Recognizing FGTB Accomplishments

Caroline Fox is well established population scientist with a strong track record of NIH intramural funding and a productive publication record in top-tier journals.

MESSAGE FROM THE CHAIR

Caroline Fox is a tenured senior scientist at the NIH Intramural Research Program and an associate clinical professor of Medicine at Harvard Medical School and Brigham and Women's Hospital.

She is an associate editor of Circulation and a section editor of social media for Circulation: Cardiovascular Quality and Outcomes and a section editor for Circulation.

When asked about how the AHA and the FGTB Council have benefited him, John Ryan said, “The FGTB Council has provided me with an incredible amount of professional support and personal mentoring. Because of my involvement with FGTB, I have been brought onto writing committees, I have been given talks at Scientific Sessions and I have had ample advice on how to write and how to be a competitive researcher. Esméria Benjamin in particular has been an incredible advocate, inviting me to leadership meetings within the American Heart Association and involving me in opportunities to spread the knowledge created by AHA researchers throughout new media. At the University of Utah, we have started a Pulmonary Hypertension/RF/PE program, and the connections I have made through AHA and in particular FGTB come into frequent use when it comes to writing papers, competing for grants and even just asking for opinions.”

Early Career Committee

I Scientific Sessions 2014, the FGTB Council will continue to have a productive Early Career Session from 1-5 p.m. on Saturday, Nov. 15. The first session, “Career Development” is in collaboration with the Council on Clinical Cardiology, and is going to be moderated by the past Chair of our Early Career Committee, Almudena Martinez Fernandez, PhD, and Sanjiv Shah, MD, FAHA, FACC. The keynote address will be given by Roger J. Hajjar, MD, on “Gene Therapy: Basics and Applications.” Other speakers include Ki-Ran Grossman, MD, MPH, PHD, FAHA, and Jennifer Hall, PhD, MPH, FAHA.

The second session, titled “How to Navigate the omics World” will be moderated by Anna Pillroth, PhD, and Jennifer Hall, PhD, FAHA. Among the distinguished speakers at this event will be a Jennifer Van Eyk, PhD, with a talk, titled “Where’s the Hoxton for Cardiovascular Proteomics?” and John Stamatoyannopoulos, MD, who will detail “How to Use ENCODE in Your Genomics Research: HaploReg and RegulomeDB.”

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HaploReg and RegulomeDB.

MARK YOUR CALENDARS

Scientific Sessions 2014 in Chicago FGTB Early Career Programming 1-5 p.m., Saturday, Nov. 15. Early Career Recipients to在职

FGTB Young Investigator Award Competition 4:45-5 p.m., Sunday, Nov. 16

FGTB Annual Business Meeting and Reception 6:30-7:30 p.m., Tuesday, Nov. 18

Discussion Forum: Cardio-oncology

John Ryan, MD, FAHA

In this issue of Connections, we are introducing discussion forums from a variety of unique and complimentary fields of functional genomics. In this edition, John Ryan, MD, FAHA, FACC, from the University of Utah and Chair of the Membership and Communications Committee for the FGTB Council is joined by Javid Mosleh, MD, assistant professor of Medicine at Vanderbilt University and director of the Cardio-Oncology Program at Vanderbilt University Medical Center, and Quinn Wells MD, assistant professor of Medicine at Vanderbilt School of Medicine.

What can you tell us about Cardio-Oncology as a new medical subspecialty? How does Cardio-Oncology relate to translational research? Javid Mosleh: Cardio-oncology (the cardiovascular care of cancer patients) represents a new frontier in medicine and it exists as a new subspecialty in cardiology in part due to the advent of novel therapies in cancer. These “targeted” therapies are being tested and approved at a rapid pace and have completely reshaped the prognosis in certain types of cancers. As a result, cancer survivorship has been introduced as a new “theme” in oncology care. Last year, for example, there were an estimated 14 million cancer survivors in the United States alone, a number that was unimaginable only a few years ago and one that will continue to grow. Cardiovascular therapies are associated with some of the traditional therapies (such as anthracyclines or radiation) that form the cornerstone therapies for some types of cancers (especially some of the cancers with good outcomes, such as lymphoma or breast cancer). In addition, some of the novel “targeted” therapies have adverse cardiovascular sequelae, in part because the same pathways that are important for the cancer cell (and which are being targeted by therapies) are important for cardiovascular homeostasis and their disruption can lead to cardiovascular and metabolic toxicities.

