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Classifying and Analyzing 3d Cell Motion in Jammed Microgels<sup>1</sup> TAPOMOY BHATTACHARJEE, W. GREGORY SAWYER, THOMAS AN-GELINI, Univ of Florida - Gainesville — Soft granular polyelectrolyte microgels swell in liquid cell growth media to form a continuous elastic solid that can easily transition between solid to fluid state under a low shear stress. Such Liquid-like solids (LLS) have recently been used to create 3D cellular constructs as well as to support, culture and harvest cells in 3D. Current understanding of cell migration mechanics in 3D was established from experiments performed in natural and synthetic polymer networks. Spatial variation in network structure and the transience of degradable gels limit their usefulness in quantitative cell mechanics studies. By contrast, LLS growth media approximates a homogeneous continuum, enabling tractable cell mechanics measurements to be performed in 3D. Here, we introduce a process to understand and classify cytotoxic T cell motion in 3D by studying cellular motility in LLS media. General classification of T cell motion can be achieved with a very traditional statistical approach: the cell's mean squared displacement (MSD) as a function of delay time. We will also use Langevin approaches combined with the constitutive equations of the LLS medium to predict the statistics of T cell motion.

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