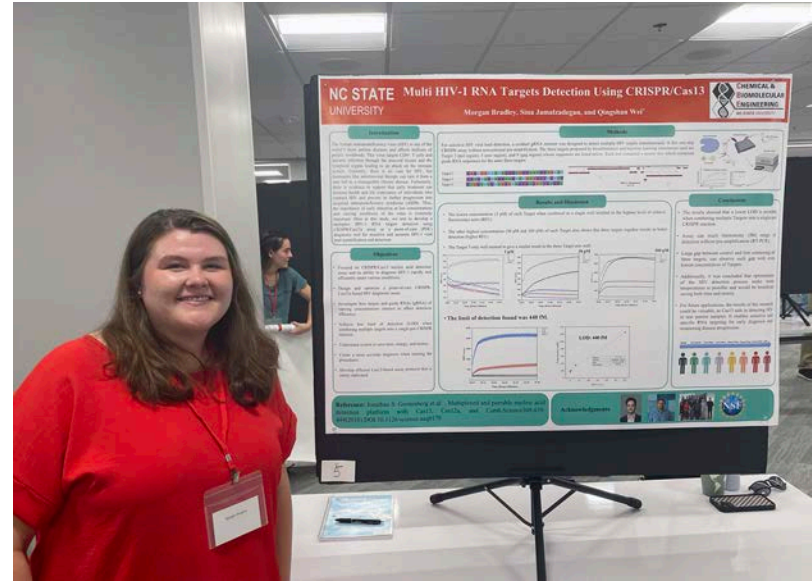


Aditi demo MN extraction

2023 Undergraduate Research Symposium:



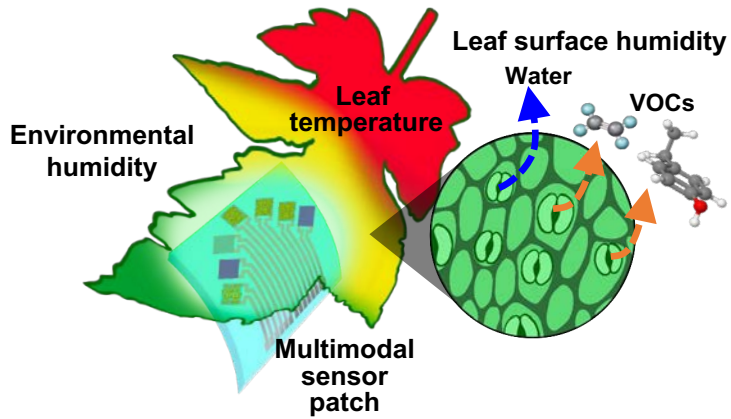
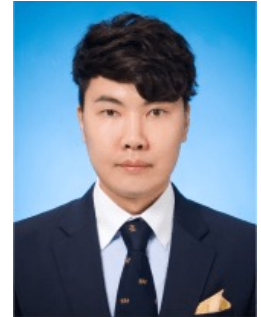
Jenna in front of poster



