



Supplementary Information for

Unusual dynamics of the divergent malaria parasite *PfAct1* actin filament

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This PDF file includes:

Figs. S1 to S4
Captions for movies S1 to S6

Other supplementary materials for this manuscript include the following:

Movies S1 to S6

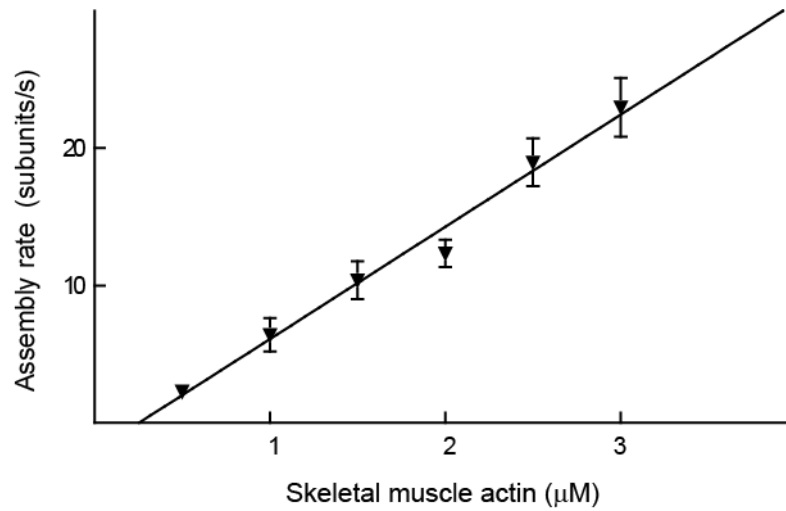


Fig. S1. Polymerization rate as a function of skeletal muscle actin concentration in the presence of actin-chromobody Emerald to visualize the filaments. Assembly rate (slope), 8.2 subunits/ $\mu\text{M}\cdot\text{s}$; disassembly rate (y-intercept 2.1 subunits/s; critical concentration, 0.25 (x-intercept) μM . See Table 1.

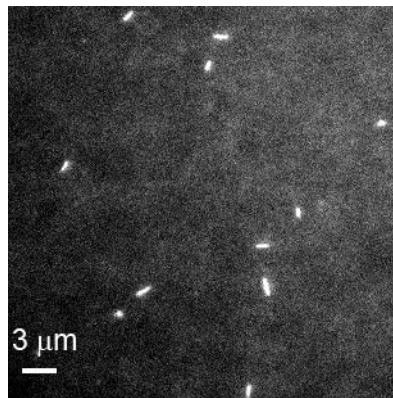


Fig. S2. 65 μM *PfAct1*-ADP forms short filaments after 3 min. Bar, 3 μm .

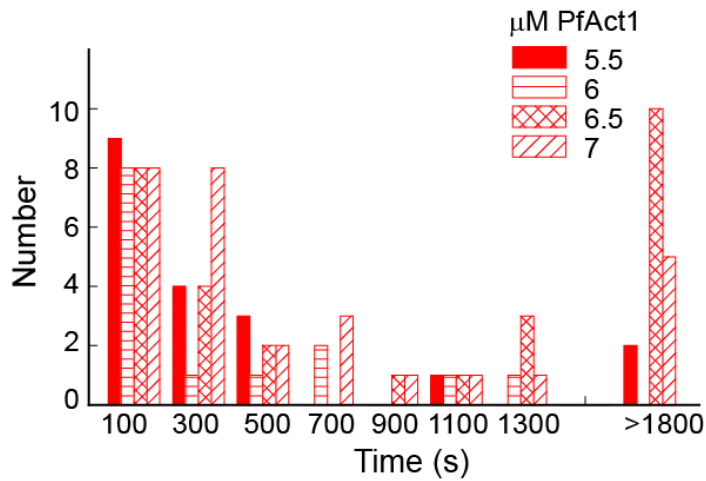


Fig. S3. The distribution of starting times at which the pointed end begins to depolymerize for 5.5-7 μM G-actin. The last bin consist of filaments that remain intact after 30 min, which varied from 10-35% of the total. Data from 2 experiments with 2 *PfAct1* preparations.

