Human induced pluripotent stem cells (iPSC) give researchers a powerful opportunity to investigate novel cellular dynamics and to apply fundamental knowledge gained towards translational science. Our brains are derived from a complex network of neuronal and glial cells. Cells that when they weave together in just the right manner can create one of the most powerful entities in the world, the mind. Depicted here is a collection of iPSC derived ectoderm showing Nestin (red), F-actin (cyan) and MAP2+ (green) cells constructing telecommunication lines between neighbors.

**TOTAL GRANTS**

155 17 percent are held by primary investigators with R01 awards

**TOTAL RESEARCH FUNDING**

$93.9 million

**VETERANS AFFAIRS INVESTIGATORS FUNDING**

$10.5 million

**OVER $14.5 million in NEW AWARDS IN FY2020**

**CLINICAL TRIAL REVENUE (FY2020)**

$5.9 million

**INCREASE IN TOTAL FUNDING (from FY2019 to FY2020)**

5.5%

**SUCCESS RECEIVING FUNDING (FY2020)**

29%

**IMAGE, FRONT COVER:**

*I'd Like to Place a Long Distance Call*

Human induced pluripotent stem cells (iPSC) give researchers a powerful opportunity to investigate novel cellular dynamics and to apply fundamental knowledge gained towards translational science. Our brains are derived from a complex network of neuronal and glial cells. Cells that when they weave together in just the right manner can create one of the most powerful entities in the world, the mind. Depicted here is a collection of iPSC derived ectoderm showing Nestin (red), F-actin (cyan) and MAP2+ (green) cells constructing telecommunication lines between neighbors.

2020 Image Gallery awardee, Basic Research

**CREDIT:** Andrew Dunn, PhD, Research Fellow, Gastroenterology
Annual Research Report  
ACADEMIC YEAR 2019-2020

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Since 2011, our strategic plan in the Department of Internal Medicine has prioritized our research mission.

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Welcome from the Chair

We are privileged to provide the 2019–2020 edition of the Department of Internal Medicine Annual Research Report. In keeping with the strategic plan implemented in 2011, we are most pleased with the past and ongoing successes of our department and especially the accomplishments of our clinician scientists, basic scientists and clinical outcomes researchers over this past year. We continue to develop, mentor and support our residents, fellows, doctoral and post-doctoral students, junior and unquestionably our senior faculty to allow them to succeed. Those individuals recruited over the past year are maturing with support from department infrastructure and are showing evidence of successful academic research career development with impactful publication and major external awards. Our department’s supportive offerings and constructs are not only carefully aligned with our UC College of Medicine initiatives and offerings and the UC Health system, but also the Cincinnati Veterans Administration Medical Center (VAMC) and the Cincinnati Children’s Hospital Medical Center.

Since 2011 our research programs have grown annually by 6 - 14%. Our current research holdings at the end of June 2020 were over $93 million. At the time of this printing (mid-FY21), the department’s research holdings are now in the range of $110 million. Our Academic Research Services (ARS) program is led by Kelly Niederhausen, Yolanda Wess and Eric Smith, MD. These individuals and others in the ARS program directly contributed to the successes of many of our research faculty this year, and in years past. Our departmental intramural awards system led by the Research Associate Chairs, Peter Clayton and his team supports bridge funding, junior and senior investigator awards. The success of
our Internal Medicine Scholarly Training for Academic Research (IMSTAR) program has been unprecedented. We have just learned that our department is one of 19 in the nation now funded by the R38 training initiative called Stimulating Access to Research in Residency (StARR) to even further enhance and support internal medicine residents in their research-oriented academic careers. Other institutions receiving this designation include Duke, Columbia, Emory, University of California-San Francisco, Vanderbilt, University of Pennsylvania, Stanford University and Massachusetts General Hospital to name a few. This new initiative will build upon our Physician Scientist Training Program (PSTP) and the categorical training program that focuses on training in the translational sciences and scholarly, peer-reviewed publications during the second year of residency.

In June, 2020 the department held 155 total grants. This does not include $5.9 million in clinical trial revenue nor the over $10.5 million dollars awarded to our investigators at the Cincinnati VAMC. Forty-four of these were new grants with $14.5 million in direct awards. Approximately 17% of those were R01 awards to PIs in the department. These significant outcomes reflect our successes since 2011 and have resulted in unprecedented yearly growth in the department’s research holdings. It has indeed been most rewarding for me to see the successes of our research faculty and how our strategic departmental research infrastructure has supported them. We will soon be transitioning to new departmental chair leadership. This transition will allow us to succeed even further over the next 3-5 years based upon additional resources to recruit established physician scientists. We are most grateful to our associate chairs for basic and translational research Sakthi Sadayappan, PhD, MBA and Carl Fichtenbaum, MD, respectively. Our new chair will very much benefit from the expertise of the two of them and our ARS personnel during this transition. With their support, this new leadership will be well served in continuing our discovery mission in the upcoming years.

GREGORY ROUAN, MD
CHAIR, DEPARTMENT OF INTERNAL MEDICINE
BUILDING THE RESEARCH MISSION

From the Associate Chair for Translational Research

CARL FICHTENBAUM, MD
Preparing for Transition: Building the Research Mission

Life has many moments of transition and renewal. These are times when one can reflect and consider new ideas. As we move in 2021, our Department will have a transition of leadership. This will present opportunities and challenges. It is a time when we can ask ourselves what should we be doing to build our research mission?

This past year has been very challenging for our research mission and researchers. We have endured closing many aspects of our research and trying to navigate through a devastating pandemic. Despite many challenges, our resilience has prevailed, and our researchers continue to contribute to the emerging body of knowledge. There are many examples but just to highlight a few our faculty have obtained new grants including several career development awards. Drs. Apewokin, Lynch and Shah received K23 awards in the past year. Recently, we learned that Drs. Jose and Gulati earned a CT2 and KL2 awards, respectively. New awards came to Drs. Blackard, Cohen, DeMazumder, and Sadayappan. And, Drs. Rubinstein, Sadayappan and Schauer received an R38 training award. These recent successes highlight the talent within our Department.

This past year has also presented some opportunities in Covid research with members of our Department leading the way in building a Biorepository for Covid Research, Epidemiologic Research Studies, Treatment studies and Vaccine studies. Some of the investigators leading the way in our Department include Drs. Fichtenbaum, Huaman, Hudock, Hite and Powers. And we’d be remiss not to thank the staff, particularly in the Pulmonary and Infectious Diseases Divisions, that have given countless hours in making these new studies possible and bringing hope to our community. These efforts have increased the prominence of our institution within the community and the nation.

The Research Leadership and Research Governance Committee is spearheading an effort to review our strategic research planning. This moment is a time for us to build consensus on research priorities and share our ideas with the incoming Chair of the Department in 2021. This will aid a new leader to better understand our strengths and weaknesses.

Our strategic research plan should aim to propel our Department to the next level. Over the next 3-5 years we need to increase the number of funded researchers, build, and prepare new research mentors and enhance our training for the next generation of researchers. We must build on our strengths and look for new areas that demand research and scholarship. We must also improve our diversity and leadership in research by women and underrepresented populations. We have created the conditions for research success within our Department. Now we must think big and chart a course that will help aid discovery and build our Department’s research portfolio. Together, this is a goal we can achieve.

CARL FICHTENBAUM, MD
ASSOCIATE CHAIR FOR TRANSLATIONAL RESEARCH

Despite many challenges, our resilience has prevailed, and our researchers continue to contribute to the emerging body of knowledge.
BUILDING THE RESEARCH MISSION

From the Associate Chair for Basic Research

SAKTHIVEL SADAYAPPAN, PHD, MBA
Building the Research Mission: New Opportunities

How did DOIM support researchers during the pandemic crisis?

By February and March of 2020, COVID-19 had become a worldwide threat to human health and the economy. Even before the state of Ohio announced a lockdown, the UC College of Medicine (COM) was working with Department of Internal Medicine (DOIM) Co-Chairs to develop COVID-19 lab disaster plans. Faculty and staff were asked to work from home beginning March 16, 2020, and all in-person activities were cancelled. In close collaboration with the COM, researchers were eventually allowed to perform critical studies. Labs and clinical researchers were able to slowly reopen research capacity, going from 25%, 50% and then 100%, by strictly following CDC COVID-19 guidelines. During this time, the Academic Research Services Office and the department Co-Chairs worked together tirelessly to review and approve lab reopening forms in a timely manner, guiding researchers through new COVID-19 policies. Although the entire country was under a state of emergency, the research mission of DOIM was never abandoned. Animal facilities continued to be monitored, and shipments and core facilities were allowed to provide full support to researchers. Critical clinical research continued and Grand Rounds, Research Conferences and meetings were moved to virtual mode and managed very effectively during this time. The first duty of DOIM was protection of researchers and participants engaged in research during the early phase of the pandemic.

What are new opportunities for research in DOIM in the FY 2020-21?

The DOIM is undergoing a rapid transition with the hiring of a new department chair in the upcoming year. The addition of more resources and facilities and the hiring of more basic and clinical researchers will be priorities. The role of the Academic Research Service has expanded with the addition of Research Financial Services (RFS). RFS will provide clinical research study oversight and budget review to facilitate and grow clinical research in the department. The Research Governance Committee has formed several subcommittees, including Strategic Research, Mentoring, and Gender Equity subcommittees. These subcommittees will be fully active in the new year and will improve workflows and communication, as well as increase knowledge of and compliance with regulations and policies. Lastly, we expect that a vaccination program, combined with continuing attention to CDC guidelines, will allow us to resume our regular research routines next year. Thus, the future looks bright with new opportunities for basic and translational research in DOIM, so please stay tuned.

As DOIM Vice Chair of Basic Research, my responsibilities are to strengthen basic and translational research through advanced facilities, state-of-the-art technologies, active collaborations between basic and clinical scientists, teamwork to foster innovation and discovery, in addition to advancing our understanding of human biology with the aim of treating deadly diseases, developing therapeutic strategies, and performing preclinical studies.

SAKTHIVEL SADAYAPPAN, PHD, MBA
ASSOCIATE CHAIR FOR BASIC RESEARCH
Impact
Donald Lynch Jr., MD was accepted into the 2019 PRIDE-Functional and Translation Genomics of Blood Disorder Program, a research career advancing training opportunity funded by the National Heart, Lung, and Blood Institute (NHLBI).

Oversight of the Pathobiology Molecular Medicine (PMM) PhD program transitioned to the Department of Internal Medicine from the Department of Pathology and Laboratory Medicine.

Jane Yu, PhD was granted a Department of Defense Idea Development Award entitled, “Dysregulation of sphingolipid metabolism and actions in TSC.” The award totals $722,000 over three years.

Xiaoyang Qi, PhD was honored as a senior member of the National Academy of Inventors for his contributions to the field in the discovery of a molecule found to kill many forms of cancer while leaving healthy cells unaffected.

Kevin Haworth, PhD and A. Phillip Owens, III, PhD, were awarded an R01 Supplement of $396,621 to a current R01 to study the role of Alzheimer’s Disease in PAR2.

Trisha Wise-Draper, MD, PhD, was named the “2019 Clinical Trialist of the Year” at the College of Medicine, she was recognized as the investigator with the greatest revenue from industry-funded clinical trial during the 2019 fiscal year.

Bette Young was hired as the Program Coordinator for Pathobiology Molecular Medicine PhD program.

Awardees of the Department of Internal Medicine Fall Intramural Awards Competition:

- Junior Faculty Pilot Project Awardees: Arjan Flora, MD, funded in the amount of $30,000 and Rajat Madan, MD, PhD, funded in the amount of $30,000.
- Collaborative Challenge Awardee: Laura Conforti, PhD, funded in the amount of $30,000.
- Outcomes Research Awardee: Margaret Powers, PhD, funded in the amount of $3,000.
- Post Doctorate Travel Awardee: Hani Alrefai, PhD, funded in the amount of $1,250.
Helen Gina Shelton was hired as the Clinical Regulatory Manager to lead the effort to centralize regulatory services within the department.

For four years now, the UC Office of Research annually recognizes the top externally sponsored researchers. Those IM faculty honored for each of the four years are:

Vladimir Bogdanov, PhD; Robert Cohen, MD; Laura Conforti, PhD; Melanie Cushion, PhD; George Deepe, MD; Carl Fichtenbaum, MD; Fred Finkelman, MD; Christy Holland, PhD; Francis McCormack, MD; Diego Perez-Tilve, PhD; Atsuo Sasaki, PhD; Kenneth Sherman, MD, PhD and Michael Tranter, PhD.

IM faculty honored three of the four years are:

David Bernstein, MD; Jason Blackard, PhD; Michael Borchers, PhD; Nishant Gupta, MD; Jamie Robertson, MD; Sakthivel Sadayappan, PhD; Jason Winnick, PhD and Jane Yu, PhD.

March 11, 2020

Coronavirus (COVID-19) reached Ohio with confirmed cases reported as of March 9, 2020. Contact limitations and other safety precautions were instituted for study participants, research laboratories, clinical research operations, staff, students, and faculty. Travel restrictions, remote instruction, restrictions on gathering size, remote operations and other health and safety precautions were instituted. Only critical research functions were permitted on campus through May 1, 2020.

9th Annual Internal Medicine Research Symposium cancelled due to COVID-19 pandemic.
Silvi Shah, MD, MS, received a CT2 Research Career Development Award from the CCTST.

The COVID-19 Innovation Task Force was established by the College of Medicine and UC Health to maximize COVID-19 research success and minimize burden to patients and families by prioritizing and evaluating all requests for COVID-19 research funding and support.

Donald Lynch, MD, received a career development award (K23) from the National Institutes of Health, providing $831,500 for his project.

Sakthivel Sadayappan, PhD, MBA, was awarded a new R01 entitled, “Slow myosin binding protein-C in skeletal muscle physiology.” The total funding was ~$453,000/year over 5 years.

Sakthivel Sadayappan, PhD, MBA was named Associate Chief for Basic Research, Cardiovascular Health and Disease Division.

