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New biomarker improves parathyroid cancer diagnosis

CSIRO and the **Kolling Institute of Medical Research** at Royal North Shore Hospital have discovered a new biomarker which improves existing detection rates of parathyroid cancer by another 10 percent, thereby further reducing the chance that a patient with the cancer could be misdiagnosed.

The new biomarker, called protein gene product 9.5 or PGP9.5, was first noted in 2004 by gene chip analysis data from patients with parathyroid cancer.

"We statistically analysed thousands of genes and got a shortlist whose high levels of expression were linked with the cancer, said CSIRO statistical researcher Dr Rob Dunne. "This particular gene product showed the most promise because you could see it was always there with the cancer but undetectable in healthy patients. That's what you need for it to be a good diagnostic tool".

To identify which gene would work best from the 19,000 tested, the researchers used sophisticated statistical methods developed by researchers from CSIRO Mathematical and Information Sciences.

A validation study published recently in the *Journal of Clinical Endocrinology and Metabolism* confirms that PGP9.5 is a reliable indicator of parathyroid cancer, and should be used in a biomarker panel to accurately diagnose parathyroid cancer.

"We were looking for a way to increase the accuracy of diagnosing parathyroid cancer using the latest technologies" said Dr Viive Howell, Research Fellow at Kolling. "This research paves the way for laboratory testing for the two biomarkers to become routine in diagnosing this cancer".

The new test is already being used at Royal North Shore Hospital which is considered a world leader in the diagnosis and treatment of parathyroid cancer.

"Because of this discovery this testing can now be done in virtually any laboratory and costs less than \$5 to do, said Dr Anthony Gill, Pathologist at RNSH. "This discovery is top!"

The function of protein PGP9.5 in the body, or why it's produced in such high levels during parathyroid cancer is unknown. But, even without that information, it holds great promise as a diagnostic tool.

Media Release

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Reference: "Protein gene product 9.5 and parafibromin combine with high sensitivity and specificity as diagnostic markers of parathyroid carcinoma ", J Clinical Endocrinology and Metabolism 94:434-441 (Feb 2009)

Image available on request

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