Virginia Tech Science Festival 2021

September 27- November 19



The Virginia Tech Science Festival...

- Is safe, fun, educational
- Is local, live, and public
- Promotes two-way conversations between learners and scientists
- Gives scientists practice talking to kids
- Gives kids practice talking to scientists
- Builds networks and partnerships
- Promotes Virginia Tech
- Promotes college
- Promotes STEM careers

The Virginia Tech Science Festival has been celebrating science on campus since 2014. Last year marked the Covid edition of the Virginia Tech Science Festival. Scientists and learners maintained safe, two-way conversations by teleconferenced meetups before the official festival date. Videos of teleconferences were made public on the festival day. This year's festival will be a series of teleconferenced meetups, livestreamed events, and inperson again from the Moss Arts Center. Our friends at the Center for Communicating Science will hold Nutshell Games in the spring this year in conjunction with the Center's the five-anniversary and Communicating Science Week.

2021 edition will host...

- Small group campus field trips
- Teleconferenced meetups between scientist and learners
- Six stellar presentations will be presented in the Moss Arts Center Cube and livestreamed via YouTube in 360

Thanks to our 2021 Sponsors and Partners!

Platinum

• Virginia Tech Office of The Executive Vice President and Provost

Gold

- The Institute for Creativity, Arts, and Technology at Virginia Tech
- Moss Arts Center
- Center for Educational Networks and Impacts
- Center for Communicating Science
- College Access Collaborative
- 4-H

Silver

- Science Museum of Western Virginia
- Virginia Tech College of Science
- Virginia Tech Department of Mechanical Engineering
- Technology-enhanced Learning and Online Strategies (TLOS)

Bronze

• Virginia Tech Center for Autism Research

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Look, Think, and Play: Mobile Eye Tracking and Math Games online meetup

Caroline Hornburg, Human Development and Family Science Katherine D'Ercole, Human Development and Family Science Maria Hirt, Human Development and Family Science Jordan Teel,, Human Development and Family Science Breanne De Vera, Human Development and Family Science Naheda Nassan, Biochemistry, Human Development and Family Science Brianna Whitmore, Human Development and Family Science Marie Costanzo, Human Development and Family Science Caroline Begley, Human Development and Family Science Hailey Foster, Human Development and Family Science Julia Ricci, Human Development and Family Science Jisun Kim, Human Development and Family Science Julia Nathanson, Human Development and Family Science Elise Jensen, Human Development and Family Science Yullie Kwak, Human Development and Family Science, Neuroscience Shuqi Yu, Human Development and Family Science Michelle Tran, Human Development and Family Science

Have you ever wondered how your eyes move when you learn? Come join us to learn about how we can track your eye movements. We will talk about how you pay attention to and learn from fun, educational math games! We have some videos to help you experience eye-tracking research in action. You will be able to see where people look and what they choose during game play. We will answer your questions and talk about how we use eye-tracking technology to answer questions about attention and learning.



7

Create with Artificial Intelligence

Michael Hsiao, Electrical and Computer

Create your very own video game in just a few minutes by describing the logic of the game. The system will convert your sentences into game code. You get to be creative and at the same time, learn about game design, logic and critical thinking. The Artificial intelligence inside the platform will guide you through the process with suggestions and feedback. Learn to think like a computer scientist and no prior programming experience necessary.

YOU CAN BE A GAMECHANGINEER

Spark Your Imagination and Creativity



Science in Engineering!

Ha Van Nguyen, Industrial and Systems Engineering Ashley Girod, Industrial and Systems Engineering

Attendees of the event will be able to understand how engineering and science can work together to create amazing things.



Engineering & Art: A Juggler's Perspective

Greg Kennedy, Innovative Juggler

The learners will be able to see some real-world applications to physics concepts and witness unique, creative ways to apply scientific principles. Learners will have an open dialogue with the creator.



Human Powered Submarine Design Team

Hannaneh Shadabi, Aerospace and Ocean Engineering James Duval, Aerospace and Ocean Engineering

We show you how we design, build and race a fully flooded human-powered submarine.



