



Full wwPDB EM Validation Report ⓘ

Mar 14, 2026 – 09:54 AM UTC

PDB ID : 7SGZ / pdb_00007sgz
EMDB ID : EMD-25121
Title : Structure of the yeast Rad24-RFC loader bound to DNA and the closed 9-1-1 clamp
Authors : Zheng, F.; Georgescu, R.; Yao, Y.N.; O'Donnell, M.E.; Li, H.
Deposited on : 2021-10-07
Resolution : 3.17 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ 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:

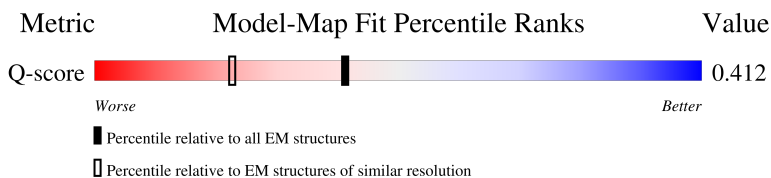
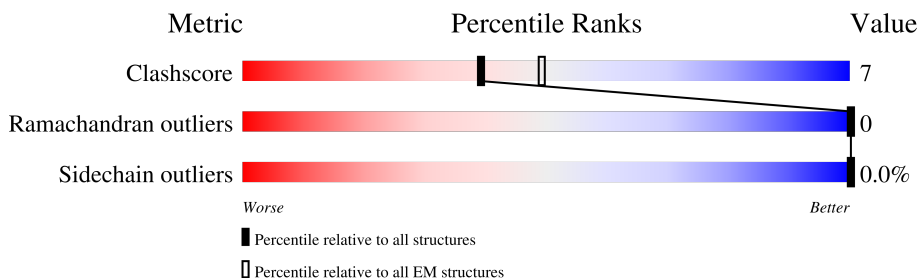
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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 3.17 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	14465 (2.67 - 3.67)

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	659	
2	B	323	
3	C	340	
4	D	353	

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Mol	Chain	Length	Quality of chain
5	E	354	76%21%
6	F	460	27%45%14%42%
7	G	401	9%60%12%27%
8	H	593	8%34%11%55%
9	P	20	40%10%50%
10	T	40	28%5%68%

2 Entry composition

There are 14 unique types of molecules in this entry. The entry contains 21055 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 Checkpoint protein RAD24.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	418	Total	C	N	O	S	0	0
			3416	2180	592	626	18		

- Molecule 2 is a protein called Replication factor C subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	317	Total	C	N	O	S	0	0
			2489	1570	444	462	13		

- Molecule 3 is a protein called Replication factor C subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	325	Total	C	N	O	S	0	0
			2569	1619	449	493	8		

- Molecule 4 is a protein called Replication factor C subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	330	Total	C	N	O	S	0	0
			2617	1653	452	502	10		

- Molecule 5 is a protein called Replication factor C subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	341	Total	C	N	O	S	0	0
			2693	1705	467	502	19		

- Molecule 6 is a protein called Mitosis Entry Checkpoint protein MEC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	269	Total	C	N	O	S	0	0
			2178	1395	374	390	19		

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	ARG	deletion	UNP A0A6A5PTK1
F	?	-	GLY	deletion	UNP A0A6A5PTK1
F	?	-	SER	deletion	UNP A0A6A5PTK1
F	?	-	LEU	deletion	UNP A0A6A5PTK1
F	?	-	GLU	deletion	UNP A0A6A5PTK1
F	?	-	ASP	deletion	UNP A0A6A5PTK1
F	?	-	SER	deletion	UNP A0A6A5PTK1
F	?	-	GLU	deletion	UNP A0A6A5PTK1
F	?	-	ASP	deletion	UNP A0A6A5PTK1
F	?	-	VAL	deletion	UNP A0A6A5PTK1
F	?	-	GLU	deletion	UNP A0A6A5PTK1
F	?	-	LYS	deletion	UNP A0A6A5PTK1
F	?	-	PRO	deletion	UNP A0A6A5PTK1
F	?	-	ARG	deletion	UNP A0A6A5PTK1

- Molecule 7 is a protein called DNA damage checkpoint control protein RAD17.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	292	Total	C	N	O	S	0	0
			2313	1473	374	454	12		

- Molecule 8 is a protein called DNA Damage Checkpoint protein DDC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	266	Total	C	N	O	S	0	0
			2154	1377	357	408	12		

There are 19 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	?	-	THR	deletion	UNP A0A7I9C529
H	?	-	ILE	deletion	UNP A0A7I9C529
H	?	-	GLU	deletion	UNP A0A7I9C529
H	?	-	ASP	deletion	UNP A0A7I9C529
H	?	-	GLU	deletion	UNP A0A7I9C529
H	?	-	LYS	deletion	UNP A0A7I9C529
H	?	-	GLN	deletion	UNP A0A7I9C529
H	?	-	ASP	deletion	UNP A0A7I9C529
H	?	-	LYS	deletion	UNP A0A7I9C529
H	?	-	ARG	deletion	UNP A0A7I9C529
H	?	-	SER	deletion	UNP A0A7I9C529

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Chain	Residue	Modelled	Actual	Comment	Reference
H	?	-	HIS	deletion	UNP A0A7I9C529
H	?	-	SER	deletion	UNP A0A7I9C529
H	?	-	LYS	deletion	UNP A0A7I9C529
H	?	-	ARG	deletion	UNP A0A7I9C529
H	?	-	ARG	deletion	UNP A0A7I9C529
H	?	-	GLU	deletion	UNP A0A7I9C529
H	?	-	HIS	deletion	UNP A0A7I9C529
H	?	-	MET	deletion	UNP A0A7I9C529

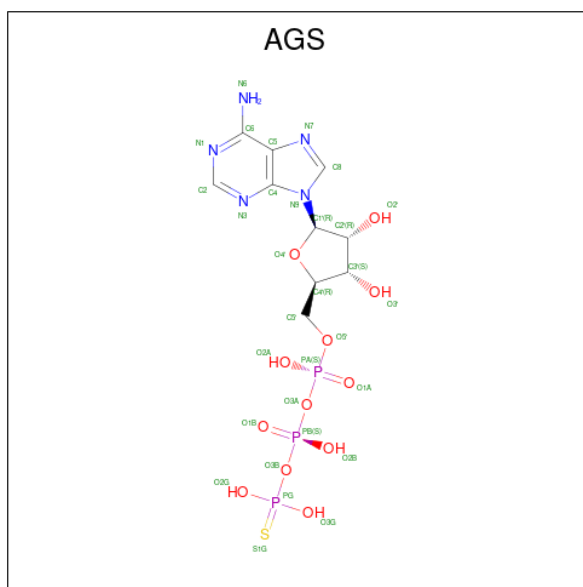
- Molecule 9 is a DNA chain called Watson strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	P	10	Total	C	N	O	P	0	0
			202	97	41	55	9		

- Molecule 10 is a DNA chain called Crick strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	T	13	Total	C	N	O	P	0	0
			264	127	40	84	13		

- Molecule 11 is PHOSPHOTHIOPHOSPHORIC ACID-ADENYLATE ESTER (CCD ID: AGS) (formula: C₁₀H₁₆N₅O₁₂P₃S) (labeled as "Ligand of Interest" by depositor).

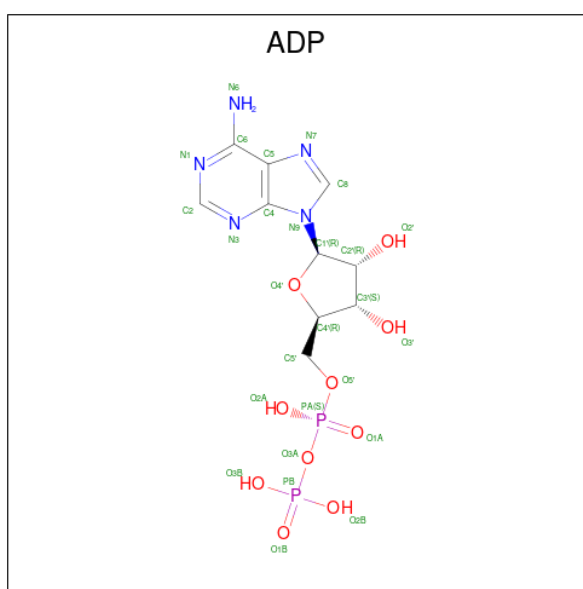


Mol	Chain	Residues	Atoms					AltConf
11	A	1	Total	C	N	O	P	S
			31	10	5	12	3	1
11	B	1	Total	C	N	O	P	S
			31	10	5	12	3	1
11	C	1	Total	C	N	O	P	S
			31	10	5	12	3	1
11	D	1	Total	C	N	O	P	S
			31	10	5	12	3	1

- Molecule 12 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

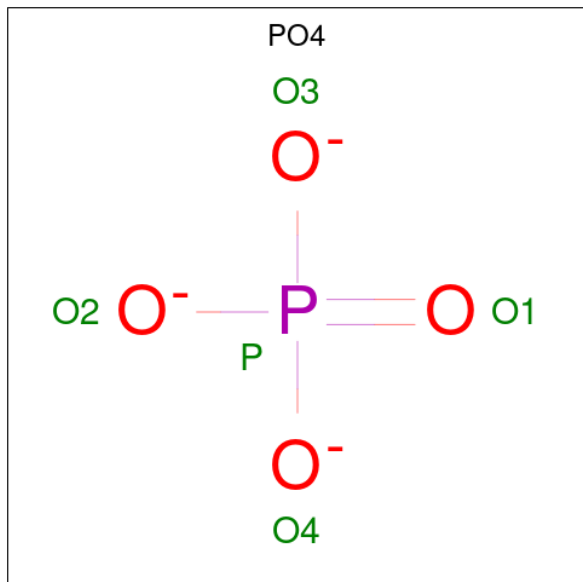
Mol	Chain	Residues	Atoms		AltConf
12	A	1	Total	Mg	0
			1	1	
12	B	1	Total	Mg	0
			1	1	
12	C	1	Total	Mg	0
			1	1	
12	E	1	Total	Mg	0
			1	1	

- Molecule 13 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: C₁₀H₁₅N₅O₁₀P₂) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 14 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P) (labeled as "Ligand of Interest" by depositor).

