

Abstract Submitted  
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**Phase Transitions in a Model of Y-Molecules Abstract** DANIELLE HOLZ, DONOVAN RUTH, Lehigh University, RAUL TORAL, Institute for Cross-Disciplinary Physics and Complex Systems, JAMES GUNTON, Lehigh University — Immunoglobulin is a Y-shaped molecule that functions as an antibody to neutralize pathogens. In special cases where there is a high concentration of immunoglobulin molecules, self-aggregation can occur and the molecules undergo phase transitions. This prevents the molecules from completing their function. We used a simplified model of 2-Dimensional Y-molecules with three identical arms on a triangular lattice with 2-dimensional Grand Canonical Ensemble. The molecules were permitted to be placed, removed, rotated or moved on the lattice. Once phase coexistence was found, we used histogram reweighting and multicanonical sampling to calculate our phase diagram.

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