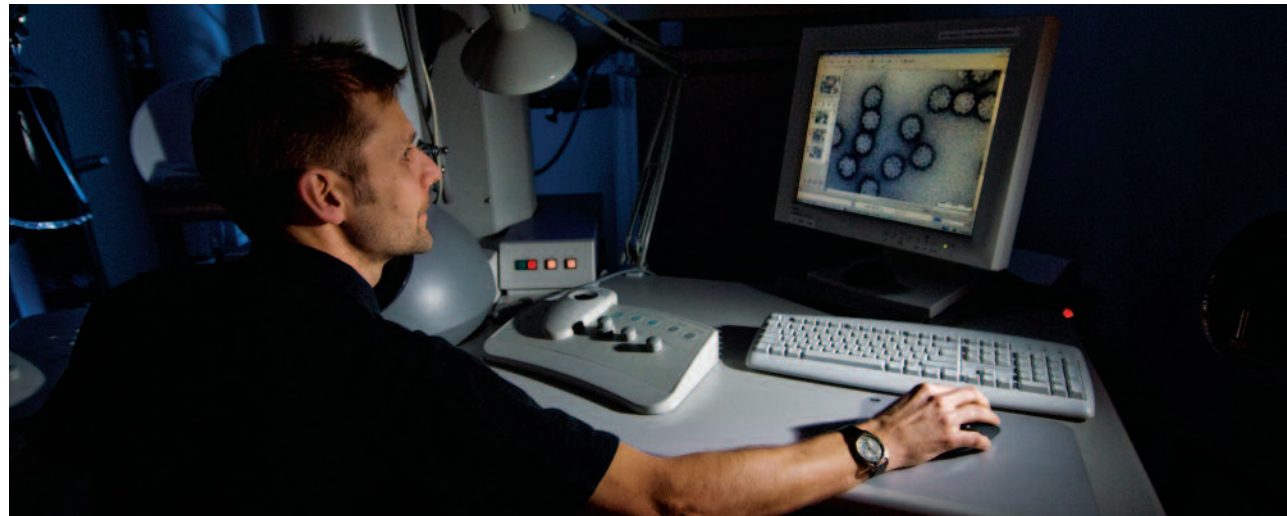


Vironova

Committed to fighting viruses with technologies of tomorrow



Vironova is dedicated to developing solutions to fight viruses. Viruses that all of us are susceptible to like Influenza or Herpes. And viruses that could cause a potential deadly threat to us all. Phenomena such as global warming are changing the pattern of geographical location of viruses, and many viruses are moving countries and even continents as the climate changes and their host organisms, like ticks and mosquitoes spread to new regions. Moreover, epidemics caused by viruses such as Influenza continue to be a serious global threat.

Vironova is a Swedish biotechnology company dedicated to the development of solutions to combat the threat of viral infection. Solutions are based on Vironova's innovative technology platform of techniques that add speed, accuracy, repeatability and objectivity to the structural analysis of viruses and nanoparticles in transmission electron microscopy (TEM) digital images.

Technologies of tomorrow at your service

Vironova runs successful fee-for-service contract research, working closely with clients to provide on demand digital imaging and image analysis services based on visualization of virus particles, virus-like particles (VLPs) and nanoparticles (VLPs) in EM. For companies that develop therapeutics based on VLP delivery, or companies producing biologicals, Vironova is dedicated to assist advancing and optimizing the research and production processes.

By utilizing our particle analysis technology the cost of drug development and timelines to clinical phases can be made significantly shorter and cheaper than the industry average.

Imaging Services

Vironova specialises in digital EM imaging of virus and VLPs and has in-house experience needed to provide high quality

images of nano-scale structures. The service covers several custom-made preparation and labelling techniques that provide valuable insight into VLP research, development and production.

By using electrons instead of light, TEM technique enables detailed analysis at nano-scale. We use several techniques to further highlight or distinguish image features. Cryo-TEM is a technique to study delicate and dynamic structures of specimens sensitive to changes from the native environment, while high pressure freezing preparation provides maximum contrast for detailed structure analysis. By labeling antigens using gold particles (www.immunogold.com) the precise identification and localisation of proteins exceeds any other immunolabeling techniques. Moreover, scanning electron microscopy (SEM) can give a topographic image of the specimen with complex details of the surface structure.

And Vironova's proprietary image analysis technology can be directly at your fingertips with the help of the web based portal (virusimaging.com). This provides online access to automatically analyse, identify and measure viruses in highly textured TEM images.

