

SPRING / SUMMER 2012

FOCUS

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National Technical Institute for the Deaf • Rochester Institute of Technology



Spotlight on STEM



MARK BENJAMIN



MARK BENJAMIN

Just Imagine! More than 35,000 visitors attended the fifth annual Imagine RIT Innovation + Creativity Festival on May 5, and there was no shortage of exhibits, demonstrations or hands-on activities led by NTID students, faculty and staff. Visitors of all ages donned caps and gowns to have their picture taken as RIT “graduates,” played tic-tac-toe on a See-through Life-size Interactive Monitor, rode electric bikes, enjoyed poetry in American Sign Language, learned about the differences in the brains of deaf and hearing people, and more. Learn more about the festival at www.rit.edu/imagine and plan to attend next year’s festival on May 4, 2013.



STEPHEN WILLE



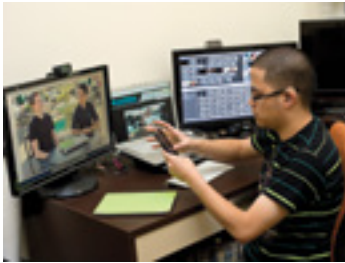
MARK BENJAMIN

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ABOUT THE COVER

NTID is a leader in STEM (science, technology, engineering and mathematics) education for deaf and hard-of-hearing students. This issue of *FOCUS* magazine showcases some of the college's many STEM-related initiatives. The front cover photos, by photographers Mark Benjamin and A. Sue Weisler, are from various articles in this issue. Look inside for more.

RIT/NTID 2012 *FOCUS* magazines are printed on a paper that has 10-percent postconsumer recycled fiber, which results in a total environmental savings of 10.02 trees; 28.96 pounds waterborne waste; 4,260 gallons wastewater flow; 472 pounds solid waste; 928 pounds net greenhouse gases and 7,103,110 BTUs.



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FOCUS

NTID

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MARK BENJAMIN

Leading the Way in STEM

If the United States is going to remain competitive in the STEM disciplines (science, technology, engineering and mathematics), we need to prepare more individuals for STEM careers, and I'm proud to say that NTID is doing its part. Since its establishment nearly 50 years ago, NTID has led the way in STEM education for deaf and hard-of-hearing students, and we continue to be at the forefront of inspiring and preparing our students for careers in fields that are driving our nation's economy and solving some of the world's biggest challenges.

Research shows that deaf and hard-of-hearing college graduates earn more than twice what their non-degreed peers earn. And deaf and hard-of-hearing individuals employed in STEM fields earn 31 percent more than those working in other fields. Holding a degree in

a STEM discipline also helps close the wage gap between deaf and hard-of-hearing workers and their hearing peers.

This spring, a record 425 students were candidates for graduation. Nearly half of these students completed programs of study in STEM disciplines. Some were graduates of our Master of Science program in Secondary Education who will pursue teaching careers in STEM fields and help inspire the next generation of deaf and hard-of-hearing students.

This issue of *FOCUS* highlights some of our many STEM-related initiatives—from faculty members like Dr. Todd Pagano who are involving undergraduate students in scientific research (see p. 3) to outreach programs that are encouraging more female students in STEM fields (see p. 10) to STEM-focused grant projects that are reinforcing NTID's role as a leader in STEM education (see p. 12).

I continue to be inspired by our talented students, faculty and staff. Their innovation and creativity, coupled with the support of our partners in government and industry as well as families, donors and friends of the institute, will ensure that NTID continues to lead the way in STEM fields for decades to come.

Dr. Gerard J. Buckley
NTID President
RIT Vice President and Dean

Taking Science Outside of the Classroom

by Greg Livadas

Dr. Todd Pagano's enthusiasm for science is obvious as he talks about his numerous research projects—from determining how climate change can affect water quality to establishing links between cigarette smoke and carcinogens to linking fruit chemistry with bird migration.

But Pagano, an associate professor and director of NTID's Laboratory Science Technology program in NTID's Science & Mathematics Department, has even more enthusiasm when he talks about his students.

"When I started teaching here, I quickly learned that associate-level students could do groundbreaking research that contributes to the scholarship in the field," Pagano says. "We're collecting the highest quality data. The students' motivation is so great. And we're being recognized globally."

Pagano and two of his students, Ryan Spector, of Kings Park, N.Y., and James Macisco, of Stratford, Conn., recently attended a national meeting of the American Chemical Society in San Diego, Calif. There, the students gave a presentation on their research to thousands of attendees.

"When my students finish presenting at these conferences, the audience always leaves in awe," Pagano says. "It's rewarding to watch the students come full circle and present their research results after years of hard work in the laboratory. Seeing the pride on their faces really reinforces why taking the time to guide students in these projects is so worth it."

"The trip to San Diego was an amazing experience for me," Spector says. "I learned how to be confident in myself in presenting research projects in front of a group of people. I also learned about a wide variety of research projects that are currently happening. The thing that I



Getting Results from Science Associate Professor Todd Pagano (right), director of NTID's Laboratory Science Technology program, collects water for sampling with students Ryan Spector (left) and James Macisco.

will remember most is the interaction and networking that I had with scientists and ACS members. It gave me a sense of confidence and the knowledge that I can succeed."

"I was nervous about the presentation, but it turned out to be a good experience for me," Macisco says.

At the conference, Pagano received the American Chemical Society Award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences. The award, sponsored by The Camille and Henry Dreyfus Foundation, comes with up to \$15,000 for RIT/NTID to help further promote students interested in science.

Pagano, who has served on the Rochester chapter of ACS's executive board and the ACS's Chemists with Disabilities national joint-board, donned a tuxedo to receive the honor at the Awards Dinner and was the keynote speaker for the ACS Professional Relations Division, where he talked about his 10-year teaching career at RIT/NTID and the attitudes he's helped change in terms of what deaf students can accomplish.

