

## COVID-19 vaccine provides 'A ray of hope'

BY BRYCE DONOVAN

[donovanb@musc.edu](mailto:donovanb@musc.edu)

Never has a holiday package been more anticipated.

On Tuesday morning, a box no bigger than a coffee maker arrived via UPS at MUSC. Inside were 4,875 tiny purple-topped doses of the Pfizer-BioNTech COVID-19 vaccine, a product that received emergency-use authorization by the U.S. government just four days prior.

Jason Mills, Pharm.D., pharmacy supply chain manager for MUSC, signed for the package as a representative from the Centers for Disease Control and Prevention looked on. Once opened, Mills and Heather Easterling, Pharm.D., system administrator of pharmacy services at MUSC, had exactly three minutes to extricate them from the packaging and get them into the Sanyo Ultra Low Freezer.

"No pressure," Mills joked as he and Easterling donned bright blue cryogenic gloves, a necessity when dealing with a substance that needs to be kept at -92 Fahrenheit to remain viable for an extended length of time.

See **VACCINE** on page 3



*Photos by Sarah Pack*

MUSC Children's Health trauma/ortho nurse Metzfe Dela Rama receives the COVID-19 vaccine.



**Pediatric nurse Shemika Champion was the first employee vaccinated on Dec. 15.**

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"I got chills"

Did vaccine trial recipient get the "real deal?"

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Year in Review

2020 proves to be an "unprecedented year."

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BOT Update

# Vaccine arrives as state sees over 100% increase in COVID cases in two-week period

By HELEN ADAMS

adamshel@musc.edu

When South Carolina's COVID cases topped 3,000 three days in a row, smashing the previous record, global health expert Michael Sweat, Ph.D., wasn't surprised. "Honestly, I was expecting it. I was watching it every day, wondering when it was going to happen."

And looking ahead to late December holiday celebrations, Sweat sees the potential for even higher numbers. "It could kind of put this on steroids," he said, referring to a graph showing the current statewide surge.

But Sweat, who directs the Center for Global Health at MUSC, pointed to a silver lining in the COVID cloud.

Vaccines are arriving. "It's good, and we should all feel good."

The South Carolina Department of Health and Environmental Control reported that the state expects to get almost 43,000 doses of the Pfizer vaccine this week, and some health care facilities are getting vaccines directly from the federal government.

At MUSC Health, doctors, nurses and other care team members who work directly with patients start getting vaccinated today as part of the Center for Disease Control and Prevention's Phase 1a of the vaccine rollout.

But most people won't get vaccinated right away. Spring is more like it, according to the federal government.

So we need to stick with COVID precautions for a little while longer. "What was it Alan Greenspan used to say?" Sweat said, referring to the former Federal Reserve chairman. "Irrational exuberance? You don't want that to happen."

He recommends rational caution instead. "We don't want people to be overly optimistic. They need to be careful."



Sweat

That's important heading into the holidays. "Christmas is a long break. It's sort of Christmas and Hanukkah and New Year's - the way it falls during the week, it hits on a Friday," Sweat said.

"I think we're going to have at least two weeks of people getting together. Schools are letting out. College students are going home. People are traveling. All the movement of people is carrying the virus around. That has clearly been shown to lead to higher sustained levels."

But Sweat also put South Carolina's COVID situation in perspective. "We've seen a 104% increase in cases over two weeks, statewide. That's bad. But we should feel a little lucky because even though it's going up, it's way lower than most of the country. As these increases happen, they're happening from a lower number."

Sweat noted that the COVID caseload is much heavier in some parts of the state than others. "In Greenville County, it's been like a rocket taking off. Pickens is another one, right next door - they've seen massive increases. And Florence, too - they were pretty low, and then they just took off."

The COVID case rate in the southern part of the state is much lower, he said. "The \$99 question is why. If I had to put my money on it, I think it's a combination of weather and humidity."

Sweat noted nuances along the South Carolina coast. "There are some differences across counties. Berkeley seems to be doing worse than Charleston County, by a tad. Dorchester County goes back and forth."

Sweat is familiar with those differences through his work leading the MUSC COVID-19 Epidemiology Intelligence Project. It provides daily updates on the Tri-county area's case rate and weekly big-picture assessments. Once the government begins releasing more specific vaccine data, the project will begin tracking that, too.

In the meantime, Sweat worries about what could happen next as 2020 draws to a close. "It's sort of like shaking a snow globe. You stir people up and move them all around."



## Advocate honored with humanities award

Staff Report

Caroline DeLongchamps was among five South Carolinians honored with the 2020 Governor's Awards in Humanities. DeLongchamps, manager of MUSC Health's Patient-and-Family-Centered Care, was presented with the Fresh Voices in Humanities Award in a livestream virtual ceremony held Oct. 22 in Columbia, South Carolina.

The award was established in 2018 and recognizes individuals for their innovativeness in using culture and history to bring people together.

DeLongchamps's own experience as a mother and advocate for her son while he was in the pediatric ICU led her to coordinating resources in the hospital and community that would help parents and children. She volunteered at MUSC's Children's Hospital, leading her to service on the hospital's Family Advisory Council and learning about the values of patient-and-family-centered care.

Today, she's created opportunities for MUSC to apply the humanities in ways that affect the lives of patients, families, clinicians and students through several creative programs and initiatives such as the Patient Story Workshop and Patient Story Library. The South Carolina Hospital Association and health care performance improvement company Vizient have invited DeLongchamps to collaborate with them to host workshops and webinars for other health care organizations.

Other 2020 Governor's Awards in the Humanities recipients are Beaufort Mayor Billy Keyserling; Historic Columbia executive director, Robin Waites; historian and preservationist Barbara Williams Jenkins; and Jon Tuttle, Ph.D., professor of English at Francis Marion University and a celebrated playwright.



Editorial Office  
MUSC Office of Public Affairs &  
Media Relations, 135 Cannon  
Street, Suite 403C, Charleston, SC 29425.  
843-792-4107; Fax: 843-792-6723  
Editor: Cindy Abole  
catalyst@musc.edu

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Letter from the  
Office of the **PRESIDENT**

**VACCINE** *Continued from Page One*

Once inside the freezer, the daunting task begins of earmarking and divvying up where each shipment of vaccine will go – MUSC has four locations in the Charleston area and four regional sites – before sending them out the door via courier to be dispersed.

Two blocks away on Ehrhardt Street, Shemika Champion, R.N., a pediatric nurse at MUSC Children's Health, readied herself to be the first care team member vaccinated.

“When we were told we’d be able to sign up, I was a little hesitant at first, to be honest. But I had to think of myself as a health care professional and what this would mean to my patients,” she said.

The mother of three boys also thought about what it would mean to her family. “I told my kids I was getting the vaccine today, and they were really excited about mommy being the start of a new beginning,” she said.

Champion was joined by MUSC pharmacists, physicians, nurses – anyone who touches patients at the health system was eligible to be vaccinated in the first wave – all lining up for their turn in what would no doubt be an historic moment in the United States, affectionately termed V-Day.

MUSC infectious disease expert Krutika Kuppalli, M.D., one of the more than 600 employees scheduled to be vaccinated on day one, beamed. “To use the words of Tony Fauci, ‘The cavalry is coming,’” she said. “This is very exciting.”

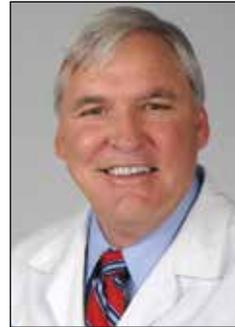
Kuppalli and Danielle Scheurer, M.D., MUSC Health System chief quality officer, are two of the key leaders overseeing vaccine rollout logistics. They both knew how important it was for them to be out there from the start, not only from an organizational standpoint but effectively to put their money where their mouths are and get vaccinated themselves.

