

**Department of Epidemiology**

Amit Shah, MD, MSCR

Assistant Professor of Epidemiology

Assistant Professor of Medicine (Cardiology)

1518 Clifton Rd. NE, Rm 3053

Atlanta, GA 30322

[ajshah3@emory.eduajshah3](mailto:ajshah3@emory.edu)

Phone – 404-727-8712

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Dear Review Committee,

It is with great enthusiasm that I write this letter in support of Anish Shah’s TL1 application to evaluate the cardiac and neuropsychiatric correlates of heart rate variability in the Emory Biobank Study. I am excited to work with him on this project as his Co-Lead mentor with Alvaro Alonso, my colleague, office neighbor, and friend. Anish is a truly exceptional applicant, beyond what could be appreciated from his paper representation. His energy, diligence, and quantitive skills are truly exceptional, and will carry him far as he completes his MSCR coursework and conducts investigations as outlined in this grant.

We first met 3 years ago when he was an intern who was open to a number of possibilities in research. He was unique in that he had a special skill and interest in computer science, and could understand advanced concepts in mathematics. It is rare to find someone in cardiology with both clinical and engineering skills such as Anish. This aligned well with my work, and we quickly started on an interesting analysis on the Emory Twins Data that evaluated the relationship of autonomic function and ischemic heart disease (that was the foundation for the current proposal). Anish performed a rigorous analysis in R independently that was presented at the 2018 American Heart Association meeting, and was chosen by the AHA to be one of two posters that were highlighted for the donor luncheon based on its real-world relevance and impact on science. Clearly his work was making a difference, and he was just getting started.

While his previous experience was limited without any protected time for research, he is hopefully on the cusp of his first peer-reviewed original manuscript (currently under review). While this provides limited data for Anish to produce, with a year dedicated to research and training in the MSCR, I have no doubt he will be extremely productive, and that this program will catapult his career as a clinical investigator.

Although I am relatively early in my career as an Assistant Professor in Epidemiology (since 2013), I have been able to successfully leverage several funding mechanisms to build a multidisciplinary team that investigates the heart-brain relationship with novel alogrithms and wearables. It will be the perfect fit for Anish’s proposed training and research plan. Not only have I been funded through NIH mechanisms (K23 HL127251), but also the American Heart Association (Scientist Development Grant, PI), Emory Synergy award mechanism as lead PI (2 separate awards), Coulter foundation (contact PI), VA Center for Innovations (PI), and Georgia Research Alliance (contact PI). Based on this support, I have been able to build a team that consists of study coordinators, regulatory specialists, data managers, and engineers. Furthermore, I have been able to leverage my strong relationship with Viola Vaccarino and others in the Emory Program for Outcomes Research and Epidemiology (EPICORE) to build a synergistic multidisciplinary program of epidemiologists, engineers, mental health specialists, cardiologists, and imaging researchers. Furthermore, my work with Dr. Quyyumi on my K23 award and recently completed program project grant on mental stress ischemia (P01 HL101398) also increased my involvement and presence with the Emory Clinical Cardiovascular Research Institute (ECCRI), where we are actively working projects involving the evaluation of mechanisms relating acute stress and ischemic heart disease.

I look forward to meeting with Anish regularly and support his project needs with the infrastructure that I have created with multiple funding sources. In our weekly meetings, I look forward to discussing with him several aspects of his training and research plan, and working with him to discuss issues as they arise. Together we will review all aspects related to training for research. This includes primary data collection, data analysis, interpretation of findings, writing manuscripts, and presenting his work at national meetings. Furthermore, I will guide him towards appropriate training and research opportunities as they arise, and hold him accountable with a goal of submitting 2 first-author publications by the time he is finished with his research year.

My work with his mentoring team is extensive. Both Dr. Alonso and I share a passion for cardiac epidemiology, arrhythmia, and the brain-heart relationship. In the past 2 years since he arrived at Emory, we have already written 2 papers together (one published, another under review), gained funding for an R01 award together (PI Alonso, R01 HL137338), applied for 2 large center grants together, and mentored several students together. He is an ideal co-lead mentor for Anish given his expertise in cardiovascular epidemiology and translational research, status as a internationally recognized, tenured researcher with independent funding, close relationship with me, dedication to mentoring, and extensive network of contacts that could offer additional support for Anish if needed.

Dr. Thames and I also share a strong interest together on autonomic function as it relates to ischemic heart disease. He and I are both on Anish’s paper evaluating *Dyx* as an independent marker of ischemia in the Emory Twins Studies. It has been a pleasuring working with him, and I look forward to continue doing so as we move forward with Anish’s postdoctoral training.

In summary, I am more than happy to recommend Anish for this application and work as his co-lead mentor. Despite being early in his career, he displays incredible talent and promise. His large mentoring team will also add greatly to his expertise and foundations in research. I appreciate your consideration of his application and look forward to supporting his research career.

Best regards,



Amit Shah, MD, MSCR

Assistant Professor, Department of Epidemiology

Rollins School of Public Health, Emory University

Adjunct Assistant Professor, Department of Medicine, Division of Cardiology

Emory University School of Medicine

Staff Physician, Division of Cardiology

Atlanta Veterans Affairs Medical Center

List of Previous Trainees Mentored or Co-mentored (table)

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| Trainee | Start Date | Summary of Support During Training | Terminal Degree(s) Received and Year(s) | Topic of Research Project | Initial Position Department Institution Activity | Current Position Department Institution Activity |
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| Reinersten, Erik | 7/1/15 | MD-PhD Program | BA, 2013 | Classification of mental health disorders | MD/PhD Student, Emory U. | MD/PhD Student, Emory U. |
| Ayse Cakmak | 7/1/17 | NIH U award (AURORA) | BA, 2015 | Classification of Sleep in Heart Failure | PhD student, GT | PhD student, GT |
| Ismail Sadiq | 7/1/18 | NIH K23 award (PI Shah) | BA, 2014 | Classification of Morphological Variability in PTSD | PhD student, GT | PhD student, GT |
| Giulia Da Poian | 9/1/17 | NIH R01 | PhD, 2016 | Autonomic Function and Sleep in PTSD | Postdoctoral fellow, Emory | Postdoctoral fellow, Emory |
| Jay Khambati | 9/1/18 | VA Scholars Program | MD, 2016 | Quality improvement in cardiac rehabilitation | VA Postdoctoral Fellow | VA Postdoctoral Fellow |
| Elliot Mahlof | 9/1/18 | VA Scholars Program | MD, 2016 | Quality improvement in cardiac rehabilitation | VA Postdoctoral Fellow | VA Postdoctoral Fellow |
| Arash Harzand | 7/1/16 | GME | MD, 2013 | Smartphone Enabled Exercise Therapy in CVD | VA Postdoctoral Fellow | Assistant Professor, Emory University |
| Nil Gurel | 7/1/17 | DARPA | PhD, 2015 | Noninvasive vagal nerve stimulation in PTSD | PhD student, GT | PhD student, GT |
| Nino Isakadze | 7/1/16 | GME | MD, 2015 | Atiral Fibrillation and depression | Medical resident, Emory | Postdoctoral fellow, Johns Hopkins University |
| Senbeta Guteta | 7/1/17 | MEPI program | MD, 2001 | Diabetes and Risk of Heart Failure | Assitant Professor | Associate Professor |
| Aaron Trammell | 3/15/16 | Self-funded | MD, 2008 | Pulmonary Hypertension and Prognosis | Assitant Professor | Assistant Professor, Emory University |