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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47334-2026

Protein detection - Method for measuring the trans-cleavage activity of CRISPR Cas12a

蛋白检测 CRISPR Cas12a蛋白反式切割活性检测方法

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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 Second People's Hospital, Wuxi Tolo Harbor Biomedical Technology Co., Ltd., Shenzhen University, Tsinghua University. Shenzhen Mindray Bio-Medical Electronics Co., Ltd., Jiangnan University, The First Affiliated Hospital of Chengdu Medical College, China Metrology and Testing Society, Shanghai Metrology and Testing Technology Research Institute Co., Ltd., Guojian Pharmaceutical (Shenzhen) Group Co., Ltd., and Sichuan Zhenxing Testing Technology Co., Ltd. The main drafters of this document are. Gu Dayong, Wang Jin, Zhuang Songkuan, Liu Yizhen, Li Jie, Wang Yi, Qi Huan, Xie Qian, Zhang Yiwen, Li Weifeng, and Cui Wenjing. Xu Ying, Li Lanying, Dai Jihai, Yang Yangzhongfu, Song Qiao, Liu Chuan, Yang Jie. Protein detection CRISPR Cas12a protein trans cleavage Activity detection methods

1 Scope

GB/T 47334-2026 is the Chinese national standard covering the collateral cleavage of Cas12a - once the enzyme finds its target it starts cutting any single-stranded DNA nearby,

which is the effect the whole class of CRISPR diagnostic tests is built on, and this is how that activity is quantified. First edition, in force since 1 July 2026. It was issued on 31 March 2026 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 2026 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 describes the principle, reagents, instruments, experimental procedures, and methods for detecting the trans-cleavage activity of the CRISPR Cas12a protein. Data processing. This document is applicable to the detection of trans-cleavage activity of the CRISPRCas12a protein.

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 6682 Specifications and test methods for water used in analytical laboratories

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 A genetic structure in the genome of prokaryotes, consisting of alternating short repetitive sequences and spacer sequences. Note

1.This structure usually originates from exogenous DNA fragments integrated into the genome and is a component of the prokaryotic adaptive immune system. Note

2.Its upstream leader sequence usually contains a promoter to initiate transcription of this structure. Short repeat sequences are typically 28-37 base pairs in length. The spacer sequence is typically 32 to 38 base pairs long and is used to identify homologous exogenous DNA.

3.2 Cas12a protein A type 2, type V RNA-guided nuclease in the CRISPR-Cas system, which cleaves target double-stranded DNA and trans-cleaves non-stranded DNA. Target single-stranded DNA.

Note. Its function is mediated by the RuvC nuclease domain.

3.3 CRISPR-derived RNA; crRNA A sequence complementary to the target fragment guides the Cas12a protein to cleave the RNA sequence of the target fragment.

3.4 Cas12a protein trans-cleavage activity

3.5 The amount of Cas12a protein required to catalyze the cleavage of 1 pmol of single-stranded DNA fluorescent reporter probe per minute in a 37°C, 20μL reaction system.

Note. Abbreviated as transU, 1IU=106transU.