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PDE models for the growth of phenotypically heterogeneous cell populations

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In this talk, PDE models for the growth of phenotypically heterogeneous cell populations will be considered. Both models with discrete phenotype states, which consist of coupled systems of nonlinear PDEs, and models wherein the phenotype enters as a continuous structuring variable, which are formulated as nonlocal PDEs, will be examined. Connections between such population-level models and underlying individual-based models will be addressed, analytical and numerical results summarising the behaviour of the solutions to the model equations will be presented, and the insights into the mechanisms that underpin collective cell migration generated by these results will be briefly discussed.