The Genome 10K (G10K) Consortium Selects 10x Genomics for Next Phase of their Vertebrate Genome Project (VGP)

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– 10x Genomics' Chromium de novo Assembly Solution Adopted to Generate High Quality Reference Genome Assemblies using Linked-Reads Data –

PLEASANTON, Calif.—September 12, 2017—10x Genomics, a company focused on enabling the mastery of biology by accelerating genomic discovery, announced today that the pioneering Chromium *de novo*Assembly Solution will be used for the generation of high-quality genome assemblies to capture the genetic diversity of vertebrate species, thus creating an unprecedented resource for life sciences research and worldwide conservation efforts.

Erich Jarvis, Chairperson of the Genome 10K Project has agreed to purchase the Chromium Controller and consumable reagents for use to sequence the next phase of the initiative at The Vertebrate Genome Lab co-led by Olivier Fedrigo at the Rockefeller University in New York. Others within the G10K leadership, including Richard Durbin of the Sanger Institute and Gene Myers of the Max Planck Institute already have Chromium Controller instruments that they plan to use for the project. The team plans to utilize 10x Genomics platform to contribute to scaffolding, phasing, and error correction for the next phase of the G10K-VGP, which aims to create reference quality genome assemblies of 260 species representing all vertebrate orders.

The G10K Project was founded by David Haussler, Oliver Ryder, and Stephen O'Brien, and launched in April 2009 at a three-day meeting at the University of California, Santa Cruz. Inaugural meeting attendees included 55 leading scientists representing major zoos, museums, research centers, and universities around the world. This initial group, the Genome 10K Community of Scientists (G10KCOS) continues to grow as they pursue their dedication to coordinating a major tissue specimen collection that will lay the groundwork for a large-scale sequencing and analysis project.

Recently, the G10K has been using long read sequencing, in combination with scaffolding technologies like optical genome mapping, and Hi-C mapping. They are planning to use 10x Genomics' Chromium *de novo* Assembly Solution to provide additional long-range information, as well as high level phasing provided by its unique and proprietary Linked-Reads data type. This novel data will be used to scaffold and provide haplotype resolution to reveal the "true" diploid nature of these unique genome assemblies, as well as to improve upon the accuracy of the finished assemblies.

Diploid-resolved genomes are becoming a critical aspect of understanding the biology of model organisms. With haplotype resolved genome assemblies, we now realize that structural variants and large scale genomic rearrangements are common across the animal kingdom. If an individual is heterozygous for a structural variant, it is impossible to merge these into a singly-represented consensus sequence without creating a reference bias or error. The old approach of creating these 'haploid consensus' assemblies often create artefactual sequence representations not truly represented in the population, potentially confounding biological discovery. 10x provides unparalleled power for resolving haplotype assemblies that can be processed, and assembled, using this the system.

In addition to using the Chromium *de novo* Assembly Solution, the G10K Project also plans to use the Chromium Single Cell 3' Solution to study neuronal cell type diversity across multiple vertebrate species, which will be a novel application of single cell RNA sequencing (scRNA-seq). This new data will allow members of the G10KCOS to openly explore neuronal diversity, and identify potential homologies in neuronal cell types between different species that may reveal commonalities in cell-by-cell gene expression in homologous populations of cells. The unparalleled capability of the 10x platform to provide both genotype and phenotype information with single-cell resolution makes it the ideal platform for uncovering these novel biological insights from groundbreaking studies like the G10K-VGP.

"We are excited to see 10x Genomics' Technology being increasingly used worldwide, including the exemplary initiative of the Genomes 10K Project. By using the Chromium *de novo* Assembly Solution and Supernova Assembler, biologists can easily and affordably produce a high-quality *de novo* genome assembly in weeks, not months, alone or in conjunction with other technologies," said Serge Saxonov, CEO of 10x Genomics. "This can rapidly increase our repository of additional vertebrate genomes, which is an important step towards advancing conservation biology ecological diversity efforts worldwide."

For more information, please visit the Genome 10k Project at https://genome10k.soe.ucsc.edu/

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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