WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Feb 12, 2026 – 12:30 PM EST

PDB ID	:	9XYU / pdb_00009xyu
EMDB ID	:	EMD-72341
Title	:	NER complex - C7CAD.ATP
Authors	:	Li, C.L.; Kim, J.; Yang, W.
Deposited on	:	2025-08-26
Resolution	:	3.50 Å(reported)
Based on initial model	:	8ebt

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 3.50 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
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		0.5%

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.343

Worse   *Better*

▮ Percentile relative to all EM structures

▯ Percentile relative to EM structures of similar resolution
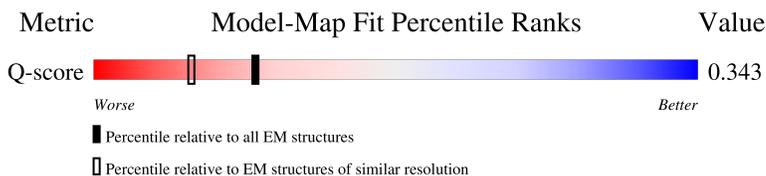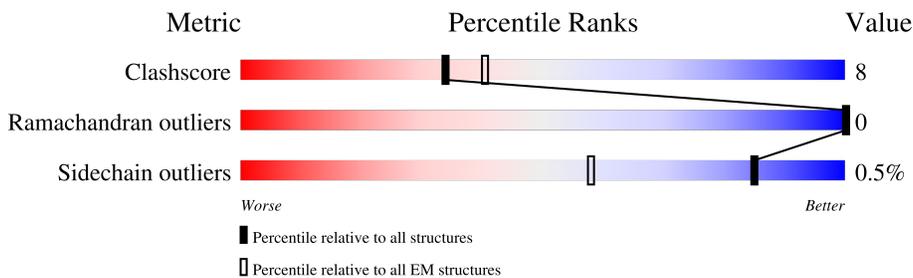
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	13950 (3.00 - 4.00)

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	782	61% 16% 23%
2	B	768	73% 18% 9%
3	C	548	24% 5% 72%
4	D	462	73% 21% 6%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
5	E	395	72% 22% 7%
6	F	308	63% 21% 16%
7	G	71	68% 25% 7%
8	H	940	96%
9	K	273	45% 14% 41%
10	L	93	17% 12% 71%
11	M	94	20% 77%

2 Entry composition ⓘ

There are 13 unique types of molecules in this entry. The entry contains 23406 atoms, of which 0 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 TFIIH basal transcription factor complex helicase XPB subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	604	Total 4882	C 3119	N 845	O 889	S 29	0	0

- Molecule 2 is a protein called General transcription and DNA repair factor IIH helicase subunit XPD.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	702	Total 5659	C 3622	N 985	O 1023	S 29	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	761	ASP	-	expression tag	UNP P18074
B	762	TYR	-	expression tag	UNP P18074
B	763	LYS	-	expression tag	UNP P18074
B	764	ASP	-	expression tag	UNP P18074
B	765	ASP	-	expression tag	UNP P18074
B	766	ASP	-	expression tag	UNP P18074
B	767	ASP	-	expression tag	UNP P18074
B	768	LYS	-	expression tag	UNP P18074

- Molecule 3 is a protein called General transcription factor IIH subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	154	Total 1234	C 779	N 216	O 231	S 8	0	0

- Molecule 4 is a protein called General transcription factor IIH subunit 4, p52.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	434	Total 3483	C 2245	N 605	O 620	S 13	0	0

- Molecule 5 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	369	Total 2896	C 1828	N 496	O 545	S 27	0	0

- Molecule 6 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	258	Total 2034	C 1301	N 337	O 377	S 19	0	0

- Molecule 7 is a protein called General transcription factor IIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	66	Total 522	C 337	N 82	O 100	S 3	0	0

- Molecule 8 is a protein called DNA repair protein complementing XP-C cells.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	H	42	Total 332	C 206	N 60	O 66	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	939	LYS	GLN	variant	UNP Q01831

- Molecule 9 is a protein called DNA repair protein complementing XP-A cells.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	K	160	Total 1348	C 843	N 235	O 256	S 14	0	0

- Molecule 10 is a DNA chain called DNA (CY5).

Mol	Chain	Residues	Atoms					AltConf	Trace
10	L	27	Total 548	C 262	N 95	O 164	P 27	0	0

- Molecule 11 is a DNA chain called DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	M	22	Total 454	C 216	N 87	O 129	P 22	0	0

- Molecule 12 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe_4S_4).
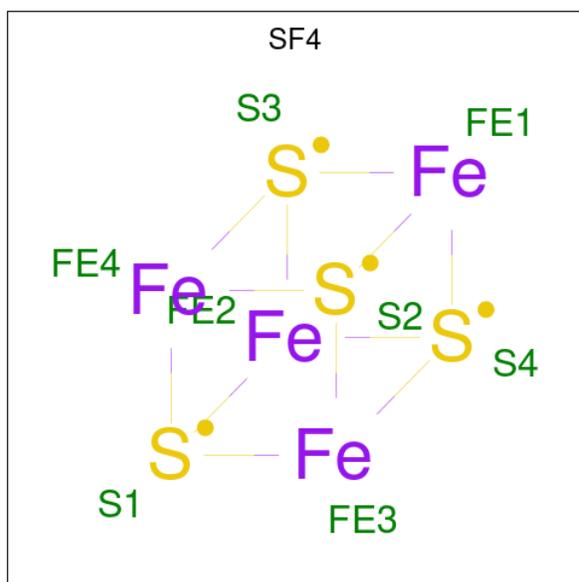
Mol	Chain	Residues	Atoms			AltConf
12	B	1	Total 8	Fe 4	S 4	0

- Molecule 13 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
13	E	3	Total 3	Zn 3	0
13	F	2	Total 2	Zn 2	0
13	K	1	Total 1	Zn 1	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: TFIIH basal transcription factor complex helicase XPB subunit

Chain A:

• Molecule 2: General transcription and DNA repair factor IIH helicase subunit XPD

Chain B:

PRO VAL LEU PRO ASP GLU VAL LEU GLN GLU ALA VAL PRO G321 R334 L344 V350 Q351 E352 S353 P354 K370 P371 L372 L383 I388 D393 A404 T415 I416 I417 I418 E419 P420 T427 I428 A429 L433 C437 M438 K445 P446 V447 F451 V454

S458 G459 T460 L461 S462 P463 D472 T482 R487 V488 I494 V502 A515 M527 V530 V531 W552 Q555 S556 I557 L558 I569 E570 T571 Q572 T577 L581 E586 A587 C588 E589 N590 L597 I608 H613 R616 A617 V618 Y627 T628

Q629 S630 R631 I632 L633 L637 L640 I646 R647 E648 L652 T653 F654 Q662 C663 V664 G665 R666 L676 F679 A680 D681 F684 K692 L693 P694 R695 W696 I697 Q698 E699 H700 L708 T709 E712 G713 V714 R722 Q726 P727 F728 D732 L738 LEU SER

LEU GLU GLN LEU GLU SER GLU GLU THR LEU LYS ARG GLU ILE ALA GLN ILE LEU ASP TYR LYS ASP ASP ASP LYS

● Molecule 3: General transcription factor IIH subunit 1

Chain C:

24%   5%   72%

MET ALA THR SER GLU GLU VAL LEU LEU ILE VAL LYS VAL LYS VAL ARG GLN LYS LYS GLN ASP GLY ALA LEU TYR LEU MET ALA GLU ARG ILE ALA TRP ALA PRO GLU GLY LYS ASP ARG PHE THR ILE SER HIS MET TYR ALA ASP ILE LYS CYS GLN LYS ILE SER PRO GLU GLY LYS

ALA LYS ILE GLN LEU GLN LEU LEU VAL LEU HIS ALA GLY ASP THR ASN PHE HIS PHE SER ASN GLU GLU SER THR ALA VAL LYS GLU LYS ARG ASP ALA VAL LYS ASP LEU GLN LEU LEU PRO LYS PHE LYS ARG LYS ALA ASN LYS GLU LEU GLU GLU LYS ASN ARG MET LEU GLN GLU

ASP PRO VAL PHE GLN LEU LEU TYR LYS ASP LEU VAL VAL SER GLN VAL ILE SER ALA PHE HIS PHE SER ASN GLU GLU SER THR ALA ASN HIS LYS GLN ASP VAL GLY ILE SER ALA ALA PHE LEU ALA ASP ARG PRO GLN GLN THR ASP GLY

CYS ASN GLY LEU ARG TYR ASN LEU THR SER ASP ILE ILE GLU SER ILE PHE ARG THR TYR PRO ALA VAL LYS MET LYS TYR ALA GLU ASN VAL ALA THR ASP LEU ASP GLU THR ALA LEU GLU GLU ASP LYS PRO ASN MET THR GLU LYS GLU GLY GLY TYR ILE SER SER VAL PRO SER ALA ASN SER LYS SER ILE LYS GLU ASN SER ASN

ASP LEU PHE ALA GLU CYS ALA LYS ILE ASP GLU VAL LYS GLY LEU LYS THR MET VAL SER LEU GLY VAL LYS ASN PRO LEU LEU ASP THR ALA LEU GLU GLU ASP LYS PRO ASN MET THR GLU LYS GLU GLY GLY TYR ILE SER SER VAL PRO SER ALA ASN SER LYS SER ILE LYS GLU ASN SER ASN

ALA ALA ILE ILE LYS ARG PHE ASN HIS HIS SER ALA MET VAL LEU ALA GLY LEU ARG LYS GLN GLU ALA GLN ASN GLU GLN THR THR GLU GLY PRO SER ASN MET ASP ASP GLY ASN SER GLY ASP ALA ASP CYS PHE GLN PRO ALA VAL LYS ARG ALA LYS LEU GLN GLU SER ILE GLU TYR

GLU ASP LEU GLY LYS ASN ASN SER VAL LYS THR ILE ALA LEU ASN LEU LYS LYS SER ASP ARG TYR TYR HIS GLY PRO THR PRO ILE GLN SER LEU GLN TYR A395 F404 I407 R408 I431 T445 Q446 Q451 P454 I457 L461 K462 A467 E470 L471 L472

R473 H474 N482 L486 K511 R514 Q515 Y516 L521 V522 S523 M528 T531 K535 Q540 R543 L544 K547 T548

● Molecule 4: General transcription factor IIH subunit 4, p52

Chain D:

73%   21%   6%

MET GLU SER THR PRO SER ARG GLY LEU ASN ARG VAL HIS LEU GLN CYS R17 R33 L34 T40 C41 L42 F45 R46 E47 L48 A52 K53 N54 W55 V56 L66 E78 F79 Q83 L90 L101 P102 G103 G104 L105 L110 A128 D132 T133 G137

K140 H141 A142 R143 D144 S147 Y151 E154 V159 S172 Q173 D174 L175 L184 M185 P194 S198 A199 G200 F201 L204 L205 L206 D207 Q211 L212 F215 M228 V231 E232 I233 S241 Y249 S257 L258 L259 N260 Q263 H264 L265 R266 E267 F268

R280 Y281 L290 S291 S292 GLY VAL SER GLY ALA GLY GLY THR VAL HIS GLN PRO G305 V308 V309 E310 Y316 A317 Y318 T319 E320 S321 Q324 I325 A326 L327 M334 R337 F338 P339 N340 M341 V342 E349 Q353 A356 S357 G358 I359 I365 H373 P374 V375

K378 T386 I387 T388 R398 D399 R400 E405 L421 N435 L440 V451 S462

• Molecule 5: General transcription factor IIH subunit 2

Chain E: 72%   22%   7%

MET ASP GLU GLU PRO GLU ARG T8 W11 E26 S29 K42 ARG LYS VAL PHE GLU HIS HIS GLY GLN VAL R54 M58 R59 H60 V64 S68 K77 L85 E89 V92 E93 E94 I104 K110 S111 K112 R113 L120 P124 I128

L131 V135 P143 N147 S148 L149 L156 M159 P160 G161 H162 R165 E166 V167 I168 I169 S172 S173 L174 I186 A192 K193 I194 R195 V196 S197 V198 L201 S202 A203 R206 L211 A212 T215 G216 G217 V221 I222 H227 V236 I250 R251

P255 T258 S263 D266 A267 K268 H275 L276 P282 G283 L284 T285 L286 C291 P292 Q293 A296 I307 L312 L325 E333 N340 C345 C348 L352 H356 V357 Y358 C368 V369 D370 C371 V375 H376 D377 S378 L379 H380 C381 C382 C385

