WORLDWIDE PDB
PROTEIN DATA BANK

wwPDB EM Validation Summary Report ⓘ

Mar 10, 2024 – 04:31 PM EDT

PDB ID	:	6OMA
EMDB ID	:	EMD-20122
Title	:	non-decorated head of the phage T5
Authors	:	Huet, A.; Duda, R.L.; Boulanger, P.; Conway, J.F.
Deposited on	:	2019-04-18
Resolution	:	7.20 Å(reported)
Based on initial model	:	2FT1

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:
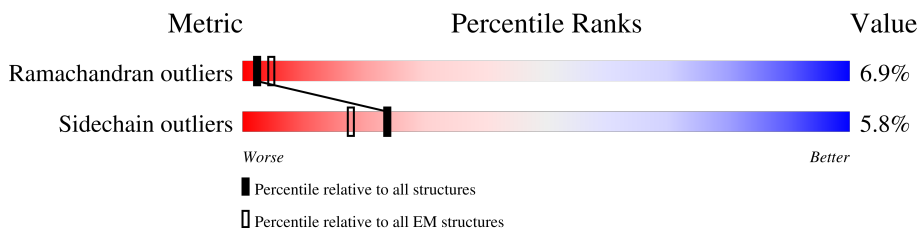
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 7.20 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Ramachandran outliers		6.9%
Sidechain outliers		5.8%

Worse   *Better*

■ Percentile relative to all structures

❏ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	299	30% / 84% / 13% / •
1	B	299	31% / 87% / 11% / •
1	C	299	31% / 84% / 13% / •
1	D	299	29% / 87% / 12% / •
1	E	299	31% / 85% / 13% / •
1	F	299	32% / 84% / 12% / •
1	G	299	42% / 87% / 11% / •
1	H	299	30% / 86% / 12% / •
1	I	299	30% / 84% / 14% / •

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	J	299	28% 87% 13%
1	K	299	39% 85% 14%
1	L	299	42% 87% 12%
1	M	299	65% 82% 14%

2   Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 60546 atoms, of which 30454 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Major capsid protein.

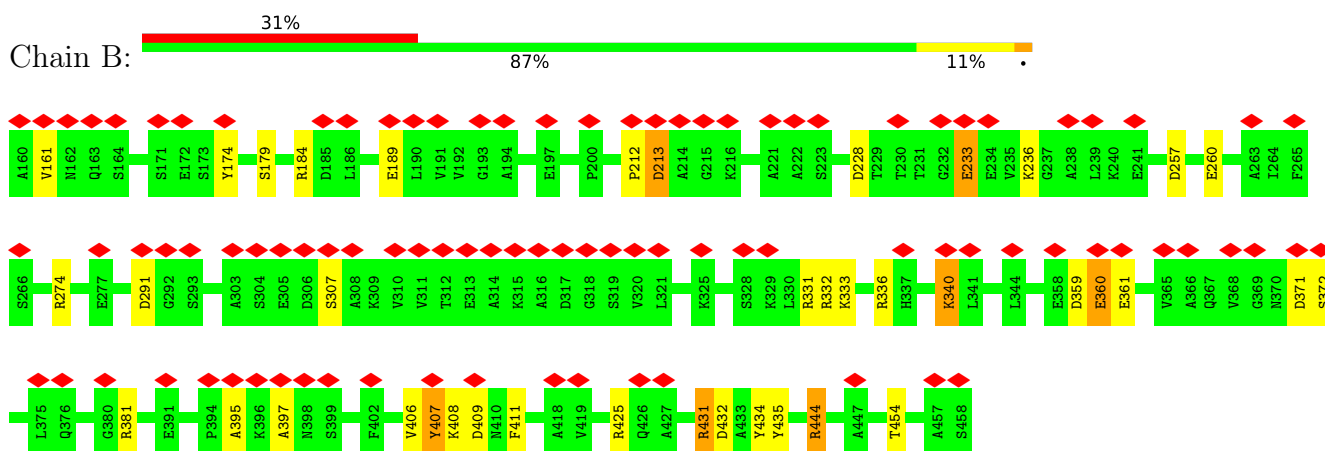| Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	B	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	C	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	D	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	E	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	F	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	G	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	H	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	I	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	J	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	K	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	L	299	Total 4662	C 1466	H 2345	N 391	O 455	S 5	0	0
1	M	295	Total 4602	C 1449	H 2314	N 385	O 449	S 5	0	0

3   Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
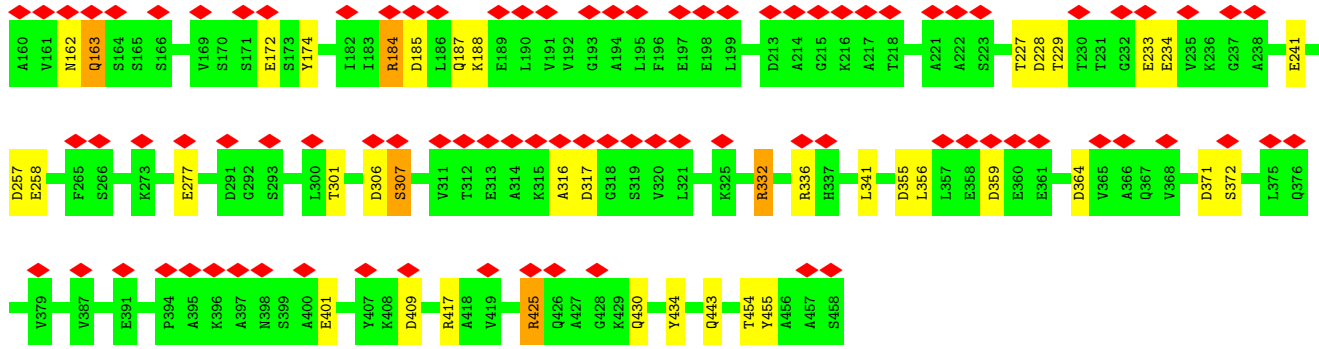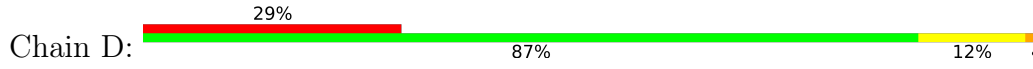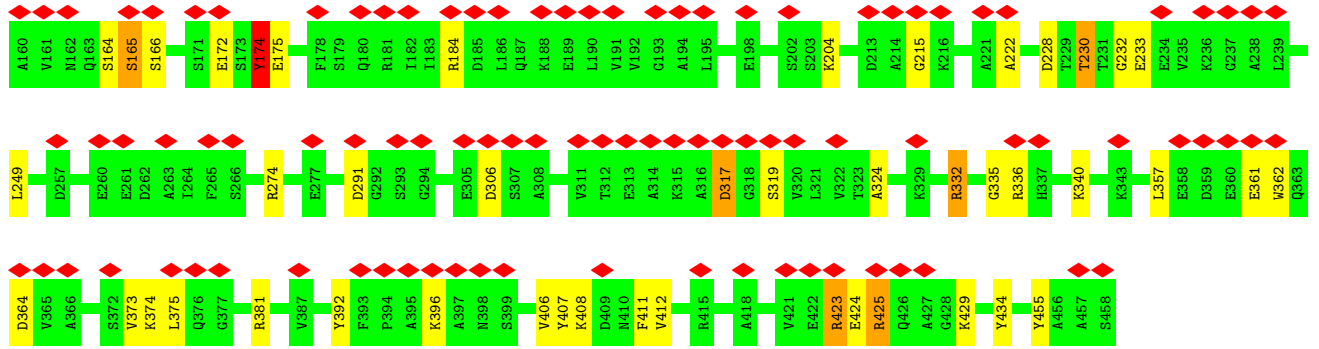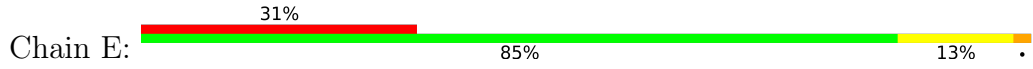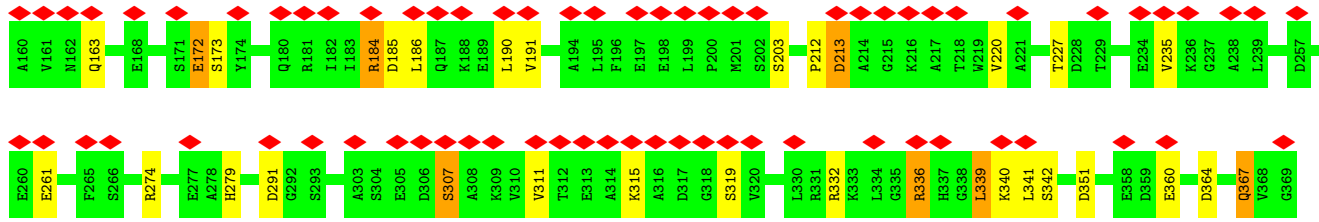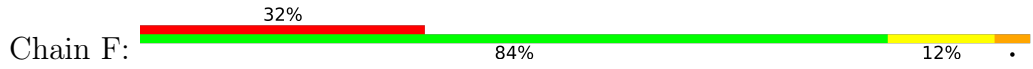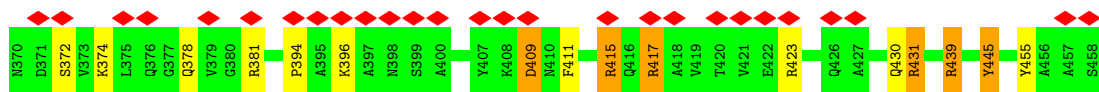
• Molecule 1: Major capsid protein

