10x Genomics Chromium Single Cell 3’ Solution Utilized for Perturb-seq Approach

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– Novel method for high-throughput functional genomics developed by UCSF and the Broad Institute –

PLEASANTON, Calif., December 19, 2016 – 10x Genomics, a company focused on improving and broadening the application of genomic information, announced today that the Chromium Single Cell 3′ Solution has been utilized in two seminal publications demonstrating high-throughput CRISPR-based functional genomics screening. The two papers published this week in *Cell* describe Perturb-seq, a novel approach that takes advantage of the massive throughput of the 10x Chromium Single Cell 3′ Solution to screen and sequence the CRISPR-perturbed cells on an unprecedented scale.

The researchers used CRISPR-based technologies to perturb gene expression in a targeted manner, followed by single cell RNA-seq using the Chromium Single Cell 3’ Solution for barcoded library preparation. Using this approach, the researchers were able to investigate the effect of transcription factors on genes, programs and states in lipopolysaccharide response in immune cells, as well as to dissect the mammalian unfolded protein response providing insights into cellular stress response.

“The application of our platform towards massively-parallel genome screening is a big advance for functional genomics, and will improve our understanding of how genomic information encodes phenotypes,” said Serge Saxonov, co-founder and chief executive officer of 10x Genomics. “The ability to assay hundreds to millions of cells, and then to identify genetic perturbations in each cell is a remarkable new application for our technology that will accelerate new discoveries and understanding of biology.”

Profiling gene expression and CRISPR barcodes at the single cell level allows researchers to test the function of hundreds and potentially thousands of genes in a single experiment, instead of painstakingly perturbing them one at a time. In addition, using unbiased gene expression profiling as a general read-out of changes in cellular state allows researchers to skip the costly and lengthy development of traditional reporter assays.

The publications are available online at:

“Perturb-Seq: Dissecting Molecular Circuits with Scalable Single-Cell RNA Profiling of Pooled Genetic Screens” (DOI: 10.1016/j.cell.2016.11.038) http://www.cell.com/cell/fulltext/S0092-8674(16)31610-5and

“A Multiplexed Single-Cell CRISPR Screening Platform Enables Systematic Dissection of the Unfolded Protein Response” (DOI: 10.1016/j.cell.2016.11.048) http://www.cell.com/cell/fulltext/S0092-8674(16)31660-9

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, Genome and Exome applications that incorporate their pre-existing sequencing technologies.

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