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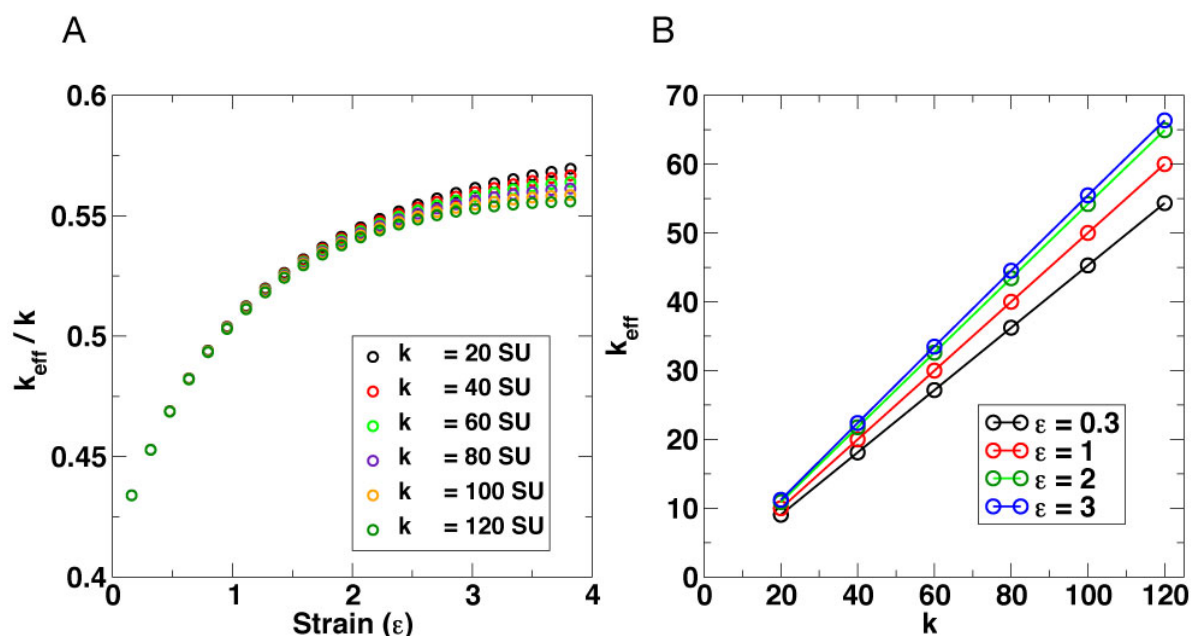


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B. k_{eff} can be conveniently tuned by choice of k as k_{eff} varies linearly with k for each value of ϵ . We have described the *Hydra* body column as cylinder of uniform cross-section made up of mass-points as shown in Figure 4A. This helps in tuning the stiffness of the body column as seen in AFM experiments ($\alpha = 3$).

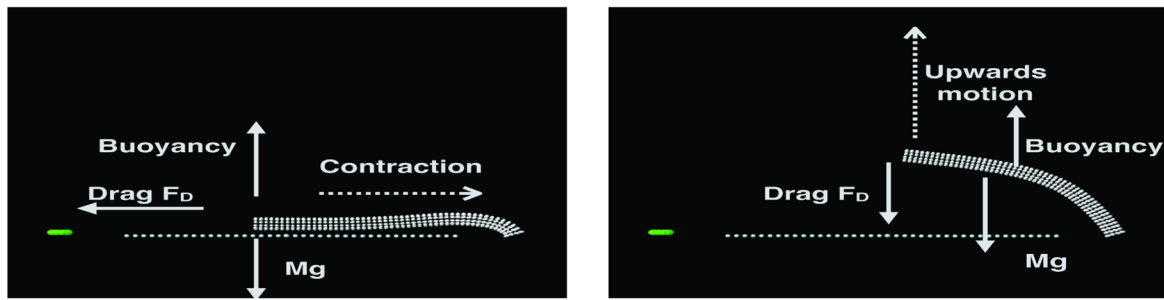


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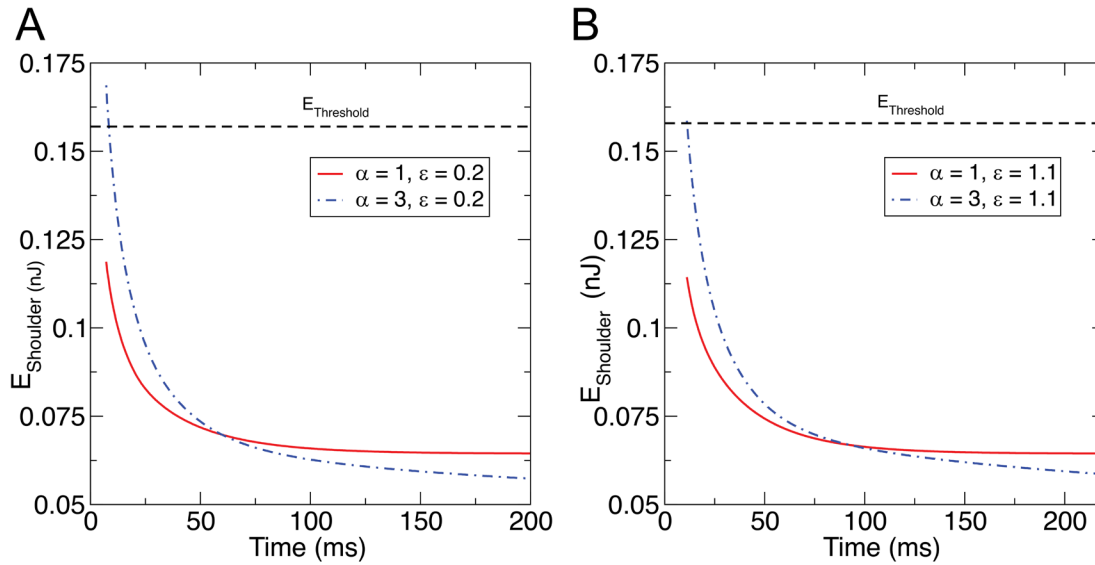


