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Quantitative Analysis of *Dictyostelium Discoideum* Chemotaxis¹ GABRIEL AMSELEM, MATTHIAS THEVES, MPI for Dynamics and Self-Organization, Goettingen, ALBERT BAE, MPI for Dynamics and Self-Organization, Goettingen and LASSP, Cornell University, Ithaca, CARSTEN BETA, Institute for Physics and Astronomy, University of Potsdam and MPI for Dynamics and Self-Organization, Goettingen, EBERHARD BODENSCHATZ, MPI for Dynamics and Self-Organization, Goettingen and LASSP, Cornell University, Ithaca — We used microfluidic tools to expose *Dictyostelium discoideum* to stationary spatial gradients of the chemoattractant cyclic adenosine 3',5' monophosphate (cAMP). At a cAMP gradient of 10^{-2} nM/ μ m, the chemotactic velocity reached a plateau, which continued for gradients up to 1 nM/ μ m. Our measurements agree with [Song at al, Eur. J. Cell Biol., 85(10):981]. We also found that the chemotactic velocity was highly correlated with the cell's polarization. We present a model based on a generalized Langevin equation that provides good agreement with the measured data.

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