

## Description of Additional Supplementary Files

1  
2 File name: Supplementary Movie 1

3 Description: Gliding GFP-actin expressing cell imaged by TIRF microscopy. Movie show  
4 composites of GFP and chloroplast channels (upper panel), and registered movies of only the GFP  
5 channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

6 File name: Supplementary Movie 2

7 Description: A stationary GFP-actin expressing cell imaged by TIRF microscopy. Movie show  
8 composites of GFP and chloroplast channels (upper panel), and registered movies of only the GFP  
9 channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

10 File name: Supplementary Movie 3

11 Description: Example of a CaMyo51A-GFP expressing cell exhibiting smooth, sustained gliding  
12 imaged by TIRF microscopy. Movie show composites of GFP and chloroplast channels (upper  
13 panel), and registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

14 File name: Supplementary Movie 4

15 Description: Example of a CaMyo51B-GFP expressing cell exhibiting smooth, sustained gliding  
16 imaged by TIRF microscopy. Movie show composites of GFP and chloroplast channels (upper  
17 panel), and registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

18 File name: Supplementary Movie 5

19 Description: Example of a CaMyo51C-GFP expressing cell exhibiting smooth, sustained gliding  
20 imaged by TIRF microscopy. Movie show composites of GFP and chloroplast channels (upper  
21 panel), and registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

22 File name: Supplementary Movie 6

23 Description: Example of a CaMyo51D-GFP expressing cell exhibiting smooth, sustained gliding  
24 imaged by TIRF microscopy. Movie show composites of GFP and chloroplast channels (upper  
25 panel), and registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

26 File name: Supplementary Movie 7

27 Description: TIRF microscopy imaging of a CaMyo51A-GFP expressing cell transitioning from  
28 stationary to gliding of. Movie show composites of GFP and chloroplast channels (upper panel),  
29 and registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

30 File name: Supplementary Movie 8

31 Description: TIRF microscopy imaging of a slow moving CaMyo51A-GFP expressing cell. Movie  
32 show composites of GFP and chloroplast channels (upper panel), and registered movies of only  
33 the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

34 File name: Supplementary Movie 9

35 Description: TIRF microscopy imaging of a stationary CaMyo51A-GFP expressing cell. Movie  
36 show composites of GFP and chloroplast channels (upper panel), and registered movies of only  
37 the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

38 File name: Supplementary Movie 10

39 Description: TIRF microscopy imaging of a CaMyo51B-GFP expressing cell transitioning from  
40 stationary to gliding. Movie show composites of GFP and chloroplast channels (upper panel), and  
41 registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

42 File name: Supplementary Movie 11

43 Description: TIRF microscopy imaging of a CaMyo51B-GFP expressing cell transitioning from  
44 gliding to stationary. Movie show composites of GFP and chloroplast channels (upper panel), and  
45 registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

46 File name: Supplementary Movie 12

47 Description: TIRF microscopy imaging of reversal event of a CaMyo51B-GFP expressing cell.  
48 Movie show composites of GFP and chloroplast channels (upper panel), and registered movies of  
49 only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

50 File name: Supplementary Movie 13

51 Description: TIRF microscopy imaging of a CaMyo51C-GFP movement from the cell apices to  
52 center of cell. Movie show composites of GFP and chloroplast channels (upper panel), and  
53 registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

54 File name: Supplementary Movie 14

55 Description: TIRF microscopy imaging of CaMyo51D-GFP movement from the cell apices to  
56 center of cell. Movie show composites of GFP and chloroplast channels (upper panel), and  
57 registered movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

58 File name: Supplementary Movie 15

59 Description: TIRF microscopy imaging of CaMyo51D-GFP movement from the center to apices  
60 of cell. Movie show composites of GFP and chloroplast channels (upper panel), and registered  
61 movies of only the GFP channel data (lower panel). Scale bars: 5  $\mu\text{m}$ .

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63 File name: Supplementary Data 1

64 Description: List of the names and abbreviations of the diatom myosins used to construct the  
65 Cladogram in Supplementary Fig. 4. The databases used to retrieve the sequences are: MMTSP  
66 (<http://sampgr.org.cn/sequenceserver/>)<sup>2,3</sup> ; PLAZA  
67 ([https://bioinformatics.psb.ugent.be/plaza/versions/plaza\\_diatoms\\_01/](https://bioinformatics.psb.ugent.be/plaza/versions/plaza_diatoms_01/))<sup>4</sup>;

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69 File name: Supplementary Data 2

70 Description: Clustal Omega multiple sequence alignment of diatom myosin sequences used for the  
71 phylogenomic analysis (Supplementary Figure 7)

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73 File name: Supplementary Data 3

74 Description: Source data for the analysis of the relationship between cell velocity and intracellular  
75 GFP-tagged myosin velocities presented in Figure 4.

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