“It’s a whole new era,” Scheurer said. “We haven’t had many hopeful messages since January. It’s been almost an entire year since something really good has happened in this country. You keep hearing, ‘We’re out of beds. We’re out of ventilators. There are so many deaths.’ The reality has been so grim. And finally, there’s a ray of hope.”

MUSC Health trauma/ortho nurse Metzfe Dela Rama, R.N., was one of the first people to sign up on the MUSC intranet site.

“This is really important,” she said. “I’m not just doing this because of my job; I’m doing it for me, for my boyfriend’s parents. It’s just the responsible thing to do.”

Scheurer expects the initial delivery of nearly 5,000 doses to be completely administered by the first of next week. Though it was an exciting day, Kuppalli and Scheurer both reiterated that it doesn’t stop the need for us as a society to keep doing what we’ve been doing – wearing masks, social distancing and avoiding large crowds. “But that said, people need to understand that these are really good vaccines,” Scheurer said. “These are better than flu, measles, mumps. These are stunningly effective vaccines. Finally, something good has come out of 2020.”



**Cole**

Dear MUSC family,

Our determined walk together over these past nine months, fueled by an incredible amount of innovation, compassion and collaboration, has led us collectively to this pandemic milestone. On Dec. 15, we vaccinated the first MUSC Health providers against COVID-19, providing the first tangible evidence that we will move beyond this “COVID” point in time. Moments worth celebrating have been few and far between this year, and this is definitely one of them.

At the MUSC Board of Trustees meeting last Friday, Danielle Scheurer, M.D., chief quality officer, MUSC Health, and David Zaas, M.D., CEO for the Charleston Division of MUSC Health, summarized the current status of the COVID-19 vaccine process. I encourage you to follow the hyperlink and take a look at the presentation. For example, did you know that there are more than 230 vaccines in development as we speak? It’s a helpful overview of where we stand right now.

Last Saturday, the Food and Drug Administration (FDA) authorized the Pfizer/BioNTech vaccine for emergency use, and we became a part of one of the largest logistical operations in our nation’s history. Our initial allotment of 4,875 doses – the most we could request at this time – arrived yesterday. We look forward to more shipments and moving forward as quickly as we can to protect our MUSC family, our first responders and essential workers, our communities and our loved ones from the worst of the virus. We anticipate that by the end of December, everyone who works in a clinical space will have had the opportunity to be vaccinated. Please continue to monitor your email, the MUSC Health website (<https://muschealth.org/patients-visitors/coronavirus-information/covid-vaccine>) and medical center intranet (<https://www.musc.edu/medcenter/covid-19/vaccine/index.html>) for information about new phases as we continue our vaccine deployment into the new year.

Our teams are working with precision to maximize our implementation of the vaccine. I cannot underscore enough the remarkable efforts that have gone into this process by so many from across our health system. Once again, I am humbled and impressed by the efforts of our MUSC family. In keeping with the guidelines established by the Centers for Disease Control and Prevention (CDC), health system care team members and long-term care residents at MUSC Health facilities will be the first groups to have the opportunity to receive the vaccine. In addition, it’s important to note the large role MUSC played with the South Carolina Department of Health and Environmental Control and other health experts around the state to deploy the vaccine ethically and safely.

The deployment of a vaccine has brought a lot of hope and enthusiasm for many, and as expected, there are some who have reservations about receiving a vaccination. I hope as you read the MUSC Catalyst News team’s coverage of this historic moment (See page one story), it will become apparent that while our global community is moving forward as quickly as possible to get vaccines into our population, this momentum has not outweighed the commitment to safety. The data clearly shows that the benefits of the vaccine far outweigh the risks associated with taking it.

The next step in the FDA review process is review, and hopefully, approval of the Moderna vaccine. We should know more by the end of this week, once the FDA advisory panel and governing body have provided their input.

MUSC has served the state as an innovative leader throughout this pandemic, and we must also continue to lead in another area – continued vigilance while the vaccine makes its way through our state population. Whether you receive the vaccine sooner or later, it’s important to continue practicing the preventive measures that have proved to deter the virus from spreading. Wear a mask. Social distance and wash your hands. Protect the most vulnerable among us. Stay the course.

Yes, we still have a road to travel before the pandemic is over. However, today on Dec. 15, we celebrate the rollout of the CDC’s Phase 1a. We have a safe, effective vaccine to help protect our front-line health care providers and, eventually, our entire state and nation. No matter what material gifts we may receive this holiday season, I hope that everyone recognizes and appreciates the gift we’ve all been given.

Happy holidays,

David J. Cole, M.D., FACS  
MUSC President

## Part Three

# ‘I got chills. They’re multiplyin’

*Editor’s Note: Kelly Warren is a manager with MUSC’s Enterprise Campaigns and University Communications. Warren volunteered to be a participant in the MUSC/AstraZeneca COVID-19 vaccine trial. She shares her experiences so that others might also feel comfortable receiving the vaccine.*

Well, this has been a most interesting week!

After receiving the injection at my morning appointment, I returned to my house for the workday. All day, I found myself a little on edge. I stayed busy, but in the back of my mind was a running stream of questions — “Are my arms sore? Or is that a normal shot and blood draw feeling? Am I feeling achy? Or did I do something wrong during my last workout? Is this fatigue? Or is it explainable tiredness after a week with not enough sleep?”

As the day progressed, I noticed an increasing soreness at the injection site. The other thing I noticed was discomfort in my inner elbow where the tape was wrapped from the blood draw. I’ve donated blood many times and never had an issue, but this time, I experienced a small reaction from it. Perhaps I left the tape on too long or maybe my arm didn’t like this particular tape. Whatever the case, fortunately the reaction disappeared after a few hours.

I had a normal working day, feeling overall OK. However, around 5:30, eight hours after my shot, I noticed a shift. First, I noticed my brain seemed to be moving a little bit slower and things were taking longer to “connect.” While this isn’t unheard of after a workday, it felt different, like I was moving through molasses.

Then I got very tired — tired enough to lie on the couch for a bit, instead of my normal post-work walk. This is when I started to think something may be up, but I still wasn’t fully convinced I wasn’t just on edge and willing things into existence.

I finally knew and accepted that something was up when I got the chills and felt achy. Anyone who knows me knows I get cold easily, so again, this isn’t unheard of. However, the sudden onset made my wheels start turning about the shot I received. I put on a warm sweater and wrapped up in a blanket. In about 20 minutes, the chills were gone; there was minimal achiness, and I didn’t experience either again.

Given all of this, I decided to take my temperature and found I was running a low-grade fever of 100.4.

After spending more quality time on the couch, I was feeling exhausted, so I made a quick dinner then decided to retreat to bed for a thrilling evening of reading and an early bed time. I checked my temperature about an hour later, confirmed I was still running a low fever and called it a night.

The next morning, I woke up and felt fine. No fever,



A nurse draws blood from Kelly Warren during an appointment. Warren is a study participant in the MUSC/AstraZeneca COVID-19 vaccine trial.

Photo by Sarah Pack

## ‘NOT THROWING AWAY MY SHOT’

By Kelly Warren

*A chronicle of my COVID-19 vaccine trial journey.*

no aches and only the normal pre-coffee fog. I’m not sure when the symptoms ended and fever disappeared, though I briefly woke up in the middle of the night and noticed I didn’t have a fever. I contacted the study coordinators to let them know about my fever. Based on this, they ran my specimen collection for COVID. Fortunately, it quickly came back negative.

Since the few hours of symptoms that first evening, the only thing I’ve noticed was a little muscle soreness in the back of my shoulder. This lasted a couple of days and was nothing unmanageable, though it did make workouts a little more challenging! Otherwise, the first week since my injection has been smooth sailing. I’ve completed a digital diary each day and am now waiting for my next appointment.

