In Review

SONG CYCLE

Premiere Performance

DAYS OF DEBUTS: Grammy Award–winning soprano Renée Fleming '83E (MM) and the Eastman Philharmonia presented the debut of *Letters from Georgia*, a song cycle by Pulitzer Prize–winning composer Kevin Puts '94E, '99E (DMA) during a performance last fall at Kodak Hall at Eastman Theatre. Basing the composition on correspondence from artist Georgia O'Keeffe to her photographer husband Alfred Stieglitz and suffragist Anita Pollitzer, Puts wrote the work specifically for Fleming and the Philharmonia. The Rochester debut was followed by a one-night performance at Lincoln Center in New York City. **PHOTOGRAPH BY DAVE JONES/EMPIRE WEST PHOTO FOR THE EASTMAN SCHOOL OF MUSIC.**

'JOY IN THEIR HEARTS'

90 Years Young

EARTH MOVERS: This spring marks the 90th anniversary of the groundbreaking for the River Campus, a day in 1927 when, historian Arthur May noted, "trustees, faculty, alumni, and townspeople smiled the joy in their hearts." On May 21 of that year, May writes in *A History of the University of Rochester*, then President Rush Rhees ceremoniously turned the first spadeful of earth before "a big steam shovel gave a little demonstration of its prowess." Plans for the campus originally included a dozen buildings. Today, there are close to 60.

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DANCE & MOVEMENT

Physical Presence

SOCIAL SUPPORT: Sarah Bjornland '17, an optics major from Utica, New York, is lifted during a rehearsal for a late-semester concert presented by the Program of Dance and Movement. Called *Confluence*, the performances featured students, faculty members, and guest artists. Bjornland, along with Anna Alden '17, an English major from Canandaigua, New York, and Charlotte Pillow '19, a biology major from Ridgewood, New Jersey, presented work designed to explore the physicality behind female gender conceptions, the social constructions and cultural expectations that result from those conceptions, and how they influence the lives of women in contemporary society. PHOTOGRAPH BY ADAM FENSTER

CLIMATOLOGY

A Large Seagull…with Teeth

Rochester team's discovery of ancient bird species adds to understanding of climate.

By Lindsey Valich

A Rochester team of geologists has discovered a new species of bird in the Canadian Arctic. At approximately 90 million years old, the bird fossils are among the oldest avian records found in the northernmost latitude, and offer further evidence of an intense warming event during the late Cretaceous period.

"The bird would have been a cross between a large seagull and a diving bird like a cormorant, but likely had teeth," says John Tarduno, professor and chair of the Department of Earth and Environmental Sciences and leader of the expedition.

Tarduno and his team, which included both undergraduate and graduate students, named the bird *Tingmiatornis*

BUILDING A BIRD: New fossil records unearthed in the Canadian Arctic are offering scientists their first look at a prehistoric bird and its much warmer climate.

MICHAEL OSADCIW (BIRD); STEVE BOERNER (MAP)

arctica; "Tingmiat" means "those that fly" in the Inuktitut language spoken in the central and eastern Canadian Arctic (Nunavut territory). The findings, published in *Scientific Reports* and based on work funded in part by a grant from the National Science Foundation, add to previous fossil records that Tarduno has uncovered from the same geological time period and location. Taken together, the fossils paint a clearer picture of an ecosystem that would have existed in the Canadian Arctic during the Cretaceous period's Turonian age, which lasted from approximately 93.9 to 89.8 million years ago.

"These fossils allow us to flesh out the community and add to our understanding of the community's composition and how it differed from other places in the world," says Donald Brinkman, vertebrate paleontologist and director of preservation and research at the Royal Tyrrell Museum in Alberta, Canada.

Building historic climate records further helps scientists determine the effects of climate on communities, ecosystems, and the distribution of species and could help predict the effects of future climatic events.

"Before our fossil, people were suggesting that it was warm, but you still would have had seasonal ice," Tarduno says. "We're suggesting that's not even the case, and that it's one of these hyper-warm intervals because the bird's food sources and the whole part of the ecosystem could not have survived in ice."

From the fossil and sediment records, Tarduno and his team were able to conjecture that the bird's environment would have been characterized by volcanic activity, a calm freshwater bay, temperatures comparable to those in northern Florida today, and creatures such as turtles, large freshwater fish, and champsosaurs—a now extinct, crocodile-like reptile.

"The fossils tell us what that world could look like, a world without ice at the Arctic," says Richard Bono, a PhD candidate in earth and environmental sciences and a member of Tarduno's expedition. "It would have looked very different than today, where you have tundra and fewer animals."

The fossils were found above basalt lava fields, created from a series of volcanic eruptions. Scientists believe volcanoes pumped carbon dioxide into the Earth's atmosphere, causing a greenhouse effect and a period of extraordinary polar heat. That created an ecosystem allowing large birds, including *Tingmiatornis arctica*, to thrive.

Tarduno's team unearthed three bird bones: part of the ulna and portions of the humerus, which, in birds, are located in the wings. From the bones' features, as well as their thickness and proportions, the team's paleontologist, Julia Clarke of the University of Texas, was able to determine the evolutionary relationships of the new birds as well as characteristics that indicate whether the animals were likely able to fly or dive.

"These birds are comparatively close cousins of all living birds and they comprise some of the oldest records of fossil birds from North America," Clarke says. "Details of the upper arm bones tell us about how features of the flightstroke seen in living species came to be."

Previous fossil discoveries indicate the presence of carnivorous fish such as the half-meter-long bowfin. Birds feeding on the fish would have needed to be large and have teeth, offering additional clues to *Tingmiatornis arctica*'s characteristics.

Physiological factors, such as a rapid growth and maturation rate, might explain how the line of bird was able to survive the Cretaceous-Paleogene mass extinction event that occurred roughly 66 million years ago and eliminated about three-quarters of the Earth's plant and animal species.

The physiological characteristics are still conjecture, Tarduno emphasizes, but he says the bird's environment gives clear indications as to why the bird fossils were found where they were.

"It's there because everything is right," he says. "The food supply was there, there was a freshwater environment, and the climate became so warm that all of the background ecological factors were established to make it a great place." R

LOCATION LECTURE: The discovery of fossils (top) during an expedition in the Canadian Arctic that geophysicist John Tarduno led with Rochester students (above) suggests the area was once a more volcanically active region.

