

never still.
never stopping.

Impact Report | 2022-2023



UNC

**ESHELMAN SCHOOL
OF PHARMACY**

Table of Contents

3	Message From Our Dean
4	Message From Our Chancellor
5	Our School
6	<i>BEYOND</i> Strategic Plan
8	Educational Programs
9	Pathways to Success
12	Pharm.D. Program
15	Ph.D. Program
17	M.S. Programs
19	Educational Stories
21	Practice Advancement
23	Research Enterprise
28	Honors and Recognitions
30	Accelerating Innovation
32	Serving Our State
34	Serving The World
36	Philanthropy

Message From Our Dean

As pharmacists and pharmaceutical scientists, we are committed to going **BEYOND** where we are today and leading the charge in pharmacy education, research and practice. In this impact report, you will meet the remarkable people behind the UNC Eshelman School of Pharmacy and how they are never still, never stopping, in their pursuit of excellence. Here are some notable highlights:

Our Learners

Our learners' ambitions and drive are inspiring, and it is a joy to work with them. This year we are featuring a story about Tom Diaz, a Pharm.D. candidate reaching for the stars and paving a career pathway in aerospace medicine through his work with NASA. You'll also read about Glory Dan-Dukor, a Ph.D. candidate and trailblazer in pharmaceutical sciences and entrepreneurship.

Our Faculty

Our faculty are leading the way in education, research and practice. You can read more about four of our faculty being honored this year during the American Association of Colleges of Pharmacy meeting: Adam Persky, Jeff Aubé, Jackie Zeeman, and Pete Koval. We also had a record-breaking \$75 million year of research funding! An accomplishment achieved thanks to the diligence and perseverance of our world-renowned faculty. In particular, we have highlighted our new Triangle CERSI, our READDI-AViDD Center for pandemic preparedness and research recognitions for Kim Brouwer and Kristy Ainslie.

Serving our State and the World

We are working to better pharmacy practice and pharmaceutical science to benefit all patients, not only in the Tar Heel State, but also around the world. We are serving the state through practice and regional initiatives that include our Rural Pharmacy Health Initiative. At the global level, we have expanded our activities back to pre-pandemic levels, making an impact in Ethiopia and through our PharmAlliance partnership.

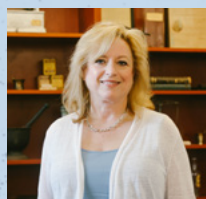
From Innovation to Impact

The Eshelman Institute for Innovation is a health care innovation engine that bridges the inspiration of academia and the spirit of entrepreneurship to turn groundbreaking ideas into real products and services. Read how this innovation engine has accelerated School initiatives in cancer, the opioid crisis and health care solutions for underrepresented patients.

Philanthropy

This year we closed out a historic campaign, raising more than \$211 million. In 2022-23, the Foundation provided more than \$3.3 million in funding to the UNC Eshelman School of Pharmacy. Read more about how these gifts have impacted our innovation, scholarships, professorships and research enterprise.

I hope you enjoy reading this review of a year full of amazing accomplishments! When everything we do begins and ends with a patient in mind, the possibilities are endless. I am grateful to all our staff, faculty, students, donors, alumni and partners for their energy, enthusiasm, engagement and belief that anything is possible when we work together.



All the best,

A handwritten signature in dark ink, appearing to read 'AKashuba'.

Angela DM Kashuba
Dean, UNC Eshelman School of Pharmacy

Message From Our Chancellor

From life-changing research to exceptional world-class teaching, to novel pharmacy practice models of care, the UNC Eshelman School of Pharmacy is preparing the next generation of leaders and innovators to solve the grand challenges of our time.

In addition to being the No. 1 school of pharmacy in the country, there's much to be proud of.

- The School ranks second among pharmacy schools in research funding.
- The students, faculty and staff uphold Carolina's dedication to service to the state and beyond, not only in research but also in education and practice as School faculty, staff and preceptors prepare future generations to serve.
- The Eshelman Institute for Innovation is translating research into application.
- As part of the Rapidly Emerging Antiviral and Drug Development Initiative (READDI), the School is on the forefront of discovering and developing drugs for clinical trial testing in anticipation of future viral pandemics.

The School exemplifies what it means to be a Tar Heel. It is a leader among its peers across campus and not only sets the bar but continues to raise it. As a University, we aim to enhance the quality of life for all people across North Carolina and beyond, something the UNC Eshelman School of Pharmacy accomplishes daily. As we look toward the future, I know the School will continue to push the boundaries as innovators, educators, practitioners and leaders in pharmacy and pharmaceutical sciences.



A handwritten signature in black ink that reads "Kevin M. Guskiewicz". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Kevin M. Guskiewicz
Chancellor, University of North Carolina at Chapel Hill



never still. never stopping.

There are still treatments to discover. Health care leaders to train. Lives to save.

That's why we're steadfast in our mission. We're here to put patients first as we prepare leaders and innovators to solve the world's most pressing health care challenges.

At the UNC Eshelman School of Pharmacy, advancing medicine for life is not just a mantra. It's why we are constantly innovating and collaborating with an eye toward the future for over 125 years.

#1

Pharmacy School
U.S. News and World Report

#2

Total Research
Funding

#7

Pharmacy & Pharmacology
QS World University Ranking

#11

Best in Pharmacy and
Pharmaceutical Sciences
Shanghai Global Ranking

BEYOND Strategic Plan

It was another successful year with our *BEYOND* strategic plan. As global leaders in pharmacy and pharmaceutical sciences, we know our work is never over. Below are a few highlights that demonstrate how we are pushing *BEYOND* limits and expectations.

PRIORITY 1: CREATE THE MOST ENGAGING CULTURE

To foster diversity, equity and inclusion, we created a mentorship program for our Pharm.D. and Ph.D. programs, held five educator development sessions on inclusive teaching and learning practices and increase applications of cultural intelligence within the Pharm.D. curriculum. To improve well-being, we implemented Friday afternoon meeting-free times and onboarded an embedded counselor. As part of engagement, we completed our second Culture Amp Survey, with an engagement score above benchmark at 72%, and 100% of managers developed at least one action plan to improve staff/faculty engagement.

PRIORITY 2: ACCELERATE INNOVATION AND TRANSFORMATIONAL CHANGE IN PHARMACY AND PHARMACEUTICAL SCIENCES

We achieved record-breaking research funding, and the Eshelman Institute of Innovation (EII) developed a robust pre-clinical therapeutic portfolio and developed a statewide digital health venture studio. On the education side, we finalized the launch of a Master in Professional Science (M.P.S) in Regulatory Science, an undergraduate Minor in Pharmaceutical Sciences and a certificate program entitled "Molecules to Market" in partnership with Deerfield. We also expanded our Early Assurance Program, which now includes seven partnerships. For advancing practice, we worked with the Western North Carolina Health Policy Initiative to identify legislative changes needed to advance

and sustain pharmacy services. We educated legislators and collaborated with medical societies and NCAP to amend the omnibus health care bill to expand the Clinical Pharmacist Practitioner collaborative practice program and reimbursement models for clinical services. We also partnered with the Alliance for Integrated Medication Management (AIMM) to create two Catalyst events to convene payers, health systems, providers and pharmacists to identify and expand sustainable business models for pharmacy services in North Carolina.

PRIORITY 3: IMPROVE OPERATING EFFICIENCY TO INVEST IN STRATEGIC AREAS

We completed the largest fundraising campaign of any U.S. pharmacy school and extended the EII sustainability runway by 10 years. Our new Signature Scholarship Program has a \$125,493,216 endowment that provides 8 full in-state scholarships and 19 half in-state scholarships, leading pharmacy schools in the nation.



A Commitment to Health and Well-Being

The mental health and well-being of our community is such a top priority that it's built into the School's **BEYOND** strategic plan. Underscoring that commitment to mental health and wellness, the School welcomed its inaugural embedded counselor this year.

Through this position, Ardith Burkes provides mental health and wellness resources to pharmacy students and one-on-one counseling. The embedded counselor program is operated through the University's Counseling and Psychological Services (CAPS). It's designed to provide support to students by placing CAPS

providers directly within a school, allowing them to focus on the needs of that community.

"It's important to me to create an accessible and non-judgmental space for students of all identities and backgrounds so that they can process the challenges of academics and life and learn skills to navigate them," said Burkes.

The program model allows Burkes to provide both day and evening appointments, in person and virtually, to accommodate the scheduling needs of all students within the School, including those on the Asheville campus.

Cultural Intelligence

We are always looking for ways to examine and reexamine curriculum and pedagogy to ensure that we are preparing pharmacists to meet the world's health care needs. In alignment with our vanguard **BEYOND** strategic plan and our WE CARE values, we have developed resources, identified gaps and pursued transformative opportunities.

This year, the UNC Eshelman School of Pharmacy partnered with the Ackland Art Museum to offer Art & Equity which is designed to foster in-depth reflections about equity in health care among students, faculty and staff. All incoming Pharm.D. students attended the Art & Equity experience and separate sessions are being held for faculty and staff.

