

Media Statement

WA-MADE GENE MINE HELPS SOLVE NEW PIECE OF IMMUNE SYSTEM PUZZLE

The West Australian-made world-leading next generation genetic resource the Gene Mine has been used to solve a new piece of the immune system puzzle.

The step forward could lead to progress in tackling cancer and autoimmune and inflammatory diseases like type 1 diabetes and lupus, according to the research team.

Together with colleagues from Croatia's Glycoscience Research Laboratory, WA's Centre for Diabetes Research has confirmed that genetic variation has a strong influence on an essential function of the immune system known as immunoglobulin G (IgG) glycosylation.

They discovered five genes linked to the process and also pinpointed the amino acids in proteins that can affect it.

Professor Grant Morahan said the findings, published in the prestigious international journal, *Nature Chemical Biology*, were fundamental to biochemistry.

"Until now, the genetic and environmental factors that underlie IgG glycosylation haven't been well understood so it's exciting to be part of this study that sheds new light on these," he said.

"Changes in IgG glycosylation have been observed in cancer, autoimmune diseases like type 1 diabetes, lupus and rheumatoid arthritis, as well as in pregnancy and ageing, so this work may also have implications for generating a better understanding of those conditions."

Professor Morahan said this research also underscored the enormous potential of the Gene Mine.

"Using only 95 Gene Mine mouse strains, we were able to generate more results than our colleagues had previously obtained from a study of more 30,000 people, so that's incredibly powerful," he explained.

Sherl Westlund, executive director at Diabetes Research WA, WA's peak diabetes research funding group, which was instrumental in establishing WA's Centre for Diabetes Research and continue to fund projects within the Centre, said she was excited about where these results may lead.

"With rates of type 1 diabetes on the rise worldwide, we desperately need to unravel more about what sparks this incurable condition and how we can prevent or cure it – and we're hopeful this fabulous research opens up another avenue to do this," she said.

The Gene Mine was recently purchased by China's leading animal sciences institute and medical school, the Chinese Academy of Medical Sciences' Institute, affiliated with Peking Union Medical College in Beijing.

Visit www.diabetesresearchwa.com.au for more information.

-more-

BACKGROUND

Glycosylation is a process through which complex sugar molecules (glycans) are covalently attached to proteins, and it has significant impact on structural and functional properties of the immunoglobulin G antibody.

For example, glycans attached to the IgG Fc constant fragment contribute to the decision of whether a pro-inflammatory or an anti-inflammatory immune response could be activated.

The Gene Mine was created over the past decade and captures over 90 per cent of common genetic variations of the mouse species. It mimics a large, powerful family tree with dozens of "cousins". This provides the power to help researchers rapidly map and identify genes related to complex human diseases.

The US\$2 million sale of the Gene Mine had been finalised, and transfer of the resource was due to be completed by June.

Professor Morahan has been appointed a Joint Professor in Beijing to supervise discovery programs of the resource from its new base.

-ends-

Media Contact: Natalie Caudle, natalie@capturemedia.com.au, 0407 984 435