I’m certainly no medical expert, and there’s no way of knowing right now what shot I received, but I have my suspicions that it was the real-deal vaccine and not the placebo. Some of the initial symptoms could have been imagined in my hypervigilance, but the fever, chills and aches were undeniable. I’m imaginative, but not that good!

Only time will tell — more in two weeks after my next appointment.



## Part Four

## Taking one for the team

Two weeks ago, I had my first appointment in the COVID-19 vaccine trial. Today, I returned for a follow-up appointment. Since it is a double-blind study, with some participants receiving the vaccine and others receiving a saline placebo, none of the administrators could tell me which I received. Based on my experiences after the injection, though, I’m pretty certain I received the vaccine.

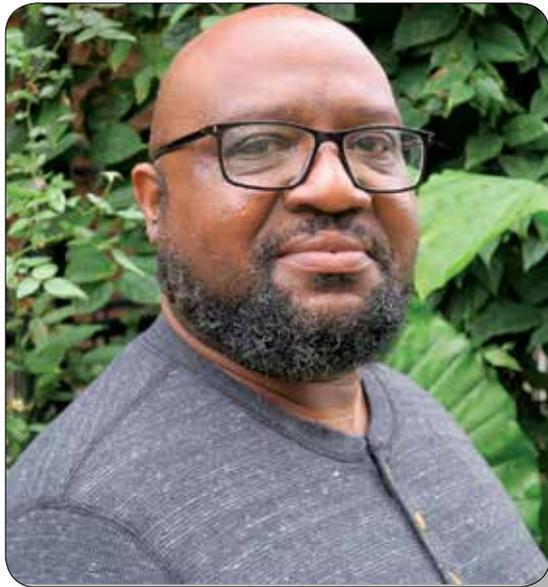
While this has given me a sense of protection, I’m consciously trying not to get cocky and think I’m now super-human. There’s still so much unknown about COVID-19, and while this vaccine is in the final stages, it is still a trial. I’ve committed to continuing to live as if I don’t have antibodies; that I’m at the same level of risk for having or spreading COVID-19. So, no ditching masks and distancing anytime soon, unfortunately.

My appointment today was a short one. I met with one of the study administrators, and we went through a brief questionnaire. We discussed any symptoms I’d experienced and their duration. She confirmed that what I experienced has been a typical response, which was nice to hear.

Then, it was time for a bit of paperwork and scheduling my next appointment. That one will be at the one-month mark and will involve another injection.

See **TRIAL** on page 7

## MEET JERIMAINÉ



**Sgt. Jerimaine Chatman**

**Department and how long at MUSC**  
*Department of Public Safety; almost three years*

**How are you changing what's possible at MUSC**

*By giving people a place to come to while answering questions to help resolve their technical issues*

**Family, pets and their names**

*Wife, Monica; daughters, Mykala, 19, and Mckenzee, 17; and a new puppy, Apollo*

**Favorite holiday memory**

*My parent's Christmas breakfast where everyone's invited!*

**Music that's currently in your player**

*Jazz and old-school hip-hop*

**Favorite holiday song**

*"Merry Christmas" by the Temptations*

**Best thing about living in Charleston**

*Living close to water. The water is so calm and relaxing*

**Words of advice —** *Live life to the fullest.*

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MUSC Health  
 Medical University of South Carolina

IRB Number: IR05180080  
 Date Approved: 10/9/2020

Changing What's Possible

Great Christmas Presents!

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 Benefitting the Charleston Medical District

11AM- 2PM MWF | November 9th - December 18th

6 inch Poinsettia \$12  
 red, cream, and pink available

8 inch Poinsettia \$20  
 red, cream, and pink available

Website to order: <https://bit.ly/3jjbLy0>

- A custom text field is provided for customers purchasing multiple poinsettias.
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- Locally grown in SC
- Drive by pickup option available for online orders at Doughty and Ehrhardt - Call volunteer cell number that will be provided and flowers will be delivered to your car
- Email Greenway coordinator with any questions at [coordinator@charlestonmedicaldistrict.com](mailto:coordinator@charlestonmedicaldistrict.com)

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MUSC's digital employee well-being program, Imagine U, features over 100 challenges organized within four main categories of well-being:

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- Psychosocial Health

The catalog of well-being challenges can be accessed by any MUSC employee 24/7 on any desktop computer, tablet or smartphone device. Furthermore, the majority of the Imagine U challenges can be completed remotely and will provide MUSC employees and their families with valuable health and wellness resources and tools that they can utilize to promote physical and mental well-being as we adapt to the challenges of the COVID-19 outbreak in the weeks ahead.

Visit [www.musc.edu/iu](http://www.musc.edu/iu) to start today!

FOR QUESTIONS OR PROGRAM SUPPORT: [IMAGINE-U@MUSC.EDU](mailto:IMAGINE-U@MUSC.EDU)

# Renowned cancer researcher recognized for spirit of academic innovation

## Staff Report

In recognition of her spirit of innovation and the lasting impact of her work on cancer patients, MUSC Hollings Cancer Center researcher Nancy Klauber-DeMore, M.D., has been named as a 2020 fellow of the National Academy of Inventors (NAI), the organization announced today.

Induction into the NAI fellows program is the highest professional distinction accorded solely to academic innovators. The program was established to highlight inventors who have created or facilitated outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.

Klauber-DeMore joins a class that represents 115 research universities and governmental and nonprofit research institutes worldwide. To be eligible, awardees must have made outstanding contributions in areas such as patents, licensing, innovative discovery, technology or the enhancement of innovation and must be named as the inventor on patent(s) issued by the U.S.

Patent and Trademark Office.

“As a physician-scientist, my ultimate goal is to take discoveries of novel cancer targets from human tumors all the way to development of a drug to treat the patient’s disease,” said Klauber-DeMore. “It is an honor to have this work recognized by NAI.”

The BMW Endowed Chair in Cancer Research at MUSC, Klauber-DeMore has extensive research experience in developing new therapies for breast cancer that have led to clinical advances in patient care, particularly for those with metastatic disease. She has been a principal or co-investigator on more than 30 active and completed clinical trials and has contributed to five patents or patents pending. She is also developing novel surgical devices to aid in breast surgery.

Her lab focuses on discovering novel factors that stimulate the growth of new capillary blood vessels that provide tumors with oxygen and nutrients with a goal of developing new drugs to block these factors, therefore inhibiting tumor growth. She has also played an integral role as a surgeon in the evaluation of



Photo by Sarah Pack

**Dr. Nancy Klauber-DeMore’s research focuses on developing new therapies for breast cancer and novel surgical devices to aid in breast surgery.**

surgical clinical trials as well as clinical trials evaluating the role of natural products in cancer treatment.

With a focus on discovering less toxic therapies, Klauber-DeMore is leading investigator-initiated trials that look at

the effects of natural products, such as an extract of frankincense, on tumor biology in humans and is collaborating with Mark Hamman, Ph.D., a researcher in Hollings’ Developmental Cancer Therapeutics Program, to generate potent analogues of frankincense.

Most recently, research by Klauber-DeMore helped to lead to the development of IVT-8086, a new innovative cancer therapy for the treatment of osteosarcoma. In September, the U.S. Food and Drug Administration granted the drug both the rare pediatric disease designation and orphan drug designation, highlighting the significant unmet medical needs of patients with this life-threatening disease.

“The most significant work that I have been involved in is in developing IVT-8086. This novel monoclonal antibody is directed toward a protein that we discovered to be very important in tumor growth and tumor immunology and is the culmination of 15 years of research,” said Klauber-DeMore. “My long-term goal is to continue to impact cancer patients through innovation in drug discovery.”

