



**Arkansas NSF EPSCoR
Spring 2018 Newsletter**



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YouTube Channel Update

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EAST ALL SYSTEMS GO

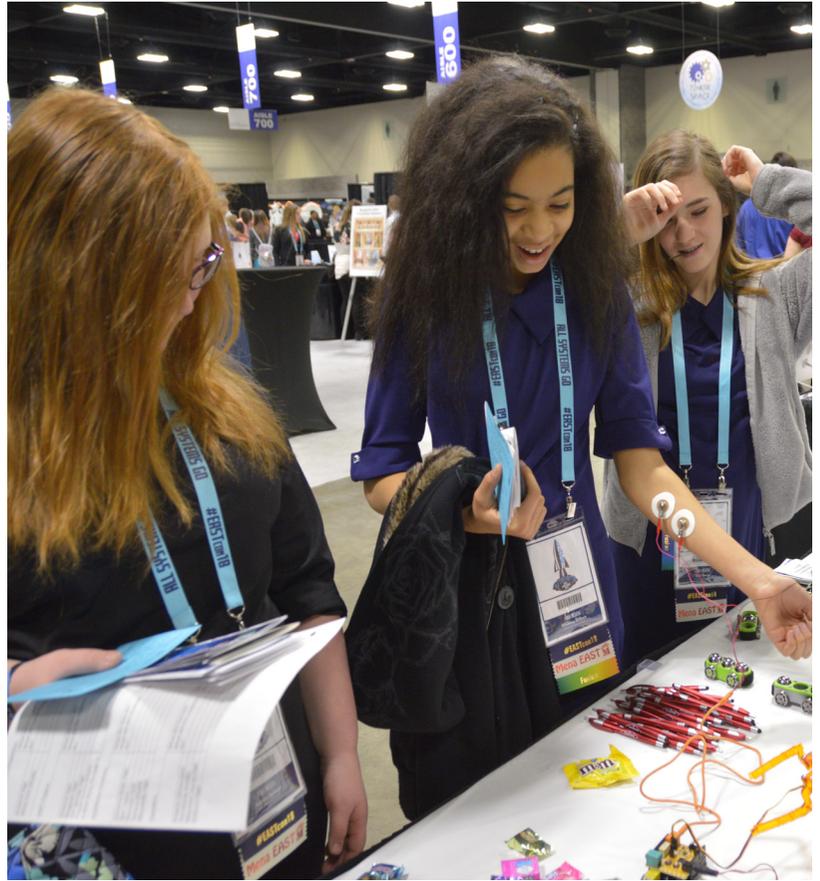
2018 EAST CONFERENCE



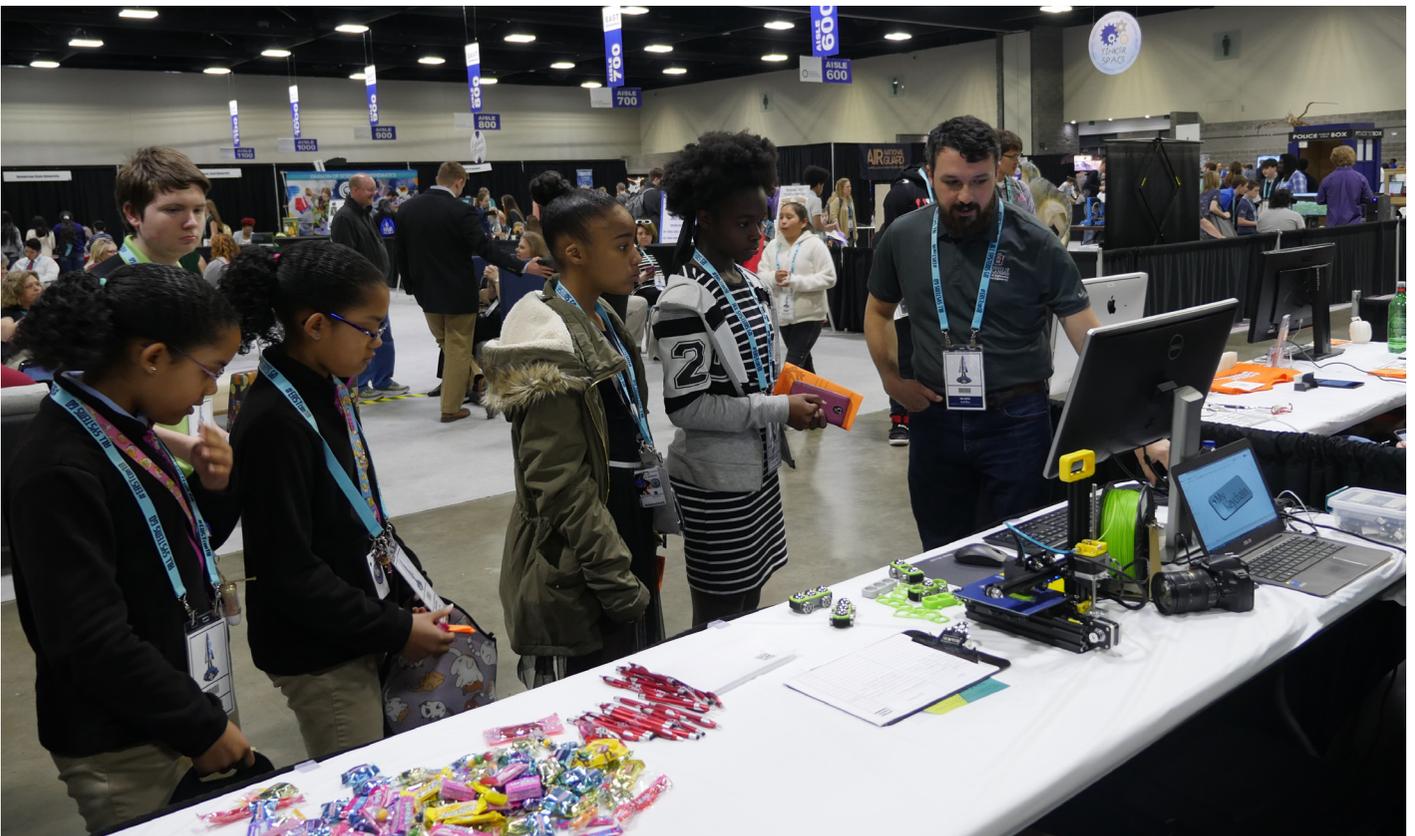
Above: CASE Research Scientist Josh Goss demonstrates a 3D Printed Newton's Car

Below: Education, Outreach, & Diversity Director Jennifer Shelton demonstrates a Backyard Brains Claw kit





Above: Students try their hand at operating a Backyard Brains Claw by contracting their arm muscle to pick up candy
Below: Students watch and learn how to use OnShape CAD software to design their own 3D models for printing





NEW VIDEOS

@arepscor



STUDENT SPOTLIGHT: GURSHAGAN KANDHOLA

University of Arkansas graduate student Gurshagan Kandhola talks about her research project and the importance of finding sustainable alternatives to plastic.

STUDENT SPOTLIGHT: MAHYAR AFSHAR MOHAJER

Mahyar Afshar Mohajer is a graduate student at the University of Arkansas. His research in tribology and nano systems could have major impacts around the world.