Nishant Gupta, MD, was awarded funding in the amount of $30,000 from the College of Medicine Research Innovation/Pilot Grant Program.

Laura Wexler, MD, professor in the Division of Cardiovascular Health and Disease, was named a recipient of the College of Medicine Daniel Drake Medal for 2020. (See story, page 17)

Xiaoyang Qi, PhD, received a Pancreatic Cancer Network Grant of $500,000.

Senu Apewokin, MD, received a career development award (K08) from the National Cancer Institute. The grant provides $1,108,910 for a duration of five years.

April 2020

May 2020
Richard Becker, MD, was appointed to the National Heart, Lung, and Blood Institute (NHLBI) COVID-19 protocol Review Committee.

Charuhas Thakar, MD, was invited to be part of a national expert panel discussion on AKI and Renal Replacement Therapies in hospitalized COVID patients convened by the department of Health and Human Services and FDA.

A. Phillip Owens III, PhD, was awarded a new R01 entitled, “Role of the gut microbiota in abdominal aneurysm.” The total award amount was ~648,000/year over 4 years.

Robert M. Cohen, MD, was awarded a new R01 entitled, “Towards optimizing diabetes management and diagnosis by personalizing HbA1c targets.” The total award amount was ~$730,000/year over 5 years.

Janey Yu, PhD, was awarded a new R01 as Co-PI with Dr. Yan Xu, Cincinnati Children’s Hospital Medical Center, for the project entitled “Uterine signaling networks in the pathogenesis of pulmonary lymphangioleiomyomatosis.” The total award amount was ~$790,000/year over 4 years.

The IM Department provided Intramural funding to six faculty, staff and trainees. Clayton Lewis, PhD, received the Trainee Award in the amount of $1,750, Cristina Andreani, PhD, received the Trainee award in the amount of $1,750, Dylan Steen, PhD, received the Rehn Award funded in the amount of $16,000, Laura Conforti, PhD, received the Senior Faculty Pilot Project Award in the amount of $30,000. Richard Becker, MD, PhD, received the Senior Faculty Pilot Project Award in the amount of $30,000 and Caterina Bartolacci, PhD, received the Post Doctorate Travel Award funded in the amount of $1,250.
Through support of the COVID 19 Innovation Task Force, over nine different coronavirus-related trials were activated and enrolling at UC by this date.

Under the leadership of Carl Fichtenbaum, MD, professor in the Department of Internal Medicine, UC was selected as a study site for the Moderna vaccine as it entered Phase 3 clinical trials.

Recognized by the CoM Office of Research in the Gallery of Awardees for receiving external research grants of $100,000 per year or more are: Jason T. Blackard, PhD, Robert Cohen, MD, Pamposh Kaul, PhD, and Trisha Wise-Draper, MD, PhD.

Deeptankar DeMazumder, MD, PhD was awarded the prestigious NIH Director’s New Innovator Award, total funding amount, $2,407,500 over 5 years.

The DOIM was awarded an NIH-sponsored R38 training program grant entitled, “Stimulating Access to Research in the University of Cincinnati Internal Medicine Residency Program.” The Co-PIs are Jack Rubinstein, MD, Sakthivel Sadayappan, PhD, MBA and Dan Schauer, MD. Total funding amount was $1,217,279 over 4 years. The funds will be primarily directed towards salary support for a select group of DOIM residents to complete an additional year of residency devoted to research. The goal is to increase the pipeline of physician-scientists.
Laura Wexler, MD, professor in the Division of Cardiovascular Health and Disease, has been named one of two recipients of the Daniel Drake Medal for 2020. The award, established in 1985, is given annually to living faculty or alumni for their outstanding and unique contributions to medical education, scholarship and research. Daniel Drake, MD, was the founder of the Medical College of Ohio, the forerunner of the College of Medicine, and one of the most influential physicians, educators and scientists of his time.

Wexler served from 2001 until 2011 as senior associate dean of student affairs and admissions at the UC College of Medicine making numerous significant changes to student services and the admissions process. She instituted a new and innovative program for student mental health services and academic assistance for students. In 2008, she led UC to becoming the first U.S. medical school to adopt the Multiple Mini Interview system, a holistic approach for medical student selection that emphasizes humanistic skills and qualities. Wexler also served for 11 years as Cardiology Section chief at the Cincinnati Veterans Affairs Medical Center instituting many changes to improve access to specialty care and enhancing the cardiology fellowship and residency training programs. She received her medical degree from Washington University School of Medicine in St. Louis, completed residency training with Harvard Medical School at Boston City Hospital and a cardiology fellowship at the Massachusetts General Hospital. Wexler joined the UC College of Medicine faculty in 1987.
Research Funding FY20: **$93,912,064**

We currently hold 155 total grants in the department, 19% of which are held by primary investigators with R0-1 awards. The total award amount is $93,912,064. $14.5 million of these were new grants awarded in FY20.

**KEY**
- Federal Funding
- Non-Federal Funding

**Nephrology, Kidney CARE Program**
**$2,439,979**

**Infectious Diseases**
**$27,149,405**

**General Internal Medicine**
**$436,185**

**Cardiovascular Health and Disease**
**$22,187,451**

**Office of the Chair**
**$100,000**
Pulmonary, Critical Care and Sleep Medicine
$14,693,656

Hematology Oncology
$8,915,613

Digestive Diseases
$6,741,573

Endocrinology, Diabetes and Metabolism
$4,213,076

Immunology, Allergy and Rheumatology
$7,035,126
Clinical Trial Revenue FY20: **$5,960,741**

### Clinical Trial Revenue By Division

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**University of Cincinnati**

**INTERNAL MEDICINE**

Annual Research Report 2020
Six Year Trend of Research Funding

- 2015: $55.4 million
- 2016: $64.9 million
- 2017: $80.9 million
- 2018: $86.8 million
- 2019: $89.0 million
- 2020: $93.9 million

University of Cincinnati
INTERNAL MEDICINE
Annual Research Report 2020
Research Initiative Supporting Excellence-UC (RISE-UC)
Three Initiatives Represent Impact of Academic Research Services (ARS)

The Department of Internal Medicine (DOIM) created the Research Initiative Supporting Excellence-UC (RISE-UC) in 2012 to foster the development and success of our researchers. By listening to faculty needs, we created a platform of people and programs to support researchers and trainees and to assist them in reaching their research career goals. RISE-UC heralded the development of the Academic Research Services (ARS) in 2016.

The scope of ARS continued to expand in Academic Year 2019-2020. From a service initially focused on providing grant writing assistance and administrative functions related to governance of the research mission, ARS, by the conclusion of July 2020, also provided services such as comprehensive regulatory assistance for both industry-sponsored and investigator-initiated research studies, expert biostatistics assistance through a DOIM funded position and administrative support of the Pathobiology and Molecular Medicine graduate program. A core mission, however, remained to assist DOIM researchers in the entire pre-award process for obtaining external funding, the life blood of any research-focused academic department. Three representative and interrelated initiatives during this time provide a sense of the scope of the activities.

Timely Submission Of The Highest Quality Proposals

A chronic challenge to optimizing the grant submission process that frequently plagues any institution is ensuring timely submission of the highest quality proposals. In the competitive arena of the awarding of grants, success hinges on not only the submission of the best effort but also on a system, regardless of the outcomes, that minimizes the stress to the large team of people involved in the submission, whether they be the principal investigator, the laboratory worker generating preliminary data or the administrative staff responsible for preparing the online documents for electronic submission with all the necessary institutional checks having been completed. A chronic specific challenge in DOIM has been proposals that are not complete with the five working day internal deadline. In AY 2019-2020, the DOIM grants administration office surveyed the process for 12 months and determined that over 25% of grants were late by this standard.

In the first two quarters of AY 2019, 43 grants were submitted with ARS assistance; 53% of the grants were funded, comparing well to the overall success rate for the DOIM of 30%.
In order to document the status of submissions while intervening to assist investigators within the DOIM, the first two quarters of AY 2019 were tracked by ARS. A total of 43 grants were submitted with ARS assistance, ~20% were deemed late of which only one was so overdue and, therefore, not allowed to be submitted. Ultimately, ~53% of the grants were funded, comparing well to the overall success rate for the DOIM of ~30%. However, the ideal timeline for submission in which a specific aim page is in a mature form at ~6 months was not achieved in any grant. And, for example, although the College of Medicine provides an internal mechanism for formally reviewing grants if a version is advanced enough to be evaluated 60 days prior to the internal deadline, no grant was submitted taking advantage of this service. Importantly, 3 of 14 R01 NIH grants were awarded; this percentage (~20%) is in line with the extreme competitiveness of these awards. The general conclusion was that ARS was having a positive impact on the proposal submission process and even the “late” grants were in the acceptable category but represented an area of needed improvement.

Peer-Mentoring Junior Faculty Group

A junior faculty J club (J-club) organized in the fall of 2016 by Kevin Haworth, PhD, a recent K25 awardee, and Carl Fichtenbaum, MD, Associate Chair of Translational Research, with the assistance Eric Smith, MD, ARS grant writer, matured in AY2020 into a major contributor to improving research outcomes. The J-club is a peer-mentoring group involving 10-12 of the research-oriented junior faculty. The group includes basic, translational, and clinician-scientists from most divisions within the department. The club was targeted at faculty members who had not yet received R01-equivalent funding, although junior faculty with R01-equivalent funding were allowed to join. As a pre-requisite for participating, an individual development plan was required. The group meets bimonthly providing a forum for a broad variety of discussions, presentations, and training relevant to their success. One faculty member is assigned for each meeting (~45 out of 60 min) to present whatever proposal for which they wish to receive feedback. Most of the meeting involves feedback on a grant document, often a specific aims page, with time for other issues including a general presentation of current research activities, practice presentation for a national conference, or a didactic session provided by the Associate Chair for Translational Research.

As of the end of AY2021, over 90% of the J-club participants had received significant funding.

As of the end of AY2021, over 90% of the J-club participants had received significant funding.
Enhancing Mentoring Opportunities Across the Research Experience

Another emphasis related to the above efforts was a focus on enhancing mentoring at the level of residents, fellows, graduate students and postdoctoral fellows. In July 2020, with the assistance of the ARS, the DOIM was awarded a highly competitive NIH sponsored T32 training program under the guidance of Co-PIs, Vladimir Bogdanov, PhD and Xiaoyang Qi, PhD, Division of Hematology / Oncology. The focus to provide postdoctoral level researchers with 1) formal and integrated instruction on the role of intellectual property protection in drug development in the context of a complex economy that is both market-based and government-regulated; 2) a comprehensive didactic and practical training in anti-cancer compound evaluation, with a primary focus on rigorous training in how to conceptualize, design, manage, and successfully carry to completion a clinical trial involving a novel drug; 3) establish a collaborative structure that promotes genuinely creative and productive interactions between PhD scientists and MD-MD/PhD clinicians. Following in the heels of this award were efforts to obtain an R38 training program, in this case, focused on resident training. Based on the existing IMSTAR and PSTP programs already in place within the DOIM dedicated to fellow level training, the notion was that a resident-focused curriculum would complement these fellowship oriented efforts. With the assistance of ARS and the Co-PIs, Jack Rubinstein, MD, Sakthivel Sadayappan, PhD, MBA and Daniel Schauer, MD, the R38 was ultimately awarded in 2020. This provides a funded extra year of research for selected DOIM residents with the goal of fostering an academic fellowship and physician scientist career.

- **Postdoctoral Focus**
  - T32 training program
  - Co-PIs:
    - Vladimir Bogdanov, PhD
    - Xiaoyang Qi, PhD

- **Resident Focus:**
  - R38 training program
  - Stimulating Access to Research in Residency (StARR)
  - Co-PIs:
    - Jack Rubinstein, MD
    - Sakthivel Sadayappan, PhD, MBA
    - Daniel Schauer, MD

**ACADEMIC RESEARCH SERVICES**

Online at:
med.uc.edu/depart/intmed/research/contact-us-staff

Send a message to ARS to inquire about any of the department’s programs and initiatives.
IMResearch@uc.edu
Discover and Innovate
DISCOVER & INNOVATE

Division of
Cardiovascular Health and Disease

ENDOWED CHAIR: Mabel Stonehill Endowed Chair

The Division of Cardiovascular Health and Disease is continuing and expanding upon its history of high-quality clinical, preclinical and basic research programs. The Division’s mission is to enhance collaborative clinical, basic and translational research that is broadly related to treating cardiovascular diseases. Our vision includes facilitating collaboration and synergy among investigators, integrating basic and clinical research programs, and promoting rapid translation from bench to bedside.

Charles Hattemer, MD
CHIEF

Sakthivel Sadayappan, PhD, MBA
ASSOCIATE CHIEF, BASIC RESEARCH

Research Focus Areas/Types:
Our research programs are focused on understanding the basic biology of the cardiovascular system; defining mechanisms underlying the development of heart failure, myocardial and reperfusion injury, genetic cardiomyopathies and stroke; and engaging in the development and testing of novel therapies, devices and diagnostic assays to treat these diseases. To meet our research missions, we provide multi-center clinical care, perform clinical trials and utilize various animal models, including mouse, rat, guinea pig and pig, in addition to in vitro assays, artificial intelligence, and machine learning techniques.

Investigators/Trainees:
Our faculty range from early career to established investigators with recognized excellence in the delivery of clinical practice and research, teaching, education and training. All basic researchers have multiple externally-funded research projects. Articles submitted by our investigators to peer review are regularly published in high-impact journals like Nature, PNAS, Circulation Research, and the Journal of Biological Chemistry. Our faculty is represented at many prestigious national and international conferences and meetings by participating, moderating and presenting timely and vital research studies. Faculty members routinely participate in organizing scientific sessions, like the American Heart Association. Some faculty members have multiple patents for drugs, concepts and devices to treat patients with heart failure. A few have even initiated startup companies, such as High Enroll by Dr. Dylan Steen and NobleRx Neuroprotection by Dr. Christy Holland, and licensed their inventions to various pharmaceutical companies.

