SUPPORTING FIGURES FOR:

FtsZ Polymers tethered to the Membrane by ZipA Are Susceptible to Spatial Regulation by Min Waves.

VIDEO S1 Dynamic FtsZ filaments on ZipA-SLB imaged by dSTORM**.** 30 original images with localized emitters were merged to create one movie frame, resulting in one frame per 1.5 s in real time. Frame size: 10 µm x 10 µm. See also Fig. S4.

VIDEO S2 Ficoll70 enhances the MinC-induced modulation of FtsZ polymers anchored to ZipA-containing bilayers. Sequence of confocal images showing MinCDE waves (traced by MinC-eGFP) and the FtsZ network (traced by FtsZ-Alexa647) on a ZipA-containing bilayer in the presence of 130 g/l Ficoll70. The modulation value, *m*, of the FtsZ observed in these conditions was 0.55 ± 0.01. Images taken every 20 s. Frame size: 53 µm x 53 µm. See also Fig.6.

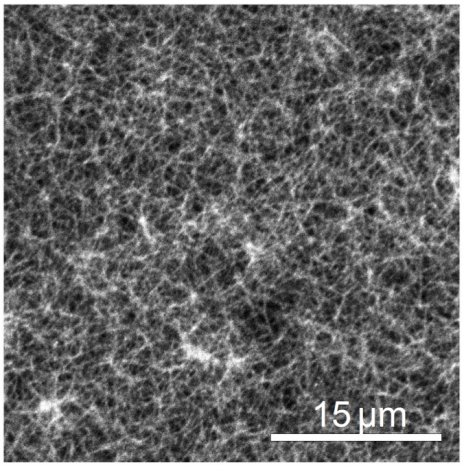

FIGURE S1 Unspecific bundling of FtsZ on ZipA-SLBs in the presence of 0.7 µM glucose oxidase. Together with catalase (2,170 U/ml), β-D-glucose (0.4% wt/wt) and Trolox (2 mM), the mixture is commonly used as an oxygen scavenging system to improve dye stability. See also Materials and Methods.

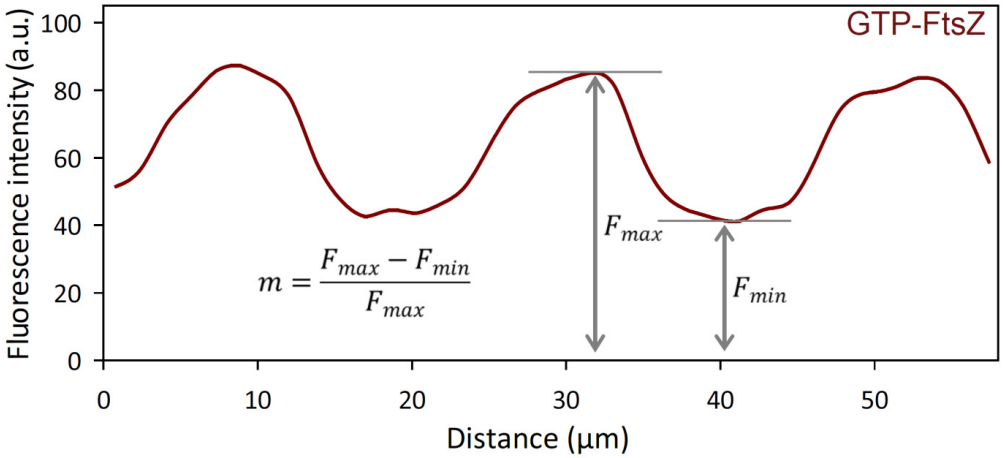

FIGURE S2 The definition of the FtsZ wave modulation parameter *m*: the relative difference between the maximum and the minimum fluorescence intensity measured within the wave. Here, the smoothed fluorescence intensity profile of FtsZ-Alexa647 from the sample in Fig. 6 is shown. The modulation value, *m*, of the FtsZ observed under these conditions was 0.55 ± 0.01.

