

RICE AT LARGE

Engaging with Houston communities.

Bryan Najera Demoraes would like to see a future in which people's color and culture are important assets to society.



LATINO STUDENT SEEKS TO EMPOWER HIS COMMUNITY

This summer Bryan Najera Demoraes discovered his mission in life. After completing a two-month internship with the nonprofit Latinos for Education, the Rice University junior realized that his purpose in this world is to help Latinos achieve positions of power.

“What this internship fostered in me is an awakening of the problem of Latino underrepresentation and a drive to tackle it,” he said.

Latinos for Education seeks to “develop, place and connect essential Latino leaders in the education sector.” The organization has found that only 2% of leaders on education nonprofit boards are Latino and only 8% of senior education leaders in Houston are Latino.

Continued on Page 2 »

LOCAL MIDDLE SCHOOL STUDENTS LEARN ABOUT CUTTING-EDGE PH.D. RESEARCH AT RICE

We all know kids are smart, but are they smart enough to understand the innovative research going on at Rice?

Yes! The Graduate Student Association (GSA) and Rice Office of STEM Engagement hosted the first Rice Youth Science Workshop on campus for 52 middle school kids. The day started with Matthew Bedell, GSA co-director of Community Outreach, giving a presentation about Rice, research, the scale of the universe and where the different sciences “live” and interact on that scale.

Then Brant Gracia, postdoctoral fellow at MD Anderson, described the importance of science communication and outreach. Thanks to Gracia, this program has traveled to Houston all the way from Austin, where he led similar events as a graduate student with the Present Your Ph.D. Thesis to a 12 Year Old outreach project at the

Continued on Page 3 »

NAJERA DEMORAES

Continued from Page 1

As an intern for the nonprofit, Najera Demoraes worked on the organization's two signature leadership programs: The Latino Board Fellowship, which trains Latinos to serve on educational nonprofit boards; and the Aspiring Latino Leaders Fellowship, which helps Latino education leaders advance in their educational careers.

For the Latino Board Fellowship, Najera Demoraes helped develop the recruiting process and contributed to identifying qualified candidates. In its first year, the program accepted 10 Latino leaders from a wide-range of industries and trained them for six months to become an effective board member of an education nonprofit organization. The fellows were then placed on a nonprofit board that matched their preferences and skill sets.

Although Najera Demoraes worked on these two programs, it was his research for the organization that opened his eyes about the

need for more Latino leaders. He did research on Latino representation of school boards in the five largest counties in Texas: Harris, Bexar, Dallas, Tarrant and Waller. He specifically looked at the ratio of school board members to Latino students.

"If the whole board is Latino and the entire student body is Latino, that makes sense," he said. "But if half of the student body is Latino and there are no Latino school board members, I find that very interesting."

He found that some school districts, such as San Antonio Independent School District had representation on their school boards that was on par with their Latino student body. The largest school districts — Houston ISD and Dallas ISD — also have representation on their school boards that is on par with their respective student populations; however, there are districts in the region that severely lack Latino representation, he said. In Spring Branch ISD, for example, 60% of students are Latino, yet there aren't any Latinos on their school board.

"I was shocked to learn that the Greater Houston area has 600,000 Latino students and that Latinos makeup 60% of HISD," he said. "I underestimated the power of the Latino voice."

Yet that voice has largely gone unheard, he said. "To tackle underrepresentation you have to empower Latinos to believe that they can have a say in their society, whether it is in government, business or health care," he said. "Many Latinos feel they don't have a say, so they feel disengaged."

Another way to address this problem, Najera Demoraes asserted, is to acknowledge that the immigrant community has a lot to offer to this country. Immigrants, he said, bring a lot of resources with them and society should help them move up and benefit from their talents and energy.

Najera Demoraes knows about the immigrant community

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— NAJERA DEMORAES

firsthand. His father came from Mexico and his mother from Brazil and they met in Houston by attending the same church. The family eventually moved from Houston to Crosby, where Najera Demoraes finished high school and then became the first one in his family to attend college when he enrolled at Rice in 2017.