Mentoring and Teaching:
Our faculty members are fully engaged in training and mentoring the next generation of physicians, scientists by offering a variety of programs and giving priority to the training of underrepresented minorities and women scientists. In the Division, the following programs are actively carried out: Medical Scientist Training Program (MSTP), Physician Scientist Training Program (PSTP), AHA Summer Undergraduate Research Fellowship (SURF), Predoctoral and Postdoctoral training programs supported by both AHA and NIH. In addition, we have established an Early-Career Cardiovascular Researchers Network in Cincinnati, including early-career researchers from both UC and Cincinnati Children’s Hospital, to boost local interaction, networking and collaboration.

Collaborations:
Collaboration and team efforts are our mantra for actively engaging the Division. The Division of Cardiovascular Health and Disease provides the opportunity to work with physicians, physician-scientists and basic scientists under one umbrella in a very collaborative manner in various programs that include clinical trials for various novel drugs, collection of human samples to perform mechanistic studies in the laboratory, next-generation DNA sequencing, testing biomarkers, and developing machine learning tools to decode heart-brain talk. Both clinical and basic scientists were involved in this study, alongside our trainees, serving as a model for collaboration in the Division. Overall, our faculty members are collegial by nature and ready to partner with faculty from inside and outside UC.

University of Cincinnati
INTERNAL MEDICINE
Annual Research Report 2020
Christy Holland, PhD

PROFESSOR
DIVISION OF CARDIOVASCULAR HEALTH AND DISEASE
Christy Holland, PhD, knows a picture is worth a thousand words — literally. The University of Cincinnati professor of internal medicine and biomedical engineering is also editor-in-chief of “Ultrasound in Medicine and Biology,” the official journal of the World Federation of Ultrasound in Medicine and Biology.

“Ultrasound in Medicine and Biology is the only ultrasound journal that balances basic science and clinical papers,” Holland says. “As such, it is highly complementary to the purely clinical ultrasound journals, and we are very keen to further enhance its visibility to both pre-clinical and clinical researchers.”

The journal has strong foundations in innovative ultrasound developments, elastography, biological effects of ultrasound and therapeutic ultrasound, and Holland says it has become the journal of choice to report innovative pre-clinical research in the field. She should know, as a Yale-educated expert in the unique possibilities ultrasound holds for treating patients. Holland’s current research in UC’s Image-Guided Ultrasound Therapeutics Laboratories is focused on the development of ultrasound-enhanced thrombolysis, a therapy that dissolves dangerous blood clots, and to provide new information to assist the design of targeted agents that will improve thrombolysis in acute stroke treatment. Her work will also allow clinicians to stage atherosclerosis (hardening of the arteries) and apply directed therapy to improve blood flow.

“We also hope to develop a combined ablation and targeted thrombolytic high amplitude ultrasound (‘histotripsy’) technique that lysed stiff thrombi in the deep veins, decreases the risk of pulmonary embolism and improves long-term prognosis,” Holland says.

Holland’s work isn’t contained to the lab, either — and she is eager for it to make a real-world impact. In 2019, building on seven patents she holds on intellectual property and paired with Rick D’Augustine, an entrepreneur-in-residence with UC’s Venture Lab at the 1819 Innovation Hub, Holland launched NobleRx Neuroprotection. The start-up aims to develop a novel neuroprotectant delivery platform to help stroke teams and emergency care personnel treat stroke victims by protecting the brain against irreversible damage caused by oxygen deprivation. The team has secured funds from Ohio Third Frontier Entrepreneurial Services Provider Program to develop Xenon-loaded microbubbles to provide neuroprotection during stroke, complete formative testing and develop an FDA regulatory strategy to enable first in human trials.

She also plans to recruit a new postdoctoral fellow and graduate student to work in the Image-Guided Ultrasound Therapeutics Laboratories.

“The excellent questions that students ask help motivate my work,” Holland says. “They challenge me to have a deeper understanding of my research.”

Holland’s current research is focused on the development of ultrasound-enhanced thrombolysis. Her work will also allow clinicians to stage atherosclerosis and apply directed therapy to improve blood flow.


6 Petraney MJ, Song T, Sadayappan S, Millay DP. Myocyte-derived Myomaker expression is required for reparative fusion but exacerbates membrane instability in dystrophic myofibers. JCI Insight. 2020 May 7;5(9):e136095. doi: 10.1172/jci.insight.136095. PMID: 32310830; PMCID: PMC7253022.


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<td>38</td>
<td>&quot;Effects of exercise intensity on acute circulating molecular responses poststroke.&quot;</td>
<td>Lawton RC, Kissela B, Vannest J, Dunning K.</td>
<td>10.1016/j.ultsonch.2019.03.029</td>
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DISCOVER & INNOVATE
Cardiovascular Health and Disease

PUBLICATIONS CONTINUED


ENDOWED CHAIR: Robert and Helen Gould Endowed Professorship in Internal Medicine

The Digestive Disease Division has an active research agenda across the spectrum of gastrointestinal disorders. This includes basic, and clinical/translational research studies in esophageal disorders including eosinophilic esophagitis and GERD, upper GI bleeding, pancreato-biliary disorders, inflammatory bowel disease, intestinal infections like C. difficile and liver disorders including viral hepatitis, NAFLD/NASH, PSC, PBC and liver transplantation.

Research Focus Areas/Types:
Currently, the division has five active research laboratories/groups. These investigators are nationally recognized for their contributions to the understanding of:

- New treatments of hepatitis C, and interaction of HIV and hepatitis C viruses
- Viral host immunology and hepatic fibrosis
- Pharmacoeconomics
- Hepatitis B Clearance Mechanisms
- SARS CoV-2 replication and injury in the liver
- Effects of Cocaine on Liver Disease Progression
- Hepatitis E in Immunosuppressed Hosts
- Opioids and Viral Infections
- Drug Induced Liver Disease
- Inflammatory bowel diseases and C difficile infection
- Eosinophilic esophagitis
- Liver Transplantation
- Immunosuppression and use of hepatitis virus infected organs

Investigators/Trainees:
We have seven MD investigators engaged in clinical and translational research, three PhD investigators engaged in basic/translational research and one PharmD focused on liver transplantation. The Division has one endowed Chair (Gould) that is currently filled.

Funding types:
- National Institutes of Health
- Foundations (e.g. AASLD Foundation)
- UC College of Medicine and Department of Internal Medicine
- Industry and public-private partnerships

Mentoring:
All division laboratories are available to medical residents interested in an elective experience in a basic/translational research. We have an extensive and well-developed clinical research program. In addition to GI fellows, participation in the programs is also available to house staff.

Collaborations:
A joint GI training grant with pediatric gastroenterology has recently been renewed and funded. This grant provides stipends for fellows interested in basic and translational laboratory research. The divisional faculty have active international collaborations in South Africa, Botswana, Ghana, Rwanda and India and work with leading investigators at UCSF, University of Maryland, Florida International University, University of Florida, University of North Carolina, Duke University and Harvard University.
Elizabeth Stambrook, BSN, RN
SENIOR CLINICAL RESEARCH PROFESSIONAL
DIGESTIVE DISEASES
At first, Elizabeth Stambrook was resistant to a career in research. Her father was a professor emeritus in the University of Cincinnati's Department of Molecular Genetics, and her mother was an associate senior librarian in the UC Health Sciences Library.

“I grew up in the throes of academic medicine and saw the reality of competing for funding and the amount of commitment it took to have a successful career,” Stambrook says. But while attending Rutgers University, Stambrook was surprised to find that the classes she enjoyed most were biology-based psychology courses. “I ended up working in a neuroscience lab as a student, and it felt like coming home.”

It was during her undergraduate years that Stambrook also realized the importance of research support staff. “They not only manage a portion of actual research activities but the scope of their responsibilities can be as broad as their PI or credentialing will allow,” she says. “These roles also develop knowledge and skills that are applicable to multiple fields within biological sciences, allowing easy transition if desired.”

So after earning her bachelor’s degree, Stambrook found a position managing a neuroscience lab. Then, intrigued by exposure to translational research, she transitioned into clinical research. Knowing that she would be limited by having a BA, Stambrook decided to return to school and earn her BSN and RN license.

“Completing my nursing degree was an accomplishment that has opened many pathways forward for me,” says Stambrook. “The degree helped me find my current position as a clinical research nurse and paved the way towards an eventual master’s degree in nursing.”

Today, Stambrook is a senior clinical research professional in UC’s Department of Internal Medicine’s Digestive Diseases Division. Her research group focuses on liver diseases, with most projects sharing a common goal to either halt advancement of liver disease (a common pathway despite the etiology) or attenuate the effects of cirrhosis and portal hypertension.

In 2021, Stambrook’s team will undertake multiple new clinical trials for NASH, or nonalcoholic steatohepatitis — liver inflammation and damage caused by a buildup of fat in the liver. NASH is a form of the condition called nonalcoholic fatty liver disease. The group will also begin their first monoclonal antibody study for treatment of eosinophilic esophagitis, (EoE), a chronic immune system disease in which eosinophils (a type of white blood cell), builds up in the lining of the esophagus. This buildup, which is caused by an immune-mediated response, can inflame or injure the esophageal tissue, leading to swallowing and eating difficulties for patients.

“If we can limit the amount of liver damage caused by NASH, then we can halt the progression of liver disease and potentially reverse it,” Stambrook says.

With her nursing background, Stambrook helps move these important clinical trials forward while keeping the patients’ best interests at heart — and finds herself in a role that feels just right.

“I grew up in academic medicine and swore that I would never end up doing research at a university,” says Stambrook. “Despite this, all of my post-graduate jobs have been with universities or academic medical centers. I find it interesting that the things you fight against when young can ultimately end up being the right fit.”


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The Division of Endocrinology, Diabetes and Metabolism is committed to improving the health of our region by translating insightful findings from innovative research into impactful outcomes for the health of patients and our community. A few examples of how the division is making a difference include the hemoglobin A1C and blood glucose research led by Robert M. Cohen, MD; Jason Winnick, PhD, study of hepatic glucose metabolism; Yufei Dai, MD, investigation of the mechanism(s) responsible for hypoglycemia after weight-loss surgery; Mercedes Falcigilia, MD, outcomes research on the clinical care of patients with diabetes and Ruchi Bhabhra’s work in novel therapeutic strategies for managing pituitary disorders and the treatment of acromegaly. Basic science research includes Vincent Fong, MD, PhD, investigation of why steroids affect bone and fat cells adversely and Dr. Shailendra Patel’s work on genetic disorders of cholesterol metabolism.

Research Focus Areas/Types:
Current research interests range from exploring the integrated pathways using animal models of diabetes and obesity, lipid disorders affecting embryonic development and atherosclerosis to diabetes and metabolic clinical research. Examples are:
- Mechanisms important in hypoglycemia responses in subjects with diabetes
- Rare lipid disorders and integrated cholesterol metabolism in animal models
- The role of cholesterol in embryonic development
- Mechanisms by which the toxic proteins, causing Alzheimer's disease, are excreted by the brain
- The relationship between bone and metabolism
- Comparative effectiveness of various therapies for improving the durability of type 2 diabetes treatment (beta cell preservation)
- Mechanisms underlying variation between people in the hemoglobin A1C-blood glucose relationship, including racial differences
- Clinical interventions to reduce diabetes and nonalcoholic fatty liver consequences after liver transplantation
- Hematologic mechanisms contributing to the relationship between diet-induced obesity and inflammation

Investigators/Trainees:
We have two MD PhD investigators (Patel and Fong) engaged in basic science research, two MD investigators (Cohen and Dai) and one PhD investigator (Winnick) engaged in clinical and translational research, one MD PhD (Bhabhra) engaged in clinical trials and one MD (Falcigilia) in health outcomes research. We have two basic science laboratories (Patel and Fong). Additionally, all of the Endocrine fellows engage in scholarly activities and are expected to submit a manuscript as part of their training program.

Funding types:
- National Institutes of Health
- UC College of Medicine and Department of Internal Medicine

Mentoring:
Jason Winnick mentors one post-doctorate fellow, Shailendra Patel hosts one undergraduate intern for laboratory-based research, and Robert Cohen mentors one internal medicine resident and one nursing PhD student for clinical and translational research. In addition, we are all qualified faculty for hosting medical students during their research rotations. Dr. Winnick is also active in the Pathobiology and Medicine Graduate program.

Collaborations:
Our faculty has many collaborative research efforts with other disciplines including Adult and Pediatric Hematology; Digestive Diseases; Transplantation Surgery; Pediatric Gastroenterology, Hepatology and Nutrition; Pediatric Human Genetics; and the Department of Pathology and Laboratory Medicine.
Robert M. Cohen, MD
PROFESSOR
DIVISION OF ENDOCRINOLOGY, DIABETES AND METABOLISM
Medicine runs in the family for Robert Cohen, MD; his father was a physician too, as well as two of his three brothers. Still, Cohen was equally drawn to both science and medicine at first. But it was his introduction to research, through a 1969 summer program for high school students sponsored by the National Science Foundation, that helped him find his niche.

“I continued with a substantial research experience most summers throughout college at the National Institutes of Health and the Marine Biological Laboratory and spent my senior year doing research full time,” Cohen says. “I saw the potential for a combined career in medicine and science. I selected endocrinology and diabetes because I thought it was an opportunity for both leading-edge science and long-term patient care relationships.”

That potential for long-lasting connections has proven true over Cohen’s 40-year career, in which he has focused particularly on preventing diabetes complications for patients.

“Just recently, in one afternoon I saw three of my patients who have had type 1 diabetes for more than 50 years each and another with diabetes for almost 40 years,” says Cohen. “I’ve been their doctor for three decades.”

Most recently, Cohen’s research has highlighted the physiology underlying mismatches between hemoglobin A1c (HbA1c) and blood glucose that interfere with preventing diabetes complications. For decades, HbA1c has been the standard measure of glycemic control for most patients with diabetes. The test is cost-effective, easy to obtain and correlates with complication risk. However, HbA1c has limitations, including clinically significant mismatches between HbA1c and average glucose (AG).

