Full wwPDB EM Validation Report (i)

Dec 14, 2024 – 04:54 PM EST

PDB ID	:	8VUR
EMDB ID	:	EMD-43537
Title	:	Human GluN1-2A with IgG 003-102 WT conformation
Authors	:	Michalski, K.; Furukawa, H.
Deposited on	:	2024-01-29
Resolution	:	3.84 Å(reported)

This is a Full wwPDB EM Validation 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 (i) 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 (i)) were used in the production of this report:
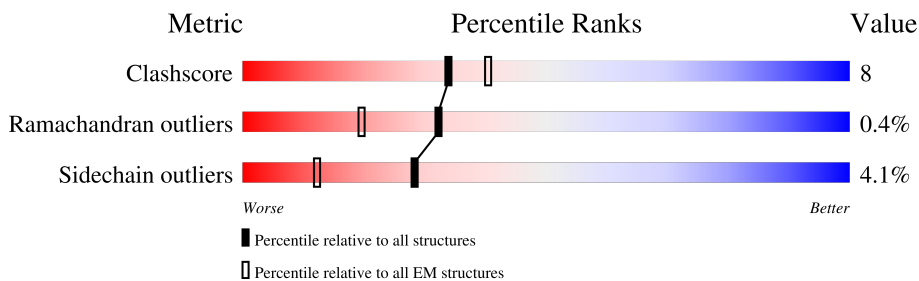
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 3.84 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		0.4%
Sidechain outliers		4.1%

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	815	6% — 77% — 19% · ·
2	B	808	8% — 79% — 17% ·
2	D	808	7% — 77% — 18% · ·
3	C	815	7% — 78% — 18% · ·
4	H	234	· — 88% — 12%
5	L	218	· — 91% — 8% ·

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 24978 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 Glutamate receptor ionotropic, NMDA 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	787	Total 5778	C 3679	N 1012	O 1059	S 28	0	0

- Molecule 2 is a protein called Glutamate receptor ionotropic, NMDA 2A.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	781	Total 5547	C 3569	N 949	O 1002	S 27	0	0
2	D	780	Total 5412	C 3508	N 925	O 955	S 24	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	578I	CYS	ASN	conflict	UNP Q12879
B	578L	ASP	LYS	conflict	UNP Q12879
B	578N	ARG	LYS	conflict	UNP Q12879
B	578O	GLU	ALA	conflict	UNP Q12879
B	578Q	GLY	HIS	conflict	UNP Q12879
D	578I	CYS	ASN	conflict	UNP Q12879
D	578L	ASP	LYS	conflict	UNP Q12879
D	578N	ARG	LYS	conflict	UNP Q12879
D	578O	GLU	ALA	conflict	UNP Q12879
D	578Q	GLY	HIS	conflict	UNP Q12879

- Molecule 3 is a protein called Glutamate receptor ionotropic, NMDA 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	787	Total 5496	C 3504	N 973	O 996	S 23	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	54	ALA	GLY	conflict	UNP Q05586
C	358	ARG	ASN	conflict	UNP Q05586

- Molecule 4 is a protein called 003-102 Heavy.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	H	234	Total	C	N	O	S	0	0
			1456	912	269	271	4		

- Molecule 5 is a protein called 003-102 Light.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	L	218	Total	C	N	O	S	0	0
			1289	802	226	256	5		

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.
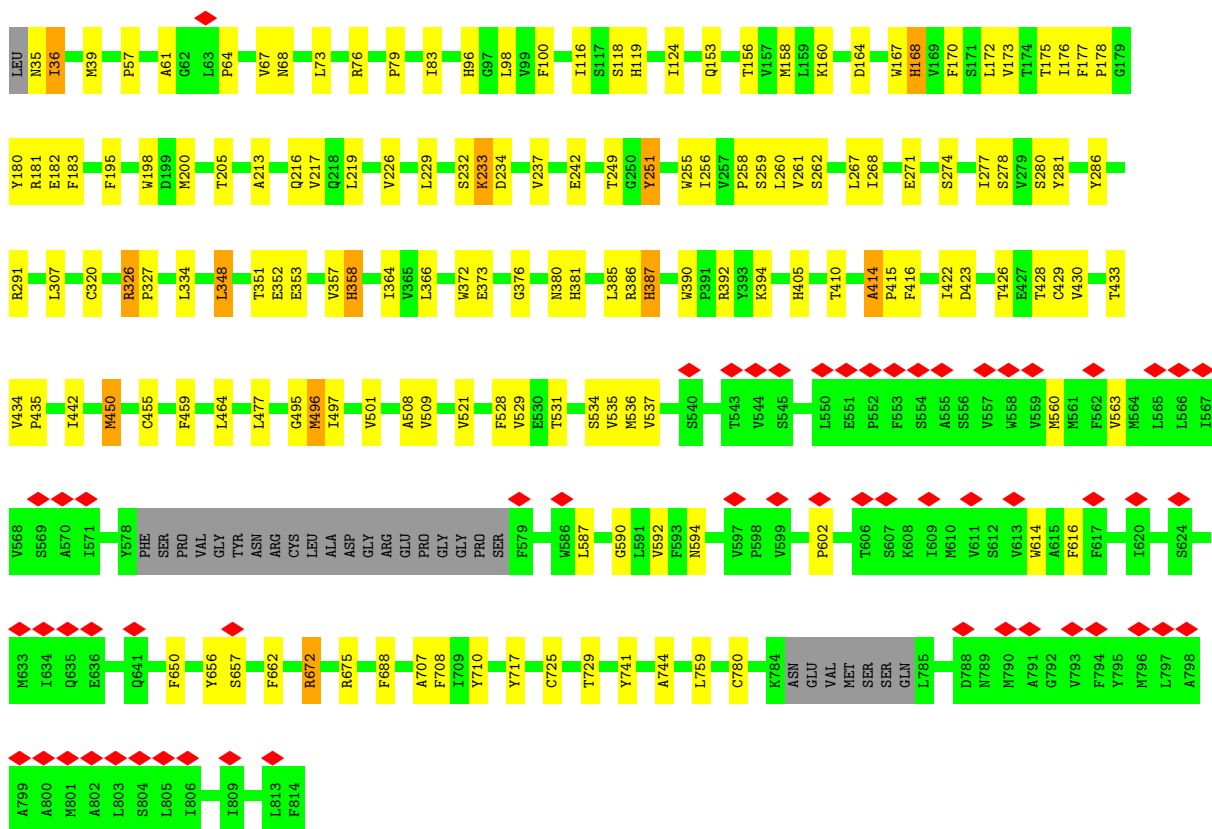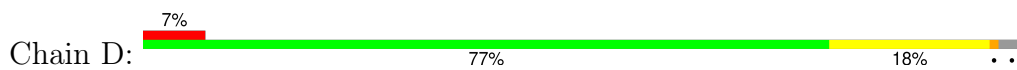
• Molecule 1: Glutamate receptor ionotropic, NMDA 1
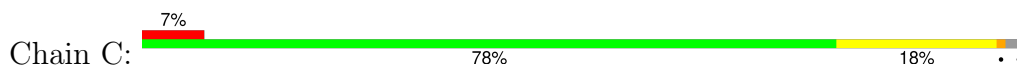

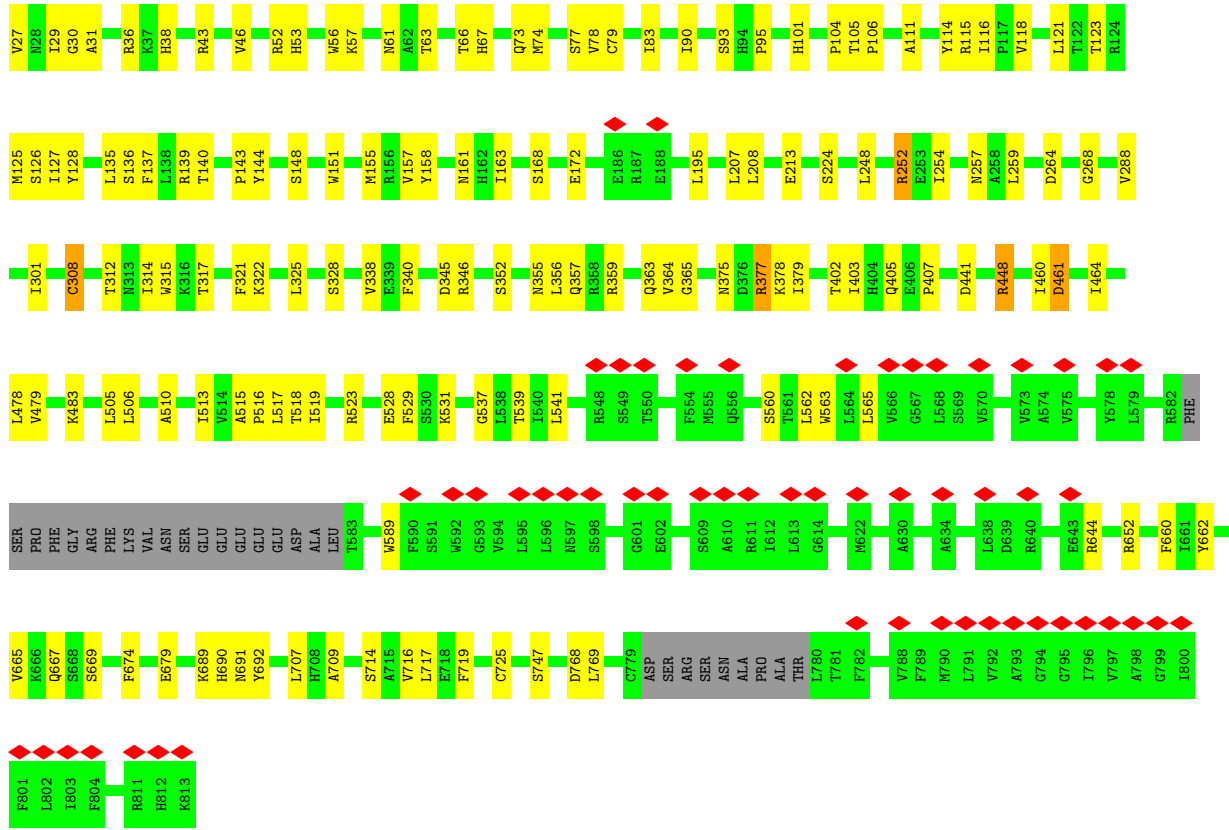• Molecule 2: Glutamate receptor ionotropic, NMDA 2A

D207 T208 Q218 L219 K220 K221 I222 H223 V226 I227 L228 S232 E235 L238 S241 Y251 S259 T265 E271 I277 Y281 D282 D283 L288 G295 G296 G297 I298 L299 T300 I313 S319 H332 T333 L334 L348 T351 V357

V362 V363 L366 R370 E371 W372 E373 K374 K377 L383 S384 L385 F396 C399 I408 V409 T410 L411 E412 E413 A414 P415 F416 V417 D423 P424 L425 T426 E427 T428 C429 V434 P435 K438 C455 I461 Y475 K484 I497 V500 V506 M507 A508

L512 R518 V522 F528 V529 V535 M536 S540 N541 G542 T543 V544 S545 P546 S547 F553 S554 A555 S556 V557 W558 V559 M560 M561 F562 V563 M564 L565 L566 I567 V568 S569 A570 I571 A572 V573 Y578 PHE SER PRO VAL GLY TYR ASN ARG CYS LEU ALA ASP GLY ARG GLU

PRO GLY GLY SER F579 G582 W586 L587 L588 W589 G590 L591 V592 F593 N594 V597 P602 T606 S607 K608 I609 M610 V611 S612 V613 W614 F617 S624 Y625 T626 A627 N628 M633 I634 D640 S657 F660 R661 T664 V665 S669 Y684 A707 F708

I709 Y710 V714 L715 K718 T729 I730 G731 Y734 A744 L745 W751 I755 C780 H781 K784 ASN GLU VAL MET SER SER GLN L785 M790 A791 F794 Y795 M796 L797 A798 A799 A800 M801 A802 L803 S804 A805 I806 T807 W810 E811 H812 L813 F814

