

Supporting information

Reaction-limited formulation: The FA is in green. Only edge motion is shown for purposes of visualization; the changing concentration profile over the FA is not shown.

Movie S1: $P = 0$ pN and small conformational change; no growth.

Movie S2: $P = 1 \times 10^{-1}$ pN and small conformational change; treadmilling with growth.

Movie S3: $P = 1 \times 10^2$ pN and small conformational change; pure treadmilling.

Movie S4: $P = 10^4$ pN and small conformational change; treadmilling with resorption.

Movie S5: $P = 0$ pN and large conformational change; no growth.

Movie S6: $P = 1 \times 10^{-1}$ pN and large conformational change; treadmilling dominated by growth at both ends.

Movie S7: $P = 1 \times 10^2$ pN and large conformational change; symmetric growth.

Movie S8: $P = 10^4$ pN and large conformational change; treadmilling with resorption.

Reaction-diffusion formulation: The changing concentration profile over the FA is shown in green.

Movie S9: Reaction-diffusion formulation with $P = 10^2$ pN and small conformational change; pure treadmilling is discernible.

Movie S10: Reaction-diffusion formulation with $P = 10^2$ pN and large conformational change; treadmilling is dominated by growth at both ends.