COURTESY OF JOHN TARDUNO

HAJIM SCHOOL

New Engineering Dean Outlines Her Vision

Wendi Heinzelman, the first woman to serve as dean of the Hajim School, sees engineering as a quest to improve the world.

Wendi Heinzelman recognizes that some students can find it difficult to imagine themselves as engineers. But, she notes, that's often because many young people haven't had the opportunity to learn about engineering and how the field contributes to modern life.

That was not the case for her. Heinzelman credits the example of her parents with sparking her interest in engineering and technology, as well as in expanding the reach of education.

"When I was growing up, engineering was not a subject that was covered in school, and had I not been born into a family where both education and engineering were highly valued, I may never have found my calling in life. My mom was a science teacher, and my dad an engineer," she recounted during a ceremony to formally mark her appointment as dean of the Hajim School of Engineering & Applied Sciences.

"From my mom I learned the power of education, as she spent most of her career teaching students from an inner city with less privileged backgrounds. My dad worked at Bell Labs in its heyday, and I remember the palpable excitement just in walking into that enormous building, where great minds of the day would be discussing their latest breakthroughs."

FIRST: Wendi Heinzelman is the first woman to lead engineering.

Her father helped develop technology to enable computers to understand spoken language, which was, as she noted, well before Apple, Google, Microsoft, and Amazon rolled out commercial versions of "assistants" you can talk to. "As a kid growing up in the '80s, this was the coolest technology I could imagine," she says. "You could actually talk to a computer and it would respond appropriately. This is what ignited my desire to learn about engineering, and in particular, electrical engineering, so that I could one day perhaps make a similar contribution to society."

Heinzelman's contributions—both as an electrical engineer and as an educational leader—were recognized during the December ceremony. Presided over by President and CEO Joel Seligman, the event included remarks by Ed Hajim '58, a chemical engineer who went on to become chair emeritus of the Board of Trustees and the namesake for the school.

They were joined by Peter Lennie, senior vice president and the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences & Engineering. Also giving presentations were Heinzelman's mentor, Anantha Chandrakasan, the Vannevar Bush Professor and head of electrical engineering and computer science at MIT; and a guest speaker, Alicia Abella, assistant vice president for cloud technologies and services research at AT&T.

—BOB MARCOTTE

ADAM FENSTER

DEAN'S ADDRESS

'Diverse Groups Thinking about Problems'

By Wendi Heinzelman

Everyone grows up with the impacts of engineering all around them. But many kids do not have the slightest idea about what an engineer does and could not possibly envision themselves in this profession. This leads to a big portion of our society not being adequately represented in the fields of engineering and applied sciences. Given that the best, most creative, and most efficient solutions have been shown to result from diverse groups thinking about problems, it is vital to the future of not only our school but also our profession that we increase access.

To meet this goal, we as a society need to ensure that we do a better job of educating future generations about the field of engineering—the excitement of tackling difficult issues, the satisfaction of solving even a small piece of a problem, the incredible challenge that comes with being able to design the future, and the awesome responsibility to make sure that these solutions lead to positive outcomes, a healthier, happier, and more sustainable world. This is a challenge that we all are tasked with, and I know we will continue to make progress.

APPLYING APPLAUSE: Wendi Heinzelman, dean of the Hajim School of Engineering & Applied Sciences, is applauded after delivering an address to mark her installation as the first woman to lead the school.

The mission of the Hajim School is to advance the highest quality education and research in engineering and applied science through engaging experiences and environments that promote critical thinking, creativity, ethics, and leadership.

It is important that our students have access to opportunities outside of the classroom in three key areas: internships, global education, and research. Internships provide such an opportunity and help students determine directions they would like to take in their careers. It is also crucial that our students understand that we operate in a global world, and engineering must be undertaken within the context of a global society. Stepping out of their comfort zones and experiencing life in a different society, a different culture, perhaps a different language, is an incredible growth opportunity that I hope many of our students can experience. And research is key to developing analytic and creative skills, to understanding the literature and determining how to develop new knowledge, and to fostering critical thinking that will benefit our students in whatever careers they choose.

I also want to ensure that every individual within the Hajim School is respected and valued for the contributions that he or she brings to our academic mission. Although we have made great strides to increase our enrollment of women and underrepresented minority students and faculty, we need to do more to both attract and retain diverse students and faculty in our programs. At the same time, we must challenge ourselves to expand our thinking and our ideas—about the intellectual nature of our fields, the practical applications of our work, and the professional responsibilities that necessarily follow.

I am a strong believer in the benefits of crossdisciplinary thinking. The humanities and social sciences, in particular, have a lot to teach us about critical discourse, and my goal is for our Hajim students to engage in such discourse and to have our students explore opportunities they won't readily have once they leave the University.

I believe that all educated citizens in the 21st century, regardless of major or intended career, need to have an understanding of technology, of data analysis, system design, and computer systems, and we are currently working on developing new courses and clusters that will hopefully attract non-engineers to become educated in these important skills.

I've always loved our school's motto, Meliora, which means "ever better." To me, Meliora is about taking time to recognize, appreciate, and really celebrate how far we have come, yet always keeping an eye on where we want to go. I have no doubt that the spirit of Meliora is alive and well in the Hajim School, and I look forward to working with our students, faculty, staff, alumni and friends to achieve ever better research and educational opportunities. R

For the full text of Heinzelman's remarks, visit Rochester.edu/newscenter/heinzelman-address/.

ADAM FENSTER

ART, MEET SCIENCE

Computing and Connecting

It may sound odd that Euakarn (Som) Liengtiraphan '17 uses words like "magic" and "empowerment" in describing computer science, but think of the terms as updates to the "black box" metaphor for the *Harry Potter* generation.

If you know how to code—if you know how to make that nondescript box do what you want it to do—you have a certain power that's not widely distributed among the population. And while it may not be the same as wizardry, studying computer science provides an important grounding in how to solve problems and how to approach a wide range of challenges, Liengtiraphan says.

