SCIENTIST TRAINING AND INTENSIVE MENTORSHIP (STIM) PROGRAM

A Collaborative Research Career Development Initiative of:
The Department of Emergency Medicine
The Department of Anesthesia
And
The Division of Pediatric Emergency Medicine

July 2019

BACKGROUND AND OBJECTIVES

The research missions of the University of Colorado Departments of Emergency Medicine and Anesthesia, 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 with the goal of ensuring 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 researchers, mid-career and senior mentors, 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 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. 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.

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, we have developed the Scientist Training and Intensive Mentorship (STIM) Program to foster and accelerate the career development needs of junior faculty physician scientists and mid-career mentors 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 career development award applications and ultimately, independence as physician-scientists.
3) To support mid-career scientists in their initial applications for independent research awards.
4) To develop a cadre of highly trained emergency medicine physician-scientists and mentors to support robust, nationally recognized emergency care research programs.

PROGRAM OVERVIEW

The STIM Program is an intensive research career development program for junior, and mid-career emergency medicine research faculty based in the University of Colorado, Denver Health, and Children's Hospital Colorado, and in the Department of Anesthesia. Each junior mentee will participate in the Program for 2-3 years initially on the pre-K track with the explicit goal of successfully applying for a federal (e.g., K08/K23) or equivalent foundation (e.g., AHA) career development award by the end of their formal participation. The Program leadership will carefully select mentees based on their ability and readiness to meet this goal during the allotted time period.

Faculty members who successfully obtain a career development award participate in the STIM program as mentors to junior faculty and also receive mentorship with the explicit goal of receiving their initial independent (R-level) research award. This "K to R" transition track will include presentations at monthly meeting, ongoing peer and senior mentorship, and dedicated sessions as needed for specific R applications.

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 Education, Training, and Career Development core, 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.

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 RESPONSIBILITIES AND BENEFITS

Required
- >80% attendance and active participation at monthly research-in-progress meetings. These will be scheduled around major conferences and holidays, and mentees are expected to block off the scheduled times on their clinical schedules
- Primary presenter at assigned sessions, 1-3 times per year (trades allowed)
- Bring content mentor to monthly research-in-progress meetings at least annually
- Meet regularly with STIM mentors outside of monthly meetings
- Take grant writing course (7101) or demonstrate equivalent training or experience
- <u>Pre-K</u>: Submit major career development award application (NIH K Award or equivalent) within the first two years of entering the program
- <u>K to R</u>: Submit R01 or equivalent at least one year before career development award or start-up package ends
- Publish, on average, at least 3 peer reviewed manuscripts per year

Optional, highly encouraged
- 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
- Become STIM K to R participant after successfully completing the pre-K phase
- Become STIM mentor after successfully transition to independent investigator

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

MENTOR RESPONSIBILITIES AND BENEFITS

Required
- >80% attendance and active participation at monthly research-in-progress meetings. These will be scheduled around major conferences and holidays, and mentees are expected to block off the scheduled times on their clinical schedules
- Meet one-on-one with STIM mentees outside of monthly meetings
- Review career development award applications of STIM mentees
- Provide annual evaluations of STIM mentees
- 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 (2019-2020)

Program Director: Adit Ginde, MD, MPH, Professor of Emergency Medicine (Vice Chair for Research) and Anesthesiology (Medical Director of Clinical Research)

Chairs/Heads
Richard Zane, MD, Professor and Chair of Emergency Medicine
Vesna Jevtovic-Todorovic, MD, PhD, MBA, Professor and Chair of Anesthesiology
Stephen Wolf, MD, Professor and Director of Service (Denver Health) of Emergency Medicine
Mark Roback, MD, Professor of Pediatrics, Section Head of Pediatric Emergency Medicine

STIM Pre-K Mentees
Lauren Abbate, MD, PhD, Assistant Clinical Professor of Emergency Medicine (VA)
Avi Baehr MD, Chief Resident in Emergency Medicine
Nathan Clendenen, MD, Assistant Professor of Anesthesiology
David Douin, MD, Senior Instructor of Anesthesiology
Juan-Pablo Idrovo, MD, Assistant Professor of Surgery (University)
Ben Li, MD, Instructor/Fellow of Emergency Medicine (Denver Health)
Taylor McCormick, MD, Assistant Professor of Emergency Medicine (Denver Health)
Ryan Murphy, MD, Instructor/Fellow of Emergency Medicine (University)
Nidhya Navanandan, MD, Assistant Professor of Pediatrics
Stacy Trent, MD, MPH, Assistant Professor of Emergency Medicine (Denver Health)

STIM K to R Mentees
Kathleen Adelgais, MD, MSPH, Professor of Pediatrics
Lilliam Ambroggio, PhD, Associate Professor of Pediatrics
Karsten Bartels MD, PhD, Associate Professor of Anesthesiology
Foster Goss, DO, MMSc, Assistant Professor of Emergency Medicine (University)
Jason Hoppe, DO, Associate Professor of Emergency Medicine (University)
Daniel Lindberg, MD, Associate Professor of Emergency Medicine (University)
Nee-Kofi Mould-Millman, MD, Associate Professor of Emergency Medicine (University)
Sarah Perman, MD, MS, Associate Professor of Emergency Medicine (University)
Halden Scott, MD, Assistant Professor of Pediatrics
Jody Vogel, MD, MSc, Associate Professor of Emergency Medicine (Denver Health)

STIM Program Mentors
Marian (Emmy) Betz, MD, MPH, Assistant Professor of Emergency Medicine (University)
Ana Fernandez-Bustamante, MD, Associate Professor of Anesthesiology
Kennon Heard, MD, Professor of Emergency Medicine and Medical Toxicology (University)
Andrew Monte, MD, Associate Professor of Emergency Medicine (University)
Marion Sills, MD, MPH, Professor of Pediatrics

STIM Program Senior Advisors
Vikhyat Bebarta, MD, Professor of Emergency Medicine (University)
Jason Haukoos, MD, MSc, Professor of Emergency Medicine (Denver Health)
Ed Havranek, MD, Professor of Medicine (Denver Health/ACCORDS)
Paco Herson, PhD, Professor of Anesthesiology (University)
Anne Libby, PhD, Professor of Emergency Medicine (University)
Rakesh Mistry, MD, MS, Professor of Pediatrics

STIM Program Coordinator
Jenni Koch, Department of Emergency Medicine