Roller Coaster and Theme Park Design

John Knueve, Mechanical Engineering

At the Roller Coaster and Theme Park Design experience, learners will discover what makes roller coasters work, both in terms of physics and mechanics. They will find out how a ride exerts forces on the body, how a coaster train can climb a hill or launch while staying on the track, and how a roller coaster can safely cycle multiple trains and thousands of passengers. Real examples of rides at Busch Gardens, Kings Dominion, and Disney World will be showcased. Then, a fun interactive Kahoot will test the learners' understanding of how these scream machines function!



Learn to Fly at the VT Drone Park

Sarah Macey, Institute for Critical Technology and Applied Science

Visit the VT Drone Park where our staff will walk you through the steps of how to safely fly a drone, and you'll have the opportunity to fly and take photos using the drone! You can also ask questions and learn from our experts about this exciting technology!



Brain Drain - The Role of Fluid Movement in Brain Tumors

Cora Esparza, Biomedical Engineering and Mechanics Caleb Stine, Biomedical Engineering and Mechanics Gabriela Mendes, Biomedical Engineering and Mechanics Jennifer Hammel, Biomedical Engineering and Mechanics Zehra Demir, Biomedical Engineering and Mechanics

If you're interested in brain research, make sure to stop by our booth! We are the Munson lab and we study brain cancer. At our booth, we will have paper microfluidics, hand-painted neurons, and playdoh to model all the different types of cells found in brain cancer.



Ware Lab tours with Astrobotics at VT

Madeline Pedersen, Mechanical Engineering Henry Forsyth, Electrical and Computer Engineering

The learners will come through the Ware Lab on a tour guided by one of the undergraduate students who work in the Ware Lab on a design project. They will see the different bays as well as the projects inside of them. This will give the learners an understanding of the spaces that we work in as well as dome of the relevant projects being worked on.



Immunity, Autoimmunity, and Lupus

Steven Zhuang Wang, Virginia Tech

This event is a brief introduction to the immune system and autoimmune diseases, which will help everyone get a basic understanding about the systemic lupus erythematosus and pathogenesis of lupus. Videos, slides, and animation will be included.



Limited Water, Unlimited Ways to Save

Laljeet Sangha, Department of Biological Systems Engineering

Imagine watering plants every day in our gardens when they don't need it. Imagine your garden as big as one football field and think about the amount of water wasted. Imagine if there are million such big gardens around and the water being wasted. Can we save this water using science? Join our talk and learn how we are working with farmers and using science to save our precious water.

Are Freshwater Fish in Danger from a Changing Climate?

Sam Silknetter, Virginia Tech Biology

Did you know that our climate is changing? Have you ever wondered how those climate changes might affect different animals? Do you think freshwater fish are cool?!?

I'm a student at Virginia Tech, and I am excited to talk to students about the answers to these questions that I've found through my research. I'm also happy to answer any related questions that you might have!





Wind Turbine Building Contest

Hayley Capilitan, Mechanical Engineering Jackson Andrew, Engineering Emma Babiec, Engineering Jaedyn Williams, Engineering Charlotte Uehling, Engineering Puneeth Puneeth, Electrical and Computer Engineering, Puneeth Vangumalla, Electrical and Computer Engineering

Students will be given the opportunity to learn about Wind Energy with hands on experience! Using craft materials and household items like paper towel rolls, plates, straws and tape, students will get to build their own windmills and test them to see how well they spin! Led by the Wind Turbine Team at Virginia Tech, the students will also gain insight into how real wind turbines work and why they're so good for the environment!





Wave Energy and Ocean Platform Challenge!

Hayley Capilitan, Marine Energy Collegiate Competition: Offshore Wind Platform Team

At this exhibit students can get hands on experience to learn about ocean energy and offshore wind floating platforms! Students can test out a DIY tidal turbine and can build a floating platform that can withstand the "weight of an offshore turbine." Students will use aluminum foil to design their own floating platform and see how many coins they can stack unstill it sinks!





How do Scientists make Discoveries about Viruses in the Laboratory?