Pagano has taken nearly 20 of his students over the years to give presentations at national conferences.

"They are the only associate degree

level students presenting," he says. "They are the only deaf students presenting. And on three occasions, they've been recognized with research presentation awards, competing against hundreds of other students."

"It's an honor to be recognized for blazing the way in this field," Pagano says. "Students who are deaf or hard of hearing are a minority in the field of chemistry. The fact that I'm taking large numbers of students and preparing them to work in the field after graduation is something I'm quite proud of."

Last year, Pagano was named a Fellow of the American Chemical Society, one of 213 scientists who have demonstrated outstanding accomplishments in chemistry and made important contributions to the ACS, the world's largest scientific society. And in February, Pagano, a principle investigator on four research projects, was given an RIT College Research Award.

To continue the research and his work with students, he's also working on securing additional grants. Attending the conference "was very stimulating for my research initiatives," Pagano says. "I returned with so many ideas for other directions to take my research. It's never done. There's always more research to do."

The Next Big Idea

by Kathy A. Johncox

People looking for the next big idea often are entrepreneurs who want to change the world. Think Bill Gates, Steve Jobs and 3M's Art Fry, the man who invented the Post-it® note.

Closer to NTID, think alumnus Chris Wagner, senior vice president for business operations and marketing at video relay service provider ZVRS, who truly understands the value of innovation, creativity, collaboration and community involvement in our world today. Wagner, who graduated in 1994 with a bachelor's degree in Social Work and currently chairs the NTID Foundation Board, is one of the developers of RIT/NTID's The Next Big Idea, an annual competition that challenges students to create teams across different disciplines, and work together to create a business or product that will benefit the deaf and hard-of-hearing community as a whole.

"Chris has given back to RIT/NTID in so many ways," says NTID President Gerry Buckley. "At ZVRS, he has hired and mentored co-op students and hired alumni for permanent employment, has been a consistent supporter for the Imagine RIT: Innovation + Creativity Festival since its inception, and now has created a competition that will give students the encouragement and opportunity to think outside the box. The term 'distinguished alumnus' was created for alumni like Chris."

FOCUS recently interviewed Wagner to find out more about his commitment to RIT/NTID and the ZVRS connection with The Next Big Idea.

You were chosen as the RIT/NTID Distinguished Alumnus in 2009. What did that feel like?

I was humbled by the recognition and honored by the fact that I was able to contribute to the university in many different ways. I would never change anything from what I have learned at

RIT/NTID. As an alumnus, I believe you can make a difference being part of the university after completing your studies.

If you could describe your college experience in one word, what word would you pick and why?

I can think of two words that describe my experience at RIT/NTID—life transforming. I believe RIT/NTID has changed my life completely. Growing up with communication barriers, challenges and lack of social interaction with people who cannot understand the frustrations of being a person who is deaf and alone was difficult. Once you walk on the beautiful campus at RIT, you feel free and know that you are finally home. At RIT, I could participate in the classroom fully, socialize with people without any fear that I might miss out on any information and be accepted for who I am.

ZVRS has worked with RIT/NTID to create The Next Big Idea Competition. Where did this idea originate and where do you think it is going?

Last summer, I was thinking about my experiences supervising co-op students over the past few years, and I had noticed that students who were in different majors faced challenges in working together on projects. For example, a business administration student, graphic design student and a software engineering student were assigned to work together in developing a new project, and there were difficulties in communicating or following expectations because they did not have an understanding of the other's disciplines. I started thinking about something like the television show *The Apprentice*, where the



PHOTO PROVIDED BY ZVRS

Chris Wagner

students would be challenged working together as a team, each bringing knowledge in their field to create new ideas. That led to the establishment of The Next Big Idea competition, which requires that students in different majors work in teams and allows them to win cash prizes for developing new products that will benefit deaf and hard-of-hearing individuals. Many RIT/NTID students and alumni already have contributed to the advanced technology so important in the deaf and hard-of-hearing community. The Next Big Idea partnership is an example of how we put students first in preparation for their careers. Perhaps students' lives will be changed by this competition.

What do you expect this will do for RIT/NTID students?

I believe this will give students the experience of working with people in different professions just as they will in



MARK BENJAMIN

And The Top Prize Goes To... (Left to right) ZVRS CEO Sean Bellanger and Chris Wagner with The Next Big Idea first place team members, Michael Della Penna, Tyler Swob and Jeremiah Thompson, and NTID President Gerry Buckley.

jobs in the real world after graduation. Expanding their horizons in other areas rather than just in their area of specialty will increase their knowledge and chances for better employment. And that's what it's all about.

What's your impression of the result of the first annual Next Big Idea Competition?

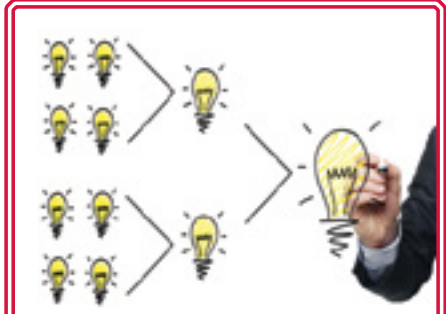
The first Next Big Idea was a big success and has set the stage for some exciting future competitions. All five finalists did an outstanding job! The other ZVRS judges and I were impressed and excited by the creativity and energy the groups brought to this effort. The first place winners demonstrated their creation called V-Sports™, a device that facilitates communication via vibration notification, for example, between the referees or the coaches, and deaf and hard-of-hearing athletes. This concept has other applications beyond sports. Seeing the dreams and aspirations the student inventors have makes me even more proud to be an alumnus.

Please explain a little about ZVRS and its mission.

