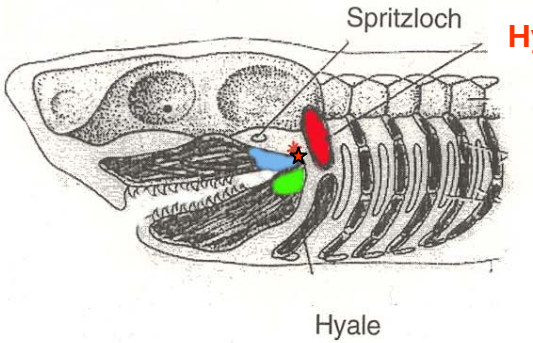
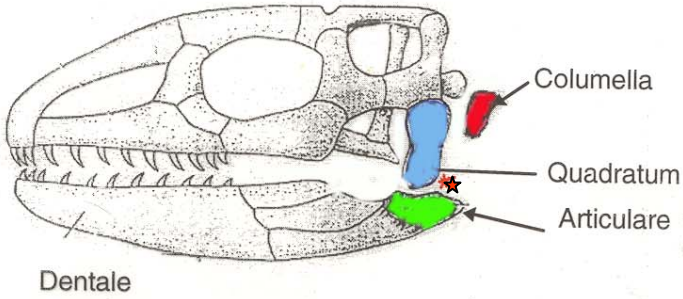
Evolution von Mittelohr und sekundärem Kiefergelenk

Hai



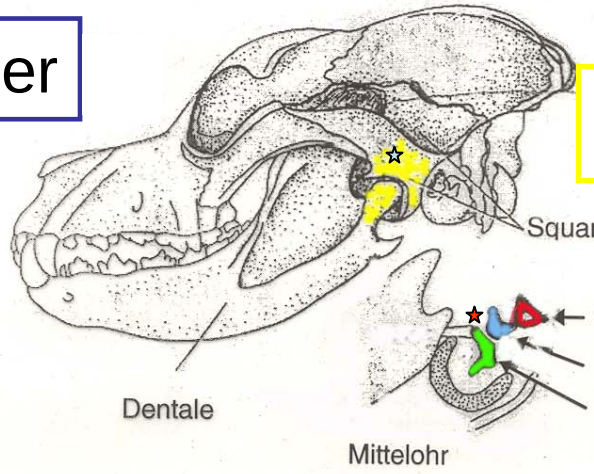
Primäres Kiefergelenk ★ **Quadratum** **Artikulare**

