



Changing What's Possible

COLLEGE OF PHARMACY

musc.edu/pharmacy



COLLEGE OF PHARMACY



Philip D. Hall, PharmD
Professor and Dean,
College of Pharmacy

Founded in 1881, the pharmacy program at MUSC has a rich history of contribution as a leader in pharmacy education and practice, research and discovery, and community stewardship.

We're proud to continue that tradition by asking important questions about the future:

- What will the pharmacy profession look like in 2020? In 2050?
- How do we best prepare our students to be leaders in that future profession?
- What areas of research will emerge as breakthrough?

The answers to these questions evolve every day. In the College of Pharmacy, we recruit the kind of people with the intellectual curiosity and passionate drive to develop and shape the future of health care. The MUSC College of Pharmacy provides a premier pharmacy education by uniting nationally recognized faculty and high-achieving students with the innovative, interprofessional learning opportunities offered at MUSC's academic medical center.

Our researchers, who annually draw millions of dollars of NIH investment and contribute to a blossoming biotech industry, are part of a translational research program discovering new drugs to save and improve lives. Our clinical faculty provides best practices in therapeutic care throughout the MUSC enterprise, optimizing patient outcomes, conducting clinical research, and offering community outreach. Our alumni are leaders in the South Carolina pharmacy profession and essential health care providers in their communities.

The MUSC pharmacy family includes the thousands of MUSC pharmacy alumni, students, preceptors, staff, volunteers, donors, parents and others who recognize and cherish an intimate personalized environment in which diversity is valued, students have opportunities for leadership experience, and lifelong relationships are fostered.



93.8%
4-year
Graduation Rate



96%
Student Satisfaction



92%
Residency Match Rate



\$4.5 M
NIH Funding



Members of the MUSC pharmacy family adopted the slogan “I am MUSC Pharmacy” a few years ago to convey their pride and privilege in some key characteristics of the MUSC experience: the warmth and tradition in the education experience, the excitement of discovery, the fulfillment of a clinical calling, and the embrace of a new community.



3,500+
Alumni

2,000+
Active Preceptors



320
PharmD Students



30
Residents



8.3 to 1
Student-Faculty Ratio

EDUCATION

Being part of an academic health care center creates so many opportunities for practical experience and interprofessional interaction.

- Whitney Graham '18

Active in C.A.R.E.S. Clinic, SNPhA,
SSHP, Phi Delta Chi,
Student Interprofessional Society



The college's PharmD curriculum reflects its vision of personalized education for the future of health care. Courses incorporate critical thinking and active learning, promoting relationships between faculty and students. Students take required courses in interprofessionalism and community outreach.

Electives and opportunities for student leadership abound, as well as multiple perspectives of practice experience through our 2,000 active preceptors with rotation sites all over the world.

The success of the program is illustrated by annually achieving at or higher than the national average in NAPLEX and MJPE pass rates, graduating student satisfaction, residency placement, and six-month employment figures.

Our 16 Ph.D. students represent a growing program in graduate studies that offers interactive and comprehensive didactic units in biomedical research, working collaboratively and with extensive resources to advance drug discovery.

The college offers two concurrent degrees: the PharmD/MBA degree with The Citadel that can be completed within the same four-year period, as well as a PharmD/Ph.D. program with the MUSC College of Graduate Studies. In the near future, we expect to unveil our newest concurrent degree in a PharmD/Master of Public Health.

One of the oldest and most respected programs in the country, the MUSC Residency Program offers 11 PGY1 and seven PGY2 residencies.



SmartState® Endowed Chairs in the Department of Drug Discovery and Biomedical Sciences

- **John J. Lemasters, M.D., Ph.D.**
SmartState® GlaxoSmithKline Distinguished Endowed Chair
- **Patrick M. Woster, Ph.D.**
SmartState® Endowed Chair in Medicinal Chemistry
- **Mark Hamann, Ph.D.**
SmartState® Charles and Carol Cooper Endowed Chair in Pharmacy

Recent National Institutes of Health (NIH) funding

- **NIH R01 award (\$1.3 million) to Dr. Patrick M. Woster** for a project aimed at the discovery of inhibitors of spermine oxidase (SMOX), an enzyme that has been implicated in the development of gastric cancer.
- **NIH R01 award (\$1.1 million) to Dr. Eduardo Maldonado** for research to create a new paradigm for cancer treatment by targeting mitochondria to revert the Warburg metabolism, which is a common feature for most types of cancer.
- **Doris Duke Foundation award (\$751,000) to Dr. Patrick M. Woster** to design and develop agents to treat sickle cell disease. These agents produce an effect by altering the expression of genes that make fetal hemoglobin to replace mutated sickle cell hemoglobin in patients.