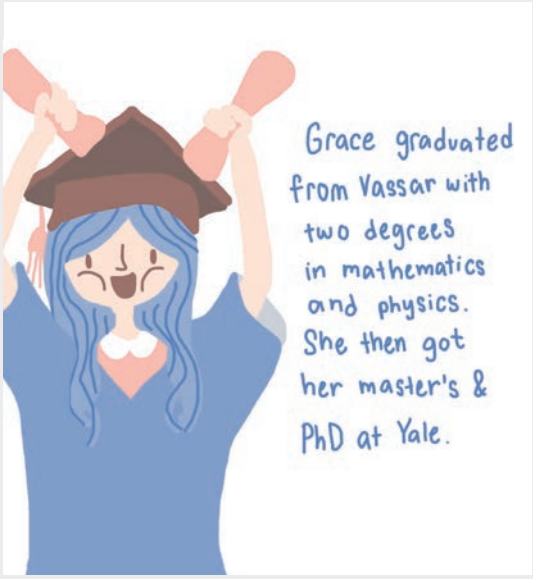
"Computer science is very empowering," she says. "It's kind of like knowing magic: you learn the right stuff and how to say it, and out comes an answer that solves a real problem. That's so cool."

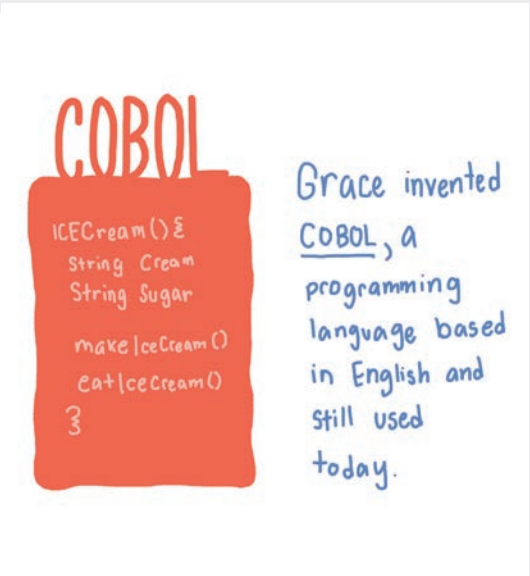
The senior from Bangkok, Thailand, has been sharing the message of computing as power in her role as the president of the Rochester student group Women in Computing Club. With about 100 members, the group organizes outreach events at Rochester-area schools and local organizations like the Girl Scouts to introduce computing and computer science to young women.

Marty Guenther, the undergraduate coordinator for the Department of Computer Science, says finding ways to engage students, particularly young women, who have not traditionally majored in computer science, is a key initiative of the department and the Hajim School.

Nationally, about 16 percent of computer science students are women. At Rochester, the department expects the

SCIENCE OF ART: To tell the story of pioneering computer scientist Grace Hopper, Euakarn (Som) Liengtiraphan '17 draws on her skills as a studio art minor.





Class of 2017 to be about 34 percent women, up from about 30 percent last spring. That's gratifying to see, Guenther says, because she can remember when "year after year, there would be one woman graduating, or maybe none."

Guenther says recent changes that allow students to switch to computer science later in their studies has helped bring more students to the major. Women, in particular, seem to discover the major later in their academic careers, she says. The department has seen an increase in double majors. About 50 percent of all computer science students double major, but about 62 percent of women in the department combine the major with something else.

Rochester has also been selected as a partner in BRAID (Building, Recruiting, and Inclusion for Diversity), an initiative of 15 institutions led by the Anita Borg Institute and Harvey Mudd College. In addition to other support, the initiative helps pay travel expenses for Rochester students to attend the annual Grace Hopper Celebration, billed as the world's largest gathering of women technologists. Organized by the Borg Institute and supported by the Association for Computing Machinery, the event is named in honor of pioneering computer scientist Grace Hopper. Attendees learn about ideas in computer science and have several opportunities to make professional connections.

Liengtiraphan, who left last fall's conference with three job interviews, says having the chance to learn from and work with women technologists is important to expanding the field. At Rochester, she and members of the group often organize "Coding Parties," small gatherings where they share ideas about coding. The sessions are part of an effort to create a sense of community, she says.

"It's nice to have a place where lots of girls are doing the same thing."

—Scott Hauser

ART HISTORY

A Story in Pictures

Critic Douglas Crimp offers a snapshot of the art and culture of mid-century New York City.

By Kathleen McGarvey

After art critic Douglas Crimp moved to the Chelsea neighborhood of Manhattan in 1969, he became a regular customer at Max's Kansas City, a restaurant and art bar on Park Avenue. Max's had two rooms, one in front and one in back, and members of Andy Warhol's Factory could reliably be found in the latter.

As he passed through the front room, Crimp would greet the "artist-regulars" he had come to know during his first two years in the city, but he found himself inexorably pulled to the back, whose "charged atmosphere" he loved.

The divisions between the rooms "mirrored divisions in the art world that were fairly pronounced in those days, divisions between tough-minded Minimal and Conceptual art and the glam performance scene, between real men and swishes, to use Warhol's word," writes Crimp in his new book, *Before Pictures* (University of Chicago Press, 2016).

The *Village Voice* has called it a "profound, delectably gossipy memoir" while *The New Yorker* termed it an "exhibition-as-memoir," with its story significantly relayed through the 150 illustrations that fill it.

But Crimp—the Fanny Knapp Allen Professor of Art History and a professor of visual and cultural studies—rejects the label of memoir, which he suggests doesn't capture his narrative method and puts the emphasis on him rather than on the historical moment he depicts.

The book "moves from anecdote to criticism to research, back to anecdote, and so forth, and also from my gay life to my art world life," he says.

Before Pictures was inspired years before it was written, by Crimp's realization that many of his fellow activists in ACT UP, an advocacy group formed in response to the AIDS crisis, were decades younger than he and so hadn't experienced gay life in 1970s New York. Writing about his life in that era would be a means of resisting a "revisionist narrative that was being promulgated: that the 1970s represented gay men's immaturity and led inevitably to AIDS, which in turn made us grow up and become responsible citizens," Crimp told *Out Magazine* in September.

After spending his childhood in Coeur d'Alene, Idaho, he went to college "as far away as possible in every respect," he writes, moving to New Orleans and enrolling at Tulane's School of Architecture.

He explored local gay culture and also pivoted from architecture to art history. In 1967 he moved to New York, taking up residence first in Spanish Harlem.

> "I moved at a time when New York was virtually bankrupt and rents were cheap and I could imagine myself becoming an art critic by simply joining the art world and participating—and I was able to do that."

"I moved at a time when New York was virtually bankrupt and rents were cheap and I could imagine myself becoming an art critic by simply joining the art world and participating—and I was able to do that," he says.