Amphib, Reptil, Vogel



Primäres Kiefergelenk ★

Säugetier

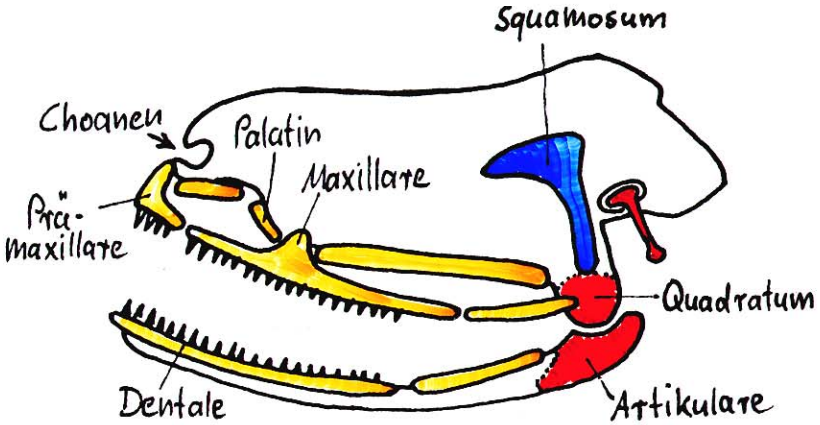


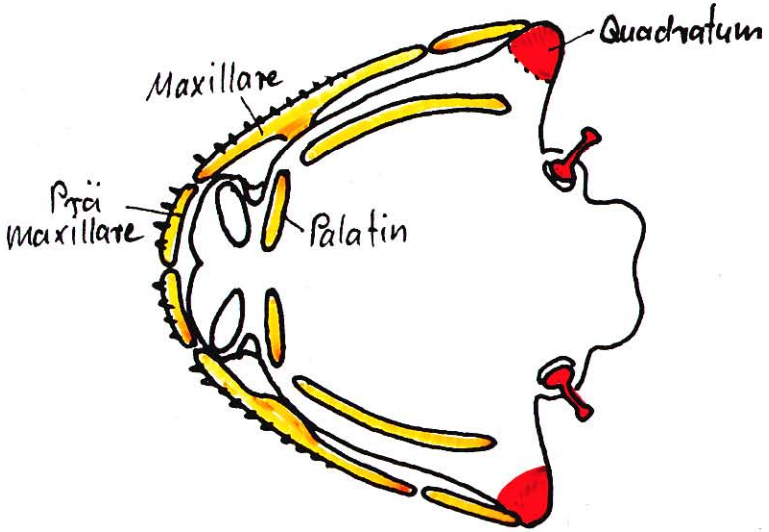
Sekundäres Kiefergelenk ☆ **Squamosum** **Dentale**

Primäres Kiefergelenk ★

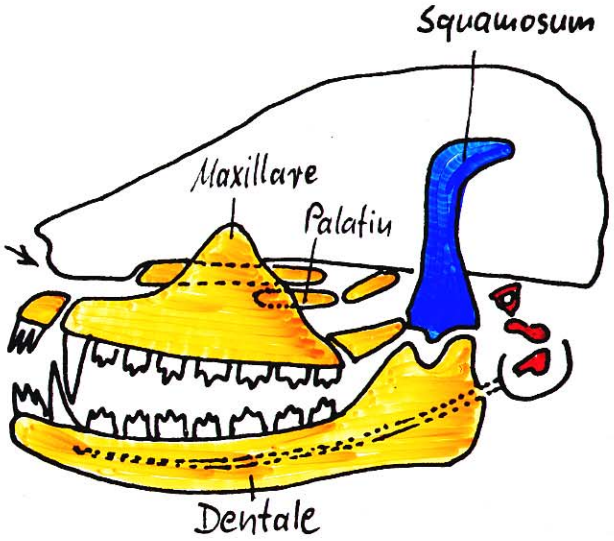
Säuger: Sekundäres Kiefergelenk und Gaumendach