Chain A:

• Molecule 1: Major capsid protein

Chain B:

• Molecule 1: Major capsid protein

Chain C:

K273 R274 E277 D291 G292 S293 L300 A303 S304 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 V322 T323 K329 L330 R331 R332 R336 H337 G338 L339 K340 L343 L344 Y353 Y354 D355 L356 L357 E358 D359 E360 E361 W362 Q363 D364

V365 A366 Q367 V368 D371 S372 L375 Q376 G377 Q378 V387 E391 P394 A395 K396 A397 N398 S399 F402 K408 D409 R415 Q416 R417 R425 Q426 R431 Y434 T437 Q443 R444 Y445 F446 A447 N448 G449 A457 S458
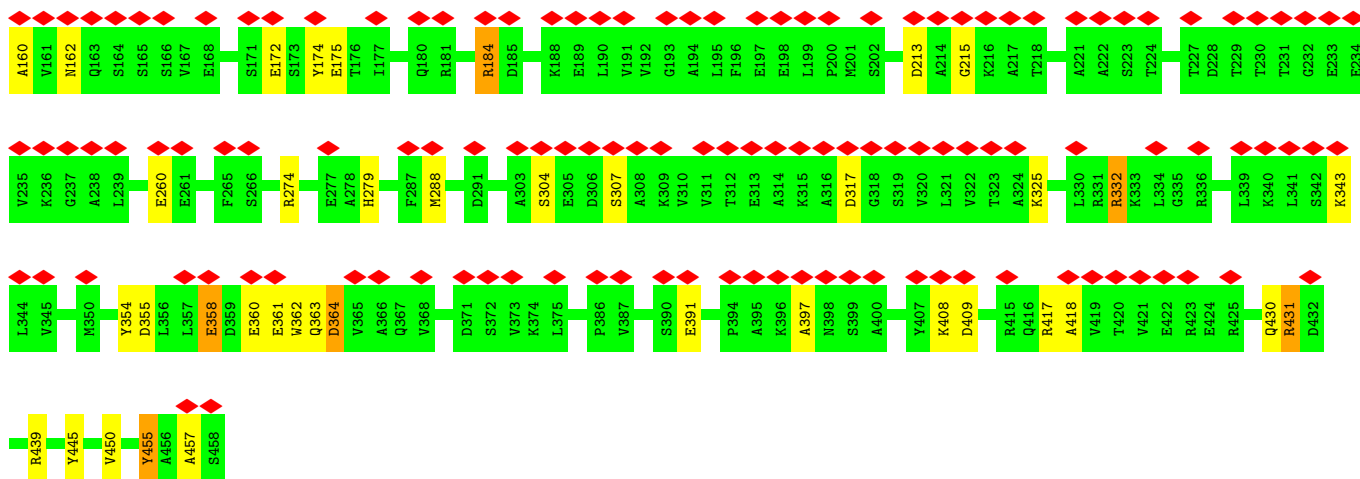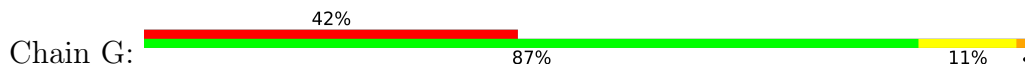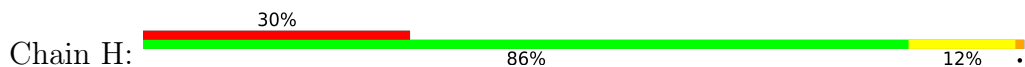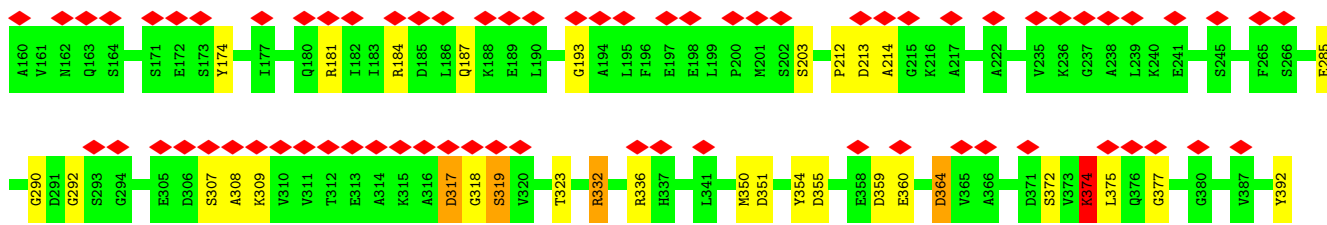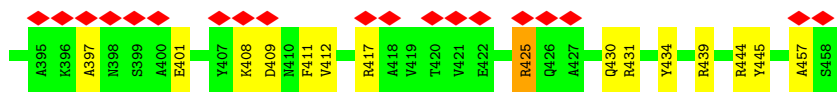
• Molecule 1: Major capsid protein

Chain D:

29%
87%   12% •

A160 V161 N162 Q163 S164 S165 S166 V169 S170 S171 E172 S173 Y174 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 V192 G193 A194 L195 F196 E197 E198 L199 D213 A214 G215 K216 A217 T218 A221 A222 S223 T227 D228 T229 T230 T231 G232 E233 E234 V235 K236 G237 A238 E241

D257 E258 F265 S266 K273 E277 D291 G292 S293 L300 T301 D306 S307 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 K325 R332 R336 H337 L341 D355 L356 L357 E358 D359 E360 E361 D364 V365 A366 Q367 V368 D371 S372 L375 Q376

V379 V387 E391 P394 A395 K396 A397 N398 S399 A400 E401 Y407 K408 D409 R417 A418 V419 R425 Q426 A427 G428 K429 Q430 Y434 Q443 T454 Y455 A456 A457 S458

• Molecule 1: Major capsid protein

Chain E:

31%
85%   13% •

A160 V161 N162 Q163 S164 S165 S166 S171 E172 S173 Y174 E175 F178 S179 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 V192 G193 A194 L195 E198 S202 S203 K204 D213 A214 G215 K216 A221 A222 D228 T229 T230 T231 G232 E233 E234 V235 K236 G237 A238 L239

L249 D257 E260 E261 D262 A263 I264 F265 S266 R274 E277 D291 G292 S293 G294 E305 D306 S307 A308 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 V322 T323 A324 K329 R332 G335 R336 H337 K340 L343 L357 E358 D359 E360 E361 W362 Q363

D364 V365 A366 S372 V373 K374 L375 Q376 G377 R381 V387 Y392 F393 P394 A395 K396 A397 N398 S399 V406 Y407 K408 D409 N410 F411 V412 R415 A418 V421 E422 R423 E424 R425 Q426 A427 G428 K429 Y434 Y455 A456 A457 S458
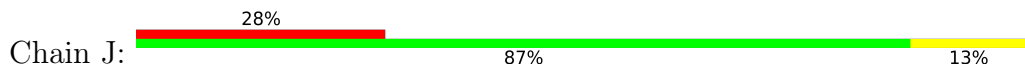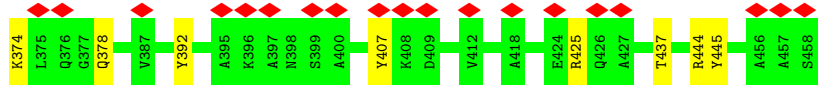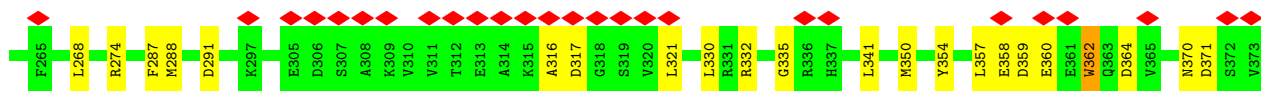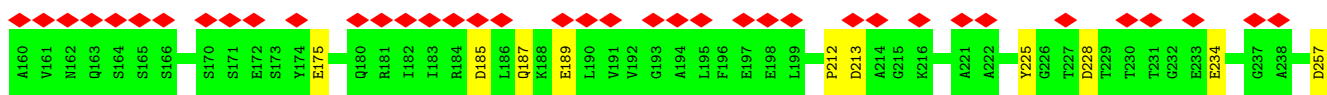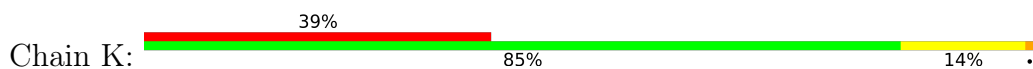
• Molecule 1: Major capsid protein