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B. The plots of energy in the shoulder versus time for strain of 1.1. We show that for strains as different as 0.2 and 1.1, the energy in the shoulder is above threshold for $\alpha = 3$ than $\alpha = 1$. The initial energies in both these cases were as different as 2.4 nJ and 42 nJ.

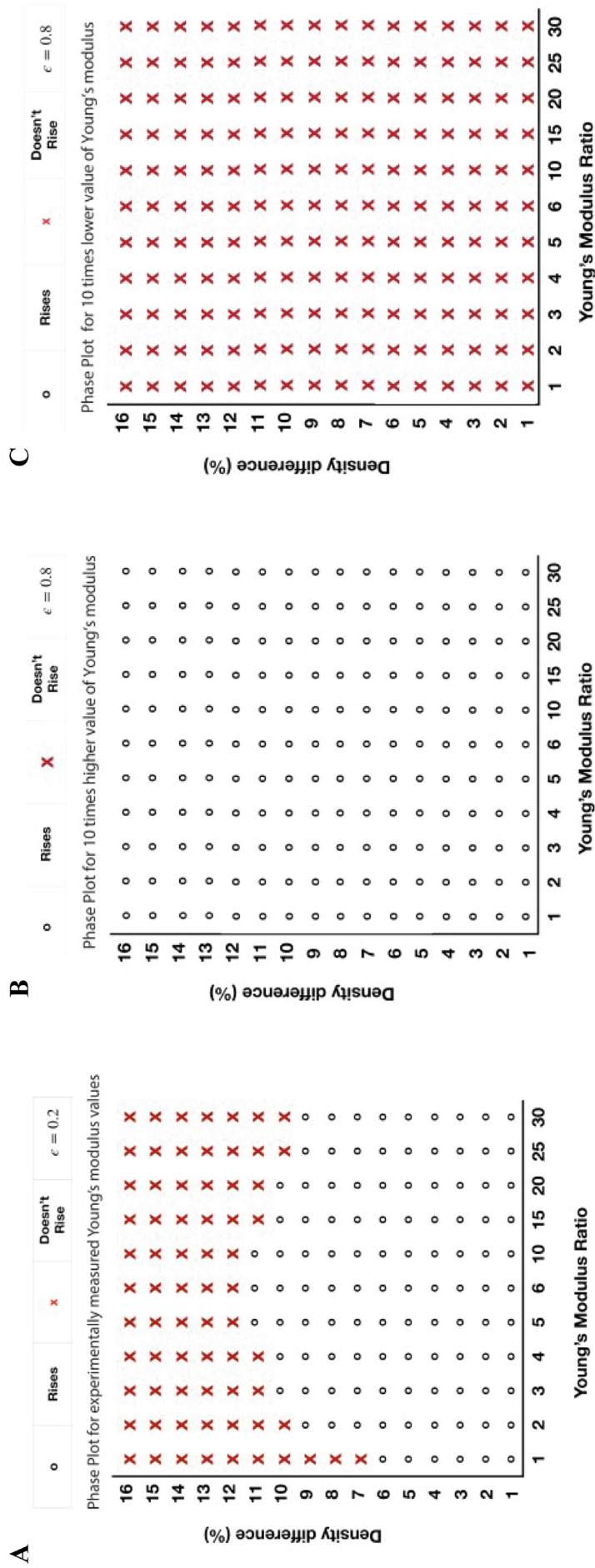


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B. Phase plots for stiffness values which are 10 times larger than those observed in AFM experiments. The criticality observed with stiffness values in the range seen in AFM experiments is absent. The variation in tissue stiffness is not important. However, it should be noted that the energies involved in stretching and bending are too high and actual *Hydra* may not have so much energy if the body column is 10 times stiffer.

