

# Australian researchers develop treatment to treat obesity

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A team of researchers from the St Vincent's Campus in Sydney have developed a novel way to control the extreme weight loss, common in late stage cancer, which often speeds death.

The findings, published in *Nature Medicine*, suggest it may soon be possible to prevent this condition, giving people the strength to survive treatment and improve their chances of recovery.

The team of researchers from the Centre for Immunology at St Vincent's Hospital and the University of New South Wales and the Garvan Institute of Medical Research have shown that most common cancers produce large amounts of a molecule known as MIC-1, which in turn targets receptors in the brain that switch off appetite. Antibodies against MIC-1, already developed by St Vincent's, make it possible to switch appetite back on.

Conversely, when normal and obese mice are treated with MIC-1, they eat less and lose a lot of weight, suggesting that MIC-1 may also form the basis of a treatment for severe obesity.

Professor Sam Breit at the Centre for Immunology originally cloned the MIC-1 gene. He discovered that blood levels of MIC-1 were high in many patients with advanced cancers, and correlated this with the extreme weight loss seen in these patients.

In a collaboration with Professor Herbert Herzog, Director of the

Neuroscience Research Program at Garvan they then analysed the effect of this molecule on metabolism and the brain control of appetite.

“This work has given us a better understanding of the part of the brain that regulates appetite. Our bodies send complex chemical signals to our brains, which interpret them and send back responses, in this case ‘eat’ or ‘don’t eat’. Our research indicated that MIC-1 is a previously unrecognised molecule sending a ‘don’t eat’ signal to the brain,” said Professor Herzog.

The study showed that if a human cancer making a lot of MIC-1 is grafted onto a mouse, that mouse lost weight dramatically. When the researchers injected that mouse with an antibody that ‘mopped up’ MIC-1, the weight loss was reversed. In effect, they rescued the mouse from the excessive influence of MIC-1.

It is hoped that in the near future, the MIC-1 findings will prevent a sizeable proportion of advanced cancer patients from literally wasting away. The team from St. Vincent’s Hospital hope to develop a human antibody and run clinical trials in the next few years.

Professor Breit who, since discovering the MIC-1 gene in the 1990s, has conducted several internationally published studies relating to the gene’s influence on coronary disease, miscarriage and cancer. He now believes the findings could also have a significant impact on a range of appetite-related disorders.

“Injecting mice with MIC-1 protein also made them stop eating, suggesting that it may be possible to use this to advantage for treating patients with severe obesity,” he said.

Source: University of New South Wales

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