RNase Inhibitor V2

Enhance the Quality and Reliability of Your Single-Nuclei Sequencing Experiments

Description

Gene expression assays that utilize single nuclei as input require inhibition of endogenous RNAse activity during the nuclei isolation process. RNase Inhibitor V2 has been optimized to inhibit endogenous RNase activity, including RNases A, B, and C, during nuclei isolation and purification from solid tissue, thereby ensuring the integrity and stability of RNA within single nuclei for gene expression detection. The RNase Inhibitor V2 is designed to be used with the Singulator platform, with packaging sizes matching the number of isolations and subsequent processing steps. Our V2 RNAse Inhibitor exhibits improved performance over our V1 RNAse Inhibitor, ensuring the success of your single-nuclei genomics experiments. The RNAse Inhibitor V2 is compatible with several downstream applications, including the 10x Genomics' Chromium Gene Expression and Multiome Assays and Parse Evercode™ WT Assays.

Product Features

1. **Enhanced Activity:** RNase Inhibitor V2 demonstrates enhanced activity over its predecessor, V1.
2. **Robust RNase Inhibition:** Robust protection against RNases A, B, and C during nuclei isolation, ensuring RNA integrity with its high stability and maximum inhibition.
3. **Seamless Integration with the Singulator Platform:** RNase Inhibitor V2 performs with Singulator Nuclei Isolation Kits, sold in sizes that cover both isolation and post-processing needs.
4. **Economically Priced:** RNase Inhibitor V2 makes automated single-nuclei isolation affordable without sacrificing quality.

Performance

The RNase Inhibitor V2 was validated using fresh and frozen samples into single-nuclei suspensions suitable for downstream genomic analysis.

The RNase Inhibitor V2 was compared to the RNase Inhibitor V1 in nuclei isolated from a pancreatic ductal adenocarcinoma (PDAC) mouse model tumor, a tissue with a high level of endogenous RNase activity. Nuclei were isolated using the Standard Nuclei Isolation Protocol on the Singulator Platform in combination with the NIC+ cartridges. Gene expression observed using the 10x Genomics Chromium Next GEM Single Cell 3' Kit v3.1. Performance was assessed by measuring the unique gene number and total UMI counts of samples isolated with RNase Inhibitor V2 compared to V1 **(FIGURE 1)**. Samples prepared with RNase Inhibitor V2 had 15.6K genes detected compared to 14.7K with V1, and total UMIs detected with V2 were 14.1M verses 11.6M with V1. This indicates V2 prepared samples have more unique genes with higher counts compared to V1 prepared samples.

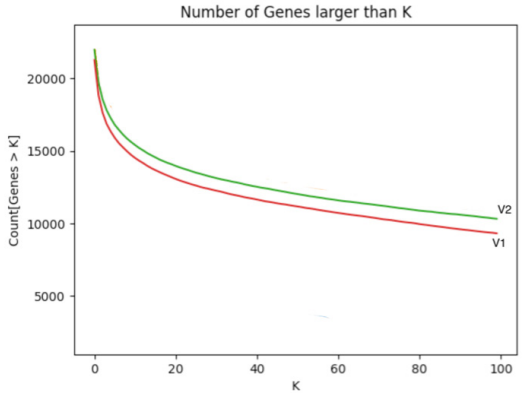

FIGURE 1: Gene Expression difference between mouse PDAC nuclei isolated with V1 and V2 RNase Inhibitor. This graph illustrates that for all threshold values (K), the number of genes with counts greater than K is consistently higher in V2 compared to V1.

RNase Inhibitor V2 was validated in mouse lung, kidney, and brain nuclei isolated from frozen tissue using the NIC+ cartridge and the Low Volume Nuclei Isolation Protocol on the Singulator Platform. Gene expression was determined using the Next GEM 3'v3.1 assay from 10x Genomics. Nuclei were clustered and UMAP projections of 10,590 lung nuclei, 11,429 brain nuclei, 11,123 kidney nuclei were generated for each tissue type **(FIGURE 2A, 2B, 2C)**. Each cell represented by a single dot. Cell clusters were annotated manually by canonical gene expression markers.

The RNase Inhibitor V2 was validated with fixed nuclei. Mouse kidney nuclei were isolated from frozen kidney tissue using the NIC+ cartridge and Low Volume Nuclei Isolation Protocol on the Singulator Platform, fixed, and gene expression was determined using the Flex assay from 10x Genomics **(FIGURE 2D)**. UMAP projection was generated from 7,256 cells. Each cell is represented by a single dot. Cell clusters were annotated manually by canonical gene expression markers.

