Reconstitution of the dynamic steady state of actin networks.

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The dynamic assembly and turnover of actin networks in cells control shape changes, migration and organelle function, as well as communication with extracellular substrates or neighbors. The intracellular actin cytoskeleton forms such complex intricate networks in cells that it is difficult to identify the principles of their dynamic self-organization. We have developed reconstituted systems in vitro as simplified models for the study of the cytoskeleton. Using this approach, we have established general principles on how the dynamic steady state of actin network emerges from biochemical and structural feedbacks.