

# Professor Team Webinar #1 (New Professors)

April 25, 2024

Yeonjin Bae, ORNL  
Kim Trenbath, NREL

# Agenda

- JUMP into STEM Overview
- JUMP into STEM Competition
- 2024-2025 Professor Team
- 2023-2024 Competition
- Q&A

# Management Team



## U.S. Department of Energy (DOE) Building Technologies Office (BTO)



Nicholas Ryan

## Oak Ridge National Laboratory Grid Interactive Controls, Integrated Building Performance



Dr. Yeonjin Bae



Bill Eckman

## National Renewable Energy Laboratory Building Technologies and Science Center



Dr. Kim Trenbath



Allison  
Georgeson

## Pacific Northwest National Laboratory Building Simulation & Design, Building Systems



Dr. Sarah Newman



Carmen Cejudo



Dr. Mini Malhotra



Dr. Yeobeom Yoon



Jason Schmidt



Dr. Kerry Rippey



Alyssa Bersine



Willy Heredia

# JUMP into STEM Overview



- BTO-sponsored building science collegiate competition
- Student teams respond to one of three challenges
- Promotes ideation and diversity
- Awards include mentoring and paid internships
- 2024-2025 is seventh year of student competition

**For more info:**  
**[www.jumpintostem.org](http://www.jumpintostem.org)**

# Vision

- Inspire the next generation of building scientists, focusing on creative ideation and diversity in the building science field
- Provide a gateway for college undergraduate and graduate students to experience the research and career possibilities of studying building science
- Attract students from diverse majors and diverse backgrounds



# JUMP into STEM Competition

# Tentative Student Competitions for Building Technology Innovation



3 concurrent online challenges  
August-November

Final competition  
at ORNL or NREL

Awards: Summer  
Internships  
(2025)

For more information,  
visit [jumpintostem.org](https://jumpintostem.org)

## How it works:

- Fall semester: three building science challenges for innovation
- Supported with technical overview slide deck for each challenge
- Webinars
  - Professor team webinars
  - Student webinars
- Finalists compete in Final Competition at ORNL or NREL for paid summer internships at ORNL, NREL or PNNL



# JUMP into STEM Supporting Resources and Webinars



## JUMP into STEM website

- Go-to location for students and professors
- [www.jumpintostem.org](http://www.jumpintostem.org)



## JUMP emails ([jump@ornl.gov](mailto:jump@ornl.gov) & [jump@mailor.ornl.gov](mailto:jump@mailor.ornl.gov))

- Challenge topic
- Webinar
- Winner announcement



## Professor webinar

- 6-7 Professor team webinars
- Potential challenge topics
- Program updates



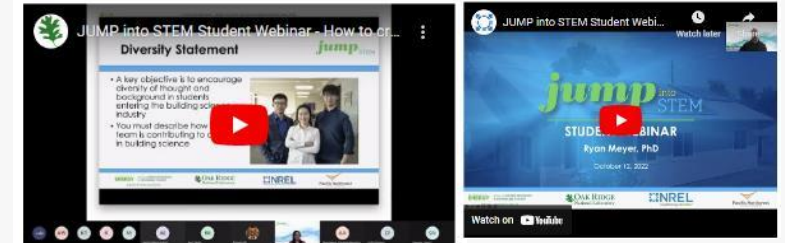
Professor Team recruiting video



Professor Team slides and flyer

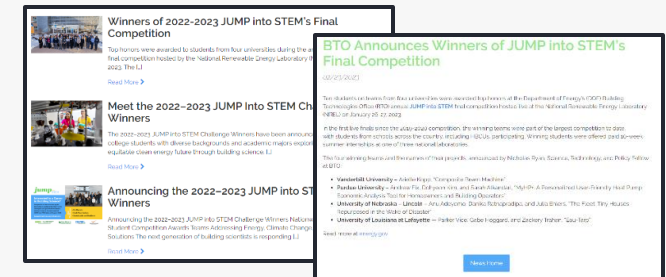
## Student webinar

- Student webinars
  - How to create successful submission
  - JUMP into STEM Student Webinar



