A team of scientists is using AI to transform the way we think about mental illness.
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In the heart of downtown Atlanta, Georgia State scientists are focused on solving the problems that keep you up at night.

See the power and potential of our work at research.gsu.edu.
Building a Better Future

IN RECENT YEARS, Georgia State has become a national model for student success, eliminating academic achievement gaps based on race, ethnicity or income. Outside the classroom, our faculty are also making enormous strides in research.

From 2010 to 2017, Georgia State grew its research expenditures by 148 percent and climbed more than 50 places in the National Science Foundation’s Higher Education Research and Development survey. That rapid expansion makes us one of the nation’s fastest-growing research institutions. But these kinds of numbers aren’t the only measures of success.

As a member of the Georgia State faculty for nearly 20 years, I’m most proud of our research impact, which stretches far beyond the boundaries of our campus. As you’ll read in this issue, our researchers are working overtime to address some of the most urgent issues facing communities around the world, from health disparities to teacher shortages to sustainability.

We’re also recruiting world-class faculty who are pioneering new approaches to longstanding problems. Biomedical sciences professor Cynthia Nau Cornelissen (p. 12) is developing what could be the first vaccine for gonorrhea, an infection that is becoming almost untreatable because of antibiotic resistance. Vince Calhoun (p. 32), Distinguished University Professor of Psychology, is working at the intersection of engineering, computer science and neuroscience, using machine learning to improve our understanding of mental health disorders. And public health professor Collins O. Arhilenbowa (p. 26) is bridging the cultural gap to help treat chronic diseases more effectively in developing nations.

I believe at Georgia State, our researchers’ innovation, creativity and potential impact is without limit. After reading through this issue, I think you’ll agree.

Michael P. Eriksen
Interim Vice President for Research & Economic Development
FORWARD CREATIVITY

Making It Up as You Go Along

Associate professor Martin Norgaard studies how jazz improvisation affects the brain.

BY JENNIFER RAINEY MARQUEZ | PHOTO BY STEVEN THACKSTON

JAZZ ARTIST LOUIS ARMSTRONG once said, “never play a thing the same way twice.” Although musical improvisation — composing new passages on the spot — is not unique to jazz, it’s perhaps the genre’s most defining element. While improvised jazz solos are spontaneous, there are rules, says Martin Norgaard, associate professor of music education.

“In tonal jazz, improvisation is not ‘free,’” he says. “It’s always tied to the chord structure that the melody is based on.”

In other words, improvisation is an incredibly complex form of creative expression, yet great jazz improvisers like Charlie Parker, Miles Davis or John Coltrane make it seem effortless. Which makes you wonder: what’s happening inside jazz players’ brains as they simultaneously compose and play music?

“As a musician, you feel that there’s something different about the way your brain is working when you improvise,” says Norgaard, a violinist who came to the U.S. in 1985 to study jazz. “You’re tapping all your stored knowledge and adapting it to a chord structure in real time.”

While earning his Ph.D. from the University of Texas at Austin, Norgaard began studying the effects of musical improvisation: interviewing jazz artists and students about their thoughts during the process of improvisation, analyzing the solos of Charlie Parker for patterns and asking musicians to perform a secondary task while improvising to see how it affects their performances.

In his most recent study, published in August in the Journal of Research in Music Education, Norgaard examines the “far transfer effect” of improvisation — how learning to invent music in the moment affects other cognitive abilities.

“For nearly three decades, scientists have explored the idea that learning to play an instrument is linked to academic achievement,” says Norgaard. “Yet at the same time, there are many types of music learning. Does the kid who learns by ear get the same benefits as the kid who learns notation or the kid who learns to improvise?”

The researchers started by conducting a pre-test, in which they asked two sets of middle school kids to each perform two tasks: one that tests cognitive flexibility, or the brain’s ability to task-switch, and another that tests inhibitory control, or the brain’s ability to focus on relevant information and block out irrelevant information. The middle-schoolers played instruments, but only some studied jazz through the Georgia State Rialto Jazz for Kids program. They found that the jazz students drastically outperformed their concert band peers.

“Still, we didn’t know: are kids with high levels of cognitive flexibility simply drawn to jazz, or is it the improvisation that produces the effect,” says Norgaard.

To follow up, he and his collaborators asked the school’s band director to divide his entire concert band — 155 7th and 8th graders — into two groups. Each group learned about jazz, but only half learned improvisation. Then each group was given the same two brain tests. The result: improvisation training led to a significant improvement in cognitive flexibility.

“Their scores started looking like the scores of the kids who had studied jazz from the pre-test,” says Norgaard.

The improvements were only apparent in the 8th graders; 7th-grade students instead saw a small improvement in inhibitory control.

“It’s hard to say what’s driving the difference in effect. Maybe it’s the age of the kids or maybe it’s the number of years spent playing an instrument,” says Norgaard. “In the future, we need to look into whether improvisation has different cognitive effects depending on a student’s age or experience.”

Watch as Norgaard and jazz guitar instructor David Frackenpohl improvise on stage at researchmagazine.gsu.edu.
IN 2015, sociology and public health professor Eric Wright organized a survey of homeless youth in Atlanta. Earlier the same year, the city had performed a one-night survey, which determined there were 585 homeless people under the age of 24. But providers in the area disagreed.

“Providers were distressed by the number of homeless LGBT youth who needed services,” says Wright. “I volunteered to try to get a more accurate count.”

He dispatched dozens of students and graduate assistants to canvass the city and five core metro counties — Fulton, Cobb, Clayton, Dekalb and Gwinnett — over three months. The resulting Atlanta Youth Count and Needs Assessment estimated the number of homeless youth in the metro area to be more than 3,300.

Three years later, Wright repeated the count, this time with a grant from the National Institute of Justice*. Last fall, the student canvassers, led by project manager and sociology Ph.D. student Ana LaBoy, completed a field count of homeless individuals between the ages of 14 and 25. They also administered a 100-question survey covering topics ranging from housing history to sex and labor trafficking. (Participants were anonymous and received a $10 gift card for completing the survey.)

Although the city of Atlanta has reported the overall homeless population is dropping, Wright says his research shows the number of homeless youth has remained relatively stable. The 2018 count estimates there are 3,372 youth who are homeless (either on the street or in shelters) or precariously housed (staying in a motel, for instance, or couch surfing). There are many factors driving homelessness among young people, LaBoy says.

Often, LGBT youth are homeless because they’ve been kicked out of their families’ homes, she says. In other cases, homelessness can be a spillover effect of the city’s lack of affordable housing.

“The survey found that 48.7 percent of respondents who experienced high levels of trauma reported trafficking while homeless, compared to only 18.9 percent of their less traumatized peers. Gay and transgender youth also had a significantly higher risk of trafficking compared to their straight or cisgender peers. “

Wright and his team are now developing a set of recommendations for community leaders and service providers about how to help homeless youth who are being trafficked.