• Molecule 2: Glutamate receptor ionotropic, NMDA 2A

7%

Chain D: 77% 18% • •

LEU N35 I36 M39 P57 A61 G62 L63 P64 V67 N68 L73 R76 P79 I83 H96 G97 L98 V99 F100 I116 S117 S118 H119 I124 Q153 T156 V157 M158 L159 K160 D164 W167 H168 V169 F170 S171 L172 V173 T174 T175 I176 F177 P178 G179

Y180 R181 E182 F183 F195 W198 D199 M200 T205 A213 Q216 V217 Q218 L219 V226 L229 S232 K233 D234 V237 E242 T249 G250 Y251 W255 I256 V257 P258 S259 L260 V261 S262 L267 I268 E271 S274 I277 S278 V279 S280 Y281 Y286

R291 L307 C320 R326 P327 L334 L348 T351 E352 E353 V357 H358 I364 V365 L366 W372 E373 G376 N380 H381 L385 R386 H387 W390 P391 R392 Y393 K394 H405 T410 A414 P415 F416 I422 D423 T426 E427 T428 C429 V430 T433

V434 P435 I442 M450 C455 F459 L464 L477 G495 M496 I497 V501 A508 V509 V521 F528 V529 E530 T531 S534 V535 M536 V537 S540 T543 V544 S545 L550 E551 P552 F553 S554 A555 S556 V557 W558 V559 M560 M561 F562 V563 M564 L565 L566 I567

V568 S569 A570 I571 Y578 PHE SER PRO VAL GLY TYR ASN ARG CYS LEU ALA ASP GLY ARG GLU PRO GLY GLY PRO SER F579 W586 L587 G590 L591 V592 F593 N594 V597 P598 V599 P602 T606 S607 K608 I609 M610 V611 S612 V613 W614 A615 F616 F617 I620 S624

M633 I634 Q635 E636 Q641 F650 Y656 S657 F662 R672 R675 F688 A707 F708 I709 Y710 Y717 C725 T729 Y741 A744 L759 C780 K784 ASN GLU VAL MET SER SER GLN L785 D788 N789 M790 A791 G792 V793 F794 Y795 M796 L797 A798

A799 A800 M801 A802 L803 S804 L805 I806 I809 L813 F814

• Molecule 3: Glutamate receptor ionotropic, NMDA 1

7%

Chain C: 78% 18% • •

V27 N28 I29 G30 A31 R36 K37 H38 R43 V46 R52 H53 W56 K57 N61 A62 T63 T66 H67 Q73 M74 S77 V78 C79 I83 I90 S93 H94 P95 H101 P104 T105 P106 A111 Y114 R115 I116 P117 V118 L121 T122 T123 R124

M125 S126 I127 Y128 L135 S136 F137 L138 R139 T140 P143 Y144 S148 W151 M155 R156 V157 Y158 N161 H162 I163 S168 E172 E186 R187 E188 L195 L207 L208 E213 S224 L248 R252 E253 I254 N257 A258 L259 D264 G268 V288

I301 C308 T312 N313 I314 W315 K316 T317 F321 K322 L325 S328 V338 E339 F340 D345 R346 S352 N355 L356 Q357 R358 R359 Q363 V364 G365 N375 D376 R377 K378 I379 T402 I403 H404 Q405 E406 P407 D441 R448 I460 D461 I464

L478 V479 K483 L505 L506 A510 I513 V514 A515 P516 L517 T518 I519 R523 E528 F529 S530 K531 G537 L538 T539 L540 L541 R548 S549 T550 F554 M555 Q556 S560 T561 L562 W563 L564 L565 V566 G567 L568 S569 V570 V573 A574 V575 Y578 L579 R582 PHE

SER PRO PHE GLY ARG PHE LYS VAL ASN SER GLU GLU GLU GLU ASP ALA LEU T583 W589 F590 S591 W592 G593 V594 L595 L596 N597 S598 G601 E602 S609 A610 R611 I612 L613 G614 M622 A630 A634 L638 D639 R640 E643 R644 R652 F660 I661 Y662

V665 K666 Q667 S668 S669 F674 E679 K689 H690 N691 Y692 L707 H708 A709 S714 A715 V716 L717 E718 F719 C725 S747 D768 L769 C779 ASP SER ARG SER ASN ALA PRO ALA THR L780 T781 F782 V788 F789 M790 L791 V792 A793 G794 G795 I796 V797 A798 G799 I800

F801 L802 I803 F804 R811 H812 K813

• Molecule 4: 003-102 Heavy

Chain H:

88% 12%

L2 Q5 T17 T23 R39 W48 I49 G50 E51 S55 N59 Y60 N61 L64 D73 N77 G103 V104 L231 S254 W266 P271 Y282 H283 K305 S314 A317 A321 C325 G332 V333 N334 G340 V347

• Molecule 5: 003-102 Light

Chain L:

91% 8%

N1 L4 T5 Q6 C22 T23 R24 S25 S26 I29 A30 S31 N32 Y33 Y50 Y90 C91 Y94 G102 G103 G104 H237 Q244 K245 T246 G271 S286 G287 I307 T312 Y323 V328 G331 V338

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	133432	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.743	Depositor
Minimum map value	-0.426	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.016	Depositor
Recommended contour level	0.0509	Depositor
Map size (Å)	342.4, 342.4, 342.4	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.856, 0.856, 0.856	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	0.26	0/5903	0.50	0/8045
2	B	0.26	0/5673	0.48	1/7762 (0.0%)
2	D	0.25	0/5538	0.48	1/7600 (0.0%)
3	C	0.25	0/5618	0.47	0/7701
4	H	0.24	0/1495	0.49	0/2071
5	L	0.27	0/1315	0.49	0/1821
All	All	0.26	0/25542	0.48	2/35000 (0.0%)

