

Supporting Information

Rollins et al. 10.1073/pnas.1408071112

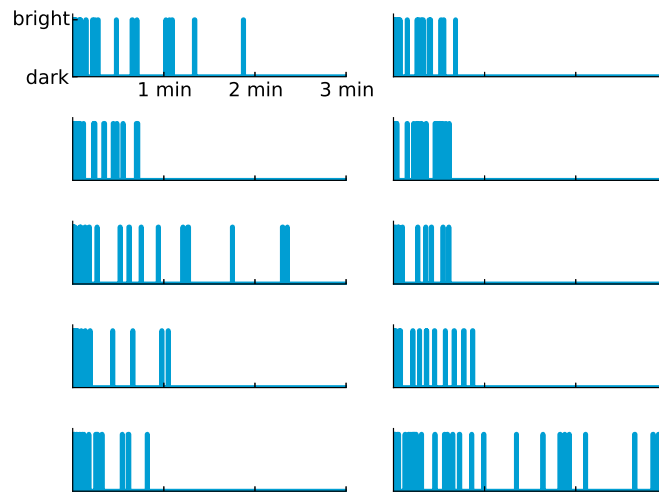


Fig. S1. Simulated time traces for a collection of PA-FPs. Sample traces from Gillespie simulations with parameters: $N=5$ and rates from data set 1.

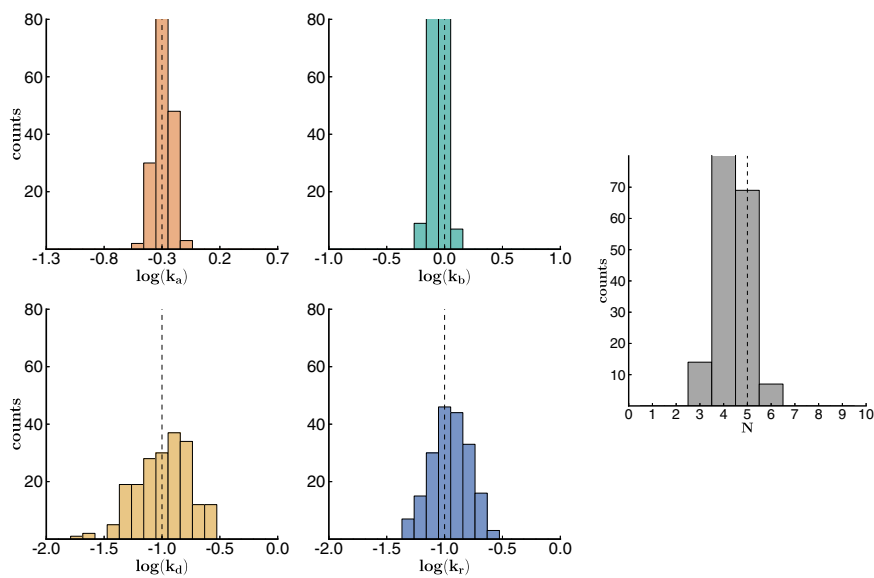


Fig. S2. Histogram of bootstrapping results from simulated data set 3. Histogram of bootstrapping results from simulated data set 3 with 200 traces (200 bootstrap iterations). The theoretically expected results are shown in the dotted line.

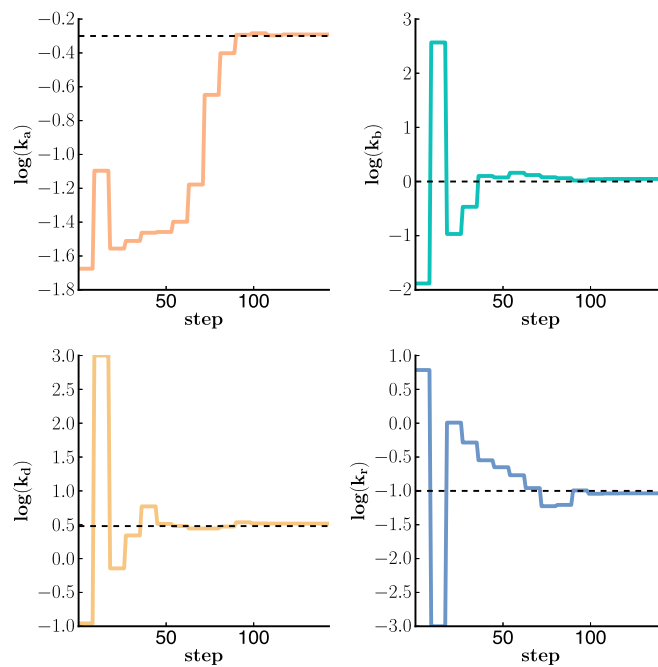


Fig. S6. Convergence of likelihood maximization of data set 1. The maximization converges close to true the parameter values. The parameters are estimated from the results of many independent maximization runs, like the one depicted here. In these runs, $N=5$. Similar plots can be generated for the other data sets.

Table S1. Macrostates for a collection with $N = 2$ PA-FPs

Macrostate	$\{I,A,D,B\}$	Aggregated class
s_1	$\{2,0,0,0\}$	Dark
s_2	$\{0,0,2,0\}$	Dark
s_3	$\{0,0,0,2\}$	Dark
s_4	$\{1,0,1,0\}$	Dark
s_5	$\{1,0,0,1\}$	Dark
s_6	$\{0,0,1,1\}$	Dark
s_7	$\{0,2,0,0\}$	Bright
s_8	$\{1,1,0,0\}$	Bright
s_9	$\{0,1,1,0\}$	Bright
s_{10}	$\{0,1,0,1\}$	Bright

Macrostates for a collection with $N=2$ PA-FPs.

Table S2. Kinetic rates of a collection of PA-FPs

Transition type	Change in population	Rate $s_i \rightarrow s_j$
Activate	$\{-1, +1, 0, 0\}$	$N_{i,i}k_a(t)$
Blink	$\{0, -1, +1, 0\}$	$N_{A,i}k_d$
Recover	$\{0, +1, -1, 0\}$	$N_{D,i}k_r$
Photobleach	$\{0, -1, 0, +1\}$	$N_{A,i}k_b$

Kinetic rates of a collection of PA-FPs.