Share the recording

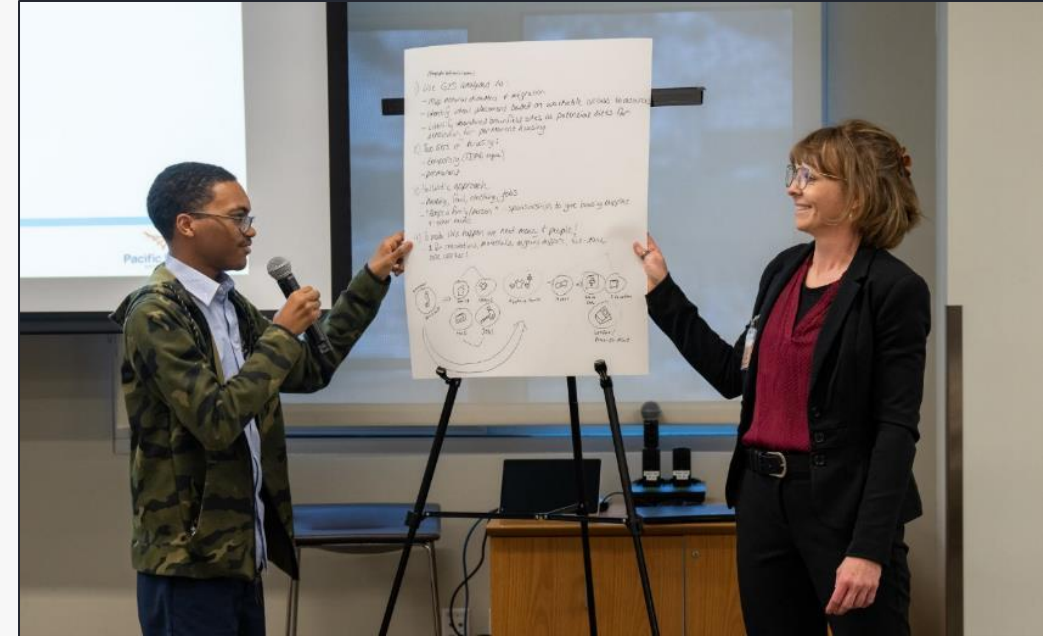
## Share the JUMP into STEM news





# Challenge Winners

- Each team chooses to participate in one of three Challenges
- Online resources help teams explore solutions and craft submissions
- Winning teams selected from each Challenge will be awarded a token of recognition and 1:1 mentorship with an industry expert



# Challenge Finalists

- Challenge winners, and additional eligible teams will be selected to compete at the **Final Competition**
- Finalists will be notified in December
- To be eligible to participate in the Final Competition, students must complete Zintellect **internship applications**



# Final Competition



- The Final Competition will be held in person at NREL (January, 2025)
- Finalists will present ideas to a panel of judges from industry, DOE, academia, and national labs



# Winning Teams

- Will receive 10-week paid internship at ORNL, NREL, or PNNL



- Will be highlighted in DOE online article
- Interns will have dedicated mentors and work with national lab staff members

Buildings

## BTO Announces Winners of JUMP into STEM's Final Competition

FEBRUARY 15, 2023

Buildings » BTO Announces Winners of JUMP into STEM's Final Competition

Participants at the JUMP into STEM finals competition Jan. 26-27, 2023, at the National Renewable Energy Laboratory included students, professors, judges, national laboratory management, and the Department of Energy.

Ten students on teams from four universities were awarded top honors at the Department of

# 2024-2025 Professor Team

# 2024-2025 Professor Team



## Join the JUMP into STEM Professor Team!

### Your Role and Activities:

- The Professor Team connects DOE's goals within the Challenges to university students.
- Engage with JUMP into STEM team to provide feedback on potential challenges and updates during the competition
- Incorporate at least one (1) challenge into an appropriate Fall 2024 course as part of the student's grade
- Support students on research and submissions
- Promote JUMP into STEM to other university stakeholders.



