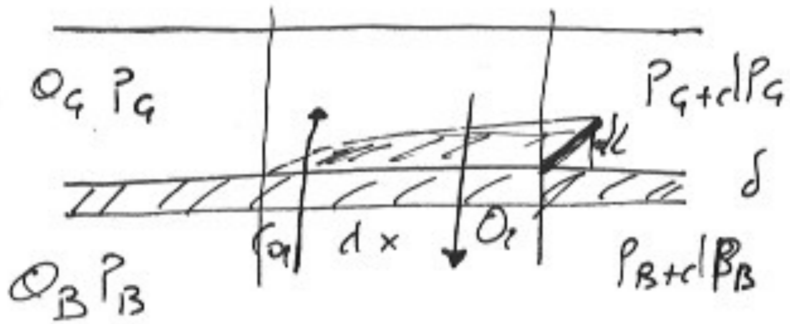


$$dW = K(P_G - P_B)\,dA = -Q_G H\,dP_G = Q_B H\,dP_B.$$

1 2 3

$$K(P_G - P_B)\,dA = -Q_G H\,dP_G.$$

$$\frac{dP_G}{P_G - P_B} = -\frac{K\,dA}{Q_G H}$$

$$K(P_G - P_B)\,dA = Q_B H\,dP_B$$

$$\frac{dP_B}{P_G - P_B} = \frac{K\,dA}{Q_B H}$$

$$\frac{dP_G}{P_G - P_B} - \frac{dP_B}{P_G - P_B} = -\frac{K\,dA}{H}\frac{1}{Q_G} - \frac{K\,dA}{H}\frac{1}{Q_B}$$

$$\frac{d(P_G - P_B)}{P_G - P_B} = -\frac{K\,dA}{H}\left[\frac{1}{Q_G} + \frac{1}{Q_B}\right]$$

$$\ln\frac{(P_{Go} - P_{Bo})}{(P_{Gi} - P_{Bi})} = -\frac{KA}{H}\left[\frac{1}{Q_G} + \frac{1}{Q_B}\right]$$

2

$$\ln \frac{(P_{Gi}-P_{Bi})}{(P_{Go}-P_{Bo})} = \frac{KA}{H}\left[\frac{1}{Q_B}+\frac{1}{Q_G}\right]$$

$$dW = -Q_G H\, dP_G \qquad W = -Q_G H\,[P_{Go}-P_{Gi}] \qquad \frac{1}{Q_G} = \frac{H(P_{Gi}-P_{Go})}{W}$$

$$dW = Q_B H\, dP_B \qquad W = Q_B H\,[P_{Bo}-P_{Bi}] \qquad \frac{1}{Q_B} = \frac{H(P_{Bo}-P_{Bi})}{W}.$$

$$\ln \frac{(P_{Gi}-P_{Bi})}{(P_{Go}-P_{Bo})} = \frac{KA}{\cancel{H}}\left[\frac{\cancel{H}(P_{Bo}-P_{Bi})}{W}+\frac{H(P_{Gi}-P_{Go})}{W}\right]$$

$$\underline{W} = \frac{\underline{KA}\,[(P_{Gi}-P_{Bi})-(P_{Go}-P_{Bo})]}{\ln \frac{(P_{Gi}-P_{Bi})}{(P_{Go}-P_{Bo})}}. =$$

equazione logaritmo medio ossigenatori.

$W_{O_2} = 250 \frac{ml}{min}$

$P_{GiO_2} = 760-47\ mmHg = 713\ mmHg.$

$P_{BiO_2} = 40\ mmHg$

$P_{BoO_2} = 104\ mmHg.$

$P_{GoO_2} = 713-64 =$

$P_{BiCO_2} = 46\ mmHg$

$P_{BoCO_2} = 40\ mmHg.$

$P_{GiCO_2} = \emptyset$

$P_{GoCO_2} = \underline{6\ mmHg}.$

$W_{CO_2} = 200 \frac{ml}{min}$

$$A_{OTT} = \frac{A_{O_2}+A_{CO_2}}{2}.$$

O = Oxygenation: $Q_B \dfrac{P_{Bi}-P_{Bo}}{P_{Bi}-P_{Gi}}$

$$D = Q_B \frac{C_{Bi}-C_{Bo}}{C_{Bi}-C_{Di}}$$

$$C = D\Big|_{C_{Di}} \qquad C_{ox} = O\Big|_{P_{Gi}=\phi} = Q_B \frac{P_{Bi}-P_{Bo}}{P_{Bi}}$$

