National Aeronautics and Space Administration

AEROSPACE Frontiers

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LaunchHouse Helps Glenn Gain Entrepreneurial Skills

NASA Glenn-developed water purification technology was among 10 early-stage startups "cleared to take off" after graduating from the LaunchHouse Hardware Accelerator (LHX) 2014 program in February. More than 200 people attended the graduation, where the Glenn team and local startup companies demonstrated prototype systems to a mix of investors, companies, academia and others in the entrepreneurial community.

Glenn was both a participant and partner during the rigorous 16-week program. Participants received a crash course on the "lean startup" methodology—a scientific approach to shorten development, lower costs and produce a product that aligns with

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Photo by Matthew Moran

Glenn's Dr. Isaiah Blankson (left) and Dr. Grigory Adamovsky (middle), senior researchers who developed the water purification technology, describe it to Richard Rund of Shaker Investments, LLC.

Glenn Joins Cleveland Clinic's Global Healthcare Innovations Alliance

NASA Glenn and Cleveland Clinic Innovations (CCI) have entered into a joint collaboration that will bring NASA's renowned aeronautics and spaceflight engineering expertise to CCI's Global Healthcare Innovations Alliance.

The entities will work together to identify, prioritize, develop and commercialize technologies in Glenn's portfolio that can be applied to healthcare.

As a member of the Global Healthcare Innovations Alliance, Glenn's researchers, engineers and developers will have access to Cleveland Clinic Innovations'

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In This Issue

Good Sleep Habits Promote Health and Safety

Are you getting enough sleep? The National Sleep Foundation (NSF) recommends a minimum of 7 hours of sleep each night. Chronic sleep deprivation may be caused by stresses in our daily life, trading sleep for more work or play, or more seriously—a disorder. Some alarming consequences from lack of sleep include decreased alertness, increased stresses with relationships and higher risks of occupational and automobile injuries. It's been a month since we turned our clocks forward an hour. Are you still missing that precious sleep time? If so, NSF suggests resetting your sleep habits as well as your clock.

Please join me in being attentive to good sleep habits for your own well-being and those around you.

—Jim

LaunchHouse Accelerator

Continued from page 1

customers' wants. They also learned best practices for finding and developing customers, along with a host of other useful tools. As a partner, NASA's expertise and test facilities were available to all fellow participants.

"Our NASA team selected the plasma water purifier technology after review and assessment of potential candidates," explained Matt Moran, sector manager for Energy and Materials in the Office of the Director. "LHX training exposed us to customer development methods and the concept of a 'minimum viable product.' This type of product offers just enough features to entice early adopters, some of whom will pay for additional reiterations or give feedback."

The water purifier team included NASA senior researchers Dr. Isaiah Blankson and Dr. Grigory Adamovsky, and former NASA researcher Dr. John Foster, now a University of Michigan professor. Moran served as business lead for the team.

The technology involves producing plasma in water, which generates reactive radicals that can attack organic contaminants such as pesticides and pharmaceuticals. This problem is not currently being addressed in conventional treatment methods. No chemicals or filters are required, only electrical power.

Glenn's participation in the LHX program was a first for NASA, with very few other federal agencies to model. As a result, Moran is benchmarking General Electric (GE), a larger company more closely aligned with the type of work performed at the center. GE has adapted their own version of the lean startup methodology throughout their corporation.

"The LHX program has been a springboard for us to develop a strategy to train teams and other interested staff in the lean startup methodology," Moran said. "We will also identify pilot projects to test and adapt these techniques to specific NASA activities internally and externally."

By S. Jenise Veris

Glenn Names CIO Deputy Director


Shah

Raju Shah has been selected as NASA Glenn's Deputy Chief Information Officer and deputy director of the Office of the Chief Information Officer, effective March 22. He previously served as chief of the Information and Applications Office, overseeing information management, applications, scientific computing and visualization at Glenn. Joining Glenn in 2013 from the University of Maryland, College Park, Shah brings an extensive background in Information Technology (IT) management and comprehensive knowledge of delivering IT in research environments.

New Library Request System

The Glenn Science and Engineering Library's (GSEL) new Library Request System (LRS) is open for business at Glenn. Use the new site to request articles, books and other materials from the Library Learning Center.

