



Full wwPDB EM Validation Report ⓘ

Mar 27, 2026 – 06:02 AM UTC

PDB ID : 7P0B / pdb_00007p0b
EMDB ID : EMD-13147
Title : Human mitochondrial Lon protease without substrate
Authors : Valentin Gese, G.; Shahzad, S.; Hallberg, B.M.
Deposited on : 2021-06-29
Resolution : 4.11 Å(reported)
Based on initial model : 3M6A

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 ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

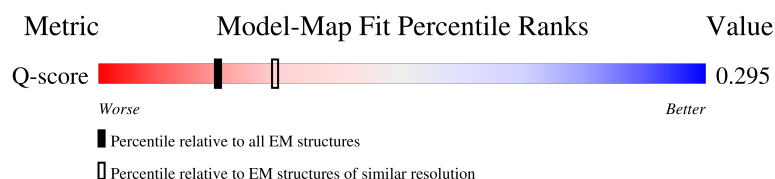
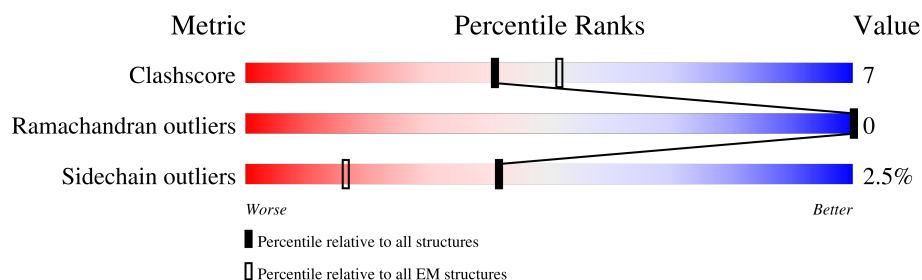
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 4.11 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	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	5659 (3.62 - 4.61)

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 $\leq 5\%$. 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	885	11% 51% 9% 40%
1	B	885	5% 50% 10% 40%
1	C	885	• 47% 12% 40%
1	D	885	• 48% 12% 40%

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Mol	Chain	Length	Quality of chain
1	E	885	5%48%11%40%
1	F	885	18%50%10%40%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 25038 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 Lon protease homolog, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	531	Total	C	N	O	S	0	0
			4147	2633	707	786	21		
1	B	532	Total	C	N	O	S	0	0
			4155	2637	708	789	21		
1	C	531	Total	C	N	O	S	0	0
			4147	2633	707	786	21		
1	D	531	Total	C	N	O	S	0	0
			4147	2633	707	786	21		
1	E	531	Total	C	N	O	S	0	0
			4147	2633	707	786	21		
1	F	529	Total	C	N	O	S	0	0
			4133	2624	705	783	21		

There are 30 discrepancies between the modelled and reference sequences:

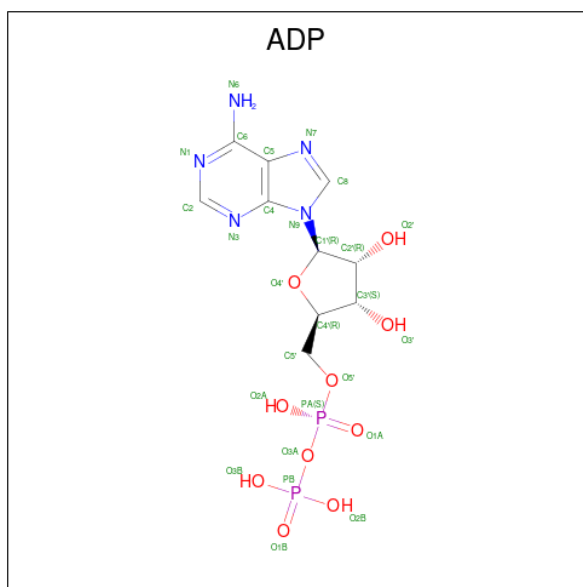
Chain	Residue	Modelled	Actual	Comment	Reference
A	65	SER	-	expression tag	UNP P36776
A	66	MET	-	expression tag	UNP P36776
A	107	GLY	PRO	conflict	UNP P36776
A	563	TRP	ARG	conflict	UNP P36776
A	594	MET	LYS	conflict	UNP P36776
B	65	SER	-	expression tag	UNP P36776
B	66	MET	-	expression tag	UNP P36776
B	107	GLY	PRO	conflict	UNP P36776
B	563	TRP	ARG	conflict	UNP P36776
B	594	MET	LYS	conflict	UNP P36776
C	65	SER	-	expression tag	UNP P36776
C	66	MET	-	expression tag	UNP P36776
C	107	GLY	PRO	conflict	UNP P36776
C	563	TRP	ARG	conflict	UNP P36776
C	594	MET	LYS	conflict	UNP P36776
D	65	SER	-	expression tag	UNP P36776
D	66	MET	-	expression tag	UNP P36776
D	107	GLY	PRO	conflict	UNP P36776

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Chain	Residue	Modelled	Actual	Comment	Reference
D	563	TRP	ARG	conflict	UNP P36776
D	594	MET	LYS	conflict	UNP P36776
E	65	SER	-	expression tag	UNP P36776
E	66	MET	-	expression tag	UNP P36776
E	107	GLY	PRO	conflict	UNP P36776
E	563	TRP	ARG	conflict	UNP P36776
E	594	MET	LYS	conflict	UNP P36776
F	65	SER	-	expression tag	UNP P36776
F	66	MET	-	expression tag	UNP P36776
F	107	GLY	PRO	conflict	UNP P36776
F	563	TRP	ARG	conflict	UNP P36776
F	594	MET	LYS	conflict	UNP P36776

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).

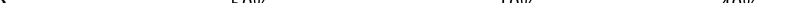


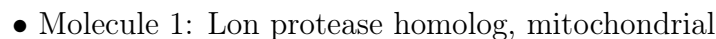
Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	C	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	D	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	E	1	Total	C	N	O	P	0
			27	10	5	10	2	

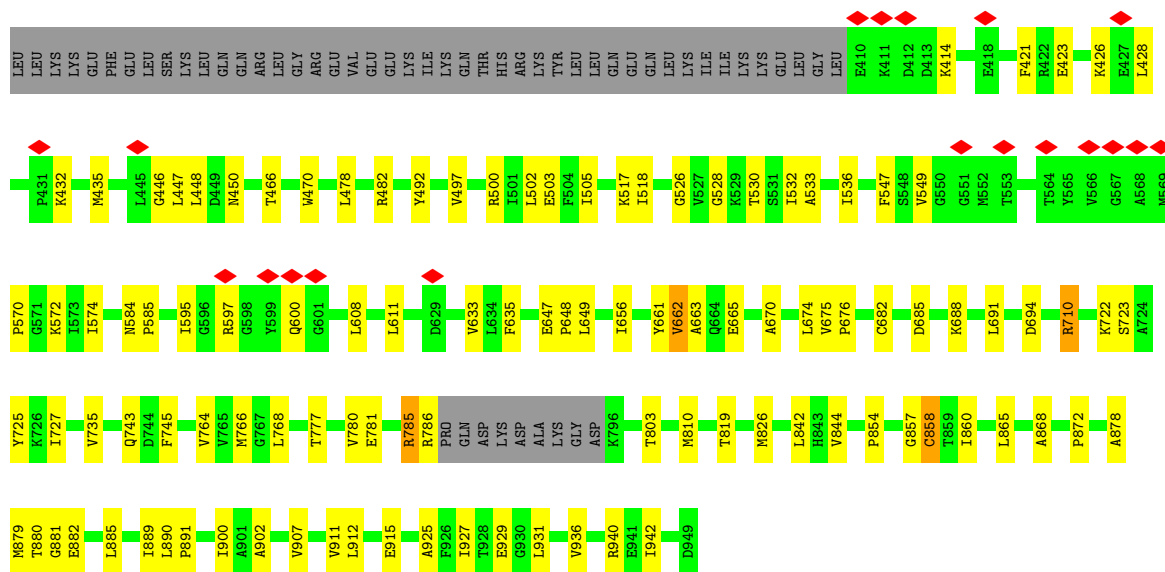
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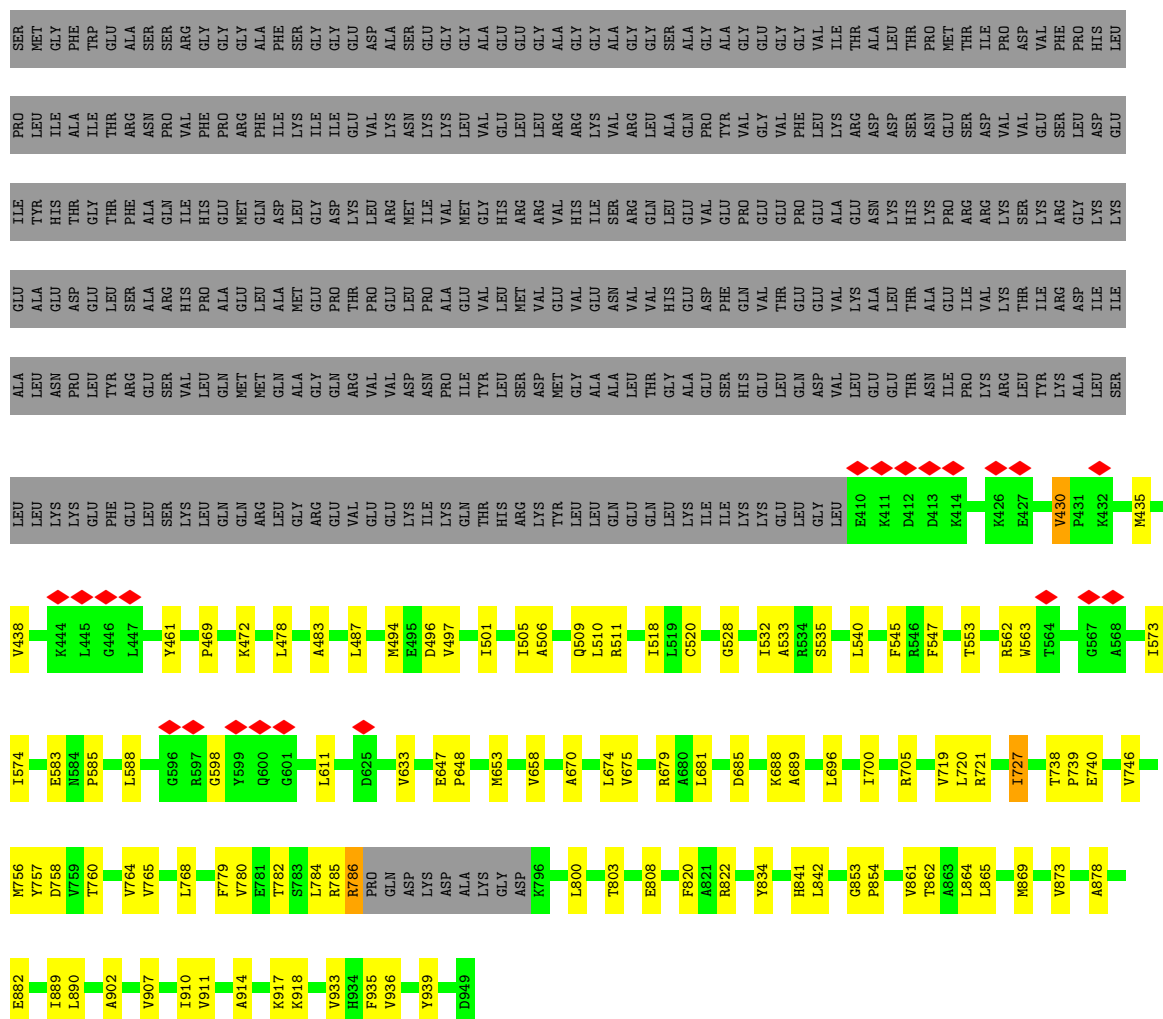
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	F	1	27	10	5	10	2	0

- Chain B: 





- Molecule 1: Lon protease homolog, mitochondrial



Chain E:



Chain F:





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	61980	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	51	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.145	Depositor
Minimum map value	-0.456	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.027	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	523.2, 523.2, 523.2	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3080001, 1.3080001, 1.3080001	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.48	0/4223	1.20	0/5712
1	B	0.47	0/4231	1.16	0/5723
1	C	0.49	0/4223	1.22	4/5712 (0.1%)
1	D	0.48	0/4223	1.20	1/5712 (0.0%)
1	E	0.48	0/4223	1.19	5/5712 (0.1%)
1	F	0.48	0/4208	1.20	3/5688 (0.1%)
All	All	0.48	0/25331	1.20	13/34259 (0.0%)

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	820	PHE	CA-CB-CG	-7.17	106.63	113.80
1	C	858	CYS	CA-C-N	6.39	128.84	120.28
1	C	858	CYS	C-N-CA	6.39	128.84	120.28
1	E	820	PHE	CA-CB-CG	-6.38	107.42	113.80
1	F	739	PRO	CA-C-N	6.11	128.79	120.54
1	F	739	PRO	C-N-CA	6.11	128.79	120.54
1	E	666	LYS	CA-C-N	5.99	128.23	120.44
1	E	666	LYS	C-N-CA	5.99	128.23	120.44
1	E	717	GLU	CA-C-N	5.09	127.06	120.44
1	E	717	GLU	C-N-CA	5.09	127.06	120.44
1	C	872	PRO	CA-C-N	5.06	127.28	120.50
1	C	872	PRO	C-N-CA	5.06	127.28	120.50
1	F	727	ILE	O-C-N	5.03	126.95	121.87

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	4147	0	4190	50	0
1	B	4155	0	4194	58	0
1	C	4147	0	4190	71	0
1	D	4147	0	4190	73	0
1	E	4147	0	4190	65	0
1	F	4133	0	4174	53	0
2	A	27	0	12	0	0
2	B	27	0	12	1	0
2	C	27	0	12	2	0
2	D	27	0	12	0	0
2	E	27	0	12	0	0
2	F	27	0	12	0	0
All	All	25038	0	25200	348	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 7.

