# #76665 A complete pipeline for high-plex spatial proteomic profiling and analysis of neural cell phenotypes on the CosMx™ Spatial Molecular Imager and AtoMx™ Spatial Informatics Platform



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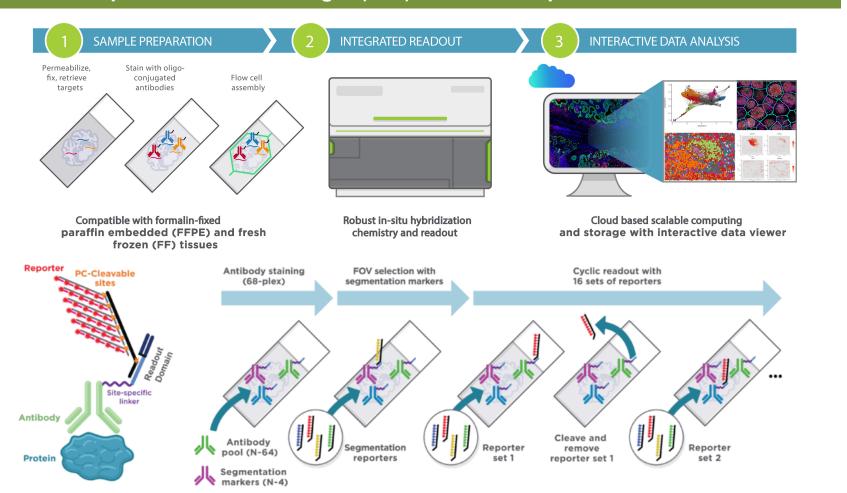
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## Introduction

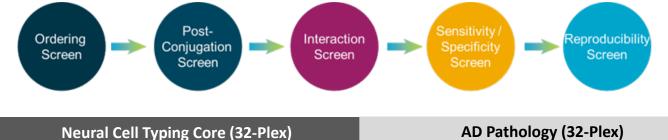
The brain is complex and heterogeneous where cell function and cell-to-cell communication are critical for rapid and accurate performance. The ability to explore protein-driven activities at high resolution within spatial context of their immediate environment is critical to gain comprehensive pictures of brain development, activity, aging, disease or dysfunction, and inflammatory responses. Many existing approaches for high-plex single cell spatial proteomics face issues around simplicity, speed, scalability, and big data analysis.

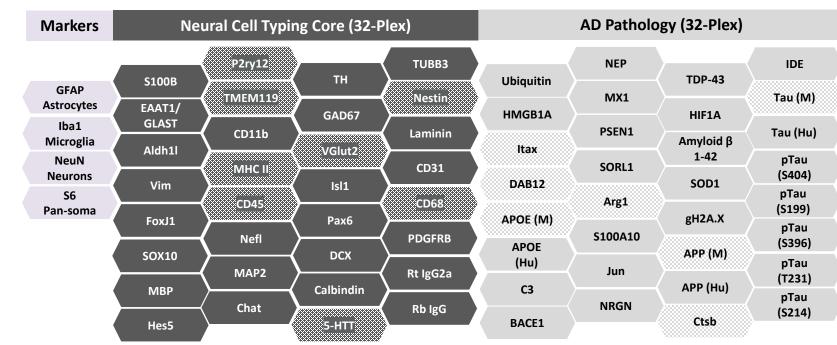
Here, we present an integrated workflow from sample through analysis that addresses key concerns around high plex proteomics. The CosMx™ Spatial Molecular Imager and AtoMx™ Spatial Informatics Platform comprises an end-to-end workflow that efficiently handles highly multiplex protein analysis at plex sizes exceeding 68 targets. The CosMx protein assays uses oligonucleotide conjugated antibodies, detected using universal, multi-analyte CosMx readout reagents. The CosMx Mouse Neural Cell Typing and Alzheimer's Pathology panel is optimized to comprehensively profile neural cell lineages across the brain as well as the progression of Alzheimer's disease (AD), including specific antibodies for humanized mouse AD models. The AtoMx spatial informatics platform provides full analysis support, including whole-slide image viewer, and methods for performing built-in or fully customizable analyses for cell typing, ligand-receptor analysis, neighborhood analysis and spatial differential expression. proteomics face issues around simplicity, speed, scalability, and big data analysis.