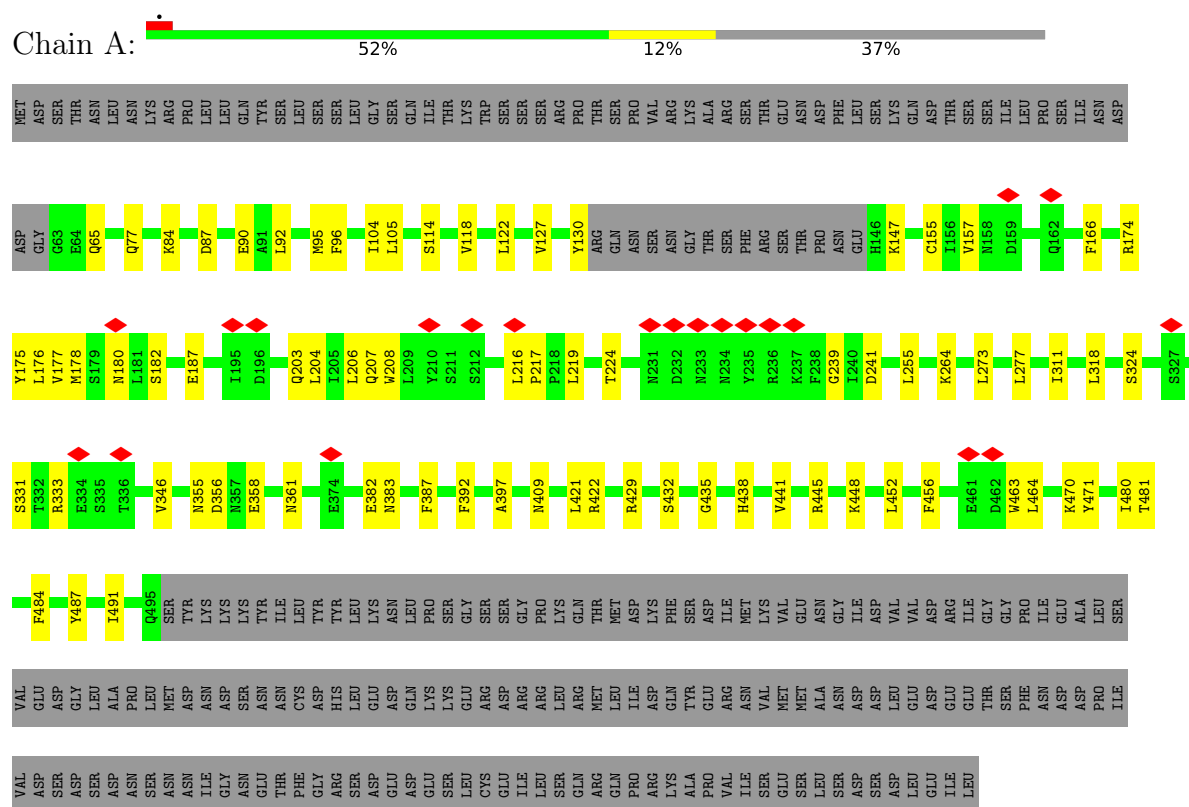


Mol	Chain	Residues	Atoms			AltConf
			Total	O	P	
14	E	1	5	4	1	0

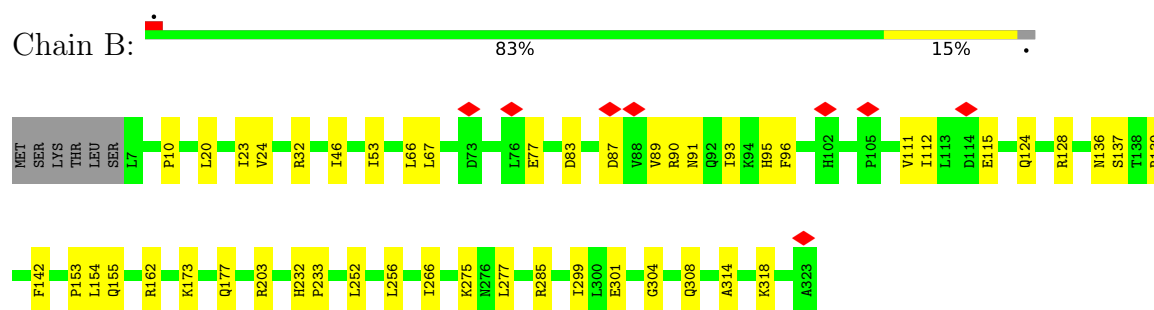
3 Residue-property plots

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: Checkpoint protein RAD24

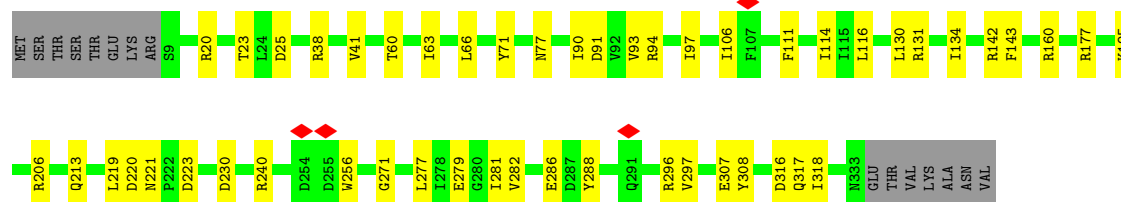


• Molecule 2: Replication factor C subunit 4



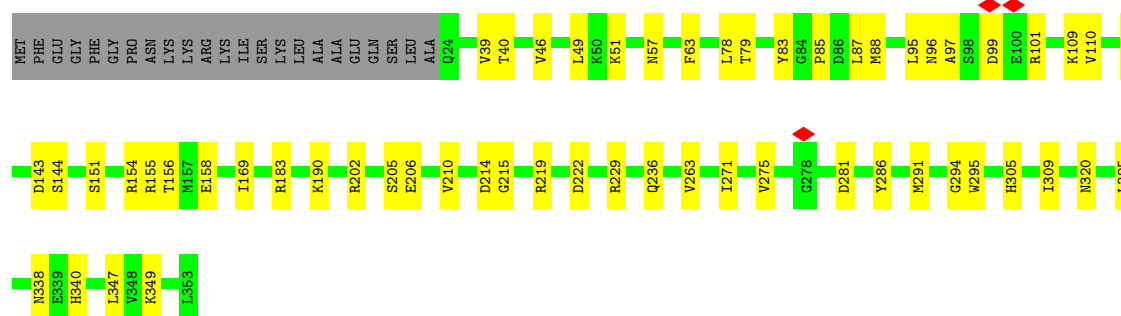
• Molecule 3: Replication factor C subunit 3

Chain C: 



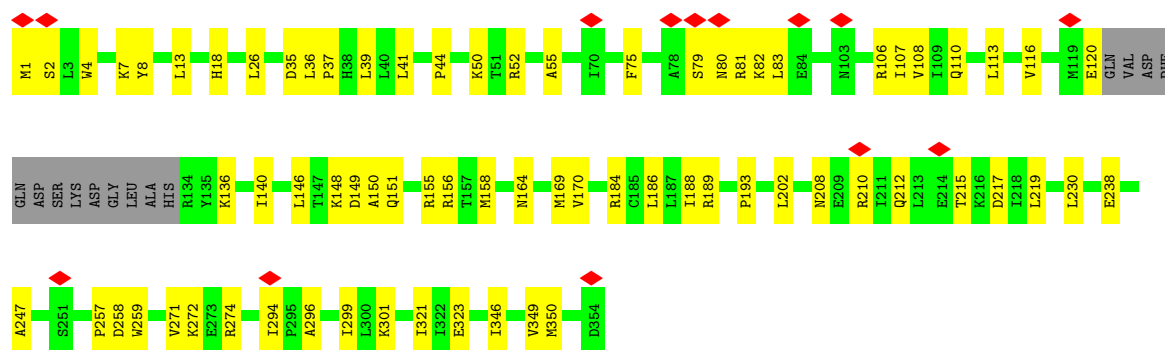
• Molecule 4: Replication factor C subunit 2

Chain D: 

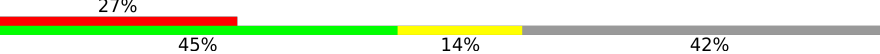


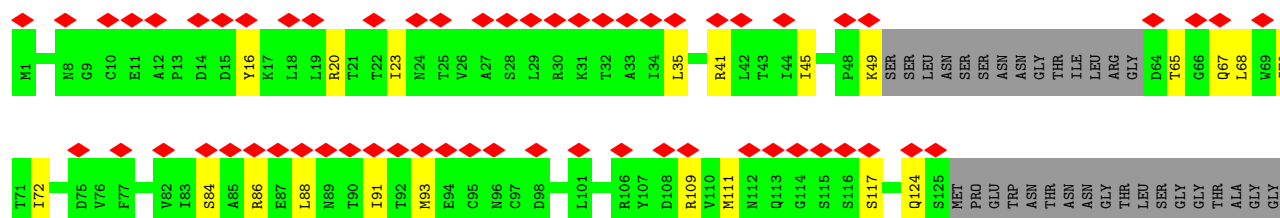
• Molecule 5: Replication factor C subunit 5

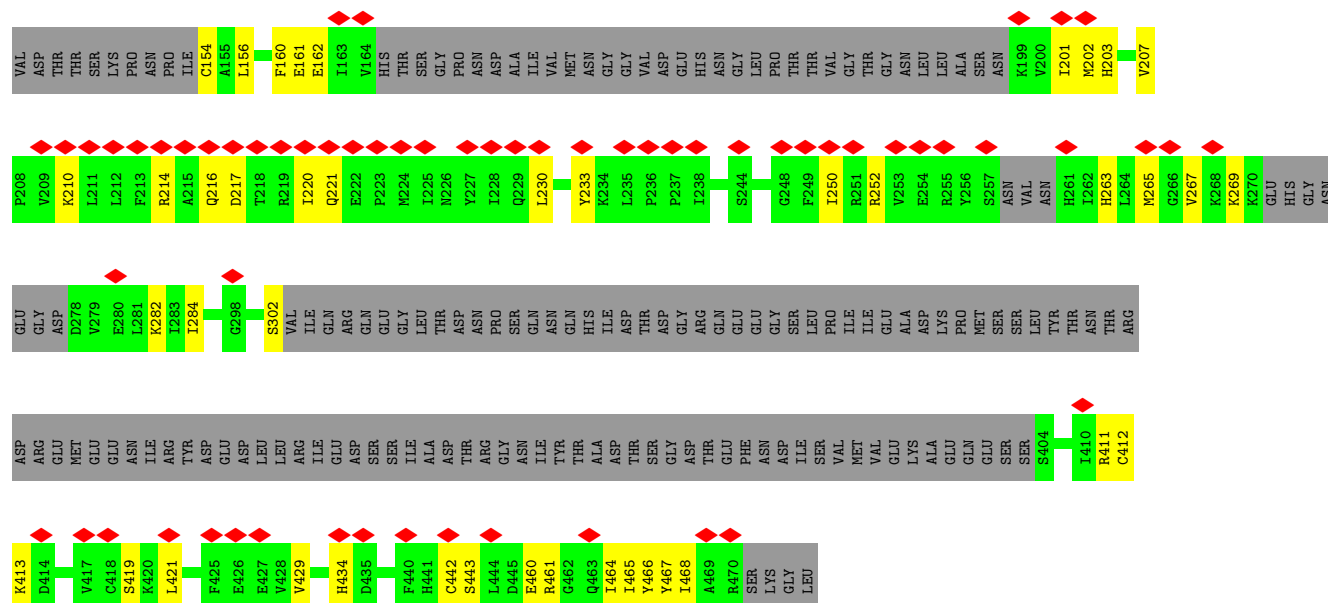
Chain E: 



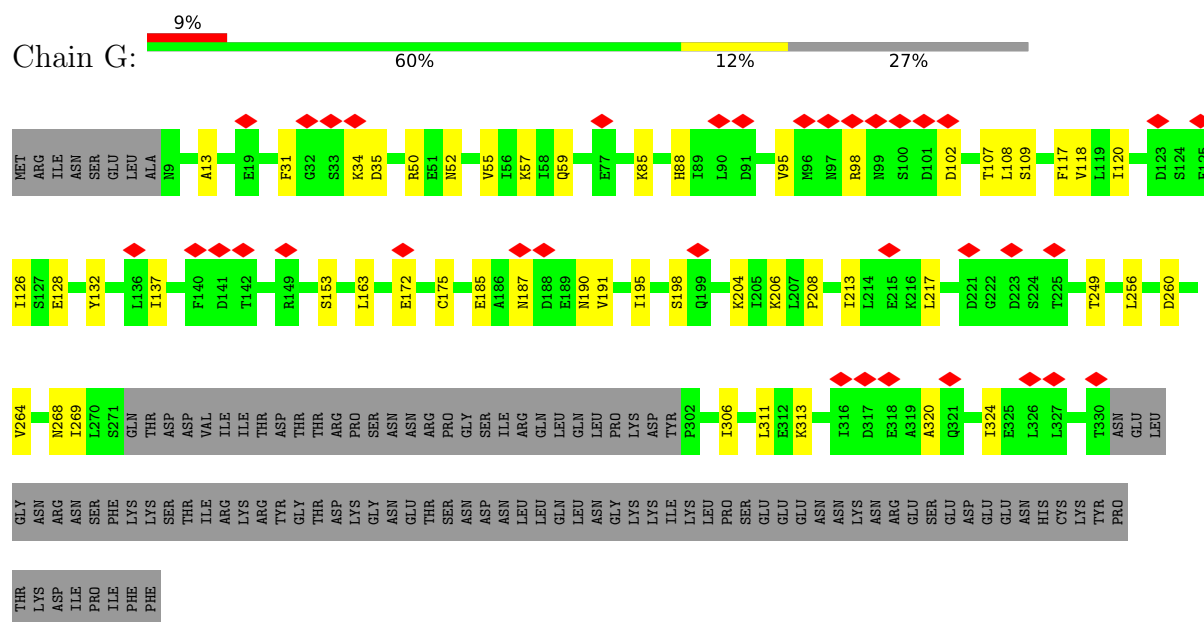
• Molecule 6: Mitosis Entry Checkpoint protein MEC3

Chain F: 

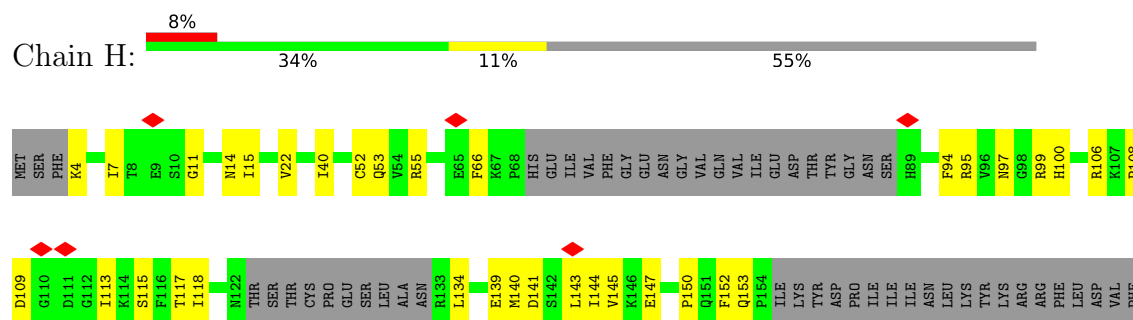


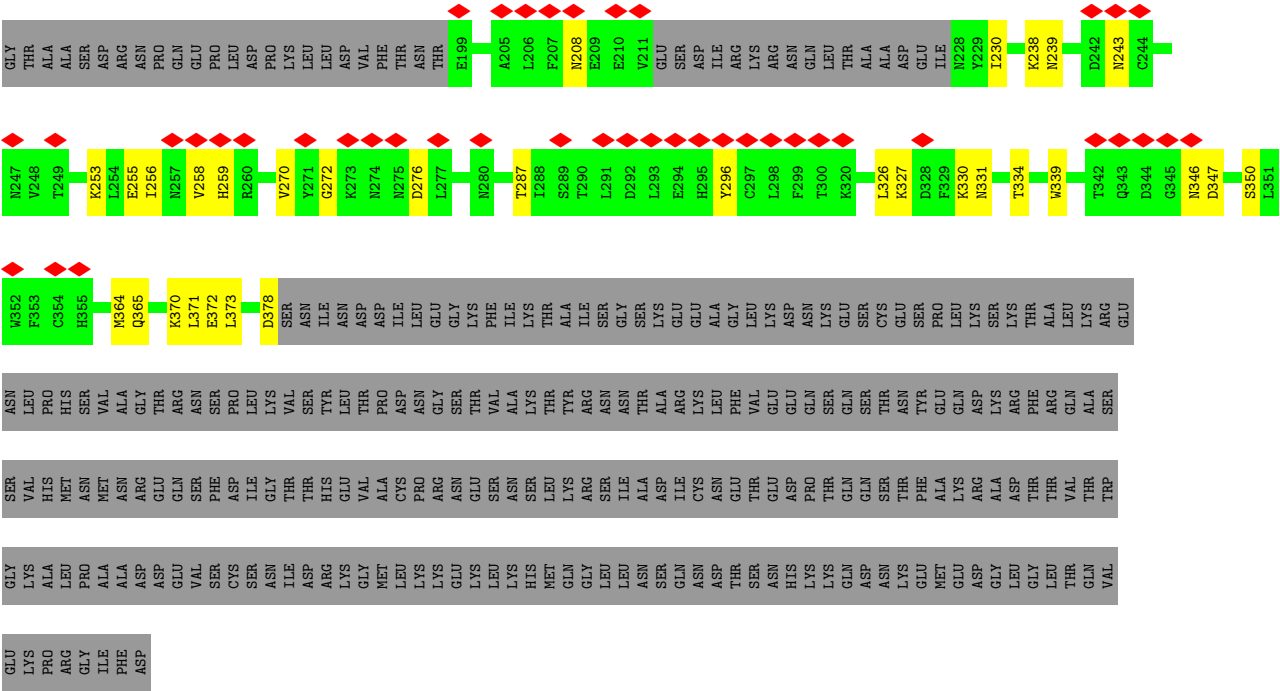


- Molecule 7: DNA damage checkpoint control protein RAD17

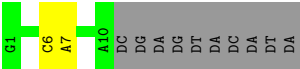
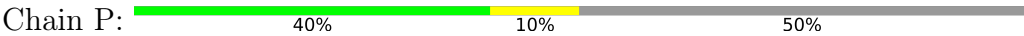


