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Characterizing Spatial Organization of Cell Surface Receptors in Human Breast Cancer with STORM EVAN LYALL, Department of Bioengineering, University of California, Berkeley, MATTHEW R. CHAPMAN, Biophysics Graduate Group, University of California, Berkeley, LYDIA L. SOHN, Department of Mechanical Engineering, University of California, Berkeley — Regulation and control of complex biological functions are dependent upon spatial organization of biological structures at many different length scales. For instance Eph receptors and their ephrin ligands bind when opposing cells come into contact during development, resulting in spatial organizational changes on the nanometer scale that lead to changes on the macro scale, in a process known as organ morphogenesis. One technique able to probe this important spatial organization at both the nanometer and micrometer length scales, including at cell-cell junctions, is stochastic optical reconstruction microscopy (STORM). STORM is a technique that localizes individual fluorophores based on the centroids of their point spread functions and then reconstructs a composite image to produce super resolved structure. We have applied STORM to study spatial organization of the cell surface of human breast cancer cells, specifically the organization of tyrosine kinase receptors and chemokine receptors. A better characterization of spatial organization of breast cancer cell surface proteins is necessary to fully understand the tumorigenisis pathways in the most common malignancy in United States women.

Evan Lyall
Department of Bioengineering, University of California, Berkeley

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