One critical finding from Parry’s lab was spearheaded by student Louisa Tichy, whose mouse trials have shown that low-intensity exercise can be effective in slowing tumor growth and protecting musculature.

“High-intensity exercise can be daunting to someone suffering from an illness. We wanted to see if getting a patient to walk 45 minutes a day, just to get them moving and their metabolism up, could help in their prognosis, as well as quality of life,” Tichy says.

Tichy, who came to UNCG from Germany as an undergraduate on a golf scholarship in 2016, was drawn to Parry’s lab in part after watching her grandmother waste away due to cancer-related cachexia. She originally had plans to attend medical school, but once she discovered Parry’s lab, everything changed.

As a kinesiology major, Tichy conducted undergraduate research in UNCG’s applied neuromechanics research lab during her junior year. But the next year, she discovered Parry’s exercise oncology lab and realized that she was more drawn to learning about cell functions in the body and metabolism up, could help them move and their metabolism up, could help in their prognosis, as well as quality of life,” Tichy says.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The presence of these scientific instruments makes UNCG a more attractive destination when Obare and other leaders are recruiting new faculty and graduate students. "The fact that we have those facilities at the Joint School opens doors for us to attract really high-quality faculty because they know that what they need is going to be in the building," Obare says. "And faculty who are on the main campus at UNCG know they can just hop in the car and go three miles down the road – it means that they’re going to be able to easily get data.”

Students from UNCG and NC A&T – especially graduate students who may one day themselves be leading research labs at universities – get hands-on access to the equipment, facilitating their research and giving them the opportunity to develop expertise with the devices, Obare says.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.

“Observation has always been fundamental to research – in the field or in a tightly controlled lab. The Joint School of Nanosense and Nanoeconomics, or JSNN, millions of dollars’ worth of major scientific instruments are allowing faculty and students from across two universities to drive their scholarly projects forward with powerful, precise observation.

“Just for them to have access to these facilities, it enables us to move the research quicker,” says JSNN Dean Sherine Obare. “Easily a fourth of the usage comes from industry partners.”

Among the major scientific instrumentation that now lives at JSNN are an MRI, a micro-CT scanner, and electron microscopes – including one that allows researchers to see objects as small as a single atom.
changes in biological communities. “It really has revolutionized paleontology,” Dr. Anemone says. A CT scanner works by taking thousands of x-rays of a fossil or bone sample at different angles. A computer knits together those images to create a precise, three-dimensional rendering. That enables scientists like Anemone to precisely visualize, measure, and analyze skeletal structures. Sometimes, Anemone says, he doesn’t even have to separate the fossil from the rock it’s preserved within. But driving to Duke ate up precious time and research funds. Now, thanks to a $642,892 major instrumentation grant from the National Science Foundation, Anemone only has to drive from the UNCG main campus to the Joint School of Nanoscience and Nanotechnology, where he and other researchers have access to their own micro-CT scanner.

It was installed in March 2022. Anemone, JSNN’s Obare, and biology faculty member Bryan McLean led the grant effort, which was successful in part due to its multidisciplinary focus. “We’ve got the same machine they have at Duke University, just a much newer model,” Anemone says. “It’s been great for us, for our students. We’ve trained some of our students already in biology and anthropology to use the scanner here.”

The machine is helping UNCG graduate students and faculty dig into important research questions and shed light on how animals interact with their environment, and how changes in their environment — whether across the change of seasons or over millions of years — affect animals.

By measuring different parts of a skeleton or analyzing marks left on bones and fossils, scientists can glean insights into the animal and the environment it lived in. How much and what kind of food was available? How did the animal move? How big was its brain? A CT scanner allows them to create precise, detailed images of the animals’ anatomy.