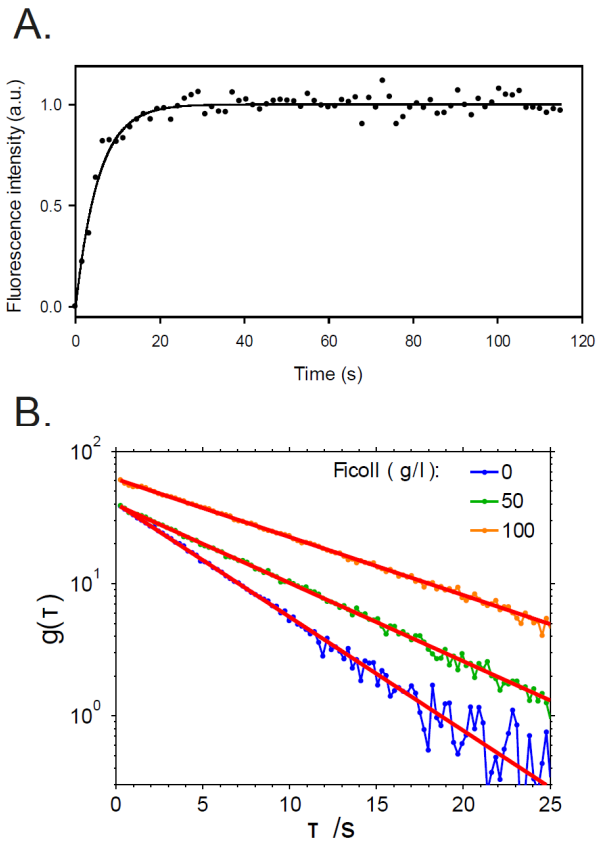

FIGURE S3 (A) FRAP experiment of a 2µM GTP-FtsZ network on ZipA-SLBs. The plot shows the intensity fluorescence of the photobleached region over time (corrected and normalized for bleaching caused by imaging). The data points (●) were fitted by a simple exponential curve (–) to calculate the half-time turnover value ($\tau_{1/2}$) (See also Materials and Methods). The $\tau_{1/2}$ in this particular example was 3.7 s. **(B)** Example of typical fluorescence correlation decays FtsZ on SLB (eq. 1) at three different ficoll concentrations with exponential fits. See also Fig. 5C.

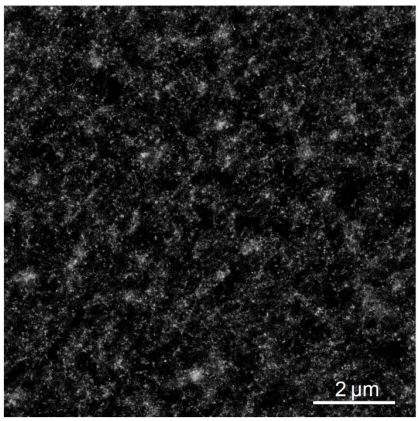

FIGURE S4 dSTORM image of FtsZ protofilaments on ZipA-SLBs (0.083 % ZipA content as molar percentage, %). The Video S1, showing the FtsZ dynamics, was reconstructed from the initial part of this measurement. Measurement time: 20 min. Frame size: 10 µm x 10 µm.

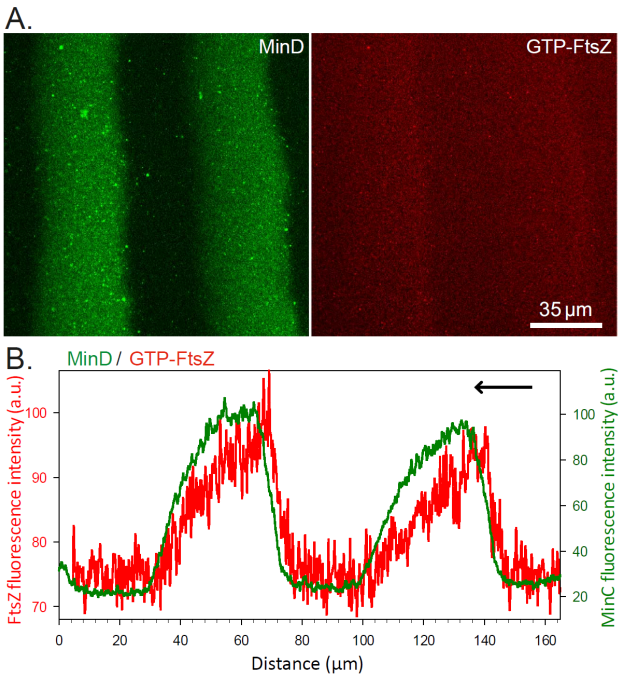

FIGURE S5 ZipA is required for the anti-correlated coupling of MinCDE and FtsZ. **(A)** Confocal fluorescence micrographs showing MinCDE-FtsZ waves (labeled proteins: MinD-eGFP and FtsZ-Alexa647), observed upon joint reconstruction on bilayers without ZipA. **(B)** Fluorescence intensity profiles of MinD and FtsZ acquired from the image shown in (A). In the absence of ZipA a small fraction of FtsZ was found to be transported by MinC within the MinCDE wave. Contrary to the situation described for the ZipA-SLBs, where correlated FtsZ and MinCDE patterns were observed, here FtsZ travel together with the Min proteins and its profile recalls that of MinC.