Communication Service for the Deaf Video Relay Service (CSDVRS) launched nationally in 2000 as a nonprofit, human service agency and was the first commercially developed video relay application perfected for nationwide use by deaf and hard-of-hearing consumers. It was at the vanguard of what would become a booming video relay service (VRS) industry. In 2006, the CSDVRS product was spun off to become a stand-alone, for-profit company that today is known as The Z® or ZVRS, focused on developing VRS innovations to better serve deaf and hard-of-hearing individuals. ZVRS also is a leading employer of deaf and hard-of-hearing RIT/NTID alumni, with about 60 alumni currently employed.

What skills do RIT/NTID alumni bring that benefit the company?

RIT/NTID alumni bring the considerable skills they have developed at the college plus the real-world work



The Next Big Idea Competition

- An annual competition sponsored by ZVRS.
- Cash prizes:
 - 1st place – \$5,000
 - 2nd place – \$3,000
 - 3rd place – \$2,000
- Cross-disciplinary teams of deaf and hard-of-hearing RIT/NTID students work together to create a project, technology or a business that will be useful to the deaf and hard-of-hearing community.
- Teams create an idea to pitch to a group of judges.
- Judges select three to five teams as finalists.
- These teams receive seed money and work on their project for a final presentation, judging and selection of winners who then exhibit at the Imagine RIT: Innovation + Creativity Festival.

experience they have acquired through RIT/NTID's co-op program. And, graduates come prepared to work in an environment that believes in challenges and in innovation. These characteristics are qualities that ZVRS is looking for.

Chris, thanks for all that you've done, both personally and through ZVRS, and for what you continue to do for our students and your fellow alumni.

We are pleased to be able to be part of RIT/NTID's mission to offer career opportunities to students and look forward to continuing our collaboration with the university.

Living the Tech Life

by Ilene J. Avallone

NAME

Samuel Sandoval

AGE

22

HOMETOWN

Fairfax, Va.

MAJOR

**Associate+Bachelor's Degree,
Applied Computer Technology, 2010
B.S., Information Technology,
expected 2013**

Join us for an insider's view of a week in the life of a science, technology, engineering and mathematics (STEM) student at RIT/NTID. We accompanied Samuel Sandoval to capture a typical week for him at RIT. He was in perpetual motion—juggling classes and labs, projects, work and extracurricular activities. His life on campus was full of a variety of experiences and interactions. How much and how varied was the activity he packed into a single week on campus? Take a look.



A. SUE WEISER



YASMEEN SMALLEY

Samuel is one of 60 men and women who got their heads shaved during a fundraiser sponsored by Sigma Nu fraternity. The fundraiser netted more than \$9,000 for St. Baldrick's Foundation, which supports research for childhood cancers.



MARK BENJAMIN

Samuel gets tutored for his Data Analysis I class by Jane Jackson, support faculty in the NTID Science and Mathematics Department. Jackson helps him with the week's assignment—using the statistical software package Minitab, and applying the use of technology in statistical analysis.



A. SUE WEISLER

LEFT: Samuel spends some quality time studying for his class, "History of Modern America," in one of his favorite spots to study—the third floor in the Wallace Library.

BELOW: Samuel attends his first speech therapy session at RIT with Bonnie Bastian, speech/language instructor. He's interested in learning how to control the volume of his speech, so Bastian uses a spectrogram to show Samuel how to vary his speaking volume.

MARK BENJAMIN



A. SUE WEISLER

ABOVE: Samuel meets with Chris Santoro (right), a third-year IT major from Long Island; and Brant Gipson, a second-year IT major from Marietta, Ga., in the computer lab in RIT's Golisano College of Computing and Information Sciences to work on a group assignment for their Human-Computer Interaction class.



A. SUE WEISLER

ABOVE: In his dorm in RIT's Global Village, Samuel gets right to work. He spends about three hours every week working on DeafTechNews, a website he launched in 2010 that covers issues related to deaf technology products, assistive technology, video relay services and technology-related accessibility for deaf and hard-of-hearing people. Here, he works on a video blog about an interview he conducted with Wayne Betts from Convo Relay.

LEFT: Starving! Samuel joins his girlfriend, Kristina McQuay, and two friends, Yuri Elt and Kyle Barbauld (left), for lunch at RIT's Global Grille, one of his favorite restaurants. Samuel enjoys their special of the day—catfish with steamed vegetables.



A. SUE WEISLER

Dan Latimer

by Greg Livadas



A. SUE WEISLER

Dan Latimer says his natural curiosity and his family's strong background in science—his father and father's father are psychiatrists, and his mother's father is a surgeon—make biomedical science the perfect major for him.

The second-year student from Montclair, N.J., accepted a co-op this summer to do biomedical research at prestigious Columbia University in New York City.

"I thought at first I'd like to follow in my family's footsteps and become a doctor," says Latimer, 21. "But now, I think I'd like to get my Ph.D. and do medical research at a hospital or a pharmaceutical company. I like working with people, but I think I'd like working in a laboratory more than being a doctor."

Born deaf, Latimer received a cochlear implant when he was nine years old. He relied on classroom captioning in high school, and says C-Print® captioning offered in his classes was one of the reasons he chose to come to RIT.

"I really like the education system here," he says. "You can approach the teachers with questions, and they're happy to talk with you after class if you need to."

His first exposure to RIT/NTID was in 2009, when he attended NTID's Explore Your Future career exploration camp.

"I remember it was very diverse, and I enjoyed interacting with everyone," he says.

His enthusiasm for RIT/NTID continues.

"I just like the people here," he says.

In his free time, he's involved in RIT's Capoeira Mandinga Club, an Afro-Brazilian martial arts club where participants express themselves in dance-like movement.

After graduation, his dream job is working for a drug manufacturer or a university medical center. It's an ambitious goal, but one he's committed to seeing through.

"I'm pretty persistent," he says.

