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**Method of morphological identification of coronavirus by using
transmission electron microscopy**

冠状病毒透射电子显微镜形态学鉴定方法

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Foreword

Appendix A of this standard and Appendix B is an informative annex. This standard by the National Standardization Technical Committee microbeam analysis and focal points. This standard was drafted. Institute of Geology and Geophysics, Chinese Academy of Military Medical Sciences Basic Medicine Institute, the National Center of Biomedical Analysis, Institute of Basic Medical Sciences, Chinese Academy of Medical Sciences, Second Military Medical University foundation Department of Fudan University Shanghai Medical College, Guangzhou Xing Shi-yuan Biological Technology Co., Ltd. Photonic Microsystems. The main drafters of this standard. Chen Dehui, Zeng Rong tree, Yang Yi, Liu Shide, Yong Ji, Yu Chang, Bi Shu.

With the development of electron microscopy, and in vitro virus virus separation and purification technology, the virus morphology, chemical composition, genetic structure Increasing knowledge of biological characteristics as well as its other aspects. According to virus transmission electron microscope morphological characteristics. virion Shape and size, and the capsid symmetry (symmetry or helical symmetry is a perspective) and the size, number and arrangement of shell particles, in a host of fine nucleocapsid Intracellular replication and assembly sites, with or without an envelope, the envelope surface of the spike of the size, shape and spacing, and enveloped virus budding maturity site Etc., combined with the virus biology and molecular characterization of nucleic acids and proteins of the virus classification and nomenclature. Known people Class of pathogenic viruses involved in at least 22 families (Family) and two unclassified virus genus (Genus). Virus taxonomy and nomenclature Morphological characteristics of the virus is the primary indication. Practice has proved that, according to virus morphology and morphogenesis characteristics can be applied quasi-electron microscopy Correctly identified the virus to families. In order to properly guide diagnosis and appraisal of human viral infectious viral pathogens, it is necessary to develop human Disease-associated virus transmission electron microscope morphological analysis Identification of national standards. Coronavirus transmission electron microscopy Morphological identification method

1 Scope

GB/T 21637-2008 is the Chinese national standard on method of morphological identification of coronavirus by using transmission electron microscopy, in the field of chemical technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 11 April 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 October 2008. Classification: ICS 71.040.99, CCS N53. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the electron microscope observation and identification of coronavirus transmission method of application, requirements and coronavirus morphology and shape hair Health characteristics (see Appendix A, Appendix B). This standard applies to the use of a transmission electron microscope identification of the coronavirus morphology.

2 Terms and Definitions

The following terms and definitions apply to this standard.

2.1 A class of relatively primitive, with only one nucleic acid (DNA or RNA), capable of self-replication and cell parasitic within strict non-cellular organisms.

2.2 Copy, fully assembled mature viral particles.

2.3 Capsid proteins and nucleic acids by the composition of the center of the virus, there are two kinds of three-dimensional symmetry and helical symmetry.

2.4 Protein subunits are multiplexed nucleic acid wound on the outside, along the central axis was spirally arranged, the formation of highly ordered, symmetrical stable structure.

2.5 Outside the viral nucleocapsid by lipoprotein and mucin consisting of lipid bilayer membranes.

2.6 The outer envelope spike glycoprotein composed of projections having antigenicity.

2.7 High-density heavy metal salts (such as phosphotungstic acid, uranyl acetate, etc.) dye, will be surrounded by a tiny virus, the virus is displayed on a dark background Fine structure.

2.8 Ultra-thin slicer fixed biological sample after embedding, cut into thin slices having a

thickness of 60nm ~ 80nm for TEM Observed.

3.1 The main equipment

a) transmission electron microscope;

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