

Supplemental Figures

Figure 1: The effect of 2 mM amrinone on *in vitro* sliding velocity and percent motile filaments at varying calcium concentrations. Dashed line represents the control condition. A) The presence of 2 mM amrinone has no significant effect on calcium sensitivity (5.77 with control, 5.90 with amrinone), or cooperativity of the thin filament (2.39 with control, 2.37 with amrinone) when measuring *in vitro* sliding velocities (see Table 2). Data were fit with by model simulations (see methods). B) At high calcium concentrations, 2 mM amrinone reduced the percent of motile filaments, however, increased motility at low calcium conditions when compared to control (see Table 1). The pCa_{50} was unchanged when compared to control (6.0 ± 0.8) and cooperativity was reduced to 2.0 ± 0.9 (2.7 ± 0.4 in control).

Figure 2: The effect of 4 mM amrinone on *in vitro* sliding velocity and percent motile filaments at varying calcium concentrations. Dashed line represents the control condition. A) The presence of 4 mM amrinone has significant effect on calcium sensitivity (5.77 with control, 6.40 with amrinone), and cooperativity of the thin filament (2.39 with control, 1.60 with amrinone) when measuring *in vitro* sliding velocities (see Table 2). Data were fit with by model simulations (see methods). B) At high calcium concentrations, 4 mM amrinone reduced the percent of motile filaments, however, increased motility at low calcium conditions when compared to control (see Table 1). The pCa_{50} was increased to 6.5 ± 0.1 when compared to control (6.03 ± 0.04) and cooperativity was reduced to 2.0 ± 0.4 (2.7 ± 0.4 in control).

Figure 3: The effect of 60 mM sucrose on *in vitro* sliding velocity and percent motile filaments at varying calcium concentrations. Dashed line represents the control condition. A) The presence of 60 mM sucrose has significant effect on calcium sensitivity (5.77 with control, 5.59 with sucrose), and cooperativity of the thin filament (2.39 with control, 1.45 with sucrose) when measuring *in vitro* sliding velocities (see Table 2). Data were fit with by model simulations (see methods). B) 60 mM sucrose reduced the percent of motile filaments, when compared to control (see Table 1). The pCa_{50} was unchanged (6.1 ± 0.1) when compared to control (6.0 ± 0.8) and cooperativity was reduced to 2.0 ± 0.9 (2.7 ± 0.4 in control).

Figure 4: The effect of 120 mM sucrose on *in vitro* sliding velocity and percent motile filaments at varying calcium concentrations. Dashed line represents the control condition. A) The presence of 120 mM sucrose has significant effect on calcium sensitivity (5.77 with control, 5.22 with sucrose), and cooperativity of the thin filament (2.39 with control, 1.07 with sucrose) when measuring *in vitro* sliding velocities (see Table 2). Data were fit with by model simulations (see methods). B) 120 mM sucrose slightly reduced the percent of motile filaments, when compared to control (see Table 1). The pCa_{50} was decreased to 5.9 ± 0.4 when compared to control (6.0 ± 0.8) and cooperativity was reduced to 1.3 ± 0.4 (2.7 ± 0.4 in control).

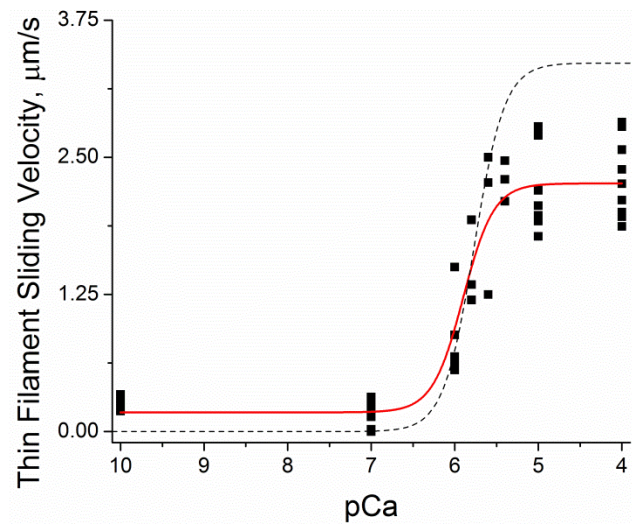
Figure 5: The effect of 120 mM sucrose and 4 mM amrinone on *in vitro* sliding velocity and percent motile filaments at varying calcium concentrations. Dashed line represents the control condition. A) The presence of 120 mM sucrose and 4 mM amrinone recovered calcium sensitivity (5.77 with control, 5.66 with sucrose and amrinone), and cooperativity of the thin filament (2.39 with control, 3.13 with sucrose and amrinone) when measuring *in vitro* sliding