All (348) 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:D:768:LEU:HD11	1:D:878:ALA:HB1	1.48	0.96
1:D:902:ALA:HB1	1:D:907:VAL:HG11	1.49	0.95
1:D:497:VAL:O	1:D:501:ILE:HG12	1.69	0.93
1:C:842:LEU:HD21	1:C:844:VAL:HG23	1.51	0.90
1:C:768:LEU:HD11	1:C:878:ALA:HB1	1.50	0.89
1:F:724:ALA:O	1:F:727:ILE:HG13	1.74	0.88
1:D:785:ARG:O	1:D:786:ARG:HG3	1.75	0.87
1:D:494:MET:HA	1:D:494:MET:HE2	1.62	0.82
1:E:766:MET:HE1	1:E:777:THR:OG1	1.80	0.81
1:C:785:ARG:O	1:C:786:ARG:HG2	1.80	0.81
1:C:518:ILE:HG22	1:C:635:PHE:HB2	1.64	0.78
1:E:936:VAL:HG21	1:E:942:ILE:HD11	1.64	0.77
1:B:682:CYS:HB3	1:B:684:LEU:HD13	1.66	0.76
1:D:782:THR:HG22	1:D:842:LEU:HB3	1.67	0.74
1:D:505:ILE:HD11	1:D:540:LEU:HD22	1.70	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:696:LEU:HD23	1:F:699:LEU:HD12	1.71	0.72
1:C:725:TYR:HA	1:D:506:ALA:CB	2.21	0.71
1:D:902:ALA:HB1	1:D:907:VAL:CG1	2.22	0.68
1:B:842:LEU:HD21	1:B:844:VAL:HG23	1.76	0.68
1:C:570:PRO:HB2	1:C:574:ILE:HD11	1.76	0.67
1:B:785:ARG:HD2	1:B:841:HIS:HB2	1.77	0.66
1:E:861:VAL:O	1:E:865:LEU:HD13	1.96	0.65
1:C:570:PRO:HD3	1:D:562:ARG:HH21	1.60	0.65
1:B:450:ASN:HB3	1:C:447:LEU:HD21	1.78	0.65
1:E:670:ALA:HA	1:E:674:LEU:HB2	1.79	0.64
1:E:920:PHE:CE2	1:E:933:VAL:HG11	2.33	0.64
1:F:676:PRO:HG3	1:F:679:ARG:HH21	1.62	0.64
1:F:602:ASP:N	1:F:603:PRO:HD2	2.11	0.64
1:D:518:ILE:HG21	1:D:611:LEU:HG	1.80	0.64
1:F:869:MET:HA	1:F:869:MET:HE2	1.80	0.64
1:F:911:VAL:HG12	1:F:934:HIS:HB2	1.78	0.64
1:D:738:THR:HG23	1:D:740:GLU:HG2	1.80	0.63
1:B:670:ALA:HA	1:B:674:LEU:HB2	1.79	0.63
1:C:492:TYR:O	2:C:1001:ADP:N6	2.31	0.63
1:C:414:LYS:HE3	1:C:450:ASN:OD1	1.99	0.63
1:D:670:ALA:HA	1:D:674:LEU:HB2	1.80	0.63
1:E:487:LEU:HD13	1:E:498:LYS:HG2	1.81	0.63
1:A:494:MET:HB2	1:A:497:VAL:HB	1.78	0.63
1:F:726:LYS:HE2	1:F:732:ALA:HA	1.79	0.62
1:C:725:TYR:HA	1:D:506:ALA:HB1	1.81	0.62
1:A:662:VAL:HG12	1:A:663:ALA:H	1.64	0.62
1:A:414:LYS:HD2	1:A:446:GLY:HA2	1.82	0.62
1:B:494:MET:SD	1:B:658:VAL:HG13	2.39	0.61
1:C:810:MET:HE1	1:C:854:PRO:HD3	1.83	0.61
1:D:469:PRO:HB2	1:D:472:LYS:HB2	1.83	0.61
1:F:608:LEU:HD21	1:F:648:PRO:HB2	1.81	0.61
1:A:765:VAL:HG22	1:A:873:VAL:HG21	1.82	0.60
1:E:675:VAL:HB	1:E:676:PRO:HD3	1.83	0.60
1:A:766:MET:HE1	1:A:777:THR:OG1	2.00	0.60
1:A:585:PRO:HD2	1:A:633:VAL:HG22	1.83	0.60
1:E:780:VAL:HG22	1:E:844:VAL:HG22	1.83	0.60
1:E:936:VAL:HG21	1:E:942:ILE:CD1	2.32	0.60
1:A:914:ALA:HA	1:A:935:PHE:HB3	1.84	0.59
1:F:681:LEU:HD12	1:F:717:GLU:OE1	2.02	0.59
1:D:435:MET:HA	1:D:438:VAL:HG12	1.83	0.59
1:A:778:LEU:HB2	1:A:845:PRO:HG2	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:554:ASP:HA	1:A:600:GLN:HE22	1.69	0.58
1:F:507:VAL:O	1:F:511:ARG:HG2	2.05	0.57
1:D:494:MET:SD	1:D:658:VAL:HG13	2.45	0.57
1:F:461:TYR:HB2	1:F:563:TRP:HE1	1.69	0.57
1:C:584:ASN:N	1:C:585:PRO:HD3	2.19	0.57
1:D:533:ALA:CB	1:D:588:LEU:HD12	2.35	0.57
1:C:768:LEU:HD21	1:C:902:ALA:HB2	1.87	0.56
1:C:595:ILE:HG23	1:C:597:ARG:HH12	1.71	0.56
1:C:500:ARG:HH22	1:C:517:LYS:HE3	1.70	0.56
1:C:879:MET:HE3	1:C:942:ILE:HG21	1.87	0.56
1:E:501:ILE:O	1:E:505:ILE:HD12	2.05	0.56
1:C:497:VAL:HG22	1:C:656:ILE:HG21	1.87	0.55
1:C:528:GLY:HA3	2:C:1001:ADP:C8	2.42	0.55
1:A:878:ALA:HB2	1:A:907:VAL:HG21	1.87	0.55
1:C:662:VAL:HG12	1:C:663:ALA:H	1.72	0.55
1:F:719:VAL:HG13	1:F:745:PHE:HE2	1.70	0.55
1:B:607:LEU:HA	1:B:610:LEU:HD23	1.88	0.55
1:D:760:THR:HG22	1:D:779:PHE:HE2	1.72	0.55
1:E:621:ASP:HB3	1:E:624:LEU:HB3	1.89	0.55
1:F:464:TRP:HE1	1:F:574:ILE:HG22	1.71	0.55
1:B:914:ALA:HA	1:B:935:PHE:HB3	1.89	0.55
1:E:518:ILE:HG22	1:E:653:MET:HE1	1.89	0.54
1:E:549:VAL:HG13	1:E:589:ILE:HD11	1.88	0.54
1:E:889:ILE:HD11	1:E:939:TYR:HB2	1.90	0.54
1:F:546:ARG:HG3	1:F:588:LEU:HD22	1.88	0.54
1:E:691:LEU:HD11	1:E:695:VAL:HG11	1.90	0.54
1:F:504:PHE:HD1	1:F:517:LYS:HE3	1.72	0.54
1:B:530:THR:O	1:B:533:ALA:HB3	2.08	0.54
1:F:530:THR:HB	1:F:546:ARG:HH21	1.73	0.54
1:C:768:LEU:CD1	1:C:878:ALA:HB1	2.32	0.54
1:C:685:ASP:OD1	1:C:688:LYS:HG2	2.09	0.53
1:E:555:VAL:HG23	1:E:600:GLN:HE22	1.73	0.53
1:B:518:ILE:HG22	1:B:635:PHE:HB2	1.91	0.53
1:D:520:CYS:HB2	1:D:653:MET:SD	2.49	0.53
1:E:532:ILE:O	1:E:536:ILE:HD12	2.08	0.53
1:B:546:ARG:HA	1:B:588:LEU:HB3	1.91	0.53
1:D:533:ALA:HB3	1:D:588:LEU:HD12	1.91	0.53
1:E:608:LEU:HD21	1:E:648:PRO:HB2	1.91	0.53
1:B:474:SER:HB3	1:B:582:THR:HG21	1.91	0.53
1:E:858:CYS:HB2	1:E:881:GLY:O	2.08	0.52
1:D:882:GLU:O	1:D:889:ILE:HA	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:757:TYR:CE1	1:B:888:LYS:CG	2.92	0.52
1:D:583:GLU:C	1:D:585:PRO:HD3	2.35	0.52
1:F:705:ARG:HH21	1:F:751:PHE:HB2	1.74	0.52
1:A:501:ILE:HD12	1:A:536:ILE:HD11	1.91	0.52
1:B:717:GLU:O	1:B:721:ARG:HB2	2.10	0.52
1:E:807:GLY:H	1:E:810:MET:HE2	1.74	0.52
1:D:679:ARG:HG3	1:D:720:LEU:HD21	1.91	0.51
1:A:662:VAL:HG12	1:A:663:ALA:N	2.26	0.51
1:C:547:PHE:CD2	1:C:572:LYS:HE2	2.45	0.51
1:B:469:PRO:HG3	1:B:581:LYS:HA	1.91	0.51
1:D:705:ARG:HE	1:D:705:ARG:HA	1.75	0.51
1:D:914:ALA:N	1:D:936:VAL:O	2.43	0.51
1:E:836:VAL:HG23	1:E:837:THR:HG23	1.91	0.51
1:F:529:LYS:NZ	1:F:639:ALA:O	2.43	0.51
1:A:410:GLU:HB2	1:A:450:ASN:ND2	2.26	0.51
1:D:757:TYR:OH	1:E:886:THR:HG22	2.11	0.51
1:D:800:LEU:HD11	1:D:842:LEU:HD23	1.92	0.51
1:B:585:PRO:HD2	1:B:633:VAL:HG22	1.93	0.51
1:D:861:VAL:O	1:D:865:LEU:HG	2.11	0.51
1:C:675:VAL:HB	1:C:676:PRO:HD3	1.93	0.50
1:C:768:LEU:CD2	1:C:902:ALA:HB2	2.41	0.50
1:D:853:GLY:N	1:D:854:PRO:HD2	2.26	0.50
1:A:810:MET:HE1	1:A:854:PRO:HD3	1.92	0.50
1:D:785:ARG:O	1:D:786:ARG:CG	2.56	0.50
1:E:768:LEU:HD11	1:E:910:ILE:CD1	2.42	0.50
1:A:757:TYR:CE1	1:B:888:LYS:HG2	2.46	0.50
1:A:486:VAL:HG22	1:A:538:ARG:NH1	2.27	0.50
1:A:891:PRO:HB3	1:A:915:GLU:HB2	1.93	0.50
1:C:858:CYS:HB2	1:C:881:GLY:O	2.10	0.50
1:C:661:TYR:HB3	1:C:665:GLU:HB2	1.93	0.50
1:F:670:ALA:HA	1:F:674:LEU:HB3	1.94	0.50
1:B:841:HIS:ND1	1:C:819:THR:HG21	2.27	0.50
1:C:764:VAL:HA	1:C:780:VAL:O	2.11	0.50
1:A:853:GLY:N	1:A:854:PRO:HD2	2.27	0.49
1:B:835:LEU:HD11	1:B:864:LEU:HB3	1.94	0.49
1:C:842:LEU:CD2	1:C:844:VAL:HG23	2.34	0.49
1:E:505:ILE:HD12	1:E:505:ILE:H	1.76	0.49
1:E:703:TYR:O	1:E:711:ASN:ND2	2.45	0.49
1:D:585:PRO:HD2	1:D:633:VAL:HG22	1.95	0.49
1:D:738:THR:OG1	1:D:739:PRO:HD2	2.11	0.49
1:B:542:ARG:HD2	1:B:586:LEU:HB2	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:765:VAL:HG21	1:D:862:THR:HB	1.94	0.49
1:F:682:CYS:SG	1:F:727:ILE:HD11	2.53	0.49
1:C:421:PHE:HB3	1:C:466:THR:HG21	1.94	0.48
1:F:786:ARG:HA	1:F:786:ARG:NE	2.28	0.48
1:E:621:ASP:OD1	1:E:622:HIS:N	2.46	0.48
1:E:450:ASN:OD1	1:E:455:PHE:CE2	2.66	0.48
1:E:484:GLN:HG3	1:E:488:GLU:OE2	2.14	0.48
1:A:666:LYS:HA	1:A:669:ILE:HD12	1.96	0.48
1:C:502:LEU:HA	1:C:505:ILE:HD12	1.94	0.48
1:E:520:CYS:O	1:E:656:ILE:HB	2.12	0.48
1:B:414:LYS:HE2	1:B:450:ASN:OD1	2.14	0.48
1:A:757:TYR:CE1	1:B:888:LYS:HG3	2.49	0.48
1:A:854:PRO:HB2	1:A:882:GLU:OE1	2.14	0.48
1:D:573:ILE:HG13	1:D:574:ILE:HD12	1.96	0.48
1:F:603:PRO:HA	1:F:606:ALA:HB3	1.96	0.48
1:F:769:ALA:HB3	1:F:778:LEU:HD13	1.95	0.48
1:B:786:ARG:H	1:C:826:MET:HE1	1.79	0.48
1:F:602:ASP:N	1:F:603:PRO:CD	2.77	0.48
1:F:805:GLN:HG2	1:F:810:MET:HG3	1.95	0.47
1:A:842:LEU:HD11	1:A:860:ILE:HG23	1.95	0.47
1:B:529:LYS:HG2	2:B:1001:ADP:O1B	2.13	0.47
1:E:910:ILE:O	1:E:933:VAL:HA	2.14	0.47
1:F:910:ILE:O	1:F:933:VAL:HA	2.14	0.47
1:F:414:LYS:HG3	1:F:446:GLY:HA2	1.97	0.47
1:B:483:ALA:O	1:B:487:LEU:HG	2.14	0.47
1:B:738:THR:HB	1:B:740:GLU:OE1	2.15	0.47
1:C:727:ILE:HD11	1:D:510:LEU:HD11	1.97	0.47
1:A:528:GLY:O	1:A:532:ILE:HG12	2.13	0.47
1:A:818:TYR:CE1	1:A:835:LEU:HD12	2.49	0.47
1:D:705:ARG:HA	1:D:705:ARG:NE	2.30	0.47
1:A:675:VAL:HB	1:A:676:PRO:HD3	1.96	0.47
1:E:670:ALA:HB2	1:E:712:LEU:HD21	1.97	0.47
1:A:812:GLU:O	1:A:816:ILE:HG12	2.14	0.47
1:D:478:LEU:HD13	1:D:509:GLN:HG3	1.97	0.47
1:B:768:LEU:HD11	1:B:878:ALA:HB1	1.96	0.47
1:A:691:LEU:HD21	1:A:696:LEU:HD21	1.97	0.46
1:C:585:PRO:HD2	1:C:633:VAL:HG22	1.97	0.46
1:C:925:ALA:O	1:C:929:GLU:HG2	2.16	0.46
1:D:430:VAL:HB	1:D:435:MET:SD	2.55	0.46
1:E:471:GLY:N	1:E:583:GLU:OE2	2.49	0.46
1:E:710:ARG:HA	1:E:710:ARG:NE	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:555:VAL:HG13	1:B:606:ALA:HB2	1.95	0.46
1:C:890:LEU:HB3	1:C:891:PRO:HD2	1.97	0.46
1:D:782:THR:HG21	1:D:864:LEU:HD12	1.95	0.46
1:E:724:ALA:O	1:E:728:VAL:HG23	2.16	0.46
1:F:732:ALA:HB1	1:F:735:VAL:HG12	1.97	0.46
1:C:532:ILE:O	1:C:536:ILE:HG12	2.14	0.46
1:D:545:PHE:HE2	1:D:547:PHE:HB2	1.81	0.46
1:F:914:ALA:O	1:F:917:LYS:HB2	2.15	0.46
1:C:723:SER:HB3	1:C:735:VAL:HG11	1.98	0.46
1:C:528:GLY:O	1:C:532:ILE:HG12	2.17	0.46
1:D:727:ILE:HD13	1:D:727:ILE:HA	1.80	0.46
1:D:882:GLU:HB3	1:D:890:LEU:HB2	1.97	0.46
1:B:860:ILE:O	1:B:863:ALA:HB3	2.16	0.45
1:D:494:MET:HE2	1:D:494:MET:CA	2.41	0.45
1:E:450:ASN:OD1	1:E:455:PHE:CZ	2.69	0.45
1:F:809:VAL:HG13	1:F:810:MET:HE2	1.98	0.45
1:B:461:TYR:HE1	1:B:624:LEU:HA	1.81	0.45
1:E:865:LEU:CD1	1:E:865:LEU:N	2.79	0.45
1:C:764:VAL:HG23	1:C:781:GLU:HG3	1.98	0.45
1:D:765:VAL:HG22	1:D:873:VAL:HG21	1.99	0.45
1:A:766:MET:HB3	1:A:878:ALA:HA	1.98	0.45
1:B:519:LEU:O	1:B:636:ILE:HA	2.16	0.45
1:C:423:GLU:O	1:C:426:LYS:HG2	2.16	0.45
1:D:545:PHE:CE2	1:D:547:PHE:HB2	2.51	0.45
1:A:700:ILE:HD11	1:A:712:LEU:HD22	1.98	0.45
1:B:863:ALA:O	1:B:866:SER:OG	2.30	0.45
1:D:764:VAL:HA	1:D:780:VAL:O	2.16	0.45
1:F:630:LEU:O	1:F:630:LEU:HG	2.15	0.45
1:E:424:ARG:O	1:E:428:LEU:HB2	2.17	0.45
1:F:682:CYS:HA	1:F:724:ALA:HB2	1.98	0.45
1:C:865:LEU:O	1:C:868:ALA:HB3	2.16	0.45
1:E:647:GLU:N	1:E:648:PRO:HD2	2.32	0.45
1:B:414:LYS:HE2	1:B:450:ASN:CG	2.41	0.45
1:B:450:ASN:OD1	1:B:455:PHE:CZ	2.69	0.45
1:C:879:MET:HE2	1:C:879:MET:HB2	1.68	0.45
1:D:461:TYR:HB2	1:D:563:TRP:HE1	1.82	0.45
1:C:428:LEU:HD22	1:C:470:TRP:H	1.82	0.45
1:C:882:GLU:O	1:C:889:ILE:HA	2.17	0.45
1:D:841:HIS:HD1	1:E:819:THR:HG21	1.82	0.45
1:E:766:MET:HE3	1:E:767:GLY:O	2.17	0.45
1:B:649:LEU:O	1:B:653:MET:HB2	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:910:ILE:HG23	1:D:933:VAL:HG23	1.98	0.44
1:A:430:VAL:HG12	1:A:470:TRP:CD1	2.52	0.44
1:A:662:VAL:CG1	1:A:663:ALA:H	2.29	0.44
1:B:624:LEU:HD11	1:B:628:VAL:HG11	1.97	0.44
1:B:836:VAL:HG13	1:B:837:THR:HG23	2.00	0.44
1:F:497:VAL:O	1:F:501:ILE:HG12	2.17	0.44
1:A:757:TYR:HE1	1:B:888:LYS:HG2	1.83	0.44
1:D:917:LYS:HA	1:D:935:PHE:CZ	2.52	0.44
1:C:722:LYS:HD2	1:C:745:PHE:HA	1.98	0.44
1:E:853:GLY:N	1:E:854:PRO:HD2	2.32	0.44
1:A:473:TYR:HB3	1:A:583:GLU:HB2	1.99	0.44
1:A:519:LEU:HD12	1:A:656:ILE:HD11	1.99	0.44
1:C:414:LYS:HD3	1:C:446:GLY:HA2	2.00	0.44
1:C:891:PRO:HB3	1:C:915:GLU:HB2	1.99	0.44
1:D:939:TYR:CD2	1:D:939:TYR:O	2.71	0.44
1:E:549:VAL:HA	1:E:552:MET:HE3	2.00	0.44
1:E:662:VAL:HG12	1:E:663:ALA:N	2.33	0.44
1:E:757:TYR:CE1	1:F:888:LYS:HD3	2.53	0.44
1:F:724:ALA:HA	1:F:727:ILE:HD11	1.99	0.44
1:F:858:CYS:SG	1:F:889:ILE:HD12	2.58	0.44
1:D:917:LYS:HG2	1:D:935:PHE:CE2	2.53	0.44
1:B:522:TYR:HA	1:B:639:ALA:O	2.18	0.44
1:C:530:THR:O	1:C:533:ALA:HB3	2.18	0.44
1:D:808:GLU:CD	1:D:808:GLU:H	2.25	0.44
1:E:501:ILE:HG13	1:E:536:ILE:HG12	1.99	0.44
1:E:649:LEU:O	1:E:653:MET:HB2	2.18	0.44
1:E:755:ARG:HG3	1:E:905:ALA:O	2.18	0.44
1:C:500:ARG:O	1:C:503:GLU:HB2	2.18	0.43
1:E:557:GLU:HA	1:E:572:LYS:HZ3	1.83	0.43
1:A:524:PRO:HG3	1:A:774:GLY:HA3	1.99	0.43
1:A:518:ILE:HG13	1:A:611:LEU:HD22	2.00	0.43
1:B:532:ILE:O	1:B:536:ILE:HG12	2.18	0.43
1:E:768:LEU:HD11	1:E:910:ILE:HD11	2.00	0.43
1:A:487:LEU:HD23	1:A:498:LYS:HG2	1.99	0.43
1:A:920:PHE:CE1	1:A:933:VAL:HG11	2.53	0.43
1:C:526:GLY:HA3	1:C:710:ARG:HB2	2.00	0.43
1:F:672:ARG:O	1:F:676:PRO:HG2	2.18	0.43
1:C:912:LEU:O	1:C:936:VAL:HG22	2.19	0.43
1:F:616:ASN:O	1:F:619:PHE:HB2	2.19	0.43
1:E:585:PRO:HD2	1:E:633:VAL:HG22	1.99	0.43
1:A:706:GLU:HG2	1:A:708:GLY:H	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:428:LEU:HD22	1:B:469:PRO:HA	1.99	0.43
1:B:879:MET:HG2	1:B:911:VAL:HB	2.01	0.43
1:C:647:GLU:N	1:C:648:PRO:HD2	2.34	0.43
1:E:910:ILE:HG21	1:E:931:LEU:HD13	2.01	0.43
1:C:785:ARG:C	1:C:786:ARG:HG2	2.43	0.42
1:D:647:GLU:N	1:D:648:PRO:HD2	2.34	0.42
1:D:865:LEU:O	1:D:869:MET:SD	2.77	0.42
1:C:682:CYS:O	1:D:511:ARG:HD3	2.19	0.42
1:B:719:VAL:HG22	1:B:745:PHE:HB3	2.02	0.42
1:D:757:TYR:OH	1:E:886:THR:CG2	2.67	0.42
1:F:502:LEU:HA	1:F:505:ILE:HD12	2.01	0.42
1:C:500:ARG:HG2	1:C:656:ILE:HD11	2.01	0.42
1:D:528:GLY:O	1:D:532:ILE:HG12	2.19	0.42
1:E:882:GLU:HB2	1:E:890:LEU:HB2	2.00	0.42
1:A:785:ARG:HG3	1:A:785:ARG:HH11	1.85	0.42
1:D:784:LEU:HD22	1:D:834:TYR:OH	2.19	0.42
1:D:785:ARG:HD2	1:E:819:THR:HG23	2.00	0.42
1:F:579:LYS:HG3	1:F:580:THR:HG23	2.02	0.42
1:B:451:HIS:HD2	1:C:448:LEU:HG	1.85	0.42
1:B:804:GLY:HA2	1:B:846:GLU:OE2	2.20	0.42
1:B:911:VAL:HG22	1:B:934:HIS:HB2	2.00	0.42
1:C:611:LEU:HD13	1:C:649:LEU:HD22	2.02	0.42
1:C:670:ALA:HA	1:C:674:LEU:HD12	2.01	0.42
1:E:768:LEU:CD1	1:E:910:ILE:HD11	2.49	0.42
1:A:468:ILE:HB	1:A:470:TRP:NE1	2.34	0.42
1:B:843:HIS:HB3	1:C:885:LEU:HD22	2.01	0.42
1:E:550:GLY:O	1:E:595:ILE:HA	2.19	0.42
1:F:647:GLU:N	1:F:648:PRO:HD2	2.34	0.42
1:A:425:LEU:HD11	1:A:430:VAL:HG22	2.01	0.42
1:D:553:THR:HB	1:D:598:GLY:HA3	2.02	0.42
1:E:778:LEU:HD22	1:E:845:PRO:HB2	2.02	0.42
1:F:515:GLN:HA	1:F:632:LYS:HG2	2.02	0.42
1:F:664:GLN:HA	1:F:667:LEU:HD12	2.01	0.42
1:B:844:VAL:HA	1:B:845:PRO:HD3	1.92	0.42
1:E:699:LEU:O	1:E:703:TYR:HB2	2.19	0.42
1:F:478:LEU:HD13	1:F:505:ILE:HG23	2.02	0.42
1:F:719:VAL:HG13	1:F:745:PHE:CE2	2.54	0.42
1:A:543:GLU:OE2	1:A:582:THR:HG21	2.19	0.42
1:B:464:TRP:O	1:B:468:ILE:HG12	2.20	0.42
1:A:670:ALA:HA	1:A:674:LEU:HB2	2.02	0.41
1:B:784:LEU:C	1:B:785:ARG:HG3	2.45	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:920:PHE:CE2	1:B:933:VAL:HG11	2.55	0.41
1:C:570:PRO:CD	1:D:562:ARG:HH21	2.31	0.41
1:D:679:ARG:NH2	1:D:689:ALA:O	2.53	0.41
1:F:725:TYR:CE2	1:F:726:LYS:HG3	2.55	0.41
1:A:688:LYS:HE3	1:A:727:ILE:HD12	2.01	0.41
1:B:917:LYS:HA	1:B:935:PHE:CE1	2.56	0.41
1:E:692:SER:OG	1:E:694:ASP:OD1	2.36	0.41
1:F:743:GLN:CD	1:F:743:GLN:H	2.28	0.41
1:C:857:GLY:HA2	1:C:860:ILE:HD12	2.01	0.41
1:F:504:PHE:HZ	1:F:634:LEU:HD21	1.85	0.41
1:F:582:THR:HG21	1:F:585:PRO:HB3	2.02	0.41
1:C:584:ASN:N	1:C:585:PRO:CD	2.83	0.41
1:C:842:LEU:HD21	1:C:844:VAL:CG2	2.38	0.41
1:E:546:ARG:HG2	1:E:588:LEU:HD22	2.02	0.41
1:B:691:LEU:HD23	1:B:696:LEU:HD21	2.01	0.41
1:D:696:LEU:O	1:D:700:ILE:HG13	2.20	0.41
1:D:785:ARG:C	1:D:786:ARG:HD2	2.45	0.41
1:A:647:GLU:N	1:A:648:PRO:HD2	2.35	0.41
1:B:428:LEU:HD13	1:B:469:PRO:HA	2.02	0.41
1:C:549:VAL:HB	1:C:595:ILE:HD13	2.03	0.41
1:C:785:ARG:NH1	1:D:822:ARG:NH1	2.69	0.41
1:F:504:PHE:CZ	1:F:634:LEU:HD21	2.55	0.41
1:A:784:LEU:HG	1:A:785:ARG:H	1.85	0.41
1:B:494:MET:HA	1:B:494:MET:HE2	2.03	0.41
1:C:432:LYS:HA	1:C:435:MET:HE2	2.03	0.41
1:C:766:MET:HE1	1:C:777:THR:HB	2.03	0.41
1:D:532:ILE:O	1:D:535:SER:OG	2.30	0.41
1:D:803:THR:HG23	1:D:841:HIS:NE2	2.36	0.41
1:E:882:GLU:O	1:E:889:ILE:HA	2.20	0.41
1:A:778:LEU:HD13	1:A:845:PRO:HD2	2.02	0.41
1:B:841:HIS:HD2	1:B:842:LEU:N	2.19	0.41
1:F:718:LYS:HD2	1:F:721:ARG:HE	1.86	0.41
1:D:483:ALA:O	1:D:487:LEU:HG	2.21	0.40
1:E:895:ILE:HD13	1:E:895:ILE:HA	1.97	0.40
1:B:679:ARG:NH2	1:B:689:ALA:O	2.53	0.40
1:F:690:LYS:HG3	1:F:736:GLU:C	2.46	0.40
1:B:895:ILE:HD12	1:B:912:LEU:HD22	2.03	0.40
1:D:494:MET:HA	1:D:494:MET:CE	2.35	0.40
1:A:543:GLU:HG3	1:A:582:THR:HG21	2.03	0.40
1:D:685:ASP:HB3	1:D:688:LYS:HG2	2.03	0.40
1:D:721:ARG:HB3	1:E:503:GLU:OE1	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:496:ASP:OD1	1:E:496:ASP:N	2.54	0.40
1:E:767:GLY:HA2	1:E:859:THR:HG21	2.03	0.40
1:C:743:GLN:CD	1:C:743:GLN:H	2.29	0.40
1:C:929:GLU:C	1:C:931:LEU:H	2.29	0.40
1:F:675:VAL:O	1:F:679:ARG:N	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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	527/885 (60%)	512 (97%)	15 (3%)	0	100	100
1	B	528/885 (60%)	514 (97%)	14 (3%)	0	100	100
1	C	527/885 (60%)	518 (98%)	9 (2%)	0	100	100
1	D	527/885 (60%)	511 (97%)	16 (3%)	0	100	100
1	E	527/885 (60%)	515 (98%)	12 (2%)	0	100	100
1	F	523/885 (59%)	508 (97%)	15 (3%)	0	100	100
All	All	3159/5310 (60%)	3078 (97%)	81 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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	452/751 (60%)	442 (98%)	10 (2%)	45	64
1	B	453/751 (60%)	448 (99%)	5 (1%)	65	74
1	C	452/751 (60%)	436 (96%)	16 (4%)	32	54
1	D	452/751 (60%)	440 (97%)	12 (3%)	39	60
1	E	452/751 (60%)	437 (97%)	15 (3%)	33	55
1	F	450/751 (60%)	439 (98%)	11 (2%)	43	63
All	All	2711/4506 (60%)	2642 (98%)	69 (2%)	42	62