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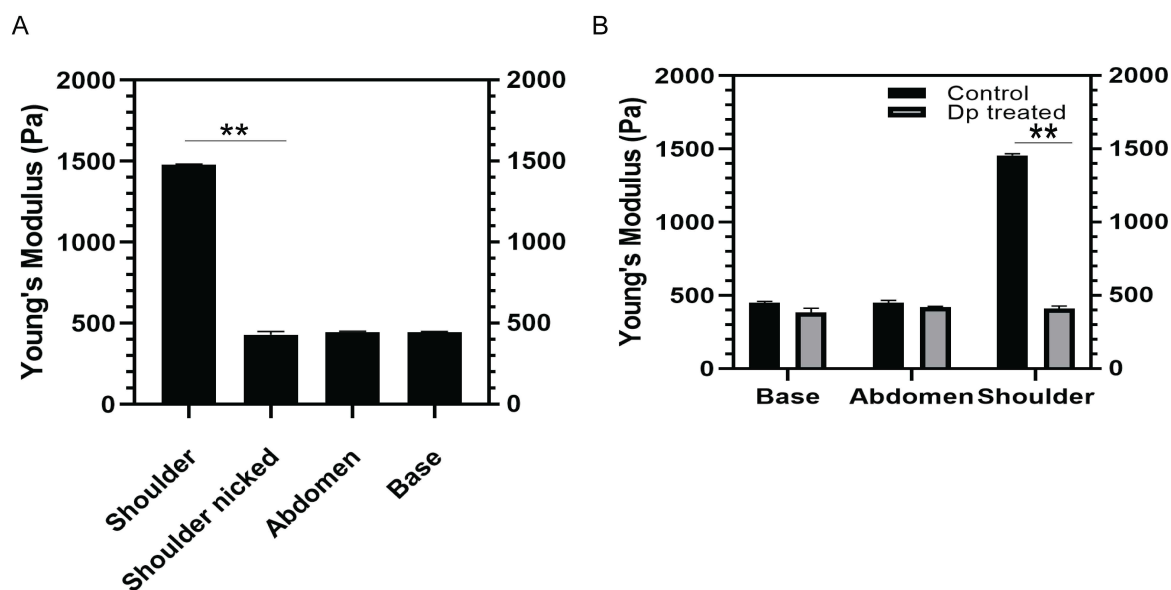


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A. The shoulder region of *Hydra* was nicked such that the polyp was cut halfway on one side (until the center of the body cavity) to disrupt the stiffness in this region. The polyp was allowed to heal for 12 hours after which AFM measurements were performed. The graph represents Young's Modulus (Pa) of three distinct regions of the body column after amputation in 3 biological replicates. Error bars show the standard error of mean between three biological replicates; significance value calculated by the student t test.

