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Recurring Slope Lines are examples of ongoing geologic activity on Mars

Hot on the Glacial Ice Trails of Mars

BY ELISE TAKEHANA

Reid Parsons, a NASA-funded planetary scientist and assistant professor of geographical sciences, spends his time considering the deep history of Mars visible in its changing geological features. He is intrigued by how and why Mars differs from and is similar to Earth.

While in the 1970s scientists thought Mars was “geologically dead,” more recent data reveals that “there are still some interesting things happening with ice moving from the polar caps to other places on the planet, kind of like ice ages on the earth.” Like Earth, Mars has undergone significant climate changes associated with variations in the tilt of the planet’s rotation axis. However, Mars’s tilt, or obliquity, varies more dramatically than Earth’s due to its proximity to Jupiter. The poles can tilt such that the polar ice caps become unstable and evaporate into the atmosphere and are subsequently re-deposited in the equatorial regions. Scientists think periodic variations in Martian obliquity drive episodes of glaciation or ice ages.

For the past two years, Parsons has been in Japan where he collaborated with JAXA (the Japanese space agency) scientists in studying Mars. His research focused on the unusual ridges found on the northern side of Pavonis Mons, a nearly 47,000 foot shield volcano near Mars’s equator. While early speculations attributed these geological features to lava flows or landslides, Parsons’s glacier model, which simulates the climate on Mars under different obliquity conditions, determined that when Mars’s axis is tilted 10 degrees more than it is now, ice accumulates on this side of the volcano. Those unusual

ridges mark the response of glacial flow to changing obliquity.

By applying ice flow models used on Earth to ice movement on Pavonis Mons, Parsons is looking for how glacial movement and the formation of deposit ridges there ultimately differ from those on Earth. Luckily for him, ice flow dynamics are easier to calculate

on Mars since it’s so much colder, thus eliminating the complications that arise with the variable that water brings to the equation. To do such work, Parsons is using sophisticated, open-source ice flow models that the University of Alaska, Fairbanks developed.

While scientists had and still continue to study Mars by looking at Mars-like places on Earth, using computer simulations allows researchers

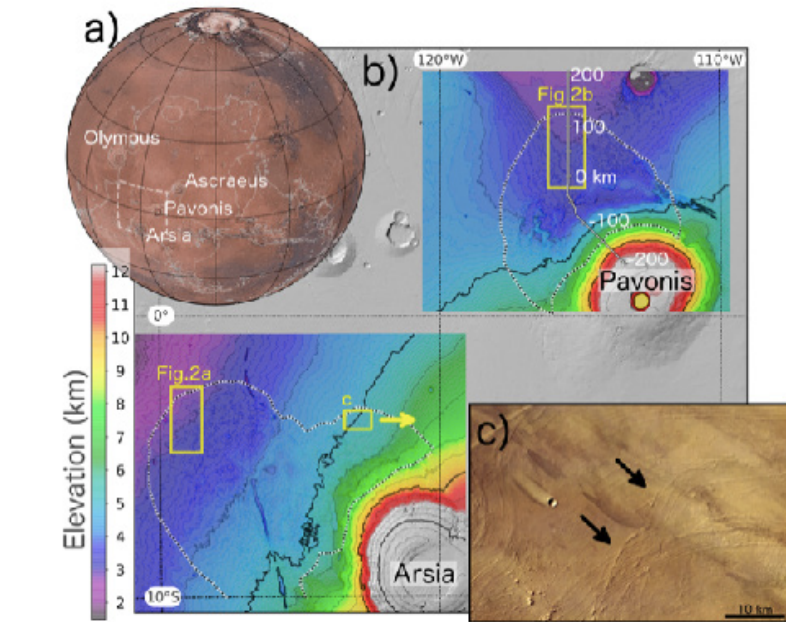
to account for difference in gravity, temperature, humidity, and atmosphere between the two planets. Parsons will continue to work with ice flow models by drawing connections between what astrophysicists have determined as the likely obliquity of Mars in the last few million years to features on Mars. By doing so, he hopes to “connect a point in time in Mars’s obliquity history with a point in space on the surface of Mars. That has not yet been done.”

