Abstract Submitted
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The 2-Body Cytoskeleton Problem: Studying Cell-Cell Fusion Mechanics in Osteoclasts with Multiscale Imaging[1] JESSE SILVERBERG, Wyss Institute, Harvard University, PEI YING NG, ROLAND BARON, Harvard School of Dental Medicine, PENG YIN, Wyss Institute, Harvard University — Most research on *in vivo* cytoskeletal mechanics focuses on what happens in a single cell context. This foundational work has opened up new avenues to study higher-order problems, such as what happens when cells physically interact. For example, osteoclasts, one of the cell types responsible for maintaining healthy skeletal structure, are formed when ˜10 or more mononuclear cells fuse into a multinuclear behemoth. But how does the cytoskeleton of two or more cells fuse? And what is the role of mechanics in understanding the resulting cytoskeletal organization? In this work, we use the multiscale multiplexed Molecular Atlas Platform to image and study the cytoskeletal mechanics of cell-cell fusion. Our work documents the processes involved and uses observed structures to infer mechanical events during these interactions. Broadly this work takes a technology-driven approach to perform fundamental exploratory work, and uses current state-of-the-art cytoskeletal mechanical modeling to interpret our observations.

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