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Recoil Dynamics after Laser Ablation of Single Cell Edges in Embryonic Epithelia[1] XIAOYAN MA, M. SHANE HUTSON, Vanderbilt University — In order to determine the interfacial tensions along cell-cell boundaries in living fruit fly (*Drosophila*) embryos, we have developed a microsurgical method based on laser ablation and laser-scanning confocal microscopy. Following ablation of one cell edge, we follow the recoil dynamics (strain relaxation) of adjacent GFP-labeled cell edges (with time resolution down to 2 ms). The recoils are consistently fit best by a double exponential decay with one time constant around 80 ms and the other around 1.2 s. The initial recoil velocities are in the range of 10-20 μm/s. We observe the same biphasic strain relaxation in multiple (N = 60) embryos at different developmental stages. Both recoil time constants are much longer than either the plasma lifetime or the duration of cavitation.

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