

ELECTRON TRANSPORT ABNORMALITIES AND mtDNA MUTATIONS IN ROCKFISH HEART TISSUE.

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This study intends to determine whether any electron transport abnormalities or mitochondrial DNA mutations exist in long-lived yelloweye rockfish, (*Sebastes ruberimus*), with heart samples ranging in age from 12 to 83 years old. As direct amplification of the mitochondrial genome of yelloweye rockfish heart samples was unobtainable given the limited published sequence, we began by sequencing the *S. ruberimus* mitochondrial genome. DNA was phenol/chloroform extracted from a rockfish heart and then ethanol precipitated. The genomic DNA was restriction digested with Xba1 and Shrimp Alkaline Phosphatase treated. Xba1 compatible adaptors were ligated onto the digested genomic DNA. The sample was amplified using two nested PCR reactions with primers designed from the cytochrome B gene (genbank accession #AF030750) and the adaptor sequence. These products were electrophoresed on a 1% agarose gel, purified and subsequently cloned. Plasmids containing the rockfish mitochondrial genes were isolated and sequenced. Inserts containing 2122 base pairs from the mitochondrial genome have been sequenced. The genes for NADH dehydrogenase subunit six and roughly half of subunit five have been identified. In addition tRNA-Glu has been identified. With this added sequence of mtDNA we are hopeful that new priming locations may be identified and amplification of the entire mitochondrial genome may be possible. Additionally, we are repeating the above process using primers designed from the newly discovered sequences to obtain additional cloned fragments of the mitochondrial genome. With these primer sets, we will be able to investigate electron transport abnormalities and mitochondrial DNA mutations.