



Full wwPDB EM Validation Report ⓘ

Nov 9, 2025 – 06:34 am GMT

PDB ID : 9QXX / pdb_00009qxx
EMDB ID : EMD-53447
Title : JetABC DNA loaded state dimer
Authors : Roisne-Hamelin, F.; Gruber, S.
Deposited on : 2025-04-16
Resolution : 3.70 Å (reported)
Based on initial models : ?, 8as8, 8bfn, 8q72

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:

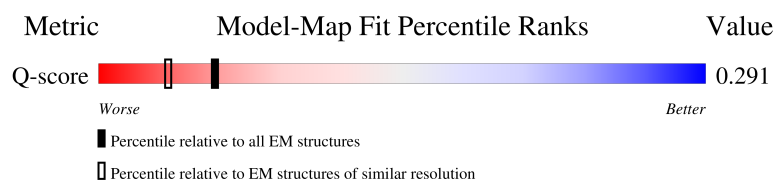
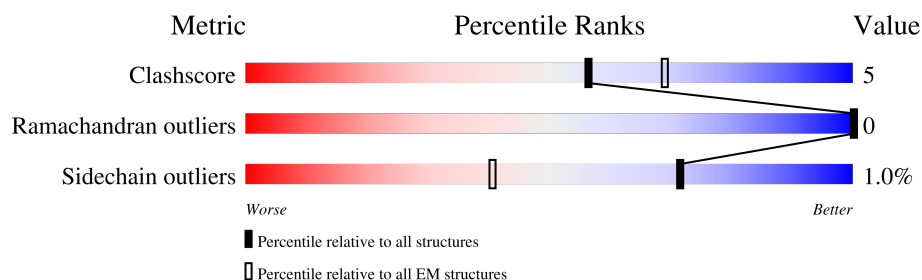
EMDB validation analysis : 0.0.1.dev129
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up 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) : 2.46

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 3.70 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.



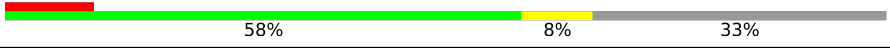
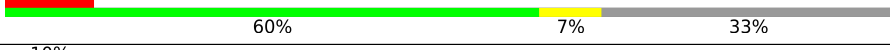
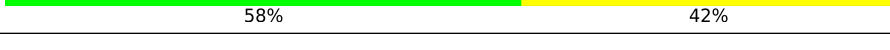
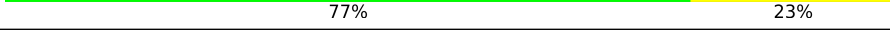
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	11569 (3.20 - 4.20)

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	C	250	 66% 12% 22%
1	D	250	 71% 7% 22%
1	H	250	 68% 10% 22%
1	I	250	 71% 7% 22%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	E	503	
2	J	503	
3	A	1096	
3	B	1096	
3	F	1096	
3	G	1096	
4	P	60	
4	Q	60	

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 79364 atoms, of which 39108 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 JetB.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	C	195	Total	C	H	N	O	0	0
			3173	991	1607	280	295		
1	D	195	Total	C	H	N	O	0	0
			3173	991	1607	280	295		
1	H	195	Total	C	H	N	O	0	0
			3173	991	1607	280	295		
1	I	195	Total	C	H	N	O	0	0
			3173	991	1607	280	295		

- Molecule 2 is a protein called JetA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	498	Total	C	H	N	O	0	0
			8050	2512	4007	752	772		
2	J	498	Total	C	H	N	O	0	0
			8050	2512	4007	752	772		

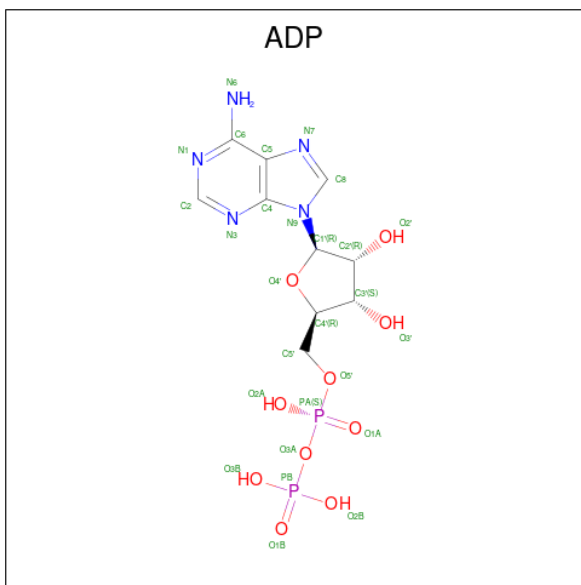
- Molecule 3 is a protein called JetC.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	730	Total	C	H	N	O	0	0
			11642	3640	5805	1070	1116		
3	B	733	Total	C	H	N	O	0	0
			11647	3641	5812	1063	1119		
3	F	730	Total	C	H	N	O	0	0
			11642	3640	5805	1070	1116		
3	G	733	Total	C	H	N	O	0	0
			11647	3641	5812	1063	1119		

- Molecule 4 is a DNA chain called Circular plasmid DNA (1843-MER).

Mol	Chain	Residues	Atoms						AltConf	Trace
4	P	60	Total 1919	C 600	H 692	N 210	O 358	P 59	0	0
4	Q	60	Total 1919	C 600	H 692	N 210	O 358	P 59	0	0

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

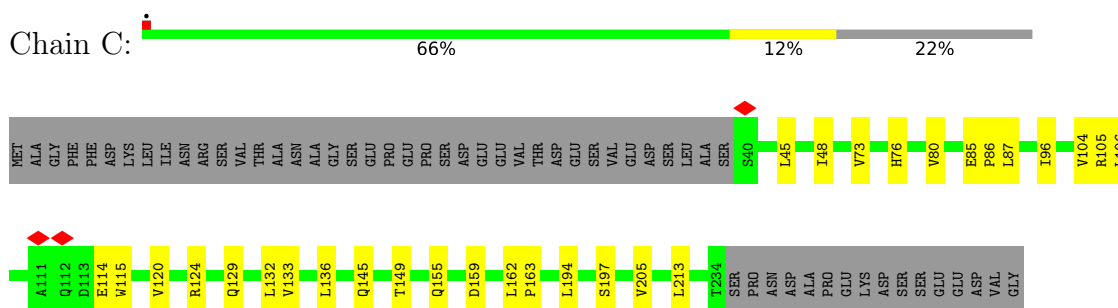


Mol	Chain	Residues	Atoms						AltConf
5	A	1	Total 39	C 10	H 12	N 5	O 10	P 2	0
5	B	1	Total 39	C 10	H 12	N 5	O 10	P 2	0
5	F	1	Total 39	C 10	H 12	N 5	O 10	P 2	0
5	G	1	Total 39	C 10	H 12	N 5	O 10	P 2	0

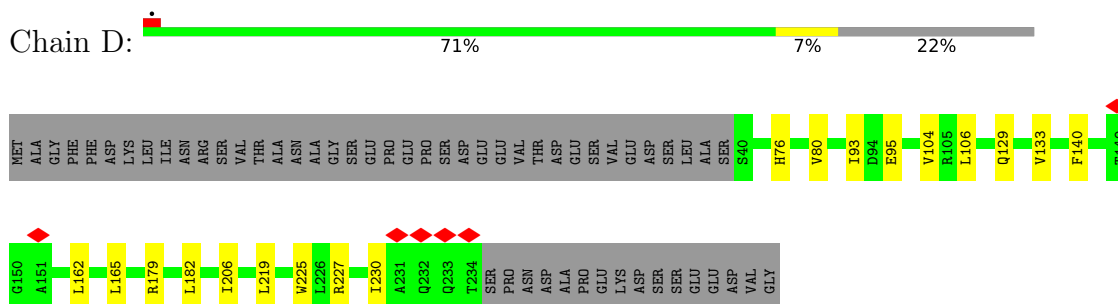
3 Residue-property plots [i](#)

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.