I386 H387 LYS ILE PRO ALA PRO SER GLY VAL

• Molecule 6: General transcription factor IIH subunit 3

Chain F: 63%   21%   16%

MET VAL SER ASP GLU D6 V12 N18 P19 I20 W21 W22 G23 K24 Q25 F32 T33 L34 S35 K36 L44 F50 A58 A61 S67 R68 F69 L70 Y71 PRO GLY LYS ASN GLY ARG LEU GLY ASP PHE PHE GLY ASP PRO GLY ASN PRO PRO GLU GLU PHE ASN PRO SER

GLY SER LYS D98 G99 V112 I115 S122 T131 L132 L133 K139 R146 M147 N148 V151 R160 I164 K165 A166 M175 N179 I191 D192 A193 C194 D199 S200 G201 L202 L203 Q204 D208 I209 T210 L213 Y214 L215 Q219 M220 P221 L227 L228

W229 V230 F231 L232 P233 R238 L243 V247 H248 V249 D250 Y251 R252 L261 I262 E263 S269 V270 C271 F289 LYS ILE SER LEU PRO PRO VAL LEU LYS ALA LYS LYS LYS LEU LYS VAL SER ALA

• Molecule 7: General transcription factor IIH subunit 5

Chain G: 68%   25%   7%

MET VAL ASN V4 L5 V8 L9 D13 P14 K17 L21 Y22 E25 I34 H42 V45 E48 Q54 V57 L60 F66 T69 GLN LYS

• Molecule 8: DNA repair protein complementing XP-C cells

Chain H: 96%

MET ALA ARG LYS ARG ALA ALA GLY GLY GLU PRO ARG GLY ARG GLU LEU ARG SER GLN LYS SER ALA LYS LYS SER ALA ARG ARG GLU GLU GLU GLU GLU ASP ALA PHE GLU ASP LYS PRO LYS PRO PRO LYS LYS SER LEU LEU SER LYS VAL SER GLN GLY LYS ARG LYS ARG GLY CYS

SER HIS PRO GLY GLY SER ALA ASP GLY PRO ALA LYS LYS LYS VAL ALA LYS VAL THR VAL LYS SER GLU ASN LEU LYS VAL ILE LYS ASP GLU ALA LEU LEU SER ASP GLY ASP GLU LEU ARG ASP PHE PRO ASP ALA GLU LEU LYS LYS ALA HIS HIS LEU LEU ARG GLY ALA THR MET ASN GLU

ASP SER ASN GLU GLU GLU GLU SER GLU ASN ASP TRP GLU GLU VAL GLU GLU LEU SER GLU PRO VAL LEU GLY GLY VAL ARG GLU GLU SER THR ALA PHE SER ARG GLU LEU LEU PRO VAL LYS PRO GLU VAL ILE GLU ILE GLU THR PRO GLU GLN ALA LYS THR ARG GLU ARG SER GLU

LYS ILE LYS LEU GLU PHE GLU GLY THR TYR LEU ARG ARG MET LYS PHE ASN LYS GLY VAL HIS GLU ASP THR HIS LYS VAL HIS LEU LEU CYS LEU LEU ASN GLY PHE TYR ARG ASN ASN ILE CYS SER GLN PRO ASP LEU HIS ALA ILE GLY LEU SER ILE PRO ALA ARG

PHE THR ARG LEU PRO ASP VAL ASP ARG ASP VAL ASP THR TYR LEU SER LEU VAL ASN LEU LYS TRP PHE GLY THR THR PHE THR VAL ALA GLU SER ALA SER GLU GLN ASP ASN GLY TYR ARG ASN ASN LEU GLN LEU LEU GLU ARG PHE GLU ALA ILE TYR SER ALA ARG ASP GLU LEU VAL HIS

ILE PHE LEU ILE LEU ARG ALA LEU GLN GLU LEU THR ARG GLU VAL LEU GLU ARG SER GLN PRO ILE PRO LEU LYS SER ALA THR ALA LYS GLY LYS LYS PRO SER GLU ARG LEU ALA ASP PRO GLY GLY SER GLU THR SER SER GLN VAL LEU GLU ASN HIS LYS PRO

LYS THR SER SER LYS GLY THR GLN GLU GLU THR PHE ALA LYS GLY CYS THR PRO SER ALA LYS LYS GLY ASN ARG ASN LYS GLY LYS LYS PRO SER SER GLU GLU ASP ASP GLY GLY ASP LYS LYS GLN GLU LYS ALA THR GLN ARG ARG PRO HIS GLY ARG

GLU ARG ARG VAL ALA SER ARG VAL SER TYR LYS GLU SER GLY SER ASP ALA GLY SER SER ASP SER PHE GLU LEU SER SER GLY LYS LYS ALA SER LYS MET CYS ASP ASP GLY LYS ILE ALA THR GLU ARG ALA PRO ALA GLN ARG THR LYS ALA GLY SER

LYS SER ALA ARG THR HIS ARG GLY SER HIS ARG ASP PRO SER LEU PRO ALA ALA SER SER SER SER LYS ARG GLY LYS MET SER ASP GLY GLU LYS ALA GLU ILE ALA GLY ILE ASP LYS GLN GLU TRP LEU VAL PHE CYS GLU GLU

LYS TRP VAL CYS VAL ASP CYS VAL HIS GLY VAL VAL GLY GLN PRO LEU THR CYS TYR LYS TYR ALA THR LYS PRO MET THR TYR VAL VAL GLY ILE ASP ASP SER GLY TRP ARG ASP ASP VAL LYS ALA GLU VAL THR GLN ARG SER ILE ALA GLY LYS TRP MET THR VAL THR ARG LYS CYS ARG VAL ASP ALA

GLU TRP TRP ALA THR GLU THR LEU ARG PRO TYR GLN SER PRO PHE MET ASP ARG GLU GLU LYS LYS GLU GLU LEU GLN ALA LYS HIS MET ASP ASP GLN PRO LEU THR ALA LEU LYS ARG VAL ARG LEU GLY VAL VAL PRO ARG TYR LYS ASN HIS PRO LEU TYR ALA LEU LYS ARG ARG HIS LEU LYS TYR GLU VAL ALA ILE TYR

PRO GLU THR ALA ILE LEU GLY TYR CYS GLY ARG GLU GLN ALA VAL TYR ARG ASP CYS VAL HIS THR LEU HIS SER ARG ASP TRP LEU LYS ALA VAL ARG LEU GLY VAL GLU PRO TYR LYS MET VAL LYS GLY PHE SER ASN ARG ALA ARG LYS ALA ARG LEU ALA

GLU PRO GLN ARG GLU ASN ASP GLY LEU GLY PHE GLY TYR TRP GLN THR GLU GLU THR GLN GLU TYR GLN PRO PRO VAL ALA VAL ASP GLY LYS VAL PRO ARG GLU ASN GLU PHE GLY ASN VAL TYR LEU PHE PRO SER MET MET PRO ILE GLY CYS VAL GLN LEU ASN LEU PRO ASN LEU HIS

ARG VAL ALA LYS LEU ALA ARG ASP ILE ASP GLY VAL CYS VAL GLN ALA ILE THR GLY PHE ASP PHE HIS GLY GLY TYR SER HIS PRO VAL THR ASP GLY LYS ILE VAL CYS GLU GLU PHE LYS ASP PHE LYS ASP VAL LEU LEU THR ALA TRP GLU GLU ASN GLN GLN ALA VAL ILE GLU VAL ILE GLU GLU VAL ILE GLY GLN ALA VAL ILE GLU LEU GLU ARG LYS GLU GLU LEU LYS

GLU LYS ARG ALA LEU GLY ASN TRP LYS LEU LEU ALA LYS GLY LEU LEU LEU ILE ARG GLU GLU ARG LEU LYS ARG TYR GLY PRO LYS SER SER ASN ALA ALA PRO HIS THR ASP ALA ALA GLY GLY GLY LEU LEU SER ASP SER GLU GLU GLU ▓G889▓ ▓E895▓ ▓S903▓ ▓W904▓ ▓N907▓ ▓R908▓ ▓K915▓ LEU

LYS GLY GLY PRO LYS LYS THR LYS ARG ▓E926▓ ◆▓L940▓

• Molecule 9: DNA repair protein complementing XP-A cells

Chain K: 45%   14%   41%

MET ALA ALA ALA ASP GLY ALA LEU PRO GLU ALA ALA ALA LEU GLU GLN PRO ALA GLU LEU PRO ALA SER VAL ARG ALA SER ILE GLU ARG LYS ARG GLN ARG ALA LEU MET LEU ARG GLN ALA ARG LEU ALA ARG PRO TYR SER ALA THR ALA ALA ALA THR GLY GLY MET ALA

ASN VAL LYS ALA ALA PRO LYS ILE ILE ASP THR GLY GLY GLY PHE ILE LEU GLU GLU GLU GLU GLU GLU GLU GLN LYS ILE GLY LYS VAL VAL HIS GLN PRO GLY PRO VAL MET GLU GLY PHE ASP ◆▓Y102▓ ▓E107▓ ▓L117▓ ▓D122▓ ▓L123▓ ▓P124▓ ▓T125▓ ▓A132▓ ▓K135▓ ▓H136▓ ▓K137▓ ▓L138▓ ▓K141▓

D154 L155 E156 K157 F164 L180 Y181 Q185 K188 R189 E201 K204 E205 V206 E209 E212 K213 Q216 F219 K222 E225 A229 VAL ARG SER SER VAL TRP LYS ARG GLU THR ILE VAL H242 E249 L252 M256 L268 T269 Y270 E271

K272 M273

• Molecule 10: DNA (CY5)

Chain L:　　17%　　12%　　　　　　　71%

DG DC DT DG DC DG DG DT DC DC DG DT DT DG DA DC DG DA DC DA DT DA DC DA DG DC DT DC DA DA DC G32 A33 T34 G35 A43 G44 C45 A46 T47 T48 G49 C50 A51 A55 T58 DT DC DT DG CY5 DC DA DC DT DA DG

DT DA DC DT DA DC DG DA DC DT DA DC DG DC DT DC DG DG DC DT DC DG DA

• Molecule 11: DNA

Chain M:　　20%　·　　　　　　　77%

DT DC DG DA DG DC DC DG DA DG DC DG DC DT DA DG DC DG DT DA DG DT DA DC DT DA DG DT DG DT DC DA DG DA DA DT DA DT DG A42 T52 G53 A54 C63 DG DT DT DG DA DG DC DT DG DT DA DT

DG DT DC DG DT DC DA DA DC DG DG DA DC DC DG DC DA DG DC

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	142798	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/Å^2)$	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.036	Depositor
Minimum map value	-0.011	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.004	Depositor
Map size (Å)	378.72003, 378.72003, 378.72003	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.052, 1.052, 1.052	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SF4, ZN

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	0.08	0/4985	0.23	0/6734
2	B	0.08	0/5780	0.23	0/7821
3	C	0.09	0/1257	0.25	0/1696
4	D	0.06	0/3564	0.17	0/4827
5	E	0.07	0/2960	0.20	0/4006
6	F	0.07	0/2070	0.19	0/2803
7	G	0.08	0/528	0.24	0/713
8	H	0.08	0/337	0.21	0/448
9	K	0.07	0/1373	0.21	0/1830
10	L	0.18	0/612	0.38	0/941
11	M	0.16	0/510	0.32	0/785
All	All	0.08	0/23976	0.22	0/32604

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	4882	0	4923	81	0
2	B	5659	0	5699	92	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	1234	0	1250	19	0
4	D	3483	0	3526	61	0
5	E	2896	0	2857	60	0
6	F	2034	0	2050	41	0
7	G	522	0	531	11	0
8	H	332	0	322	4	0
9	K	1348	0	1323	26	0
10	L	548	0	306	8	0
11	M	454	0	248	3	0
12	B	8	0	0	0	0
13	E	3	0	0	0	0
13	F	2	0	0	0	0
13	K	1	0	0	0	0
All	All	23406	0	23035	370	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

All (370) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:219:GLN:HG3	6:F:221:PRO:HD2	1.69	0.74
1:A:168:LEU:HD11	1:A:277:ILE:HD11	1.71	0.72
6:F:175:MET:SD	6:F:179:ASN:ND2	2.64	0.69
1:A:551:HIS:HB2	1:A:558:ILE:HD11	1.76	0.68
8:H:903:SER:O	8:H:907:ASN:ND2	2.24	0.68
2:B:487:ARG:HH12	2:B:728:PHE:HA	1.60	0.67
2:B:637:LEU:HB3	2:B:648:GLU:HG2	1.77	0.67
5:E:258:THR:HA	6:F:248:HIS:HB2	1.75	0.67
1:A:375:LYS:HE2	1:A:391:ARG:HE	1.60	0.67
4:D:34:LEU:HB3	4:D:40:THR:HG21	1.77	0.67
5:E:68:SER:HB3	5:E:143:PRO:HD3	1.77	0.67
1:A:60:ASP:HA	4:D:337:ARG:HB3	1.77	0.66
6:F:32:PHE:HA	6:F:36:LYS:HD2	1.76	0.66
1:A:84:ILE:HB	1:A:116:TYR:HB2	1.79	0.65
2:B:460:THR:HG21	2:B:662:GLN:HA	1.79	0.65
4:D:33:ARG:HG2	4:D:231:VAL:HG21	1.78	0.65
4:D:263:GLN:HG2	4:D:266:ARG:HH22	1.61	0.64
5:E:382:CYS:HB3	5:E:385:CYS:SG	2.38	0.64
7:G:4:VAL:N	9:K:271:GLU:O	2.32	0.63
5:E:222:ILE:HA	5:E:227:HIS:HD2	1.63	0.63

