WORLDWIDE

wwPDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Oct 7, 2024 – 05:10 PM EDT

PDB ID	:	8EXX
EMDB ID	:	EMD-28663
Title	:	Herpes simplex virus 1 polymerase holoenzyme bound to DNA and foscarnet (pre-translocation state)
Authors	:	Pan, J.; Abraham, J.; Coen, D.M.; Shankar, S.; Yang, P.; Hogle, J.
Deposited on	:	2022-10-26
Resolution	:	3.30 Å(reported)

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

|		
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
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)	:	2.39

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 3.30 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		10
Ramachandran outliers		0
Sidechain outliers		3.0%

Worse *Better*

■ Percentile relative to all structures
▯ Percentile relative to all EM structures
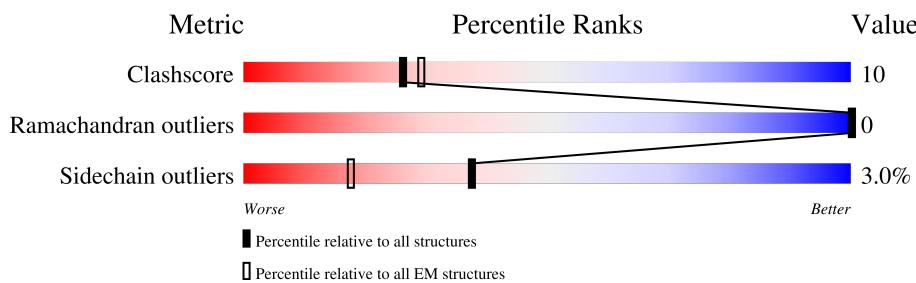
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	1199	67% 23% • 9%
2	B	340	55% 22% • 22%
3	P	32	38% 34% 12% 16%
4	T	50	20% 30% 10% 40%
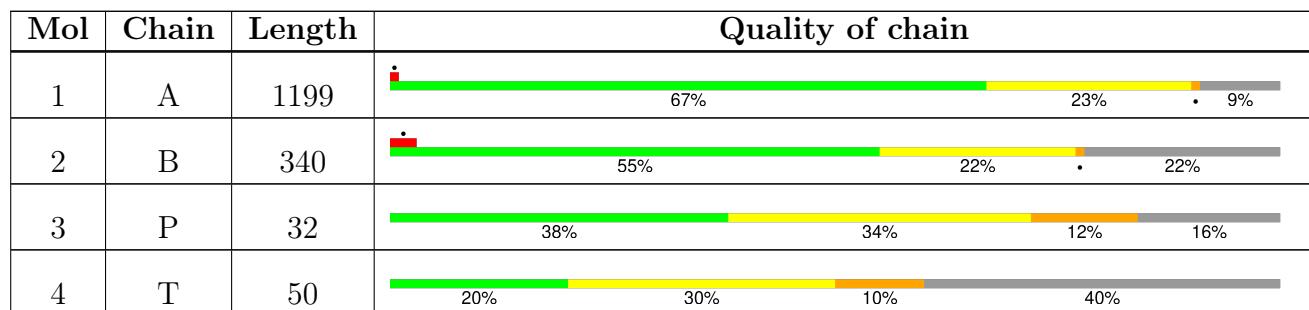
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	DOC	P	0	X	-	-	-

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 11862 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 DNA polymerase.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1088	Total	C	N	O	S	5	0
			8624	5515	1524	1545	40		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	37	HIS	-	expression tag	UNP H9E937
A	38	HIS	-	expression tag	UNP H9E937
A	39	HIS	-	expression tag	UNP H9E937
A	40	HIS	-	expression tag	UNP H9E937
A	41	HIS	-	expression tag	UNP H9E937
A	42	HIS	-	expression tag	UNP H9E937

- Molecule 2 is a protein called DNA polymerase processivity factor.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	266	Total	C	N	O	S	1	0
			2061	1311	365	378	7		

- Molecule 3 is a DNA chain called Primer DNA (32-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
3	P	27	Total	C	N	O	P	0	0
			554	262	104	161	27		

- Molecule 4 is a DNA chain called Template DNA (50-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
4	T	30	Total	C	N	O	P	0	0
			613	290	115	178	30		

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
5	A	3	Total 3	Mg 3	0

- Molecule 6 is PHOSPHONOFORMIC ACID (three-letter code: PPF) (formula: CH_3O_5P) (labeled as "Ligand of Interest" by depositor).
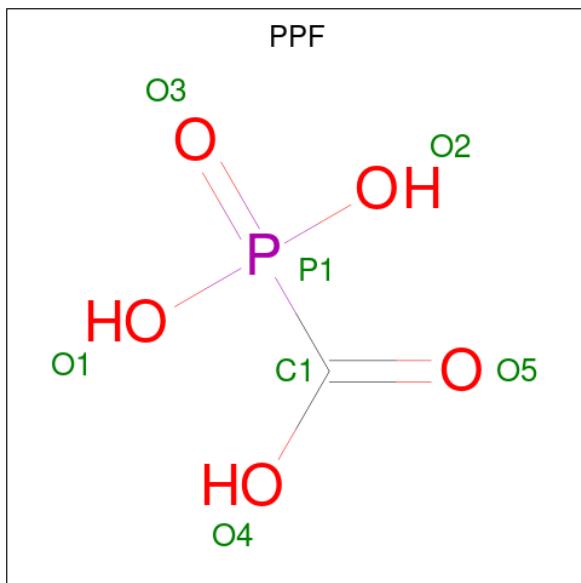
| Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total 7	C 1	O 5	P 1	0

3 Residue-property plots ⓘ

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

- Molecule 1: DNA polymerase

Chain A:

THR PRO SER HIS ALA ASP PRO PRO GLY GLY ALA SER LYS PRO R1135 E1144 D1145 P1146 A1149 I1150 A1151 H1152 G1153 V1154 A1155 L1156 N1157 T1158 D1159 Y1160 Y1161 A1169 A1175 L1176 F1177 G1178 N1179 L1188 K1189 R1190 E1194 H1197 P1198 P1199 D1200 D1201 V1202 A1203 A1208 F1211

V1214 G1215 A1216 G1217 E1222 T1223 L1227 H1228 R1229 A1230 F1231 D1232 A1235
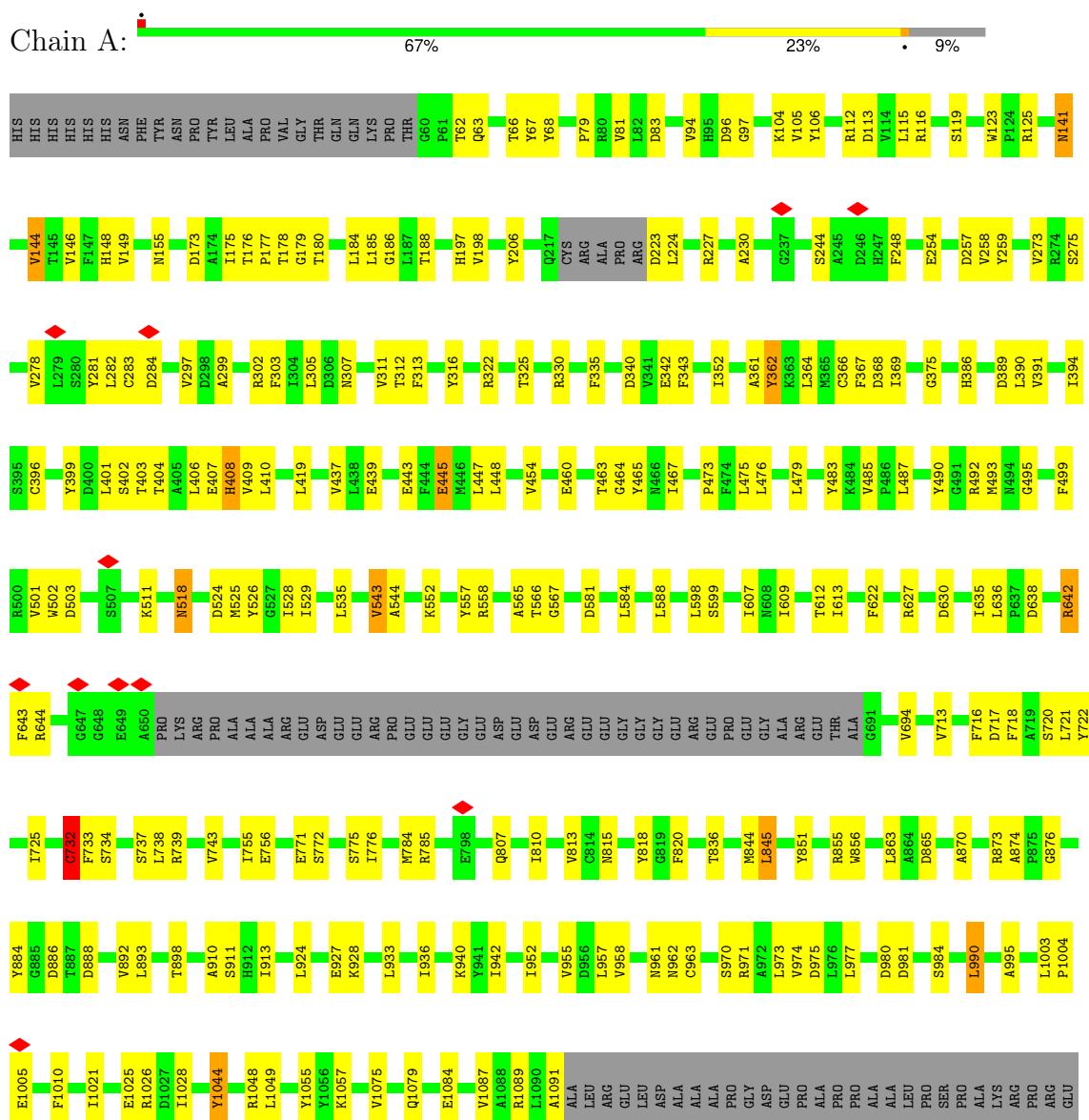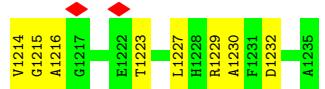
• Molecule 2: DNA polymerase processivity factor

Chain B:

55%   22% • 22%

MET THR ASP SER PRO GLY GLY VAL ALA PRO ALA SER PRO VAL GLU ASP ALA SER ASP ALA SER LEU GLY GLN PRO GLU GLU G28 A29 P30 C31 L35 E39 F47 A48 R51 T52 S57 L58 L59 V60 R64 G65 I66 I67 I68 L81 A97 S100 L101 V102

D103 Q104 K105 R106 S107 L108 R113 A114 Y117 E124 L125 A126 I127 T128 G129 Q130 T135 L136 V137 Q138 W141 T144 S145 D146 K159 L162 T163 S164 F165 V166 V169 P170 Q171 V176 R179 P183 Q184 L185 T186 K187 V188 L189 S196 A197 F202

N207 G208 S216 T217 C218 E225 GLU GLY VAL SER SER THR SER THR GLN VAL GLN ILE LEU SER ASN ALA LEU THR LYS ALA GLY GLN ALA ALA ALA N252 T255 V256 Y257 G258 E259 N260 R263 T264 F265 V266 V267 V268 V269 R275 L278 R279 Q282 V283 G286