*JUMP into STEM participants Jarrett Thomas and Jai Huntley, and Hampton University Professor Laura Battaglia*

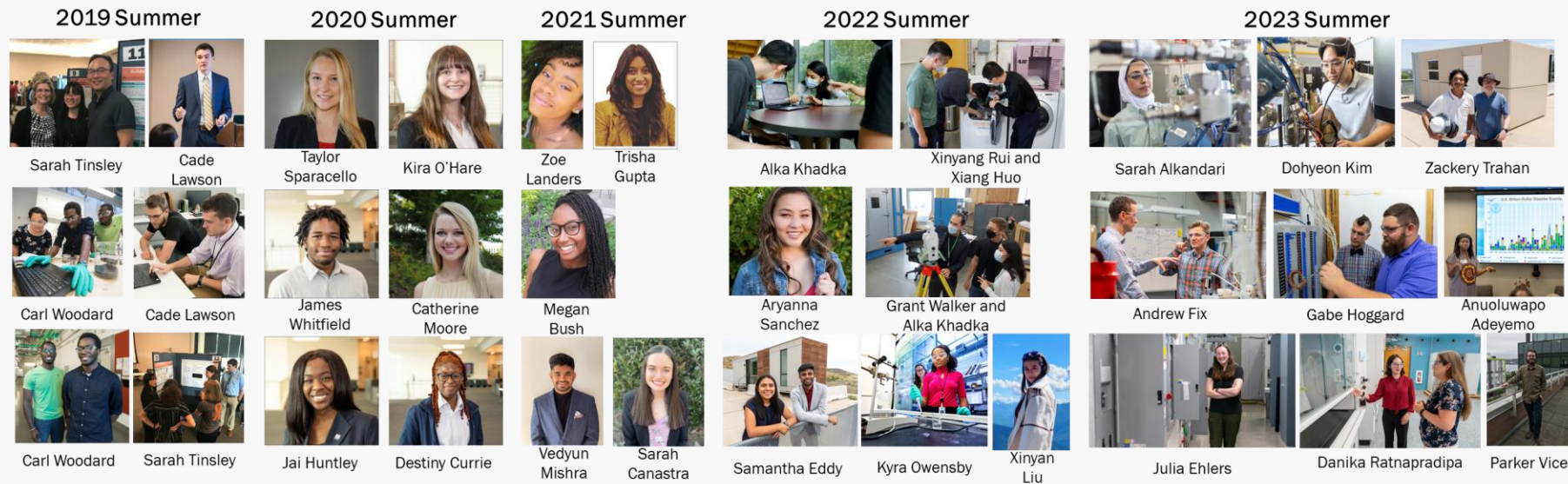
**For more info:**  
<https://jumpintostem.org/professors/>



# 2024-2025 Professor Team (cont.)

## Benefits to participating:

- Give your students the opportunity to earn a **10-week paid summer internship** to a national laboratory (ORNL, NREL, or Pacific Northwest National Laboratory).



- To date, 32 students have interned at ORNL, NREL, and PNNL.

# 2024-2025 Professor Team (cont.)

## ▪ Benefits to participating:

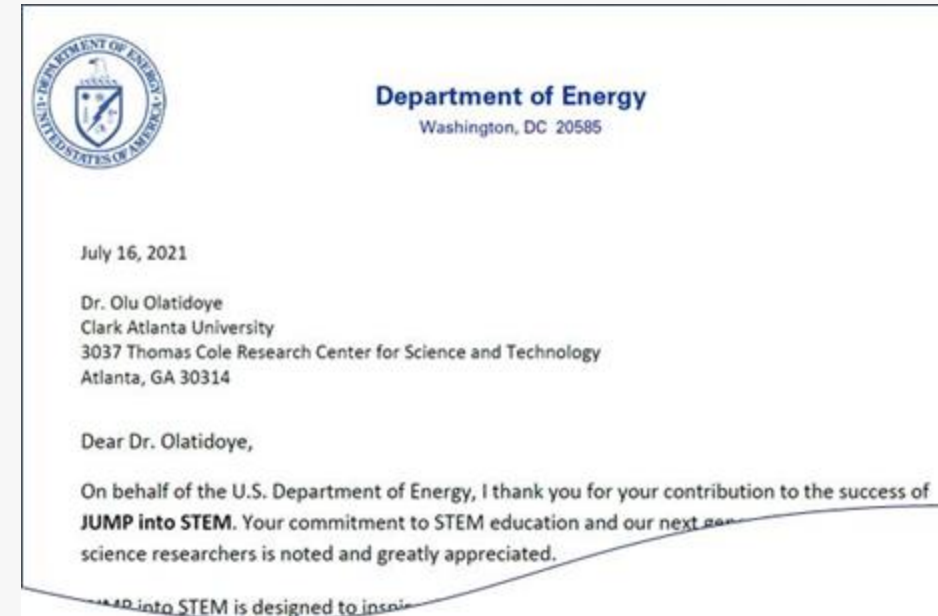
- Make connections with DOE and the national laboratories that can lead to additional scientific progress.
- Invited to attend the JUMP into STEM Final Competition
  - Results in teaching students about national labs and DOE.
  - Collaboration on proposals.



