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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46927-2025

Spatio-temporal omics - Specification for dataset format

时空组学 数据集格式规范

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Biochemical Testing (SAC/TC387). This document was drafted by: Shenzhen BGI Life Science Research Institute, China Institute of Testing Technology, Wuhan BGI Life Science Research Institute, and Zhijiang. Laboratory, Southwest Huada Life Science Research Institute, Shenzhen Sailu Medical Technology Co., Ltd., Shenzhen University, Jingliang Technology (Shenzhen) Co., Ltd. Pengcheng Laboratory, Beijing Novogene Technology Co., Ltd., Suzhou Baiyuan Gene Technology Co., Ltd., and LeadHealth Technology (Guangzhou) Co., Ltd. company. The main drafters of this document are. Chen Yuxin, Zhou Lihua, Zhang Nan, Wang Leying, Zhang Yong, Li Shengkang, Feng Linqing, Du Yue, Xie Min, Xu Xun, and Li Yuxiang. Xu Zaoxu, Wu Bian, Zhu Zexuan, Lin Mufei, Li Jinghua, Baolig, Wang Rongjie, Che Tuanjie, Zhang Feng, Che Yan. Spatiotemporal omics dataset format specifications

1 Scope

GB/T 46927-2025 is the Chinese national standard covering the data of spatial transcriptomics - gene expression measured with its position in the tissue kept, so the dataset has to carry the coordinates, the tissue image, the capture geometry and the expression matrix together and aligned. It is one of the fastest moving areas in biology and one where every platform has had its own format. First edition, 18,500 words. It was issued on 31 December 2025 and has been in force since 1 July 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the storage and format requirements for spatiotemporal omics datasets, including spatiotemporal omics metadata, dataset files, and data storage. Table of contents. This document applies to the storage and sharing of spatiotemporal omics data.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 29859-2013 Bioinformatics Terminology

GB/T 35890-2018 Specification for High-Throughput Sequencing Data Sequence Format

3 Terms and Definitions

The terms and definitions defined in GB/T 29859-2013, as well as the following terms and definitions, apply to this document.

3.1 Spatio-temporal omics Building upon spatial transcriptomics, this extends to multiple omics levels, including genomics, epigenomics, and proteomics, utilizing spatial analysis... Multi-omics technologies can be used to perform molecular localization of tissues or organisms at single-cell or subcellular resolution, combined with time-series sampling or computation. It can be inferred to achieve spatiotemporal dynamic analysis of biological processes such as development, physiology, and pathology.

Note. Spatial transcriptomics refers to the use of high-throughput technologies to locate transcripts at single-cell or subcellular resolution within the spatial context of tissues or organs. This enables space observation at multiple scales, including molecules, cells,

tissues, and organs.

3.2 The smallest spatial unit capable of capturing biomolecules.

Note. The spatial location of biomolecules captured within this unit region cannot be distinguished.

3.3 spatio-temporal chip A specialized chip that arranges biomolecule capture units in a specific pattern to capture nucleic acid fragments in space.

Note. All biomolecule capture units on the chip are distinguished by CID, and all captured nucleic acid sequences on the chip are distinguished by MID. CID, MID, and nucleic acid... Sequence information was obtained using high-throughput sequencing. The arrangement of the biomolecule capture units in the spatiotemporal chip is not limited; it can be arranged in a square or other configurations. They are arranged in an equilateral triangle, with a typical spacing of 500nm to 100 μ m.

3.4 Serial barcode In biological fields such as high-throughput sequencing and cell analysis, short nucleic acid sequences are used to label different samples, cells, or nucleic acid molecules. Label.