Table 1. Simulation Parameter Values

parameter	range
extensional modulus	μ_e
compressional modulus	μ_c
cross-link drag coefficient	ξ
medium drag coefficient	ζ
filament length	L
cross-link spacing	l_c
domain size	$D_x \times D_y$

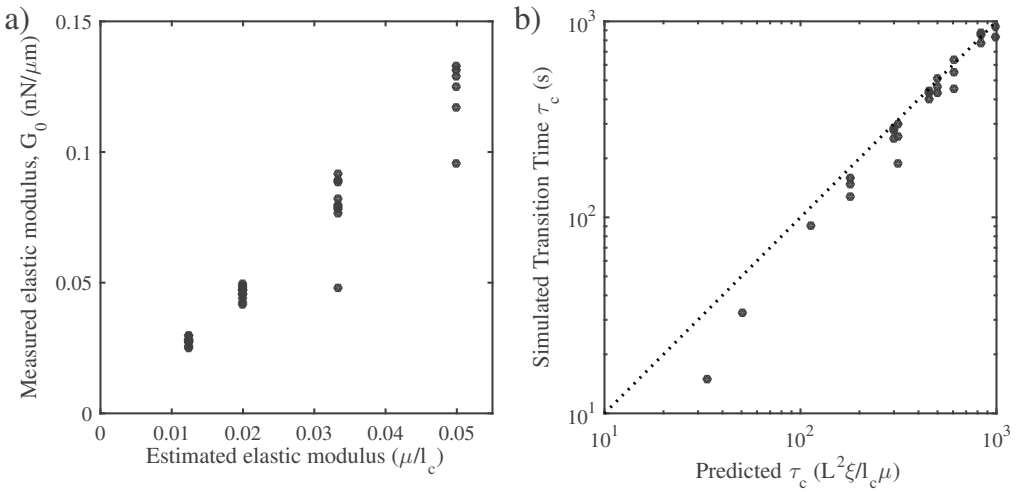

Figure 1. Mechanical properties of passive networks. **a)** Elastic modulus of networks. Our measurements closely match prediction of $G_0 \sim \mu/l_c$. **b)** Placeholder for inevitably another figure relevant to passive properties.

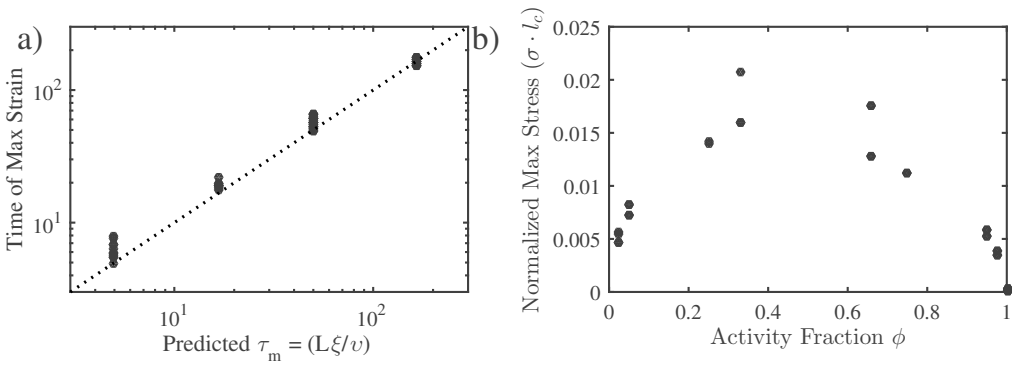

Figure 2. Mechanical properties of active networks. **a)** Timescale of maximum strain in networks free to contract. This relationship was found phenomenologically. **b)** Dependence of network stress on the fraction of cross-links which are active. Note that the network stress approaches 0 as ϕ approaches 0 or 1.