Librarian Jaime Scibelli said the new system enables the staff to communicate with libraries at other NASA centers, universities and government facilities. The previous Glenn-only system did not link to an agencywide system.

Users should update their bookmarks to https://requests.ndc.nasa.gov, and look for the "NASA Library Request System" link on the GSEL website (in the "Library Forms" section).

As always, the staff is available via phone, email and in person at building 142 or Mobile Librarian sites to assist with information requests. Please do not hesitate to contact them. For additional information, contact Jaime Scibelli, 3-8854.

LIBRARY COMMONS

CCI Alliance

Continued from page 1

resources, which will help facilitate the discovery and development of patient-benefiting technologies.

"NASA Glenn's research extends well beyond our aeronautics and spaceflight missions to the field of human health," said Center Director Jim Free. "By providing a pathway that will benefit the greater medical community, the Cleveland Clinic and the Alliance has opened a door to decades of NASA technological expertise that keeps humans safe on Earth and in space."

Glenn will also be a part of the Alliance's nationwide network that currently includes hospital systems, universities, institutions and industry partners that are all looking to share innovation resources and leverage CCI's commercialization expertise.

"This collaboration between some of the nation's most respected institutions will bring great depth and breadth to our innovation mission," said Gary Fingerhut, executive director of Cleveland Clinic Innovations. "We believe that the collaboration between NASA Glenn's engineers and our caregivers will bring about promising ideas and technologies that can propel us into the new era of healthcare."

The collaboration stems from Glenn's desire to develop a medical technology portfolio based on research from its longstanding aerospace missions. While NASA has a long history of pushing its industrial innovations to the commercial market, the organization has typically had limited resources to pursue healthcare sector opportunities.

By Frank Jennings Jr.

NASA 1915-2015

A century of aerospace achievement

What was it like to work here when NASA was NACA? Over the coming months, we will share a few memories of NACA employees still working at the center. Our first profile is Carl F. Lorenzo, who works as a Distinguished Research Associate in the Communications and Intelligent Systems Division.

GRC-2015-C-1135 Photo by Marvin Smith

Above: Lorenzo applies fractional trigonometry to study the shapes of natural phenomena such as galaxies, shells and weather patterns. Right: In his early NACA days.

Carl F. Lorenzo

Q. How did you begin your career at NACA?
A. I started my NACA career in 1956 as a co-op student working in the turbine cooling group. In my second co-op period, I worked with the rocket engine performance group, studying compatibility of the oxidizer, fluorine, with rocket components. I started full time with that group in 1958.

Q. What do you remember most about the workforce culture of the early years?
A. The culture at that time was quite different from the present day. Then, we were organized into small groups/sections, each of which was devoted to a particular research area. Typically, each section housed various talents required to perform the mission, as opposed to the later matrix-based organizations. The workforce at that time had very few Ph.D.-level researchers relative to what we have here today. Further, there were considerably fewer female and minority members of the research staff.

Q. As NASA has evolved through the years, what has stayed the same?
A. The important thing that hasn't changed since those days was the dedication and commitment of a very talented and professional staff. Then, as now, there was always a willingness to share knowledge to help a fellow investigator when asked.

Q. What do you feel is the most important contribution you have made to NASA's mission?
A. In the early Apollo flights one of the vehicles experienced mission-threatening pogo-stick-like oscillations. Pogo oscillation is a potentially dangerous instability involving the vehicle structure, fluid system and rocket engines. NASA then decided to preempt the problem for the space shuttle and formed an agencywide and industry Pogo Interface Working Group to assure stability of the vehicle. I served as the Lewis lead and our team provided active control designs. I was also project engineer for hot-firing tests of the full-up Centaur vehicle in the Plum Brook B–2 facility. From these tests, pogo stability for the stage was established.

By Doreen B. Zudell

Year-Long Mission in Space

On March 27, NASA astronaut Scott Kelly and Russian cosmonaut Mikhail Kornienko began a 1-year mission of collaborative investigations focused on human exploration beyond low-Earth orbit onboard the International Space Station. Researchers expect the investigations to provide data on physical and mental changes as well as challenges astronauts may face on longer-duration missions, like those to an asteroid, Mars or beyond. Follow the mission on social media at #yearinspace.

