Cell fate plasticity during breast cancer development - where is the translational utility?

Synopsis

Molecularly, breast tumors are classified as luminal or basal according to the two major cell lineages in the normal gland, because their global gene expression profiles clusters with the respective normal lineages in the breast. This classification suggests that the cell-of-origin dictates tumor type and depends on the assumption that a fixed tissue hierarchy exists in the mammary gland that stays intact during malignant transformation. By contrast, several recent studies suggest that lineage identity in the mammary gland can be altered through germline or somatic mutations, activation of signaling networks or programs normally active during morphogenesis and tissue repair. A major question emerging from these recent studies is whether a better understanding of cell fate changes during breast cancer development will improve breast cancer classification into distinct subtypes and thus, facilitate patient stratification.