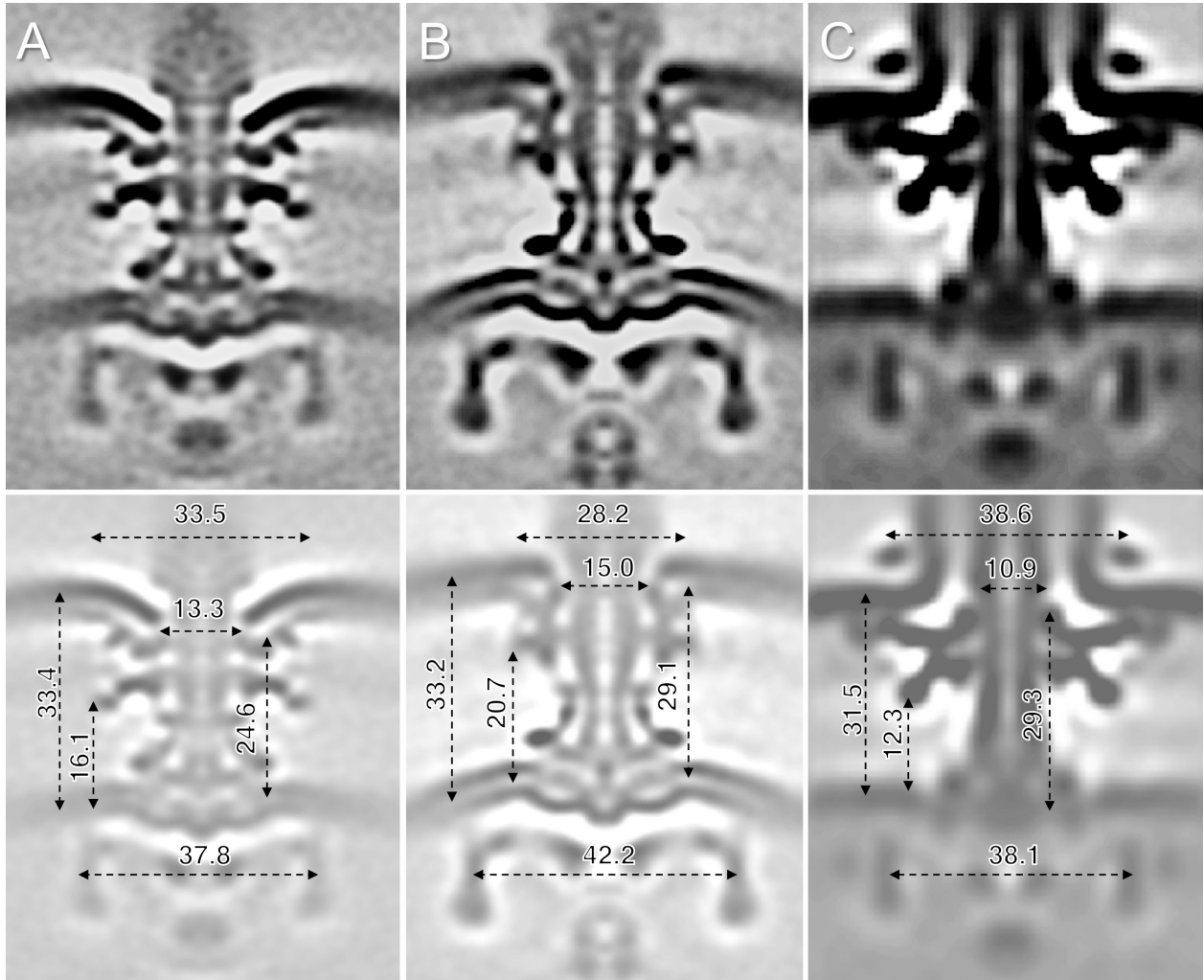


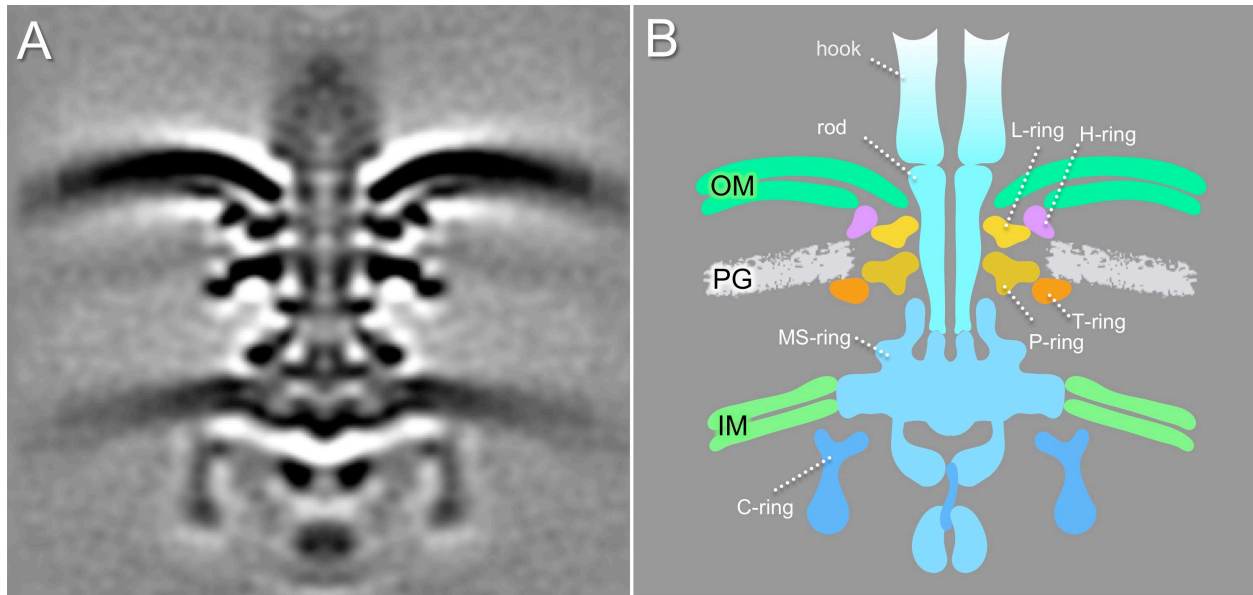
1 **Supplementary Figures and Figure legends**