- Molecule 8: DNA Damage Checkpoint protein DDC1

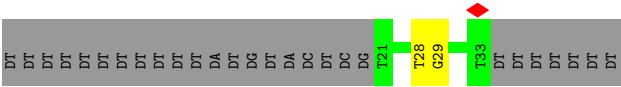




● Molecule 9: Watson strand



● Molecule 10: Crick strand



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	147415	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 ($e^-/\text{\AA}^2$)	65	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.958	Depositor
Minimum map value	-0.528	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.019	Depositor
Recommended contour level	0.085	Depositor
Map size ($\text{\AA}$)	331.2, 331.2, 331.2	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.828, 0.828, 0.828	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, AGS, PO4, MG

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	0.11	0/3491	0.30	0/4708
2	B	0.10	0/2524	0.29	0/3403
3	C	0.11	0/2609	0.28	0/3529
4	D	0.09	0/2662	0.24	0/3600
5	E	0.10	0/2730	0.28	0/3686
6	F	0.11	0/2216	0.32	0/2983
7	G	0.10	0/2349	0.29	0/3164
8	H	0.10	0/2193	0.28	0/2965
9	P	0.12	0/227	0.22	0/348
10	T	0.18	0/293	0.39	0/450
All	All	0.10	0/21294	0.29	0/28836

