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Investigating the Diameter and Tension Dependence of Single-fibrin Fibers during Fibrinolysis. IGAL BUCAY, NATHAN HUDSON, MICHAEL FALVO, UNC Chapel Hill, NSRG TEAM — In this investigation we will study the lysis time dependency on the diameter and tension of fibrin. Fibrinolysis is a process driven by plasmin in which a blood clot is broken down. Plasmin is produced as plasminogen, which can be activated by tissue plasminogen activator (tPA). tPA is produced in a single-chain form. The single-chain form is cleaved into double-chain tPA by plasmin. Our experiments show that dc-tPA cleaves plasminogen at a higher rate than sc-tPA. tPA binds to fibrin and cleaves the plasminogen in the blood plasma to form plasmin. Plasmin then transversely cleaves the fibrin transversely in various places. In our initial experiments, we simply added plasmin to samples of fibrin fibers and we noticed that lysis time decreases as plasmin concentration decreases. We have also been adding 20μM plasminogen to samples of fibrin with bound sc-tPA. In an hour, the fiber seemed to curve, not lyse. This curvature may be an initial stage of fibrinolysis. We plan to add very low concentrations of plasmin (<10nM) to see if the fibers reproduce this effect. The biochemistry behind the experiments will help us when studying the relationship between tension or diameter and lysis time.

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