



Michigan Emergency Medicine (EM) Physician-Scientist StARR Training Program

Enhancing research training and career development opportunities
for EM resident investigators at the University of Michigan



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

StARR recruits & trains outstanding resident investigators in research related to **heart, lung, blood, and sleep (HLBS)** disorders and biological systems.

The StARR program selects **two exceptional EM resident investigators each year**. Residents apply for the program at the beginning of their third postgraduate year (PGY3).



To ensure that program graduates are both clinically excellent and well-prepared for successful research careers, the StARR program integrates a dedicated research-focused year (PGY4R) into the residency training. This structure provides residents with the opportunity to devote 80% of their effort to research activities, supported by the StARR program, while maintaining their clinical skills through up to four eight-hour Emergency Department shifts per month. By creating protected time for intensive research training, the program is designed to accelerate the path to achieving an NIH career development award **without compromising clinical experience**.



Participants will continue their clinical training after the research-focused year, completing the traditional PGY4 clinical curriculum during their fifth postgraduate year (PGY5). This carefully designed sequence ensures residents have the opportunity to dedicate up to three elective months to advancing their research and focusing on grant writing. During this time, they are expected to apply for the **NIH Stimulating Access to Research in Residency Transition Scholar (StARRTS) K38 award**. This prestigious award supports 50% effort over 12-24 months, provides \$20,000 in research funds, and facilitates a seamless transition into an early career faculty position. This award will make graduating residents very attractive for top-tier academic faculty positions.



By aligning the training schedule to enable K38 applications during residency, the program aims to accelerate participants' paths to securing a traditional K08 or K23 award by the end of their K38-supported training, dramatically reducing the time typically required to establish independent research careers. Over the past 20 years, University of Michigan Emergency Medicine faculty who successfully obtained K08 or K23 awards typically achieved this milestone 4 to 8 years after completing their residency training.



Financial Support & Supplementary Research Funds

The StARR program will assist eligible resident investigators in applying for an NIH student loan repayment award before starting their PGY4R year. This award pays **up to \$50,000 annually** for a researcher's qualified educational debt.

Additionally, as part of the StARR program, **up to \$20,000 per year in Supplementary Research Funds** is available per resident-investigator. These funds can be used to cover short-term courses, workshops, research supplies, and technical support costs. However, they may **NOT** be used for tuition for courses leading to a degree, materials leading to clinical qualifications, or equipment.



Travel & Professional Development

The StARR award also provides **\$3,000 annually for travel** to domestic scientific conferences, NIH-sponsored workshops, or exceptionally well-justified foreign travel for research presentations. These travel funds support the dissemination of research findings and foster professional development within the scientific community.

Frequently Asked Questions

Why is a dedicated year of research training during residency important?

A dedicated year of research training during residency is a strategic decision that offers several compelling benefits, especially if you're aiming to become a successful physician-scientist:

- **Enhanced Clinical Expertise:** As a physician-scientist, you will likely have dedicated time for research throughout your career, meaning you won't be working a full complement of clinical shifts. This makes it essential to ensure your clinical training is at least the same as the clinical training of your colleagues on the clinical track. The additional year allows you to solidify your clinical skills, ensuring you are equally proficient in clinical practice and research.
- **Accelerated Research Milestones:** Participating in this program enables you to jump-start your mentored research training and significantly increases your chances of securing an individual K-award within 2-3 years of completing residency. This milestone typically takes 4-8 years post-residency to achieve. Extending your residency, you fast-track your journey to research success, positioning yourself for a productive and impactful research career sooner.

Traditional EM Research Training Pathway



Accelerated R38-K38 EM Research Training Pathway



- **Dedicated Research Focus:** The additional year provides you with dedicated time to immerse yourself in research without the pressure of full-time clinical duties. This focus allows you to develop a robust research portfolio, gain valuable experience, and build a network of collaborators, mentors, and sponsors, all of which are critical for long-term success as a physician-scientist.
- **Balanced Career Preparation:** Balancing clinical excellence with research acumen is key to a successful career as a physician-scientist. The extended residency ensures you are clinically competent and well-prepared to tackle the challenges of a research-intensive career, giving you a unique advantage in the competitive field of academic medicine.
- **Reliable Funding Pathway:** The combined R38-K38 pathway provides an established funding pathway to support your mentored research career development. Alternatives for research fellowship training are often based on competitive applications for national foundation career development grants or the availability of training slots in various institutional training grants held at the institution offering the fellowship training.

