

Supplementary Figure Legends

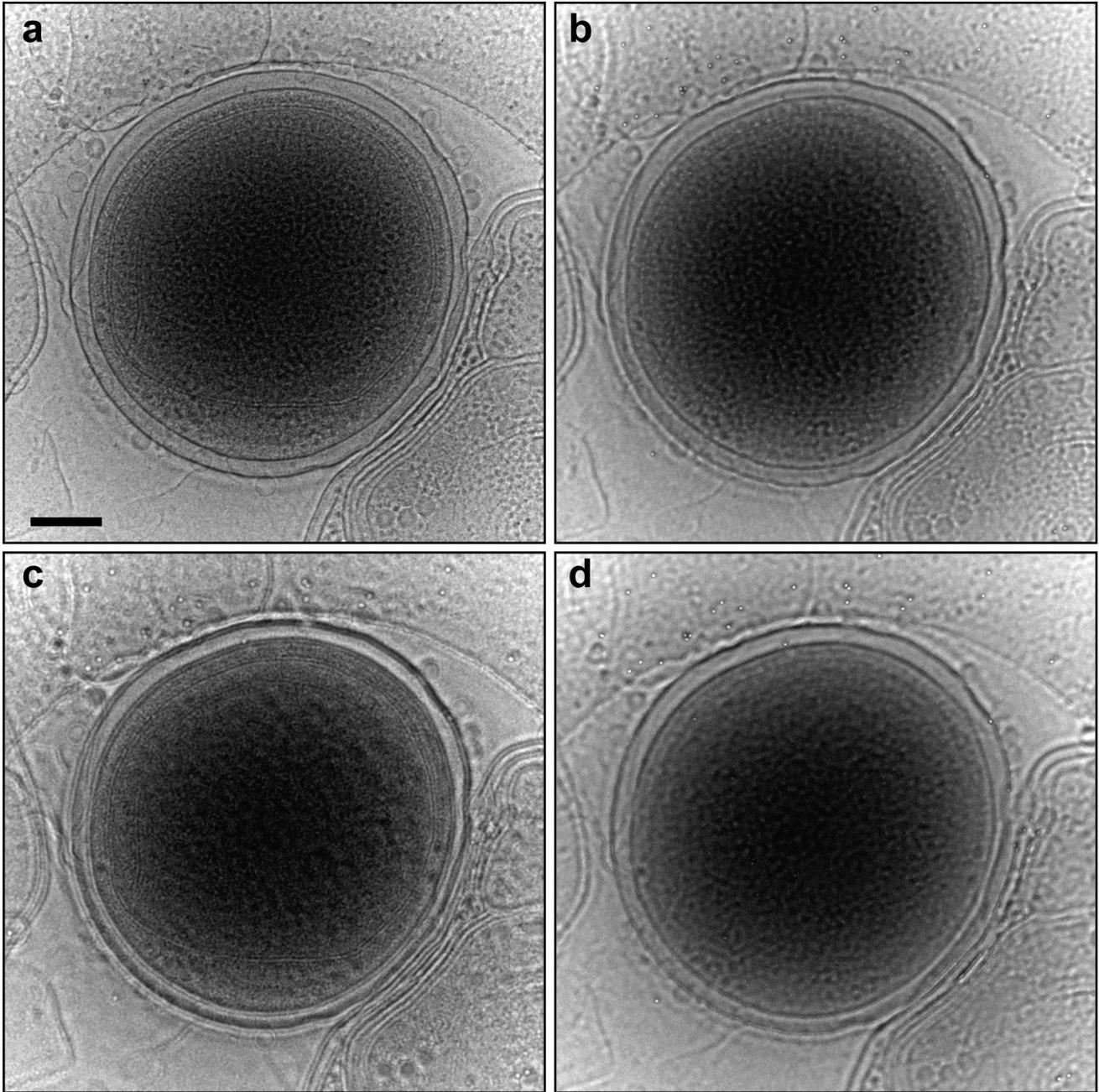
Supplementary Figure 1. ZPC cryoEM images of a Syn5-infected WH8109 cell

taken from good and charging phase plates. All four images are taken under the same conditions at 25,000x magnification and $1.3 \text{ e}^-/\text{\AA}^2$ exposure. **(a)** Image from a good phase plate. **(b–d)** Images from phase plates suffering from various amounts of charging. Scale bar: 200 nm.