Klauber-DeMore will be inducted into the academy at the 2021 Fellows Induction Ceremony at the NAI’s 10th annual meeting in Tampa, Florida, in June.

## MUSC HEALTH REGIONAL HOSPITALS DISTRIBUTE VACCINE



**Left photo: Dr. Rami Zebian, MUSC Health Florence Division chief medical officer, is among the first care team members to receive the Pfizer BioNTech COVID-19 vaccine. Below: MUSC Health Lancaster Division’s Dr. Howard Snyder also receive the COVID-19 vaccine on Dec. 16.**



Photos Provided

# 3D Printing Club uses skills for Christmas fun

BY LESLIE CANTU

*cantul@musc.edu*

Researchers and clinicians are figuring out new health care uses for 3D printing all the time. But this week, some 3D printing enthusiasts used their skills to bring crafty fun to patients at the MUSC Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion.

The newly established 3D Printing Club is open to students from all six colleges at the university. Members teamed up with the Pediatric Interest Group, for College of Medicine students, to bring 3D printed Christmas tree ornaments for decorating to children in the hospital.

Bryce Kunkle, co-president of the 3D Printing Club, said the kids seemed to enjoy painting the ornaments. So did the students.

"I painted a gingerbread man ornament, and it's on the tree in my house now," he said.

Kunkle, a third-year College of Medicine student, said he and Nick Baxter, a second-year medical student, came up with the club idea for the club based on their undergraduate experiences at Clemson University as engineering majors.

They have a lot of ideas for the club, including developing a newsletter to highlight 3D printing advances, both on campus and in health care generally; providing a centralized listing of 3D printing research opportunities for students; partnering with student interest groups to create 3D models for educational purposes and to connect with patients – for example, by printing models for the Surgery Interest Group; and eventually being able to donate money from the nominal printing fee to use the library's 3D printers.

The ornament project was the group's first foray into partnering with other student groups, and Kunkle gave credit to fellow student Ansley Hirsch for coming up with the idea.

Next, Kunkle looked online for existing plans to print ornaments but realized most of the plans wouldn't be suitable for painting. Instead, he

looked to Christmas cookie outlines and developed his own plans for three ornaments: gingerbread men, snowmen and Christmas trees.

The Pediatric Interest Group then worked with the Child Life Program to set up a visit to the children's hospital.

Sally Hunt, a third-year medical student, is volunteer coordinator for the group, which is 70 students strong. Most years, the group keeps busy volunteering at activities on campus and in the community like reading with patients, working at the Sugar Free Fall Festival – an important event for patients with certain conditions like diabetes – and speaking to school groups about health and wellness.

This year, of course, the pandemic has curtailed most of these activities. However, the students were able to return to the children's hospital in the fall for a circumscribed program of logistical support for patients playing virtual Bingo and for some one-on-one unstructured time with patients.

For this inaugural partnership event, the participating students spent about an hour each painting with one of six patients, who loved the opportunity to spend some special time just being merry.

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**TRIAL** *Continued from Page Four*

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The final stop during this visit was with a nurse who did some sort of nasal collection (thankfully not a full swab this time!) and a blood draw. As she did the blood draw, I asked her what the vials would be used for. One will be tested to see if I have antibodies. The other three or four are tested for other things related to possible impacts from the vaccine. She kept her answer intentionally vague, but this reinforced my feeling that I got the real deal.

And in just a few minutes, the appointment was finished, and I was on my way. Now, to wait for the next appointment and to keep an eye on the news as companies release their findings and distributions plans are made!



*Photos by Molly Leff*

**Bryce Kunkle, Ansley Hirsch, Melanie Rubin, Elena Goldstein and Nick Baxter display Christmas tree ornaments they helped create with patients at the MUSC Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion.**



**Left photo: Medical student Bryce Kunkle and a young patient together paint holiday gingerbread men ornaments.**



# Meeting in Progress: 2020

# Chat



Reopening schools



Portable testing pods



Silent protest



Honoring health care heroes



COVID care team



COVID care team



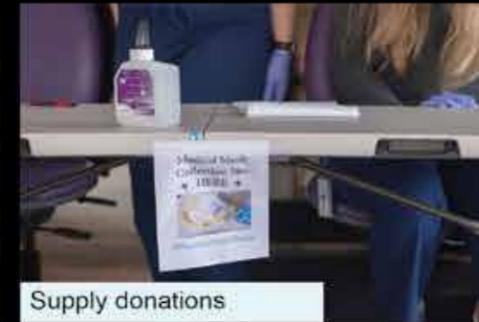
Antibody testing



Graduation 2020



Drive-through testing



Supply donations



Environmental Services



COVID care team



3-D printed masks



COVID care team



Food service workers



Donating convalescent plasma



COVID care team



COVID testing



Jolly old elf, new helipad



MIS-C trial success

### From Mikie Hayes:

Every time a newscaster used the word unprecedented to describe 2020, I popped a peanut M&M. **New normal**, **lockdown** and **social distancing** each earned a plain. For obvious reasons, that plan lasted only until March.

Then there came front-line heroes. **PPE**. **WFH**. **ZOOM**... words and phrases that in no time at all, thanks to COVID-19, became part of our everyday vernacular.

And with the promise of a still pristine new year, the world changed – and seemingly overnight. Hugs were off limits. Births were lonely. Weddings postponed. Businesses shuttered. Zoom calls revealed undereye bags and roots needing a touch-up. Kids missed their friends. Parents and grandparents felt isolated. Families lost loved ones. Anxiety, depression and grief skyrocketed.

So as we say goodbye to 2020 – a year like few others in recent history – reflecting on the year that's almost in our rearview mirrors provides opportunities for personal inventory. And while many of us have found ourselves sporting new double-muffin tops and buying bigger sweat pants, others on the front lines spent the year risking their lives to help patients to recover and stay healthy.

But with all of that said, we end this topsy-turvy year filled with hope. People are baking bread, over-decorating for the holidays and contributing generously to nonprofits – like MUSC. And, thankfully, many key projects came to fruition. We opened the new Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion, our adult burn center, the West Ashley Medical Pavilion and clinics in Greenville and Bluffton.

And, we showed our chops. MUSC Health was a national leader in **drive-through COVID testing** and delivering **convalescent plasma**, and MUSC has been integral to numerous cutting-edge drug trials and an important ongoing vaccine trial. We hosted our first "**drive-thru**" **graduation** and were granted numerous patents, and again, we were named the **No. 1 hospital in S.C.** – for the sixth year running. But perhaps most importantly, an exciting **COVID-19 vaccine** rolled out this chilly December week, with many more phases to follow, allowing many, finally, to see light at the end of the tunnel – and a light that promises not to be an oncoming train.

Please enjoy a small selection of MUSC's numerous headlines that highlight our amazing care team, researchers and staff and newsworthy firsts.



End

STATEWIDE IMPACT

# \$5.6 billion

An economist at the Darla Moore School of Business at the University of South Carolina found that MUSC has a \$5.6 billion impact on the state's economy.

**INNOVATION**

The FDA approved the Guardian Needle, invented by neurophysiologist Jessica Barley, Ph.D., and neurologist Jonathan Edwards, M.D.

The Siemens Healthineers OR of the future debuted.

The FDA granted rare pediatric disease designation for an osteosarcoma treatment drug developed by Innova Therapeutics, co-founded by Nancy Klauber-DeMore, M.D.

**RESEARCH**

NIH awarded funding to MUSC for a Digestive Disease Research Core Center and a Center for Biomedical Research Excellence in Digestive and Liver Disease.

The National Center of Neuromodulation for Rehabilitation was named national coordinating center for six such centers funded by NIH.

**CLINICAL CARE**

**EDUCATION**



The College of Health Professions expanded its Physician Assistant program after transferring a cohort from Lenoir-Rhyne when their program ceased.