Dr. Bryan McLean, the biologist, is interested in both evolutionary changes in mammals over long periods of time, as well as short-term changes in individuals from one season to another. He’s studied how rodents around the world adapt in both similar and different ways to underground environments, including how their bodies change to allow them to dig. Some species use their forelimbs, some their hindlimbs, others make more use of their mouths. “We’re interested in the nuances that go along with that,” he says. “The extent to which there’s trade-offs — the forelimb becomes enlarged, the other limbs aren’t. By studying the animals’ anatomy, he hopes to gain insights into how the environment can shape evolution.

He’s also interested in how short-term variations, such as changes in food availability and the weather, can prompt physiological changes — specifically, ones he can track through changes in anatomy. For example, he and his students collected mice from the Appalachian Mountains in North Carolina and discovered that during the winter, when food is scarce, their digestive tracts lengthened by about 35 percent. That should allow them to extract more nutrients from the food that they are getting, McLean says.

Now, he and his students are measuring the skulls of Sorex shrews — a group of animals that includes dozens of species and subspecies in Europe, Asia, and North America. Research has shown that one European species will reabsorb part of its brain matter — resulting in smaller skulls — when food supplies shrink.

“We have more species in this one genus, Sorex, than exist in Europe, but the phenomenon has never been shown here,” McLean says. “So, McLean and his students go to the western part of the state each season to trap shrews and bring them back to Greensboro for analysis. The micro-CT scanner allows them to create precise, detailed images of the animals’ anatomy.

A CT scanner can even measure blood flow in the brain. So, McLean says, “Dr. Randy Schmitz, professor of kinesiology and director of musculoskeletal imaging at the Gateway UNCG MRI Center, where the MRI is housed, says Randy Schmitz, professor of kinesiology and director of musculoskeletal imaging at the Gateway UNCG MRI Center, where the MRI is housed, and director of musculoskeletal imaging at the Gateway UNCG MRI Center, where the MRI is housed, ‘This has torn down barriers,’ he says. "Our researchers no longer have to go to a medical institution here in town or another academic institution 60 miles away.’”

MRIs create high-resolution images of tissues that have water in them — virtually all tissues in the human body. Powerful magnets in the machine cause protons in water molecules to align, and then the machine emits radio waves that tickle those water molecules. The water molecules give off energy the machine detects to create pictures of tissues. It can even measure blood flow in the brain.

**SEENING THE INVISIBLE: HOW ANIMALS CHANGE OVER TIME**

For the last few years, vertebrate paleontologist Robert Anemone would take fossils he was studying, drive more than an hour to Duke University, and pay $120 per hour for use of a mini-CT scanner. Conventional computer tomography scanners, long used in medicine, have become a standard research tool for paleontologists and other scientists interested in the anatomical structure of plants and animals.

“How animals change over time is a dangerous thing — it leads to extinction and all sorts of unpredictable outcomes. For example, around 55 million years ago, a period of warming affected animal species.

By examining changes in animal morphology over millions of years — and comparing those to other data about that time period, Anemone can learn how changes in the environment — such as climate change — affected animal species.

Conducting fieldwork in Wyoming, Anemone’s team discovered the most complete skull specimen of Eothamnus seen thus far. “Most of the time we find isolated teeth. An entire skull is a trove of information — brain size, nasal cavity, ear structure — giving us information on diet, how they balanced and moved, and more.”

**SKULL SIZE IN RESPONSE TO FOOD SUPPLIES**

Undergrad researcher Leo Ivey and McLean gather data on shrew size, shape, and brain volume. The scanner means they don’t have to clean, preserve, and then measure individual skeletons — something that could take years, McLean says. “It’s speeding up what we can do.”

**A 55-MILLION-YEAR-OLD DEER-LIKE MAMMAL**

**INTO THE TISSUE: ACL AND THE BRAIN**

UNCG researchers are using a magnetic resonance imaging machine, or MRI, to peer inside joints and take pictures of study volunteers’ brains. Their goal is to better understand how our bodies and brains function — and why things go wrong — to find ways to prevent common problems.