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
2	B	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	89	LEU	CA-CB-CG	6.62	130.53	115.30
2	D	348	LEU	CA-CB-CG	5.64	128.28	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	428	THR	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	5778	0	5401	98	0
2	B	5547	0	5008	85	0
2	D	5412	0	4730	88	0
3	C	5496	0	4885	87	0
4	H	1456	0	1037	18	0
5	L	1289	0	871	12	0
All	All	24978	0	21932	374	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 (374) 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)
1:A:501:MET:HB3	1:A:513:ILE:HD11	1.67	0.76
1:A:512:MET:HG2	1:A:514:VAL:HG23	1.71	0.72
2:B:271:GLU:N	2:B:271:GLU:OE2	2.24	0.70
3:C:148:SER:HA	3:C:151:TRP:HD1	1.57	0.70
2:B:34:LEU:HD23	2:B:96:HIS:HD2	1.57	0.69
2:D:258:PRO:O	2:D:260:LEU:N	2.26	0.69
1:A:381:TRP:NE1	1:A:387:GLU:O	2.25	0.69
3:C:93:SER:HB2	3:C:121:LEU:HD12	1.74	0.69
1:A:441:ASP:HB2	1:A:446:SER:HB3	1.75	0.69
1:A:359:ARG:NH1	4:H:103:GLY:O	2.26	0.68
2:D:39:MET:HG3	2:D:98:LEU:HD11	1.73	0.68
2:D:251:TYR:O	2:D:392:ARG:NH1	2.25	0.68
3:C:155:MET:HG3	3:C:163:ILE:HD11	1.76	0.68
5:L:24:ARG:HD3	5:L:29:ILE:HD11	1.76	0.68
2:B:425:LEU:HG	2:B:426:THR:HG22	1.77	0.67
3:C:27:VAL:N	3:C:57:LYS:O	2.26	0.67
1:A:119:LEU:HD12	1:A:138:LEU:HB2	1.77	0.67
1:A:130:ASP:O	1:A:132:SER:N	2.26	0.67
1:A:364:VAL:HG21	1:A:379:ILE:HG23	1.76	0.66
2:B:40:LEU:HD11	2:B:288:LEU:HD21	1.78	0.66
2:B:590:GLY:O	2:B:594:ASN:N	2.30	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:216:GLN:NE2	2:D:242:GLU:OE2	2.28	0.65
3:C:195:LEU:HB3	3:C:207:LEU:HD11	1.79	0.65
2:D:508:ALA:HB3	2:D:744:ALA:HB3	1.78	0.65
1:A:155:MET:HE2	1:A:163:ILE:HG21	1.79	0.65
1:A:255:SER:OG	1:A:256:GLY:N	2.29	0.65
1:A:800:ILE:HA	1:A:803:ILE:HD12	1.80	0.64
2:D:326:ARG:HG2	2:D:327:PRO:HD2	1.79	0.64
2:B:34:LEU:N	2:B:66:ASP:O	2.31	0.64
2:D:536:MET:HA	2:D:729:THR:HA	1.81	0.63
2:B:232:SER:HB3	2:B:235:GLU:HG3	1.81	0.63
3:C:301:ILE:HA	3:C:317:THR:HG21	1.81	0.62
2:B:34:LEU:HB2	2:B:67:VAL:HG12	1.81	0.62
3:C:312:THR:HG21	2:D:76:ARG:HB3	1.82	0.62
3:C:505:LEU:HD22	3:C:513:ILE:HG21	1.80	0.62
1:A:41:MET:SD	1:A:278:SER:OG	2.51	0.62
2:D:392:ARG:HH21	2:D:405:HIS:HB2	1.65	0.62
3:C:36:ARG:O	3:C:36:ARG:NH1	2.33	0.61
4:H:73:ASP:O	4:H:77:ASN:N	2.33	0.61
3:C:505:LEU:HA	3:C:510:ALA:HA	1.83	0.61
1:A:91:LEU:HD23	1:A:119:LEU:HB3	1.82	0.61
1:A:523:ARG:HH12	1:A:669:SER:HB2	1.64	0.60
1:A:358:ASN:ND2	4:H:51:GLU:OE1	2.33	0.60
3:C:363:GLN:NE2	3:C:365:GLY:O	2.34	0.60
4:H:39:ARG:HD3	4:H:49:ILE:HD11	1.83	0.60
3:C:135:LEU:O	3:C:322:LYS:NZ	2.35	0.60
3:C:137:PHE:HE2	3:C:139:ARG:HD3	1.66	0.60
2:B:408:ILE:HD12	2:B:408:ILE:H	1.67	0.60
3:C:83:ILE:HG21	3:C:308:CYS:HB3	1.84	0.60
3:C:144:TYR:OH	3:C:252:ARG:NH2	2.35	0.60
3:C:537:GLY:H	3:C:714:SER:HB2	1.67	0.60
1:A:125:MET:O	1:A:139:ARG:NH2	2.36	0.59
1:A:355:ASN:OD1	1:A:356:LEU:N	2.36	0.59
2:B:423:ASP:OD1	2:B:423:ASP:N	2.35	0.58
2:B:660:PHE:O	2:B:684:TYR:OH	2.14	0.58
2:B:415:PRO:HG2	2:B:714:VAL:HG22	1.84	0.58
2:D:450:MET:SD	2:D:450:MET:N	2.71	0.58
5:L:246:THR:HA	5:L:307:ILE:O	2.03	0.58
3:C:359:ARG:NH2	4:H:332:GLY:O	2.33	0.58
3:C:127:ILE:HG23	3:C:128:TYR:HD1	1.69	0.58
3:C:325:LEU:O	3:C:328:SER:OG	2.18	0.58
4:H:231:LEU:HA	4:H:254:SER:O	2.03	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:314:SER:O	4:H:314:SER:OG	2.22	0.57
1:A:677:GLN:NE2	1:A:684:TYR:OH	2.37	0.57
5:L:24:ARG:NE	5:L:26:SER:O	2.30	0.57
1:A:90:ILE:HB	1:A:118:VAL:HG12	1.86	0.56
1:A:664:THR:HB	1:A:711:ILE:HG13	1.86	0.56
3:C:483:LYS:NZ	3:C:667:GLN:O	2.39	0.56
3:C:461:ASP:HB3	3:C:769:LEU:HD11	1.87	0.56
1:A:143:PRO:O	1:A:145:SER:N	2.39	0.56
2:B:123:PRO:HG3	2:B:334:LEU:HD11	1.86	0.56
5:L:90:TYR:CE1	5:L:104:GLY:HA2	2.41	0.56
2:D:280:SER:OG	2:D:281:TYR:N	2.39	0.56
3:C:375:ASN:OD1	3:C:377:ARG:NH2	2.40	0.55
2:D:35:ASN:N	2:D:68:ASN:OD1	2.40	0.55
3:C:407:PRO:HG3	3:C:716:VAL:HA	1.88	0.55
1:A:489:ARG:NH2	1:A:494:ASN:OD1	2.39	0.55
3:C:31:ALA:HA	3:C:90:ILE:HG13	1.88	0.55
2:B:97:GLY:HA2	2:B:123:PRO:O	2.05	0.55
2:D:464:LEU:HD22	2:D:509:VAL:HG11	1.87	0.55
2:B:413:GLU:H	2:B:417:VAL:HG23	1.72	0.55
1:A:664:THR:HG23	1:A:665:VAL:H	1.71	0.54
3:C:254:ILE:HD13	3:C:268:GLY:HA3	1.90	0.54
3:C:364:VAL:HG11	3:C:379:ILE:HD11	1.90	0.54
1:A:541:LEU:HB3	1:A:710:PHE:HB3	1.90	0.54
1:A:596:LEU:HD22	2:D:616:PHE:HB2	1.90	0.54
3:C:151:TRP:HZ3	3:C:248:LEU:HD22	1.72	0.54
2:B:162:MET:HE1	2:B:228:LEU:HD12	1.90	0.54
2:D:416:PHE:O	2:D:459:PHE:N	2.39	0.54
4:H:334:ASN:H	5:L:323:TYR:HE2	1.55	0.54
1:A:129:SER:O	1:A:129:SER:OG	2.25	0.53
4:H:271:PRO:HD3	4:H:321:ALA:HA	1.90	0.53
2:B:265:THR:HB	2:B:372:TRP:CD1	2.44	0.53
2:D:233:LYS:H	2:D:261:VAL:HG22	1.73	0.53
3:C:136:SER:HA	3:C:322:LYS:NZ	2.23	0.53
2:D:426:THR:O	2:D:428:THR:N	2.39	0.53
2:B:428:THR:O	2:B:429:CYS:HB3	2.07	0.53
4:H:17:THR:O	4:H:17:THR:HG22	2.09	0.53
2:B:167:TRP:HB3	2:B:226:VAL:HG21	1.91	0.53
2:D:205:THR:HG22	2:D:205:THR:O	2.08	0.53
2:B:417:VAL:HG12	2:B:461:ILE:HG12	1.90	0.52
2:D:422:ILE:HD12	2:D:423:ASP:H	1.74	0.52
1:A:82:LEU:HD22	1:A:87:VAL:HG11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:383:LEU:HG	2:B:385:LEU:HD13	1.90	0.52
2:D:79:PRO:O	2:D:83:ILE:HG12	2.08	0.52
2:D:380:ASN:O	2:D:381:HIS:ND1	2.42	0.52
3:C:560:SER:O	3:C:563:TRP:HB2	2.08	0.52
1:A:424:PHE:HB3	1:A:428:GLY:HA2	1.92	0.52
2:B:150:SER:OG	2:B:151:ILE:N	2.43	0.52
1:A:134:HIS:O	1:A:136:SER:N	2.42	0.52
1:A:259:LEU:O	1:A:359:ARG:NH2	2.39	0.52
1:A:429:ASP:OD1	1:A:430:PRO:HD2	2.08	0.52
2:B:120:THR:HG22	2:B:122:VAL:HG22	1.91	0.52
2:B:506:VAL:HG12	2:B:507:MET:HG2	1.92	0.52
3:C:114:TYR:HA	3:C:314:ILE:HG22	1.90	0.52
1:A:36:ARG:O	1:A:36:ARG:NH1	2.43	0.52
2:B:508:ALA:HB3	2:B:744:ALA:HB3	1.91	0.52
4:H:325:CYS:O	4:H:340:GLY:N	2.35	0.52
2:D:351:THR:OG1	2:D:352:GLU:OE2	2.26	0.51
2:B:608:LYS:HG2	3:C:589:TRP:HB3	1.90	0.51
3:C:30:GLY:HA2	3:C:63:THR:H	1.75	0.51
3:C:441:ASP:O	3:C:448:ARG:NH2	2.43	0.51
3:C:662:TYR:HA	3:C:709:ALA:HB3	1.92	0.51
2:D:36:ILE:H	2:D:96:HIS:HA	1.75	0.51
1:A:530:SER:OG	1:A:531:LYS:N	2.44	0.51
2:B:536:MET:HG3	2:B:729:THR:HA	1.93	0.51
3:C:478:LEU:HD23	3:C:479:VAL:N	2.26	0.51
1:A:664:THR:HG23	1:A:665:VAL:N	2.26	0.51
2:B:207:ASP:OD1	2:B:208:THR:N	2.44	0.51
2:B:296:ILE:O	2:B:300:THR:HG22	2.10	0.51
3:C:104:PRO:HG3	3:C:123:THR:HG21	1.93	0.51
2:D:158:MET:SD	2:D:258:PRO:HB3	2.51	0.50
2:B:34:LEU:HD23	2:B:96:HIS:CD2	2.43	0.50
2:D:274:SER:HA	2:D:366:LEU:HB3	1.93	0.50
3:C:105:THR:HG23	3:C:106:PRO:HD3	1.93	0.50
3:C:151:TRP:CZ3	3:C:248:LEU:HB3	2.46	0.50
2:D:233:LYS:HA	2:D:261:VAL:HG13	1.93	0.50
2:D:587:LEU:HD22	2:D:602:PRO:HD3	1.93	0.50
5:L:4:LEU:HD12	5:L:22:CYS:SG	2.51	0.50
1:A:151:TRP:HH2	1:A:222:SER:HB2	1.76	0.50
1:A:668:SER:OG	1:A:669:SER:N	2.44	0.50
3:C:74:MET:O	3:C:78:VAL:HG12	2.11	0.50
3:C:101:HIS:O	3:C:101:HIS:ND1	2.44	0.50
1:A:168:SER:OG	1:A:169:ASP:N	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:591:LEU:HD23	2:B:614:TRP:HD1	1.77	0.50
2:D:83:ILE:HD13	2:D:116:ILE:HD11	1.93	0.50
3:C:541:LEU:HD22	3:C:717:LEU:HD22	1.93	0.49
2:D:118:SER:OG	2:D:119:HIS:N	2.44	0.49
2:B:497:ILE:HD12	2:B:522:VAL:HG11	1.93	0.49
1:A:121:LEU:HD22	1:A:280:HIS:HB3	1.93	0.49
1:A:415:LEU:HG	1:A:417:ASP:H	1.77	0.49
1:A:526:TYR:O	1:A:526:TYR:HD1	1.95	0.49
3:C:691:ASN:OD1	3:C:692:TYR:N	2.45	0.49
4:H:266:TRP:NE1	4:H:325:CYS:SG	2.85	0.49
2:B:96:HIS:O	2:B:98:LEU:N	2.45	0.49
2:B:500:VAL:HG21	2:B:508:ALA:HB2	1.93	0.49
1:A:541:LEU:HD22	1:A:717:LEU:HD22	1.94	0.49
2:B:176:ILE:HG12	2:B:207:ASP:HA	1.93	0.49
3:C:52:ARG:O	3:C:53:HIS:ND1	2.46	0.49
3:C:264:ASP:N	3:C:264:ASP:OD1	2.42	0.49
5:L:91:CYS:O	5:L:102:GLY:N	2.46	0.49
1:A:393:GLN:HG3	1:A:394:MET:H	1.78	0.49
1:A:490:VAL:HG23	1:A:493:SER:HB2	1.95	0.48
1:A:249:VAL:O	1:A:268:GLY:HA2	2.13	0.48
2:B:102:ASP:OD1	2:B:103:ASP:N	2.46	0.48
3:C:135:LEU:HD23	3:C:135:LEU:H	1.77	0.48
3:C:126:SER:N	3:C:172:GLU:OE2	2.38	0.48
1:A:104:PRO:HG3	1:A:123:THR:HG21	1.95	0.48
1:A:681:SER:HA	1:A:684:TYR:CD2	2.48	0.48
1:A:540:ILE:HD12	1:A:711:ILE:HG23	1.95	0.48
2:B:150:SER:O	2:B:154:GLN:NE2	2.46	0.48
2:D:61:ALA:HB3	2:D:64:PRO:HG3	1.95	0.48
2:D:173:VAL:O	2:D:229:LEU:HA	2.14	0.48
2:D:249:THR:HG22	2:D:255:TRP:HE1	1.78	0.48
3:C:519:ILE:HA	3:C:529:PHE:HE2	1.79	0.47
1:A:148:SER:HA	1:A:151:TRP:CE3	2.49	0.47
1:A:302:THR:HG22	1:A:303:ASP:H	1.79	0.47
2:D:35:ASN:N	2:D:35:ASN:OD1	2.46	0.47
1:A:254:ILE:HD13	1:A:268:GLY:HA3	1.95	0.47
1:A:272:ILE:HD13	1:A:350:ASN:HB3	1.96	0.47
3:C:66:THR:OG1	3:C:67:HIS:N	2.48	0.47
3:C:345:ASP:OD1	3:C:345:ASP:N	2.44	0.47
1:A:140:THR:O	1:A:346:ARG:NH1	2.47	0.47