Chain F:

32%
84%   12% •

A160 V161 N162 Q163 E168 S171 E172 S173 Y174 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 A194 L195 F196 E197 E198 L199 P200 M201 S202 S203 P212 D213 A214 G215 K216 A217 T218 W219 V220 A221 T227 D228 T229 E234 V235 K236 G237 A238 L239 D257

E260 E261 F265 S266 R274 E277 A278 H279 D291 G292 S293 A303 S304 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L330 R331 R332 K333 L334 G335 H336 H337 G338 L339 K340 L341 S342 D351 E358 D359 E360 D364 Q367 V368 G369

N370 D371 S372 V373 K374 L375 Q376 G377 Q378 V379 G380 R381 P394 A395 K396 A397 N398 S399 A400 Y407 K408 D409 N410 F411 R415 Q416 R417 A418 V419 T420 V421 E422 R423 Q426 A427 Q430 R431 R439 Y445 Y455 A456 A457 S458
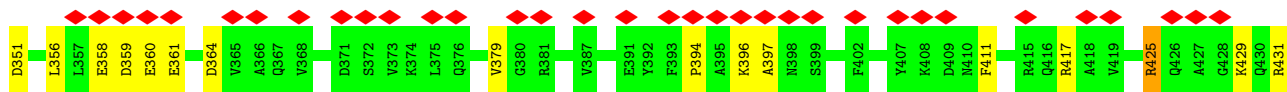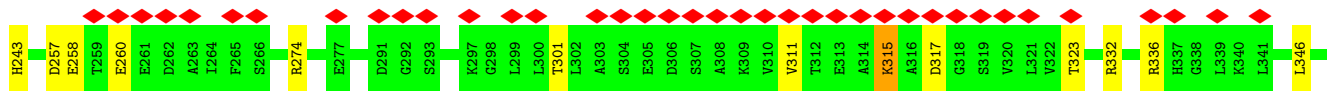
• Molecule 1: Major capsid protein

42%

Chain G:

87%   11%   •

A160 V161 N162 Q163 S164 S165 S166 V167 E168 S171 E172 S173 Y174 E175 T176 I177 Q180 R181 R184 D185 K188 E189 L190 V191 V192 G193 A194 L195 F196 E197 E198 L199 P200 M201 S202 D213 A214 G215 K216 A217 T218 A221 A222 S223 T224 T227 D228 T229 T230 T231 G232 E233 E234

V235 K236 G237 A238 L239 E260 E261 F265 S266 R274 E277 A278 H279 F287 M288 D291 A303 S304 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 V322 T323 A324 K325 L330 R331 R332 K333 L334 G335 R336 L339 K340 L341 S342 K343

L344 V345 M350 Y354 D355 L356 L357 E358 D359 E360 E361 W362 Q363 D364 V365 A366 Q367 V368 D371 S372 V373 K374 L375 P386 V387 S390 E391 P394 A395 K396 A397 N398 S399 A400 Y407 K408 D409 R415 Q416 R417 A418 V419 T420 V421 E422 R423 E424 R425 Q430 R431 D432

R439 Y445 V450 Y455 A456 A457 S458
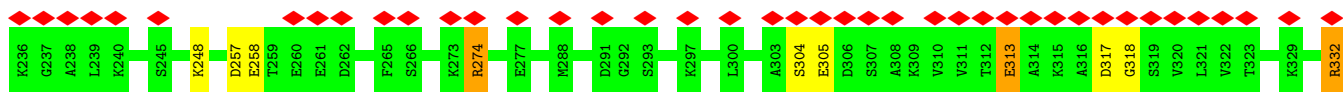
• Molecule 1: Major capsid protein

30%

Chain H:

86%   12%   •

A160 V161 N162 Q163 S164 E168 V169 S170 S171 E172 S173 Y174 E175 T176 I177 Q180 R181 R184 D185 L186 Q187 K188 E189 L190 V191 V192 G193 A194 L195 F196 E197 E198 L199 P200 M201 S202 M208 P212 D213 A214 G215 K216 A217 T218 A221 A222 G232 E233 E234 A238 D257

E260 E261 F265 S266 E277 T289 G290 D291 L300 A303 S304 E305 D306 S307 A308 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L330 R331 R332 L339 K340 K343 D351 L357 E358 D359 E360 E361 D364 V365 A366 D371 S372 V373 K374 L375 Q376

V379 E391 Y392 F393 P394 A395 K396 A397 N398 S399 A400 V404 Y407 K408 D409 N410 F411 V412 M413 P414 R415 A418 V419 T420 R423 E424 R425 Q426 A427 R431 D432 A457 S458

• Molecule 1: Major capsid protein

30%

Chain I:

84%   14%   •

A160 V161 N162 Q163 S164 S171 E172 S173 Y174 I177 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 G193 A194 L195 F196 E197 E198 L199 P200 M201 S202 S203 P212 D213 A214 G215 K216 A217 A222 V235 K236 G237 A238 L239 K240 E241 S245 F265 S266 E285

G290 D291 G292 S293 G294 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 T323 R332 R336 H337 L341 M350 D351 Y354 D355 E358 D359 E360 D364 V365 A366 D371 S372 V373 K374 L375 Q376 G377 G380 V387 Y392

A395 K396 A397 N398 S399 A400 E401 Y407 K408 D409 N410 F411 V412 R417 A418 V419 T420 V421 E422 R425 Q426 A427 Q430 R431 Y434 R439 R444 Y445 A457 S458

• Molecule 1: Major capsid protein

Chain J:

28%

87%　　　　　13%

A160 V161 N162 Q163 S164 S165 S166 S170 S171 E172 S173 Y174 E175 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 V192 G193 A194 L195 F196 E197 E198 L199 P212 D213 A214 G215 K216 A221 A222 Y225 G226 T227 D228 T229 T230 T231 G232 E233 E234 G237 A238 D257

F265 L268 R274 F287 M288 D291 K297 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 L330 R331 R332 G335 H337 L341 M350 Y354 L357 E358 D359 E360 E361 W362 Q363 D364 V365 N370 D371 S372 V373

K374 L375 Q376 G377 Q378 V387 Y392 A395 K396 A397 N398 S399 A400 Y407 K408 D409 V412 A418 E424 R425 Q426 A427 T437 R444 Y445 A456 A457 S458

• Molecule 1: Major capsid protein

Chain K:

39%

85%　　　　　14% ·

A160 V161 N162 Q163 S164 S165 S166 V167 E168 V169 S170 S171 E172 E175 T176 I177 F178 S179 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 V192 G193 A194 L195 F196 E197 E198 L199 P200 M201 S202 P212 D213 A214 G215 A221 A222 S223 V235 K236 G237 A238 L239 K240 E241 I262

H243 D257 E258 T259 E260 E261 D262 A263 I264 F265 S266 R274 E277 D291 G292 S293 K297 G298 L299 L300 T301 L302 A303 S304 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 V322 T323 R332 R336 H337 G338 L339 K340 L341 L346

D351 L356 L357 E358 D359 E360 E361 D364 V365 A366 Q367 V368 D371 S372 V373 K374 L375 Q376 V379 G380 R381 V387 E391 Y392 F393 P394 A395 K396 A397 N398 S399 F402 Y407 K408 D409 N410 F411 R415 Q416 R417 A418 V419 R425 Q426 A427 G428 K429 Q430 R431

R439 V440 N441 R444 Y445 F446 A447 N448 V451 T454 Y455 A456 A457 S458

• Molecule 1: Major capsid protein

Chain L:

42%

87%　　　　　12% ·

A160 V161 N162 Q163 E168 V169 S170 S171 E172 E175 T176 I177 F178 S179 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 A194 L195 F196 E197 E198 L199 P200 M201 E211 P212 D213 A214 G215 K216 A217 V220 A221 A222 S223 T227 D228 T229 T230 T231 G232 E233 E234 V235

K236 G237 A238 L239 K240 S245 K248 D257 E258 T259 E260 E261 D262 F265 S266 R273 R274 E277 M288 D291 G292 S293 K297 L300 A303 S304 E305 D306 S307 A308 K309 V310 V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 V322 T323 K329 R332