Rafaela Flor, Biomedical Sciences & Pathobiology

Ever since the world was struck by the Covid pandemic in March 2020, it seems as all we talk about is SARS-CoV-2 and how we need to find an effective solution for it, such as a vaccine. But before all that advanced work, have you ever wondered what is the work that scientists actually do in the laboratory that allows them to make these discoveries? Over a brief conversation learners will get to know a little more about some laboratory techniques that are used for discoveries related to viruses and how planning and executing experiments work. I will also be briefly presenting about the work that I am performing at Virginia Tech with the Venezuelan Equine Encephalitis Virus, also known as VEEV. This is a virus transmitted through mosquitoes that affects humans and horses.



Building Royale

Isabella Villarente, Industrial and Systems Engineering

We will have two main events: spaghetti tower building and popsicle stick bridge building. There will be a competition between participants to build the highest tower or the most sturdy bridge (can hold the most weight).



Herpes Simplex Virus: The Tale of an Evil Virion Invading the Body Greyson Moore, Population Health Sciences

Learn about my graduate research working with herpes simplex virus and how it invades and interacts with the nervous system. I work within the peripheral and autonomic nervous system pathways studying how sex hormones induce the virus to trigger recurrent disease.



Let's Fly with Rocketry at Virginia Tech!

Carmen White, Rocketry at Virginia Tech

Come learn about Rocketry at Virginia Tech! We are a student led design team that competes annually at Spaceport America Cup in New Mexico. You'll be able to see what we do, how we do it, as well as interact with old rocket elements. We also will be providing coloring activities for younger rocketeers.



What's the Buzz about Mosquitoes?

Joanna Reinhold, Biochemistry Nicole Wynne, Biochemistry

We've all experienced the most dreaded sound of summer: the buzzing of a mosquito in your ear. They may be annoying, but there's more to mosquitoes than you might think! At our booth, you can learn about the mosquito life cycle, why they are both good and bad, how they find us, why you might get bitten more than your friends, and so much more!





DNA your way: Strawberry DNA extraction

Joanna Reinhold, Biochemistry Caitlin Cridland, Biochemistry Kayla Kester, Biochemistry Madison Payne, Biochemistry Paul Kavanaugh, Biochemistry Spenser Stone, Biochemistry

DNA is an important part of our biology: it's the blueprint in all living things that tells cells what to do. It's what makes us different from each other, our pets, and the food we eat. But have you ever SEEN DNA? At the BcGSA booth, we will show you how to take DNA out of a strawberry so you can actually see it, just using ingredients you can find in your own home!



Walking and Running with Dinosaurs!

Mariah Green, Geosciences Michael Zigah, Geosciences

Visitors will examine a simulated dinosaur trackbed and determine the life stage (juvenile or adult) of dinosaurs based on the footprints. Additionally, visitors will learn about two measurements: stride length (measurement from the back of the heel, or from the tip of the third toe from track to track) and footprint length (the length of an individual print, from heel to the tip of the third toe). From these two measurements, visitors will then be able to identify if the track represents a walking dinosaur or a running dinosaur.



Hokienauts Space Suit Heads-Up Display

Mithil Adsul, Electrical and Computer Engineering Kien Tran, Electrical and Computer Engineering Burak Topo, Electrical and Computer Engineering

In this exhibit, learners will do an augmented reality (AR) headset to simulate a lunar spacewalk. Learners will utilize their AR headset to visualize space suit vitals, navigate the expo space, select the appropriate tools for their mission, and perform audio note taking.

Our goal is to teach learners about AR and how Virginia Tech students are using it to help NASA establish a sustainable lunar presence for the Artemis mission.



Rock around the Clock

Benjamin Unruh, Biological Sciences Shihoko Kojima, Biological Sciences Evan Littleton, Biological Sciences Lin Miao, Biological Sciences



Do you know why we wake up, eat, play, and sleep on a schedule? There is more to it than the sun rising and the rooster crow – your own body has an internal clock! Our clock controls more than just sleep; It affects how we digest food, how we think, how we respond to stress, and when we want to go out and play!

You can make a "clock" here at our Rock Around the Clock booth to help you set your daily pattern to stay healthy and learn more about why it is important.

Why do I have to Wear a Seatbelt Mom/Dad?