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Table S2

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Table S3

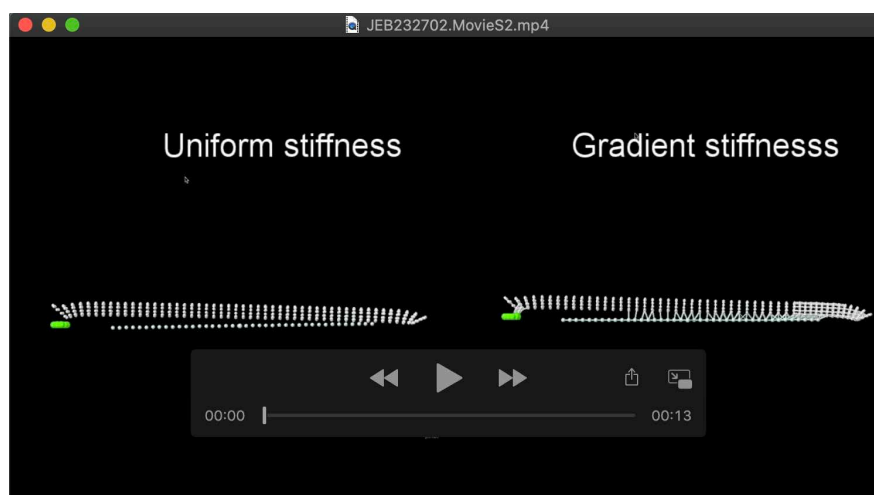
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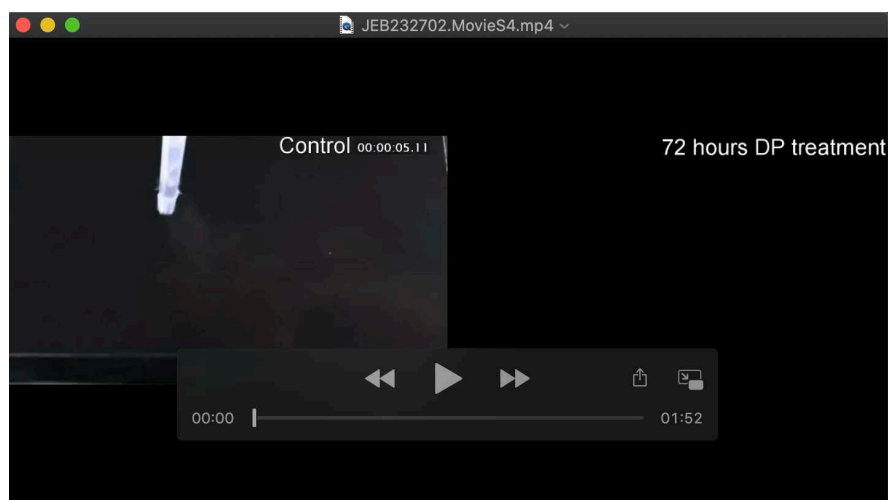
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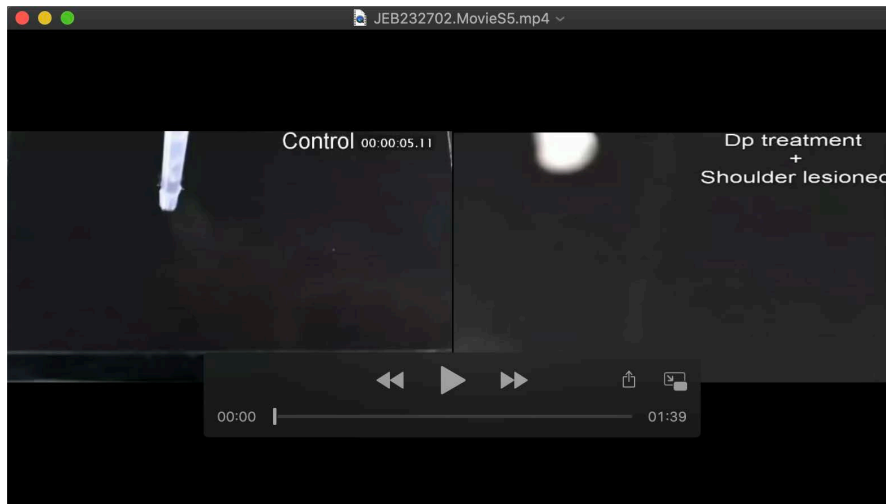
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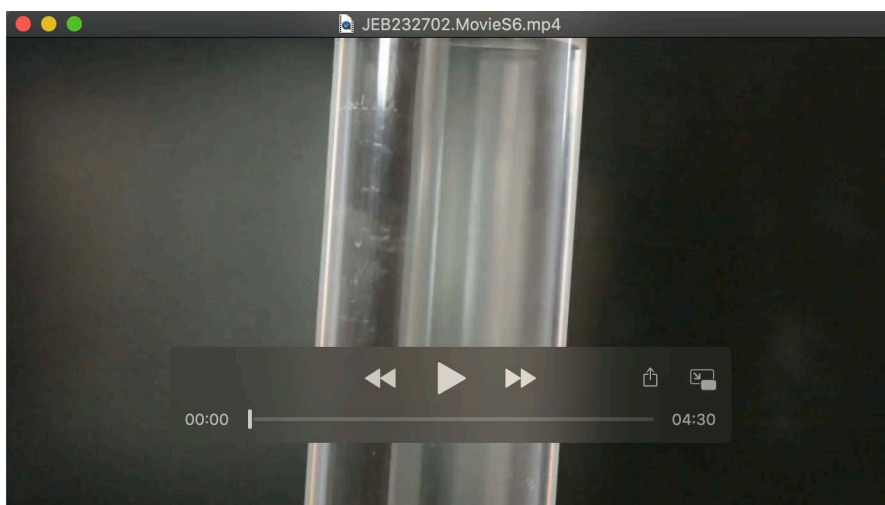
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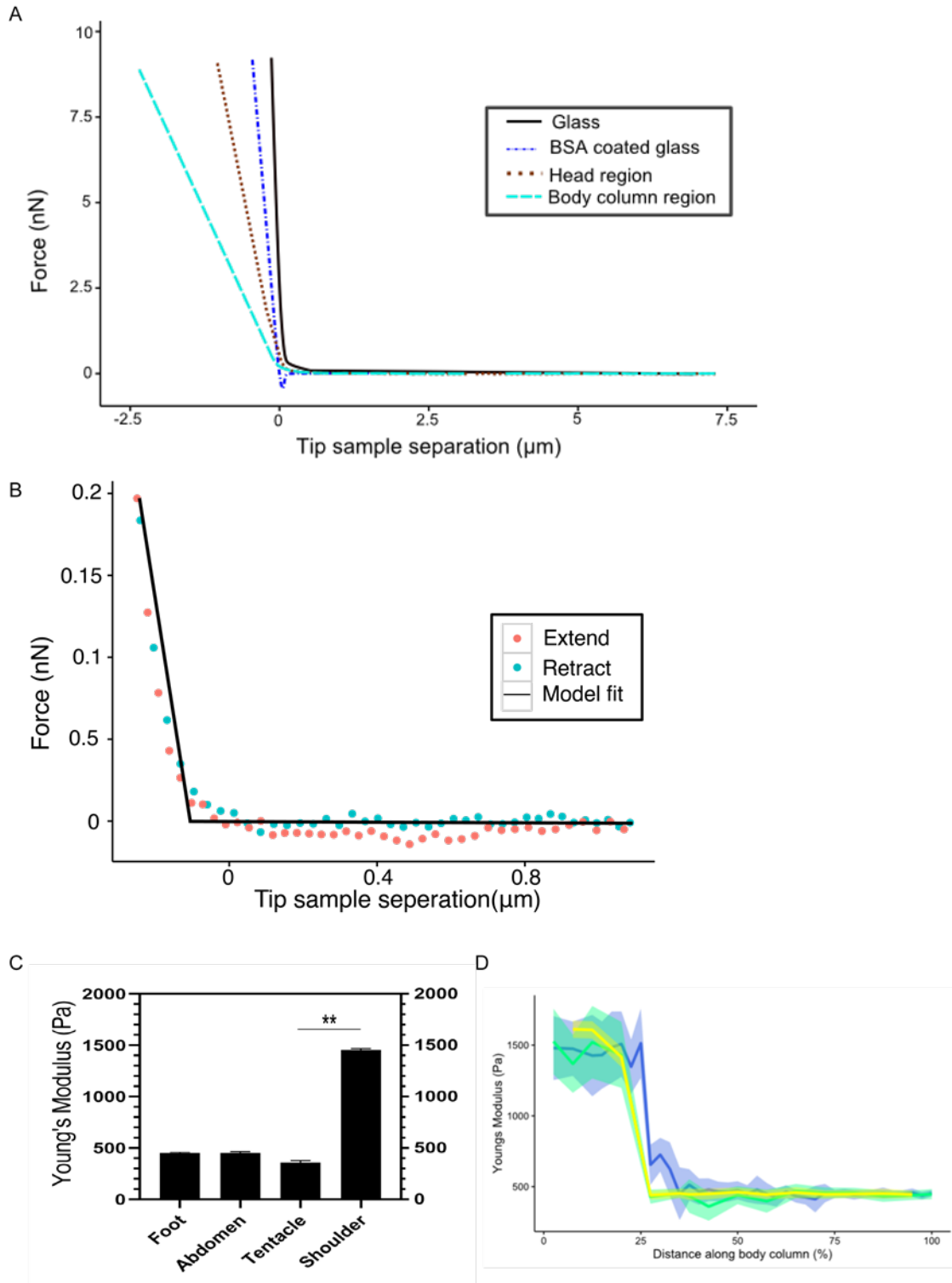