His interest in the education of Latino immigrants led him to sign up for the Alternative Spring Break LatiNo BARRIERS: Immigrant Dreams, which took a group of undergraduates to Miami to examine the social issues affecting the Latino community. Najera Demoraes said by meeting with leaders of cultural and educational programs, he was able to see the strengths of the immigrant community, but also detected how immigrants were systematically denied their rights.

"Bryan was a big contributing member of the group," said Serene Chen, site leader of the Alternative Spring Break. "His empathy for the populations that this issue affects frequently shone through when he contributed in a group discussion."

One thing that Najera Demoraes learned is that sharing power is crucial for the advancement of the Latino community. "I think the greatest exercise of

power is when you give up your power," he said. "You realize you have had it for so long that maybe it's time and beneficial to give it to someone else. It doesn't have to be random. It can be someone you are mentoring so that they can continue with the fight that you have invested in."

For example, he said, his supervisor, Andy Canales, executive director at the Latinos for Education has become his mentor. "I'm thankful for him for using his power and sharing it with me," he said.

Canales said that Najera Demoraes was a pleasure to work with and contributed to making his organization stronger and better. "Bryan's commitment to our work stemmed from his own journey in developing his Latinidad (Latino identity). This allowed him to invest genuine time, energy and interest in our work. The fact that he is aware of the issues and focused on being part of the solution leaves our organization with a sense of hope and excitement in knowing that he will be impacting this work beyond the internship."

Najera Demoraes is majoring in political science and Latin American studies. He plans to become an immigration lawyer so that he can help Latino immigrants advance in their civic engagement and take part in the power structure of their communities and beyond.

"My ideal future is a celebration in which we can see color and culture as assets and important to society," he said. "In a way, I would like to have a fiesta at the end of this struggle to celebrate our differences yet unity. Let's have some fun at the fiesta, then a quick siesta, and then get back to work." ■

— DAVID D. MEDINA

DIRECTOR
MULTICULTURAL COMMUNITY
RELATIONS
PUBLIC AFFAIRS

PH.D. RESEARCH

Continued from Page 1

University of Texas at Austin. Students were grouped by interest with Rice researchers in areas ranging from computer science and mechanical engineering to psychology and global health.

The 12 researchers shared the background and premise of their Ph.D. work with their small group of students using white boards — no computers, videos or PowerPoints allowed. Students took notes and asked questions, unraveling the mystery of cutting-edge science with their youthful curiosity.

After some team building that included a campus tour and pizza lunch, the students took charge, drawing illustrations and organizing the take-home messages on white boards to create posters to represent each small group's project. Finally, the middle school kids brainstormed a presentation with their group leader, putting on their lab coats and assuming the role of the scientist, and then explained their Ph.D. projects to the other groups and parents — even fielding questions from the audience about their own scientific intuitions or favorite parts from what they learned.

So, did the middle school kids really understand the Ph.D. level research? We surveyed the students using a pre-post retrospective survey used previously by Gracia at UT Austin, and the results were overwhelmingly positive. Fifteen questions before and after showed significant change toward more interest in science. Students felt the best parts of the workshop were learning new things, getting to know the people in their group and sharing what they learned. The workshop's initial influence on students was higher interest in science at the research level.

One student said, "It made me a lot more interested in science than I already am." The feedback for improvement from the kids included having more time together, getting to do scientific research themselves as well as having even more pizza and snacks.

The official data from the graduate student scientists and engineers who shared their Saturday with these youths are still pending, but their



GETTING ON BOARD: Students practice their presentation on protein mutations.

informal feedback was also positive. Graduate students said that they would enjoy more scientific mentoring opportunities, and that they would like to do the Rice Youth Science Workshop again. Being able to explain one's Ph.D. project to kids can be very helpful and motivating for the researcher. In fact, multiple graduate students said that the middle school students asked them questions similar to questions asked by their dissertation committee.

