

Discovery first step to new therapies

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In an Australian first, scientists at Sydney's Centenary Institute have mapped the anatomy of a membrane protein. This exciting discovery has the potential to turn the way we discover new drugs on its head and reduce the development time for new treatments.

"These membrane proteins are the target for 70% of all therapeutic drugs so an increased understanding of them is vital for future drug discoveries," said Centenary Institute Executive Director, Professor Mathew Vadas.

Publishing this month in the prestigious international journal, *Nature Structural & Molecular Biology*, Dr Mika Jormakka and his colleagues at UNSW, say understanding membrane protein structures will help develop better treatments for some of Australia's biggest killers such as cancer.

Dr Jormakka explains: "The best way to imagine the way we currently discover new drugs is to think of a lock and key. The lock is the membrane protein that causes the body to respond to treatment and the key is the drug."

"Up until recently we have never known what the lock looked like so we have to build thousands of keys (drugs) until we stumble upon one that fits. By

mapping membrane

proteins we are creating a map of the locks – this should make it much easier to design a key that fits."

Work on membrane proteins is still in its infancy, particularly in Australia. Having joined the Centenary Institute last year to head up the new Structural Biology laboratory, Dr Jormakka is widely recognised as a leader in the field.

"It is an exciting time to be working in structural biology as we are still very much at the start of the story," he explains. "There are only around 70 membrane proteins out of a potential 10,000 that have ever been mapped."

"At Centenary, we are now trying to map membrane proteins that are involved in 'pumping' drugs out of cells thereby reducing the effectiveness of cancer chemotherapy agents and antibiotics among other drugs."

"By understanding how these membrane proteins work, we have the potential to eliminate the trial and error nature of patient treatment and to create targeted therapies."

Professor Vadas explains Dr Jormakka is working in a complicated scientific field but that his work is critical to improved drug therapies.

"For Dr Jormakka the higher the degree of difficulty the more interested he becomes. He is prepared to investigate very difficult subjects and his success to date is extremely encouraging," says Professor Vadas. "We are proud to have recruited

such a talented young scientist to Centenary to lead our new Structural Biology program. We look forward to further scientific advances from him and his team which will have the potential to improve outcomes for patients."

Source: Research Australia

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