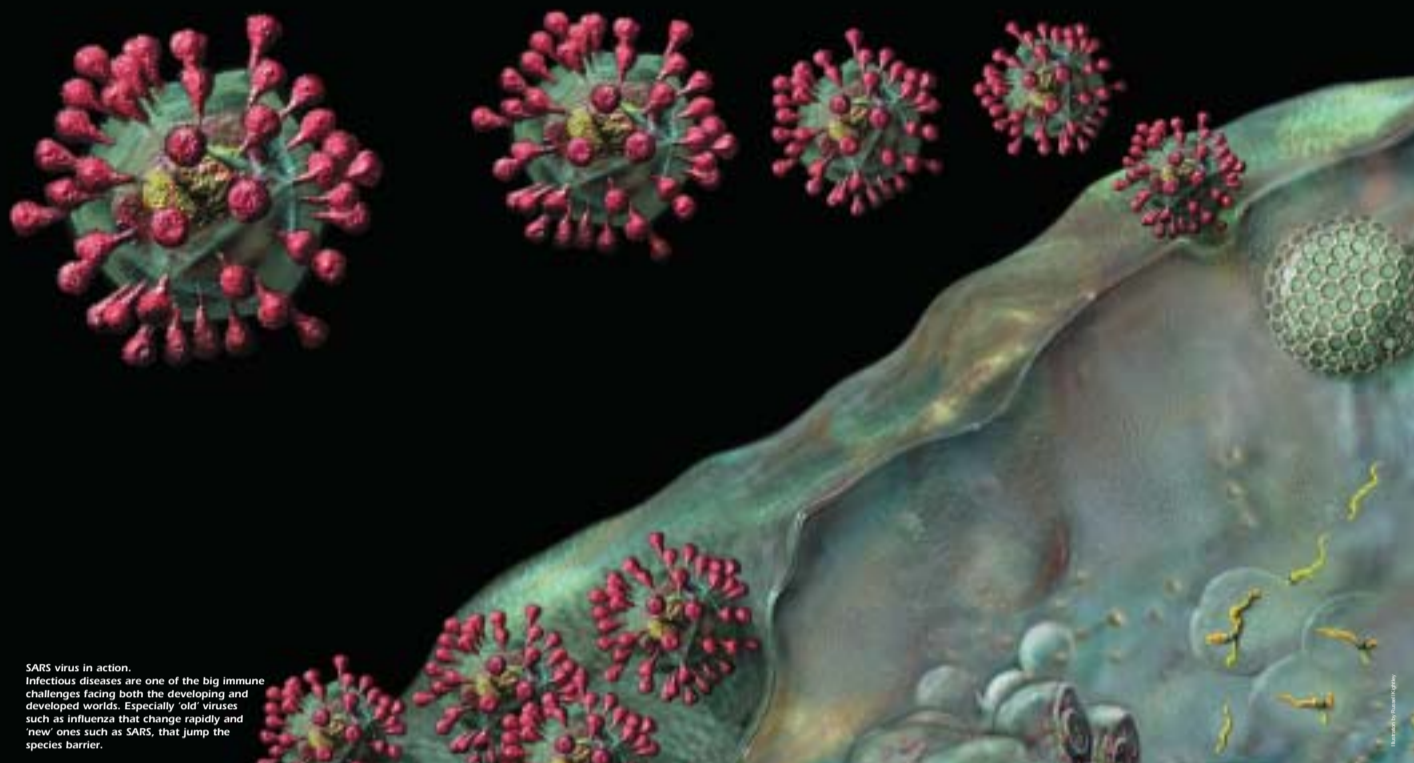


# Cunning, devious, nasty

Viruses invade our body, attach to cells and take control



SARS virus in action. Infectious diseases are one of the big immune challenges facing both the developing and developed worlds. Especially 'old' viruses such as influenza that change rapidly and 'new' ones such as SARS, that jump the species barrier.

**Viruses** have challenged humans for centuries. The Spanish flu in 1918 **killed** 50 million people worldwide, including Australia—more than the number of deaths in four years of fighting during the First World War.

Viruses need a host to reproduce. The viral DNA takes control of the body cell, turning it into a factory for more viruses.

## EUREKA!

Our immune system goes into **defence** mode. Our body starts to ache, we develop a fever, sore throat, dry cough, nasal congestion and feel tired.

What triggers this response?



Immunologist Peter Doherty described in 1975 how the body **recognises** virus-infected cells.<sup>1</sup> This led to an understanding of how the immune system distinguishes between the body's own tissue and foreign organisms—'self' and 'non-self'.

How the body **responds** to the recognition signal can be either good or bad for the person's health.

For example, transplants are rejected when the body recognises the tissue as being foreign and responds accordingly.

Autoimmune reactions in diseases such as rheumatoid arthritis, multiple sclerosis and diabetes occur when the body mistakes 'self' for 'non-self'.

*The Nobel Assembly at the Karolinska Institute has today decided to award the Nobel Prize in Physiology or Medicine for 1996 jointly to Peter C Doherty and Rolf M Zinkernagel for their discoveries concerning The Specificity of the Cell Mediated Immune Defence.*

*The Nobel Assembly, Karolinska Institute  
Press Release October 7, 1996*

### WHAT NEXT?

Easy ways to design and produce **vaccines** against new and changing infectious agents.

Smart ways to boost immunity **against cancer** cells.

Ways to diminish the effects of autoimmune responses and stop transplant rejection without suppressing the whole immune system.

1. Zinkernagel R M, Doherty P C (1974). Immunological surveillance against altered self components by sensitised T lymphocytes in lymphocytic choriomeningitis. *Nature*, 251, 547-548.