R336 H337 K340 L341 S342 K343 L344 A352 Y353 Y354 D355 L356 L357 E358 D359 E360 E361 D364 V365 A366 S372 V373 K374 L375 Q376 G380 R381 V387 V388 V389 S390 E391 Y392 F393 P394 A395 K396 A397 N398 S399 A400 E401 F402 Y407 K408 D409 N410 F411 V412 R415 Q416

R417 A418 V419 R425 Q426 A427 G428 R431 Y434 R444 Y445 F446 A447 N448 A457 S458

• Molecule 1: Major capsid protein

65%

Chain M:

82%   14%

ALA VAL ASN GLN S164 S165 S166 V167 E168 V169 S170 S171 E172 S173 Y174 F178 S179 Q180 R181 I182 I183 R184 D185 L186 Q187 K188 E189 L190 V191 V192 G193 A194 L195 F196 E197 E198 L199 P200 M201 S202 S203 P212 D213 A214 G215 K216 A217 T218 W219 V220 A221 A222 Y225 G226 T229

G232 E233 E234 V235 K236 G237 A238 L239 K240 E241 I242 H243 F244 S245 T246 D257 E258 E261 D262 A263 I264 F265 S266 L267 L268 L271 R272 L275 S282 I283 A286 F287 M288 T289 G290 D291 G292 S293 G294 K295 P296 K297 G298 T301 L302 A303 S304 E305 D306 S307 A308 K309 V310

V311 T312 E313 A314 K315 A316 D317 G318 S319 V320 L321 V322 T323 A324 K325 S328 R331 R332 K333 L334 G335 R336 H337 G338 L339 K340 L341 S342 K343 L344 V345 L346 I347 M350 Y353 L357 E358 D359 E360 E361 W362 Q363 A366 Q367 V368 G369 N370 D371 S372 V373 K374 L375 Q376 G377

Q378 V379 G380 R381 I382 Y383 G384 L385 P386 V389 S390 E391 Y392 F393 P394 A395 K396 A397 N398 S399 A400 E401 F402 I405 V406 Y407 K408 D409 N410 F411 V412 R415 Q416 R417 A418 V419 T420 V421 E422 R423 E424 R425 Q426 A427 G428 K429 Q430 R431 D432 A433 T437 Q438 R439 Q443 R444

Y445 F446 A447 N448 G449 V450 V451 S452 G453 T454 Y455 A456 A457 S458

4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	21233	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	30	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	22.827	Depositor
Minimum map value	-6.765	Depositor
Average map value	0.005	Depositor
Map value standard deviation	2.329	Depositor
Recommended contour level	11.0	Depositor
Map size (Å)	1052.8899, 1052.8899, 1052.8899	wwPDB
Map dimensions	499, 499, 499	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	2.11, 2.11, 2.11	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#|Z| > 5$	RMSZ	$\#|Z| > 5$
1	A	0.77	0/2352	1.21	11/3178 (0.3%)
1	B	0.76	0/2352	1.22	10/3178 (0.3%)
1	C	0.79	1/2352 (0.0%)	1.25	13/3178 (0.4%)
1	D	0.77	0/2352	1.18	3/3178 (0.1%)
1	E	0.78	0/2352	1.24	12/3178 (0.4%)
1	F	0.77	0/2352	1.28	16/3178 (0.5%)
1	G	0.77	0/2352	1.24	10/3178 (0.3%)
1	H	0.76	0/2352	1.25	10/3178 (0.3%)
1	I	0.77	0/2352	1.25	14/3178 (0.4%)
1	J	0.77	0/2352	1.22	10/3178 (0.3%)
1	K	0.78	0/2352	1.25	9/3178 (0.3%)
1	L	0.77	0/2352	1.26	10/3178 (0.3%)
1	M	0.80	0/2323	1.26	16/3138 (0.5%)
All	All	0.77	1/30547 (0.0%)	1.24	144/41274 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	10
1	B	0	6
1	C	0	12
1	D	0	6
1	E	0	9
1	F	0	9
1	G	0	6
1	H	0	5
1	I	0	9
1	J	0	5
1	K	0	5
1	L	0	6

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	M	0	5
All	All	0	93

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	362	TRP	CD2-CE2	-6.29	1.33	1.41

The worst 5 of 144 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	415	ARG	NE-CZ-NH1	-12.65	113.97	120.30
1	H	423	ARG	NE-CZ-NH2	10.09	125.34	120.30
1	I	354	TYR	CB-CG-CD2	-9.46	115.33	121.00
1	L	431	ARG	NE-CZ-NH2	9.40	125.00	120.30
1	G	332	ARG	NE-CZ-NH1	-9.19	115.71	120.30

There are no chirality outliers.

5 of 93 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	181	ARG	Sidechain
1	A	184	ARG	Sidechain
1	A	187	GLN	Peptide
1	A	370	ASN	Peptide
1	A	374	LYS	Peptide

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2317	2345	2342	0	0
1	B	2317	2345	2342	0	0
1	C	2317	2345	2342	0	0
1	D	2317	2345	2342	0	0
1	E	2317	2345	2342	0	0

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WORLDWIDE
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PROTEIN DATA BANK

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2317	2345	2342	0	0
1	G	2317	2345	2342	0	0
1	H	2317	2345	2342	0	0
1	I	2317	2345	2342	0	0
1	J	2317	2345	2342	0	0
1	K	2317	2345	2342	0	0
1	L	2317	2345	2342	0	0
1	M	2288	2314	2314	0	0
All	All	30092	30454	30418	0	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). Clashscore could not be calculated for this entry.

There are no clashes within the asymmetric unit.

There are no symmetry-related clashes.

5.3　Torsion angles　ⓘ

5.3.1　Protein backbone　ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	297/299 (99%)	233 (78%)	42 (14%)	22 (7%)	1	13
1	B	297/299 (99%)	233 (78%)	47 (16%)	17 (6%)	1	18
1	C	297/299 (99%)	231 (78%)	45 (15%)	21 (7%)	1	14
1	D	297/299 (99%)	232 (78%)	46 (16%)	19 (6%)	1	16
1	E	297/299 (99%)	221 (74%)	54 (18%)	22 (7%)	1	13
1	F	297/299 (99%)	227 (76%)	43 (14%)	27 (9%)	1	11
1	G	297/299 (99%)	237 (80%)	43 (14%)	17 (6%)	1	18
1	H	297/299 (99%)	226 (76%)	54 (18%)	17 (6%)	1	18
1	I	297/299 (99%)	226 (76%)	48 (16%)	23 (8%)	1	13
1	J	297/299 (99%)	234 (79%)	48 (16%)	15 (5%)	2	19

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	K	297/299 (99%)	229 (77%)	47 (16%)	21 (7%)	1	14
1	L	297/299 (99%)	235 (79%)	46 (16%)	16 (5%)	2	19
1	M	293/299 (98%)	222 (76%)	42 (14%)	29 (10%)	0	9
All	All	3857/3887 (99%)	2986 (77%)	605 (16%)	266 (7%)	2	15

5 of 266 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	171	SER
1	A	174	TYR
1	A	230	THR
1	A	309	LYS
1	A	364	ASP

5.3.2   Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	250/250 (100%)	235 (94%)	15 (6%)	19	44
1	B	250/250 (100%)	235 (94%)	15 (6%)	19	44
1	C	250/250 (100%)	236 (94%)	14 (6%)	21	46
1	D	250/250 (100%)	233 (93%)	17 (7%)	16	41
1	E	250/250 (100%)	236 (94%)	14 (6%)	21	46
1	F	250/250 (100%)	236 (94%)	14 (6%)	21	46
1	G	250/250 (100%)	236 (94%)	14 (6%)	21	46
1	H	250/250 (100%)	233 (93%)	17 (7%)	16	41
1	I	250/250 (100%)	238 (95%)	12 (5%)	25	50
1	J	250/250 (100%)	235 (94%)	15 (6%)	19	44
1	K	250/250 (100%)	233 (93%)	17 (7%)	16	41
1	L	250/250 (100%)	237 (95%)	13 (5%)	23	48
1	M	247/250 (99%)	235 (95%)	12 (5%)	25	50

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
All	All	3247/3250 (100%)	3058 (94%)	189 (6%)	24	45

5 of 189 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	391	GLU
1	J	370	ASN
1	H	432	ASP
1	I	401	GLU
1	K	241	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-20122. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1   Orthogonal projections ⓘ