T287 L288 K289 V296 L299 C300 V301 F313 L314 L315 Q318 K319 ILE CYS LEU ASP TRP LEU GLY HIS SER GLN GLY SER PRO SER ALA GLY SER SER ALA SER ARG

• Molecule 3: Primer DNA (32-MER)

Chain P:

38%   34%   12%   16%

DG DA DT DA C-26 G-25 A-24 A-23 C-20 C-14 G-13 G-12 C-8 C-7 G-6 G-5 G-4 G-3 A-2 T-1 C0

• Molecule 4: Template DNA (50-MER)

Chain T:

20%   30%   10%   40%

DC DA DC DA DC DA DC DA DC DA DC DA DC A-3 C-2 A-1 G0 A1 T2 C3 C4 C5 C6 G7 G8 A11 C12 C13 G14 A15 G16 C17 T18 A21 T24 C25 G26 DT DA DA DT DC

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	264472	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 $(e^-/\text{Å}^2)$	53.11	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	60606	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	46.252	Depositor
Minimum map value	-27.213	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	4	Depositor
Map size (Å)	264.0, 264.0, 264.0	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.825, 0.825, 0.825	Depositor

5　Model quality ⓘ

5.1　Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MG, PPF, DOC

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	1.21	35/8824 (0.4%)	0.91	7/11955 (0.1%)
2	B	0.73	2/2099 (0.1%)	0.93	4/2855 (0.1%)
3	P	2.00	14/601 (2.3%)	1.75	14/926 (1.5%)
4	T	2.06	17/687 (2.5%)	1.46	13/1057 (1.2%)
All	All	1.26	68/12211 (0.6%)	1.02	38/16793 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	4
2	B	0	2
3	P	1	0
All	All	1	6

All (68) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	170	PRO	CG-CD	-11.66	1.12	1.50
3	P	-2	DA	N9-C4	-10.49	1.31	1.37
2	B	170	PRO	N-CD	8.58	1.59	1.47
1	A	963	CYS	CB-SG	-8.56	1.67	1.82
1	A	445	GLU	CB-CG	-8.37	1.36	1.52
1	A	732	CYS	CB-SG	-8.22	1.68	1.82
3	P	-4	DG	C3'-O3'	-7.38	1.34	1.44
3	P	-2	DA	N7-C5	-7.28	1.34	1.39
1	A	362	TYR	CE1-CZ	-7.18	1.29	1.38
1	A	362	TYR	CD2-CE2	-7.14	1.28	1.39
1	A	396	CYS	CB-SG	-7.12	1.70	1.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	T	3	DC	N1-C6	-7.11	1.32	1.37
4	T	7	DG	N7-C5	-7.09	1.34	1.39
4	T	4	DC	N1-C6	-6.96	1.32	1.37
3	P	-1	DT	N1-C2	-6.93	1.32	1.38
4	T	3	DC	C3'-O3'	-6.69	1.35	1.44
1	A	884	TYR	CD2-CE2	-6.66	1.29	1.39
4	T	5	DC	N1-C6	-6.62	1.33	1.37
1	A	362	TYR	CD1-CE1	-6.58	1.29	1.39
4	T	2	DT	N3-C4	-6.34	1.33	1.38
4	T	8	DG	C3'-O3'	-6.30	1.35	1.44
1	A	316	TYR	CE1-CZ	-6.26	1.30	1.38
1	A	316	TYR	CD1-CE1	-6.19	1.30	1.39
1	A	502	TRP	CB-CG	-6.18	1.39	1.50
4	T	2	DT	C3'-O3'	-6.07	1.36	1.44
4	T	4	DC	N3-C4	-6.06	1.29	1.33
3	P	-4	DG	P-O5'	-5.91	1.53	1.59
1	A	722	TYR	CE1-CZ	-5.87	1.30	1.38
1	A	1161	TYR	CD2-CE2	-5.77	1.30	1.39
1	A	362	TYR	CE2-CZ	-5.74	1.31	1.38
1	A	67	TYR	CE1-CZ	-5.69	1.31	1.38
1	A	490	TYR	CD1-CE1	-5.67	1.30	1.39
1	A	144	VAL	CB-CG1	-5.67	1.41	1.52
4	T	1	DA	C3'-O3'	-5.67	1.36	1.44
3	P	-2	DA	N3-C4	-5.67	1.31	1.34
4	T	5	DC	C3'-O3'	-5.62	1.36	1.44
1	A	722	TYR	CD1-CE1	-5.61	1.30	1.39
4	T	2	DT	N1-C6	-5.60	1.34	1.38
1	A	884	TYR	CE1-CZ	-5.55	1.31	1.38
1	A	1161	TYR	CD1-CE1	-5.54	1.31	1.39
1	A	316	TYR	CD2-CE2	-5.53	1.31	1.39
3	P	-1	DT	P-O5'	-5.49	1.54	1.59
1	A	1055	TYR	CE1-CZ	-5.49	1.31	1.38
3	P	-5	DG	N7-C5	-5.43	1.35	1.39
4	T	6	DC	N1-C6	-5.39	1.33	1.37
1	A	343	PHE	CD2-CE2	-5.38	1.28	1.39
4	T	17	DC	C3'-O3'	-5.37	1.36	1.44
1	A	490	TYR	CE1-CZ	-5.30	1.31	1.38
3	P	-4	DG	O3'-P	-5.27	1.54	1.61
1	A	518	ASN	CB-CG	-5.26	1.39	1.51
3	P	-5	DG	N9-C8	-5.26	1.34	1.37
1	A	67	TYR	CD1-CE1	-5.24	1.31	1.39
1	A	543	VAL	CB-CG2	-5.24	1.41	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	P	-2	DA	C5-C4	-5.23	1.35	1.38
4	T	1	DA	N3-C4	-5.22	1.31	1.34
1	A	454	VAL	CB-CG1	-5.21	1.41	1.52
3	P	-3	DG	N3-C4	-5.21	1.31	1.35
4	T	7	DG	N9-C4	-5.21	1.33	1.38
4	T	0	DG	C5-C4	-5.18	1.34	1.38
1	A	343	PHE	CB-CG	-5.16	1.42	1.51
1	A	465	TYR	CD1-CE1	-5.12	1.31	1.39
1	A	198	VAL	CB-CG1	-5.11	1.42	1.52
3	P	-2	DA	N9-C8	-5.10	1.33	1.37
1	A	259	TYR	CE2-CZ	-5.07	1.31	1.38
1	A	1160	TYR	CE2-CZ	-5.06	1.31	1.38
1	A	399	TYR	CD2-CE2	-5.06	1.31	1.39
1	A	1044	TYR	CD2-CE2	-5.05	1.31	1.39
3	P	-5	DG	C5-C4	-5.01	1.34	1.38

All (38) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	P	-13	DG	P-O3'-C3'	17.55	140.76	119.70
3	P	-14	DC	P-O3'-C3'	16.18	139.11	119.70
4	T	5	DC	O3'-P-O5'	-15.23	75.06	104.00
3	P	-20	DC	P-O3'-C3'	15.01	137.72	119.70
2	B	170	PRO	CA-N-CD	-14.54	91.14	111.50
3	P	-24	DA	P-O3'-C3'	12.69	134.93	119.70
3	P	-12	DG	P-O3'-C3'	10.92	132.81	119.70
2	B	170	PRO	N-CD-CG	-10.79	87.01	103.20
3	P	-8	DC	O3'-P-O5'	-10.15	84.71	104.00
4	T	-3	DA	P-O3'-C3'	8.85	130.32	119.70
4	T	12	DC	P-O3'-C3'	8.75	130.20	119.70
1	A	581	ASP	CB-CG-OD1	8.70	126.13	118.30
4	T	17	DC	O3'-P-O5'	-8.33	88.17	104.00
3	P	-23	DA	P-O3'-C3'	8.30	129.67	119.70
3	P	-12	DG	OP1-P-OP2	-8.03	107.56	119.60
4	T	15	DA	P-O3'-C3'	8.00	129.30	119.70
4	T	24	DT	P-O3'-C3'	7.94	129.23	119.70
3	P	-4	DG	O4'-C1'-N9	7.32	113.13	108.00
2	B	105	LYS	CD-CE-NZ	7.07	127.95	111.70
4	T	13	DC	O3'-P-O5'	-6.87	90.94	104.00
2	B	170	PRO	CA-CB-CG	-6.76	91.16	104.00
4	T	14	DG	P-O3'-C3'	-6.71	111.65	119.70
4	T	11	DA	P-O3'-C3'	6.44	127.42	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	P	-3	DG	O3'-P-O5'	-6.06	92.49	104.00
1	A	185	LEU	CA-CB-CG	5.95	128.99	115.30
1	A	845	LEU	CA-CB-CG	5.80	128.64	115.30
4	T	4	DC	P-O3'-C3'	5.66	126.49	119.70
3	P	-25	DG	P-O3'-C3'	5.58	126.40	119.70
1	A	630	ASP	CB-CG-OD2	5.47	123.23	118.30
3	P	-6	DG	O4'-C1'-N9	5.43	111.80	108.00
3	P	-4	DG	O3'-P-O5'	-5.37	93.80	104.00
4	T	21	DA	P-O3'-C3'	5.25	126.00	119.70
4	T	-1	DA	P-O3'-C3'	-5.22	113.44	119.70
3	P	-5	DG	O4'-C1'-N9	5.20	111.64	108.00
1	A	375	GLY	N-CA-C	-5.14	100.26	113.10
1	A	990	LEU	CA-CB-CG	5.06	126.94	115.30
4	T	-3	DA	O4'-C1'-N9	5.05	111.54	108.00
1	A	535	LEU	CA-CB-CG	5.04	126.89	115.30

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	P	0	DOC	C4'

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1152	HIS	Peptide
1	A	408	HIS	Peptide
1	A	642	ARG	Peptide
1	A	643	PHE	Peptide
2	B	130	GLN	Peptide
2	B	144	THR	Peptide

5.2 Too-close contacts (i)

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	8624	0	8616	177	0
2	B	2061	0	2112	59	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	P	554	0	303	8	0
4	T	613	0	336	6	0
5	A	3	0	0	0	0
6	A	7	0	0	1	0
All	All	11862	0	11367	230	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 10.