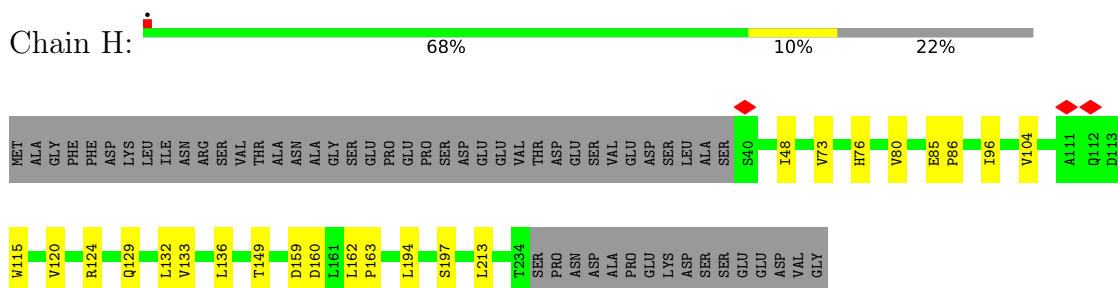
- Molecule 1: JetB



- Molecule 1: JetB

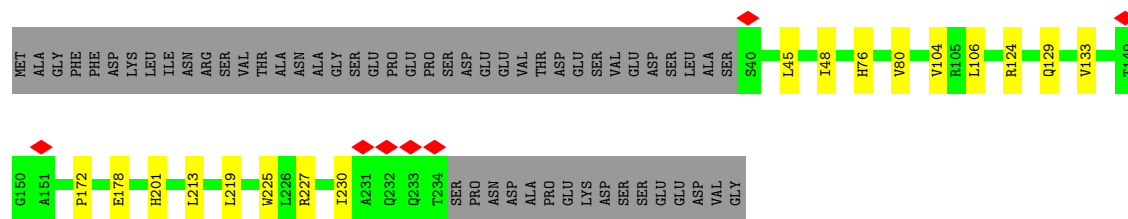


- Molecule 1: JetB



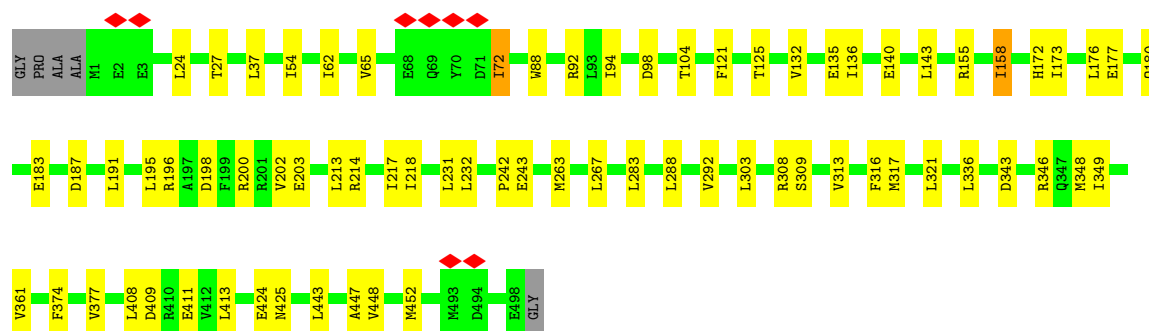
- Molecule 1: JetB





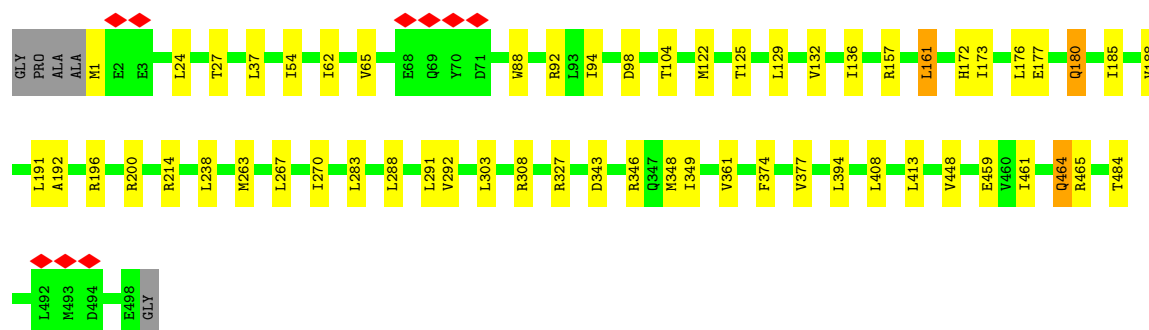
• Molecule 2: JetA

Chain E: 84% 14% .



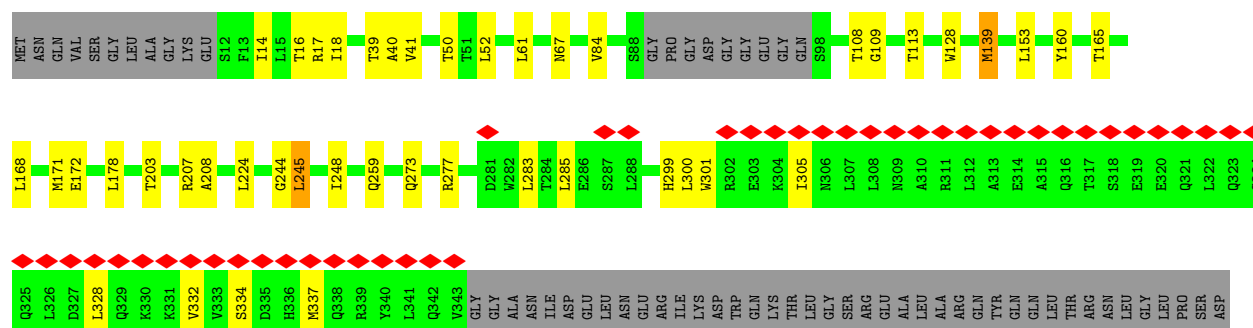
• Molecule 2: JetA

Chain J: 87% 11% ..