Amanda McPeak, Carilion Clinic

The learner will be able to visualize the effects of not wearing a seatbelt while in a vehicle. This activity will be fun, visually interactive, and learners will see how wearing a seatbelt can prevent injury.



LACE

Sam Blanchard, Studio Art Greg Bolet, Computer Science Kirk Cameron, Computer Science Eles Jones, Computer Science

Blockchains. Though we hear them mentioned frequently in the media, few people outside of the computing field grasp the intricate and varied methods by which these systems operate. The hype and volatility surrounding their use in cryptocurrencies have led to a public perception that blockchains and their proliferation are potentially dangerous technologies. With LACE we can demystify this technology by translating data movement through a living sculpture that physically represents blockchain computation as it propagates throughout a decentralized and distributed network.



The Amazing Brain: How We See the World

Jennifer Rainville, Neuroscience

Have you ever wondered how your brain makes sense of all the things your eyes see? We will use optical illusions and brain teasers show you how your amazing brain can learn new things but still be tricked as you perceive and adapt to the world around you!



What is a Gel?

Glenn Spiering, Virginia Tech

The learners will see me mix a glue solution and a borax solution together. When mixed, the solution turns into a gel state, and will not flow when the container is tilted.



Catch 20-Flu - A Polymer Approach to Antiviral Treatment

Rachel Bianculli, Chemistry

Polymers can be used to treat viral infections like the flu. Learn more about how this works.

Inside Out: How We Develop, Control, and Express Our Emotions Every Day

Jennifer Phillips, Psychology

Learn about your own emotional development and how you regulate emotions. You will be guided through demonstrations of emotion regulation strategies and have an understanding of how you use these strategies each day to achieve your personal and social goals while also learning about your biological and social underpinnings of your emotion and emotion regulation development.

> Inside Out: How We Develop, Control, and Express Our Emotions Every Day

Tricking the Mind into Healing

Jessie Mann, Neuromotor Research Clinic at VTC Fralin Biomedical Research Institute

I will explain what neurorehabilitation is and some of the techniques used.

The Battle against Microbes

Ehab Salama, Virginia Tech

The learner will know more about the story of the war between microbes and humans and the challenges of developing new antimicrobial agents.

Fungi: the Hidden Danger Yehia Abdallah Elgammal, Virginia Tech

I will explain to the learners the nature of my work with fungi and how we try to develop new effective and safe treatments.

NanoEarth: What is Nano and What Does It Have to Do with the Earth and the Environment?

Tonya Pruitt, NanoEarth Sheri Singerling, NanoEarth

Nanotechnology is everywhere: in your smartphone, in your food, and in nature. But what can nanotechnology do for the Earth? And what can it mean for the environment? We will explore what gives nanotechnology their "superpowers" and how they behave in the environment, as well as how we can leverage them to tackle challenges in the environment.

The Amazing Brain: A Hands-On Minds-On Neuroscience Experience Ben Kilgman, Virginia Tech Department of Geoscience

Have you ever wondered how your brain makes sense of all the things your eyes see? We will test your throwing skills to show you how your amazing brain can learn new things quickly, but it can still be tricked!

The ancient and extraordinary Triassic animals of Virginia

Ben Kligman, Virginia Tech Department of Geoscience

Scientists have discovered many interesting and unusual fossil animals from Triassicaged rocks in Virginia. In this lesson learners will observe fossils representing the animal life of Virginia in the Triassic Period, about 225 million years ago. Learners will be asked to compare and contrast the Triassic animals of Virginia to those that live here today. Next, learners will be asked to describe how the animal life of Virginia has changed since the Triassic. Finally, learners will be asked questions about why they think the animal life of Virginia has changed since the Triassic.

Your House is (probably) Safe from Volcanoes

Mark Caddick, Geosciences Gabrielle Troia, Geosciences

What are the chances that a volcanic eruption will destroy your Virginia home? Almost none. You probably already know this, but do you know why? And do you know why the same scientific principles also explain where water, energy, and food resources are abundant and where they are scarce? Or why we only find the remains of big dinosaurs in a few select localities? Learn about this and how you can solve important problems of the future by understanding that the fundamental laws of science come together to control the how, what and why of EVERYTHING on Earth.

The scoop on Honeybee poop!