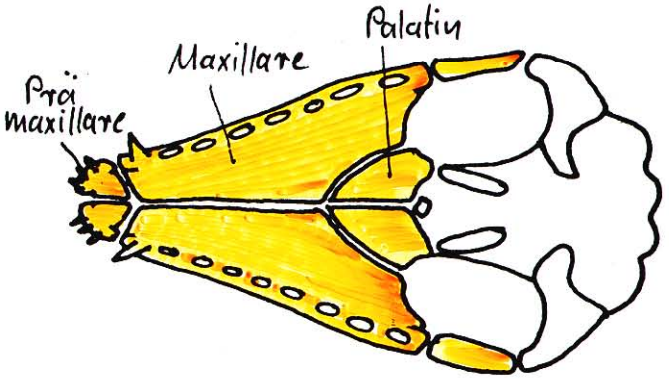
Amphib





Säuger





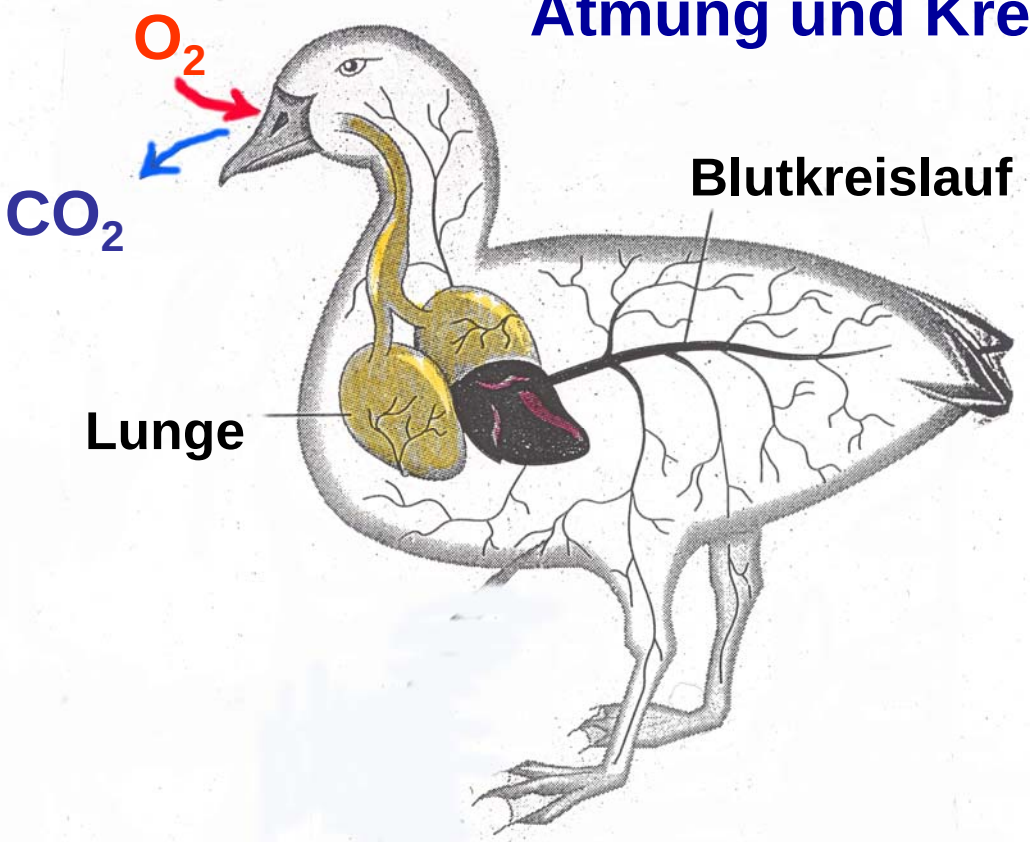
Wehner/Gehring

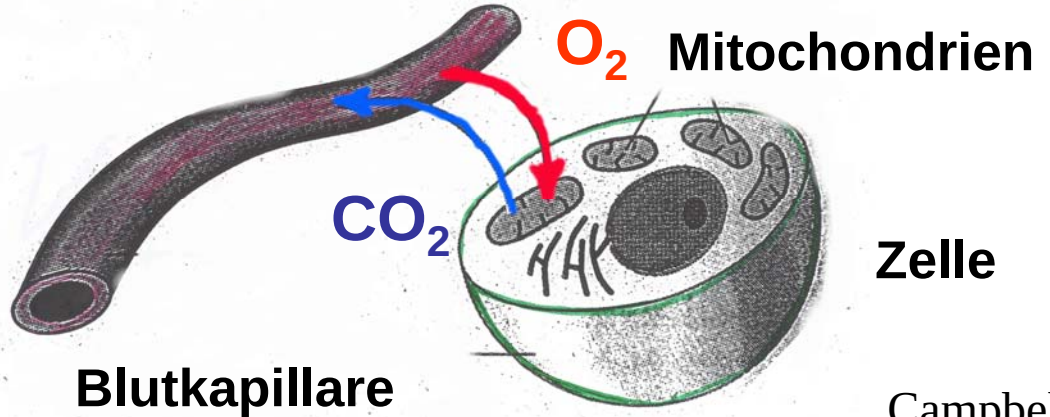
Atmung und Kreislauf

1. Äußere Atmung

2. Gastransport über Kreislauf

