“Pick the Right Controversy” – Robert Green

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The Short Read

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Welcome to The Short Read, our weekly peek

behind the curtain at the people who make this amazing community tick. Make sure to check back every Tuesday for the latest installment.

Everyone talks about generating the clinical utility data necessary to integrate genomics into healthcare, but no one has taken this to heart more, or generated more of it, than Robert Green.

Early in his career, he was widely recognised as a clinical trialist and genetic

Dr Robert Green, Founder of Genomes 2 People

epidemiologist, and when he retrained in medical genetics, he brought this reverence for empirical data with him.

He has since led the field of genomics in the development of methodologically rigorous trials to define the medical, behavioural and economic outcomes of incorporating genomics into the practice of medicine. Along the way, he co-led the ACMG's original policy statement on secondary findings and has become one of the first to design and implement randomised clinical trials of sequencing in both adults and children.

As Professor of Medicine (Genetics) at Brigham and Women's Hospital, Broad Institute and Harvard Medical School, he leads the Genomes2People Research Program in translational genomics and health outcomes. He is currently working with the Precision Medicine Initiative to standardise methods for return of genomic results and is collaborating with teams of molecular and computational geneticists to see if longstanding epidemiological studies can solve some of the mysteries around the variable penetrance of pathogenic variants

What are you working on right now?

We are analysing top line results from the NIH-funded MedSeq Project, the first randomised controlled trial implementing whole genome sequencing (WGS). We hope to help others apply what we learn to improve the everyday practice of medicine by generating empirical data on whether, for example, it is efficacious and cost-effective to sequence health adults or newborns. Our paper on the first randomised trial of WGS in healthy individuals just came out in *Annals of Internal Medicine*, and our paper on the first randomised trial comparing panel testing and WGS in patients with hereditary cardiomyopathy should be coming out soon.

In addition, we are currently recruiting healthy and NICU babies, and their families, for the NIH-funded BabySeq Project, the first sequencing trial of newborn infants. What we learn will help guide the usage and reimbursement for sequencing and other 'omics.

Finally, we are contributing to the return of genomic results in the Precision Medicine Initiative and exploring new ways to use large-scale longitudinal epidemiology studies to illuminate penetrance.

What's the biggest challenge you face in your work at the moment?

At a programmatic level, we have been fortunate with NIH grants, but each of these is on a 3-4 year cycle with no promise of renewal. Achieving sustainable funding to maintain salaries for our talented team of investigators and staff is the toughest internal problem we face.

At a societal level, we are witnessing the rapid development of extraordinary multi-omics technologies, but the generation of evidence justifying and shaping their use is much slower and more laborious. A huge challenge to science and to society is deciding what levels of evidence are required for specific technologies to be implemented and reimbursed.

Name one big development that you would like to see in your field the next 18 months.

It might take longer than 18 months, but as a clinical trialist who works in the implementation of medical genomics, I can't wait to see CRISPR trials beginning for the treatment and prevention of genetic diseases.

What are you most proud of in your career?

I'm particularly proud of the young scientists I have mentored who have developed, or are

developing, new areas of accomplishment on their own.

On a personal note, I became interested in medical genetics at a later age than most of my colleagues and some advised that diving into a whole new specialty was foolish. I'm proud that I persevered.

Which scientists, living, dead, or fictional, would you invite to dinner, and why?

I would choose Leonardo da Vinci, Copernicus, Galileo, Darwin and Marie Curie. These were all scientists who managed to see ideas or inventions far beyond the thinking of their day.

What advice do you wish someone had given you at the start of your career?

Pick generous mentors and work on the big problems in science, not because those problems are controversial *per se*, but because the controversy signals that people are passionate about the answers.

Opinions and views expressed in The Short Read are the interviewee's and not those of the home institution

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George Church
"Follow Your Dreams, not the Drove"