Kelly *Kornienko*

Emerging Technologies Showcased at Expo

GRC-2015-C-1073 Photo by Michelle Murphy

NASA Glenn held a Technology Expo, March 3, in the upper level of the Lewis Field cafeteria. This was an opportunity for organizations and directorates to see the latest in emerging technologies, network with industry experts, and share ideas and future goals. More than 200 people attended and viewed the live demonstrations and presentations from a variety of vendors. Eight of the 17 vendors participating were small businesses. Glenn's Office of Small Business hosted the event. Pictured is TPC Wire and Cable Corporation's Chris Hannigan, center, talking with Glenn's George Guzauskas, right.

Workshop Focuses on Space Power Technologies

NASA Glenn's Small Business Innovation Research/Small Business Technology Transfer Research (SBIR/STTR) Program held a Space Power Technology Workshop at Lewis Field, March 17 and 18. The workshop informed NASA staff, other government agencies and private industry representatives of opportunities to further develop federally funded technologies. Technologies discussed were representative of the SBIR/STTR Program and Game Changing Development Advanced Energy Storage Systems awards. Charles Taylor, Space Technology Mission Directorate principal investigator for Space Power and Energy Storage, pictured right, discusses technology opportunities with a small business representative at the workshop.

GRC-2015-C-1012 Photo by Marvin Smith

Science Facts Versus Comic Book Fiction

Photo by David DeFelice

Faster than a speeding bullet! More powerful than a locomotive! Able to leap tall buildings in a single bound! NASA Glenn researchers addressed the science fiction surrounding such super powers during their "NASA and the Science of Superman" panel at the Wizard World Comic Con Cleveland (comic convention), Feb. 20 to 22. Approximately 100 convention participants explored science facts versus fiction based on NASA's accomplishments. Glenn's David DeFelice moderated the panel that included Joan Emmett, Dr. Lee Kohlman, Dr. Geoffrey Landis, Dr. Jerry Myers and Dennis Stocker. Pictured, left, Stocker and Myers at the event.

Employees Recognized for Public Speaking

Photo by S. Jenise Veris

Glenn's Aerospace Toastmasters Club (ATC) members Judith Majher, retiree, and Mina Mankbadi, Inlets and Nozzles Branch, finished second in the Toastmasters Western Division/Area 42 Championship held at the Westlake Porter Public Library, Feb. 28. They advanced to the area competition after winning the club contest in the categories of International Speech and Speech Evaluation. Glenn's ATC is an affiliate of Toastmasters International, an educational nonprofit organization focused on improving communication and leadership skills of its members. To learn more about the club visit http://aerospace.toastmastersclubs.org. Pictured: Majher, second left, is congratulated by ATC officers Dr. John Betterson, Robert Reid and Saundra Gage. Mankbadi, not pictured.

SFA Awarded

Photo by John Proferes, Boeing

David Morgan, Quality Engineering and Assurance Branch, received a Space Flight Awareness (SFA) award during the QM–1 Static Test Honoree Event, Ogden, Utah, March 10. The QM–1 is the first Space Launch System booster qualification motor, which is being tested in a specialized test stand in Utah.

Morgan was recognized for exceptional technical excellence. He provided leadership in quality assurance and nondestructive evaluation for the completion of the Mechanical Vibration Table. Pictured above, left to right: Glenn Safety and Mission Assurance Director Anita Liang, astronaut Jim Kelly, Morgan and NASA Deputy Associate Administrator for Exploration Systems Development Bill Hill.

Earth Month 2015

• **Trevor Clatterbuck discusses "Fresh Fork Market,"** a Community Supported Agriculture (CSA) group in the Cleveland area. A CSA is a weekly subscription service to fresh local foods. Learn about the benefits of CSAs and opportunities to participate, April 16, 11:30 a.m., Small Dining Room (bldg. 15).

• **Garlic Mustard Pull** to combat invasive species at Lewis Field, April 22, near Abrams Creek at the bottom of Duct Bank Road, 12 to 1 p.m.

• **Sustainability Fair at Lewis Field** Learn about opportunities to protect the environment while perusing items from local vendors who keep sustainability as a top priority in their products, April 30, 10:30 a.m. to 1 p.m., MIC Auditorium (bldg. 162).

Check *Today@Glenn* for more Earth Week events.