Plans are underway to make these workshops a regular occurrence at Rice, and open the program to even more local families. Events like these are formative opportunities for both scientists-in-training at Rice practicing their broader communication skills as well as curious children looking to embark on fun explorations into the scientific world around them. ■

— **CARRIE OBENLAND OWENS**

ASSOCIATE DIRECTOR FOR OUTREACH AND RESEARCH
RICE OFFICE OF STEM ENGAGEMENT

INVESTMENT IN JOB TRAINING AND EDUCATION WILL YIELD GREAT BENEFITS FOR THE NATION

If the U.S. and other countries hope to thrive in an interconnected world that offers opportunities and threats, they must develop and maintain a skilled and adaptable workforce, according to a new book edited by a Rice University psychologist.

"Workforce Readiness and the Future of Work" (Routledge Press, 2019) argues that the large-scale, multifaceted efforts required to ensure talent and skill in the U.S. workforce should be systematically addressed across all relevant scientific disciplines. The publication was edited by Fred Oswald, a professor of psychological sciences

at Rice University; Tara Behrend, an associate professor at George Washington University; and Lori Foster of North Carolina State University, all of whom are industrial-organizational psychologists who study the science of work.

With contributions from leading international scholars, the new book sheds light on crucial workforce effectiveness issues such as education in K-12, vocational, postsecondary and STEM arenas; economic and labor market considerations; employment, organizations and the world of work; and laws, policies and budgets at the international, national and local levels. All of

these issues are linked to advice for people involved in research, practice and policy.

The book stresses that strategic national investments in job training and schools remain essential, both in the short and the long term. The authors emphasize that these investments stimulate businesses, policymakers, labor groups and employment agencies to collaborate with educators who provide training and vocational guidance.

"Educational, employment, technological and policy initiatives related to the workforce stand to be more effective when they are defined and executed in a more coordinated and collaborative

manner," Oswald said. "Even modest improvements in this direction stand to yield great benefits to society. Hopefully, this book will provide relevant disciplines and stakeholders some workforce insights and motivation to this end."

More information is available online at <http://bit.ly/rice-at-large-workforce>. ■

— **AMY MCCAIG**

SENIOR MEDIA RELATIONS
SPECIALIST
PUBLIC AFFAIRS

RICE ALUM AND FRENCH SOLDIER FEATURED IN WORLD WAR I EXHIBITION

Rice University's Fondren Library attracted a stream of visitors during the spring semester with an exhibition commemorating the centennial anniversary of World War I. The exhibition, "100: The Great War Seen Through the Eyes of Two Soldiers," combined a scrapbook created by the wife of a Rice alum with black and white photographs taken by a French soldier.

The scrapbook, donated to the Woodson Research Center at Rice, shows the journey of James S. Waters '18 as he traveled from Houston to the battlefields of France to Germany and his return home.

French soldier Paul Gueneau took the photographs from the trenches with a Kodak VestPocket. By joining Waters' scrapbook with Gueneau's photographs, the exhibition provided a unique and fascinating perspective of World War I.

Gueneau was from Nevers, France, and served with the 56th Infantry Regiment from 1914 through 1918, when he was injured by mustard gas during battle just a few months before the armistice. Gueneau's grand-

daughter, Pulcherie Gueneau de Novoa, who lives in Houston, curated the exhibit along with Woodson Research Center and French association Le Cercle de Valmont. Her grandfather's stark photographs included pictures of the soldiers having a snowball fight and holding kittens in front of a food pantry. De Novoa was able to receive the official recognition of the French Mission Centenaire and the U.S. World War I Centennial Commission for the exhibit with help from sponsors Société Générale and Hexagroup.