2

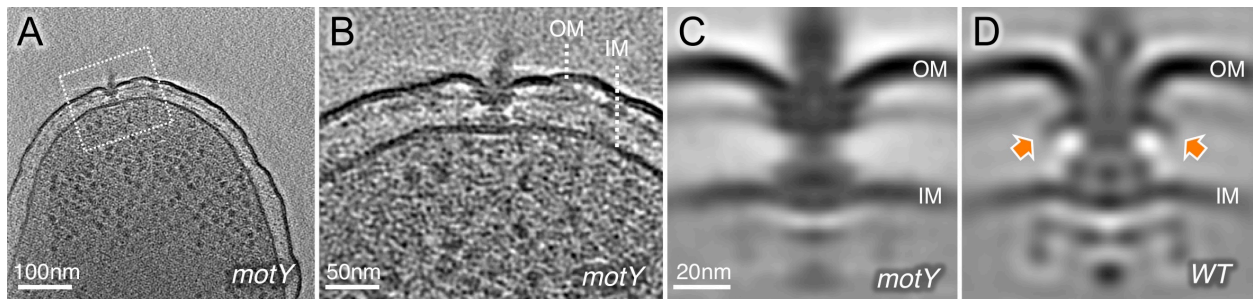


3

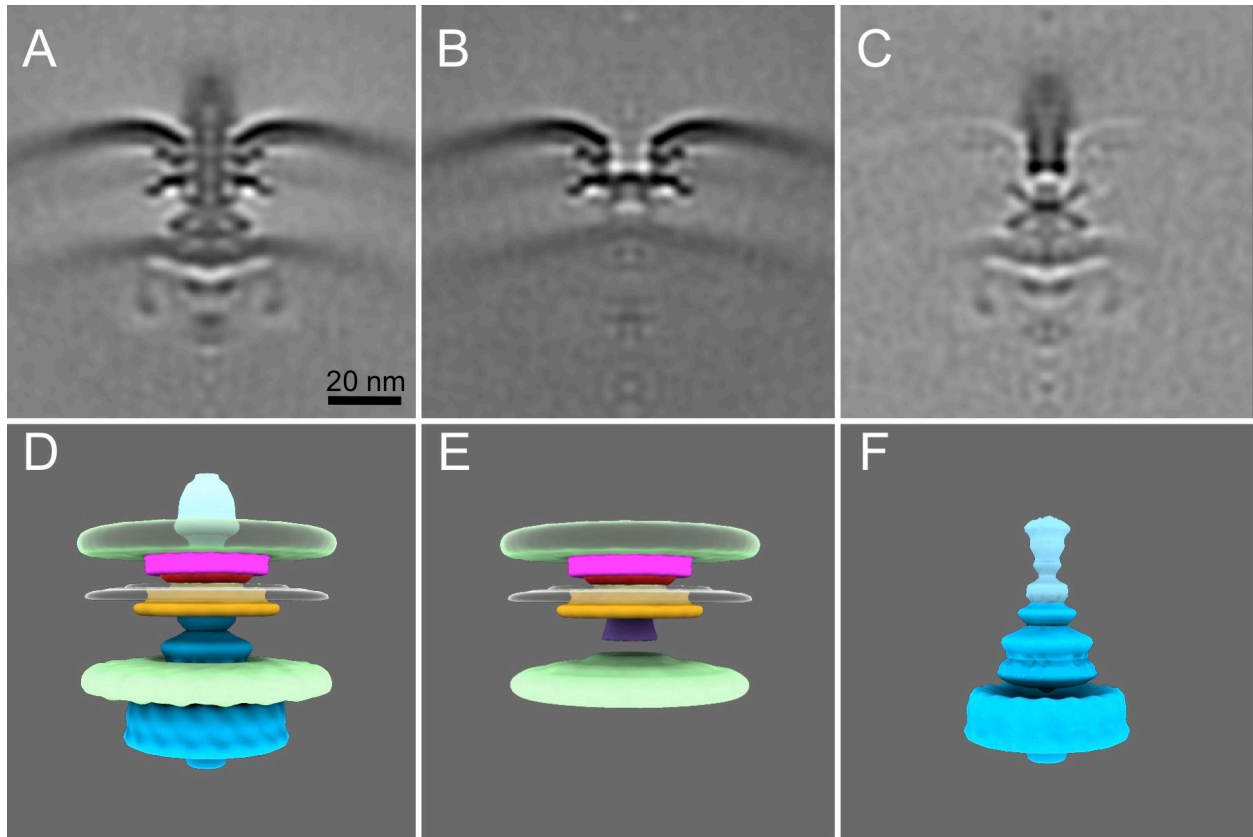
4 **Figure S1. Comparison of flagellar motors from *P. aeruginosa* (A), *S. Typhimurium* (B), *V.***
5 ***alginolyticus* (C) (31). All dimensions are reported in nanometers (nm).**



6
 7 **Figure S2. Model of flagellar motor from *P. aeruginosa*.** OM, outer membrane; PG,
 8 peptidoglycan; IM, inner membrane.



10
 11 **Figure S3. Flagellar motor structure in *P. aeruginosa* Δ *motY*.** (A) A representative slice from
 12 a tomogram of a Δ *motY* cell. (B) A zoom-in view shows the flagellar motor embedded in inner
 13 membrane (IM) and outer membrane (OM). (C) A central slice from an averaged structure of the
 14 Δ *motY* motor. (D) As a comparison, a central slice of the WT motor structure, which was low-
 15 pass filtered to 60 angstroms. Orange arrows indicate densities in the WT motor that are absent
 16 in the Δ *motY* motor.