• Molecule 3: JetC

Chain A: 10% 58% 8% 33%

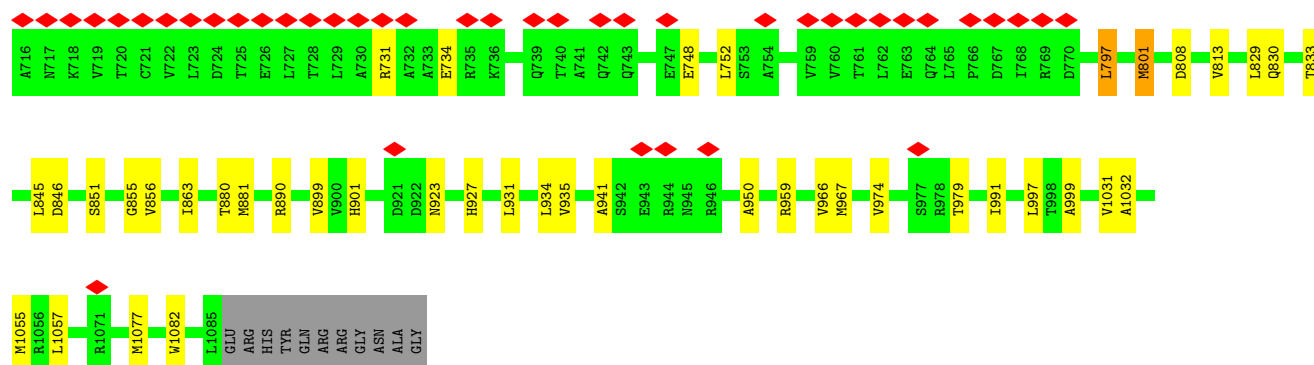




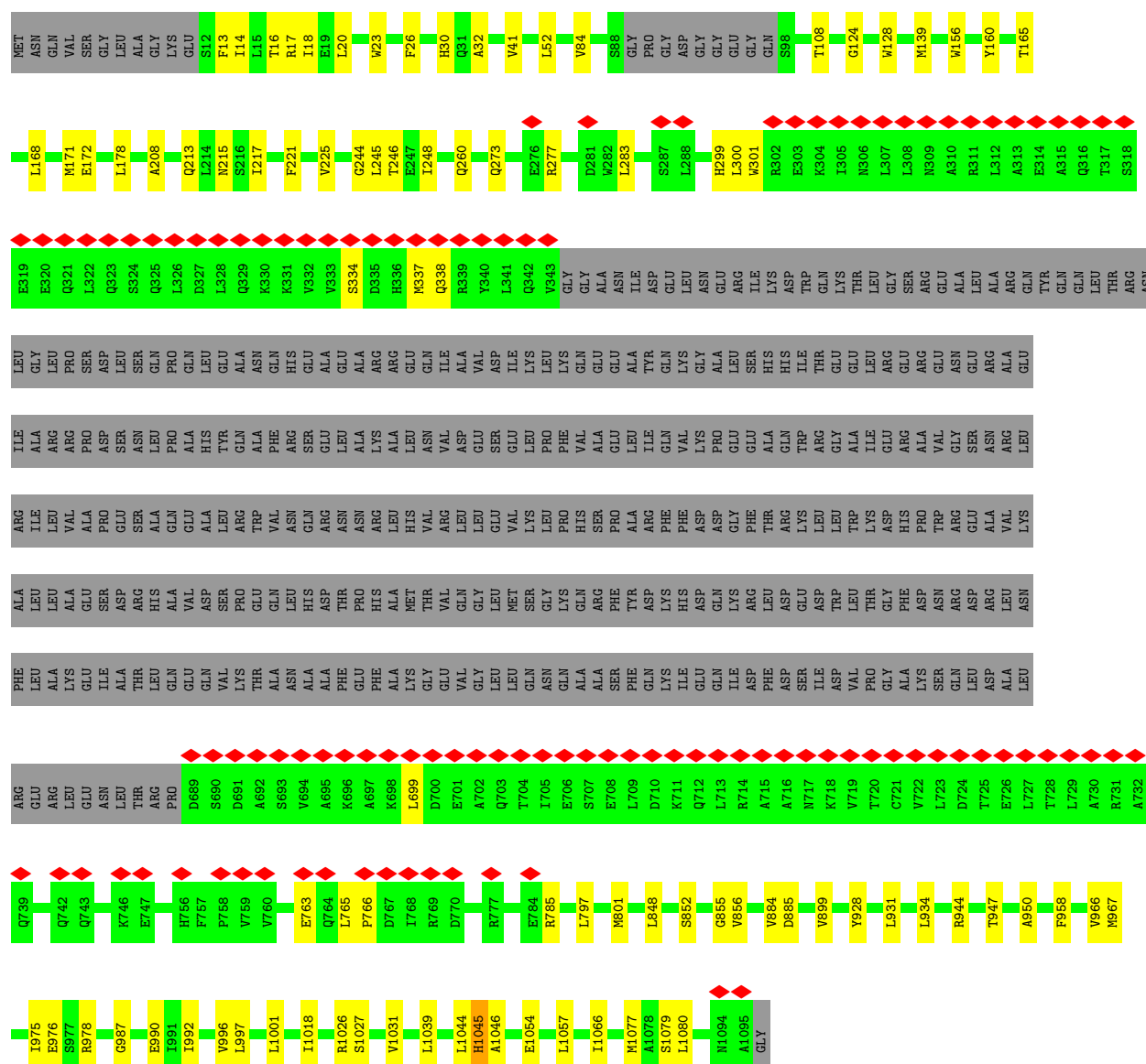
- Molecule 3: JetC



GLN	ASP	ARG	ILE	TYR	LYS	A266	W1
	LYS	PHE	GLN	GLN	ASP	LYS	
ILE	HIS	PHE	VAL	LYS	TRP	E270	L7
GLU	ASP	ASP	LYS	GLY	GLN		
GLN	GLN	ASP	PRO	ALA	ALA	D281	T16
ILE	LYS	GLY	GLU	LEU	THR		R17
ASP	ARG	PHE	GLU	SER	LEU		
PHE	LEU	THR	ALA	HIS	GLY	R302	L20
ASP	ASP	ARG	GLN	HIS	SER	E303	
SER	SER	LYS	TRP	ILE	ARG	K304	A32
ILE	ASP	LEU	ARG	THR	GLU	T305	A33
ASP	TRP	LEU	GLY	GLU	ALA		I34
VAL	LEU	TRP	ALA	GLU	LEU	N306	
PRO	THR	LYS	ILE	LEU	ALA	L307	
GLY	GLY	ASP	ILE	GLU	ALA	L308	I42
ALA	PHE	HIS	ARG	GLU	GLN	N309	
LYS	ASP	PRO	ALA	ARG	TYR	A310	L52
SER	ASN	TRP	VAL	GLU	GLN		
GLN	ARG	ARG	GLY	ASN	GLN	R311	A55
LEU	ASP	GLU	SER	GLU	LEU	L312	L56
ASP	ARG	ALA	ASN	ARG	THR	A313	M57
ALA	LEU	VAL	ARG	ALA	ARG	T58	L59
LEU	ASN	LYS	LEU	GLU	ASN	E314	
ARG	PHE	ALA	ARG	ILE	LEU	A315	M63
GLU	LEU	LEU	ILE	ALA	GLY		
ARG	ALA	LEU	LEU	ARG	LEU	Q316	L80
LEU	LYS	ALA	VAL	ARG	PRO	T317	
GLU	GLU	GLU	ALA	PRO	SER	S318	P90
ASN	ILE	SER	PRO	ASP	ASP	E319	GLY
LEU	ALA	ASP	GLU	SER	LEU	E320	ASP
THR	THR	ARG	SER	ASN	SER		GLY
ARG	LEU	HIS	ALA	LEU	GLN	Q321	GLY
PRO	GLN	ALA	GLU	PRO	PRO	L322	GLU
D689	GLN	VAL	GLU	ALA	GLN	Q323	GLY
S690	VAL	SER	LEU	HIS	LEU	S324	GLN
D691	LYS	PRO	ARG	TYR	GLU		S98
A692	THR	GLU	TRP	GLN	ALA	Q325	
S693	ALA	GLN	VAL	ALA	ASN	L326	V107
V694	ASN	LEU	ASN	PHE	GLN	D327	
A695	ALA	HIS	GLN	ARG	HIS	L328	L123
K696	ALA	ASP	ARG	GLU	ALA		
A697	PHE	THR	ASN	LEU	GLU	Q329	L127
L699	GLU	PRO	ASN	ALA	ALA	K330	W128
D700	GLY	VAL	GLN	LYS	ARG		M139
E701	VAL	GLN	VAL	ASN	GLN	V333	Y160
A702	GLY	GLN	ARG	VAL	ILE	S334	E172
Q703	LEU	VAL	LEU	ASP	ALA	D335	
I704	LEU	MET	VAL	GLU	VAL	H336	Y187
I705	GLN	SER	VAL	LEU	ASP	K337	A208
E706	ASN	GLY	LYS	LEU	LEU	Q338	
S707	GLN	LYS	PRO	PRO	LYS	R339	I217
E708	ALA	GLN	HIS	PHE	GLN	Y340	Q258
L709	ALA	ARG	SER	VAL	GLU	L341	
D710	SER	PHE	PRO	ALA	GLU	Q342	L262
K711	PHE			LEU	ALA	V343	
Q712						GLY	
L713						GLY	
R714						ALA	
A715						GLY	
						ALA	
						GLY	
						ALA	
						ASN	
						ILE	
						ASP	
						GLU	
						LEU	
						ASN	
						GLU	
						ARG	
						ARG	
						TYR	