How do I learn more about applying for subsequent K38 Funding?

Visit: <https://www.nhlbi.nih.gov/node-general/frequently-asked-questions-limited-competition-stimulating-access-research-residency>

What if I plan to do a clinical fellowship after residency?

Participation in the R38-K38 pathway is likely to make you more competitive for the most desirable academically oriented clinical fellowship positions. In addition, it is possible to incorporate K38-funded research training into a clinical fellowship program or defer applying for K38 funding until after completing a clinical fellowship.

What types of research topics can I work on?

While participating in the program, your research should focus on areas related to heart, lung, and blood diseases, as the NHLBI funds the program. On the back of this brochure, you will find a list of program mentors and potential areas of research investigation that align with these critical fields.

NIH-Funded Program Mentors & Potential Trainee Research Areas of Investigation

Geoffrey Barnes: Implementing low-risk PE care pathways in the MEDIC state-wide network; testing a d-dimer first strategy for evaluation of DVT; LMWH as first-line therapy for acute PE

Cindy Hsu: Cardiac arrest resuscitation; neuroprotection after OHCA; OHCA and ECPR systems of care

Keith Kocher: Health services and use of observational data methodologies; variation in care, quality measurement and improvement; implementation science; knowledge translation; learning health science

Prashant Mahajan: Studying host response using transcriptomics and multivariable methods to predict outcomes, identify therapeutics and develop early interventions in asthma, sepsis, and sickle cell disease

William Meurer: Age based differences in post-cardiac arrest care across the lifespan

Kayvan Najarian: Artificial intelligence in critical care

Robert Neumar: Post-cardiac arrest brain injury molecular mechanics and neuroprotective therapies; physiology-guided cardiopulmonary resuscitation; ECPR for refractory cardiac arrest

Kathleen Stringer: Sepsis and ARDS biomarker discovery, experimental pharmacotherapy, metabolomics phenotypes, metabolite genetics

J. Scott VanEpps: Sepsis phenotyping; antifouling medical device materials; novel antimicrobial nanomaterials

Colin Greineder: Affinity targeting of biotherapeutics to various sites in the body as a means of enhancing their therapeutic efficacy and index

Brahmajee Nallamothu: Studying quality of care and patient outcomes in healthcare delivery systems, largely focusing on cardiovascular diseases; using large national and regional data sets to answer fundamental questions about current healthcare delivery systems and how new approaches to designing these systems could save lives and reduce disease burden in large patient populations

Kevin Ward: Critical illness and injury, ranging from combat casualty care to the ICU

Mahshid Abir: Health system-embedded research, acute care delivery, and mixed quantitative-qualitative research methods; outcomes along the continuum of care (pre-hospital, ED, inpatient, & ambulatory care)

David Pinsky: Understanding the relationship between blood flow and heart and brain diseases

Robert Dickson: Understanding how microbial communities in the gut/respiratory tract contribute to respiratory illness/health; using microbial ecology and molecular microbiology to understand how the body's bacteria are altered by lung disease and critical illness and how they contribute to the pathogenesis of disease

Xudong (Sherman) Fan: Using micro/nano photonic devices, such as high quality optical resonators, photonic crystals, optical fibers, and nanoparticles, for sensitive detection of biological markers in body fluids (like blood, saliva, or breath) and in exhaled breath that indicate the occurrence of various diseases such as ARDS, asthma, and COVID-19

Omolola Eniola-Adefeso: Applying knowledge of cellular inflammatory response and blood flow dynamics to design bio-functionalized particles for targeted drug delivery and imaging, including for acute respiratory illness

Robert Silbergleit: Clinical trials in cardiovascular and neurological diseases

Phillip Scott: Clinical trials in stroke

Frederick Korley: Evaluation and management of suspected acute coronary syndrome

Residency Program Director

Robert Huang, MD

StARR Program Director

Frederick Korley, MD, PhD

StARR Program Co-Directors:

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For questions, email Korley@med.umich.edu