6.1.1   Primary map

| X | Y | Z |
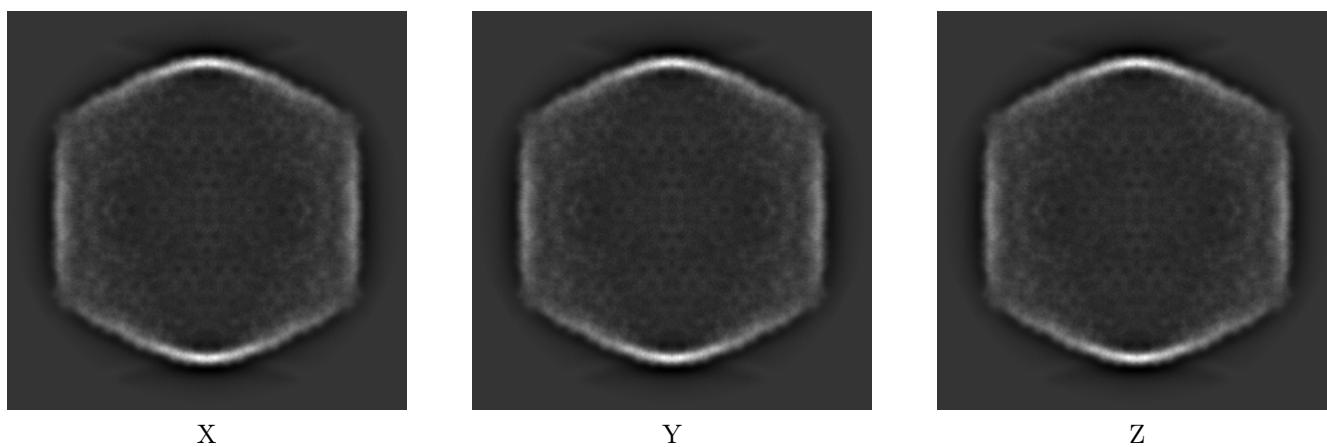
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ

6.2.1   Primary map

| X Index: 249 | Y Index: 249 | Z Index: 249 |
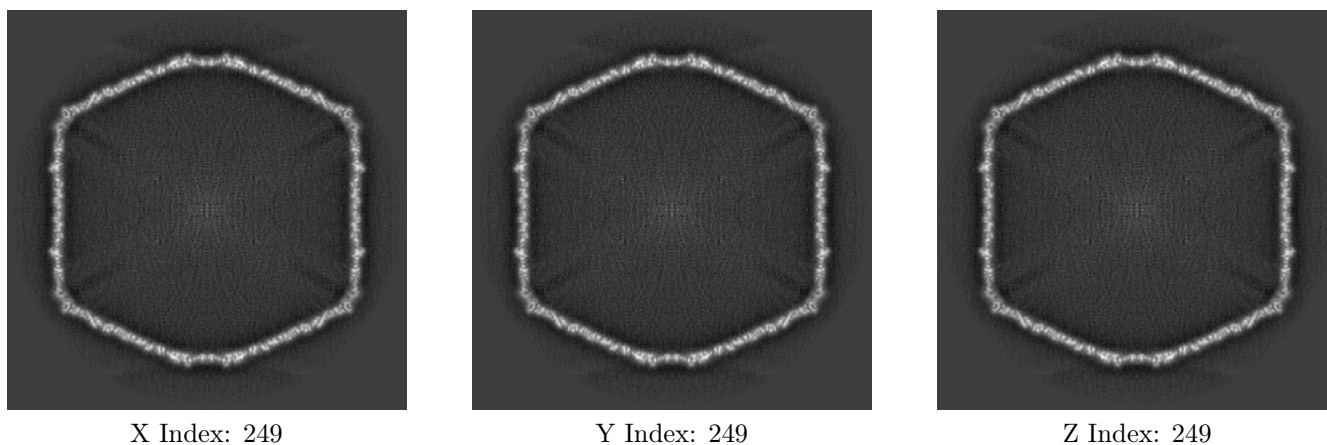
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
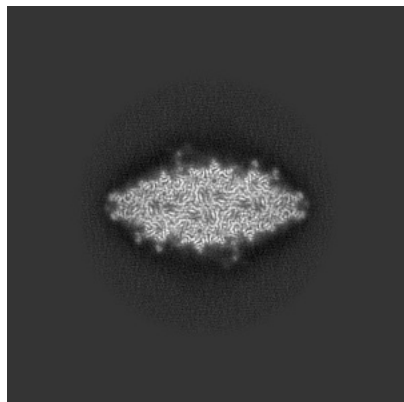
6.3.1 Primary map
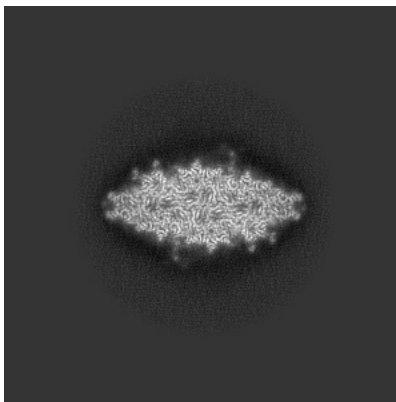
| X Index: 66 | Y Index: 432 | Z Index: 66 |
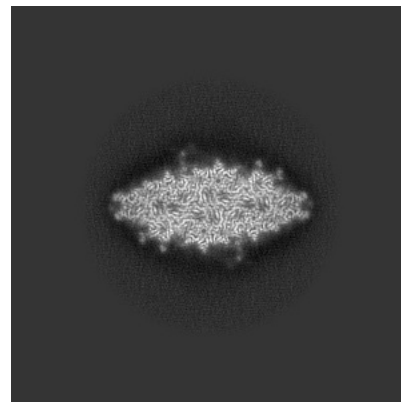
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map

| X | Y | Z |
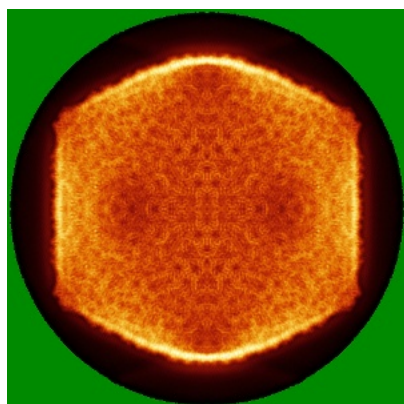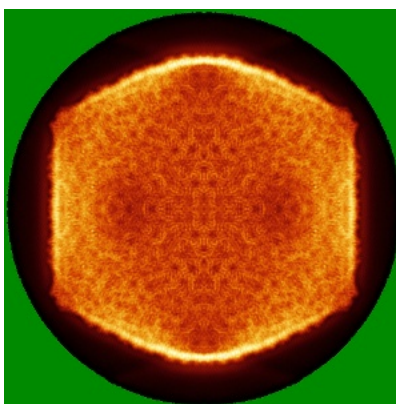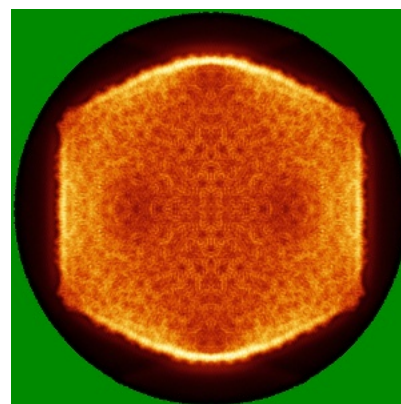
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X   Y   Z
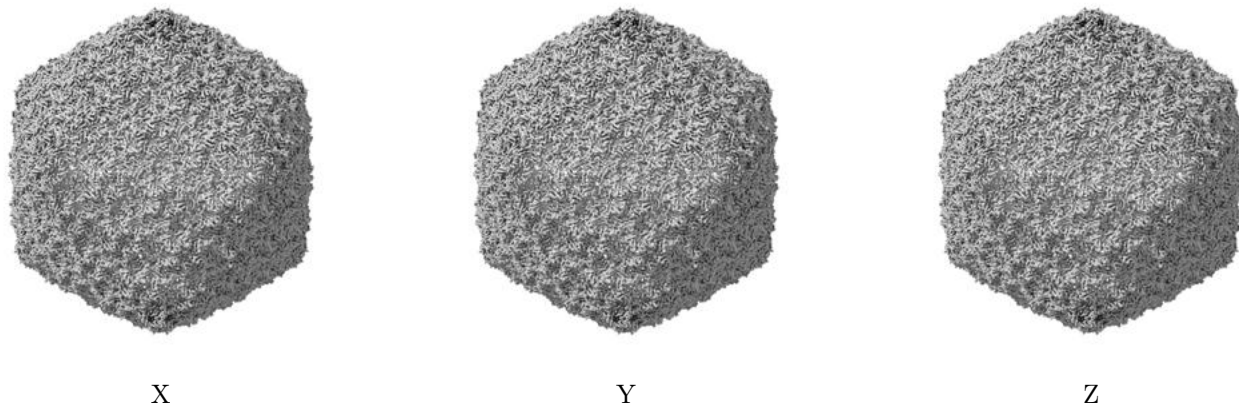
The images above show the 3D surface view of the map at the recommended contour level 11.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis ⓘ