The book, structured around Crimp's changing addresses, tells the story of his life in the city from the late 1960s through much of the '70s, concluding with his curation of the 1977 exhibition *Pictures* at the gallery Artists Space.

Crimp first became renowned as a critic of the "Pictures Generation"—a group of artists, including Cindy Sherman and Robert Longo, whose work reflects the media-driven, consumerist world in which they grew up.

"My own life and aesthetic attitudes reflected the ambivalence and fears that were still operative about homosexuality," he writes, "about whether art could be a manly enough profession and about what kinds of art qualified as most manly."

He calls the division "between the art world and the queer world" something that he "would negotiate throughout my first decade living in New York City."

Crimp is the author of five other books, including *"Our Kind of Movie": The Films*

VIEW FINDER: Crimp depicts an era through text and art, such as this image, "Pier 18: Hands Framing New York Harbor," by John Baldessari and Shunk-Kender.

of Andy Warhol (MIT Press, 2012) and *Melancholia and Moralism: Essays on AIDS and Queer Politics* (MIT Press, 2002). He also edited *AIDS: Cultural Analysis/Cultural Activism* (MIT Press, 1988), a special issue of the art journal *October*, later republished as a book.

It was the first book-length publication on the cultural meaning of AIDS and propelled Crimp into the AIDS activist movement.

"I first met Douglas through his writing when I was in graduate school," says Joan Saab, chair of the Department of Art and Art History.

When she came to Rochester 15 years ago, she was intimidated to become his colleague—an apprehension that she says was soon dispelled by his generosity toward fellow faculty and his engagement of students.

Crimp's book "brings all the warmth and intellectual rigor of his classroom to the printed page," she says.

"He seamlessly balances his art criticism with his emerging activism, without ever losing his warm and compelling voice. It's a tour de force." R

Can 'Supernormals' Stave off Alzheimer's?

Older adults with excellent memories have more efficient connections between specific areas of the brain—a finding that could hold promise for the prevention of dementia and cognitive decline, according to a School of Nursing study.

Although researchers have historically viewed memory deterioration as an inevitable part of the aging process, a small group of older adults—called "supernormals"—are able to maintain their memory capacities much better than their peers. Feng (Vankee) Lin, an assistant professor of nursing, is exploring what can be learned from such individuals.

In a study published in *Cortex*, Lin and her team explored differences in brain function among three groups of older adults: supernormals, who were defined as having higher than average memory scores for their age, older adults diagnosed with amnestic mild cognitive impairment who are at high risk for developing Alzheimer's, and a healthy control group. The study is the first to compare the brain function of supernormals to those who are at risk for developing Alzheimer's.

Specifically, Lin and her colleagues measured the functional connectivity—the connections among spatially separated structures of the brain—between the cingulate cortex and other regions. Functional connectivity is measured by observing which parts of the brain are activated at the same time or in rapid succession in response to a stimulus.

"The cingulate cortex acts as a 'hub' and receives input from many areas in the brain. Its functioning often deteriorates early in the aging process and in the development of Alzheimer's disease, so it could play a key role in memory decline," says Lin. "It's a vulnerable area that hasn't been explored in this way before."

As part of the study, the team analyzed a national data set from the Alzheimer's Disease Neuroimaging Initiative, which collects brain imaging scans and provides them to researchers across the country. The participants also underwent memory, executive function, and other tests to assess their cognitive abilities.

Lin found that individuals who had stronger or more efficient functional connectivity between the cingulate cortex and certain regions of the brain had better memories compared to those who had weaker or less efficient relationships between the same areas. Supernormals also had lower levels of amyloids, groups of proteins that are associated with Alzheimer's disease.

But even when amyloids were present, the relationship between better functional connectivity and better memory still remained. The findings indicate that the way the cingulate cortex functions in supernormals may represent exceptional neural reserve—the ability of the mind to resist damage. The neural reserve could protect supernormals against the effects of amyloid plaques and allow their memories to be maintained, researchers say.

—Jessica O'Leary

Better Vision through Brain-Training Video Games

The peripheral vision of children with poor vision improved after only eight hours of training via kid-friendly action video games, according to a study by Rochester and Vanderbilt researchers. Most surprising to the scientists was the range of visual gains the children made, and that the gains were quickly acquired and stable when the children were tested a year later.

Duje Tadin, an associate professor of brain and cognitive sciences, helped design the games used in the study, which was supported by the National Eye Institute and published in *Scientific Reports*. "Children who have profound visual deficits often expend a disproportionate amount of effort trying to see straight ahead," he says. "So we devised a kid-friendly game that compels players to pay attention to the entire visual field."

A total of 24 youths from Tennessee and Oklahoma schools for the blind participated in the study. After eight hours of training, the children made improvements in a range of visual tasks. The researchers say the students were able to better perceive moving objects in the far periphery and were much faster at visual searches, such as finding a stapler on a messy desk.

"We were surprised by the range of improvements, and we were even more surprised when we tested a few of the students a year later and found that the gains they made were stable," says Jeffrey Nyquist, the study's lead author who has since founded a company called NeuroTrainer. "Within just a few hours of training, they were able to expand their usable visual field and visual search ability."

—Monique Patenaude

ADOBE STOCK

Antisense Compounds Offer New Weapon Against Influenza

Challenging a long-held convention, University researchers have shown they can inhibit the influenza A virus by targeting its genomic RNA with "antisense" compounds.

The findings, highlighted on the cover of *Nucleic Acid Therapeutics*, may offer scientists a new way to attack an increasingly drug-resistant pathogen that causes an estimated 250,000 to 500,000 deaths a year.

The collaboration, involving the labs of Douglas Turner, a professor of chemistry; Luis Martinez-Sobrido, an associate professor of microbiology and immunology; and two researchers in Poland, reported that "antisense" compounds targeting one of the virus's eight genomic RNA segments caused a 5- to 25-fold reduction of influenza A virus in cell cultures.

"Antisense" compounds are synthesized with nucleotides, the building blocks of nucleic acid. When the compounds—called antisense oligonucleotides—bind to the targeted genomic RNA, they block its ability to replicate.

"That's a big difference," Martinez-Sobrido says. "When mice are infected with 10,000 viruses, they all die. However, with 25 times less virus, all animals can survive infection and they don't even develop symptoms."

The most effective of the antisense compounds ranged from 11 to 15 nucleotides long, and were not toxic to host cells. To date, influenza viruses have shown a remarkable ability to mutate and become resistant to current antiviral drugs.