Supplementary Figure 2. Screenshot of PPCont program for phase plate mapping and evaluation. The good phase plates are reported in green, the possibly usable ones in orange, and the charging or otherwise unusable ones in pink.

Supplementary Figure 3. Diagram of low-dose setup for ZPC cryoET and the relative positions of the phase plate, Photo mode, and Focus mode in Search view.

Supplementary Figure 4. Flowchart of symmetry axis search procedure. A symmetry axis search algorithm is used to determine if individual phage progeny particles have icosahedral symmetry and to align the particles to their icosahedral symmetry axes if symmetry is identified (Step 45).



ZPC cryoEM images of a Syn5-infected WH8109 cell taken from good and charging phase plates. All four images are taken under the same conditions at 25,000x magnification and $1.3 \text{ e}^{-}/\text{\AA}^2$ exposure. (a) Image from a good phase plate. (b–d) Images from phase plates suffering from various amounts of charging. Scale bar: 200 nm.

PPCont

X **-871** Y **-132** Phase Plate MDS
 Setting mode for Phase plate MDS

control Setting Status Ready Phase Plate MDS off

Slow Fast

Go Special Area

Y+ X+ X- Y-

Calibration SetOrigin

N..	X	Y	comment
1	-1315	1880	film position of no.1
2	-556	1758	film position of no.2
3	442	1648	film position of no.3
4	1059	1523	film position of no.4
5	1880	1404	film position of no.5
6	-1523	1059	film position of no.6
7	-702	940	film position of no.7
8	131	812	film position of no.8
9	940	702	film position of no.9
10	1720	583	film position of no.10
11	-1642	238	film position of no.11
12	-785	165	film position of no.12
13	0	0	film position of no.13
14	821	-119	film position of no.14
15	1578	-209	film position of no.15
16	-1697	-470	film position of no.16
17	-940	-702	film position of no.17

Emergency STOP detail SAVE LOAD EDIT

Screenshot of PPCont program for phase plate mapping and evaluation. The good phase plates are reported in green, the possibly usable ones in orange, and the charging or otherwise unusable ones in pink.