2:B:661:ARG:O	2:B:707:ALA:HB3	2.15	0.47
3:C:519:ILE:HG12	3:C:529:PHE:CD2	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:434:VAL:O	2:D:455:CYS:HB2	2.15	0.47
2:D:495:GLY:O	2:D:497:ILE:N	2.48	0.47
3:C:127:ILE:HG23	3:C:128:TYR:CD1	2.48	0.47
3:C:148:SER:HA	3:C:151:TRP:CD1	2.45	0.47
5:L:5:THR:OG1	5:L:23:THR:OG1	2.33	0.47
4:H:5:GLN:O	4:H:23:THR:OG1	2.33	0.47
3:C:118:VAL:HG22	3:C:137:PHE:HA	1.97	0.47
3:C:157:VAL:HG23	3:C:157:VAL:O	2.15	0.47
5:L:6:GLN:NE2	5:L:102:GLY:HA3	2.30	0.47
2:D:560:MET:HA	2:D:563:VAL:HG22	1.97	0.47
1:A:135:LEU:HD11	2:B:111:GLN:HE22	1.81	0.46
1:A:538:LEU:HD21	1:A:670:VAL:HG22	1.97	0.46
1:A:146:HIS:CE1	1:A:179:ARG:HH12	2.33	0.46
2:D:251:TYR:CE1	2:D:394:LYS:HA	2.50	0.46
2:D:429:CYS:HB3	2:D:433:THR:HG23	1.97	0.46
1:A:189:SER:OG	1:A:190:LYS:N	2.48	0.46
2:B:408:ILE:HD13	2:B:475:TYR:HB2	1.98	0.46
1:A:119:LEU:HD23	1:A:284:ALA:HB1	1.96	0.46
1:A:192:GLU:HG2	1:A:214:LEU:HD23	1.97	0.46
2:B:129:GLY:O	2:B:132:SER:HB3	2.15	0.46
2:B:710:TYR:HB3	2:B:715:LEU:HD21	1.97	0.46
2:D:268:ILE:HD11	2:D:372:TRP:HE1	1.81	0.46
2:B:434:VAL:HG11	2:B:475:TYR:HE2	1.80	0.46
1:A:662:TYR:HB3	1:A:709:ALA:HB3	1.98	0.46
2:D:172:LEU:HD11	2:D:183:PHE:HE1	1.80	0.46
3:C:338:VAL:HG22	3:C:346:ARG:HH21	1.81	0.46
1:A:71:ALA:HB1	2:B:119:HIS:CE1	2.50	0.45
2:B:745:LEU:HD11	2:B:755:ILE:HD12	1.97	0.45
2:D:170:PHE:CZ	2:D:200:MET:HB2	2.51	0.45
2:D:410:THR:HG22	2:D:477:LEU:HD21	1.99	0.45
2:B:610:MET:SD	2:B:611:VAL:N	2.89	0.45
1:A:79:CYS:HA	1:A:83:ILE:HB	1.99	0.45
2:B:102:ASP:OD1	2:B:104:THR:N	2.42	0.45
2:B:587:LEU:HD23	2:B:588:LEU:HD23	1.99	0.45
2:B:608:LYS:HA	2:B:608:LYS:HD2	1.72	0.45
3:C:407:PRO:HB3	3:C:719:PHE:CD2	2.51	0.45
2:D:73:LEU:HA	2:D:73:LEU:HD12	1.80	0.45
3:C:405:GLN:HG2	3:C:516:PRO:HG3	1.98	0.45
2:B:438:LYS:HE3	2:B:438:LYS:HB2	1.85	0.45
3:C:562:LEU:HD22	3:C:565:LEU:HD12	1.99	0.45
2:D:435:PRO:HA	2:D:455:CYS:HB2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:650:ASP:OD1	1:A:650:ASP:N	2.49	0.45
2:B:161:ILE:HD11	2:B:363:VAL:HG21	1.99	0.45
2:B:435:PRO:HA	2:B:455:CYS:HA	1.98	0.45
3:C:518:THR:HG21	3:C:669:SER:HB2	1.99	0.45
2:D:415:PRO:HG3	2:D:717:TYR:CD1	2.52	0.45
1:A:60:LEU:HD12	1:A:60:LEU:HA	1.81	0.44
2:D:352:GLU:HB2	2:D:353:GLU:H	1.67	0.44
1:A:495:LYS:HA	2:B:193:ASN:HB3	1.99	0.44
2:B:664:THR:OG1	2:B:665:VAL:N	2.50	0.44
2:D:153:GLN:O	2:D:156:THR:HG22	2.16	0.44
1:A:352:SER:O	1:A:352:SER:OG	2.33	0.44
2:B:366:LEU:HD11	2:B:370:ARG:HA	1.98	0.44
2:D:286:TYR:HE2	2:D:291:ARG:HG3	1.82	0.44
3:C:139:ARG:HH22	3:C:143:PRO:HB3	1.83	0.44
1:A:491:ASN:OD1	1:A:491:ASN:N	2.49	0.44
2:B:295:GLY:O	2:B:298:ILE:HG22	2.17	0.44
1:A:304:PRO:HA	1:A:305:PRO:HD3	1.87	0.44
1:A:260:ARG:HD2	5:L:31:SER:HA	2.00	0.44
1:A:342:GLU:HB3	1:A:343:ASP:H	1.68	0.44
2:D:592:VAL:HG23	2:D:614:TRP:HE1	1.83	0.44
3:C:402:THR:OG1	3:C:403:ILE:N	2.51	0.44
2:D:537:VAL:HG22	2:D:707:ALA:HA	1.99	0.44
2:D:725:CYS:HB2	2:D:780:CYS:HB2	1.67	0.44
1:A:458:PHE:HD1	1:A:769:LEU:HD22	1.82	0.43
1:A:593:GLY:O	1:A:598:SER:N	2.40	0.43
2:D:167:TRP:HB3	2:D:226:VAL:HG21	1.98	0.43
2:D:182:GLU:OE2	2:D:182:GLU:N	2.35	0.43
1:A:499:ASN:OD1	1:A:499:ASN:N	2.50	0.43
2:B:299:LEU:HD23	2:B:299:LEU:HA	1.86	0.43
3:C:692:TYR:CZ	3:C:707:LEU:HD11	2.52	0.43
2:D:180:TYR:OH	2:D:181:ARG:NH2	2.43	0.43
2:B:35:ASN:O	2:B:96:HIS:HB2	2.17	0.43
1:A:79:CYS:HB3	1:A:308:CYS:HB2	1.84	0.43
2:D:501:VAL:HG22	2:D:521:VAL:HG11	1.99	0.43
1:A:398:LEU:HD21	1:A:749:TRP:NE1	2.34	0.43
3:C:531:LYS:HD3	3:C:531:LYS:HA	1.76	0.43
1:A:356:LEU:HD13	1:A:361:LEU:HD22	2.00	0.43
3:C:679:GLU:CD	3:C:679:GLU:H	2.21	0.43
2:D:416:PHE:HA	2:D:459:PHE:HB3	1.99	0.43
2:B:512:LEU:HD12	2:B:512:LEU:HA	1.87	0.43
2:B:745:LEU:HD21	2:B:751:TRP:HB2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:410:THR:OG1	2:B:411:LEU:N	2.52	0.43
3:C:523:ARG:H	3:C:523:ARG:HG2	1.65	0.43
2:D:415:PRO:HG3	2:D:717:TYR:CG	2.53	0.43
2:B:518:ARG:NH1	2:B:669:SER:OG	2.52	0.43
2:D:160:LYS:HD2	2:D:160:LYS:HA	1.71	0.43
2:D:307:LEU:HD23	2:D:307:LEU:HA	1.91	0.43
2:D:672:ARG:HH11	2:D:675:ARG:HH12	1.67	0.43
2:B:238:LEU:HD23	2:B:238:LEU:HA	1.90	0.42
2:B:731:GLY:HA3	2:B:734:TYR:HB3	2.01	0.42
3:C:29:ILE:HG21	3:C:288:VAL:HG11	2.00	0.42
3:C:111:ALA:HB1	3:C:116:ILE:HG13	2.01	0.42
3:C:355:ASN:OD1	3:C:356:LEU:N	2.52	0.42
3:C:478:LEU:HD23	3:C:479:VAL:H	1.84	0.42
2:D:414:ALA:HB1	2:D:415:PRO:HD2	2.01	0.42
1:A:143:PRO:HD2	1:A:146:HIS:CD2	2.54	0.42
3:C:136:SER:HA	3:C:322:LYS:HZ3	1.84	0.42
2:D:364:ILE:HG22	2:D:373:GLU:O	2.18	0.42
2:D:376:GLY:HA2	2:D:385:LEU:HA	2.00	0.42
2:B:53:THR:HA	2:B:69:VAL:HG21	2.02	0.42
2:D:357:VAL:HG12	2:D:358:HIS:ND1	2.35	0.42
2:D:531:THR:HG21	2:D:741:TYR:CE1	2.54	0.42
2:D:168:HIS:HA	2:D:198:TRP:CD1	2.54	0.42
2:D:175:THR:OG1	2:D:176:ILE:N	2.51	0.42
2:D:219:LEU:HD12	2:D:219:LEU:HA	1.83	0.42
2:D:386:ARG:HE	2:D:387:HIS:CE1	2.38	0.42
2:D:590:GLY:O	2:D:594:ASN:N	2.51	0.42
1:A:517:LEU:HD12	1:A:517:LEU:HA	1.90	0.42
3:C:364:VAL:O	3:C:375:ASN:N	2.51	0.42
2:D:177:PHE:CG	2:D:178:PRO:HD2	2.54	0.42
2:D:278:SER:O	2:D:278:SER:OG	2.35	0.42
1:A:364:VAL:HG23	1:A:377:ARG:HB3	2.02	0.42
3:C:208:LEU:HD23	3:C:208:LEU:HA	1.87	0.42
2:D:57:PRO:HG2	2:D:67:VAL:HG21	2.02	0.42
2:D:759:LEU:HD23	2:D:759:LEU:HA	1.87	0.42
1:A:758:LEU:HD23	1:A:758:LEU:HA	1.93	0.42
2:B:241:SER:HB2	2:B:271:GLU:HG2	2.01	0.42
2:B:351:THR:HG23	2:B:357:VAL:HG22	2.01	0.42
3:C:506:LEU:HD23	3:C:506:LEU:HA	1.83	0.42
3:C:128:TYR:HD2	3:C:137:PHE:CZ	2.37	0.42
4:H:104:VAL:HB	5:L:33:TYR:HD2	1.85	0.42
1:A:523:ARG:O	1:A:527:ILE:HG22	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:73:GLN:O	3:C:77:SER:OG	2.27	0.42
3:C:140:THR:HG22	3:C:340:PHE:HZ	1.84	0.42
2:B:220:LYS:HE2	2:D:216:GLN:NE2	2.35	0.41
2:D:213:ALA:O	2:D:217:VAL:HG12	2.20	0.41
1:A:743:MET:CE	1:A:750:LYS:HA	2.49	0.41
2:B:113:LEU:HG	2:B:124:ILE:HG21	2.01	0.41
2:B:313:ILE:HD13	2:B:313:ILE:HA	1.88	0.41
2:B:384:SER:O	2:B:384:SER:OG	2.32	0.41
3:C:259:LEU:HD23	3:C:259:LEU:HA	1.87	0.41
1:A:121:LEU:HD23	1:A:121:LEU:HA	1.90	0.41
1:A:438:GLY:HA3	1:A:478:LEU:HB2	2.01	0.41
2:B:170:PHE:HB3	2:B:226:VAL:HB	2.03	0.41
2:B:408:ILE:HG13	2:B:507:MET:HB2	2.01	0.41
2:D:177:PHE:CD1	2:D:178:PRO:HD2	2.55	0.41
1:A:489:ARG:HH21	2:B:195:PHE:HD2	1.69	0.41
2:B:218:GLN:HE21	2:B:218:GLN:HB2	1.72	0.41
3:C:213:GLU:OE1	3:C:213:GLU:HA	2.21	0.41
2:B:411:LEU:HD11	2:B:484:LYS:HG2	2.02	0.41
2:B:568:VAL:HG21	2:B:614:TRP:CZ3	2.56	0.41
3:C:115:ARG:HD3	3:C:115:ARG:HA	1.66	0.41
3:C:125:MET:H	3:C:139:ARG:HH12	1.68	0.41
1:A:161:ASN:OD1	1:A:187:ARG:NH1	2.54	0.41
2:B:528:PHE:HD1	2:B:529:VAL:HG23	1.85	0.41
2:B:780:CYS:SG	2:B:781:HIS:N	2.94	0.41
1:A:394:MET:O	1:A:396:THR:N	2.54	0.41
2:B:362:VAL:HG21	2:B:374:LYS:HD2	2.03	0.41
3:C:562:LEU:HA	3:C:565:LEU:HB2	2.02	0.41
2:D:98:LEU:HB3	2:D:124:ILE:HG23	2.03	0.41
2:D:672:ARG:NH1	2:D:675:ARG:HH12	2.18	0.41
2:B:348:LEU:H	2:B:348:LEU:HD23	1.86	0.41
2:B:718:LYS:HB2	2:B:718:LYS:HE2	1.73	0.41
3:C:67:HIS:CE1	3:C:95:PRO:HD3	2.55	0.41
2:D:232:SER:O	2:D:234:ASP:N	2.54	0.41
2:D:277:ILE:HD11	2:D:390:TRP:CZ2	2.56	0.41
4:H:48:TRP:CZ3	4:H:61:ASN:HB3	2.55	0.41
3:C:43:ARG:O	3:C:46:VAL:HG12	2.21	0.41
3:C:460:ILE:O	3:C:464:ILE:HG12	2.21	0.41
2:D:237:VAL:HG23	2:D:271:GLU:HB2	2.03	0.41
1:A:400:ILE:HG12	1:A:512:MET:HB3	2.02	0.40
1:A:164:ILE:HG23	1:A:216:ALA:HB3	2.03	0.40
1:A:395:SER:OG	1:A:396:THR:N	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:519:ILE:HG12	1:A:529:PHE:CD2	2.56	0.40
1:A:541:LEU:N	1:A:710:PHE:O	2.54	0.40
1:A:664:THR:CG2	1:A:665:VAL:H	2.34	0.40
3:C:515:ALA:O	3:C:517:LEU:N	2.52	0.40
3:C:539:THR:O	3:C:539:THR:OG1	2.33	0.40
2:D:534:SER:OG	2:D:535:VAL:N	2.55	0.40
2:D:650:PHE:HA	2:D:662:PHE:HZ	1.87	0.40
4:H:48:TRP:HZ2	4:H:51:GLU:HG3	1.87	0.40
4:H:282:TYR:HD1	4:H:283:HIS:N	2.19	0.40
5:L:323:TYR:HA	5:L:328:VAL:HA	2.03	0.40
1:A:75:ALA:O	1:A:78:VAL:HB	2.21	0.40
1:A:165:LEU:HD13	1:A:180:LEU:HD23	2.02	0.40
1:A:498:TRP:HE1	1:A:526:TYR:HH	1.68	0.40
1:A:644:ARG:HA	1:A:644:ARG:HD2	1.98	0.40
1:A:661:ILE:HD11	1:A:690:HIS:CG	2.56	0.40
1:A:677:GLN:HE22	1:A:680:LEU:HD21	1.85	0.40
2:B:161:ILE:HD13	2:B:277:ILE:HG21	2.03	0.40
2:D:98:LEU:HG	2:D:100:PHE:H	1.86	0.40
2:D:528:PHE:CD2	2:D:529:VAL:HG23	2.56	0.40
2:B:34:LEU:HB3	2:B:35:ASN:H	1.78	0.40
3:C:378:LYS:HE2	3:C:378:LYS:HB2	1.86	0.40
2:D:158:MET:HG2	2:D:256:ILE:HG22	2.03	0.40
2:D:268:ILE:HD11	2:D:372:TRP:NE1	2.37	0.40
4:H:73:ASP:O	4:H:77:ASN:CA	2.70	0.40
2:B:535:VAL:HG23	2:B:709:ILE:HG13	2.04	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	781/815 (96%)	685 (88%)	93 (12%)	3 (0%)	30	65