Waters was the captain of Rice's track team and a leader of the famous 1917 escapade to recover the kidnapped Sammy the Owl from Texas A&M University. Waters served from June 1918 to June 1919 in the Corps of Engineers with the 360th Regiment, 90th Division. He was the commander of a combat platoon in the St. Mihiel and Meuse-Argonne campaigns, resulting in his promotion to the rank of first lieutenant and the receipt of three combat stars.

After World War I, Waters became the first person at Rice to hold the title of Instructor of Engineering. Waters was born in Galveston and went by the nickname of "Chief." He retired in 1964 after 45 years of teaching. In 1965, a former student of his set up the James S. Waters Creativity Award to provide a competitive monetary award to an undergraduate engineering student. Twenty-four years later, the award now honors two undergraduates each April with \$1,000 each.

The Fondren exhibition drew students from Houston Community College, the University of Houston, Bellaire High School and the Awty International School. Constance Guillaume, an eighth grader at Awty wrote an essay about the exhibit. The black and white photographs allowed Guillaume to



FELINE : A photograph taken by French soldier Paul Gueneau shows fellow soldiers holding kittens in front of a food pantry during World War I.

understand the hard living conditions of the soldiers fighting in the trenches. She realized after seeing the exhibit how proud she is of her great uncle, Michel Guillaume, who fought in World War I. The exhibit helped her understand his bravery in fighting for what was important to him, to his nation and the world.

"As the photographs were taken by a soldier himself, it makes these picture even more real," Guillaume said. The essay won her the privilege of representing her school at Arlington Cemetery's changing of the guard ceremony.

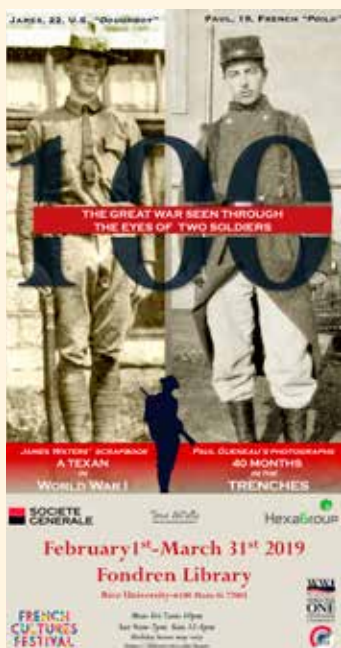
Numerous members of the public also viewed the exhibition, including Waters' nephew, Ashley Waters, 75, who said that thanks to the show, he finally learned the

details about his uncle's World War I service. His uncle, he said, never discussed his time in the war. Ashley Waters also felt that he was finally able to pay his respects to his uncle, who died while he was serving in the Navy.

For additional exhibit coverage visit <http://bit.ly/rice-at-large-ww2-history>. To download Waters' scrapbook visit <https://scholarship.rice.edu/handle/1911/95189>. ■

— JULIA KRESS

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BRINGING CUTTING-EDGE RESEARCH INTO THE CLASSROOM

This summer, more than 150 teachers, administrators, graduate students, high school students and professors filled Rice University's Brockman Hall for the 2019 third annual Engineering Research Symposium for Teachers.

Led by the Rice Office of STEM Engagement (R-STEM), the goal of the symposium is to make STEM teachers more aware of current engineering-focused research and to provide them with examples of how to translate that research into classroom lessons or activities.

Each summer, 23 teachers are selected to participate in a six-week internship at either Rice University, Arizona State University or the University of Texas-El Paso to conduct

symposium.

This year's symposium participants also engaged in cutting-edge engineering research discussions lead by Naomi Halas, the Stanley C. Moore Professor of Electrical and Computer Engineering and founding director of the Laboratory for Nanophotonics at Rice; and Reginald DesRoches, dean of Rice's George R. Brown School of Engineering.