—Bob Marcotte

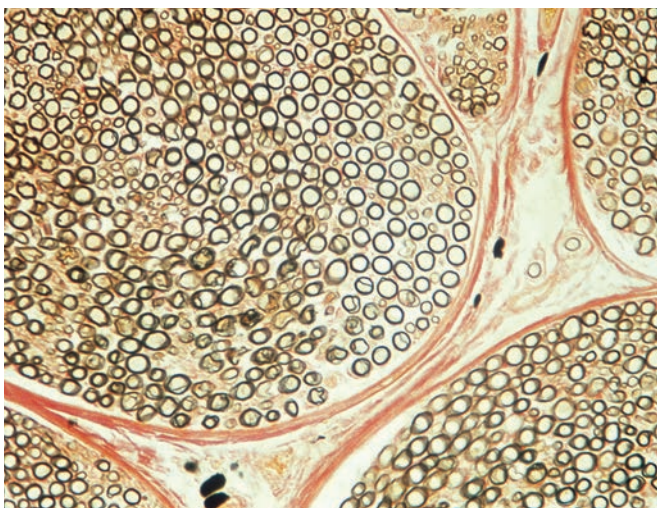
Repurposed Drug May Offer Treatment for Nerve Damage

Medical Center researchers may have identified a new means of enhancing the body's ability to repair its own cells. They hope the finding will lead to better diagnosis and treatment of traumatic nerve injuries, like those sustained in car accidents, sports injuries, or combat. The team showed that a drug previously approved for other purposes can "wake up" damaged peripheral nerves and speed repair and functional recovery after injury.

The study, which appeared in *EMBO Molecular Medicine*, demonstrates for the first time that 4-aminopyridine (4AP), a drug currently used to treat patients with the chronic nerve disease multiple sclerosis has the unexpected property of promoting recovery from acute nerve damage. The study is the first demonstration of the drug's benefit in treating acute nerve injury and the first time those benefits have been shown to persist after treatment was stopped.

Study authors John Elfar, associate professor of orthopaedics, and Mark Noble, the Martha M. Freeman, M.D., Professor in Biomedical Genetics, and their team, found that daily treatment with 4AP promotes repair of myelin, the insulating material that normally surrounds nerve fibers, in mice. The findings advance an area of research that has been stagnant for nearly 30 years and may address unmet needs of traumatically injured patients in the future.

—Susanne Pallo



NERVE CENTER: A Medical Center study indicates that a drug currently used to treat patients with multiple sclerosis may help repair damage to peripheral nerves. (Above, a transverse section of a human nerve.)

BIOPHOTO ASSOCIATES/SCIENCE SOURCE

Study Refutes Theory about Autism Brain Response

A Medical Center study is challenging the hypothesis that nerve cells in the brains of people with autism spectrum disorders do not reliably and consistently respond to external stimuli.

"Our findings show there is no measurable variation in how individuals with autism respond to repeated visual and tactile stimuli," says John Foxe, the Kilian J. and Caroline F. Schmitt Professor in Neuroscience, the chair of the Department of Neuroscience, and the senior author of the study.

Published in the journal *Cerebral Cortex*, the study involved 20 individuals diagnosed with autism and 20 individuals who served as healthy controls. The electrical activity in the participants' brains was recorded as they were exposed to repeated visual stimuli. No matter how the researchers measured the variability of the responses, brain responses in people with autism were as stable as those of the controls. To make sure that the finding didn't apply only to the visual system, the team also evaluated tactile inputs—repeated touches to the wrists of participants—and, once again, measures of brainwave responses provided no evidence of increased variability in the individuals with autism.

The work examined an understanding of how the brain responds to stimuli known as the neuronal unreliability theory, which has gained traction in recent years in the wake of a study published in 2012. The theory is based on the assumption that the brain's response to repetitive stimuli should be steady and consistent. According to the theory, the brain's response is not constant in people with autism and, consequently, alters their perception of the physical environment and impairs cognitive and social development.

That theory did not ring true with Foxe and his colleagues, based on their decades of studying the brain activity of children with autism spectrum disorders. Furthermore, the original studies that formed the basis for the hypothesis involved functional MRI experiments, work that measures changes in the blood oxygen levels in the brain. While fluctuations in blood flow are important indicators of brain activity, the measures do not precisely correlate to the more rapid electrical activity that occurs in the brain when nerve cells are stimulated.

The authors contend that while the new study essentially demonstrates negative findings, it represents an important contribution in the field of autism, in which much of the understanding of the disease is—to the frustration of patients, families, researchers, and caregivers alike—sometimes long on theory and conjecture but short on solid scientific research.

—Mark Michaud

MEMORIAL ART GALLERY

Museum Launches Media Arts Project

Renowned curator John Hanhardt ’67 will lead an effort to build a collection featuring the aesthetics of film, video, and other technologies.

By Scott Hauser

An initiative of the Memorial Art Gallery is bringing a new type of “moving work” to the museum. Under the direction of John Hanhardt ’67, a former curator for the Smithsonian Institution, the museum has launched a new project to explore the technologies and aesthetics of film as well as the emerging tools and practices of video, computers, virtual reality, the Internet, software, and mobile devices.

Called the Media Arts Watch project, the initiative will feature four exhibitions a year. The inaugural exhibition, *Bodies in Space*, was opened to the public during Meliora Weekend in October and ran through December.

Internationally recognized as an authority on art involving moving images, Hanhardt began his museum career in the department of film and video at the Museum of Modern Art in New York City. He later established the film program and film study collection at the Walker Art Center in Minneapolis, and he was curator and head of the film and video department at the Whitney Museum of American Art.

He was the senior curator of film and media arts at the Guggenheim Museum from 1996 to 2006. He joined the Smithsonian American Art Museum’s staff in 2006, and was a consulting senior curator of film and media arts there until 2016.

At Rochester, he will serve as consulting senior curator of media arts and will oversee efforts to bring media art into the museum’s permanent collection. Works featured in the Media Arts Watch exhibitions will form the core of the museum’s media art collection.