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	775/808 (96%)	682 (88%)	91 (12%)	2 (0%)	37	70
2	D	774/808 (96%)	662 (86%)	103 (13%)	9 (1%)	11	43
3	C	781/815 (96%)	698 (89%)	82 (10%)	1 (0%)	48	80
4	H	230/234 (98%)	201 (87%)	29 (13%)	0	100	100
5	L	214/218 (98%)	201 (94%)	13 (6%)	0	100	100
All	All	3555/3698 (96%)	3129 (88%)	411 (12%)	15 (0%)	32	65

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	144	TYR
2	D	259	SER
2	D	442	ILE
1	A	342	GLU
2	B	781	HIS
2	D	36	ILE
2	D	233	LYS
2	D	496	MET
2	D	657	SER
1	A	406	GLU
2	D	168	HIS
2	B	657	SER
2	D	430	VAL
2	D	414	ALA
3	C	665	VAL

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	555/703 (79%)	538 (97%)	17 (3%)	35	57
2	B	502/706 (71%)	487 (97%)	15 (3%)	36	58
2	D	446/706 (63%)	428 (96%)	18 (4%)	27	51

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	476/703 (68%)	448 (94%)	28 (6%)	16	42
4	H	87/202 (43%)	82 (94%)	5 (6%)	17	43
5	L	72/192 (38%)	68 (94%)	4 (6%)	17	44
All	All	2138/3212 (67%)	2051 (96%)	87 (4%)	28	51

All (87) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	41	MET
1	A	43	ARG
1	A	53	HIS
1	A	68	LYS
1	A	113	PHE
1	A	131	LYS
1	A	171	HIS
1	A	255	SER
1	A	315	TRP
1	A	330	TYR
1	A	404	HIS
1	A	458	PHE
1	A	526	TYR
1	A	660	PHE
1	A	682	THR
1	A	737	SER
1	A	743	MET
2	B	88	ASP
2	B	147	PHE
2	B	221	LYS
2	B	223	HIS
2	B	251	TYR
2	B	259	SER
2	B	281	TYR
2	B	283	ASP
2	B	319	SER
2	B	348	LEU
2	B	377	LYS
2	B	396	PHE
2	B	399	CYS
2	B	429	CYS
2	B	708	PHE
3	C	38	HIS

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Mol	Chain	Res	Type
3	C	56	TRP
3	C	61	ASN
3	C	79	CYS
3	C	158	TYR
3	C	161	ASN
3	C	168	SER
3	C	224	SER
3	C	252	ARG
3	C	257	ASN
3	C	308	CYS
3	C	315	TRP
3	C	321	PHE
3	C	352	SER
3	C	357	GLN
3	C	377	ARG
3	C	448	ARG
3	C	461	ASP
3	C	528	GLU
3	C	644	ARG
3	C	652	ARG
3	C	660	PHE
3	C	674	PHE
3	C	689	LYS
3	C	690	HIS
3	C	725	CYS
3	C	747	SER
3	C	768	ASP
2	D	164	ASP
2	D	195	PHE
2	D	251	TYR
2	D	262	SER
2	D	267	LEU
2	D	320	CYS
2	D	326	ARG
2	D	334	LEU
2	D	348	LEU
2	D	358	HIS
2	D	387	HIS
2	D	450	MET
2	D	496	MET
2	D	656	TYR
2	D	672	ARG

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Mol	Chain	Res	Type
2	D	688	PHE
2	D	708	PHE
2	D	710	TYR
4	H	55	SER
4	H	59	ASN
4	H	60	TYR
4	H	64	LEU
4	H	282	TYR
5	L	50	TYR
5	L	91	CYS
5	L	94	TYR
5	L	323	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	146	HIS
1	A	677	GLN
2	B	96	HIS
2	B	111	GLN
2	D	68	ASN
5	L	6	GLN

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 ⓘ

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
4	H	1
5	L	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	H	118:VAL	C	231:LEU	N	177.14
1	L	109:VAL	C	230:ASN	N	167.30

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-43537. 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 ⓘ
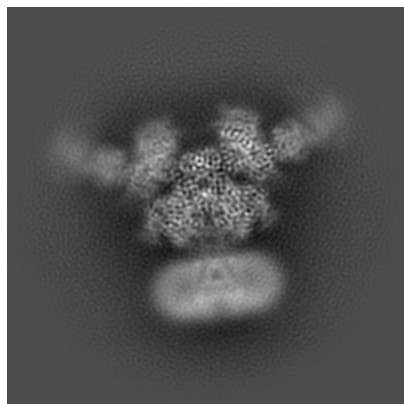
6.1.1 Primary map

X
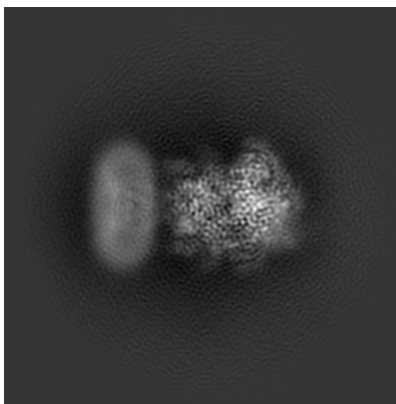
Y
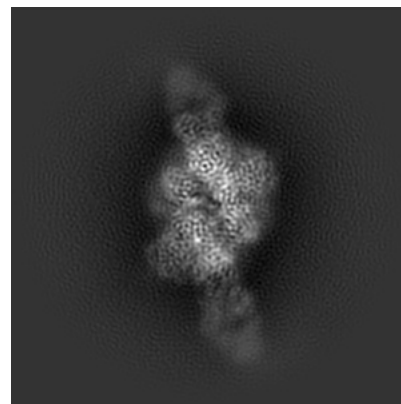
Z

6.1.2 Raw map

X

Y

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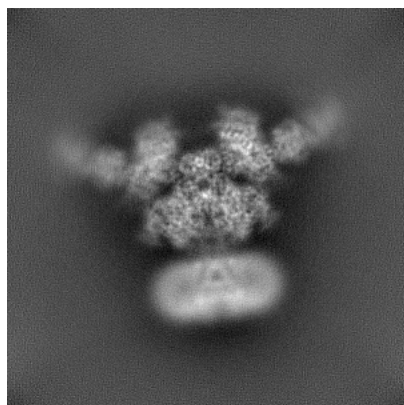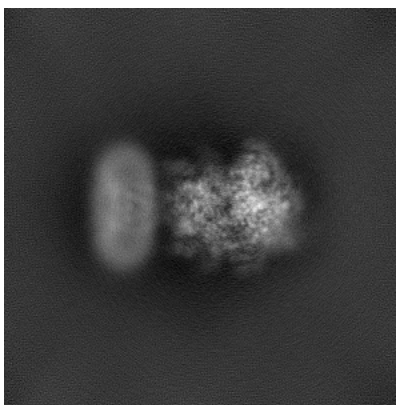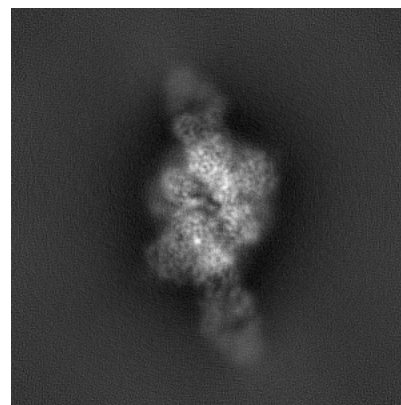
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
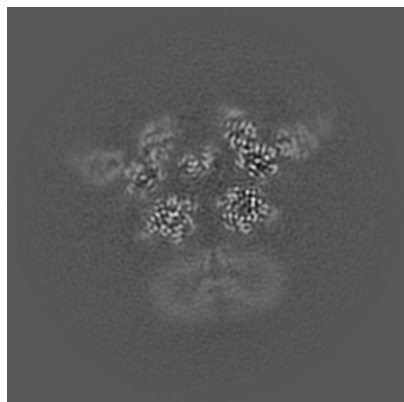
6.2.1 Primary map
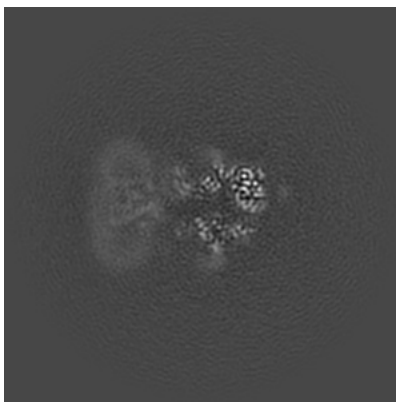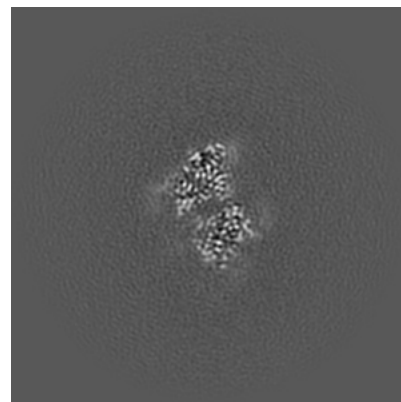
| X Index: 200 | Y Index: 200 | Z Index: 200 |