# 2024-2025 Professor Team (cont.)

## ▪ Benefits to participating:

- Meet service-related metrics for your university by contributing to the development of a nationwide student competition.
- Letter of Recognition
  - Recognizes participation
  - Official letter from U.S. Department of Energy's Building Technologies Office (BTO)
- Incorporate at least one (1) challenge into an appropriate Fall course as part of the student's grade **that leads to students' submissions**



# 2023-2024 Competition



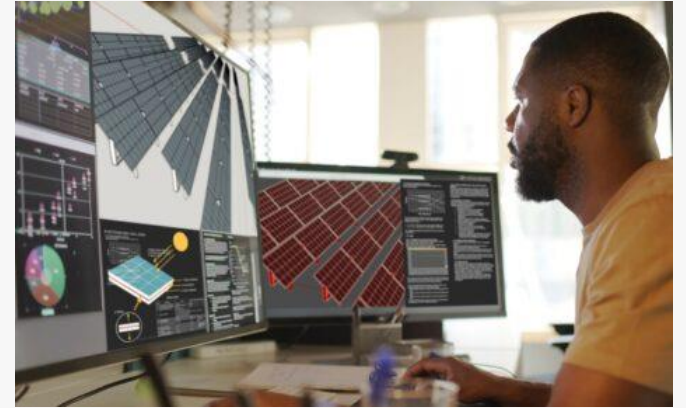
# 2023–2024 Challenge Topics



**Keepin' it Cool (or Hot)**



**That's a Wrap!**



**You and Me, Carbon Free!**

# 2024 Final Competition

## 23–24 Challenge Series Topics

- Keepin' it Cool (or Hot)
- That's a Wrap!
- You and Me, Carbon Free!