All (69) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	449	ASP
1	A	450	ASN
1	A	510	LEU
1	A	700	ILE
1	A	809	VAL
1	A	840	ILE
1	A	844	VAL
1	A	846	GLU
1	A	873	VAL
1	A	910	ILE
1	B	552	MET
1	B	667	LEU
1	B	719	VAL
1	B	742	LEU
1	B	873	VAL
1	C	478	LEU
1	C	482	ARG
1	C	600	GLN
1	C	608	LEU
1	C	662	VAL
1	C	691	LEU
1	C	694	ASP
1	C	710	ARG
1	C	785	ARG
1	C	803	THR
1	C	880	THR
1	C	900	ILE
1	C	907	VAL
1	C	911	VAL
1	C	927	ILE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	940	ARG
1	D	430	VAL
1	D	496	ASP
1	D	675	VAL
1	D	681	LEU
1	D	719	VAL
1	D	727	ILE
1	D	746	VAL
1	D	756	MET
1	D	758	ASP
1	D	786	ARG
1	D	911	VAL
1	D	918	LYS
1	E	518	ILE
1	E	549	VAL
1	E	641	VAL
1	E	684	LEU
1	E	693	SER
1	E	700	ILE
1	E	773	MET
1	E	777	THR
1	E	796	LYS
1	E	859	THR
1	E	860	ILE
1	E	865	LEU
1	E	886	THR
1	E	900	ILE
1	E	918	LYS
1	F	549	VAL
1	F	610	LEU
1	F	630	LEU
1	F	691	LEU
1	F	725	TYR
1	F	727	ILE
1	F	742	LEU
1	F	759	VAL
1	F	765	VAL
1	F	885	LEU
1	F	886	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	715	GLN
1	A	828	HIS
1	B	451	HIS
1	B	515	GLN
1	B	702	GLN
1	B	715	GLN
1	B	743	GLN
1	B	828	HIS
1	C	433	HIS
1	C	575	GLN
1	C	677	GLN
1	C	715	GLN
1	D	433	HIS
1	D	450	ASN
1	D	640	ASN
1	D	702	GLN
1	D	743	GLN
1	E	456	ASN
1	E	618	ASN
1	E	741	ASN
1	E	828	HIS
1	E	875	GLN
1	F	451	HIS
1	F	509	GLN
1	F	561	HIS
1	F	615	GLN
1	F	828	HIS
1	F	875	GLN
1	F	934	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

