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

GB/T 43776-2024

**Technical specification of sample collection and processing for
single cell sequencing**

单细胞测序样本采集与处理规范

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed and coordinated by the National Technical Committee on Biological Sample Standardization (SAC/TC559). This document was drafted by: Shenzhen BGI Life Sciences Institute, Shanghai Xinchao Biotechnology Co., Ltd., Fudan University, China Metrology Science Research Institute, Guangdong Provincial Hospital of Traditional Chinese Medicine (Second Affiliated Hospital of Guangzhou University of Chinese Medicine), Shanghai Biochip Co., Ltd., Qingdao MGI Intelligent Manufacturing Technology Co., Ltd. Co., Ltd., Shanghai International Human Phenotype Group Research Institute, Shenzhen University, Tangyi Holdings (Shenzhen) Co., Ltd., Shanghai Yikang Medical Testing Co., Ltd. Co., Ltd., Hematology Hospital of Chinese Academy of Medical Sciences (Institute of Hematology, Chinese Academy of Medical Sciences), and Shanghai Water Resources Technology Transfer Co., Ltd. The main drafters of this document are. Xu Xun, Li Qiyuan, Gao Hengjun, Wu Jingjing, Zhang Xiaoyan, Yang Yajun, Wang Jing, Chen Qubo, Fu Boqiang, Cai Xianchu, Ni Ming, Ding Guohui, Liu Shanshan, Guo Yunfeng, Wang Bo, Chen Liqun, Wang Jiangxin, Zeng Qingxiang, Zhang Li, Xu Shaokun, Jiang Yueming, Ma Shihui, Wang Mengmeng, Li

Manli, Ren Cheng, and Hu Peng. Single-cell sequencing sample collection and processing specifications

1 Scope

GB/T 43776-2024 specifies the collection and processing of samples for single cell sequencing. Everything that limits a single cell experiment happens before the sequencer: the tissue has to be dissociated into a suspension of intact single cells, and the dissociation itself stresses the cells and changes their transcriptomes, so the stress response genes seen in the data may be an artefact of the protocol rather than biology; cells that dissociate badly simply disappear from the result. The standard sets the general principles and requirements, the sample collection covering the preparation beforehand and the collection itself, the sample processing covering the preparation and the procedure, and the quality verification of the resulting suspension, with informative annexes on enzymatic dissociation of tissue cells, methods of enriching a cell population, and the trypan blue staining procedure for viability. It took effect on 15 March 2024.

This document specifies the basic requirements and quality verification for single-cell sequencing sample collection and processing. This document applies to the collection and analysis of human and animal blood and tissues, plant tissues, cell lines and other special single-cell sequencing samples. deal with. This document does not apply to the collection and processing of microbiological samples.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB 19489 General requirements for laboratory biosafety

GB/T 35892 Guidelines for Ethical Review of Laboratory Animal Welfare

GB/T 38576 Collection and processing of human blood samples

GB/T 38736 Ethical requirements for the preservation of human biological samples

GB/T 40352.1 Collection and processing of human tissue samples Part

1.Surgical removal of tissue ISO /T S20388.2021 Requirements for the storage of animal biological samples in biotechnology biobanks ISO /T S23105.2021 Requirements for the storage of plant biological samples for research and development in biotechnology biobanks (Biotech- development

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Single cell sequencing Using single-cell genome amplification technology, all genome and transcriptome sequences in a single cell can be obtained through high-throughput sequencing. This technique reflects the heterogeneity among cells.

3.2 Cell line A cell population with heterogeneous characteristics obtained by subculturing primary cells or cell populations. [Source: ISO 21427-2:2006,3.1]

3.3 Use a certain medium (such as cesium chloride, sucrose and polysucrose) to form a continuous or discontinuous density gradient in a centrifuge tube. The suspension or homogenate is placed on the top of the medium, and the cells are layered and separated by gravity or centrifugal force.