## Professor team

**44** professors from  
**38** schools  
**16** professors from  
**12** MSIs

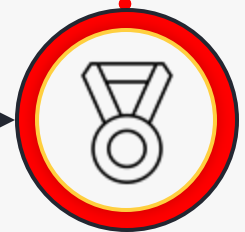


## Submissions

**83** ideas  
from **267** students



**9**  
**FINALIST**  
**TEAMS**





# JUMP into STEM's Professor Team



2023-2024



44

Professors



16

HBCU/HSI/MSI



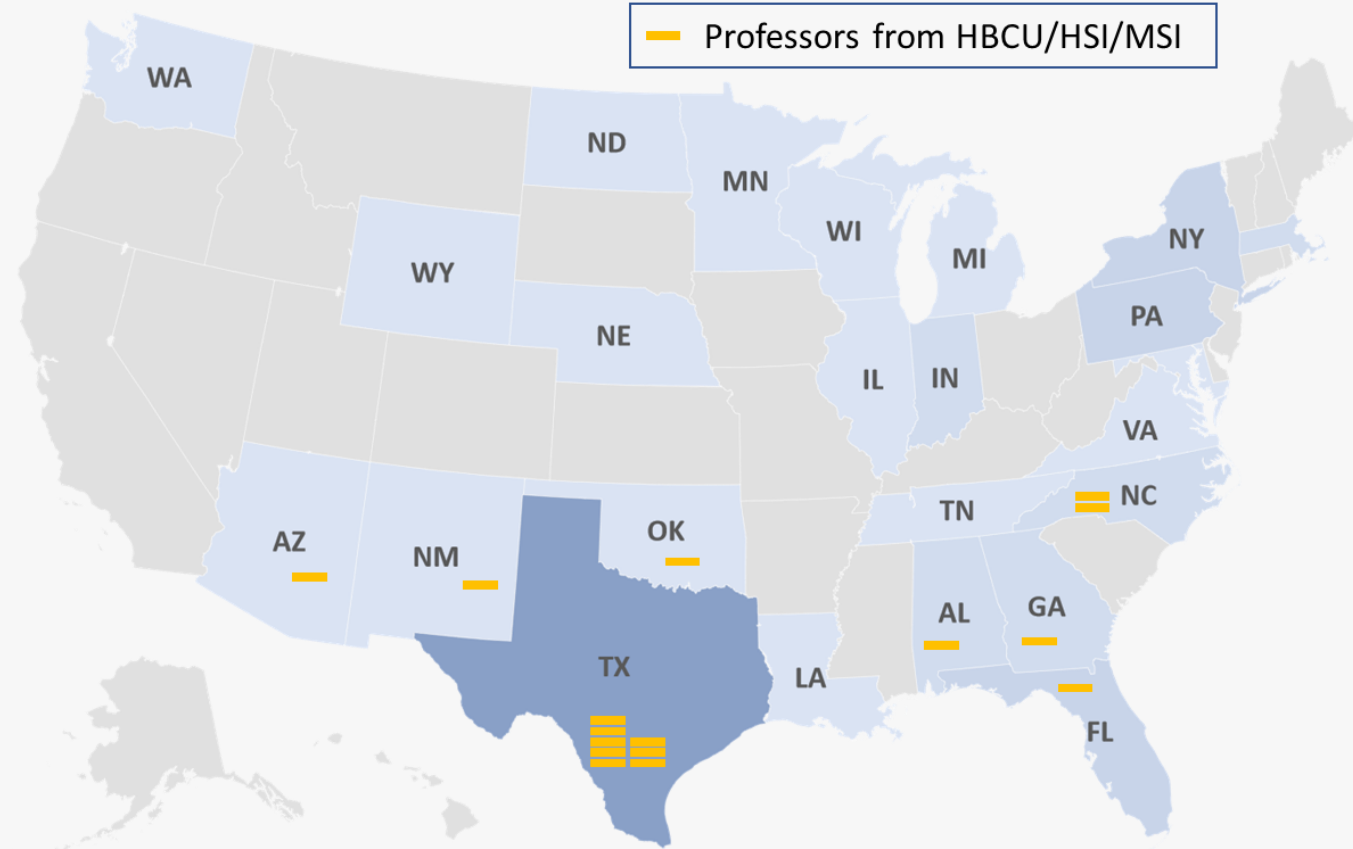
38

Universities



12

HBCU/HSI/MSI



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# JUMP into STEM's Student Participation

