



The Faroe Genome Project selects 10x Genomics' Linked-Reads to sequence the Faroese Population

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PLEASANTON, Calif.—October 10, 2017—10x Genomics, a company focused on enabling the mastery of biology by accelerating genomic discovery, and the Faroe Genome Project (FarGen), announced today that the 10x Genomics' pioneering Chromium Exome Solution will be used to conduct a population sequencing project of the Faroe Island Native people. Known as the FarGen Project, this initiative aims to sequence and analyze the genomes of the Faroese individuals, in an effort to enable improvements in the prevention and treatment of rare medical conditions.

The 18 islands of the Faroe Islands lie in a tight cluster between Iceland and Scotland, and – like other remote islands – has a highly endogamous population. With few new genes being introduced into this isolated and still relatively native population, there is a very high incidence of rare autosomal recessive genetically transmitted diseases, like carnitine transporter deficiency and glucose III storage disease. For this and other reasons, the Genetic Biobank of the Faroe Islands announced the plans to perform whole-genome sequencing of the Faroese people currently living in the Faroe Islands. During the first phase of the population study, the exomes of 1,500 Faroese people will be sequenced using the 10x Genomics' Chromium Exome Solution, and the data will be digitalized and shared with researchers in a database held by the Genetic Biobank.

Currently, the predominant method for large-scale population analysis of whole-genomes and exomes involves sequencing an individual using short-reads, and aligning to a consensus reference sequence without retaining haplotype knowledge that can be used to infer parentage. While this approach provides sufficient power to call single nucleotide variants (SNVs) across most of the consensus genome, a comprehensive analysis of the genome of each unique individual is not possible.

The Chromium Exome Solution overcomes these limitations by utilizing a unique data type called Linked-Reads, which allow for the mapping of short-reads to their high molecular weight genomic DNA (HMW-gDNA), thus allowing the placement of short-read information in the context of the whole genome. This unique approach provides access to haplotype information which reveals the diploid nature of each personalized human genome, revealing parentage in population based studies, and enabling this haplotyped information to be taken into account.

"Identifying changes that occur on maternal and paternal chromosomes in individuals within a population is critical for understanding gene expression changes in genetic disease research, especially for autosomal recessive inherited disorders prevalent in isolated populations like the Faroese. Additionally, most short-read methods struggle to call large structural variants, particularly balanced events such as inversions and translocations, whereas Linked-Reads can provide this genetic information easily from whole-exome data," said Noomi Oddmarsdóttir Gregersen, Project Manager for the FarGen Project.

Finally, due to the widespread presence of high identity repeats and paralogs, entire regions of the genome are inaccessible to most short-read analytical methods. Linked-Reads, powered by our GemCode Technology, overcomes this limitation and allows for the analysis of a more complete genome.

"At 10x Genomics we integrate innovative microfluidics, chemistry and bioinformatics to provide researchers with access to crucial information not practically available through any other means. Working with FarGen is a key milestone for us in advancing large scale population based studies," said Serge Saxonov, CEO of 10x Genomics.

About the Faroe Genome Project (FarGen)

The aim of the FarGen project (www.fargen.fo) is to sequence and develop a platform for genetic research of the Faroese population to enable improvements in the prevention and treatment of medical conditions. The FarGen project is managed by the Genetic Biobank of the Faroe Islands. The Genetic Biobank is a coordinating unit within the Faroese public health services, which organizes, develops and manages the registries of genealogy, diagnoses and tissue.

For more information, please visit the FarGen Project at <http://www.fargen.fo/en/>

About 10x Genomics

10x Genomics is changing the definition of sequencing by providing an innovative genomics platform that dramatically upgrades the capabilities of existing sequencing technologies. This is achieved through a combination of new microfluidic science, chemistry and bioinformatics. By implementing GemCode Technology within the Chromium System, researchers can now, for the first time, find new structural variants, haplotypes and other valuable genomic information with comprehensive workflows for Single Cell, V(D)J, Genome, Exome and *de novo* Assembly applications that incorporate their pre-existing sequencing technologies.

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