



Bilkent University

Faculty of Science

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Towards Precision Medicine in Understudied Global Populations - The Qatar Experience

Achieving “personalized medicine” will ultimately depend on the quality and speed of genome interpretation, tailored to individuals in the context of their native populations. Over the past 5 years in Qatar there have been significant advances in this area, driven by initial explorations of population genetic structure to recent identification of disease-causing genes and loci underlying both rare (Mendelian) disease and complex traits, such as obesity, diabetes and cardiovascular disorders. To date, we have sequenced nearly 2,000 Qataris for a variety of population-level and disease studies, and have demonstrated the significant under-appreciated diversity of modern day Arabs, as well as identified founder alleles for a variety of different diseases relevant to the local population. Our data motivate the launch of the recent Qatar Genome Program, a multi-stakeholder, nation-wide effort to sequence all native Qataris over the coming decade. To date, this program has sequenced almost 10,000 whole genomes, and is preparing to explore bio-banked samples on the same individuals using a variety of state-of-the-art ‘omics approaches. This talk will cover the trajectory that genome sciences has taken in Qatar over recent years and invite collaborations for the future, to deliver on the promise of using next generation tools to unravel human biology, and arrive at precision healthcare.

Khalid Fakhro is Assistant Professor of Human Genetics and Biology at Sidra Medicine, Weill-Cornell Medical College in Qatar and Hamad Bin Khalifa University. He obtained a MS degree in Cellular Biology and Molecular Genetics at the University of Chicago and a PhD degree in Human Genetics at Yale University. His thesis advisor is renowned geneticist Richard Lifton. He uses next generation sequencing technologies and bioinformatics to study the genetics of the Qatari population, in order to deliver Precision Healthcare to the population. His group is focused on two major projects: 1) Setting up a comprehensive Mendelian program in Qatar, including partnering with local healthcare providers to identify families with rare diseases with no known mutations for investigation by exome sequencing. 2) Population genomics of the Qatari population, including using deep whole genome sequencing to investigate population history and substructure, burden for recessive disease, and polymorphic background variation using genome sequencing, all in an effort to build a Qatari (and Gulf- Arab-centric) “reference” genomes.



April 4
Wednesday



Science
SAZ-240



15:40

Faculty of Science Seminars are designed to address a non-specialist, broad audience and introduce topics of contemporary research through lectures by leading experts. We warmly invite all members of the student body, including undergraduates enrolled in any programme.

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