Kehinde Ogunbayo

by Ilene J. Avallone



MARK BENJAMIN

To be successful, Kehinde Ogunbayo believes, "Don't give up on your goals and don't fear to ask others if you need help."

This spring, Ogunbayo, 20, received an associate degree in Computer Aided Drafting Technology—a major she chose because she loves to draw.

Ogunbayo was born in Nigeria in West Africa, and grew up in a hearing world not knowing much about Deaf culture. She attended a mainstream high school with her twin sister, who is hearing, and who became her interpreter during high school. When she was 18 years old, she moved with her family to Chicago.

She chose RIT/NTID because she wanted to meet other deaf and hard-of-hearing people and experience Deaf culture.

"I also wanted to go to a technological college with lots of diversity," she says. "RIT/NTID offered it all."

She found a cooperative work experience with the City of Los Angeles invaluable.

"I applied my technical skills and learned so much on my co-op," she says. "I worked

on real-world design projects, and was an integral part of the design team with other engineers. I am confident now in my technical skills, and learned how to become more independent by living alone in a new city across the country from my family."

Upon completion of her co-op, she received an Award of Appreciation from the City of Los Angeles Department of Public Works/Bureau of Engineering Architectural Division.

On campus, this Dean's List student works as an NTID Engineering Studies lab assistant, and is a member of Phi Kappa Phi Honor Society, African Deaf Student Union, Deaf Christian Club and supports the Organization for African Students.

"I love when I meet different people from around the world," she says.

Ogunbayo is continuing her education. This spring she started a bachelor's degree program in RIT's Civil Engineering Technology program. Someday she hopes to work in the construction field and help design buildings, or return to Nigeria and teach deaf students.

Taneshia Smith

by Susan L. Murad

“My goal in life has been the same since I was in elementary school—I want to help people,” says 20-year-old Taneshia Smith.

But the Baltimore, Md., native was not sure how to match her desire with her skills and talents until she started her studies at RIT/NTID.

“I chose RIT/NTID because it provides outstanding programs for deaf and hard-of-hearing students that can be difficult to find in other universities and colleges,” Smith says. “During my junior and senior year of high school, I participated in FIRST (For Inspiration and Recognition of Science and Technology) Robotics, and my mentors had a son who graduated from RIT. When I visited campus, I knew this was where I wanted to be.”

Smith graduated in May with an associate degree in Applied Computer Technology, and credits her co-op experiences as an IT technician at the Social Security Administration Headquarters in Baltimore, and as a technical support representative

in RIT’s Information and Computing Studies Department, with helping her find that match. Currently, she is applying for positions in the Baltimore area.

At RIT, Smith learned the necessary skills to be successful in a computer-related work environment and developed an understanding of how her academic studies would be critical to her career choice.

“My co-ops gave me valuable experience in how to handle real-life situations on the job,” she says. “Having those experiences made me confident about the career I want to pursue. I can’t emphasize enough how my co-ops added to developing my teamwork and people skills.

“In the future, I see myself owning a business and expanding my knowledge to follow my dream of helping others succeed in life.”



MARK BENJAMIN

Vincent Stowbunenko

by Greg Livadas

Unlike many other college students, Vincent Stowbunenko doesn’t pull too many all-nighters, cramming for tests instead of sleeping through the night. In fact, he’s often in bed by 8 p.m.

As a result, the Electrical Engineering major from San Jose, Calif., sees more sunrises than most of his fellow students.

“I’m very much a morning person,” he says. “I usually wake up at 4 a.m. every day so that I can have time to cook a delicious breakfast and do my homework while my brain is fresh.”

Stowbunenko, an only child, has enjoyed building things since he was a young boy.

“I used to play a lot with Legos® when I was a kid,” he says.

His first experience with RIT/NTID came when he attended Explore Your Future, a summer career exploration camp for deaf and hard-of-hearing high school students.

He came to RIT/NTID “because it’s one of the best engineering schools in the country, in addition to having the best support

services for deaf and hard-of-hearing people in the world.”

He received his associate degree in Applied Mechanical Technology in 2010, and plans to graduate in 2013 with a bachelor’s degree in Electrical Engineering.

“I didn’t have much interest in cars, planes or other mechanical objects like other mechanical engineering students do,” he says. “So after taking the required class in circuits, I fell in love and changed my major. I like math and physics and working with electronics.”

In addition to cooking, Stowbunenko enjoys playing mahjong and is training for his second marathon.

After he graduates, he’s not exactly sure which branch of engineering he’ll be most happy working in—he plans to get more design experience on co-ops before he decides.

“The most important thing is that I will enjoy the job,” he says.



A. SUE WEISLER

Wanted: More Girls in STEM Fields

by Kathy A. Johncox

The workforce of the future will demand more people working in STEM fields: science, technology, engineering and mathematics. And with females currently making up the majority of students enrolled in colleges, encouraging girls to engage in science and technology studies at an early age and pursue careers in those fields is essential for the United States to remain competitive in the global economy.

RIT/NTID's Pre-College Outreach programs have been reaching out to deaf and hard-of-hearing middle and high school girls to fuel their interest in science with two programs that offer future scientists not only hands on experiences in the lab, but also access to an increasingly important resource—mentors and role models.

TechGirlz

Since 2006, groups of seventh-, eighth- and ninth-grade deaf and hard-of-hearing girls have attended TechGirlz on the RIT/NTID campus. This six-day

summer camp was created to reach out to middle school girls with information and experiences that can help them take the steps they need to get to college. They perform chemistry experiments, work in a computer integrated machining lab, build their own computer and experience physics at an amusement park. They leave with hands-on knowledge and a notion of science as a possibility for a future career. Former TechGirlz are now enrolled at RIT/NTID, majoring in Laboratory Science Technology, Mechanical Engineering, Environmental Management and other STEM majors.