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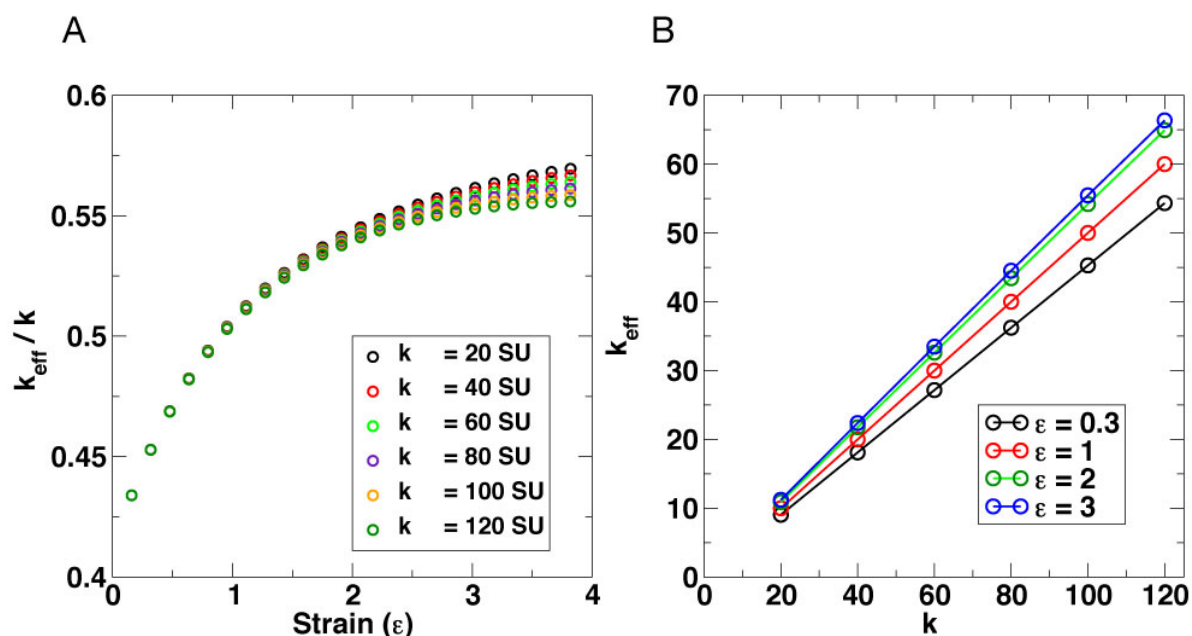


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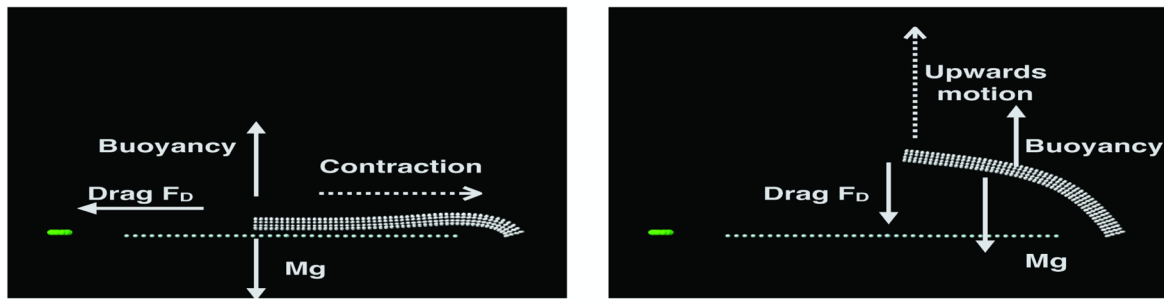