While in Japan, Parsons also calculated changes to geological features on Mars by superimposing images of Mars taken at different times and statistically analyzing the differences between pixels to see what has changed. With photo resolutions at half a meter



per pixel, contemporary Mars imagery offers rich data. Parsons first used this data visualization technique to examine recurring slope lines (RSLs), dark lines that appear in the summertime on crater slopes. People are hoping these RSLs are waterflow from melting ice. He wants to chart where, when, and at what frequency these RSLs occur, but “no one has done that sort of widespread global survey because looking through all of these thousands and thousands of images is just too onerous a task.” Parsons’s data visualization project lets computers help human researchers parse through the mass of images to identify potential geological changes. He hopes to include students in such a change detection analysis over the summer.

While Parsons hopes his research will contribute to our understanding of how planetary orbits and their climates correspond, he also wants to reach laypeople. Amidst public interest in colonizing Mars, he would like to push against “this idea that we can escape our planet and go to Mars



CAPTION: Locations of the largest volcanoes on Mars (a) two of which, Arsia and Pavonis (b), feature repeating ridges on their flanks (arrows in (c)) which appear to be deposited by glaciers.

as a safe home from climate change.” While some would like to terraform Mars to make it more habitable to humans, Parsons thinks we should appreciate Mars as it is and work to understand its unique history.

“Studying another planet gives you a great perspective on your own planet. And even though we

may undergo some very significant climate changes in our lifetimes with global warming and the emission of greenhouse gases, there’s never going to be a better place for us to live than our own planet.”

From the Co-Coordinator's

Hopefully news of some of the exciting happenings on campus will wipe away any mid-winter blues. Spring is coming!

As co-coordinators of the Center for Faculty Scholarship, one of our goals is to overcome silos. With so many exciting events and projects on campus, and colleagues working on similar research topics to our own, it is such a shame to let silos pen our passions. One way to break out of those silos is through the Faculty Research Colloquium, which will be on April 29th 2020. At that colloquium, Catherine Buell, Kisha Tracy, Joe Wachtel, and J.J. Sylvia IV will discuss their work on digital humanities. Each will present a paper, followed by a Q&A session and a reception. Their papers will be published by the FSU Press, and they will each receive a \$500 stipend for their work. This spring we will be soliciting applications for the 2021 Faculty Research Colloquium, so talk with your colleagues and put together an application! Panels should consist

of 4 faculty members, and must have at least 2 departments represented.

Another way we are trying to break down silos is through Google Groups on different meta-research interests. We surveyed faculty members on their research interests last semester and used that data to create the Google Groups. The groups will be as active as the members desire, but offer opportunities to share work across the campus, discuss issues in our research, bounce ideas off of our colleagues, etc. If you would like to find out more about the Google Groups or join one, just email one of us.

We are always open to new ideas on connecting the academic community and promoting scholarship on campus. Drop us a note, and we will find a way to help. We look forward to an exciting spring!

Google Groups

1. Community and Collaboration
2. Creative Expression
3. Data Analytics
4. Developing Nations
5. Digital Humanities
6. Energy
7. Gender and Sexuality
8. Health and Human Development
9. Identity
10. Media Studies
11. Migration and Immigration
12. Nature and the Environment
13. Poverty and Inequality
14. Race, Nationality, and Ethnicity
15. Social Justice and Human Rights
16. Technology



Counting in Time-Poor Women

BY ELISE TAKEHANA

Ozge Ozay is currently researching Turkish women's time poverty: an insufficient amount of unstructured time remaining after work, household production (which includes care-work), and basic self-care activities like eating and sleeping are deducted from the hours in a day. Time poverty is its own deprivation measure because a lack of time hurts one's health.

Countries collect data called time-use surveys where survey respondents typically record data on their activities every 15 minutes. There are methodological differences in the interpretation of time-use surveys that are subject to debate as in the case of whether napping counts as sleep or leisure. Nevertheless, with this rich data, feminist economists can research the gendered dimensions of time use especially within the same household. In countries like Turkey where women aren't a large part of the paid labor force, such data show how much women are participating in housework, child care, elderly care, and community service. "Women are working all the time, especially in countries like Turkey because the standards of a clean house or of being a housewife are very high."

Time-use surveys allow feminist economists to go beyond the mainstream definition of "work". In national income accounting, for example, homemakers' contribution to the national income is not included in Gross Domestic Product. Such gendered assumptions make it appear as though Turkish women outside of the labor force do not contribute to the economy at all, but "just because it's official statistics, doesn't mean that it's like laws of physics right? People are writing these definitions, so it is obviously a social construct."