The College of Graduate Studies and the Foundation for Research Development partnered on a biomedical entrepreneurship class.

MUSC premiered an interprofessional course on emergency management in which students can earn FEMA certifications.



*Brennan Wesley/MUSC*

**MUSC Children's Health care team members celebrate the ribbon-cutting on their unit.**

- January*  
West Ashley Medical Pavilion opening celebration
- February*  
MUSC Shawn Jenkins Children's Hospital and Pearl Tourville Women's Pavilion opening
- May*  
South Carolina Burn Center opens
- May*  
First organ donor at SJCH
- October*  
100th lung transplant performed
- December*  
MUSC Health Florence performs its first neuroendovascular procedure

2

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2

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# Fourth quarter MUSC Innovator Awards recognize excellence

## Staff Report

The Office of Innovation is proud to recognize the following individuals and teams as the December 2020 recipients of the “I am an MUSC Innovator” award.

**Scott Bragg, Pharm.D.**, associate professor in the College of Pharmacy, Department of Clinical Pharmacy and Outcomes Sciences, and College of Medicine Department of Family Medicine

**Problem** — In 2017, my colleagues and I recognized multiple issues with our residency’s training model, specifically concerns about health care provider burnout and a perception among trainees that they didn’t feel comfortable advocating for change locally or nationally. We felt it was important for residents to engage in dialog with others that may share different opinions on how to tackle complex problems within health care and our community.

**Impact** — I collaborated with faculty and residents to start a new project within our residency called sociopolitical rounds. After completing inpatient rounds, our family medicine faculty facilitate a 20-minute discussion with our inpatient team focused on complex health care and social problems that include health care policy issues, public health challenges and medical ethics problems. We’ve also followed resident responses on a validated questionnaire called the Sociopolitical Control Scale during their residency to measure their growth in perceived advocacy skills as a result of our discussions.

**Acknowledgements** — Russell Blackwelder, M.D., and Sean Haley, M.D., Department of Family Medicine. Blackwelder came up with the original idea to create sociopolitical rounds and Haley has added a public policy and population health perspective since joining the project. We’ve also received great support from leaders within our family medicine residency and department.

**Satish N. Nadig, M.D., D.Phil.**, the P.K. Baliga Endowed Chair in Solid Organ Transplantation and associate professor, Department of Surgery; Shikhar Mehrotra, Ph.D., associate professor, Department of Surgery; Vamsi Gangaraju, Ph.D., assistant professor, Department of Biochemistry and Molecular Biology

**Problem** — COVID was and is an international pain point to say the least. Our pain point was being able to develop, quickly and accurately, testing (i.e. antibody testing) for South Carolinians.

**Impact** — Our solution was easy: leverage the strengths of MUSC and what we do best. Through the partnership of the Center for Cellular Therapy with

the Clinical Lab, we were able to set up effective and efficient clinical pathways to serve our community by developing an orthogonal testing for antibody development as well as salivary testing.

**Acknowledgements** — The entire CCT, namely Colleen Cloud, Tara Duke, Cindy Wang.

The numerous college students who stepped up and made up the “COVID CREW” for antibody testing.

**Leigh Ridings, Ph.D.**, assistant professor, College of Nursing, associate director of the Trauma Resilience and Recovery Program (TRRP)

**Problem** — Each year, nearly 300,000 children experience pediatric traumatic injuries (PTI) that require hospitalization and affect quality of life, emotional and behavioral health, physical recovery, family roles and routines and academic functioning. Caregivers experience high levels of distress and mental health needs after PTI, which is strongly associated with their children’s emotional and behavioral recovery after trauma, yet U.S. trauma centers do not adequately address these outcomes and a scalable national model of care for these families is needed.

**Impact** — I was granted a K23 career development award through the National Institute of Child Health and Human Development (NICHD) in July 2020 to develop and test the feasibility of CAARE, a technology-enhanced stepped intervention to be delivered to caregivers of traumatically injured children under age 12, beginning in the hospital. CAARE leverages our TRRP service and is designed to accelerate the emotional recovery of caregivers and their children through education, symptom self-monitoring, coping resources and connections to evidence-based mental health treatment for those who need it. I am using feedback from caregivers and pediatric trauma center staff to finalize the technology-based components of CAARE in preparation for an open feasibility trial.

**Acknowledgements** — Ken Ruggiero, Ph.D.; Tatiana Davidson, Ph.D., (TRRP Co-director); Olivia Bravoco (TRRP program manager); and our TRRP staff, whose support of this innovation is instrumental. This project would also not be possible without my mentorship team, Nancy Kassam-Adams, Ph.D.; Lynne Nemeth, R.N., Ph.D.; Martina Mueller, Ph.D.; Keith Borg, M.D., Ph.D.; and MUSC’s Pediatric Trauma medical director, Chris Streck, M.D. Funding from NICHD, the South Carolina Telehealth Alliance and MUSC Health Center for Telehealth supports this work.

**Gretchen Seif, DPT**, a board certified orthopedic specialist, fellow of the American Academy of Orthopedic Manual Physical Therapists and associate

professor, Division of Physical Therapy in the College of Health Professions

**Problem** — I teach hands-on lab courses in the physical therapy curriculum. When the COVID-19 pandemic forced all classes to online formats, I had to figure out quickly how to teach a hands-on class online.

**Impact** — My solution was to go back to the basics of effective teaching and learning and apply them to this new environment. My innovation was a complete revamping of all my hands-on lab courses to facilitate students learning clinical skills prior to their upcoming clinical practicums. We restructured every aspect of the lab from smaller groups, use of iPads and other technology to facilitate learning, online practical examinations and extensive use of videos, including student videos for asynchronous feedback on their techniques. I was selected to chair a task force for the CHP on innovations in online teaching. This group continues to meet and present within CHP and the university on these innovations.

**Acknowledgements** — Rick Segal, P.T., Ph.D., chair, Department of Health Professions, College of Health Professions, has been supportive in both time and resources. The CHP IT team — Jim Moore and Justin Muir, specifically, have been very helpful with their time, ideas, resources and troubleshooting.

**Michael Sweat, Ph.D.**, professor, Department of Psychiatry and Behavioral Sciences, faculty director, MUSC Center for Global Health and director, Division of Global and Community Health

**Problem** — The COVID-19 pandemic emerged very rapidly, and there was a need to track both its advancement in our area to support appropriate warnings to the population but also to project very quickly ahead the impact on the MUSC health system to allow us to prepare. A major challenge was access to data on such factors as the number of new cases; the number of people needing hospitalization, intensive care, ventilation; and identifying risk factors and demographic characteristics of patients in need of these. To develop an accurate picture, there was also a need to synthesize a large and rapidly emerging literature on the epidemiology of COVID-19.

**Impact** — Our team created the “COVID-19 Epidemiology Intelligence Project” to collect as much data as possible on the status and trends of the epidemic on an ongoing basis to allow for analysis to inform and warn the community and developed a mathematical epidemic model to project the number of patients MUSC may have, PPE needs, staff, beds, ventilators, etc. Our team now does regular weekly updates that we share through our website that include

# SC Innovates event draws up-and-coming ideas, innovative minds

By CINDY ABOLE

aboleca@musc.edu

A medical device that redirects blood flow during CPR to provide better outcomes during a heart attack. An on-demand tutoring app that connects students to tutors, A digital payment system/scheduling platform that helps parents connect their student-athletes to sport coaches and helps to manage their time. These were among several award-winning and enterprising ideas presented at SC Innovates 2020 – the inaugural statewide innovation student pitch competition established for students in South Carolina.

