

Early Career Investigators Forum

Open Access



Pursuing the physician-scientist path to satisfy research curiosity and passion for patient care

Leila Rouhi 

Center for Cardiovascular Genetics, Institute of Molecular Medicine and Department of Medicine, University of Texas Health Sciences Center at Houston, Houston, TX 77030, USA.

Correspondence to: Dr. Leila Rouhi, Center for Cardiovascular Genetics, Institute of Molecular Medicine and Department of Medicine, University of Texas Health Sciences Center at Houston, 6770 Bertner Street Suite C950H, Houston, TX 77030, USA.
E-mail: Leila.Rouhi@uth.tmc.edu

How to cite this article: Rouhi L. Pursuing the physician-scientist path to satisfy research curiosity and passion for patient care. *J Cardiovasc Aging* 2023;3:4. <https://dx.doi.org/10.20517/jca.2022.39>

Received: 19 Oct 2022 **Accepted:** 21 Oct 2022 **Published:** 1 Jan 2023

Academic Editor: Ali J. Marian **Copy Editor:** Fangling Lan **Production Editor:** Fangling Lan

Anis Hanna [Figure 1] is a medical doctor from Egypt who works as a research postdoctoral fellow at Albert Einstein College of Medicine in New York. His dedication and passion for research brought him to the U.S., where he is now a rising star in the field of cardiovascular molecular biology. He believes that research is not a linear path on which one will have to struggle before reaching success. “There are a lot of ups and downs in doing research and I learned to think of research as a roller coaster”, Anis says. Anis’ mindset and achievements as a young scientist are inspiring for younger scientists. In this interview, he shares his perspective on going after his dream of becoming a physician-scientist.

Anis, tell us about your life experiences that led you to pursue a career in cardiovascular research.

I grew up in a rural area near Asyut, or “Seyout” as my late grandmother used to accurately pronounce it in Coptic. Where I grew up, myocardial infarction is a heavy burden. I recall sometimes hearing the news that someone in our small community had a “heart attack” and lost his or her life because it was too late to reach a hospital. Back then, when I listened to that news with sorrow and fear, I had a lot of unanswered questions. What happens during a heart attack? Why is it so deadly? How could we possibly save those patients? Those questions and the unmet needs for medical care in my rural community shaped my interest



© The Author(s) 2022. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, sharing, adaptation, distribution and reproduction in any medium or format, for any purpose, even commercially, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.



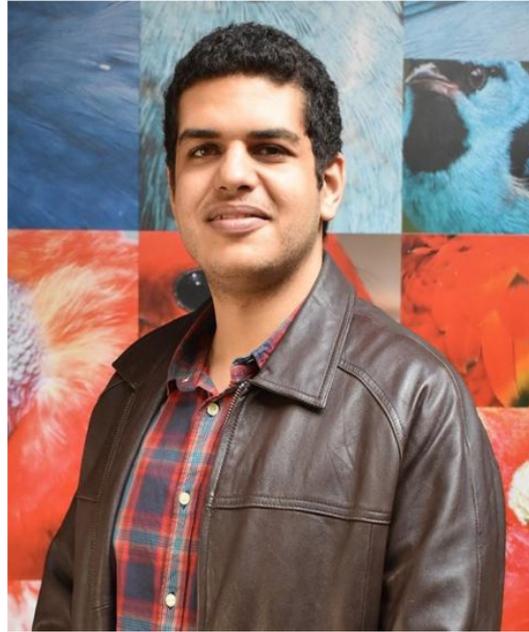


Figure 1. Anis Hanna, M.D.

in becoming a physician-scientist. Years later, when I entered Alexandria medical school, I was intrigued by the enigmatic biology of heart disease. The answers to my early questions on the causes and manifestations of heart disease generated more questions about the biological mechanisms involved.

Is there a particular scientist or person that inspires you to pursue a career in cardiovascular research as a physician-scientist?