All (230) 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)
2:B:267:VAL:HG11	2:B:315:LEU:HD13	1.51	0.92
2:B:105:LYS:HE3	3:P:-12:DG:OP2	1.71	0.90
2:B:183:PRO:O	2:B:186:THR:OG1	1.98	0.81
1:A:717:ASP:OD1	1:A:718:PHE:O	2.02	0.78
1:A:104:LYS:N	1:A:445:GLU:OE2	2.16	0.77
1:A:1214:VAL:HG13	1:A:1223:THR:HG23	1.66	0.77
1:A:927:GLU:OE2	1:A:928:LYS:NZ	2.16	0.76
1:A:330:ARG:NE	1:A:342:GLU:OE2	2.19	0.76
1:A:642:ARG:NH1	4:T:-1:DA:N1	2.34	0.75
1:A:851:TYR:OH	1:A:855:ARG:NH1	2.19	0.75
2:B:252:ASN:N	2:B:252:ASN:HD22	1.85	0.74
1:A:1057:LYS:NZ	1:A:1144:GLU:OE1	2.17	0.73
2:B:39:GLU:OE1	2:B:39:GLU:N	2.21	0.73
1:A:419:LEU:HD11	1:A:437:VAL:HG21	1.69	0.73
2:B:135:THR:OG1	2:B:159:LYS:O	2.05	0.72
1:A:1216:ALA:HB2	2:B:164:SER:HB2	1.75	0.69
1:A:873:ARG:NH2	1:A:876:GLY:O	2.25	0.69
1:A:476:LEU:HD22	1:A:487:LEU:HD13	1.76	0.68
2:B:51:ARG:NH1	2:B:282:GLN:OE1	2.26	0.68
1:A:460:GLU:N	1:A:460:GLU:OE1	2.27	0.68
1:A:855:ARG:NH2	1:A:865:ASP:OD2	2.27	0.67
1:A:176:THR:HG23	1:A:177:PRO:CD	2.24	0.67
1:A:230:ALA:O	1:A:281:TYR:OH	2.10	0.66
1:A:942:ILE:HD11	1:A:955:VAL:HG21	1.78	0.66
1:A:961:ASN:OD1	1:A:962:ASN:N	2.28	0.66
1:A:1079:GLN:NE2	1:A:1084:GLU:OE2	2.30	0.65
1:A:756:GLU:N	1:A:756:GLU:OE1	2.30	0.64
1:A:1197:HIS:ND1	2:B:166:VAL:HG12	2.13	0.64
1:A:369:ILE:HD13	1:A:394:ILE:HG22	1.78	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:148:HIS:ND1	1:A:362:TYR:OH	2.30	0.64
2:B:286:GLY:O	2:B:287:THR:OG1	2.10	0.64
1:A:282:LEU:HD11	1:A:638:ASP:OD1	1.98	0.64
1:A:732:CYS:SG	1:A:734:SER:N	2.71	0.63
1:A:224:LEU:HD12	1:A:227:ARG:HE	1.63	0.63
1:A:815:ASN:OD1	3:P:0:DOC:H2'	1.98	0.63
1:A:737:SER:OG	1:A:737:SER:O	2.14	0.63
1:A:369:ILE:HD13	1:A:394:ILE:CG2	2.29	0.62
2:B:59:LEU:HD23	2:B:66:ILE:HD11	1.81	0.62
1:A:257:ASP:OD1	1:A:258:VAL:N	2.32	0.62
1:A:642:ARG:O	1:A:644:ARG:N	2.33	0.61
1:A:368:ASP:OD1	1:A:369:ILE:N	2.34	0.61
1:A:1214:VAL:CG1	1:A:1223:THR:HG23	2.31	0.61
1:A:313:PHE:CD2	1:A:609:ILE:HD11	2.36	0.60
1:A:529:ILE:HG21	1:A:543:VAL:HG21	1.83	0.60
2:B:189:LEU:HD21	2:B:278:LEU:HD23	1.83	0.60
1:A:810:ILE:HA	1:A:813:VAL:HG12	1.83	0.60
1:A:1179:ASN:ND2	1:A:1179:ASN:O	2.34	0.60
1:A:176:THR:HG23	1:A:177:PRO:HD3	1.82	0.59
1:A:845:LEU:HD11	1:A:886:ASP:O	2.01	0.59
2:B:176:VAL:HG11	2:B:265:PHE:CE1	2.37	0.59
2:B:189:LEU:HD22	2:B:275:ARG:HA	1.84	0.59
2:B:57:SER:OG	2:B:58:LEU:N	2.31	0.59
2:B:100:SER:O	2:B:102:VAL:HG23	2.02	0.59
1:A:419:LEU:CD1	1:A:437:VAL:HG21	2.32	0.59
2:B:97:ALA:O	2:B:162:LEU:HD12	2.02	0.59
1:A:386:HIS:ND1	1:A:389:ASP:OD2	2.34	0.59
1:A:815:ASN:HD22	1:A:815:ASN:N	1.99	0.58
1:A:1232:ASP:OD1	2:B:64:ARG:NH2	2.33	0.58
1:A:598:LEU:HD13	1:A:613:ILE:HG12	1.83	0.58
1:A:305:LEU:HD22	1:A:627:ARG:HB2	1.85	0.58
1:A:1190:ARG:NH2	2:B:103:ASP:OD1	2.35	0.58
2:B:113:ARG:NH1	4:T:17:DC:OP1	2.37	0.58
1:A:144:VAL:HG23	1:A:188:THR:HG23	1.85	0.58
1:A:173:ASP:O	1:A:176:THR:HG22	2.04	0.57
1:A:406:LEU:HD12	1:A:407:GLU:N	2.19	0.57
1:A:369:ILE:HD11	1:A:475:LEU:HD12	1.86	0.57
1:A:888:ASP:OD1	1:A:888:ASP:N	2.34	0.56
2:B:105:LYS:HE3	3:P:-12:DG:P	2.45	0.56
1:A:910:ALA:HB1	1:A:924:LEU:O	2.06	0.56
2:B:225:GLU:OE2	2:B:260:ASN:N	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:PHE:CE2	1:A:609:ILE:HD11	2.41	0.56
1:A:1021:ILE:O	1:A:1026:ARG:NH2	2.39	0.56
2:B:252:ASN:N	2:B:252:ASN:ND2	2.54	0.56
3:P:-3:DG:N2	4:T:4:DC:O2	2.39	0.55
1:A:303:PHE:O	1:A:307:ASN:ND2	2.37	0.55
2:B:125:LEU:HD22	2:B:136:LEU:HD11	1.89	0.55
1:A:856:TRP:HZ3	1:A:913:ILE:HD11	1.72	0.54
2:B:260:ASN:OD1	2:B:263:ARG:NH2	2.40	0.54
1:A:352:ILE:HG13	1:A:352:ILE:O	2.07	0.54
1:A:68:TYR:CE1	1:A:485:VAL:HG23	2.43	0.54
1:A:66:THR:HG22	1:A:495:GLY:HA2	1.90	0.54
1:A:391:VAL:N	1:A:443:GLU:OE1	2.40	0.54
1:A:785:ARG:NH2	6:A:1304:PPF:O5	2.39	0.54
1:A:503:ASP:OD1	1:A:503:ASP:N	2.41	0.54
1:A:990:LEU:HD11	1:A:1004:PRO:HD3	1.88	0.54
1:A:936:ILE:HD11	1:A:955:VAL:HG12	1.90	0.53
2:B:66:ILE:HG23	2:B:81:LEU:HB2	1.90	0.53
1:A:113:ASP:N	1:A:113:ASP:OD1	2.41	0.53
2:B:106[A]:ARG:NH2	2:B:117:TYR:OH	2.41	0.53
1:A:1194:GLU:OE1	1:A:1194:GLU:N	2.31	0.53
1:A:1215:GLY:N	1:A:1223:THR:OG1	2.42	0.53
2:B:125:LEU:CD2	2:B:136:LEU:HD21	2.38	0.53
1:A:958:VAL:HG12	1:A:958:VAL:O	2.08	0.53
1:A:772:SER:HB2	1:A:775:SER:HB3	1.91	0.53
1:A:713:VAL:HG11	1:A:933:LEU:HD22	1.90	0.52
1:A:1044:TYR:OH	3:P:-5:DG:OP1	2.23	0.52
1:A:771:GLU:OE1	1:A:776:ILE:HD11	2.10	0.52
1:A:743:VAL:HG12	1:A:743:VAL:O	2.10	0.52
1:A:175:ILE:O	1:A:178:THR:N	2.42	0.52
2:B:31:CYS:HB2	2:B:127:ILE:HG12	1.92	0.52
1:A:297:VAL:HG21	1:A:302:ARG:NE	2.24	0.51
1:A:312:THR:O	1:A:312:THR:OG1	2.24	0.51
2:B:288:LEU:HD22	2:B:299:LEU:HD11	1.92	0.51
1:A:141:ASN:O	1:A:141:ASN:ND2	2.44	0.51
1:A:479:LEU:HD22	1:A:485:VAL:HG11	1.92	0.51
1:A:1025:GLU:N	1:A:1025:GLU:OE1	2.44	0.51
1:A:952:ILE:HG21	1:A:957:LEU:HD23	1.94	0.50
2:B:57:SER:OG	2:B:68:ILE:HG23	2.10	0.50
1:A:1152:HIS:O	1:A:1154:VAL:N	2.44	0.50
1:A:146:VAL:HG13	1:A:146:VAL:O	2.11	0.50
1:A:609:ILE:HA	1:A:612:THR:HG22	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:622:PHE:CE1	1:A:636:LEU:HD23	2.47	0.50
1:A:524:ASP:OD1	1:A:525:MET:N	2.44	0.50
1:A:980:ASP:OD1	1:A:981:ASP:N	2.43	0.50
1:A:1087:VAL:O	1:A:1091:ALA:N	2.45	0.50
1:A:391:VAL:HG21	1:A:447:LEU:HD21	1.94	0.49
1:A:529:ILE:HG22	1:A:529:ILE:O	2.12	0.49
1:A:1230:ALA:HB1	2:B:169:VAL:HG12	1.93	0.49
1:A:721:LEU:HD11	1:A:844:MET:HE3	1.94	0.49
1:A:206:TYR:HB2	1:A:635:ILE:HD11	1.94	0.49
1:A:476:LEU:HD22	1:A:487:LEU:CD1	2.42	0.49
1:A:977:LEU:O	1:A:984:SER:OG	2.23	0.49
1:A:1211:PHE:CE1	2:B:170:PRO:HD3	2.48	0.49
2:B:59:LEU:CD2	2:B:66:ILE:HD11	2.43	0.49
1:A:283:CYS:SG	1:A:284:ASP:N	2.86	0.48
1:A:936:ILE:HA	1:A:1175:ALA:HB2	1.94	0.48
1:A:557:TYR:HD2	1:A:558:ARG:HE	1.61	0.48
1:A:115:LEU:HD21	1:A:448:LEU:HD21	1.94	0.48
1:A:716:PHE:CE2	1:A:892:VAL:HG21	2.49	0.48
1:A:479:LEU:HD22	1:A:485:VAL:CG1	2.44	0.48
1:A:755:ILE:HD12	1:A:836:THR:HG23	1.96	0.48
1:A:68:TYR:O	1:A:115:LEU:HD22	2.14	0.47
1:A:1198:PRO:HD2	2:B:166:VAL:HG13	1.96	0.47
1:A:83:ASP:OD1	1:A:83:ASP:N	2.47	0.47
1:A:1200:ASP:O	1:A:1203:ALA:N	2.47	0.47
1:A:936:ILE:HD11	1:A:940:LYS:HB3	1.95	0.47
2:B:217:THR:OG1	2:B:218:CYS:N	2.47	0.47
1:A:694:VAL:HG13	4:T:2:DT:H3'	1.97	0.47
1:A:957:LEU:HD11	1:A:971:ARG:HB2	1.97	0.46
2:B:124:GLU:OE2	2:B:141:TRP:NE1	2.48	0.46
1:A:721:LEU:HD11	1:A:844:MET:CE	2.45	0.46
2:B:278:LEU:HD11	2:B:283:VAL:HG21	1.98	0.46
1:A:176:THR:HG23	1:A:177:PRO:HD2	1.96	0.46
1:A:529:ILE:HD11	1:A:588:LEU:HD13	1.98	0.46
1:A:970:SER:O	1:A:974:VAL:HG13	2.16	0.46
2:B:102:VAL:HG22	2:B:159:LYS:HD3	1.98	0.46
2:B:296:VAL:HG23	2:B:315:LEU:O	2.16	0.46
1:A:311:VAL:HG22	1:A:352:ILE:HD11	1.98	0.46
1:A:322:ARG:O	1:A:325:THR:OG1	2.20	0.45
1:A:732:CYS:HB3	1:A:772:SER:HB3	1.99	0.45
1:A:493:MET:HG2	1:A:518:ASN:OD1	2.15	0.45
2:B:289:LYS:NZ	2:B:300:CYS:SG	2.88	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1003:LEU:O	1:A:1005:GLU:N	2.45	0.45
1:A:275:SER:O	1:A:275:SER:OG	2.31	0.45
1:A:63:GLN:NE2	1:A:335:PHE:O	2.42	0.45
1:A:1169:ALA:HB1	1:A:1188:LEU:HD21	1.98	0.45
1:A:1158:THR:O	1:A:1158:THR:HG22	2.17	0.45
1:A:447:LEU:HD22	1:A:475:LEU:HG	1.99	0.45
1:A:995:ALA:HB2	1:A:1177:PHE:O	2.17	0.44
1:A:403:THR:O	1:A:404:THR:OG1	2.24	0.44
1:A:408:HIS:O	1:A:410:LEU:N	2.51	0.44
1:A:1146:PRO:HA	1:A:1149:ALA:HB3	1.99	0.44
1:A:273:VAL:HG21	1:A:278:VAL:HG12	1.99	0.44
1:A:197:HIS:ND1	1:A:342:GLU:OE2	2.50	0.44
1:A:888:ASP:OD2	3:P:0:DOC:OP1	2.36	0.44
2:B:279:ARG:O	2:B:282:GLN:N	2.48	0.44
1:A:312:THR:HG21	1:A:607:ILE:O	2.18	0.44
1:A:1227:LEU:HD11	2:B:60:VAL:HG11	1.98	0.44
2:B:108:LEU:O	2:B:138:GLN:NE2	2.47	0.44
1:A:106:TYR:O	1:A:439:GLU:N	2.43	0.44
1:A:148:HIS:O	1:A:186:GLY:HA3	2.18	0.44
1:A:409:VAL:HG12	1:A:409:VAL:O	2.17	0.44
1:A:524:ASP:O	1:A:528:ILE:HD12	2.17	0.44
2:B:52:THR:O	2:B:52:THR:HG23	2.18	0.44
1:A:716:PHE:HE2	1:A:892:VAL:HG21	1.82	0.43
2:B:52:THR:HG22	4:T:18:DT:OP1	2.17	0.43
2:B:102:VAL:HG21	2:B:108:LEU:HD13	1.99	0.43
1:A:863:LEU:HD21	1:A:870:ALA:HB2	2.01	0.43
1:A:529:ILE:HG21	1:A:543:VAL:CG2	2.45	0.43
1:A:942:ILE:HG12	1:A:952:ILE:HG23	1.99	0.43
1:A:1028:ILE:HB	1:A:1150:ILE:HD11	2.01	0.43
2:B:259:GLU:O	2:B:260:ASN:ND2	2.52	0.43
1:A:720:SER:OG	1:A:720:SER:O	2.35	0.43
1:A:725:ILE:HD11	1:A:844:MET:CE	2.49	0.43
1:A:364:LEU:HB2	1:A:401:LEU:HD13	2.01	0.43
1:A:473:PRO:HG3	1:A:501:VAL:HG11	2.01	0.43
1:A:566:THR:HG22	1:A:567:GLY:H	1.84	0.43
1:A:716:PHE:HB3	1:A:924:LEU:HD11	1.99	0.43
1:A:492:ARG:N	1:A:518:ASN:O	2.49	0.42
2:B:202:PHE:CE1	2:B:269:VAL:HG21	2.54	0.42
1:A:223:ASP:OD1	1:A:223:ASP:N	2.50	0.42
2:B:185:LEU:HD12	2:B:188:VAL:CG2	2.49	0.42
1:A:105:VAL:HG12	1:A:112:ARG:O	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:732:CYS:SG	1:A:733:PHE:N	2.92	0.42
1:A:1201:ASP:OD1	1:A:1202:VAL:N	2.52	0.42
1:A:443:GLU:OE2	1:A:483:TYR:OH	2.34	0.42
1:A:178:THR:OG1	1:A:179:GLY:N	2.52	0.42
1:A:463:THR:HG22	1:A:464:GLY:N	2.35	0.42
1:A:694:VAL:HG12	1:A:694:VAL:O	2.19	0.42
2:B:299:LEU:HB2	2:B:315:LEU:HD11	2.01	0.42
3:P:0:DOC:H4'	3:P:0:DOC:H6	2.02	0.42
1:A:66:THR:O	1:A:66:THR:HG23	2.19	0.42
1:A:149:VAL:HG11	1:A:184:LEU:HD23	2.01	0.42
1:A:544:ALA:CB	1:A:584:LEU:HD21	2.50	0.42
1:A:552:LYS:HD2	1:A:584:LEU:HD23	2.01	0.42
1:A:813:VAL:HG22	1:A:813:VAL:O	2.20	0.42
2:B:102:VAL:HG21	2:B:108:LEU:CD1	2.50	0.42
1:A:874:ALA:HB2	1:A:898:THR:HG22	2.02	0.42
2:B:255:THR:HG23	2:B:255:THR:O	2.20	0.42
2:B:29:ALA:HB2	2:B:128:THR:HG22	2.01	0.41
2:B:179:ARG:N	2:B:257:TYR:O	2.46	0.41
2:B:299:LEU:O	2:B:313:PHE:N	2.41	0.41
1:A:112:ARG:NH1	1:A:116:ARG:O	2.54	0.41
1:A:971:ARG:NH1	1:A:975:ASP:OD1	2.54	0.41
2:B:288:LEU:HD23	2:B:301:VAL:HG13	2.03	0.41
1:A:62:THR:OG1	1:A:63:GLN:N	2.54	0.41
1:A:973:LEU:HD22	1:A:1010:PHE:CZ	2.56	0.41
1:A:361:ALA:H	1:A:402:SER:HB3	1.86	0.41
1:A:464:GLY:HA3	1:A:467:ILE:HG23	2.03	0.41
1:A:79:PRO:HA	1:A:94:VAL:HA	2.03	0.40
1:A:96:ASP:OD1	1:A:97:GLY:N	2.54	0.40
1:A:81:VAL:HG11	1:A:565:ALA:HA	2.03	0.40
1:A:180:THR:HG21	1:A:299:ALA:CB	2.51	0.40
1:A:737:SER:OG	1:A:743:VAL:HG21	2.21	0.40
3:P:0:DOC:C2	4:T:0:DG:H22	2.34	0.40
1:A:1229:ARG:NH2	2:B:171:GLN:OE1	2.54	0.40
1:A:144:VAL:CG2	1:A:188:THR:HG23	2.51	0.40
1:A:755:ILE:CD1	1:A:836:THR:HG23	2.52	0.40
1:A:1075:VAL:HG22	1:A:1156:LEU:HD22	2.04	0.40
2:B:48:ALA:HB2	2:B:114:ALA:HB2	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	1084/1199 (90%)	1079 (100%)	5 (0%)	0	100	100
2	B	263/340 (77%)	263 (100%)	0	0	100	100
All	All	1347/1539 (88%)	1342 (100%)	5 (0%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	898/977 (92%)	869 (97%)	29 (3%)	34	61
2	B	228/282 (81%)	222 (97%)	6 (3%)	41	66
All	All	1126/1259 (89%)	1091 (97%)	35 (3%)	37	61