• Molecule 3: JetC



• Molecule 3: JetC

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	79015	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2600	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.429	Depositor
Minimum map value	-0.118	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.08	Depositor
Map size (Å)	464.63998, 464.63998, 464.63998	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1616, 1.1616, 1.1616	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	C	0.15	0/1592	0.34	0/2164
1	D	0.13	0/1592	0.34	0/2164
1	H	0.14	0/1592	0.35	0/2164
1	I	0.13	0/1592	0.32	0/2164
2	E	0.14	0/4109	0.36	0/5559
2	J	0.14	0/4109	0.34	0/5559
3	A	0.14	0/5932	0.34	0/8009
3	B	0.12	0/5929	0.32	0/8006
3	F	0.13	0/5932	0.33	0/8009
3	G	0.12	0/5929	0.32	0/8006
4	P	0.17	0/1376	0.48	0/2122
4	Q	0.18	0/1376	0.48	0/2122
All	All	0.14	0/41060	0.35	0/56048

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 [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	C	1566	1607	1605	20	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	1566	1607	1605	11	0
1	H	1566	1607	1605	14	0
1	I	1566	1607	1605	9	0
2	E	4043	4007	4007	57	0
2	J	4043	4007	4007	43	0
3	A	5837	5805	5801	66	0
3	B	5835	5812	5809	55	0
3	F	5837	5805	5801	64	0
3	G	5835	5812	5809	37	0
4	P	1227	692	692	16	0
4	Q	1227	692	692	8	0
5	A	27	12	11	0	0
5	B	27	12	11	0	0
5	F	27	12	11	0	0
5	G	27	12	11	1	0
All	All	40256	39108	39082	371	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 5.