This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ
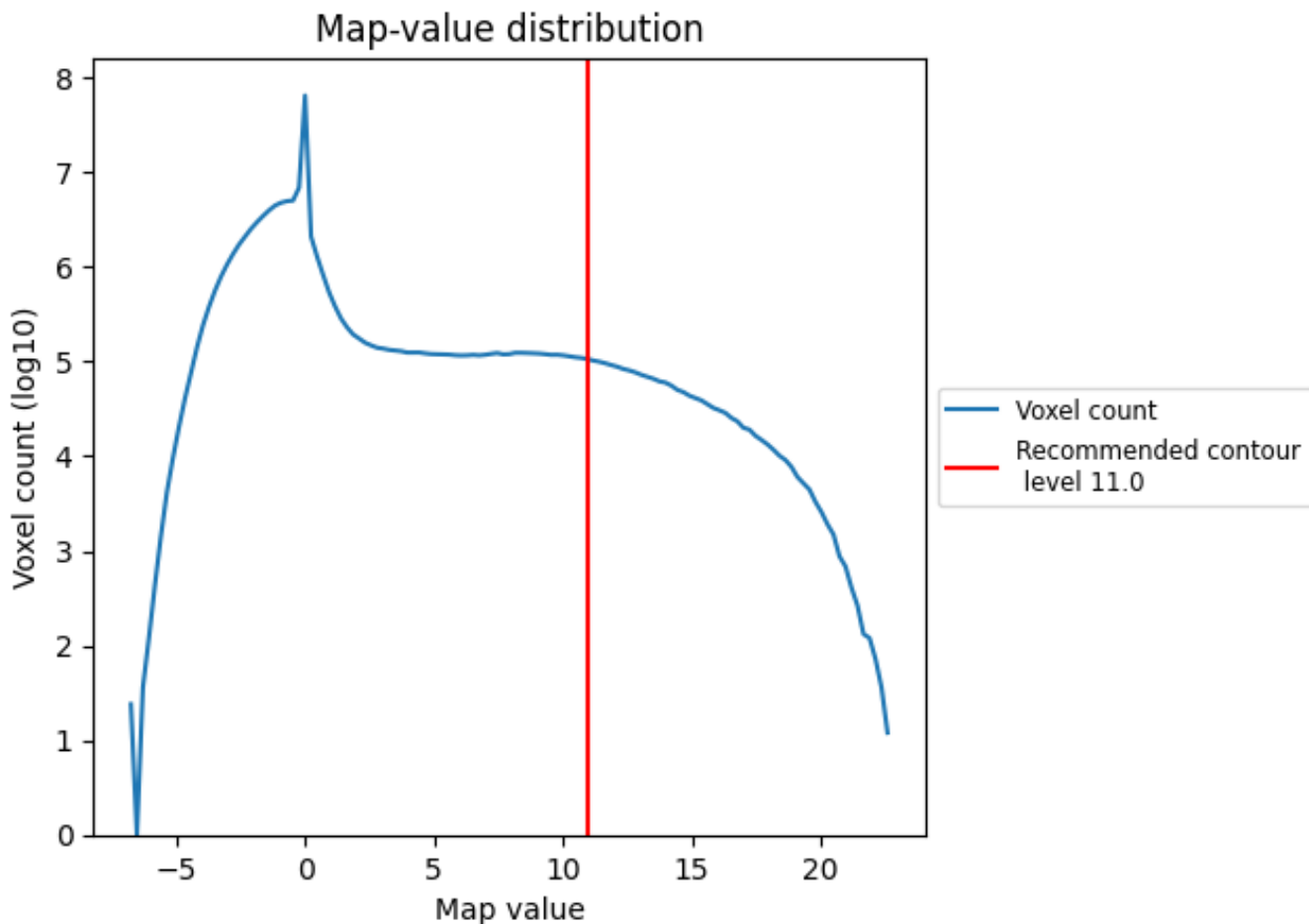
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate (i)
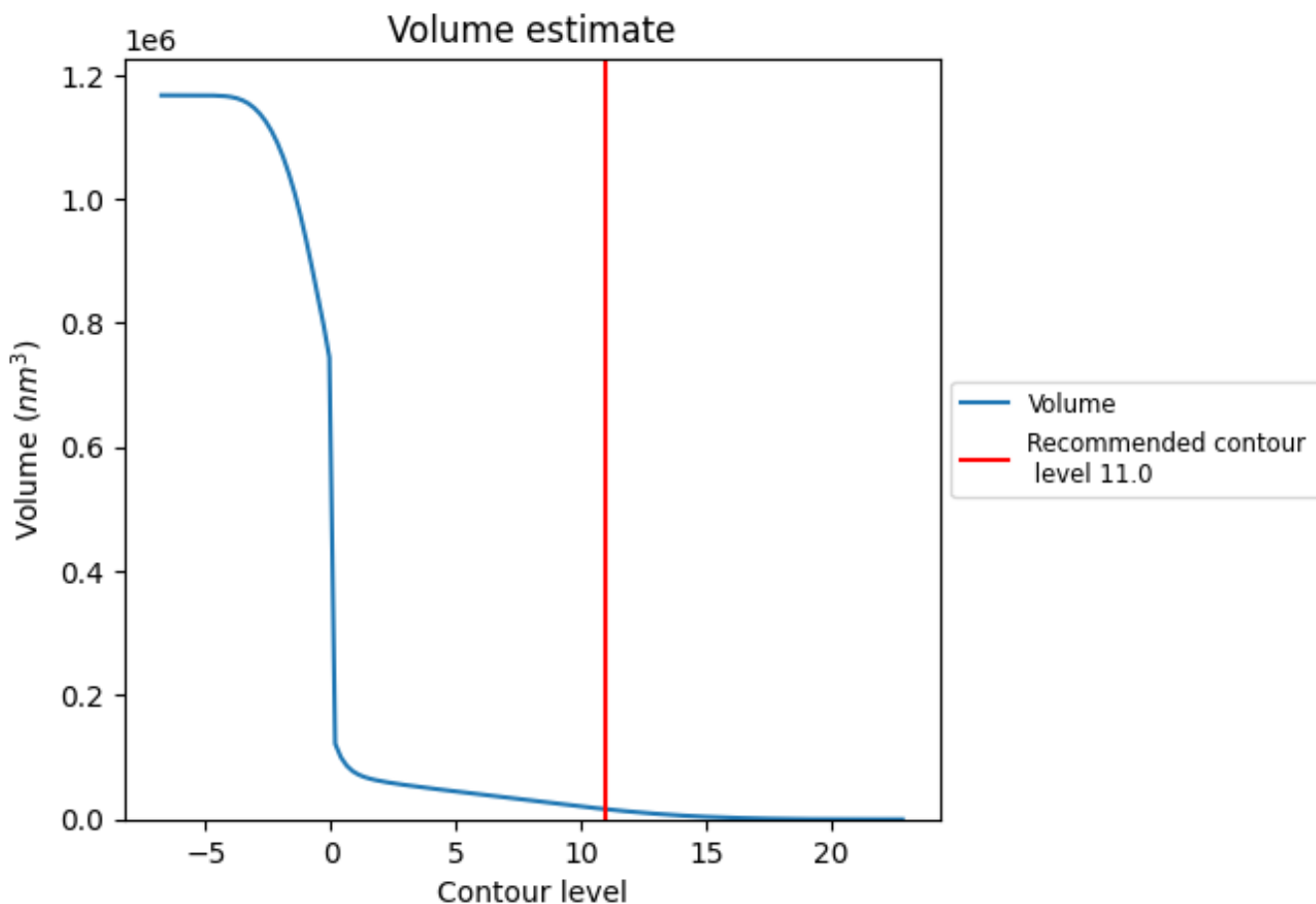
The volume at the recommended contour level is 16241 nm³; this corresponds to an approximate mass of 14671 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3   Rotationally averaged power spectrum ⓘ
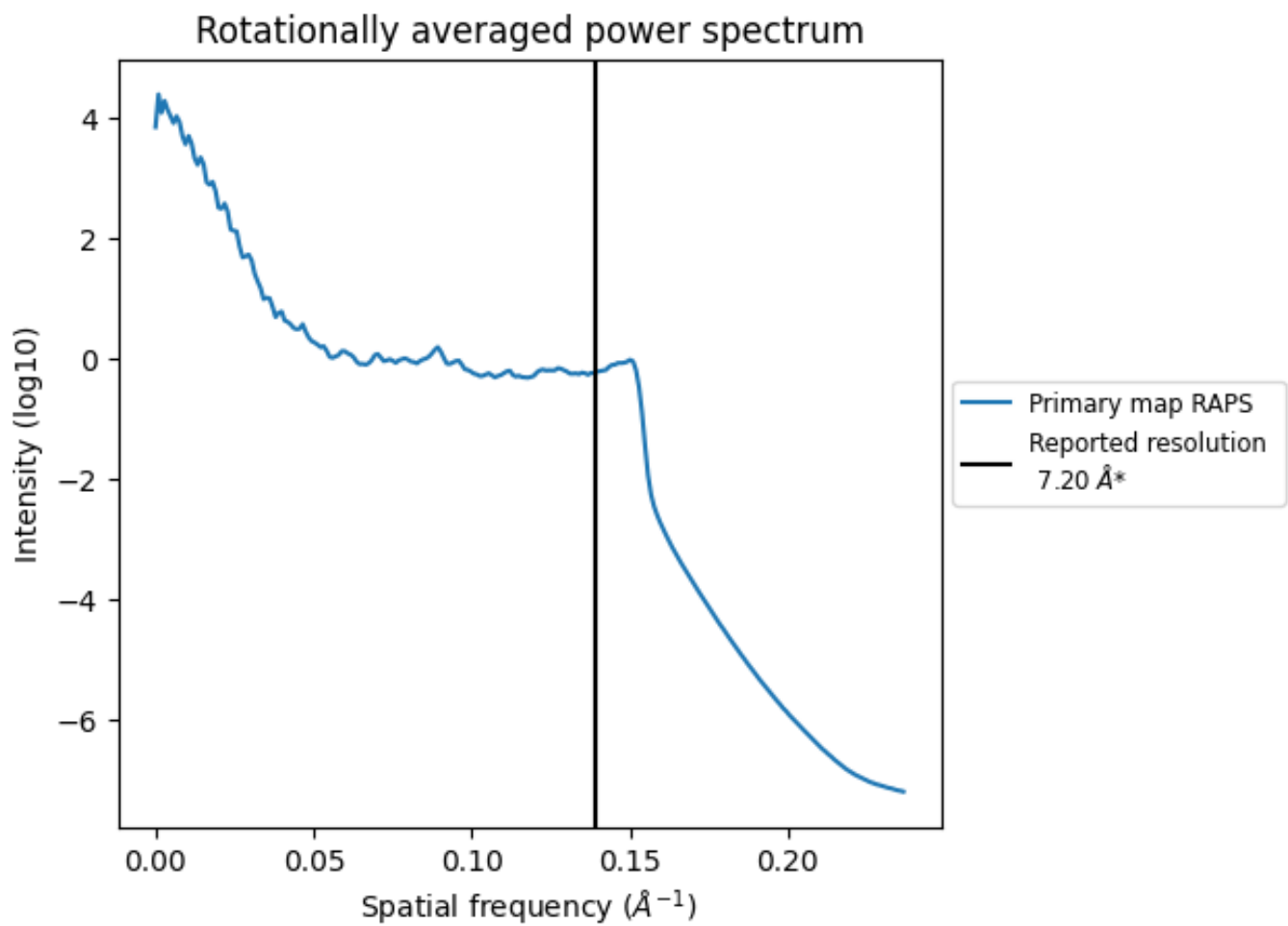
*Reported resolution corresponds to spatial frequency of 0.139 Å^{-1}