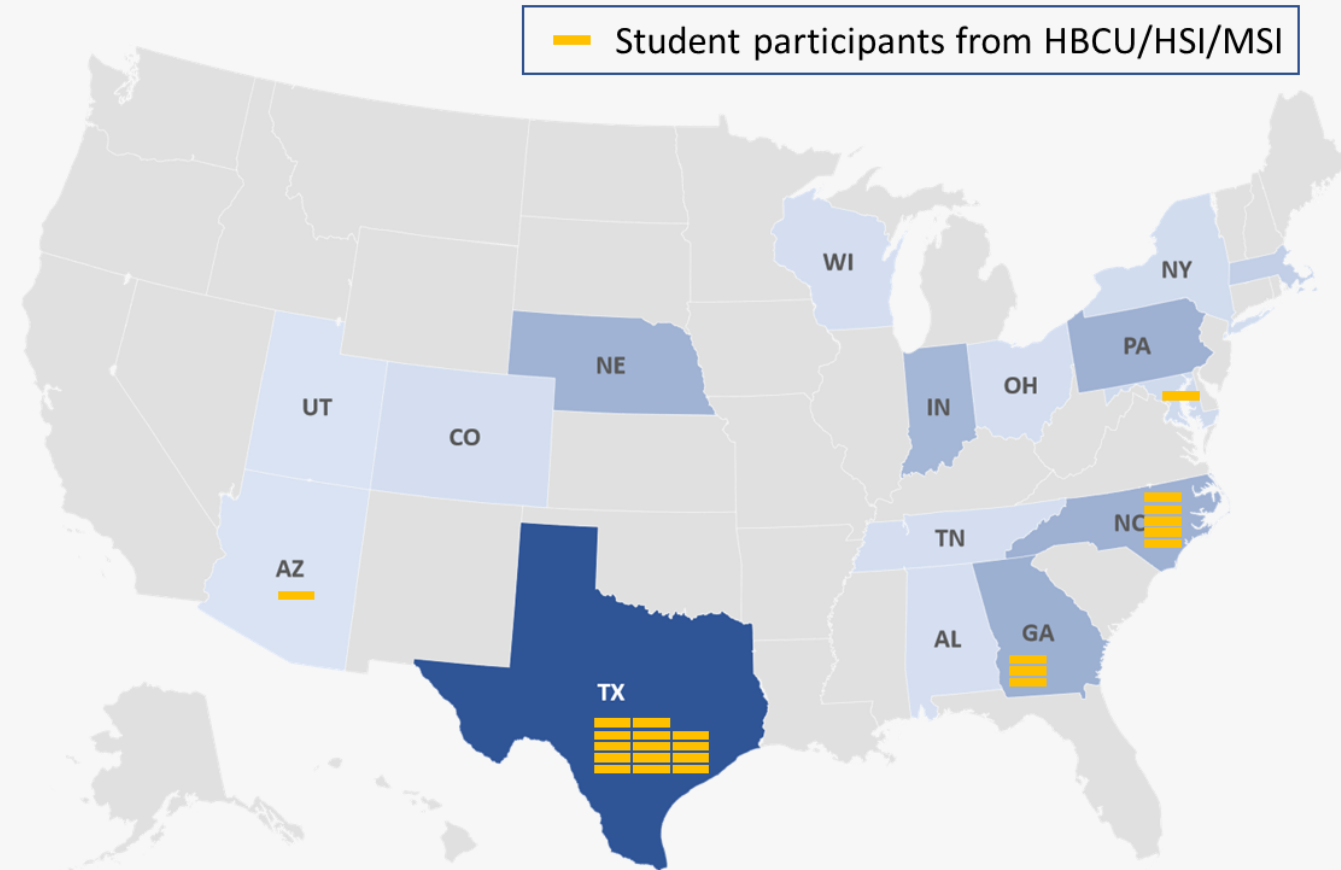
2023-2024



**267**  
Students



**116**  
HBCU/HSI/MSI



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# 2023-2024 Challenge Winners



## ▪ Keepin' it Cool (or Hot)

### • 1<sup>st</sup> place

- **Energy Save Solutions** - Energy Save Solution: Mini-Split Thermal Energy Storage System



### • 2<sup>nd</sup> place

- **OneGrid** - Reducing Barriers to Achieve an Energy Efficient Lifestyle for Low-Income Families in the United States of America



### • 3<sup>rd</sup> place

- **Team PRTM** - KILN TES



# 2023-2024 Challenge Winners



## ▪ That's a Wrap!

### • 1<sup>st</sup> place

- **MESI** - Detecting, Contracting, Sealing (DCS) – The Community Envelope

### • 2<sup>nd</sup> place

- **NC A&T Team** - Building Facade Sealing Kits

### • 3<sup>rd</sup> place

- **EcoSeal** - Bridging Gaps in Energy Efficiency



**NORTH CAROLINA AGRICULTURAL  
AND TECHNICAL STATE UNIVERSITY**



# 2023-2024 Challenge Winners



## ▪ You and Me, Carbon Free!

### • 1<sup>st</sup> place

- **Urban Green Niners** - Building-Integrated Algae Photobioreactor Systems for Carbon Sequestration

### • 2<sup>nd</sup> place

- **SUNY ESF Team** - Interlocking Sun-Dried Adobe Bricks (MODIFIED ADOBE – MODUBE)

### • 3<sup>rd</sup> place

- **Mushroom Masons** - Decarbonizing Interior Construction Using Mycelium Based Assemblies



# Challenge Awards

- One hour of one-on-one mentoring with BTO, ORNL, NREL or PNNL staff
- Certificate





# 2023-2024 Finalist



UNIVERSITY OF  
**Nebraska**



**NORTH CAROLINA AGRICULTURAL  
AND TECHNICAL STATE UNIVERSITY**

**PURDUE**  
UNIVERSITY



  
UNIVERSITY OF NORTH CAROLINA  
**CHARLOTTE**

INDIANA**TECH**



**WPI**

# 2024 Final Competition

- Finalists presented ideas to a panel of judges from industry, DOE, academia, and national labs
- Networking sessions for students, professors, and industry partners
- Laboratory tours