All (371) 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:J:348:MET:HE2	2:J:348:MET:HA	1.61	0.83
2:E:348:MET:HA	2:E:348:MET:HE3	1.60	0.83
3:G:208:ALA:HB2	3:G:997:LEU:HD21	1.61	0.82
3:G:337:MET:HE1	3:G:341:LEU:HD11	1.62	0.81
3:F:139:MET:HE2	3:F:139:MET:HA	1.63	0.80
3:A:856:VAL:HG11	3:A:934:LEU:HD23	1.65	0.79
2:E:135:GLU:OE2	2:J:188:VAL:HG22	1.86	0.76
2:J:343:ASP:O	2:J:349:ILE:HG21	1.85	0.76
2:E:343:ASP:O	2:E:349:ILE:HG21	1.86	0.76
3:B:208:ALA:HB2	3:B:997:LEU:HD21	1.68	0.75
1:C:96:ILE:HG22	1:C:149:THR:HG21	1.68	0.74
3:A:1002:SER:HB2	3:A:1044:LEU:HD21	1.70	0.73
2:E:263:MET:HE2	2:E:292:VAL:HG22	1.71	0.73
2:J:263:MET:HE2	2:J:292:VAL:HG22	1.72	0.71
3:A:852:SER:HB2	3:A:931:LEU:HD21	1.73	0.70
3:A:852:SER:CB	3:A:931:LEU:HD21	2.20	0.70
2:E:24:LEU:O	2:E:27:THR:HG22	1.92	0.69
3:F:852:SER:CB	3:F:931:LEU:HD21	2.23	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:225:TRP:CD2	2:E:377:VAL:HG21	2.30	0.67
2:J:157:ARG:O	2:J:161:LEU:HD22	1.95	0.66
3:G:881:MET:N	3:G:881:MET:HE2	2.10	0.66
2:E:231:LEU:HD13	2:E:313:VAL:HG21	1.78	0.66
1:C:120:VAL:HG23	2:E:361:VAL:HG13	1.77	0.66
3:F:967:MET:HE2	3:F:967:MET:HA	1.79	0.65
3:F:1039:LEU:HD21	3:F:1046:ALA:HB2	1.79	0.65
1:D:104:VAL:HG12	1:D:106:LEU:H	1.60	0.64
3:F:1027:SER:OG	3:F:1031:VAL:HG23	1.98	0.63
3:A:1039:LEU:HD21	3:A:1046:ALA:HB2	1.81	0.62
3:F:852:SER:HB2	3:F:931:LEU:HD21	1.80	0.62
2:J:24:LEU:O	2:J:27:THR:HG22	1.99	0.62
3:A:139:MET:HE2	3:A:139:MET:HA	1.82	0.62
3:B:128:TRP:CG	3:B:160:TYR:HH	2.18	0.62
3:A:765:LEU:O	3:A:768:ILE:HG22	2.00	0.61
1:H:96:ILE:HG22	1:H:149:THR:HG21	1.82	0.61
3:F:128:TRP:CD1	3:F:160:TYR:HH	2.18	0.61
1:H:120:VAL:HG23	2:J:361:VAL:HG13	1.83	0.60
3:F:32:ALA:HB1	3:F:1066:ILE:HD13	1.83	0.60
1:C:73:VAL:HG13	1:C:80:VAL:HG21	1.85	0.59
2:E:135:GLU:CD	2:J:188:VAL:HG22	2.27	0.59
3:B:128:TRP:CD1	3:B:160:TYR:HH	2.21	0.59
3:G:128:TRP:CD1	3:G:160:TYR:HH	2.21	0.59
3:B:881:MET:N	3:B:881:MET:HE2	2.18	0.58
3:A:1079:SER:C	3:A:1080:LEU:HD22	2.28	0.58
3:F:975:ILE:HG23	3:F:975:ILE:O	2.03	0.58
3:B:208:ALA:CB	3:B:997:LEU:HD21	2.33	0.58
1:D:225:TRP:CG	2:E:377:VAL:HG21	2.39	0.57
3:B:63:ASN:OD1	3:B:63:ASN:O	2.21	0.57
2:E:62:ILE:O	2:E:65:VAL:HG22	2.05	0.57
3:A:208:ALA:CB	3:A:997:LEU:HD21	2.34	0.57
3:A:168:LEU:O	3:A:171:MET:HE2	2.04	0.57
3:F:32:ALA:HB2	3:F:1077:MET:CE	2.35	0.57
3:B:808:ASP:OD2	3:B:813:VAL:HG13	2.05	0.56
3:F:899:VAL:HG21	3:F:958:PHE:O	2.05	0.56
3:F:856:VAL:HG11	3:F:934:LEU:HD23	1.87	0.56
3:A:967:MET:HE2	3:A:967:MET:HA	1.86	0.56
2:J:413:LEU:HD23	2:J:448:VAL:HG11	1.88	0.56
3:F:168:LEU:O	3:F:171:MET:HE2	2.06	0.55
3:A:128:TRP:CD1	3:A:160:TYR:HH	2.24	0.55
3:F:699:LEU:HD21	3:G:337:MET:HE2	1.86	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:231:LEU:CD1	2:E:313:VAL:HG21	2.37	0.55
1:C:105:ARG:O	1:C:106:LEU:HD12	2.07	0.55
2:E:140:GLU:HA	2:J:270:ILE:HD11	1.88	0.54
3:B:107:VAL:HG22	3:B:128:TRP:HB3	1.89	0.54
3:F:1079:SER:C	3:F:1080:LEU:HD22	2.32	0.54
4:Q:49:DA:H2'	4:Q:50:DT:H71	1.90	0.54
3:A:128:TRP:CG	3:A:160:TYR:HH	2.26	0.53
2:E:448:VAL:HG12	2:E:452:MET:HE3	1.90	0.53
3:A:1001:LEU:HD23	3:A:1018:ILE:HD12	1.90	0.53
3:B:991:ILE:HG12	3:B:1031:VAL:HG13	1.89	0.53
3:F:128:TRP:CG	3:F:160:TYR:HH	2.27	0.53
3:G:991:ILE:HG12	3:G:1031:VAL:HG13	1.91	0.53
3:F:852:SER:HB3	3:F:931:LEU:HD21	1.91	0.53
3:A:852:SER:HB3	3:A:931:LEU:HD21	1.89	0.53
1:H:104:VAL:HG11	1:H:114:GLU:HB2	1.91	0.53
3:B:899:VAL:HG12	3:B:901:HIS:H	1.74	0.52
2:E:202:VAL:HG22	2:E:243:GLU:HB2	1.91	0.52
3:G:171:MET:C	3:G:171:MET:HE2	2.34	0.52
1:C:48:ILE:HD11	1:C:76:HIS:CG	2.44	0.52
3:B:80:LEU:HD21	3:B:139:MET:HE2	1.91	0.52
2:E:231:LEU:HD23	2:E:231:LEU:C	2.35	0.52
3:A:1027:SER:OG	3:A:1031:VAL:HG23	2.10	0.52
2:E:267:LEU:HD22	2:E:288:LEU:HG	1.92	0.51
3:B:797:LEU:O	3:B:801:MET:HG2	2.10	0.51
1:C:194:LEU:HD21	1:C:213:LEU:HD23	1.91	0.51
2:E:37:LEU:HD21	2:E:88:TRP:CE3	2.45	0.51
4:P:35:DA:H2'	4:P:36:DT:H72	1.91	0.51
1:H:194:LEU:HD21	1:H:213:LEU:HD23	1.93	0.51
1:C:129:GLN:O	1:C:133:VAL:HG23	2.10	0.51
2:J:408:LEU:HD21	2:J:413:LEU:HD22	1.92	0.51
3:A:277:ARG:HA	3:A:277:ARG:NH1	2.25	0.51
3:B:305:ILE:HD11	3:B:731:ARG:HA	1.92	0.51
2:J:238:LEU:HD13	2:J:238:LEU:O	2.11	0.51
4:P:49:DA:H2'	4:P:50:DT:H71	1.91	0.51
3:G:61:LEU:HD21	3:G:203:THR:HA	1.93	0.50
2:E:348:MET:HA	2:E:348:MET:CE	2.39	0.50
4:Q:35:DA:H2'	4:Q:36:DT:H72	1.92	0.50
2:J:267:LEU:HD22	2:J:288:LEU:HG	1.93	0.50
3:G:967:MET:SD	3:G:974:VAL:HG22	2.51	0.50
2:E:135:GLU:OE1	2:J:191:LEU:HD12	2.12	0.50
1:H:48:ILE:HD11	1:H:76:HIS:CG	2.47	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:987:GLY:CA	3:G:45:THR:HG22	2.43	0.49
3:F:1039:LEU:HD23	3:F:1044:LEU:O	2.12	0.49
3:A:301:TRP:CD2	3:A:765:LEU:HD21	2.48	0.49
2:J:303:LEU:HD23	3:F:855:GLY:HA2	1.94	0.49
3:F:208:ALA:CB	3:F:997:LEU:HD21	2.42	0.49
2:E:303:LEU:HD23	3:A:855:GLY:HA2	1.94	0.49
2:E:413:LEU:HD23	2:E:448:VAL:HG11	1.93	0.49
3:B:20:LEU:HD11	3:B:52:LEU:HD13	1.94	0.49
3:B:829:LEU:O	3:B:833:THR:HG23	2.13	0.49
2:E:132:VAL:O	2:E:136:ILE:HD13	2.13	0.49
3:F:1026:ARG:O	3:G:45:THR:HG21	2.13	0.49
3:F:334:SER:O	3:F:337:MET:HG3	2.13	0.49
3:G:1055:MET:HE3	3:G:1055:MET:HA	1.94	0.49
2:E:231:LEU:HD23	2:E:232:LEU:N	2.27	0.48
4:Q:57:DA:C8	4:Q:58:DT:H72	2.48	0.48
3:B:967:MET:HE1	3:B:974:VAL:HG22	1.95	0.48
3:B:851:SER:O	3:B:855:GLY:N	2.45	0.48
1:H:73:VAL:HG13	1:H:80:VAL:HG21	1.95	0.48
3:G:208:ALA:CB	3:G:997:LEU:HD21	2.37	0.48
3:B:797:LEU:HD23	3:B:801:MET:HE2	1.95	0.48
1:D:76:HIS:O	1:D:80:VAL:HG23	2.13	0.48
1:C:132:LEU:O	1:C:136:LEU:HG	2.14	0.48
2:E:447:ALA:HB1	3:B:42:ILE:CD1	2.44	0.48
3:A:944:ARG:O	3:A:947:THR:HG22	2.14	0.48
3:G:128:TRP:CG	3:G:160:TYR:HH	2.31	0.48
3:A:285:LEU:HD21	3:A:752:LEU:HD11	1.96	0.47
2:J:37:LEU:HD21	2:J:88:TRP:CE3	2.49	0.47
2:J:176:LEU:HD23	2:J:177:GLU:N	2.28	0.47
3:B:863:ILE:HG21	3:B:959:ARG:CZ	2.45	0.47
2:J:92:ARG:O	2:J:104:THR:HG21	2.15	0.47
2:E:242:PRO:HB2	2:J:122:MET:HE1	1.96	0.47
1:H:194:LEU:HD12	1:H:194:LEU:N	2.29	0.47
2:E:121:PHE:CD1	2:E:121:PHE:O	2.68	0.47
3:A:947:THR:HG23	3:A:950:ALA:H	1.79	0.47
3:B:262:LEU:HB3	3:B:829:LEU:HD13	1.96	0.47
3:B:1055:MET:SD	3:B:1055:MET:N	2.87	0.47
1:I:76:HIS:O	1:I:80:VAL:HG23	2.15	0.47
2:J:192:ALA:HB1	2:J:291:LEU:HD22	1.96	0.47
2:J:459:GLU:OE2	2:J:461:ILE:HD12	2.15	0.47
3:F:245:LEU:HB3	3:F:848:LEU:HD12	1.96	0.47
4:P:57:DA:C8	4:P:58:DT:H72	2.49	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:92:ARG:O	2:E:104:THR:HG21	2.15	0.47
2:E:158:ILE:O	2:E:158:ILE:HD13	2.14	0.47
3:B:845:LEU:HD21	3:B:923:ASN:C	2.40	0.47
3:A:14:ILE:HG23	3:A:1045:HIS:CG	2.50	0.46
3:B:127:LEU:HB3	3:B:139:MET:HE1	1.97	0.46
3:B:881:MET:HE2	3:B:881:MET:CA	2.45	0.46
3:F:301:TRP:CG	3:F:765:LEU:HD21	2.49	0.46
2:E:283:LEU:H	2:E:283:LEU:HD22	1.81	0.46
3:A:41:VAL:HG22	3:A:1066:ILE:HB	1.97	0.46
3:A:899:VAL:HG21	3:A:958:PHE:O	2.15	0.46
1:C:194:LEU:HD12	1:C:194:LEU:N	2.30	0.46
2:E:317:MET:HG3	3:A:248:ILE:HD12	1.97	0.46
3:G:851:SER:O	3:G:855:GLY:N	2.48	0.46
3:A:245:LEU:HD23	3:A:848:LEU:HG	1.97	0.46
3:A:273:GLN:O	3:A:277:ARG:HG2	2.16	0.46
2:E:176:LEU:HD23	2:E:177:GLU:N	2.31	0.46
2:E:424:GLU:O	2:E:425:ASN:OD1	2.34	0.46
3:B:337:MET:HE3	3:B:338:GLN:N	2.31	0.46
1:C:155:GLN:HG2	1:C:205:VAL:HG22	1.98	0.46
3:F:947:THR:HG23	3:F:950:ALA:H	1.81	0.46
3:A:301:TRP:CE3	3:A:765:LEU:HD21	2.52	0.46
3:A:856:VAL:HG11	3:A:934:LEU:CD2	2.43	0.45
2:E:203:GLU:C	2:E:203:GLU:OE2	2.59	0.45
3:B:16:THR:HG22	3:B:34:ILE:CG2	2.46	0.45
2:J:62:ILE:O	2:J:65:VAL:HG22	2.17	0.45
3:F:797:LEU:O	3:F:801:MET:HG2	2.17	0.45
1:C:120:VAL:O	1:C:120:VAL:HG13	2.16	0.45
3:A:1001:LEU:HD11	3:A:1005:LEU:HD11	1.97	0.45
3:F:987:GLY:HA3	3:G:45:THR:HG22	1.97	0.45
4:Q:23:DA:H2'	4:Q:24:DT:H72	1.97	0.45
1:I:225:TRP:CD2	2:J:377:VAL:HG21	2.52	0.45
3:B:941:ALA:O	3:B:950:ALA:HB1	2.16	0.45
3:F:18:ILE:HG21	3:F:52:LEU:HD11	1.97	0.45
2:E:136:ILE:HD11	2:J:188:VAL:HG13	1.99	0.45
3:A:300:LEU:HD22	3:A:762:LEU:HA	1.98	0.45
3:B:57:MET:SD	3:B:57:MET:N	2.90	0.45
3:F:1057:LEU:C	3:F:1057:LEU:HD12	2.41	0.45
3:B:890:ARG:HH11	3:B:966:VAL:HG11	1.82	0.45
2:J:196:ARG:O	2:J:200:ARG:HG2	2.17	0.45
3:F:84:VAL:HG13	3:F:108:THR:OG1	2.17	0.45
4:P:7:DA:C8	4:P:8:DT:H72	2.52	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1039:LEU:HD23	3:A:1044:LEU:O	2.17	0.45
4:P:35:DA:C2'	4:P:36:DT:H72	2.47	0.45
2:E:214:ARG:HH22	2:E:308:ARG:C	2.24	0.45
2:J:1:MET:HE2	2:J:1:MET:HA	1.99	0.45
2:E:65:VAL:HA	2:E:72:ILE:HG23	1.99	0.44
3:A:1032:ALA:O	3:A:1036:ILE:HG12	2.17	0.44
2:E:155:ARG:O	2:E:158:ILE:HG22	2.17	0.44
3:A:1027:SER:HG	3:A:1031:VAL:HG23	1.81	0.44
2:J:62:ILE:HA	2:J:65:VAL:HG13	2.00	0.44
1:C:159:ASP:C	1:C:159:ASP:OD1	2.61	0.44
1:I:129:GLN:O	1:I:133:VAL:HG23	2.17	0.44
3:F:217:ILE:HD11	3:F:221:PHE:CE2	2.51	0.44
1:H:162:LEU:HB2	1:H:163:PRO:HD3	1.98	0.44
2:E:143:LEU:HD11	2:J:185:ILE:HD11	1.99	0.44