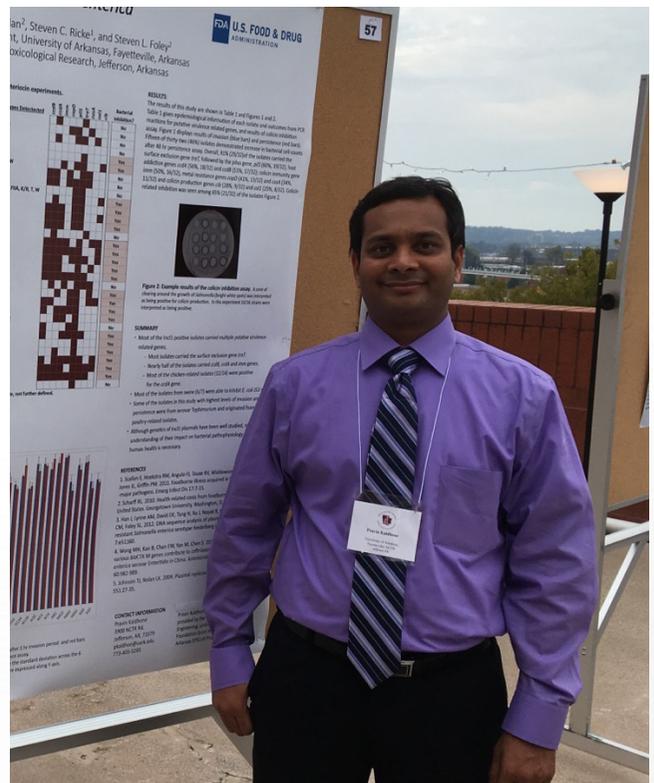
STUDENT SPOTLIGHT: JOHN MOORE

STUDENT SPOTLIGHT: LUCIA ACOSTA GAMBOA

Lucia Acosta Gamboa, graduate student at Arkansas State University, just completed an internship with LemnaTec, a global leader in plant imaging technology.



Faculty Interview: **PRAVIN KALDHONE** Research Associate UA Fayetteville NCTR



Pravin Kaldhone is a research associate employed by the University of Arkansas at Fayetteville. He is currently doing research at the National Center for Toxicological Center in Jefferson, AR.

When did you become interested in science?

“I was a science major in college for my undergrad in Mumbai. Even when I was in 7th grade, I was more interested in biology and chemistry and science related subjects. That influenced my decision to pursue science in my undergrad. When I graduated, I decided to work for a few years and I pursued a Master’s in Biological Sciences with a focus on molecular biology at UCA in Conway. I chose food science because it’s an applied science field, so I felt I could have a bigger impact on the community. I learned more about food processing and food engineering. After my master’s, I went to Wisconsin to work in research, then I moved to Chicago and worked as a teaching assistant at a community college. I wanted to expand my job and I decided to go back to graduate school, so I joined the food science program at UARK.

Describe your current research project and potential applications.

“Currently I am working on an a follow-up project of my PHD dissertation, we work on food pathogens that cause food poisoning. We study *Salmonella enterica*, looking at what genetic elements make these ‘bugs’ more harmful. A long term impact would be making food safer for the community. On the commercial side, most food processing companies could reduce financial losses incurred by product recalls. The markers we are developing could be used to identify the harmful ‘bugs’. If contamination is suspected, they could swab the sample of food or package and process it to detect potential pathogens.

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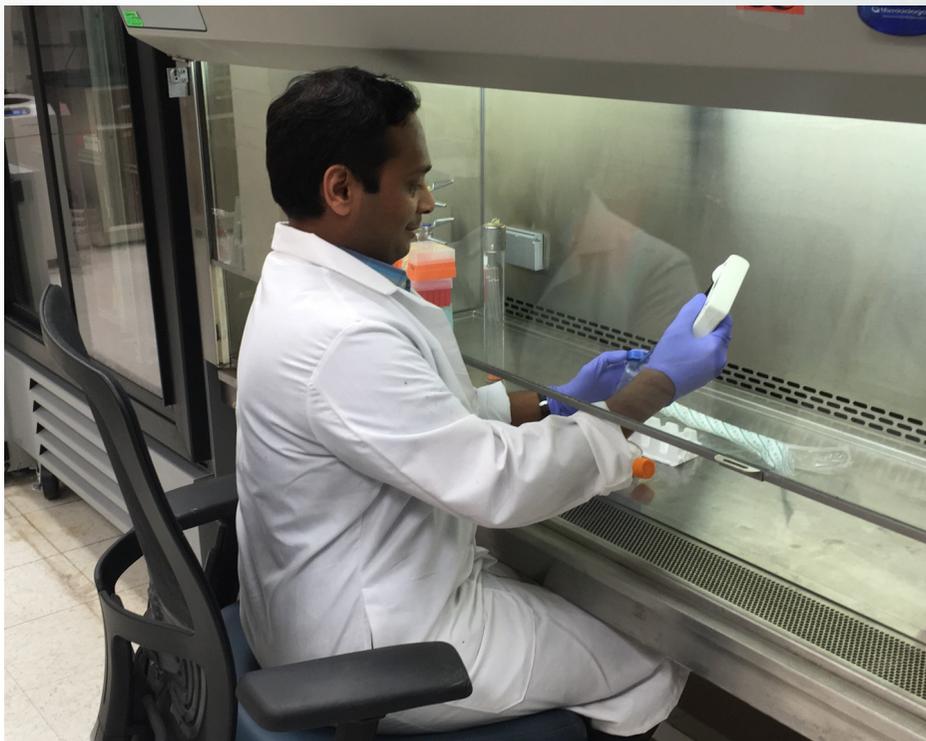
What influenced you to come back to Arkansas?

