



CHANGING WHAT'S POSSIBLE

OFFICE OF
INNOVATION

web.musc.edu/innovation



A plan in action

Innovation has been a core in changing what's possible at MUSC for almost 200 years. Our team believes that transformation and growth are critical to our future, and each MUSC faculty and staff member and student is capable of being an innovator. As a part of our OneMUSC strategic plan, we are building a robust ecosystem of support to ensure that ideas are turned into impact.

Our team is dedicated to empowering MUSC and all of its employees — from faculty members, researchers and clinicians to our students and staff — we seek to improve patient experiences, find efficiencies and bring new ideas to life.



Inspire



Inspire and empower the MUSC community to innovate and generate ideas.

Optimize



Optimize an infrastructure that supports the implementation of novel ideas.

Elevate



Elevate MUSC's national reputation as a health system at the cutting-edge of innovation.

By the numbers

\$2.1 Million

awarded to MUSC innovators to advance their ideas to the next milestone.

\$400,000

in state innovation funds to launch new businesses that bring the work of researchers and clinicians to life.

5,000+

The number of employees engaged in MUSC's Innovation Week, an annual event that showcases innovative projects and programs. Over \$500,000 in funds are awarded to implement ideas from MUSC employees.

83%

of our employees and students believe that MUSC supports a culture of innovation.



INNOVATION WEEK

MUSC's annual Innovation Week is a celebration of our culture of creativity. Each year, our programming is designed to inspire and empower the MUSC community to innovate.

Innovation Week 2022 was held April 25 through 29 and highlights include:

- \$500,000+ awarded in funding to 25 new projects.
- 11 live sessions.
- 2 pitch sessions.
- 3 Shark Tank events.
- Stress Less Bash with over 100 attendees.
- 131 posters / 1200+ participants / 591 votes.
- A vast library of curated content for on-demand viewing.

2022 also marked the first year of Innovation Week being hosted with our Regional Health Networks.

Lasting effect of Innovation Week

Shark Tank 2020 winner: Listening to Women (LTW)

Mental health issues and substance abuse are significant concerns during pregnancy and the year postpartum. Suicide and drug overdose are two of the leading causes of maternal mortality during this time. There are currently multiple barriers to implementing screening tools.

The winner of our 2020 Shark Tank, Constance Guille, M.D., and the LTW team created a mobile, text-based screening and remote-care system that allows women to do the screening on their phones and then be connected to care through telehealth. The remote-care aspect was ideal not just in the time of COVID-19 but also continues to benefit women who live in medically underserved areas where mental health treatment is hard to access.

[Listen in and learn more about Guille's project from her appearance on the Innovatively Speaking podcast.](#)

Shark Tank competitions

Poster session finalists, who were selected by their peers, participated in this fun-filled annual event. Teams from each MUSC location pitched their ideas to a panel of executive leaders for an opportunity to win bragging rights and funding to support the development or scaling of their concepts. For a complete list of this year's winners, [click here](#).

Featured winner: Socializer, Teacher, Evaluator, Mentor (STEM) Preceptorship

This project from Ashley Hudson, R.N.; Lathrum Johnson, R.N.; and Michelle Thompson, R.N., was the winner at the MUSC Health-Florence Division's Shark Tank event, and the team received \$15,000 to advance their idea.

The STEM preceptorship identified a struggle that new nurses face related to critical thinking and bedside skills. It uses a high-fidelity simulation maniken to provide scenario-based learning opportunities that provide real-time feedback and debriefing.



Student Innovation Award

Each year during Innovation Week, MUSC students have the opportunity to participate in their own pitch session and learn how to move a business idea from conception to action, with the help of seasoned professionals. The competition is designed to recognize innovative thinking and pioneering solutions. The winning group is awarded \$2,500 in funding toward its projects.

2022 winner: Endovascular Organizer

The Endovascular Organizer is a tool designed to achieve safe endovascular care for patients regardless of clinical scenario or experience. The tool creates a labeling system that makes every device easily identifiable and accessible to vascular technicians. Furthermore, the organizer accommodates the natural workflow of the operating room, particularly the technician and surgeon interactions.

The invention was fostered through MUSC's Human Centered Design Program, which seeks to develop novel solutions for unmet needs in health care.



MUSC's tech transfer center



ZUCKER INSTITUTE for Innovation Commercialization

powered by MUSC

Innovations in health care born out of MUSC come to fruition through the Zucker Institute for Innovation Commercialization. The Zucker Institute is responsible for evaluating all intellectual assets that the enterprise owns and generates, thereby cultivating value and forging industry and other relationships, which result in products and services that provide real-life solutions to the world's medical needs.

Acting as a component of the Office of Innovation, the Zucker Institute enables ideas and innovation with funding, consulting, marketing and operation planning and making connections with licensing partners.