In her talk about the potential uses of nanophotonics, Halas encouraged the crowd of teachers to look toward the future of innovation. Clinical trials on humans suffering from prostate cancer are underway using nanoparticles as agents to destroy the cancerous tissue. Teachers were amazed to learn that so far there have been no reports of any adverse effect

architects, city planners and social scientists to study the impact of the earthquake. After DesRoches' presentation, teachers discussed how they now plan to convince their principals to allow them to spend more time teaching engineering in the classroom.

To enhance the connection between real-world problems studied in the lab and classroom curriculum, the symposium offered breakout sessions throughout the day on five different hands-on engineering activities. Participants were allowed to choose two breakout sessions during registration based upon grade-level and area of interest.

Sessions included how to engineer glow in the dark slime, how to design a solution for removing pollution from our local bayous

and how to develop a code to use a webcam in order to find your heart rate. The rigorous day was designed for teachers to visualize a method for incorporating impactful research within the classroom as a way to engage their students in real-world innovative research.

"We want K-12 students to begin thinking about the next phase of problems that may challenge the future and teachers to think beyond the classroom walls," said Carolyn Nichol, director of the Rice Office of STEM Engagement. ■

— **CHRISTINA CRAWFORD**
ASSOCIATE DIRECTOR FOR SCIENCE
AND ENGINEERING
RICE OFFICE OF STEM ENGAGEMENT



PHOTO: (Left) Dean Reginald DesRoches sharing his personal engineering journey. (Middle) During the poster session, symposium participants engaged in conversations about the research conducted and how it may be taken into the classroom. (Right) K-12 teachers are given an opportunity to practice hands-on engineering activities during the breakout sessions so that the lessons may be successfully shared with students. Photos: Quy Tran

research within various National Science Foundation Engineering Research Collaboratives, such as Nanotechnology Enabled Water Treatment (NEWT) or Precise Advanced Technologies and Health Systems for Underserved Populations (PATHS-UP).

The teacher interns conduct research within a specific problem area under the guidance of a graduate student mentor and learn important aspects of engineering. At the conclusion of the internship, the interns design and present their research poster at the

from this treatment.

"I feel inspired to learn more about science even though I am a math teacher," said Demetria Ellis.

In his lecture about the wonders of engineering, DesRoches talked about his amazing journey from Haiti to Rice University. He explained how because of his engineering knowledge he was able to help the people of Haiti after an earthquake rocked that country in 2010. DesRoches served as the key technical leader in the United States' response to the earthquake, taking a team of 28 engineers,

"We want K-12 students to begin thinking about the next phase of problems that may challenge the future and teachers to think beyond the classroom walls."

— **CAROLYN NICHOL**

YOUNG STUDENTS LEARN ABOUT THE BENEFITS OF STEM

Imagine designing and constructing a car that runs on energy harnessed from the sun. Young students were given that opportunity to create and race solar-powered cars with their teammates at the Junior Solar Sprint Competition.

The U.S. Army Educational Outreach Program established the Junior Solar Sprint Competition in 2001 to help students in grades 5–8 develop teamwork and problem-solving abilities, investigate environmental issues and gain hands-on STEM skills.

In this age of technology, the importance of learning STEM continues to increase. Harmony Public Schools promotes STEM projects and competitions to help students at an early age become

more proficient in science and technology. Suleyman Gecmenler, Harmony’s Southwest District STEM coordinator, and Yetkin Yildirim, the Rice University School Mathematics Project’s director of STEM projects, are dedicated to promoting these goals at Harmony by establishing the Junior Solar Sprint (JSS) Competition.

Yildirim believes that the JSS Competition has helped students develop academically through project-based learning in science, technology, engineering and mathematics. Thousands of students compete in the JSS every year, and this competition has gained in popularity as solar technology continues to improve.

Harmony Public Schools has been the Army’s strategic

outreach partner since 2016 and has recently hosted its annual JSS Competition with 85 competitors from 11 different Harmony campuses. U.S. Congressman Pete Olson ’85 presented at this event, and after observing the huge impact the JSS has on students, he said, “STEM is our future; these are needed jobs, needed fields. What we want to aim for at Harmony and Rice University is that we want to teach these kids early because these kids, the ones attending this competition right now, are going to change our world.”