The existence of mismatches is important as they can result in over- or under-treatment of diabetes, each of which has risks and costs. If hemoglobin A1c is erroneously thought to be too high when, in fact, the underlying AG is acceptable, the individual could be overly aggressively treated and become predisposed to both dangerous hypoglycemia and excessive induced weight gain. Conversely, patients with a “low mismatch” might not have therapy intensified to reduce their risk of diabetes complications. Significant mismatches between HbA1c and AG may occur in up to 30 percent of the population, Cohen says. His latest hypothesis suggests that red blood cell lifespan variation is the predominant cause for these mismatches, and with a new NIH-funded research grant, he plans to test the idea in larger and more diverse populations.

“We anticipate that the result of the study will have a major impact on improving diabetes care for millions of patients in both developed and developing countries around the world,” says Cohen, who adds that resulting data will be shared with national and international research meetings to determine how the findings might translate into trials and clinical care.

Cohen, who came to UC as a faculty member in 1985, is proud of his research team that has worked together for more than 20 years.

“Since at UC, I have had valuable experiences with faculty members both ahead of and behind me in seniority from whom I have continued to learn and/or tried to serve as a role model,” Cohen says. “Each has contributed to my career development as both clinician, investigator and teacher.”


Division of
General Internal Medicine

ENDOWED CHAIRS: Posey Chair and Richard W. and Sue P. Vilter Chair

Research in our Division impacts numerous stakeholders ranging from patients in our own health care system to national policy. Examples of impactful work include work funded by the Centers for Disease Control and Prevention that has contributed to updated national guidelines on screening recommendations for hepatitis C infection; NIH-funded research helping to elucidate associations between morbid obesity and the incidence of certain cancers and the impact of bariatric surgery on reducing these risks, and another study examining genetic risk factor profiles for future cardiovascular disease in children; PCORI-funded research to determine optimal treatment for migraine headache patients with medication overuse; and another PCORI-funded project to improve treatment for pediatric patients with mood disorders.

Mark H. Eckman, MD
DIVISION DIRECTOR

Research Focus Areas/Types:
Primary areas of interest include the Decision Sciences, Outcomes Research, Health Services Research, Clinical Informatics, Performance Improvement and Innovations in Medical Education, and system redesign.

Impactful Publications:
Recent high impact publications include an examination of the cost-effectiveness of transplanting HCV-infected kidneys from donors infected with the hepatitis C virus (HCV) into HCV-infected patients with end stage kidney disease and in another article, the effect of variations in published stroke rates on the net clinical benefit of anticoagulation for patients with atrial fibrillation in the *Annals of Internal Medicine*. An analysis of costs and outcomes of transplanting HCV-infected kidneys in HCV-uninfected recipients was selected as one of 4 Editors’ Choices for 2020 in the *American Journal of Kidney Diseases*. The assessment of bariatric surgery and the risk of cancer in a large multisite cohort and in another article was published in the *Annals of Surgery*.

Investigators/Trainees:
We have nine MD investigators engaged in clinical and translational research; Six senior faculty (Eckman, Schauer, Martin, Warm, Burrows, Diers) and three promising junior faculty; (Wood, Kinnear, Kelleher) and two endowed chairs, the Posey Chair and the Vilter Chair. Dr. Kinnear received the Macy Faculty Scholar’s Award in 2020. Our faculty have received R01, UL1, Ryan White Foundation, other investigator-initiated industry and foundation, and Anthem Blue Cross Blue Shield Foundation award funding.

Funding types:
• National Institutes of Health
• Centers for Disease Control and Prevention
• PCORI
• UC College of Medicine and Department of Internal Medicine
• Industry and public-private partnerships

Mentoring:
Our researchers are currently mentoring 2 PhD candidates, 7 junior faculty researchers, and 15 internal medicine residents. We also are mentoring junior faculty in other institutions, including one K-award recipient at the Cleveland Clinic, and faculty at UCSF.

Collaborations:
Beyond a rich network of collaborations within the University of Cincinnati, our faculty collaborate on academic activities and research with colleagues at a number of institutions, including the Harvard Medical School, the Massachusetts General Hospital, UCSF, Kaiser Permanente, McMaster University (Ontario), the Cleveland Clinic, and the University of Birmingham (UK), among others.
Sharice N. Wood, MD, MPH

ASSISTANT PROFESSOR OF MEDICINE, ATTENDING PHYSICIAN
As a primary care physician in the University of Cincinnati Medical Center's Hoxworth Center, Sharice Wood, MD, applies the training from her combined internal medicine and pediatrics residency every day.

“My goal has always been to care for underserved and under-represented populations and ideally empower people to improve their health,” Wood says. “Working in the Hoxworth clinic allows me to do this daily. At the same time, I am privileged to work with residents and medical students and continue to be a part of the academic medicine process.”

During her time at Hoxworth, Wood has explored a diverse array of interests—all with the common theme of serving the underserved. In 2017-18, Wood participated in a MATEC Clinician Scholar Program aimed at helping primary care physicians provide high quality HIV/AIDS care. In 2019, she obtained board certification in Obesity Medicine to enable her to work closely with patients in their weight loss efforts. And most recently, in the fall of 2020, Wood joined with the eMERGE IV project with Cincinnati Children’s Hospital Medical Center, part of a national effort to evaluate the utility of polygenic risk scores in predicting several common conditions that affect the African American community. Her role in the project will have her review and return the scores to families, along with counseling and education on disease prevention.

“This aspect of research is new for me, and we are still in the early stages, but I am looking forward to learning and growth during this process,” says Wood.

This past year also saw Wood moving to the other side of bench — from researcher to subject. Wood and her husband chose to be participants in a COVID-19 vaccine trial. She decided on participation for personal reasons — Wood lost a loved one to COVID-19 — and professional, recognizing the importance of research in informing physicians’ daily decisions regarding evidence-based patient care, and the need for data derived from people of color or those who lack resources so that findings can be applied to more diverse populations.

“As an African-American, I recognize that historically, people of color have been treated negatively in science and medicine, so there is often an element of distrust of the health care system. Many of my patients often express concern for these things,” Wood says. In the pandemic, people of color have also been disproportionately affected by COVID-19, with higher rates of morbidity and mortality so the cycle seemed to be continuing. “In some ways, I saw my participation in the study as an opportunity to lead by example and try to build a bridge from the African American community to reconnect to the science of medicine.”

As vaccines now roll out to the public, Wood, a mom of three, is proud to be an example for her patients and community. “Patients seem to listen a little differently when I speak of my participation in the survey, and even early on, I was able to have some interesting conversations with patients,” Wood says. “My hope is that people will gather factual information, then make an informed decision about whether the vaccine is appropriate for their family. I hope that in most cases, the choice is ‘yes.’”


PUBLICATIONS


IMPACT PUBLICATION


IMPACT PUBLICATION


IMPACT PUBLICATION


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Division of Hematology Oncology

ENDOWED CHAIR: Herbert F. Koch Endowed Chair

The scientists and clinical investigators in the Division of Hematology Oncology strive to understand the molecular basis of cancer with the goal of developing novel cancer therapies. The research faculty is engaged in the design and execution of early phase clinical trials, laboratory, research and in teaching and training clinical and research trainees.

Research Focus Areas/Types:
LABORATORY RESEARCH: The Division has 7 independent laboratories pursuing the following research interests:

- Oncogene-dependent intracellular signaling
- Cancer metabolism
- Cancer immunotherapy
- Role of tissue factor in cancer biology
- Identification of novel therapeutic targets
- Biology of primary and metastatic brain tumors.

CLINICAL RESEARCH: The interests of the clinical faculty span from the design and execution of early phase to later phase clinical trials clinical (phase I-III). The program has steadily increased the number and quality of clinical trials. We have a portfolio of 72 open trials for a wide array of cancer types. Our experimental therapeutic program is unique in the tristate region providing access to novel therapies that are tested in man for the first time. Several of our faculty have developed investigator-initiated trials that have attracted the financial support of government, non-profit or industry sponsors.

Over the past year, 566 patients were enrolled in interventional trials offered by the Division, which is the highest enrollment of any division in the University of Cincinnati Cancer Institute! Examples of exciting research programs are: Dr. Gulati’s investigator-initiated trial aimed at assessing immune check point blockade in association with EGFR inhibition and Dr. Riaz’s trial assess the effect of pan-FGFR inhibition, both in head and neck cancer.

Investigators/Trainees:
Three clinical investigators dedicated to phase I and phase Ib trials staff the experimental therapeutic program; eight additional clinical faculty members contribute to our clinical research mission through clinical trials or outcome research. The Division has 12 Hematology and Oncology fellows, several of which are engaged in original research.

Funding types:
- National Institutes of Health
- UC College of Medicine and Department of Internal Medicine
- VA Medical Center
- Industry and public-private partnerships
- Department of Defense
- National Science Foundation

Mentoring:
Our researchers are mentoring 4 post-doctoral fellows in addition to 4 graduate and several undergraduate students. Educational activities include research seminars and Cancer Grand rounds. Several postgraduate trainees, including Hematology and Oncology fellows, are supported by our brand-new T32 that was funded by the NCI in 2019.

Collaborations:
We maintain close interactions with other clinical and basic science departments through the framework provided by the UC Cancer Institute and the Cincinnati Cancer Center within the UC Academic Health Center, Cincinnati Children's Hospital Medical Center and the Cincinnati VA Medical Center.
Xiaoyang Qi, PhD, professor in the University of Cincinnati’s Division of Hematology Oncology, is laser-focused on one objective for 2021.

“I’m striving to develop an immunotherapy for cancer,” Qi says.

In 2016, Qi came one step closer to his goal. After decades of laboratory research and promising findings, the discoveries of Qi, also a Cincinnati Cancer Center researcher and scientific co-founder of Bexion Pharmaceuticals, were translated to clinical trials in humans, potentially helping thousands living with cancer.

In July 2016, Bexion Pharmaceuticals LLC announced that the U.S. Food and Drug Administration cleared their application for a first-in-human Phase I clinical trial with the compound BXQ-350 for treatment of advanced solid tumors and glioblastoma multiforme, the most common type of brain cancer.

“It was an exciting announcement as this is the goal of every scientist — to actually make a difference in patient care,” says Qi, a member of the UC Cancer Institute and the UC Gardner Neuroscience Institute and Brain Tumor Center. “Over the years when I’ve published new research, e-mails from patients and family members asking about a clinical trial involving my findings hit my inbox. I’m so happy when I can answer back that there is one available.”

In 2013, Bexion received a $2.9 million Small Business Innovation Research Bridge Award from the National Cancer Institute, with Qi as co-principal investigator, to help it bring BXQ-350 into the clinical trial phase.

Qi discovered SapC-DOPS, the combination of a lysosomal protein saposin C (SapC), and a phospholipid, known as dioleoyl-phosphatidylserine (DOPS), that assembled into tiny cavities, or nanovesicles, can target and kill many forms of cancer cells. Lysosomes are membrane-enclosed cellular organelles that contain enzymes capable of breaking down all types of biological components; phospholipids are major components of all cell membranes and form lipid bilayers, or cell membranes.

Qi says his lab found that the combination of these two natural cellular components, or SapC-DOPS, caused cell death in human cancer cell types, including brain, lung, skin, prostate, blood, breast and pancreatic cancer, while sparing normal cells and tissues in animal models of human cancer. With numerous basic studies under his belt, Qi formed a partnership with Bexion to create the BXQ-350 compound tested in a Phase I clinical trial. Currently, several Phase 1 and 2 trials have either recently been completed, are ongoing or are scheduled for the near future.

For Qi, who was first attracted to science as a child fascinated by space exploration, the research represents a triumphant step toward seeing the real-world impact of his work.

“Having an effect or benefit on the lives of citizens and society, beyond contributions to academic research, is the ultimate win as a researcher,” says Qi.


**IMPACT PUBLICATION**


Our Division undertakes a wide range of research that is grounded in immunology and inflammation. Highlights of this year’s research include: publication of a novel genetic cause of a mouse model of primary biliary cholangitis (PBC), a paper on prevention of food allergy and suppression of established food allergy by neutralization of TSLP, IL-25 and IL-33, a publication using a novel way to suppress anaphylaxis by using an Anti-Fc receptor monoclonal antibody, a paper showing that house dust-mite allergy is independent of IgE and Fc–Riα, a paper on targeted inhibition of Axl receptor tyrosine kinase in nephritis, a paper on the genetic basis of house dust-mite allergy, and a paper on targeting innate immunity to reverse Type 1 diabetes.

Research Focus Areas/Types:
The research in the division spans the spectrum of basic immunological research. Research projects include:
• investigations to the pathogenesis of food allergy/hypersensitivity
• anaphylaxis, new therapies for asthma and allergic diseases
• mechanisms of occupational lung disease
• pathogenesis of Primary biliary Cirrhosis and Type 1 Diabetes (organ specific autoimmunity)
• pathogenesis of cutaneous systemic lupus erythematosus (SLE)
• novel therapies for autoimmune disease

Investigators/Trainees:
We have five MD and three PhD researchers and three labs. We hired a new PhD investigator in Immunology, Dr. Wenhai Shao, who specializes in lupus mouse models and immune cell signaling. The Evelyn Hess Chair for Lupus research is now officially established and we will start the search for the first occupant of the Hess chair. Overall, the division published over 50 articles this year.

Funding types:
• National Institutes of Health
• VA Medical Center
• UC College of Medicine and Department of Internal Medicine
• Industry and public-private partnerships and philanthropy

Mentoring:
We have a T32 in Allergy/Immunology, one participant in the CSTP program, a participant in the young faculty mentored journal club, and two separate ACGME accredited fellowship programs whose goal is to produce academic Allergists and Rheumatologists.