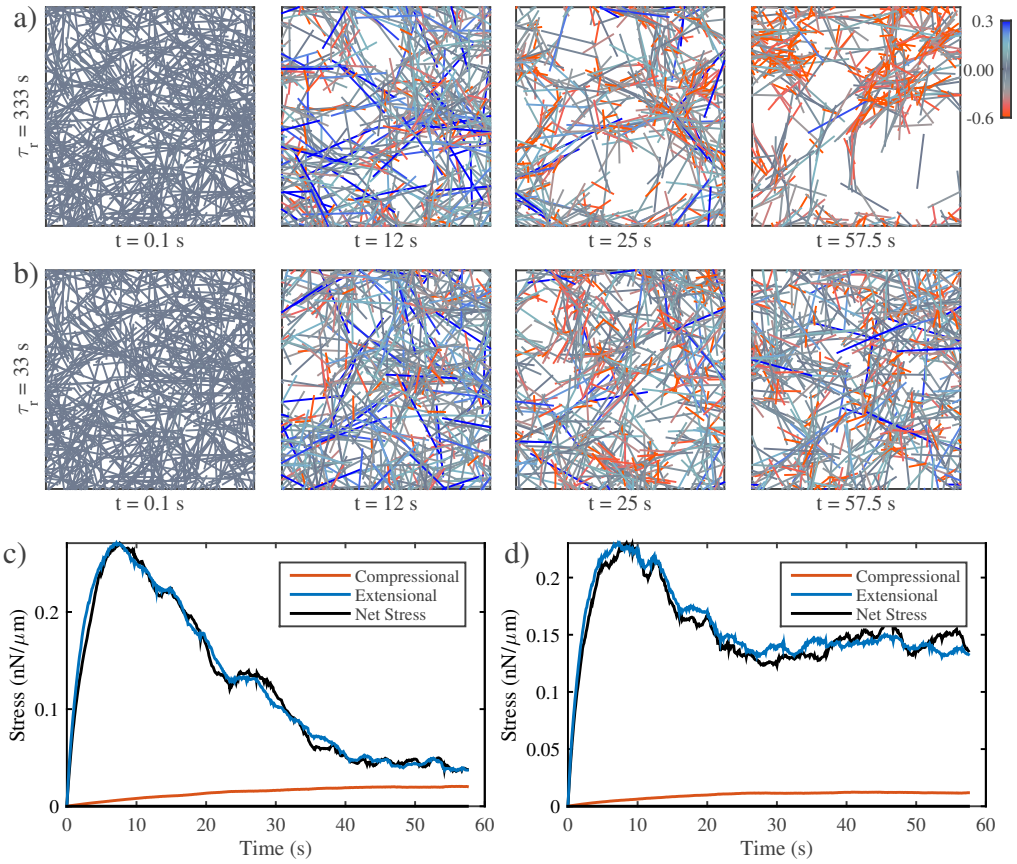

Figure 3. Tearing of active networks is prevented via recycling. **a)** An active network undergoing large scale deformations due to active filament rearrangements. **b)** The same network as in a) but with a shorter filament recycling time. **c)** Time trace of internal stresses for network in panel a. **d)** Time trace of internal stresses for network in panel b.

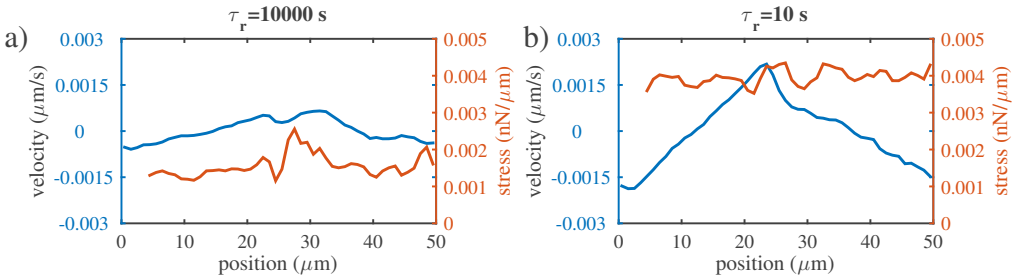

Figure 4. Stress and strain profiles of networks with contractile and passive domains. **a)** Blue line indicates strain velocity profile while orange represents net stress as measured in the main text. **b)** Same as panel a except for the condition where recycling time is 10 s. Note the increase in net stress and the corresponding increase in flow rate.