Council On

Functional Genomics and Translational Biology

Q&A

With Kiran Musunuru, MD, PhD

Q: Describe your education, background and service to the AHA.

A: I earned my bachelor’s degree at Harvard College in biochemical sciences, after which I did my MD/PhD training at Cornell and Rockefeller in New York. I did my intern- nal medicine training at Brigham and Women’s Hospital followed by clinical cardiology and MPH training at Johns Hop- kins. It was at Hop- kins that I became keenly interested in preventive cardiology and tackling the problem of discovering novel genetic risk factors for myocardial infarc- tion, with the hope of eventually helping to craft novel preventative therapies. I returned to Boston to do a postdoctoral fellowship in the dual disciplines of human genetics and stem cell biology. Last summer, I began in a tenure-track faculty position in Harvard’s Department of Stem Cell and Regenerative Biology, with a clinical appointment in the Division of Cardiology at Brigham and Women’s Hospital. I wrote this as an inpatient attending. My laboratory is focused on using stem cell models to understand novel genetic loci linked to cardiovascular and metabolic diseases. One part of my job is teaching under- graduates at Harvard College, so I’ve actually come full circle!

I initially became involved with the AHA when I joined the Clinical Cardiology Center’s Young Clinicians and Investigators Committee as a cardiology fellow. In my volunteer activities for AHA, I’ve been particularly interested in serving the needs of student/trainee and early career members. I served on the task force that started the annual Saturday Early Career Day at the AHA Scientific Sessions, which has become quite popular and supports most of the AHA Councils. As my scientific interests evolved, the new Functional Genomics and Translational Biology Council was a natural fit for me, and I’ve been serving on the FGTB Early Career Committee as well as the Membership & Communications Committee.

Q: How do you anticipate genome-wide association studies (GWAS) will change our current practice of managing patients with coronary artery disease?

A: In the near term, perhaps not much as GWAS is a powerful technique for detecting common DNA variants associated with disease, but the flipside is that these variants individually have small effects on disease risk and do not offer much prognostic power. It seems likely that aggregating many of these vari- ants into genetic scores will significantly add to traditional cardiovascular risk scores, but it remains to be seen whether they will offer much additional information beyond simply asking patients about their family history. One area where knowledge of common DNA variants may be of more practical value is pharmacoge- netics; I can envision such knowledge guiding clinicians as to the optimal medication choices for individual patients. I don’t think that’s too far in the future. I suspect that GWAS findings will ultimately have their most significant impact on clinical care by pointing to novel pathogenetic mechanisms underlying coronary artery disease. It’s already clear from the latest GWAS studies on coronary artery disease that there are numerous risk factors that are “non- traditional” and that we knew nothing about just a few years ago. I firmly believe that the keys to new preventative therapies lie in the GWAS findings. The challenge is figuring out the biology and then developing the new therapies. I have no doubt that it will happen, but it will take dogged determination on the part of many investigators and will likely unfold over several decades.

Q: What advice do you have for new investigators who want to start studying genetic risk factors for coro- nary artery disease?

A: As increasingly large lists of disease-associated loci and genes are generated by GWAS and next-generation sequencing studies, there will be an increasing need for investigators to functionally validate and biologically explicate the new findings. There are many, many careers to be made here.

Kirwan Musunuru, MD, PhD

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FTGB Joint Session at ATVB Meeting

The Early Career Committee (ECC) is pursuing opportunities to connect with the FGTB community and engage new members through social media tools. Using a blog and discussion forum, we will provide frequent electronic updates on recent advances in functional genomics and translational biology, achievements of Council members, meetings and conferences, and AHA opportunities for existing and new Council members. Besides laying the groundwork for an FTGB blog and a Wiki page, members of the ECC have planned a series of podcasts in interview format covering the various “omics” technologies. Building on the success of the FTGB Webinar series in previous years, podcasts will be released up to four times a year. The schedule and topics will be placed on the FTGB Web page when they are available.

Thanks to strong support and mentoring from senior scientists of the FTGB Council, ECC members have developed a mentoring pro- gram that is open to all junior members of the Council. ECC members will make themselves available through the planned blog and discussion forum to answer career-oriented ques- tions, whether related to funding opportunities, networking, presenting at conferences or other issues relevant to junior scientists.

Check out the February issue of Circulation: Cardiovascular Genetics for an article on the top research advances in functional genomics and translational biology for 2011, selected by the members of the ECC. Also check out the recurring “Cardiovascular Genetics: A News Round-Up” series in each issue of the same journal, in which ECC members summarize important papers in the field.

With the Scientific Sessions abstract deadline approaching, we encourage junior researchers with promising projects in the field of functional genomics and translational biology to submit an application for the fourth annual FTGB Young Investigator Award competition. Finalists will present at Scientific Sessions 2012 in Los Angeles. For more information, visit my.americanheart.org/ fgtbcouncil for more details.

Interview conducted by John Ryan on Feb. 15.