In these time poverty studies, Ozay calculates the percentage of women who are time-poor using existing methodologies in the literature. Her recent study compared low- and high-income time-poor women in Turkey to see if time poverty has significant differences across economic classes. Ultimately, low income women were time poor because they had to work longer hours in the paid sector just to make a living and high income women's time poverty came from a combination of paid labor and household production obligations.

For high income women she thought that they would buy ready

to serve food and hire help at home to purchase back their own time, but these women did not feel that that was an option given cultural expectations of a good wife and mother. Of course, more qualitative analysis would help bear out these trends.

Doing such research makes women's work visible but it also has paradigm shifting potential for economic measures in general. For instance, countries' minimum income thresholds usually assume that there is someone to care for the home, children, and elderly without pay. Traditionally, economists have not included domestic work in national output. Since the 19th century, economists assumed that work takes place in the market, which excludes the household. But as more female economists come to the field, concerns on the plight of women's deprivations will eventually become more mainstream.

Ozay also recently published a co-authored study exploring whether the flying geese model of regional economic development still holds true for the East and South-east Asian region. The flying geese model explains how a set of countries recycles comparative advantage goods (goods that they can produce at a relatively lower cost) among each other. As the leader graduates into producing and exporting a more sophisticated product, the next tier of countries picks up products the leader no longer makes. She would like to expand the study to include gender to further explore the relationship among comparative advantage, regional development, and women workers' contribution to it. As an intersectional feminist, she would also like to look at interactions between race and gender in the United States with time poverty, a question that is not possible to examine in Turkish data sets as they do not document race.

Modernizing Music Through Commissions and Coding

BY ELISE TAKEHANA

While Amy McGlothlin's prolific career as a saxophonist includes everything from orchestra to jazz and chamber music to pit orchestras, her current musical interests revolve around her professional saxophone quartet, which mostly plays contemporary classical music. The group regularly commissions new pieces to ultimately build a quality repertoire of more accessible and crowd pleasing pieces of contemporary classical music.

"For a long time [contemporary] music followed a really numerical formula instead of a musical one, and I think we're coming out of that stage now."

Commissioning work is what grows the canon of music for, and thus the reputation of, an instrument. Because McGlothlin and many other musicians assemble in a consortium to commission music and thus share the cost of the composer, more pieces come to exist and the composer gets more exposure on the world stage as all the consortium members can play the piece prior to its publication. Such a model helps an instrument become less dependent on the whims and tastes of the wealthy who could afford to commission work. For the saxophone, the wealthy Bostonian widow, Elise Hall, commissioned over 20 saxophone concertos from every major French composer of the early 20th century. "Without her we would not have a major body of work and we probably would not be taken seriously as a classical instrument."

Beyond playing her part to change the image of the saxophone as

more than a jazz band instrument, McGlothlin has also been playing the bagpipes for 20 years. Despite having a long and serious background, the bagpipes have



a thin record of scholarship. It doesn't help that bagpipe publications are hard to find because of their limited print runs, given the costly process of creating engraved metal plates to stamp the music onto the page. The limited accessibility of bagpipe music brought McGlothlin to unexpected places in her work. "I never thought I would end up basically being a musicologist, which I kind of am now."

Inspired by her friends—one who scans bagpipe books and shares them online and another who has amassed the largest private collection of bagpipe music in the world—McGlothlin is reprinting Donald MacDonald's only book of jigs, reels, and dance music. To do so, she is using LilyPond to code old style embellishments that modern notational programs do not have. She has finished encoding the entire book, which ultimately required frequent collaborations with the software developer.

At this point in the project, McGlothlin is pinpointing mistakes in the original printing and identifying parts of the music that would no longer be played as it was written some 200 years ago. She and other bagpipers will work out modern

versions of these measures while leaving behind historical notes explaining the changes.

Much of the historical work of bagpipe musicologists fits under the umbrella of the digital humanities, even though such work existed long before the term. Making bibliographies of bagpipe music and original manuscripts of tunes available online has been going on for decades now. The Piobaireachd Society (<https://www.piobaireachd.co.uk/>) is a stellar example of a digital archive of bagpipe music. "There are tons of resources like this for bagpipes on the internet. There are not tons of resources like this for other instruments. I think the rarity of the music itself and the rarity of its availability has driven everyone to make it available online."