cond $\frac{164}{40}$

$$E = \frac{D}{Q_B}\Big|_{C_{Di}=\phi} \qquad E_{ox} = \frac{O}{Q_B}\Big|_{C_{Di}=\phi} = \frac{P_{Bi}-P_{Bo}}{P_{Bi}} = 1 - \frac{P_{Bo}}{P_{Bi}} \qquad Q_D >> Q_B$$

$$\underline{E = 1 - e^{-N_T}} \qquad N_T = \frac{KA}{Q_B}$$

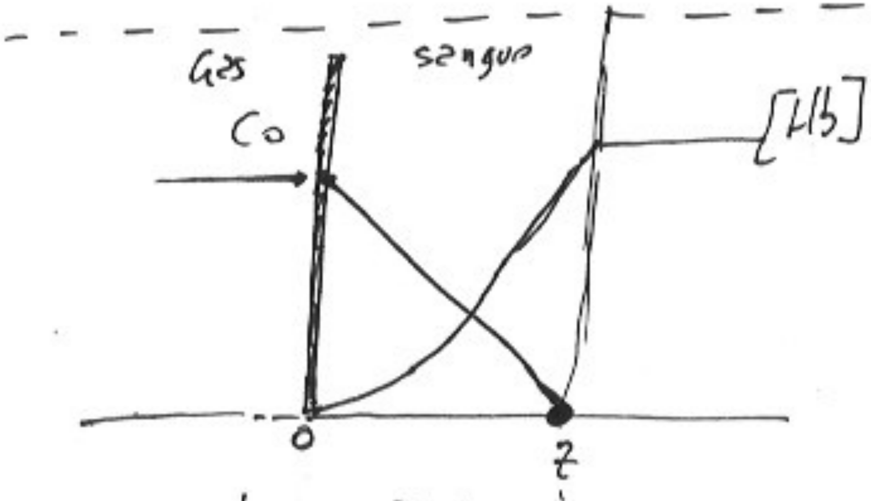
$$E = \cancel{1} - e^{-N_T} = \cancel{1} - \frac{P_{Bo}}{P_{Bi}} \qquad \underline{P_{Bo} = P_{Bi}\, e^{-N_T}}$$

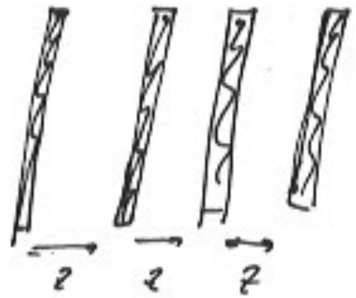
$$V_b \cancel{H} \frac{dP_{Bi}}{dt} = Q_B \cancel{H} (P_{Bo} - P_{Bi}) = Q_B (P_{Bi} e^{-N_T} - P_{Bi}) = Q_B P_{Bi} (e^{-N_T} - 1) =$$

$$e^{-N_T} = B \qquad V_b \frac{dP_{Bi}}{dt} = Q_B\, P_{Bi}\, (B-1) \qquad \frac{dP_{Bi}}{P_{Bi}} = \frac{Q_B}{V_b}(B-1)\,dt$$

$$\ln \frac{P_{Bi}^{R}}{P_{Bi}^{I}} = \frac{Q_B}{V_b}(\beta - 1)t \;\rightarrow\; P_{Bi}^{R} = P_{Bi}^{I}\, e^{\frac{Q_B}{V_b}(\beta-1)t}$$