6 ligands are modelled in this entry.

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
2	ADP	B	1001	-	28,29,29	0.54	0	43,45,45	0.64	0
2	ADP	E	1001	-	28,29,29	0.41	0	43,45,45	0.70	0
2	ADP	F	1001	-	28,29,29	0.52	0	43,45,45	0.68	0
2	ADP	A	1001	-	28,29,29	0.49	0	43,45,45	0.59	0
2	ADP	C	1001	-	28,29,29	0.41	0	43,45,45	0.73	1 (2%)
2	ADP	D	1001	-	28,29,29	0.44	0	43,45,45	0.61	0

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
2	ADP	B	1001	-	-	3/16/32/32	0/3/3/3
2	ADP	E	1001	-	-	2/16/32/32	0/3/3/3
2	ADP	F	1001	-	-	3/16/32/32	0/3/3/3
2	ADP	A	1001	-	-	2/16/32/32	0/3/3/3
2	ADP	C	1001	-	-	1/16/32/32	0/3/3/3
2	ADP	D	1001	-	-	0/16/32/32	0/3/3/3

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1001	ADP	O3'-C3'-C2'	2.09	118.51	111.82

There are no chirality outliers.

All (11) torsion outliers are listed below:

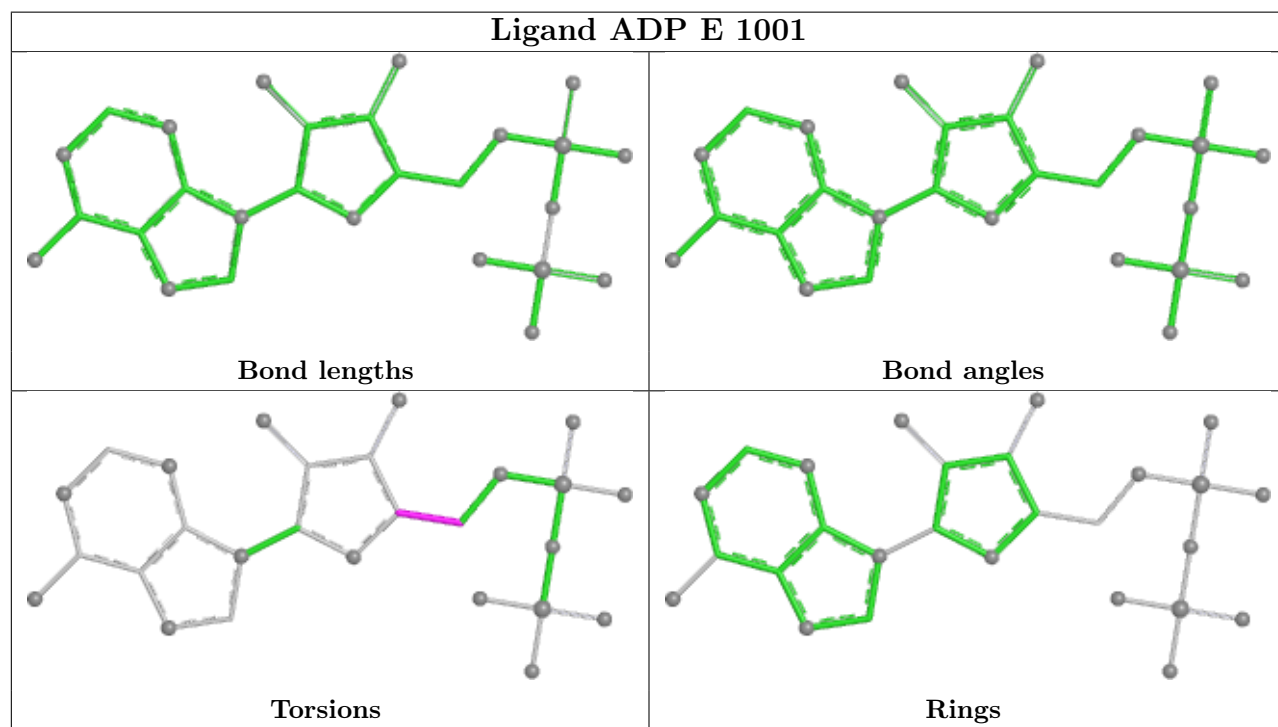
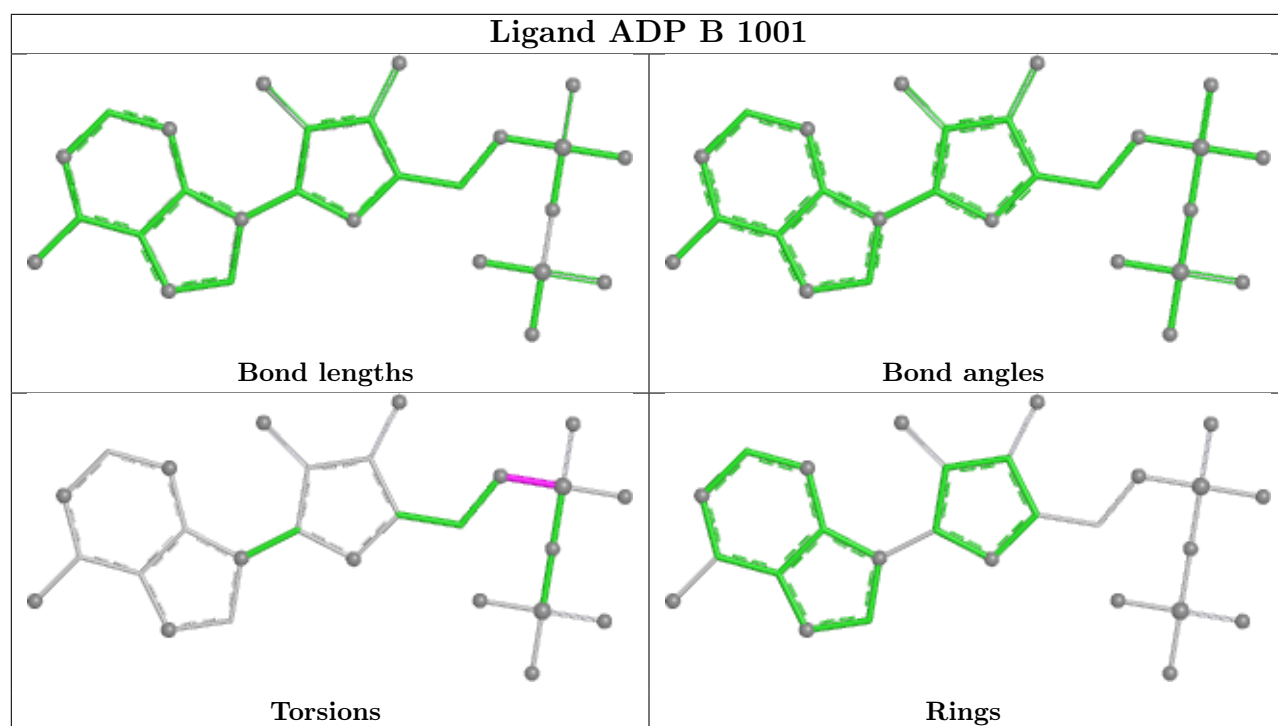
Mol	Chain	Res	Type	Atoms
2	A	1001	ADP	O4'-C4'-C5'-O5'
2	A	1001	ADP	C3'-C4'-C5'-O5'
2	B	1001	ADP	C5'-O5'-PA-O1A
2	B	1001	ADP	C5'-O5'-PA-O2A
2	B	1001	ADP	C5'-O5'-PA-O3A
2	E	1001	ADP	O4'-C4'-C5'-O5'
2	F	1001	ADP	C3'-C4'-C5'-O5'
2	F	1001	ADP	O4'-C4'-C5'-O5'
2	E	1001	ADP	C3'-C4'-C5'-O5'
2	C	1001	ADP	C5'-O5'-PA-O1A
2	F	1001	ADP	C5'-O5'-PA-O1A