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:M:53:DG:H2'	11:M:54:DA:H8	1.64	0.63
5:E:162:HIS:HE1	5:E:250:ILE:HD11	1.63	0.62
2:B:488:VAL:HG13	2:B:700:HIS:HD2	1.65	0.62
5:E:368:CYS:SG	5:E:371:CYS:HB2	2.38	0.61
1:A:581:TYR:HD1	1:A:583:PRO:HD2	1.64	0.61
1:A:591:GLN:O	1:A:595:ASN:ND2	2.33	0.61
2:B:354:PRO:HG3	2:B:415:THR:HA	1.83	0.61
1:A:104:ALA:HA	1:A:122:SER:HB2	1.82	0.61
2:B:695:ARG:NH1	2:B:698:GLN:OE1	2.34	0.61
4:D:399:ASP:O	8:H:908:ARG:NH1	2.33	0.60
1:A:623:LEU:HB3	1:A:659:PHE:HB2	1.81	0.60
6:F:191:ILE:H	6:F:210:THR:HG21	1.67	0.60
1:A:601:LYS:HG3	1:A:602:ILE:HG13	1.83	0.60
3:C:431:ILE:HD13	4:D:66:LEU:HD21	1.84	0.60
2:B:109:LEU:HB2	2:B:207:TYR:HB3	1.84	0.60
9:K:132:ALA:HA	9:K:136:HIS:HB2	1.83	0.60
1:A:472:ARG:H	1:A:477:ILE:HD11	1.66	0.59
6:F:12:VAL:HG12	6:F:58:ALA:HB3	1.84	0.59
2:B:586:GLU:O	2:B:590:ASN:ND2	2.35	0.59
1:A:547:LEU:O	1:A:551:HIS:ND1	2.36	0.59
1:A:82:GLY:O	1:A:83:HIS:ND1	2.36	0.58
5:E:165:ARG:NH2	5:E:192:ALA:O	2.36	0.58
5:E:194:ILE:O	5:E:215:THR:OG1	2.22	0.58
1:A:274:GLN:NE2	1:A:456:THR:O	2.36	0.58
1:A:525:ILE:HD12	1:A:529:LYS:HB3	1.86	0.58
4:D:206:LEU:O	4:D:211:GLN:NE2	2.37	0.58
4:D:45:PHE:HE2	6:F:50:PHE:HB3	1.68	0.58
2:B:57:MET:SD	2:B:60:GLN:NE2	2.77	0.58
2:B:5:VAL:HG12	2:B:6:ASP:H	1.69	0.57
4:D:228:MET:HG3	4:D:257:SER:HB2	1.86	0.57
4:D:349:GLU:OE2	4:D:353:GLN:NE2	2.37	0.57
5:E:89:GLU:HG3	5:E:128:ILE:HD12	1.86	0.57
5:E:110:LYS:O	5:E:113:ARG:NH1	2.37	0.57
2:B:350:VAL:HG11	2:B:631:ARG:HG3	1.85	0.57
2:B:458:SER:HB3	2:B:461:LEU:HG	1.87	0.57
1:A:548:ILE:HG21	1:A:577:LYS:HE3	1.86	0.57
1:A:580:ILE:HD12	1:A:607:ILE:HG12	1.87	0.56
4:D:241:SER:HB2	4:D:291:SER:HB3	1.87	0.56
1:A:304:PRO:HG2	1:A:360:ARG:HD2	1.86	0.56
1:A:568:LEU:HD11	1:A:606:PHE:HB3	1.88	0.56
4:D:308:VAL:HB	4:D:316:TYR:HB2	1.88	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:321:GLU:OE2	1:A:325:ARG:NH2	2.39	0.56
2:B:117:ILE:HG23	2:B:181:LYS:HE2	1.87	0.56
2:B:170:LEU:HD11	2:B:194:LEU:HD21	1.87	0.56
2:B:569:ILE:HG13	2:B:597:LEU:HD11	1.88	0.56
6:F:160:ARG:NH1	6:F:233:PRO:O	2.39	0.56
6:F:194:CYS:HB2	6:F:231:PHE:HE2	1.70	0.56
4:D:128:ALA:HA	6:F:99:GLY:H	1.71	0.56
2:B:372:LEU:HD11	2:B:404:ALA:HB1	1.87	0.55
2:B:637:LEU:HD13	2:B:648:GLU:HB3	1.88	0.55
5:E:156:LEU:HG	5:E:165:ARG:HD2	1.89	0.55
2:B:664:VAL:HG21	2:B:679:PHE:HE1	1.72	0.55
9:K:117:LEU:O	9:K:122:ASP:N	2.39	0.55
5:E:160:PRO:HB2	5:E:162:HIS:HD2	1.71	0.55
1:A:706:LYS:NZ	8:H:895:GLU:OE2	2.37	0.55
6:F:238:ARG:HB3	6:F:243:LEU:HD11	1.89	0.55
1:A:173:ASN:ND2	1:A:432:THR:O	2.40	0.55
5:E:174:LEU:HD21	5:E:203:ALA:HB3	1.89	0.55
6:F:204:GLN:HB3	6:F:249:VAL:HG12	1.87	0.55
6:F:208:ASP:OD2	6:F:251:TYR:OH	2.25	0.55
3:C:482:ASN:H	3:C:486:LEU:HD12	1.71	0.54
5:E:186:ILE:HG12	5:E:211:LEU:HD12	1.90	0.54
7:G:9:LEU:HD11	7:G:42:HIS:HB3	1.89	0.54
2:B:71:ILE:HB	2:B:231:VAL:HA	1.90	0.54
9:K:154:ASP:O	9:K:189:ARG:NH1	2.40	0.54
2:B:76:THR:OG1	2:B:77:VAL:N	2.35	0.54
4:D:33:ARG:HE	4:D:231:VAL:HG11	1.73	0.53
5:E:58:MET:H	6:F:269:SER:HB3	1.72	0.53
2:B:531:VAL:HG21	2:B:617:ALA:HB2	1.90	0.53
4:D:159:VAL:HG23	4:D:175:LEU:HD21	1.91	0.53
9:K:117:LEU:HD13	9:K:123:LEU:HD23	1.90	0.53
5:E:156:LEU:HD21	5:E:165:ARG:HB3	1.89	0.53
1:A:89:PHE:CG	4:D:375:VAL:HG21	2.43	0.53
5:E:375:VAL:HG12	5:E:379:LEU:HD12	1.90	0.53
2:B:25:MET:HG3	2:B:55:LEU:HD22	1.91	0.53
4:D:375:VAL:O	4:D:378:LYS:NZ	2.40	0.53
9:K:138:LEU:HB3	9:K:180:LEU:HB3	1.91	0.53
4:D:232:GLU:HB3	4:D:258:LEU:HD21	1.90	0.53
9:K:273:MET:SD	9:K:273:MET:N	2.83	0.53
6:F:164:ILE:HG22	6:F:194:CYS:HB3	1.91	0.52
4:D:175:LEU:HD13	4:D:268:PHE:HE1	1.74	0.52
2:B:56:ILE:HG21	2:B:70:LEU:HD22	1.91	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:421:LEU:HD11	4:D:451:VAL:HG13	1.90	0.52
1:A:277:ILE:HD12	1:A:280:LEU:HD21	1.92	0.52
1:A:568:LEU:HD22	1:A:608:SER:HB2	1.91	0.52
2:B:76:THR:HG23	2:B:78:PRO:HD2	1.91	0.52
2:B:722:ARG:NH1	5:E:201:LEU:O	2.42	0.52
9:K:123:LEU:HD12	9:K:124:PRO:HD2	1.90	0.52
2:B:383:LEU:HD22	2:B:388:ILE:HD13	1.91	0.52
4:D:132:ASP:OD1	4:D:133:THR:N	2.43	0.52
6:F:201:GLY:HA2	6:F:204:GLN:HE21	1.75	0.51
4:D:228:MET:HG2	4:D:233:ILE:HD11	1.92	0.51
4:D:325:ILE:HD12	4:D:342:VAL:HG11	1.92	0.51
2:B:640:LEU:HB3	2:B:646:ILE:HB	1.93	0.51
1:A:469:THR:HG21	1:A:638:GLN:HG3	1.93	0.51
4:D:172:SER:OG	4:D:174:ASP:OD1	2.28	0.51
11:M:52:DT:C2	11:M:53:DG:C8	2.98	0.51
4:D:321:SER:OG	4:D:324:GLN:OE1	2.28	0.51
11:M:53:DG:H2'	11:M:54:DA:C8	2.44	0.51
4:D:198:SER:HB2	4:D:358:GLY:HA3	1.93	0.51
4:D:56:VAL:HG23	4:D:110:LEU:HD21	1.93	0.51
1:A:110:PRO:HD2	1:A:114:HIS:HA	1.93	0.50
1:A:558:ILE:HB	1:A:604:THR:HG22	1.93	0.50
2:B:261:GLY:O	2:B:264:GLU:HG3	2.12	0.50
4:D:185:MET:HB3	4:D:194:PRO:HB2	1.93	0.50
10:L:44:DG:H2'	10:L:45:DC:C6	2.46	0.50
2:B:726:GLN:NE2	5:E:221:VAL:O	2.37	0.50
5:E:377:ASP:O	5:E:380:HIS:NE2	2.44	0.50
2:B:588:CYS:O	2:B:613:HIS:NE2	2.43	0.50
6:F:21:TRP:NE1	6:F:25:GLN:HE21	2.09	0.50
4:D:356:ALA:HB2	4:D:398:ARG:HH12	1.76	0.50
2:B:118:HIS:HB3	2:B:121:VAL:HG12	1.93	0.50
2:B:627:TYR:HD2	2:B:630:SER:HB2	1.76	0.50
1:A:168:LEU:HD12	1:A:291:LEU:HD22	1.92	0.50
5:E:255:PRO:HG3	5:E:312:LEU:HB3	1.94	0.50
2:B:502:VAL:HG11	2:B:515:ALA:HB1	1.94	0.50
1:A:313:THR:HG21	2:B:732:ASP:HA	1.92	0.49
5:E:85:LEU:HD22	5:E:131:LEU:HD22	1.94	0.49
5:E:333:GLU:OE2	5:E:356:HIS:ND1	2.38	0.49
1:A:626:ILE:HG22	1:A:662:LEU:HB2	1.95	0.49
3:C:404:PHE:HZ	6:F:20:ILE:HG12	1.76	0.49
1:A:440:LEU:HD22	1:A:484:ILE:HD11	1.95	0.49
1:A:628:SER:OG	1:A:676:ARG:NH2	2.46	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:137:GLY:O	4:D:280:ARG:NH2	2.39	0.49
1:A:308:ILE:HG22	1:A:384:ILE:HD13	1.94	0.49
2:B:42:MET:HB3	2:B:48:LYS:HD3	1.95	0.49
1:A:385:ASP:OD2	1:A:387:SER:OG	2.30	0.49
4:D:365:ILE:HD13	4:D:388:THR:HG23	1.94	0.49
1:A:574:ARG:HG2	1:A:703:PHE:HE1	1.78	0.49
2:B:617:ALA:HA	2:B:676:LEU:HB3	1.95	0.49
2:B:628:THR:HA	2:B:633:LEU:HD23	1.95	0.49
2:B:25:MET:HE1	2:B:51:SER:HB2	1.95	0.48
4:D:319:THR:HG21	4:D:324:GLN:HG2	1.95	0.48
1:A:580:ILE:HG23	1:A:589:ARG:HG2	1.93	0.48
1:A:125:ALA:O	1:A:128:SER:OG	2.27	0.48
2:B:637:LEU:HD22	2:B:648:GLU:HA	1.94	0.48
4:D:260:ASN:O	4:D:264:HIS:ND1	2.34	0.48
4:D:373:HIS:CG	4:D:374:PRO:HD2	2.49	0.48
5:E:201:LEU:HA	5:E:222:ILE:HG12	1.95	0.48
1:A:599:ASN:HD21	1:A:601:LYS:HE2	1.78	0.48
2:B:552:TRP:HB3	2:B:558:LEU:HB2	1.94	0.48
5:E:161:GLY:HA2	5:E:165:ARG:HH12	1.77	0.48
9:K:213:LYS:HG2	9:K:216:GLN:HE21	1.79	0.48
4:D:52:ALA:HB1	4:D:90:LEU:HD21	1.95	0.48
1:A:447:PRO:HD3	1:A:480:LEU:HD21	1.95	0.48
1:A:666:ASP:OD2	4:D:400:ARG:NH2	2.39	0.48
4:D:204:LEU:HG	4:D:327:LEU:HD21	1.95	0.48
6:F:193:ALA:HB1	6:F:203:LEU:HD13	1.96	0.48
2:B:122:THR:N	2:B:123:PRO:HD2	2.28	0.48
5:E:284:LEU:HD23	5:E:284:LEU:H	1.79	0.48
6:F:61:ALA:HB2	6:F:70:LEU:HD11	1.94	0.48
1:A:472:ARG:HH12	1:A:474:ASP:HB2	1.79	0.47
2:B:69:LYS:NZ	2:B:199:ILE:O	2.41	0.47
5:E:345:CYS:HB2	5:E:352:LEU:HD21	1.96	0.47
2:B:207:TYR:HE1	2:B:212:LEU:HB2	1.79	0.47
7:G:13:ASP:OD1	7:G:13:ASP:N	2.46	0.47
1:A:516:PRO:HG3	7:G:14:PRO:HB2	1.96	0.47
2:B:708:LEU:HB3	2:B:712:GLU:HG3	1.95	0.47
4:D:184:LEU:HD22	4:D:200:GLY:HA2	1.96	0.47
4:D:435:ASN:N	4:D:440:LEU:O	2.46	0.47
5:E:26:GLU:HG3	5:E:29:SER:HB3	1.97	0.47
9:K:185:GLN:O	9:K:188:LYS:HG3	2.15	0.47
2:B:530:VAL:HG21	2:B:714:VAL:HG13	1.96	0.47
1:A:75:PRO:HD2	1:A:143:LEU:HD23	1.97	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:292:LEU:H	1:A:292:LEU:HD23	1.79	0.47
5:E:60:HIS:HB3	5:E:120:LEU:HD21	1.97	0.47
10:L:46:DA:H2'	10:L:47:DT:C6	2.48	0.47
2:B:494:ILE:HG13	2:B:679:PHE:HB2	1.97	0.47
2:B:262:ASN:ND2	2:B:393:ASP:O	2.44	0.47
3:C:454:PRO:HD2	3:C:457:ILE:HD13	1.97	0.47
6:F:21:TRP:HE1	6:F:25:GLN:HE21	1.62	0.47
9:K:249:GLU:OE1	9:K:270:TYR:OH	2.33	0.47
1:A:668:GLN:NE2	1:A:672:TYR:OH	2.47	0.47
2:B:231:VAL:HB	2:B:454:VAL:HG22	1.97	0.47
3:C:445:THR:O	3:C:446:GLN:HG3	2.15	0.47
5:E:291:CYS:HB3	5:E:296:ALA:H	1.80	0.46
1:A:74:ARG:HB2	1:A:145:LYS:HB2	1.95	0.46
6:F:112:VAL:HA	6:F:115:ILE:HG22	1.97	0.46
6:F:228:LEU:HD22	6:F:232:LEU:HD22	1.97	0.46
1:A:635:GLN:OE1	1:A:676:ARG:NH2	2.48	0.46
4:D:249:TYR:HB2	4:D:281:TYR:CZ	2.51	0.46
8:H:907:ASN:OD1	8:H:908:ARG:NE	2.48	0.46
6:F:18:ASN:HB2	6:F:131:THR:HG22	1.98	0.46
1:A:325:ARG:HG2	5:E:11:TRP:HA	1.97	0.46
2:B:616:ARG:O	2:B:676:LEU:N	2.43	0.46
5:E:149:LEU:HD21	5:E:169:ILE:HD11	1.98	0.46
5:E:64:VAL:HB	5:E:169:ILE:HA	1.97	0.46
5:E:325:LEU:HD21	6:F:271:CYS:HB2	1.97	0.46
10:L:49:DG:H4'	10:L:50:DC:OP1	2.14	0.46
1:A:129:VAL:HG12	1:A:130:GLY:H	1.81	0.46
1:A:424:GLU:O	1:A:427:MET:HG3	2.16	0.46
1:A:703:PHE:HE2	1:A:712:LEU:HD22	1.81	0.46
2:B:570:GLU:HG2	2:B:577:THR:HG22	1.98	0.46
5:E:59:ARG:NH2	5:E:166:GLU:OE1	2.44	0.46
4:D:201:PHE:HB3	4:D:359:ILE:HD11	1.98	0.46
1:A:431:LYS:HE2	1:A:457:ILE:HG23	1.98	0.45
3:C:470:GLU:O	3:C:474:HIS:ND1	2.38	0.45
4:D:34:LEU:HD23	4:D:231:VAL:HG23	1.98	0.45
5:E:124:PRO:O	5:E:128:ILE:HG12	2.14	0.45
4:D:212:LEU:HG	4:D:290:LEU:HD13	1.99	0.45
4:D:318:TYR:HE1	4:D:341:MET:HE2	1.81	0.45
1:A:615:PHE:H	1:A:642:ARG:HH22	1.64	0.45
10:L:43:DA:H2'	10:L:44:DG:H8	1.80	0.45
1:A:316:LEU:H	1:A:316:LEU:HD23	1.82	0.45
4:D:405:GLU:HA	7:G:8:VAL:HA	1.98	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:133:LEU:HD22	6:F:165:LYS:HD2	1.99	0.45
2:B:527:MET:O	2:B:531:VAL:HG12	2.17	0.45
4:D:151:TYR:O	4:D:154:GLU:HG3	2.17	0.45
2:B:152:LEU:HD12	2:B:153:PRO:HD2	1.99	0.45
3:C:511:LYS:HG3	3:C:514:ARG:HH21	1.82	0.45
9:K:155:LEU:HD13	9:K:181:TYR:HE2	1.81	0.45
1:A:86:LEU:HB3	1:A:114:HIS:HB2	1.99	0.45
2:B:370:LYS:HB3	2:B:371:PRO:HD3	2.00	0.45
3:C:407:ILE:HG21	6:F:23:GLY:HA2	1.99	0.45
4:D:48:LEU:O	4:D:53:LYS:NZ	2.49	0.45
1:A:58:ALA:HB2	4:D:334:MET:HB3	1.99	0.44
5:E:77:LYS:HE2	5:E:77:LYS:HB2	1.88	0.44
6:F:21:TRP:CD1	6:F:166:ALA:HB1	2.52	0.44
9:K:107:GLU:OE2	9:K:135:LYS:NZ	2.50	0.44
9:K:209:GLU:HA	9:K:212:GLU:HG2	1.99	0.44
10:L:34:DT:H2"	10:L:35:DG:C8	2.51	0.44
2:B:352:GLU:HG2	2:B:417:ILE:HG12	1.99	0.44
3:C:540:GLN:O	3:C:543:ARG:HG3	2.17	0.44
5:E:251:ARG:HH22	5:E:293:GLN:HG3	1.82	0.44
2:B:79:GLU:N	2:B:79:GLU:OE1	2.50	0.44
2:B:268:LYS:O	2:B:271:LEU:HG	2.18	0.44
5:E:375:VAL:HA	5:E:379:LEU:HB2	2.00	0.44
1:A:613:THR:O	1:A:642:ARG:NH2	2.50	0.44
5:E:387:HIS:HE1	6:F:67:SER:H	1.66	0.44
2:B:156:ARG:H	2:B:156:ARG:HD3	1.83	0.44
6:F:44:LEU:HD12	6:F:227:LEU:HD13	1.99	0.44
6:F:252:ARG:NH1	6:F:263:GLU:OE2	2.51	0.44
4:D:399:ASP:OD1	4:D:399:ASP:N	2.51	0.44
9:K:201:GLU:HA	9:K:204:LYS:HG2	1.99	0.44
6:F:252:ARG:HD3	6:F:261:LEU:HD13	2.00	0.43
2:B:124:LEU:HD23	2:B:129:ASP:HB3	1.99	0.43
2:B:344:LEU:HD11	2:B:433:LEU:HD22	2.00	0.43
2:B:437:CYS:SG	2:B:438:MET:N	2.91	0.43
7:G:54:GLN:HA	7:G:57:VAL:HG12	1.99	0.43
9:K:164:PHE:HB3	9:K:181:TYR:CE1	2.53	0.43
9:K:219:PHE:HD1	9:K:222:LYS:HZ3	1.64	0.43
2:B:445:LYS:HD3	2:B:472:ASP:HB3	1.99	0.43
2:B:447:VAL:HG12	2:B:454:VAL:HG21	2.00	0.43
10:L:50:DC:H2"	10:L:51:DA:C8	2.53	0.43
1:A:393:THR:O	1:A:393:THR:OG1	2.36	0.43
2:B:709:THR:HG22	2:B:712:GLU:HG2	2.00	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:581:LEU:HD11	2:B:608:ILE:HG21	1.99	0.43
1:A:588:GLU:O	1:A:591:GLN:HG3	2.18	0.43
2:B:571:THR:OG1	2:B:572:GLN:N	2.52	0.43
1:A:199:LEU:HG	1:A:200:ARG:HG2	2.00	0.43
5:E:340:ASN:OD1	5:E:340:ASN:N	2.52	0.43
3:C:462:LYS:HG3	5:E:276:LEU:HD22	1.99	0.43
5:E:131:LEU:O	5:E:135:VAL:HG23	2.18	0.43
5:E:275:HIS:HB3	5:E:282:PRO:HA	2.00	0.43
2:B:53:LEU:HD12	2:B:87:LEU:HD13	2.00	0.43
2:B:555:GLN:HB2	2:B:557:ILE:HG22	2.00	0.43
5:E:112:LYS:O	5:E:147:ASN:ND2	2.52	0.43
5:E:348:CYS:HB3	6:F:146:ARG:HD3	2.00	0.43
1:A:88:ALA:HB2	1:A:114:HIS:CD2	2.54	0.42
2:B:42:MET:HG2	2:B:48:LYS:HB2	1.99	0.42
3:C:461:LEU:HD22	3:C:521:LEU:HD13	2.00	0.42
5:E:92:VAL:HG23	5:E:104:ILE:HG13	2.00	0.42
9:K:141:LYS:HE2	9:K:141:LYS:HB3	1.88	0.42
9:K:252:LEU:HB2	9:K:256:MET:HB3	2.01	0.42
1:A:633:ARG:HG2	1:A:676:ARG:HA	2.01	0.42
2:B:463:PRO:HG3	2:B:654:PHE:HD1	1.83	0.42
3:C:523:SER:HB3	5:E:268:LYS:HG3	2.01	0.42
6:F:22:TRP:CD1	6:F:34:LEU:HD12	2.54	0.42
1:A:114:HIS:HE1	1:A:492:ASN:HD21	1.66	0.42
1:A:678:ARG:HD3	7:G:66:PHE:HE2	1.84	0.42
5:E:212:ALA:O	5:E:217:GLY:N	2.52	0.42
2:B:263:LEU:HB3	2:B:334:ARG:NH1	2.34	0.42
3:C:446:GLN:HG2	5:E:286:LEU:HG	2.02	0.42
4:D:101:LEU:HD23	4:D:105:LEU:HB2	2.01	0.42
9:K:157:LYS:HE3	9:K:157:LYS:HB2	1.90	0.42
5:E:169:ILE:HD12	5:E:198:VAL:HG22	2.01	0.42
1:A:375:LYS:HE3	1:A:375:LYS:HB3	1.83	0.42
1:A:446:ILE:O	1:A:448:ALA:N	2.49	0.42
2:B:627:TYR:HA	10:L:55:DA:H2"	2.00	0.42
4:D:42:LEU:HD11	4:D:46:ARG:HH21	1.85	0.42
1:A:418:LYS:HE3	1:A:418:LYS:HB3	1.94	0.42
5:E:147:ASN:OD1	5:E:148:SER:N	2.53	0.42
1:A:448:ALA:O	1:A:452:ARG:N	2.51	0.42
2:B:633:LEU:HD21	2:B:652:LEU:HD21	2.02	0.42
3:C:431:ILE:HG12	6:F:229:TRP:HZ3	1.84	0.42
4:D:55:TRP:HH2	4:D:83:GLN:HE21	1.68	0.42
1:A:384:ILE:HD11	1:A:388:GLN:HB2	2.02	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:118:HIS:CE1	2:B:120:GLU:HB2	2.54	0.41
2:B:76:THR:O	2:B:80:ILE:HG12	2.20	0.41
6:F:69:PHE:HE1	6:F:139:LYS:HE2	1.84	0.41
6:F:199:ASP:OD1	6:F:199:ASP:N	2.52	0.41
1:A:119:THR:O	1:A:122:SER:OG	2.28	0.41
3:C:467:ALA:O	3:C:470:GLU:HG3	2.20	0.41
4:D:144:ASP:O	4:D:147:SER:OG	2.32	0.41
5:E:94:GLU:HG3	5:E:236:VAL:HG11	2.01	0.41
9:K:222:LYS:O	9:K:225:GLU:HG3	2.21	0.41
1:A:439:ILE:HG23	1:A:466:LEU:HD13	2.03	0.41
1:A:165:LYS:HB3	1:A:184:VAL:HG11	2.01	0.41
2:B:20:GLU:HG3	2:B:482:THR:O	2.20	0.41
1:A:326:LYS:O	1:A:334:ARG:NH2	2.53	0.41
1:A:510:VAL:HG23	1:A:690:ILE:O	2.20	0.41
1:A:537:ASN:O	1:A:540:LYS:HG2	2.21	0.41
2:B:216:LYS:HE3	2:B:216:LYS:HB3	1.87	0.41
6:F:148:ASN:O	6:F:151:VAL:HG12	2.21	0.41
7:G:5:LEU:HD21	9:K:268:LEU:HD21	2.03	0.41
7:G:22:TYR:HA	7:G:25:GLU:HG2	2.02	0.41
1:A:112:HIS:HB2	4:D:310:GLU:OE1	2.21	0.41
1:A:511:TRP:HE1	1:A:691:THR:HB	1.85	0.41
2:B:263:LEU:HD13	2:B:334:ARG:HD3	2.03	0.41
2:B:418:ILE:HG22	2:B:420:PRO:HD3	2.02	0.41
7:G:34:ILE:HG23	7:G:45:VAL:HG12	2.02	0.41
9:K:206:VAL:HA	9:K:209:GLU:HG2	2.02	0.41
2:B:462:SER:HB3	2:B:692:LYS:O	2.21	0.41
2:B:662:GLN:O	2:B:666:ARG:HG2	2.20	0.41
2:B:681:ASP:HB3	2:B:684:PHE:HD2	1.85	0.41
3:C:408:ARG:NH2	6:F:122:SER:O	2.54	0.41
4:D:78:GLU:HG3	4:D:79:PHE:CD2	2.55	0.41
4:D:143:ARG:NH2	4:D:147:SER:HB2	2.35	0.41
4:D:207:ASP:OD1	4:D:207:ASP:N	2.52	0.41
5:E:60:HIS:CD2	5:E:159:MET:HE1	2.56	0.41
5:E:167:VAL:HB	5:E:196:VAL:HG22	2.01	0.41
9:K:213:LYS:O	9:K:216:GLN:HG3	2.21	0.41
1:A:686:SER:HB2	4:D:386:THR:HG21	2.03	0.41
2:B:195:ALA:O	2:B:199:ILE:HG23	2.21	0.41
2:B:229:ALA:HB3	2:B:451:PHE:HD1	1.86	0.41
2:B:640:LEU:HD22	2:B:646:ILE:HD12	2.03	0.41
3:C:535:LYS:HE2	3:C:535:LYS:HB2	1.88	0.41
10:L:43:DA:H2'	10:L:44:DG:C8	2.56	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:25:MET:HE2	2:B:25:MET:HB2	1.97	0.40
2:B:618:VAL:HG11	2:B:664:VAL:HA	2.03	0.40
3:C:528:MET:HA	3:C:531:THR:HG22	2.02	0.40
6:F:215:LEU:HD22	6:F:230:VAL:HG11	2.03	0.40
9:K:117:LEU:HD12	9:K:125:THR:HB	2.03	0.40
1:A:62:ARG:HA	4:D:339:PRO:HG3	2.02	0.40
2:B:494:ILE:HG12	2:B:684:PHE:HB3	2.02	0.40
2:B:681:ASP:HB3	2:B:684:PHE:CD2	2.56	0.40
2:B:694:PRO:HB2	2:B:696:TRP:CD1	2.56	0.40
5:E:172:SER:HA	5:E:201:LEU:HB2	2.03	0.40
5:E:255:PRO:HD3	5:E:312:LEU:HD22	2.02	0.40
7:G:14:PRO:HA	7:G:17:LYS:HB3	2.03	0.40
1:A:363:VAL:HG22	1:A:439:ILE:HD12	2.02	0.40
2:B:613:HIS:CD2	5:E:206:ARG:HB2	2.56	0.40
5:E:358:TYR:HE2	5:E:369:VAL:HG22	1.85	0.40
9:K:164:PHE:HB3	9:K:181:TYR:HE1	1.86	0.40
2:B:52:LEU:HD22	2:B:72:TYR:HE1	1.87	0.40
2:B:161:PHE:O	2:B:165:GLY:N	2.52	0.40
6:F:213:LEU:HB3	6:F:231:PHE:HE1	1.86	0.40
3:C:472:LEU:HB3	5:E:307:ILE:HG23	2.03	0.40
4:D:140:LYS:HG3	4:D:141:HIS:ND1	2.35	0.40
4:D:204:LEU:O	4:D:211:GLN:NE2	2.54	0.40