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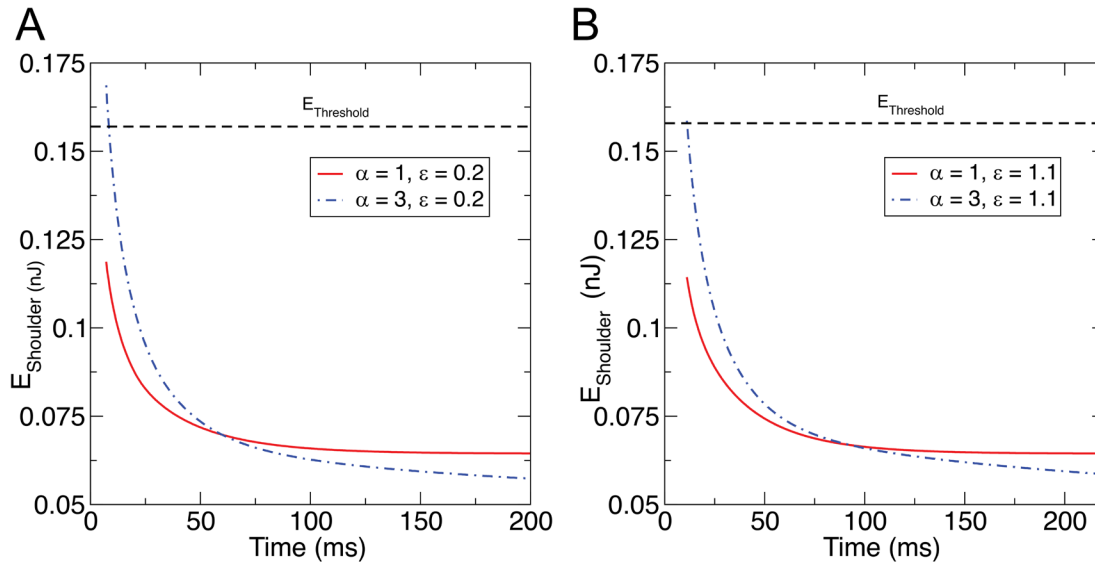


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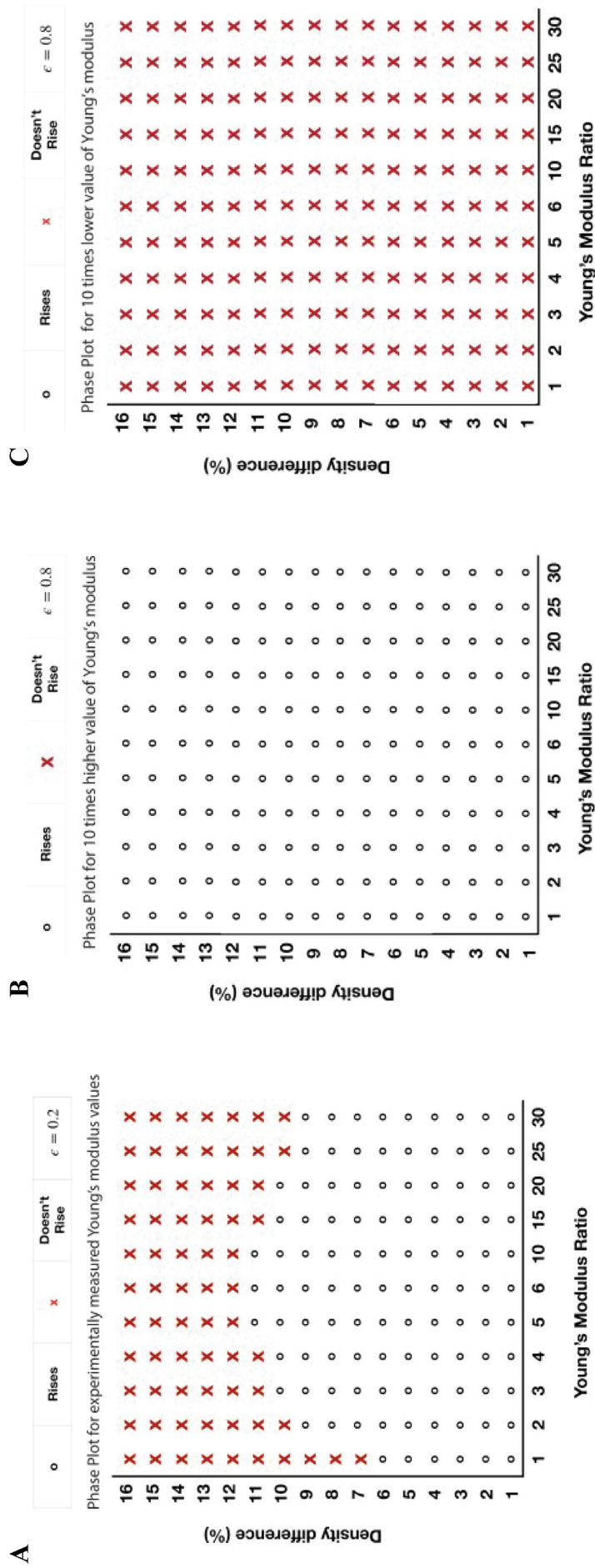


