1154-92-2728 **Eric J Puttock*** (eputtock@uci.edu). *Patterned heterogeneity in Colon Cancer: Xenografts, scRNAseq and Mathematical Modeling.*

Spatial patterns of metabolism have been observed in colon cancer, where clusters of cells show higher glycolytic activity than their surrounding neighbors. There is evidence that Wnt signaling regulates this pattern of metabolism. Recently, we performed single cell RNA sequencing (scRNAseq) on xenograft tumors that indicates the interactions between cell types. Here, we develop a multispecies mathematical model that incorporates cellular interactions informed by scRNAseq analysis. The model recapitulates the spotted patterns, stromal content, morphologies and their spatial variations in the tumor. In addition, the cellular interactions indicated by scRNAseq are found to enhance the robustness of the patterns. The model predicts that blocking positive feedback signaling will alter population heterogeneity and the spatial patterning of Wnt signaling, indicating that there is a possible link between heterogeneity and drug resistance. (Received September 17, 2019)