**Project Title:**
Quantification of Flavoprotein succinate dehydrogenase eye muscle antibodies in Graves' disease and Hashimotos Thyroiditis patients serum using ELISA assay.

**Host School/ Institute:**
Nepean Clinical School

**Address:**
Thyroid Research Laboratory Level 5 South Block Nepean Hospital


**Personal Supervisor:**
Professor Jack Wall

**Phone:** 02 4734 2613

**Email:** robyn.lewis@sydney.edu.au

**Co-Supervisor:**
Dr Hooshang Lahooti

**Project Type:**
Laboratory based

**Project Category:**
Immunology & Infection, Endocrinology/Metabolism

**Project Keywords:**
1. Antibodies
2. Graves Disease
3. Hashimotos thyroiditis
4. ELISA
5. Eye muscles

**Project Description:**

The project concerns the development of an enzyme linked immunosorbent assay (ELISA) for antibodies against 64 kDa protein, flavoprotein succinate dehydrogenase (FP). This eye muscle antigen is closely linked to the development of ophthalmopathy in patients with Graves’ hyperthyroidism and Hashimotos Thyroiditis and was the first antigen identified as being a target of autoantibodies in Graves’ ophthalmopathy. It seems likely that FP antibodies are more closely linked to the development of Graves’ ophthalmopathy than subsequently identified antibodies against calsequestrin 1, collagen XIII autoantibodies. The development of an ELISA will enable us to identify informative single nucleotide polymorphisms in the flavoprotein molecule for later studies.

Student would set up and test the ELISA in our laboratory under the day by day supervision of Dr Hooshang Lahooti and the principle investigator. We would then test sera from patients with Graves’ disease with and without ophthalmopathy, Hashimotos thyroiditis with and without eye disease and normal subjects as controls to confirm the association of FP antibodies with ophthalmopathy. Earlier studies on FP were performed using SDS Page and Western Blotting. ELISA is a simple technique more readily standardised and more consistent with a clinical testing program. Because we have set up ELISAs previously and indeed measure antibodies against calsequestrin and collagen XIII using ELISAs it should be straight forward to set up, optimise and standardise an ELISA for FP to carry out studies with patient sera which are available in our data storage. The work can be carried out in the period allocated and the results of the work will be of importance for understanding the pathogenesis of Graves’ ophthalmopathy, which in future will provide the background information for further genetic and immunological studies in our laboratory.