“We estimate that if a district retrofits its entire bus fleet, the effect would be slightly greater than the effect of going from a rookie teacher to one with five years of experience,” says Kreisman. The researchers also looked at how retrofits affected the outcomes of standardized fitness tests given to Georgia students, and found a significant improvement in respiratory health and aerobic capacity. Although previous studies have shown that pollution harms students with respiratory conditions like asthma, this study is the first to demonstrate that even students without preexisting health conditions are vulnerable to the health effects of bus emissions.

“According to our calculations, if an average district retrofits just 10 percent of its bus fleet, the lifetime value of improved test scores (for example, from higher earnings in adulthood) is approximately $2.5 million,” says Austin. “The estimated cost to the district? Just $90,000.”
FINDING THE WAY

Georgia State joins the CDC’s Prevention Research Center network with a new Clarkston-based office focused on migrant health.

BY JENNIFER RAINÉ MARQUEZ | ILLUSTRATION BY REID SCHULZ

WHEN AYUB MOHAMMAD was in eighth grade, members of the military detained him on his way to school and tried to conscript him into forced labor. When he refused, he was beaten and tortured.

“That day, I decided I had to leave Myanmar,” says Mohammad, who is a member of the Rohingya ethnic group, which has been subject to brutal persecution in the country.

In high school, he fled across the border to Bangladesh where, along with dozens of other Bangladeshi and Rohingya refugees, he boarded a boat bound for Malaysia. After 27 days floating in the Indian Ocean, many without food or water, the group was rescued by the Sri Lankan navy.

Mohammad spent four years in Sri Lanka before a resettlement program sent him to the U.S. He arrived in Clarkston, Ga., in February 2012. A little more than two years later, he founded the Burmese Rohingya Community of Georgia (BRCG), a nonprofit dedicated to supporting refugees and immigrants.

“When I came here, I didn’t see anyone helping refugees except resettlement agencies, and typically only for a very short period of time, about three to six months,” Mohammad says. “But it takes much longer than that for people to become acclimated and self-sufficient.”

BRCG is one of a dozen partners — community groups, agencies, nongovernmental organizations and new citizens — who are informing and directing the work of Georgia State’s new Clarkston-based Prevention Research Center (PRC), which opened on Sept. 30. The center, funded by a $3.75 million grant from the Centers for Disease Control & Prevention (CDC), is focused on the health and health disparities of migrants and refugees.

The PRC network’s dedication to community-based participatory research makes it unique. The advisory board, which includes BRCG, helps guide the center’s research and offers input on health concerns that should be addressed.

Heval Kelli (B.A. ’08), Cardiology Fellow at Emory University who arrived in the U.S. as a refugee in 2001, chairs the board. Community engagement is overseen by Mary Helen O’Connor, assistant professor of English at Perimeter College and director of Georgia State’s Center for Community Engagement.

“Having taught in Clarkston for more than a decade, I’m excited to have an initiative that is developing innovative approaches to address persistent disparities in this community,” says O’Connor. “We look forward to learning together how to make measurable and sustainable improvements in the health of our friends, neighbors and students.”

The center’s core research project addresses the health and well-being of migrant children by adapting SafeCare, an evidence-based parenting program. (Learn more on p. 24.) Georgia State researchers will use SafeCare to conduct the first systematic effort in the nation to develop culturally and linguistically relevant care and interventions for migrant and refugee children.

Led by Daniel Whittaker, professor in the School of Public Health and co-director of the National SafeCare Training and Research Center, the project examines whether the program can improve the parent-child relationship, alleviate parenting stress, and boost children’s social and emotional health.

“We are deeply honored to join the CDC’s Prevention Research Center network, which has played a vital role in advancing public health in this country for more than 30 years,” says Michael Eriksen, interim vice president for research and economic development at Georgia State, who is the center’s director. “Nationally, very little is being done to address issues affecting refugee communities, and having a campus inside Clarkston presents a tremendous opportunity to work with a population that needs support and research.”
Listen as Cornelissen discusses her work on the Research Podcast from Georgia State University.
Thomas and assistant professor Natalie King are working with two local school districts to recruit STEM professionals into teaching, and develop them as leaders in the classroom and beyond.

“Having that STEM career background means they can better prepare students for what the college programs look like, what the jobs look like,” says Thomas. “We also want teachers who can be advocates, both for kids and for what an exemplary educational program should look like in math and science.”

Thomas and King are particularly focused on recruiting Black and Latinx men. The U.S. Department of Education estimates that just two percent of teachers are Black men, yet research shows their presence in classrooms matters. In STEM fields, where Blacks and Hispanics are underrepresented in the workforce, representation is also critical to help students imagine themselves as scientists, engineers or mathematicians.

“We don’t want them to get burned out,” says King. “Our goal is that those who come through this program will become leaders within their schools and districts, and will help to strengthen STEM education in the state of Georgia. The support mechanisms are in place to ensure their success.”

Metro Atlanta needs more science and math teachers. It also needs more diverse teachers. A new Georgia State project aims to deliver both.

IN THE CLASSROOM
WHERE ARE THE BLACK MALE STEM TEACHERS?

IN THE LAST 30 YEARS, the number of people working in science, technology, engineering and mathematics (STEM) occupations has shot up 79 percent, outpacing overall job growth in the U.S. As demand for these skills continues to rise, experts say there’s an urgent need to direct more young people into STEM careers.

Yet the rush to fill STEM jobs is hamstrung by the country’s shortage of qualified STEM teachers. In the College of Education and Human Development, professor Christine Thomas and assistant professor Natalie King are working with two local school districts to recruit STEM professionals into teaching, and develop them as leaders in the classroom and beyond.

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Program participants Dustin Lemon teaches at Alpha Academy High School in Rockdale County, Ga.

WHEN BEING A PARENT MEANS BEING A NURSE

Associate professor Regena Spratling is helping parents care for children with extraordinary medical needs.

BY JENNIFER RANEY MARQUEZ

TWO DECADES AGO, Regena Spratling started her nursing career at Children’s Healthcare of Atlanta, working in a technology dependent care unit. The kids there — who ranged in age from babies to teenagers — all had complex, chronic issues that made them reliant on medical equipment like ventilators, tracheostomies or feeding tubes.

“Children who require this type of care don’t spend their lives in a hospital, though. They go home, they attend school — bringing the breathing machines and feeding tubes along with their backpacks and pencil cases.

“For families, it’s like having an intensive care unit in the home,” says Spratling, associate professor in the Byrdine F. Lewis College of Nursing and Health Professions. “A lot of people don’t even know this exists until they’re in the situation. Parents think, ‘I go home with all this stuff? How do I do that?’

Caring for children who require constant monitoring and technology often takes a toll. As a nurse, Spratling saw many parents who struggled with anxiety, depression and a lack of confidence in their ability to provide proper care.

“The parents are managing this equipment on the level of a nurse, on top of dealing with their kids’ appointments, medications and everything else,” she says. “In some cases, if anything goes wrong, it’s life or death.”

To better support these parents, Spratling is developing a series of short educational modules. Her project, which is funded by a $423,314 grant from the National Institutes of Health, is designed to help caregivers navigate the technologies as well as common symptoms like coughing or wheezing.

