

# Martinus Willem Beijerinck Biography

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# Contents

<a href="#">Martinus Willem Beijerinck Biography.....</a>	<a href="#">1</a>
<a href="#">Contents.....</a>	<a href="#">2</a>
<a href="#">Biography.....</a>	<a href="#">3</a>

# Biography

Born in Amsterdam, Martinus Willem Beijerinck was the son of a tobacco dealer who went bankrupt. In response to his father's misfortune, Beijerinck would devote most of his scientific career to the **tobacco mosaic virus**, a pathogen causing an economically devastating disease that dwarfs tobacco plants and mottles their leaves.

Beijerinck, who graduated from the Delft Polytechnic School, began his research under the assumption that the tobacco mosaic disease was caused by an unidentified bacterium or a parasite. Attempting to isolate the causative agent, Beijerinck filtered the sap of an infected plant to remove all known **bacteria**; however, the resulting liquid was still infective. In addition, the filtered substance was capable of infecting another plant, which could infect another, demonstrating that the substance had the ability to multiply and grow. The Russian botanist Dmitri Ivanovsky had come up against the same type of agent, but had failed to report its existence, assuming instead that his research was flawed.

In 1898 Beijerinck published his work, which maintained that tobacco mosaic disease was caused not by bacteria, but by a living liquid virus that infected only growing plant organs where cellular division allowed it to multiply. This new agent he called a filterable virus, from Latin meaning filterable poison. **Louis Pasteur** had speculated about the existence of germs that were smaller than bacteria, but did not conduct research into this phenomenon. Beijerinck asserted that the virus was liquid, but this theory was later disproved by Wendell Stanley, who demonstrated the particulate nature of **viruses**. Beijerinck, nevertheless, set the stage for twentieth-century virologists to uncover the secrets of viral pathogens now known to cause a wide range of plant and animal (including human) diseases.