“I had options of different programs for my PhD. The reason I chose Arkansas is that the program at the UA is very diverse and well established, it is a very strong program compared to others nationally. I enjoyed living in Arkansas before, and Arkansas is the natural state. I really like hiking and outdoor activities. There are not many outdoor activities like these in Wisconsin and Chicago. Those were all incentives for me to come back in Arkansas, it’s so beautiful...the Buffalo River, kayaking, canoeing, I love it.”

What advice would you give others who might be considering research?

“I would say, if somebody is thinking about doing research, to ask yourself, what is your passion? Passion will differentiate research from just a job. Do what you enjoy. If you’re passionate about something like graphic design, molecular biology, or chemistry, if that topic fascinates you and you’re passionate about it, then go for it. In this competitive world, leading companies are looking for innovation. Companies have to innovate to survive. Research is a free-flowing river, incoming ideas and thoughts and outgoing products and innovations.”

**“I would strongly encourage students to go into research.
Without research, all industry would be stagnant.”**





Student Interview: **RABAB HAMZAH** PhD Student UA Little Rock

Rabab Hamzah is a graduate student at the University of Arkansas at Little Rock. Rabab received her bachelor's degree in biochemical technology in Baghdad, Iraq, and a master's degree in Applied Science from UA Little Rock. She began working toward her PhD in August of 2017. Learn more about her background and her current research in this recent interview.

How did you become a PhD student researcher?

“When I was in high school, I was interested in medical school, but I ended up pursuing biology and chemistry in my undergraduate studies. I was in the biochemical technology program and really enjoyed it, so I decided I would pursue higher education. I got good grades each year during my undergraduate studies, and I ended up being one of the top 10 students in my department. When I graduated, I got a scholarship to come to the United States and get my master's degree, which led me to the Center for Integrative Nanotechnology Sciences (CINS). The research I conducted there was biomedically focused, allowing me to pursue my love of helping people and of science; I knew I wanted to continue this work after I earned my master's degree. I was offered a position at CINS as a doctoral student. I considered an offer to go to school in Australia, but I like the atmosphere and quality of education here in Arkansas. At CINS, I received research funding for my doctoral studies through EPSCoR with the Center for Advanced Surface Engineering.”

Describe your current research project.

“Right now, I am working with exosomes, which are extracellular vesicles and naturally occurring nanoparticles. We are trying to develop a new method for tracking exosomes using nanotechnology. This method could be used to study stem cell differentiation or to track cancer cells and inflammation.”

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What is a potential application or impact of your research?

“I hope to develop a product or technology that improves lives, such as a more effective way to treat or diagnose cancer. Cancer is so harmful and affects many people. If we can find a way to help the patients, to fight this disease, that would be amazing.”

What are your future plans?

“I want to continue in research, either in academia or industry. I want to pursue interesting work in which I can develop something new. Though I am still in the beginning of my career, I could see myself eventually running a company based on technology that I develop.”

What would you say to students considering going into research?

“The most important thing in research is to do what you like, what you want, and what you find interesting. If we follow our passions, we will make a creative, positive impact on the world. Also, don't let anything stand in the way of you pursuing your education and your work. My husband is also a graduate student, and we have a young daughter. We are far away from family, and the first year after she was born was very hard. But a lot of people encouraged and supported us, and, while it's challenging, we are both continuing our education.”