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	119	SER
1	A	123	TRP
1	A	125	ARG
1	A	141	ASN
1	A	155	ASN
1	A	244	SER
1	A	248	PHE
1	A	254	GLU

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Mol	Chain	Res	Type
1	A	340	ASP
1	A	366	CYS
1	A	367	PHE
1	A	390	LEU
1	A	499	PHE
1	A	511	LYS
1	A	526	TYR
1	A	599	SER
1	A	732	CYS
1	A	738	LEU
1	A	739	ARG
1	A	784	MET
1	A	807	GLN
1	A	818	TYR
1	A	820	PHE
1	A	893	LEU
1	A	911	SER
1	A	1048[A]	ARG
1	A	1048[B]	ARG
1	A	1049	LEU
1	A	1089	ARG
2	B	35	LEU
2	B	47	PHE
2	B	51	ARG
2	B	216	SER
2	B	252	ASN
2	B	260	ASN

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

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is 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	#$|Z| > 2$
3	DOC	P	0	5,4,3	16,19,20	2.24	7 (43%)	20,26,29	2.30	5 (25%)

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
3	DOC	P	0	5,4,3	1/1/3/3	3/7/18/19	0/2/2/2

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	P	0	DOC	C5-C4	-4.36	1.32	1.42
3	P	0	DOC	C4-N4	3.96	1.43	1.33
3	P	0	DOC	C3'-C2'	-3.34	1.44	1.54
3	P	0	DOC	O2-C2	-3.32	1.17	1.23
3	P	0	DOC	C2-N1	-2.88	1.34	1.40
3	P	0	DOC	C4-N3	-2.05	1.30	1.34
3	P	0	DOC	C6-N1	-2.04	1.33	1.38

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	P	0	DOC	O4'-C1'-N1	5.04	116.81	107.86
3	P	0	DOC	C3'-C2'-C1'	4.80	108.40	102.87
3	P	0	DOC	C4'-O4'-C1'	-4.13	105.91	109.81
3	P	0	DOC	C2'-C1'-N1	-3.99	104.84	112.40
3	P	0	DOC	O4'-C4'-C5'	2.44	113.73	109.34

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	P	0	DOC	C4'

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	P	0	DOC	C3'-C4'-C5'-O5'
3	P	0	DOC	O4'-C4'-C5'-O5'
3	P	0	DOC	C4'-C5'-O5'-P

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	P	0	DOC	4	0

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 4 ligands modelled in this entry, 3 are monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
6	PPF	A	1304	5	4,6,6	1.24	0	3,9,9	1.13	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
6	PPF	A	1304	5	-	0/0/6/6	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	1304	PPF	1	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 then 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.