Annemarie Ross, assistant professor in RIT/NTID's Laboratory Science Technology Program graduated from RIT in 2005 with a bachelor's degree in Biochemistry and earned a master's degree in Professional Studies with concentrations in Chemistry and Biotechnology. She worked for a few years at IBM, but decided that her calling might be somewhere else. She returned to RIT/NTID to teach full time

and has worked summers as an instructor in the TechGirlz program.

"I work in the program because I enjoy inspiring future science professionals," says Ross. "I never expected young deaf and hard-of-hearing girls to look up to me, but they do, and I take my role as a mentor seriously. This program exposes them to different STEM fields and inspires them to continue exploring their passion."

Science Fair

The RIT National Science Fair for Deaf and Hard-of-Hearing Students has attracted the attention of many teams of middle and high school girls and boys from around the country. Marlet Mancera from Chicago, Ill., won a science award at her high school, then participated in the science fair at RIT/NTID twice. Currently a first-year Laboratory Science Technology major, Mancera volunteered this year to assist with judging at the science fair.

"Participating in the science fair as a high school sophomore and junior influenced my decision to come to RIT/NTID," she says. "The selection of majors was a good fit for me. I always was interested in science, and I'm planning for a career in that field."

The Future

An increasing number of females currently are enrolling in the Laboratory Science Technology Program, and that pleases Ross.

"I believe that when female students see successful female role models actively opening doors for them, they do not see their deafness or their gender as a limitation in the profession."

"My high school science teacher was a role model and had a big influence on my decision to go into science," says Mancera. "When I see women in science fields that were traditionally male dominated, it feels good to be a strong woman breaking the barrier."



In the Lab Annemarie Ross (center) works with students in the Laboratory Science Technology Program.

Mentor Inspires Student Success

by Kathy A. Johncox

A cooperative education experience (co-op) plays an important part in preparing students for their careers after college. And an important component of that is the mentorship of a student's co-op supervisor in making the work experience rewarding and valuable. One outstanding example of the value of mentorship to RIT/NTID students is Dr. Peggy Cebe, professor of physics in the School of Arts and Science at Tufts University.

Over the past nine years, Cebe has mentored 34 deaf and hard-of-hearing students in her research lab—20 of them from RIT/NTID. She is known for her educational philosophy that embraces students from groups that traditionally are underrepresented in science, technology, engineering and mathematics (STEM) disciplines. Cebe's work with her students is so well known, in fact, that she was one of nine individuals to receive the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring in December.

After beginning to experience a progressive hearing loss in 1993, Cebe became sensitized to challenges faced by deaf and hard-of-hearing students. She started to look for ways to use her skills and expertise to directly help underserved populations, and providing research opportunities in her lab seemed like a good method. A connection with Dr. Todd Pagano, director of NTID's Laboratory Science Technology Program, resulted in several students spending the summer conducting research in Cebe's lab. A collaboration was born.

"Having responsible, hard-working and highly motivated deaf and hard-of-hearing interns here at Tufts has raised awareness of the value of these interns as well as the sensitivity to their need for accommodation to ensure all students can succeed to their potential," says Cebe.

RIT/NTID students in STEM fields get



Honored at the White House Dr. Peggy Cebe (second from left) and other winners of the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring were invited to the Oval Office to receive personal congratulations from President Obama.

involved in co-ops at places like the University of Michigan, Harvard and Columbia universities, Dow Chemical Company, Eli Lilly and Co., the National Security Agency and the Department of Defense.

"I believe students who enter the STEM disciplines are highly sought after by employers because they're taught to think critically and in a scientific way," Cebe says. "That type of thinking carries over into many different fields, and employers know that."

Her former students would agree.

Dr. Jennifer Miller, RIT/NTID alumna and former co-op student in Dr. Cebe's lab, now is a veterinarian in Macedon, N.Y. "In my job, objective and analytical thought processes are essential skills," she says. "Dr. Cebe wanted us to learn to formulate our own way of doing things so we could genuinely understand the process. These skills were partially honed by learning how to conduct research properly and by allowing the facts to speak for themselves. I have no doubt that my time spent at Tufts helped prepare me for entering veterinary school."

"During my internship, I did nanopolymer research, and Dr. Cebe sparked

my interest in polymers," says JingJing Pan, a 2009 RIT/NTID graduate and now a chemist at the Puget Sound Naval Shipyard and Intermediate Maintenance Facility Quality Assurance Office Laboratory Division in Washington State. "I went on to study polymer science in graduate school. Dr. Cebe helped me greatly with confidence and patience. I was thankful to learn a lot from her and enjoyed working with her."

"Dr. Cebe's mentorship helped me grow and make better contributions to research I was conducting with the faculty at RIT/NTID," says Kyle Edenzon, a 2011 graduate and a quality assurance specialist for the Department of Defense. "She has very high expectations of all her students and really pushed us to strive for the very best. I believe I am able to do what I do today because of it."

Cebe says her father, a self-taught engineer, was her role model.

"My father was so supportive of my love of science, and for me, that made the difference," she says. "Maybe support, meaning someone believing in you and saying 'You can do it!' is most important."

Celebrating Excellence in STEM Education

by Greg Livadas

In the past few months, more than \$7 million in awards have been given to RIT/NTID projects focusing on STEM (science, technology, engineering and mathematics) education for deaf and hard-of-hearing students.

“The principle investigators and co-PIs whose vision helped create these programs contribute to RIT/NTID’s increasing role as a national leader in education of people who are deaf and hard of hearing,” says NTID President Gerry Buckley.