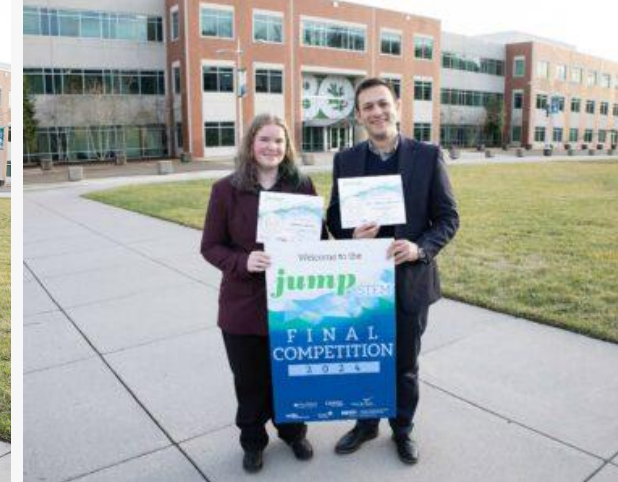
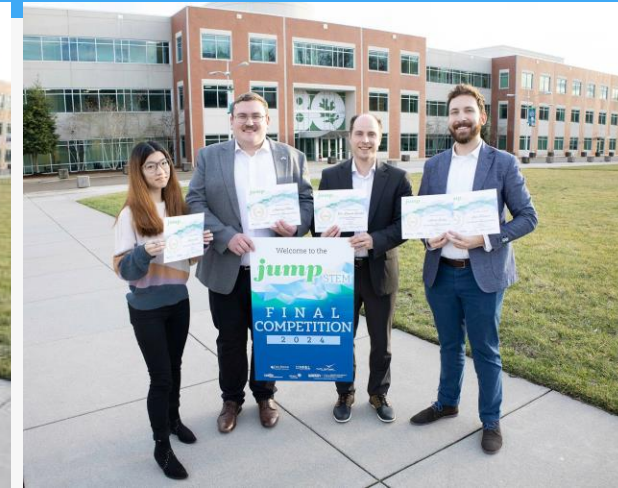




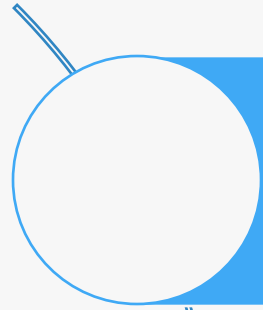
# 2024 Final Competition Winners



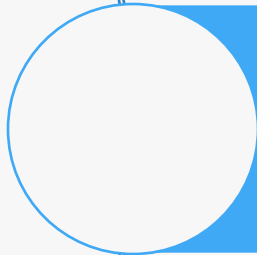
- University of Nebraska Lincoln
  - Detecting, Contracting, Sealing (DCS)
- Purdue University
  - Energy Efficient Heating and Cooling for Low-Income Families in the United States of America
- Worcester Polytechnic Institute
  - Thermal Energy Storage Kiln
- Embry-Riddle University
  - Energy Save Solutions: Mini-Split Thermal Energy Storage System



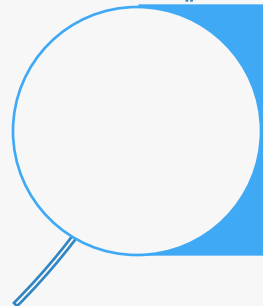
# 2024 Final Competition Student Feedback



I had a lot of fun researching and discussing possible solutions. Getting the chance to compete against so many great minds pushed me to elevate my idea and to work harder. - Israel Bryant, University of Nebraska Lincoln

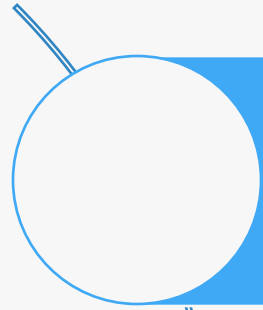


Participating in JUMP into STEM has undoubtedly broadened my knowledge in the fields of building science. The networking opportunities will likely contribute to my professional growth, opening doors to new possibilities and connections. – Felix Ekufu, UNC Charlotte

