Mapping ALS neurodegeneration with spatial multiomics

The Challenge ↓   Why spatial multiomics ↓   COMET ↓   Workflow ↓

The challenges
of ALS

ALS (Amyotrophic Lateral Sclerosis) is a rare and fatal neurodegenerative disorder that affects upper and lower motor neurons. ALS results in muscle weakness, paralysis, and ultimately respiratory failure. The disease is characterized by rapid progression and involvement of multiple, heterogeneous brain regions. This results in limited treatment options for ALS patients, and partial cognitive impairment for up to 50% of patients1-4. As the population ages, the number of cases is projected to increase globally by 69% by 20405.
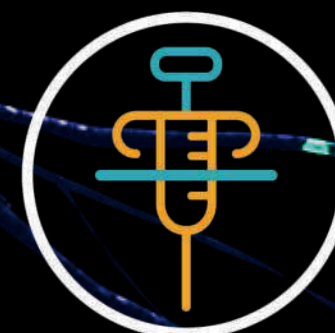
Affects 2 to 5 people out of 100,000 worldwide.

90% sporadic patients, no family history.

1.5X MORE PREVALENT

1.5x more prevalent among men compared to women.

Limited treatment options for ALS patients.of 100,000 worldwide.

2-5 YEARS

2-5 years: the average life expectancy.

90 MIN

Every 90 min someone is diagnosed.

Why use spatial multiomics in neurodegenerative disease research?

FPO Video Animation

Molecular phenotyping
Identify key cell types and map targets on whole brain tissue sections.
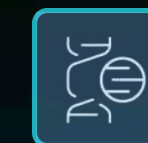
Biomarker development
Detect changes in RNA and protein marker expression on the same tissue section.

Target discovery & validation
Quantify complex disease mechanisms and validate biomarkers with spatial multiomics.

Stratification of ALS Phenotyping
Uncover actionable disease subtypes with an integrated AI-data driven discovery workflow.

Do you want to see the full dataset study? → **Download the white paper**

Using COMET™
to access new depths
in neurodegenerative
disease research

COMET™ translates complexity into clarity by
enabling rapid discovery through the integration
of multiomics data into a single, intuitive system.

➕ **The first universal, end-to-end, spatial biology solution**

➕ **A companion in your spatial biology journey**

➕ **Your research and development partner**

Do you have questions? **Our scientist have answers**

Request more information

Automated
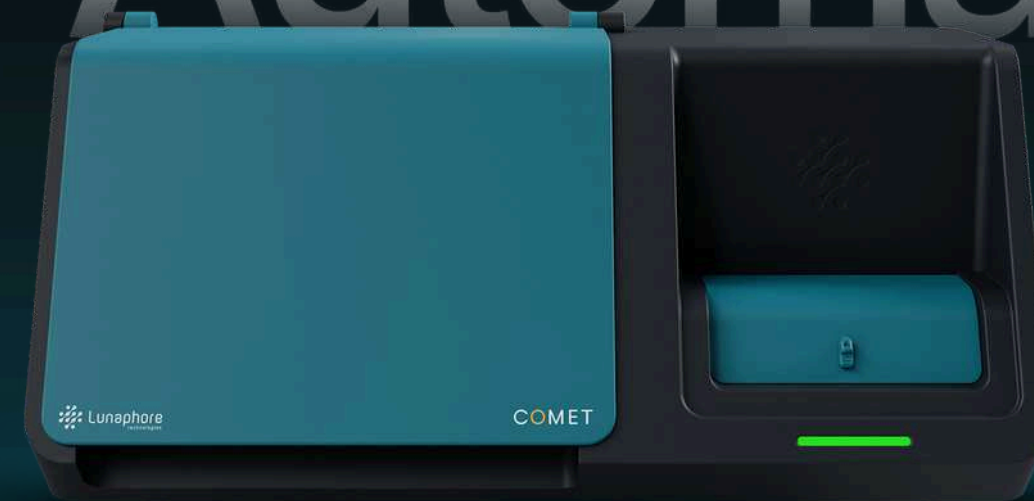
Get reproducible results with
a fully automated same-section
spatial multiomics workflow.
From target probe hybridization
to imaging, click start and
walk away.

Lunaphore   COMET

An integrated spatial multiomics workflow for every lab

COMET is part of a large spatial biology offering, including multimarker panel design, validated reagent database, assay optimization and hyperplexing, and image analysis.

FPO Animation

FPO Animation

FPO Animation

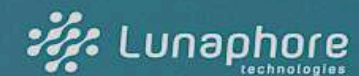**+** The first universal, end-to-end, spatial biology solution

+ Target labeling and detection on COMET™

+ Image visualization and analysis on HORIZON™

Do you want to learn more about COMET™?

Speak to one of our Scientists

Lunaphore
technologies

COMET

References

1. ALS by the numbers. Source: the ALS Association. Accessed via: https://healthdiscovery.org/infographic/als-by-numbers/
2. Martin S et al (2017) What causes amyotrophic lateral sclerosis? F1000Research 6:371
3. Crockford C et al (2018) ALS-specific cognitive and behavior changes associated with advancing disease stage in ALS. Neurology 91(15): e1370-e1380.6:371

4. Manjaly ZR et al (2010) The sex ratio in amyotrophic lateral sclerosis: A population based study. Amyotroph Lateral Scler 11(5): 439-42.
5. Arthur KC et al (2016) Projected increase in amyotrophic lateral sclerosis from 2015 to 2040. Nat Commun 7:12408.
6. Rivest F et al. (2023). Fully automated sequential immunofluorescence (seqIF) or hyperplex spatial proteomics. Scientific Reports, 13, 16994.