RESEARCH

We have discovered a new class of compounds based on Vitamin K that protect mitochondrial and neuronal health. We have started a company to develop these compounds as therapies for epilepsy, Parkinson's disease and mitochondrial disease.

- **Sherine Chan, Ph.D.**

Associate Professor of Drug Discovery and Biomedical Sciences, co-founder of biotech startup Neuroene Therapeutics

Faculty in the Department of Drug Discovery and Biomedical Sciences (DDBS) are engaged in cutting-edge research in several disciplines including drug design and development, bioorganic and medicinal chemistry, pharmaceuticals and pharmacology.

DDBS faculty are internationally recognized scientists studying cell death, injury and regeneration, cancer chemoprevention and anti-cancer therapeutics, design of anti-infective agents, agents to treat metabolic disorders, and therapeutics targeting the epigenetic basis of disease. These research efforts have resulted in the creation of five start-up companies that are commercializing new therapeutics based on faculty research.

In 2016-17, DDBS faculty members were awarded nearly \$5 million in external funding and generated nine patents, 94 abstracts/invited presentations and 68 peer-reviewed manuscripts.

PATIENT CARE

The college's 27 full-time and more than 100 adjunct clinical faculty members represent a multitude of specialties from ambulatory care to critical care throughout the MUSC enterprise, providing expert patient care as well as learning experiences for students.

In addition to MUSC Pharmacy Services, the college has practice partnerships with Trident Family Medicine, Roper St. Francis Health Care and the Ralph H. Johnson VA Medical Center.



DIVERSITY

The College of Pharmacy embraces diversity and inclusion as a fundamental value. The MUSC pharmacy family has a strong tradition of leadership in diversity, dating back to the enrollment of one of the university's first African-American students in James Hodges. Creating a welcoming environment for people from all backgrounds and walks of life is one of the college's most important touchstones.

Some of the programs we've developed include:

- › **Establishing two endowed diversity scholarships in 2017, as well as awarding four annual scholarships in support of diversity and inclusion.**
- › **Starting a mentorship group to help provide additional guidance on career preparation and managing academic requirements, with 10 underrepresented minority MUSC pharmacy alumni as advisors.**
- › **Annually surveying students, faculty and staff to assess our success in creating a welcoming environment.**



COMMUNITY OUTREACH

The pharmacist has a traditional role as one of the most visible and available health care resources in his or her community. Giving our students real experience in leadership and outreach prepares them for this responsibility. The MUSC pharmacy family impacts the health of the communities we serve with a priority on healthy lifestyles, preventive care, and evidence-based care delivery. Integration of these principles strengthens our education, practice and research efforts.

Some of our community outreach activities include:

- › **Drug Take Back Day, health and wellness fairs, hygiene awareness program.**
- › **Certification in immunization and diabetes for all students during their P2 year.**
- › **Generation Rx – medication safety presentations to elementary and high school students.**
- › **Medication Therapy Management brown bag sessions.**
- › **Teddy Bear Tree Gift Tags to support Carolina Youth Development Center.**



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THE MEDICAL UNIVERSITY OF SOUTH CAROLINA

Founded in 1824 in Charleston, The Medical University of South Carolina is the oldest medical school in the South. Today, MUSC continues the tradition of excellence in education, research, and patient care. MUSC educates and trains more than 3,000 students and 700 residents in six colleges (Dental Medicine, Graduate Studies, Health Professions, Medicine, Nursing, and Pharmacy), and has nearly 14,000 employees, including approximately 1,500 faculty members.

As the largest non-federal employer in Charleston, the university and its affiliates have collective annual budgets in excess of \$2.4 billion, with an annual economic impact of more than \$3.8 billion and annual research funding in excess of \$250 million. MUSC operates a 700-bed medical center, which includes a nationally recognized children's hospital, the Ashley River Tower (cardiovascular, digestive disease, and surgical oncology), Hollings Cancer Center (a National Cancer Institute-designated center), Level I trauma center, Institute of Psychiatry, and the state's only transplant center. In 2018, for the fourth consecutive year, U.S. News & World Report named MUSC Health the number one hospital in South Carolina.

For more information on academic programs or clinical services, visit musc.edu.

For more information on hospital patient services, visit muschealth.org.



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