Ligand PPF A 1304

Bond lengths

Bond angles

Torsions

Rings
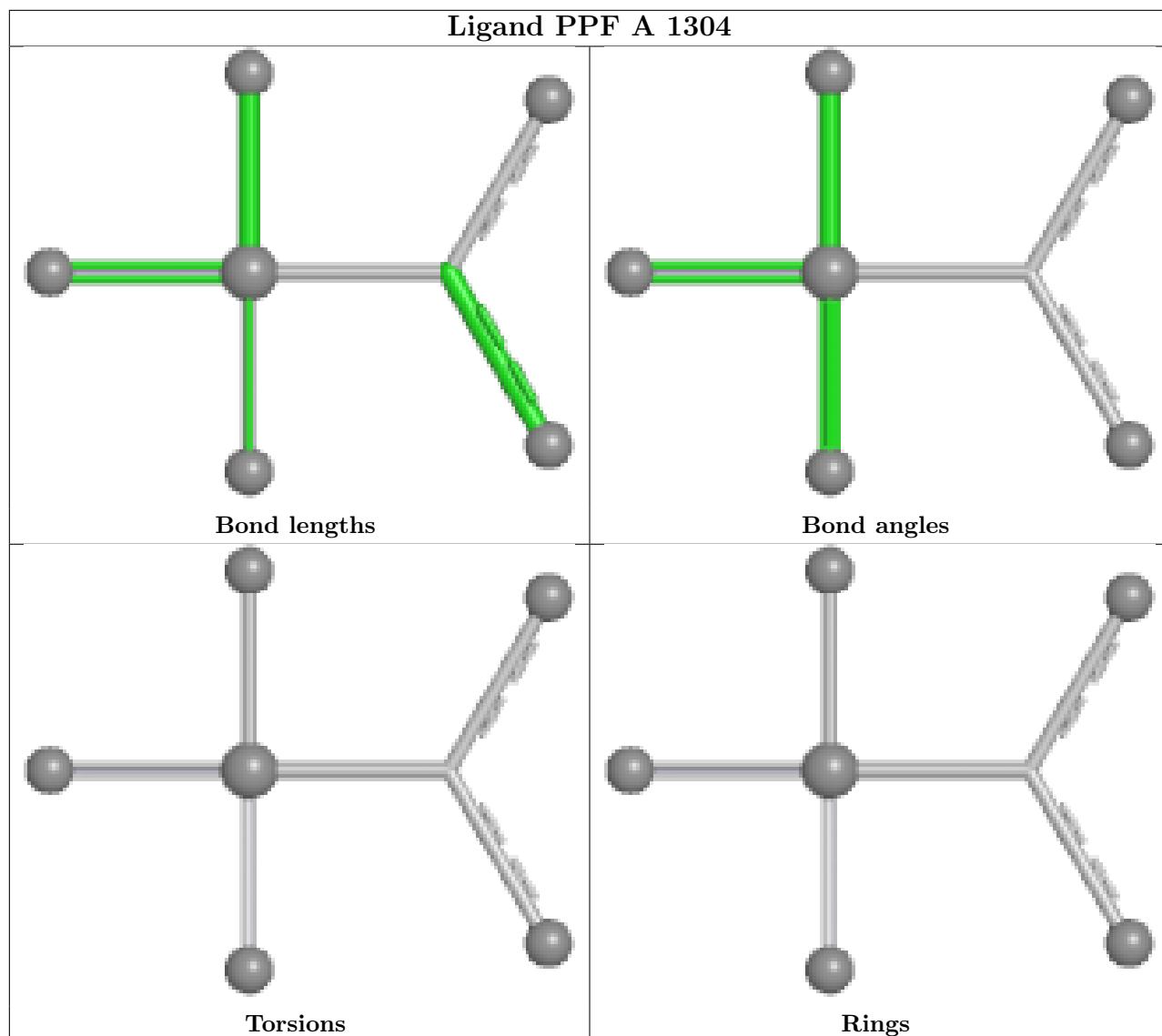
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-28663. 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 ⓘ
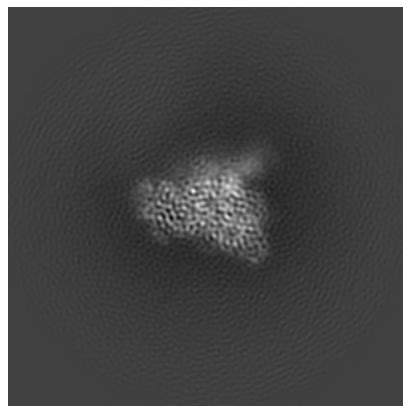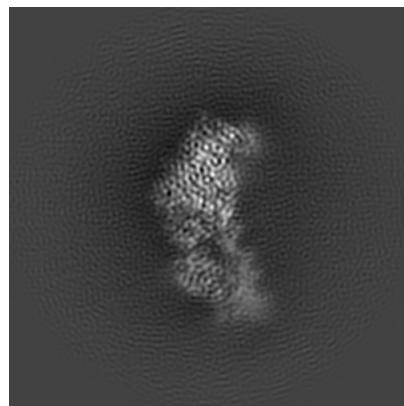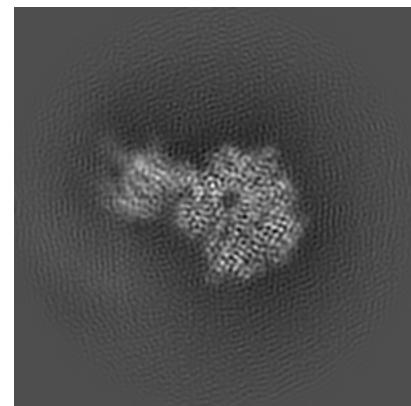
6.1.1   Primary map

X   Y   Z

6.1.2   Raw map

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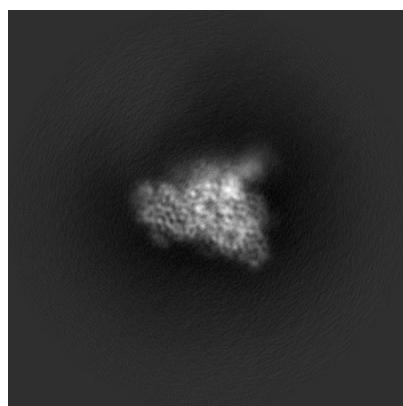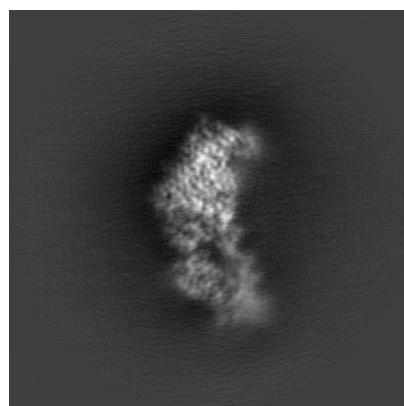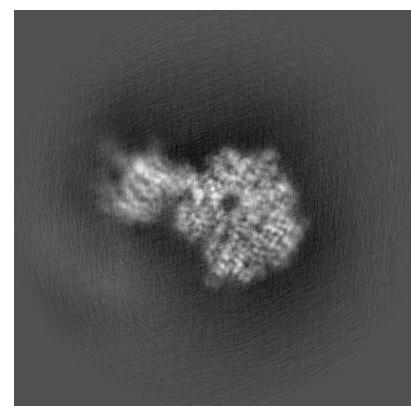
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
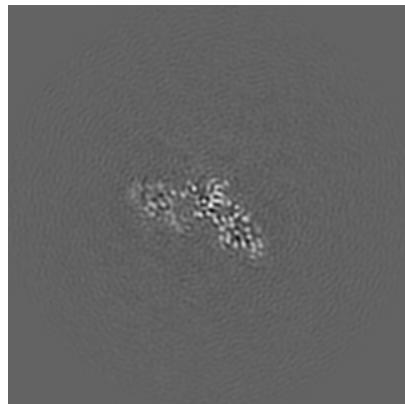
6.2.1 Primary map
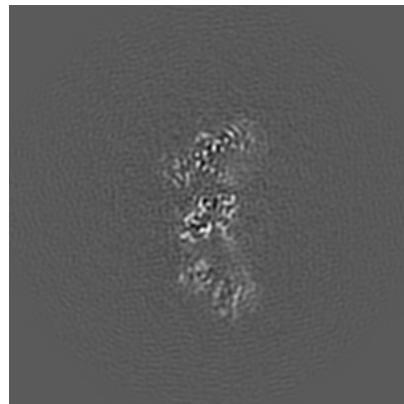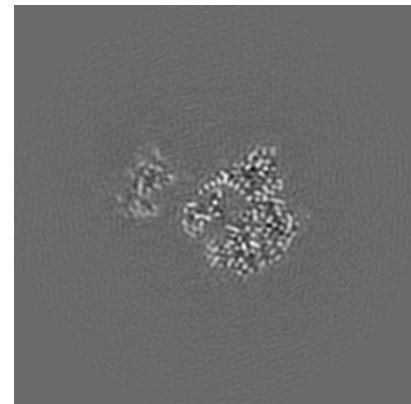
| X Index: 160 | Y Index: 160 | Z Index: 160 |

6.2.2 Raw map
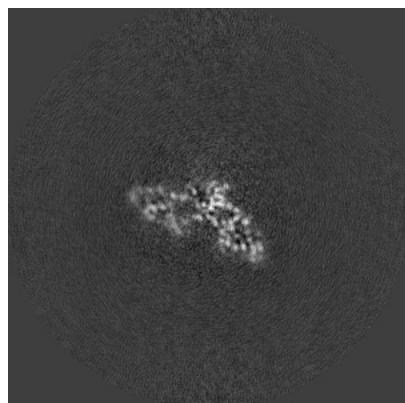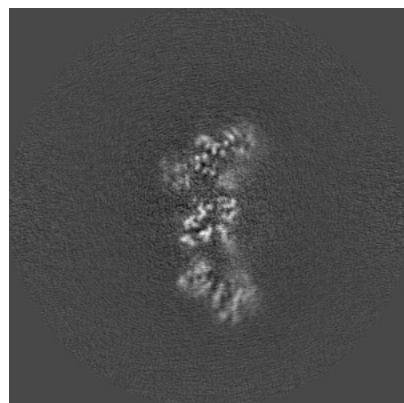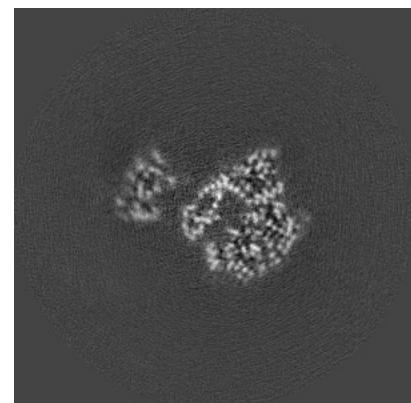
| X Index: 160 | Y Index: 160 | Z Index: 160 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
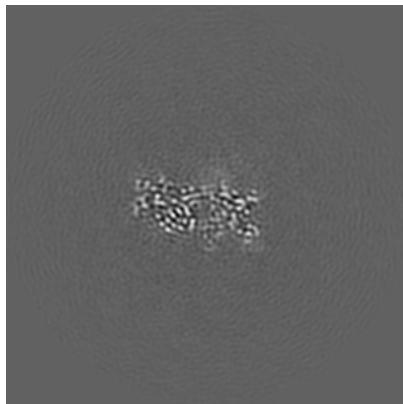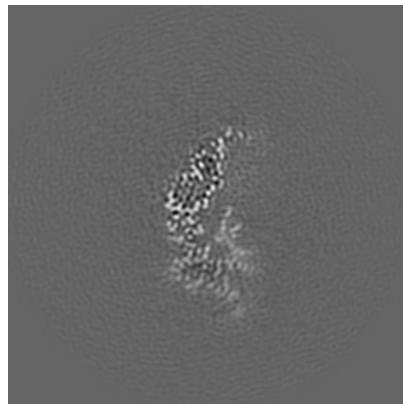
X Index: 185	Y Index: 182	Z Index: 152
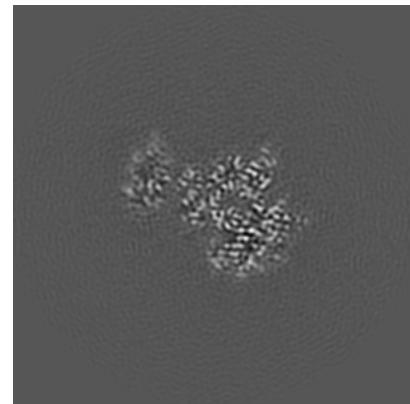
6.3.2 Raw map
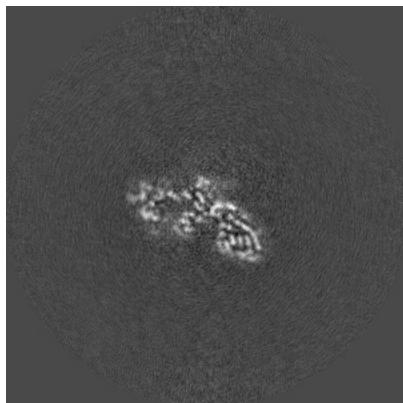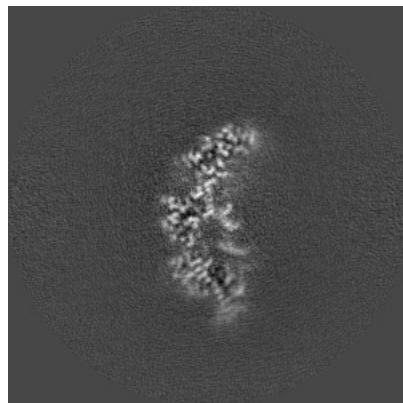
X Index: 163	Y Index: 175	Z Index: 159
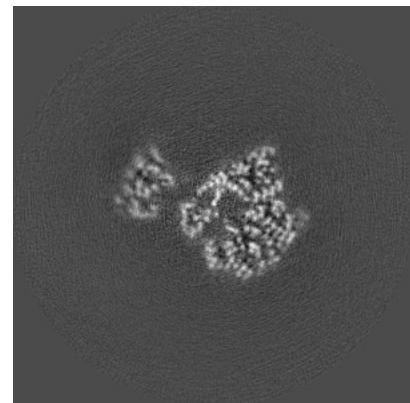
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

