Report of 15 February 2017
Royal Society
Southern Highlands Branch

Speaker: **Professor Adam Guastella**
Autism Clinic for Translational Research
Brain & Mind Centre
University of Sydney

Topic: **Oxytocin and Autism**

Professor Adam Guastella is interested in developing more effective clinical treatments based on neuroscience advances for a range of mental health conditions. This work recently culminated in providing the first evidence of a medical treatment to improve social impairments in child autism. In this lecture, Adam presented some of his findings to an audience of sixty at Chevalier College, highlighting the neurobiology of social behaviour, the critical role of the social environment in social development, and how this knowledge is now informing 21st century treatments for social impairments in disorders such as autism.

Autism is a disorder of social dysfunction. Marked qualitative impairments in social interaction are obvious especially in the use of non-verbal behaviours such as eye-to-eye gaze, facial expression, body postures and gestures to regulate social interaction. There is failure to develop peer relationships appropriate to developmental level, and a lack of spontaneous seeking to share enjoyment, interests or achievements with other people. Lack of social or emotional reciprocity is clearly evident along with qualitative impairments in communication. There is also the problem of lack of varied, spontaneous make-believe play or social imitative play appropriate to development level. It is not surprising then that children demonstrating these characteristics are often the target of bullying.

One of the first empirically supported markers of autism is failure to use eye-to-eye gaze. Many treatments have been used for social dysfunction in autism and schizophrenia, with very limited success. Those that have been found to be of little or no use include anti-depressants, anti-psychotics, herbal remedies, cognitive behavioral therapy (CBT), hyperbaric chambers, family therapy, electric shock, and dolphin therapy. One exception has been the use of behaviour therapies.

Professor Guastella and his team have published ground-breaking work on the effects that oxytocin exhibits in enhancing social cognition. Importantly they have published their findings that oxytocin enhances eye-gaze and also improves recall of positive social memories. They have recently shown in a large trial that oxytocin improves emotion recognition too. That work was published in 2013 in *Neuropsychopharmacology.* It is known too that oxytocin enhances trust.

As for social intervention in children, research has shown in previous years that early intervention is associated with improved therapeutic outcomes, and that young children appear to respond better to treatment. Guastella feels that if oxytocin is likely to benefit people with autism, there is greater potential for these benefits during the younger years of life. His hypotheses are that oxytocin nasal spray will improve everyday interactions in those with autism, and that there will be improved functioning, reduced repetitive behaviour, as well as reduced caregiver stress. Of course there will have to be many investigations into the tolerability and safety for this young population.

Guastella emphasised throughout his lecture that although certain aspects of his research have been encouraging, there are still many questions to be answered. A huge factor in assessing the significance of any trials such as these is the subjectivity involved. He has seen on many occasions that because a parent is so eager to see improvement in a child, they will often declare that huge improvement has been achieved by the administration of a placebo.

His next research trial is planned for September with a 160 autism child trial. He also plans to conduct a PET ligand development study to research the question of where oxytocin goes in the brain.

It is not surprising that Professor Guastella faced a particularly long question time from his appreciative audience.

Anne Wood FRSN