“We’re all looking for resources online these days, and we want to provide quality information that is accessible regardless of where you are,” says Spratling.

She adds that the modules are not meant to replace the education parents receive when their child leaves the hospital. The assumption is that parents have been trained to care for their kids, but may need a refresher or reminder of what to do in a given situation. The modules can also educate caregivers about a change to their child’s care, like going from one type of respiratory support to another.

Spratling will recruit participants for a feasibility study to analyze how the modules affect caregivers’ symptoms of anxiety or depression, health literacy, competence in providing care and the ability to manage family issues at home. After that, she hopes to make the modules more widely available, translate the content into Spanish and create additional modules based on user feedback.

“In my experience, these families and kids are very perseverant,” says Spratling. “But they are also very understood and underserved. It’s a small population, but the needs are huge.”

FORWARD CAREGIVING
Decoding the Constitution

Law professor Clark Cunningham is using linguistic analysis to shed light on the original meaning of America’s founding documents.

BY JENNIFER RAINEY MARQUEZ

THE STATE OF MARYLAND AND THE DISTRICT OF COLUMBIA FILED A LAWSUIT in 2017 against President Donald Trump, arguing he had violated the U.S. Constitution by accepting payments from foreign officials in the form of hotel room bookings at Trump International Hotel near the White House. (The Constitution prohibits federal officials from receiving a “present, Emolument, Office, or Title” from a foreign state without the consent of Congress.)

The case was unusual in that it hinged on the meaning of a word — emolument — that has almost vanished from use since the Constitution was written in 1787. Trump’s attorneys maintained the definition was a narrow one that would not include hotel profits. Lawyers for Maryland and D.C. argued the opposite.

This word might as well be from another language,” says Clark Cunningham, professor of law and the W. Lee Burge Chair of Law and Ethics. “It’s hard to know, what did ‘emolument’ generally mean 200 years ago?”

Cunningham’s research focus is applying corpus linguistics, or the study of how language is used in very large data sets of texts, to legal interpretation. Legal interest in this field has exploded in the past two years, after Brigham Young University digitized a large collection of historical documents known as the Corpus of Founding Era American English, and built an interface that allows the documents to be easily searched and indexed.

Cunningham likened corpus linguistics to going back in a time machine and eavesdropping on everyday Americans’ speech. Providing evidence of how words were used in the late 1700s is particularly important in today’s legal system because of the theory of interpretation known as originalism. This doctrine, which a majority of current Supreme Court Justices subscribe to, places the primary emphasis in deciding constitutional cases on the original meaning of the U.S. Constitution when it was ratified in 1789.

“The Constitution derives its authority not from its drafters but from the thousands of people across the 13 states who ratified it,” says Cunningham.

“The question, for example when it comes to the word emolument, is not what James Madison thought it meant. But what did those people who ratified the Constitution think it meant? Linguistic analysis is a scientific way to try to answer that question.”

While the case was making its way through the courts, Cunningham was working on research project with a linguist at Northern Arizona University named Jesse Egbert, in which they analyzed more than 2,500 uses of the word “emolument” in texts written between 1760 and 1799.

They found the word frequently appeared with other nouns, as part of a list. And “emolument” appeared most often as the last word in the series, just after the word “and” or “or.” In 69 instances, it was preceded by the words “and other,” meaning the first things in the list were also considered to be types of emoluments.

“The discovery and analysis of these ‘and other’ phrases showed that ‘emolument’ could be applied to a remarkable variety of things, and often functioned to conclude a list as a catch-all word,” says Cunningham. Their research found no support for Trump’s legal team’s argument that emolument was used with a narrow meaning.

Their study formed the basis of what’s known as an amicus — or “friend of the court” — brief, an analysis typically offered from experts in the subject matter of a legal case who are not directly involved in the litigation. Cunningham and Egbert’s application of quantitative and qualitative analysis to interpret Constitutional meaning attracted much attention, including a story in the Washington Post the day the brief was filed. The editorial board at Law.com wrote that their “analytical method illustrates that attorneys and jurists do not, and should not, exercise any monopoly power on the authoritative approaches to interpreting the language of the law.”

Cunningham notes that although some legal scholars have pushed back on his approach, the idea that you could interpret the Constitution with something like scientific rigor is significant.

“I’m not advocating that judicial decisions should somehow be made by computers,” he says. “But if you can discern the original meaning of a word or phrase, that’s where you start.”

It’s an endeavor that has become possible only since the advent of the kind of computing power required to analyze large data sets. Before then, the search for original public meaning was criticized as lacking an objective basis. Lawyers could make an argument for anything by cherry-picking particular texts. But by doing mass computerized analysis of hundreds of thousands of documents, Cunningham says, scholars can take empirical evidence into account. He and Egbert are now putting together a plan for increasing the integration of applied linguistics into judicial decision-making.

“We’re just getting started,” Cunningham says, “but I think it’s entirely possible that 20 years from now, people will look back and say this is the most important development of the decade in terms of truly understanding the Constitution.”
IT’S A HOT JULY EVENING AND I’M AT A PARTY

filled with strangers, watching as a troubling scene unfolds before my eyes. A woman sits on a living room couch, being plied with drinks by her male companion. When she tries to stand she sinks back unsteadily. A few moments later, I glance over and see the man leading her away. I turn around to hear several other partygoers discussing the situation. Should they intervene? If so, how? What about the friend who brought her here?

I can’t intervene myself, because I’m not really there. I’m wearing a virtual reality (VR) headset in the office of Laura Salazar, professor of health promotion and behavior in the School of Public Health. Salazar and her colleagues wrote the script for this brief film — called “Real Decisions” — as part of her ongoing research on the impact of interactive educational tools and their ability to stem violence. It’s a fully immersive 3D short produced with the help of Georgia State’s Creative Media Industries Institute as well as faculty and doctoral students with expertise in infectious diseases, neuroscience and behavioral science. In the VR film, the same scene plays out four different times, with four different endings. Each ending highlights one of the “four D’s” of effective bystander intervention: direct (directly intervene), distract (distract either individual), delegate (seek help from someone with more influence) or delay (check in with the young woman later).
The Center for Research on Interpersonal Violence brings together a diverse group of faculty to understand what fuels violence and what we can do to prevent it. From left to right: Center director Dominic Parrott, professor of psychology in the College of Arts & Sciences; Laura Salazar, professor of health promotion and behavior in the School of Public Health; Kevin Swartout, associate professor of psychology in the College of Arts & Sciences; Leah Daigle, professor of criminal justice and criminology in the Andrew Young School of Policy Studies.