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	598/782 (76%)	563 (94%)	35 (6%)	0	100	100
2	B	698/768 (91%)	675 (97%)	23 (3%)	0	100	100
3	C	152/548 (28%)	148 (97%)	4 (3%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	D	430/462 (93%)	428 (100%)	2 (0%)	0	100	100
5	E	365/395 (92%)	360 (99%)	5 (1%)	0	100	100
6	F	254/308 (82%)	251 (99%)	3 (1%)	0	100	100
7	G	64/71 (90%)	61 (95%)	3 (5%)	0	100	100
8	H	38/940 (4%)	37 (97%)	1 (3%)	0	100	100
9	K	156/273 (57%)	153 (98%)	3 (2%)	0	100	100
All	All	2755/4547 (61%)	2676 (97%)	79 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	536/688 (78%)	531 (99%)	5 (1%)	75	86
2	B	614/672 (91%)	613 (100%)	1 (0%)	92	97
3	C	140/484 (29%)	140 (100%)	0	100	100
4	D	377/399 (94%)	376 (100%)	1 (0%)	91	96
5	E	329/352 (94%)	328 (100%)	1 (0%)	91	96
6	F	230/272 (85%)	229 (100%)	1 (0%)	89	95
7	G	59/64 (92%)	56 (95%)	3 (5%)	20	48
8	H	33/804 (4%)	32 (97%)	1 (3%)	36	63
9	K	150/233 (64%)	150 (100%)	0	100	100
All	All	2468/3968 (62%)	2455 (100%)	13 (0%)	85	93

