

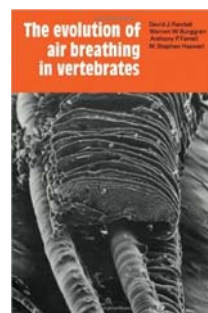
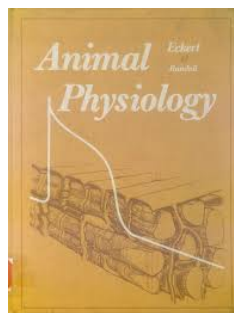


High oxygen levels in teleost tissues

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Teleost fish, with high oxygen levels in their swim-bladder, eye and muscle associated with Root shift hemoglobins, are the most successful vertebrates. Responses to hypoxia are aimed at maintaining arterial oxygen content rather than tension. Although increased hemoglobin oxygen affinity during hypoxia should exacerbate oxygen delivery, muscle tissue oxygen levels remain higher than mixed venous levels. How are these high tissue oxygen levels maintained? There are non-equilibrium states for bicarbonate in venous plasma and that in the gills. We suggest that carbonic anhydrase on muscle vascular endothelium catalyses bicarbonate dehydration, resulting in RBC acidification. A Root off shift increases PaO_2 and oxygen diffuses into muscle tissue. RBC proton excretion enhances bicarbonate disequilibrium and, therefore, tissue oxygen delivery. Similar mechanisms, with the addition of countercurrent circulations, maintain high oxygen levels in the eye and swim bladder.



Wednesday November 30th at 15.00

lecture hall G1 Building 1532 (matematisk institut)