

**Report of March Meeting
Royal Society
Southern Highlands Branch**

Speaker: **Dr Jason Tye-Din**
 MBBS, FRACP, PhD

Topic: *When the staff of life becomes a rod for your
back: tackling the rising problem of coeliac
disease*

Once considered a medical curiosity afflicting young infants, coeliac disease is now understood to be a strikingly prevalent disorder in adults, affecting at least 1 in 100 Australians, with most remaining undiagnosed. The identification in the 1950s that gluten from wheat, rye and barley causes the disease led to the treatment we still use today – a lifelong gluten free diet. However the disease is often not diagnosed, the role of the gluten free diet is not fully understood, and general misconceptions abound.

Dr Tye-Din talked of the emerging epidemic of coeliac disease, and described how research has progressed from a primitive understanding of gluten to a comprehensive molecular characterization that is now opening up avenues for novel diagnostics and therapies that could one day mean an end to the gluten free diet. His presentation coincided with Coeliac Awareness Week, so it was hardly surprising that many in the 47-strong audience were sufferers of the disease.

Coeliac Disease (CD) is a systemic inflammatory illness caused by gluten. While small bowel villous atrophy is characteristic, multiple organ systems are targeted. CD is now more than twice as common as type 1 diabetes, and more frequently diagnosed in adults without overt malnutrition. Despite improvements in disease awareness and serologic testing, CD remains frequently overlooked. Untreated CD is associated with increased morbidity and mortality – a major concern given that 80% of the more than 210 000 Australians remain undiagnosed.

With a fourfold increase in prevalence in the past 50 years, the burden of CD continues to grow, with a substantial rise in diagnosed cases projected over the next decade. The cause for this rate of prevalence is unknown. Typically CD begins in early childhood, but may not manifest until adulthood and even old age. Dr Tye-Din noted that in Victoria, new members joining the Coeliac Society are generally females of median age 40 years. He suggested that a disproportionately higher rate of coeliac serology testing in females is likely to explain the sex differences in the rate of diagnosed CD rather than substantial differences in biological risk.

Dr Tye-Din stressed the clinical need for a less restrictive and more effective therapy for CD. Insight into the molecular mechanisms underpinning CD pathogenesis provides several opportunities for novel therapeutic development. An understanding of the gluten peptides driving CD pathogenesis has formed the basis of an immunotherapy ('coeliac vaccine') designed to induce tolerance of gluten. This has recently completed a phase I trial in Australia.

New approaches also under development include oral protease supplements ('glutenases') that digest toxic gluten peptides, blockers of small intestine permeability (zonulin antagonists) to reduce the absorption of peptides, and inhibitors of the enzyme transglutaminase. Several of these new investigations have already been subjected to early-phase human clinical trials.

Although much research work lies ahead, these proposed therapies offer a ray of hope for CD sufferers. Dr Tye-Din feels that the challenge of ensuring satisfactory gluten detoxification means that most therapeutics are likely to supplement the gluten free diet and provide a safeguard against inadvertent gluten exposure, but not replace the gluten free diet completely. The possibility always exists however that, in the future, long-acting agents that qualitatively modify the immune response to gluten may entirely replace the gluten free diet.

At the conclusion of this excellent lecture, all agreed that Dr Jason Tye-Din and the Royal Society had presented an outstanding event for Coeliac Awareness Week. Jason was warmly applauded.

Anne Wood