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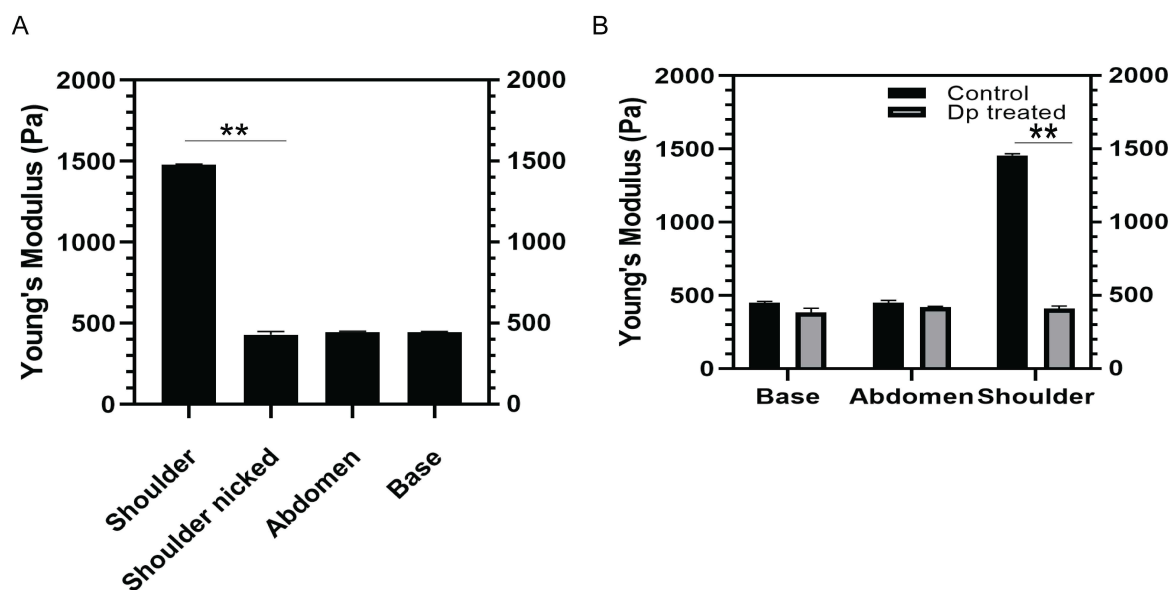


