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A MODEL FOR TRANSFER PHENOMENA IN STRUCTURED POPULATIONS

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P-glycoprotein causes resistance to cancer chemotherapy as it is able to remove toxic substances from the cytoplasm of a cell. Recent experiments shows that cells rich in P-gp can transfer part of their P-gp to other cells and thereby may confer resistance. We propose a model for the transfer of a scalar quantity in a structured population. We show the convergence of solutions to a Radon measure. We add to this model production of P-gp and random fluctuations and show the existence of a globally asymptotically stable steady state, if the rate of P-gp transfer is sufficiently small.

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