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Network based approaches reveal clustering in protein point patterns JOSHUA PARKER, Univ of Maryland-College Park, VALARIE BARR, National Cancer Institute, The National Institutes of Health, JOSHUA ALDRIDGE, Univ of Maryland-College Park, LAWRENCE E. SAMELSON, National Cancer Institute, The National Institutes of Health, WOLFGANG LOSERT, Univ of Maryland-College Park — Recent advances in super-resolution imaging have allowed for the sub-diffraction measurement of the spatial location of proteins on the surfaces of T-cells. The challenge is to connect these complex point patterns to the internal processes and interactions, both protein-protein and protein-membrane. We begin analyzing these patterns by forming a geometric network amongst the proteins and looking at network measures, such the degree distribution. This allows us to compare experimentally observed patterns to models. Specifically, we find that the experimental patterns differ from heterogeneous Poisson processes, highlighting an internal clustering structure. Further work will be to compare our results to simulated protein-protein interactions to determine clustering mechanisms.

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