

## **Microarray analysis of red and white muscle in the blue swimmer crab, *Portunus pelagicus***

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The fifth periopod of portunid crabs is modified as a swimming leg. The promotor muscle in the fifth periopod, has three distinct branches with one containing predominantly red muscle fibres and the other predominantly white muscle fibres. Analysis (histochemical and physiological) in several portunids has shown the red fibres to be tonic with slow contraction speeds and high density of mitochondria and the white to be phasic with fast contraction speeds and higher levels of force. In order to identify genes expressed specifically in each muscle type, RNA was isolated from red and white fibres of the promoter muscle of the blue swimmer crab, *P. pelagicus*, (in the intermoult stage of the moult cycle), and was screened on custom *P. pelagicus* microarrays containing 5000 ESTs. There were clear differences in the composition of genes expressed in each of the two muscle types. In the red muscle, the most abundantly up-regulated gene was NADH (45%) followed by cytochrome C (14%) and ATP synthase (8%), other genes of interest also include cytochrome b, cytochrome oxidase 1. These genes conform to previous understanding of the metabolic pathways that take place in red muscle. Genes up-regulated in white muscle included actin (27%), ubiquitin & myosin (11%) followed by ferritin (9%), cryptocyanin, trypsin and hemocyanin. Some of these have not been previously associated with white muscle activity (e.g. ubiquitin and ferritin). Between 11-14% of the differentially expressed genes from each muscle type were not previously annotated and potentially represent new genes.