Students enjoy participating in the JSS because they know that they are gaining many important skills and experiences from it.

“I joined JSS because I really like innovating and creating

things, so I thought this would be a good chance for me to prove my talent and interest,” said Bahar Kose, a team member of the first-place team at Harmony’s JSS competition. “The Junior Solar Sprint has provided many students a gateway into the world of STEM and shaped their career interests and passions.”

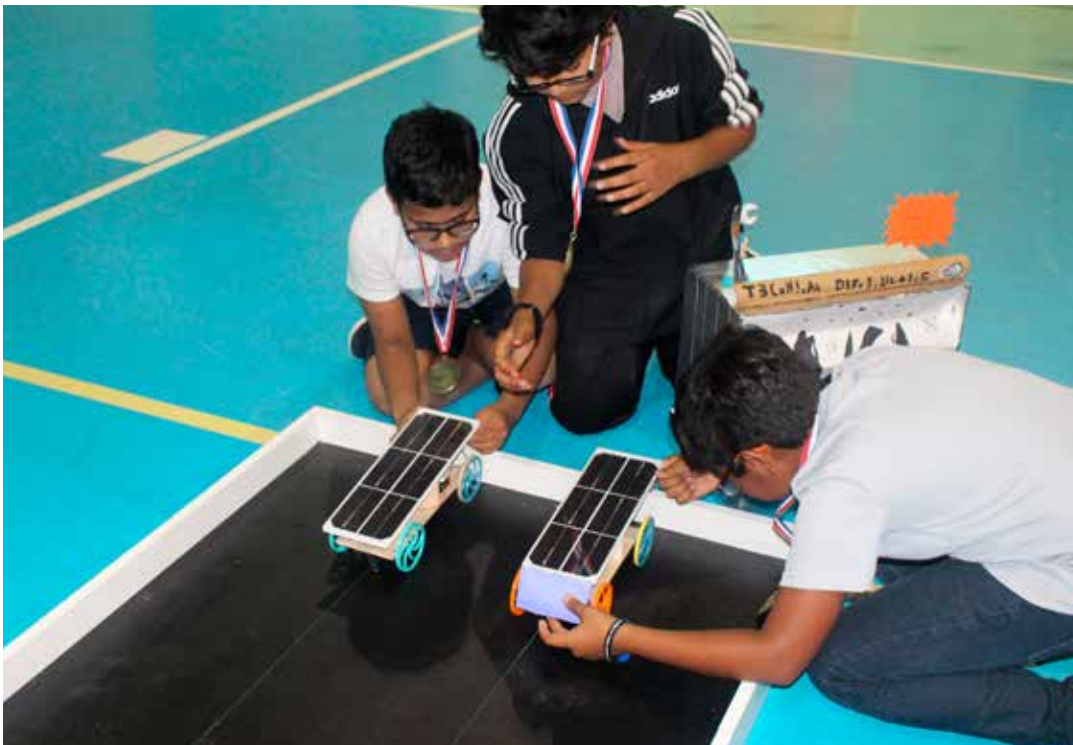
STEM-based learning also makes students aware of the environmental benefits of using renewable energy resources, particularly solar energy. As students participate in the JSS, they are more inclined to take better care of the natural surroundings through technologies and innovations.

A major part of the JSS competition is to prepare Harmony kids to pursue STEM careers. As Olson emphasized, these students will meet the demands of the STEM workforce and solve main global issues and change the world for the better. ■

“What we want to aim for at Harmony and Rice University is that we want to teach these kids early because these kids, the ones attending this competition right now, are going to change our world.”

— CONGRESSMAN PETE OLSON

— ANJALI AGRAWAL
HARMONY PUBLIC SCHOOLS



STEM IN ACTION: Students were given the opportunity to create and race solar-powered cars with their teammates at the Junior Solar Sprint Competition.