Through art, we have facilitated deeper self-awareness, enhanced student learning and created an environment where divergent ideas can co-exist. This effort has generated conversations pertaining to individuals that have been deeply affected by disparate health care and promoted the cultural intelligence we aspire our trainees to have as they enter the workforce. As noted by one student, "Something I can draw from this experience is ensuring that I see my patients not as numbers - but as people with their own lives, cultures and perspectives."

Our aspirations are to leverage diversity, equity and inclusion to build unparalleled training opportunities that will serve as a model for pharmacy and health science schools nationwide.

2023 Impact on DEI

11

DEI
Publications

5

DEI Related
Grants

25%

UR Pharm.D. Students
Admitted in 2023
21% Total Enrolled

24%

UR M.S. Students
Admitted in 2023
17% Total Enrolled

36%

UR Ph.D. Students
Admitted in 2023
26% Total Enrolled

Educational Programs



Pharm.D. Programs

- Pharm.D. Degree
- Pharm.D./MBA Degree
- Pharm.D./MPH Degree

Ph.D. in Pharmaceutical Sciences

- Drug Discovery: Chemical Biology and Medicinal Chemistry
- Drug Delivery: Pharmacoengineering and Molecular Pharmaceutics
- Drug Optimization: Pharmacotherapy and Experimental Therapeutics
- Patient Outcomes: Pharmaceutical Outcomes and Policy

M.S. in Health-Systems Pharmacy Administration

- Residential Program
- Online Program

M.P.S. in Regulatory Science

- Online Program

Residency Programs

- Community-based Pharmacy

Postdoctoral Fellowships

- NIH-sponsored
- Industry-sponsored
- Global Engagement
- Center for Innovative Pharmacy Education and Research

Certificates (Credit)

- Rural Pharmacy Health Certificate
- Ambulatory Care Certificate

Certificates (Non-Credit)

- Molecules to Market: The Business of Translational Science (M2M)
- Teaching and Learning Certificate (TLC)
- Health-System Pharmacy Administration and Leadership Training Program (HSPAL)

2

Campuses

122

Faculty

202

Staff

926

Learners

Pathways to Success

The UNC Eshelman School of Pharmacy is committed to its mission of preparing leaders and innovators to solve the world's most pressing health care challenges. With the goal to improve health care for those here at home and around the world, we have developed pathways to ensure student success. From our efforts to recruit exceptionally talented and diverse students who will become the next generation of pharmacy leaders with our Early Assurance Programs to providing opportunities to our graduates as they start and continue their careers, we pride

ourselves in helping forge these pathways for students and alumni.

Not only are there opportunities housed within the School, but we have also established strong partnerships with health care and research institutions and an alumni network that spans the globe. Our reputation speaks for itself, as our rigorous and innovative curriculum prepares our students to be competitive and highly regarded in their pursuits.

New Minor in Pharmaceutical Sciences

Carolina undergraduates can now study pharmaceutical sciences at the UNC Eshelman School of Pharmacy. Our first classes will start January 2024.

"The School's faculty are thrilled with the addition of the minor to our programs at the UNC Eshelman School of Pharmacy. It is an excellent example of the School's and the University's shared commitment to academic excellence and preparing our students for their future roles as leaders, creative problem-solvers, lifelong learners and engaged citizens," said Scott Singleton, program director of the

pharmaceutical sciences minor and associate professor in the Division of Chemical Biology and Medicinal Chemistry.

Students will learn the foundations of drug discovery, including pharmaceutical discovery, optimization, delivery and clinical trial application. The minor is designed to acquaint undergraduate students with core areas of pharmaceutical science in preparation for a career in the pharmaceutical or biotechnology industries, or an advanced degree in the health sciences or health care professions.

7

Early Assurance Programs in North Carolina

1

NIH-sponsored T32 Predoctoral Fellowship Program

3

NIH-sponsored T32 Postdoctoral Fellowship Programs

5

Industry-sponsored Predoctoral Fellowships

38

Industry-sponsored Postdoctoral Fellowships

10

Academic Postdoctoral Fellowships

15

Residencies



Pharm.D. Early Assurance Programs

The School's Early Assurance Program (EAP) is growing. This year, the EAP expanded to include East Carolina University. This partnership means current and incoming ECU students interested in pursuing a Pharm.D. may be eligible for assured admission to the UNC Eshelman School of Pharmacy.

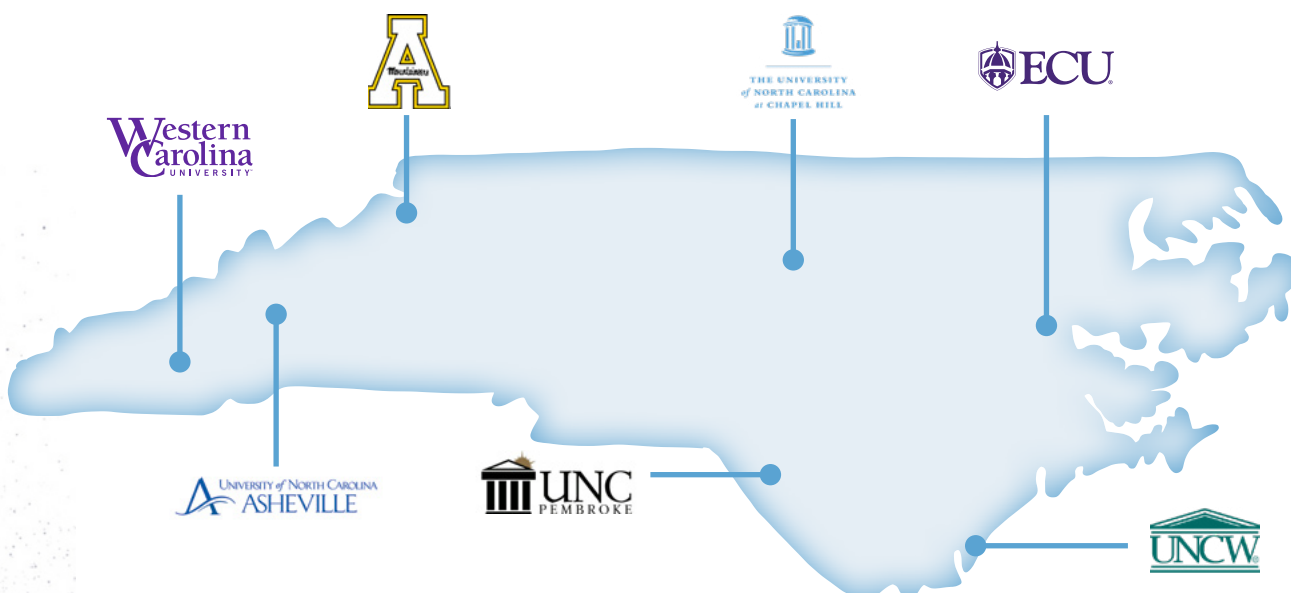
The program underscores a shared commitment to training the next generation of health care leaders.

"Our mission is to prepare leaders and innovators to solve the world's most pressing health care challenges," said UNC Eshelman School of Pharmacy Dean Angela Kashuba. "This partnership takes us one step closer to doing just that by creating pathways to broader academic

access, opportunities and success for a new group of pharmacy students and future health care leaders."

The program offers early assurance of admission into the UNC Eshelman Doctor of Pharmacy Program after a minimum of two years of undergraduate study at ECU for qualifying and selected students who maintain certain academic standards.

The UNC Eshelman School of Pharmacy also has partnerships with UNC-Chapel Hill, UNC Pembroke, Western Carolina University, Appalachian State University, UNC-Asheville and UNC-Wilmington.



From Dream to Reality: One Student's Journey

Madison Wood, Pharm.D. candidate class of 2027, is a first-generation college student pursuing her dream career with help from the UNC Eshelman School of Pharmacy's Early Assurance Program (EAP) and the Signature Scholarship Program.

Madison's pathway to success started with the EAP program. She first learned about the program while in her third year at Appalachian State University. She was then accepted to the School in April 2022 for a fall 2023 start. She describes it as a relief—knowing she wouldn't have to apply anywhere else, and a confidence booster that she was accepted into the No.1 pharmacy school in the nation. However, finances were still a concern.

As a first-generation college student from Southport, North Carolina, she worked on the

weekends. Although she credits that experience for her strong work ethic, she wasn't able to focus on her academics like she wanted to.

Madison said that a huge advantage of the EAP is access to a current student liaison at the School and having more time to apply for scholarships. Because of this, she learned about the Signature Scholarship Program. This new program includes a cohort of 26 students who are recognized for their grit, growth mindset and moral courage.

"I was worried that I would have to work during pharmacy school just like I did for undergrad to make ends meet. However, the scholarship covers enough so I don't need to do that. I've really been able to just focus on school," she said. "School is my full-time job and because of the scholarship, I'm able to give 110%."