The VR program is so vivid that a month later, as the lead author of the study explains, the program “can fuel violence” HOW “MAN ENOUGH” CAN FUEL VIOLENCE

It has been a quarter century since the Violence Against Women Act was passed by Congress, an act that created and supported programs to dramatically improve national and local responses to domestic violence, sexual assault, dating violence and stalking. In 2011, the U.S. Department of Education let colleges know they would lose federal funding if they didn’t do a better job of protecting students. As a result, most instilled mandatory orientation or education for incoming freshmen. In 2014, the White House established a task force to help protect students from campus violence, and in 2015, Congress introduced the Campus Accountability and Safety Act, which required better coordination with local police departments, reporting when accusations are made. And yet in spite of all this effort, and even with the indelible imprint of #MeToo, interpersonal violence still plagues our society nationwide. Global estimates published by the World Health Organization indicate that about one in three women has experienced either physical and/or sexual partner violence or non-partner violence in their lifetime. Across the country, about 23 percent of undergraduate females and 5.4 percent of undergraduate males experience sexual assault or sexual assault through physical force, violence or incapacitation, according to the Rape, Abuse & Incest National Network. Violence against minorities, marginalized groups and those in the LGBT community is also problematic. Most victims don’t report the incidents, believing it’s a personal matter, or because they fear reprisal. Researchers at Georgia State are hoping to change that by developing tools that can help prevent or de-escalate violence. Addressing internalized masculine norms is one key. New research shows that internalized toxic masculinity (where rape or coercion is seen as a badge of honor, where “no” is thought to mean “maybe” or “yes,” and where hostility towards women fuels anger) can serve as tinder for assault. With Parrott and other colleagues, associate professor of psychology Kevin Swartout has found that men who adhere strongly to these demeaning masculine norms may feel compelled to be sexually aggressive and coercive toward an intimate partner in order to maintain their dominance. They also experience more anger towards other men. One Georgia State study found hyper-masculine norms led almost 10 percent of men use tactics such as verbal coercion or getting their partner drunk. That’s far more prevalent than those who use any means, including physical force (just 1.5 percent). Because this second group of men can and do perpetrate rape, says Swartout, addressing campus social norms and providing education around consent is critical. One way to affect behavior is through the peer group — a young man’s friends. Often, in campus life, peer groups can share toxic masculine norms. (Witness the scandals associated with fraternity hazings rituals.) According to campus is one of the few times in a young person’s life when they can have a clean slate, and their social networks almost entirely turn over.”

In essence, they might have traded up their peer group for a more enlightened bunch of buddies. More recently, Swartout teamed up with Salazar and Monica Swahn, Distinguished University Professor of Epidemiology in the School of Public Health, to conduct a longitudinal study of men’s changing mores as they go through the college experience and integrate into a new peer group. Called FreshMEN of Georgia and funded by the Centers for Disease Control and Prevention, the project assessed the changing attitudes of male first-year college students recruited from 30 colleges across Georgia. Swartout says his long-term plan is to create a program that infuses pro-social norms and attitudes into these male peer groups.
Alcohol is an ever-present social lubricant in our society. And, says Parrott, it is one of many causes of assault — although the likelihood that alcohol will cause violence in a given situation depends on a range of other factors. Half of all sexual assaults involve alcohol consumption. Drinking loosens inhibitions and makes it easier to push past consent. Research by Parrott, Swartout and colleagues at Purdue University shows, drinking drives aggression and impairs executive functioning. It also impairs proper processing of risk. Inebriation causes a cognitive phenomenon called alcohol myopia — where attention is wholly captured in a kind of spotlight effect by what is immediate and in front of you, while the normal ability to monitor all the other stimuli around you is impaired. A male or female who is drunk may only see the person before them, as if he or she were a player on stage in a darkened theater.

Alcohol contributes because, as research by Parrott, Swartout and colleagues at Purdue University shows, drinking drives aggression and impairs executive functioning. It also impairs proper processing of risk. Inebriation causes a cognitive phenomenon called alcohol myopia — where attention is wholly captured in a kind of spotlight effect by what is immediate and in front of you, while the normal ability to monitor all the other stimuli around you is impaired. A male or female who is drunk may only see the person before them, as if he or she were a player on stage in a darkened theater.

Alcohol also has a negative impact on bystander intervention. In a 2019 study led by Parrott and doctoral student Ruschelle Leone, young men discussed whether to show sexually explicit images to a young woman who did not wish to see the images — a way of simulating sexual violence in the lab. (Only one of the men was an actual participant, the others appeared to be participants but had been recruited and supplied with scripts.) Some of the men consumed alcohol and others did not. Drinking had the strongest effect on men with the highest intent to help. “Alcohol reduced the likelihood that a bystander will intervene,” says Parrott, “particularly for men who would typically want to help in that situation.” Parrott adds that women who report being assaulted say that in 23 percent of cases there were other people around who could have stopped it. When bystanders were present prior to a sexual assault and had an opportunity to intervene, they had consumed alcohol in 88 percent of those cases.

For vulnerable females, alcohol alters judgment, decreases reaction time, impairs decision-making and delays the recognition of danger. According to Leah Daigle, a professor in the Department of Criminal Justice & Criminology in the Andrew Young School of Policy Studies, female students in their first year of college who are heavy drinkers belong in a “red zone” of risk, and are more vulnerable to sexual aggression than older students. Preventive education programs for college students have maximum benefit during this early period. This is especially important because, says Daigle, recurring victims experience a large proportion of all victimization incidents. In a 2008 study of sexual victimization of college women, Daigle and her colleagues found that although just 7 percent of college women experienced more than one sexual victimization during an academic year, those incidents accounted for over 70 percent of sexual victimization incidents reported in the study. “If we can intervene after an initial victimization,” says Daigle, “we can dramatically reduce the risk of additional incidents.”

For that reason, providing education as to what consent truly means is profoundly important, Salazar has created another interactive program called “Real Consent” — which has separate modules for both men and women — that has been proven effective in helping to prevent violence and increase pro-social bystander intervention. “Oftentimes there are gray areas when initiating sex. Sexual assault is not always about a guy physically forcing himself on an incapacitated woman,” says Salazar. The program focuses on understanding effective and real consent, the role of alcohol in negating consent and enhancing empathy for victims. There are myths about consent, according to Salazar, such as “the idea that a woman says ‘no’ when she means ‘yes’ or the way she dresses can indicate whether she wants to have sex.” The program deconstructs those myths and explores gender roles that men and women adopt.
that can create misunderstandings. It also covers male victimization.

Her approach has been a success. Salazar’s research shows that men participating in “Real Consent” were significantly less likely to perpetrate sexual violence, and significantly more likely to intervene as a bystander in a situation that might lead to nonconsensual sex. Soon, says Salazar, the program will be made available to other universities.

Connecting researchers with university leaders is an important part of the center’s work, says Parrott. Five years ago, Georgia State hosted a campus climate forum, which brought scholars together with college administrators and those working in student health centers. Out of that conference grew the Administrator-Research Consortium, a nationwide network, and a campus climate survey, crafted by Swartout along with colleagues, campus advocates, students and law enforcement. The 30-minute survey, which has been adopted by more than 300 universities nationally and internationally, measures the prevalence of campus sexual misconduct and related attitudes about both perpetration and victimization on campus. It was pre-tested with more than 2,200 students and is organized into modules other universities can adapt to their needs.

