

Mayo researchers discover how measles virus spreads

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Textbooks will require revisions, researchers say

Measles, one of the most common contagious diseases, has been thought to enter the body through the surface of airways and lungs, like many other major viruses. Now, Mayo Clinic researchers and their collaborators say that's not the case, and some medical texts will have to be revised. The findings are reported in today's online edition of *The Journal of Clinical Investigation* .

"It has long been assumed that measles virus infects the airway epithelium before infecting immune cells," says Roberto Cattaneo, Ph.D., Mayo Clinic virologist and senior author of the study. "But we've shown that replication in the airways is not required, and that a virus replicating only in immune cells causes measles in monkeys."

The research team generated a measles virus that cannot enter the airway epithelium and showed that it spread in lymphocytes, cells of the immune system, and remained virulent. Researchers also showed, as they predicted in a new model of infection, that the virus could not cross the respiratory epithelium on its way out of the lungs and was not shed from infected monkeys.

Significance of the Research

From a treatment standpoint, the findings help physician-researchers better understand how measles virus, which can be reprogrammed to

eliminate cancer cells, spreads in its host. The research may help improve efficacy and safety of cancer therapy, and lead to a better understanding of how viruses similar to measles function. A result could be more effective vaccines for other diseases.

From a strictly scientific perspective, the study challenges a widely held assumption about this common contagion. In the introduction to their article, the researchers cite two recent medical texts on the measles virus that say it infects the upper respiratory epithelium before spreading to the rest of the body. In light of their findings, the investigators say those statements will have to be revised.

The team tested their hypothesis by developing a form of the measles virus that could not enter epithelia because it was made "blind" to the epithelial cell receptor, but could enter lymphatic cells through another receptor. The virus was tested on rhesus monkeys, inoculated via the nasal tract. They developed a rash and lost weight (both symptoms of measles in the species), but follow-up tests showed that the virus did not enter through the airway epithelium, though the lymph system was infected.

Source: Mayo Clinic

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