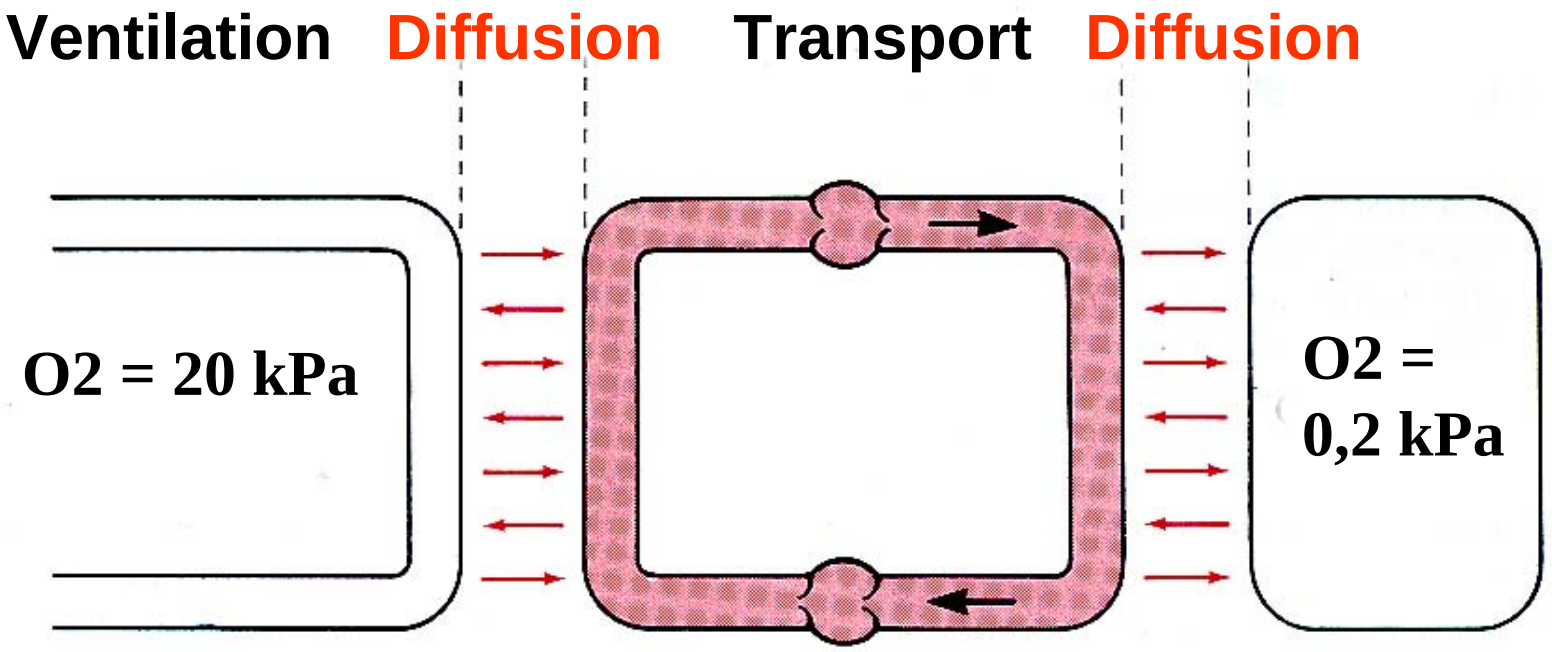
3. Versorgung der Zellen



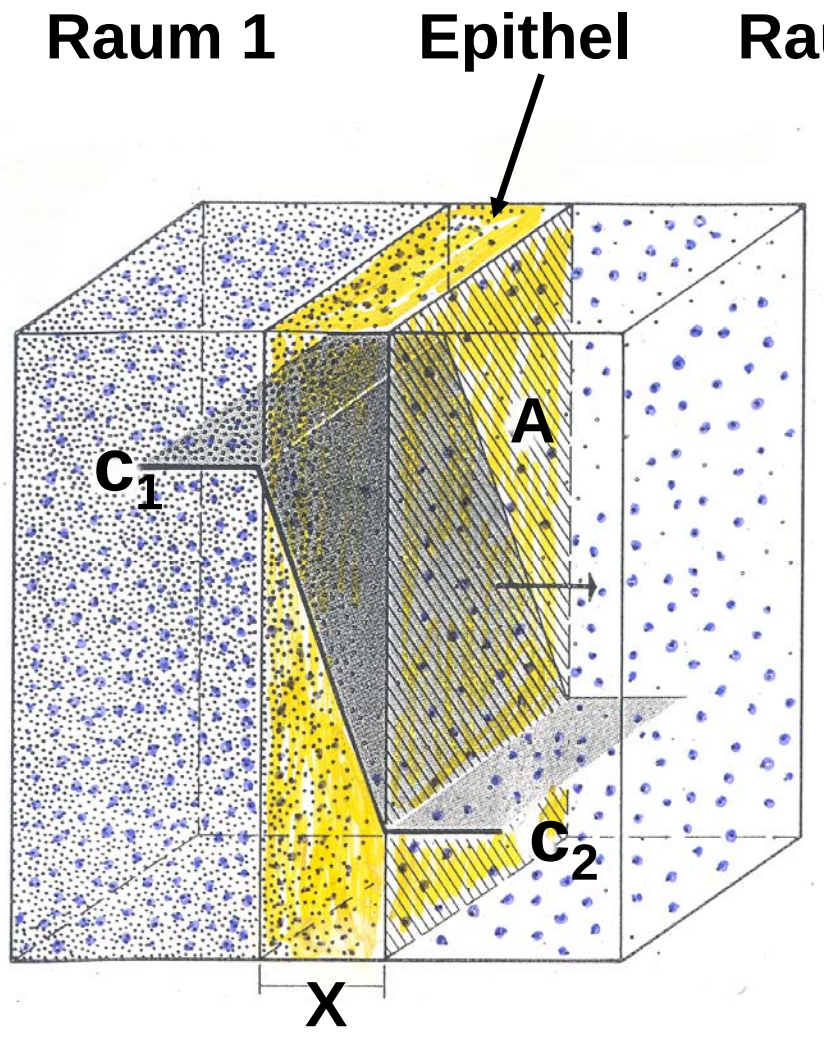


Campbell

Prinzip des Gastransportsystems bei Wirbeltieren



Eckert



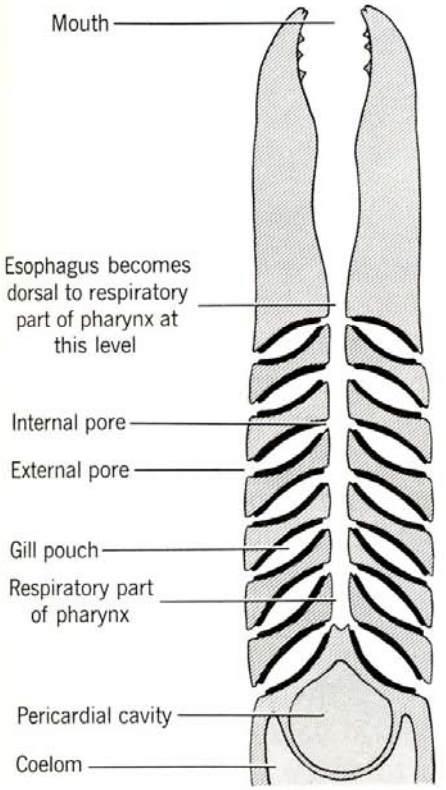
Diffusion = Nettobewegung von Stoffen von Orten hoher Konzentration zu Orten niedriger Konzentration

$$F = D \frac{A\,(c1-c2)}{X}$$

F:	Fluss des transportierten Stoffs (Mol/sec)
A:	Austauschfläche
c1-c2:	Konzentrationsdifferenz
X:	Dicke des Epithels
D:	Diffusionskoeffizient