6.2.2 Raw map
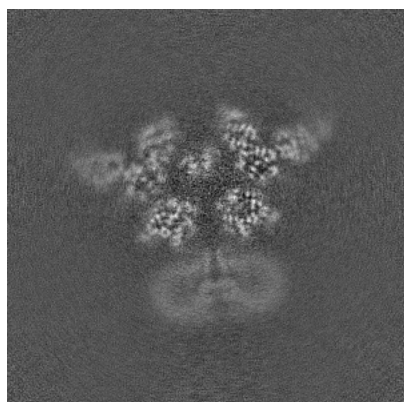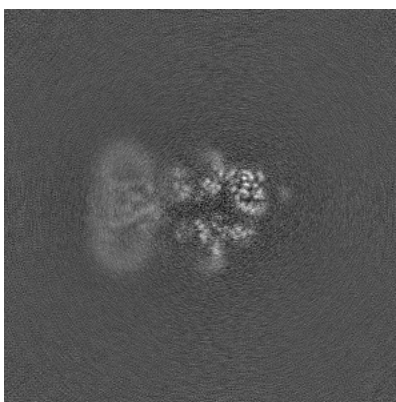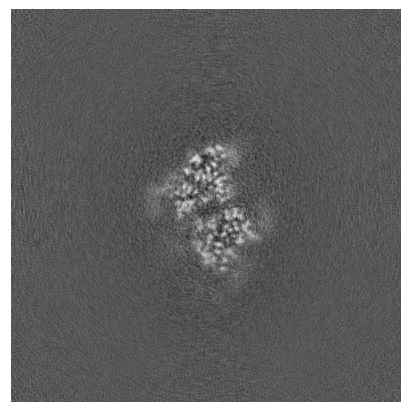
| X Index: 200 | Y Index: 200 | Z Index: 200 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
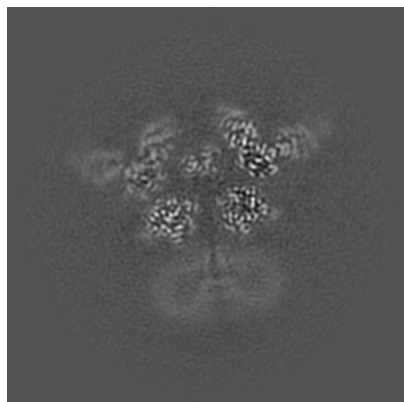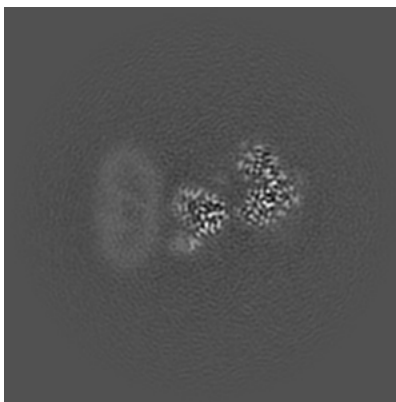
| X Index: 201 | Y Index: 237 | Z Index: 244 |
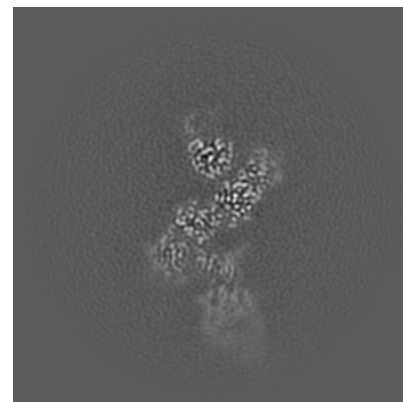
6.3.2 Raw map
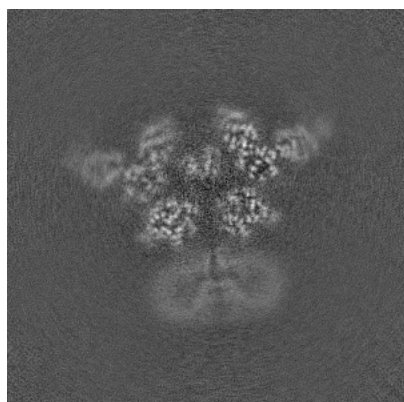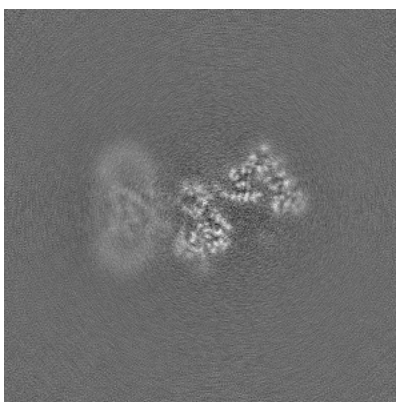
| X Index: 201 | Y Index: 219 | Z Index: 244 |
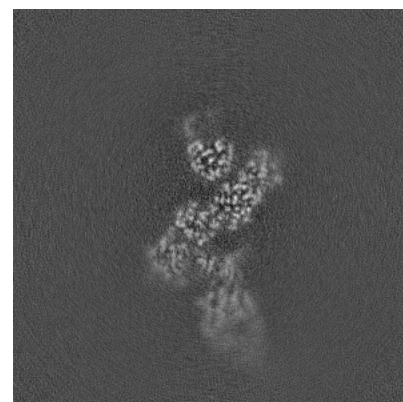
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
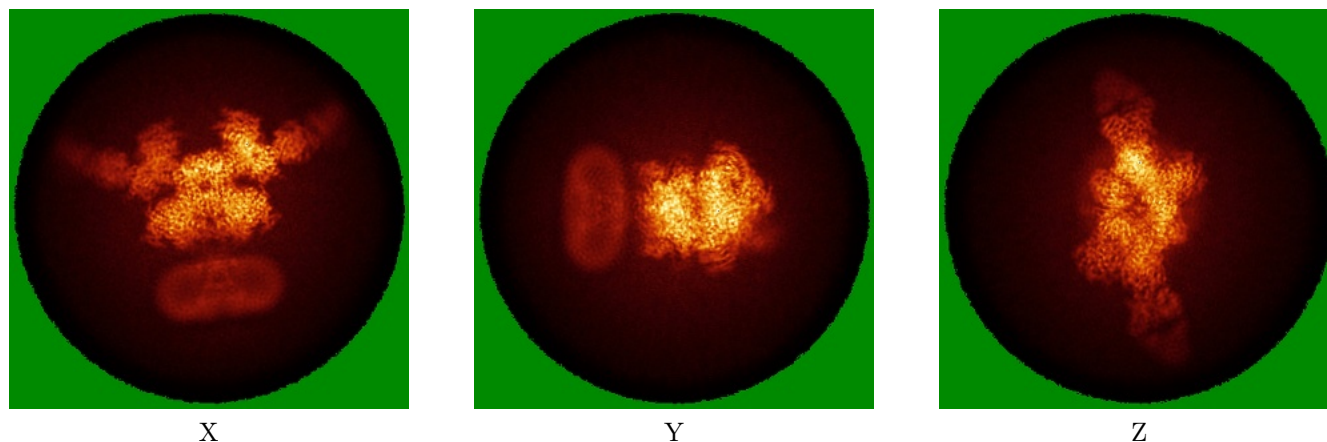
X   Y   Z

6.4.2 Raw map

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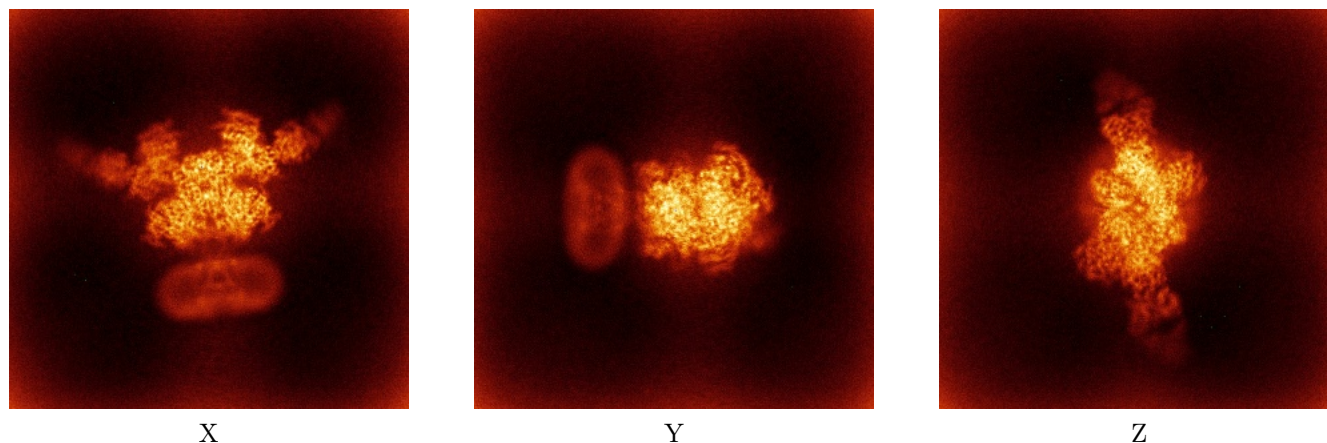
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