Major grants received by NTID faculty and staff include:

DeafTEC: Technological Education Center for Deaf and Hard-of-Hearing Students, \$4.45 million

Funded through the National Science Foundation’s Advanced Technological Education program, the center will provide STEM-related resources for deaf and hard-of-hearing students and their teachers and counselors in high schools and community colleges, and for employers hiring deaf and hard-of-hearing individuals to successfully integrate them into the workplace in highly skilled technician jobs in which these individuals currently are underrepresented and underutilized. [Donna Lange, associate professor in NTID’s Information and Computing Studies Department, PI; Dr. Gary Long, associate professor in NTID’s Research and Teacher Education Department, and Myra Pelz, associate professor in NTID’s Information and Computing Studies Department, co-PIs.]

Deaf STEM Community Alliance, \$1.6 million

Funded by the National Science Foundation’s Research in Disability Education program, this alliance of NTID’s Center on Access Technology (CAT) with Cornell University and



STEM Leadership NTID faculty and staff involved with more than \$7 million in STEM grants (from left) Gary Long, Donna Lange, Myra Pelz, Lisa Elliot, Christopher Kurz, James DeCaro, E. William Clymer, Susan Lane-Outlaw with RIT Provost Jeremy Haefner, RIT Vice President for Research Ryne Raffaele, and NTID President Gerry Buckley.

Camden County College in New Jersey, will improve the retention and graduation rates of deaf and hard-of-hearing students in STEM majors and facilitate the transition of deaf and hard-of-hearing students to STEM baccalaureate and graduate programs as well as to employment. [Dr. Lisa Elliot, NTID senior research scientist, PI; Dr. James DeCaro, dean emeritus and director of CAT, and E. William Clymer, associate director of NTID’s CAT, co-PIs.]

Preparing STEM and Minority Teachers of Deaf and Hard-of-Hearing Students, \$1.2 million

Funded by the Department of Education, this project will address the critical shortage of teachers who are qualified both to teach deaf and hard-of-hearing students and to teach them a specific content area, especially mathematics and science. Additionally, the project will address the shortage of teachers from African American, Latino, Native American and Asian American backgrounds. [Dr. Gerry Bateman, director of NTID’s Master of Science

program in Secondary Education, PI; Dr. Christopher Kurz, associate director of MSSE, and Dr. Susan Lane-Outlaw, assistant director of MSSE, co-PIs.]

Integration of Experiential Learning to Develop Problem Solving Skills in Deaf and Hard-of-Hearing Students

A National Science Foundation grant of nearly \$200,000 recently was awarded to Dr. Andres Carrano, a faculty member at RIT’s Kate Gleason College of Engineering. Co-PIs are Wendy Dannels, faculty member in NTID’s Engineering Studies Department, and Dr. Matthew Marshall, faculty member at KGCOE.

They are collaborating to develop modules to present problem-solving content to students in a visual and hands-on mode. Improving problem-solving skills will increase deaf and hard-of-hearing students’ likelihood of success in STEM careers.

With these projects, NTID continues to lead the way in STEM education and resources for deaf and hard-of-hearing students and their teachers.

STEM Technology: From Concept to Market

by Susan L. Murad

From adaptations of the original TTY to the captioning system known as C-Print®, RIT/NTID has a proud tradition of bringing innovative products from the idea stage to reality. The results of these innovations have benefitted deaf and hard-of-hearing people throughout the country and around the world.

That spirit of innovation and product development continues to thrive through RIT/NTID's Center on Access Technology.

According to Dr. James DeCaro, dean emeritus and CAT director, "CAT was established to provide access to

learning, life, education, workplace and society. We exist to create solutions that level the playing field for deaf and hard-of-hearing people."

DeCaro develops relationships, cultivates prospects and brings people to the table.

"My job is to stir the pot—throw out an idea, bring in faculty researchers and students, identify potential vendors and pass it on."

Students are engaged as partners in the process from concept to creation. Deaf, hard-of-hearing and hearing students working on projects in the CAT lab come from a variety of majors and degree programs, from associate to doctoral levels.

"Right now, we have 10 to 14 co-op students working on various projects," says Gary Behm, director of the CAT Innovation Laboratory. "They develop products and eventually

*"Innovation distinguishes between a leader and a follower."
— Steve Jobs*



MARK BENJAMIN

Gary Behm

he and the students are developing, such as a referee whistle notification to aid deaf athletes, a bed shaker alarm and others. Additional projects include development of several IBM patents.

"We sat down with IBM to review licensing agreements for disability-related patents that we can bring to market," Behm, who himself holds numerous patents, says. "We're negotiating with IBM's Intellectual Property people to develop those patents."

CAT Associate Director Bill Clymer keeps the business side of the center working smoothly.

"I write concept papers for prospective clients, so they can see the scope and skill level here," he says.

Often, what begins as a small project develops into something much larger.

may share their knowledge with potential investors."

Behm has developed an electronic circuit called the CAT CLAW that works as the basis for a number of projects that

Clymer cites the example of the Cisco Systems Telepresence project as a prime example.

"The Cisco relationship started with \$60,000 and one project and has grown to \$750,000 with more projects planned in the future," he says. "We now are evaluating equipment and reporting on the feasibility of making projects profitable and marketable."

Currently, two deaf students who completed co-ops at Cisco are working on projects in CAT that are part of a Cisco-funded grant.

RIT/NTID faculty also work on projects under the CAT umbrella. Dr. Lisa Elliot is the principal investigator on a \$1.6 million National Science Foundation grant using technology to support deaf and hard-of-hearing students in mainstream colleges; Joseph Stanislaw and Brian Trager, instructional support faculty in NTID's Information and Computing Studies Department, are working on first-time patents; and Dr. Christopher Kurz is conducting research on a special whiteboard. Working with RIT/NTID student Robb Dooling, the product is being refined, and a development firm is interested in the technology.

The goal is for the center to be self-sustaining.

"RIT now has licensing agreements that will bring money back to the university to continue creating and developing," DeCaro says. "We want to continue building our war chest to develop new products. We have a lot of exciting possibilities."



