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Unusual Glassy Behavior of a Biologically Inspired Glass Former

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What can we learn about dense biological tissue by viewing it as a soft active matter system? The mechanical and dynamical properties of dense collections of cells help govern processes ranging from wound healing to embryonic development to cancer progression, and an outstanding challenge is developing tractable models that can predict and explain the amazing variety of complex phenomena that even simple cellular systems can exhibit. Recent experiments have shown, for example, that many tissues lie close to a collective rigidity transition, and I will discuss how simple coarse-grained models of dense tissue can support unusual forms of mechanical integrity. The glassy behavior of these model systems appears very different from that of more traditional soft matter models (e.g., hard or soft sphere glasses), and I will discuss the non-Arrhenius character of the biological models as viewed from both a simulation- and machine-learning-based perspective.