Who the Zucker Institute works with:

- Licensing partners.
- Institutions and companies in need of technologies.
- Economic development offices.

MUSC's portfolio of companies is advancing innovations in research, education and health care, including novel therapeutics, devices, diagnostics, biologicals, health care IT and services. Combined, MUSC startups have raised over \$50 million in financing.

MUSC recognizes that the translation of discoveries has a significant benefit for society and is an important component of our mission as an academic medical center. Since 2014, over 70 startup companies have spun out of MUSC and over half remain active today. Startups are an excellent approach to translate innovations into products and services for the public benefit and provide an engine for economic growth in the state. They also offer a means of commercialization that is not always possible through licensing each technology separately.

To date, companies developing products from the Zucker Institute have raised over \$774 million in capital. The Zucker Institute has filed over 2,000 patent applications on behalf of more than 2,000 MUSC inventors and creators.

Research



Blue Sky Award

The MUSC Office of the Vice President for Research in partnership with the Office of Innovation has developed the Blue Sky Award (BSA) for promising high-risk research that tackles big problems in medicine and science. The BSA provides support for highly creative faculty members with a track record of outstanding success with the opportunity to test the feasibility of their “grand idea” and prepare that idea for an application for extramural funding. The goal is to foster high-payoff work that promises to be transformational but for which other funding sources are limited. Winners are awarded \$100,000 in funding for their projects.

Blue Sky Award winners: Donna Roberts, M.D., and Jill Harvey, Ph.D.

“A Feasibility Study of the Incorporation of a Portable MRI in a Telemedicine-Equipped Ambulance for Field Triage of Stroke Patients.”

When a patient experiences a stroke, the clock starts ticking for receiving effective, urgent care. For patients with strokes caused by blood clots, tissue plasminogen activator (tPA), an important clot-busting drug, can help to clear blocked vessels if given within a narrow time window. Because tPA carries a risk for increased bleeding, scans are needed before treatment to ensure that the stroke is not a brain bleed.

This study will help to determine whether equipping ambulances with a portable MRI scanner could reduce the time to treatment for South Carolina stroke patients in a cost-effective way.

Education Innovation Cabinet (EIC)

The EIC funds new ways to encourage student learning by promoting exploration, resourcefulness and creativity to find solutions or answers to questions.

2022-23 EIC awardees

Katherine Chike-Harris, DNP

Assistant professor, College of Nursing
Project: Development of telehealth simulations for ABSN and DNP students to complement didactic content and practice skills

Fabio Rizzante, D.D.S, Ph.D.

Associate professor, College of Dental Medicine
Project: Creating a digital dentistry course for pre-clinical and clinical dentistry students

Christopher Stem, M.D.

Clinical instructor of Pediatrics, College of Medicine
Project: Can a video game improve a learner’s ability to successfully perform ultrasound-guided IV placement?

Education impact

South Carolina Innovates award winners

A collaborative group of 15 colleges and universities have come together, in partnership with the South Carolina Department of Commerce and South Carolina Research Authority, to host SC Innovates, a statewide pitch competition that awards \$10,000 in prizes to student teams.

2021 winner: Subina Saini and Alan Snyder

GlowDot

Winning first place and taking home a share of \$10,000, GlowDot is a patented microencapsulated fluorescent ink that serves as an alternative to traditional carbon ink that is used to mark lesions during colonoscopies.

With the current method, up to 15% of tattooed tumor locations are incorrectly identified or wholly missed by the time of surgery. This team's solution would dramatically reduce those numbers as well as lower the overall costs to hospitals.

Education Innovation Advocates

In collaboration with the MUSC provost and MUSC associate provost for Education Innovation and Student Life, the Office of Innovation developed the Education Innovation Advocates (EIA) program. The program is a grassroots colleague-to-colleague pilot initiative that encourages faculty members to “think big” and re-imagine the learning experience and create a culture of innovation within the classroom, whether face to face or online.

The EIA, with direction from the Education Innovation Cabinet, will fill a one-year role in support of education innovation. In addition to the \$3,000 incentive, pending successful completion of their strategic goals, they will receive sponsorship to attend a conference or workshop focusing on innovative pedagogy in higher education.

Members of the inaugural class include:

Fabio Piola Rizzante, D.D.S., Ph.D.
College of Dental Medicine

Tammy Loucks, DrPH
College of Graduate Studies

Gretchen Seif, Ph.D.
Division of Physical Therapy
College of Health Professions

Joe Blumer, Ph.D.
College of Medicine

Aalap Shah, M.D.
College of Medicine

Dawn Terzulli, DNP, R.N.
College of Nursing

Jennifer Wisniewski, Pharm.D.
College of Pharmacy

Christine Andresen
Academic Affairs



Seated, L to R: Doctors Tammy Loucks and Gretchen Seif. Standing, L to R: Doctors Joe Blumer and Aalap Shah and Christine Andresen.