Collaborations:
In the coming years, a major effort will be the development of the UC Lupus Center. There is now a critical mass of SLE researchers on campus, including basic and clinical research programs. This year we will organize seminars to encourage cross-disciplinary research in SLE that involves both basic investigators and clinicians.
David E. Adams, PhD
RESEARCH SCIENTIST
DIVISION OF IMMUNOLOGY, ALLERGY AND RHEUMATOLOGY
University of Cincinnati
INTERNAL MEDICINE
University of Cincinnati research scientist David Adams's passion for discovery has led him to labs around the world — but started in his Cincinnati backyard. “I grew up in the Cincinnati area, which is world famous for its Ordovician period rocks, and I collected fossils as a kid,” Adams says. Later, during his undergraduate studies at Oberlin College, he conducted a number of independent research projects in the departments of geology and chemistry. “And I caught the research bug.”

It was his PhD research advisor at the University of California Berkeley, though, that determined the precise path of Adams’s career in autoimmunity. “My mentor there used the Socratic method of teaching, and he taught me a lot about how to carry out basic research and to ask fundamental questions,” says Adams.

Since then, Adams has spent nearly three decades in the field, including stints at the Imperial Cancer Research Fund in England, the CNRS outside of Paris and the University of Edinburgh in Scotland. Most of his research since joining UC 14 years ago has focused on the study of autoimmune diseases, including Type 1 diabetes and primary biliary cholangitis, in the laboratory of William M. Ridgway, MD; systemic lupus erythematosus (SLE) and lupus nephritis with Ram R. Singh, MD; and, most recently, with Wenhui Shao, PhD. Adams’s current work in Dr. Shao’s laboratory focuses on TAM receptor gene expression and signaling.

“My current work gives me the opportunity to use my molecular biology skills and training to design and synthesize novel DNA- and RNA-based reagents, which can be used to study and treat autoimmunity,” Adams says.

Another example of Adams’s work is on display in a paper recently published by Ridgway’s group in the journal Hepatology, which shared findings from a mouse model of primary biliary cholangitis (PBC) that showed enoxacin offers a promising approach to treat liver disease. Enoxacin belongs to a class of molecules known as fluoroquinolones that act as potent antibiotics and are typically used to treat bacterial infections, including those of the urinary tract.

“We repurposed enoxacin to target an entirely different molecular pathway in pathogenic T cells, the biogenesis of small RNA regulators of gene expression, to suppress T cell activation,” explained Adams, adding that the research harkened back to his PhD studies. “The Hepatology paper is a perfect example of using my pure science background to study medically relevant problems in autoimmunity.”

Adams, who stays busy outside the lab with his wife of 39 years, six children and three grandchildren, says that while he enjoyed working around the globe, there’s no place like home.

“UC attracts some of the best researchers in the world. My prediction is that we will continue to grow as a division and that our work will ultimately lead to cures and preventions of many diseases that plague us today,” Adams says. “We address some of the most common and pervasive ailments in society. It is an honor to be a part of this community of scientists.”


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IMPACT PUBLICATION


IMPACT PUBLICATION


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IMPACT PUBLICATION


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IMPACT PUBLICATION


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93 The Need for an Interpreter Increases Length of Stay and Influences Postoperative Disposition Following Primary Total Joint Arthroplasty. Bernstein JA, Sharan M, Lygrisse KA, Lajam CM. PMID: 32446624.


The Division of Infectious Diseases has a long-standing reputation as a research focused division where almost 70% of the division's faculty members have active roles in clinical, translational, and basic science research. In total, the division has 11 MD investigators and 4 PhD investigators with over $27M in research holdings.

**Research Focus Areas/Types:**
The focus of the division’s basic science research remains fungal pathogens:
- *Histoplasma capsulatum*
- *Pneumocystis spp.*
- Host cellular response to *Clostridium difficile*

The clinical and translational research focus continues to be:
- HIV
- Diarrheal pathogens
- Respiratory pathogens
- COVID

**Investigators/Trainees:**
The division has an international reputation as a mycology powerhouse based on the research programs of George Deepe in *Histoplasma capsulatum* and Melanie Cushion in *Pneumocystis* species. Kavitha Subramanian Vignesh is expanding the division’s *Histoplasma* research activities even further. Junior investigators such as Rajat Madan and Senu Apewokin are growing the basic and translational research programs of the division by examining the pivotal interface between host cellular, metabolism and *Clostridium difficile* in mouse models and in immunocompromised humans. Additionally, Moises Huaman and Carl Fichtenbaum have delved into a new area of exploration for the division by investigating the role of the host inflammatory response elicited by microbes in the pathogenesis of cardiovascular disease. The clinical research program under Dr. Fichtenbaum continues to conduct studies on persons with HIV infection; prevention of HIV infection; Hepatitis C; COVID; influenza and appropriate antibiotic usage.

**Funding types:**
- National Institutes of Health
- American Heart Association
- Health Resources and Services Administration
- Department of Veterans Affairs
- UC College of Medicine and Department of Internal Medicine
- Industry, public-private partnerships and philanthropy

**Mentoring:**
The divisional research program is committed to providing a structured mentoring environment to allow junior faculty and fellows to develop as independent investigators while sustaining the programs of established investigators.

**Collaborations:**
The division maintains close collaboration with the VA National Infectious Disease Program office based here in Cincinnati and benefits from access to the UC based fungal research on *Aspergillus* and *Candida* and international programs in *Paracoccidioides* and *Cryptococcus*. 
Senu Apewokin, MD, found his mentor — and research path — by taking a chance. University of Cincinnati professor Alison Weiss, PhD, was speaking at the university’s Infectious Diseases divisional conference. After her presentation, Apewokin asked if Weiss would allow him to try his hands on the bench in her lab.

It wasn’t until years later that he discovered that Weiss had long held the goal of supporting a clinical researcher because of the importance of grounding basic research in clinical reality.

“She took a chance on me, supported me with her resources, and the rest is history,” Apewokin recalls.

Since Weiss became his primary mentor, Apewokin has focused on how microbes and host factors change to influence development of *Clostridioides difficile* infection (CDI) during immunosuppressive events, such as chemotherapy. CDI is the most common healthcare-acquired infection and increases hospital mortality and healthcare costs. Although some progress has been made in controlling rates nationwide, the current rates remain “unacceptable,” Apewokin says. The most effective strategy to combat CDI starts with understanding how the disease develops. In addition to microbe-related factors, host factors play a significant role in CDI development.

“Why some patients develop CDI while others don’t is not very clear,” says Apewokin. “Appreciating and acknowledging that not all CDIs are the same motivates research into patient-specific factors that promote development of CDI. My research, hopefully, will emphasize this.”

In addition to working with Weiss, Apewokin’s UC mentoring team has consisted of David Haslam, MD, a specialist in pediatric infectious diseases; Tesfaye Mersha, PhD, who studies asthma and pediatric infectious diseases; and Pier Scaglioni, MD, who researches hematology. “Together they have provided me with valuable resources, career guidance and advice,” Apewokin says.

Looking ahead, Apewokin is hopeful that some of the limitations placed on research activities because of COVID-19 will be removed once the pandemic is under control.

“2021 follows up on a challenging year for all researchers,” he says. “I look forward to a productive and exciting year.”

What Apewokin knows for certain is that his work will continue to focus on a population — pharmacologically immunosuppressed hosts — that historically has been understudied. The potential impact further research could have on patients’ lives drives him each day.

“The knowledge gaps in this area were very obvious during my clinical practice,” Apewokin says. “There was also a glaring absence of translational researchers who studied this population. Together these needs spoke to a sense of urgency that I felt was important to make a contribution toward.”
DISCOVER & INNOVATE
Infectious Diseases

PUBLICATIONS  July 1, 2019 thru June 30, 2020


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16. BOOK: Molecular Medical Microbiology 3rd edition CHAPTER: Clostridium difficile: from “difficult to grow” to “difficult to treat” Authors: Shinmon Jose, David Terrero-Salcedo and Rajat Madan


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Division of Nephrology, Kidney CARE Program

ENDOWED CHAIR: James Heady Endowed Chair

The division conducts basic and translational research alongside robust programs in clinical outcomes research and clinical trials within nephrology. First and foremost, we strive to impact the health of patients and our community through the delivery of excellent care. One of the ways we achieve this is by bringing the latest discoveries in the field of nephrology closer to the bedside. We are recognized regionally and nationally for leading and/or contributing to cutting-edge research, and advancing the knowledge about kidney diseases to patients, peers and trainees. This is achieved via a variety of mediums, including peer-reviewed publications, chapters and monographs, symposia, and focused learning sessions within the institution and the community. With our state-of-the-art laboratory facilities, we provide an academic home to our established research faculty and are committed to training graduate and post-doctoral students.

Charuhas Thakar, MD
DIVISION DIRECTOR

Research Focus Areas/Types:
• Acute kidney injury, chronic kidney disease, dialysis, and transplantation
• Ion-channels and immune regulation
• Epithelial transport
• Vascular biology
• Phosphate metabolism, acid-base physiology

Investigators/Trainees:
The division is at the forefront of planning or participating in national and international clinical trials of new drug development, devices, and other technology. Promising Junior investigators are Silvi Shah, MD and Prakash Gudsoorkar, MD. More established investigators are Laura Conforti, PhD, Hassane Amlal, PhD, Rita Alloway, PharmD and Heather Duncan, PhD. Clinical trial experts include Dr. Abu Jawdeh, Dr. Anand, Dr. Govil, Dr. Kamath and Dr. Kant, among others. In total we have 5 MD investigators and 4 PhD investigators and over 15 active clinical trials. Research publications by the Division of Nephrology investigators have appeared in the most prestigious medical journals over the last decade, including the Annals of Internal Medicine, Journal of Clinical Investigation, Science, Translational Medicine, Journal of American Society of Nephrology, Kidney International, and Critical Care Medicine and Stroke.

Funding types:
• National Institutes of Health (R01, U01, DOD)
• United States Department of Veteran Affairs
• Department of Defense and FDA
• UC College of Medicine and Department of Internal Medicine
• Industry and public-private partnerships and philanthropy

Mentoring:
Faculty provide mentoring to eight trainees and two post doctorate fellows. Realizing the importance of quality improvement research in the future of clinical medicine, the division continues to co-direct a program at the VA to develop and train a fellow in Quality and Safety.

Collaborations:
We continue to grow our outcomes research program, basic science program, and clinical translational research through strategic collaborations with the VA Medical Center, Cincinnati Children’s Medical Center, UC College of Engineering, Department of Surgery, Department of Family and Community Medicine, Department of Biomedical Informatics and the Department of Emergency Medicine. All of the above collaborations have resulted in scientific productivity: either scholarly work and grant funding.
Rita Alloway, PharmD
RESEARCH PROFESSOR
DIVISION OF NEPHROLOGY, KIDNEY CARE PROGRAM
Nephrology, Kidney CARE Program Division Research Professor Rita Alloway, PharmD, says one overarching, patient-centered objective drives her pharmaceutical research now.

“Our goal is for the first kidney transplant a patient receives to be the last in a long life,” Alloway says.

To that end, Alloway has focused on developing novel immunosuppressant combinations in addition to optimizing the management of current immunosuppression. As a pharmacist, Alloway has the pharmacokinetic knowledge base to develop and implement sophisticated pharmacokinetic studies addressing complex issues of drug exposure. One particularly successful example lies in the use of tacrolimus, a medicine that lowers the body’s natural immune system but has a complex pharmacokinetic profile. The drug is widely used to prevent rejection of transplanted organs but its success is associated with achieving optimal tacrolimus exposure for each patient.

After years of experience with branded tacrolimus, generic tacrolimus formulations were approved. “Virtually the entire transplant community was opposed to the use of generic tacrolimus, yet the transition to generics was inevitable due to market forces,” says Alloway.

Alloway and her team successfully conducted a study of the branded tacrolimus, and two different generic formulations in kidney and liver transplant recipients. The researchers determined that generics were as safe and effective as their branded counterparts.

“These data provided the transplant community with an unbiased, objective evaluation of multiple generic products in transplant recipients,” Alloway says.

Always interested in better long-term outcomes for patients, today Alloway’s research is focused on replacing tacrolimus altogether. Immunosuppressants offer less overall toxicity and similar efficacy, and the current average kidney graft survival is approximately 10-15 years. While kidney transplant offers a survival benefit to remaining on dialysis, there is tremendous room for improvements in long-term graft survival. Novel costimulatory blockers are commercially available to replace tacrolimus, but risks and benefits exist. While there is potential to improve adherence and reduce several risk factors negatively impacting long-term survival, a new paradigm must be adopted. A transition away from tacrolimus after almost 30 years will require a new mindset for providers and patients.

“This immunosuppression transition would be easy if it came without risks,” Alloway explains, “but the increased risk of rejection and viral infections require the provider to change focus to managing these short-term risks for a potential improvement in long-term outcomes.”

Alloway is confident that UC’s clinical transplant team will continue addressing the unmet clinical needs of transplant patients today.

“We have an extraordinary clinical transplant team of nephrologists, hepatologists, surgeons, APPs, nurses, pharmacists, dieticians, medical assistants, social workers, leadership — without whom we couldn’t succeed in our clinical research endeavors,” she says.

Alloway gives ample credit to the research coordinators, who serve as patient advocates and whose “unsung, behind-the-scenes efforts” contribute to the overall success of UC’s transplant program — especially during a global pandemic. “Their efforts are no less than heroic,” says Alloway.


* first authors


Division of Pulmonary, Critical Care and Sleep Medicine

ENDOWED CHAIR: **Taylor Professor of Medicine**

The Division of Pulmonary, Critical Care and Sleep Medicine conducts both basic and clinical research programs focused primarily on development of pathogenesis-driven molecular diagnostics and therapeutics for rare lung diseases.