Emma Bueren, Biological Sciences

Every animal, from humans to honey bees, is home to countless microbes. Take a tour of a real dissected honey bee gut and see what honey bee poop looks like! On your tour, you'll meet the bacteria that help bees make honey, digest pollen, and keep bees healthy. See some bee poop and get the scoop of what's going on inside honey bee guts!

Steel Bridge Design

Justice Forster, Civil and Environmental Engineering Gavin Harwell, Civil and Environmental Engineering Justice Forster, Civil and Environmental Engineering

Within our exhibit, we will walk through the design considerations necessary to develop and construct a scale-size steel bridge! Our physical exhibit will consist of the build of half of our 2021 competition bridge. During this build, we will discuss the basic statics behind the elements needed to carry a load on the bridge. We will also highlight the important considerations of the engineering design process which were used in the design and construction of our bridge!

Aquaponics Demonstration

Benjamin Bowman, American Water Resources Association Student Chapter at Virginia Tech Maura Harbaugh, American Water Resources Association Student Chapter at Virginia Tech

Learners will see a model of an aquaponics system (with live animals OR another representation without animals or water). They will also learn about nutrient and water

cycling, how the system functions, and other information.

Polymers: The Science all Around You

Connor Gallagher, Chemistry Hanan Almuzaini, Chemistry Zhen Shi, Chemistry Rachel Bianculli, Chemistry

Polymers are super big molecules that are used all around us. Polymers make up many materials like plastics, foams, and rubbers. You will explore the properties of common materials made of polymers and you will perform your own reaction with polymers to make slime!

How Did Extinct Animals Grow?

Erika Goldsmith, Virginia Tech Paleobiology and Geobiology Research Group

What is a baby dinosaur? How can we tell with just a fossil? What about baby horseshoe crab ancestors called trilobites? In this experience, you will hear from Erika Goldsmith, a PhD student at Virginia Tech studying paleontology, about how extinct animals grew from babies to adults and how scientists can tell! We will discuss why studying the growth of extinct organisms is important and then do a quick exercise to demonstrate how differences in growth can influence how a critter looks! Lastly, you will be shown real data Erika collected to determine how old a dinosaur was when it died.

Monitoring Volcanoes using High-precision GPS

D. Sarah Stamps, Geosciences Asenath Kwagalakwe, Geosciences D.Sarah Stamps, Geoscience Karen Williams, Geosciences Rufus Hinton, Geosciences

Learners will experience a demonstration and volcanic inflation and deflation, see real-time data streams, and interact with members of the Geodesy and Tectonophysics Laboratory.

The Buzz about Pumpkins

Courtney Walls, Entomology

This station will allow for individuals to learn who is pollinating pumpkins, why it is important to have these pollinators, what they look like, and ways to encourage the bees to "bee" present in your area.

Making Video Games with Gamechangineer!

Rajan Mann, Electrical and Computer Engineering

Learn how to make your own video game by just writing some simple sentences! Join this online experience with your own computer and internet access to learn the basics of the GameChangineer site. Students will learn how to write sentences to design a game and learn the logic behind basic programming at the same time. We will walk through how to make a simple game and how it can be made better. By the end, students will know how to make their very own video games!

YOU CAN BE A GAMECHANGINEER

Spark Your Imagination and Creativity

Climate Change: Your voice is important (Robot Musical Theater)

Koeun Choi, Human Development and Family Science , Breanne De Vera, Human Development and Family Science Myounghoon Jeon, Industrial and Systems Engineering Tanner Upthegrove, Institute for Creativity, Arts, and Technology Yullie Kwak, Human Development and Family Science , Neuroscience , Devanshu Vajir, Industrial and Systems Engineering Michelle Tran, Clinical Neuroscience Ariana Wyatt, School of Performing Arts

This robot theater project starts with a desire to broaden human understanding of climate change by engaging people's imagination and emotions about the Earth. We are telling stories from the perspective of Wind, Fire, Earth, and Water by using different robots. Children can listen to the sounds and see the image when they participate in the performance with robots. We want to make them realize and feel the change when they act on something voluntarily and actively; they can prevent climate change. Robot Theater Project explains the deep complexities of our species with humans, animals, plants, and the bio-geo-physical systems, including the climate that controls the Earth. This project is meant to encourage the audience to consider the following questions:

Can you give up some of your convenience? Can you change yourself to save the other species? Can you do something to mitigate the Earth's anger?

