SCIENTIST TRAINING AND INTENSIVE MENTORSHIP (STIM) PROGRAM

A Collaborative Research Career Development Initiative of:
The Department of Emergency Medicine
The Department of Anesthesiology and
The Division of Pediatric Emergency Medicine

January 2025

BACKGROUND AND OBJECTIVES

The research missions of the University of Colorado Departments of Emergency Medicine and Anesthesiology, and the Division of Pediatric Emergency Medicine are to: (1) develop and sustain outstanding, nationally-recognized research programs; and (2) provide scientific training and career development to ensure successful progression of faculty members towards independent research careers. To achieve these missions, we recognize the critical importance of early career development and mentorship to develop a self-sustaining cadre of independent scientists and ensure the success of junior, mid-career, and senior scientists, and the departments as a whole.

The NIH K series mechanism (e.g., K08, K23) is one of the most well-developed methods of support for junior faculty to obtain the necessary training to launch successful independent research careers. Fundamentally, a successful K award application depends on the three components applicant, research proposal, and mentorship team. While the K series is not the only path to research success, for faculty who have received a career development award, receiving the initial independent research award is often the single most important step in establishing a sustainable career as an independent researcher. Other mechanisms and funders may be pursued by early-career or established researchers, each with unique requirements and challenges. All of these are part of building and sustaining research careers.

Each participating department and division has a strong core of junior, research-oriented faculty who, with the right mentorship, are poised to obtain extramural funding in the coming years. A collaborative mentorship program that leverages mid-career and senior mentors from within and across multiple departments is well-suited to develop scientific collaborations, address shared challenges, and build capacity and infrastructure for primary research mentorship.

Accordingly, in 2013 we instituted the Scientist Training and Intensive Mentorship (STIM) Program to foster and accelerate the career development needs of scientists at all levels in the participating departments. The STIM Program objectives are:

1) To sustain an infrastructure for research career development, mentorship, scientific review, and collaboration
2) To prepare STIM mentees with requisite skills in study methodologies, effective oral and written communication, and collaboration for successful major research applications and ultimately, independence as clinician-scientists.
3) To support early career scientists in career development awards and other early scholarship efforts.
4) To support mid-career scientists in their initial applications for independent research awards.
5) To develop a cadre of highly trained emergency medicine scientists and mentors to support robust, nationally recognized emergency care research programs.

PROGRAM OVERVIEW

The EM-STIM Program is an intensive career development program for early and mid-career emergency medicine scientists based at the University of Colorado, Denver Health, and Children's Hospital Colorado, and in the Department of Anesthesia. The program is geared towards research-oriented faculty and fellows (including post-doctoral research associates) with doctoral-level degrees interested in obtaining extramural funding to support their scholarship. It is especially appropriate for those with a goal of obtaining a federal (e.g., K01/K08/K23) or equivalent foundation (e.g., AHA) career development award. Early career mentees will participate in the Program for 2-3 years initially on the early research and scholarship track, with the expectation of applying for a career development award or other appropriate funding based on their personal research and scholarship goals. Mentees who have successfully obtained a career development award or other initial funding and are transitioning to "R-level" funding applications will participate in the mid-career research and scholarship track. The Program leadership will select mentees based on their ability and readiness to meet this goal during the allotted time period.

The STIM program provides individualized and comprehensive mentorship to guide mentees' research career development and supplement scientific mentorship by content mentors. Mentorship focuses on developing all aspects of the career development award application, including the career development plan, mentorship team, research plan, and technical grant writing. Carefully selected educational activities will ensure that each mentee becomes facile with a spectrum of research tools, including research methodology, epidemiology, biostatistics, and technical writing necessary to design and conduct high-quality, independent research. Formal coursework toward a research-based Master's degree from the Colorado Clinical and Translational Sciences

Institute (CCTSI) Clinical Sciences or Colorado School of Public Health programs will be encouraged to enhance methodology training and the ultimate success of career development award applications. Mentees who enter the program with an equivalent degree will be encouraged to develop an educational plan that will provide structure to their career development award application. Finally, the STIM program will collaborate closely with the CCTSI and other groups offering education (e.g., ACCORDS), through educational programs, career development resources, and pilot funding mechanisms to enhance the experience by leveraging existing institutional resources.