Cardio-oncology is a growing field and a unique platform to do translational research. The cardiovascular toxicities that arise from novel targeted therapies can teach us about cardiovascular biology. The cardiovascular toxicities that were initially observed after treatment with trastuzumab, for example, have uncovered an entire biology focused on HER2 signaling in the heart with the potential for therapeutic intervention for heart failure with myocardia (a HER2 ligand).

A similar story is emerging with angiogenesis inhibitors.

Most of these classes of drugs target Vascular Endothelial Growth Factor signaling and the interesting observation is that cardiovascular toxicities associated with these classes of drugs (hypertension, proteinuria and thrombosis, and, less frequently, heart failure) are similar to heart and vascular issues that arise in some prognostics (namely, pre-eclampsia and preeclampsia [cardiomyopathy]). With respect to the latter, work done by several investigators has now shown that the cardiovascular issues with pregnancy are essentially driven by an angiogenic imbalance and due to VEGF dysregulation. The same picture may come about from drugs that target metabolism (a hot area in cancer research) where cardiovascular and cardiometabolic issues that arise from these drugs may give insight into human cardiovascular and metabolic biology.

There is also a growing need to understand why certain patients are at risk of cardiovascular and cardiometabolic perturbations after treatment with traditional and new therapies and so having a platform where you can study this at a genetic/genomic but also mechanistic levels would be important as this field moves forward.

You recently left the Brigham and Women’s Hospital to come to Vanderbilt University. Why did you leave the Brigham? Why Vanderbilt?

I came to Vanderbilt because, in my opinion, it is the best place to advance the field of cardio-oncology. First, there is already a clinical infrastructure in cardio-oncology in place. My colleagues Doug Sanyi, MD, PhD, Dan Less, MD, and David Shlyk, MD, have already established a program here and each brings a unique set of clinical expertise. The new leadership in cardiology, Tommy Wang, MD, and Tom Force, MD, bring diverse perspectives and mentoring in translational and basic research research.

In addition, key infrastructure is already in place at Vanderbilt for human translational research. Vanderbilt has a long tradition in Personalized Medicine, Pharmacogenomics, and Clinical Pharmacology (led by Dan Roden, MD, Nancy Brown, MD, and David Harrison, MD), and the BioVU resource is unique nationally. Finally, the collaborative interactions that exist both between cardiology and oncology groups as well as clinicians and basic investigators are unlike any other in the country.

Quinn Wells, let me turn this over to you. Can you expand on the unique platform of BioVU?

BioVU is the Vanderbilt University Medical Center biorepository that links DNA samples to a do-identified version of the EMR termed the Synthetic Derivative. The Synthetic Derivative contains approximately 20 years of data on over 2 million unique individuals, and BioVU contains DNA samples from approximately 185,000 subjects. Many subjects have already been genotyped on one or more platforms, including almost 13,000 with GWAS platforms and nearly 400,000 using the Illumina Exomechip, and these data are available to Vanderbilt researchers and their collaborators.

We are using the BioVU resource to understand how common and rare genetic variation contributes to variable disease susceptibility and drug response and toxicity, including to chemotherapeutic agents. In this regard, I think applying this platform to cardio-oncology can be especially unique because it can give us specific information about factors that predispose to cardiotoxicity with cancer therapies. Combined with other, complementary, platforms (for example, metabolomics) one can begin exploring mechanisms that underlie variability in drug response and why some patients have adverse cardiovascular sequelae while others do not. For example, recent results from our effort have identified a potential novel pathway for anthracycline cardiotoxicity that we are exploring in animal models and human clinical cohorts.

Catch us at the American Heart Association Conference, Fall 2014.