Current clinical research focuses on:
- Investigator-initiated, multicenter, NIH supported, national and international randomized trials for lymphangioleiomyomatosis
- Investigator initiated phase II NIH combination therapy trial for lymphangioleiomyomatosis
- Pharmaceutical trials in pulmonary arterial hypertension, COPD, asthma, interstitial lung disease and critical care medicine
- Therapeutic Development Network and pharmaceutical trials in cystic fibrosis
- Phase 1 NIH trials of phosphate restriction and therapeutic EGTA lavage for pulmonary alveolar microlithiasis
- Safety and yield of cutting edge interventional and advanced diagnostic pulmonary procedures
- Investigator initiated study of the molecular pathogenesis of portopulmonary hypertension
- NIH funded federal network and pharmaceutical trials in Critical Care Medicine
- Investigator initiated home spirometry trials

**Research Focus Areas/Types:**

In our basic research, we focus on studies that have a human clinic trial on the horizon, at least conceptually. Current laboratory projects are focused on:
- Innate and adaptive immunology of:  
  - Smoking  
  - Trauma
- The role of collectins and lung epithelial cells in innate immune defense against inhaled bacteria, mycobacteria, fungi and viruses, especially influenza
- Preclinical studies in mouse models of:  
  - Pulmonary Langerhans cell histiocytosis  
  - Lymphangioleiomyomatosis  
  - Pulmonary alveolar microlithiasis  
  - Pulmonary alveolar proteinosis  
  - Thermal trauma  
  - Influenza
- Neutrophil NETs in cystic fibrosis
- Alveologenesis

**Funding Types for Investigator Initiated Research:**

- National Institutes of Health and other federal agencies—VA, NCATS, FDA, DOD
- Heart and lung societies, ALA, AHA, ATS
- Patient Advocacy Foundations
- Pharmaceutical companies—Pfizer, United Therapeutics

**Mentoring:**

We committed to the training of the next generation of basic scientists and clinician-investigators. We have a special interest in training physician-scientists who are comfortable both at the bench and in the clinic, and fully equipped with the skills, resources and personnel required to bring their research discoveries to trials.

**Collaborations:**

We are part of the Translational Pulmonary Science Center, a collaborative project between pulmonary groups at UC and Cincinnati Children’s Hospital Medical Center, and the Rare Lung Diseases Consortium.
Kristin Hudock, MD
ASSISTANT PROFESSOR
DIVISION OF PULMONARY, CRITICAL CARE AND SLEEP MEDICINE
For Kristin Hudock, University of Cincinnati assistant professor of medicine and pediatrics, the ‘why’ behind her research is quite simple.

“I love science and understanding why and how things happen,” says Hudock, an ICU doctor with joint appointments in UC’s Division of Pulmonary, Critical Care and Sleep Medicine as well as the Cincinnati Children’s Hospital Medical Center (CCHMC) Division of Pulmonary Biology. “The potential to uncover mechanisms of disease that could be targeted to improve another human’s health drives and fulfills me.”

Hudock’s current research focuses on understanding the balance between host defense and lung injury in Cystic Fibrosis.

“We have demonstrated that neutrophils expel neutrophil extracellular traps (NETs) that drive epithelial injury and inflammation via very specific pathways,” Hudock explains. “We believe NETs are a therapeutic target to limit progression of lung disease in cystic fibrosis and prolong lives.”

More immediately, Hudock’s role in the ICU has also brought her in close contact with COVID-19 patients in the past year, and she has been part of the program that collects the blood from coronavirus patients for one of the first COVID-19 biorepository systems in the nation — being built by doctors and scientists in Cincinnati. The biorepository is basically a library of COVID-19 blood samples. UC researchers, along with the Cincinnati Veterans Administration Hospital and Children’s Hospital, are working together to create the repository.

The goal of the blood library is to ultimately make research against the virus more efficient. Researchers hope to collect specimens from 500 patients in the end. The specimens will be used by Hudock and other researchers to learn more about COVID-19 and possible treatments and preventions for not only this disease but possibly diseases of the future.

“Really, the goal is to identify a biomarker, or something that’s going to tell us if this person is likely to get sick and this person isn’t,” Hudock says. “I think the number of questions we can answer with this, and the number of people we can help, is phenomenal.”

For Hudock, both the cystic fibrosis and COVID work represent just the latest endeavors in a career spent striving to make lives better for patients through active research. Hudock attended the Georgetown University School of Medicine and completed her fellowship at the University of Pennsylvania in Philadelphia before moving to Cincinnati. At UC, she has collaborated with investigators in various disciplines, including: Bruce Trapnell, MD, MS; JP Clancy, MD; Frank McCormack, MD; Jeffrey Whitsett; MD and Scott Worthen, MD. Hudock also welcomes students in MD or PhD programs into her labs, passing on the support she has received from the department and mentors.

“The trial and error of research is tough, and there is a lot of failure, but that is why having an administration and department that invest in your potential is so crucial,” Hudock says. “It is a bit like gambling, but with lots of preparation. I hope to see even more investment from the department and college in junior investigators like myself.”

Both the Cystic Fibrosis and COVID work represent just the latest endeavors in a career spent striving to make lives better for patients through active research.


Mentor and Support
Caterina Bartolacci, PhD
POST-DOC FELLOW, DIVISION OF HEMATOLOGY ONCOLOGY
Caterina Bartolacci didn’t dream of becoming a researcher while growing up in Italy. Being fond of forensic television series where information from a DNA sample could solve any case, she wanted to become a forensic biologist, and earned a bachelor’s degree in biology. Then her PhD work led her to the lab of Augusto Amici, PhD, and Cristina Marchini, PhD, at Italy’s University of Camerino, where she focused on breast cancer biology and immunology.


Her love for research led Bartolacci to a life-changing decision: In 2016, she and her peer Cristina Andreani, PhD (they are still coworkers), left the tiny University of Camerino for the University of Texas Southwestern in Dallas.

There, in the lab of Pier Paolo Scaglioni, MD, Bartolacci started her post-doc fellowship. The University of Texas Southwestern gave Bartolacci the opportunity to collaborate with world-renowned scientists in lung cancer and lipidomics, the large-scale study of pathways and networks of cellular lipids in biological systems, a promising but still poorly understood area of cancer biology. The huge structural diversity of these molecules continues to pose a challenge for lipid analysis. Despite the obstacles, Bartolacci succeeded at establishing a novel high-performance lipidomics platform.

After two years in Dallas, Bartolacci moved to the University of Cincinnati’s Division of Hematology Oncology. She is currently working with several external partners and the lab of Ken Greis, PhD, at UC, establishing the lipidomics platform at the university.

“I am fortunate to be able to count on the mentorship and expertise of Dr. Scaglioni, a world class expert in the field of lung cancer, and on the support of my coworkers,” Bartolacci says. “Moreover, during my post-doc fellowship, I collaborated with John Minna, MD, and Jeff McDonald, PhD, experts in lung cancer and lipidomics, respectively. Their supervision helped me acquire a wide range of cancer biology, lung cancer and lipidomics knowledge while also gaining new skills in mouse lung cancer models and mass spectrometry technique. In this environment, I have undergone tremendous professional growth.”

Bartolacci’s current research objective is to significantly contribute to the understanding of the metabolic dependencies of mutant KRAS lung cancer, ultimately leading to innovative therapies. The KRAS gene belongs to a class of genes known as oncogenes. Mutated oncogenes can cause normal cells to become cancerous. The KRAS biomarker is mutated in approximately 30 percent of patients with non-small cell lung cancer. In particular, Bartolacci is focusing on how mutant KRAS regulates fatty acids metabolism.

“I intend to apply the skills and expertise I gained during my fellowship to test the hypothesis that the metabolism of fatty acids is indeed an ‘Achilles’ heel’ of mutant KRAS lung cancer,” says Bartolacci. “My long-term goal is to broaden the knowledge on lipid metabolism in lung cancer driven by oncogenes other than KRAS or harboring additional mutations on top of KRAS.”

Outside of the lab, Bartolacci enjoys drawing, painting and dancing, mainly salsa and bachata. “I like the way dance brings such diverse people together,” she says. “I always smile while dancing.”
MENTOR & SUPPORT
Emerging Researchers SPOTLIGHT

Robert Burkes, MD, MSCR
IMSTAR FELLOW
Clinical Instructor Robert M. Burkes, MD, MSCR, is delighted to be able to continue his early career as a physician-scientist in the Division of Pulmonary, Critical Care and Sleep Medicine. He finds the division’s long history of academic contributions, strong mentorship infrastructure, and emphasis on career development to be a great place for him to work towards his career goal of becoming an independently funded researcher.

Burkes’ academic interests involve the clinical-translational study of the interface of measurable components of the immune system with clinically-relevant Chronic Obstructive Pulmonary Disease (COPD) outcomes. With COPD being the fourth leading cause of death in this country and worldwide, establishing markers which predict poor outcomes is an important and ongoing endeavor. Burkes studied the associations between levels of immune peptides and COPD outcomes prior to joining the faculty at the University of Cincinnati.

Currently, his focus is understanding the dynamic relationship between chronic cytomegalovirus infection, Natural Killer cell phenotypes, and loss of lung function and COPD exacerbations. Burkes works closely with his mentorship team of Frank McCormack, MD, Michael Borchers, PhD, and Ralph Panos, MD—world experts in their fields and distinctly suited to oversee the development of a young researcher like Burkes. While striving to become an independently funded researcher himself, Burkes is excited to have the opportunity to learn from his supportive team of mentors.

Prior to settling in Cincinnati with his wife, a community pediatrician, and his three daughters, Burkes was a medical student at The University of Toledo College of Medicine and Health Sciences where he studied mood disorders in cardiopulmonary rehabilitation participants with a highly regarded psycho-physiologist, Angele McGrady, PhD. He continued his medical training at the University of Louisville, where he solidified his interest in COPD and worked as a quality improvement leader mentored by Nancy Kubiak, MD, to perform a peer-to-peer quality improvement intervention in the care of COPD patients in his internal medicine residents’ clinic. While at the University of Louisville, Burkes also worked on ICU outcomes studies with intensivist Rodrigo Cavallazzi, MD.

Immediately prior to coming to Cincinnati, Burkes was a fellow and then clinical instructor at the University of North Carolina-Chapel Hill, where he obtained a Master of Clinical Research and was awarded a NIH Ruth R. Kirschtein F32 award to study the innate immune peptide, cathelicidin, and COPD outcomes. During this time, he was mentored by thought experts in COPD, Brad Drummond, MD, MHS, and Jim Donohue, MD. The findings from this work were presented at international meetings and in manuscripts and is the basis for his continued work at the University of Cincinnati.

Burkes is enjoying working with his top-of-their-field mentors, supportive colleagues, and staff in the Department of Internal Medicine and feels supported in his quest to advance his career and achieve his career goals to better understand how mechanisms of COPD directly affect patient outcomes.

IMSTAR
Internal Medicine Scholars Training for Academic Research (IMSTAR) grew out of the department’s desire to develop a highly competitive program that would train scholars in academic medicine. The program provides trainees opportunities for development of basic, translational, and clinical research programs. It also includes a focus on educational scholarship offering structured learning experiences in clinical teaching and leadership development. Burkes is a 2020 IMSTAR participant.
Adeboye Adejare, PhD
GRADUATE ASSISTANT, BIOMEDICAL INFORMATICS PROGRAM
GENERAL INTERNAL MEDICINE
Research graduate assistant Adeboye Adejare wants to create more equitable, better healthcare outcomes for everyone — all while empowering patients to make informed medical decisions. His lofty goals are becoming reality through his work at the University of Cincinnati with his mentor, Mark Eckman, MD, MS, and collaborating colleagues.

“There is no such thing as too much effort to combat disparities in healthcare, whether they are based on race, gender, sexual orientation or otherwise,” Adejare says. “To reject that effort is to reject modern research.”

Working with experts in UC’s Department of Internal Medicine and the Center of Health Informatics, Adejare’s team created a web based assessment tool, The Gambler, to help patients become more involved in making healthcare decisions. The Gambler acts as a shared decision-making tool for patients to express their ideas, preferences and values for different health conditions. During the process of expressing their values, patients can learn more about the different outcomes they might face from a disease by watching videos of people demographically matched to them. This method allows for patients to receive information about conditions from people like them, a method proven to make them more receptive to the information discussed.

“These expressions can allow for decision models to give researchers and patients guidance on how to approach the health care treatment,” says Adejare. “Contributing software that gives patients more say in their healthcare truly means a lot since it may provide vulnerable patients more educated agency.”

In clinical settings, Adejare’s research can provide the mechanism for health equity. The Gambler demonstrates this purpose with their recent research with hemodialysis patients. The researchers acquired patients’ preferences and values for different health states involved in End-Stage Kidney Disease (ESKD), including hemodialysis and kidney transplant. In particular, they wanted to know how patients, given appropriate information, would value a kidney successfully treated for a hepatitis C infection.

“African Americans wait longer for kidneys than other patients, and to remediate the issue, it requires more kidneys,” Adejare explains. While a tragedy, deceased opioid users provide an option for kidney donation even with the kidneys infected with hepatitis C. “Asking patients to consider a kidney transplant through shared decision making and The Gambler can alert clinicians to consider the option for patients, helping to ameliorate the kidney transplant disparities in African Americans.”

Decreasing the disparity in kidney transplants is just one potential application of The Gambler; there are plans to use tool in multiple settings. For instance, Adejare’s team is currently working to embed The Gambler in a shared decision-making pipeline to help prevent strokes in patients with atrial fibrillation (AF), providing doctors with treatment recommendations based on individual patient preferences. The researchers are also working with collaborators in Spain and Canada to implement The Gambler to improve outcomes in women who previously had venous thromboembolism and are either pregnant or want to become pregnant. For this work, the team created a mechanism to display The Gambler in multiple languages, opening even more potential applications for the tool.

“Developing innovations that can truly impact patients is what drove me to research,” Adejare says. “Creating new techniques that can improve patients’ health care experience, and overcome disparities, motivates my work every day.”
Robert Baughman, MD
Professor

Our group has a registry to follow patients with advanced sarcoidosis. We are part of the Foundation for Sarcoidosis Research Clinical Studies Network, an eight-center group focused on sarcoidosis. We have also initiated and contributed in clinical trials of diagnosis and treatment of sarcoidosis, including sarcoidosis associated pulmonary hypertension.