| X | Y | Z |

6.4.2 Raw map

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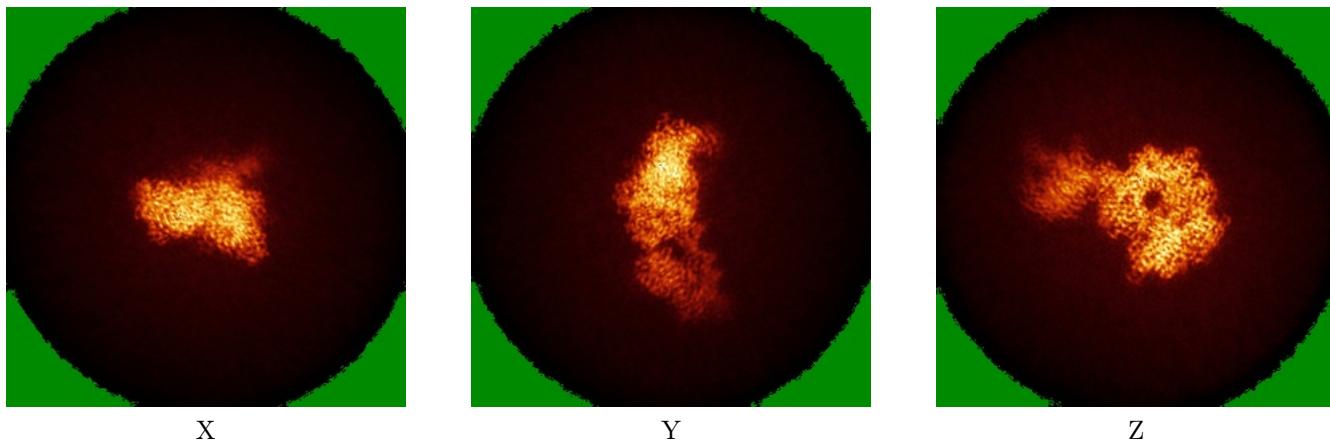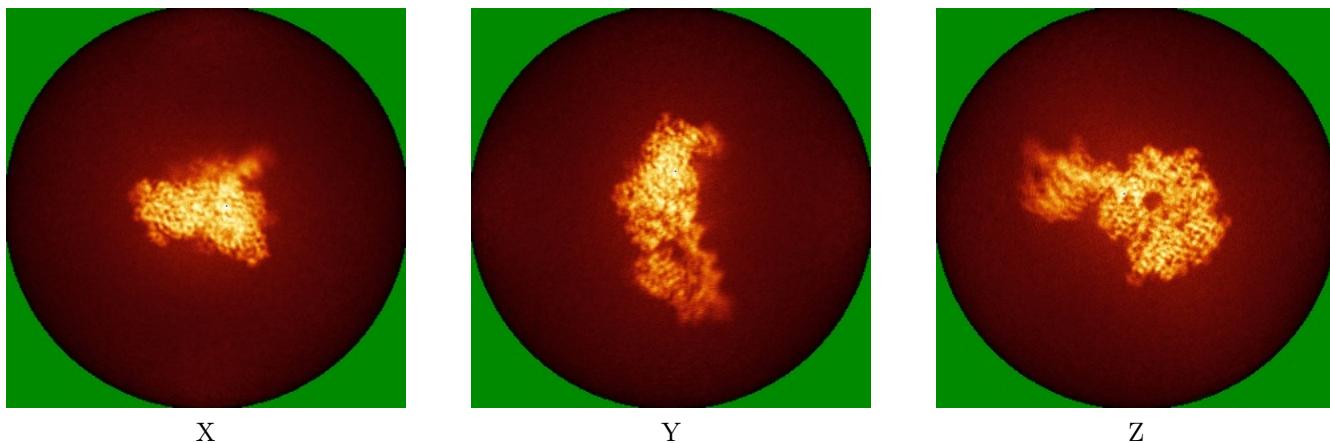
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

| X | Y | Z |
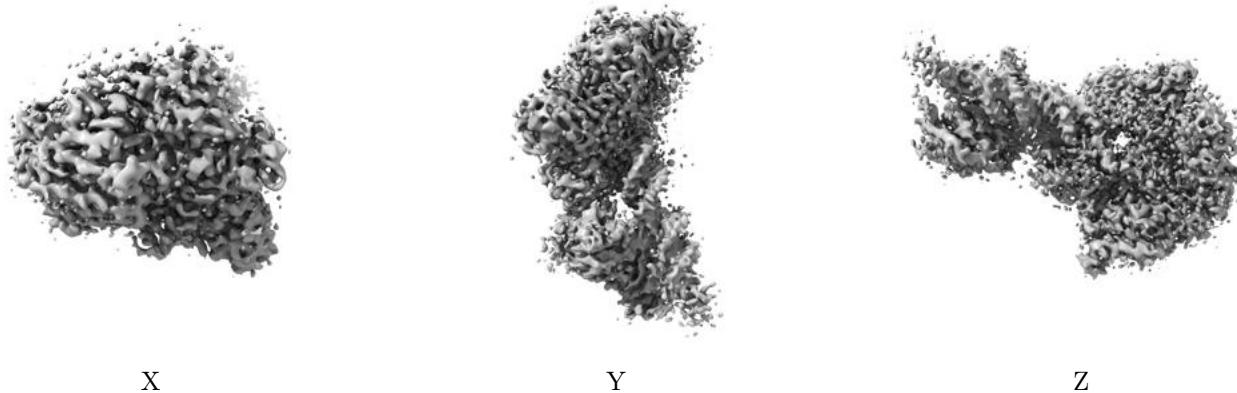
The images above show the 3D surface view of the map at the recommended contour level 4.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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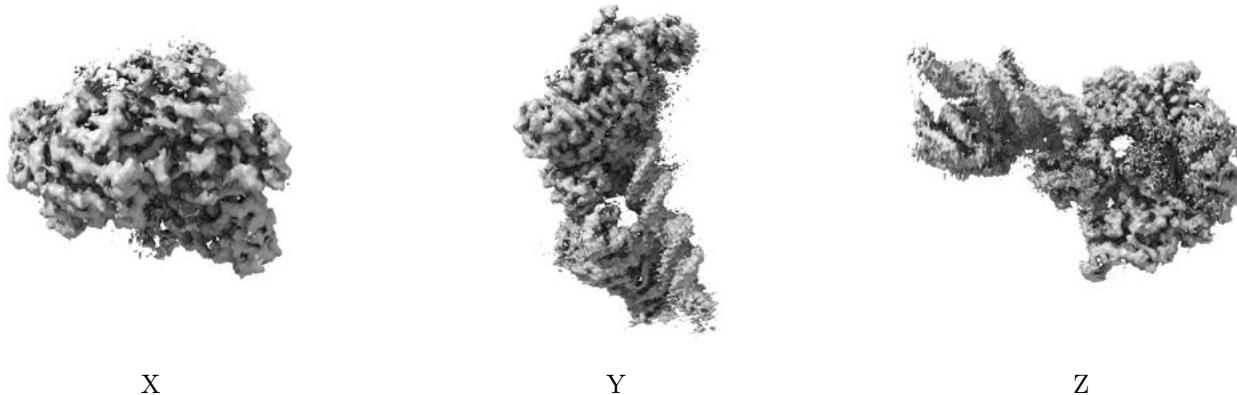
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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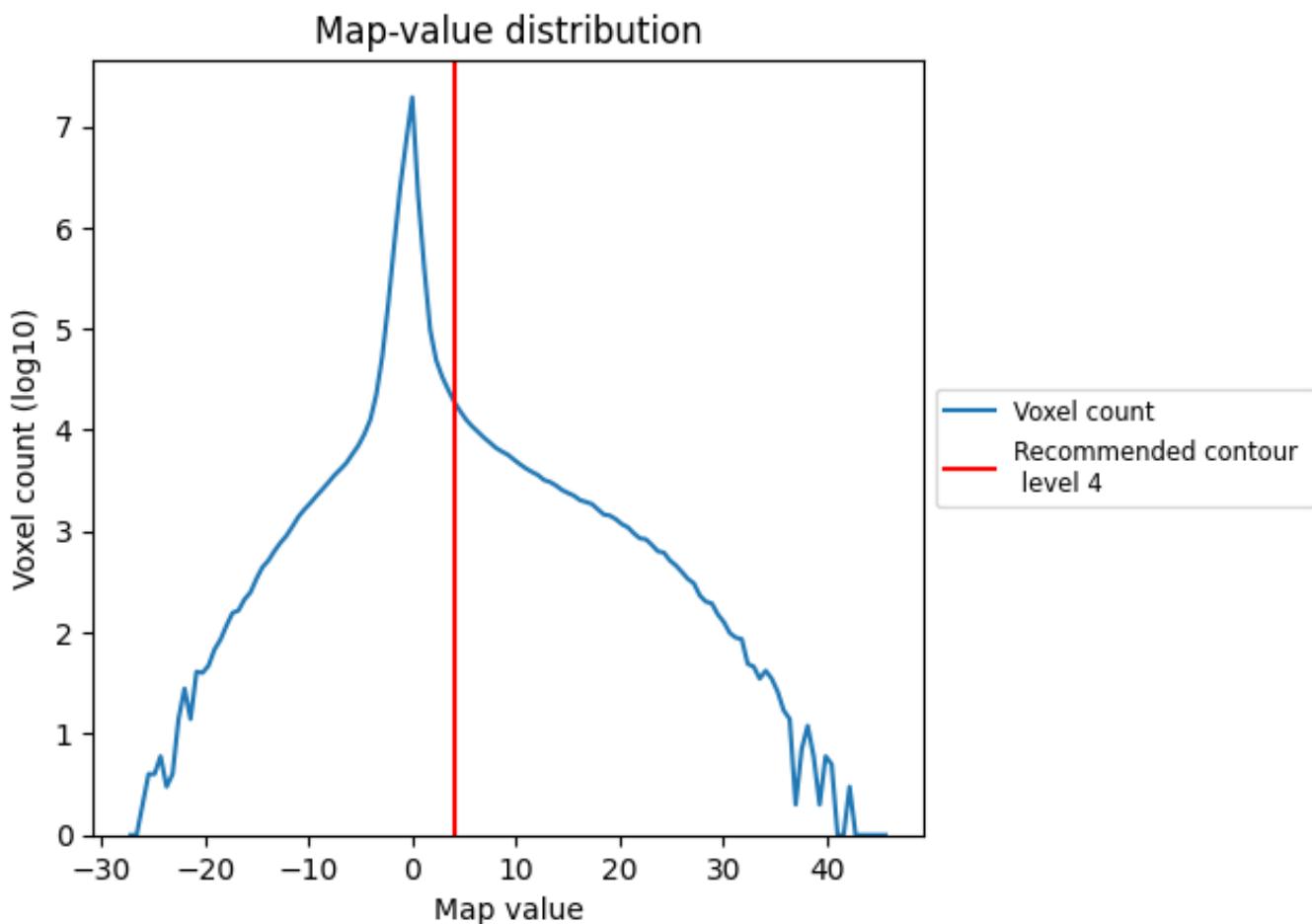
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate ⓘ
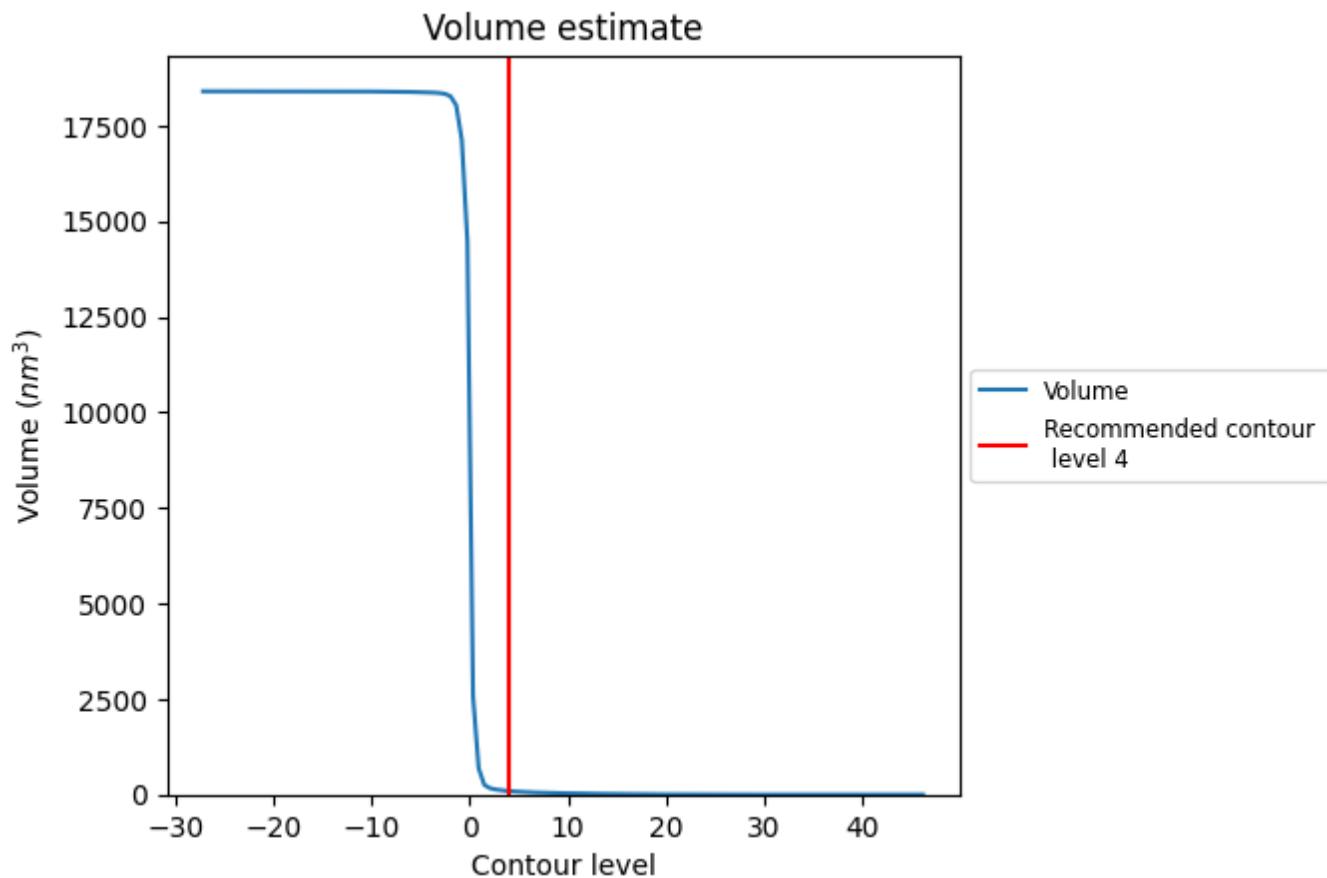
The volume at the recommended contour level is 92 nm³; this corresponds to an approximate mass of 83 kDa.