## CosMx Spatial Molecular Imager (SMI) and AtoMx Spatial Informatics Platform



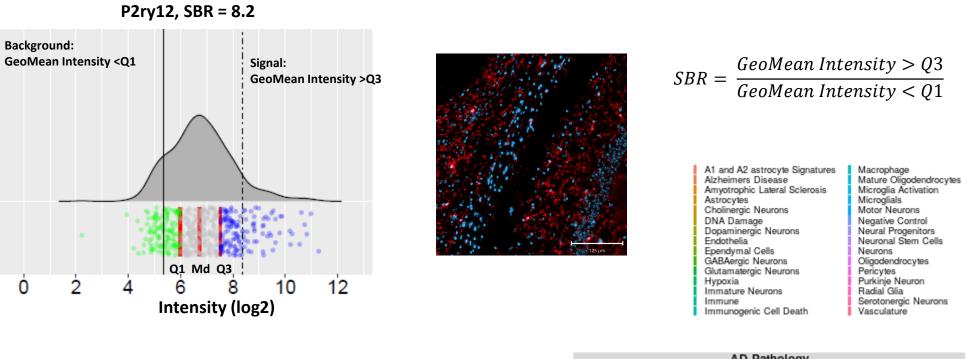
# CosMx Mouse Neuroscience Protein Panel (64-Plex) Content

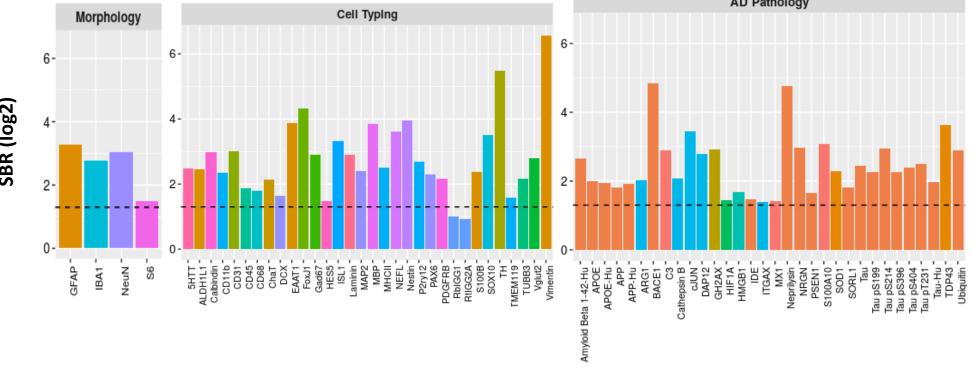




# Calbindin TH APP GFAP IBA1 NeuN CosMx Mouse Neural Panel antibodies demonstrate comparable IHC and CosMx staining patterns consistent with specific antigen targets