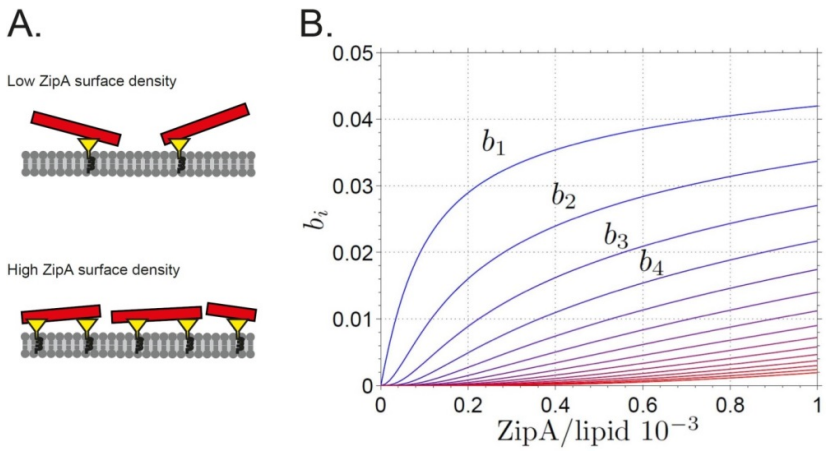

FIGURE S6 (A) At low ZipA concentration most FtsZ filaments are anchored by one ZipA and parts of filaments are out of reach of the MinCD complex. At high ZipA concentration FtsZ filaments are attached by more ZipA molecules, bringing the filament closer to the membrane and making them more susceptible to MinCD. **(B)** Membrane concentrations b_i of FtsZ protofilaments with i ZipA anchors as obtained from the model of FtsZ-ZipA interaction (Equations 3-9). While at low ZipA concentration there are mainly FtsZ filaments with one or two anchors, filaments with more anchors are abundant at high ZipA densities.

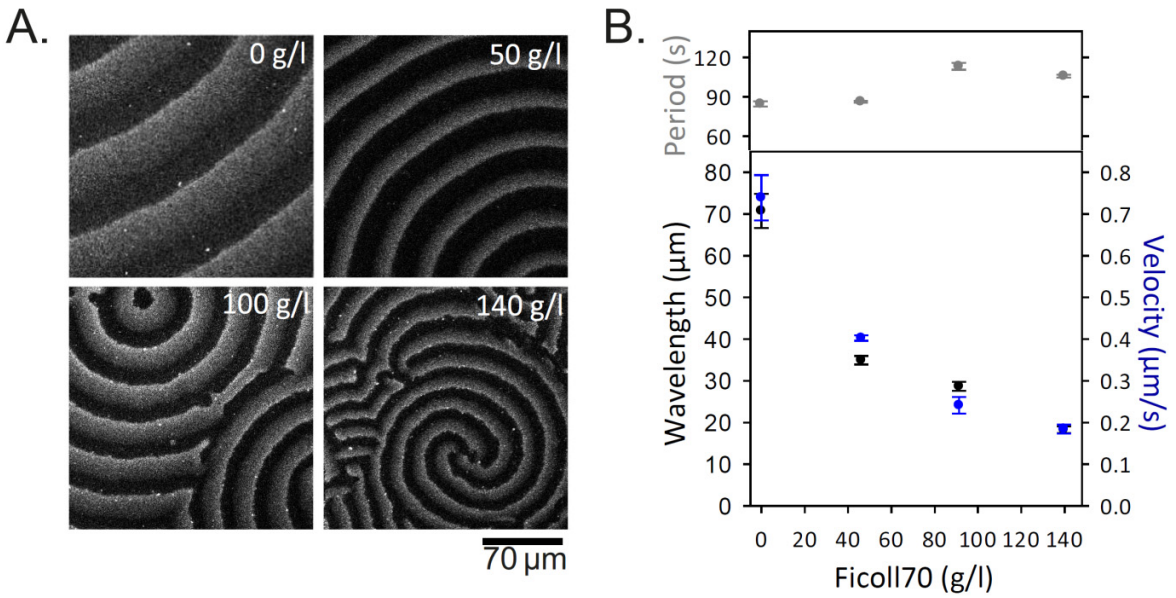

FIGURE S7 Effect of Ficoll70 on Min wave propagation. **(A)** Confocal fluorescence micrographs showing MinCDE waves obtained in the presence of different Ficoll70 concentrations (labeled protein: MinD-eGFP). **(B)** Both the wavelength (λ) and velocity (v) of the Min waves decrease with higher crowder concentration, while the period (T, $T = \lambda/v$) remains practically constant.