PROGRAM FORMAT AND STRUCTURE

The STIM program relies heavily on mentorship, collaboration, and formal methodological training as primary components. Key personnel include program mentors; a senior advisory committee comprised of senior mentors within and outside participating departments; and program mentees. Modeled after the CCTSI Clinical Faculty Scholars Program, the core of the STIM program will be <u>monthly research-in-progress meetings</u>, in which three mentees per session present updates on upcoming grant applications (e.g., Specific Aims drafts), their career development plans/challenges, or key preliminary data. Being the reviewer and being reviewed are essential components of the process, and formal presentation of grant applications and reviews will be emphasized. Constructive feedback and discussion will occur on a peer-to-peer mentee level with emphasis on areas of shared challenges, and on a mentor-mentee level with emphasis on solutions and accountability.

Regular attendance at research-in-progress meetings will be required of both mentees and mentors. We will encourage at least one member of the senior advisory committee and presenters' primary content mentor to attend each session to obtain additional outside perspective. The mentees' Chair/Chief and other research-oriented faculty in their Department will also be encouraged to attend when available. Mentees are strongly encouraged to meet one-on-one with senior mentors to supplement discussions that occur at the monthly meetings. Mentees may also meet with the UCD Writing Center for technical writing analysis. Specific performance outcomes are extramural grant proposals, manuscripts published in peer-reviewed journals, research and career development skills, and experience as a reviewer and mentor.

MENTEE EXPECTATIONS AND BENEFITS

Expectations
- Regularly attend monthly STIM sessions (a minimum of 8 sessions per academic year). These will be scheduled around major conferences and holidays, and mentees are expected to block off the scheduled times on their clinical schedules to attend regularly.
- Actively participate at monthly STIM meetings.
- Primary presenter at assigned sessions, 1-2 times per year (trades allowed)
- Bring content mentor to monthly research-in-progress meetings at least annually
- Meet regularly with mentorship team outside of monthly meetings
- <u>Early research and scholarship track</u>: Submit major career development award application (NIH K Award or equivalent) within the first two years of entering the program
- <u>Mid-career research and scholarship track</u>: Submit R01 or equivalent at least one year before career development award or start-up package ends

Benefits
- Receive organized research career development training and enhance chances of writing successful career development award applications
- Identify gaps in portfolios early that need to be filled to have successful career development applications
- Learn how to overcome common logistical, career development, and scientific challenges through intensive external and peer mentorship

- Strengthen methodology, innovation, and impact of science by cross-disciplinary review
- Improve technical and grant writing
- Find new avenues for intra and cross-Departmental collaboration and networking
- Motivate through peer interaction and mentor accountability to accelerate productivity
- Improve readiness to apply for the CCTSI KL2 and mentored pilot grant applications, which typically have minimal notice and a truncated timeline for submission

Other Campus Resources for Research Training and Collaboration
- Attend CCTSI Clinical Faculty Scholars Special Topics Seminars
- Apply for CCTSI available grant mechanisms (e.g., CO-Pilots and KL2)
- Enroll in CCTSI CO-Mentor program
- Take courses at Colorado School of Public Health or CCTSI Clinical Sciences Program
- ACCORDS Education events (biostatistics and qualitative methods workshops and seminars, annual pragmatic research conference)

MENTOR EXPECTATIONS AND BENEFITS

Expectations
- Regular attendance and active participation at monthly research-in-progress meetings.
- Meet one-on-one with STIM mentees outside of monthly meetings
- Continue own scientific productivity (as measured by grant awards and publications)

Benefits
- Enhance community of science and number of federally funded investigators
- Build capacity and track record of successful mentorship to accelerate skills and qualifications for primary mentorship on future mentees' K (or equivalent) applications
- Create a venue for funded scientists to interact and enhance potential for scientific collaboration and networking within and across Departments

DEPARTMENT BENEFITS

- Accelerate the timing and increase the number of faculty with K (or equivalent) and ultimately R01-level grants
- Hold individuals accountable to productivity goals and application deadlines with formal evaluations and progress reports from mentors and senior advisory committee
- Improve the ability to recruit promising physician-scientists due to formal mentorship structure, a track record of success, and immediate opportunities for collaboration and networking
- Enhance collaboration with the CCTSI and intra-/cross-departmental collaboration
- Establish the framework for successful future training grant applications (e.g., NIH K12/T32 programs, SAEM Institutional Training Grant)

