Continuous model

Letting $y = n + a + m_n + m_a$

$\nabla \Sigma(\psi)$

migration

growth

$$\left\{\begin{aligned}
\frac{\partial n}{\partial t} &= \overbrace{\nabla \cdot [nK\Sigma'(\psi)\nabla\psi]}^{response\ to\ compression} + \overbrace{\gamma_n H_\sigma(\psi - \psi_n)n}^{growth} - \overbrace{\delta_n n}^{apoptosis}, \\
\frac{\partial a}{\partial t} &= \overbrace{\nabla \cdot [aK\Sigma'(\psi)\nabla\psi]}^{response\ to\ compression} + \overbrace{\gamma_a H_\sigma(\psi - \psi_a)a}^{growth} - \overbrace{\delta_a a}^{apoptosis}, \\
\frac{\partial m_n}{\partial t} &= \overbrace{\mu_n(\Sigma(\psi))n}^{host\ production} - \overbrace{\nu c m_n}^{degradation}, \\
\frac{\partial m_a}{\partial t} &= \overbrace{\mu_a(\Sigma(\psi))a}^{tumour\ production} - \overbrace{\nu c m_a}^{degradation}, \\
\frac{\partial c}{\partial t} &= \overbrace{\kappa \nabla^2 c}^{diffusion} + \overbrace{\pi_n(\Sigma(\psi))n}^{host\ production} + \overbrace{\pi_a(\Sigma(\psi))a}^{tumour\ production} - \overbrace{\frac{c}{\tau}}^{decay}.
\end{aligned}\right.$$