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	129	VAL
1	A	415	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	502	ILE
1	A	510	VAL
1	A	523	VAL
2	B	5	VAL
4	D	215	PHE
5	E	371	CYS
6	F	247	VAL
7	G	21	LEU
7	G	48	GLU
7	G	60	LEU
8	H	904	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (41) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	303	ASN
1	A	307	ASN
1	A	492	ASN
1	A	497	GLN
1	A	506	GLN
1	A	595	ASN
1	A	599	ASN
1	A	656	ASN
1	A	668	GLN
2	B	118	HIS
2	B	154	HIS
2	B	187	GLN
2	B	203	ASN
2	B	260	GLN
2	B	262	ASN
2	B	543	GLN
2	B	555	GLN
2	B	700	HIS
3	C	405	GLN
3	C	458	GLN
4	D	54	ASN
4	D	97	HIS
4	D	211	GLN
4	D	260	ASN
4	D	273	GLN
4	D	353	GLN
4	D	390	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
5	E	99	ASN
5	E	154	GLN
5	E	162	HIS
5	E	220	HIS
5	E	227	HIS
5	E	257	HIS
6	F	9	ASN
6	F	25	GLN
6	F	185	GLN
6	F	204	GLN
6	F	248	HIS
9	K	169	ASN
9	K	208	GLN
9	K	244	HIS

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 oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

Of 7 ligands modelled in this entry, 6 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z|>2$	Counts	RMSZ	$\#|Z|>2$
12	SF4	B	1000	2	0,12,12	-	-	-		

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
12	SF4	B	1000	2	-	-	0/6/5/5

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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-72341. These allow visual inspection of the internal detail of the map and identification of artifacts.

Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1　Orthogonal projections ⓘ
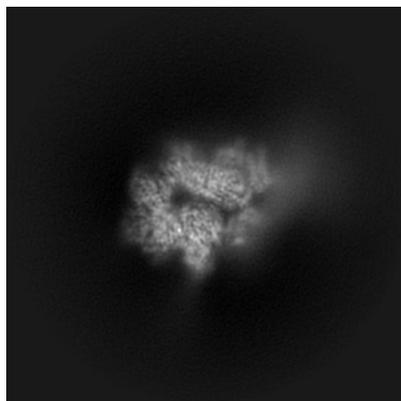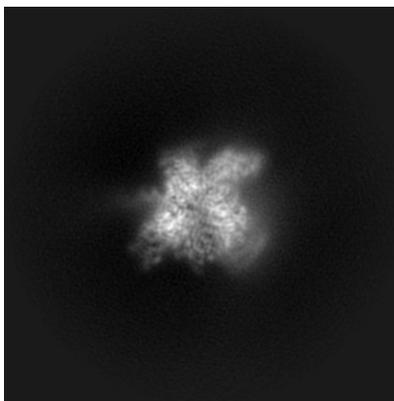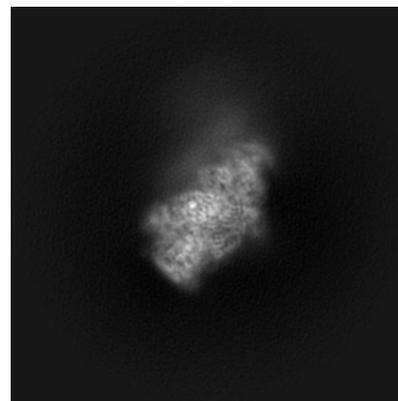
6.1.1　Primary map

X　　　　　　　　　　　　　Y　　　　　　　　　　　　　Z

6.1.2　Raw map

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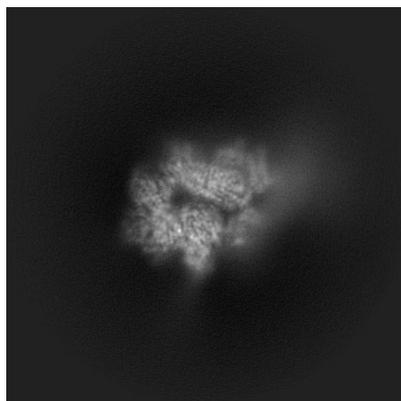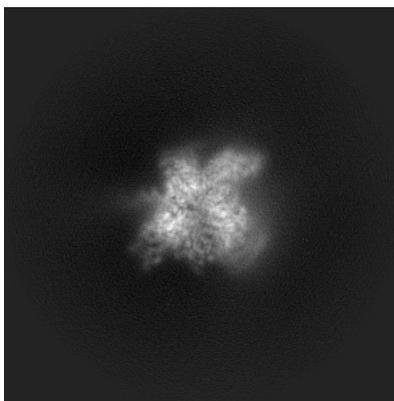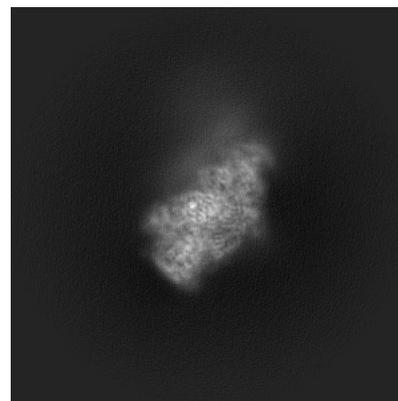
The images above show the map projected in three orthogonal directions.