| X | Y | Z |
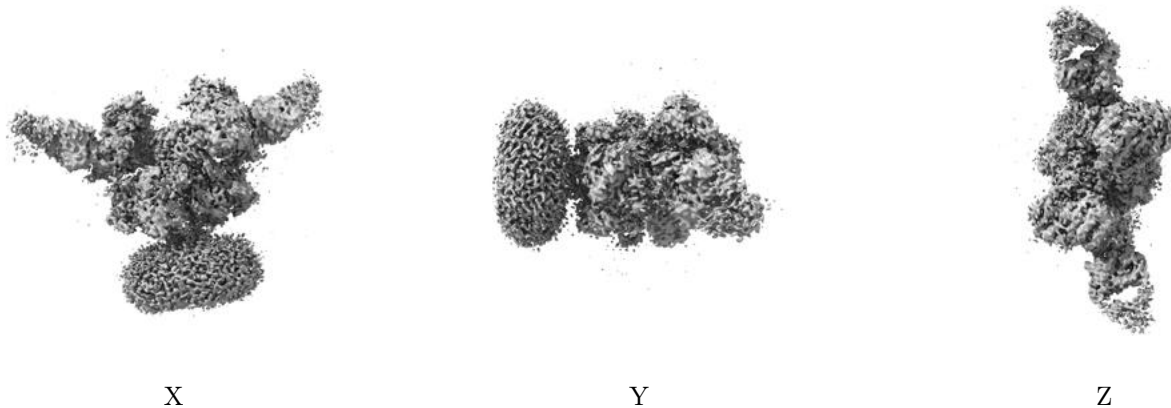
The images above show the 3D surface view of the map at the recommended contour level 0.0509. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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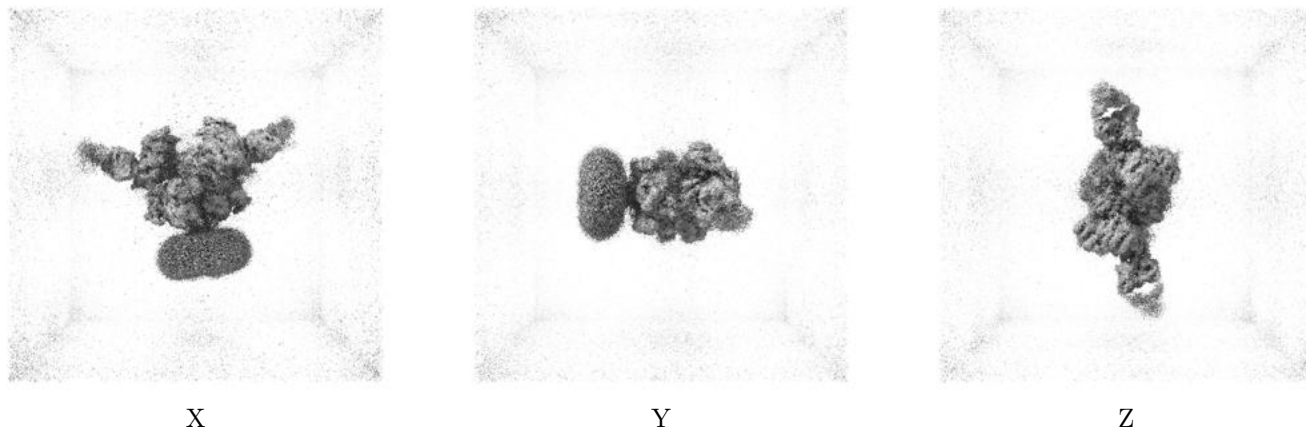
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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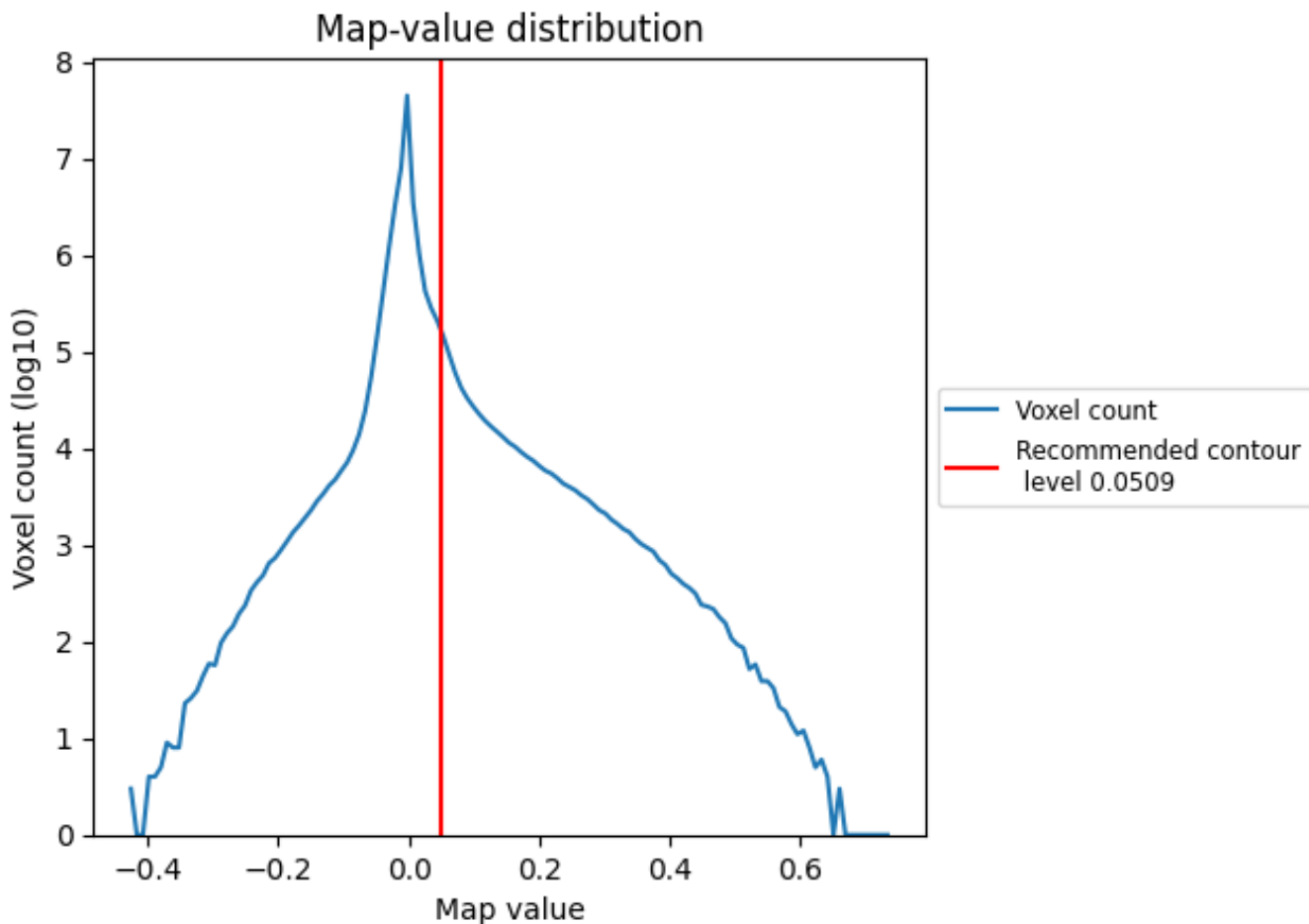
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
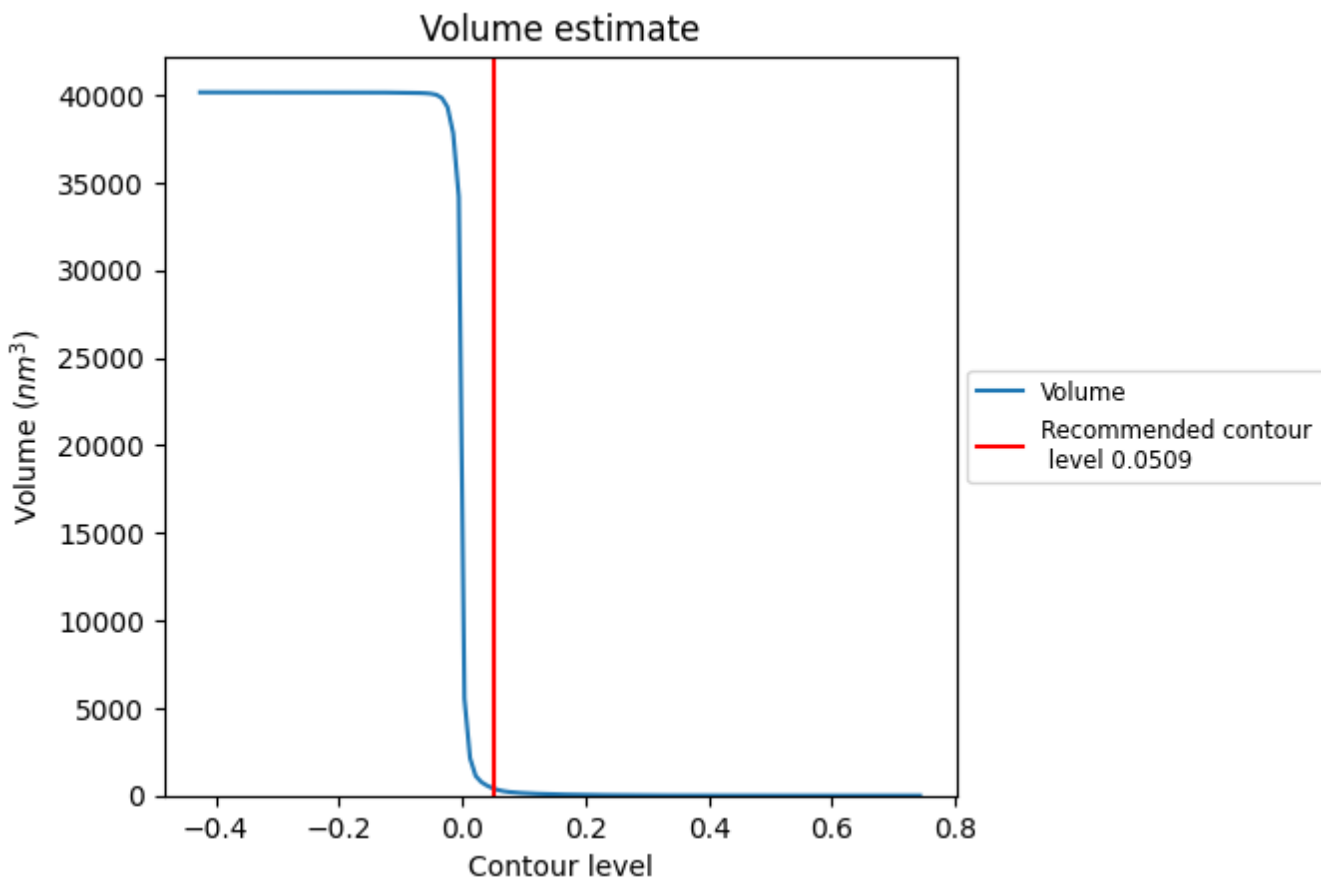
The volume at the recommended contour level is 404 nm³; this corresponds to an approximate mass of 365 kDa.

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 ⓘ
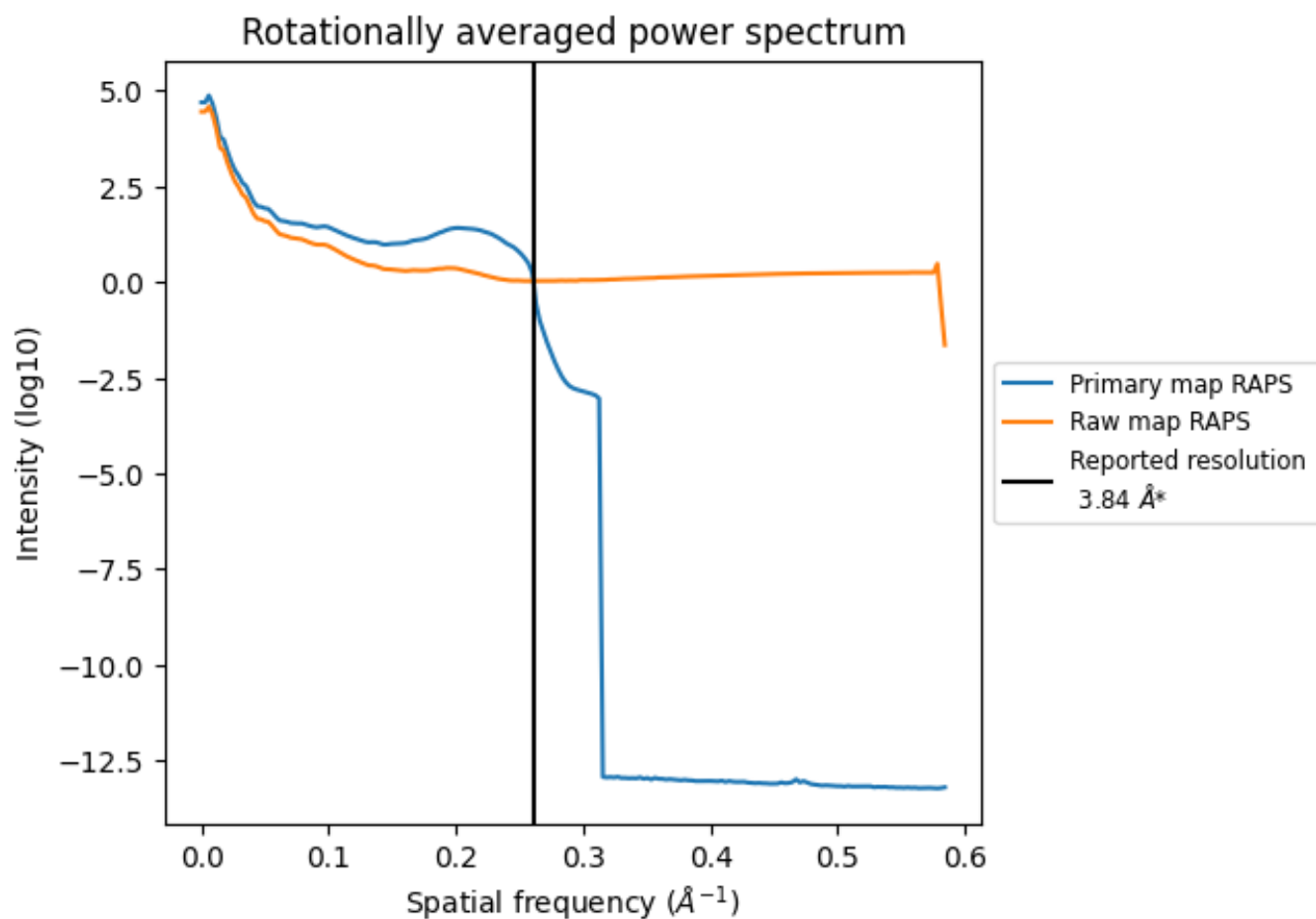
*Reported resolution corresponds to spatial frequency of 0.260 Å^{-1}