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3416	0	3415	50	0
2	B	2489	0	2583	38	0
3	C	2569	0	2599	41	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	2617	0	2647	45	0
5	E	2693	0	2822	51	0
6	F	2178	0	2222	44	0
7	G	2313	0	2308	30	0
8	H	2154	0	2151	45	0
9	P	202	0	113	1	0
10	T	264	0	148	1	0
11	A	31	0	12	3	0
11	B	31	0	12	4	0
11	C	31	0	12	3	0
11	D	31	0	12	4	0
12	A	1	0	0	0	0
12	B	1	0	0	0	0
12	C	1	0	0	0	0
12	E	1	0	0	0	0
13	E	27	0	12	1	0
14	E	5	0	0	0	0
All	All	21055	0	21068	304	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 (304) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:252:ARG:HE	7:G:95:VAL:HG21	1.51	0.74
3:C:131:ARG:HA	3:C:134:ILE:HG12	1.73	0.70
5:E:1:MET:SD	5:E:2:SER:N	2.66	0.68
3:C:41:VAL:HG11	3:C:66:LEU:HD11	1.77	0.67
6:F:250:ILE:HD11	6:F:419:SER:HB3	1.77	0.67
2:B:128:ARG:HD2	2:B:153:PRO:HB2	1.77	0.67
1:A:174:ARG:HG3	1:A:208:TRP:HE1	1.60	0.67
4:D:79:THR:HG22	4:D:88:MET:HE1	1.79	0.65
7:G:98:ARG:NH1	7:G:102:ASP:OD2	2.30	0.65
8:H:108:PRO:HG2	8:H:140:MET:HE1	1.77	0.64
7:G:204:LYS:HB3	8:H:147:GLU:HB2	1.79	0.64
1:A:87:ASP:HA	1:A:90:GLU:HG2	1.77	0.64
8:H:22:VAL:HG22	8:H:331:ASN:HB3	1.78	0.64
6:F:156:LEU:HB2	6:F:207:VAL:HB	1.80	0.64
3:C:93:VAL:HG23	3:C:97:ILE:HD12	1.80	0.64
8:H:134:LEU:HB3	8:H:150:PRO:HG2	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:172:GLU:OE1	8:H:106:ARG:NH1	2.32	0.63
7:G:185:GLU:HG3	7:G:187:ASN:H	1.64	0.62
3:C:25:ASP:HB3	3:C:38:ARG:HH22	1.64	0.61
6:F:67:GLN:HB3	6:F:467:TYR:HB3	1.83	0.61
6:F:84:SER:HB2	6:F:91:ILE:HG12	1.83	0.61
1:A:127:VAL:HG11	1:A:147:LYS:HB2	1.83	0.61
1:A:382:GLU:OE2	1:A:445:ARG:NH1	2.34	0.60
8:H:55:ARG:HB2	8:H:370:LYS:HB2	1.82	0.60
5:E:215:THR:HG22	5:E:217:ASP:H	1.65	0.60
7:G:208:PRO:HB3	8:H:143:LEU:HB3	1.83	0.60
6:F:429:VAL:HG13	6:F:443:SER:HA	1.84	0.60
11:D:500:AGS:O2B	11:D:500:AGS:O3G	2.20	0.59
2:B:91:ASN:OD1	2:B:95:HIS:NE2	2.35	0.59
8:H:239:ASN:O	8:H:243:ASN:ND2	2.36	0.59
7:G:107:THR:HB	7:G:120:ILE:HB	1.85	0.59
1:A:175:TYR:HD1	8:H:378:ASP:H	1.51	0.59
6:F:23:ILE:HD11	6:F:421:LEU:HD11	1.85	0.59
5:E:158:MET:HE3	5:E:184:ARG:HD2	1.86	0.58
11:C:401:AGS:S1G	4:D:183:ARG:NH2	2.77	0.58
5:E:39:LEU:HD23	5:E:186:LEU:HB3	1.84	0.58
1:A:207:GLN:HG2	8:H:270:VAL:HG11	1.86	0.58
11:D:500:AGS:O2G	5:E:184:ARG:NH2	2.35	0.58
8:H:272:GLY:HA3	8:H:276:ASP:HB3	1.86	0.57
2:B:203:ARG:NH2	11:B:401:AGS:S1G	2.77	0.57
8:H:95:ARG:NH2	8:H:153:GLN:OE1	2.37	0.57
2:B:277:LEU:O	2:B:285:ARG:NH1	2.38	0.57
4:D:39:VAL:HG21	4:D:46:VAL:HG21	1.85	0.57
2:B:20:LEU:HD23	2:B:23:ILE:HD12	1.87	0.57
4:D:325:LEU:HD22	4:D:349:LYS:HD3	1.87	0.56
5:E:113:LEU:HA	5:E:116:VAL:HG12	1.86	0.56
7:G:269:ILE:HB	7:G:306:ILE:HB	1.86	0.56
4:D:101:ARG:NH2	4:D:144:SER:OG	2.37	0.56
1:A:176:LEU:HD13	1:A:182:SER:HB2	1.88	0.56
1:A:480:ILE:HA	1:A:484:PHE:HB2	1.87	0.56
3:C:213:GLN:NE2	4:D:57:ASN:O	2.39	0.55
6:F:265:MET:HB2	6:F:282:LYS:HB3	1.88	0.55
8:H:364:MET:HB2	8:H:371:LEU:HB2	1.88	0.55
1:A:333:ARG:HD2	2:B:155:GLN:HB2	1.88	0.55
5:E:271:VAL:O	5:E:274:ARG:NH1	2.40	0.55
8:H:52:CYS:HB2	8:H:373:LEU:HD13	1.88	0.55
1:A:203:GLN:HA	1:A:206:LEU:HB2	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:456:PHE:HE2	1:A:481:THR:HG22	1.71	0.55
2:B:24:VAL:O	11:B:401:AGS:N6	2.40	0.55
2:B:299:ILE:HD13	2:B:304:GLY:HA2	1.89	0.55
1:A:387:PHE:O	1:A:438:HIS:ND1	2.40	0.55
8:H:118:ILE:HD11	8:H:134:LEU:HD21	1.88	0.55
3:C:134:ILE:HG22	3:C:143:PHE:CD2	2.42	0.54
6:F:86:ARG:HG3	6:F:91:ILE:HG23	1.89	0.54
7:G:13:ALA:HB3	7:G:108:LEU:HB2	1.88	0.54
8:H:97:ASN:HB3	8:H:100:HIS:HB2	1.88	0.54
3:C:20:ARG:NH2	11:C:401:AGS:O2A	2.35	0.54
2:B:256:LEU:HD13	2:B:266:ILE:HG12	1.89	0.54
6:F:233:TYR:HB3	6:F:302:SER:HB2	1.88	0.54
2:B:24:VAL:H	11:B:401:AGS:HN62	1.54	0.54
2:B:115:GLU:OE2	3:C:131:ARG:NH1	2.41	0.54
5:E:155:ARG:HA	5:E:158:MET:HE2	1.91	0.53
7:G:117:PHE:HB3	7:G:132:TYR:HB2	1.90	0.53
4:D:151:SER:HA	4:D:154:ARG:HD3	1.90	0.53
4:D:349:LYS:HE2	5:E:323:GLU:HG2	1.90	0.53
6:F:443:SER:N	6:F:464:ILE:O	2.36	0.53
8:H:40:ILE:HG23	8:H:55:ARG:HG2	1.91	0.53
5:E:79:SER:OG	5:E:80:ASN:N	2.39	0.53
1:A:331:SER:HG	2:B:162:ARG:HH21	1.54	0.53
4:D:214:ASP:OD1	4:D:215:GLY:N	2.42	0.53
5:E:81:ARG:NH1	5:E:82:LYS:O	2.42	0.53
3:C:23:THR:OG1	3:C:25:ASP:OD1	2.25	0.53
3:C:90:ILE:O	3:C:94:ARG:HB2	2.09	0.53
4:D:295:TRP:CD1	5:E:189:ARG:HD2	2.44	0.53
5:E:116:VAL:HG23	5:E:136:LYS:HD2	1.90	0.53
7:G:109:SER:HB3	7:G:118:VAL:HB	1.90	0.53
1:A:177:VAL:HG12	1:A:217:PRO:HD3	1.91	0.53
6:F:109:ARG:HH12	8:H:239:ASN:HB3	1.72	0.53
5:E:83:LEU:HD12	5:E:107:ILE:HD11	1.90	0.52
5:E:321:ILE:HG12	5:E:349:VAL:HG22	1.91	0.52
6:F:70:CYS:HB3	6:F:464:ILE:HG23	1.90	0.52
1:A:355:ASN:HB3	1:A:358:GLU:HG2	1.90	0.52
7:G:256:LEU:HB3	7:G:268:ASN:HB2	1.90	0.52
2:B:83:ASP:HA	3:C:94:ARG:HD3	1.91	0.52
8:H:256:ILE:HB	8:H:296:TYR:HE1	1.75	0.52
6:F:20:ARG:HH21	6:F:23:ILE:HB	1.75	0.52
8:H:346:ASN:HD21	8:H:365:GLN:HB3	1.74	0.51
2:B:46:ILE:HA	2:B:142:PHE:HB2	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:7:ILE:HG23	8:H:117:THR:HB	1.92	0.51
6:F:35:LEU:HD13	6:F:93:MET:HG3	1.92	0.51
8:H:253:LYS:NZ	8:H:255:GLU:OE1	2.44	0.51
10:T:28:DT:H2"	10:T:29:DG:H5"	1.92	0.51
4:D:49:LEU:HB3	4:D:78:LEU:HD13	1.93	0.51
3:C:77:ASN:HD22	3:C:106:ILE:HD13	1.75	0.51
5:E:140:ILE:HB	5:E:169:MET:HG2	1.92	0.51
1:A:95:MET:HE1	1:A:105:LEU:HB2	1.92	0.51
11:A:701:AGS:O2G	11:A:701:AGS:O2B	2.29	0.51
6:F:443:SER:HB3	6:F:464:ILE:HB	1.92	0.51
5:E:120:GLU:OE1	5:E:164:ASN:ND2	2.44	0.51
8:H:11:GLY:O	8:H:14:ASN:ND2	2.44	0.51
3:C:219:LEU:O	4:D:51:LYS:NZ	2.44	0.50
7:G:191:VAL:HG13	7:G:206:LYS:HE2	1.93	0.50
7:G:195:ILE:HG22	7:G:204:LYS:HA	1.92	0.50
3:C:316:ASP:OD1	3:C:317:GLN:N	2.43	0.50
3:C:220:ASP:OD1	3:C:221:ASN:N	2.44	0.50
5:E:294:ILE:HD12	5:E:299:ILE:HD11	1.94	0.50
6:F:117:SER:HA	6:F:161:GLU:HB3	1.94	0.50
3:C:279:GLU:HA	3:C:282:VAL:HG22	1.94	0.50
5:E:41:LEU:HB2	5:E:170:VAL:HG12	1.94	0.50
2:B:252:LEU:HD12	2:B:256:LEU:HD12	1.94	0.49
4:D:205:SER:OG	4:D:210:VAL:O	2.30	0.49
5:E:296:ALA:HA	5:E:299:ILE:HD12	1.92	0.49
7:G:163:LEU:HD23	7:G:249:THR:HG21	1.94	0.49
3:C:116:LEU:HD13	3:C:130:LEU:HD21	1.95	0.49
6:F:124:GLN:O	6:F:154:CYS:N	2.45	0.49
8:H:15:ILE:HB	8:H:339:TRP:HB2	1.94	0.49
3:C:230:ASP:OD1	3:C:240:ARG:NH1	2.45	0.49
6:F:411:ARG:NH1	6:F:412:CYS:O	2.45	0.49
4:D:338:ASN:HD21	5:E:301:LYS:HD3	1.77	0.49
6:F:35:LEU:HA	6:F:45:ILE:HG22	1.94	0.49
6:F:93:MET:HE1	6:F:210:LYS:HB2	1.94	0.49
3:C:91:ASP:OD1	3:C:91:ASP:N	2.46	0.49
1:A:92:LEU:HD12	1:A:122:LEU:HD13	1.95	0.49
1:A:331:SER:OG	2:B:162:ARG:NH2	2.40	0.49
1:A:356:ASP:OD2	1:A:429:ARG:NH1	2.46	0.49
8:H:115:SER:HB3	8:H:139:GLU:HB2	1.95	0.49
2:B:89:VAL:O	2:B:93:ILE:HG12	2.12	0.48
4:D:63:PHE:HB2	4:D:169:ILE:HG12	1.95	0.48
6:F:49:LYS:HE3	6:F:65:THR:HA	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:463:TRP:HE3	1:A:464:LEU:HD22	1.78	0.48
7:G:57:LYS:HZ3	7:G:59:GLN:HG3	1.78	0.48
3:C:206:ARG:NH2	11:C:401:AGS:S1G	2.76	0.48
5:E:13:LEU:HD11	5:E:26:LEU:HD11	1.95	0.48
6:F:16:TYR:HE2	6:F:72:ILE:HG13	1.77	0.48
6:F:412:CYS:SG	6:F:413:LYS:N	2.81	0.48
7:G:206:LYS:HB3	8:H:145:VAL:HG23	1.94	0.48
8:H:230:ILE:HB	8:H:350:SER:HB2	1.94	0.48
2:B:87:ASP:OD2	2:B:90:ARG:NH2	2.47	0.48
4:D:155:ARG:NH1	4:D:158:GLU:OE1	2.46	0.48
4:D:281:ASP:OD1	4:D:281:ASP:N	2.44	0.48
7:G:126:ILE:HG22	7:G:128:GLU:OE1	2.14	0.48
3:C:221:ASN:ND2	3:C:223:ASP:O	2.46	0.48
4:D:40:THR:H	11:D:500:AGS:HN62	1.62	0.48
4:D:85:PRO:HA	4:D:88:MET:HG2	1.96	0.48
7:G:55:VAL:HA	7:G:311:LEU:HD12	1.96	0.48
1:A:96:PHE:HB3	1:A:130:TYR:HE2	1.78	0.47
7:G:34:LYS:HA	7:G:50:ARG:HH12	1.78	0.47
4:D:97:ALA:O	5:E:110:GLN:NE2	2.47	0.47
1:A:277:LEU:HD22	1:A:318:LEU:HD22	1.97	0.47
5:E:50:LYS:NZ	13:E:402:ADP:O3B	2.44	0.47
6:F:160:PHE:HB2	6:F:203:HIS:HB3	1.96	0.47
1:A:84:LYS:NZ	1:A:264:LYS:O	2.39	0.47
2:B:91:ASN:HD21	8:H:99:ARG:HH22	1.63	0.47
2:B:232:HIS:CG	2:B:233:PRO:HD3	2.49	0.47
5:E:39:LEU:HD22	5:E:188:ILE:HD11	1.97	0.47
5:E:13:LEU:HD13	5:E:55:ALA:HB1	1.96	0.47
1:A:239:GLY:O	1:A:241:ASP:N	2.45	0.46
4:D:219:ARG:NH1	4:D:222:ASP:OD2	2.48	0.46
5:E:202:LEU:HB3	5:E:219:LEU:HD22	1.96	0.46
8:H:109:ASP:OD1	8:H:109:ASP:N	2.43	0.46
1:A:207:GLN:HA	8:H:270:VAL:HG21	1.98	0.46
2:B:314:ALA:HB1	3:C:297:VAL:HG22	1.97	0.46
3:C:71:TYR:OH	3:C:111:PHE:O	2.24	0.46
8:H:94:PHE:HB2	8:H:152:PHE:HB2	1.97	0.46
8:H:140:MET:HG3	8:H:144:ILE:HG23	1.98	0.46
4:D:229:ARG:NH1	11:D:500:AGS:O2A	2.49	0.46
4:D:275:VAL:HG21	4:D:347:LEU:HD22	1.97	0.46
5:E:212:GLN:HB2	5:E:247:ALA:HA	1.96	0.46
8:H:4:LYS:HA	8:H:66:PHE:HA	1.96	0.46
3:C:60:THR:HA	3:C:63:ILE:HG22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:271:GLY:HA3	4:D:190:LYS:HD2	1.96	0.46
6:F:267:VAL:HG22	6:F:269:LYS:H	1.80	0.46
1:A:187:GLU:OE1	11:A:701:AGS:O2B	2.34	0.46
1:A:435:GLY:O	1:A:438:HIS:NE2	2.49	0.46
2:B:173:LYS:O	2:B:177:GLN:HG3	2.16	0.45
4:D:110:VAL:HG12	4:D:156:THR:HG21	1.97	0.45
6:F:214:ARG:NH2	6:F:217:ASP:OD1	2.44	0.45
4:D:99:ASP:OD1	4:D:99:ASP:N	2.45	0.45
8:H:53:GLN:HG3	8:H:372:GLU:HB2	1.98	0.45
6:F:35:LEU:N	6:F:93:MET:O	2.38	0.45
4:D:263:VAL:HG13	4:D:295:TRP:HZ3	1.80	0.45
5:E:146:LEU:HB3	5:E:150:ALA:HB3	1.99	0.45
2:B:301:GLU:OE1	3:C:308:TYR:OH	2.27	0.45
3:C:318:ILE:HA	4:D:305:HIS:CE1	2.52	0.45
4:D:294:GLY:HA3	5:E:44:PRO:HD3	1.97	0.45
6:F:230:LEU:HB2	6:F:434:HIS:HB3	1.98	0.45
5:E:36:LEU:HD11	5:E:39:LEU:HD11	1.98	0.45
1:A:224:THR:HG21	2:B:153:PRO:HG3	1.98	0.45
3:C:195:LYS:HA	3:C:195:LYS:HD3	1.78	0.45
6:F:41:ARG:HD3	6:F:461:ARG:HH22	1.82	0.45
3:C:288:TYR:O	3:C:296:ARG:NH2	2.49	0.45
1:A:448:LYS:O	1:A:452:LEU:HG	2.17	0.45
4:D:83:TYR:HB3	4:D:87:LEU:HB2	1.98	0.45
2:B:77:GLU:HG3	2:B:112:ILE:HB	1.99	0.44
2:B:203:ARG:NH1	3:C:160:ARG:HE	2.15	0.44
2:B:308:GLN:NE2	3:C:307:GLU:OE1	2.48	0.44
4:D:143:ASP:OD1	4:D:143:ASP:N	2.49	0.44
5:E:208:ASN:O	5:E:210:ARG:NH1	2.50	0.44
3:C:256:TRP:NE1	4:D:320:ASN:OD1	2.36	0.44
6:F:265:MET:HG3	6:F:282:LYS:HD2	1.98	0.44
7:G:208:PRO:HG3	7:G:213:ILE:HD11	2.00	0.44
9:P:6:DC:H2"	9:P:7:DA:C8	2.52	0.44
1:A:178:MET:O	1:A:180:ASN:N	2.49	0.44
4:D:236:GLN:NE2	5:E:35:ASP:O	2.50	0.44
2:B:53:ILE:N	11:B:401:AGS:O2B	2.50	0.44
4:D:96:ASN:HB3	5:E:156:ARG:HG2	2.00	0.44
1:A:166:PHE:HD2	1:A:204:LEU:HD13	1.82	0.44
1:A:324:SER:OG	2:B:32:ARG:NE	2.50	0.44
7:G:153:SER:H	7:G:260:ASP:HA	1.83	0.44
7:G:175:CYS:HA	7:G:198:SER:HB3	2.00	0.44
8:H:347:ASP:OD1	8:H:347:ASP:N	2.49	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:470:LYS:HG3	1:A:471:TYR:CD2	2.53	0.43
1:A:487:TYR:CZ	5:E:257:PRO:HG3	2.54	0.43
1:A:114:SER:HB3	1:A:118:VAL:HG23	2.01	0.43
6:F:35:LEU:HB2	6:F:93:MET:HG3	2.00	0.43
8:H:238:LYS:HE2	8:H:334:THR:HG22	1.99	0.43
2:B:124:GLN:HB3	2:B:154:LEU:HD11	2.00	0.43
2:B:318:LYS:HD2	3:C:297:VAL:HG11	2.00	0.43
5:E:107:ILE:HG13	5:E:108:VAL:N	2.34	0.43
6:F:68:LEU:HD13	6:F:466:TYR:CD2	2.54	0.43
8:H:141:ASP:OD1	8:H:141:ASP:N	2.51	0.43
3:C:177:ARG:HD2	3:C:177:ARG:HA	1.80	0.43
7:G:190:ASN:HB3	7:G:217:LEU:HD23	1.99	0.43
1:A:155:CYS:O	1:A:157:VAL:N	2.44	0.43
1:A:273:LEU:HD21	1:A:311:ILE:HA	2.01	0.43
1:A:387:PHE:HZ	1:A:432:SER:HA	1.84	0.42
3:C:286:GLU:HA	3:C:296:ARG:HH12	1.83	0.42
5:E:272:LYS:HB3	5:E:272:LYS:HE2	1.77	0.42
6:F:411:ARG:HH21	6:F:468:ILE:HG21	1.83	0.42
1:A:77:GLN:O	11:A:701:AGS:N6	2.52	0.42
1:A:361:ASN:ND2	2:B:275:LYS:O	2.48	0.42
4:D:271:ILE:HG12	4:D:286:TYR:HE2	1.84	0.42
5:E:193:PRO:HG2	5:E:230:LEU:HD21	2.00	0.42
1:A:383:ASN:HB3	1:A:441:VAL:HG12	2.01	0.42
2:B:10:PRO:HD3	3:C:142:ARG:NH2	2.34	0.42
7:G:320:ALA:O	7:G:324:ILE:HG12	2.20	0.42
5:E:148:LYS:HA	5:E:151:GLN:HB2	2.00	0.42
1:A:104:ILE:HG22	1:A:219:LEU:HB3	2.01	0.42
6:F:162:GLU:HG2	6:F:201:ILE:HB	2.01	0.42
6:F:220:ILE:HG13	6:F:221:GLN:HG2	2.02	0.42
8:H:327:LYS:HE2	8:H:327:LYS:HB3	1.82	0.42
6:F:68:LEU:HD13	6:F:466:TYR:HD2	1.84	0.42
6:F:263:HIS:HB3	6:F:284:ILE:HG23	2.01	0.42
8:H:113:ILE:HA	8:H:140:MET:HA	2.01	0.42
8:H:272:GLY:N	8:H:276:ASP:O	2.53	0.42
4:D:95:LEU:HA	4:D:95:LEU:HD23	1.87	0.42
4:D:101:ARG:HH22	4:D:144:SER:HG	1.65	0.42
7:G:264:VAL:HG12	7:G:311:LEU:HD23	2.01	0.42
2:B:96:PHE:CE2	2:B:111:VAL:HG22	2.55	0.41
5:E:4:TRP:HZ3	5:E:238:GLU:HA	1.84	0.41
6:F:442:CYS:HA	6:F:465:ILE:HG22	2.01	0.41
2:B:66:LEU:HD23	2:B:67:LEU:HG	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:35:ASP:HB2	7:G:85:LYS:HD2	2.01	0.41
3:C:277:LEU:O	3:C:281:ILE:HG12	2.20	0.41
3:C:318:ILE:HA	4:D:305:HIS:HE1	1.84	0.41
5:E:7:LYS:HG2	5:E:8:TYR:CD1	2.55	0.41
5:E:18:HIS:HB2	5:E:52:ARG:HH22	1.85	0.41
5:E:36:LEU:HA	5:E:37:PRO:HD3	1.94	0.41
8:H:365:GLN:HE22	8:H:370:LYS:NZ	2.18	0.41
3:C:206:ARG:NH1	4:D:158:GLU:OE2	2.54	0.41
4:D:115:ARG:HA	7:G:137:ILE:HD12	2.02	0.41
5:E:106:ARG:HD3	5:E:149:ASP:HB3	2.02	0.41
1:A:409:ASN:HD22	1:A:409:ASN:HA	1.70	0.41
7:G:31:PHE:HB3	7:G:52:ASN:HD21	1.85	0.41
4:D:305:HIS:O	4:D:309:ILE:HG12	2.20	0.41
5:E:346:ILE:O	5:E:350:MET:HG3	2.19	0.41
6:F:460:GLU:HG3	6:F:461:ARG:H	1.86	0.41
8:H:258:VAL:HG23	8:H:259:HIS:H	1.85	0.41
5:E:41:LEU:HG	5:E:188:ILE:HB	2.03	0.41
5:E:258:ASP:N	5:E:258:ASP:OD1	2.51	0.41
5:E:259:TRP:CH2	5:E:294:ILE:HG21	2.56	0.41
1:A:346:VAL:HG11	1:A:421:LEU:HD22	2.01	0.41
1:A:422:ARG:HE	2:B:285:ARG:HD2	1.86	0.41
4:D:95:LEU:HD11	4:D:109:LYS:HD3	2.01	0.41
4:D:155:ARG:HD2	4:D:155:ARG:HA	1.84	0.41
6:F:86:ARG:O	6:F:88:LEU:HD23	2.21	0.41
6:F:202:MET:HB2	8:H:287:THR:HB	2.03	0.41
6:F:214:ARG:HG2	6:F:216:GLN:H	1.85	0.41
8:H:208:ASN:C	8:H:208:ASN:HD22	2.29	0.41
1:A:216:LEU:HD12	1:A:217:PRO:HD2	2.03	0.40
1:A:255:LEU:HD23	1:A:255:LEU:HA	1.88	0.40
1:A:65:GLN:OE1	2:B:139:ARG:NH1	2.55	0.40
3:C:114:ILE:HG13	3:C:143:PHE:CE1	2.56	0.40
4:D:291:MET:HG2	4:D:340:HIS:CG	2.56	0.40
7:G:313:LYS:HE2	7:G:313:LYS:HB3	1.83	0.40
3:C:130:LEU:O	3:C:134:ILE:HG23	2.21	0.40
6:F:111:MET:HE2	6:F:111:MET:HA	2.02	0.40
8:H:326:LEU:O	8:H:330:LYS:N	2.53	0.40
2:B:136:ASN:OD1	2:B:137:SER:N	2.54	0.40
5:E:1:MET:HG3	5:E:7:LYS:HD3	2.04	0.40
1:A:392:PHE:HE2	1:A:397:ALA:HB2	1.86	0.40
1:A:491:ILE:HD12	5:E:238:GLU:HG2	2.03	0.40
4:D:202:ARG:O	4:D:206:GLU:HG3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:75:PHE:CG	5:E:108:VAL:HG12	2.57	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	414/659 (63%)	390 (94%)	24 (6%)	0	100	100
2	B	315/323 (98%)	308 (98%)	7 (2%)	0	100	100
3	C	323/340 (95%)	307 (95%)	16 (5%)	0	100	100
4	D	328/353 (93%)	313 (95%)	15 (5%)	0	100	100
5	E	337/354 (95%)	317 (94%)	20 (6%)	0	100	100
6	F	255/460 (55%)	231 (91%)	24 (9%)	0	100	100
7	G	288/401 (72%)	269 (93%)	19 (7%)	0	100	100
8	H	256/593 (43%)	242 (94%)	14 (6%)	0	100	100
All	All	2516/3483 (72%)	2377 (94%)	139 (6%)	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	385/612 (63%)	385 (100%)	0	100	100
2	B	277/283 (98%)	277 (100%)	0	100	100
3	C	281/296 (95%)	281 (100%)	0	100	100
4	D	294/312 (94%)	294 (100%)	0	100	100
5	E	313/324 (97%)	313 (100%)	0	100	100
6	F	248/411 (60%)	248 (100%)	0	100	100
7	G	266/369 (72%)	265 (100%)	1 (0%)	84	85
8	H	249/541 (46%)	249 (100%)	0	100	100
All	All	2313/3148 (74%)	2312 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	G	88	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	77	GLN
1	A	102	HIS
1	A	158	ASN
1	A	180	ASN
1	A	234	ASN
1	A	266	ASN
1	A	357	ASN
1	A	369	ASN
1	A	417	ASN
2	B	64	HIS
2	B	146	GLN
2	B	148	ASN
2	B	320	ASN
3	C	12	ASN
3	C	83	ASN
3	C	95	ASN
4	D	124	HIS
4	D	305	HIS
4	D	334	ASN
5	E	74	GLN
6	F	24	ASN