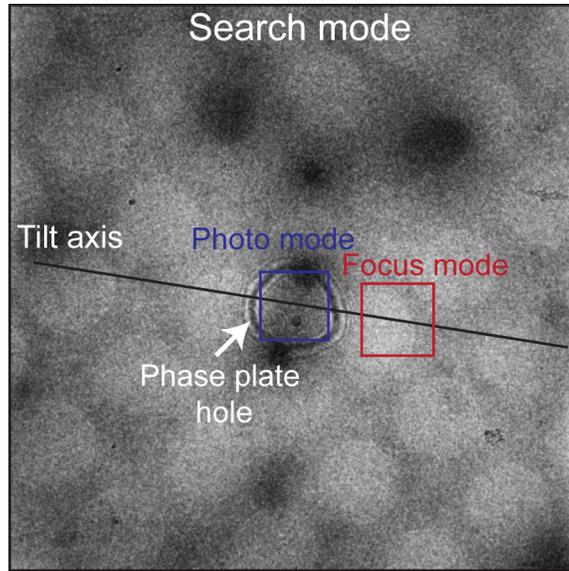
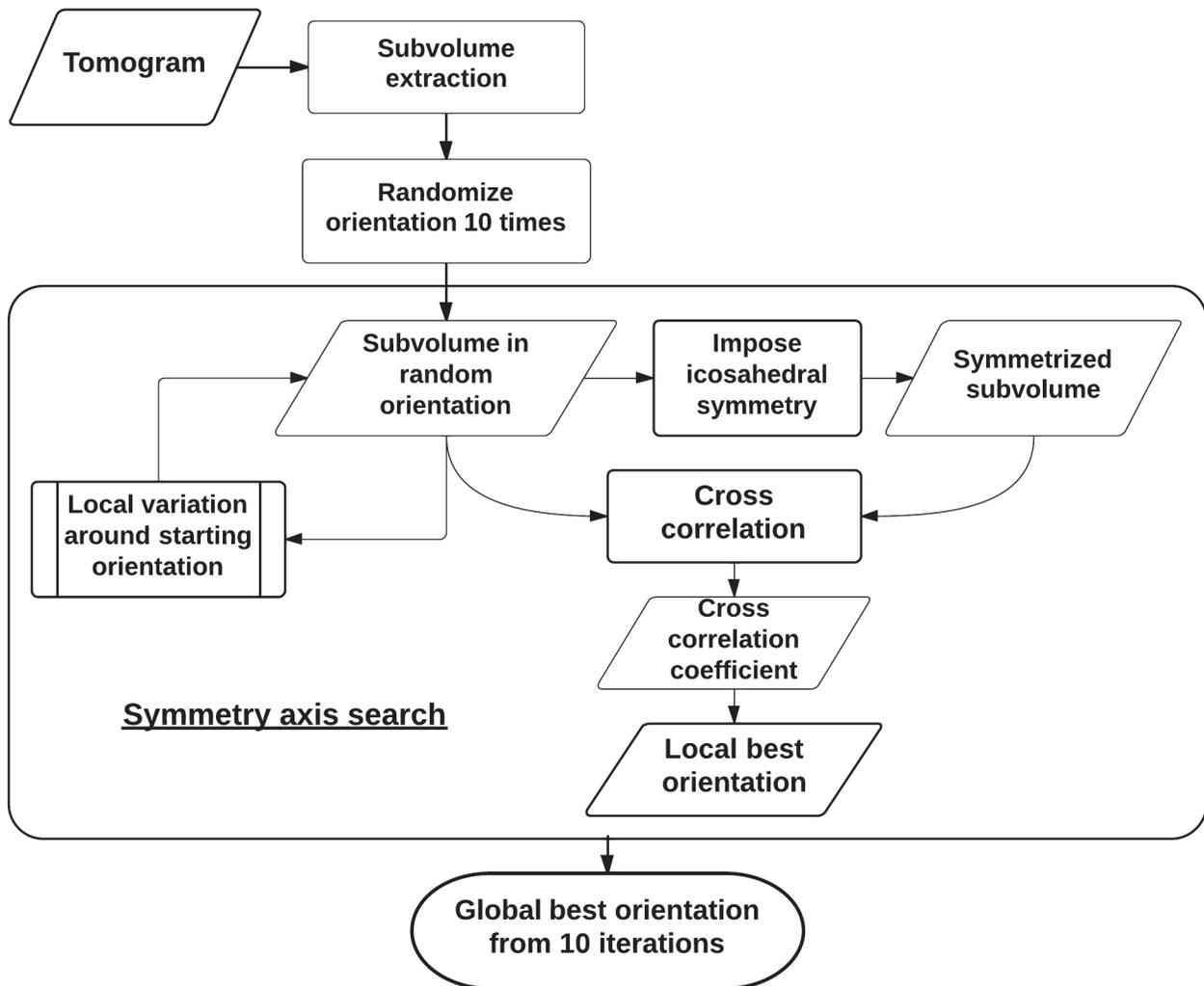


Diagram of low-dose setup for ZPC cryoET and the relative positions of the phase plate, Photo mode, and Focus mode in Search view.



Flowchart of symmetry axis search procedure. A symmetry axis search algorithm is used to determine if individual phage progeny particles have icosahedral symmetry and to align the particles to their icosahedral symmetry axes if symmetry is identified (Step 45).