Pharm.D. Program

Plan, Do, Study, Act

a Message from Adam Persky, Associate Dean of Professional Education

To advance our curriculum, we embrace the Plan, Do, Study, Act principle to achieve better efficiency, quality, and overall performance. This commitment to continuous improvement is at the core of our education philosophy.

One significant step in advancing our curriculum was the 2023 Education Symposium, which brought together faculty, staff, students, preceptors and partners to identify key goals for the current academic year. Through this collaborative event, we established priorities that align with our **BEYOND** strategic plan, which now places a strong emphasis on improving the student experience from admission to career placement. This emphasis has been translated into several strategies:

- **Pharm.D. Recruitment Plan:** We have outlined priorities, strategies and metrics to guide our recruitment efforts, ensuring that we attract the best candidates, especially from North Carolina.
- **Student Differentiation Experiences:** We are establishing guidance on opportunities for students to individualize their educational experiences that align with the strengths of the School and market trends.
- **Enhanced Student Support:** We are refining our efforts to improve the support system during the first year to ensure students' academic and social-emotional success within the curriculum.
- **Program Outcomes:** We are in the final stages of defining program outcomes and pioneering the assessment of relevant workplace activities to continue our leadership in pharmacy education.
- **Optimizing Courses:** We are evaluating and proposing improvements to a variety of courses to enhance the sustainability of our curriculum and improving the student experience.
- **Career Support:** We are developing a comprehensive, four-year career support plan to connect students with valuable career networks and resources.

These strategies and initiatives represent a sample of our dedication to delivering an exceptional educational experience, and they demonstrate our commitment to the principles of continuous improvement, and the goals set out in our **BEYOND** strategic plan. Through these efforts, we aim to provide our students with the best possible education and support as they progress from admission to career placement.



Research and Scholarship in Pharmacy

Research and Scholarship in Pharmacy (RASP) is a longitudinal, selective pathway within the Doctor of Pharmacy elective curriculum that is built around a mentored, in-depth, scholarly project. The goal of RASP is to expose students to research and scholarship by integrating them in the world-class research programs of School faculty so that they are better prepared to serve patients, create new knowledge, and lead in the arenas where health-care decisions are made.

In the past five years, out of 123 RASP students, 80% presented an abstract at a national meeting, 65% submitted a manuscript to a peer-reviewed journal and 50% had a manuscript accepted for publication in a peer-reviewed journal. Students indicate the pathway helped them gain a deeper understanding of research and scholarship, develop project management skills and would highly recommend RASP to other students.

"One of my greatest experiences and proudest achievements during my time at ESOP was completing my RASP project. I had the opportunity to collaborate with leading practitioners in their field, Dr. Suzie Harris and Dr. Jackie Zeeman, on our project "Supporting All Students: Identifying Factors that Influence the Well-Being in Ph.D. Students at Pharmacy Programs." This helped to develop my passion for research and is a great example of how our School is committed to seeking feedback to ensure all community members are growing both professionally and personally."

Emili Anderson, Pharm.D. Candidate, Class of 2024



#2

Residency Match Rate Among
Schools with 50+ Matching

155

Graduated

567

Professional Students

89%

Received 1st or 2nd choice
Residency or Fellowship position

97%

Position Acceptance Rate

94%

NAPLEX First-Time Pass Rate

We are preparing the next generation of pharmacists to be patient care leaders and innovators in a wide range of practice settings.

Leader: Tazche Turner Selected for Inaugural AACP Aspiring Academics Program

Tazche Turner, Pharm.D. candidate, Class of 2025, was selected for The American Association of Colleges of Pharmacy's (AACP) Aspiring Academics Program this year. Of 200 applicants, Turner is only one of 20 students selected from across the country. The program is designed to facilitate a deeper understanding of career paths in academic pharmacy. Over the next year, the inaugural cohort will participate in monthly modules, mentorship, networking, a group project and the opportunity for a poster presentation at the 2024 AACP's annual meeting in Boston.

Turner always desired to pursue teaching and through her family's non-profit, her interest expanded to science and business. The non-profit ran science-based, educational parties in homeless shelters and Turner would dress as a scientist. "There was a little girl that looked at me and said she wanted to be like me—she wanted to be a scientist. That's when I realized the importance of representation in higher education," she shared. This fueled her desire to go into academia and she ultimately decided to pursue pharmacy because it combined all her interests.



Innovator: Pharmacy Student Paving his Own Path in Aerospace Medicine

Tom Diaz, Pharm.D. candidate, Class of 2024 president, is paving his own path in aerospace medicine at NASA. He is the first Pharm.D. student ever to attend the NASA/Johnson Space Center Aerospace Medicine Clerkship program. As a pharmacy student, his interest is extremely niche. The program is geared toward medical students and residents, so Diaz pursued the opportunity by reaching out to the program's coordinator directly for permission to apply.

During the clerkship, Diaz was able to attend briefings, lectures and tours led by NASA scientists and complete a research project. "This clerkship has essentially been a month-long structured course about aerospace medicine, so I'm learning from front to end about the field from experts. It's been a hands-on experience that I wouldn't have gotten anywhere else," said Diaz.

His research project focused on pharmacogenomics, or how one's genetics can affect the safety and efficacy of medication use for ground support and spaceflight. In May 2023, Diaz received the Aerospace Medicine Student and Resident Organization Scientific Paper Award for his abstract submitted to the Aerospace Medical Association (AsMA) Scientific Meeting. Diaz also used this experience to solidify his future. He will pursue a two-year residency in clinical pharmacy, focusing on critical care while staying active in aerospace medicine organizations and research in hopes of one day being back at NASA.

Diaz is a member of the AsMA and co-founder of Aerospace Medicine at Carolina.



Ph.D. & Postdoctoral Programs

Our Ph.D. and postdoctoral programs prepare tomorrow's scientists for basic, translational, or health outcomes research careers in industry, government or academia.

Drug Discovery

Chemical Biology and Medicinal Chemistry

Drug Optimization

Pharmacotherapy and
Experimental Therapeutics

Drug Delivery

Pharmacoengineering and
Molecular Pharmaceutics

Patient Outcomes

Pharmaceutical Outcomes and Policy



Ph.D. Candidate Awarded Fellowship Grant for Cancer Research

The National Cancer Institute (NCI) has awarded Division of Pharmacoengineering and Molecular Pharmaceutics Ph.D. candidate Jacob Ramsey a fellowship grant for his project "Drug Retention and Tumor Distribution of Polymeric Micelles for Cancer Therapy." Ramsey, the Lead PI on the project, is aided by his mentor, Professor Alexander "Sasha" Kabanov, Ph.D.

"The goal of this project is to understand how drug encapsulation in polymeric micelle nanoparticles improves the delivery of drugs to tumors," said Ramsey. "Here we seek to understand what principles govern drug retention in polymeric micelles, which is essential to tumor delivery and will help ensure the efficient development and translation of these promising drug delivery systems in the future."

The grant from the NCI awards Ramsey two years of Ph.D. support and four years of post-doctoral support to transition into an independent investigator.

102

Ph.D. Students

151

Postdoctoral Researchers

23

Graduated

Beyond Boundaries: Pharmaceutical Sciences and Entrepreneurship

Another trailblazer within the Ph.D. program is Glory Dan-Dukor. She is studying pharmaceutical sciences in the Division of Chemical Biology and Medicinal Chemistry. Glory was named to the National Science Foundation Graduate Research Fellowship program in 2023. She has a strong interest in business, leadership and drug discovery. As a researcher, she studies protein macromolecular complexes involved in gamma-globin gene silencing. In addition to research, Glory is a co-partner for the Carolina

Graduate Consulting Group. She is also a Venture Catalyst Fellow at Innovate Carolina. The Venture Catalyst Program allows founders of UNC-affiliated startups and innovations to converge, collaborate and grow young companies with the support of talented graduate students and postdocs. Additionally, she is the co-managing director for the Triangle's chapter of Nucleate, a bioentrepreneur community with chapters around the world.



"Being a Ph.D. student at the UNC Eshelman School of Pharmacy has exposed me to many academic and entrepreneurial opportunities that I am very appreciative of. I have had the opportunity to work with faculty at the School to advance their scientific discoveries. I hope to continue to make the work we do accessible to the public."

Fellowship Programs

Industry Postdoctoral Fellowships

- Clinical Research and Drug Development
- Medical and Regulatory Affairs
- Global Drug Safety/Pharmacovigilance
- Pharmacokinetics/Pharmacodynamics/Pharmacometrics
- Pharmaceutical Outcomes/Market Access/Health Informatics

NIH Postdoctoral Fellowships

- UNC-Duke Clinical Pharmacology T32 Postdoctoral Training Program
- Duke-UNC Pediatric Pharmacology T32 Postdoctoral Training Program
- Carolina Cancer Nanotechnology T32 Postdoctoral Training Program

NIH Predoctoral Fellowship

- UNC Chemistry-Biology Interface T32 Predoctoral Training Program



M.S. Programs



School Sets New Standard With Online Master's Program

The School launched the Master of Professional Science (M.P.S.) in Regulatory Science, a one-of-a-kind program designed to impart on students a dynamic regulatory science skill set that is in hot demand by employers in the health care industry. The program director, Patricia Termini, M.S., RAC, joined the School as an Associate Professor in the Division of Pharmacotherapy and Experiential Therapeutics in June 2023. She has more than 25 years of experience in the pharmaceutical, biotechnology, and consulting industries focused on regulatory affairs strategy, execution and project management.