Glenn Gets a New Band: Everything Old is New Again—And More

After a 40-year hiatus, NASA Glenn is reviving a concert band reminiscent of the center's band in the 1960s and early 1970s. A group of musicians, featuring Glenn employees and retirees, have been practicing for their debut this summer.

Jeff Woytach, Science and Space Technology Systems Branch, is the "Pied Piper" for the band's revival. In July, he began posting bulletins and hosting meetings to gauge the interest of other Glenn musicians.

"Nearly 40 people expressed interest in forming a new band," Woytach said. "The level of talent varied from accomplished musicians to those becoming reacquainted with their instruments after a lapse in time."

Over the next several months, Woytach took on the challenge of securing a conductor, a practice facility and music arrangements suitable to the new group.

Erik Kalish, North Olmsted High School's (NOHS's) band and orchestra director, graciously accepted the role of conductor and began leading weekly practices in the school's band room in October. To show their gratitude, band members offered to tutor NOHS students.

Woytach's vision for the band includes making the most of the center's band tradition while expanding the mission beyond entertainment for employee morale.

"Our goal is to represent Glenn at official events, as well as public activities. We want the band to perform outreach as a vehicle for what is called STEAM—Science, Technology, Engineering, Arts and Mathematics. Band members will be demonstrating the 'science of sound' during National Lab Day in May," said Woytach. "We came together out of a sense of pride and camaraderie, but now have an even greater sense of purpose."

The Glenn Band is still accepting new members, and is open to Glenn employees, retirees and their family members. Whether you are an accomplished musician or someone dusting off an instrument that has not been played in years, the band would love to have you.

Editor's note: This new band is separate from the NASA Jam Band, which features rhythm and blues (R&B) and jazz musical selections.

By S. Jenise Veris

Photo by S. Jenise Veris

Kalish leads front row (left to right): Jeff Woytach, Susan Wrbanek and Valerie Lyons; middle row: Jennifer Nappier, Peter Struk, John Wrbanek, Linda Yavoich, Jeff Riddlebaugh, Wes Johnson, Bill Fabanich, Brian Sommers, Shae Miller and Carissa Woytach; back row: Gary Klann.

Glenn-School Partnership Connects Scientific Education to Careers

NASA Glenn scientists and engineers are helping students at the Metropolitan Cleveland Consortium for Science, Technology, Engineering and Mathematics (MC²STEM) High School connect what they study in the classroom to real-world jobs.

Glenn subject matter experts (SMEs) highlighted current work and science, technology, engineering and mathematics (STEM) careers through hands-on demonstrations at a 2015 kickoff event in January. In March, the SMEs led a Communication Workshop where they highlighted NASA Space Communication. Students visited Glenn laboratories and learned firsthand about STEM careers.

MC²STEM is an innovative STEM-focused high school within the Cleveland Metropolitan School District. It uses cutting-edge curriculum and support strategies to attract and retain students in STEM fields. Glenn's relationship with MC²STEM started in 2009. MC²STEM has been recognized as a national model of effective school reform.

Glenn employees serve as SMEs, mentors, tutors and speakers for the school, which is located at the Great Lakes Science Center in Downtown Cleveland. Students also have opportunities to visit NASA Glenn.

Photo by Tim Dedula

"Our employees enthusiastically share their time, expertise and experience in support of this program," said Glenn Education Director Rob LaSalvia. "This helps students experience a dynamic project-based learning environment that will better prepare them for the 21st century global economy."

Employees are always welcome and needed for this program. Those interested in sharing a little of their time should contact Lynne Sammon, 3-3952.

By Doreen B. Zudell

Above: Glenn's Dan Vento, talks with students about extreme environment testing during a kickoff event at the school. Below: Glenn's Deb Waters (center) discusses intercalation of carbon nanotube yarns with Aakilah Carlisle (left) and Denise Cameron during the March visit.

Photo by Doreen B. Zudell

More Than a Memory

Ralph F. Jocke, 84, a 1986 retiree with 36 years of federal service, died Dec. 15, 2014. Jocke was a U.S. Army veteran, who retired from NASA's Facilities, Operations and Maintenance Division. During his career, he served as a building manager and a mechanic working on automatic controls for test rigs. He was also a volunteer for the center's Emergency Reaction Team that backed up the Lewis Fire Department. Jocke's sister Rosemarie Jocke, a NASA retiree, survives him.