In 2018, The National Academies of Science, Engineering and Medicine used results from data that had been gathered in 2015 by the University of Texas System. With Swartout’s help, the researchers examined sexual harassment of women across STEM (science, technology, engineering and mathematics) fields. They found women enrolled in medical school experienced “alarmingly high rates of sexual harassment,” says Swartout, with 47 percent of female students reporting they had been sexually harassed. For women studying engineering, the rate of harassment was 27 percent, and for women studying science, 20 percent.

Long term, says Parrott, he hopes that the center’s interdisciplinary approach and its focus on adapting research to help solve societal problems will serve as a national model.

“In my view,” he says, “this is the only way we can address this extraordinarily complicated – but preventable – problem.”
The gravest health threats facing developing countries are not viral outbreaks or parasites, but chronic conditions such as heart disease and cancer. Professor Collins O. Airhihenbuwa has pioneered a culturally informed approach to confront the global spread of these diseases.
Collins O. Airhihenbuwa was a graduate student studying health planning and administration in Tennessee when he first realized there was a problem. When his professors talked about health issues facing developing countries, they focused on the income, formal education, nutrition and other resources that these places lacked — and the impact those deficiencies had on the health of the people. But to Airhihenbuwa’s mind, the well-meaning instructors were only painting half the picture.

Airhihenbuwa knew the full scope of life in many of these countries because he had lived it. He had grown up in Benin City, Nigeria, in the 1960s, the son of subsistence farmers. By the standards he was being taught by Western researchers, his parents — who did not work for wages — would have appeared poor, but they farmed their own land and traded for everything they couldn’t grow or make. Scientists might have seen no meat on young Airhihenbuwa’s plate and declared his diet unbalanced, yet his seasonal plant-based diet conferred all the health he needed. He had grown up watching a football game from behind a fence. Some were so fat, saturated fat and salt because that’s all that was offered. African Americans live. In short, they ate diets high in the perceived connection between socioeconomic status and the overwhelming availability of cheap and unhealthy fast food in the poorer communities in which many African Americans live. Traditional social science rested on this more holistic approach. He had studied everything from HIV in South Africa to nutrition among African Americans here in the U.S. He has developed a cultural model, known as the PEN-3, that is used in several countries to develop public health programs and address health inequity.

“In public health right now, there are three concepts that are en vogue: health disparities, culture of health, and the cultural determinants of health,” says Michael Eriksen, interim vice president for research and economic development and founding dean of the university’s School of Public Health. “Airhihenbuwa’s work deals with the intersection of these concepts because he’s focused his career on looking at things like poverty and race and education level and their impacts on health. Not just the behaviors, but the root causes that determine that behavior.”

That’s why Eriksen brought Airhihenbuwa to Georgia State, where he will lead a new interdisciplinary team known as the Global Research Against Non-Communicable Disease (GRAND) Initiative. Part of the university’s Next Generation research program, meant to build strength around innovative research that addresses some of the world’s most pressing issues, the GRAND Initiative will look at ways to combat chronic conditions such as heart disease, stroke, cancer, diabetes, obesity, respiratory disease, mental illness and drug abuse and alcoholism — collectively the leading causes of mortality on Earth — through the wider lens of social, structural and cultural determinacy. He and his colleague Nida J. Shaikh, assistant professor of nutrition in the Byrdine F. Lewis College of Nursing and Health Professions, will examine the structures and systems behind individual behaviors that contribute to these widespread diseases, from eating certain foods so failing to seek preventative treatment, and try to better understand them. “Understanding the social determinants of health is so crucial in understanding global health disparities,” says Airhihenbuwa. “This is the way we’re going to close the gap of inequity.”

Airhihenbuwa first switched his focus from business to healthcare as an undergraduate at Tennessee State University because he thought he wanted to work at the macro level managing healthcare facilities. But as he delved into micro aspects of the field, he found he was more curious about the people behind the numbers. “I wanted to understand why people die and why they are sick,” he says. “To make sense out of people and their agency.”

Central to Airhihenbuwa’s research is the difference between addressing health disparity and addressing health equity. A popular metaphor imagines a group of fans watching a football game from behind a fence. Some are tall enough to see over the fence, others cannot. Equality means bringing a bench for all to stand on, but though it elevates everyone, some may be still too short. Equity means looking at individuals, sizing up their situation and providing each a riser that allows them to see the game.

Researchers like Airhihenbuwa look deeper, to the roots of the structural inequity, and ask: Why do you need the fence? This is the social justice question. For Airhihenbuwa, the answers always revolve around cultural context. In the late 1990s, while teaching at Pennsylvania State University, Airhihenbuwa studied the high mortality rate from diet-related diseases among African Americans. Traditional social science rested on the perceived connection between socioeconomic status and the overwhelming availability of cheap and unhealthy fast food in the poorer communities in which many African Americans live. In short, they are diets high in fat, saturated fat and salt because that’s all that was offered to them.

Airhihenbuwa felt that wasn’t the complete picture. He and his research team began studying African Americans’ eating practices, and found that the participants
Arihinenbua’s PEN-3 cultural model consists of three domains, each of which include three key factors that form the acronym PEN. The domains are Cultural Identity (Person, Extended Family and Neighborhood); Relationships and Expectations (Perceptions, Enablers and Nurturers); and Cultural Empowerment (Positive, Existential and Negative).

Cultural Identity looks at the potential points of entry for intervention, such as family members, healthcare workers or communities as a whole. Relationships and Expectations evaluates local attitudes toward health services, including healthcare services, but also the influence of family and friends in nurturing decisions about health. Cultural Empowerment takes into account local beliefs and practices.

The PEN-3 cultural model is used to provide context, highlighting not only the aspects of a culture that are harmful to health, but those that are positive to health, including the people, structures and traditions that are benign or beneficial in unconventional ways.

“It helps me set aside my own biases and, at the same time, not be overwhelmed by the fact that I have biases,” says Chandra Ford, a professor at the University of California – Los Angeles Center for Health Equity, who studied and collaborates with Arihinenbua at Penn State. “PEN-3 helps us address our own fallacies. It helps us realize that even when we show up meaning to do good, we bring assumptions that can harm communities. It’s almost radical in public health. We usually view everything through the lens of the problem. But the first ‘P’ in PEN is not ‘Problem,’ it’s ‘Positive.’”

“You can’t just go into a culture and look at the negative and ignore everything else,” says Arihinenbua. “When public health practitioners work with a population that has been studied heavily, they need to be mindful that although there might be an expectation to provide a solution, every individual, family and community has something beneficial going on, something unique. If we can work through the process and identify the positive qualities, we’ll be more likely to get positive results.”

By 2030, more people in the developing world will die from chronic conditions than from infectious diseases.

Source: World Health Organization
Meet the Georgia State scientists who are using big data to help transform the way we think about mental illness.

BY BONNIE ROCHMAN  |  ILLUSTRATIONS BY REID SCHULZ
Vince Calhoun, one of the world’s top experts in brain imaging and analysis, has been pondering this question for a while. As an undergraduate in electrical engineering, he was intrigued by how engineering principles can be used to model the human body – blood flow, for example. That led him to pursue bioengineering in graduate school. At Johns Hopkins University, he connected with a psychiatry group doing neuroimaging.