As the top school of pharmacy in the U.S., the UNC Eshelman School of Pharmacy understands the critical need for highly trained regulatory

science professionals who bring value to product safety, efficacy and quality to confront the new global health care challenges that appear virtually every day.

Graduates of the program will be prepared to become leaders in public health, global compliance standards and consumer safety, developing the critical skills necessary to drive innovation in pharmaceutical products from concept to market and beyond. These future leaders will work at the forefront of health care innovation.

No other Regulatory Science program offers a Master of Professional Science and we are proud to be recognized by the National Professional Science Master's Association (NPSMA).

2

Programs

13

Partners

21

Graduated

52

Students

100%

Students Placed

New Leadership Certificate Training Program

The School is now offering a Health-System Pharmacy Administration and Leadership Training Program (HSPAL) geared toward those currently working in the pharmacy field.

This new training program is for pharmacists and pharmacy technicians to gain important knowledge and skills in health-system pharmacy administration to enhance their current role. Taking part in this training will also prepare participants for a future career move or to take a step towards a Master of Science degree.

“Our programs are intended to serve a wide range of students, including preparing new graduates, enhancing working professionals in their current roles, or advancing individuals within their chosen areas. We strive to ensure our programs use evidence-based teaching practices and curricular design, have high touch with our instructors, and provide networking opportunities for all students,” said Kathryn Morbitzer, Pharm.D. '17, M.S., assistant director of the M.S. concentrating in Health-System Pharmacy Administration program, associate professor in the Division of Practice Advancement and Clinical Education (PACE) and associate director of the School's Center for Innovative Pharmacy Education and Research.

This flexible, non-credit certificate program is offered online with both synchronous and asynchronous learning modules.

“My name is Kim Asmus. I am currently the director of Pharmacy Services at NYU Langone Hospital – Long Island. After assuming the role of assistant director in 2020 and rising to director in early 2021, I chose to enroll in the UNC M.S. working professionals program, in order to become an effective and thoughtful leader in a field that I love. Almost three quarters into the program, I can say I am growing into a confident and patient leader. The program has allowed me to identify my strengths and apply new skills to my practice. The team-taught approach enables me to meet pharmacy professionals from many different walks and has been inspiring. Colleagues have asked about my evolution over the first year and a half as director, highlighting my confidence, communication and team building skills. I can only credit the incredible guidance from the diverse group of educators of this program. I am grateful for the opportunity to participate in this program and for all the talented individuals I have had the opportunity to learn from and with.”



Educational Stories

Leading the Way in Education, Research and Clinical Practice

Our mission is to prepare leaders and innovators to solve the world's most pressing health care challenges. Leading those efforts are our dedicated faculty. They work to advance this mission every day through their commitment and dedication to education, research, clinical practice and innovation.

It is because of that work that four of our faculty members have been recognized by the American Association of Colleges of Pharmacy (AACP).

- Associate Dean Adam Persky, Ph.D., has received the **AACP Robert K. Chalmers Distinguished Pharmacy Educator Award**, which recognizes excellence in pharmacy education. Persky has spent many years implementing new evidence-based teaching strategies to improve student success. He also received the **Rufus A. Lyman Award**, which recognizes the best paper published in the American Journal of Pharmaceutical Education during the previous year.
- Professor Jeff Aubé, Ph.D., received the **AACP Volwiler Research Achievement Award**. This award recognizes a leading researcher and their contributions to an area of the pharmaceutical and clinical sciences, pharmacy practice and the social and administrative sciences. Aubé's research includes developing new treatments for tuberculosis, discovering new chemical matter to treat various types of cancer and studying new non-addicting opioids.
- Associate Professor Jackie Zeeman, Pharm.D., received the **2023 AACP Emerging Teaching Scholar Award**. This award recognizes excellence in academic pharmacy faculty engaged in the scholarship of teaching and learning. Zeeman's research focuses on the assessment of student learning in informal learning environments, including interprofessional education and co-curricular activities and strategies to use assessment data to inform curricular initiatives.
- Associate Professor Pete Koval, Pharm.D., BCPS, CPP, was chosen for the **2023 AACP Distinguished Preceptor Recognition Program**, which recognizes individuals for their sustained commitment to excellence in experiential education and professional practice. Koval is the Director of Pharmacy Education with the Piedmont Area Health Education Center in Greensboro and has precepted more than 700 months of pharmacy students/residents.





Optimizing Care and Education

The Center for Innovative Pharmacy Education & Research (CIPhER) had a global presence this year by offering programs to national and international faculty on topics like curriculum design, precepting, inclusion and well-being. Notably, CIPhER continued to successfully host its world-renowned Summer Institute, a four-day synchronous program focused on teaching and learning best practices; the Scholarship of Teaching & Learning Bootcamp, a two-day synchronous program focused on research in teaching and learning; and the Teaching and Learning Certificate, an asynchronous program focused on teaching and learning basics.

A Perfect Match: A significant milestone this year was the transition of the School's Office of Lifelong Learning (OLL) into CIPhER. In 2022-2023, OLL supported more than 300 accredited professional education activities with the aim of equipping the pharmacy workforce with the knowledge and skills needed to address society's most pressing health care challenges. Together, CIPhER and OLL are poised to lead the way in optimizing care and education within and beyond the UNC Eshelman School of Pharmacy.

Faculty Member Honored with University Distinguished Teaching Award

Jo Ellen Rodgers, Pharm.D., was named one of 25 UNC-Chapel Hill faculty members to receive a 2023 University Teaching Award for Distinguished Teaching for Post-Baccalaureate Instruction. The annual awards, administered by the UNC Center for Faculty Excellence, acknowledge the commitment to outstanding teaching and mentoring of undergraduate, graduate and post-baccalaureate students.

"Words can't express how appreciative I am of this recognition. I am truly overcome by emotion," said Rodgers. "I am grateful for the opportunity to be part of this University and to work alongside such brilliant colleagues and trainees. I learn something new every day from those with whom I am so fortunate to interact, be it faculty, staff, students, residents, fellows and patients!"





Practice Advancement

We are working across the continuum of care to optimize medication use for patients, improve patient outcomes and transform the role of Pharmacists in providing patient-centered team-based care.

Transforming Community-Based Pharmacy Practice

The UNC Eshelman School of Pharmacy is leading the way when it comes to transforming community-based pharmacy practice. In July, the School held a Community-Based Pharmacy Practice Roundtable, supported in part by Walgreens. CEO Deans of the Pharmacy Deans Research Group (PDRG), representing the top R1 pharmacy schools in the U.S., community-based practice leads and select Academia Community Transformation Pharmacy Collaborative Champions gathered to explore challenges and opportunities within community-based pharmacy.

The event, held in Aurora, Colorado, included roundtable discussions to identify challenges and opportunities for patient care in the community, to create solutions for the biggest industry challenges and to select key initiatives to transform community-based pharmacy practice to improve patient outcomes.

Next steps include partnerships to incorporate patient care services into community-based pharmacy workflows, convening multidisciplinary meetings with pharmacists, payers and providers to identify services to improve community health and collaboration on a national campaign around the role pharmacists play in the development

and optimization of medication therapy for patients. The School envisions this as the first of many discussions and continued collaboration to elevate community pharmacy practice, improve patient care and secure the profession's future relevance in health care.

School Hosts Statewide Contraception Summit

The School is also leading the conversation when it comes to access to contraceptives. We hosted a Contraception Summit in August. This event focused on supporting the implementation of pharmacist-provided hormonal contraception across the state. It was a platform for networking, knowledge-sharing and exploring new strategies to enhance pharmacist-initiated contraception services.

Attendees included representatives from the North Carolina Department of Health and Human Services, Planned Parenthood, the North Carolina Association of Pharmacists, North Carolina schools and colleges of pharmacy, The American Civil Liberties Union of North Carolina, as well as researchers, physicians, pharmacists, payers and students.

Driving Change: Legislative Education for Advancing Pharmacy Services

Working to identify legislative changes needed to advance and sustain pharmacy services is a priority for the UNC Eshelman School of Pharmacy and is built into our **BEYOND** strategic plan. Faculty member Jon Easter has been spearheading the School's efforts to drive positive change in health care transformation and policy development in North Carolina.

For years, the profession of pharmacy has been looking in from the outside of the health policy and legislative process, whether it's at a national level with the lack of traction on provider status, or at the state level with antiquated collaborative practice privileges. The profession has struggled to make the case to policymakers that pharmacists should be reimbursed for high value services when up until now, pharmacists have provided those services for free as a part of the dispensing process. The pharmacy profession is now at a crossroads, and engaging policymakers and payers is essential to position us for future success and to achieve our potential to improve patient outcomes.