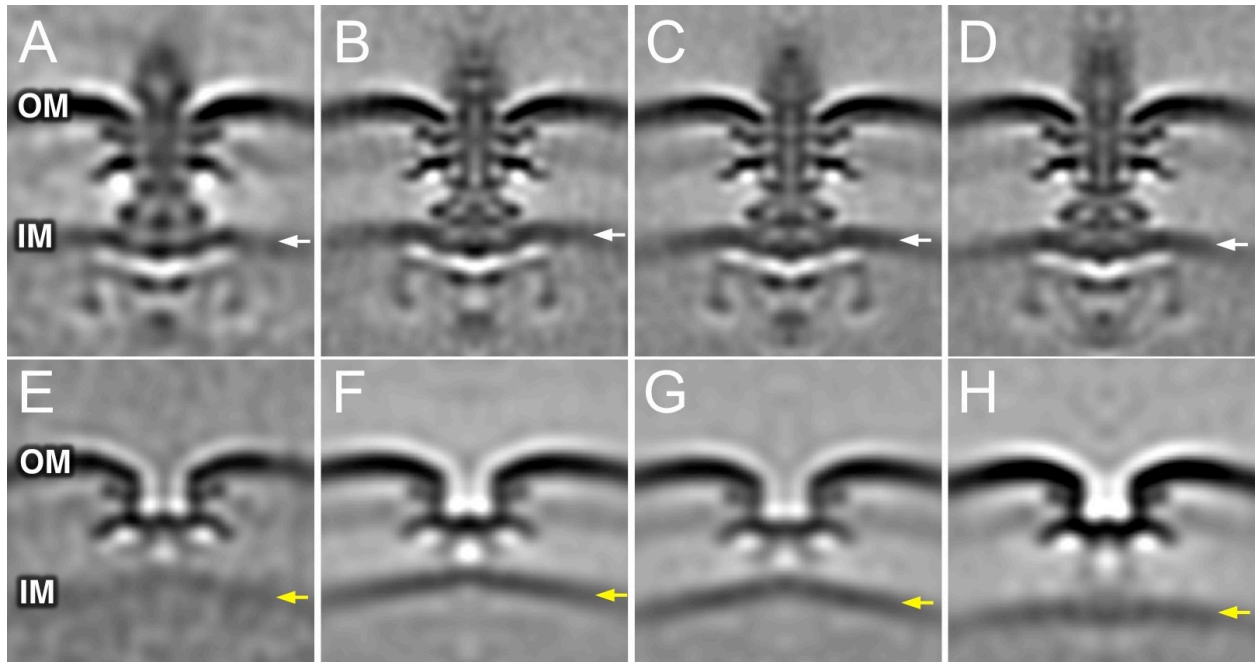
17

18 **Figure S4. Difference map between the intact motor and the FOMC in *P. aeruginosa*.** (A)

19 The intact motor structure. (B) The FOMC structure. (C) The difference map between panel (A)

20 and panel (B). (D) The surface view of the intact motor. (E) The surface view of the FOMC. (F)

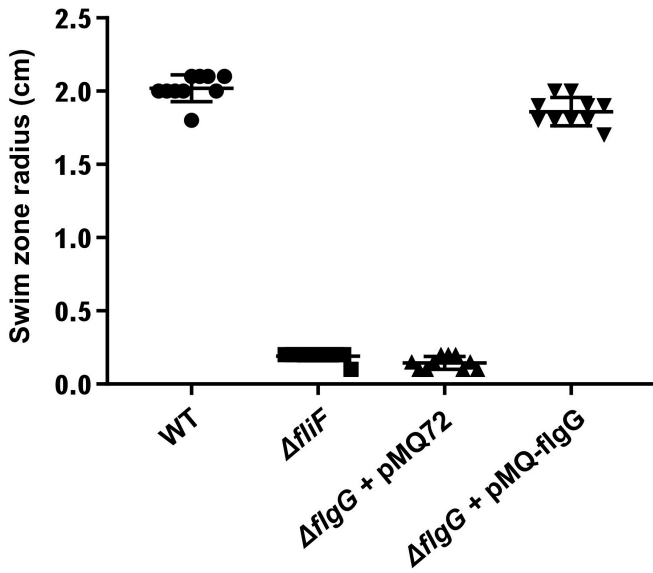
21 The surface view of the difference map.



22

23 **Figure S5. Class averages of intact flagellar motors and FOMCs in *P. aeruginosa*.** (A) A
 24 global average of the intact flagellar motors. (B-D) Three class averages of the intact flagellar
 25 motors. White arrows show the invariant position of the inner membrane. (E) A global average
 26 of the FOMCs. (F-H) Three class averages of the FOMCs show variable spacing between the L/P
 27 ring-outer membrane interface and the inner membrane (yellow arrows).

