Characterization of aquaporin 8 isoform expression in eel (*Anguilla* sp.) intestine

Christopher P. Cutler[1], Jonathon Walsh[1], Marcela Kuijpers[1], Christopher Katsekis[1], Marcqwon Day[1], and Denyia Smith[1]

[1]Department of Biology, Georgia Southern University, Statesboro, Georgia, USA.

Euryhaline eels are placed under severe osmotic stress when they migrate from freshwater to seawater during their lifecycle. In seawater, the animals drink to maintain equilibrium; to obtain water to replace continual losses occurring due to osmosis across permeable body surfaces. A significant increase in the intestine's capacity to absorb water from imbibed fluid is associated with an upregulation in aquaporin water channel expression. Studies using Q-PCR or Northern blotting have shown increases in aquaporin 8 and 8b isoform mRNA levels in intestinal segments following eel seawater-acclimation. Custom-made isoform-specific polyclonal antibodies have been raised against aquaporin 8 and 8b, and these show staining in intestinal surface epithelial cells, suggesting a potential role for these isoforms in water absorption mechanisms. Western blot experiments also showed protein expression increases following salinity acclimation of the fish. This work was supported by a National Science Foundation (NSF) grant, IOS 0844818. J. Walsh, M. Kuijpers and D. Smith were supported by Georgia Southern University, Chandler research scholarships. J. Walsh was also supported by an NSF ASPIRES scholarship and a NSF REU supplement grant, IOS 1041885. D. Smith was also supported by a NSF REU scholarship. Fish experiments were performed at MDIBL in Maine, USA.