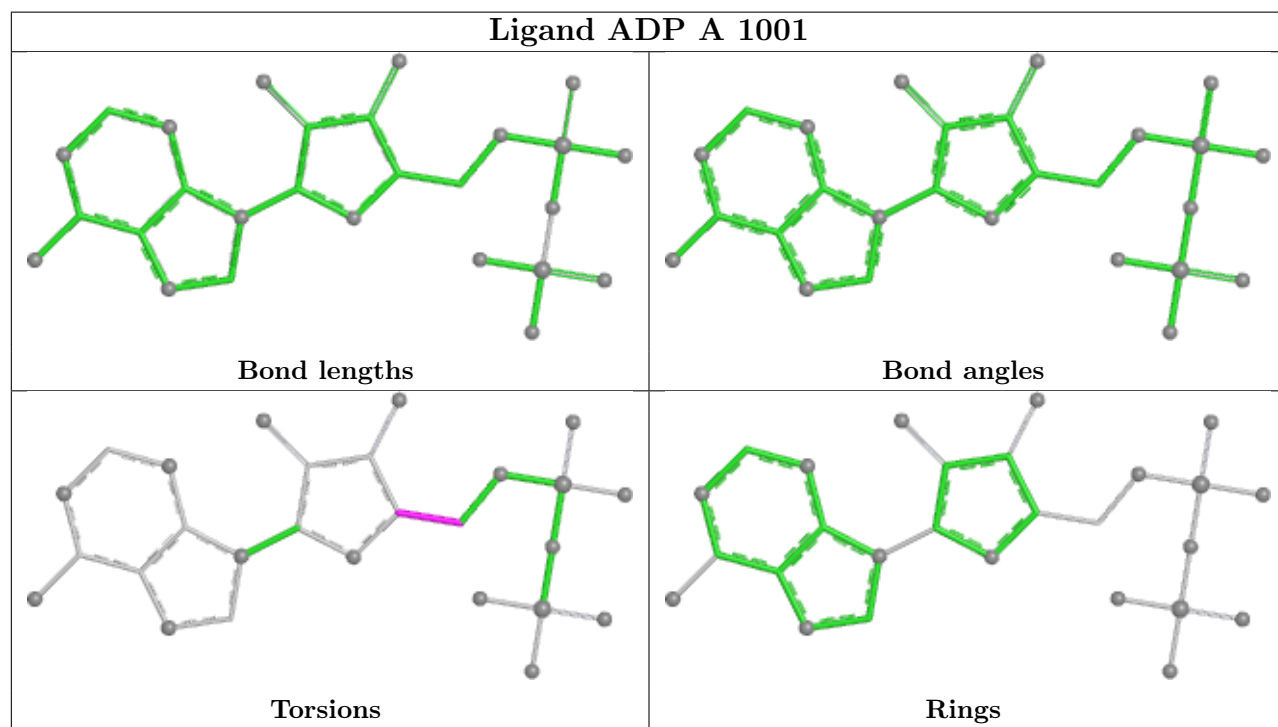
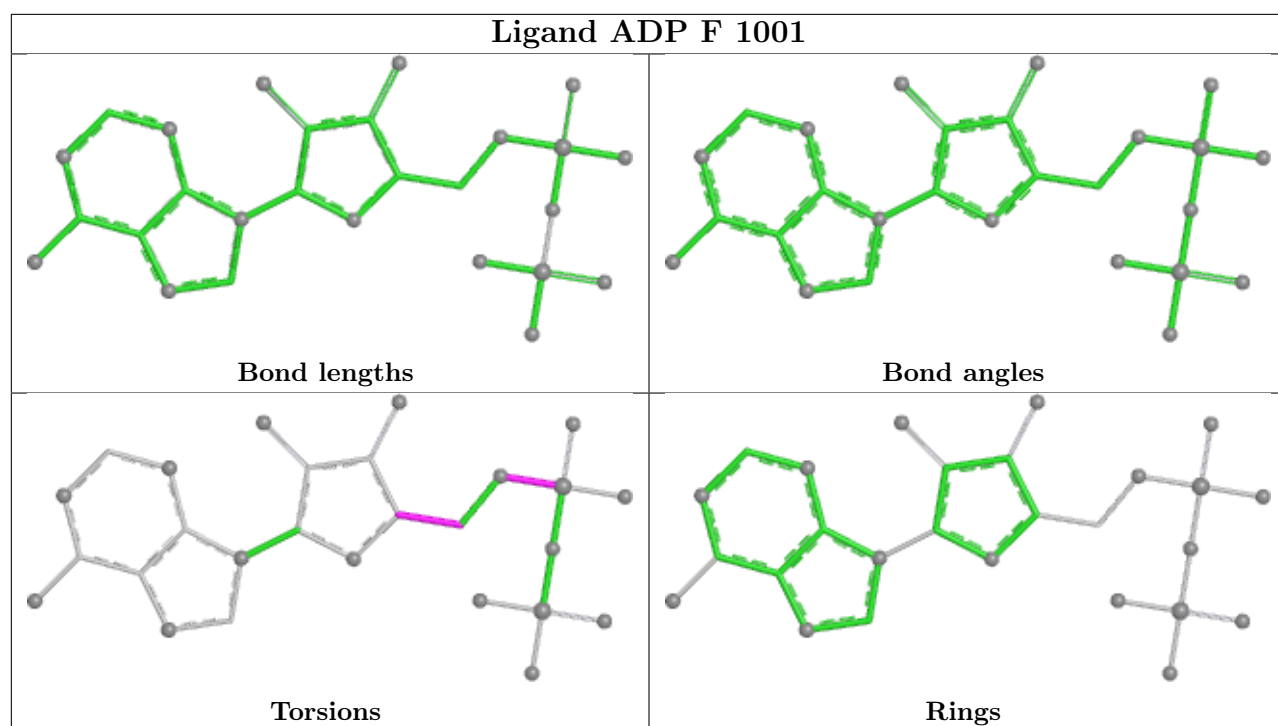
There are no ring outliers.

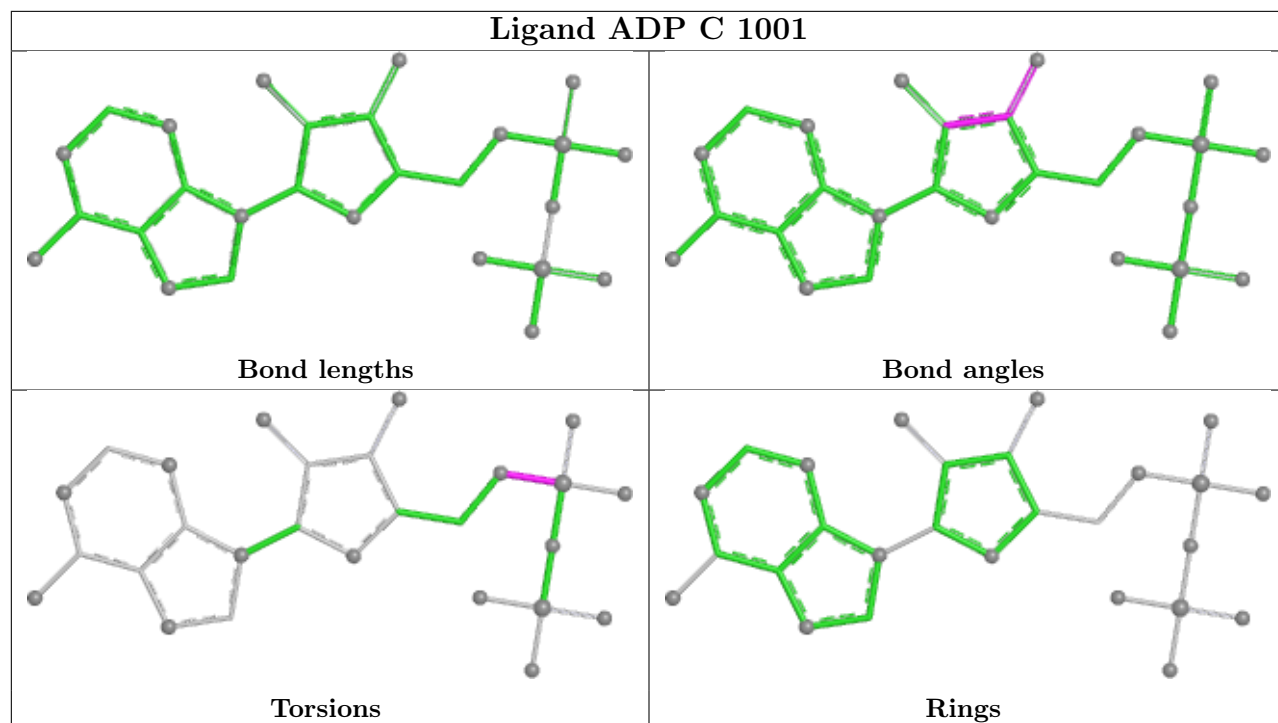
2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1001	ADP	1	0
2	C	1001	ADP	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

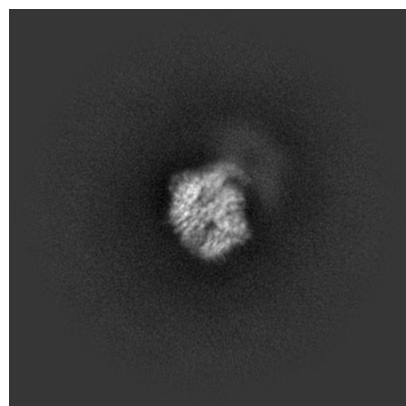
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13147. These allow visual inspection of the internal detail of the map and identification of artifacts.