“I was the only engineer,” says Calhoun, founding director of Georgia State’s new Center for Translational Research in Neuroimaging and Data Science (TReNDS), which is working to use big data and artificial intelligence (AI) to change the way we think about mental health disorders. “The joke was that I was the engineer analyzing the psychiatrists.”

It was no joke. Calhoun, a Distinguished University Professor of Psychology at Georgia State, realized technology has the potential to address “lots of the hard questions” psychiatrists were asking. At TReNDS, a collaboration among Georgia State, the Georgia Institute of Technology and Emory University, he’s searching for answers, using the center’s resources to delve into identifying biomarkers associated with brain health and disease.

“We’re working on really leveraging the synergy between all these institutions,” says Calhoun, who was recruited from the Mind Research Network in New Mexico, where he was president until Georgia State lured him to Atlanta last year. Calhoun’s work centers on applying AI and data-driven analysis to brain imaging data, employing algorithms he’s developed to yield a more nuanced understanding of the brain and how it functions, as well as how it’s affected by mental or neurological illness. To do this, he creates neuroinformatics tools that help researchers make sense of increasingly large data sets. Calhoun’s tools are designed to assist scientists as they collect, manage, analyze and share data.

If Calhoun had his way, brain scans would be a standard part of medical care. “If I could, I would get a brain scan early on everyone and then throughout their lives,” he says. “It would be a real treasure trove of data because by the time someone is sick, it’s often too late to help or understand how the problem developed.”

For starters, mental illness can be trickier to pin down than physical illness. It’s shaped by genetic and environmental factors, stress among them. While there are all sorts of biomarkers for identifying physical illness — blood tests for diabetes, X-rays for broken bones, CT scans for cancer — detecting mental illness is more elusive. Calhoun and the team of scientists he’s assembling at TReNDS are helping reshape the mental health landscape by using AI to pull more data from brain imaging scans, creating a new picture of mental illness in the brain. Calhoun, a Georgia Research Alliance Eminent Scholar in Brain Health & Image Analysis, is developing algorithms to improve our understanding of how the brain functions, its structure and genomics, so that sophisticated math and computer science can be deployed to better understand people with mood and psychosis disorders.

Mental health is perceived as a touchy-feely discipline. Practitioners – psychiatrists and psychologists, among others – are interested in how people feel, think, behave. In a world in which data are used to evaluate nearly everything, mental health has seemed a category apart. How could you possibly use data science to evaluate the complex machinery that makes up a person’s mind?

What if the brain is like a book written in a language we don’t yet understand? Calhoun is trying to decipher it, developing techniques to help doctors and scientists understand what’s written within.
He specializes in weaving together information from multiple data sets — a technique called data fusion — to provide better insight into complex problems.

At three pounds and 86 billion neurons, the human brain is an engineering marvel, with neurons communicating with one another to form circuits and transfer information that governs walking and talking, sleeping and waking — and so much more. It’s the body’s command center, so when it malfunctions, it matters.

“One challenge is that the brain is the most complex organ in the human body,” Calhoun says. “We don’t fully understand how it works, but we know that mental health diagnoses are imperfect.”

Someone who has schizophrenia, for example, may share the same symptoms with someone who has bipolar disorder. Schizophrenia itself is a diagnosis by exclusion. You must rule out bipolar disorder, depression and mood disorders by asking a lot of questions about what an individual is experiencing.

“We don’t even know if we’re trying to treat an actual clearly defined disorder or a suite of symptoms,” says Calhoun. “The categories are not as precise as they should be. We’re trying to come up with benchmarks.”

Take twins: If your identical twin has schizophrenia, you have just a 50 percent chance of developing it, too. To make matters more complicated, mental illness is also polygenetic, hinging upon an intricate mix of genes and environment. Consider that one person’s experience with schizophrenia — or any mental health disorder, for that matter — can vary widely from another’s, and it becomes clear why it has been challenging to develop treatments for mental illness.

Calhoun also has a personal stake in trying to better understand how the brain functions. His father has Parkinson’s disease and bipolar disorder has been diagnosed in his family, albeit after the course of his research was established. “It’s made me see why this work is important,” he says. “Mental illness really impacts everybody.”

Calhoun recently received nearly $4 million from the National Institutes of Health’s National Institute of Mental Health (NIMH) to develop new models that use brain imaging and genomic data to better predict mental health disorders. It’s critical work: About one in five Americans lives with a mental illness. In 2017, that was nearly 47 million people.

As part of the NIMH grant, Calhoun and his colleagues are comparing two approaches to diagnosis: the conventional approach that relies upon a checklist of symptoms to generate a diagnosis and one that analyzes brain data. It may sound simple, but it’s far from it. Calhoun is overlaying various types of brain imaging with genomic data, mixing them together mathematically using machine learning and AI to identify unique data sets that contain more useful information than imaging or genomic data can provide on its own.

“We are focused on leveraging many different kinds of data, which is unique,” Calhoun says. “We’re not just looking at does the wiring in your brain change or does the activity in your brain get stronger or weaker or does your genome look a certain way? We are trying to combine all that information together because no data set captures all the available information.”

Our goal is to look at the brain in a more holistic way,” he says. “We try to let the data speak and help us understand what is going on in inside.”

This approach can be applied to any number of mental illnesses and brain disorders, including depression, anxiety, schizophrenia and Alzheimer’s disease. Learning to determine which data correlate with which condition helps make doctors’ lives easier and helps patients end diagnostic odysseys, months or years spent searching for the right diagnosis.

One of Calhoun’s projects involves looking at a sample of children to see who, over time, will
“Do we have the power to predict whether symptoms will persist into adulthood?” says Liu. “Fine-tuning treatment could hang in the balance; if providers can determine that the condition will be lifelong, it’s likely that treatment will differ from what’s recommended for ADHD that limits itself to childhood.”

“Vince is helping remove the noise,” says Liu. “He’s cleaning up the data so we can analyze it.”

Calhoun has been on cleanup duty for a long time. Psychiatrist and researcher Godfrey Pearlson first met Calhoun when he was a senior research assistant in a psychiatry imaging center at Johns Hopkins that Pearlson directed. Pearlson was using functional MRI (fMRI), which measures brain activity, to try to probe what the brain was doing when a person drove drunk. Subjects would drive in realistic simulators inside a scanner, and Pearlson would watch how their brains reacted.

“Unlike a simple task like pressing a button when you see a stimulus, driving is incredibly complicated,” says Pearlson, now a professor of psychiatry and neuroscience at Yale University School of Medicine. “Your brain lights up like a Christmas tree, and it’s impossible to tell which part of the brain circuits or regions are involved with the behavior.”

Enter Calhoun, who realized that independent component analysis (ICA) — a computational technique that helps separate a whole into parts — could be harnessed to parse which brain circuits were switching on and off. That helped researchers winnow down what they were looking at.

