



## Media Statement

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### **Australian scientists discover that a common virus resides in healthy eyes and triggers long-lasting inflammation**

Researchers at the Lions Eye Institute (LEI) have discovered that contrary to expectations, a common virus triggers long-lasting inflammation in the eyes of hosts with a healthy immune system.

Healthy eyes have been considered largely inaccessible to viruses, as well as “immune privileged”, meaning that exposure to a foreign antigen, such as a virus, should not trigger an inflammatory response.

Outbreaks of viral diseases like Ebola and Zika have raised the possibility that viruses can cause enduring infections in the eye, but this was thought to be a feature of exotic viral infections.

Published today in the medical journal PLOS Pathogens, *Systemic cytomegalovirus infection causes ongoing inflammation in the eye* reports on the findings of the LEI’s Experimental Immunology research group.

The researchers focused on cytomegalovirus. Cytomegalovirus infections are common, with more than half of the adult population carrying the virus, but clinical symptoms are usually seen only in patients with compromised immune systems. Once a person is infected, the virus enters a dormant state in organs such as the lung. In people with healthy immune systems, tissues like the eyes are thought to be inaccessible to the virus.

However, LEI researchers discovered that infecting healthy mice with cytomegalovirus resulted in broad ocular infection, chronic inflammation and establishment of a dormant pool of virus in the eye.

Dr Valentina Voigt, who conducted the studies, said the findings challenged the belief that immune privileged tissues such as the eye were only accessible to cytomegalovirus when the infected person's immune system was severely compromised.

"Until now, it was thought that cytomegalovirus could not access the eye and certainly was unlikely to reside there indefinitely in a healthy host," she said.

"Our findings identify the eye as an unexpected reservoir for cytomegalovirus and suggest that common viruses may target the eye more frequently than appreciated.

"They also highlight that cytomegalovirus infection triggers sustained inflammatory responses in the eye, including the neural retina."

LEI Director of Research and head of the Experimental Immunology group, Professor Mariapia Degli-Esposti, who co-authored the study, said the research on mice was a reliable model for human cytomegalovirus infection.

"Since the mouse model of cytomegalovirus infection faithfully recapitulates most of the pathologies seen in people after infection with human cytomegalovirus, this study represents an important advance in understanding the full impact of this infection, especially in healthy subjects," she said.

While more research is needed to determine whether these unexpected findings extend to humans, they suggest that researchers and doctors may need to rethink the effects of cytomegalovirus - and, potentially, other viruses - on the eyes. Some eye problems caused by dormant or reactivated cytomegalovirus in people with healthy immune systems may be misdiagnosed, leading to improper treatment that could damage vision.

The full paper can be read at

<http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1007040>

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