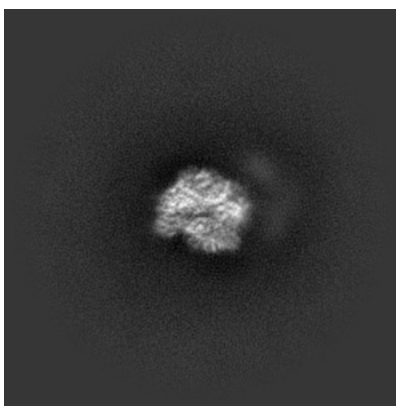
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

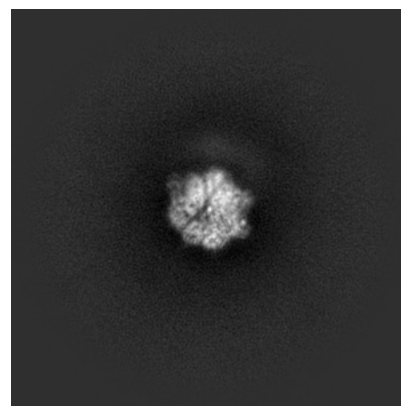
6.1.1 Primary map



X

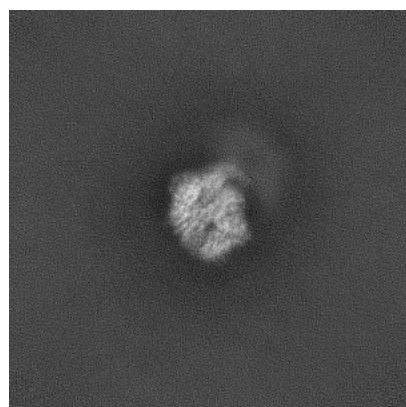


Y

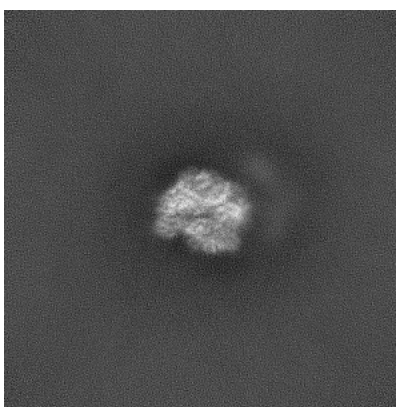


Z

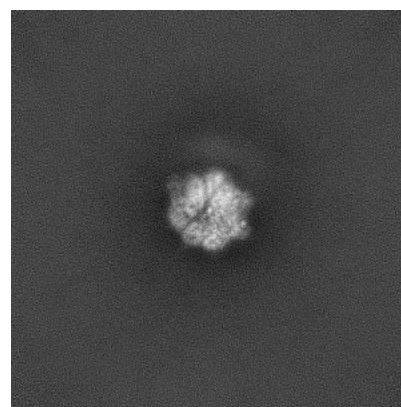
6.1.2 Raw map



X



Y

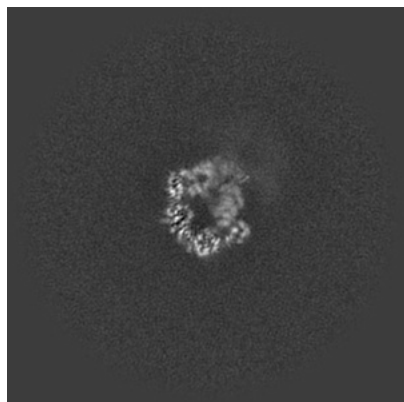


Z

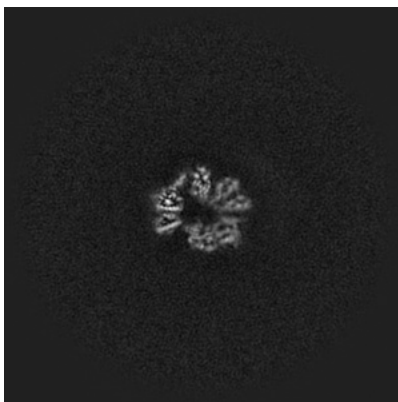
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

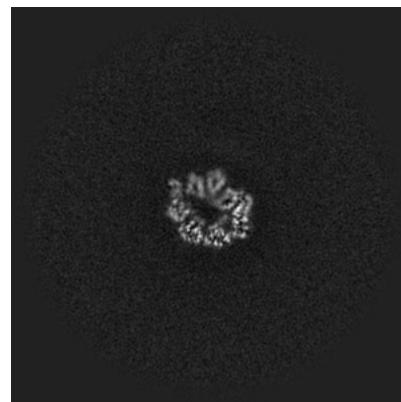
6.2.1 Primary map



X Index: 200

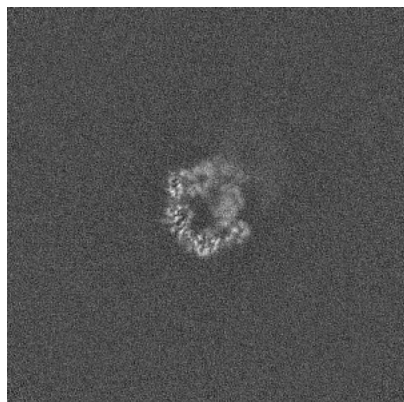


Y Index: 200

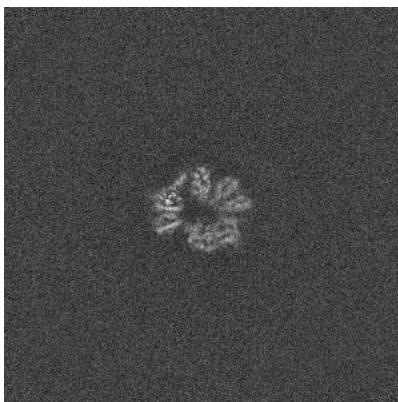


Z Index: 200

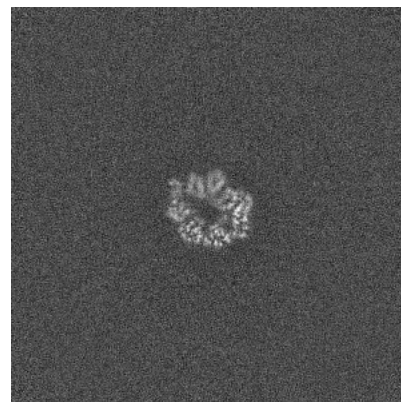
6.2.2 Raw map



X Index: 200



Y Index: 200

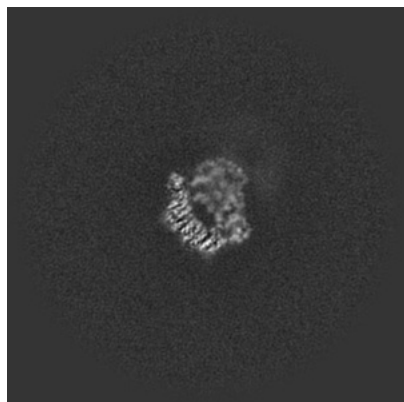


Z Index: 200

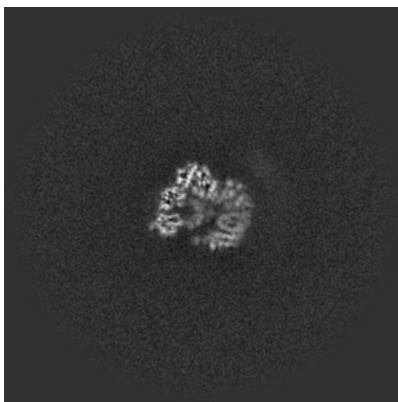
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

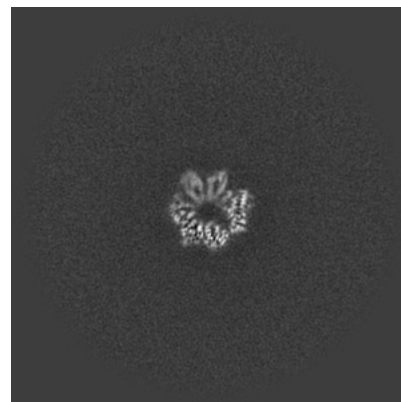
6.3.1 Primary map



X Index: 205

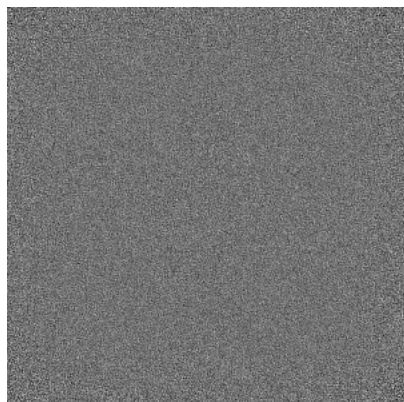


Y Index: 208

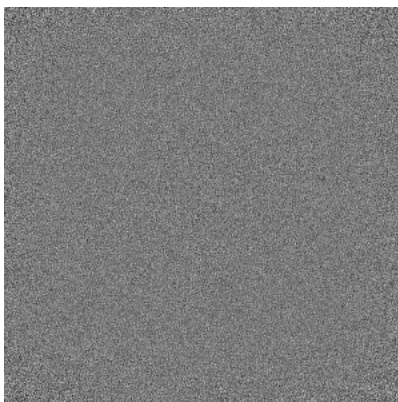


Z Index: 194

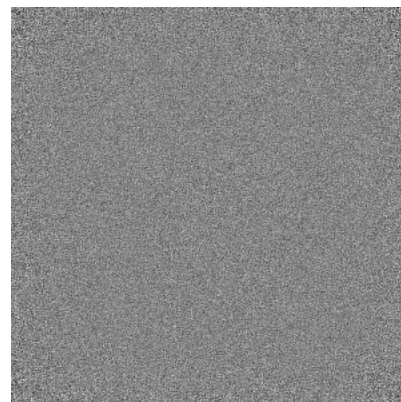
6.3.2 Raw map



X Index: 0



Y Index: 0

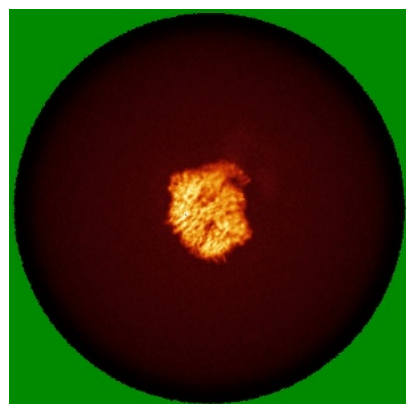


Z Index: 0

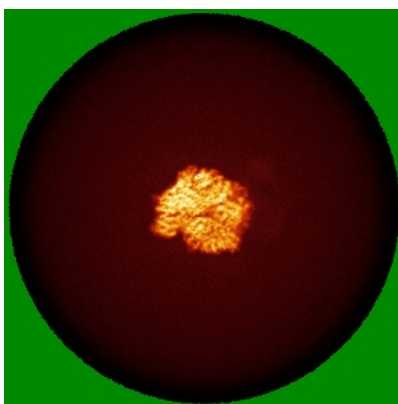
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

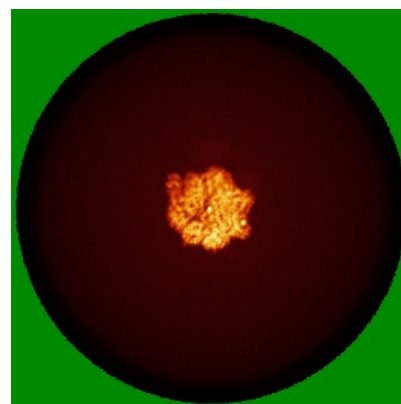
6.4.1 Primary map



X

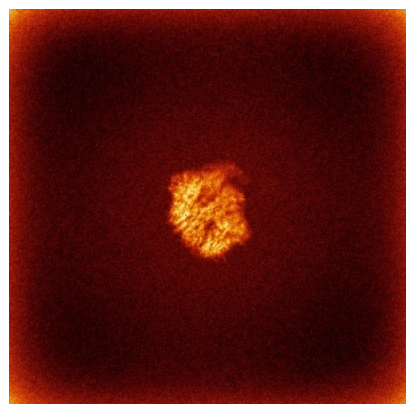


Y

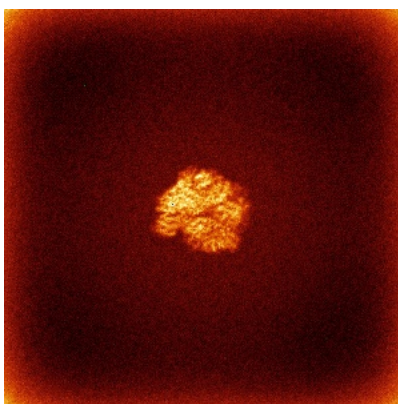


Z

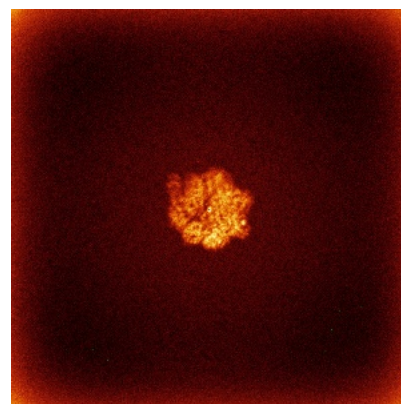
6.4.2 Raw map



X



Y

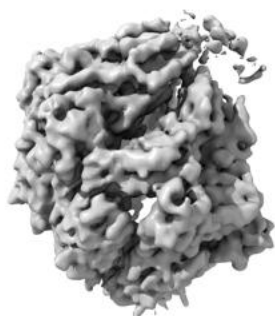


Z

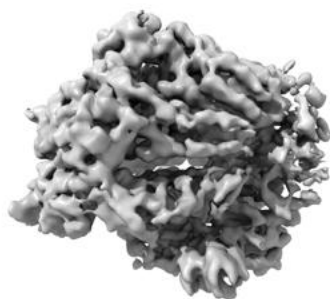
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

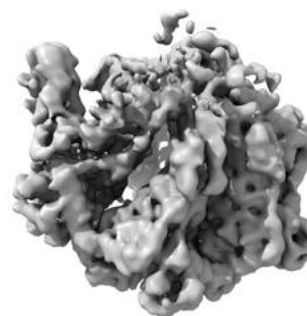
6.5.1 Primary map



X



Y



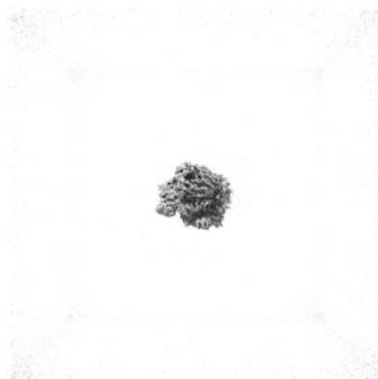
Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

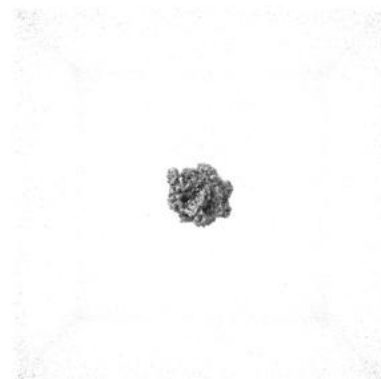
6.5.2 Raw map



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.