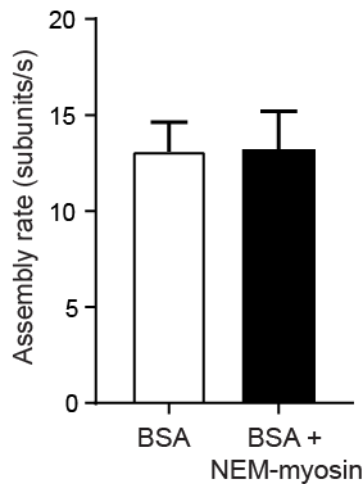
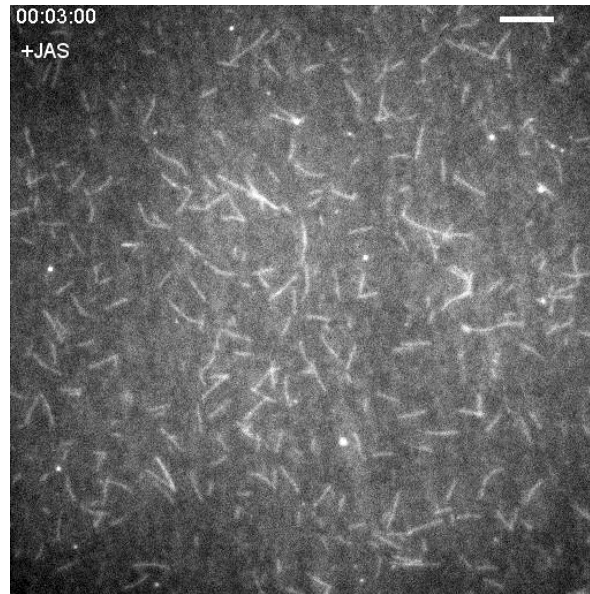
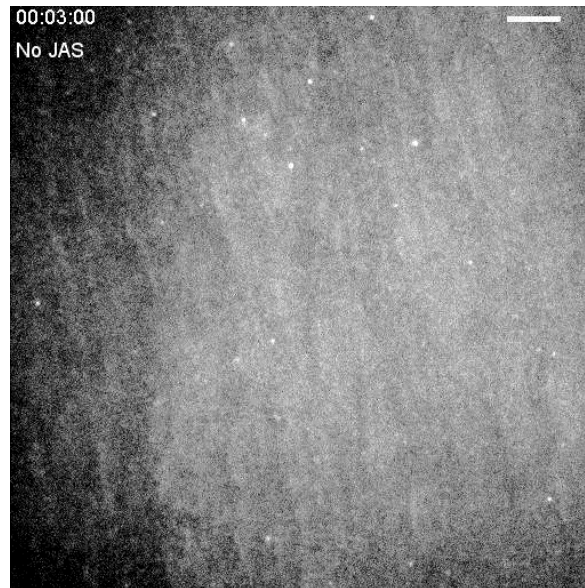


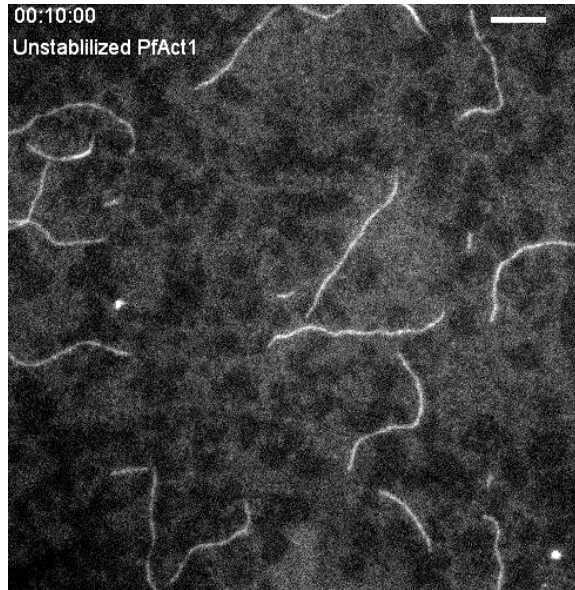
Fig. S4. *PfAct1* assembly rate on different coverslip surfaces. Rate of polymerization of 8 μM *PfAct1* on coverslips coated with 5 mg/ml BSA only versus coated first with 0.02 mg/ml NEM-myosin followed by 5 mg/ml BSA. Error bar is standard deviation.