PERSONNEL (2023-2024)

<u>Program Director</u>: Bethany Kwan, PhD, MSPH, Professor of Emergency Medicine (Associate Vice Chair for Research)

<u>STIM Program Coordinator</u>
Stephanie Braun, Department of Emergency Medicine

<u>Chairs/Heads</u>
Richard Zane, MD, Professor and Chair of Emergency Medicine
Adit Ginde, MD, MPH, Professor and Vice Chair for Research of Emergency Medicine
Susan Ingram, PhD, Professor and Endowed Traystman Vice Chair of Research, Department of Anesthesiology

<u>STIM Mentees</u>
Lauren Abbate, MD, PhD, Assistant Professor of Emergency Medicine (VA)
Nathan Clendenen, MD, Assocaite Professor of Anesthesiology
Ben Li, MD, Instructor/Fellow of Emergency Medicine (Denver Health)
Nidhya Navanandan, MD, MSCS, Associate Professor of Pediatrics
Stacy Trent, MD, MPH, Associate Professor of Emergency Medicine (Denver Health)
David (Josh) Douin, MD, Assistant Professor of Anesthesiology
Foster Goss, DO, MMSc, Assistant Professor of Emergency Medicine (University)
Rachel Kennedy PhD, MSN/MPH, RN, Research Associate Professor
Smitha Bhaumik, MD, Research Fellow and Clinical Instructor, Dept of Emergency Medicine
Melisa Tanverdi, MD, Assitant Professor of Pediatrics
Katie Joseph MD, Clinical Instructor, Emergency Medicine (Denver Health)
Broc Burke, MD, PhD, Assistant Professor of Anesthesiology
Mikita Fuchita, MD, Assistant Professor of Anesthesiology
Ian Stanley, PhD, Assistant Research Professor of Emergency Medicine
Taylor McCormick, MD MSc, Associate Professor of Emergency Medicine (Denver Health)
Layne Dylla, MD, PhD, Assistant Professor of Emergency Medicine (University)
Elizabeth Goldberg, MD, ScM, Associate Professor of Emergency Medicine (University)
Maya Haasz, MD, Associate Professor of Pediatrics (CHCO)
Evangelia Murray, MD, Research Fellow of Emergency Medicine
Anna Abrams, MD, Assistant Professor, Pediatrics-Emergency Medicine
Danielle Miller, MD, Med Assistant Professor of Emergency Medicine
Sarah Michael, DO, MS, Assistant Professor of Emergency Medicine (University)
Elan Small, MD, Instructor/Fellow, Emergency Medicine (University)
Rachel Cafferty, MD, Assistant Professor, Department of Pediatrics, Section of Emergency Medicine
Kathleen Joseph, MD, Instructor, Emergency Medicine (Denver Health)
Benjamin Li, MD, Assistant Professor, Emergency Medicine (Denver Health)
Rachael Rzasa Lynn, MD, Associate Professor, Anesthesiology (University)
Jacob Lebin, MD, Sr. Instructor, Emergency Medicine (University)
Austin Jones, MD, PhD, Instructor/Fellow, Emergency Medicine (University)
Julie Kafka, PhD, MPH, Assistant Professor, Emergency Medicine (University)
Jonathan Boyd, PhD, Visiting Professor, Emergency Medicine

<u>STIM Program Mentors</u>
Marian (Emmy) Betz, MD, MPH, Professor of Emergency Medicine (University)
Ana Fernandez-Bustamante, MD, Professor of Anesthesiology
Jason Hoppe, DO, Associate Professor of Emergency Medicine (University)
Daniel Lindberg, MD, Professor of Emergency Medicine (University)
Nee-Kofi Mould-Millman, MD, Professor of Emergency Medicine (University)
Adit Ginde, MD, MPH, Professor of Emergency Medicine (University)
Vikhyat Bebarta, MD, Professor of Emergency Medicine (University)
Jason Haukoos, MD, MSc, Professor of Emergency Medicine (Denver Health)
Anne Libby, PhD, Professor of Emergency Medicine (University)
Lilliam Ambroggio, PhD, Associate Professor of Pediatrics
Halden Scott, MD, MSCS, Assistant Professor of Pediatrics