6.2　Central slices ⓘ
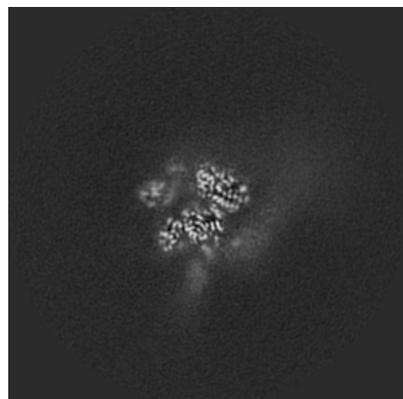
6.2.1　Primary map
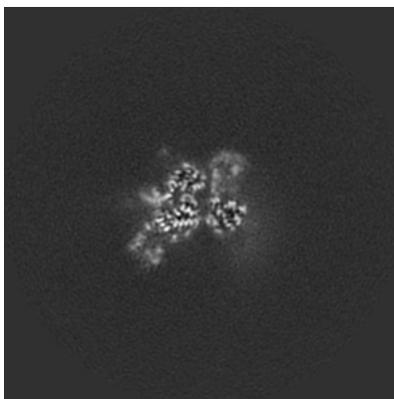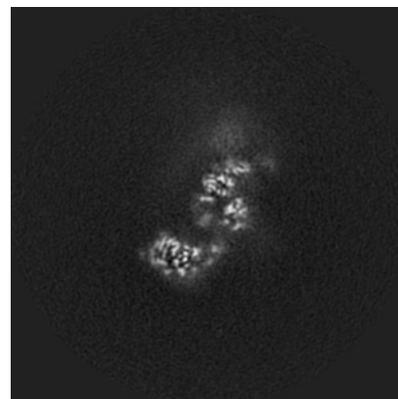
| X Index: 180 | Y Index: 180 | Z Index: 180 |

6.2.2　Raw map
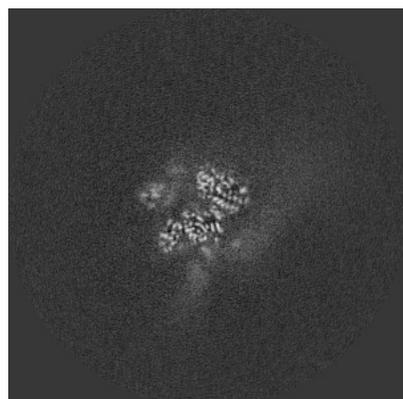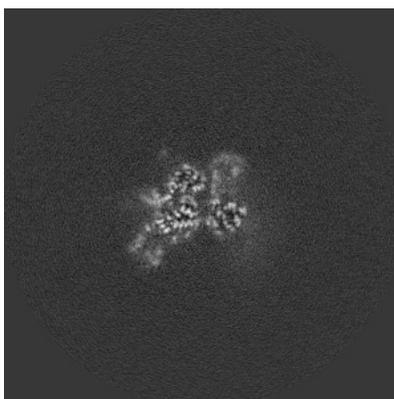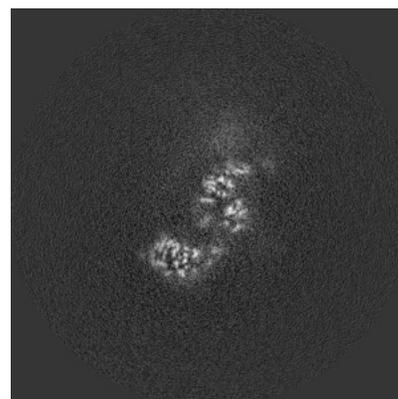
| X Index: 180 | Y Index: 180 | Z Index: 180 |

The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

6.3.1 Primary map
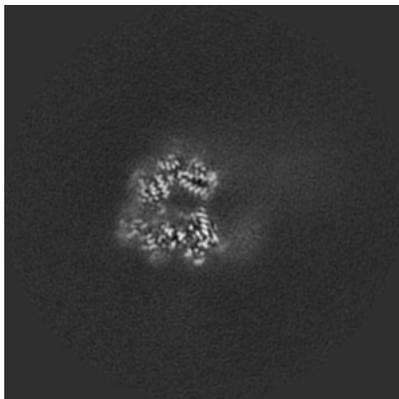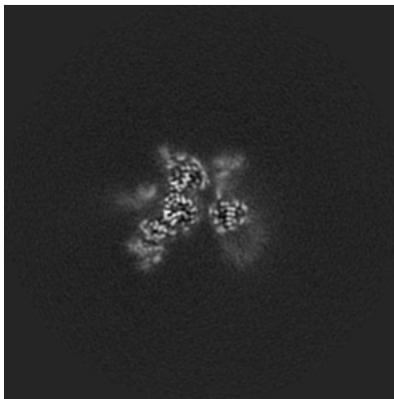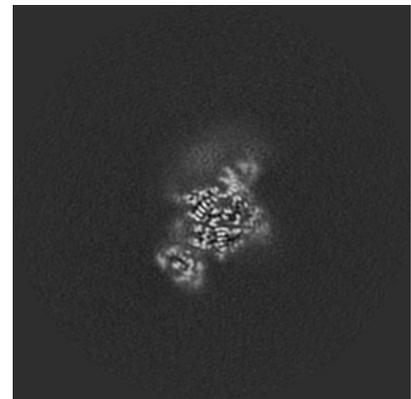
| X Index: 163 | Y Index: 174 | Z Index: 158 |

6.3.2 Raw map
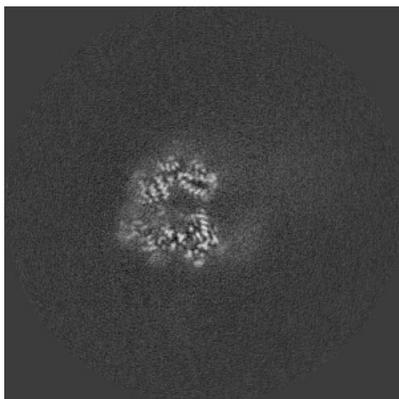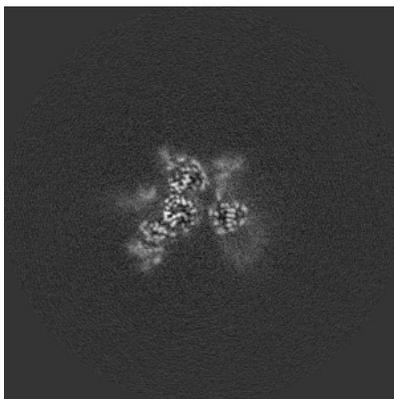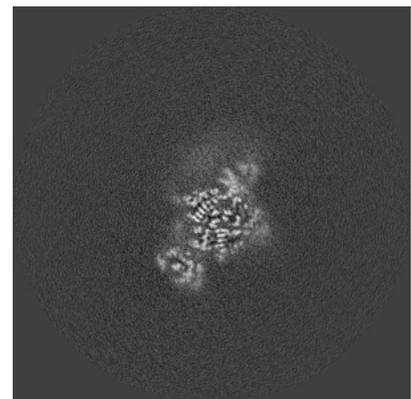
| X Index: 163 | Y Index: 174 | Z Index: 158 |

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
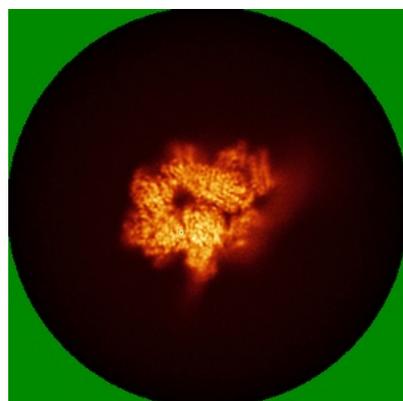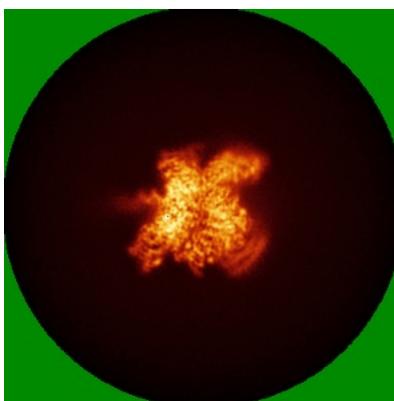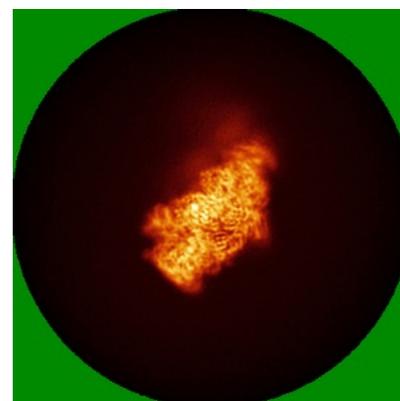
| X | Y | Z |

6.4.2 Raw map

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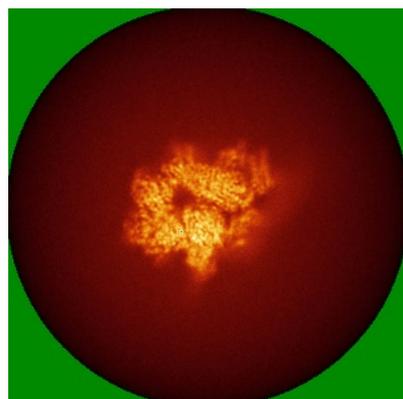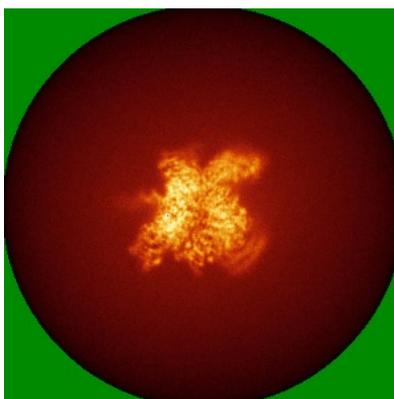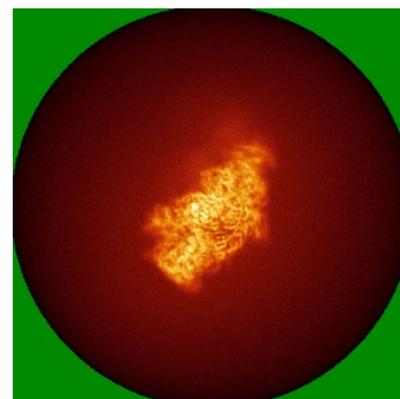
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

| X | Y | Z |
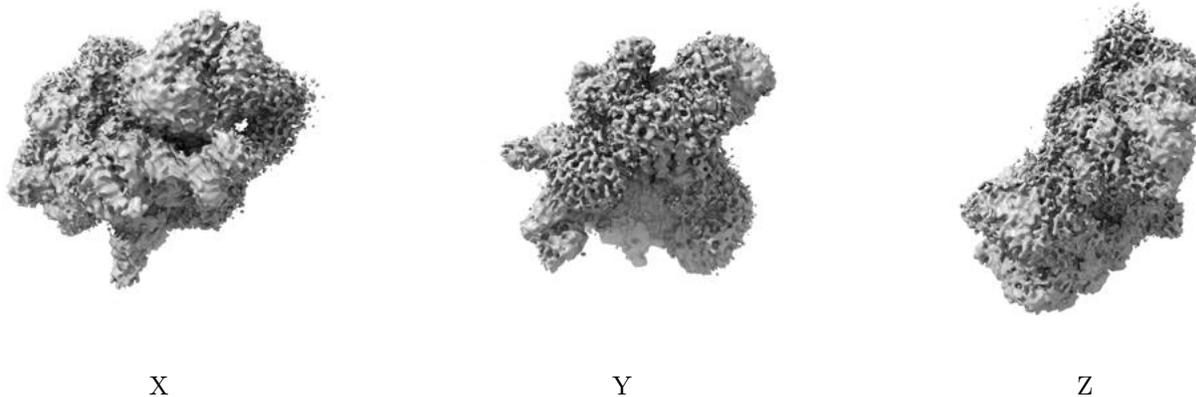
The images above show the 3D surface view of the map at the recommended contour level 0.004. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