Autism Awareness Exploration

Jen Scott, Psychology Danilo Salli, Psychology Logan Lagenour, Psychology Jennifer Scott, Psychology

Come explore autism awareness with us! The VT Autism Clinic & Center for Autism Research undergraduate research assistants will offer a quick, interactive game that allows the participants to explore how social skills, communication and friendship may mean different things for all of us. We will also offer tips on how to be an ally.

Unlocking Secrets of Huge Molecules for Alternative Energy

Louis (Lou) Madsen, Chemistry Veera Uppala, Chemistry Nicholas Pietra, Chemistry

Do you wonder how your phone gets power? When you make mixtures of ingredients in the kitchen, how do the molecules in your food interact and change textures and tastes? The behaviors of HUGE MOLECULES are behind many of the materials, processes and devices all around us. This exhibit will introduce learners to how huge molecules behave, and how we look at them as scientists. Learners will get to touch homemade batteries and their components, view how molecules move on a screen, and explore special mixtures of common foods with weird properties.

A Close Look at a Brain; Brain Adaptation in Disorientation; Problem-Solve with Physics

Rania Smeltz, Biological Sciences Sadoni James, Biological Sciences Jhanvi Parikh, Neuroscience Gabrielle Troia, Geoscience Marali Harikar, Biological Sciences

Table 1 - Sheep brain: the learners will get a close look at a sheep brain, get to touch it (with gloves on), and take a look at the structures and layers.

Table 2: activities with prism goggles to show how fast the brain adapts to changing conditions.

Table 3 - Physics demo: the learners will get to observe and/or solve a problem.

What's So Cool About Wildlife?

Maggie Smith, Fish and Wildlife Conservation Joshua Ward, Fish and Wildlife Conservation

Come and learn about all things furry, scaly, and slimly in our area. We will have animal skins, bones, pictures, and our fabulous snake.

Using VR/AR to explore design ideas before making them

Sara Saghafi Moghaddam, Architecture

I will describe using VR/AR in design can shrink the gap between abstract ideas and implementing them. Potentially, the participants can make something and position it on a site and then explore it with AR glasses and modify their design.

Lava Lamps and Magnetic Slime

Kristy Collins, Fralin Life Sciences Institute Temperance Rowell, ORION Living-Learning Community Sarah Green, Neuroscience Hindola Gangopadhyay, Economics Noah Keller, Geosciences Connor McGlothlin, Human Nutrition, Foods, and Exercise Jimmy O'Hora, Physics Annie Butcher, Human Nutrition, Foods, and Exercise Liz Fellinger, Geography Erik Wrightson, College of Science Jinjer Walters, Public Health Harrison Hartjes, Clinical Neuroscience Rebecca Morales, Explore Science Emily Partee, Animal and Poultry Sciences Lindsay Johnson, Biological Sciences Olivia Cox, Psychology May Kretzer, Neuroscience Lily Veccia, University Studies Julia Gregory, Microbiology

We will be hosting 2 hands-on booths where kids will make magnetic slime and lava lamps.

Welcome to the Student Launch Initiative at Virginia Tech!!

Tamim Wadud, Student Launch Initiative at Virginia Tech

Learners will be able to see a fully built High powered rocket along with a planetary lander payload. Learners will learn about how we built both the rocket and payload, and how the competition at NASA works.

How to Design, Build, Fly an Airplane

Aidan Sprague, Aerospace and Ocean Engineering Lemuel Hook, Aerospace and Ocean Engineering

Get a behind the scenes look at how the Virginia Tech Design, Build, Fly team creates each of their aircrafts, and make a paper one of your own!

The Laws of Physics in a Newton's Cradle

Daniel Hook, Mechanical Engineering Carl Hayden, General Engineering Dario Tarifa, Mining and Minerals Engineering

This fun presentation will use a couple of Newton's cradles to demonstrate the laws of physics. But why don't these laws perfectly predict the motion of the cradle? We will explain this as well. So join us to watch a couple of Newton's cradles rock back and forth while we learn about the laws of physics!