**Collaborators:** Elyse Lower, MD

**Keywords:** Sarcoidosis; Pulmonary hypertension; Pulmonary fibrosis

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**PUBLICATIONS**  
**July 1, 2019 thru June 30, 2020**


MENTOR & SUPPORT
Research Governance Committee (RGC)
Academic Research Services (ARS); Regulatory Staff
Retrovirology Reference Laboratory (RRL)

Research Governance Committee
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### Active Awards June 30, 2020

**Department of Internal Medicine**

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>PI</th>
<th>AWARD</th>
<th>PROJECT PERIOD</th>
<th>AWARD AMOUNT *</th>
<th>CURRENT PERIOD †</th>
</tr>
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<tbody>
<tr>
<td>ADMIN</td>
<td>Baughman</td>
<td>1015264 / 2019 Foundation for Sarcoidosis Research</td>
<td>06/01/19 - 05/31/21</td>
<td>$20,000</td>
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<tr>
<td>ADMIN</td>
<td>Baughman</td>
<td>1013987 / Validation of a Sarcoidosis Diagnostic Score (SDS)</td>
<td>07/01/18 - 06/30/20</td>
<td>$80,000</td>
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<td>CARDIO</td>
<td>Ahmad</td>
<td>1014896 / SPIRIT study</td>
<td>08/27/18 - 07/31/22</td>
<td>$17,908</td>
<td>$4,480</td>
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<tr>
<td>CARDIO</td>
<td>Costea</td>
<td>1014008 / Sub DECAAF II Efficacy of DE-MRI guided ablation</td>
<td>01/15/18 - 12/31/20</td>
<td>$1,999</td>
<td>$1,999</td>
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<tr>
<td>CARDIO</td>
<td>Crocker</td>
<td>1015928 / Autonomic remodeling and optogenetic targeted modulation therapy for arrhythmic sudden cardiac death</td>
<td>02/01/20 - 01/31/23</td>
<td>$111,023</td>
<td>$38,201</td>
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<tr>
<td>CARDIO</td>
<td>DeMazumder</td>
<td>1013213 / Autonomic Remodeling and Modulation Therapy in Heart Failure and Sudden Death</td>
<td>02/01/18 - 01/31/21</td>
<td>$747,000</td>
<td>$248,997</td>
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<td>CARDIO</td>
<td>DeMazumder</td>
<td>1015296 / CHAOS-sleep: a novel strategy for developing the personalized polysomnography-based mortality risk scoring system</td>
<td>07/01/19 - 06/30/21</td>
<td>$200,000</td>
<td>$100,000</td>
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<tr>
<td>CARDIO</td>
<td>DeMazumder</td>
<td>1015915 / Transforming sympathetic nerves to parasympathetic in vivo prevents sudden death in males and females with heart failure</td>
<td>07/01/19 - 06/30/22</td>
<td>$175,458</td>
<td>$58,255</td>
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<tr>
<td>CARDIO</td>
<td>DeMazumder</td>
<td>1015733 / Genetic Autonomic Modulation In Vivo to Protect Against Oxidative Stress and Sudden Cardiac Death (SCD)</td>
<td>09/01/19 - 08/31/20</td>
<td>$91,152</td>
<td>$91,152</td>
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<td>CARDIO</td>
<td>Desai</td>
<td>1015776 / Human cardiac organoids for hypertrophic cardiomyopathy</td>
<td>01/01/20 - 12/31/21</td>
<td>$62,032</td>
<td>$31,016</td>
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<tr>
<td>CARDIO</td>
<td>Green</td>
<td>1015777 / The role of Human Antigen R (HuR) in pathological cardiac remodeling</td>
<td>01/01/20 - 12/31/21</td>
<td>$62,032</td>
<td>$31,016</td>
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<td>CARDIO</td>
<td>Green</td>
<td>1015707 / 1014461 / Lisa Green T32</td>
<td>07/02/18 - 07/01/20</td>
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<td>$33,700</td>
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<td>CARDIO</td>
<td>Haworth</td>
<td>1015155 / Ultrasound-mediated Controlled Hypoxic Reperfusion for Inhibition of Reperfusion Injury</td>
<td>07/01/19 - 04/30/24</td>
<td>$3,651,316</td>
<td>$739,145</td>
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<tr>
<td>CARDIO</td>
<td>Haworth</td>
<td>1012816 / Ultrasound-mediated oxygen scavenging for inhibition of reperfusion injury</td>
<td>08/01/16 - 06/30/21</td>
<td>$630,964</td>
<td>$156,874</td>
</tr>
</tbody>
</table>

* NOA Project Period Award Amount
† NOA Current Budget Period
### Active Awards June 2020

**Division** | **PI** | **Award** | **Project Period** | **Award Amount** | **Current Period**
---|---|---|---|---|---
CARDIO | Holland | 1015996 / 1014971/1014086/ Echogenic Targeted Lipo-somes: Transfectin/Drug Delivery | 04/15/17 - 03/31/21 | $1,045,413 | $249,416
CARDIO | Holland | 1011436/2R01NS047603-9- Ultrasound Assisted Thromboly-sis | 08/15/14 - 07/31/20 | $2,764,157 | $545,685
CARDIO | Holland | 1013888 / Chronic Thrombus ablation with histotripsy and thrombolytics | 12/15/17 - 11/30/22 | $1,057,183 | $194,459
CARDIO | Lynch | 1015810 / Inflammation driven platelet loss following transcatheter aortic valve replacement | 11/15/19 - 11/14/20 | $20,000 | $20,000
CARDIO | Owens | 1015248 / Determine the Mechanism by which Rivaroxaban Reduces | 01/28/19 - 07/31/20 | $64,000 | $64,000
CARDIO | Owens | 1014105 / R01 The role of protease activated receptor 2 in atherosclerosis | 05/01/18 - 03/31/23 | $2,004,383 | $401,250
CARDIO | Owens | 1016115 / Role of the Gut Microbiota in Abdominal Aortic Aneurysm | 06/01/20 - 05/30/24 | $2,556,707 | $658,280
CARDIO | Owens | 1015332 / The Role of Pulmonary Alveolar Microlithiasis in Cardiovascular Disease | 07/01/19 - 06/30/21 | $200,000 | $100,000
CARDIO | Owens | 1015427 / The role of protease-activated receptor 2 (PAR2) in the pathogenesis of Alzheimer?S Disease (AD) | 09/01/19 - 03/31/20 | $396,631 | $396,631
CARDIO | Rubinstein | 1013966 / Endocrine Distruptors and Heart Heath (Wang) | 02/01/18 - 01/31/23 | $148,906 | $32,444
CARDIO | Sadayappan | 1013068 / Molecular mechanism of hypertrophic cardiomyopathy in populations of South Asians descendants | 08/15/16 - 12/31/20 | $1,326,009 | -
CARDIO | Sadayappan | 1014763 /American Heart Association - Summer Undergraduate Research Fellowship (AHA-SURF) | 01/01/19 - 12/31/21 | $60,000 | $20,000
CARDIO | Sadayappan | 1013101 / Cardiac Mosin Binding Protein-C: Structure and Function (NCE) | 12/01/16 - 03/31/21 | $1,555,018 | -
CARDIO | Sadayappan | 1015065 / Hypertrophic cardiomyopathy in populations of South Asian descendents | 04/19/19 - 01/31/21 | $250,000 | $250,000
CARDIO | Sadayappan | 1015162 / Master Cisitin Post Doc Amgen | 06/10/19 - 06/09/22 | $120,000 | $40,000

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† NOA Current Budget Period
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<th>DIVISION</th>
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<tr>
<td>CARDIO</td>
<td>Sadayappan</td>
<td>1012990 / Umass Sub R01 AR067279- Sketal myosin-binding protein C</td>
<td>08/15/16 - 06/30/20</td>
<td>$65,925</td>
<td>$16,557</td>
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<td>CARDIO</td>
<td>Sadayappan</td>
<td>1015125 / Molecular Mechanisms of Cardiac Arrhythmias in Patients with Compound Mutations</td>
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<td>$162,471</td>
<td>$54,157</td>
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<tr>
<td>CARDIO</td>
<td>Sadayappan</td>
<td>1015830 / Preclinical studies to improve contractile function in Humanized mouse model expressing R14del-phospholamban with heart failure.</td>
<td>09/01/19 - 08/31/20</td>
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<td>$60,000</td>
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<td>CARDIO</td>
<td>Sanagala</td>
<td>1015253 / 1014321/ CHAOUS- ICU</td>
<td>07/01/18 - 06/30/20</td>
<td>$100,000</td>
<td>$50,000</td>
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<td>CARDIO</td>
<td>Slone</td>
<td>1015775 / HuR-dependent regulation of inflammatory remodeling following myocardial ischemia/reperfusion injury</td>
<td>01/01/20 - 12/31/21</td>
<td>$62,032</td>
<td>$31,016</td>
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<td>CARDIO</td>
<td>Song</td>
<td>1014768 / AHA 19 Postdoc fellowship</td>
<td>07/01/19 - 06/30/21</td>
<td>$106,532</td>
<td>$52,216</td>
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<td>CARDIO</td>
<td>Tranter</td>
<td>1012547 / Investigation of Human Antigen R (HuR) as a Novel Mediator of Cardiac Hypertrophy</td>
<td>07/01/16 - 03/31/21</td>
<td>$1,777,500</td>
<td>$355,500</td>
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<td>CARDIO</td>
<td>Tranter</td>
<td>1015133 / A novel role for HuR in UCP1-independent thermogenesis and energy expenditure</td>
<td>07/01/19 - 06/30/21</td>
<td>$300,000</td>
<td>$100,000</td>
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<td>CARDIO</td>
<td>Tranter</td>
<td>1015141 / RNA aptamer homing beacons to reduce obesity</td>
<td>07/01/19 - 06/30/21</td>
<td>$200,000</td>
<td>$100,000</td>
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<tr>
<td>DIG</td>
<td>Blackard</td>
<td>1014863 /Omics analysis of HIV during synthetic opioid exposure</td>
<td>03/01/19 - 12/31/23</td>
<td>$1,181,407</td>
<td>$608,272</td>
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<td>DIG</td>
<td>Blackard</td>
<td>1016344 / The COVID-19 / Opioid / HIV Syndemic R61 Supplement</td>
<td>03/01/19 - 12/31/21</td>
<td>$279,889</td>
<td>$150,215</td>
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<td>DIG</td>
<td>Blackard</td>
<td>1014625 / Memorandum of Understanding-Instituto Nacional de Saude de Mozambique</td>
<td>08/01/18 - 07/31/20</td>
<td>$4,000</td>
<td>$2,000</td>
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<td>DIG</td>
<td>Blackard</td>
<td>1015780 / An evaluation of vertical transmission of hepatitis C virus and natural history of chronic HCV in pregnant women with subsequent treatment</td>
<td>08/01/19 - 09/30/20</td>
<td>$106,536</td>
<td>$106,536</td>
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<td>DIG</td>
<td>Reynolds</td>
<td>1013317 / Comparative effectiveness of specific carbohydrate and mediterranean diets to induce remission in patients with crohns disease</td>
<td>03/20/17 - 07/31/20</td>
<td>$25,800</td>
<td>$8,600</td>
</tr>
</tbody>
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† NOA Current Budget Period

