

Media Release  
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### **How “superbugs” evade the immune system**

MRSA and similar infections may soon be treatable, as scientists have discovered how the bacterium evades the immune system’s first line of defence.

Scientists at the Maurice Wilkins Centre, hosted by The University of Auckland, along with Australian collaborators, have analysed proteins produced by the bacteria *Staphylococcus aureus*. The scientists have developed a detailed picture of how *Staphylococcus* avoids recognition by the human immune system, moving one step closer to developing a treatment for *Staphylococcus* infections, particularly those resistant to existing drugs, such as MRSA.

The research is published in this week’s Early Online edition of the journal *Proceedings of the National Academy of Science*.

*Staphylococcus aureus* causes a wide range of conditions, from superficial skin infections to life-threatening syndromes including sepsis, toxic shock syndrome, and heart inflammation. Antibiotic-resistant strains are becoming increasingly more common, but the development of an effective therapeutic has been hindered because the bacterium is not well understood.

“The research has shown in a dramatic 3 dimensional rendition how a simple bacterial protein called SSL7 binds tightly to IgA; the antibody that coats bacteria in our gut and lung to trigger phagocytes,” says Professor John Fraser, lead investigator of the study. “With SSL7 present, the phagocytes are quite blind to the presence of antibody-coated bacteria, giving the organism enough time to slip past before they’re destroyed and into our tissue to cause infection.”

“By understanding the simple but elegant mechanisms used by *Staphylococcus aureus* to block immune recognition, we can develop ways of neutralising proteins like SSL7 to improve our resistance to diseases like MRSA strains that are currently difficult to treat with antibiotics.”

The Wilkins Centre team collaborated with scientists at the Burnett Institute, University of Melbourne and Monash University in Australia. The research was supported by grants from the National Health and Medical Research Council (NHMRC) of Australia and the Health Research Council of New Zealand.

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