

Plasticity of ultraviolet radiation skin damage repair and avoidance strategies in the blue whale, *Balaenoptera musculus*

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Recent reports evidence severe and acute sunburn damage in three species of cetacean, fin whale, sperm whale and blue whale, among them blue whale is the lightest one. My PhD project investigates plasticity of UV-damage repair and avoidance strategies in the blue whale. The aim of this study proposed to SMM was to investigate photoproduct repair capacity of the Nucleotide Excision Repair System which is a specific response to ultraviolet damage repair in blue whales. I selected the specific enzymes DDB and XPC. DDB is a heterodimer that specifically repairs DNA UV damage. When DDB is not available, there is a slower and less efficient pathway mediated by the enzyme XPC. I designed degenerate pairs of primers for each enzyme to amplify and sequence the cDNA code for each one and quantify expression via qPCR. As the sequences for these enzymes have not been reported for the blue whale, I selected sequences from other cetaceans and members of artiodactyla. Primer specificity was tested in silico and most efficient pairs were synthesised using SMM awarded funds. PCR amplification has been successful for some of the primer pairs and we are currently waiting for sequencing results before starting qPCR assays. Immunohistochemistry assays for enzyme detection has been delayed due to poor cross-reactivity with commercial antibodies and is currently being optimized for this research aim to be fulfilled.