Image Analysis Services – New tools in quality assessment

By combining diverse technical capabilities with virology and TEM expertise, Vironova offers a powerful quality and quantity assessment service of VPs and VLPs invaluable in vaccine, drug delivery or gene-based medicine. Particle assessment involves analysis of size distribution, morphology, packaging, aggregation state and presence of debris/contamination. This provides customers with deep insight into their particles' quality and characteristics in the final product or after individual purification or production steps.

Virus Diagnostics

Capturing the killers and lending a hand in saving lives

When dealing with unknown viruses in a suspected pandemic outbreak or bioterror attack, the features and benefits of Vironova's automated diagnostic TEM technology can be invaluable. In such emergencies speed and reliability are of utmost importance since every minute gained from a rapid identification may be translated into reduced spread of the outbreak.

Benefits of Vironova's automated diagnostic technology:

- Insensitive to virus mutation, by analyzing conserved viral structures
- Enables diagnostic results within minutes
- Reduces the need for virus identification expertise
- Provides objective image analysis results
- Eliminates the need for living biological material required for ELISA or PCR analysis.

R&D PanVirusShield

(www.panvirusshield.com) - A project developing a rapid diagnostic system for screening and rapid identification of some of the most dangerous viruses known to man like Crimean-Congo hemorrhagic fever, Lassa Fever, Dengue, Ebola, H1N1 influenza A and SARS. This is to strengthen society's preparedness for infectious disease emergencies such as virus outbreaks and bioterrorism caused by highly pathogenic viruses.

PanVirusShield develops software that scrutinizes the detailed nano-sized features of a new or unknown pathogen, which makes it possible to identify and distinguish it from other viruses. This is crucial to enable taking the appropriate countermeasures, in the event of a bioterrorism attack or a sudden outbreak of a highly pathogenic virus.

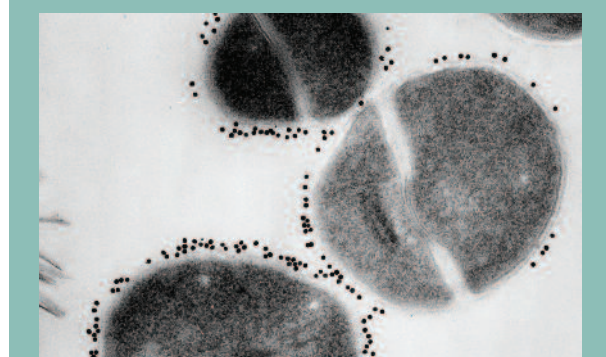
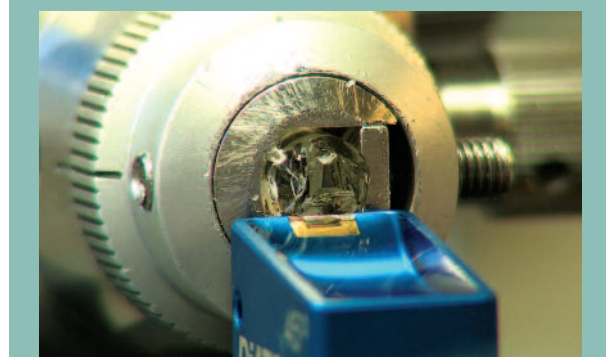
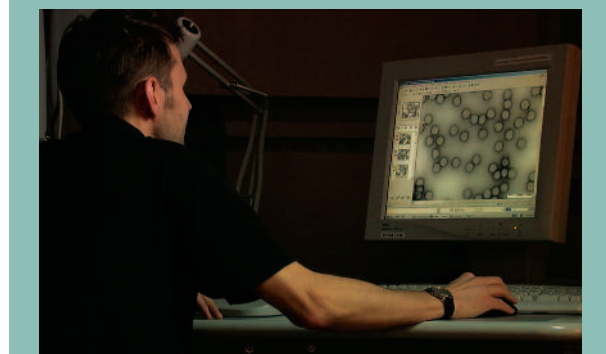
Antiviral Portfolio – Medicines of Tomorrow

Vironova specializes in antiviral drug development against Herpes, Influenza and HIV-1. In collaboration with world leading scientists, Vironova is conducting projects aiming to attack a component of the virus that cannot mutate and therefore will not be able to develop resistance against the drug. In addition, Vironova's image analysis technology allows a detailed analysis of the mechanism of action of the new antiviral drugs.

Reference Customers

Vironova's EM imaging and analysis customers come from many continents with diverse R&D questions. What they have in common is a demand for high quality, project customization and support as well as fast delivery – all core values at Vironova.

Our reference customers include: AC Immune, Amsterdam Molecular Therapeutics (AMT), Ark Therapeutics, Crucell | SBL Vaccines, Genex Biosystems, IDT Biologika, Lifecare Innovations, Nordic Vaccine, Variation Biotechnologies.



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