Internal recognition programs

I am an MUSC Innovator Award

The I am an MUSC Innovator campaign is designed to raise awareness of the many forms that innovation can take, to inspire others and to recognize publicly individuals and teams that are making a difference.

Each quarter, the campaign showcases innovative educators, researchers, care team members and service team members that have been nominated for their innovation impact.

Featured winner: BabyStrong Dorothea Jenkins, M.D., and Bashar Badran, Ph.D.

Designated a breakthrough medical device by the food and drug administration, BabyStrong is a novel system designed to help preterm babies to avoid G tubes for feeding. By stimulating the vagus nerve through the skin in the front part of the ear, the BabyStrong feeding system delivers transcutaneous auricular vagus nerve stimulation paired with oral feedings each day for 10 days. [Learn more about this project from the experts' appearance on the Innovatively Speaking podcast.](#)



The I am an MUSC Innovator campaign is represented by a light bulb to reflect the sudden flash of understanding into how to achieve something, often in a different and pioneering way.

Faculty Innovation Fellowship

This program exists to incentivize faculty members to develop innovations in teaching MUSC students. Up to five faculty members from across MUSC's academic domains will be selected to participate as fellows. Topics and goals may change annually with each cohort.

Featured winner: Ready or Not Dusti Annan-Coultas, Ed.D., and Erik Modrzynski

From cyber attacks to weather disasters and pandemics, disasters affecting health care organizations are increasing in frequency and intensity, but organizations are often unprepared for the complex teamwork required. Using a table-top simulation delivered through existing education curricula, up to 1,500 MUSC students each year will receive practice on emergency planning, response, mitigation and recovery, resulting in a new workforce with improved awareness of effective emergency strategies in all health care settings.

Faculty

INNOVATION FELLOWSHIP

Connecting the dots

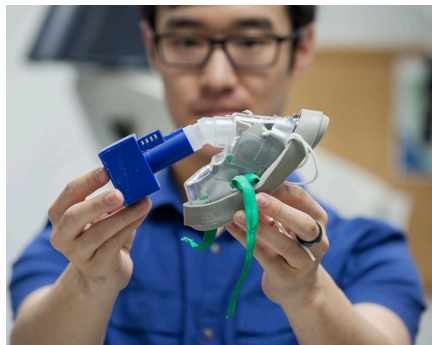
As a goal of fostering innovation at MUSC, the Office of Innovation seeks to provide surgeons, clinicians, researchers, educators and staff an expansive number of tools, technologies and programs to create new solutions or new ways of thinking.



Health Solutions

MUSC Health Solutions collaborates with internal and external entrepreneurs, researchers and vendors to meet the demands of the ever-changing health care ecosystem and work toward deployment of innovative initiatives. All ideas and potential collaborations are considered and evaluated through our robust project analysis process.

Once that phase is complete, we can determine whether we will build a product or solution from the ground up; partner with an existing similar solution; or invest in the proposed solution or a similar company.



Human Centered Design Program (HCD)

The Human Centered Design Program at MUSC is an innovative initiative that aims to bring design thinking to the Department of Surgery. Using a human-centered design approach, novel solutions are created in the health care space that solves unmet medical need for users, such as patients and physicians. The interdisciplinary HCD team leverages medical expertise, design experience and advanced technologies to problem solve iteratively.



Biomedical Informatics Center (BMCI)

The Biomedical Informatics Center was established as a program in 2008 as part of research infrastructure development and investment by MUSC and Health Sciences South Carolina (HSSC). The BMIC includes a dedicated team of informatics experts, software engineers and research support services under the leadership of Leslie Lenert, M.D., and Jihad Obeid, M.D.

BMIC provides investigators with ready access to a variety of software tools, databases and support systems that will greatly enhance the performance of clinical and translational research.



Channels



Innovatively Speaking

Join Jesse Goodwin, Ph.D., chief innovation officer at MUSC, on the Innovatively Speaking podcast, where she dives into the origins of the next big things. Goodwin and her co-host Kevin Smith explore the who, why and how of ideas that are changing what's possible at MUSC and, in some cases, across the world. Subscribe in your favorite podcast app and listen in as they talk to expert guests whose breakthrough ideas and technologies are reshaping life and health care in exceptional ways.



Innovation Gateway

Do you have an idea? Submit it to the the Innovation Gateway, which serves as the virtual front door to MUSC's innovation community. It allows users to submit ideas and automatically be connected to resources and teams throughout our organization.

Contacts



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How do employees submit ideas?

Everyone at MUSC is encouraged to solve problems creatively. Employees can submit their innovative ideas and projects through the MUSC Innovation Gateway. This tool serves as a key component that feeds and elevates the culture of innovation at MUSC.

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