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Dr. James DeCaro



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Bill Clymer

Jerry Nelson

by Susan L. Murad



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Jerry Nelson, SVP '69, '74, believes in taking on challenges and pushing limits—a talent he developed during his years at RIT/NTID while earning a bachelor's degree in Mechanical Engineering Technology.

Along with helping lead the effort that created the NTID Student Congress and being elected its first president, Nelson was editor of *The Transcript*, a fledgling underground NTID student newspaper; represented the college at the first NTID-Gallaudet debate; and even worked as a Zamboni driver at the RIT ice rink.

"Perhaps my most important life lesson at RIT/NTID was being with both deaf and hearing students, which taught me the basic virtues of working with people of diverse cultures and backgrounds," says Nelson.

The Silver Spring, Md., resident is director of large accounts for Purple VRS.

"RIT/NTID provided the foundation for my subsequent success in management and executive positions within the non-profit and corporate sectors," Nelson says. "I also learned the benefits of challenging the status

quo in constructive ways, particularly in addressing stereotypes about deaf individuals, their capabilities and contributions to society at large. These lessons, without question, opened many doors and opportunities throughout my life and career."

Nelson was a member of the first NTID Alumni Board. He also has served as an alumni member of the NTID National Advisory Group, and is involved in alumni fundraising efforts for construction of Sebastian and Lenore Rosica Hall on the RIT/NTID campus. This includes meeting with prospective donors, helping to produce a video encouraging alumni giving and, along with his wife, former National Association of the Deaf CEO Nancy Bloch, contributing to the matching grant challenge. He was honored as RIT/NTID's Distinguished Alumnus at an event in April.

"It's critical to the future of RIT/NTID that those of us who benefitted from all we learned here understand that we need to give back," says Nelson. "We need to continue contributing to the creation of the next generation of leaders."

Pamela Siebert

by Susan L. Murad



PROVIDED PHOTO

Pamela Siebert's love of technology began in elementary school with a VTech® learning toy. And when she sat down to read the manual for her family's home computer "just for fun," it was obvious that the St. Paul, Minn., native had a strong affinity that would continue throughout her life.

"I grew up with computers, and I feel at home with them," she says.

Siebert's passion for technology led her to RIT in 1999 to major in Information Technology with concentrations in System Administration and Database Administration. She completed co-ops with a small consulting firm and with IBM in Rochester, Minn., and in 2003, she graduated with a bachelor's degree, and accepted a job offer with IBM in Lenexa, Kan. Siebert has been with IBM ever since.

Siebert's training has taught her how to approach and analyze problems.

"I hope I can make an impact in the world using that knowledge," she says.

One way Siebert has helped make an impact is through her travels to India

through the Global Reach Out organization.

"India had a profound effect on me, so I created a blog to share my experiences," she says. [To read about Siebert's travels and other experiences, visit www.pamscribbles.com.]

Siebert serves as vice president of the Kansas Association of the Deaf, and gives presentations on her work experiences. In 2009, she spent one month as a tutor and mentor at the University of Washington's Summer Academy for Advancing Deaf and Hard of Hearing in Computing.

"It was one of the best experiences of my life," she says. "I'm grateful to IBM for allowing me to have that opportunity."

The future looks bright for the young woman who found technology manuals interesting reading, and she has one word of advice for students and alumni alike. Not surprisingly, the word is "networking."

"Networking is crucially important to building bridges and achieving your dreams," she says. "So many doors to opportunities are out there; open them and enter!"



Model Behavior Attending the unveiling of the 3-D Rosica Hall model were (left to right) Professor Jim Fugate; creators Brandon McCarty, Justin Katich and Andrew Crawford; Mark Rosica; and Kimberly Kraft, AIA, and Joseph Twomey of HBT Architects.

Rosica Hall's Early Learning Outcomes

by Susan L. Murad

Construction of Sebastian and Lenore Rosica Hall is just beginning, but for three students in NTID's Engineering Studies Department who created a 3-D model of the facility, the learning is well underway.

The model was the brainchild of Brandon McCarty from Lake Geneva, Wis.; Andrew Crawford from Science Hill, Ky.; and Justin Katich from New Castle, Pa. Katich graduated in fall 2011 and returned to RIT/NTID to complete the project with his teammates.

The students from Engineering Studies instructional support faculty member Jim Fugate's Computer Aided Drafting Technology class were interested in learning more about Rosica Hall, a two-story, 22,000 square-foot facility that will house research and innovation projects involving deaf and hard-of-hearing students and their hearing peers. The building will be adjacent to the CSD Student Development Center.

"The students wanted to become a part of the excitement surrounding Rosica Hall," says Fugate, a 1987 graduate of RIT/NTID. "It was a fantastic learning experience for the guys. They jumped in even before the design decisions were complete. They knew they wanted

to be part of the process."

The students unveiled their model in front of fellow students, faculty, staff and two of the architects working on the project. They took full advantage of the opportunity to ask the architects questions about programs they use in their office, their educational paths and even wondered about co-op opportunities.

"You're well on your way to learning how we approach and finish projects," said Kimberly Kraft, AIA, an architect with HBT Architects. "I'm very impressed."

Also among those at the unveiling was Mark Rosica, chairperson of NTID's Counseling and Academic Advising Department. The building will be named after his parents as a result of a \$1.75 million grant from the William E. McGowan Charitable Fund, which was established in honor of Rosica's uncle William McGowan, founder of MCI Communications.

"My mom and dad would be thrilled with this model," Rosica says. "Not only is Rosica Hall a building, it's a learning experience right from the start. It's my hope that more students will feel this kind of success when the

building is complete."

The students learned much as they prepared the model to scale and dealt with changes in the design and features as plans for the building evolved.

"It was great to work so closely with Andrew and Justin and be part of a team," McCarty says. "We each brought different talents to the project and learned to become problem solvers."