“I simplified and made the whole problem intelligible and subject to analysis,” says Pearlson, who has gone from Calhoun’s mentor to his peer. “Researchers everywhere saw the usefulness of applying ICA to fMRI. It’s now one of the main methods of analysis.”

Another scientist might have stopped there. But Calhoun took it a big step further, putting together a “toolbox,” or cheat sheet, for how to apply ICA to imaging, along with associated algorithms. His toolbox has been downloaded hundreds of thousands of times by scientists, says Pearlson.

“He’s done the scientific community a favor by distributing this as an open source software tool,” he says. “[The tools] are the sort of thing where people will say, ‘Yeah, that makes sense. I wish I’d thought of it.’”
ANDREW YOUNG SCHOOL OF POLICY STUDIES
The Georgia Policy Labs have received $1 million from the Arnold Foundation to create a Child & Family Policy Lab, which will focus on increasing the safety, education and economic stability of Georgia’s children and families.

Debbie Kibbe, senior research associate at the Georgia Health Policy Center, has received the President’s Council on Sports, Fitness & Nutrition’s Lifetime Achievement Award.

James Marton, professor of economics, has been awarded $250,000 from the U.S. Department of Agriculture to study how the Supplemental Nutrition Assistance Program affects the food security and health of people aged 60 and older.

Georgia State has been named one of eight Agency–University Partnership Workforce Excellence sites by the National Child Welfare Workforce Institute. The School of Social Work will receive $579,000 as a Workforce Excellence partner with the Georgia Division of Family and Children Services.

Sam Williams, professor of practice in the Urban Studies Institute, has received the Dan Sweat Award from Central Atlanta Progress. The award honors leaders who are “doing the right thing” for downtown.

BYRDINE F. LEVIES COLLEGE OF NURSE & HEALTH PROFESSIONS
Doug Gardenhire, chair and clinical associate professor of respiratory therapy, has authored the 8th edition of "Rau’s Respiratory Care Pharmacology," the world’s top textbook on medication use in the respiratory care field. Previous editions were written by emeritus professor Joseph Rau.

Blake McGee, assistant professor of nursing, has been awarded an American Heart Association Young Investigator Database Seed Grant to study the impact of state’s decisions on Medicaid expansion on stroke severity and rehabilitation outcomes.

Michelle Nelson, clinical assistant professor of nursing, has received the American Association of Nurse Practitioners® Georgia State Award for Nurse Practitioner Advocate Excellence. The prestigious award is given annually to a dedicated nurse practitioner (NP) and NP advocate in each state.

COLLEGE OF THE ARTS

Ruth Stanford, associate professor of art and design, has been honored with an international solo show at the National Art Gallery Zambia. Her photography series, “Foot Traffic,” was conceived during a residency at Wayi Wayi Art Studio and Gallery in Livingstone, Zambia, in June 2018.

COLLEGE OF ARTS & SCIENCES
Michael Black, senior lecturer in neuroscience, has been named president-elect of Nu Rho Psi, the National Honor Society for Neuroscience.

Megan Connors, assistant professor of physics and astronomy, has received a five-year, $834,881 CAREER award from the National Science Foundation, the agency’s most prestigious grant for early career faculty.

John Horgan, Distinguished University Professor of Psychology, has received $250,000 from the U.S. Department of Homeland Security to research the evolution and spread of the growing male supremacist movement known as “Incel.”

Jun Kong, associate professor of mathematics and statistics, has been awarded $1.14 million from the National Cancer Institute to develop cutting-edge artificial intelligence computer vision and big data technologies to advance cancer research.

Peter Lindsay, professor of political science and philosophy, has published a book, “The Craft of University Teaching,” which addresses the question: What does the act of teaching become when treated as a craft?

Kathryn McClymond, professor of religious studies, has received the Ray L. Hart Service Award from the American Academy of Religion. The award recognizes those who have fostered excellence in the academic study of religion.

CRavings

IN MANY WAYS, the decline of smoking is one of America’s great public health success stories. Before the Surgeon General released a damning report on smoking and health in 1964, more than 40 percent of American adults smoked. Today, just 14 percent do. But the number of smokers isn’t the only thing that’s changed. There’s also been a major shift in who is smoking.

Unlike the white collar, affluent smokers of the “Mad Men” era, today’s smokers have less education and a lower income. They’re more likely to have mental health disorders. Smoking rates are also much higher among certain racial groups, and African Americans are more likely to die from smoking-related disease than whites.

“Tobacco control strategies have been largely successful, but they haven’t worked for a subset of Americans,” says Claire Spears, assistant professor of health policy and behavioral sciences. “We know that minority adults of low socio-economic status are less likely to quit, and more likely to develop cancers related to tobacco use.”

Spears recently received $3.15 million from the National Cancer Institute to provide a different kind of support than what’s been offered before. She has developed a program, iQuit Mindfully, that delivers personalized text messages built around mindfulness training.

“Many people smoke as a way to cope with stress, but it doesn’t work in the long term,” says Spears. “Mindfulness is a more effective, durable way to manage stress.”

Mindfulness can also take smokers off autopilot. By focusing on a person’s attention on the present moment, mindfulness interrupts the tendency to automatically reach for a cigarette when faced with triggers, including habitual triggers (like after eating), social triggers (like being around friends who smoke) and emotional triggers (like feeling stressed).

“Mindfulness gives you a moment to slow down and consider your response rather than simply react,” says Spears. “It’s something that you can do for yourself anytime, anywhere.”

However, most existing mindfulness research has focused on higher-income and white populations. With this project, Spears hopes to expose a broader population to the benefits of mindfulness, and study the best ways of teaching mindfulness to different groups. She chose text messaging over an app because it doesn’t require participants to have a smartphone or even Internet access. Texting is also a social behavior, and Spears says social support is a big predictor of success in quitting.

“Even though the participants know the messages are automated, we’ve received a lot of feedback saying, ‘It felt like somebody cared, like I had a coach along the way. Like someone was holding my hand,’” Spears says. “Particularly when you live in an environment that is not supportive, that’s huge.”

A 2019 pilot study shows iQuit Mindfully may be particularly effective for adults of low socioeconomic status. According to the study, nearly a quarter of participants living in poverty who received the text messages in addition to in-person mindfulness-based treatment had quit smoking at a one-month follow-up.

With the grant, Spears plans to refine the program, integrating the feedback from the pilot study to make it more personalized and more interactive. In the next phase, for example, people will be able to tailor the messages to their schedule. She and her collaborators will then conduct a larger trial with more than 450 participants, looking at whether the program is effective at helping people quit and if so, how it might work differently than other approaches.

SELECT FACULTY HONORS AND ACCOMPLISHMENTS
Georgia State faculty: Share your research news with us. Send your noteworthy accomplishments to the editor at jmarquez@gsu.edu.
MaryAnn Romski, Regents’ Professor of Psychology and of Communication Sciences and Disorders, has received the American Association on Intellectual and Developmental Disabilities Leadership Award, given for outstanding contribution to the field.

