

MAR13-2012-020390

Abstract for an Invited Paper
for the MAR13 Meeting of
the American Physical Society

The interplay between cell motility and tissue architecture¹

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Glandular tissue form arboreal networks comprised of acini and tubes. Loss of structure is concomitant with the in vivo pathologic state. *In vitro* models have been shown to recapitulate the functional units of the mammary gland and other organs. Despite our much improved understanding gleaned from both in vitro and in vivo interrogation, the mechanisms by which cells are able to achieve the correct tissue organization remain elusive. How do single mammary epithelial cells form polarized acini when cultured in a surrogate basement membrane gel but not on 2D surfaces? Simply put, how does a cell know which way is up? Why do malignant breast cells show a differential response in that they form non-polarized aggregates? Recently, it was determined that non-malignant cells undergo multiple rotations to establish acini while tumor cells are randomly motile during tumor formation. Can it be that a tumor cell has simply lost its way.

¹This research was supported by the Intramural Research Program of the NIH, National Cancer Institute.