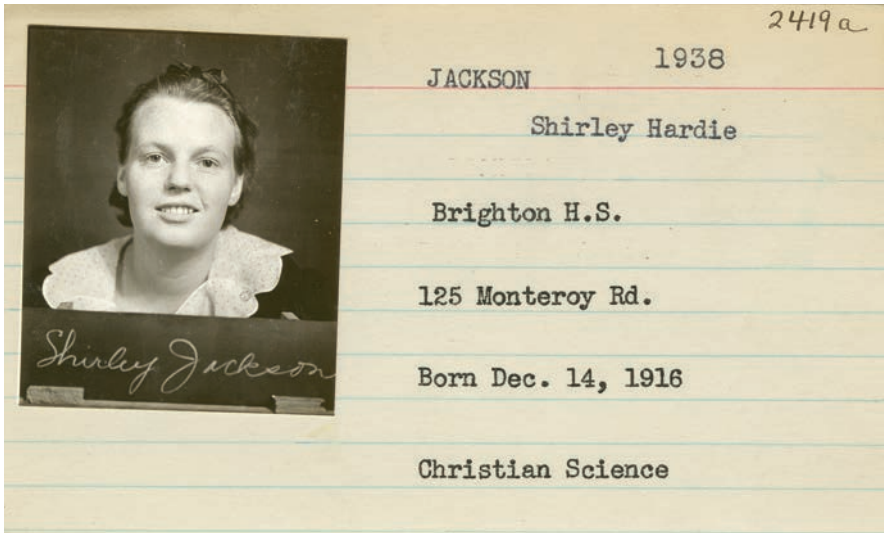
The first exhibition featured work by Nam June Paik and Bruce Nauman, key artists from the early years of video art, alongside more recent work by Sondra Perry and Takeshi Murata, artists in a new generation transforming digital media arts.

BODIES OF ART: The exhibition *Bodies in Space* was the first presented by John Hanhardt ’67 (left) in his role as senior curator for media arts, a position established by Jonathan Binstock, the Mary W. and Donald R. Clark Director of the Memorial Art Gallery.

ADAM FENSTER

Ask the Archivist:
Did Shirley Jackson 'Haunt' the University's Halls?

A question for Melissa Mead, the John M. and Barbara Keil University Archivist and Rochester Collections Librarian.



AUTHOR ID: What may be the first published work by author Shirley Jackson—a matriculated member of the Class of 1938 (above)—appeared in a student-run literary magazine (below).

I am working on a biography of the writer Shirley Jackson, who attended Rochester from 1934 to 1936 but did not graduate. The amount of material available online is truly impressive! However, one thing I was not able to find were any course catalogs from those years. Could you let me know if they are available? I would like to determine the names of the courses she took. —Ruth Franklin, biographer and author of *Shirley Jackson: A Rather Haunted Life* (Liveright, 2016)

The University Archives are a valuable resource for those researching the accomplishments of our alumni, faculty, and staff. Jackson is best known for her short story "The Lottery," and the collections held important details about her youth, although it required casting a wide net to find them.

Sharing University history online is part of the work of the Archives: *Rochester Review*, yearbooks, commencement programs, and the unabridged *History of the University of Rochester, 1850–1962*, by history professor Arthur May are available at http://rbscp.lib.rochester.edu/universityarchives.

For alumni applying for course credit at other institutions, recent *Undergraduate Bulletins* are also available online. The *Bulletin* for 1934–35 confirmed that Jackson's coursework included freshman English, government, music appreciation, psychology, biology, and French.

Also in the Archives for this period are student applications for admission. Jackson attended nearby Brighton High School, and in her application to the University she writes: "Our house is always overflowing with books." A native Californian, she describes how her family chose to travel via the Panama Canal to reach the East Coast and Rochester, where her father took a job with the Stecher-Traung Litho Company.

Jackson anticipated pursuing "law, journalism or literary work" as a career. However, graduation from Rochester was not in the cards: her grades at the end of her sophomore year were deficient, and she withdrew. She received her BA from Syracuse in 1940, and began her "literary work" in earnest; her iconic story "The Lottery" appeared in *The New Yorker* in 1948. She went on to write the novels *The Haunting of Hill House*, *We Have Always Lived in the Castle*, and others.

As is often the case, one answer sparks another inquiry, and Franklin responded:

On p. 98 of the 1934–35 Bulletin, *under "Student Activities in the College for Women," a few publications are listed:* The Croceus, *which I see online (and in which I found a picture of Shirley Jackson I hadn't seen before);* The Tower Times; *and three others:* Meliora, *a literary magazine;* In Medias Res, *"a review of campus life and thought"; and* The Blue Book, *a publication for freshmen. Do you know if copies of any of these still exist?*

"The Blue Book" was the equivalent of today's "UR Here," and provided information about clubs, traditions, activities, and a calendar.

Jackson appears with her classmates at Freshman Camp in the 1936 *Croceus*. Two brief *Tower Times* articles in October and November note that some freshman women, including Jackson, were taking horseback riding lessons.

Through the years, a variety of Rochester undergraduate literary magazines have sprouted up: *Logos* still flourishes, but *The Dandelion*, *The Genesee*, and *Prologue* withered away.

The Cloister, launched in 1921, was replaced by *Meliora* in 1930, and was itself supplanted by *In Medias Res* in 1933. When a January 1934 letter to the *Tower Times* judged that latest effort to be "of the editors, by the editors, and for the editors," *Meliora* returned, with the assurance that it would be "representative of the entire college and not to be managed and written by the Scribblers Club alone."

Shirley Jackson's arrival at the University coincided with this "ever better" *Meliora*. A signed, untitled story—only three paragraphs long—appears in the spring 1935 issue, and is believed to be the earliest publication of her work. The text describes the reactions of various audience members at a violin recital, and its significance is interpreted by Franklin in her 2016 biography, *Shirley Jackson: A Rather Haunted Life*.

Need History?

Do you have a question about University history? Email it to rochrev@rochester.edu. Put "Ask the Archivist" in the subject line.

Cathy Minehan ’68 Returns to Board of Trustees

A longtime alumna leader is returning to the Board of Trustees. Cathy Minehan ’68, who served as a trustee from 1995 until she moved to life trustee status in 2015, was re-elected by the board this winter.

A former CEO and president of the Federal Reserve Bank of Boston and well-known for her work in national and international payment systems, Minehan has served as dean of the School of Management at Simmons College in Boston, and as managing director of Arlington Advisory Partners, a Boston-based business services provider. Minehan currently chairs Massachusetts General Hospital’s board of trustees. She is the first woman to lead MGH’s governing body in the organization’s 200-year history.