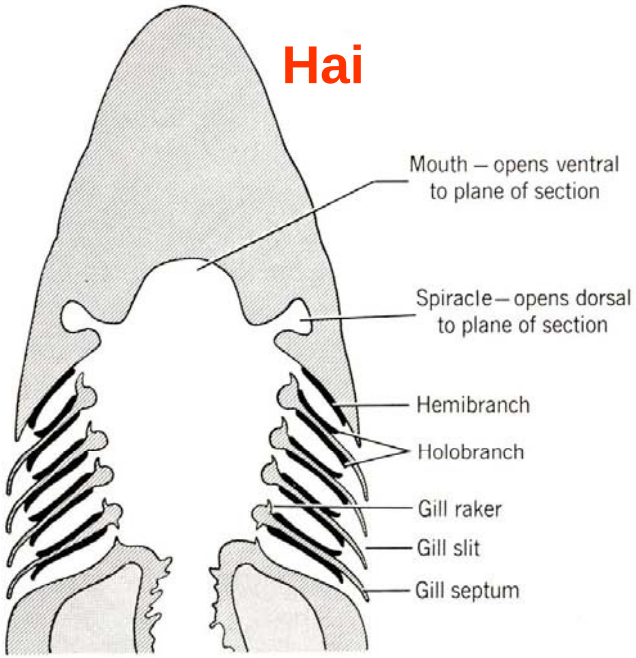
Aufbau von Kiemen

Neunauge



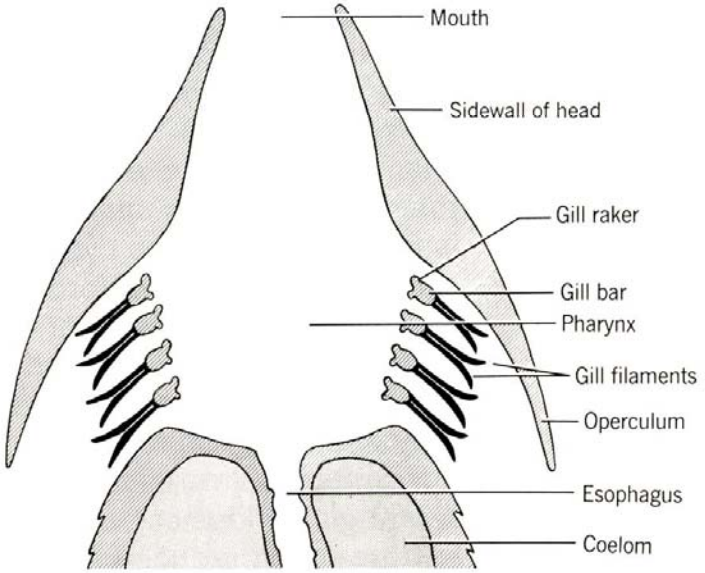
Pouched gills of a lamprey

Hai

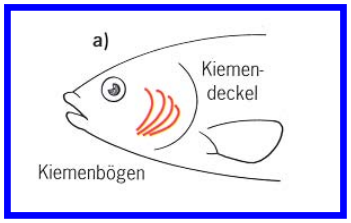


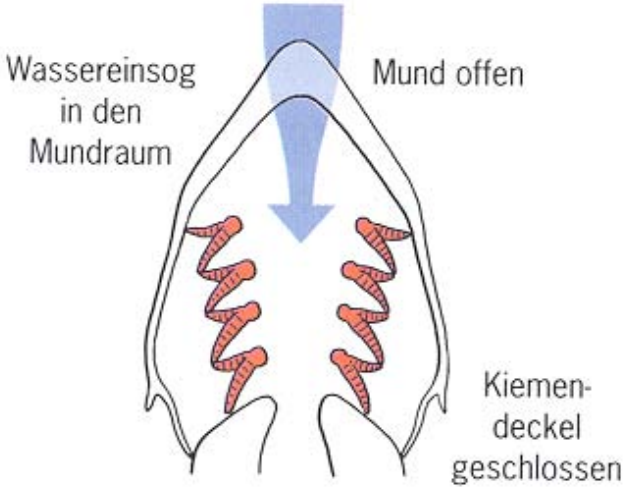
Septal gills of a shark

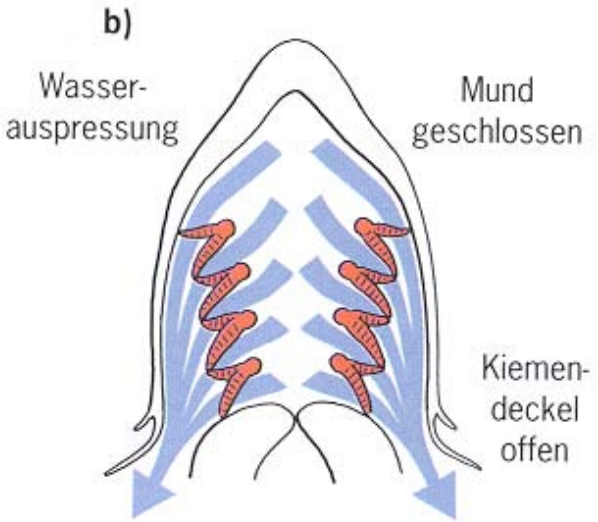