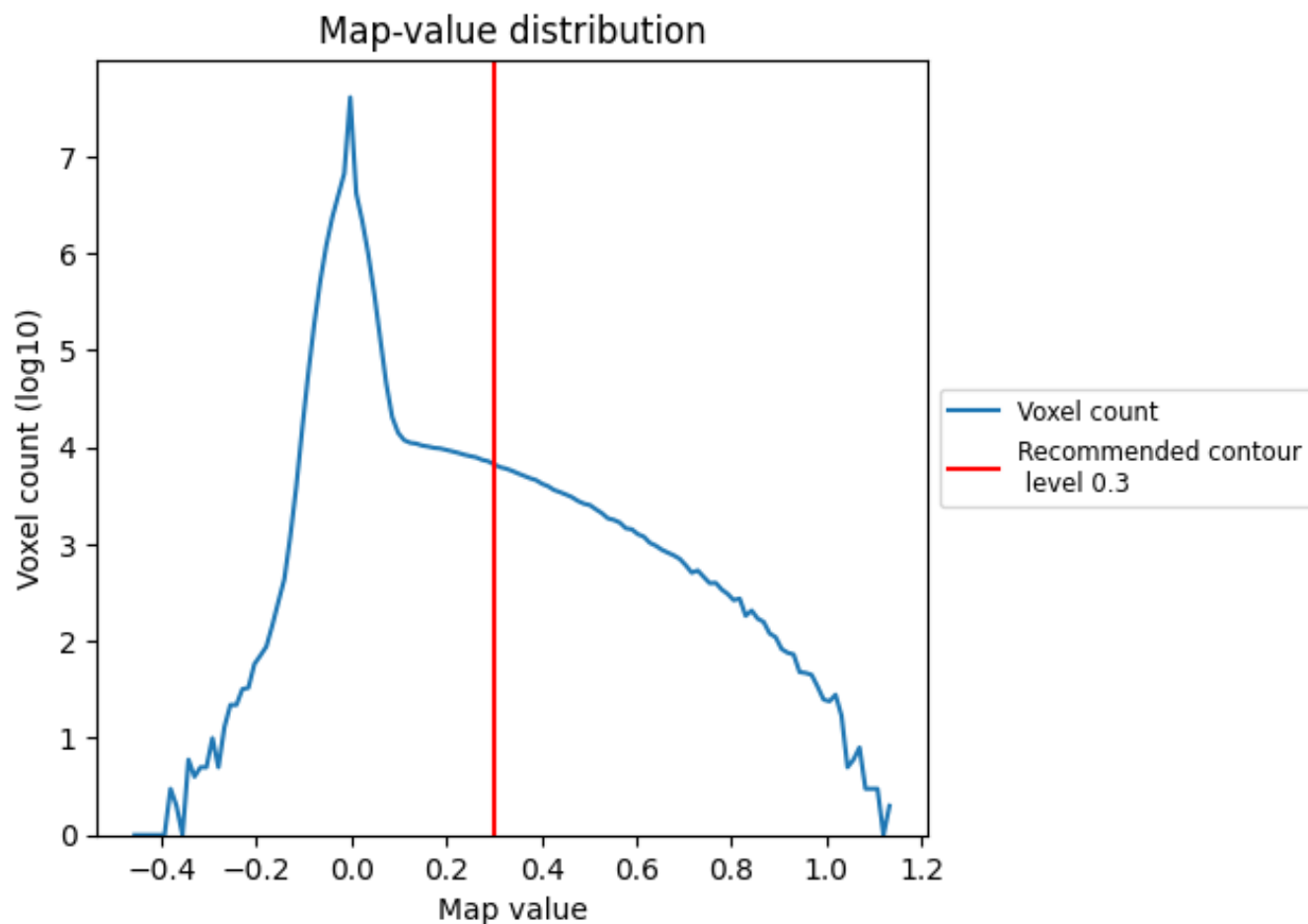
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

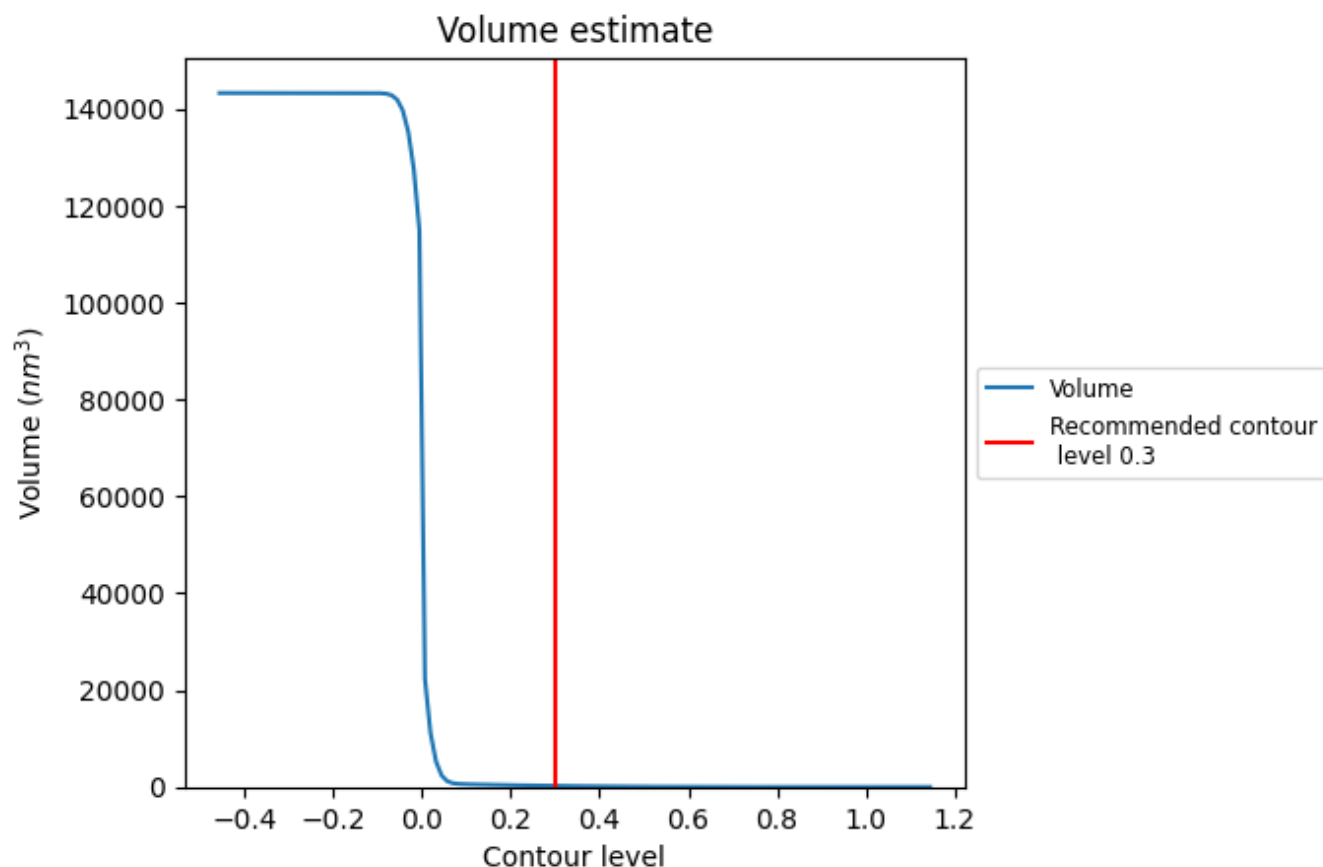
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

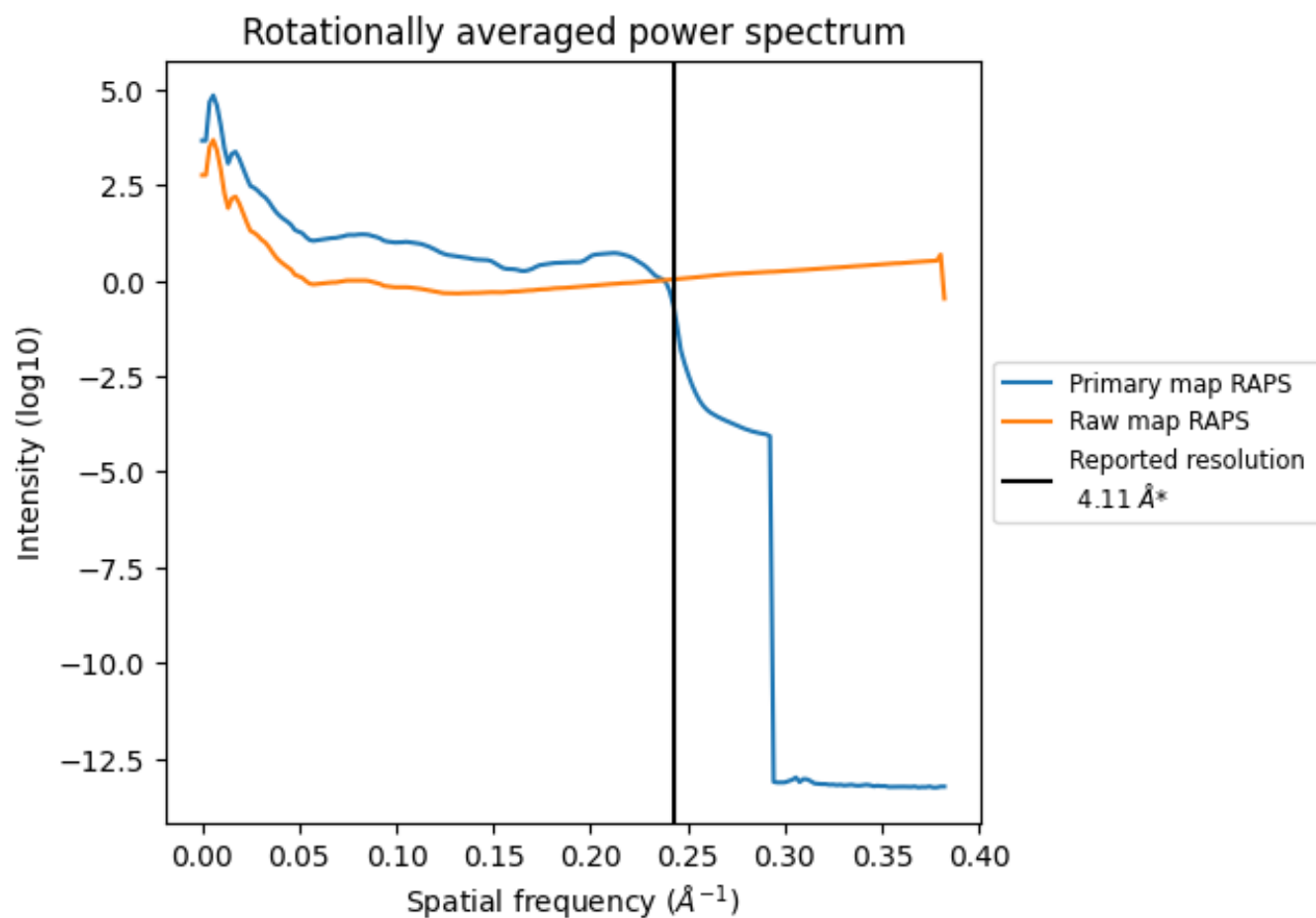
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 224 nm³; this corresponds to an approximate mass of 202 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 ⓘ