| X | Y | Z |
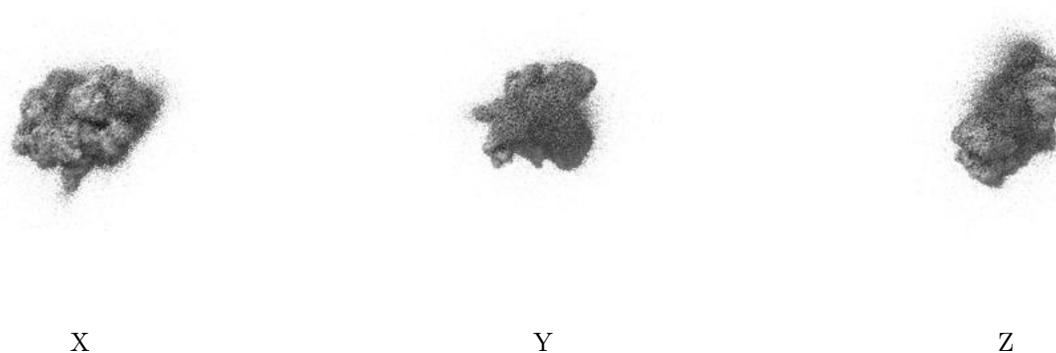
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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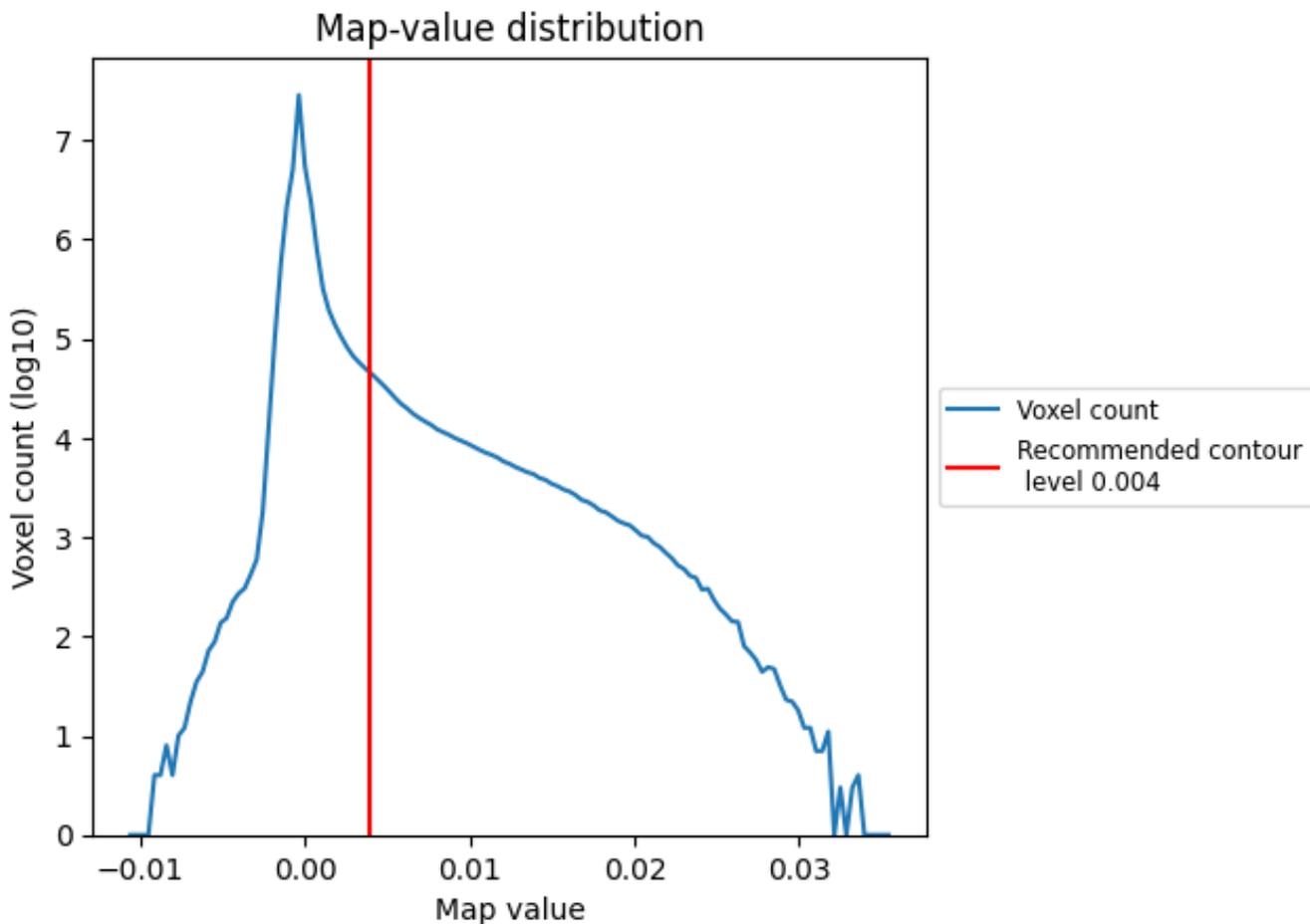
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate (i)
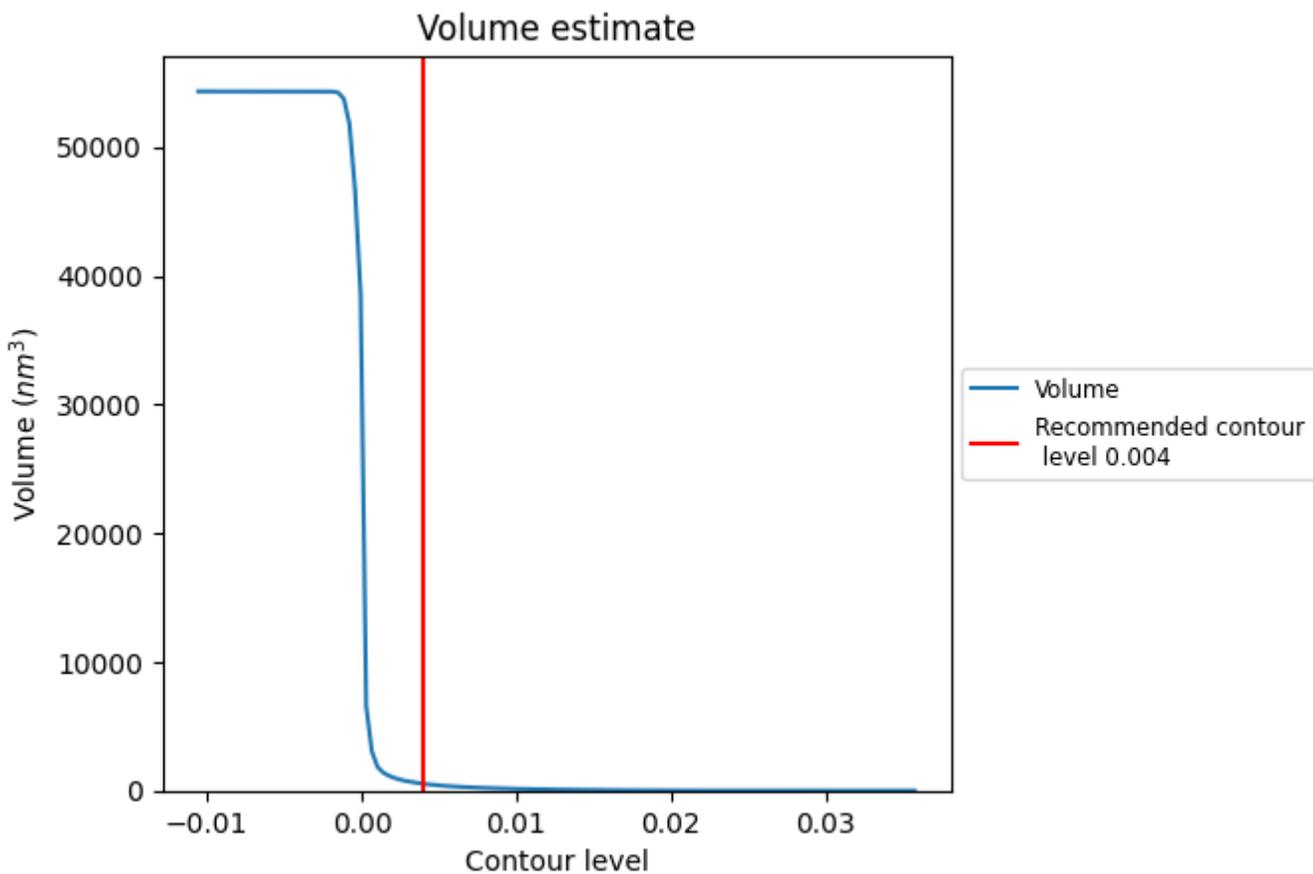
The volume at the recommended contour level is 535 nm^3; this corresponds to an approximate mass of 483 kDa.

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 ⓘ
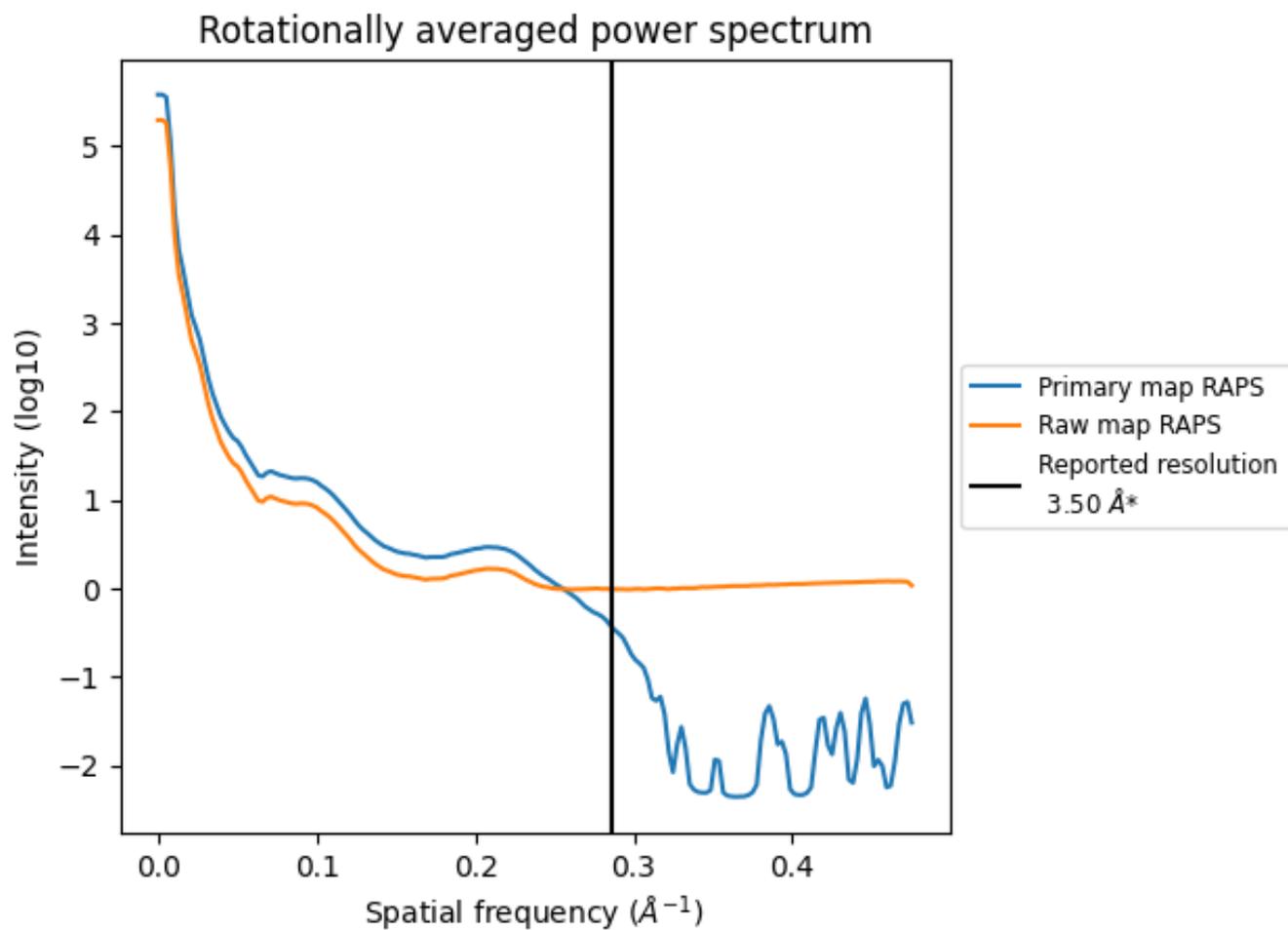
*Reported resolution corresponds to spatial frequency of 0.286 Å^{-1}