Knochenfisch

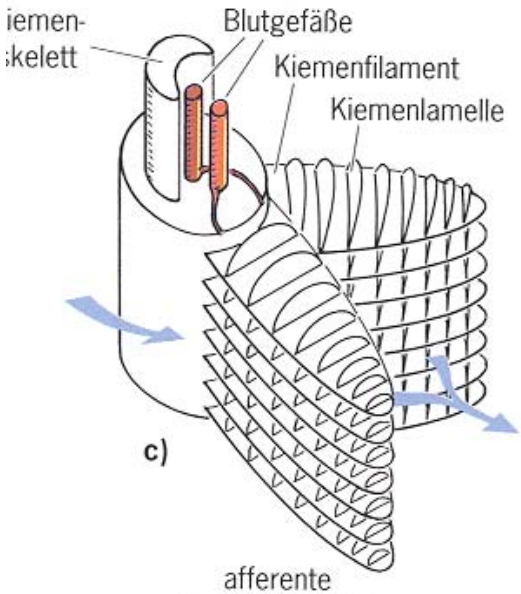


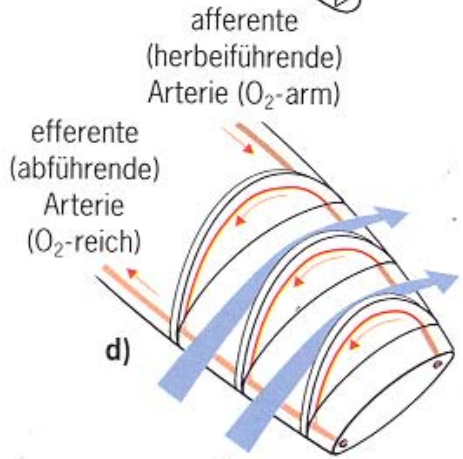
Kiemenfunktion

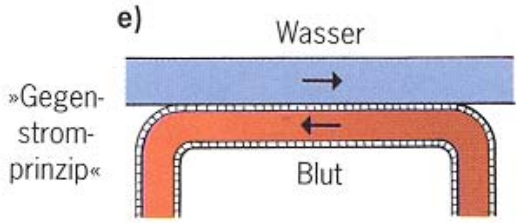








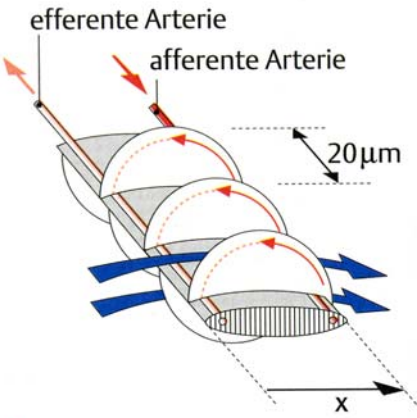


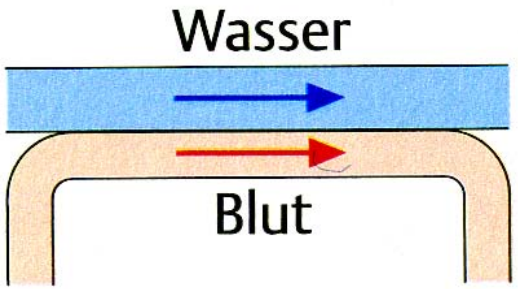


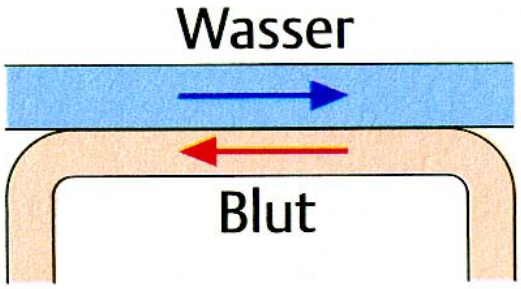
Wehner/Gehring