LOCAL HIGH SCHOOL STUDENTS LEARN HOW COMPUTER SCIENCE CAN IMPROVE HEALTH

Every 30 seconds, one American will be diagnosed with diabetes and another will suffer a coronary event. In underserved communities, the rates are even more disproportionate. This summer, Houston-area students came together to be a part of the solution.

To engage high school students in science, technology, engineering and mathematics, the Rice Office of STEM Engagement (R-STEM) launched the Computing for Health Academy, which addresses diabetes and heart issues, and shows students how computer science can be used to improve the health of people in underserved communities.

Computing for Health is a four-day summer institute for students from eight local school districts. The institute took place at Rice, where 16 students worked with health care instruments to grasp the interconnected nature of STEM and how this knowledge could be used to benefit society. Students experimented, programmed and tinkered to gain a greater understanding of the changing path of medical treatments due, in large part, to computer engineering. The students were guided by university faculty, graduate students and six secondary school teachers from Houston ISD, Harmony Public Schools and KIPP Public Schools.

During the summer institute, students toured various campus buildings and facilities, speaking with Rice students about how students at the undergraduate and graduate level work together to solve problems using the engineering design process in various STEM fields. Off campus, students made the short journey to the Texas Medical Center to visit The University of Texas McGovern Medical School. Here, the students learned about academic requirements for getting into medical school and steps they can take to reach this goal.

Yongyi Zhao, a graduate researcher at Rice in electrical and computer engineering and computer science, discussed the ways programming will enhance the efficacy of health care tracking at home. In addition, undergraduate student Oluwapelumi Fafowora talked about his path to pursuing computer science as a major and about internships, college life and some interesting ways to use their skills to do useful projects.

During the 2019–2020 school year, R-STEM will host a series of after-school programs to continue to engage local students. Students will be taking a closer look at programming fundamentals to enhance their ability to tackle larger projects.

With the use of tools and programs, such as CS Unplugged, Code.org and TI-Innovator Hubs, students will have the opportunity to understand concepts such as data types, conditional statements, loops and functions. The plan is to have students use this knowledge to begin programming in Python.

This work was funded by the National Science Foundation's Precise Advanced Technologies and Health Systems for Underserved Populations (PATHS-UP) Engineering Research Center (ERC), whose mission is to develop advanced, cost-effective technologies to prevent, delay the onset, and manage diabetes and cardiovascular disease. ■

— ALLEN ANTOINE

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— CAROLYN NICHOL

DIRECTOR
RICE OFFICE OF STEM ENGAGEMENT



MEDICAL-MINDED COMPUTING: High school students from eight local school districts attended the Computing for Health Academy, which addresses diabetes and heart issues. Students learned how computer science can be used to improve the health of people in underserved communities.



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RICE AT LARGE

FROM THE OFFICE OF PUBLIC AFFAIRS AT RICE UNIVERSITY
DAVID D. MEDINA, DIRECTOR, MULTICULTURAL COMMUNITY RELATIONS

IN THIS ISSUE:

Latino Student Seeks to Empower His Community

› Page 1

Local Middle School Students Learn About Cutting-Edge Ph.D. Research at Rice

› Page 1

Investment in Job Training and Education Will Yield Great Benefits for the Nation

› Page 3

Rice Alum and French Soldier Featured in World War I Exhibition

› Page 4

Bringing Cutting-Edge Research Into the Classroom

› Page 5

Young Students Learn About the Benefits of STEM

› Page 6

Local High School Students Learn How Computer Science Can Improve Health

› Page 7



RICE AT LARGE is a quarterly newsletter that showcases the university's outreach programs. Each issue of the newsletter includes a series of stories that raise the awareness of Rice's engagement with the city and beyond. Rice At Large has a circulation of 2,500 and is sent to members of the Rice and Houston communities, including alumni, educators, business and political leaders, program funders and others with whom the university would like to engage.