# 8	Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

## 8.1	FSC ⓘ
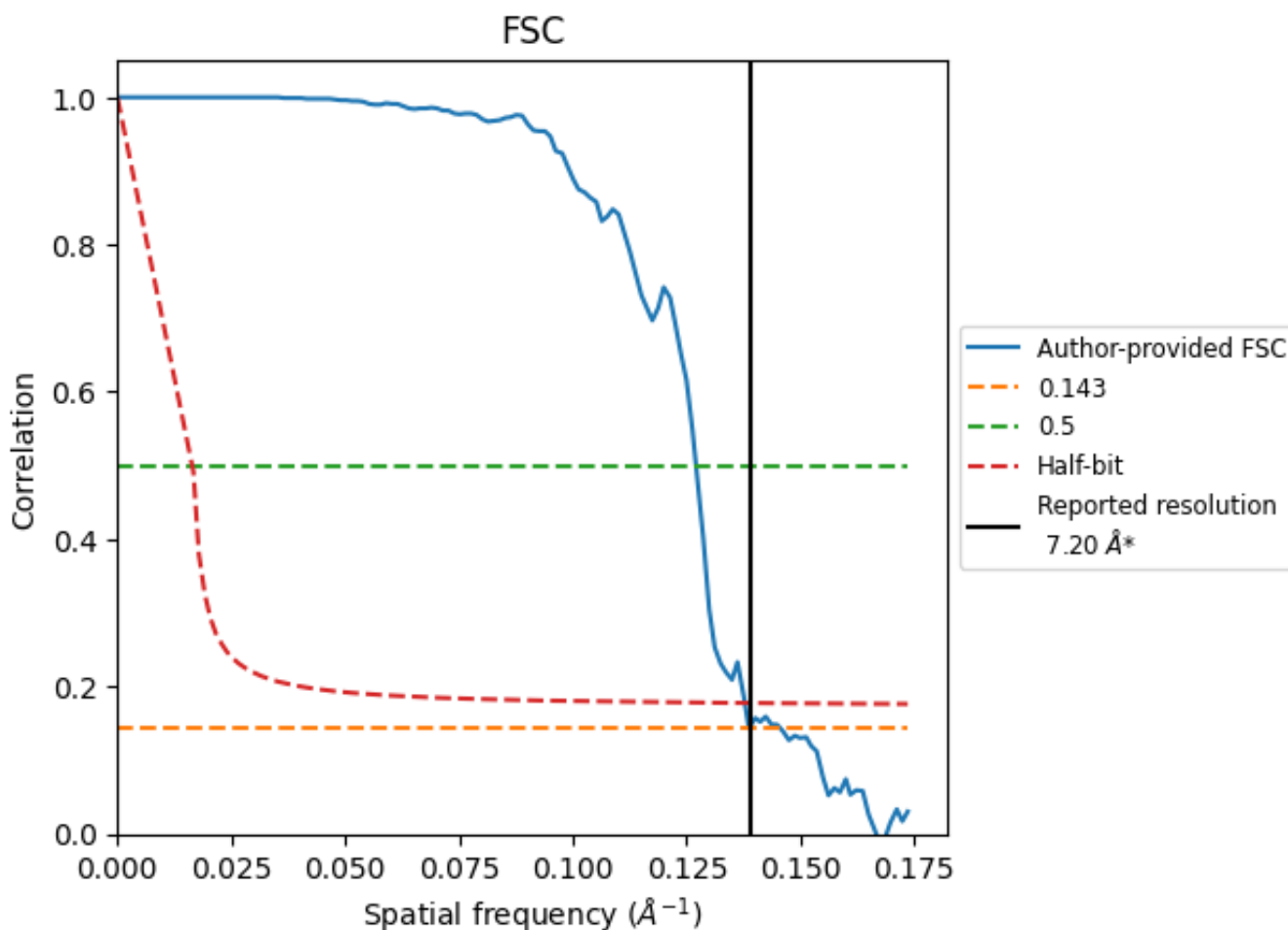
*Reported resolution corresponds to spatial frequency of 0.139 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	7.20	-	-
Author-provided FSC curve	7.21	7.87	7.26
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-20122 and PDB model 6OMA. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlays

9.1.1 Map-model overlay ⓘ

| X | Y | Z |
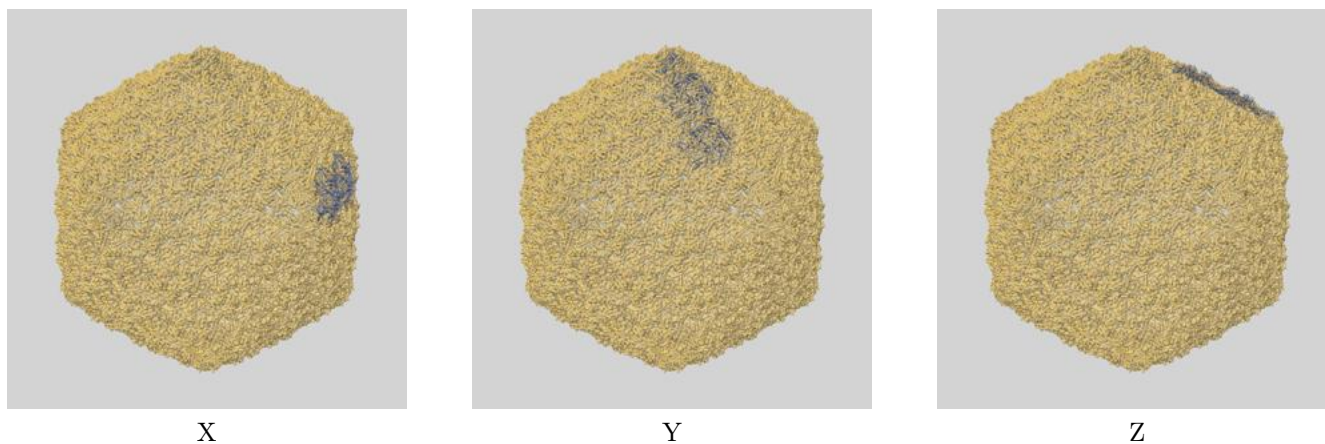
9.1.2 Map-model assembly overlay ⓘ

