

Abstract Submitted  
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**Cell Assisted Cell Growth Experiments with Dictyostelium discoideum** ALBERT BAE, WUI IP, CARL FRANCK, Cornell University — In eukaryotic cell culture, it is routinely recommended to keep the cells above a minimum cell density to maintain vigorous growth. We are investigating the basis for this prescription by viewing cell growth as a social behavior facilitated by cell-cell communication. Employing *Dictyostelium discoideum*, we find good evidence for a slow-fast transition in the cell growth rate vs. density in well mixed, 25 ml, cell cultures. We also use low height microfluidic chambers (four orders of magnitude smaller in volume) to find similar behavior even though the system is not well mixed and the cells are confined to substrates. A preliminary measurement at a flow rate that should strongly perturb cell-cell communication by means of diffusing signal molecules suggests that cell communication essential for growth is not accomplished by such means but possibly via direct contacts.

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