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Mol	Chain	Res	Type
7	G	52	ASN
7	G	88	HIS
8	H	243	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 4 are monoatomic - leaving 6 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
14	PO4	E	403	-	4,4,4	0.96	0	6,6,6	0.46	0
11	AGS	C	401	12	32,33,33	0.46	1 (3%)	45,52,52	0.66	1 (2%)
13	ADP	E	402	-	28,29,29	1.42	4 (14%)	43,45,45	1.83	10 (23%)
11	AGS	D	500	12	32,33,33	0.47	1 (3%)	45,52,52	0.61	1 (2%)
11	AGS	B	401	12	32,33,33	0.47	1 (3%)	45,52,52	0.67	1 (2%)
11	AGS	A	701	12	32,33,33	0.48	1 (3%)	45,52,52	0.65	1 (2%)

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
11	AGS	C	401	12	-	5/21/38/38	0/3/3/3
13	ADP	E	402	-	-	0/16/32/32	0/3/3/3
11	AGS	D	500	12	-	5/21/38/38	0/3/3/3
11	AGS	B	401	12	-	7/21/38/38	0/3/3/3
11	AGS	A	701	12	-	5/21/38/38	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	E	402	ADP	C5-C4	4.70	1.47	1.39
13	E	402	ADP	C5-C6	2.74	1.48	1.41
13	E	402	ADP	C8-N7	2.35	1.36	1.31
13	E	402	ADP	C5-N7	-2.24	1.35	1.39
11	B	401	AGS	PG-S1G	2.16	1.95	1.90
11	D	500	AGS	PG-S1G	2.15	1.95	1.90
11	A	701	AGS	PG-S1G	2.15	1.95	1.90
11	C	401	AGS	PG-S1G	2.11	1.95	1.90

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	E	402	ADP	C5-C4-N3	-5.85	118.66	126.72
13	E	402	ADP	N3-C4-N9	4.63	135.05	127.17
13	E	402	ADP	C2-N3-C4	3.70	120.87	111.83
11	B	401	AGS	PB-O3B-PG	-3.58	120.08	133.17
11	C	401	AGS	PB-O3B-PG	-3.54	120.22	133.17
13	E	402	ADP	C4-C5-N7	-3.48	106.60	110.58
11	A	701	AGS	PB-O3B-PG	-3.43	120.62	133.17
13	E	402	ADP	N3-C2-N1	-3.21	123.72	128.58
11	D	500	AGS	PB-O3B-PG	-3.19	121.51	133.17
13	E	402	ADP	C4-N9-C8	2.68	108.55	105.74
13	E	402	ADP	C5-N7-C8	2.56	107.47	103.45
13	E	402	ADP	C3'-C2'-C1'	2.26	105.73	101.46
13	E	402	ADP	C6-C5-N7	2.07	136.09	132.09
13	E	402	ADP	N9-C8-N7	-2.00	111.09	113.94

There are no chirality outliers.

All (22) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	A	701	AGS	C5'-O5'-PA-O2A
11	A	701	AGS	C5'-O5'-PA-O3A
11	B	401	AGS	PB-O3B-PG-O2G
11	B	401	AGS	PB-O3B-PG-O3G
11	B	401	AGS	C5'-O5'-PA-O1A
11	B	401	AGS	C5'-O5'-PA-O3A
11	B	401	AGS	O4'-C4'-C5'-O5'
11	C	401	AGS	PB-O3B-PG-O2G
11	C	401	AGS	C5'-O5'-PA-O1A
11	C	401	AGS	C5'-O5'-PA-O2A
11	C	401	AGS	C5'-O5'-PA-O3A
11	D	500	AGS	PB-O3B-PG-O2G
11	D	500	AGS	PB-O3B-PG-O3G
11	D	500	AGS	C5'-O5'-PA-O1A
11	B	401	AGS	C3'-C4'-C5'-O5'
11	A	701	AGS	O4'-C4'-C5'-O5'
11	A	701	AGS	C5'-O5'-PA-O1A
11	B	401	AGS	C5'-O5'-PA-O2A
11	D	500	AGS	C5'-O5'-PA-O3A
11	D	500	AGS	PG-O3B-PB-O2B
11	C	401	AGS	C4'-C5'-O5'-PA
11	A	701	AGS	PA-O3A-PB-O2B

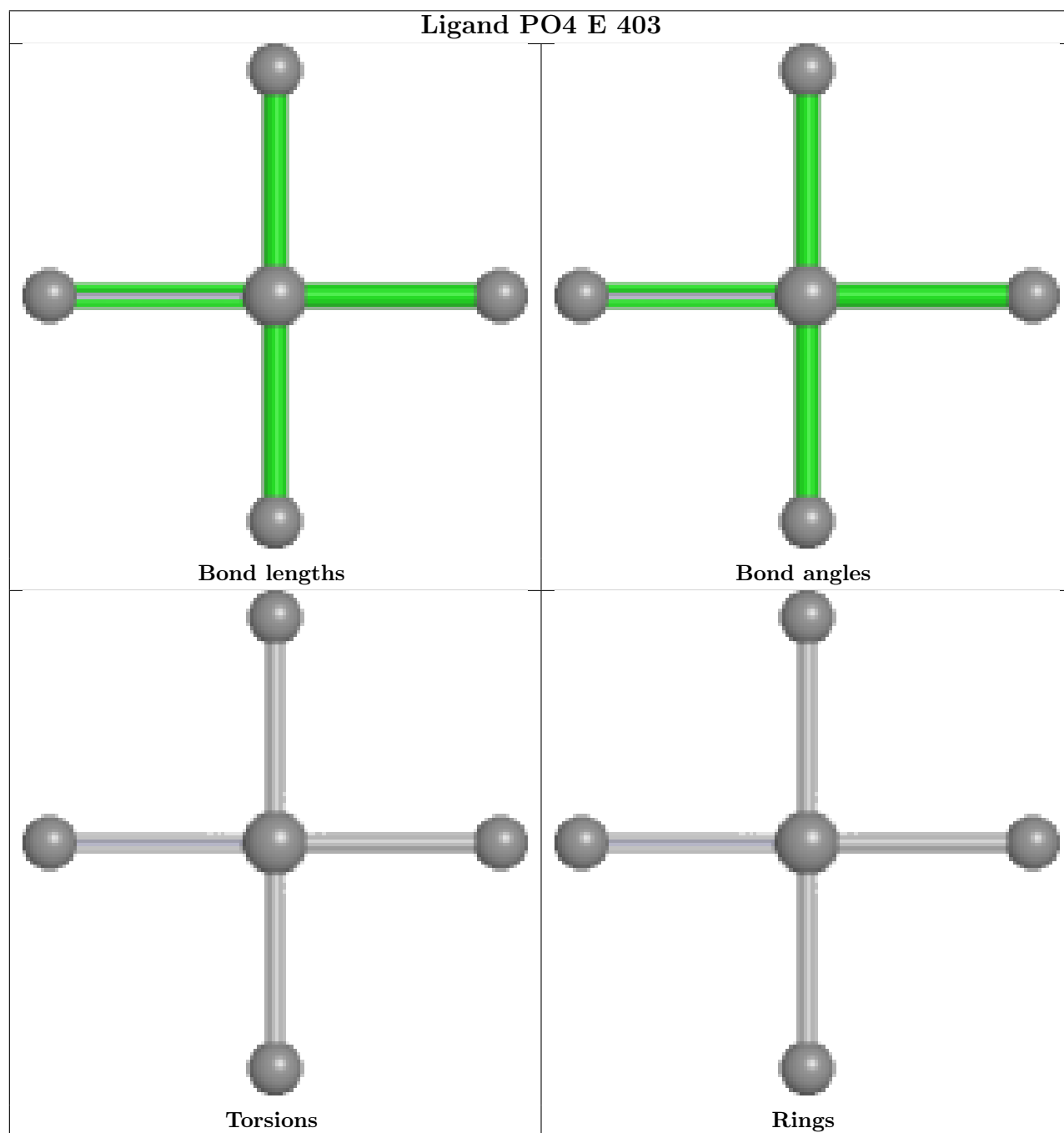
There are no ring outliers.

5 monomers are involved in 15 short contacts:

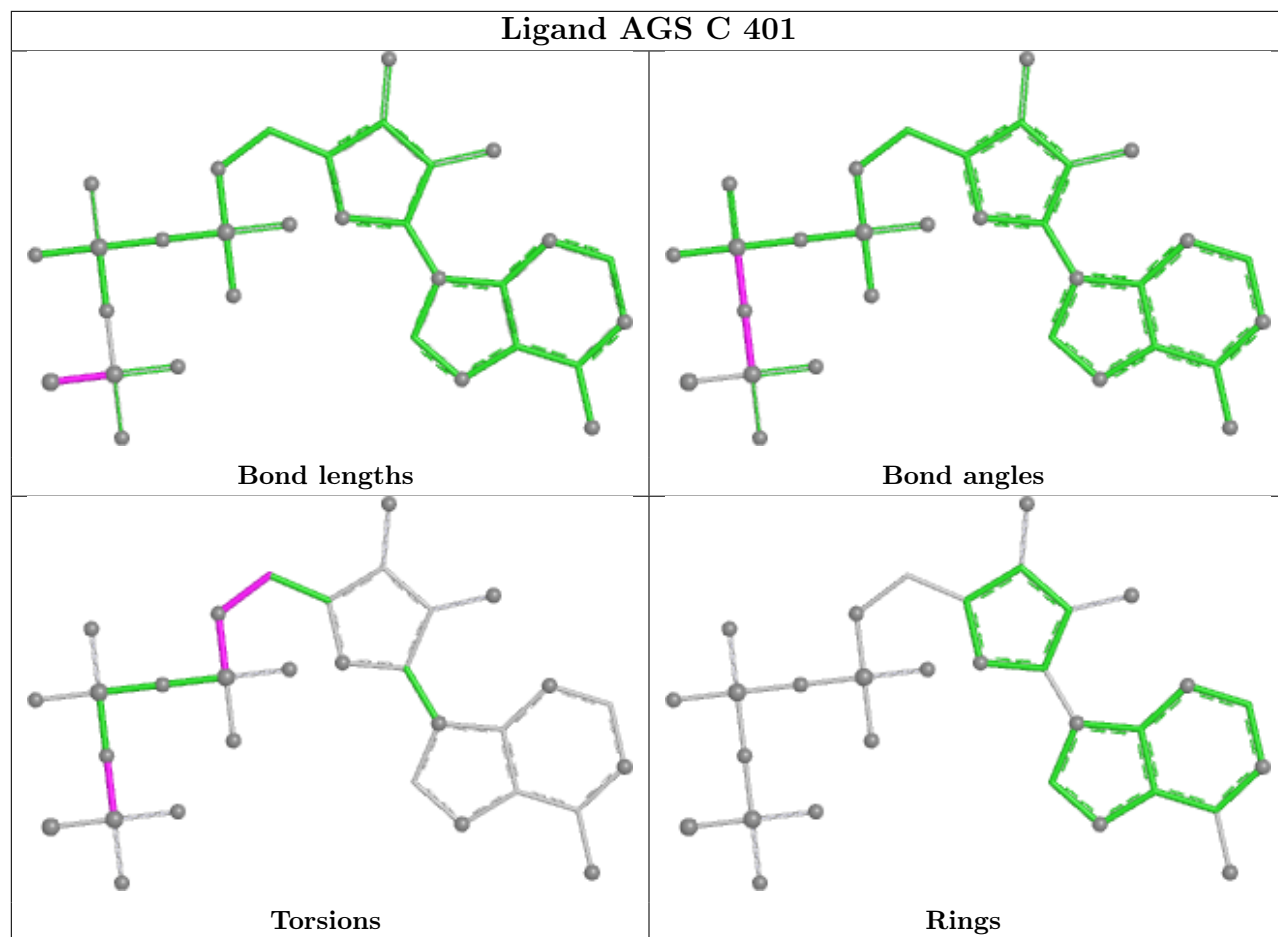
Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	C	401	AGS	3	0
13	E	402	ADP	1	0
11	D	500	AGS	4	0
11	B	401	AGS	4	0
11	A	701	AGS	3	0

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.