The model was used during a series of open forums held for RIT/NTID students, faculty and staff to learn more about the progress of Rosica Hall and to ask questions about the building.

"It also was an opportunity to give Brandon, Andrew and Justin credit for all of their hard work," says Dr. James DeCaro, NTID dean emeritus.

The model will be displayed in a prominent location in the lobby of Rosica Hall with an explanation of how it came about.

As DeCaro puts it, "The piece will serve as a model in two ways: a literal model of the building and as a model of student innovation and collaboration that has led to the attainment of greater knowledge."

Editor's note: To view an animated rendering of Rosica Hall visit www.ntid.rit.edu/rosica-hall.

Stacey Davis

by Kathleen S. Smith



A. SUE WESLER

Science and Mathematics Support faculty member Stacey Davis no doubt used every one of the 86,400 seconds she gained this February 29. A leap year offers precious bonus time for someone whose days—and nights—are filled with everything from teaching, mentoring and tutoring to star gazing at the RIT Observatory.

Students call Davis a caring tutor and praise her ability to “demystify the most challenging physics problems.”

“She is my savior,” says third-year Computer Science student Robb Dooling, of Omaha, Neb. “The tutoring schedule on her door is always crammed. She even holds three-hour open physics tutoring sessions on Sundays.”

“I don’t know any other instructor so willing to give up her time for students,” says Observatory Director Michael Richmond. “She tutors almost all day. And three nights a week, she works here until 10 p.m.”

The energetic Ohio native earned a bachelor’s degree in Astronomy-Physics

from Colgate University and taught Mathematics at a boarding school in Georgia. She became interested in deafness after friends became foster parents of a deaf youngster. She enrolled in NTID’s Master of Science program in Secondary Education of Students who Are Deaf or Hard of Hearing.

In 2000, she became an adjunct faculty member in RIT’s College of Science; five years later she became a lecturer at NTID. In 2009, she earned a bachelor’s degree in ASL-English Interpretation from RIT/NTID.

She has tutored 16 courses over the years, mostly in physics.

Davis is thrilled that the number of deaf students enrolling in physics classes has been rising steadily over the past five years.

“Clear and effective communication is so vital to helping students in science,” she says.

And like the astronomer she is, she notes, “They’re getting brighter and brighter each year.”

Raja Kushalnagar

by Kathleen S. Smith



A. SUE WESLER

Dr. Raja Kushalnagar has visited a dozen countries, has five academic degrees from four universities, has worked in three states, has taught at RIT for two years and had one unforgettable mentor—his father.

Kushalnagar, an instructional faculty member in RIT/NTID’s Information and Computing Sciences Department, grew up in Mysore, India. His father, an Air Force scientist who retired to teach his son, later founded a pre-school for deaf children in India.

“My father was my primary mentor in that he believed in me and encouraged me to do anything that I wanted,” Kushalnagar recalls. “I had a very enriching childhood filled with things like tennis, drawing and physics.”

Kushalnagar received a degree in Applied Physics from Angelo State University in Texas and then worked at the Texas School for the Deaf. He obtained a master’s degree in Computer Science from RIT and worked at Lucent/Bell Laboratories in Chicago and at Gallaudet University in Washington, D.C.

He returned to academics to nurture his interest in advocacy and his “passion for research and teaching” by pursuing degrees in Intellectual Property and Information Law. Simultaneously, he also pursued a Ph.D. in Computer Science. The latter degree completed a posthumous dream for his father, who died in 2010.

“My father looked forward so much to seeing me get my Ph.D.,” he says. “But he died a few months before my dissertation defense.”

Kushalnagar is interested in what he calls “the intersection of disability law, accessible and educational technology and human-computer interaction.” His work focuses on enhancing educational access for deaf and hard-of-hearing students in mainstream classrooms.

“Nationwide, deaf students and deaf professionals are an invisible minority,” he says. “At RIT, they are a visible minority. This makes a huge difference in terms of diversity, collaboration and teamwork among both students and professionals.”

Congratulations to the Class of 2012!



Proud graduates Steven Singer and Ryan Spector were selected as 2012 commencement delegates.

Steven Singer

A native of Indiana, Pa., Singer graduated from NTID's Master of Science program in Secondary Education of Students who are Deaf or Hard of Hearing. As part of the program, he completed internships with Western Pennsylvania School for the Deaf and Rochester School for the Deaf. Singer worked as a research assistant at NTID, a community advocate in RIT's Center for Residence Life and a costume designer for NTID Performing Arts. A certified K-12 teacher in New York and Pennsylvania, Singer also is a certified fitness trainer and very active in Boy Scouts of America. Singer plans to pursue a Ph.D. in Cultural Foundations of Education-Disabilities Studies at Syracuse University.

Ryan Spector

Ryan Spector from Kings Park, N.Y., graduated with an associate degree in Laboratory Science Technology. He is a recipient of RIT Presidential, Lucille Jennings, Kings Park Chamber of Commerce and W. Paul Ulrich Memorial Endowed scholarships. He won the Undergraduate Award for Outstanding Achievement in Chemistry (Rochester Section) and the Chemical Technology Student Recognition Award, both from the American Chemical Society. He was an environmental chemistry research assistant at NTID and an Institute on Cellular Engineering Summer Research Intern at the University of Massachusetts. Ryan plans to pursue a bachelor's degree in Biomedical Sciences at RIT in the fall with a long-term goal of earning a Ph.D. in the medical field.

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Researching Accessibility RIT/NTID is conducting research on two Telepresence systems donated to the college by Cisco Systems, headquartered in San Jose, Calif. The systems enable high quality, real-time video conferencing that makes it seem as though participants are seated in the same room, at the same table. The goal of the research is to help Cisco improve the technology for use by deaf and hard-of-hearing individuals. The research is expected to continue at RIT/NTID through October 2012, when the college will present findings to the Cisco Research team.