

Improving single cell workflows using the Singulator 100

Genomics

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Manual methods for the isolation of cells or nuclei can be lengthy, laborious, and prone to variability. The Singulator 100 by S2 Genomics is a cartridge-based, benchtop system that automates the dissociation of solid tissue into single cell or single nuclei suspensions. At the Stowers Institute, the Sequencing and Discovery Genomics Department worked with researchers to convert their manual isolation methods for a variety of organisms and tissue types into automated protocols on the Singulator.

Existing manual isolation methods generally consisted of adapted techniques from publications that were optimized based on organism, tissue type, and downstream application. On the Singulator, cell and nuclei protocols were run with the standard, pre-set protocols already installed on the instrument, using pre-formulated reagents from S2 Genomics. The customizable Singulator protocols were also utilized, allowing the use of buffers, enzymes, and runtime parameters modified to resemble the manual methods as closely as possible.

Singulator nuclei isolation protocols required 7-12 minutes to complete and generated single nuclei suspensions with well-maintained nuclear morphology. Singulator cell isolation protocols took 30-70 minutes to complete. When researchers had well-established manual protocols, the Singulator generated single cell suspensions with expected cell counts and viability percentages >85%. Automating less-optimized manual dissociation protocols generated results with lower quality, but the automated Singulator workflow allows for precise control over run metrics, which will expedite troubleshooting difficult methods. This poster describes how researchers at the Stowers Institute are generating high-quality, reproducible results and improving downstream applications by automating single cell and single nuclei workflows using the Singulator 100.