“It never ceases to amaze me that here at UNCG we have access to this amazing tool to help us ask the questions that we really want to ask,” says Randy Schmitz, professor of kinesiology and director of musculoskeletal imaging at the Gateway UNCG MRI Center, where the MRI is housed.

“Many MRIs are housed at institutions 60 miles away,” he says. “Our researchers no longer have to go to a medical institution here in town or another academic institution 60 miles away.”

By studying the animals’ anatomy, he hopes to gain insights into how the environment can shape evolution.

He’s also interested in how short-term variations, such as changes in food availability and the weather, can prompt physiological changes — specifically, ones he can track through changes in anatomy. For example, he and his students collected mice from the Appalachian Mountains in North Carolina and discovered that during the winter, when food is scarce, their digestive tracts lengthened by about 35 percent. That should allow them to extract more nutrients from the food that they are getting, McLean says.

Now, he and his students are measuring the skulls of Sorex shrews — a group of animals that includes dozens of species and subspecies in Europe, Asia, and North America. Research has shown that one European species will reabsorb part of its brain matter — resulting in smaller skulls — when food supplies shrink.

“We have more species in this one genus, Sorex, than exist in Europe, but the phenomenon has never been shown here,” McLean says. So, McLean and his students go to the western part of the state each season to trap shrews and bring them back to Greensboro for analysis. The micro-CT scanner allows them to create precise, detailed images of the animals’ anatomy.

For example, around 55 million years ago, a period of warming birthed the earliest primates, with fossils found in Europe, Asia, and the North American Rocky Mountains. But then the climate cooled again and primates disappeared. “You don’t find primates in the Rockies after 35 million years ago or so,” Anemone says. “Global climate change is a dangerous thing — it leads to extinction and all sorts of unpredictable changes in biological communities.”
Psychology faculty member Brittany Cassidy has used the MRI to study what parts of the brain are involved in different activities involving learning and memory. One study, for example, examined how connectivity in the brain’s default network affects experience-based discrimination—an important kind of memory we use in daily life. “It is looking at whether you can distinguish existing memories from similar perceptual experiences,” Dr. Cassidy says. “For example, on a table full of coffee mugs, how can you remember which one is yours when you get back from a coffee break?”

Cassidy, along with her undergraduate and graduate researchers, has also used the MRI to study why older adults tend to be more trusting of others than younger adults—especially when the other person behaves negatively. The MRI showed that during the learning process, different parts of older adults’ brains were more active when learning about someone’s reputation for trustworthiness, or lack thereof.

Dr. Jennifer Etnier, professor of kinesiology, is exploring how exercise may delay the onset of Alzheimer’s. In one large research study with $3.4 million in National Institutes of Health funding, she recruited middle-aged and older adults who may have a genetic risk for Alzheimer’s. Etnier is assessing the impact of exercise on the volunteers’ MRI scans of the volunteers’ brains are one of the ways to detect Alzheimer’s. In one large research study with $3.4 million in National Institutes of Health funding, she recruited middle-aged and older adults who may have a genetic risk for Alzheimer’s. Etnier hopes to be able to assess whether exercise delays those harmful changes in brain structure.

“From the first day of my doctoral program, I was excited to use the MRI scanner,” says Dr. Alexis Ganesh, pictured below with Etnier. Ganesh worked with UNCG’s machine as a grad student and then postdoc.

Dr. Sandy Shultz, another kinesiology professor of kinesiology, is interested in how exercise shapes the brain. For example, he and kinesiology’s Dr. Donna Duffy have found that roller derby athletes at rest exhibit unique brain patterns. On the left is a map Monroe generated of the grey matter surface of a subject’s brain. Areas in orange are functionally connected while the subject is in a resting state. On the right is a diagram of how deeper, white matter fibers connect different parts of the brain.

“Developing expertise is important,” says Monroe. “From the first day of my doctoral program, I was excited to use the MRI scanner.”

