Basically anything we put on the board

1 Asumptions

$R_{\text{inflow}} \ll R_{\text{outflow}}$	
$p_{\text{chamber}} = p$	
$IOP < P_{\text{chamber}}$	
$\Delta_p = \text{Constant}$	osmotic pressure difference accross the membrane
$C_{p_2} \approx 2$	protein concentration in aqueous humor at membrane output
$\sigma_p = 1$	reflection coefficients for protein
$C_1, C_2 < \varepsilon$	total molar concentration of low molecular components in the blood (1) and in the intraocular fluid (2) $<$ some ε
$T_1 \ll T_2$	Diffusion time $\ll$ dwell time
$\mathrm{d}V = \mathrm{d}U$	d total volume $=$ d Volume of aqueous humor in the chambers
$\mathrm{d}V_3 = 0$	average over rapid oscillation of blood in the choroid

2 model

$$\frac{\mathrm{d}V}{\mathrm{d}t} = L_p\left((p_a - p) - \sigma_p \Delta\Pi_p - \sigma_s \rho (C_1 - C_2)\right) - \frac{p - p_e}{R}$$

$$f(v, p) = 0$$

$$V^\star \frac{\mathrm{d}C_2}{\mathrm{d}t} = -\xi_s (C_2 - C_1) + J + (1 - \sigma_s) L_p \left((p_a - p) - \sigma_p \Delta\Pi_p - \sigma_s \rho (C_1 - C_2)\right) \frac{C_1 + C_2}{2}$$

Resolution ? (stationary state ?)

$$p\left(L_p + \frac{1}{R}\right) = L_p\left(pa - \sigma_p \Delta\Pi_p - \sigma_s \rho C_1\right) + \frac{p_e}{R} + \sigma_s \rho C_2$$

$$p = \alpha_1 + \alpha_2 C_2$$

$$\alpha_1 = \frac{1}{L_p + \frac{1}{R}} \left(L_p\left(p_a - \sigma_p \Delta\Pi_p - \sigma_s \rho C_1\right) + \frac{p_e}{R}\right)$$

$$\alpha_2 = \frac{\sigma_s \rho}{L_p + \frac{1}{R}}$$

$$\Delta\Pi_s = \rho(C_1 - C2)$$

then

$$C_1 = \frac{\Delta\Pi_s}{\rho} + C_2$$

Resolution : non stationary state ?

$$V = V_0 + \alpha(p - \beta) - \beta P$$

$$\frac{\mathrm{d}V}{\mathrm{d}t} = \alpha \frac{\mathrm{d}p}{\mathrm{d}t}$$

But we're gonna go with ODE system

$$\alpha \frac{\mathrm{d}p}{\mathrm{d}t} = f(p, C_2)$$

with

$$V^\star \frac{\mathrm{d}C_2}{\mathrm{d}t} = g(p, C_2)$$

3 values

L_p	$0.3mm^3$	p_a	30-35 mmHg (Healthy)
σ_p	1	$\Delta\Pi_p$	25 mmHg
σ_s	0.02-0.2	$\sigma_s = \sigma_s(R)$	≈ 0.032
$p = p(R)$		$F_h = F_h(R)$	
C_1	??	p_e	4- 8 mmHg
??	$2.5 - 5$ mmHg min / mm^3	ρ	gaz constant $\times$ absolute temperature
J	0.04 - 0.18 μ mol/min	ξ	?

4 Goal

1. Paper values $\rightarrow$ p
2. R, L_p, σ_s
3. as 2/ for $p_a = 20 \ldots 40$
4. $R = R(p)$
5. V_3 choroid
6. connect with retina