Morgan in front of poster

Scientific Breakthroughs

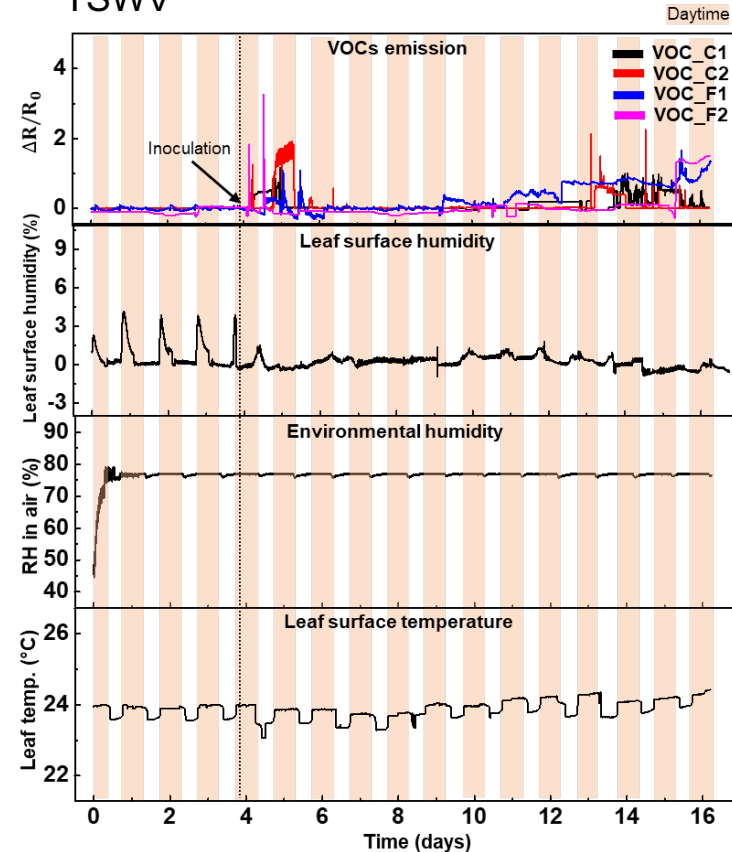
Giwon



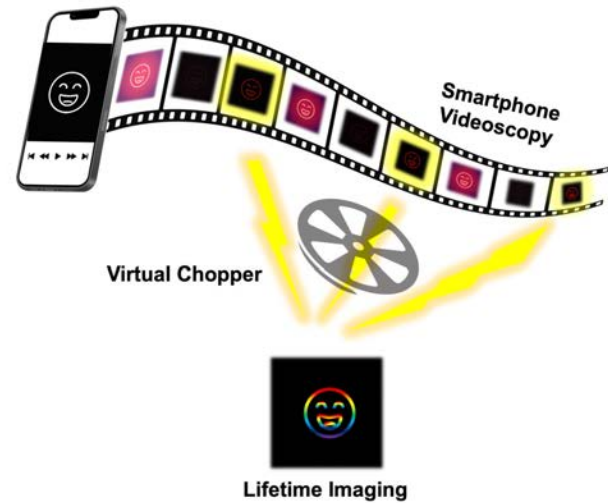
Multifunctional plant wearable sensor patch for continuous plant health monitoring



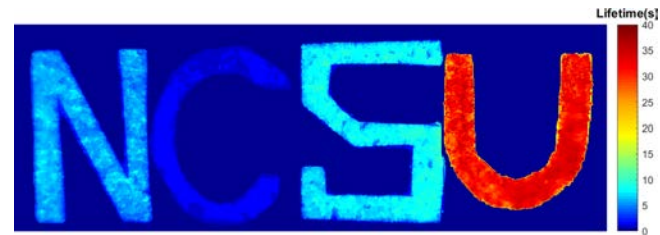
TSWV



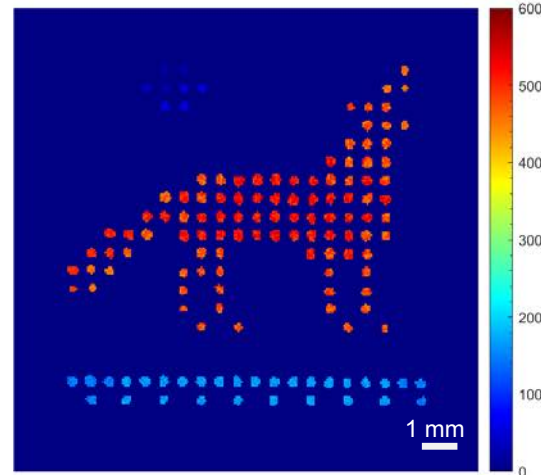
Video-rate smartphone scopy device for μs luminescence lifetime measurement



Lifetime Imaging



Lifetime(μs)