The event was the brainchild of statewide innovation leaders, educators and entrepreneurs and was sponsored by the S.C. Department of Commerce Office of Innovation, the S.C. Research Authority, doxy.me, the Global Consortium of Entrepreneurship Centers and 16 statewide partner institutions. It began with a statewide call to undergraduate, graduate and postgraduate students, generating more than 100 ideas and 77 pitches from schools and institutions from across the Palmetto state. After several weeks, 15 semifinalist teams emerged, and participants gathered in front of their computers on Nov. 18 to pitch their ideas to a panel of judges – competing for a total of \$120,000 in prize money.

Jesse Goodwin, Ph.D., chief innovation officer at MUSC, saw the competition to be a rare and special opportunity for students. MUSC was among four partner schools to help to launch the competition, collaborating with 16 total institutions from across the state that haven't historically partnered together. According to Goodwin, the event not only fostered enthusiasm for entrepreneurship in students from across the state but also closer relationships between the institutions themselves,

which will likely bear other fruit in the future.

"The quality of ideas that the student teams from across the state put forward in this competition was truly impressive. The fact that three of six MUSC teams advanced to the semifinals, and that Heather and The SAVER won, speaks to the merit of their projects, given the strength of all of the submissions. I am proud of The SAVER and all of the MUSC teams and look forward to seeing what is in store for these meaningful projects," Goodwin said.

MUSC had strong participation with six teams of students submitting their novel ideas to the competition. Ultimately, three teams – The SAVER (Heather Holman, Kristen Quinn, M.D., and Julie Siegel, M.D.); E-Z ECG (Hannah Mixer-Kephart); and STEAMtern (Kareem Heslop, Rashshana Blackwood and Randall Harris) – competed in the semifinals, with The SAVER team taking first place and \$4,200 as well as professional coaching and consulting awards.

"This means a lot to us," said Quinn, an MUSC surgical resident and a member of The SAVER team, who spoke at the November virtual event. "We're so excited and so honored, especially in this inaugural year of the SC Innovates competition. Everyone's ideas were awesome, and we loved hearing them. We're excited to take the next step with our device and to move forward."

Siegel, another MUSC surgical resident was equally as excited and supportive.

"Participating in the SC Innovates was an invaluable experience. We gained expertise in pitching our design solutions and in the process obtained further insight and resources to push our idea forward. It's extremely important to have an institution encourage innovative thinking and projects among students, staff and faculty. We applaud the MUSC



Photo Provided

**MUSC's The Saver Team, Dr. Kristen Quinn, Heather Homan and Dr. Julie Siegel won first place for their innovative idea — a tourniquet-like device to help heart attack patients reach better outcomes. Their idea and pitch were among dozens of savvy entries that competed in the SC Innovates 2020 event.**

*"The fact that three of six MUSC teams advanced to the semifinals, and that Heather and The SAVER won, speaks to the merit of their projects, given the strength of all of the submissions."*

Jesse Goodwin, Ph.D.

Department of Surgery and Human Centered Design for their support," she said.

The Safety Adjunct for Vascular Extremity Occlusion During Resuscitation device (SAVER) was an idea devised to improve very poor CPR outcomes, according to Holman. In the U.S., about 650,000 people suffer from cardiac arrest annually with only 10% reaching long-term survival. According to the Centers for Disease Control and Prevention, 1 in 7.4 Americans will die from sudden cardiac death. To improve outcomes during a heart attack, blood flow needs to be increased to the heart and brain during CPR. The SAVER device helps redirect blood from the extremities to these vital organs.

According to Holman, the device is inexpensive to manufacture and easy to use in the hospital or in the field by first responders.

The trio is part of MUSC's Human Centered Design Group (HCDG), which is involved in developing innovative solutions to problems in health care with a focus on user experiences. The group welcomes faculty input on clinical or health care problems seeking improvements. Taufiek Konrad Rajab, M.D., a pediatric cardiothoracic surgeon, approached the group with an idea to improve poor CPR outcomes.

"We were eager to create and optimize a device to tackle this problem. Through brainstorming sessions, research and literature review, we developed the solution called The SAVER," Holman said.

During the fall, the trio learned about SC Innovates through MUSC's Foundation for Research Development. They coordinated their pitch using SC Innovates resources and the support from the HCDG. To gather data, they surveyed Tri-county paramedics – future users of this device – and found that 96% felt comfortable and confident using a tourniquet-like device on patients in the field.

For market analysis and manufacturing, they conducted their

See **INNOVATES** on page 15

# Vials of COVID-19 vaccine hold more doses than previously thought

By **BRYCE DONOVAN**

[donovanb@musc.edu](mailto:donovanb@musc.edu)

The extra nugget in your value meal. That five-dollar bill you forgot about in your jacket pocket.

Little discoveries can often make a day just that much sweeter.

So when pharmacists across the nation started to realize that the vials of the Pfizer-BioNTech COVID-19 vaccine — each of which are supposed to contain five doses — had as many as one or two more in them, it was a pleasant surprise to say the least.

“We were kind of hearing the buzz about this,” said MUSC infectious disease expert Krutika Kuppalli, M.D. “But you can’t know for sure it’s real until it happens to you.”

Jason Mills, Pharm.D., pharmacy supply chain manager for MUSC, said his team realized the vials contained extra vaccine immediately.

“Overfill, especially with injectables, is fairly common,” he said. “But to have enough to make additional doses was a real surprise.”

It took some time — nearly 48 hours after many hospitals had already begun administering the vaccine — but the FDA eventually said that those extra doses could be used. Prior to that, health care workers across the nation had been disposing of the extra vaccine, due to the constraints set forth by the government, which said that only five vaccines could be administered per vial.

Fortunately for MUSC, the state’s governing body on all things vaccine, SCDHEC — which takes its cues



*Photo by Sarah Pack*

**Rumors began swirling as early as Tuesday that each vial of Pfizer-BioNTech’s COVID-19 vaccine might hold more than five doses.**

from the Centers for Disease Control and Prevention — moved quicker when it ruled earlier in the day to begin using the extra vaccine.

“I’m really proud of South Carolina for adopting that stance so quickly,” Mills said. “They weren’t going to let an administrative barrier get in the way of giving this

vaccine to as many people as possible.”

Mills estimated that in light of this development, MUSC might be able to vaccinate as many as 40% more people.

“We understand how precious this stuff is, so we’re really thrilled,” he said.

## MLK Week @ MUSC

January 16 - January 23, 2021

To Reflect.

To Celebrate.

To Serve.

IF WE ARE TO HAVE PEACE ON EARTH, OUR VOICES MUST BECOME ECHOES.  
RAATHER THAN SECTIONAL, OUR VOICES MUST TRAVEL OVER ALL  
OUR TREES, OUR CLASS, AND OUR NATIONS, AND TRY MEAN  
WE MUST BE A WORLD PEACEMAKER.

“Even though we face the difficulties of today and tomorrow I still have a dream.”

- Rev. Dr. Martin Luther King Jr.

REFLECT. LEARN. SERVE. CELEBRATE.  
together during MLK Week at MUSC!

Visit MLK Week @ MUSC

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## Board receives update on COVID-19 therapeutics, vaccines, appoints research leader

As the half-year mark approaches at the end of December, MUSC and the MUHA board of trustees held their regularly scheduled combined committee sessions and board meeting on Friday, Dec. 11. The meeting was held in the MUSC board room with a limited number of attendees physically present, all of whom adhered to mask wearing and social distancing to discourage the possible spread of the COVID-19 virus. A number of participants also attended via video conference.

□ Danielle Scheurer, M.D., chief quality officer, MUSC Health, and David Zaas, M.D., CEO for the Charleston Division of MUSC Health, summarized the current status of the COVID-19 vaccine. Scheurer noted that there are 238 vaccines in development, with 38 in the clinical testing phase and eight in phase 3 clinical trials. Two mRNA, or Messenger RNA, vaccines are currently under regulatory review: the Pfizer/BioNTech vaccine and the Moderna vaccine. Two other vaccines, from AstraZeneca and Johnson and Johnson, are completing phase 3 clinical trials.