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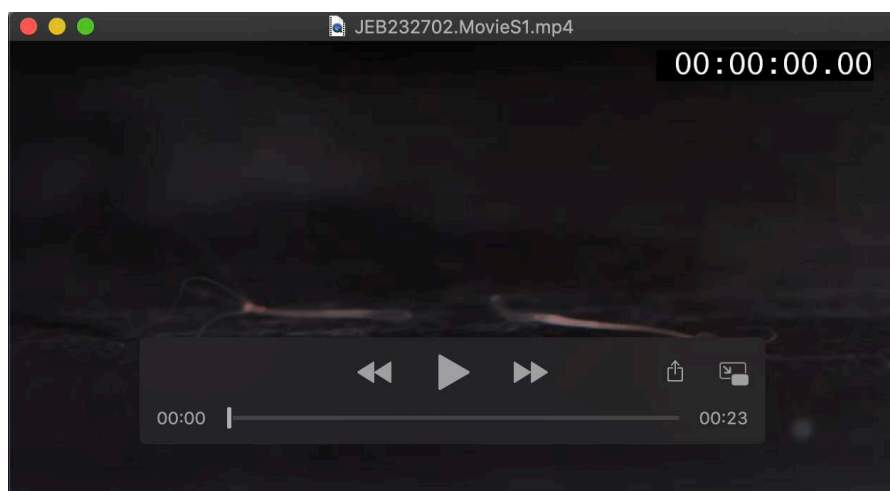
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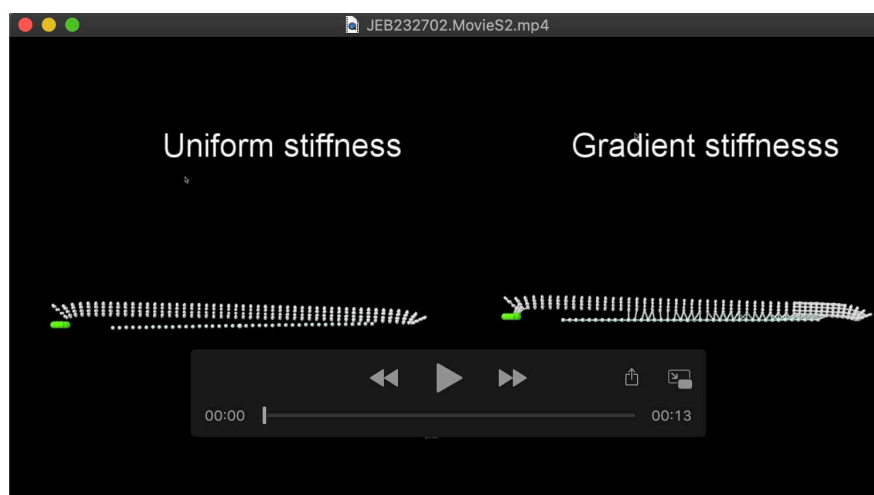
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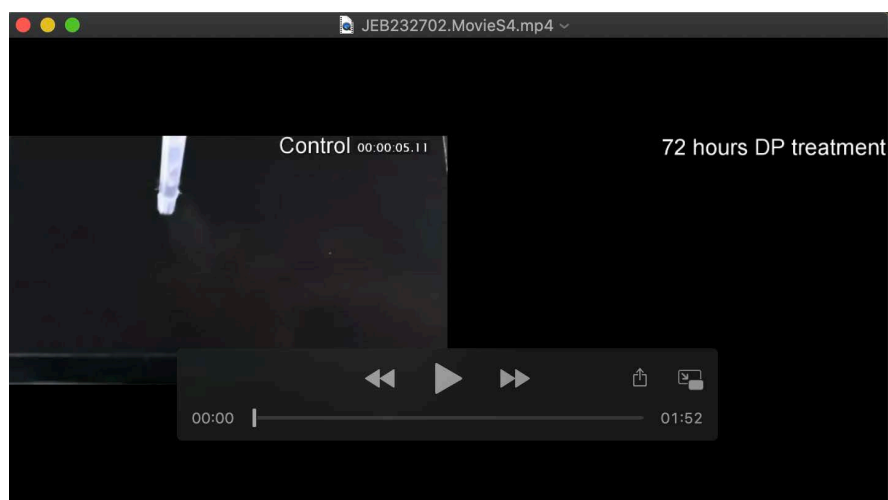
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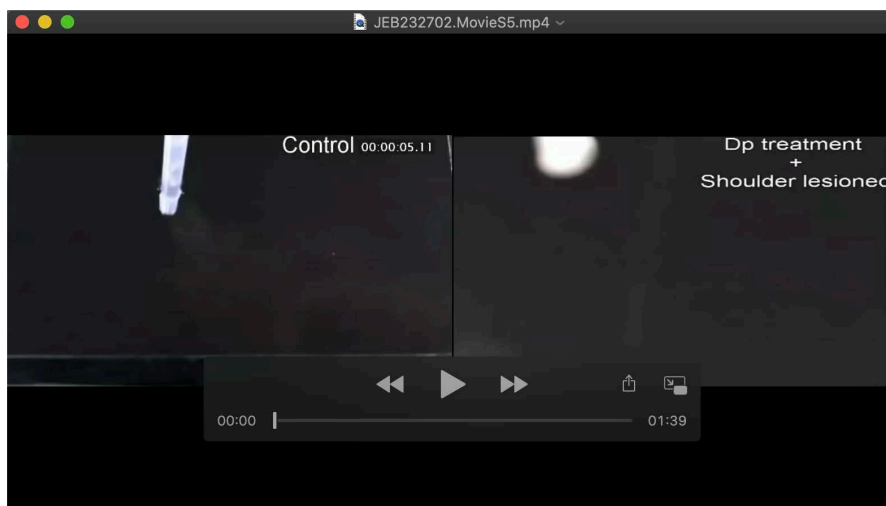
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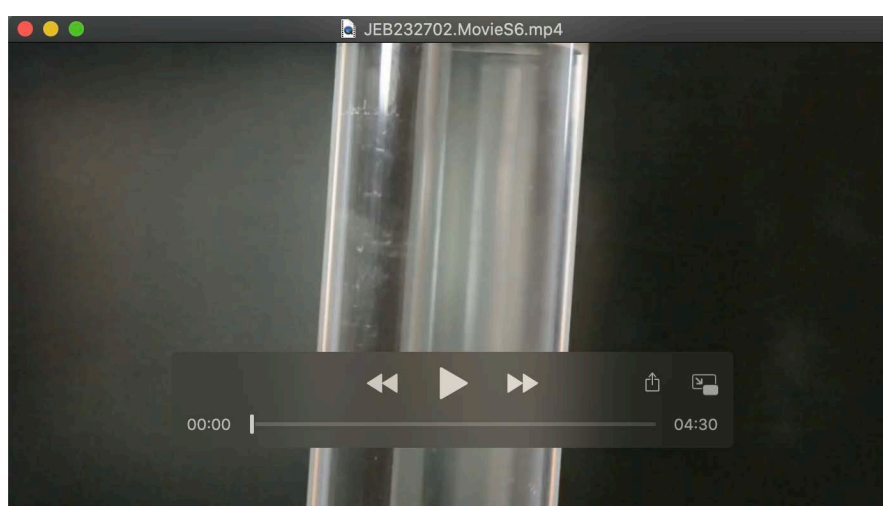
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