Given her classical training, McGlothlin gets to bring the bagpipes to orchestral performances, most recently last November with the Boston University Concert Band. "I do get hired for orchestra jobs, because I have those contacts already and I know how to count beats follow a score, and follow a conductor, which a lot of bagpipers can't do. Bagpipes are either on or off, so bagpipers are not used to starting something in the middle of a piece of music."

When she's not coding and modernizing 19th century bagpipe music or playing contemporary classical music with her saxophone quartet, McGlothlin plays with *Triage*, her woodwind trio (flute, clarinet, and saxophone), which performs a few times a year. To her great amusement, McGlothlin has brought the saxophone and bagpipes to the orchestral scene, she is modernizing old bagpipe books, and commissions

more accessible and expressive contemporary classical music. After decades of schooling and years of freelancing, gigging, and working as an adjunct, her tenure-track position gives her a newfound freedom. "I can choose what I want to research. I can research what I'm interested in now."

Take in some of McGlothlin's classical saxophone work on Sound Cloud including her performance of [Faces of Fujin, God of Wind](#) and [Michael Nyman Songs for Tony Movement 1](#).

The screenshot shows a music score for "Bodachan a Gharidh (The Jolly Old Gardener)" by D. MacDonald. The score is displayed in a software interface with a left-hand pane showing metadata and a right-hand pane showing the musical notation. The metadata includes the title, composer, and arranger. The musical notation is in a staff with a treble clef and a key signature of one flat.

The CFS's Annual Invited Lecture

It is our pleasure to host Assistant Professor, Moya Bailey, from Northeastern University's Department of Cultures, Societies, and Global Studies and the Women's, Gender, and Sexuality Studies program.

Bailey just released her co-authored book, *#Hashtag Activism*, published by MIT Press and is currently working on her book *Transforming Misogynoir: Black Women's Digital Resistance in US Culture*. Bailey coined the term misogynoir during her doctoral work and it's meaning and necessity has resonated far beyond academia and landed her in a spot in *Essence* magazine's 2018 "Woke 100 Women."

While many of her projects look to the treatment and presentation of black women as they interact with the medical community, her lecture will instead focus on the human cost of rechargeable batteries. The cobalt we need to make stable batteries for electric cars, cell phones, tablets, and laptops is not just rare, but frequently sourced inhumanly. Bailey also shares her thoughts on how activism in the West could factor in.

Join us in the Randall Science Lecture Hall on Wednesday, March 4 at 3:30 for a riveting lecture, Q&A, and reception. Bring a colleague, friend, or your students!



A lecture, Q&A, and reception with Prof. Moya Bailey

Prof. Moya Bailey examines the debilitating impact of mineral harvesting on the Black Congolese youth who do this work and what digital disability activism in the West can do. Using a Black Feminist Disability Framework, she goes beyond merely highlighting the irony of debility enabling disability activism to consider what types of solidarities are possible when laborers and consumers unite against corporate interests.

Randall Lecture
Hall SCI 211
Wed. 03.04.20





Better Reading Through the Beauty of Listening

BY SAVANAH HIPPERT

Many studies now show that therapy dogs are an asset to people coping with mental and emotional situations—plus, who wouldn't love a cuddly Golden Retriever at their side to help them through the day? Since the spring of this year, Joann Nichols, Associate Professor of Education, took the role of therapy dogs a step farther and has been conducting a literacy rate study with 75 Pawtucketville Memorial Elementary second grade students and her therapy dog, Beauty.

Nichols took a more systematic approach than other studies in the field, which are limited by the tendency to apply therapy dogs to library settings. In her study, one group of students reads to the dog, one group simply interacts with the dog, and one group does not see the dog at all. All of the children are pre-tested with Fountas and Pinnell assessments, along with utilizing Raz-Kids (an online reading program). While Nichols sees the study going into January, once it is complete, the students will be

tested again to see if they have made progress in their reading and which groups saw improvement in their prosody—how well one reads aloud and how smoothly one can read a passage.

By having Beauty at the students' side, the goal is to give students an avid listener and avoid any judgment on their literacy skills in hopes of making their learning process a smoother one. Since Beauty has been reading with children in McKay for the past five years, she has become a great intuitive listener and responds positively to students who read with affect, particularly when it comes to reading dialogue.