“On Dec. 10, the FDA expert panel recommended approval of the Pfizer/BioNTech vaccine, which must be administered in two doses separated by three weeks apart,” Scheurer said. “This was a very large, inclusive international clinical trial with more than 40,000 enrollees. Results showed that after the second dose of the Pfizer vaccine, clinical trial participants were 95% protected against contracting COVID-19, and the vaccine was very effective in protecting against severe virus symptoms. The only logistical difficulty with this vaccine is that it does require this ultra-cold storage, which fortunately MUSC does have the capacity to provide. The other logistical difficulty is we do have to know with very high precision exactly how many people are getting vaccinated that day because once you reconstitute the vaccine, it only lasts for six hours. So as part of our operational rollout, we have to be extremely precise about how many people are getting vaccinated that day. We are not going to tolerate any amount of waste of

this vaccine – for obvious reasons.”

The next step in the Food and Drug Administration-review process is for the FDA governing body to review and approve the Pfizer vaccine. Formal approval from the FDA governing body is anticipated on Saturday or Monday. MUSC Health is expecting that its first shipment of the Pfizer vaccine will include an estimated 5,000 doses. In keeping with the guidelines established by the Centers for Disease Control and Prevention, health system care team members and long-term care residents at MUSC Health facilities will be the first groups to receive the vaccine, if they want it. MUSC Health expects to begin giving vaccinations on Tuesday, Dec. 15 and hopes that by the end of December, everyone at MUSC Health who wants the vaccine will have been vaccinated. Scheurer noted that in light of the other vaccines already in the review pipeline, we will probably have four approved COVID-19 vaccines available in February.

“We are strictly following the established allocation guidelines. There’s a lot of enthusiasm for the vaccine and, as you can imagine, we’re not going to have enough for everyone who wants or needs the vaccine,” Scheurer said. “Our first wave of health care providers to receive the vaccine will be anyone who touches patients,” Scheurer said. “The second wave will be anyone who is within six feet of patients. Then everyone else who supports operations and functions of MUSC Health.”

“During this continuing intensive period, I want to applaud the amazing ability of our teams to be nimble, redesign operations and pivot quickly,” said Zaas. “This has been the case whether it was how we prepared for inpatient capacity or how within days we rolled out COVID infusion with the monoclonal antibodies and were one of the first in the region to deliver these new therapies. Similarly, we are prepared to vaccinate thousands of our team members as fast as we can to help save lives.”

Zaas continued, “Obviously, the next step is community outreach, and we are deep in the development of those plans.

We will need to engage with partners and to design the logistics required to help improve the health of vulnerable populations in our community.”

“MUSC has been in the lead on all things COVID since this pandemic began,” said Patrick J. Cawley, M.D., CEO for MUSC Health and vice president for Health Affairs, University. “Danielle has been and continues to be a key leader during this public health crisis, collaborating with team members across our enterprise to deliver what is needed to serve our patients, families and community.”

MUSC President David J. Cole, M.D. FACS, echoed Cawley’s sentiments, saying, “There has been a lot of significant hard work that continues to occur due to this pandemic. We want to acknowledge and thank Danielle as well as teams across this institution for their outstanding contributions.” Cole emphasized, “I’d also like to remind everyone that getting the vaccine doesn’t mean you should stop being vigilant. Everyone who takes the vaccine needs to continue practicing the preventive measures that have proved to deter the virus from spreading. Wear a mask. Social distance and wash your hands. At this point, we don’t have any evidence that getting the vaccine will prevent you from spreading the virus to others.”

□ Kathleen T. Brady, M.D., Ph.D., vice president for Research, reported that for the fiscal year to date (FY 2021) MUSC research funding is ahead of the FY 2020 funding awards in a number of categories, including National Institutes of Health grants and corporate awards. She explained that during the spring, when the pandemic hit the United States, scientists turned their focus to developing grants to investigate the virus.

“Our researchers were eager to participate in COVID-19 research,” Brady said. “We had been wanting to institute more clinical trials research through our Regional Hospital Network. It’s important that we build a robust, ongoing collaboration and outreach to rural communities. Over the recent months, we quickly identified the right investigators,

leveraged our momentum and engaged in more clinical trials than we’ve ever had in rural communities. We had a tremendous amount of success being able to access therapeutics that, initially, were only available to patients through research protocols – therapeutics like remdesivir and convalescent plasma.

The positive trajectory of the research enterprise at mid-year is particularly noteworthy, considering the multi-layered impacts and challenges of the pandemic. Brady plans to step down from the research leadership role in 2021; however, she will continue as a faculty member with an active portfolio of funded research.

To succeed Brady, the board voted unanimously to approve the appointment of Lori L. McMahon, Ph.D., as the next vice president for Research. McMahon will oversee the Office of Research and all of its associated divisions, which includes responsibility for accreditation and regulatory affairs, university-wide promotion of research across all colleges and centers, representing the president and provost on internal and external research matters and identifying institutional research strategies and benchmarks in relation to the MUSC strategic plan. Joining MUSC after more than 22 years at UAB, she is scheduled to begin her new role on July 1, 2021, on a part-time basis until

Nov. 1, 2021, when she will engage full time. McMahon will report to Lisa K. Saladin, PT, Ph.D., executive vice president for Academic Affairs and provost. To read the press release about McMahon, visit <https://web.musc.edu/about/leadership/institutional-offices/communications/pamr/news-releases/2020/musc-names-lori-mcmahon-vice-president-for-research>.

□ Kate Azizi, vice president for Institutional Advancement, reported that MUSC has raised more than \$20.3 million in gifts and pledges since the fiscal year began on July 1. In addition, during annual Giving Tuesday, which occurred on Dec. 1, donors generously contributed \$547,689 in gifts to MUSC, shattering the

**INNOVATORS** *Continued from Page Eleven*

these indicators but also interpretation and regularly updated public health recommendations specific to our area and the MUSC Hospital System informed by the most current science.

**Acknowledgements** — Eric Meissner, M.D., Ph.D., Division of Infectious Diseases; Virginia Fonner, Ph.D., Division of Global and Community Health; Kathleen Ellis, MUSC Center for Global Health; Claire Baily, Division of Global and Community Health; Veronique Whittaker, Division of Global and Community Health; Gregory (Brian) Elmore, fourth-year student, College of Medicine; William (Alex) Parler, fourth-year student, College of Medicine; and Sarah Taylor, student, College of Pharmacy.

**Ben Rogers**, IT Director, College of Medicine

**Problem** — The College of Medicine needed to develop a solution for medical students participating in clerkships to participate remotely due to pandemic restrictions.

**Impact** — An ad hoc team of individuals from across the institution responded rapidly to the challenge and developed a high-quality novel telerounding platform, using off the shelf components that were readily available and inexpensive. The system was dubbed TERA (tele-enabled rounding apparatus) and allows clerkship students to participate in rounds as if they were live members of the team. They can interact with the rounding team, lead patient workups and even speak with a patient from the bedside. The cookbook components are a tablet, Bluetooth speakerphone, rolling cart and battery pack to extend the rounding time as needed. We use our institutional web conferencing platforms to conduct the virtual communications. When we are dressing TERAs up so they look their best, we add a medical student white coat. Variations on this theme have gained some traction in other telerounding and teleconsult contexts via exposure to the clerkship rounding pods, which should be very gratifying to the team who came up with the idea.

**Acknowledgements** — One very

rewarding component of this project was how many people contributed to identifying the problem, testing and assembling components and building fundamental infrastructure that we used.