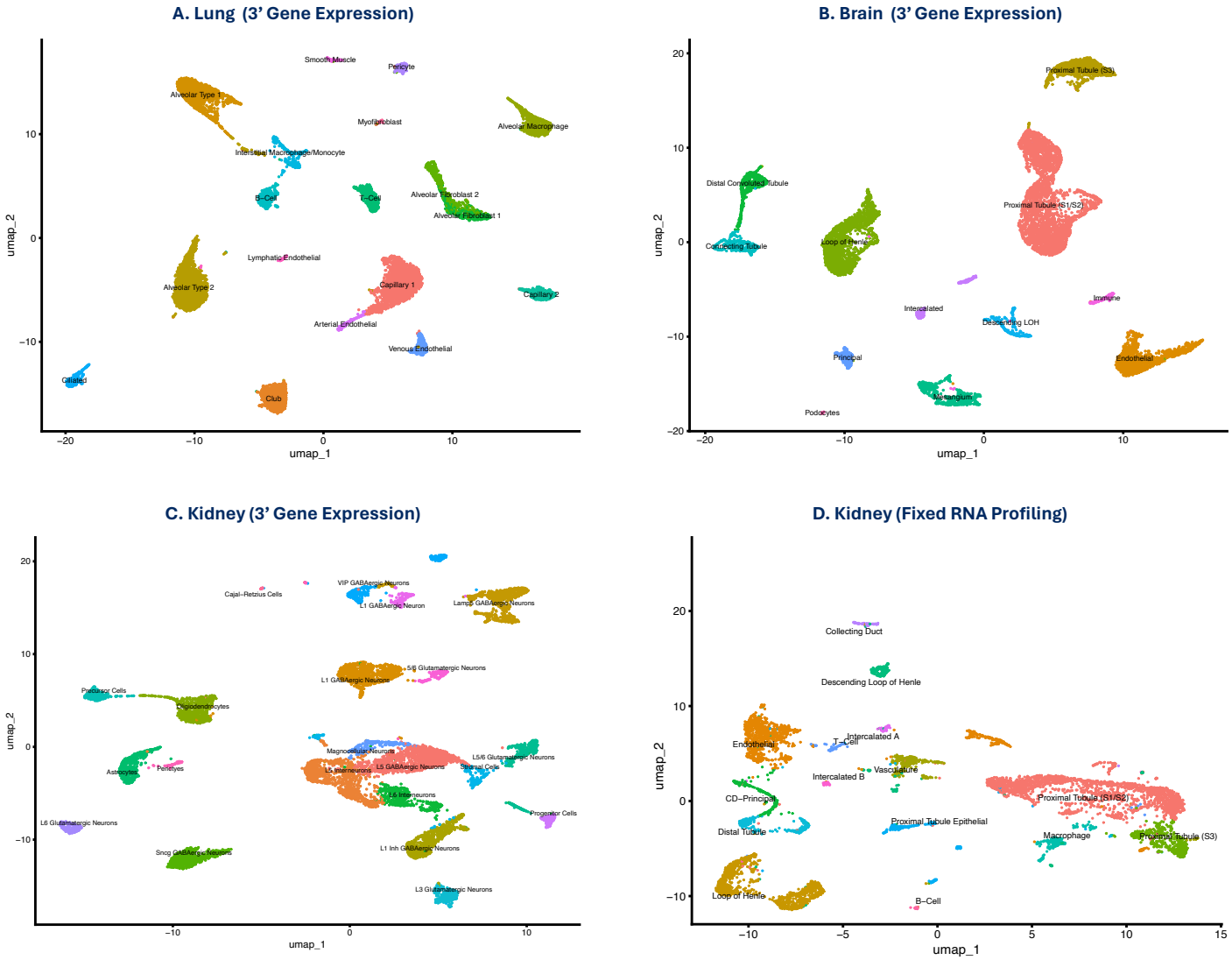

FIGURE 2: RNase Inhibitor V2 preserves the gene expression signatures allowing easy identification of cell types. UMAP projections with annotated cell types from frozen mouse lung, brain and kidney profiles with 10x Genomics Chromium Next GEM Single Cell 3' Reagent Kit v3.1 (A-C) and frozen kidney prpared with 10x Genomics Chromium Fixed NA Profiling Kit (D).

Specifications

Concentration: 40U/uL
Unit definition: One unit of RNase inhibitor is defined as the amount of RNase Inhibitor required to inhibit activity of 0.375 ng of RNase A by ≥ 95%

ORDERING INFORMATION:	
Item Description	**Part Number**
RNase Inhibitor V2, 8 samples	**100-288-916**
RNase Inhibitor V2, 24 samples	**100-291-086**
RNase Inhibitor V2, 96 samples	**100-291-195**
Nuclei Isolation Bundle with RNase Inhibitor V2 (24 samples)	**100-288-807**
NIC+ Isolation Bundle with RNase Inhibitor V2 (24 samples)	**100-289-152**
FFPE Nuclei Isolation Bundle and RNase Inhibitor (24 samples)	**100-284-221**

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