

Design and self-assembly of cytomotive filaments

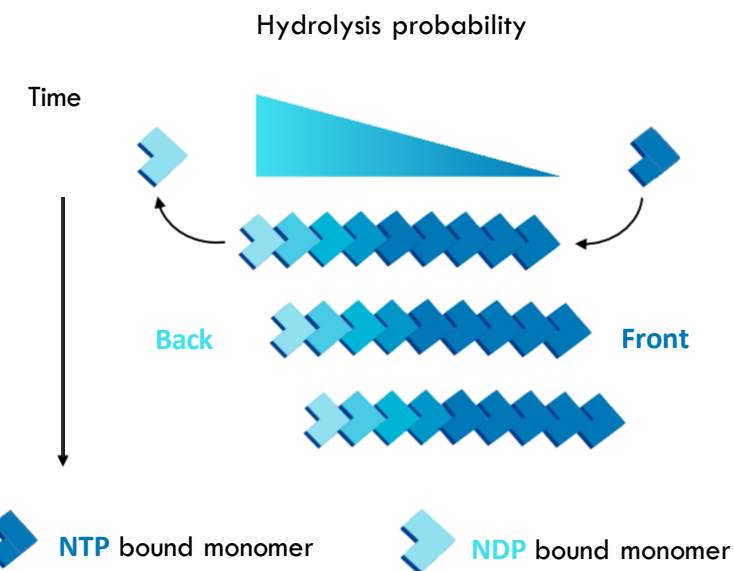
How to build a treadmilling filament from the bottom-up

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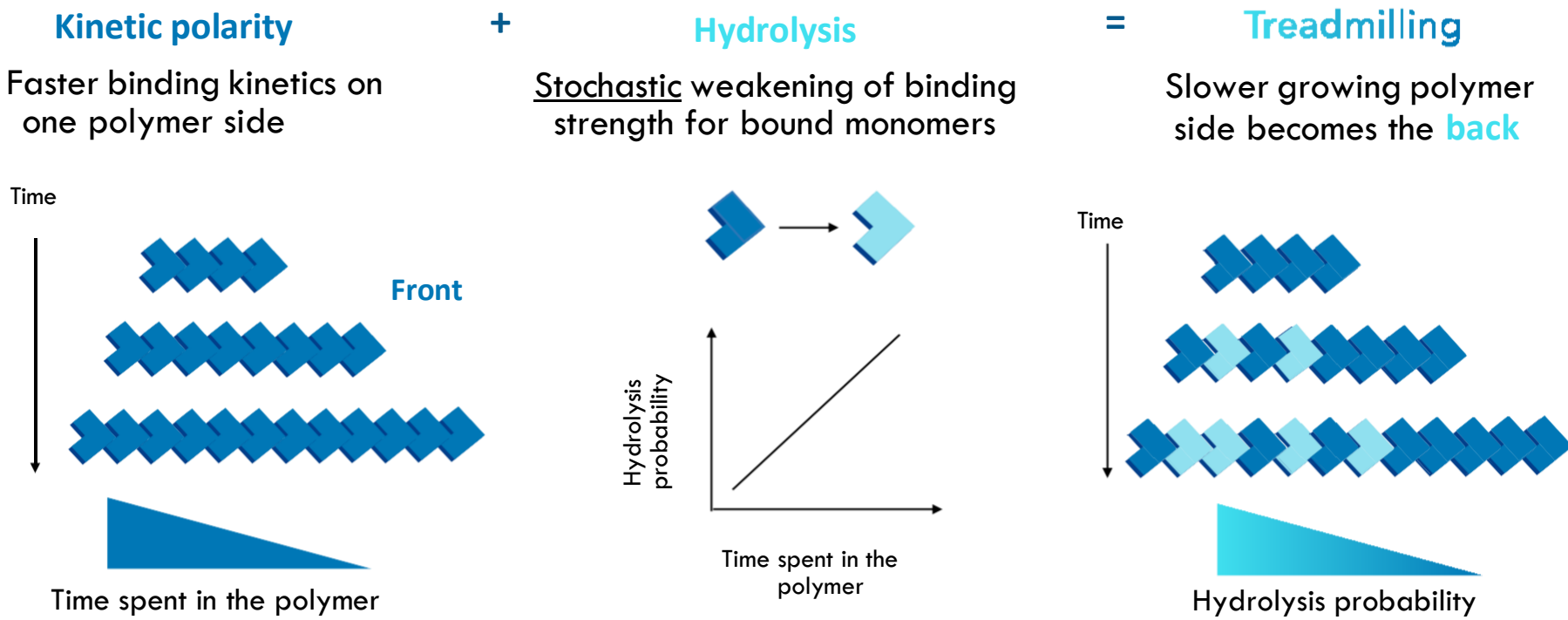
Biological system