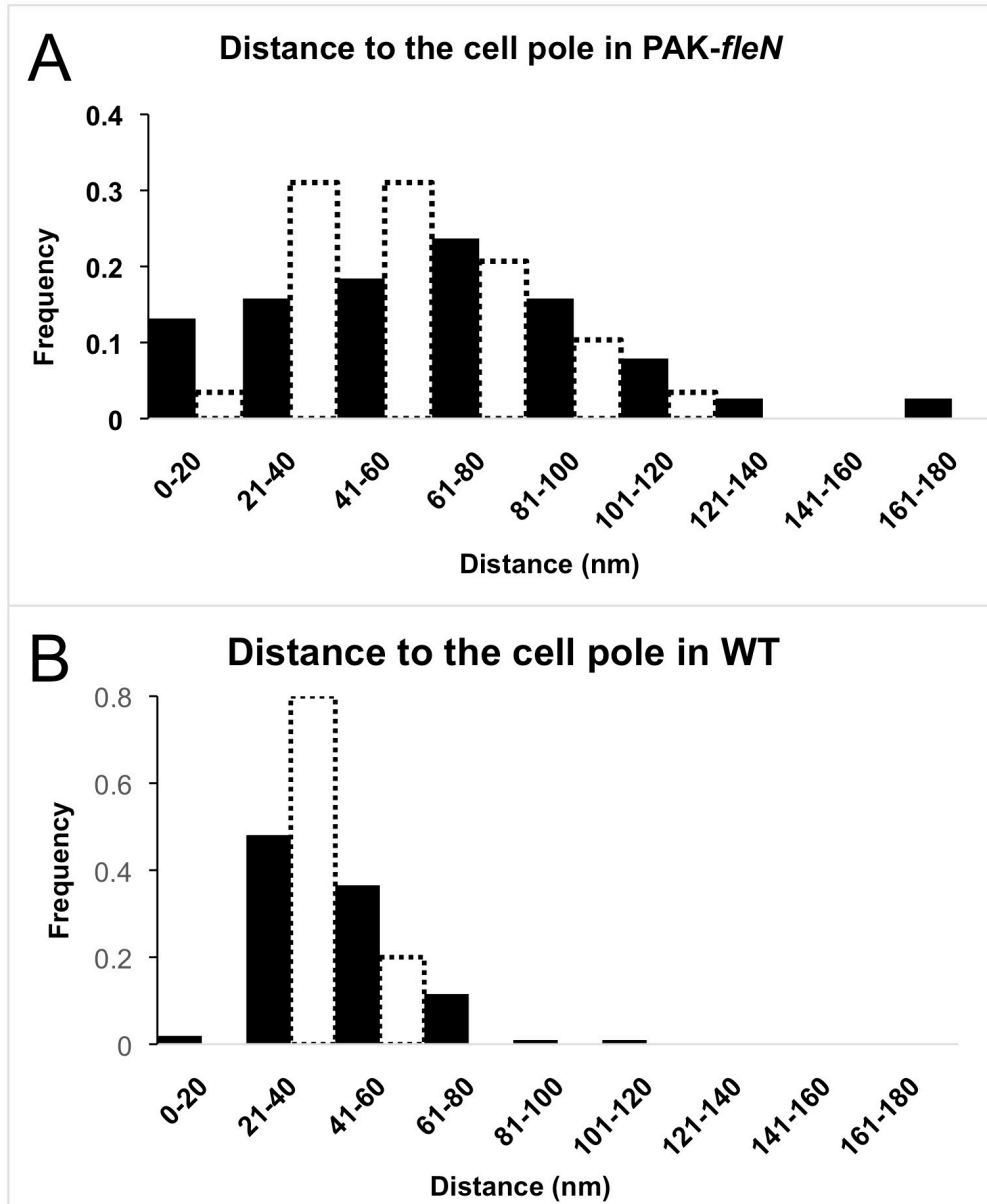
28



29

30 **Figure S6. The swimming defect of PAK Δ flgG can be complemented *in trans*.** Exponential
 31 cultures of wild-type PAK (WT) and isogenic mutants were spotted onto LB plates solidified
 32 with 0.3% agar. The swimming zone radius was measured after overnight incubation at 30°C.

33



34
 35 **Figure S7. Position of motors and of FOMCs relative to the bacterial pole.** The distance
 36 between the cell pole and individual motors and FOMCs was measured in wild-type (WT) PAK
 37 and $\Delta fleN$ (PAK-*fleN*) bacteria. Histograms show the distribution of distances for flagellar
 38 motors (black bars) and FOMCs (white bars) in $\Delta fleN$ bacteria (panel A) and WT cells (panel B).
 39