The Wondrous World of Water

Melissa Burt, Biological Sciences Alaina Weinheimer, Biological Sciences Samuel Lane, Biological Sciences Gaelle Blanvillain, Biological Sciences Chloe Moore, Biological Sciences

The students of the Interfaces of Global Change (IGC) graduate program come from many departments across the Virginia Tech campus and are focused on the myriad effects of human driven impacts on the world. At our expo table students will learn about watersheds and how humans impact the way that water travels through ecosystems. Students will do an activity in which they use a piece of crumpled paper with a drawing of a river/watershed and a spray bottle with water to demonstrate where water from rain travels and what it moves through the system. Students will discuss their results with the IGC graduate student volunteers. Volunteers will also describe potential solutions to the impacts we have on how water moves through an ecosystem. In addition to the materials for the activity, we will also have a display showing the different ways that humans impact watersheds for science festival goers.

Microbiology in your Daily Life

Carolina Alejandra Martinez Gutierrez, Biological Sciences Lola McMullan, Biological Sciences

We will have an exhibit where learners can see individual bacterial cells using microscopes and see colonies of bacteria growing on Petri dishes. We will demonstrate visually the importance of handwashing to protect against pathogens, but also remind everyone that most microbes are actually beneficial. Microbes are an important part of our daily lives both as foes and friends.

Global Health Innovations and Prosthesis Outreach

Justin Laiti, Engineering World Health

Learners will get to see, and potentially build themselves, medical sensors including heart rate and respiration sensors. They will also see different prosthetics built by students at VT for members of the Blacksburg community. The basics of both the sensors and prosthetics will be explained.

Art Bot

Yairis Soto, Animal and Poultry Sciences Yariane Soto, Business Kellie Williams, Biochemistry Faith Turner, Biological Sciences Lane Robertson, Agricultural and Applied Economics Erin Cassidy, Fralin Life Sciences Institute Skylar Chace, Neuroscience Bennett Kawas, Business Information Technology Akira Fu, Business

Students will create an Art Bot using markers, cup, motor and battery pack. They can change how the art is expressed based on how they tape the markers on the cup, and they can change the movement.

A Close Look at a Brain

Mayd Alsalman, Biological Sciences Marali Harikar, Biological Sciences

Students will get to look at a dissected sheep brain and get to touch it (with gloves) and look at the different layers and structures.

Brain Adaptation in Disorientation

Carmela Doroteo, Biological Sciences

Students will get to do an activity, such as writing down their name, with prism goggles on. This is a fun way to show them science.

Entomophagy: The Future of Food?

Daniel Frank, Entomology Rachel Parson, Entomology Joanna Reinhold, Biochemistry Karthikeyan Chandrasegaran, Biochemistry

Learn about entomophagy, the practice of eating insects. High in protein, highly sustainable, and a cheaper alternative to livestock production, insects can be used to feed future populations and protect the environment. Edible insect samples will be provided for you to try. (Note: eating insects can cause allergic reactions in people who have a shellfish allergy)

Henry's Physics Demonstrations

Brian Thibodeau, Physics Hana Mir, Physics Lander Comhaire, Biomedical Sciences & Pathobiology

Come and see physics demos by Henry's Physics Outreach team. They are there to inspire questions and get you excited about how our world works.

Inside the School of Architecture + Design

Martha Sullivan, Industrial Design

Visitors will see the studio space students use for their main design laboratory course work, as well as artifacts from our Library of Materials Culture, and our workshops such as the 3D print lab, the wood and metal shops, the robotics lab, and the Library of Art and Architecture.

Making Music with Light

Thomas Weeks, Director of Technology Futures and Community Advocacy Michael Irwin, Information Technology Marvin Addison, Middleware Services Warren Lucero, Mining and Minerals Engineering

Come learn how to use technology to play a song using a flashlight! This hands-on activity gives lets you play with a programmable light sensor that turns light into numbers, which you than turn into sound, tones and music! We even give you a parts list so you can go home and build your own musical light-theremin!