Jessica Turner, professor of psychology and neuroscience, and Vince Calhoun, Distinguished University Professor of Psychology and director of the Center for Translational Research in Neuroimaging and Data Science, have received a five-year, $5 million grant from the National Institute of Mental Health to study how symptoms associated with schizophrenia, bipolar disorder and major depression relate to changes in the brain.

Binghe Wang, Regents’ Professor of Chemistry and director of the Center for Diagnostics and Therapeutics, has been awarded $3.5 million from the National Institute of Diabetes and Digestive and Kidney Diseases to develop a carbon monoxide-based medication as a potential treatment for inflammatory conditions such as colitis.

Cynthia Puranik, associate professor of communication sciences and disorders, has been awarded $3 million from the U.S. Department of Education’s Institute of Education Sciences to assess the effectiveness of a writing intervention program.

Christine Thomas, professor of middle and secondary education, has received the Benjamin Banneker Association’s Lifetime Achievement Award for her decades of leadership and advocacy of behalf of all children in mathematics.

COLLEGE OF EDUCATION & HUMAN DEVELOPMENT

Gwendolyn Benson, associate dean for faculty development and partnerships, has been awarded $1.2 million from the Bill and Melinda Gates Foundation to help Clayton County middle school math teachers improve student achievement, particularly for students of color and those who live in low-income communities.

Thomas Crisp, associate professor of early childhood and elementary education, has been named vice president and president-elect of the Children’s Literature Association, an international nonprofit organization that studies children’s literature.

Franco Dispenza, associate professor of counseling and psychological services, has received an Early Career Achievement Award from the American Psychological Association.

David Houchins, professor of learning sciences, has received $3.2 million from the National Center for Special Education Research to study a blended learning literacy program in juvenile justice schools.

Joe Magliano, professor of learning sciences, and Kathryn McCarthy, assistant professor of learning sciences, have received nearly $600,000 from the U.S. Department of Education to analyze students’ reading comprehension.

Lauren Margulieux, assistant professor of learning sciences, co-edited “Blended Learning in Practice.” The book offers guidelines for researchers and instructors on the theory and practice of blended learning, which combines traditional in-person learning with technology-enabled education.

CONSIDER THE ENVIRONMENTAL IMPACT

The Center for Sport and Urban Policy is honored for its work helping sports organizations become leaders in sustainability.

The Center for Sport and Urban Policy was the first and only academic group to receive the Environmental Innovator Award from the Green Sport Alliance, which leverages the influence of sports to promote healthy, sustainable communities.

When presenting the award, the alliance noted the center’s involvement in the Playoff Green program at the 2018 College Football Playoff national championship game, where more than 40 Georgia Tech students, faculty and staff served as Green Ambassadors to promote sustainable behavior.

Kellison and the center’s co-director, Beth Gianfrate, associate professor of sport administration, are already talking with the organizers of the NCAA Men’s Final Four, which Atlanta will host next April, about helping with their sustainability initiatives.

“IT’S BECOMING INCREDIBLY CLEAR TO SPORTS ORGANIZATIONS, FROM BOTH AN ECONOMIC AND A COMMUNITY ENGAGEMENT PERSPECTIVE, THAT THEY NEED TO CONSIDER THEIR ENVIRONMENTAL FOOTPRINT,” SAYS KELLISON.

“We’re working to help more teams do more.”
Contaminated food causes 48 million illnesses, 128,000 hospitalizations and 3,000 deaths each year in the United States. In his recent book, “Outbreak: Foodborne Illness and the Struggle for Food Safety,” Distinguished University Professor of Law Timothy Lytton examines the history and complex workings of the country’s food safety system.

It seems like we are constantly hearing about foodborne illness outbreaks in the news. Are outbreaks becoming more common, or is it just that we’re becoming more aware of them?

“We don’t know. On the one hand, outbreaks are more visible because public health surveillance systems are constantly improving. On the other hand, some forms of industrial food production may have made our food more vulnerable to contamination than it used to be. For example, the mass production of leafy greens allows one batch of contaminated lettuce to cross-contaminate all of the lettuce in a large production run. In the end, it’s hard to determine how great a role each of these factors plays in the growing number of reported outbreaks.

In the book, you note it is very difficult to assign legal responsibility when outbreaks occur and people get sick or even die. What makes it so hard to identify the responsible parties?

There are an estimated 48 million cases of foodborne illness every year, yet very few people who get food poisoning go to a doctor. And even if they do go to a doctor, most physicians don’t take a stool sample or send it to a state laboratory to get tested. And even if a physician orders testing, the state lab doesn’t always report it to the Centers for Disease Control and Prevention (CDC). Of the 48 million acute illness episodes every year, the CDC only detects 14,000 that are tied to a particular pathogen. And of those, the government only figures out what food was responsible in about 300 cases. Consequently, the likelihood of a food producer being held accountable is about as likely as a lightning strike, maybe less.

Still, there are high-profile lawsuits and occasional criminal charges that carry effective deterrent against food contamination and outbreaks!

Yes. Even though a lightning strike is unlikely, people put lightning rods on their homes because if lightning does strike, it can destroy your house. The same is true in the food industry. If you are a food producer, it’s very unlikely to have a foodborne illness traced back to your beef or lettuce or crackers, but if it is, it can damage your brand and, in some cases, ruin your company.

Read the full interview, which includes Lytton’s ideas for improving the country’s food safety system, at researchmagazine.gsu.edu.
Nearly 57,000 children under the age of 5 are hospitalized each year in the U.S. with respiratory syncytial virus (RSV), which typically causes cold-like symptoms but can lead to serious respiratory distress. RSV is the most common cause of bronchiolitis (inflammation of the small airways in the lungs) and pneumonia (infection of the lungs) among babies in this country, and it’s also a major cause of severe respiratory illness in older adults, according to the Centers for Disease Control and Prevention.

Despite decades of work by scientists, there is no vaccine to prevent RSV infection, partly because of a disastrous vaccine failure during a 1966 clinical trial. The early vaccine not only failed to protect children, it made their symptoms worse. Two toddlers died and several infants were hospitalized with what’s known as “vaccine-enhanced respiratory disease.”

Sang-Moo Kang, professor in the Institute for Biomedical Sciences, believes he might have found the missing link to make a safe RSV vaccine. Kang has created a unique adjuvant — a chemical that is added to a vaccine to prime the immune system — and a recent study in *Virology* showed it can prevent the complication that doomed the 1966 vaccine. In the study, Kang tested his new adjuvant against existing ones. The image above shows inflamed airway tissue from the lungs of mice that received a vaccine with a conventional adjuvant and were then exposed to the virus. Kang’s adjuvant, on the other hand, activated the immune system while preventing lung inflammation.
A team of scientists is using AI to transform the way we think about mental illness.

THE MEASURE OF A MIND

How one professor is confronting the global spread of non-communicable diseases.

A RISING TIDE

Could learning to improvise music have far-reaching effects inside the brain?

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YOUR BRAIN ON JAZZ

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