A political science major at Rochester, Minehan has ties to the University that span generations. Her father, Harry Jones, was a 1957 graduate; her son, Brian Minehan, graduated in 2004, and her daughter-in-law, Cherie Minehan, in 2005.

She began service as a trustee in 1995 and was chair of the board’s executive committee from May 2003 to May 2012. She had a consequential role in the board’s audit and risk assessment committee, among other board committees. Minehan also served as a national cochair of *The Meliora Challenge*, the University’s $1.2 billion comprehensive campaign that concluded in June 2016 and raised more than $1.368 billion. Her leadership helped drive giving from more than 200,000 donors and exceed the campaign goal by more than $168 million.

In 2014, Minehan and her husband, Jerry Corrigan, committed an additional $1 million of support to the Cathy E. Minehan and E. Gerald Corrigan Endowed Scholarship, which they began at the University in 2004. She and her husband additionally established the Corrigan-Minehan Professorship in Political Science in Arts, Sciences & Engineering in 2007. They are charter members of the George Eastman Circle, the University’s leadership annual giving society.

ELECTION RETURNS: Former Boston Federal Reserve Bank CEO Cathy Minehan ’68 was re-elected to the Board of Trustees.

Report Points to Global Growth

The University continues to grow as a global institution.

That’s according to Open Doors 2016, an annual report on international education trends released by the Institute of International Education.

The University ranks 76th among the more than 1,500 institutions surveyed on their total international student enrollment.

With 2,755 international students studying at Rochester in the 2015–16 academic year, international students represent about 25 percent of the total student body.

“International exchange is critical for our position as a leading global institution,” says Jane Gatewood, the vice provost for global engagement, who leads and manages initiatives related to the University’s global activities.

“We want to provide the best educational opportunities for our students and help our faculty foster productive research connections, and increasingly, this means engaging in a sustained and systematic way with other institutions throughout the world. We are working to build strong and strategic partnerships with peer institutions throughout the world,” Gatewood says.

New York is the second leading host state for international students, just behind California. Students coming to New York from international origins bring a positive economic impact of more than $3.8 billion statewide, according to the National Association of International Educators.

The report also highlights the annual trends in U.S. students studying abroad.

According to Open Doors, a total of 370 University students went abroad for an academic program in 2014–15, with most choosing to do so in their junior year.

And in 2015–16, the estimated number is 425, according to data from the University’s Center for Education Abroad. A major expansion of opportunities for Rochester students has created several new exchange partners in the United Kingdom, Asia, and Australia.

The next five years are expected to be a period of increasing international engagement for the University, with the expansion of global partnerships in research and increased opportunities to study and intern abroad.

More connections for research and exchange are being made with major universities globally, and existing partnerships are being strengthened to provide a more comprehensive experience for students.

Cardiologists Offer Smallest Pacemaker

A western New York man who was experiencing dangerously slow heart rates was the first person in the Medical Center's 19-county service area to receive a pacemaker that's a 10th of the size of traditional devices.

Electrophysiologists David Huang and Mehmet Aktas implanted the lightweight device directly into the heart of a 67-year-old man during a procedure last fall.

The device, the Micra Transcatheter Pacing System, is considered the most advanced technology available for people with bradycardia, a condition characterized by a slow heart rhythm.

"This new pacemaker provides another tool in our arsenal for treating cardiovascular diseases," says Huang, director of the Heart and Vascular Electrophysiology Lab at Strong Memorial Hospital. "It is smaller than any other pacemaker available today, and we are excited to offer this for our patients."

Traditional pacemakers are about the size of a half-dollar coin and about three times as thick. They're placed in a small "pocket" just under the skin in the chest and have wires that extend from the device to send electrical impulses, when needed, to keep the heart rate from dropping too slow. The new system provides the same level of support, but it is about the size of a large vitamin pill and weighs two grams, the same as a penny.

PACE OF CHANGE: A Medical Center patient was the first in western New York to receive a new, lightweight pacemaker (right), a device about one-10th the size of a traditional device (left).

The heart usually beats about 60 to 100 times per minute. Bradycardia is diagnosed when that rate is abnormally slow, and the heart is unable to pump enough oxygen-rich blood through the body, which causes people to feel dizzy or lightheaded, short of breath, tired or like they are about to pass out. The condition is common in the elderly.

Computer Scientist Recognized for Innovative Research

Rochester computer scientist Ehsan Hoque is earning widespread recognition for his work in the field of human-computer interaction.

In December he was recognized with a World Technology Award from the World Technology Network, and in August, he was named one of "35 innovators under 35" by the editors of *MIT Technology Review*.

An assistant professor of computer science, Hoque also serves as assistant director for research outreach at the Goergen Institute for Data Science. He applies a computational lens to understand and model the ambiguity that language, facial expressions, gestures, and intonation introduce in human communication.

He has developed a system that allows individuals to practice speaking and social skills and receive feedback in a repeatable, objective, and respectful way. He has also developed systems that help musicians practice singing vowels and provide live feedback to public speakers while they're engaged with audiences.

Eastman Student Highlights 40th Anniversary Warfield Concert

Mezzo-soprano Alicia Rosser '17E is the latest Eastman School of Music student chosen to help celebrate the legacy of William Warfield '42E, '46E (MM).

A senior in the studio of Grammy Award–winning artist and Professor of Voice Anthony Dean Griffey, Rosser is this year's Warfield Scholar. As the scholar, she was the featured performer for the 40th annual William Warfield Scholarship Concert in January. Baritone Lawrence Craig, who was mentored by Warfield and has appeared internationally in operas, concerts, and recitals, was a guest performer for the concert. Among others joining them were singer and pianist Thomas Warfield, a nephew of Warfield and founder of PeaceArt International and director of dance at the Rochester Institute of Technology/National Technical Institute for the Deaf.

SENIOR SCHOLAR: Alicia Rosser is this year's Warfield Scholar.

Since the scholarship was founded in 1977, recipients have included such notable singers as soprano Julia Bullock '09E, winner of the 2014 W. Naumburg Foundation's International Vocal Competition; soprano Nicole Cabell '01E, winner of the 2005 BBC Cardiff Singer of the World competition; and bass-baritone Jamal Moore '12E, who was a member of the University's a cappella group the YellowJackets when the ensemble was featured on the NBC competition *The Sing-Off* in 2011. He now performs internationally with the a cappella group the Exchange.

