

Facilities and research environment at the University of Cincinnati College of Medicine contributing to the success of the investigator:

University of Cincinnati (UC) Academic Health Center (AHC) traces its origins to the Medical College of Ohio, the first medical school west of the Alleghenies, founded in 1819 in Cincinnati through the efforts of Dr. Daniel Drake. The UC AHC includes the Colleges of Medicine, Nursing, Pharmacy, and Allied Health Sciences, Hoxworth Blood Center, UC Cancer Institute, UC Neuroscience Institute, Center for Addiction Research, and Center for Integrative Health and Wellness. In 2021, UC Health initiated a \$221 million expansion that will double the size of the emergency department at the University of Cincinnati Medical Center, the region's main trauma center.

The AHC campus includes 16 buildings spanning nearly 2.5 million gross sq. ft. on 56 acres in the central Cincinnati neighborhoods of Avondale and Corryville. The Medical Sciences Building (MSB), at the center of the AHC, comprises 917,000 gross sq. ft., with 200 research laboratories totaling over 210,000 sq. ft., as well as all the preclinical and clinical departments of the CoM (except Pediatrics), the health sciences library, classrooms, teaching laboratories, and animal facilities. The MSB is physically joined to the 771-bed UC Medical Center. The attached 9 story, 240,000 gross sq. ft. Center for Academic & Research Excellence (CARE)-Crawley wing, which opened in September 2008, encompasses over 70,000 sq. ft. of laboratories as well as library, administrative, meeting, and recreational space. The \$60 million Gardner Neuroscience Institute on the AHC main campus was opened in April 2019. A \$34 million renovation of the Winkle College of Pharmacy's home in Kowalewski Hall was completed in the summer 2019. These upgrades foster the continued growth of the AHC's biomedical research grants and contracts, just as the addition of the MSB, the Cardiovascular Research Center (1996), the free-standing Vontz Center for Molecular Studies (1999), and the Metabolic Diseases Institute (2001) have done.

Our University is classified as a "very high research activity" institution by the Carnegie Commission and is ranked 25th among public institutions by the National Science Foundation in federally-financed research and development expenditures; **28th** in all R&D expenditures among public institutions; **46th** in R&D expenditures among all colleges and universities; and **47th** overall in federally-financed R&D expenditures. From all sources, UC, as of FY2020 received \$273.1 million in sponsored program funding. Nearly 83% of the \$175.4 million in UC research awards was from federal sources, including \$114.1 million from the NIH. The College of Medicine in FY2022 was ranked by Blue Ridge in the top 41% of medical schools in overall federal research grant holdings. Full-time, part-time, and adjunct/volunteer/visiting faculty (904 physician, 499 advanced practice providers, 288 PhD) at the College of Medicine (COM) (excluding pediatrics) number *4,104 (Faculty: 61% male, 39% female; 70.9% white, 23.7 Asian, 3.9% Black, 1.7% Hispanic/Latino)*, distributed among five basic science and 18 clinical departments. There are 15 robust core facilities to support research within the COM.

Facilities and resources at the University of Cincinnati College of Medicine Department of Internal Medicine (DOIM) Medicine contributing to the success of the investigator:

Starting in 2011-2012, the DOIM initiated targeted internal investments and programs to support promising MD, MD/PhD, and PhD investigators at every level of their careers. The overall objective was to support faculty based on a tripartite missions of patient care, teaching, and research. First, to establish a critical mass of investigators, the DOIM increased from 191 faculty in 2011 to 288 faculty in December 2017. Second, a Research Governance Committee (RGC) was put in place that consisted of 2-3 researchers from each Division; the RGC was charged with improving the research culture and disseminating information. The RGC defined specific goals and monitored progress with reports provided at monthly DOIM Staff and Leadership meetings. Third, the DOIM created internal funding for "unsponsored research" and made a concerted effort to identify and nominate faculty for recognition and awards, both internal and external. Discrete and targeted mechanisms to dispense bridge funding and pilot internal grant funding programs were established to support junior and senior faculty while promoting collaboration between divisions and departments. Fourth, a program was developed for mentorship, training, and faculty development at all levels. Specifically, the DOIM created a junior faculty club (J-club) involving 10-12 of the research-oriented junior

faculty (J-club. As a part of participating in the club, an individual development plan was required, and members were encouraged to apply for internal and NIH developmental awards.