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 ⓘ
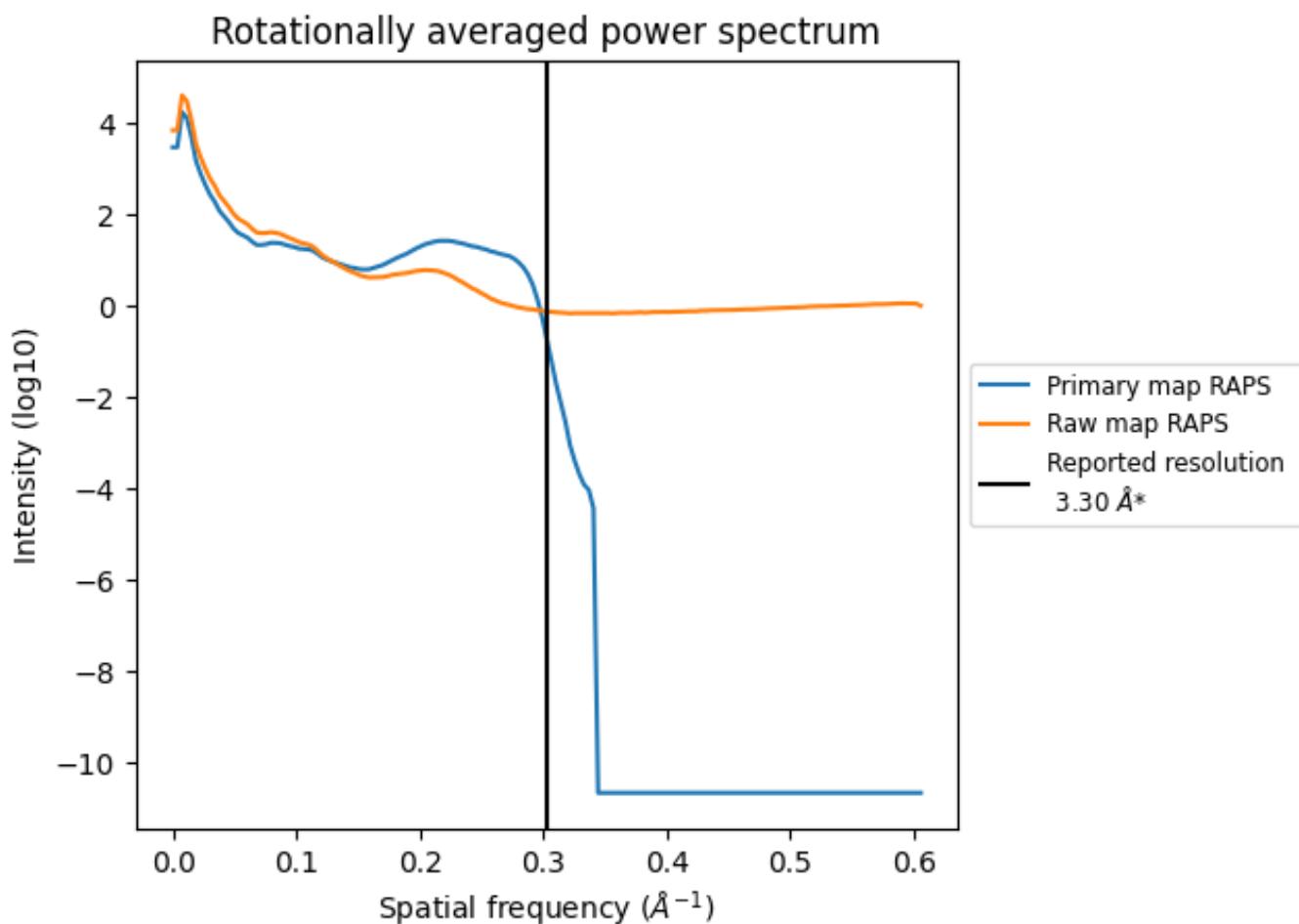
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

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 ⓘ
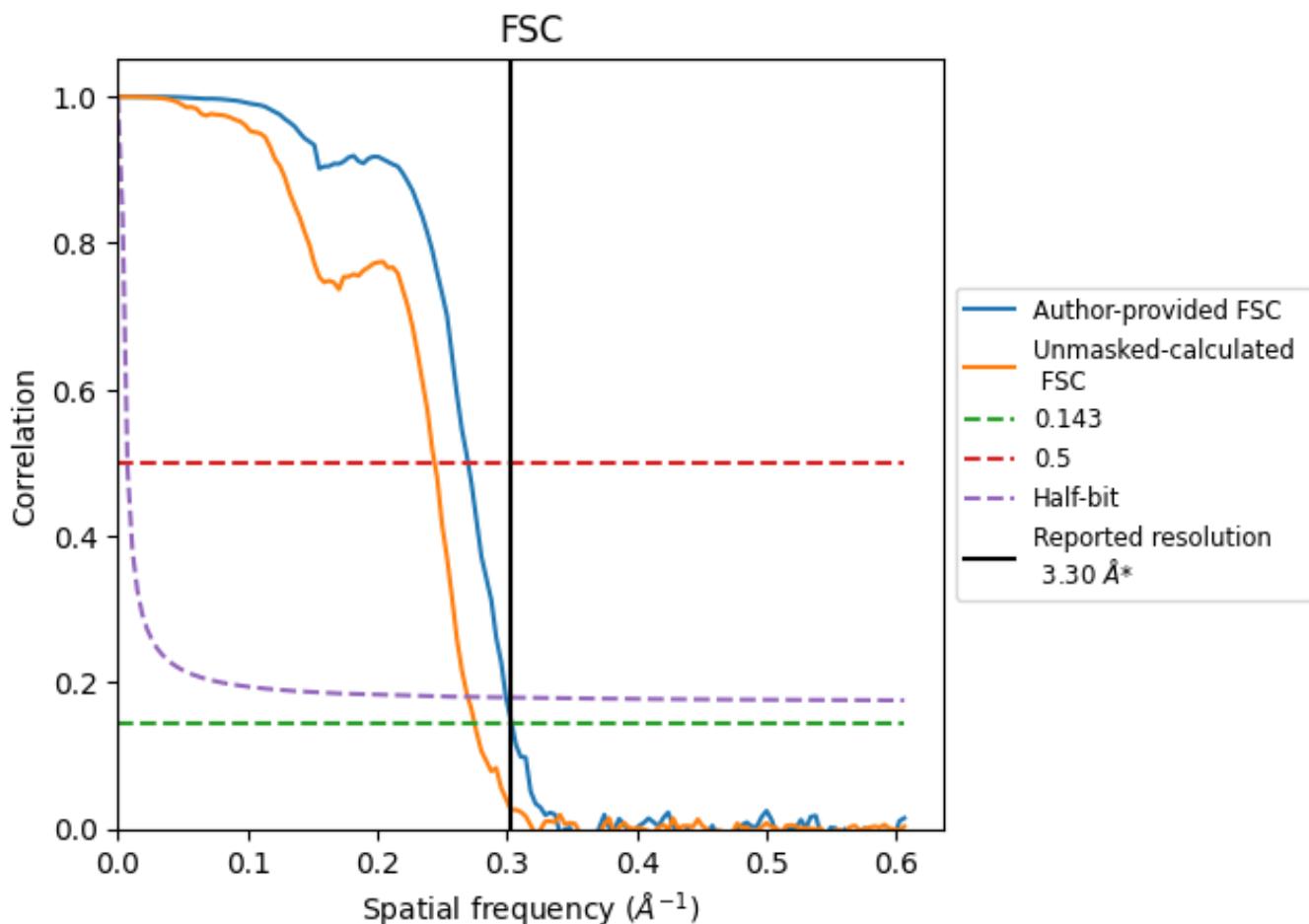
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.29	3.70	3.34
Unmasked-calculated*	3.64	4.10	3.71

