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Age structure as key to delayed logistic proliferation in scratch assays

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Scratch assays are standard *in vitro* experimental methods for studying cell migration. In these experiments, a scratch is made on a cell monolayer and imaging of the recolonisation of the scratched region is performed to quantify cell migration rates. Typically, scratch assays are modelled by continuum reaction diffusion equations depicting cell migration by diffusion and carrying capacity-limited proliferation by a logistic source term. In a recent work [1], the authors observed that on a short time, there is a disturbance phase where proliferation is not logistic, and this is followed by a growth phase where proliferation appears to be logistic.

In this talk, I will introduce an age-structured population model that aims to explain the two phases of proliferation in scratch assays. The cell population is modelled by a McKendrick-von Foerster partial differential equation. The conditions under which the model captures this two-phase behaviour are presented.

[1] Jin, W. *et al. Bull Math Biol* (2017)

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