In part because of these efforts, the DOIM is currently home to 292 faculty from 9 divisions, 112 residents, 80 fellows, and 373 staff. Administratively, it is divided into 4 areas: educational, clinical, research, and veterans affairs. Physicians within the Department are part of the UC Health University of Cincinnati Physicians group practice, providing comprehensive clinical services in primary care and all medical subspecialties. New clinical practice programs include a diabetes center, sleep center, and heart and vascular center. The Department is deeply committed to its research mission and to the training of future clinical investigators and researchers in foundational, clinical, translational, outcomes, and other health care-associated research areas. Faculty research is often interdisciplinary and collaborative between clinical and basic scientists, including projects with investigators at Cincinnati Children’s Hospital Medical Center, the Cincinnati VA Medical Center, the James L. Winkle College of Pharmacy, and the College of Education, Criminal Justice, and Human Services. The Department has particular research strengths in: cancer, with numerous collaborators across the Academic Health Center, including the CCHMC Hematology Oncology Unit; cardiovascular health, including a Cardiovascular Center of Excellence; digestive diseases, including the Hepatology Research Group, one of the premier research groups involved in the study of HCV and HBV co-infections in the context of HIV; diabetes and obesity; infectious diseases, including the AIDS Clinical Trial Unit; outcomes research; rare lung diseases including LAM and pulmonary alveolar proteinosis; and sickle cell disease, including participation in national clinical trials of the Sickle Cell Research Network. As of FY21, DOIM holds 172 total grants, ~ 21% of which are held by primary investigators with R01 awards. The total award amount is \$119 million. Investigators are supported with intramural funding such as distinguished research achievement awards, junior and senior pilot awards, challenge awards, bridge funding, submission incentive awards, and others. This investment of \$2.7 million has seen a return of \$22 million in external awards, and one of the goals is to foster the awarding of external K awards from the NIH. During FY19 through 22, 5 NIH-sponsored K career development and three CCTST-sponsored KL2/CT2 grants were awarded to junior investigators in the Department of Internal Medicine. **Figure 1** demonstrates the increase in funding from FY15 to FY21; of note, the submission success rate increased from less than 20% to over 40%.

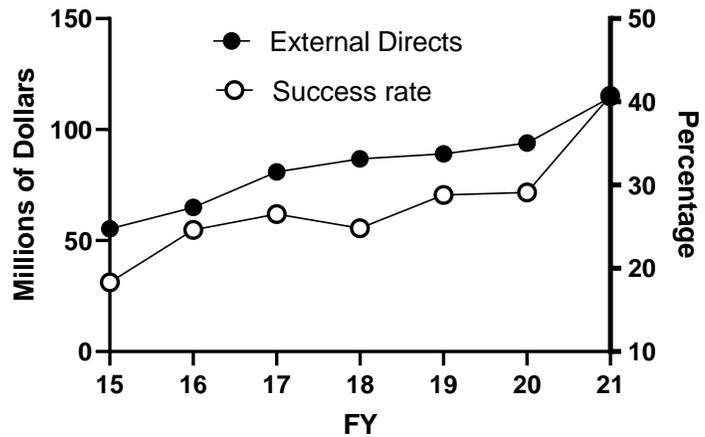


Figure 1. Departmental extramural funding research holdings and extramural grant submission success rate from FY15 to FY21. Over this 6 year period, total holdings increased over two fold from ~\$55.4M to ~\$114.5M and success rate increase from ~20 to ~40%.

Academic Research Services

In 2016, to assist in the implementation of the research mission of the DOIM, an “Academic Research Service” (ARS) administrative unit was created consisting of a senior business administrator, research manager, administrative assistant, grant writer/educator, grant matcher/web designer and a 25% FTE biostatistician from the Division of Bioinformatics. The goal was to provide comprehensive services related to the preparation and submission of all types of grants and manuscripts for investigators within the DOIM without being redundant to other services already offered by the College of Medicine. Best practices were identified by coordinating with existing efforts within the Pulmonary Division and partnering with existing initiatives within Divisions and the Academic Health Center. Representative activities included weekly Grand Rounds, annual departmental research retreats, individual division-sponsored talks, monthly faculty-staff meetings, and educational opportunities offered by affiliated organizations such as the UC Heart, Lung, and Vascular Institute housed largely within the DOIM. As of 2019, approximately 46% of research-oriented

faculty (51 of 112) have used some features of ARS services and a program involving ten training sessions devoted to the full scope of how to maximize the probability of obtaining funding. Laboratory processing service was established and managed by the ARS. Eventually, five of six divisions conducting clinical research have been utilizing this service. Finally, major responsibilities were to organize a yearly research symposium and publish an Annual Report highlighting the research accomplishments of the DOIM and offering a means to foster collaborations.