Developing Expertise

We’re open for business. You can schedule here, you can scan here. Top to bottom, the support is incredible,” says Monroe.

Graduate Training

Monroe teaches students to use the MRI. To become proficient, they must learn about multiple disciplines, like physiology, physics, psychology, and data science.

Monroe is also teaching students how to use the MRI machine. “I want to get graduate students now, and hopefully undergraduates in the near future, into courses—get them exposure to a machine that they would not have access to anywhere else,” he says. “In the graduate course we spend two weeks, and we go over and we measure our brains. We then spend the second half of the course analyzing our brains.”

Students learn how to upload the data and analyze it on powerful computers, and how to ask scientifically valid questions and understand the answers the MRI provides.

None of that, Monroe says, would be possible without both the equipment and a UNCG culture that encourages learning and interdisciplinary collaboration.

Data on Structure and Function

Monroe is interested in how exercise shapes the brain. For example, he and kinesiology’s Dr. Donna Duffy have found that roller derby athletes at rest exhibit unique brain patterns. On the left is a map Monroe generated of the grey matter surface of a subject’s brain. Areas in orange are functionally connected while the subject is in a resting state. On the right is a diagram of how deeper, white matter fibers connect different parts of the brain.

“We’re open for business. You can schedule here, you can scan here. Top to bottom, the support is incredible,” says Monroe.

Graduate Training

Monroe teaches students to use the MRI. To become proficient, they must learn about multiple disciplines, like physiology, physics, psychology, and data science.

Monroe is also teaching students how to use the MRI machine. “I want to get graduate students now, and hopefully undergraduates in the near future, into courses—get them exposure to a machine that they would not have access to anywhere else,” he says. “In the graduate course we spend two weeks, and we go over and we measure our brains. We then spend the second half of the course analyzing our brains.”

Students learn how to upload the data and analyze it on powerful computers, and how to ask scientifically valid questions and understand the answers the MRI provides.

None of that, Monroe says, would be possible without both the equipment and a UNCG culture that encourages learning and interdisciplinary collaboration.

Data on Structure and Function

Monroe is interested in how exercise shapes the brain. For example, he and kinesiology’s Dr. Donna Duffy have found that roller derby athletes at rest exhibit unique brain patterns. On the left is a map Monroe generated of the grey matter surface of a subject’s brain. Areas in orange are functionally connected while the subject is in a resting state. On the right is a diagram of how deeper, white matter fibers connect different parts of the brain.

“We’re open for business. You can schedule here, you can scan here. Top to bottom, the support is incredible,” says Monroe.

Graduate Training

Monroe teaches students to use the MRI. To become proficient, they must learn about multiple disciplines, like physiology, physics, psychology, and data science.

Monroe is also teaching students how to use the MRI machine. “I want to get graduate students now, and hopefully undergraduates in the near future, into courses—get them exposure to a machine that they would not have access to anywhere else,” he says. “In the graduate course we spend two weeks, and we go over and we measure our brains. We then spend the second half of the course analyzing our brains.”

Students learn how to upload the data and analyze it on powerful computers, and how to ask scientifically valid questions and understand the answers the MRI provides.

None of that, Monroe says, would be possible without both the equipment and a UNCG culture that encourages learning and interdisciplinary collaboration.
**AT THE NANOSCALE**

Atoms make up everything we can see – from one-celled organisms only visible under a microscope to miles-high mountains. But individual atoms and the complex structures they can form are too small to be seen by the naked eye, even under the most powerful optical microscopes.

That’s a challenge for scientists like the JSNN’s Dr. Hemali Rathnayake, who has devoted her career to studying and creating materials at the atomic scale. To see, for example, openings that are big enough to let through some molecules but too small to let through others, she and her research collaborators use powerful microscopes that don’t rely on light at all. Instead, they use beams of electrons.

Nanoscience is the study of objects and phenomena on the nanoscale, or one-billionth of a meter. For comparison, a sheet of paper is about 100,000 nanometers thick. Or, put another way, if the diameter of the earth was one meter, then one nanometer would be smaller than the diameter of a single atom of gold.