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 ⓘ
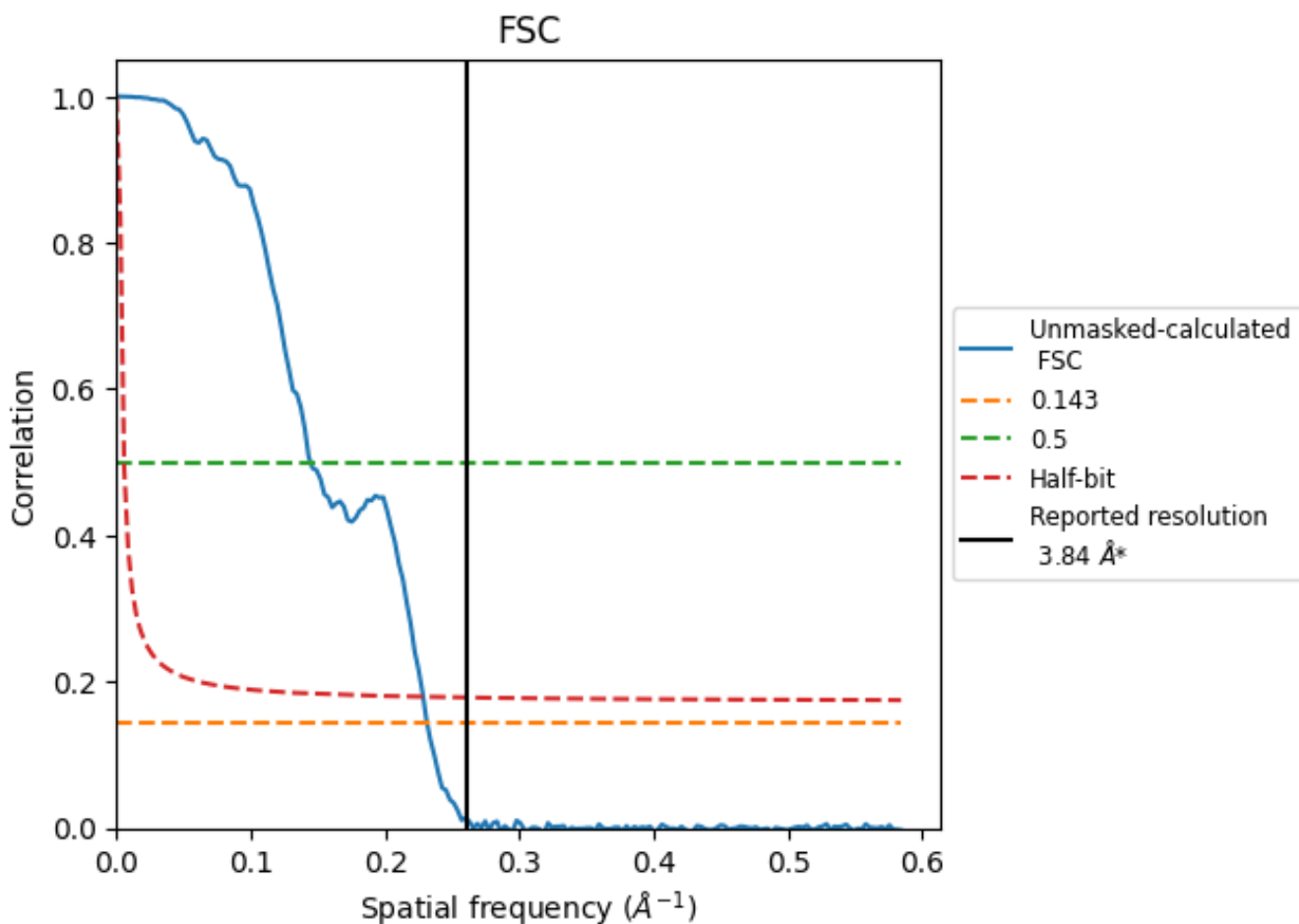
*Reported resolution corresponds to spatial frequency of 0.260 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.84	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.32	6.92	4.38

*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 4.32 differs from the reported value 3.84 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-43537 and PDB model 8VUR. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay ⓘ
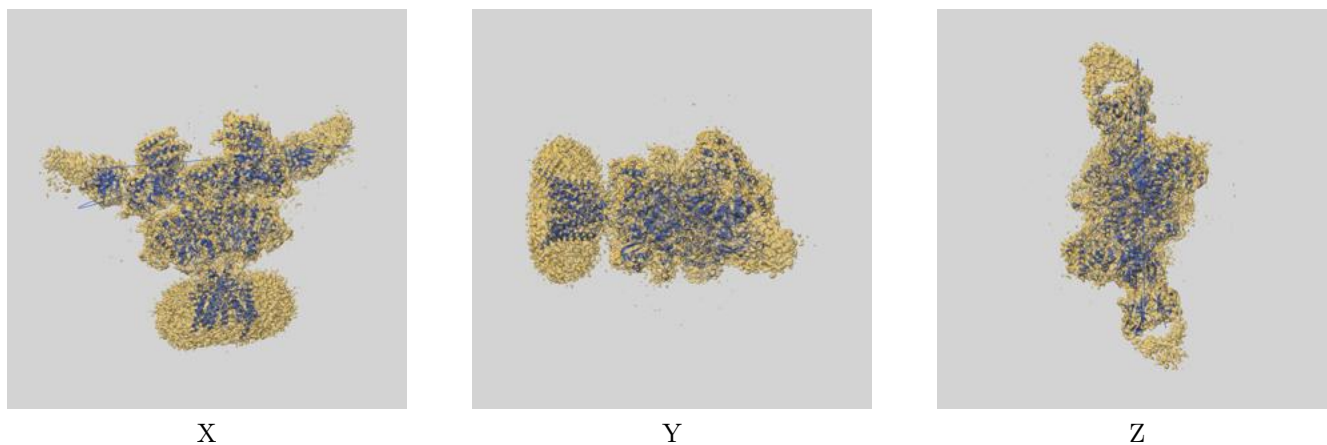
X   Y   Z

The images above show the 3D surface view of the map at the recommended contour level 0.0509 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 ⓘ

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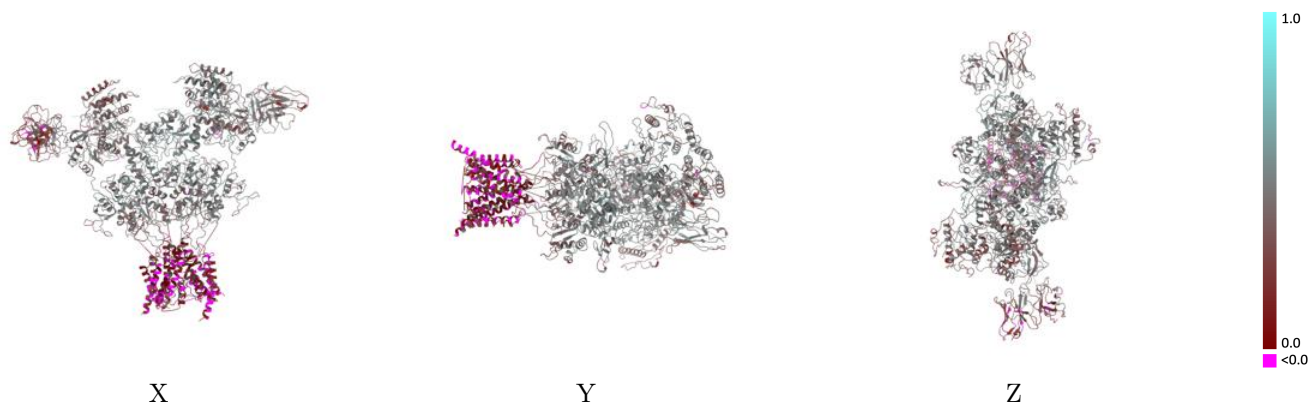
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X　　　　　　　　　　　Y　　　　　　　　　　　Z
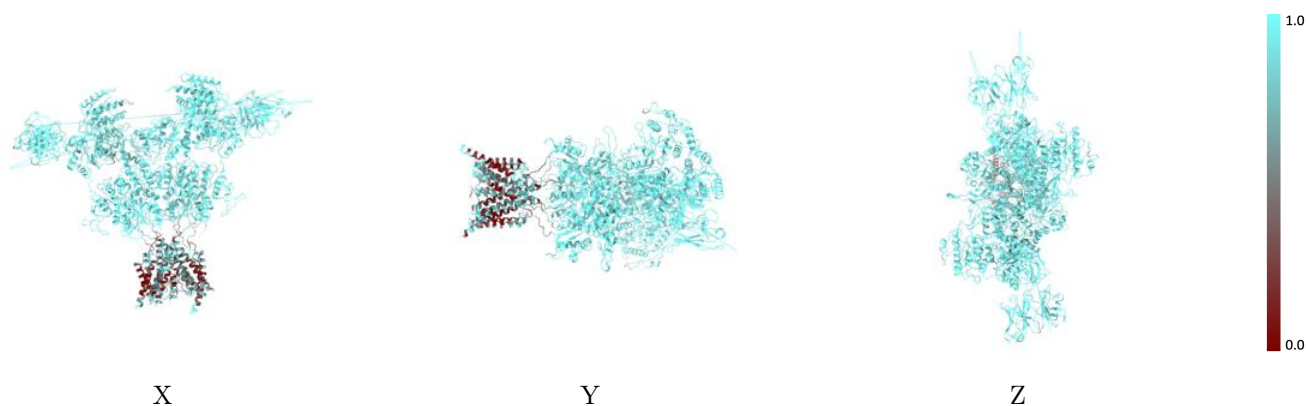
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0509).

9.4　Atom inclusion　ⓘ
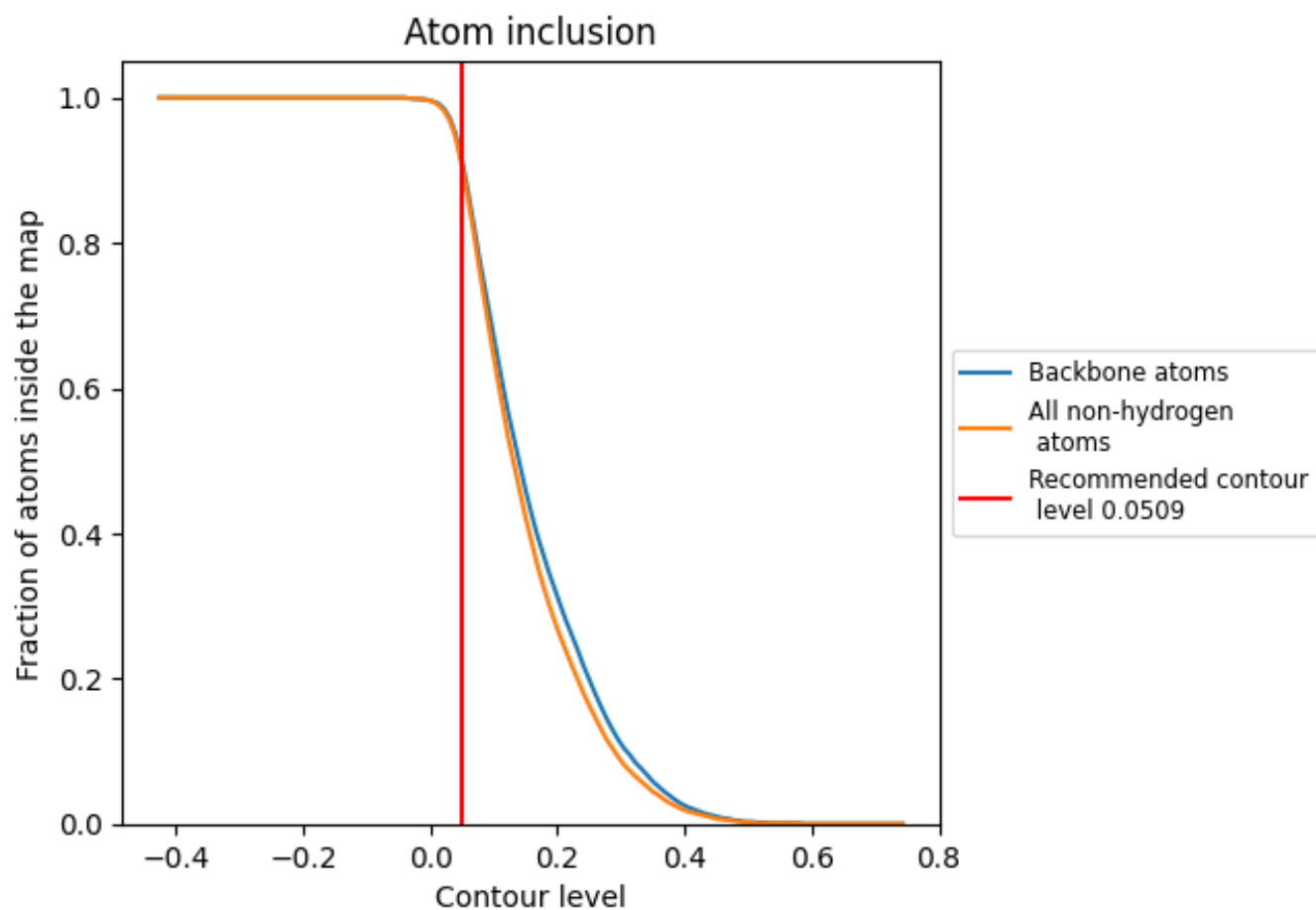
At the recommended contour level, 91% of all backbone atoms, 90% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary　ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0509) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9020	0.4100
A	0.9120	0.4300
B	0.8940	0.4220
C	0.8890	0.3940
D	0.8930	0.4100
H	0.9530	0.3970
L	0.9330	0.3500

1.0

0.0
<0.0