**“Do what is right for you, not what others want you to do.
If we do what we are passionate about, we will be creative and do
something with a good impact in the world.”**





Student Interview:
CURRAN HENSON
Grad Student
UA Fayetteville

Curran Henson is a graduate student in biomedical engineering at the University of Arkansas at Fayetteville and is currently working in Dr. Jin-Woo Kim's lab.

What's your background, and when did you become interested in science?

"I grew up in Memphis. In high school I took AP Bio and I had a great teacher. I already planned to go to college but was thinking about a business management or accounting degree. My mom is a physician, so I steered away from that because I see how hard she works and her long hours, and I wanted a different path. I got to college and realized business was not a good fit for me. I like solving problems and doing hands-on work, so I decided to go into mechanical engineering. I knew I wanted to work on living systems, and mechanical engineering just didn't seem to be what I wanted. I knew biomedical engineering would enable me to work on devices and treatments to advance the medical field. It seemed so much more interesting, and I was right, I love it!"

What are your plans after grad school?

"I am attending medical school in the fall in order to become a doctor. My Master's in Biomedical Engineering was related to cardiovascular medicine, and is absolutely fascinating to me. I could definitely foresee a future career as a Cardiologist or Cardiovascular Surgeon.

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Describe your current research project.

I work with the Center for Advanced Surface Engineering in Dr. Kim's lab, and I am also working in the Cardiovascular Biomechanics lab with Drs. Hanna and Jensen. The research I'm doing was initially proposed by the Cardiovascular Biomechanics lab. We are working on a nanotechnology approach to deliver stem cells to hearts for heart attack patients. Heart disease is the leading cause of death in the U.S. with heart attacks being a major part of that. The current research project we are working on is to engineer a novel approach to deliver stem cells to the heart for heart attack patients. When someone has a heart attack, some heart tissue dies. We are using nanoparticles to provide a more specific targeting mechanism to increase the time and amount of cells delivered to the area of tissue damage. The dead tissue releases signals that are part of the immune response. We hope to engineer smart materials capable of recognizing and reacting to these signals, enabling better cell delivery to the heart."

What advice would you give other students considering research?

"Be patient. If you're in it, just stick through it and it will be fine in the end. I would say to other undergrads, if you haven't tried research, make sure it's something you really love. There's a lot of options. Don't jump in because it's a resume builder, do it because it's something you want. Passion drives everything, so follow your passion. Don't overload yourself. If you're taking too many classes you will struggle completing your research. Time management is very important. You may be spending lots of time in the lab, and it could be double that if an experiment goes wrong.

"I would say to K12 students, the way that society is going value will be placed on STEM degrees. Technology changes every day. Having a good technical background will help you get a good job. Science is exciting! You can be on the forefront of discoveries, knowing you are the first to discover something is a great feeling. Never give up a dream and don't let others make you feel that you can't pursue a career in science."

"You have a chance to change the world. Every major world event is a result of science."

Registration & Info: <https://tinyurl.com/EPSCOR18>

REGISTER NOW FOR THE
Arkansas NSF EPSCoR

**Annual State Conference
& Student Poster Competition**

June 11-12, 2018

CONNECT | COMMUNICATE | COLLABORATE

Agenda TBA

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Chancellor
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Downtown Square
Fayetteville, AR**

QUESTIONS? Contact Cathy Ma CMa@ArkansasEDC.com

****ROOM BLOCK CLOSES ON MAY 12****

HOTEL ROOM BLOCK: Guests are responsible for booking their own rooms under the "EDC Annual Meeting" Room Block by calling 479-442-5555 or using the special link above this flyer.



STUDENTS: Poster Abstracts are due to Kathy Kirk by May 18, 2018



The Center For Advanced
Surface Engineering

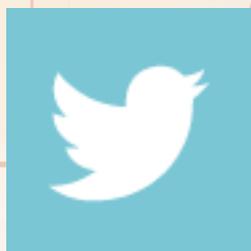


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