Yan

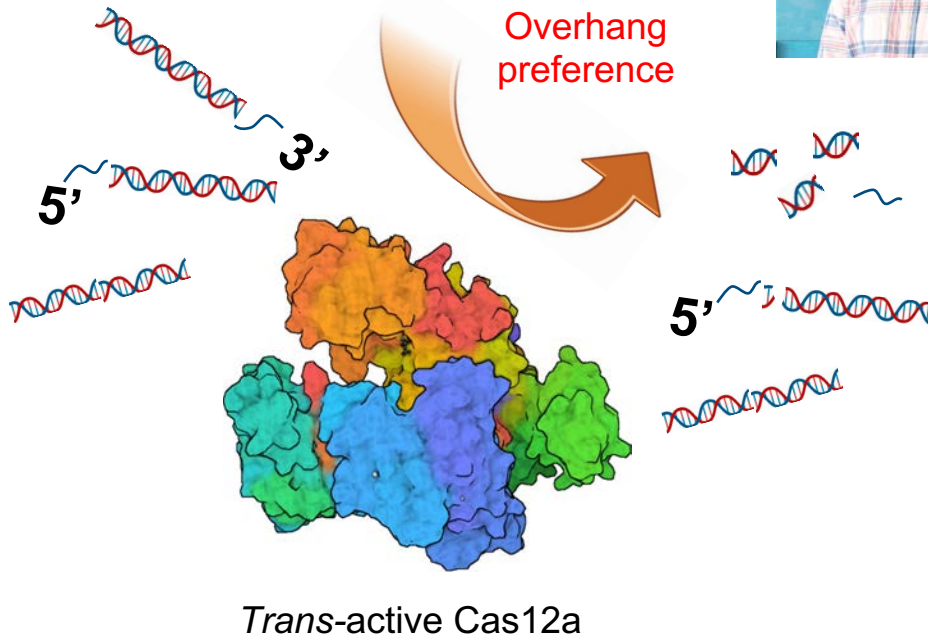


Reengineer CRISPR-Dx and innovate CRISPR-Cas12a reporting systems

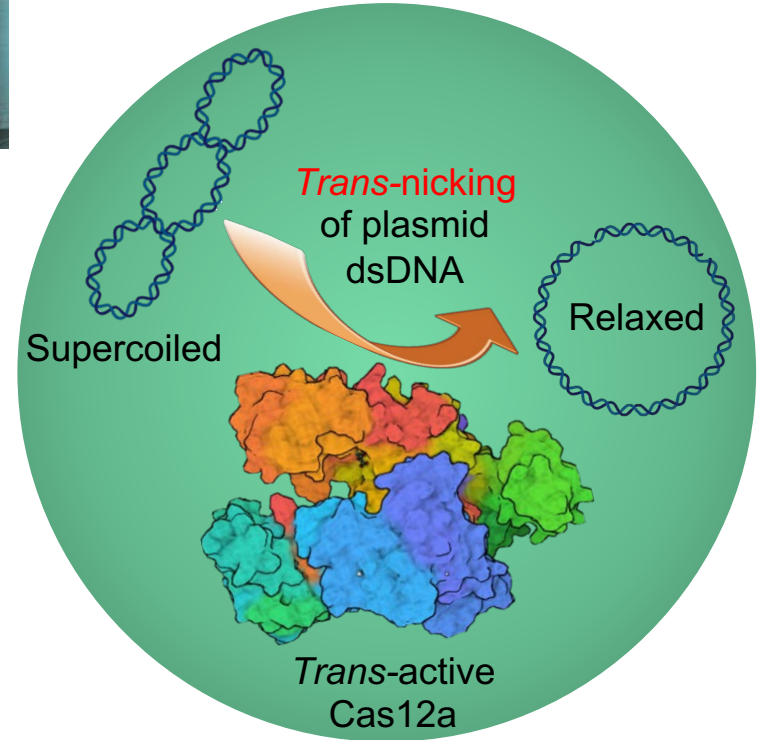
Noor



Hybrid reporters

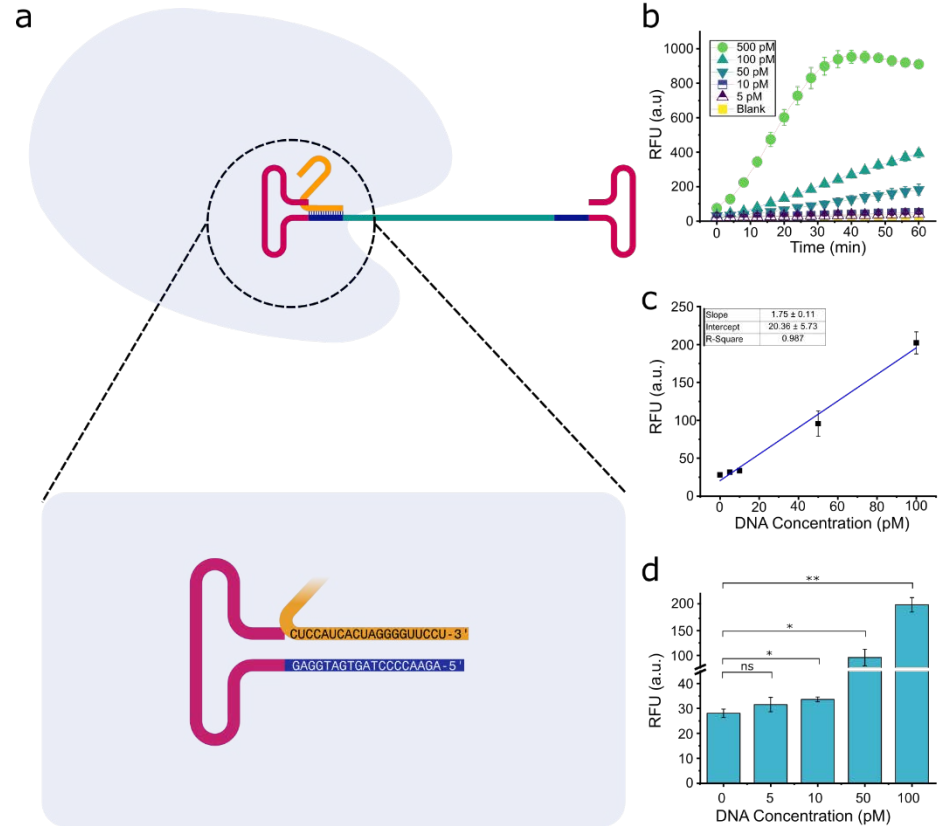
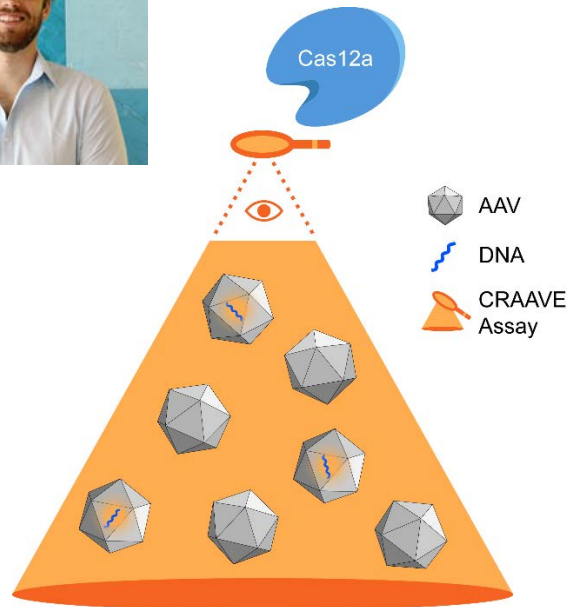


Plasmid reporters



CRAVVE: one of the first CRISPR-Dx for biomanufacturing and gene therapy

Zach



Press News

Multifunctional Patch Offers Early Detection of Plant Diseases, Other Crop Threats

April 12, 2023 | Matt Shipman | 4-min. read



‘Wearable’ Plant Sensors

A network of sensors for plants might help extend the life of farmers’ crops. Small, flexible sensors placed on plants’ leaves could monitor how a crop is coping with environmental stressors, from hot, dry spells to a lack of nutrients due to soil elements washed away in heavy rain, says Yong Zhu, a mechanical engineer at North Carolina State University.

Research Highlight | [Published: 24 May 2023](#)

Precision agriculture

Wearable sensors to monitor plant health

[Yufang Guo](#)

[Nature Food](#) **4**, 350 (2023) | [Cite this article](#)

679 Accesses | **3** Altmetric | [Metrics](#)

Giwon Lee from North Carolina State University and colleagues have now developed a wearable plant sensor patch for continuous plant-health monitoring with improved sensitivity, selectivity and environmental stability. The team uses newly developed materials including volatile organic compound (VOC)-sensing materials, which can detect plant VOCs in real time, as well as gold-coated silver nanowires (Au@AgNWs) that show high stability against humidity and solvent exposure. The multimodal wearable sensor incorporates

Research Highlight | [Published: 12 May 2023](#)

Stress responses

Wearable monitoring

[Catherine Walker](#)

[Nature Plants](#) **9**, 678 (2023) | [Cite this article](#)

368 Accesses | **5** Altmetric | [Metrics](#)

Plant disease can account for as much as 40% of crop losses annually and, as current disease management strategies rely heavily on the use of chemical pesticides, there is a great need for early and rapid in-field disease detection to optimize pesticide application and prevent disease outbreaks. One attractive strategy for monitoring plant health is the use of sensor technologies that are capable of monitoring biochemical and biophysical plant signals to predict plant health status. Now Yong Zhu, Qingshan Wei and colleagues at North Carolina State University describes the development of a multifunctional plant wearable sensor.

We are on X

← **Wei Research Group (POC sensor)**
40 posts



Wei Research Group (POC sensor)
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Credit: Sina

New Fundings

- USDA NIFA #2023-67021-40547, PI
- NCSU FRPD, PI
- USDA APHIS, co-PI
- DOD STTR, subcontract



United States Department of Agriculture
National Institute of Food and Agriculture

Together, we grow and forge ahead!



Happy Holidays!



Credit: Qingshan and Alireza