Simon Rises in *Bloomberg Businessweek* Ranking

The Simon Business School moved up six spots to 30th among the leading U.S. business schools in *Bloomberg Businessweek*'s ranking of top full-time MBA programs.

Simon also was eighth in the U.S. for placement three months after graduation.

Other areas of strength included alumni assessment (17th) and student satisfaction (29th). Simon also moved up three spots to 41st in terms of salary, and the school held steady at 38th in terms of recruiter assessment.

MEDTRONIC (PACEMAKERS); EASTMAN SCHOOL OF MUSIC (ROSSER)

WOMEN'S SOCCER

'A Team of One'

Members of Rochester's first national championship teams remember the chemistry that took them to the national title—twice.

Dennis O'Donnell

As Rochester students, they came together 30 years ago with a simple goal: become a team in the truest sense of the word. They succeeded dramatically, winning the first two NCAA Division III national championships in women's soccer—in 1986 and repeating in 1987.

Members of those Yellowjacket teams gathered on campus last fall to relive the memories and to catch up with each other.

"The memories are of the relationships we had, the fun we had, working hard together, and playing hard together," says Mary Martha Winter McKenna '90. "We had some big personalities on the team, but humble at the same time."

Maura McGinnity '87 says it didn't seem like 30 years had passed. "Everyone immediately and naturally connected, just like we did so many years ago," she says. "We had a fabulous weekend catching up, laughing, and enjoying quality time together."

Terry Gurnett '77, the program's founding coach, organized the reunion. Stepping down after the 2010 season—his 34th—as one of the winningest coaches in women's college soccer, Gurnett is now an associate director for athletics advancement. If there's any one person responsible for the success of the national championship teams, it's Gurnett, players say.

"With his energy and drive, he molded 26 different personalities into a team of one," says Maria Budihas Jensen '87. "He showed wisdom, humor, and heart as he coached us."

The team's philosophy on the field echoed Gurnett's coaching and teaching style. He knew when to push and when a break was needed. Darlene Elia Buenzow '88 tells of team conditioning runs through Mount Hope Cemetery. Gurnett would lead off, run back to the last group, then finish with the first group. "By pushing himself to be his best, it inspired us to be the best players we could possibly be," she says.

Kelly Gorman Rakowski '90 says there was an "element of fun and balance to the workouts." "We never took soccer too seriously—academics, campus life, and other priorities mattered," she says.

BACK-TO-BACK: Ranked No. 1 throughout the 1987 season, the women's soccer team defended its 1986 national title in 1987, allowing only five goals in 18 games. Founded in 1978, the program was the first in Rochester history to win an NCAA Division III national championship.

That would be a tough sell to the opponents in 1986 and 1987. On the field, the Yellowjackets defended expertly, attacking from the back to keep pressure on opponents. "There were 11 of us on defense, really 12," says McKenna, "because of [goalkeepers] Doreen [Byers] and JoAnn [Johnston] sharing equal time every game. We were constantly threatening teams out of the back field and catching them man-down."

Rochester had nine wins and two ties in the first 11 games in 1986. That included a 1–1 result at Cornell. "We realized that we might have something special," Gurnett says. Two days later, Rochester lost at St. Lawrence, 4–0.

Gurnett calls the loss "sobering and instructive." McGinnity thinks it was a positive. "That loss reminded us that you cannot take anything for granted. Success takes constant effort, teamwork, and a disciplined focus on a bigger purpose."

Two wins followed, then a Senior Day loss to Rutgers. In the first round of the playoffs, Rochester won at Smith College in Massachusetts, putting the Yellowjackets into the Final Four against the University of California, San Diego.

The game was at Cortland State in New York's Finger Lakes region, about two hours from Rochester. "We woke up and there was snow on the ground," Buenzow says. "We knew San Diego didn't stand a chance against us tough Northerners."

A 2–0 win put Rochester into the final against Plymouth State. The winning goal came from a pass by McGinnity to freshman Lisa Caraccilo '90 for a 1–0 victory.

The tough defense of 1986 was stronger a year later—only five goals allowed in 18 games. Carrying a No. 1 ranking throughout the 1987 season, the Yellowjackets again advanced to the Final Four, winning the title over William Smith College, 1–0, at Fauver Stadium. "Not many teams in sports actually accomplish or fulfill their expectations," Buenzow says. "We did."

Sometimes, it does seem like yesterday. "I can still feel the sense of joy when Abby Heister headed in the goal," Rakowski says of the 1987 final. "I knew that would be it."

Gurnett puts it in perspective differently. "We made the effort to get 'good folks' on the team," he says. "It's amazing what you can accomplish with the proper mix of character, talent, and grit."

"Terry recruited good people who came together with many a personality, but all seemed to click both on and off the field," says McKenna. "We still do." R

Dennis O'Donnell is director of communications for the Department of Athletics and Recreation

Mind over Weather

Strategy isn't reserved solely for the locker room or the playing field. At the 1986 women's soccer Final Four in Cortland, New York, as the Yellowjackets were preparing to play their semifinal opponent, the University of California, San Diego, both teams were dining at the same restaurant—at different times—before the game.

Yellowjacket coach Terry Gurnett had an idea of how to get into the heads of the Tritons, new to late fall weather in upstate New York:

"I knew we'd run into them, so I instructed each member of our team not to wear any coats to the dinner. It was about 20 degrees out, and I knew the SD team would be bundled up tight. The SD players looked at us like we were crazy. Their coach saw us—John Leaney, a true coach, gentleman, and a friend to this day—and he said, 'You bastard. I know exactly what you're doing—hope you get frostbite!' We had a great laugh but had drawn first blood."

When the game was over, the Yellowjackets had two goals and a place in the 1986 championship game. —Dennis O'Donnell

SOCCER CELEBRATION: Members of the 1986 and 1987 national championship women's soccer teams were recognized during a celebration last fall: (front row, kneeling) Charlotte Tweedie Byers, Cindi Baker Wight, Jill Keller, Jody Morrow Moore, Cathy McQuiggen, and Liz Breyton Warmerdam; (middle row, crouching) Jill McCabe; (back row, standing) Maria Budihas Jensen, Maura McGinnity, Doreen Byers Falkowski, Jill Decker, Lisa Caracillo Anderson, Diane Perna Dacey, Jo Ann Johnston Allender, Darlene Elia Buenzow, Martha Winter McKenna, Abby Heister Steele, Kelly Gorman Rakowski, Cherise Galasso, and Annie Gaisser Holmok.