

## **A MOLECULAR DIAGNOSTIC ASSAY FOR RESISTANCE TO SYNTHETIC PYRETHROIDS IN *PEDICULUS HUMANUS***

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In the head lice studied so far which are resistant to synthetic pyrethroids (permethrin) there are two point mutations in the gene for the *para*-orthologous sodium channel  $\alpha$ -subunit (*para*-locus) - most of the polymorphisms that are known to be associated with knockdown resistance are located in this gene (Lee *et al*, 2000). The first of these two point mutations termed T929I, was the substitution of threonine for isoleucine at position 929 of the polypeptide chain. Alignment of susceptible and resistant louse nucleotide sequences reveals that this substitution is due to a single C  $\rightarrow$  T base change. This base change also generates a motif that is specific for the restriction enzyme SspI (AACAA  $\rightarrow$  AA|TA). Using PCR-RFLP (polymerase chain reaction-restriction fragment length polymorphism) to exploit the SspI cutting site in the putative resistance allele, it has become possible to type lice for resistance to synthetic pyrethroids using this technique. In this preliminary study we examined the level of synthetic pyrethroid resistance in a population of head lice sampled from school children in Brisbane.