As of September, one child with a very uncommon Asian dialect and who spoke no English, communicated with little sign language. He didn't have any books to use for study, but he "has really brightened up to [Beauty] and will come and sit with her, and brush her with one hand and

flip through a book and mouth words with the other hand. So he's kind of using her as a comfort mechanism to get into what has to be frightening in his situation. So we're seeing great things like that," said Nichols.

With so much going on in the Education department as of late, Nichols is itching to get back onto campus from her sabbatical and aid with the development of the new curriculum and return to her advisees. In the meantime, she's continuing her work on an article she started a couple years ago on education students and their perceptions of their undergraduate program, particularly on their desire to have face-to-face classes and dependable relationships with advisors. But until Nichols' projects come into the final stages of fruition, she suggests listening to CBS correspondent Mo Rocca's podcast, *Mobituaries*, which offers a fresh take on current events by turning to the human stories and perspectives that make those events real.

Cyber Aggression & Bystander Actions

BY KURTIS KENDALL

What we don't understand is often of great interest to us. Questioning the unknown and then digging deeper to discover the "why" is the life blood of researchers. Dr. Daneen Deptula of the Psychological Sciences Department at Fitchburg State is no different when it comes to her interest in cyber aggression.

"I'm really drawn to areas in which I don't really understand why people are doing what they're doing," says Deptula. "I don't understand why you would say something negative about someone in a way that could be publicly recorded. That really interests me, what were they thinking then? Why would they do that?"

Deptula has been studying the subject of cyber aggression and harassment since 2012, with her more recent work focusing on studies about face to face and online attacks, as well as looking at the actions (or lack thereof) of bystanders.

It's important to note that the differences between the terms cyberbullying and cyber aggression. Cyberbullying is repeated negative actions over time with an aspect of a power differential and relationship established between the parties involved. Cyber aggression, on the other hand, lacks this relationship as the aggression could be towards anyone, even toward a friend.

The first phase of her research, which looked at the effectiveness of different styles of bullying, showed that it didn't matter whether the negative action was done face to face or online, it often still hurt the victims equally as much.

Naturally, this led Deptula to the second phase of her work: addressing what bystanders do when witnessing such actions. Deptula developed a questionnaire that presented different scenarios and a 1-7 scale of agreeability to questions such as is the victim to

blame, do you have a responsibility to help, and would the victim welcome your help?

One of the biggest discoveries from this study was that depending on who the victim was and who the perpetrator was, bystander reactions varied widely. When the victims were male, male bystanders were more likely to perceive it would help their reputation if they intervened, as opposed to helping out a female victim. Female bystanders in general were more likely to feel an obligation and responsibility to step in.

These findings reveal a lot about perceptions associated with attacks online. Most cyber aggressors are male, so when the aggressor is female, Deptula thinks people just aren't sure how to handle the situation. "Imagine you have a group of girls who are saying negative things about another girl. That's when individuals felt the most uncomfortable about intervening or stepping in." This was especially true when the bystanders were male. It's not something individuals expect. Part of a bystander's reluctance to act is their assumption that female victims of female aggressors wouldn't welcome help.

Deptula says she plans to continue looking at how gender differences and group dynamics influence bystander actions. She hopes to figure out how to encourage more intervention from bystanders to prevent future cases of cyber aggression.

The survey also provided insight into patterns of bystander behavior unrelated to gender. Part of the survey asked if the participants had performed a certain cyber aggression act before or if they had been a recipient of it. Bystanders who have gone through some of these experiences of victimization before could lead to an increase in intervention. Deptula states that looking at bystander actions of



former perpetrators is something she'd want to research in the future to see if their actions change when they are a witness to bullying instead of the transgressor.

Deptula says training individuals to be better bystanders is important to stopping these negative acts from occurring all together. Many victims don't want these activities reported to their parents or school systems which makes fellow peers the most powerful group to have an influence on preventing these things and maintaining a safe environment.

In fact, the passion of the students Deptula has worked with on this project has helped her see the importance of this work for everyone involved. Many students have faced cyber aggression themselves or have friends who have been attacked, so their perception helps to craft reasonable scenarios to study. The responsibility of the bystander resonates more with student researchers who may have had a bystander fail them in the past. It makes the subject one in which researchers and students alike would like to see more intervention.

