[Talk 4] Temporal heterogeneity and Cell heterogeneity of Cancer Cells

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Cell migration is an important step for cancer metastasis, for which extensive studies have been performed. It is still difficult, however, to quantify the cell migration especially because the cell dynamics is significantly heterogeneous. Such a heterogeneity in cell migration may arise from two reasons:(1) the population of cancer cells consists of subpopulations of different motility (called cell heterogeneity) and/or (2) all cancer cells have the identical average motility but their motilities change temporally (called temporal heterogeneity). In this work, we perform a comparative study on each case with A549-shCont cell dynamics in two dimensions in the absence of external signals. We obtain cell trajectories by employing time-lapse microscopy. We compare the transport properties of cells with numerical simulations, which consider cell heterogeneity and/or temporal heterogeneity. We show that both cell heterogeneity and temporal heterogeneity need be taken into account to explain single cell behavior