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DNA Gel with dynamic cross-links[1] CHANG-YOUNG PARK, Material Research Laboratory, University of California at Santa Barbara, DEBORAH FYGENSON, Department of Physics and Biomolecular Science and Engineering Program, University of California at Santa Barbara, OMAR SALEH, Department of Materials and Biomolecular Science and Engineering Program, University of California at Santa Barbara — The mechanical properties of a living cell are strongly related to the cytoskeletal network, which is comprised of diverse protein filaments connected by cross-linking proteins, some of which are dynamic. Gels comprised of dynamic cross-linkers exhibit unique mechanical properties not seen in those using permanent cross-linkers [1,2]. To investigate the effect of a dynamic cross-linker on mechanical properties of a material, we have synthesized biopolymer gels with a well-known semi-flexible biopolymer, DNA, and probed the mechanics of the system using microrheological techniques. We discuss these results in comparison to cytoskeletal systems, and seek to establish universal principles of dynamic cross-link based gels. - References 1. S. M. V. Ward, A. Weins, M. R. Pollak, D. a Weitz, Dynamic viscoelasticity of actin cross-linked with wild-type and disease-causing mutant alpha-actinin-4., Biophys. J. 95, 4915–23 (2008). 2. C. P. Broedersz et al., Cross-Link-Governed Dynamics of Biopolymer Networks, Phys. Rev. Lett. 105, 238101 (2010).

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