Jocke

Priebe

Seiler

Donald H. Priebe, 84, a 1981 retiree with more than 50 years of federal service, died Feb. 20. He was a U.S. Navy veteran, who began his NACA/NASA career as an apprentice in 1955. Priebe enjoyed a distinguished career as a civil servant and contractor in the Test Installation Division. He made significant contributions, from launches for pioneering space research on Aerobee sounding rockets to testing the Space Acceleration Measurement System (SAMS), currently on the International Space Station. His niece, Victoria Vasek, and her husband, Thomas, work at Glenn.

Cheri Jo Seiler, 61, a 2009 retiree with 33 years of federal service, died Jan. 15. Seiler served with the Social Security Administration prior to joining NASA. She worked in the Procurement Division throughout her 30-year NASA career. She is remembered as a cheerful, hardworking member of the Accounting Department, where she earned two NASA Group Achievement Awards supporting the Voucher Payments Team (1987) and Cash Implementation Team (1991).

Retirements

Ernest Bertone, Facilities Division, Facilities, Test and Manufacturing Directorate, retired April 3, 2015, with 53 years of NASA service.

Beth Cooper, Structural Dynamics Branch, Materials and Structures Division, retired March 31, 2015, with 28 years of NASA service.

Thomas Dixon, Fabrication and Instrumentation Branch, Manufacturing Division, retired March 31, 2015, with 27 years of NASA service. (Not pictured.)

Diane Duly, Office of the Director, retired April 3, 2015, with 42 years of NASA service. (Not pictured.)

Ralph Fekete, Machining Branch, Manufacturing Division, retired March 31, 2015, with 21 years of NASA service. (Not pictured.)

Bob McCluskey, Operations Management Branch, Facilities Division, retired April 3, 2015, with 35 years of NASA service. (Not pictured.)

Barbara McKissock, Power Architecture and Analysis Branch, Power Division, retired March 31, 2015, with 28 ½ years of NASA service.

Nancy McNelis, Aeronautics and Ground-Based Systems Branch, Systems Engineering and Architecture Division, retired April 5, 2015, with 30 years of NASA service.

Gerald Sadler, Science and Space Technology Systems Branch, Systems Engineering and Architecture Division, retired March 31, 2015, with 33 years of NASA service.

Donald Varga, Fabrication and Instrumentation Branch, Manufacturing Division, retired March 31, 2015, with 31 years of NASA service. (Not pictured.)

Gary Wilder, Operational Safety Branch, Safety and Health Division, retired April 3, 2015, with 43 years of federal service, including 40 with NASA.


Bertone


Cooper


McKissock


McNelis


Sadler

Wilder

Calendar

HUBBLE IMAX MOVIE: In recognition of the Hubble Space Telescope's 25-year anniversary, the Great Lakes Science Center will present the IMAX movie "Hubble," April 24–26. For times and ticket prices, visit http://www.greatscience.com/.

SATURDAY TOURS AT LEWIS FIELD: Glenn offers free tours of its world-class facilities at Lewis Field one Saturday through October. Tour buses depart from the Main Gate every hour starting at 10 a.m. One-hour tours begin with a multimedia presentation in the Briefing Center Auditorium. The May 2 tour will showcase research performed in Glenn's hangar. For more information and a complete schedule, visit http://www.nasa.gov/centers/glenn/events/tours.html.

NATIONAL DAY OF PRAYER: NASA Glenn's Prayer Group invites all members of the Glenn community to join them for a Christian observance on Thursday, May 7. Observances will be held at 7:30 and 11:30 a.m. See *Today@Glenn* or type "Prayer" in the Wing Transporter for locations and details.

IFPTE LOCAL 28, LESA MEETING: LESA will hold its next membership meeting, Wednesday, May 13, noon, in the Glenn Employee Center's Small Dining Room.

NASA RETIRED WOMEN'S LUNCHEON: The next luncheon will be held Thursday, May 21, 1 p.m. at Vintage House Café, 35800 Detroit Road, Avon. Please contact Gerry Ziemba, 330–273–4850 or gto64gerry@yahoo.com to reserve your place.

NATIONAL LAB DAY VOLUNTEERS: Glenn's Office of Education is seeking organizations or individuals to engage students in STEM-related research demonstrations during National Lab Day, Friday, May 22, at the hangar from 9 a.m. to 2 p.m. POC: Stephanie Brown-Houston, 3–8006.

