

Abstract Submitted
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Centrosome Positioning in 1D Cell Migration KATRINA ADLERZ, HELIM ARANDA-ESPINOZA, Univ of Maryland-College Park — During cell migration, the positioning of the centrosome and nucleus define a cell's polarity. For a cell migrating on a two-dimensional substrate the centrosome is positioned in front of the nucleus. Under one-dimensional confinement, however, the centrosome is positioned behind the nucleus in 60% of cells. It is known that the centrosome is positioned by CDC42 and dynein for cells moving on a 2D substrate in a wound-healing assay. It is currently unknown, however, if this is also true for cells moving under 1D confinement, where the centrosome position is often reversed. Therefore, centrosome positioning was studied in cells migrating under 1D confinement, which mimics cells migrating through 3D matrices. 3 to 5 μm fibronectin lines were stamped onto a glass substrate and cells with fluorescently labeled nuclei and centrosomes migrated on the lines. Our results show that when a cell changes directions the centrosome position is maintained. That is, when the centrosome is between the nucleus and the cell's trailing edge and the cell changes direction, the centrosome will be translocated across the nucleus to the back of the cell again. A dynein inhibitor did have an influence on centrosome positioning in 1D migration and change of directions.

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