velocities (see Table 2). Data were fit with by model simulations (see methods). B) 120 mM sucrose and 4 mM amrinone reduced the percent of motile filaments, when compared to control (see Table 1). The pCa_{50} was recovered to 5.90 ± 0.06 when compared to control (6.0 ± 0.8) and cooperativity was recovered to 3.0 ± 0.8 (2.7 ± 0.4 in control).

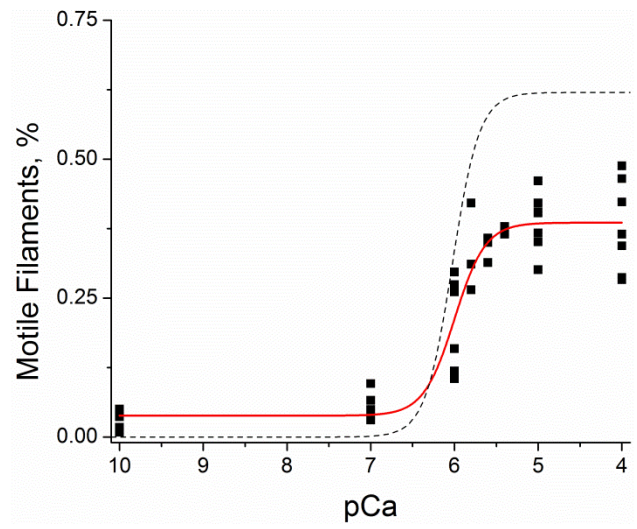
Figure 6: The effect of reduced myosin surface density and 4mM amrinone on *in vitro* sliding velocity and percent motile filaments at varying calcium concentrations. Dashed line represents the control condition. A) At low myosin density (25 $\mu\text{g/mL}$), the presence of 4 mM amrinone recovered calcium sensitivity (5.77 with control, 5.62 with amrinone), and cooperativity of the thin filament (2.39 with control, 3.42 with amrinone) when measuring *in vitro* sliding velocities (see Table 2). Data were fit with by model simulations (see methods). B) Reduced myosin density and 4 mM amrinone reduced the percent of motile filaments, when compared to control (see Table 1). The pCa_{50} was recovered to 5.9 ± 0.1 when compared to control (6.0 ± 0.8) and cooperativity was recovered to 3.4 ± 1.4 (2.7 ± 0.4 in control).

Supplemental Figure 1

A)

