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**Running and rotating: modelling the dynamics of migrating cell clusters** KATHERINE COPENHAGEN, Univ of California - Merced, NIR GOV, Weizmann Institute of Science, AJAY GOPINATHAN, Univ of California - Merced — Collective motion of cells is a common occurrence in many biological systems, including tissue development and repair, and tumor formation. Recent experiments have shown cells form clusters in a chemical gradient, which display three different phases of motion: translational, rotational, and random. We present a model for cell clusters based loosely on other models seen in the literature that involves a Vicsek-like alignment as well as physical collisions and adhesions between cells. With this model we show that a mechanism for driving rotational motion in this kind of system is an increased motility of rim cells. Further, we examine the details of the relationship between rim and core cells, and find that the phases of the cluster as a whole are correlated with the creation and annihilation of topological defects in the tangential component of the velocity field.

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