

## THE AUSTRALIAN

## Bad news for bunnies as mutant myxo virus emerges

A mutant strain of the myxomatosis virus poses an even deadlier threat to wild and pet rabbits.

JOHN ROSS THE AUSTRALIAN 5:00AM August 15, 2017

The introduced rabbit disease myxomatosis has become far deadlier, an example of an “evolutionary arms race” that imperils people — particularly unvaccinated ones.

Scientists have found the disease has mutated and now completely shuts down nonresistant rabbits’ immune systems, rendering them “moribund” within hours. Researchers warn the same thing could happen with the viruses that cause AIDS and cervical cancer and the bacteria responsible for whooping cough and typhoid.

“We could see viruses evolve enhanced ability to turn down human immunity in response to widespread immunisation,” said Andrew Read, a Penn State University biologist. “If that happens, unvaccinated people might be put at greater risk. The myxo-rabbit story shows it is possible, and that it takes decades.”

The study, published in the journal *PNAS*, has emerged amid worldwide alarm that drug-resistant pathogens could render antibiotics useless.

Professor Read said comparatively little attention had been paid to another source of superbugs — “resistance to resistance”, where bugs evolved ways to suppress their hosts’ entire defence systems.

He said this became a threat when “host defences” had been changed, either through vaccination or — in the case of farm animals — genetic modification.

Myxomatosis, which is caused by the myxoma virus, is considered a “textbook classic” of the coevolution of pathogens and their hosts. The South American virus killed up to 99 per cent of rabbits after it was introduced in Australia in the 1950s, but lost its bite as the animals evolved resistance.

“The virus evolved ways to combat that resistance, and this continued in a back-and-forth, ever escalating way,” said lead author Peter Kerr of the University of Sydney. “We wanted to know how that arms race had continued since it was last studied in the early 1980s.”

The new study tested 1990s strains of the disease by unleashing them on laboratory rabbits with no genetic resistance. Unlike the typical myxo symptoms of skin tumours leading to gradual blindness, the animals suffered a “highly lethal immune collapse syndrome” akin to septic shock.

“The evolutionary arms race has produced a virus that instead of trying to evade the host’s immune response, directly attacks it,” said co-author Isabella Cattadori.

Dr Kerr cautioned against drawing conclusions about human vaccination from a study of a wildlife disease, but said it illustrated the dangers of “partial” vaccination. “As we reduce the coverage in the community, the opportunity exists for viruses to get going.”

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