I have been fortunate to work with a world-class scientist Dr. Nikolaos G. Frangogiannis. One of the most important reasons for my rapid progress is my great relationship with him. Dr. Frangogiannis is highly supportive and motivating and keeps challenging me to expand my skills and capabilities. He always encourages me to explore new ideas and develop new techniques. When I was interested in understanding the dynamic relationship between the fibroblasts and the extracellular matrix, he encouraged me to develop my own *in vitro* models, recapitulating cell-matrix interactions. Likewise, when I was interested in pursuing bioinformatics analysis of my data, he was very supportive of my efforts to build on my skills to perform bulk and single-cell RNA-seq data analysis. Dr. Frangogiannis is a role model when it comes to research ethics. His teaching has always been that negative findings are as useful and important as positive findings and that our emphasis should be on performing rigorous and honest work. He always encourages us to trust our data, even if they challenge prevailing dogma, but also to view our findings within the existing conceptual paradigm and to respect and critically evaluate work published by others that may lead to different conclusions.

What challenges did you face and what was it like to pursue this career path outside your home country?

The challenges were numerous; moving to the hectic NYC was the first challenge. Another challenge was being unable to see my family in Egypt for more than 3 years due to various restrictions related to my visa and the Egyptian bureaucracy. One of the toughest moments was when my father had COVID-19 during

the peak epidemic in Egypt and we could not find an isolation room for him in the hospitals. The only way to help him was for me to be his remote physician. I had to follow his clinical condition closely day and night, including in-home oxygen delivery and medication infusions. Despite these challenges, my experience in the United States has been very positive. The USA has been known as the land of opportunity for a good reason: the meritocracy-based system rewards hard work. Two years after starting my fellowship, I was awarded an American Heart Association postdoctoral grant to explore the role of SMAD1 in cardiac fibroblasts following myocardial infarction, which is currently my main project. I am grateful to the academic community in the USA for providing the best environment in the world to do research, and for fostering the development of young physician-scientists, irrespective of their country of origin.

What habits have you established in your day-to-day life that you believe contributed to your success?

Habits that I think have contributed to my success include giving a good time to plan my day; detailed planning takes into account each hour and gives time for work, reading, and personal life. I also try to be as collaborative as possible. I don't recall ever refusing a request for help from any of our team members or, for that matter, anyone who has asked for my contribution. Collaboration is key to high-quality research because no single person has all the required skills to complete a demanding project.

Do you have any advice for young trainees starting in this field?

I would say it is important to approach research with an open mind. The advanced research tools and multi-omics that are available nowadays enable us to look at the big picture and appreciate the complexity of biology.

How do you deal with setbacks in your research pursuits?

Experiments can fail and may not go as planned; sometimes, it is just how biology works. I deal with setbacks simply by reminding myself of the importance of my goal, and that I'm fortunate to do what I'm doing, which could potentially provide service to science and humanity. I never give up.

What do you see as a major challenge for young scientists?

I heard from multiple colleagues who left academia that it is not as rewarding as in industry. I think this is a major challenge for academic research. Research funding is scarce and very competitive. The uncertainties of the funding commitment to research in an academic setting are particularly challenging. Perhaps a more stable research funding mechanism may remove these uncertainties and may even improve research productivity.

What are some activities or hobbies you enjoy outside of the laboratory?

I love biking with my wife to parks around the area. Our area is gifted with great nature and has the New York botanical garden and the Bronx Zoo. I love music and I play Nay, an Egyptian windpipe flute. Additionally, when I can spare some time, I enjoy cooking.

How do you balance personal life with research? Do you have any tips for others?

I might not be the best person to advise on balancing work and personal life. I do my best to dedicate sufficient time to my personal life, and I usually take a day off every week to enjoy nature or to visit one of NYC's numerous attractions. However, I sometimes find it difficult to stop doing what I enjoy doing. For example, I often forget about time while reading about interesting topics in the pathophysiology of a disease, clinical case scenarios, or a new paper with intriguing findings. Sometimes I take a deep dive into single-cell RNA-seq datasets and keep exploring the cellular patterns of gene expression in specific cell populations and how this would relate to my work.

What are your personal and academic goals as you move forward in your career as a young scientist?

I plan to complete my current research, then transition to medical residency and fellowship training in cardiology which will enable me to fulfill my dream of becoming a physician-scientist. I believe that establishing a robust repertoire of molecular and cellular research techniques and a deeper understanding of the pathophysiology of cardiovascular disease will set the stage for my development as a productive independent cardiovascular physician-investigator.

DECLARATIONS

Authors' contributions

The author contributed solely to the article.

Availability of data and materials

Not applicable.

Financial support and sponsorship

None.

Conflicts of interest

The author declared that there are no conflicts of interest.

Ethical approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Copyright

© The Author(s) 2023.