Collective motility of cells on deformable substrates[1] ARVIND
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UNIVERSITY TEAM — We consider a simple model for motile cells on deformable
substrates. The cells interact through contact interactions and medium-mediated
elastic interactions arising due to the adhesion of the cells to the substrate. Using
Brownian dynamics simulations and systematic coarse graining of the microscopic
model, we characterize the collective velocity field of such a collection of cells by
calculating the velocity autocorrelation function and identify the role of elastic in-
teractions in the emergent motility of cell sheets. Our findings include suppression of
diffusivity due to the attractive part of the elastic interaction and a growing length
scale in the velocity correlations.

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