$$\partial_t D_N(r,z,t) =$$

$$- \underbrace{\mu_{D_N} D_N}_{\text{natural decay}} + \underbrace{\Gamma(\epsilon,r,z,U)(C_U + C_E + S_A + \int (C_T + S_T)da)}_{\text{Cell death due to chronic strain}}, \quad (7a)$$

with initial condition

$$D_N(r,z,0) = 0. \quad (7b)$$