3:B:1032:ALA:HB3	3:B:1057:LEU:HD22	2.00	0.44
1:I:124:ARG:HE	4:P:48:DT:P	2.40	0.44
3:F:14:ILE:HD12	3:F:1045:HIS:HB3	1.99	0.44
2:E:218:ILE:HD12	2:E:336:LEU:HB3	2.00	0.44
3:A:848:LEU:C	3:A:848:LEU:HD23	2.43	0.44
3:F:990:GLU:N	3:F:990:GLU:OE2	2.50	0.44
3:F:1001:LEU:HD23	3:F:1018:ILE:HD12	1.99	0.44
3:G:339:ARG:O	3:G:343:VAL:HG22	2.18	0.44
3:G:922:ASP:O	3:G:925:GLU:OE2	2.36	0.44
1:C:115:TRP:CG	1:C:124:ARG:HG2	2.53	0.44
3:A:207:ARG:HB3	3:A:224:LEU:HD23	2.00	0.44
2:J:214:ARG:HH22	2:J:308:ARG:C	2.25	0.44
3:F:944:ARG:O	3:F:947:THR:HG22	2.17	0.44
3:A:891:TYR:CZ	3:A:967:MET:HG2	2.52	0.43
3:A:992:ILE:O	3:A:996:VAL:HG12	2.18	0.43
3:B:337:MET:SD	3:B:337:MET:C	3.01	0.43
3:B:856:VAL:HG21	3:B:934:LEU:HD13	2.00	0.43
1:H:120:VAL:O	1:H:120:VAL:HG13	2.18	0.43
2:E:180:GLN:O	2:E:183:GLU:OE2	2.35	0.43
3:A:765:LEU:HB3	3:A:766:PRO:HD3	1.99	0.43
3:B:7:LEU:C	3:B:7:LEU:HD13	2.43	0.43
2:J:283:LEU:H	2:J:283:LEU:HD22	1.83	0.43
3:G:305:ILE:HD11	3:G:731:ARG:HA	2.00	0.43
4:P:50:DT:C2	4:P:51:DA:N7	2.86	0.43
3:A:884:VAL:HG12	3:A:885:ASP:N	2.34	0.43
3:G:960:LEU:HD23	3:G:960:LEU:H	1.83	0.43
3:A:84:VAL:HG13	3:A:108:THR:OG1	2.19	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:244:GLY:O	3:A:248:ILE:HG12	2.19	0.43
3:A:334:SER:HA	3:A:337:MET:HG2	2.00	0.43
2:J:129:LEU:HA	2:J:132:VAL:HG22	2.00	0.43
3:F:128:TRP:CZ2	3:F:165:THR:HG21	2.54	0.43
3:F:301:TRP:CD2	3:F:765:LEU:HD21	2.54	0.43
3:G:863:ILE:HG21	3:G:959:ARG:CZ	2.49	0.43
3:A:172:GLU:HA	3:A:178:LEU:HD23	2.01	0.43
3:B:931:LEU:O	3:B:935:VAL:HG23	2.19	0.43
4:P:55:DA:H2'	4:P:56:DT:H72	2.01	0.43
2:E:88:TRP:HB2	2:E:94:ILE:HD11	2.01	0.43
3:A:305:ILE:HD11	3:A:731:ARG:HA	2.01	0.43
2:J:176:LEU:HD21	2:J:180:GLN:HB3	2.01	0.43
3:F:300:LEU:HB3	3:F:765:LEU:HD22	2.01	0.43
3:F:337:MET:HG3	3:F:338:GLN:N	2.34	0.43
3:F:848:LEU:HD21	3:F:928:TYR:CE1	2.54	0.43
3:G:217:ILE:HD11	3:G:964:VAL:CG2	2.49	0.43
3:G:1055:MET:N	3:G:1055:MET:SD	2.92	0.43
1:C:155:GLN:CG	1:C:205:VAL:HG22	2.48	0.43
3:B:258:GLN:O	3:B:262:LEU:HD13	2.19	0.43
2:J:132:VAL:O	2:J:136:ILE:HD13	2.19	0.43
1:D:162:LEU:HD21	1:D:179:ARG:HA	2.00	0.43
1:D:219:LEU:HD21	2:E:374:PHE:CD1	2.53	0.43
3:A:334:SER:O	3:A:337:MET:HG3	2.19	0.43
3:B:262:LEU:CB	3:B:829:LEU:HD13	2.49	0.43
2:E:195:LEU:HA	2:E:198:ASP:OD2	2.19	0.42
3:A:17:ARG:HB3	3:A:113:THR:HB	2.01	0.42
3:A:1028:SER:OG	3:A:1031:VAL:HG22	2.20	0.42
3:B:266:ALA:O	3:B:270:GLU:HG2	2.19	0.42
3:G:829:LEU:O	3:G:833:THR:HG23	2.19	0.42
4:P:1:DA:H2'	4:P:2:DT:H72	2.01	0.42
2:E:213:LEU:HD23	2:E:309:SER:HB2	2.01	0.42
3:A:259:GLN:HB2	3:A:832:LEU:HD21	2.01	0.42
2:J:88:TRP:HB2	2:J:94:ILE:HD11	2.02	0.42
3:F:172:GLU:HA	3:F:178:LEU:HD23	2.01	0.42
3:F:208:ALA:HB1	3:F:997:LEU:HD21	2.01	0.42
3:F:765:LEU:HB3	3:F:766:PRO:HD3	2.01	0.42
3:G:50:THR:HG22	5:G:1101:ADP:PA	2.60	0.42
2:E:448:VAL:HG12	2:E:452:MET:CE	2.50	0.42
3:B:880:THR:C	3:B:881:MET:HE2	2.45	0.42
3:F:966:VAL:HG23	3:F:976:GLU:HG2	2.02	0.42
3:B:881:MET:HE2	3:B:881:MET:HA	2.00	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:992:ILE:O	3:F:996:VAL:HG12	2.19	0.42
1:C:194:LEU:HD21	1:C:213:LEU:CD2	2.50	0.42
3:A:39:THR:HG22	3:A:40:ALA:N	2.34	0.42
3:B:55:ALA:O	3:B:59:LEU:HD12	2.20	0.42
2:J:172:HIS:O	2:J:172:HIS:ND1	2.53	0.42
4:P:47:DA:H2'	4:P:48:DT:H72	2.00	0.42
3:A:797:LEU:O	3:A:801:MET:HG2	2.20	0.42
1:D:165:LEU:HD11	1:D:182:LEU:HD13	2.02	0.42
2:E:231:LEU:HD21	3:A:847:TYR:CE2	2.54	0.42
3:G:84:VAL:HG21	3:G:139:MET:CE	2.50	0.42
3:A:328:LEU:O	3:A:332:VAL:HG23	2.20	0.42
3:F:26:PHE:HB3	3:F:30:HIS:CD2	2.55	0.42
3:F:273:GLN:O	3:F:277:ARG:HG2	2.19	0.42
1:D:93:ILE:HD12	1:D:95:GLU:OE2	2.20	0.42
2:E:346:ARG:O	2:E:349:ILE:HG22	2.20	0.42
3:F:1054:GLU:CD	3:F:1057:LEU:HD23	2.45	0.42
3:G:7:LEU:C	3:G:7:LEU:HD13	2.44	0.42
3:B:217:ILE:HD12	3:B:979:THR:HG23	2.02	0.41
1:H:129:GLN:O	1:H:133:VAL:HG23	2.20	0.41
1:I:227:ARG:HA	1:I:230:ILE:HG22	2.02	0.41
3:G:15:LEU:HD11	3:G:112:ALA:HB1	2.02	0.41
3:G:34:ILE:HG22	3:G:35:HIS:N	2.35	0.41
4:P:37:DA:H2'	4:P:38:DT:H72	2.01	0.41
1:C:45:LEU:HB2	1:C:48:ILE:HD12	2.02	0.41
3:B:16:THR:HG22	3:B:34:ILE:HG22	2.02	0.41
3:F:32:ALA:HB2	3:F:1077:MET:SD	2.60	0.41
4:P:23:DA:H2'	4:P:24:DT:H72	2.01	0.41
4:P:43:DA:C2	4:Q:19:DA:C2	3.08	0.41
1:D:140:PHE:HB2	1:D:206:ILE:HG21	2.01	0.41
1:D:227:ARG:HA	1:D:230:ILE:HG22	2.01	0.41
3:F:13:PHE:O	3:F:14:ILE:HD13	2.19	0.41
3:G:880:THR:C	3:G:881:MET:HE2	2.45	0.41
2:E:196:ARG:O	2:E:200:ARG:HG2	2.21	0.41
1:H:115:TRP:CG	1:H:124:ARG:HG2	2.56	0.41
3:G:892:LEU:HD11	3:G:964:VAL:HG11	2.01	0.41
3:A:18:ILE:HG21	3:A:52:LEU:HD11	2.01	0.41
2:J:173:ILE:C	2:J:173:ILE:HD12	2.45	0.41
3:F:244:GLY:O	3:F:248:ILE:HG12	2.19	0.41
3:G:748:GLU:O	3:G:752:LEU:HG	2.21	0.41
3:G:951:LYS:O	3:G:955:ASP:N	2.53	0.41
3:B:20:LEU:HD12	3:B:1077:MET:CE	2.50	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:219:LEU:HD21	2:J:374:PHE:CD1	2.55	0.41
3:F:84:VAL:HG22	3:F:108:THR:HG21	2.02	0.41
3:F:246:THR:HG23	3:F:928:TYR:OH	2.21	0.41
3:A:61:LEU:HD11	3:A:203:THR:HA	2.03	0.41
3:A:1054:GLU:CD	3:A:1057:LEU:HD23	2.45	0.41
3:A:1057:LEU:C	3:A:1057:LEU:HD12	2.46	0.41
3:B:32:ALA:HB2	3:B:1077:MET:SD	2.60	0.41
3:B:846:ASP:OD1	3:B:846:ASP:C	2.64	0.41
3:B:881:MET:SD	3:B:999:ALA:HB1	2.60	0.41
2:J:346:ARG:O	2:J:349:ILE:HG22	2.21	0.41
3:F:221:PHE:HA	3:F:225:VAL:HB	2.02	0.41
1:C:104:VAL:HG11	1:C:114:GLU:HB2	2.03	0.41
1:H:132:LEU:O	1:H:136:LEU:HG	2.21	0.41
3:G:126:LEU:N	3:G:126:LEU:HD22	2.36	0.41
1:C:145:GLN:OE1	2:E:321:LEU:HD23	2.21	0.41
1:D:129:GLN:O	1:D:133:VAL:HG23	2.20	0.41
2:E:187:ASP:O	2:E:191:LEU:HD12	2.21	0.41
2:E:313:VAL:O	2:E:317:MET:HG2	2.21	0.41
2:E:408:LEU:HD21	2:E:413:LEU:HD22	2.03	0.41
2:E:409:ASP:OD1	2:E:411:GLU:OE1	2.38	0.41
3:A:337:MET:SD	3:B:337:MET:HG2	2.61	0.41
3:B:123:LEU:HD23	3:B:187:TYR:OH	2.21	0.41
3:B:797:LEU:CD2	3:B:801:MET:HE2	2.50	0.41
2:J:464:GLN:HG3	2:J:484:THR:OG1	2.21	0.41
2:J:465:ARG:HA	2:J:465:ARG:NE	2.36	0.41
3:F:16:THR:O	3:F:17:ARG:HB2	2.21	0.41
3:F:124:GLY:HA3	3:F:156:TRP:CZ3	2.56	0.41
3:F:260:GLN:OE1	3:F:260:GLN:C	2.64	0.41
3:G:204:LEU:HD23	3:G:1001:LEU:HA	2.02	0.41
4:P:21:DA:C2'	4:P:22:DT:H72	2.50	0.41
4:Q:5:DA:C2'	4:Q:6:DT:H72	2.51	0.41
1:I:172:PRO:HD2	1:I:178:GLU:HG2	2.02	0.41
3:F:856:VAL:HG11	3:F:934:LEU:CD2	2.50	0.41
3:F:884:VAL:HG12	3:F:885:ASP:N	2.36	0.41
1:C:85:GLU:HB3	1:C:86:PRO:HD3	2.04	0.40
3:B:16:THR:O	3:B:17:ARG:HB2	2.20	0.40
3:F:213:GLN:OE1	3:F:215:ASN:HB2	2.21	0.40
3:G:807:VAL:O	3:G:807:VAL:HG12	2.21	0.40
4:P:53:DA:C2	4:Q:9:DA:C2	3.09	0.40
2:E:172:HIS:O	2:E:172:HIS:ND1	2.54	0.40
3:A:128:TRP:CZ2	3:A:165:THR:CG2	3.05	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:305:ILE:HD12	3:B:734:GLU:HG3	2.02	0.40
1:H:85:GLU:HB3	1:H:86:PRO:HD3	2.03	0.40
1:H:159:ASP:OD2	1:H:160:ASP:N	2.55	0.40
2:J:238:LEU:HD13	2:J:238:LEU:C	2.46	0.40
3:F:978:ARG:HA	3:F:978:ARG:HD3	1.96	0.40
3:G:16:THR:O	3:G:17:ARG:HB2	2.21	0.40
4:Q:47:DA:H2'	4:Q:48:DT:H72	2.03	0.40
2:E:443:LEU:HD22	3:B:1082:TRP:CH2	2.56	0.40
3:A:16:THR:O	3:A:17:ARG:HB2	2.20	0.40
3:A:877:LEU:HD13	3:A:1000:SER:HB3	2.03	0.40
1:C:162:LEU:HB2	1:C:163:PRO:HD3	2.03	0.40
2:E:173:ILE:HD12	2:E:173:ILE:C	2.46	0.40
3:A:50:THR:HG21	3:A:67:ASN:OD1	2.22	0.40
3:A:882:PHE:HD1	3:A:891:TYR:CZ	2.39	0.40
1:I:45:LEU:HB2	1:I:48:ILE:HD12	2.03	0.40
3:F:41:VAL:HG22	3:F:1066:ILE:HB	2.03	0.40
4:P:17:DA:H2'	4:P:18:DT:H72	2.03	0.40
3:A:109:GLY:HA3	3:A:153:LEU:HD11	2.04	0.40
3:A:1036:ILE:HD13	3:A:1036:ILE:N	2.37	0.40
3:B:748:GLU:O	3:B:752:LEU:HG	2.22	0.40
3:B:927:HIS:CD2	3:B:927:HIS:C	2.99	0.40
1:I:104:VAL:HG12	1:I:106:LEU:H	1.85	0.40
2:J:348:MET:HA	2:J:348:MET:CE	2.43	0.40
2:J:394:LEU:N	2:J:394:LEU:HD12	2.37	0.40
3:F:20:LEU:HD21	3:F:23:TRP:HB3	2.03	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	C	193/250 (77%)	183 (95%)	10 (5%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	193/250 (77%)	186 (96%)	7 (4%)	0	100	100
1	H	193/250 (77%)	183 (95%)	10 (5%)	0	100	100
1	I	193/250 (77%)	185 (96%)	8 (4%)	0	100	100
2	E	496/503 (99%)	481 (97%)	15 (3%)	0	100	100
2	J	496/503 (99%)	476 (96%)	20 (4%)	0	100	100
3	A	724/1096 (66%)	697 (96%)	27 (4%)	0	100	100
3	B	727/1096 (66%)	705 (97%)	22 (3%)	0	100	100
3	F	724/1096 (66%)	702 (97%)	22 (3%)	0	100	100
3	G	727/1096 (66%)	707 (97%)	20 (3%)	0	100	100
All	All	4666/6390 (73%)	4505 (96%)	161 (4%)	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	C	171/218 (78%)	169 (99%)	2 (1%)	67	79
1	D	171/218 (78%)	171 (100%)	0	100	100
1	H	171/218 (78%)	170 (99%)	1 (1%)	84	90
1	I	171/218 (78%)	169 (99%)	2 (1%)	67	79
2	E	434/435 (100%)	427 (98%)	7 (2%)	58	74
2	J	434/435 (100%)	427 (98%)	7 (2%)	58	74
3	A	623/928 (67%)	616 (99%)	7 (1%)	70	80
3	B	624/928 (67%)	619 (99%)	5 (1%)	79	85
3	F	623/928 (67%)	618 (99%)	5 (1%)	79	85
3	G	624/928 (67%)	621 (100%)	3 (0%)	86	92
All	All	4046/5454 (74%)	4007 (99%)	39 (1%)	71	82

