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Supporting Material

Differences in the microrheology of human embryonic stem (hES) cells and human induced pluripotent stem (hiPS) cells

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Daniels hiPS Microrheology Supp. Figure 1

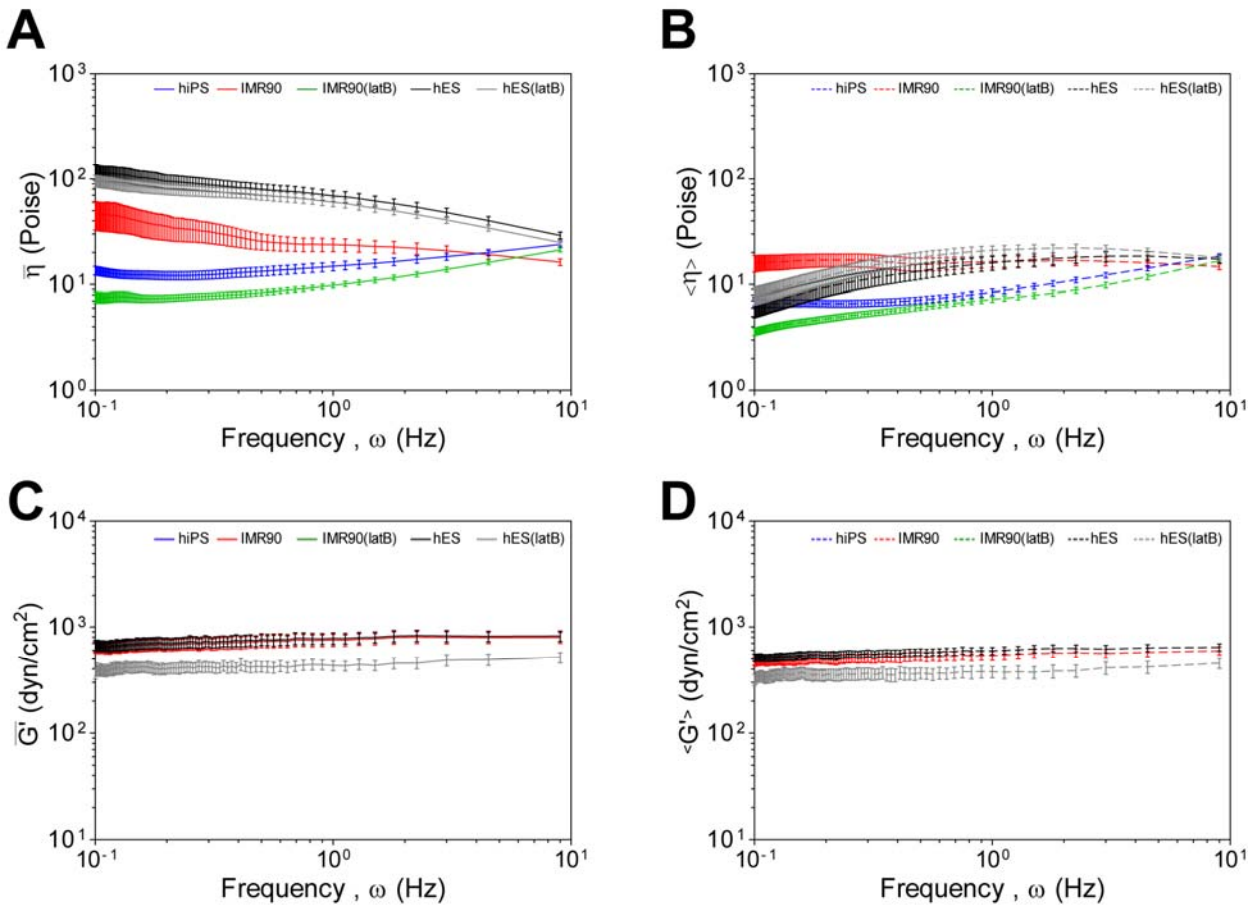

Figure S1. Viscosity and elasticity of fibroblasts, hiPS, and hES cells as a function of frequency. (A) Cytoplasmic viscosity is inversely related to the diffusion coefficient through the Stokes-Einstein relationship (see text). Viscosities of individual particles were calculated and averaged using only the freely diffuse fraction of beads in each condition, and are displayed as a function of frequency. (B) Cytoplasmic viscosity was calculated directly from the ensemble-averaged MSD of the freely diffusion fraction of beads in each condition and is displayed as a function of frequency. (C) The elastic modulus, G', of an elastic solid is inversely related to the mean-squared displacement of particles embedded in the solid through the Stokes-Einstein relationship (9). The elastic moduli of individual particles were calculated as a function of frequency and averaged using only particles displaying elastic behavior (time-independent MSDs), and thus, the elastic modulus is roughly constant across the frequencies probed for all conditions. (D) The elastic modulus was calculated as a function of frequency directly from the ensemble-averaged MSD of the elastic fraction of beads in each condition.