With this call to action, the School's leadership engaged with their strong partners in Western North Carolina at the Mountain Area Health Education Center (MAHEC). In late 2022, MAHEC created a Health Policy Initiative (HPI) to connect policymakers from Western North Carolina and health care leaders to talk about critical needs and opportunities.

Though HPI, Easter began working with Senator Ralph Hise, chairman of the appropriations committee at the North Carolina General Assembly, and others to expand the Clinical Pharmacist Practitioner (CPP) collaborative practice program and reimburse pharmacists for clinical services. With endorsements from health care partners across the state, Senator Hise and Senator Joyce Krawiec filed SB597 -

Pharmacists/Collaborative Practice, in April 2023. Easter and the School continue to engage with state policymakers to advocate for the accessible, high-quality and cost-effective health care that pharmacists provide to our patients and communities.

Advancing Practice Through Collaborations

In March 2023, the UNC Eshelman School of Pharmacy convened pharmacists, providers, health systems and payer groups in Chapel Hill, North Carolina to continue discussing priorities, needs, and gaps in population health management in our state. This meeting was a follow-up to the inaugural Medication Optimization Catalyst Event held in November 2022.

The vision of the catalyst event series has been to establish North Carolina as a leading example of state-wide collaboration to expand the reach and adoption of patient care services that optimize medication use and improve health for patients throughout the state. We sought to build and strengthen community relationships, nurture collaborations and generate ideas to collectively pursue new population health opportunities. Identifying sustainable models of care to target patients in need, improve patient outcomes and promote ongoing collaboration between stakeholders was the goal of the day.

"...the Catalyst Event served as a dialogue starter to understand each entity's (pharmacy, provider, payer) unique value and pain points of the others. How we develop trust, deliver data and pay for effort/services that brings enough ROI has yet to be discovered."

Greg Vassie, IndyCare

Research Enterprise

Our researchers and scientists are working on the world's most challenging health issues ranging from cancer and cardiovascular disease to neurological disorders and medication management.



Record-Setting Year in Research Funding

Our faculty and staff never rest when it comes to helping patients live longer, healthier lives. This is evident in the passion and perseverance they demonstrate making groundbreaking advancements in pharmacy and pharmaceutical sciences.

Thanks to that passion and perseverance, the School received more than \$75 million in research grants during the federal fiscal year, October 2021-September 2022 (FY22). That nearly doubles the \$39 million research total from FY2019.

"This ranking reflects our faculty, staff and students' dedication and commitment to advancing pharmacy and pharmaceutical sciences.

I'm proud to work with this team of innovative scientists, in an environment that sparks and supports high impact scholarship," said Angela Kashuba, Pharm.D., Dean of the UNC Eshelman School of Pharmacy.

There were 84 funded investigators who received \$75,082,027 in research grants from all funding sources. Of those grants, nearly \$60 million was secured from the National Institutes of Health (NIH) by 59 investigators.

Based on this funding level, the UNC Eshelman School of Pharmacy ranks No. 2 among the nation's pharmacy schools in total research funding, according to the American Association of Colleges of Pharmacy.

\$75M

in Total Federally
Funded Grants

#2

Total Research
Funding

#2

Total NIH
Research Funding

School Awarded Triangle CERSI

The U.S. Food and Drug Administration (FDA) will award up to \$50 million over five years to the UNC Eshelman School of Pharmacy to establish the Research Triangle Center of Excellence in Regulatory Science and Innovation (Triangle CERSI).

The Triangle CERSI, led by Professor Paul Watkins, in the Division of Pharmacotherapy and Experimental Therapeutics, is the newest of only five CERSIs across the country. It is a partnership with Duke University and includes collaborations with North Carolina State University and North Carolina Central University, as well as the UNC Schools of Medicine, Public Health and Data Science and Society.

The Triangle CERSI brings together world-class teams of scientists from these leading academic institutions with FDA scientists, to generate new approaches to drug discovery, development, delivery and health care. Triangle CERSI will serve as an accelerator to meet the FDA's evolving need to access the most cutting-edge scientific research and will support many joint research projects to better inform regulatory decisions and overall public health around the world.

Some of the 38 proposed research projects include novel approaches in statistical methodologies, machine learning and artificial intelligence, imaging, clinical trial simulation, pediatric clinical pharmacology, patient reported outcomes, population science and safety assessments.

Mental Health Research Impact

Several of our faculty are advancing access to mental health resources for both the profession and patients.

In September, Associate Professor Delesha Carpenter, Ph.D., M.S.P.H, participated in the International Association for Suicide Prevention (IASP) 32nd World Congress in Piran, Slovenia. Carpenter was part of the first pharmacy group to present a symposium at the IASP. The symposium, entitled 'Dispensing support' – how pharmacists and their teams contribute to suicide prevention efforts, included a talk by Carpenter on her Pharm-SAVES program, which teaches pharmacists how to: recognize suicide warning signs, ask about suicide and help patients get the support they need—a training that is effective with student pharmacists as well.

Associate Professor Kathleen Thomas, Ph.D., M.P.H., is a behavioral economist and mental health services researcher. Her work focuses on patient advocacy interventions, health insurance policy and disparities in access to care. Through these three focus areas, she aims to improve

access to, and quality of, mental health services. Her work has led to state and federal policy change and intervention uptake to accomplish those goals.

Suzanne Harris, Pharm.D., director of well-being and resilience and associate professor in the Division of Practice Advancement and Clinical Education (PACE), has research interests in stigma and mental health, and their relation to overall well-being in the pharmacy profession. In 2023, Harris, along with Heidi Anksorus, Pharm.D., assistant professor in PACE, published a paper on mental health entitled, Assessing the mental health, physical health, and well-being of doctor of pharmacy students. The study revealed that pharmacy students are at risk for lack of sleep and exercise, depression or anxiety, decreased well-being and burnout. These findings will enhance awareness about the well-being of health professional students and inform pharmacy programs about the risk of burnout and mental health disorders.



Kim Brouwer Receives the ACCP's Distinguished Investigator Award

Kim Brouwer, Pharm.D., Ph.D., was the recipient of the 2022 American College of Clinical Pharmacology's (ACCP) Distinguished Investigator Award. This annual award recognizes superior scientific expertise and accomplishments by a senior investigator, usually involving a distinct area of research in basic or clinical pharmacology, for which the individual is internationally known.

"It is a tremendous honor to be recognized by my clinical pharmacology colleagues as the 2022 ACCP Distinguished Investigator," said Brouwer. "This award is particularly meaningful because many members of the ACCP have been such an inspiration to me – true giants in the field, as educators and clinician scientists! I am truly grateful for this distinction, and I look forward to continuing to advance the science of drug transporters, and to integrate and translate that knowledge to optimize drug therapy."



Kristy Ainslie Receives the 2023 Sato Memorial International Award

Kristy Ainslie, Ph.D., was named the 2023 Sato Memorial International Award recipient at the 143rd Annual Meeting of the Pharmaceutical Society of Japan. The Sato Memorial Fund was created to encourage innovation in pharmaceutical science research through the exchange of scientists between Japan and the United States. The award is presented to someone who has made significant contributions to the fields of pharmacology, therapeutics and pharmaceutical sciences in the United States.

"It's really an incredible honor to receive such a notable award as the Sato Memorial International Award and I thank the Pharmaceutical Society of Japan for recognizing me in that way," said Ainslie. "It is humbling to be included with the past recipients and to have my research highlighted among their achievements in pharmaceutical sciences."

Patents

Synthetically Functionalized Living Cells for Targeted Drug Delivery

Elena Batrakova, Matthew Haney, Natalya Klyachko, Yuling Zhao

Biological Agent-Exosome Compositions and Uses Thereof

Elena Batrakova, Matthew Haney, Alexander Kabanov, Myung Kim, Marina Sokolsky, Dongfen Yuan

Compounds and Compositions for Inhibition and Elimination of Zika Infection and Uses for Same

Qisheng Zhang, Shuiping Chen, Lei Tan, Ting Zhou

Polyelectrolyte Complexes for Delivery of Agents to the CNS

Alexander Kabanov, Yuhang Jiang, Xiang Yi

Optimized Human Clotting Factor IX Gene Expression Cassettes and Their Use

Xiao Xiao, Juan Li

Optimized Mini-Dystrophin Genes and Expression Cassettes and Their Use

Xiao Xiao, Juan Li, Maritza McIntyre, Scott McPhee, Chunping Qiao, Richard Samulski

Cell Protective Methods And Compositions

Jian Liu, Jine Li, Rafal Pawlinski, Erica Sparkenbaugh, Guowei Su

Selective D3 Dopamine Receptor Agonists and Methods of Their Use

Kevin Frankowski, Jeff Aube, Marc Ferrer, R. Benjamin Free, Xin Hu, Amy Moritz, David Sibley, Noel Southall, Joseph Steiner, Warren Weiner

