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Media Statement

**WA RESEARCHERS UNRAVEL EYE MOVEMENT MYSTERY IN MUSCLE DISEASE**

WA researchers have unravelled the mystery of why severely paralysed patients with certain types of muscle diseases still maintain normal eye movements – and the finding could aid the search for improved treatments, as well as help investigations into cardiovascular disease.

Professor Nigel Laing and his team at the Western Australian Institute for Medical Research (WAIMR) have discovered the reason why patients suffering from muscle diseases caused by mutations in the skeletal muscle actin gene (responsible for muscle contraction) are able to maintain normal eye movements, despite being severely paralysed.

Professor Laing said the specific line of research was sparked when one of the team's researchers – Dr Kristen Nowak – attended a patient convention and noticed that even patients who were otherwise severely paralysed, retained normal eye movement.

“We looked into this phenomenon and found that it had already been documented that eye muscles were not affected in patients with actin-based muscle diseases but, as there was no explanation as to why this occurred, we decided to conduct our own investigations,” he said.

“We found that eye muscles have a similar actin composition to that of the heart – which have high levels of cardiac actin and some skeletal muscle actin – different from skeletal muscles which are mainly composed of skeletal muscle actin,” he said.

“The high levels of cardiac actin in eye muscles explains why they're not affected in skeletal muscle actin disease and tells us that if we're able to increase the level of cardiac actin in muscles that are affected in these diseases, we may be able to treat these patients”.

During the research process led by WAIMR's Gina Ravenscroft, a new technique to distinguish between the different muscle actins was developed in collaboration with the WAIMR-based Proteomics International.

“One problem researchers have always encountered when studying actin levels has been that there has never been a suitable method to identify and distinguish these in protein samples because cardiac and skeletal muscle actin are very similar,” Professor Laing said.

“During this study we worked out that it's possible to measure the different kinds of actin levels using MRM-mass spectrometry.

“This is very exciting because it means we can now characterise changes in the ratio of these almost identical proteins, and may ultimately be an important tool not only in skeletal muscle disease analysis, but also in cardiovascular disease diagnosis and research.”

The study was published in the December issue of the international journal, *Neuromuscular Disorders*.

WAIMR Director Peter Klinken said the discoveries were a fine demonstration of how WA researchers were continuing to make important medical breakthroughs.

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