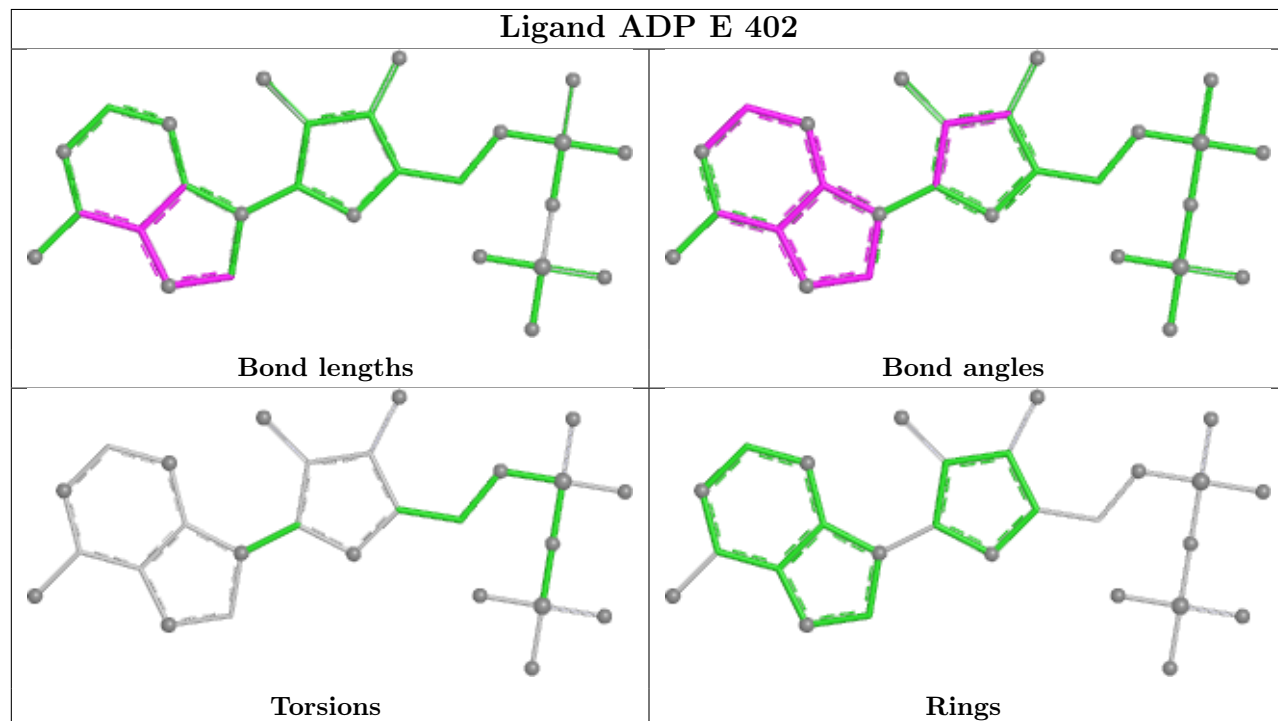
The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

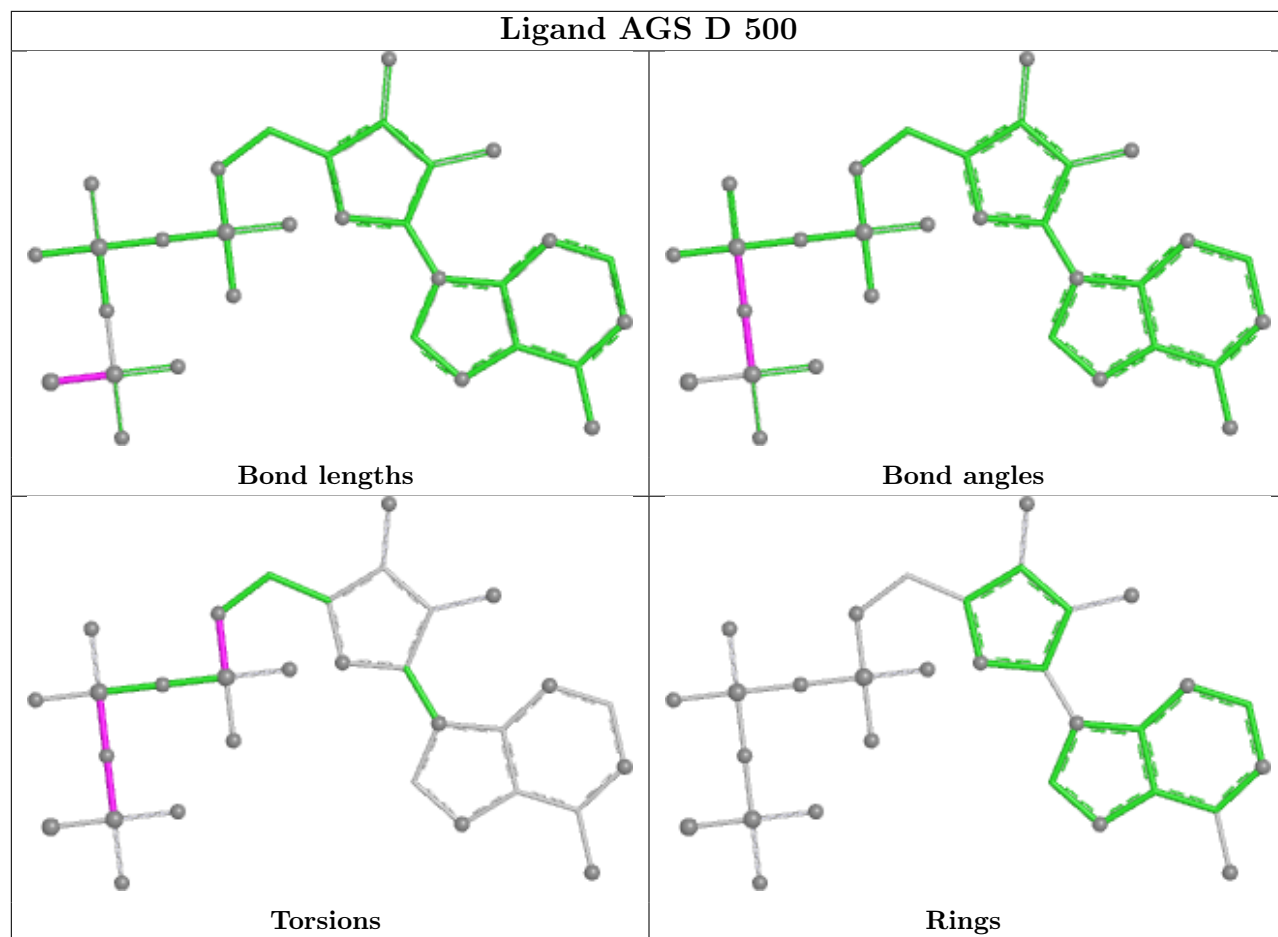


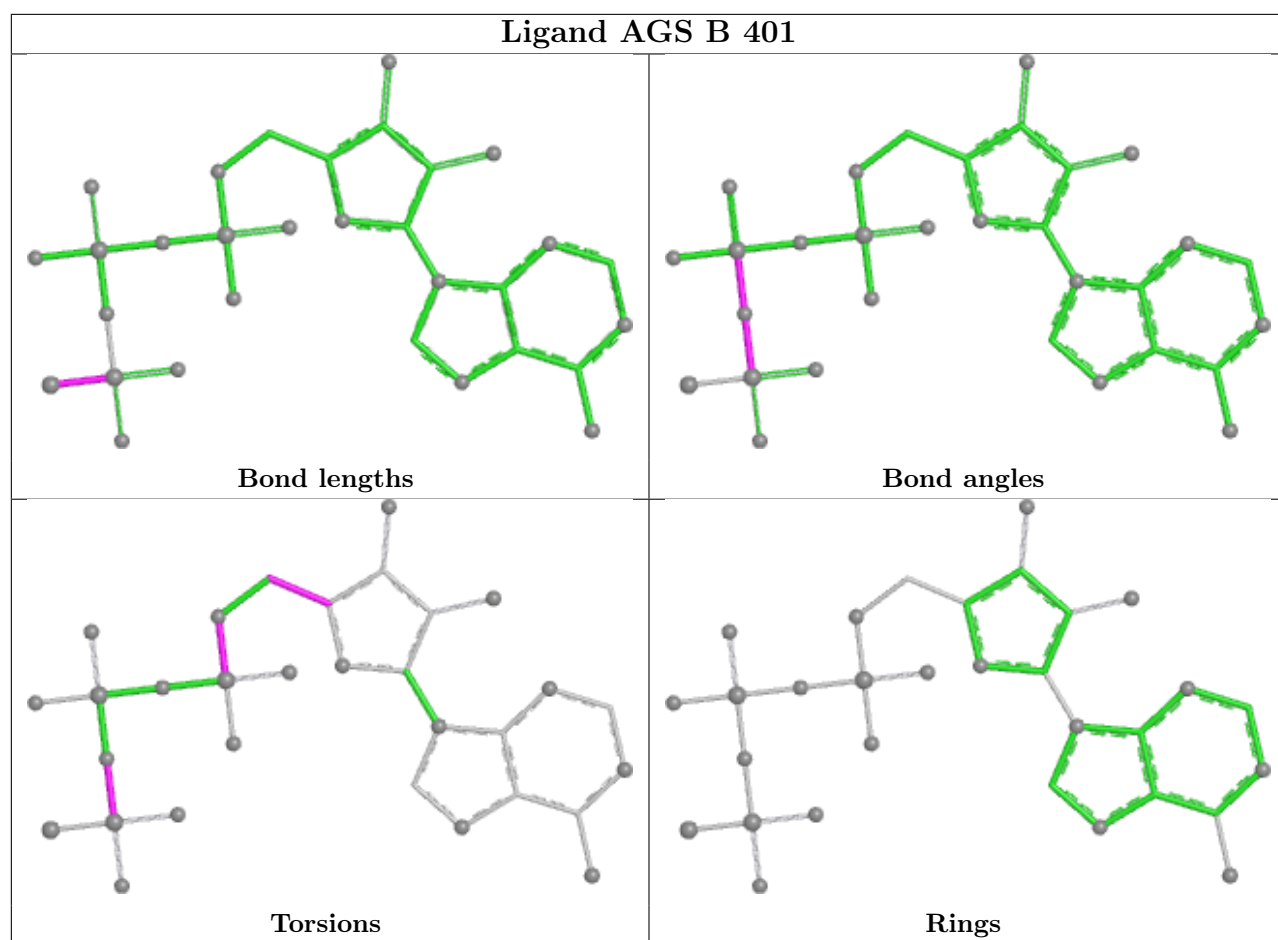
Ligand AGS C 401

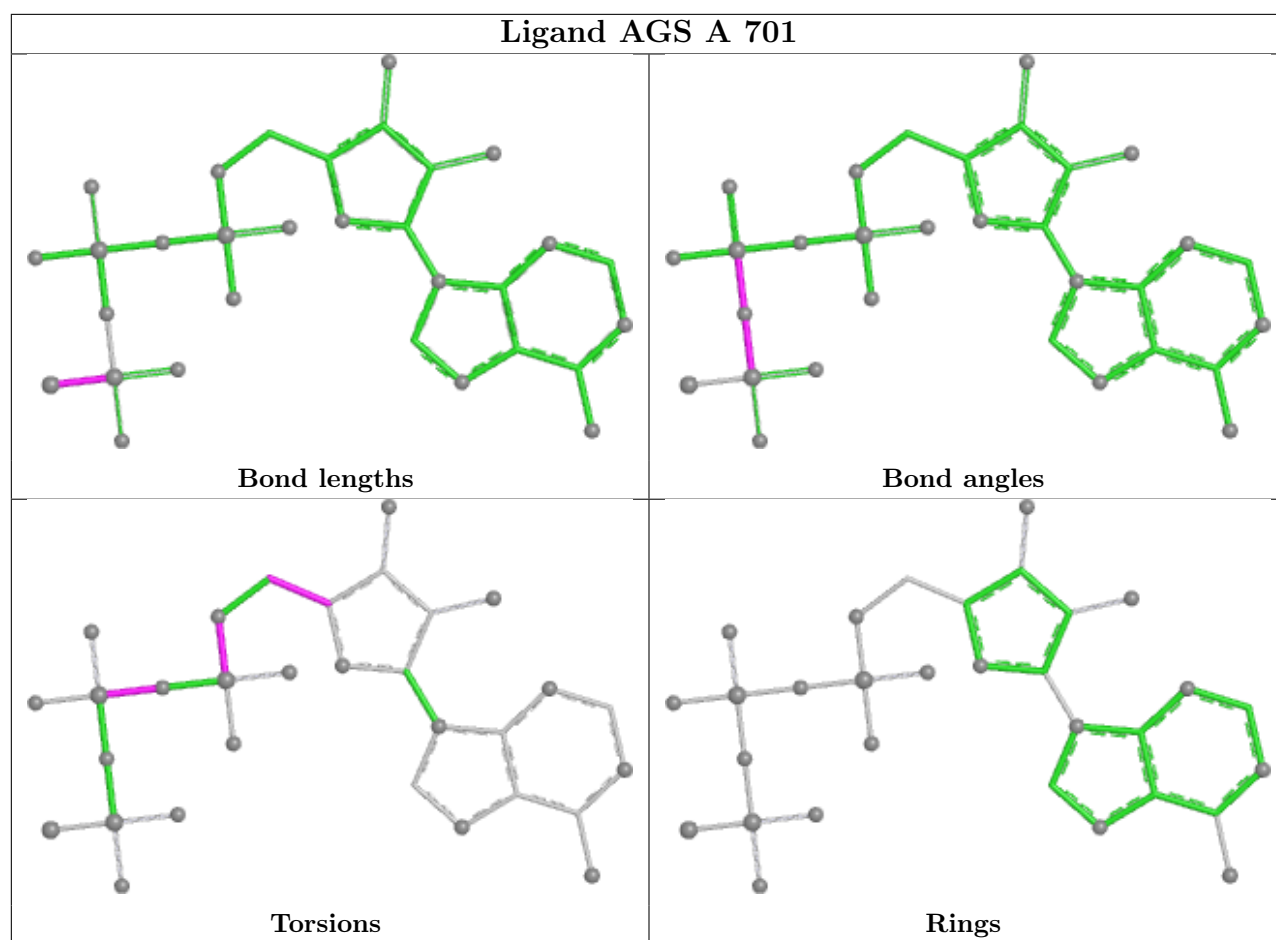


Ligand ADP E 402









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.