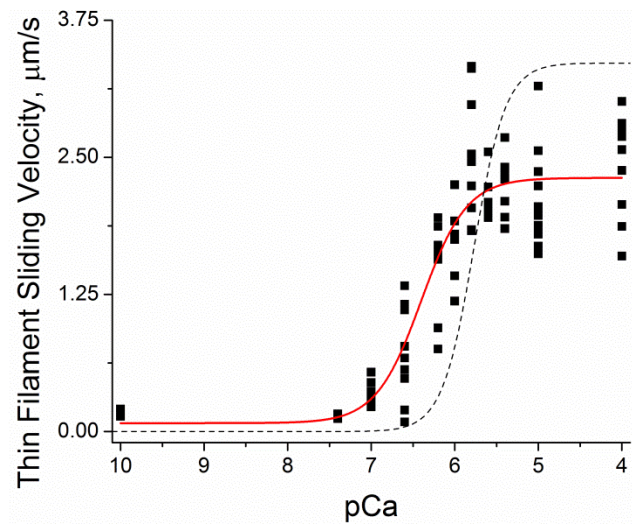


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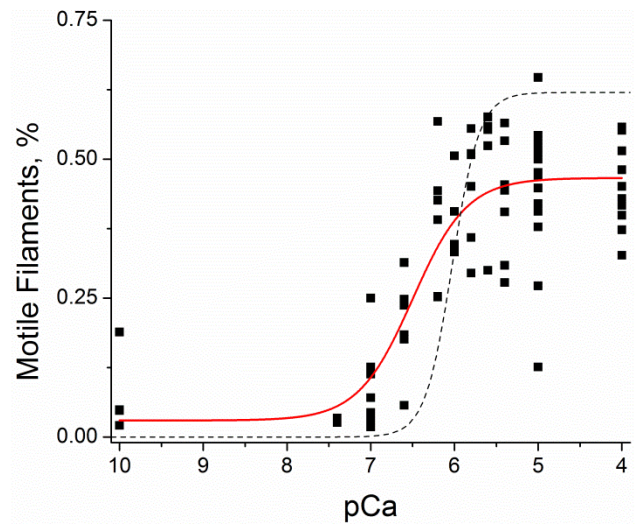


Supplemental Figure 2

A)

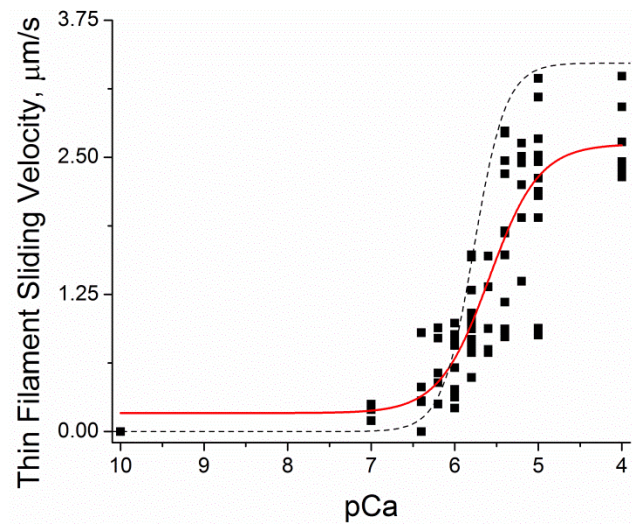


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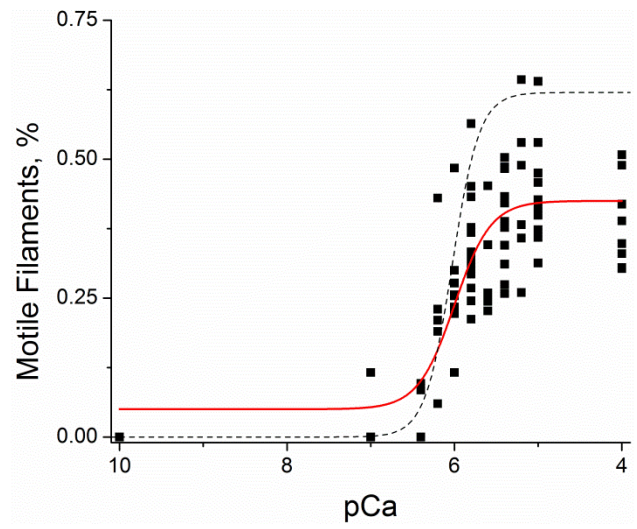


Supplemental Figure 3

A)