From these studies, Deptula hopes interventions can be developed that prevent future harassment or aggression in its tracks. "I think we need to know more about how cyber aggression works, what might go into the thinking process of those who do or who do not intervene, to help develop intervention programs in the future."

Events

Please send details of events related to faculty research or intellectual life to etakehan@fitchburgstate.edu for inclusion on the Center for Faculty Scholarship's calendar and newsletter.

02 03 20

12:30 CTL

Laura Baker appears in the Faculty Lecture Series with her talk "Critical Digital Pedagogy: Rethinking the Immigration History Course."

02 05 20

3:30 Hammond Gallery

Art and Communications Media bi-annual faculty exhibition's opening reception. Exhibit itself on show starting Jan. 21, 2020.

02 12 20

11:30-1:00 President's Hall

Faculty brown bag lunch. Bring a lunch and drop by any time for casual conversation with colleagues. You're welcome to bring food to share if you like.

02 25 20

12-3 Hammond Main Lounge

The Robert E. Cormier digital archive exhibit on childhood and sexuality features faculty and student panels on the author's work and its themes. Graphic novelist, Jarrett J. Krosoczka keynotes.

02 26 20

3:30 CTL

Connie Strittmatter delivers her talk "Copyrights and Faculty Author Agreements." Find out more about your intellectual property rights!

03 02 20

12:30 CTL

J.J. Sylvia IV appears in the Faculty Lecture Series with his talk "Becoming Data: A Digital Humanities Project." Conversation to follow.

03 04 20

3:30 Randall Sci. Lecture Hall

Prof. Moya Bailey, digital humanist and race, gender, and disability studies scholar, delivers an invited lecture "Debility and Disability in Digital Activism." Reception to follow.

03 30 20

3:30 Ellis White

Community Read panel "Rising Nationalism Around the World" featuring Kate Jewell, Ben Lieberman, Ben Railton, and Eric Budd.

04 06 20

12:30 CTL

Michael Hoberman delivers his talk "Don't Know Much About Theology: The Case for Building Religious Literacy into the University Curriculum."

04 06 20

3:30 CTL

Karen Frank-Mays hosts a workshop "Grant Writing for Non-STEM Faculty."

04 13 20

3:30 Science Lecture Hall

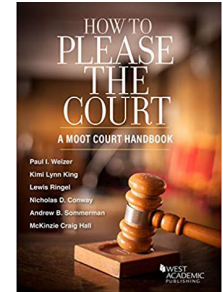
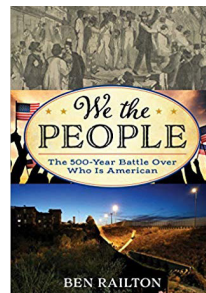
Dr. Ernest Kaninjing, FSU MBA 2001, delivers a guest lecture "Global Public Health and Poverty."

04 29 20

3:30 Ellis White

Catherine Buell, Kisha Tracy, Joe Wachtel, and J.J. Sylvia IV present papers in a panel on the digital humanities across their disciplines.

Look out for book talks from Ben Railton, Elise Takehana, and Paul Weizer who have recently published books.



Reading and Listening

Share recommendations on articles, books, and podcasts that colleagues might enjoy.

The following two articles are short, but interesting discussions on ways to incorporate your research into your teaching.

Stanford University's Tomorrow's Professors Posting "Integrating Research and Teaching in Practice" is available at: <https://tomprof.stanford.edu/posting/1619>.

The University of Notre Dame's Notes on Teaching and Learning's "Bringing Your Research into the Classroom" can be found at: <https://sites.nd.edu/kaneb/2017/02/20/bringing-your-research-into-the-classroom/>.

Check out the Center for Faculty Scholarship's podcast with recordings of campus events and conversations with or tips from colleagues. Find it at <https://anchor.fm/cfs> or on your favorite podcast app.



WHERE TO LISTEN



Research Live

[The Center for Faculty Scholarship](https://www.fitchburgstate.edu/center-for-faculty-scholarship)

Co-Coordinators: Eric Budd and Elise Takehana

Newsletter Staff: Savannah Hippert and Kurtis Kendall

If you are interested in having your research featured in Research Live, contact Elise Takehana at etakehan@fitchburgstate.edu