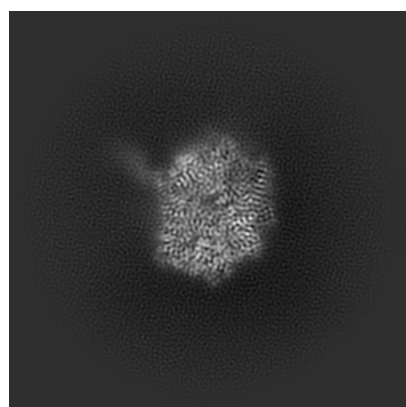
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-25121. These allow visual inspection of the internal detail of the map and identification of artifacts.

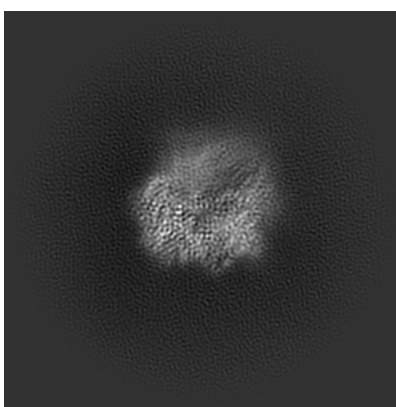
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

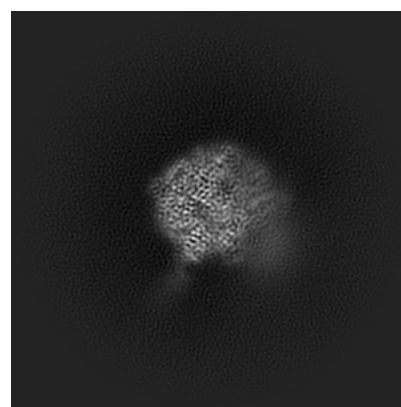
6.1.1 Primary map



X



Y

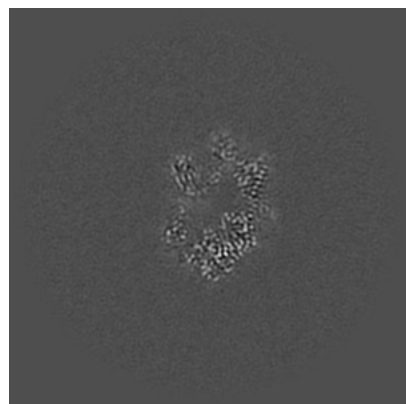


Z

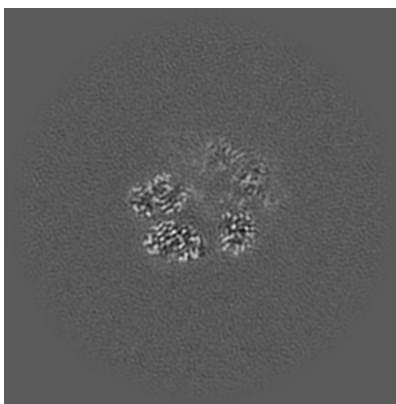
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

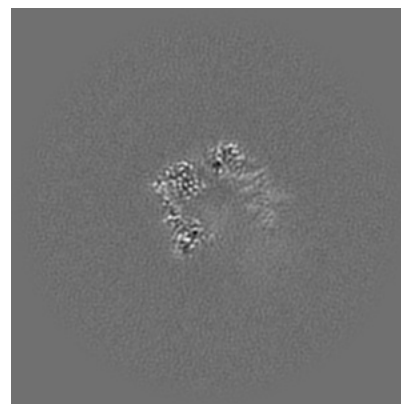
6.2.1 Primary map



X Index: 200



Y Index: 200

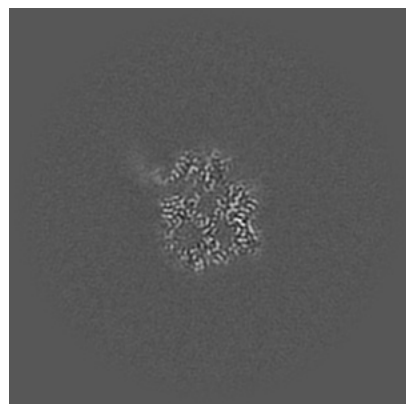


Z Index: 200

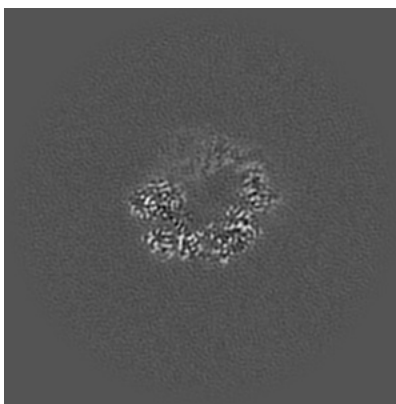
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

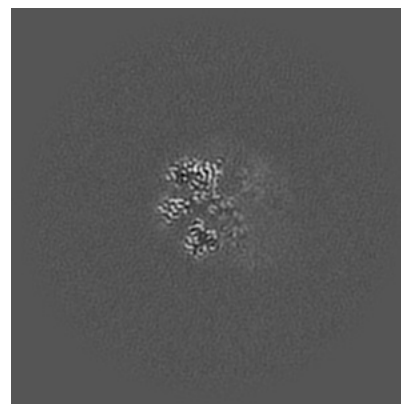
6.3.1 Primary map



X Index: 174



Y Index: 207

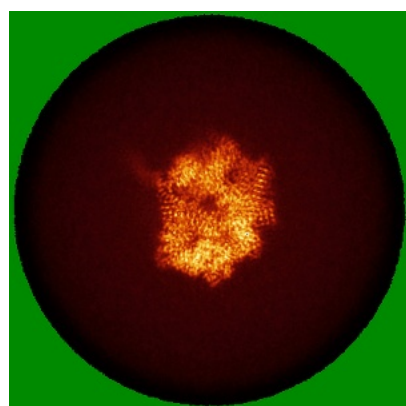


Z Index: 176

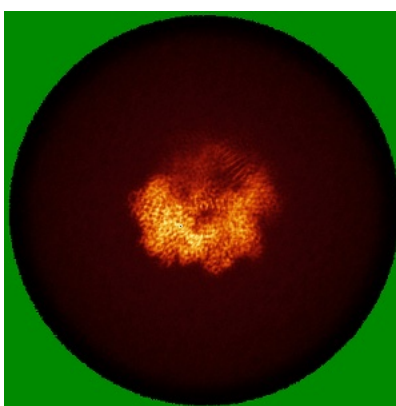
The images above show the largest variance slices of the map in three orthogonal directions.

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

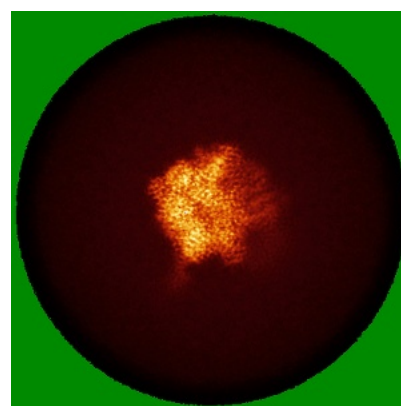
6.4.1 Primary map



X



Y



Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.085. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

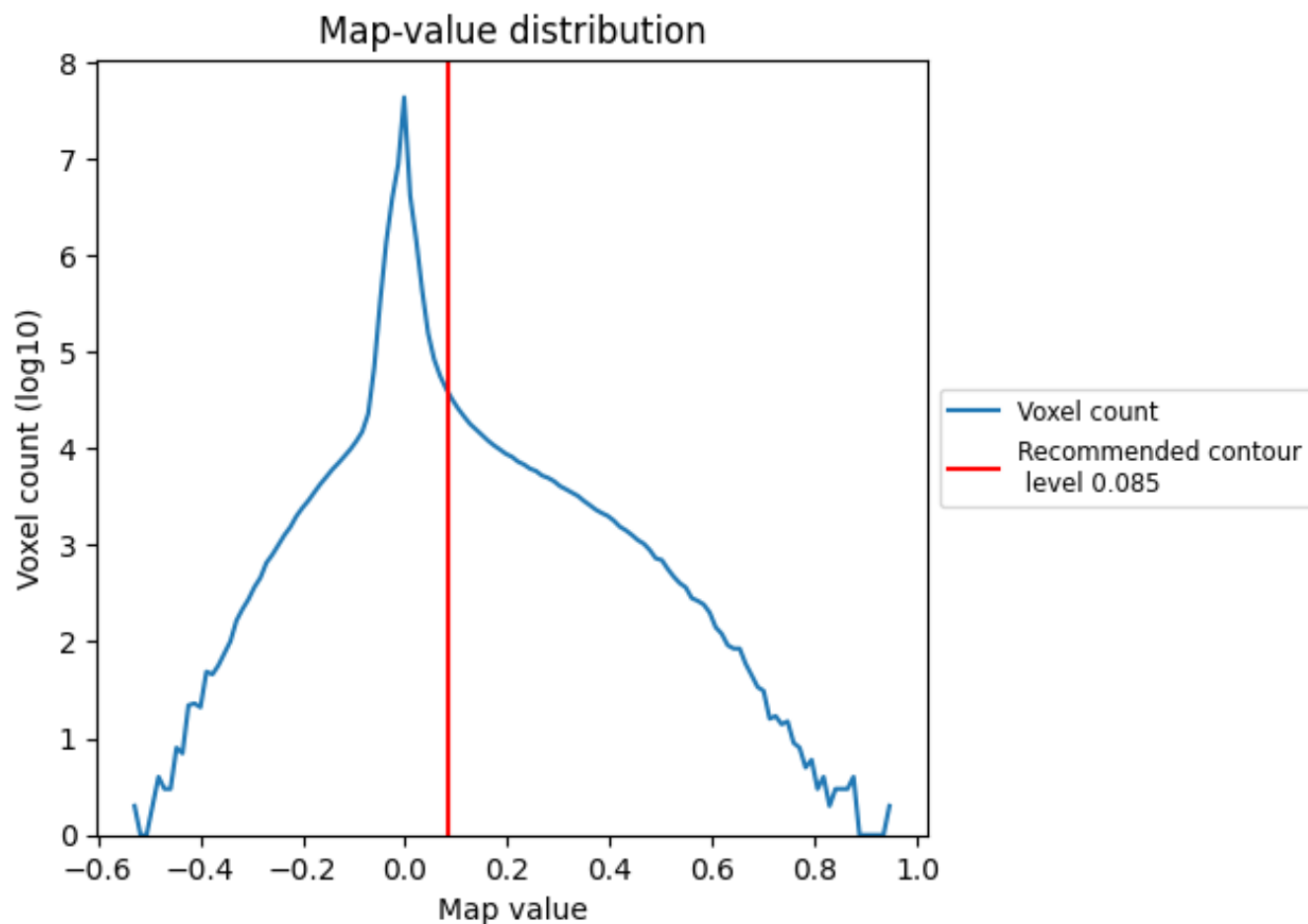
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

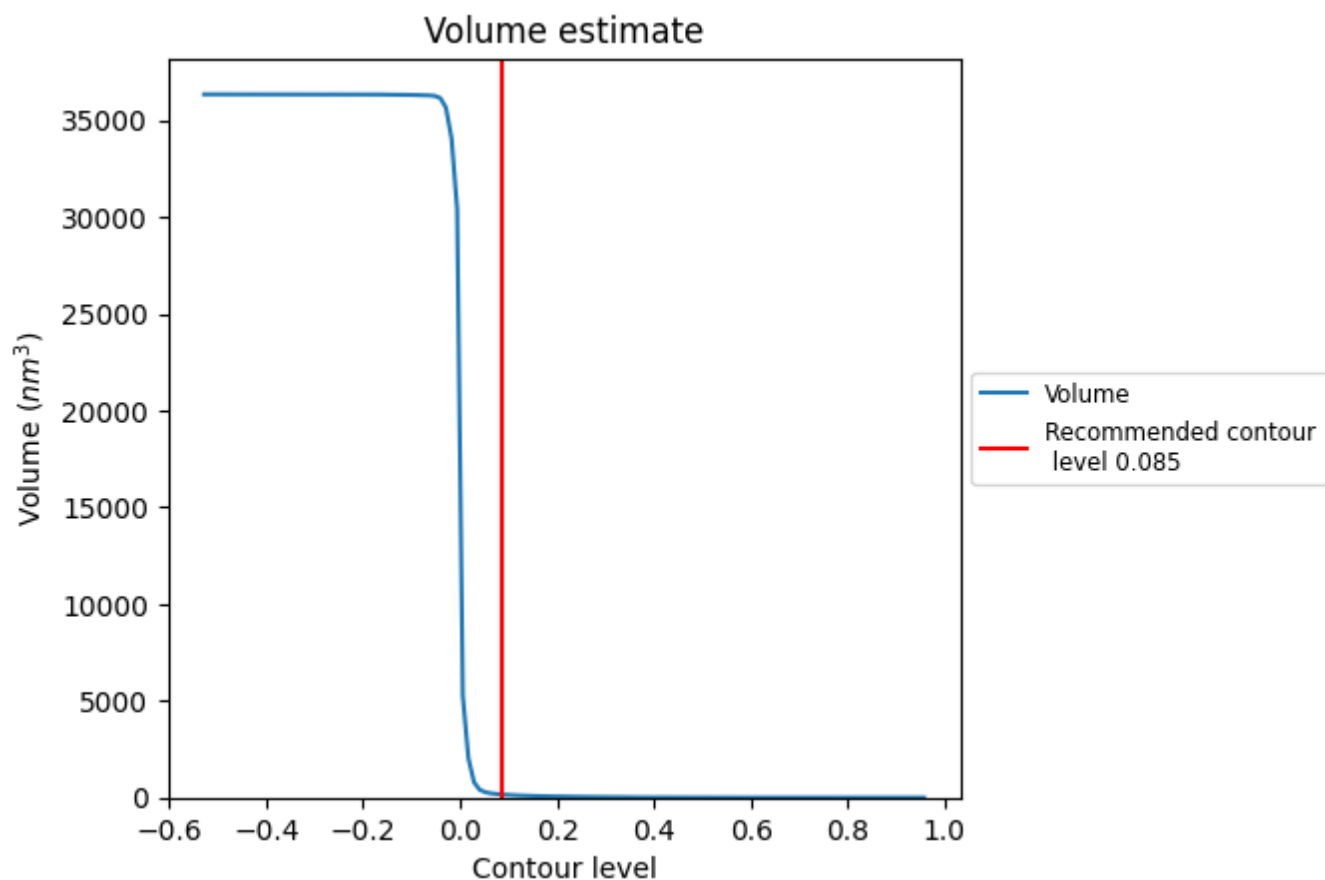
This section contains the results of statistical analysis of the map.