whole body temporali ossigenatore



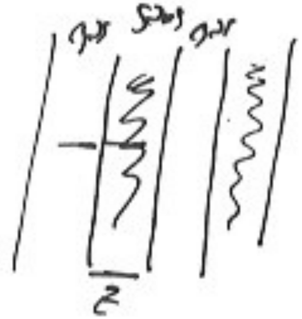


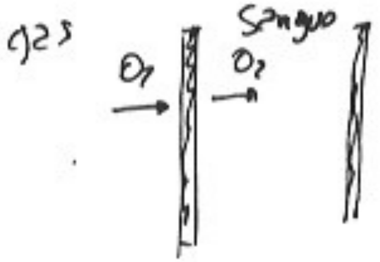
$$-DA\frac{dc}{dz} = -DA\frac{c_B}{z}$$

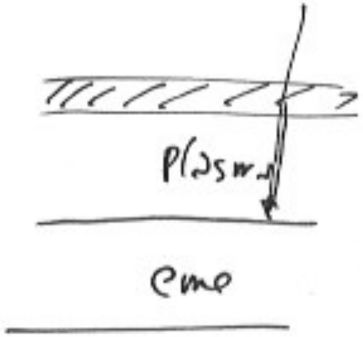
$$\underline{Hb} + \underline{O_2} \rightarrow HbO_2$$

$$+D\cancel{A}\frac{c_B}{z}\,dt = +[Hb]\cancel{A}\,dz$$

$$+\frac{Dc_B\,dt}{[Hb]} = z\,dz \qquad \frac{Dc_B t}{[Hb]} = \frac{z^2}{2} \qquad z = \sqrt{\frac{2Dc_B t}{[Hb]}}$$







$$\frac{\partial c'}{\partial t} = D_2 \frac{\partial^2 c'}{\partial x^2}.$$

$$\frac{\partial c}{\partial t} = D_1 \frac{\partial^2 c}{\partial x^2} + K(y_0 - y) - K' c y$$

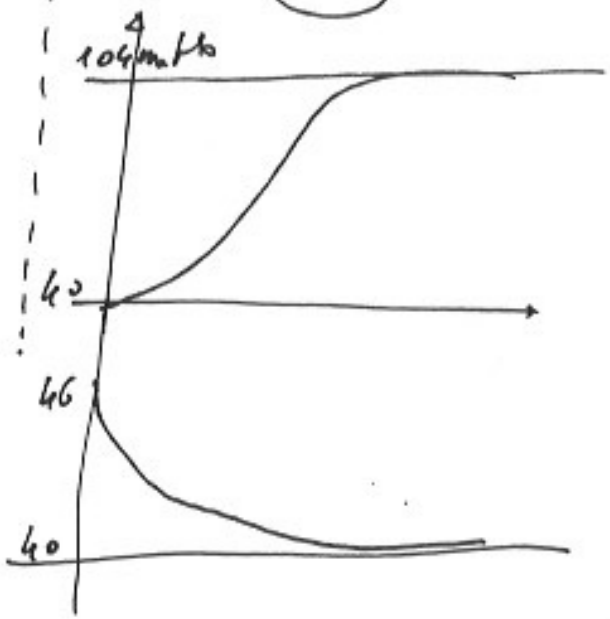
$$\frac{\partial y}{\partial t} = D_{HB} \frac{\partial y}{\partial t} + k(y_0 - y) - K' c y$$

$$\frac{\partial c}{\partial t} = A$$

$$D_\Pi \frac{\partial^2 c}{\partial x^2} = A$$

$$\frac{\partial c}{\partial t} = D_\Pi \frac{\partial^2 c}{\partial x^2}.$$

$$\frac{1}{D_L} = \frac{1}{D'_\Pi} + \frac{1}{\theta V_c}$$



$$\frac{\partial c}{\partial t} = \underline{D_{\pi}} \frac{\partial^2 c}{\partial x^2} + \underline{R_{O_2}}.$$

$D_{HB} \simeq 0$

$R_{O_2} = \frac{mol}{cm^3 \cdot sec.}$

$$\frac{\partial Y}{\partial t} = D_{HB} \frac{\partial^2 Y}{\partial x^2} + R_{Hb}.$$

$$\frac{\partial c}{\partial t} = \phi \qquad \begin{cases} \dfrac{\partial^2 C}{\partial x^2} = -\dfrac{R_{O_2}}{D_{\pi}} \\[2ex] \dfrac{\partial Y}{\partial t} = R_{Hb} \end{cases}$$