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<tr>
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<tbody>
<tr>
<td>DIG</td>
<td>Reynolds</td>
<td>1014353 /Study of a Prospective Adult Research Cohort with Inflammatory Bowel Disease (SPARC IBD)</td>
<td>07/13/18 - 08/31/21</td>
<td>$256,060</td>
<td>$126,755</td>
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<td>DIG</td>
<td>Sherman</td>
<td>1014780 / A randomized, placebo-controlled pilot study of sulfasalazine for the treatment of Primary Sclerosing Cholangitis (SHIP)</td>
<td>01/01/18 - 12/31/20</td>
<td>$10,500</td>
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<tr>
<td>DIG</td>
<td>Sherman</td>
<td>1012450 / HIV Antiretroviral Therapy and Hepatic Injury</td>
<td>02/15/16 - 01/31/21</td>
<td>$1,849,870</td>
<td>$500,045</td>
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<tr>
<td>DIG</td>
<td>Sherman</td>
<td>1016281 / 1015170 / 1014224 / 1012602 / 1012513-FIU U01-DA040381</td>
<td>08/01/15 - 05/31/21</td>
<td>$1,226,275</td>
<td>$161,007</td>
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<td>DIG</td>
<td>Sherman</td>
<td>1016316 / 1015291/1014330/ Subaward-R01 Maryland</td>
<td>02/01/18 - 05/31/22</td>
<td>$101,987</td>
<td>$11,749</td>
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<td>DIG</td>
<td>Sherman</td>
<td>1012724/ The Prioritize study: PCORI</td>
<td>03/01/16 - 08/31/21</td>
<td>$258,209</td>
<td>$57,402</td>
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<td>DIG</td>
<td>Sherman</td>
<td>1012223 / Hepatitis E in HIV-Infected Patients</td>
<td>09/23/15 - 08/31/20</td>
<td>$1,374,995</td>
<td>$274,999</td>
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<td>DIG</td>
<td>Sherman</td>
<td>1015763 / 1014941/(LOC), AIDS Clinical Trials Group (ACTG)</td>
<td>12/01/18 - 11/30/20</td>
<td>$40,044</td>
<td>$20,045</td>
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<td>DIG</td>
<td>Yeboah-Korang</td>
<td>1015477 / AASLD Foundation Advanced/ Transplant Hepatology Award</td>
<td>07/01/19 - 06/30/20</td>
<td>$26,000</td>
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<td>ENDO</td>
<td>Cohen</td>
<td>1012534 / GRADE EDS</td>
<td>09/01/15 - 03/31/21</td>
<td>$56,423</td>
<td>$12,126</td>
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<td>ENDO</td>
<td>Cohen</td>
<td>1015313 / 1014391 /1013659 (Yr 6) /1012844 (Yr 5) /1012028 (Yr 4) /1011388 (Yr 3) /1010749 (Yr 2) /1010368 (Yr 1) - GRADE</td>
<td>01/01/12 - 07/31/20</td>
<td>$2,054,669</td>
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<td>ENDO</td>
<td>Patel</td>
<td>1014913 / The Role of Abcg4 in Alzheimer's Disease</td>
<td>04/01/19 - 01/31/21</td>
<td>$320,875</td>
<td>$160,377</td>
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<td>ENDO</td>
<td>Patel</td>
<td>1015403 / 1014536/Role of Cholesterol Biosynthesis in Development</td>
<td>09/01/18 - 08/31/20</td>
<td>$127,626</td>
<td>$59,903</td>
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<td>ENDO</td>
<td>Winnick</td>
<td>1013196 / Effect of liver glycogen content on hypoglycemic counterregulation</td>
<td>09/01/16 - 05/31/21</td>
<td>$1,653,483</td>
<td>$338,817</td>
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<td>GEN MED</td>
<td>Eckman</td>
<td>1015561 / Children's Research Institute</td>
<td>08/01/19 - 07/31/23</td>
<td>$200,867</td>
<td>$25,600</td>
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<td>GEN MED</td>
<td>Martin</td>
<td>1013209 / Determining the optimal treatment strategy for patients who have chronic migraine with medication overuse</td>
<td>05/01/16 - 04/30/21</td>
<td>$212,364</td>
<td>$41,721</td>
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<td>GEN MED</td>
<td>Martin</td>
<td>1014451 / 1R03 HD094236-01-A1</td>
<td>08/07/18 - 07/31/20</td>
<td>$22,954</td>
<td>$11,477</td>
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<tr>
<td>HEMONC</td>
<td>Bogdanov</td>
<td>1012102 /1011805/1 R01 CA190717-01</td>
<td>04/09/15 - 03/31/21</td>
<td>$1,396,170</td>
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<td>Alternatively Spliced Tissue Factor and Pathobiology of Pancreatic Cancer</td>
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<td>HEMONC</td>
<td>Bogdanov</td>
<td>1015348 / Post-Graduate Cancer Research Translational (PG-CART) Training Program</td>
<td>07/05/19 - 06/30/24</td>
<td>$2,083,649</td>
<td>$296,167</td>
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<td>HEMONC</td>
<td>Charif</td>
<td>1015387 / Back to Bedside Initiative</td>
<td>07/01/19 - 12/31/20</td>
<td>$5,000</td>
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<td>HEMONC</td>
<td>Chaudhary</td>
<td>1011153 / SWOG Purchase Service Agreement</td>
<td>06/09/14 - 06/30/20</td>
<td>$415,654</td>
<td>$122,821</td>
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<td>Dong</td>
<td>1014339 / R21 Preclinical safety and efficacy assessment of a novel PCNA inhibitor for prostate cancer therapy</td>
<td>08/01/18 - 07/31/20</td>
<td>$364,010</td>
<td>$162,232</td>
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<td>HEMONC</td>
<td>Dong</td>
<td>1006682 / NSF sub</td>
<td>09/01/08 - 07/31/20</td>
<td>$1,200,000</td>
<td>$61,767</td>
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<td>HEMONC</td>
<td>Palascak</td>
<td>1016170 / 1015060/1014197 /1013325 /1012909 /1012312 /1011659 /1010330 /1011222 /1011659 - HFM MCHB</td>
<td>06/01/20 - 05/31/21</td>
<td>$15,000</td>
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<td>HEMONC</td>
<td>Palascak</td>
<td>1016172 /1015026/1014171/1012610/1011826/1009394/1011157/1010442 - HFM Cascade</td>
<td>06/01/20 - 05/31/21</td>
<td>$175,620</td>
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<td>HEMONC</td>
<td>Qi</td>
<td>1015024 / Preclinical studies of BXQ-350 therapy for DIPG</td>
<td>03/01/19 - 12/31/20</td>
<td>$99,877</td>
<td>$28,580</td>
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<td>HEMONC</td>
<td>Sasaki</td>
<td>1015376 / 1014351/Targeting the metabolic vulnerability of GTP-metabolism in IDH mutated glioma</td>
<td>07/01/18 - 06/30/20</td>
<td>$30,000</td>
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<td>HEMONC</td>
<td>Sasaki</td>
<td>1011482 /1 R01NS089815-01</td>
<td>09/30/14 - 08/31/20</td>
<td>$1,670,215</td>
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<td>HEMONC</td>
<td>Wise-Draper</td>
<td>1014740 / RSG-18-148-01 CCC-Oral Rinse Methylation for follow-up</td>
<td>01/01/19 - 12/31/22</td>
<td>$134,787</td>
<td>$44,929</td>
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<td>HEMONC</td>
<td>Wise-Draper</td>
<td>1015666 / Harnessing the Natural Killer Cytotoxic Response in Head and Neck Cancer</td>
<td>01/01/20 - 12/31/23</td>
<td>$792,000</td>
<td>$198,000</td>
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<tr>
<td>HEMONC</td>
<td>Wise-Draper</td>
<td>1013562 / CA160714P1: Ionic Mechanisms of Resistance to Immunotherapy in Head and Neck Cancer</td>
<td>07/01/17 - 06/30/20</td>
<td>$533,631</td>
<td>$173,922</td>
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<tr>
<td>IMM</td>
<td>Bernstein, J</td>
<td>1014733 / Investigation of Pathomechanisms of Chronic Cough using in Vitro Approach</td>
<td>01/02/19 - 01/01/21</td>
<td>$135,200</td>
<td>$45,067</td>
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<td>IMM</td>
<td>Finkelman</td>
<td>1013239 / Wimpy antibody isotypes protect against antibody-mediated disease</td>
<td>01/25/17 - 12/31/21</td>
<td>$1,833,210</td>
<td>$365,342</td>
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<td>IMM</td>
<td>Finkelman</td>
<td>1014203 / suB r01 Regulation of gene expression in the anaphylactic pathway</td>
<td>05/15/18 - 04/30/23</td>
<td>$254,905</td>
<td>$59,466</td>
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<td>IMM</td>
<td>Finkelman</td>
<td>1011228 / 1 R01 AI113162-01</td>
<td>07/15/14 - 06/30/20</td>
<td>$1,334,589</td>
<td>$332,784</td>
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<td>IMM</td>
<td>Finkelman</td>
<td>1012921 / Administrative Supplement to 5R01AI113162</td>
<td>08/22/16 - 06/30/20</td>
<td>$100,000</td>
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<tr>
<td>IMM</td>
<td>Finkelman</td>
<td>1015242 / Rapid, safe suppression of IgE-mediated disease with monovalent anti-FceRIa mAb</td>
<td>07/05/19 - 06/30/24</td>
<td>$2,643,173</td>
<td>$585,704</td>
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<tr>
<td>IMM</td>
<td>Khanna</td>
<td>1015630 / Genome Research in African American Scleroderma Patients (GRASP)</td>
<td>09/12/19 - 09/11/24</td>
<td>$21,660</td>
<td>$4,458</td>
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<tr>
<td>IMM</td>
<td>Shao</td>
<td>1014923 / Axl receptor tyrosine kinase, a potential therapeutic target in glomerulonephritis</td>
<td>04/01/19 - 03/31/22</td>
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<td>1016128 / Harnessing iHIOs and Metagenomics to Unravel Host Immune-microbiota Interactions During Cancer Chemotherapy-associated Clostridium difficile Infections</td>
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* NOA Project Period Award Amount
† NOA Current Budget Period

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* NOA Project Period Award Amount
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## ACTIVE AWARDS JUNE 2020 CONTINUED

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* NOA Project Period Award Amount  
† NOA Current Budget Period
## Active Awards June 2020

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# New Grants FY 2020

## Department of Internal Medicine

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<td>Transforming sympathetic nerves to parasympathetic in vivo prevents sudden death in males and females with heart failure</td>
<td>AHA Subaward (Sawti Dey - VUMC)</td>
<td>7/1/19 - 6/30/22</td>
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<td>Genetic Autonomic Modulation in Vivo Prevents Against Oxidative Stress and Sudden Cardiac Death</td>
<td>DOD subaward (Sawti Dey - VUMC)</td>
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<td>DeMazumder, D</td>
<td>Autonomic remodeling and modulation as mechanism and therapy for sudden cardiac death in heart failure</td>
<td>Jeff Crocker F32</td>
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<td>Human cardiac organoids for hypertrophic cardiomyopathy</td>
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<td>Ultrasound-mediated Controlled Hypoxemic Reperfusion for Inhibition of Reperfusion Injury</td>
<td>R01 HL148451</td>
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<td>Inflammation driven platelet loss following transcatheter aortic valve replacement</td>
<td>NHLBI SRP-2019-01 (Pride Award)</td>
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<td>The Role of Pulmonary Alveolar Microlithiasis in Cardiovascular Disease</td>
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<td>The role of protease-activated receptor 2 (PAR2) in the pathogenesis of Alzheimer’s Disease</td>
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<td>Molecular Mechanisms of Cardiac Arrhythmias in Patients with Compound Mutations</td>
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<td>Preclinical studies to improve contractile function in Humanized mouse model expressing R14del-phospholamban with heart failure</td>
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<td>Blackard, J</td>
<td>An evaluation of vertical transmission of hepatitis C virus and natural history of chronic HCV in pregnant women</td>
<td>Christ Hospital</td>
<td>10/22/19 - 10/31/20</td>
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<td>Omics analysis of HIV during synthetic opioid exposure</td>
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<td>AASLD Foundation Advanced/Transplant Hepatology Award</td>
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<td>Eckman, M</td>
<td>Improving the detection of STIs in the Pediatric Emergency Department: A Pragmatic Trial</td>
<td>Children's Research Institute - sub</td>
<td>8/1/19 - 7/31/23</td>
<td>$125,150</td>
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<td>HEMONC</td>
<td>Bogdanov, V</td>
<td>Post-Graduate Hematology/Oncology Translational (PG-HOT) Training Program</td>
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<td>6/7/19 - 6/30/24</td>
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<td>Wise-Draper, T</td>
<td>ACS Harnessing the Natural Killer Cytotoxic Response</td>
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<td>Finkelman, F</td>
<td>Rapid, safe suppression of IgE-mediated disease with monovalent anti-ceRia mAb</td>
<td>R01 AI145991</td>
<td>7/5/19 - 6/30/24</td>
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<td>Genome Research in African American Scleroderma Patients (GRASP)</td>
<td>GRASP</td>
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<td>Apewokin, S</td>
<td>Harnessing Induced Human Intestinal Organoids (IHIos) Meta</td>
<td>KD8 CA237735</td>
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<td>Cushion, M</td>
<td>Copper tolerance and homeostasis in Pneumocystis species</td>
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<td>INF</td>
<td>Deepe, G</td>
<td>Identification of human T cell epitopes of pathogenic fungi</td>
<td>University of Massachusetts Worcester</td>
<td>9/30/19 - 9/29/20</td>
<td>$124,436</td>
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<td>Kaul, P</td>
<td>Midwest Capacity Building Assistance Network (MCBAN)</td>
<td>Wash U WU-20-13 Sub 1 NU65PS923676</td>
<td>4/1/19 - 3/31/20</td>
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<td>Alloway, R</td>
<td>BEST Study - Evaluation of serum belatacept concentrations in renal</td>
<td>DCI Paul Teschan award</td>
<td>12/1/19 - 11/30/20</td>
<td>$48,317</td>
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<td>PULM</td>
<td>Gupta, N</td>
<td>Sirolimus treatment in hospitalized patients with COVID-19 pneumonia</td>
<td>Pfizer, Inc</td>
<td>4/20/20 - 4/19/21</td>
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### New Grants FY 2020

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<th>Project Period</th>
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<td>Hite, D</td>
<td>Dissecting the molecular mechanisms of lung injury during mechanical ventilation</td>
<td>OU Sub-R56HL142767</td>
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<td>K-Boost Award</td>
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<td>Jose, A</td>
<td>Biomarker Discovery in Portopulmonary Hypertension</td>
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<td>PULM</td>
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<td>R1226 Dartmouth CF Lung Transplant Transition - Regional Dissemination Network</td>
<td>Cystic Fibrosis Foundation - Dartmouth sub</td>
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<td>McCormack, F</td>
<td>The Molecular and Genetic Pathogenesis of LAM</td>
<td>Brigham and Women's</td>
<td>3/1/20 - 2/28/25</td>
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<td>Romaker, A</td>
<td>Impact of Low Flow Nocturnal Oxygen Therapy on Hospital Readmission</td>
<td>OSU Sub</td>
<td>9/1/19 - 8/31/20</td>
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<td>DOD TS180051</td>
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<td>Role of Homeobox Genes in Hormonal Regulation of Transcriptional Activation in LAM Progression</td>
<td>LAM Foundation LAM0141E01-20</td>
<td>1/15/20 - 1/14/22</td>
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**Total** $14,551,393

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**Image, Facing Page:**

"No Filters; Back to RENALity"

Mice Renal Tubular Epithelial Cells after ischemia-reperfusion injury. The four different colours represent proteins affected by oxidative stress. Live Microscopy Core was used on March 4, 2019, with a Leica DMi8 wide-field fluorescent microscope, 20x objective.

2020 Image Gallery, Basic Research Images

**Credit:** Sabrina Bernardo, Undergraduate student worker, Nephrology; Begona Campos, PhD; Charuhas Thakar, MD

**Main Image, Back Cover:**

"B cell infiltration in head and neck cancer patients on anti-PD-1 therapy"

Using NanoString's Molecularly Guided Highly Multiplexed Spatial Profiling, we investigated B cell infiltration in head and neck cancer tissue from patients on PD-1 inhibitors. The image shows CD20+ B cells (yellow) and CD138+ plasma cells (pink), and tumor characterized by pan-cytokeratin (green). Patient tissue was obtained from Dr. Trisha Wise-Draper's Phase II clinical trial, “Investigation of Adjuvant Combined Cisplatin and Radiation with Pembrolizumab in Resected Head and Neck Squamous Cell Carcinoma”

2020 Image Gallery, Clinical Research Images

**Credit:** Sarah Palackdharry, MS, College of Medicine UC Cancer Program
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