GRC CONNECTIONS PRESENTS C&I

Learn more about Glenn's Creativity & Innovation (C&I) Initiative during the next GRC Connections, April 16, 10 to 10:45 a.m., Briefing Center Aud. Panelists include Glenn staff who have been identified by their peers as being creative and innovative. POC: Mark Kilkenny, 3–8567.

Emergency and Inclement Weather Lines
Lewis Field: 216–433–9328 (WEAT)
Plum Brook Station: 419–621–3333

Connect with Glenn

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May 2015 Calendar section deadline: April 17, noon
News and feature stories require additional time

Editor: **Doreen B. Zudell**, SGT, Inc.
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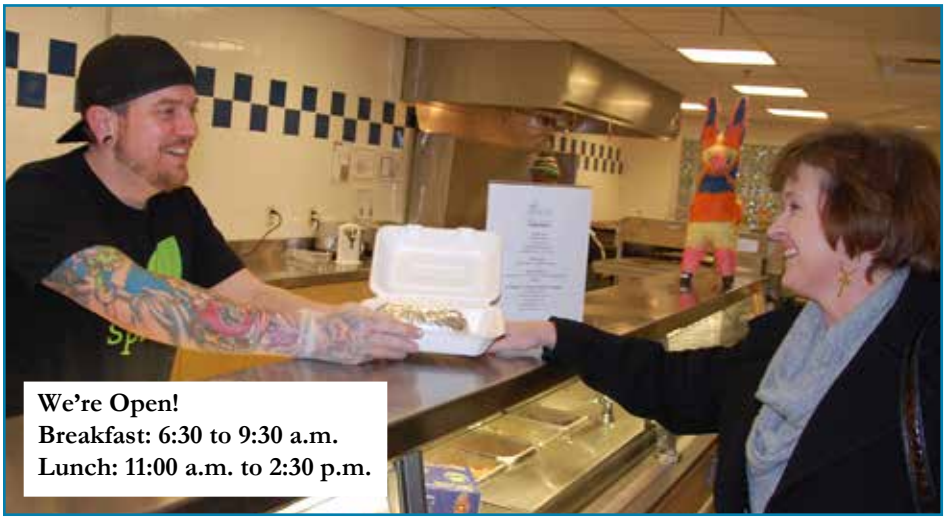
New Cafe Dishes Up Fresh Breakfast and Lunch

The Sprout Café has taken root at NASA Glenn, offering fresh and healthy food options for staff and visitors. Operated by Marigold Catering, a local business with years of experience and awards, the full-service café opened for business at Lewis Field in January.

"The staff and I are thrilled to be here and part of the NASA family," said Mike Smith, Sprout Café owner. "It's great getting to know the people, providing quality food and giving good customer service." With more than 15 years of experience in the restaurant industry, Smith looks forward to creating new and exciting menu items.

Most of the food is prepared from scratch daily. Items not prepared on the premises are obtained from select local bakeries. Patrons can choose from a variety of hot and cold foods from the buffet or grill. The popular salad bar is stocked with at least 20 topping options! Stop by in the morning to brighten your breakfast at the Oatmeal Bar or spice up Tuesday's lunch at the Taco Bar. Menu items change frequently, so check the website at https://www.grc.nasa.gov/exchange/cafe/, for daily offerings.

In a hurry? Pick up "grab and go" items such as yogurt parfaits, pasta and fruit salads, to name a few. Sprout Café is proud to be a "Certified Green Restaurant" ensuring all packaging is recyclable or compostable.



Photos by Doreen B. Zudell

Sprout's Paul Finch serves up smiles along with a variety of grilled items.

As part of Marigold Catering, Sprout Café is well equipped to meet your catering needs. Check the website for details or call 3-2986. The café also plans to open a full-service coffee kiosk in the Mission Integration Center (MIC) lobby, bldg. 162. Stay tuned to *Today@Glenn* for details.

"Quality food service is not just about the food," Smith said. "It's a lot about relationships we build with our customers based on mutual respect."

By Doreen B. Zudell

Cafe Manager Jimmy Hood shows off his own Irish flair to accompany St. Patrick's Day special menu items.