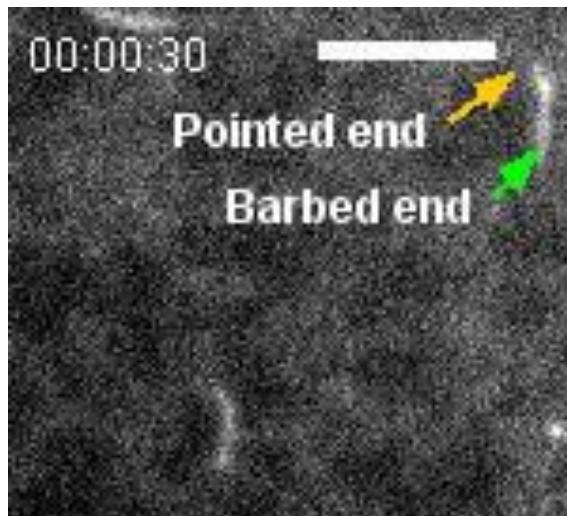
Movie S1. Polymerization of *PfAct1* in the presence of jasplakinolide (JAS). Growth of 1 μM *PfAct1* as a function of time in the presence of 2.5 μM JAS. Filaments were visualized with 0.5 μM actin-chromobody (ChromoTek). Frame rate, 20x real time; bar, 5 μm .



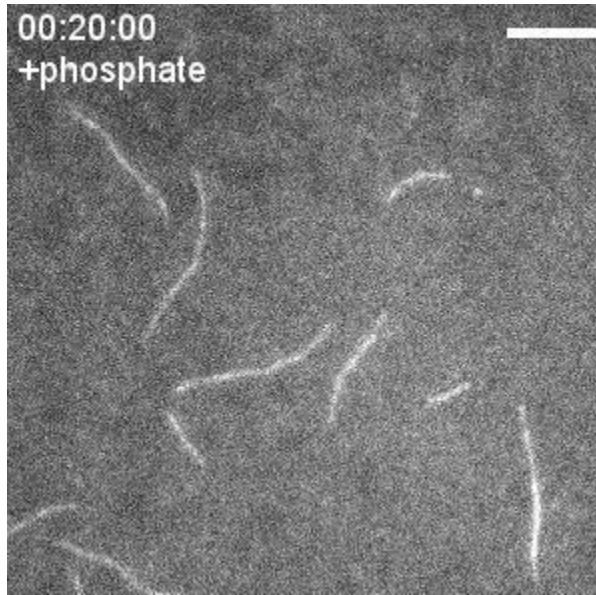
Movie S2. No polymerization of 1 μM *PfAct1* without JAS. Filaments were visualized with 0.5 μM actin-chromobody (ChromoTek). Frame rate, 20x real time; bar, 5 μm .



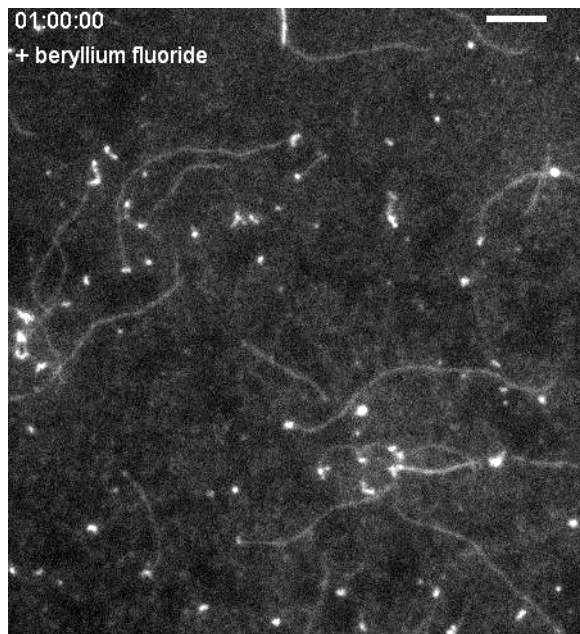
Movie S3. Polymerization of 7 μM PfAct1 without JAS. Filaments show dynamic behavior at both the barbed and pointed ends. Filaments were visualized with 0.5 μM actin-chromobody (ChromoTek). Frame rate, 120x real time; bar, 5 μm .



Movie S4. Zoom in of a few filaments from Movie S3. Filaments show dynamic behavior at both the barbed and pointed ends. Filaments were visualized with 0.5 μM actin-chromobody (ChromoTek). Frame rate, 60x real time; bar, 5 μm .



Movie S5. Polymerization of 7 μM *PfAct1* in the presence of 12.5 mM phosphate. Phosphate slows the fast pointed end kinetics. Filaments were visualized with 0.5 μM actin-chromobody (ChromoTek). Frame rate, 120x real time; bar, 5 μm .



Movie S6. Polymerization of 7 μM *PfAct1* in the presence of 2.5 mM BeF_2 . Beryllium fluoride suppresses fast depolymerization from the pointed end. Many filaments have a short bright oligomer at the pointed end. Filaments were visualized with 0.5 μM actin-chromobody (hromoTek). Frame rate, 120x real time; bar, 5 μm .