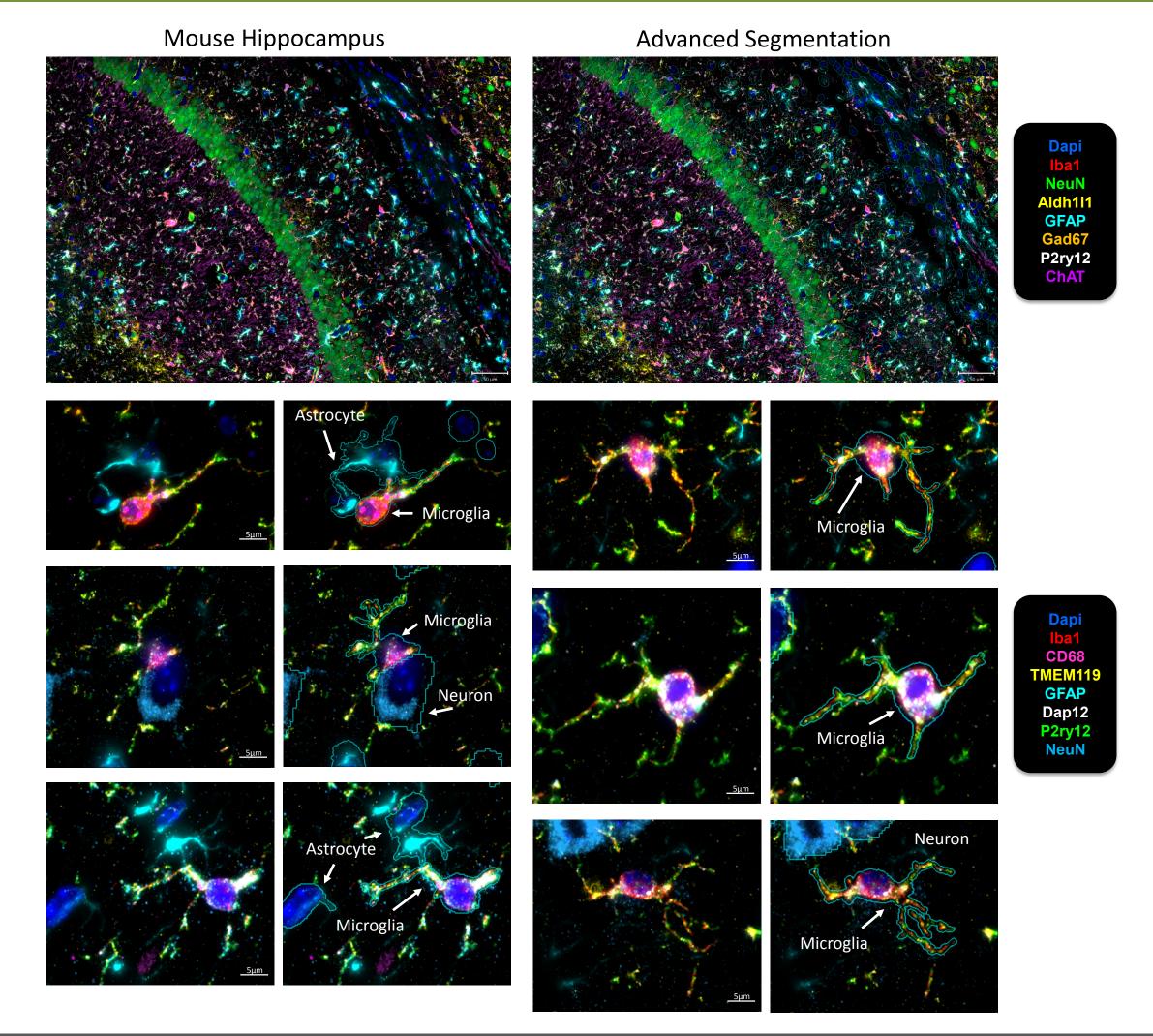
# Sensitivity





CosMx Mouse Neural Panel antibodies demonstrate on CosMx signal to background ration (SBR)  $\geq$  2.5 on mouse or human FFPE tissue samples.

# Advanced Segmentation Critical for Neural Single Cell Spatial Proteomics



## Conclusion

- End-to-end workflow from sample preparation to data analysis
- Enables high-plex proteomics up to 68 proteins from a single FFPE slide with spatial context at single-cell resolution
- Protein assay uses validated antibodies conjugated with oligonucleotides, detected via microfluidic-based cyclical immunofluorescence imaging process

### References

- 1. He et al., 2022. High-plex imaging of RNA and proteins at subcellular resolution in fixed tissue by spatial molecular imaging. Nature Biotechnology.
- Danaher et al., 2022. Insitutype: likelihood-based cell typing for single cell spatial transcriptomics. BioRxiv.
- 3. Uhlén M et al., 2015. Tissue-based map of the human proteome. Science.