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 ⓘ
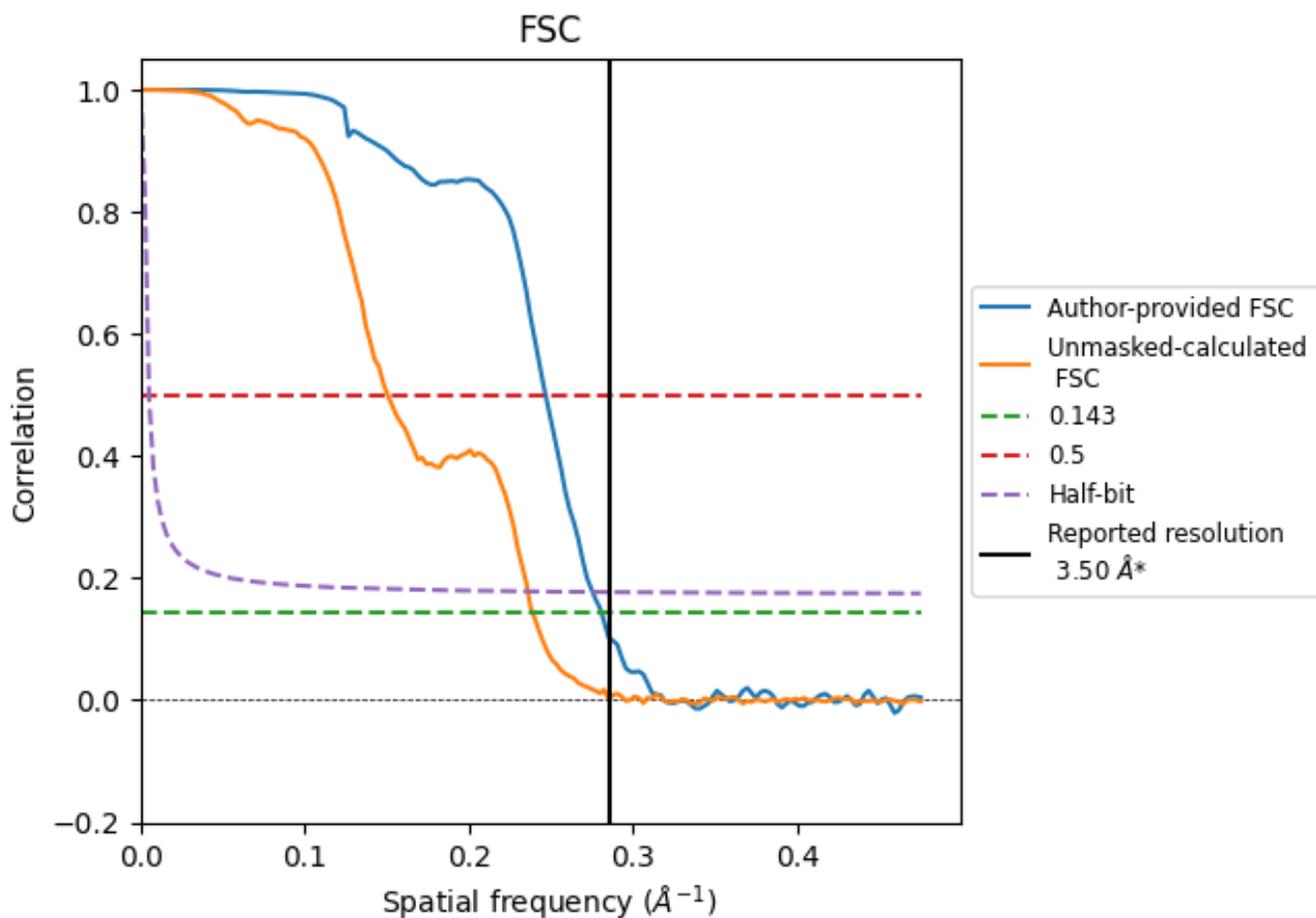
*Reported resolution corresponds to spatial frequency of 0.286 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	3.56	4.05	3.63
Unmasked-calculated*	4.19	6.64	4.24

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.19 differs from the reported value 3.5 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-72341 and PDB model 9XYU. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ

| X | Y | Z |
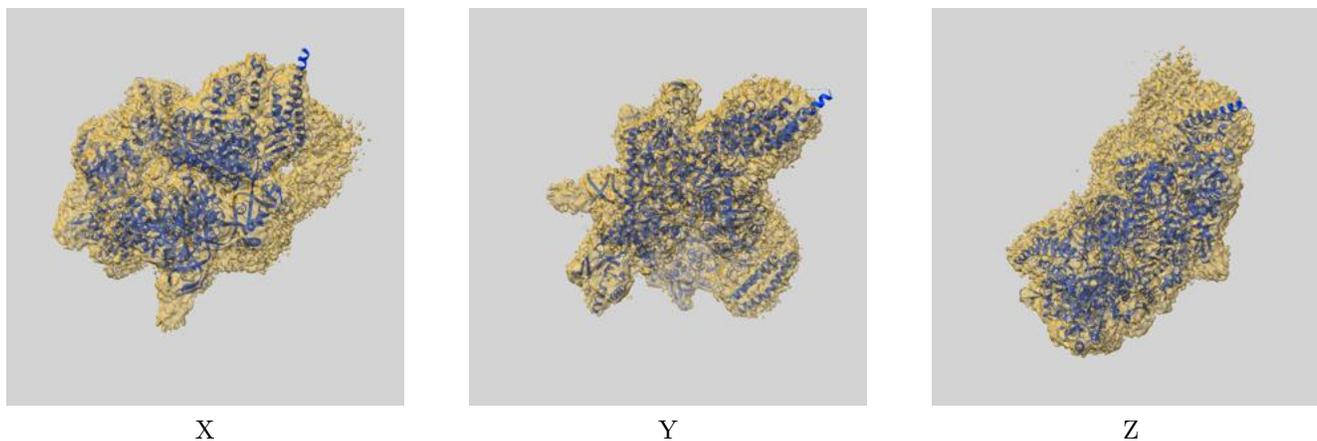
The images above show the 3D surface view of the map at the recommended contour level 0.004 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)

X Y Z
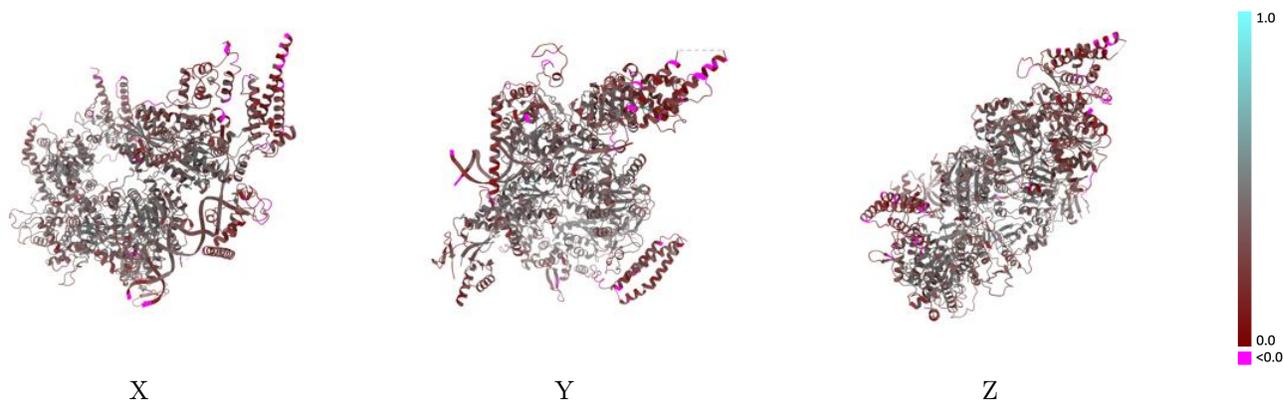
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (i)

X Y Z
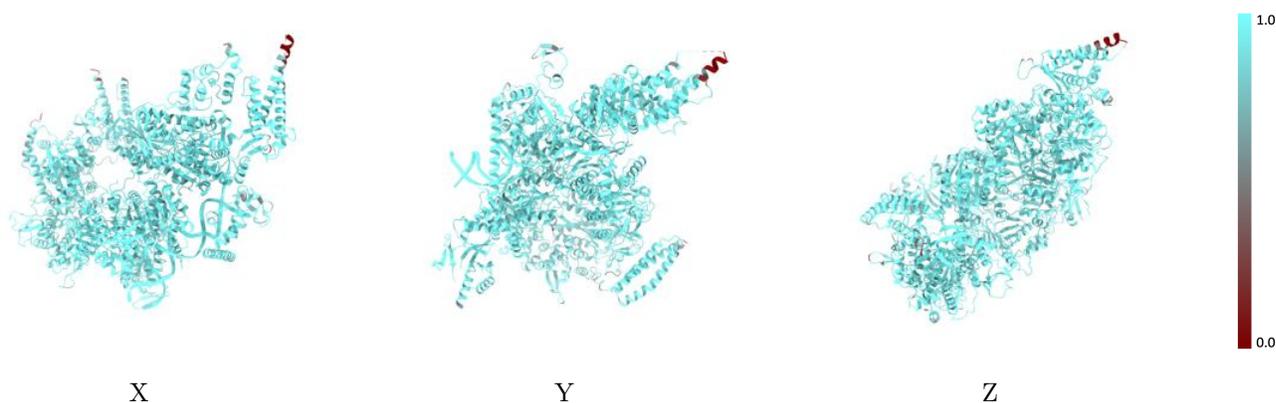
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.004).

9.4 Atom inclusion ⓘ
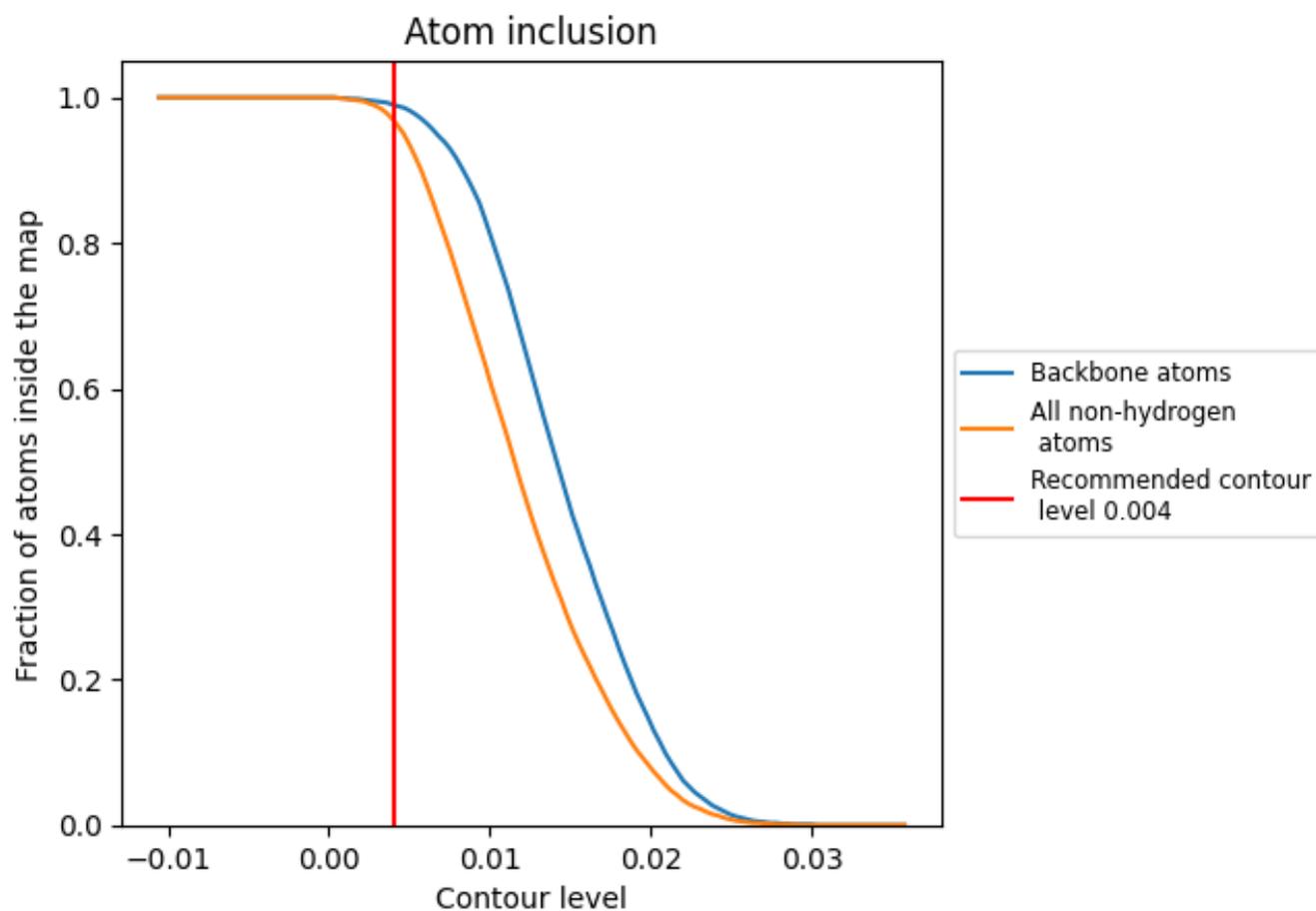
At the recommended contour level, 99% of all backbone atoms, 97% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.004) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9690	0.3430
A	0.9810	0.3950
B	0.9610	0.3080
C	0.9130	0.2190
D	0.9740	0.3590
E	0.9780	0.3780
F	0.9840	0.3880
G	0.9850	0.3720
H	0.9330	0.3450
K	0.9370	0.2380
L	0.9980	0.3200
M	0.9870	0.3110

1.0

0.0
<0.0