*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 3.64 differs from the reported value 3.3 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-28663 and PDB model 8EXX. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay (i)

| X | Y | Z |
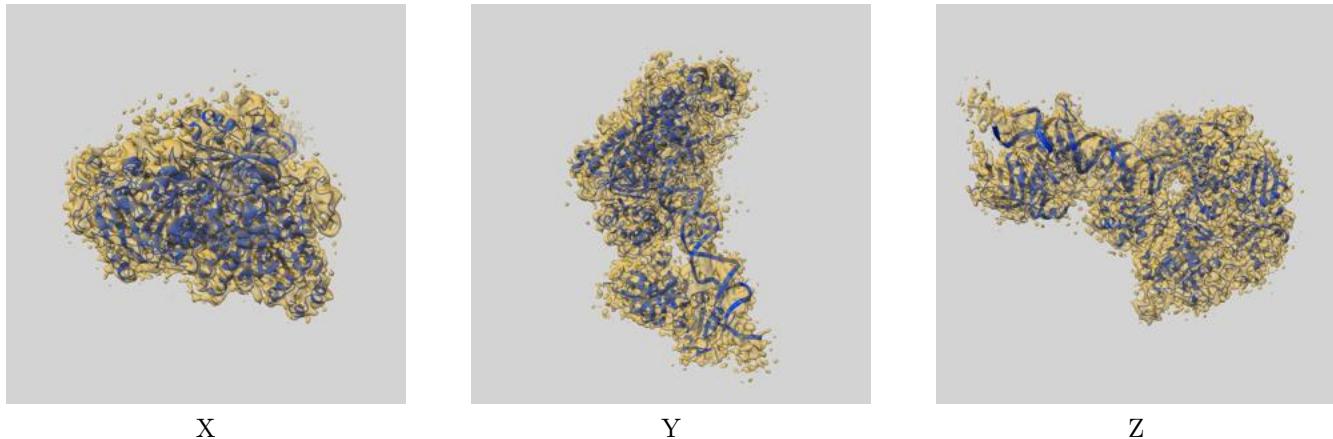
The images above show the 3D surface view of the map at the recommended contour level 4.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)

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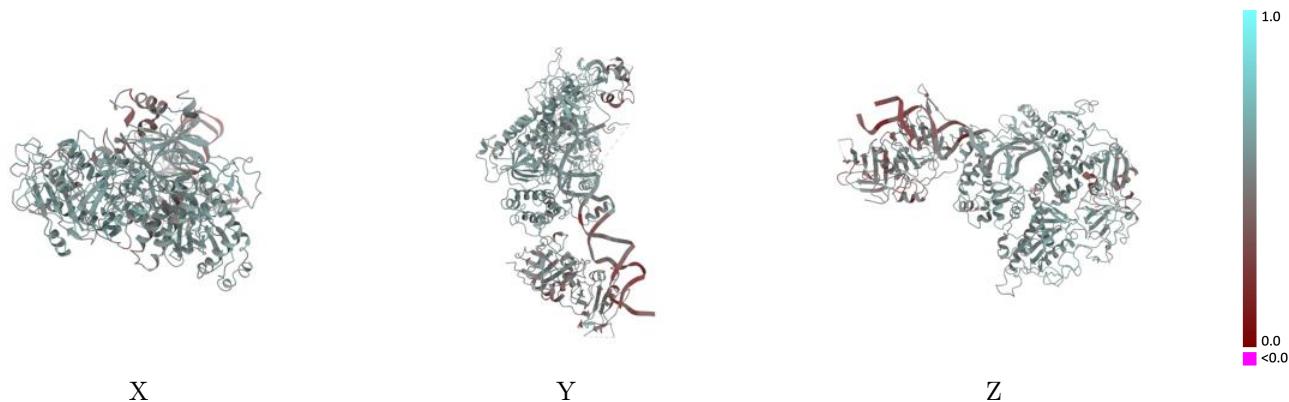
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model (i)

X   Y   Z
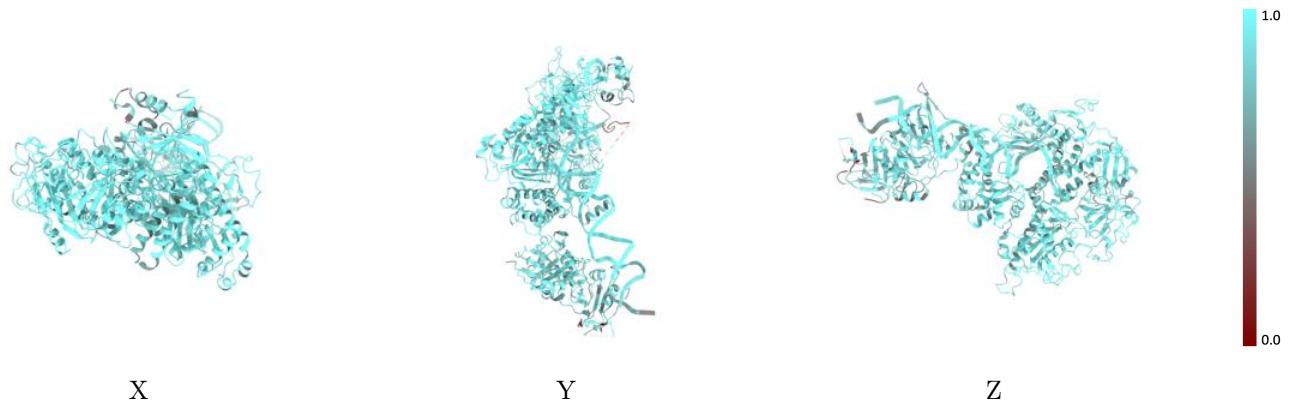
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (4).

9.4 Atom inclusion ⓘ
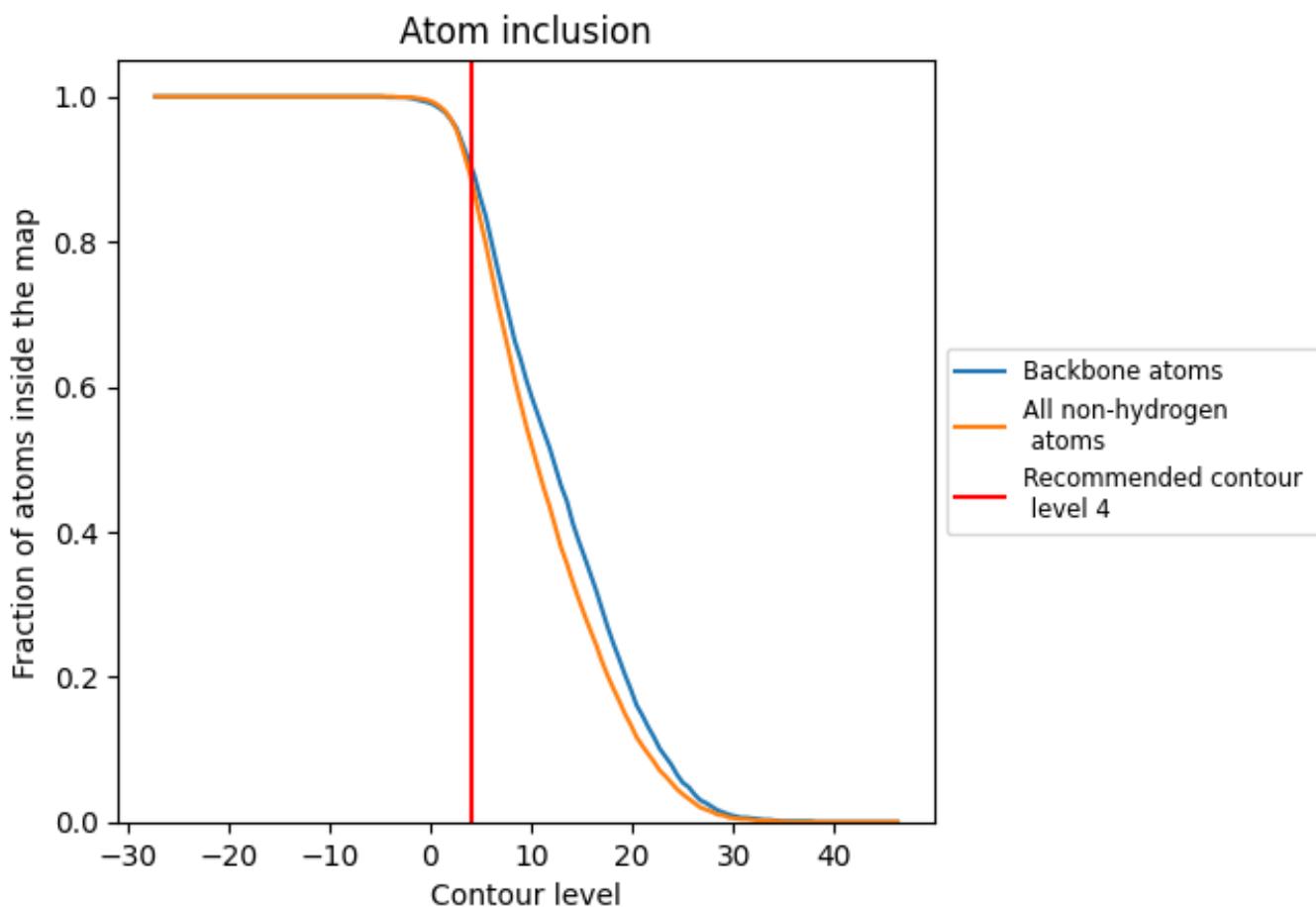
At the recommended contour level, 90% of all backbone atoms, 89% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8900	0.5220
A	0.9080	0.5430
B	0.8160	0.4820
P	0.8700	0.4340
T	0.8990	0.4410

1.0

0.0

<0.0