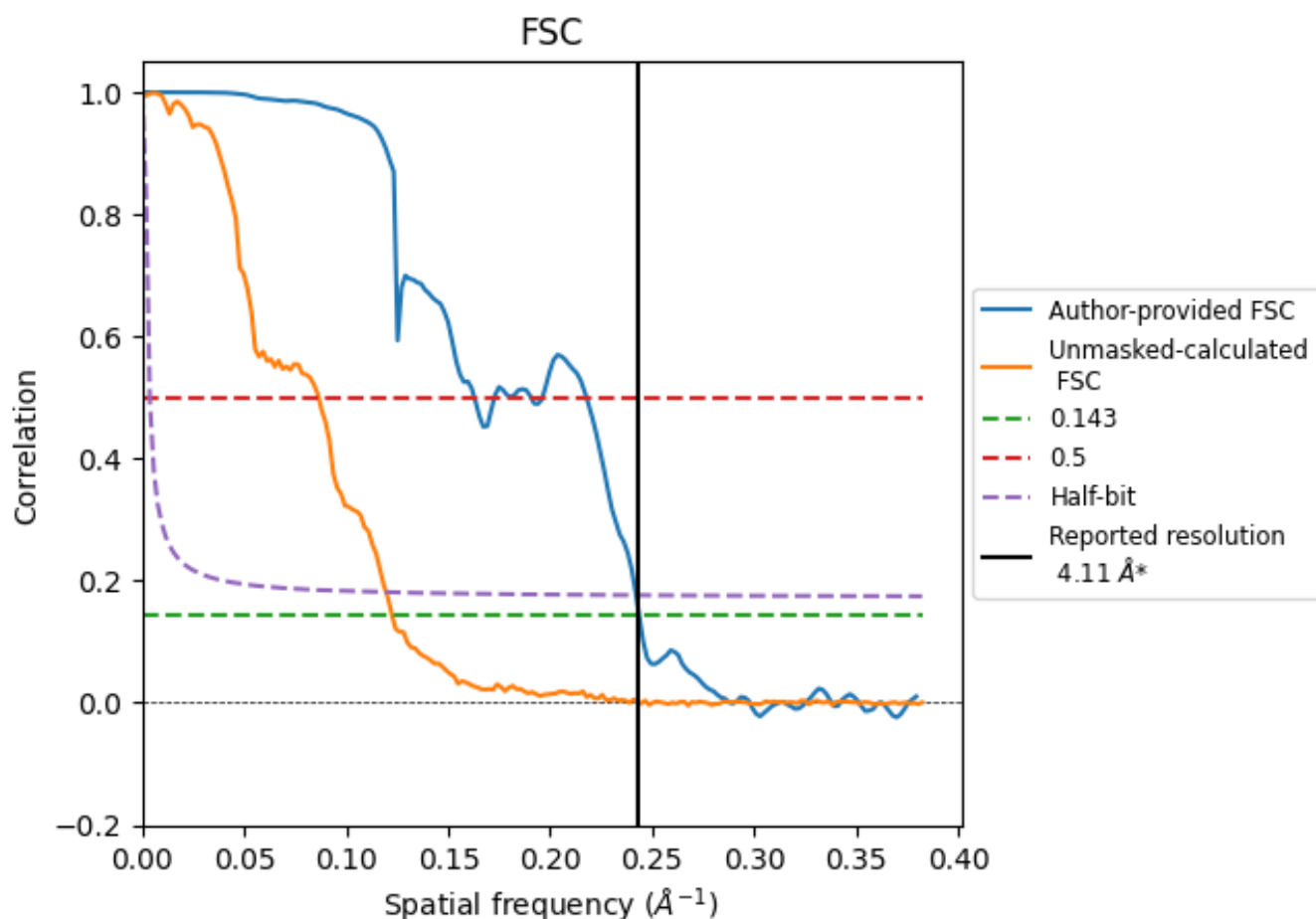


*Reported resolution corresponds to spatial frequency of 0.243 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of $0.243 \text{ \AA}^{-1}$

8.2 Resolution estimates [i](#)

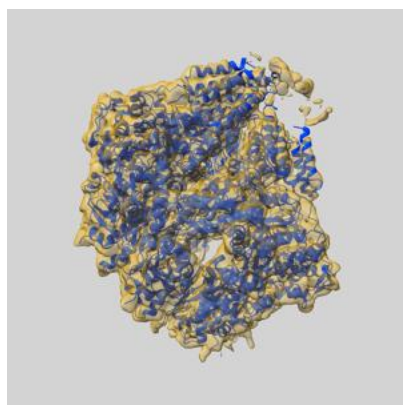
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.11	-	-
Author-provided FSC curve	4.11	6.14	4.13
Unmasked-calculated*	8.16	11.56	8.36

*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 8.16 differs from the reported value 4.11 by more than 10 %

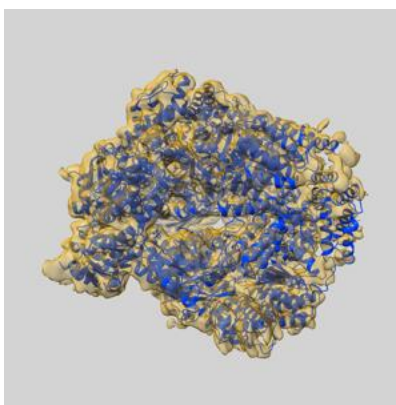
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-13147 and PDB model 7P0B. Per-residue inclusion information can be found in section [3](#) on page [7](#).

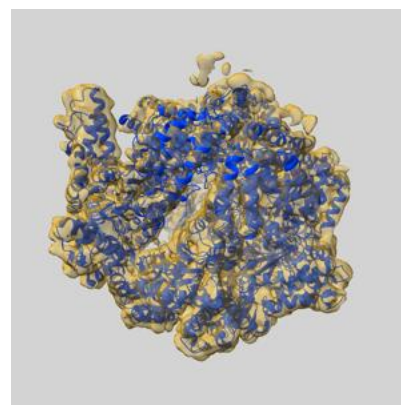
9.1 Map-model overlay [i](#)



X



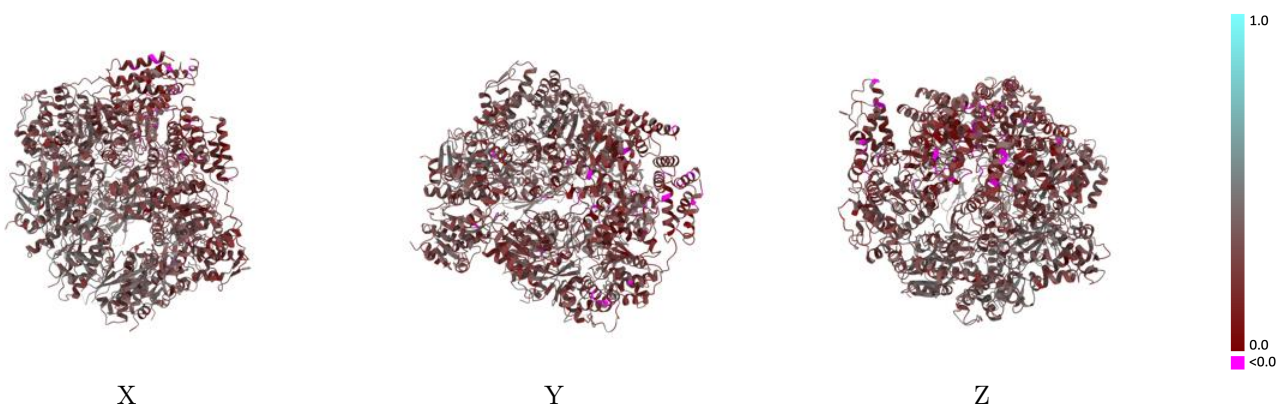
Y



Z

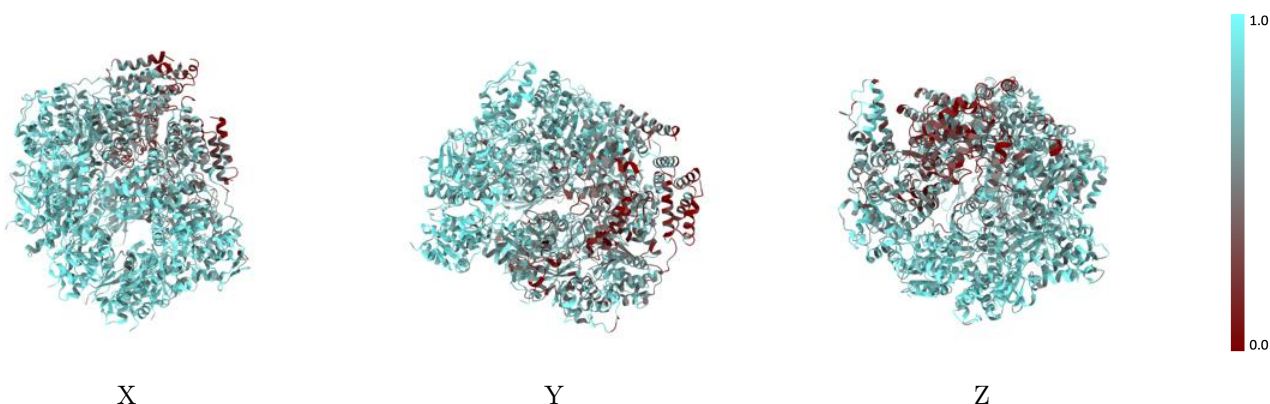
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



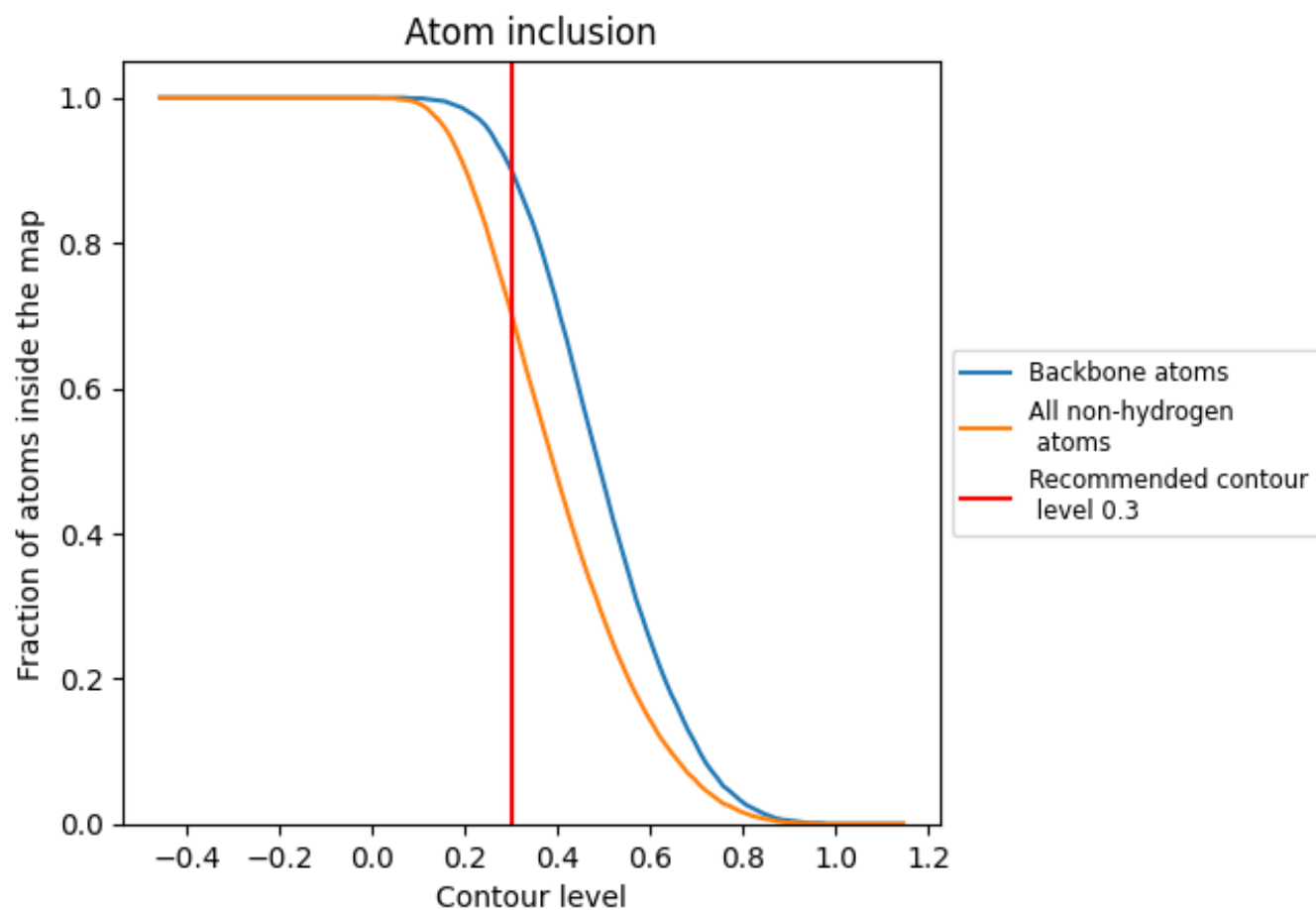
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.3).

9.4 Atom inclusion [i](#)



At the recommended contour level, 90% of all backbone atoms, 70% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7040	0.2950
A	0.6540	0.2610
B	0.7470	0.3000
C	0.7890	0.3300
D	0.7780	0.3310
E	0.7250	0.3040
F	0.5310	0.2430

1.0

0.0

<0.0