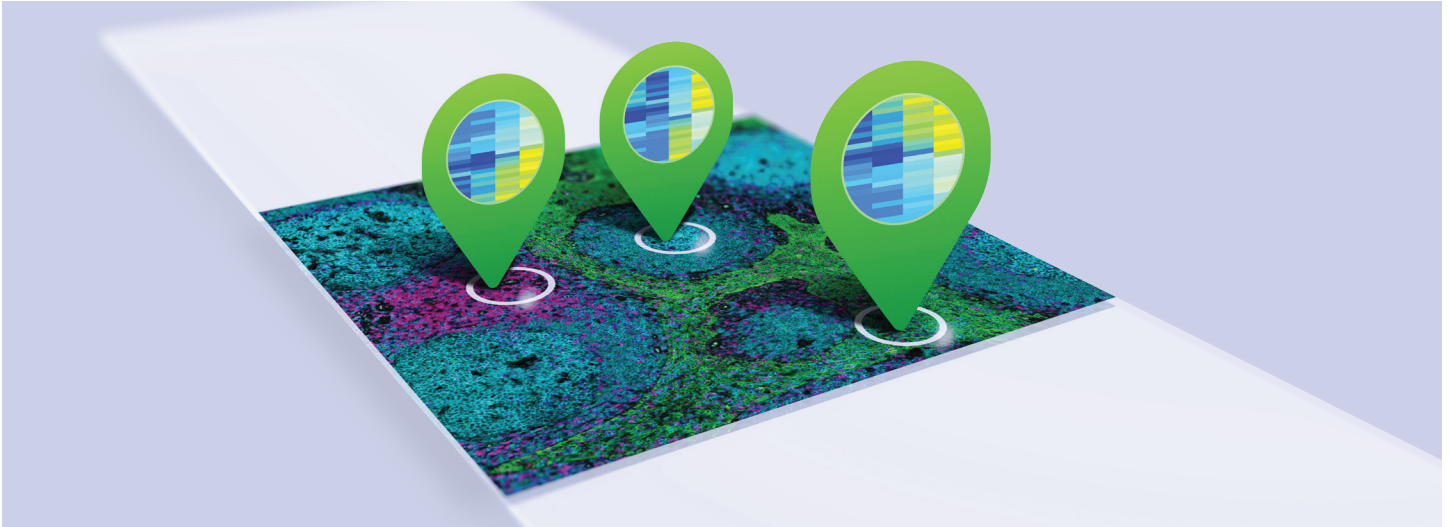


GeoMx™ Digital Spatial Profiler Sole Source Justification



The GeoMx Digital Spatial Profiler (DSP) is only available from NanoString Technologies, Inc.

The GeoMx DSP is a novel digital technology (proprietary to NanoString) that is based on multiplexed measurement of protein and nucleic acids and offers unparalleled levels of precision coupled with the ability to quantify up to 96 proteins and over 18,000 RNA targets on a formalin-fixed, paraffin-embedded (FFPE) or a fresh frozen (FF) tissue section on a microscope slide.

In contrast to the sequential analysis of multi-target immunohistochemistry (IHC) slides, the GeoMx DSP samples all protein or RNA analytes on a single slide. This not only shortens experiments and simplifies data analysis, but also provides a higher multiplexing capacity (18,000+ targets) all with spatial context from Formalin-Fixed, Paraffin-Embedded (FFPE) or fresh frozen (FF) tissue sections.

Based on NanoString's proprietary digital barcoding technology, the GeoMx DSP platform measures local protein levels, and can be combined with RNA expression, within heterogeneous tissue samples. Combining both multiplexed nucleic acid and protein on the same platform gives researchers the ability to spatially resolve RNA when suitable antibodies do not exist. The GeoMx DSP assay is performed on the GeoMx DSP platform which includes imaging and fluidic components to capture spatial context, and current nCounter® or next-generation sequencing (NGS) instruments provide the quantification.

Protein detection is enabled via primary antibodies which are covalently attached via a UV photocleavable linker to DNA indexing oligos. Following antigen retrieval, FFPE tissue samples are stained with a multiplexed cocktail of labeled antibodies, and DNA oligos are subsequently released by UV light exposure across regions of interest. The liberated DNA oligos are then hybridized to optical barcodes for quantitation on an nCounter or NGS instrument. This technique enables quantitative, multiplexed protein detection up to 5.5 logs of dynamic range.

Key Features and Benefits of DSP technology

- Multiplex many analytes on one tissue section in a single pass
- Quantitation based on linear single-molecule counting: up to 5.5 logs
- Single-cell limit of detection
- Non-destructive: sample completely intact after assay
- Single antigen retrieval without effects from order-of-addition

For a system to be equivalent to GeoMx Digital Spatial Profiler, it must:

- Be able to quantify up to 96 proteins and over 18,000 RNA in a single reaction
- Only require a single antigen retrieval process for the entire assay
- Have a dynamic range of up to 5.5 logs (base 10)
- Be compatible with FFPE or FF tissue sections
- Be compatible with standard nCounter or NGS instrumentation
- Be able to perform measurements of individual RNA and protein molecules and provide a digital output
- Enable visualization of high resolution morphological detail using conventional immunofluorescence techniques to enable region of interest selection on the same tissue section to which high-plex profiling will be performed
- Be able to multiplex many analytes on one tissue section in a single pass without having to remove or further process the FFPE or FF tissue section while performing high-plex profiling on the imaging system
- Not destroy the tissue section post processing and analysis

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