Top New Grants

Supporting Biomedical Discovery with the ROBOKOP Graph Knowledgebase

Alexander Tropsha - \$3,966,004

Mechanistic evaluation of mast cell agonists combined with TLR, NOD and STING agonists

Kristy Ainslie - \$3,120,035

Engineered "muco-trapping" antibodies for inhaled therapy of parainfluenza and human metapneumovirus infections

Samuel Lai - \$3,076,249

Health Outcomes of Discontinuing Aspirin in Older Adults with Alzheimer's Disease and Related Dementias

Carolyn Thorpe - \$2,529,699

Identification and characterization of chemical probes for interrogation of the NEK family of kinases in cancer

David Drewry - \$2,517,038

Creating a novel place-based measure to explain racial disparities in naloxone access to reduce opioid overdose deaths

Delesha Carpenter - \$2,408,581

Creating a novel place-based measure to explain racial disparities in naloxone access to reduce opioid overdose deaths

Delesha Carpenter - \$2,408,581

Rural Pharmacy Health Initiative

Betsy Sleath - \$2,390,718

Illumination of chromatin regulation via chemical controlled proximity

Nate Hathaway - \$2,131,265

Developing IN-007 as an Inhaled Treatment Against Pathogens Utilizing Human ACE2 for Viral Attachment and Entry

Samuel Lai - \$1,999,667

Engineering a cross-linked cellular network for cardiac repair

Juliane Nguyen - \$1,921,959

Addressing COVID 19 Vaccine Hesitancy in Rural Community Pharmacies Reducing Disparities Through an Implementation Science Approach

Delesha Carpenter - \$1,878,016

A novel therapeutic strategy to reduce TDP-43 expression in amyotrophic lateral sclerosis (ALS)

Alison Axtman - \$1,500,000



Faculty Honors and Recognitions

Inaugural BBA General Subjects Rising Star Award

Alison Axtman, Ph.D.

UNC Medical Center's 2023 Fred M. Eckel Pharmacy Leadership Award

Bob Dupuis, Pharm. D.

Who's Who among Pharmacology Professionals

Daniel Crona, Pharm. D., Ph.D., CPP

2023 ASCPT Leon I. Goldberg Early Investigator Award

Danny Gonzalez, Pharm.D., Ph.D.

Master of Critical Care Medicine by the Society of Critical Care Medicine

Society of Critical Care Medicine Bronze Snapshot Award

2022 ACCP Best Overall Research Abstract

Denise Rhoney, Pharm.D.

Vice Chair for the Geriatric Pharmacy Specialty Council for the Board of Pharmacy Specialties

Dennis Williams, Pharm.D.

Annual Excellence in Academia Award for Simulation Plus

Gauri Rao, Ph.D.

Treasurer for the American Academy of Clinical Toxicology

Greene Shepherd, Pharm.D.

President-Elect for ACCP Cardiology Practice and Research Networks (PRN)

Ian Hollis, Pharm.D.

2022 ACCP Cardiology PRN Lifetime Achievement Award

Jo Ellen Rodgers, Pharm.D.

Keynote Address for the EV Therapeutics and Biotechnology Symposium, Vanderbilt University College of Fellows Award, Controlled Release Society

Juliane Nguyen, Ph.D.

Forbes 30 Under 30: Science list

Katelyn Arnold, Ph.D.

2022 Keo Glidden Smith Fall Research Convocation Lecturer for SDSU College of Pharmacy

Kim Brouwer, Pharm. D., Ph.D.

Secretary/Treasurer of the ASPET Division for Drug Metabolism and Disposition

2023 Richard Okita Early Career Award in Drug Metabolism and Disposition

Klarissa Jackson, Ph.D.

2022 Highly Cited Researchers list in "Cross-Field" by Clarivate Analytics

2022 Article of the Year by Journal of Nanobiotechnology

Leaf Huang, Ph.D.

Vice Chair of the 2022-23 ACCP Clinical Practice Affairs Committee

Macary Marciniak, Pharm.D.

2023 University of Texas College of Pharmacy-Texas Society of Health System Pharmacists Robert G. Leonard Memorial Lecture Award

Mary McClurg, Pharm.D.

2022 ASHP Distinguished Service Award from the Section of Ambulatory Care Practitioners

Mollie Scott, Pharm.D.

American College of Toxicology Distinguished Scientist Award in Toxicology

Paul Watkins, M.D.

Certificate of Outstanding Contribution from the Journal of the American Pharmacists Association

Sachi Ozawa, Ph.D., M.H.S.



Learners Honors and Recognitions

Eli Rankin Innovator Acceleration Award from the EII
Ashlyn Elliott

**American Association for the Study of Liver Disease
Abstract Award**

**2023 ASCPT Annual Meeting Student/Trainee
Grant**

Billy Murphy, Pharm.D.

**The Network of Minority Health Research
Investigators Travel Award**

Jeanne Dulie Kom Nzia, Pharm.D.

**2023 ASCPT Annual Meeting Student/Trainee
Grant**

Muluneh Fashe, Ph.D.

**8th Annual American Association for Cancer
Research Early-Career Hill Day Participant**

Ricardo Gonzalez

**2023 HOPA Platform Research Award for Excellence
in Poster Presentation and Content**

Sarah Kaspari, Pharm.D.

**ASHP Pharmacy Student Forum Career and
Leadership Development Advisory Group**

Alina McCue

IPSF Chairperson of Public Health

Audrey Wong

Eli Rankin Innovator Acceleration Award from the EII
Breanna Mann

ACS Medicinal Chemistry Predoctoral Fellowship

Brian Anderson

**Atlantic Province Risk Management Committee
Chair**

Claire Stevens

**Control Release Society Immuno Delivery Focus
Group Trainee Award**

Dylan Hendy

2022 Nano Drug Delivery Symposium Poster Award

Emily Bonacquisti

IPSF PARO Regional Relations Officer

Gaith Hajeh

NSF Graduate Research Fellowship

Glory Dan-Dukor

**2023 Conference on Retroviruses and Opportunistic
Infections Young Investigator Award**

Isabella Young

**UNC LCCC Cancer Outcomes Research Program
Travel Award**

James Collins, Pharm.D.

**Atlantic Province Vice-Satrap and Province
Assembly Planning Chair**

Jonathan Boucher

National PLS chapter Development Award

Julia Fabricio

Atlantic Province Man-Mile Award

Kappa Psi Pharmaceutical Fraternity, Beta Xi Chapter

Atlantic Province Satrap

Katie Flynn

SNPhA National Fighting Diabetes Chair

Megan Griffin

2022 Nano Drug Delivery Symposium Poster Award

Natalie Jasiewicz

**CAPS-APhA-ASP Local Patient Counseling
Competition Winner**

2023 ASHP Student Leadership Award

Neel Swamy

**2023 PharmAlliance Conference International Skills
Competition Winners**

Preetish Patel, Ashlyn Elliott, Deby Adejuwon

Biomaterials Annual Meeting Poster Award

Rebeca Stiepel, Ph.D.

AAAS Mass Media Fellowship

Sabrina Iskandar

SNPhA National Vice President

Tatiana Hines

IPhO National Student Officer

Phi Lambda Sigma National Leadership Academy

Taysir Chamen

Atlantic Province Scholarship Committee Chair

Tessa Carovich

**National Member Engagement Standing Committee
Chair**

Tia Belvin

**Aerospace Medicine Student and Resident
Organization AMSRO Scientific Paper Award**

Tom Diaz

**Atlantic Province Auditing/Finance Committee
Chair**

Zach O'Connor

From Serving the State . . .

At the UNC Eshelman School of Pharmacy, everything we do begins and ends with a patient in mind. Guided by our three-year **BEYOND** strategic plan and UNC's Carolina Next: Innovations for Public Good roadmap, we are working to better pharmacy practice and pharmaceutical sciences to benefit all patients in the Tar Heel State. Together, we are Advancing Medicine for Life.

A Commitment to Rural Pharmacy Health Care

The UNC Eshelman School of Pharmacy's Rural Pharmacy Health Initiative was developed to advance pharmacy practice while building the workforce North Carolina needs to provide high-quality health care for rural and underserved communities. A core piece to accomplishing that mission is through the appointment of Stephanie Kiser, R.Ph., BScPhm '92, as executive director.

"Our School of Pharmacy was built to serve the people of North Carolina. We have an opportunity to provide accessible, high quality and affordable health care to all North Carolinians, and I believe Stephanie is the one to lead this initiative to success," said Angela Kashuba, Dean of the UNC Eshelman School of Pharmacy.

The initiative is made possible thanks to an \$815,000 grant from The Duke Endowment. This grant, led by principal investigator Betsy Sleath, Ph.D., enables the School to create the infrastructure needed to build and deliver innovative models of pharmacy practice to provide high-quality care for patients that are medically underserved.