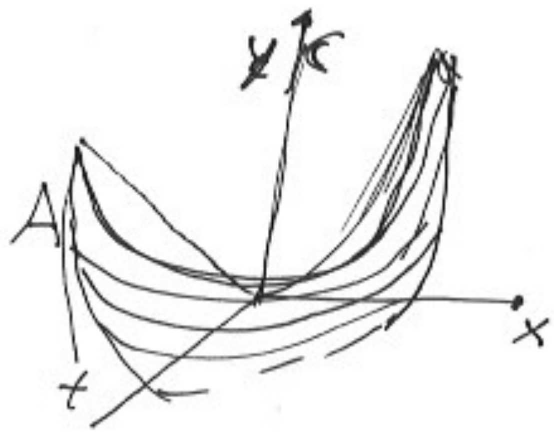
$c(x) \propto x^2$

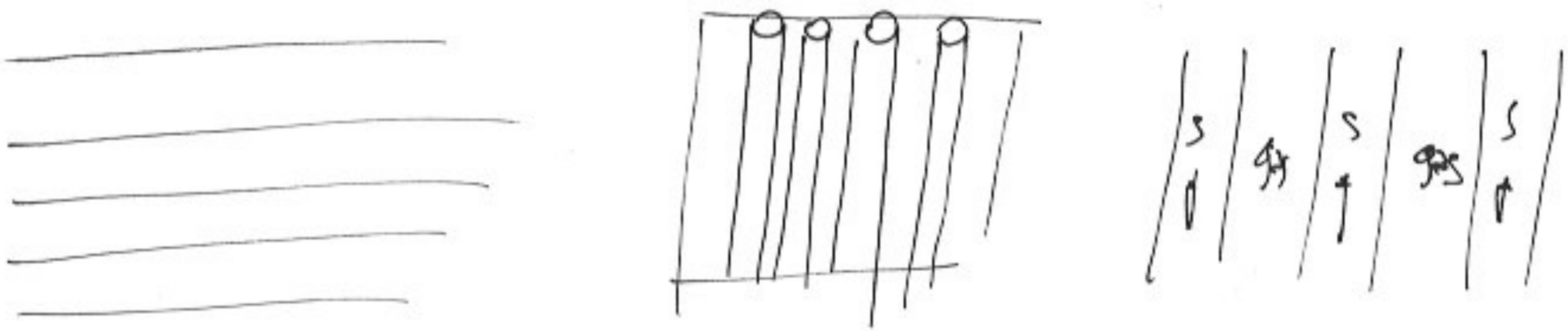
$Y \propto t$

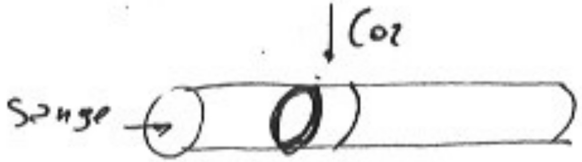
$$R_{O_2} + R_{Hb} = \phi$$

$$\frac{\partial^2 c}{\partial x^2} + \frac{\partial Y}{\partial t} = -\frac{R_{O_2}}{D_{\pi}} + R_{Hb} = -R_{O_2}\left(\frac{1}{D_{\pi}} + \frac{R_{Hb}}{R_{O_2}}\right) = A$$

$$\underline{\frac{\partial^2 c}{\partial x^2} + \frac{\partial Y}{\partial t} = A = cost. =}$$







$$J_{O_2} = -D\frac{\partial c}{\partial r} = 250\frac{ml}{m}$$

$$J_{O_2}\cdot 2\pi r = A =$$

$$-D\frac{\partial c}{\partial r}\cdot 2\pi r = A$$

$$\partial c = -\frac{A}{D}\cdot 2\pi\,\frac{\partial r}{r}$$

$$C(r) - \underset{\parallel}{C(r_l)} = -\frac{A}{D}\,2\pi\,\ln\frac{r}{r_l}$$

$$\underline{C(r)} = C_0 - \frac{A}{D}\,2\pi\,\ln\frac{r}{r_l}$$