| X | Y | Z |
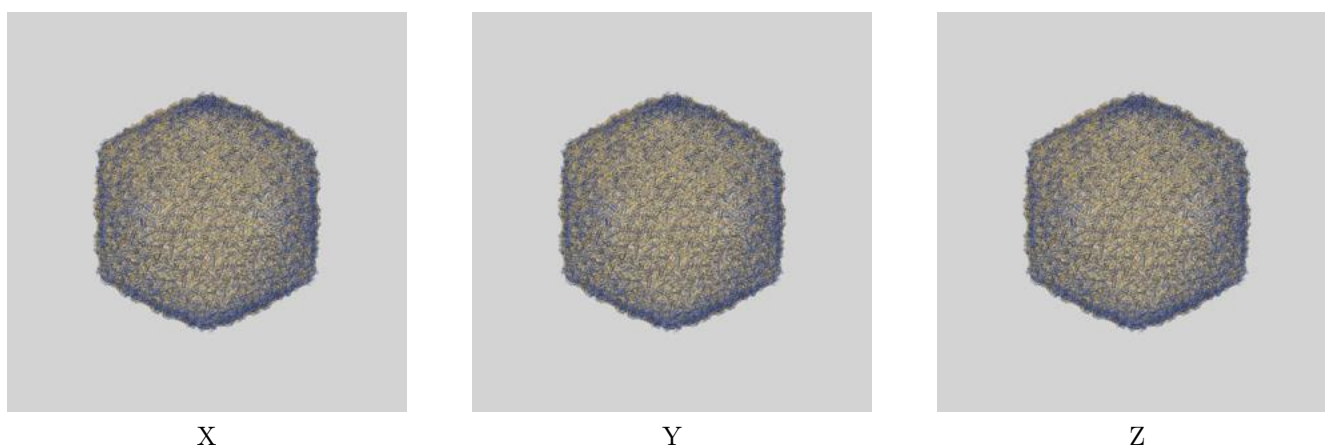
The images above show the 3D surface view of the map at the recommended contour level 11.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model　ⓘ

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3　Atom inclusion mapped to coordinate model　ⓘ
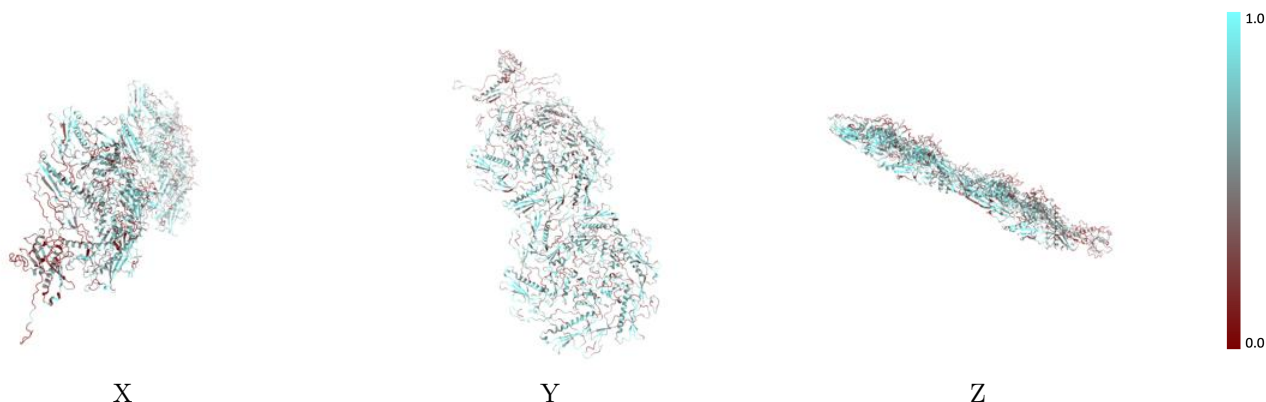
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (11.0).

9.4   Atom inclusion   ⓘ
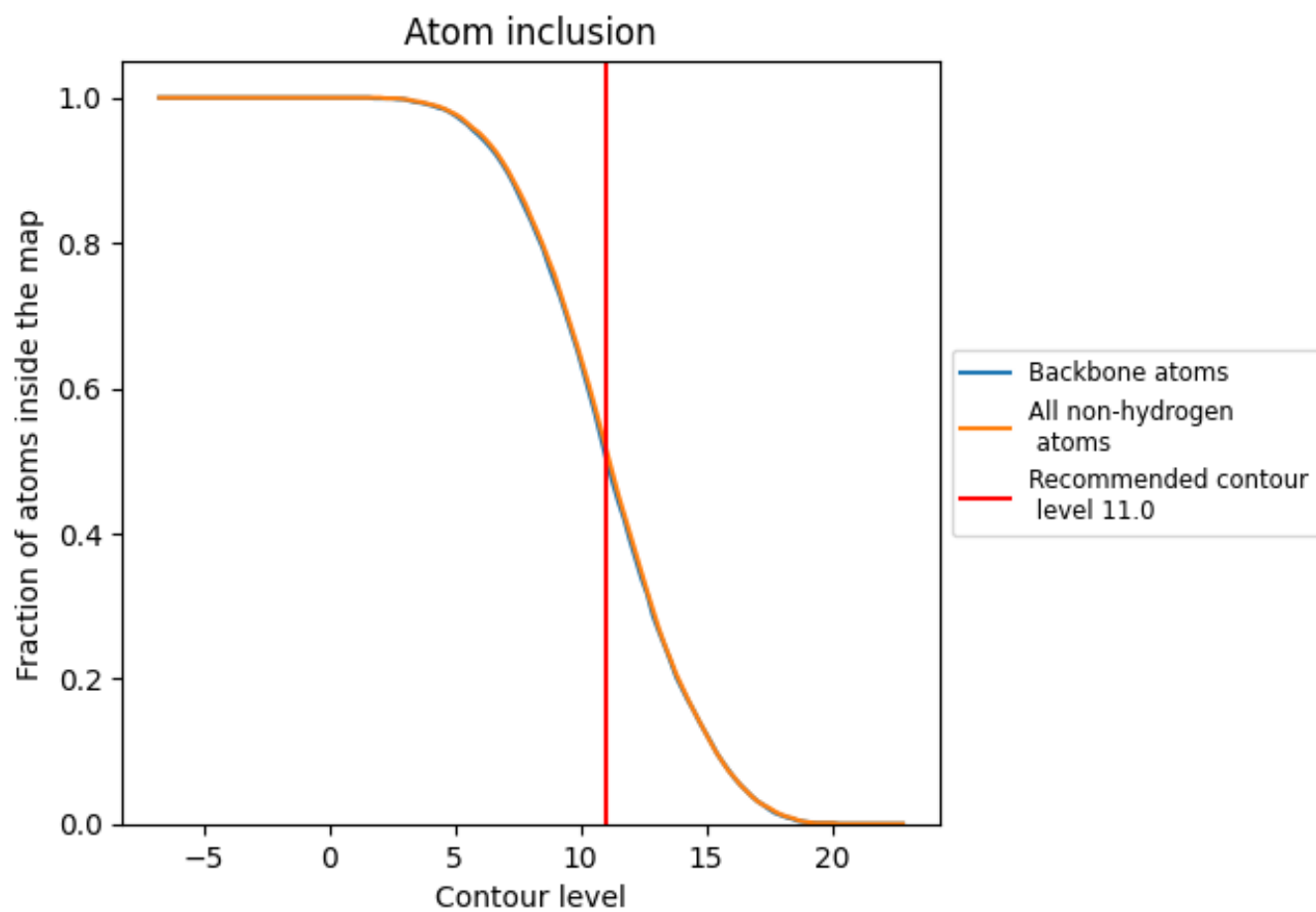
At the recommended contour level, 50% of all backbone atoms, 52% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (11.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5180	0.1280
A	0.5600	0.1330
B	0.5890	0.1200
C	0.5750	0.1120
D	0.5890	0.1250
E	0.5660	0.1370
F	0.5710	0.1290
G	0.4900	0.1220
H	0.5490	0.1300
I	0.5630	0.1320
J	0.5800	0.1400
K	0.4770	0.1340
L	0.4420	0.1320
M	0.2850	0.1250

1.0

0.0
<0.0