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.

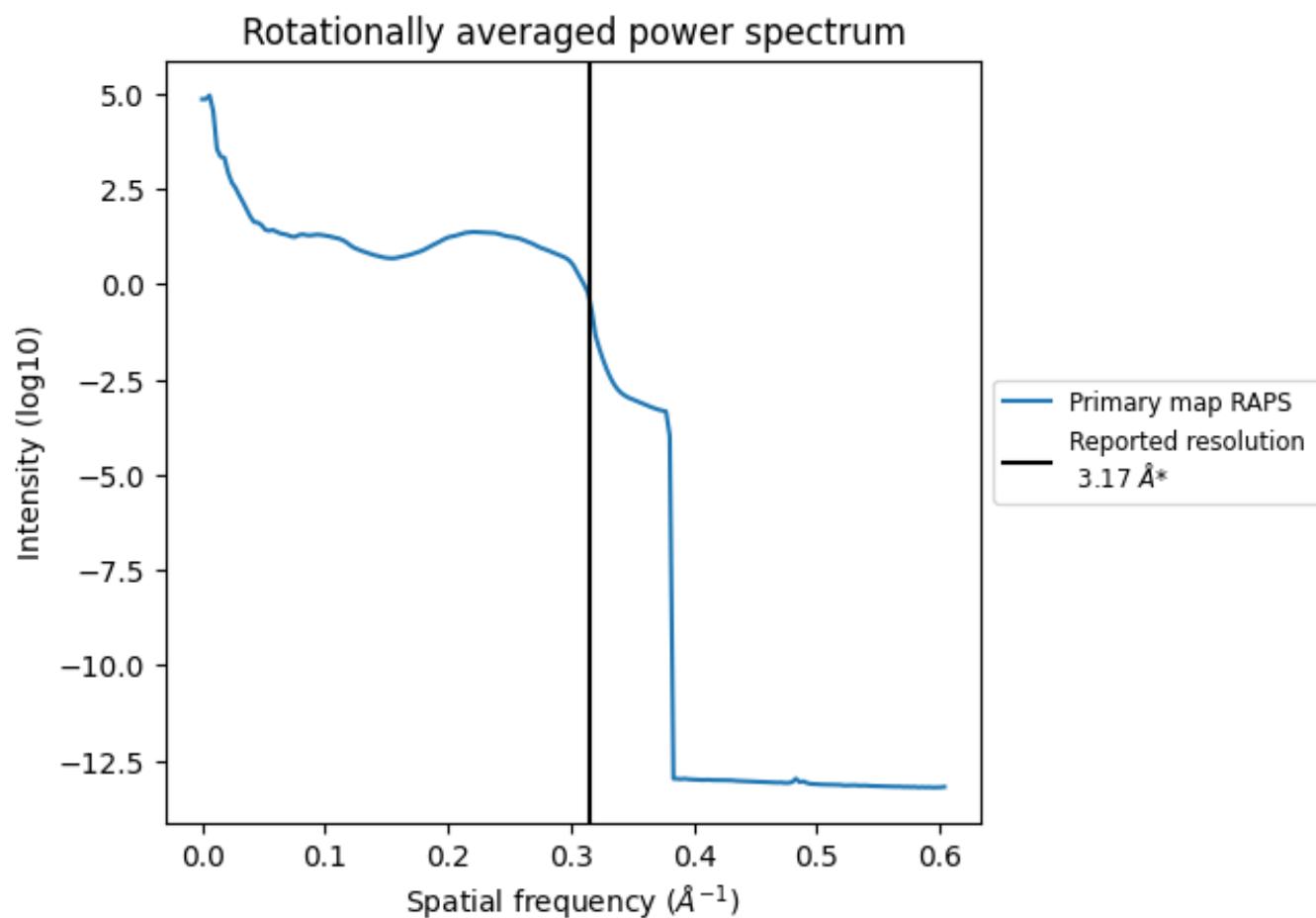
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 160 nm³; this corresponds to an approximate mass of 145 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 0.315 Å⁻¹

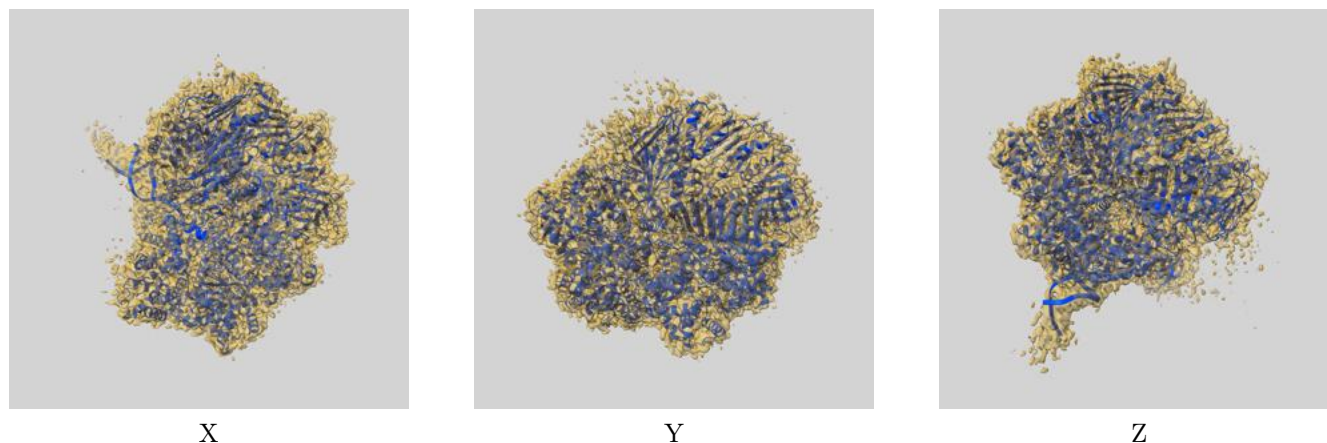
8 Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

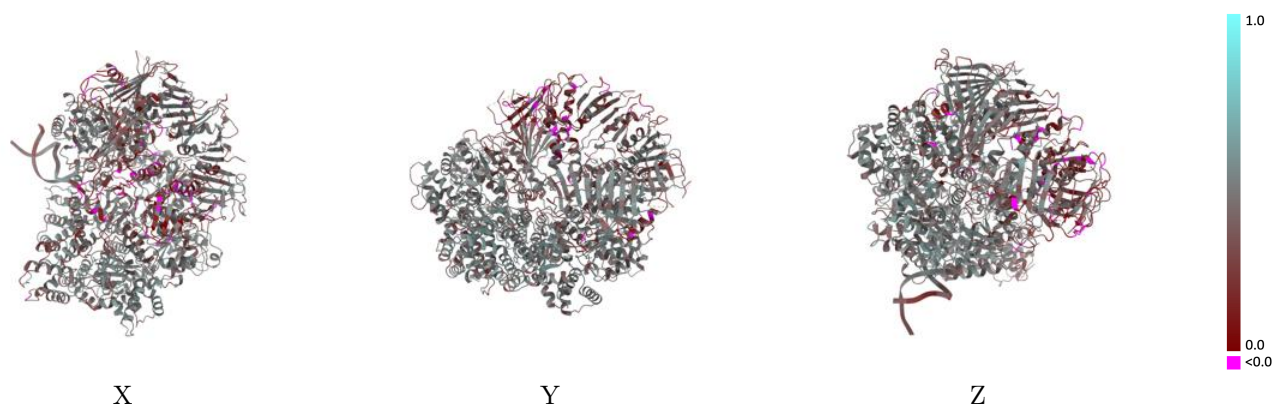
This section contains information regarding the fit between EMDB map EMD-25121 and PDB model 7SGZ. Per-residue inclusion information can be found in section [3](#) on page [9](#).

9.1 Map-model overlay [i](#)



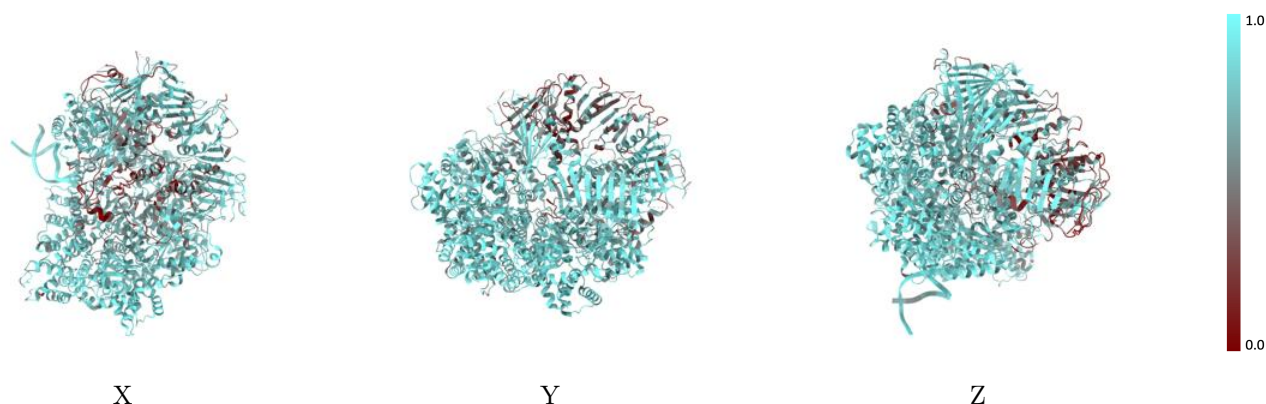
The images above show the 3D surface view of the map at the recommended contour level 0.085 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



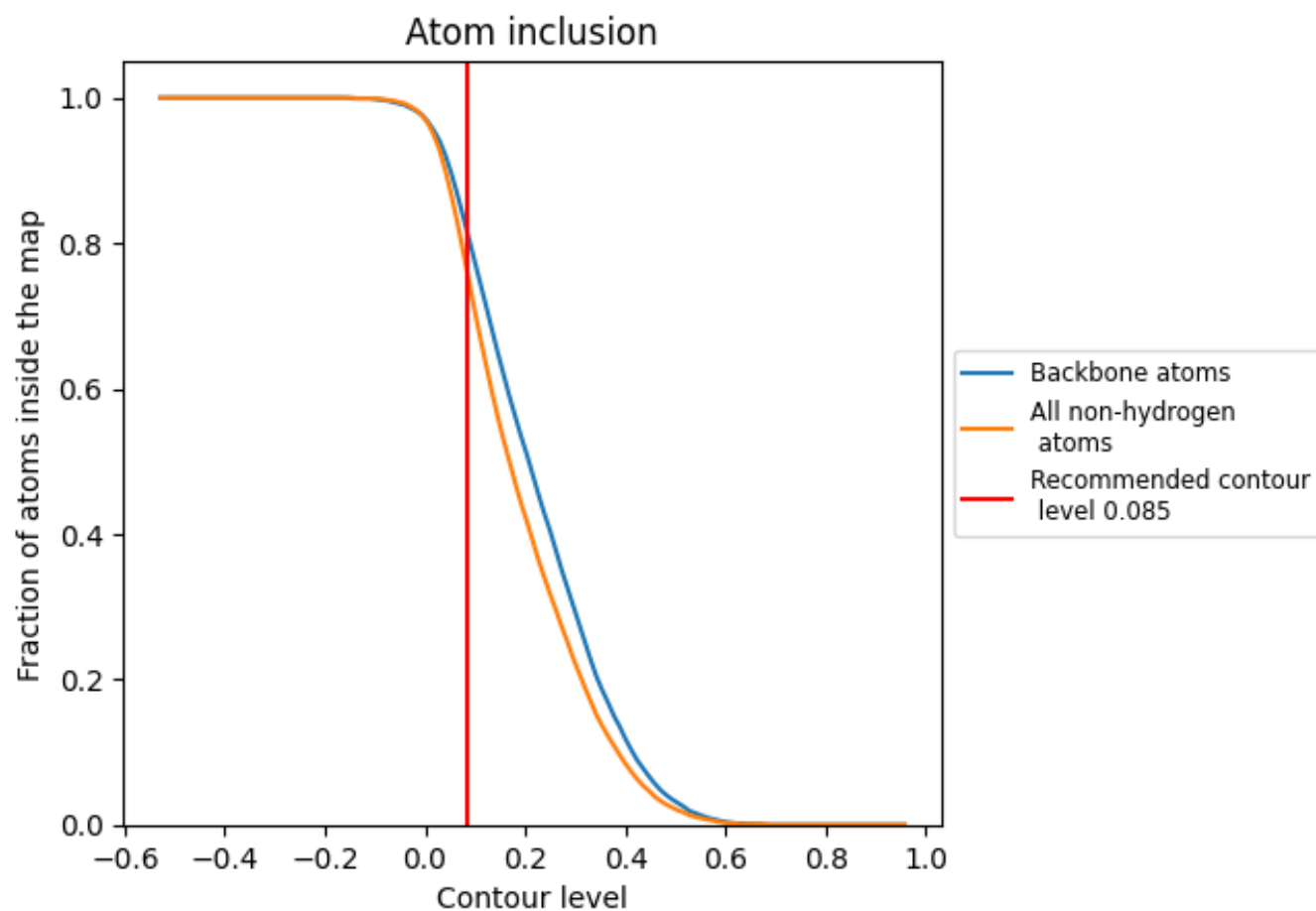
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.085).

9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 76% 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 (0.085) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7580	0.4120
A	0.7840	0.4320
B	0.8320	0.4600
C	0.8460	0.4670
D	0.8700	0.4790
E	0.8070	0.4290
F	0.4440	0.2300
G	0.7290	0.3970
H	0.6600	0.3630
P	0.7970	0.3670
T	0.8220	0.4030

1.0

0.0

<0.0