A

B

C 401,889 particles selected for 3D classification

3D refinement of unbinned and recentered particles **3.6 Å**

3D refinement of polished particles

3.3 Å

3D classification

11.5% 12.8% 9.4% 9.4% 9.7% 8.5% 10.6% 11.2% 11.0% 5.8%

D

3.0
4.0
5.0
6.0
7.0
8.0

pre-1r   pre-2r   pre-1r   pre-2r

E

map to map (pre-1r)
map to model (pre-1r)
map to map (pre-2r)
map to model (pre-2r)

3.6 Å

3.6 Å

Fourier Shell Correlation

Spatial Frequency (1/Å)

F

φ=90°
φ=135°   φ=45°
φ=180°   φ=0°
φ=225°   φ=315°
φ=270°

12+

0

X
Y
Z
X
Y
Z

pre-1r

φ=90°
φ=135°   φ=45°
φ=180°   φ=0°
φ=225°   φ=315°
φ=270°

15+

0

X
Y
Z
X
Y
Z

pre-2r