GARVAN INSTITUTE
Breakthrough Medical Research

Finding possible treatments for Prader-Willi Syndrome

One of the greatest challenges for the management of Prader-Willi Syndrome (PWS) is that this disease causes a voracious appetite and a strong propensity for obesity. People with PWS are often of normal to slightly below normal intelligence and many would be able to live independently if only there were effective treatments to curb their insatiable appetite. Presently, no such treatment exists, and current management of PWS involves living in homes where access to food is strictly controlled (e.g. padlocks on fridges and pantries, strict supervision when outside the home).

Researchers at the Garvan Institute of Medical Research are investigating possible causes for the voracious appetite and propensity for obesity in people with PWS, with the aim of eventually finding new treatments for these distressing symptoms. The Garvan team is currently investigating whether the naturally occurring hormones peptide YY (PYY) and pancreatic polypeptide (PP), both of which are secreted from the gut, might be involved in the development and possible treatment for increased appetite and obesity in PWS. To this end, we need to determine whether people with PWS actually have less PYY or PP in the circulation than people without the syndrome, either in the fasted state or after a meal, as this will tell us whether treatment with PYY or PP might be useful. Furthermore, we are examining if these changes in satiety hormones in people with PWS are linked to changes in body metabolism and composition. We are also planning to test a possible drug treatment to help improve the management of this disorder and to help prevent morbid obesity with all its complications.

On the other hand, we need to determine whether long-term deficiency of PYY or PP can contribute to increased appetite or obesity, and whether administration of additional PYY or PP (either individually or in combination) might have beneficial effects to reduce appetite and obesity. For these studies we use genetically engineered mice (for instance, PYY knockout mice which do not make PYY, and PYY transgenic mice, which make an excess of PYY) to determine the function of these gut peptides and their possible therapeutic potential. Pending the results of these studies, eventually it may be possible to test PYY- or PP-like compounds in people with PWS.