

Every Effort for Human Life and Health – Contributions to Society w

Human life sustaining activities such as breathing and muscle movement are controlled at the molecular level like protein, enzyme, lipid and carbohydrate. Identifying and understanding the mechanisms that sustain our lives have led to the development of medical treatment and medicine, the solutions to food and environmental issues, and the improvement of the quality human life. In this section, we will introduce examples of microscopic observation and analysis to contribute to society by Hitachi High-Technologies Group.

We Support the Research for Biology and Medical Sciences

Transmission Electron Microscope

Electron Microscope Useful in Various Viruses Research

It has been discovered that diseases such as bird (avian) flu and norovirus can be transmitted to humans. The viruses that cause these diseases range from about 30 to 150 nanometers (1 nanometer= 1/1000000000 meter) in size which means we can only look at them with an electron microscope. The cause of SARS, which afflicted China in 2003, was confirmed to be a new kind of corona virus. The research on this virus was done with an electron microscope. Now the research for treating and preventing this virus is progressing. Along with the

development of new medicine, the electron microscope plays a crucial role in specifying effective materials, searching for production methods, and analyzing functions within human body.

We Support Research Development Partnerships with Universities and Laboratories

A new aspect using an electron microscope technology is that the Computed Tomography (CT) is applied to three dimensional observation of fine structure of samples. This is attracting people's



What is an electron microscope?

The electron microscope magnifies objects up to a million times closer than a conventional microscope.

It enables us to observe the specimen better at the nano-level than by an optical microscope.

There are generally two kinds of electron microscopes: transmission electron microscopes and scanning electron microscopes.

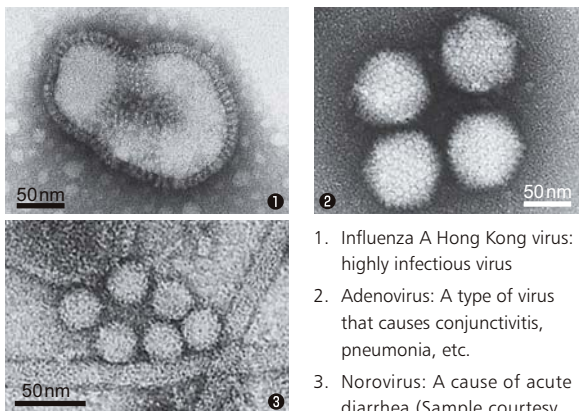
These are both used in the field of medical research, science and biology, material development, electronics, etc.

1. Transmission Electron Microscope:TEM: Active in research and industry fields as "Bio-TEM®"
2. Scanning Electron Microscope: SEM

attention. Scientists have found that they can observe the steric structure and inner structure of cells by cutting molecules into round slices to analyze and manipulating the image. Visualization of such a cell structure is currently a collaborative project between public studies and Hitachi High Technologies. Hitachi High-Technologies is working diligently developing equipment and offering technical support. We hope to develop strong partnerships and grow with various universities and laboratories.

We Respond to the Demand of the Researcher

Feedback from customers has immensely helped Hitachi High-Technologies improve the Transmission Electron Microscope “Bio-TEM®”. These improvements allow medical and biological researchers attain optimal results. Also, we pursued the operability and functionality based on ergonomics for users to feel rather comfortable even if it is their first time use of the microscope. Moreover, we have been making an effort to offer valuable solutions for optimum usage to the customers who are using our electron microscopes.



1. Influenza A Hong Kong virus: highly infectious virus
2. Adenovirus: A type of virus that causes conjunctivitis, pneumonia, etc.
3. Norovirus: A cause of acute diarrhea (Sample courtesy

by Etuko Tajiri-Utagawa, Ph. D, Senior Researcher, Department of Virology II, National Institute of Infections Diseases)



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In the development of “Bio-TEM®”, we have especially focused on functionality such as flexible observation from wide field with low magnification to large magnification and observation with auto focus as more customers demanded them. In fact, we have controlled 70% of the domestic market share which indicates the opinion our customers have about this product. Many people are using our products and that instills us with a great sense of accomplishment and increases our sense of responsibility to society.

Our important role is to support users of our electron microscope to give sufficient results and to apply our customer’s feedback to our products and services. We often conduct seminars, workshops and give lectures for young researchers as well as experienced researchers at leading universities and research facilities around the world. This is in hope to present our valuable and wide-field technologies to the world.



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