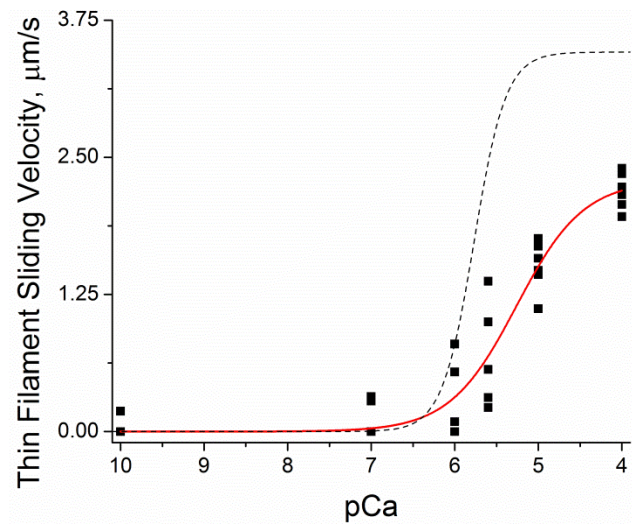


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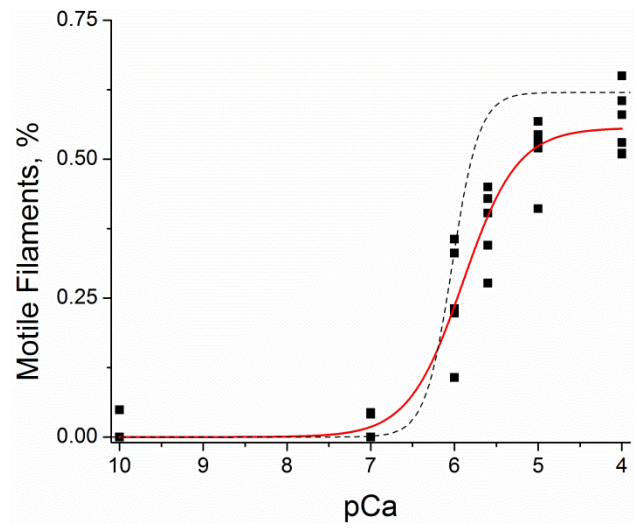


Supplemental Figure 4

A)

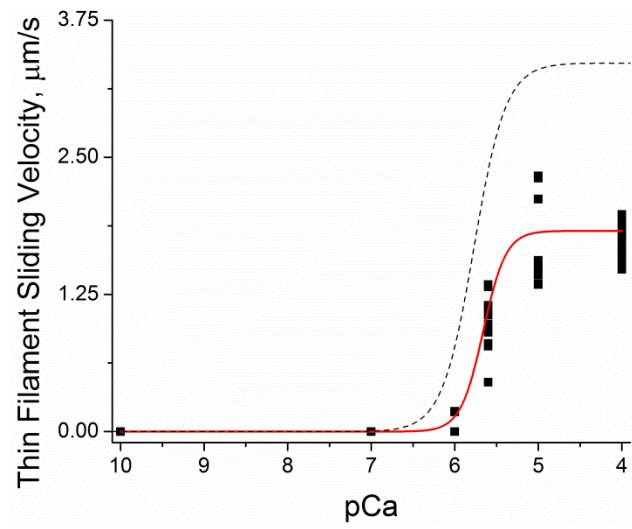


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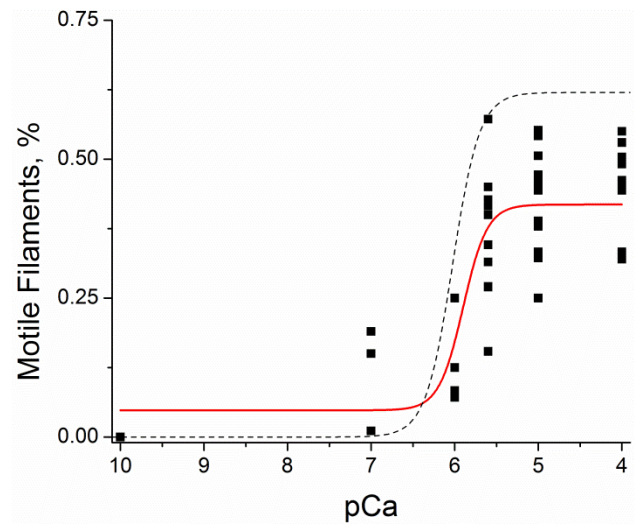


Supplemental Figure 5

A)

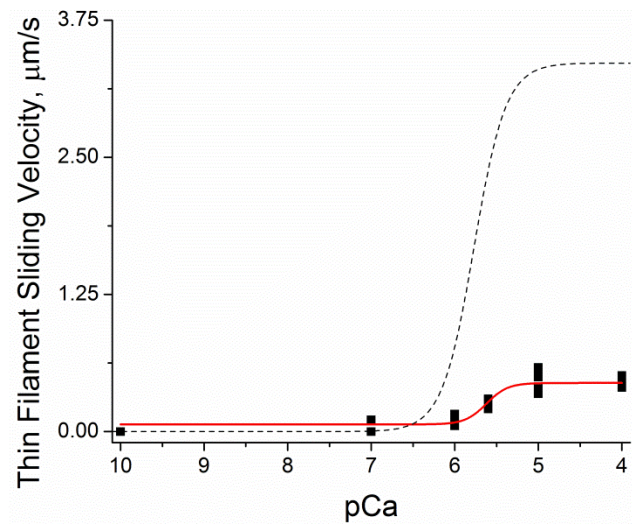


B)



Supplemental Figure 6

A)



B)

