

The 100-plex spatial multiomics grant program

Tissue preparation guidelines

These guidelines outline the recommended technical and quality practices for participating in the 100-plex Spatial Multiomics Grant Program. Following the specifications below will help ensure strong, consistent data quality and support a smooth and successful project experience.

In some cases, small deviations may be possible. If you anticipate any, please share them with the Sponsor in advance so they can be reviewed and approved as needed.

Tissue preparation requirements for RNA quality preservation

RNA is intrinsically sensitive and susceptible to degradation due to its single-stranded structure and the ubiquitous presence of ribonucleases (RNases) on tissue surfaces, laboratory environments, and human skin. Rigorous control of pre-analytical variables is therefore essential, particularly for formalin-fixed paraffin-embedded (FFPE) samples intended for RNA-based spatial analyses.

Tissue prepared according to standard RNAscope™ workflows is considered compatible with the COMET™ platform. Minor deviations from a laboratory's routine FFPE procedures are unlikely to adversely affect staining outcomes but should be communicated to Lunaphore during the grant review process.

Comprehensive technical guidance is provided in the [RNAscope™ HiPlex Pro for COMET™ Kit User Manual](#).

Parameter	Guidelines for RNA preservation
Tissue thickness	Tissue should ideally not exceed 5 mm in thickness to ensure rapid and homogeneous fixation.
Time to fixation	Tissue must be placed into fixative as soon as possible and no later than 1 hour post-excision.
Fixation duration	Fixation shall be performed for approximately 24 hours (acceptable range: 16–32 hours) at 20–25 °C , using either 10% neutral buffered formalin (NBF) or 4% paraformaldehyde (PFA) in PBS. Fixation time may require optimization based on tissue type and size.
Dehydration and embedding	Samples must be dehydrated using a standard graded ethanol series, concluding with three 100% ethanol steps of 30–60 minutes each , followed by xylene clearing and paraffin embedding.
Tissue block storage	For long-term preservation (>1 year), FFPE blocks shall be stored at 2–8 °C in the presence of desiccant.
Age of tissue blocks	Use of tissue blocks less than 1 year old is strongly recommended to ensure optimal RNA integrity.

Slides cutting	Slides must be freshly cut (<1 year) and stored at 4 °C with desiccant or vacuum sealing. Slides must be provided by the Prize Winner prior to project initiation.
Drying and Pre-Baking	Slides shall be air-dried overnight at room temperature. Pre-baking or heating of sections is strictly prohibited , as this may compromise RNA integrity.