Angela Dempsey, M.D., organized the clerkship needs and response to this project, and a number of the College of Medicine Education team was involved in needs gathering, testing and deployment, including: Donna Kern, M.D.; Inda Humes; Nate Mack; Jules Kohler and Christine Talbot-Bond; Sonny King; Erika Murphy; Josh Ody; Alex Haldeman; Nic Matutina; Jaret Navarro and Ben Rogers of the College of Medicine Center of Expertise in Information Technology designed, tested, assembled, refined and introduced the TERA platform to the first virtual clerkship rounds using them.

MUSC Libraries' Erick Lemon, Josh Ivey, Michael McIntyre and Sherman Paggi provided tablets to the project, when supply constraints

**INNOVATES** *Continued from Page Twelve*

own research, evaluating similar products already in use such as automated external defibrillators (AEDs). They also researched the costs of components commercially available and deducted manufacturing and production costs and estimated their product's growth potential.

The team recently founded a new health care tech company called Heartbeat Technologies LLC and plan to use their winnings, creative energy and momentum from the competition to secure a patent and apply for small business grants. Other plans include high-fidelity prototyping and additional research.

Other MUSC SC Innovate teams, E-Z ECG and STEAMtern, placed 10th and 12th respectively in the competition. Judges included investors, entrepreneurs and nonprofit leaders. The online semifinal Zoom event attracted an audience of more than 300 viewers.

"Promoting innovative thinking improves the care patients receive at our institution and betters our world," Quinn said. "It equips intelligent and creative people to tackle the problems

would have tanked it, assisted in testing and deployments of the tablets and 3D printed custom mounts for the speakerphones.

Kelly Kornegay of the Epilepsy Center; Leonardo Bonilha, M.D., Ph.D., Department of Neurology; and Marc Heincelman, M.D., College of Medicine, were the first pilot users of TERAs for virtual rounding and contributed immensely to the team's understanding of needs and offered smart suggestions for improvements that greatly contributed to the final TERA design.

Greg Fisher and Dalton Boeding of MUSC Information Solutions built a rapid deployment platform that lets us deploy and manage a fleet of 12 TERAs and also rapidly change the best-in-breed apps we utilize without calling TERAs back from the field.

Matt Jones, Gerry Auger and Hope Friar of MUSC Information Solutions were consulted on the usefulness and securability of the virtual collaboration

platforms we use to allow the TERAs to be the virtual presence for the clerkship students. Ragan DuBose-Morris, Ph.D., MUSC Office of Telehealth, shared months of battle-tested rapid innovation experience in the COVID telehealth and education space.

**The entire COVID Center/Anesthesia Team**

**Problem** — The team faced an emergent challenge because 100,000 N95 masks were delivered and found to be defective, as the head bands snapped when stretched.

**Impact** — They managed to create and operationalize a de novo and iterative process to refurbish and establish rapidly an MUSC systemwide inventory of effective COVID-19 staff protective PE masks. This innovative thinking saved the enterprise resources and waste.

**UPDATE** *Continued from Page Fourteen*

MUSC Foundation's previous national giving day fundraising record of \$110,720, which was set in May while raising funds for COVID-19 testing.

"It has been wonderful to see the community come together to support MUSC during this challenging time," Azizi said. "For the community to show this kind of support for our mission, especially now, is inspiring and profoundly meaningful on many different levels. We are incredibly grateful to all of our donors."

In other business, the 16-member MUSC/MUHA board also voted to approve the following items:

- To permit the MUSC health system to apply for a certificate of need (CON) for an outpatient vascular intervention lab to be located in Charleston County. As demand for these services increases, MUSC Health wants to expand capacity

they observe in actionable ways. We foresee SC Innovates continuing to conduct these competitions for students and making resources and mentors available for young entrepreneurs."

for outpatient services performed by an interventional radiologist or a vascular surgeon. The CON filing is required through the South Carolina Department of Health and Environmental Control (DHEC). DHEC must issue a CON before certain types of health care acquisitions, expansions and creation of new facilities are allowed.

- To allocate capital funds for information technology upgrades for MUSC Physicians. The upgrades will enhance use of the health care software for medical records and support lab modernization.

- To allow an easement on the Medical University Hospital Authority premises in Charleston, which was requested by the Commissioners of Public Works of the City of Charleston, to construct sewer lines in the Cherry Street and Cannon Street areas. The permanent underground utility easement will serve to connect surrounding sewer lines necessary to serve the Charleston peninsula.

The MUSC/MUHA Board of Trustees serve as separate bodies to govern the university and hospital, normally holding two days of committee and board meetings six times a year. For more information about the MUSC Board of Trustees, visit <http://academicdepartments.musc.edu/leadership/board/index.html>.



Photo by Sarah Pack

Kelly Hedges, program manager of Volunteer Services at MUSC, helps Angel Tree gift-giver Liz MacPherson shift the toys and clothes she bought into larger bags that will go to the Salvation Army for distribution.

## Despite pandemic, employees give back through Salvation Army Angel Tree program

BY HELEN ADAMS

adamshel@musc.edu

When she heard that most of the Salvation Army’s “angel” tags would be online instead of hanging from Christmas trees, Kelly Hedges was a little worried.

The program manager of volunteer services at MUSC knew it made sense, with so many people working and studying at home because of the coronavirus pandemic. But still, it was different. Would people feel comfortable “adopting” angels – committing to buying presents for children whose families are struggling – virtually?

“We did have some concerns. But this community has always come together in ways that have just astounded us. Our employees said, ‘Let’s give back this year.’ They got a lot of love during the pandemic from our community, and I think that touched people,” Hedges said.

Departments such as the perioperative group at MUSC Health pulled together to help as many kids as they could, adopting multiple angels. So Hedges had a smile on her masked face as people dropped off bag after bag of gifts on the academic medical center’s Charleston campus on Dec. 4.

Salvation Army Capt. Mike Michels was

there, too. “We have more kids this year than ever. We usually do about 2,000 kids. This year, we’re just shy of 3,000,” he said.

Even with the help of MUSC, the Lowcountry’s biggest contributor to the program, some of the children still need to be adopted. “This year, the need is the greatest we’ve ever seen because of the pandemic. Across the country, there are millions of people out of work. That’s just mind-blowing. We’re doing what we can in the Lowcountry to help out as many people as we can,” Michels said.

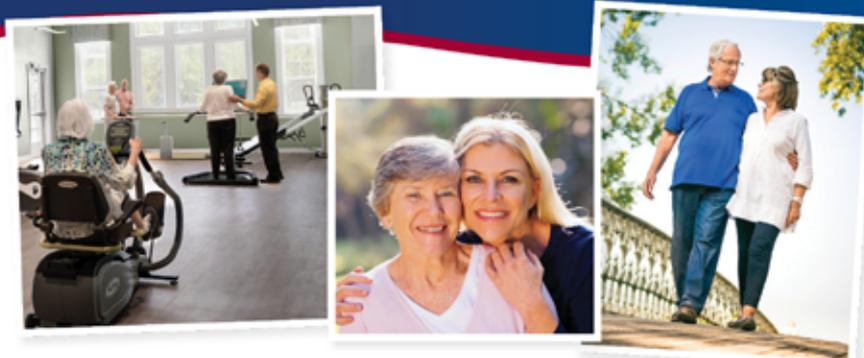
“The Salvation Army produces nothing tangible. But we produce hope. We help people in the community help other people.”

MUSC employees bought this car for a 4-year-old boy who had it on his wish list.

The Salvation Army will collect donations until Dec. 14 at its offices on Rivers Avenue and in West Ashley. After that, people can drop off gifts at the Charleston Convention Center. Then, on Dec. 18, the gifts will be distributed to parents and caregivers to give to the children.

MUSC volunteer Liz MacPherson, who dropped off three bags of gifts, said participating doesn’t just benefit the families in need. “It feels good to do good. I’ve really enjoyed it even more this year.”

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