CARTA|GENUM

MAPPA
THE GLOBAL SPATIAL REFERENCE ATLAS

Case Study: Uncovering novel multiple sclerosis pathology across 200+ integrated public tissue sections.

To understand the cellular drivers of Progressive Multiple Sclerosis (PMS), researchers need spatial context. Rather than undertaking time-consuming and costly *de novo* data generation, we partnered with the University of Cambridge to seamlessly ingest, standardize, and mine fragmented public spatial datasets.

THE CHALLENGE & THE APPROACH

Highly Fragmented Data
Valuable existing datasets remained disconnected, preventing critical cross-study comparison.

Massive Trapped Value
We bypassed the €1M cost of generating new data by unlocking the potential of public repositories.

Virtual Cohort Creation
We unified over 200 tissue sections from 31 MS patients and 12 controls across three cohorts.

Harmonized Computation
Executed spatially aware clustering and deconvolution simultaneously across all 200+ sections.

THE INSIGHT & THE IMPACT

Unmatched Processing Power
Our cloud-based pipelines seamlessly executed computations that overwhelm standard infrastructure.

In-Silico Discovery
Drove a major biological discovery by pinpointing Disease-Associated Radial Glia-like cells (DARGs).

Novel Cellular Axis
Demonstrated these cells are enriched in chronic MS lesions and actively sustain inflammation.

Publication-Ready Results
Uncovered new therapeutic avenues, with findings successfully published in *Neuron*, 2025.

Publication: Park *et al.* Integrated omics reveals disease-associated radial glia-like cells with epigenetically dysregulated interferon response in multiple sclerosis. *Neuron*. 2025;113(24):4158-4177.e10. doi: 10.1016/j.neuron.2025.09.022.

"By scaling this spatial analysis, we successfully identified DARGs in chronic active lesions—uncovering a novel cellular axis for disease pathobiology and potential therapeutic intervention."

Prof. Stefano Pluchino, Department of Clinical Neurosciences, University of Cambridge (UK)

Book a consultation today. info@cartagenum.com **www.cartagenum.com**