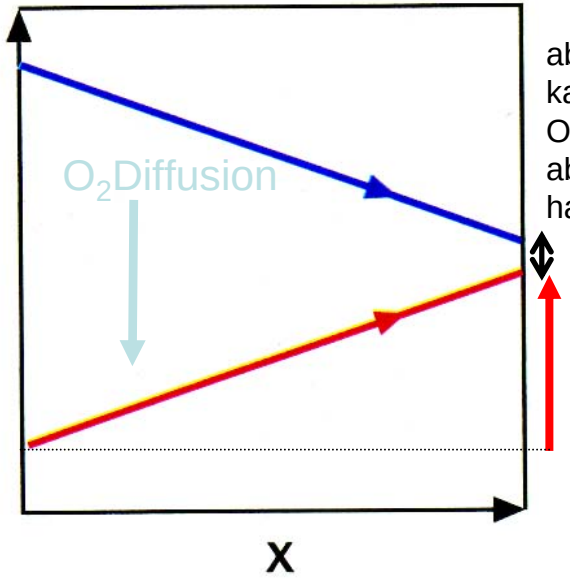
Gleichstrom

Gegenstrom



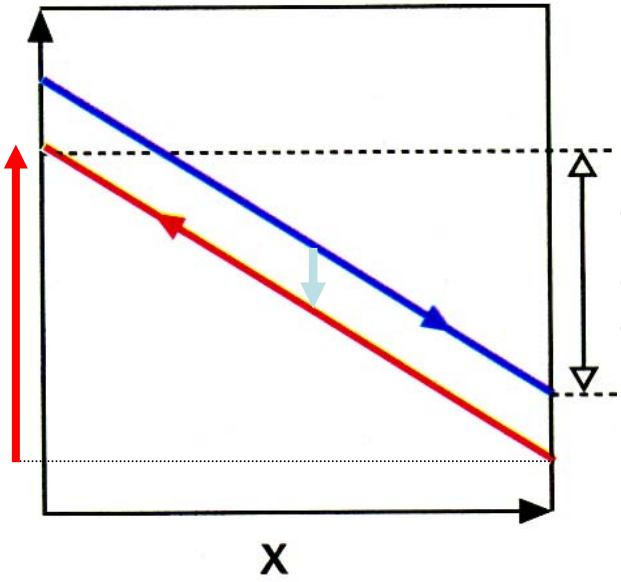






abfliessendes Blut kann keinen höheren O_2-Gehalt als abfliessendes Wasser haben

O_2 Anstieg im Blut



abfliessendes Blut hat höheren O_2-Gehalt als abfliessendes Wasser

Wehner/Gehring