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	87	LEU
1	C	197	SER
2	E	54	ILE
2	E	72	ILE
2	E	98	ASP
2	E	125	THR
2	E	158	ILE
2	E	217	ILE
2	E	316	PHE
3	A	139	MET
3	A	245	LEU
3	A	283	LEU
3	A	299	HIS
3	A	785	ARG
3	A	975	ILE
3	A	1031	VAL
3	B	172	GLU
3	B	281	ASP
3	B	797	LEU
3	B	801	MET
3	B	830	GLN
1	H	197	SER
1	I	201	HIS
1	I	213	LEU
2	J	54	ILE
2	J	98	ASP
2	J	125	THR
2	J	161	LEU
2	J	180	GLN
2	J	327	ARG
2	J	464	GLN
3	F	283	LEU
3	F	299	HIS
3	F	763	GLU
3	F	785	ARG
3	F	1045	HIS
3	G	172	GLU
3	G	943	GLU
3	G	989	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	76	HIS
2	E	67	GLN
2	E	133	GLN
2	E	441	HIS
3	A	155	HIS
3	A	200	ASN
3	A	325	GLN
3	A	775	HIS
3	A	973	ASN
3	A	982	GLN
3	B	336	HIS
3	B	830	GLN
3	B	1029	HIS
3	B	1052	ASN
1	H	68	ASN
1	I	76	HIS
1	I	218	ASN
2	J	67	GLN
2	J	273	HIS
2	J	286	HIS
3	F	155	HIS
3	F	200	ASN
3	F	756	HIS
3	G	151	GLN
3	G	155	HIS
3	G	258	GLN
3	G	791	HIS
3	G	911	GLN
3	G	932	GLN
3	G	1052	ASN
3	G	1069	HIS
3	G	1073	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