In partnership with Carolina Across 100, Kiser will lead the School's efforts to launch two rural pharmacy hubs in Eastern North Carolina over the next three years. These hubs will help address rural health care provider shortages by integrating pharmacists into interprofessional teams to optimize medication use and improve health outcomes. Community pharmacists are well-positioned to fill health care workforce gaps as accessible and trusted health care providers.

Ultimately, these hubs are a collective approach to improve health in small communities, providing unique educational opportunities to develop the pharmacist workforce Eastern North Carolina needs while at the same time serving as an important patient resource.

Kiser says the School's investment in its rural pharmacy program is what drew her to join the faculty. Over the course of her 30-year career, she has held a variety of pharmacy leadership roles that position her well as a connector to rural pharmacists and community members.



Western North Carolina

The practice advancement and research endeavors of UNC Eshelman School of Pharmacy's faculty in Asheville are impacting western North Carolina and the state. Under a new law passed in North Carolina, contraceptives can be bought at local drugstores and community pharmacies after a brief consultation with a pharmacist. With funding from The Duke Endowment, Dean Mollie Scott, Pharm.D. BCACP, CPP, FASHP, is working to implement pharmacist-provided hormonal contraception across the state.

Additionally, Delesha Carpenter, Ph.D., MSPH, is working to increase access to Naloxone with funding from the NIH. "The funding from the NIH will allow us to work with naloxone and harm reduction experts across the state to better understand gaps in naloxone access and identify ways to increase equity in access," said Carpenter.

Another highlight for the year was the 9th Annual Asheville Summit, hosted and organized by the Asheville Campus pharmacy students. The summit provided the opportunity to learn from and engage with DEI leaders in health care and strong advocates in pharmacy.



Eastern North Carolina

Betsy Sleath, Ph.D., the Regional Associate Dean for Eastern North Carolina, works with others in the School and across the East, to strength relationships, partnerships and pharmacy practice. The School aims to develop new educational and training opportunities, and expand research, economic and innovation partnerships in Eastern North Carolina.

For example, to improve outreach and student recruitment in underserved areas in Eastern North Carolina, the School co-hosted a booth at Pembroke Day with the University of Pembroke College of Nursing, where pharmacy faculty, staff and students educated about questions to ask your pharmacist and other health areas. UNC Pembroke is located in the tribal homeland of the Lumbee tribe in Robeson County, which has the worst health outcomes of all 100 counties in the state. Next, we held events at each Area Health Education Center (AHEC) in the east, where we brought together Pharm.D. students who were on rotations in their respective regions with undergraduate students from UNC Pembroke, UNC Wilmington, East Carolina University and Fayetteville State University. The undergraduate students learned about the many possible career paths that exist in pharmacy and pharmaceutical sciences.

Additionally, students, faculty and staff volunteered to help uplift children in the rural community of Conetoe with funding from a Tar Heel bus tour grant provided by UNC Rural. They volunteered in partnership with Area L AHEC at the Conetoe Family Life Center's summer camp. Students taught 60 community youth about mental health, healthy eating, the dangers of vaping, heart health and diabetes. Participants spent half a day at the Edgecomb County Health Department learning about a health department's functions and the pharmacist's role. Student pharmacists also did blood pressure checks and handed out information on diabetes and hypertension.

... To Serving the World

We are developing citizens of the world who will serve diverse patient populations in a variety of practice settings in local, national and global communities.

A Message From Stephen Eckel, Associate Dean for Global Engagement

It is great to restart student mobility activities and to reconnect with our global friends and partners, including our PharmAlliance colleagues. While there was apprehension and concern about 'what could happen' when we send students around the world, we also have a rigorous process for site determination, selecting and orienting our students and engaging with them while on rotation. The structure is important to ensure every student has a safe and great learning experience. All this work is rewarded when we hear their stories on what they learned about pharmacy and themselves, and how they plan to implement this global worldview going forward. Because North Carolina is becoming more and more global in its population, we need to ensure our future pharmacists can understand and incorporate the patient's view on health when they care for them. We believe this can best happen if they have immersed themselves in a different culture.



PHARMALLIANCE

There is no question that we are better together. Innovation and transformation happen when people collaborate. That's part of what drives PharmAlliance.

PharmAlliance is our strategic, international partnership for better health care worldwide between the top three Schools of Pharmacy in the World: the Monash University Faculty of Pharmacy and Pharmaceutical Sciences, the University College London School of Pharmacy and the UNC Eshelman School of Pharmacy. Together, we work collaboratively on education, research, practice and student success. Our mission is to cultivate and pursue innovative ideas with a focus on big problems and opportunities that member institutions could not address alone.

This year, 60 faculty, students and staff from the three PharmAlliance universities attended PharmAlliance week in Prato, Italy. The theme of the week was mental health, well-being and consumer and student engagement. Other activities included the 3rd annual PharmAlliance Graduate Research E-Symposium with 23 presenters across the three schools. PharmAlliance also reestablished the student exchange program with 21 students and three visiting scholars participating this year.

Global Pharmacy Scholars Make an Impact in Ethiopia

The School's Global Pharmacy Scholars (GPS) program allows our students to broaden their global perspectives as they learn about different approaches to health care and pharmacy practices and bring those experiences back to their practice of pharmacy in North Carolina. Benyam Muluneh, Pharm.D. '10, assistant professor in the Division of Pharmacotherapy and Experimental Therapeutics, co-director of the UNC-Ethiopia Alliance, led a team of faculty and students from the School to Addis Ababa, Ethiopia, with three goals in mind—to launch Ethiopia's first pediatric cancer registry, develop a therapeutic drug monitoring program and establish chemotherapy safe handling policies.

The group partnered with Ethiopia's five main hospitals and the government's Ministry of Health. During their visit, they hosted workshops with all stakeholders and planned a soft launch in May, which was successful, followed by the hard launch in September.

The team had the opportunity to visit cancer patients and families while they received treatment from the hospital. They played with the kids, danced and enjoyed a meal together. Although the trip was busy with project deliverables, exposing the group to the culture was a top priority.

"This trip to Addis Ababa with our amazing group sparked a new passion in my life: coordinating with providers across the world to optimize health care in their respective communities. Building relationships with providers and their patients brought me joy and humility, and I look forward to returning and continuing to work to improve patient lives around the globe,"

Julian Garcia, Pharm.D. '23



Eshelman Institute for Innovation

Center Working to Combat Pandemic-Level Viruses

The COVID-19 pandemic made the need for proactive antiviral therapeutic development woefully clear. To that end, the NIH awarded UNC-Chapel Hill a \$65 million grant in 2022, establishing an Antiviral Drug Discovery Center (AViDD), led by Dr. Ralph Baric in the UNC Gillings School of Global Public Health and Dr. Tim Willson in the UNC Eshelman School of Pharmacy. The center, one of nine established across the U.S., builds upon and is tightly affiliated with Carolina's Rapidly Emerging Antiviral Drug Development Initiative, or READDI. Since then, the READDI-AViDD Center (READDI-AC), with more than 40 laboratories at 23 institutions in five countries, has emerged as one of the most integrated global academic research networks in drug discovery.

The Center's ultimate goal is contributing to the development of antiviral drugs that protect against the next unknown viral threat, known as Disease X. Investigators at the School,

including Willson, Ken Pearce, Alex Tropsha and Konstantin Popov, are leading efforts to identify drugs that would provide protection against existing viruses and have a higher likelihood of being effective against Disease X.

It's a daunting challenge, but researchers are making progress. Having screened almost 120,000 compounds against five viral targets, they have identified over 2,200 compounds of interest. To validate and optimize novel inhibitors of these viral targets, Willson and the Structural Genomics Consortium (SGC-UNC) have led 40 chemistry campaigns, including therapeutic testing of more than 1,400 compounds with 27 academic and industry collaborators. Over the past year, READDI-AC has emerged as a valuable partner for industry, as researchers in the Center help advance eight late-stage compounds for COVID-19 to demonstrate their safety and efficacy.





Tackling the Opioid Crisis

The Eshelman Institute for Innovation is also forging a game-changing approach to translating bold new ideas into real-world impact for patients. One area EII is zeroing in on is the opioid crisis. In 2022, the EII received \$2.6 million from the North Carolina Collaboratory by the NC General Assembly to focus on the opioid epidemic. The EII used this generous funding to solicit projects from academic researchers across North Carolina for research and development that can advance the discovery and translation of therapeutics for opioid use disorders. This funding will help academic researchers generate critical research knowledge in neurobiology, discovery of novel drug targets and therapeutic approaches for chronic pain as the underlying driver of opioid addiction.

Additionally, with this funding, the EII partnered with the Mountain Area Health Education Center (MAHEC) and High Alpha Innovation to develop digital solutions to combat opioid use disorder through a venture studio sprint process. The two most viable ideas from this sprint were presented at a pitch day. The EII is currently pursuing these ideas, which will be launched as a startup company in the near future.

Serving Underrepresented Populations

This year, the Eshelman Institute for Innovation, within the UNC Eshelman School of Pharmacy, partnered with the Historically Black Colleges and Universities Founders Initiative to create PowerUp, a program that will identify and support innovators as they try to solve health equity challenges in underrepresented communities across North Carolina.