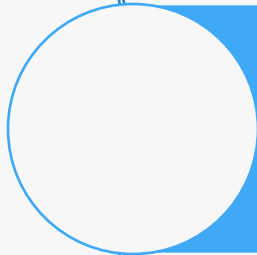


My participation in JUMP into STEM has introduced me to holistic problem solving, which is being able to factor in all variables of a problem, both the good and the bad, in the solution to a problem. This will help me in my pursuits as an architectural engineer by equipping me with the ability to make connections with diverse fields of people and knowledge in order to solve a common goal relating to buildings and the environment. – Michael Murray, NC A&T

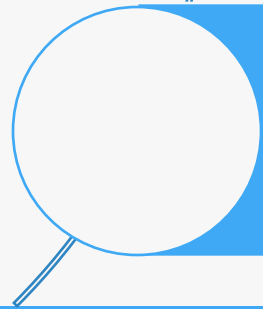
# 2024 Final Competition Professor Feedback



Participating on-site has been eye-opening. Prior to attending the competition, I had no interaction with national labs. This experience has provided resources that I will share with my students and colleagues. I have also established new connections and potential collaborative opportunities. –Marioneta Gutierrez Soto, Penn State University



This opportunity will definitely help my students understand the wonderful work being done at the national labs. They are very interested in getting an internship or job here in the future. –Thomas Tran, Indiana Institute of Technology



JUMPintoSTEM provides unique access into the cutting edge work of the national labs. Incredibly open, warm, and welcoming to our students - this program makes it clear that you have a place at the DOE. The access to directors from programs and leading scientists and engineers shows just how much the DOE is dedicated to bringing young people who represent the fabric of this country to the forefront of cutting edge research on building technology. No matter where you come from you belong here! – Liane Hancock, University of Louisiana Lafayette



# JUMP into STEM Videos

- Check out latest videos of JUMP into STEM!

Join the JUMP into STEM Professor Team



2022-2023 JUMP into STEM Final Competition Highlights



2023-2024 JUMP into STEM Final Competition Highlights



<https://jumpintostem.org/professors/>

<https://www.jumpintostem.org/final-event/>

<https://www.jumpintostem.org/final-event/>



# JUMP into STEM Past Challenge Topics

# JUMP into STEM Challenge Topics



2019-2020



Pushing the Envelope with innovative Wall **Retrofit** Designs



Designing a Healthier and **Energy Efficient** Air Distribution System



Smart **Sensors and Controls** for Residential Buildings

2020-2021



**Building Energy Audit** for Residential/ Commercial Buildings



**Grid-Interactive Efficient Buildings**



**Advanced Building Construction** Methods

2021-2022



Equal Access to **Healthy Indoor Air**



**Resilience** for All in the Wake of Disaster



**Solving Market Adoption** for Emerging Efficiency Technologies

2022-2023



It's **Electric**



Curb Your **Carbon**



**Sustainable and Resilient**

For more info: <https://jumpintostem.org/challenge-archive/>

# Next Steps

- Interested in joining the Professor Team?
- Please email me by **May 10** to confirm your interest
  - Yeonjin Bae ([baey@ornl.gov](mailto:baey@ornl.gov))
  - Fall courses that could include a JUMP into STEM challenge
- Professor Team introductory Webinar for NEW professor team members
  - Recording and slide deck will be uploaded on the JUMP into STEM webpage
  - [www.jumpintostem.org/professors](http://www.jumpintostem.org/professors)

**jump into STEM**  
COLLEGIATE BUILDING SCIENCE COMPETITION

## Professors

- ✓ Offer a unique, in-class learning experience
- ✓ Help students earn a paid national lab internship
- ✓ Introduce the next generation to building science

[jumpintostem.org/professors](http://jumpintostem.org/professors)

U.S. DEPARTMENT OF ENERGY | Office of ENERGY EFFICIENCY & RENEWABLE ENERGY  
BUILDING TECHNOLOGIES OFFICE

OAK RIDGE National Laboratory

NREL Transforming ENERGY

Pacific Northwest NATIONAL LABORATORY



# Next Meeting

## Professor Team Webinar for **ALL** professors

- Will be scheduled for mid-May
- Potential challenge topics
- Program updates



# Thank you!



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# Questions?

## Q&A