Many filaments driving shape changes and movement in cells undergo **treadmilling** (actin, FtsZ, TubZ,...)



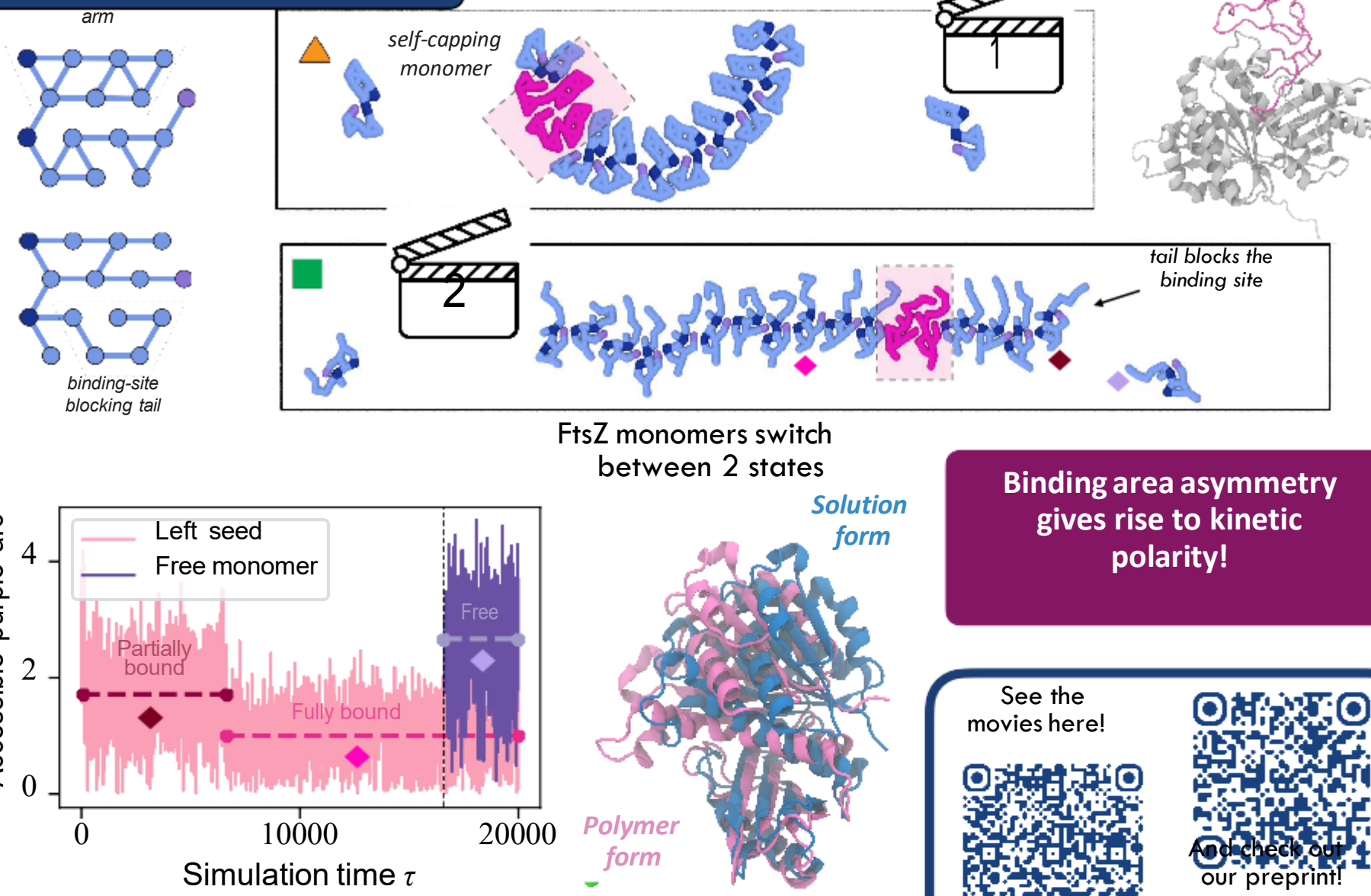
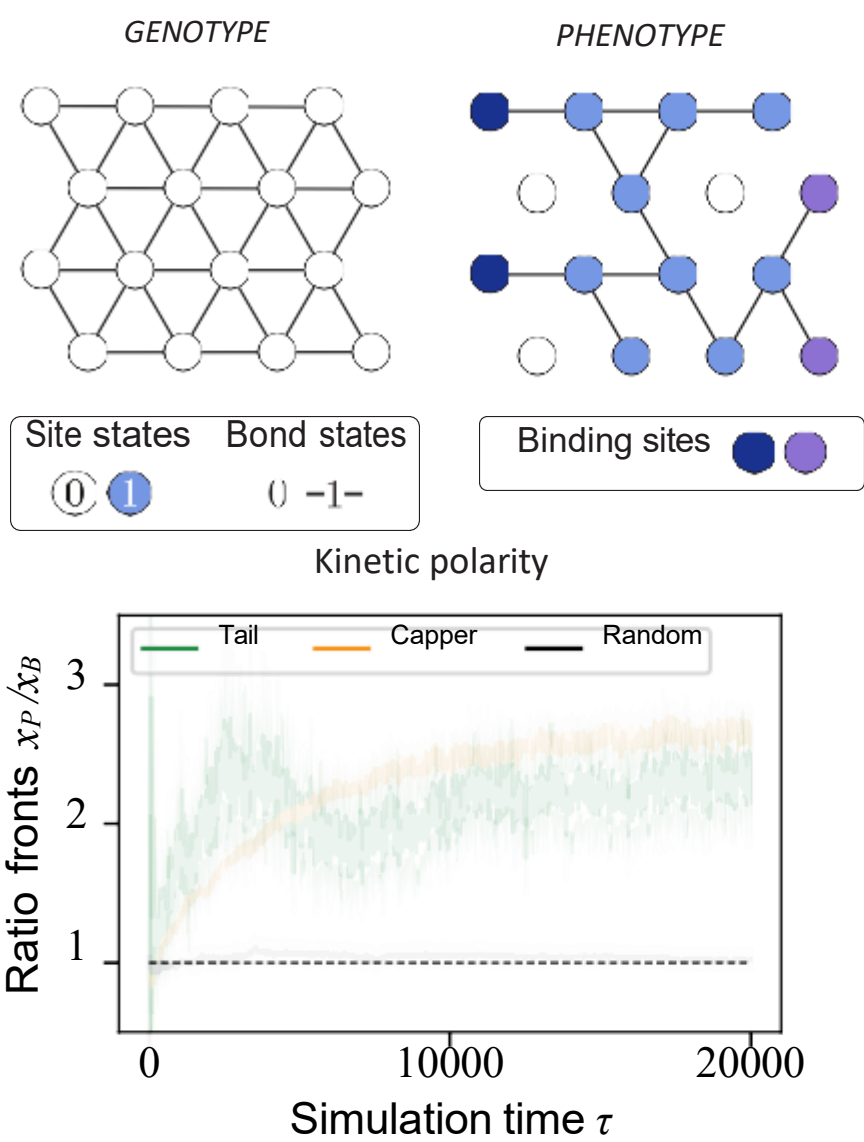
Treadmilling is a form of polymer dynamics, where the monomers keep **attaching to the front** and **detaching from the back**

Conditions underlying treadmilling dynamics



How do you build a monomer that forms a treadmilling filament?

Evolving structures with a Genetic Algorithm (GA)



Two state colloidal model as a monomer

