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

GB/T 42751-2023

**Information technology - Biometric - Specification for
high-throughput sequencing genotyping system**

信息技术 生物特征识别 高通量测序基因分型系统规范

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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 contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by the National Information Technology Standardization Technical Committee (SAC/TC28): This document is drafted by: Shenzhen Huada Forensic Technology Co., Ltd., China Institute of Electronic Technology Standardization, Shanxi Medical University, Xi'an Jiaotong University Tong University, South China University of Technology, Shenzhen Huada Gene Co., Ltd., Shanghai International Human Phenotype Research Institute, Shenzhen Huada Gene Technology Co., Ltd: Co., Ltd., Shenzhen Huada Intelligent Manufacturing Technology Co., Ltd., Tsinghua University, Fuzhou Data Technology Research Institute Co., Ltd., Fujian Provincial Public Security Bureau Criminal Technology Corps, Criminal Technology Center of Guangdong Provincial Public Security Bureau, Linfen Public Security Bureau, Wuhan Yiding Tianyang Biotechnology Co., Ltd., Beijing Zhongke Hongba Technology Co., Ltd: The main drafters of this document: Gao Shengjie, Yang Jianjun, Yan Jiangwei, Geng Li, Liu Qianying, Wang Wenfeng, Lai Jianghua, Shen Yuesheng, Song Jiwei, Zhang Hongbo, Du Hongli, Guo Yunfeng, Wu Hao, Li Zeqin, Zhang Yi, Ding Guohui, Su Liwei, Zhong Chen, Zhang Lei, Wang Xiaowo, Li Bowen, Wang Qiujuan, Li Haiyan, Huang Jianchun, Duan Jinqi, Shen Hexiao, Li Xingguang, Wei Shuguang, Kang Hengliang, Mu Haofang, Jiang Huayan, Guo Xiaosen, Yin Ye: information technology biometrics High-throughput sequencing genotyping system specification

1 Scope

GB/T 42751-2023 specifies high-throughput sequencing genotyping systems within the biometric standards series. DNA is the biometric with the highest discriminating power and the greatest sensitivity: unlike a fingerprint template, a genotype reveals disease risk and

family relationships, so the security requirements are not an appendix to the specification but part of it. Sequencing also differs from every other biometric in that the result depends on a wet laboratory workflow before any computing happens. The standard sets the general requirements covering the workflow, the functional requirements, the performance requirements and the information security requirements, and the test methods with the test environment, the reference samples and the test items, with an informative annex giving an example test record. It took effect on 1 December 2023.

This document specifies the composition, functional requirements, performance requirements, information security requirements and testing of a genotyping system based on high-throughput sequencing method: This document is applicable to the design, development, testing and use of genotyping systems based on high-throughput sequencing:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB/T 22239 Basic Requirements for Network Security Level Protection of Information Security Technology

GB/T 33767:14-2023 Information Technology Biometric Sample Quality Part 14: DNA Data

GB/T 37223 Technical specification for paternity test

GB/T 41806 Information Security Technology Genetic Identification Data Security Requirements SF/ZJD0105012-2018 Individual Identification Technical Specifications

YY/T 1723-2020 High-throughput gene sequencer

3 Terms and Definitions

The following terms and definitions defined in SF/ZJD0105012-2018 and YY/T 1723-2020 apply to this document: 3:

1 High-throughput sequencinghigh-throughputsequencing A technology capable of performing parallel sequence determination on a large number of nucleic acid molecules at one time, usually a sequencing reaction can generate no less than 100M Base pair sequencing data: [Source: GB/T 30989-2014, 3:19, modified] 3:

2 Sequencing throughput The number of sequences that can be obtained by a sequencer in a single sequence: [Source: GB/T 35537-2017, 3:1:3, modified] 3:

3 Locus locus The location occupied by a gene on a chromosome or a segment of genomic DNA: [Source: GAT 1694-2020, 3:1] 3:4 allele alele Different forms of genes controlling the same trait located at the same position on a pair of homologous chromosomes:

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