PowerUp aims to connect top talent with investment and advisory support to launch innovative digital health startups that will provide health care solutions to communities.

The Humana Foundation is helping support the PowerUp program with a Health Equity Innovation Fund grant of \$750,000 over three years. This pilot will utilize the Humana Foundation's grant to focus on mental health and food security.



Scan the QR code for the full Eshelman Institute for Innovation Impact Report.

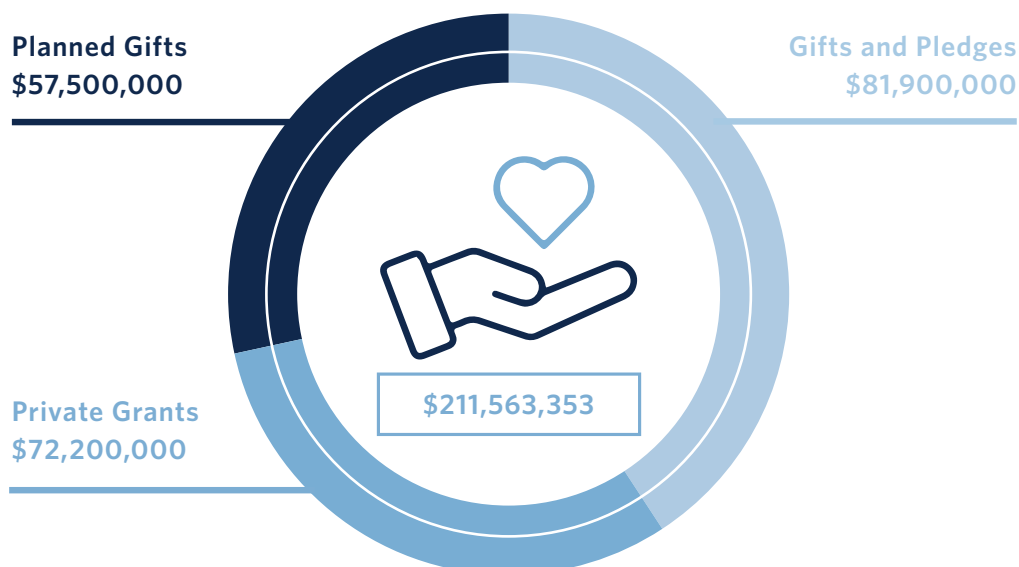


Philanthropy

We are developing citizens of the world who will serve diverse patient populations in a variety of practice settings in local, national and global communities.

A Landmark Campaign

In December 2022, the UNC Pharmacy Foundation and Pharmacy Alumni Association closed out a landmark campaign raising more than \$211 million to support all aspects of the pharmacy school's pharmacy education, research and service mission. The campaign included a historic \$100 million commitment from Dr. Fred Eshelman '72 to establish the Eshelman Institute for Innovation—the largest gift from an individual in UNC's history and the largest to a pharmacy school in the US. We are humbled that more than 4,236 campaign donors invested in our success. In a comprehensive campaign, all gifts and private grants to all areas of the university for all purposes are counted. This includes outright gifts and pledges, planned gifts and private grants. A planned gift, or legacy gift, documents a donor's intent to make a future gift as part of estate planning.



2022-23 Programmatic Support

The Foundation provides programmatic support that touches all aspects of the pharmacy school's education, research, and practice mission. In 2022-23, the Foundation provided more than \$3.3 million in funding to the UNC Eshelman School of Pharmacy.

PHARM.D. STUDENT SUPPORT

\$1 million for scholarships, awards, student activities, global experiences, and Asheville campus support

GRADUATE STUDENT SUPPORT

\$350,000 for graduate fellowships, awards, division-specific support, and professional development activities

FACULTY & STAFF SUPPORT

\$230,000 for distinguished professorships, staff awards, and funding to support faculty start-up and research

DEAN'S STRATEGIC INITIATIVES

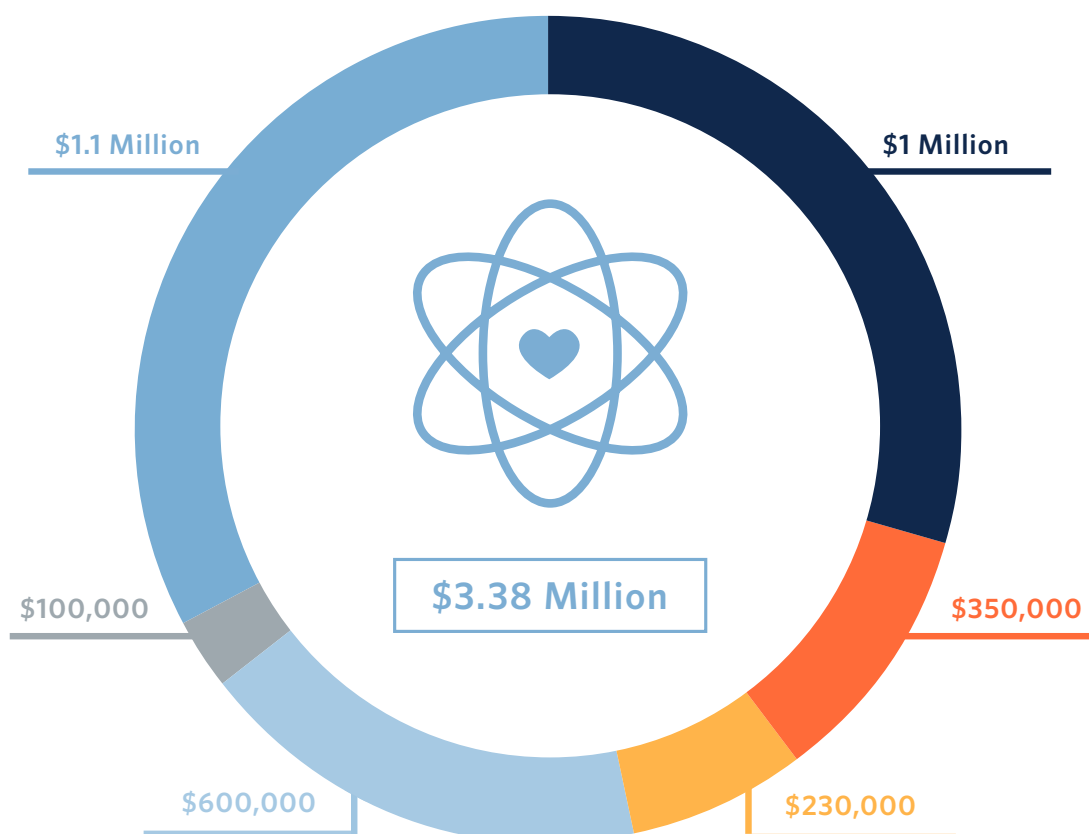
\$600,000 for greatest needs including facility enhancements and support for **BEYOND** strategic plan priorities

ALUMNI ENGAGEMENT

\$100,000 for Pharmacy Alumni Association activities to promote alumni-student engagement through networking, awards, events, and communications

ESHELMAN INSTITUTE FOR INNOVATION

\$1.1 million to accelerate the translation of innovative ideas into real-world impact in digital health and therapeutics





The First Annual Golden Mortar Awards

The Foundation and Pharmacy Alumni Association, in collaboration with the Office of Student Affairs, created a new tradition to recognize the achievements of students, faculty, preceptors, and alumni of the School. The First Annual Golden Mortar Awards were held at the iconic Varsity Theatre on Franklin Street and celebrated the Classes of 2023 and 1973. A celebration of excellence in the Pharm.D. program, 27 awards were given, including the Boka Hadzija Student Excellence Award, Instructors of the Year, Preceptors of the Year, and Distinguished Alumni Awards- among others. The class of 1973 was also inducted into the School's 50+ Club in celebration of their 50th reunion.



Kohn Distinguished Professorship Drives Forward Open Science Drug Discovery

The Harold Kohn Distinguished Professorship in Open Science Drug Discovery was established with gifts from the SGC and Harold and Carol Kohn to recognize excellence in open science drug discovery. The professorship will be held by the Chief Scientist of the Structural Genomics Consortium (SGC) at UNC. The SGC is a public-private partnership forged to conduct early basic research in finding new drug discovery targets — and then share that information with the world. The UNC Eshelman School of Pharmacy opened its SGC-UNC laboratories in 2015, the first SGC laboratory in the US. SGC-UNC scientists are working with collaborators worldwide to better understand the chemical biology of the dark proteome. With this addition, the UNC Eshelman School of Pharmacy now has 17 distinguished professorships to support the esteemed faculty who keep us on the vanguard of education, pharmacy practice, and research.



Read the full 2022-23 UNC Pharmacy Foundation and UNC Pharmacy Alumni Association Impact Report to learn more about how our alumni, donors, and partners are supporting all areas of the UNC Eshelman School of Pharmacy mission.

never still.

never stopping.