AMMONIA EXCRETION IN THE MUDSKIPPER,

***PERIOPHTHALMODON SCHLOSSERI*.**

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EXTENDED ABSTRACT ONLY – DO NOT CITE

The mudskipper, *Periophthalmodon schlosseri*, can survive air exposure for seven days, but drowns if denied access to air. This fish holds large volumes of air in its buccal cavity and exchanges gases across the buccal and opercular epithelium between blood and air. The gills are not involved in gas transfer (Wilson et al., 1999;) but are involved in ammonium ion transport. *Periophthalmodon schlosseri* can tolerate ammonia concentrations of over 100mM NH_4Cl in an external environment of 50% seawater (Peng et al., 1998). It appears that *P. schlosseri* is able to tolerate high environmental ammonia concentrations by actively excreting ammonium ions across the gills, thereby maintaining low tissue ammonia concentrations (Randall et al., 1999). Immunohistological studies (Wilson et al., 2000) have resulted in the localization of a number of transport proteins in the mitochondrial rich cells of the mudskipper gills (Figure 1). The possible role of these transport proteins in active ammonia excretion across the *Periophthalmodon schlosseri* gill will be discussed.

References

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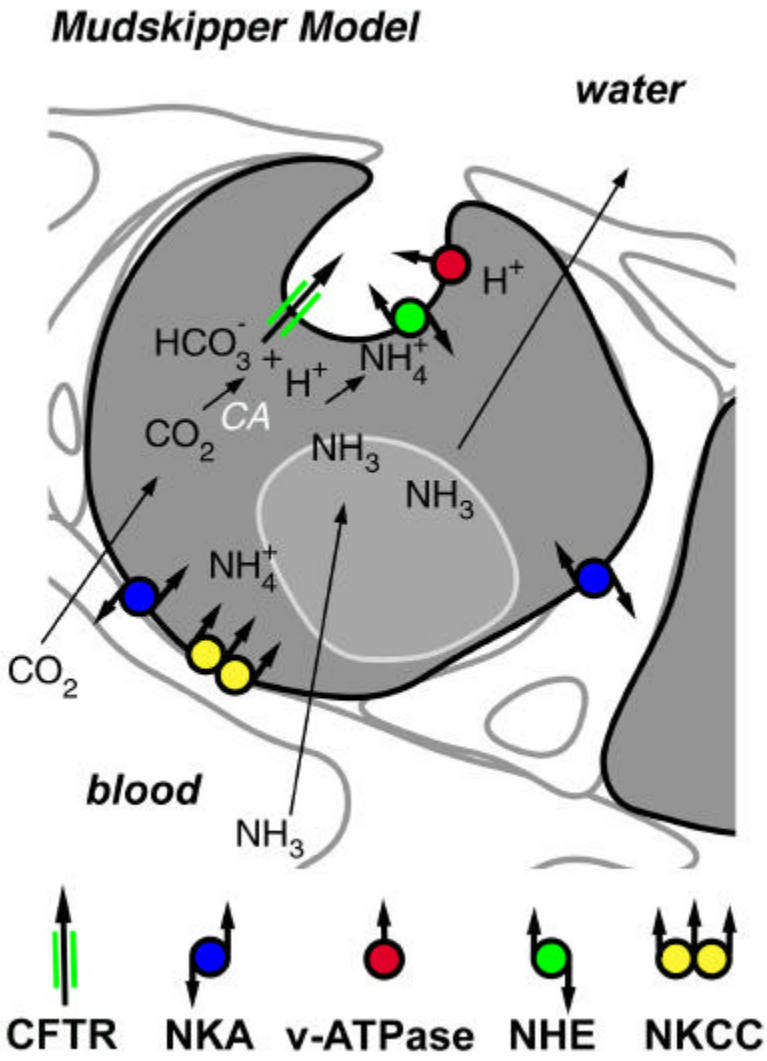
Figure 1. Schematic of the mitochondrial rich cell of the gills of the mudskipper, *Periophthalmodon schlosseri*, showing the probable location of various transport proteins. CFTR, anion channel; NKA, sodium/potassium ATPase; v-ATPase, proton ATPase; NHE, sodium/proton exchange; NKCC, sodium/potassium/2chloride cotransport.


Mudskipper Model
water
H+
HCO3- +
H+
NH4+
CA
CO2
NH3
NH3
NH4+
CO2
blood
NH3
CFTR
NKA
v-ATPase
NHE
NKCC