“‘That really opens up for us more capabilities to understand nanomaterials at, really, near atomic scale,’” Rathnayake says. Rathnayake’s research is focused on developing nanomaterials that can protect and improve the environment. Her team has created, for example, specially designed materials that can capture lithium or other waste materials in water, allowing them to be recycled for commercial use while also cleaning up the environment.

“I wanted to make the nanoworld more environmentally friendly, more sustainable, and nontoxic,” she says. “If we are polluting the environment, we are not doing anything inventive.”

Without these microscopes at the JSNN, Rathnayake would have to use NC State University’s equipment. That makes the process of getting nanoscience images more time-consuming and expensive. It also reduces opportunities for UNCG students to get firsthand experience with the instruments.

“Joining UNCG was a clear choice for me as the university provided access to advanced instruments, such as FIBSEM and TEM, for studying materials at the nanoscale,” says Kelvin Adrah, a PhD nanoscience student who works with Rathnayake (pictured above). Having the FIBSEM and TEM on-campus provides UNCG students opportunities that they wouldn’t otherwise have, Rathnayake says. “They can become an expert on these instruments. Student training is a major reason we got this equipment.”

Beneficiaries range from high school students in UNCG’s 12-credit Nanoscience Certificate Program to undergraduate researchers and graduate students – including those in the JSNN’s recently launched 12-credit Nanoscience Certificate Program. “It’s about growing the experience with the instruments. It also reduces opportunities for UNCG students to get firsthand experience with the instruments.”

Adrah, who entered the doctoral program to study materials at the atomic scale, says, “I aimed to leverage my knowledge and contribute to the scientific community,” he says, “ultimately entering industry to conduct research that benefits society.”

by Mark Tosczak  •  Learn more at jnnn.scat.uncg.edu

---

**2022 RESEARCH EXCELLENCE AWARD**

- **Dr. Hemali Rathnayake, associate professor of nanoscience, received UNCG’s 2022 Early Career Research Excellence Award for her work on designing and making innovative nanomaterials that have the potential to build a greener, more sustainable future.**

- **Shelton’s research has also been recognized with the prestigious NSF CAREER Award.**

---

**GREEN CHEMISTRY**

- **There are a lot of harsh, toxic chemicals used to make nanomaterials. While we’re making these nanomaterials to solve environmental problems, their production is actually toxic to the environment. My lab strives to use green chemistry to avoid pollution.**

- **“Green chemistry means most of the reactions are done with nontoxic solvents. You consume less energy for your reactions, and you do the chemistry at room temperature. There’s much less toxic waste.”**

---

**ENVIRONMENTAL FOCUS**

- **“At UNCG I’ve directed my research toward the design and manufacture of nanomaterials for environmental sustainability applications – energy harvesting, energy storage, water purification, and critical minerals. We’re designing a series of novel nanomaterials. One can selectively extract critical minerals while also purifying wastewater. We also make nanomaterials that are biocatalysts, which can self-assemble into very thin metal wires that you can use in the semiconductor industry for patterning transitions.”**

---

**BECOMING AN ENTREPRENEUR**

- **“I participated in UNCG’s NSF-funded I-Corps training and advanced to the national level of the program. I learned a lot about thinking outside the box, from a commercial perspective. I stopped in, took the risk, and I’ve learned a lot. It’s paid off. Now I see the academic research point of view and the commercial point of view. I see myself as an academic entrepreneur.”**

---

**MENTORING STUDENTS**

- **“I give them a small problem in the lab, and they try to solve it. During the first year I work with them in the lab training them, I help them understand the science behind the problem. Rather than teaching them the theory directly, I teach them scientific concepts through this hands-on approach. Building critical thinking – that’s what I focus on. We need to make sure they’re not technicians, that they become scientists.”**

*Interview by Mark Tosczak*