4 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
5	ADP	F	1101	-	24,29,29	3.13	8 (33%)	29,45,45	2.25	6 (20%)
5	ADP	A	1101	-	24,29,29	3.13	8 (33%)	29,45,45	2.19	5 (17%)
5	ADP	G	1101	-	24,29,29	3.12	8 (33%)	29,45,45	2.11	4 (13%)
5	ADP	B	1101	-	24,29,29	3.12	8 (33%)	29,45,45	2.12	4 (13%)

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
5	ADP	F	1101	-	-	5/12/32/32	0/3/3/3
5	ADP	A	1101	-	-	5/12/32/32	0/3/3/3
5	ADP	G	1101	-	-	5/12/32/32	0/3/3/3
5	ADP	B	1101	-	-	5/12/32/32	0/3/3/3

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	G	1101	ADP	C3'-C4'	-8.58	1.31	1.53
5	B	1101	ADP	C3'-C4'	-8.53	1.31	1.53
5	A	1101	ADP	C3'-C4'	-8.34	1.31	1.53
5	F	1101	ADP	C3'-C4'	-8.31	1.31	1.53
5	F	1101	ADP	O4'-C4'	7.85	1.62	1.45
5	A	1101	ADP	O4'-C4'	7.85	1.62	1.45

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	1101	ADP	O4'-C4'	7.72	1.62	1.45
5	G	1101	ADP	O4'-C4'	7.72	1.62	1.45
5	F	1101	ADP	O4'-C1'	-7.30	1.30	1.41
5	A	1101	ADP	O4'-C1'	-7.29	1.30	1.41
5	B	1101	ADP	O4'-C1'	-7.12	1.31	1.41
5	G	1101	ADP	O4'-C1'	-7.00	1.31	1.41
5	A	1101	ADP	C6-N6	3.15	1.45	1.34
5	G	1101	ADP	C6-N6	3.13	1.45	1.34
5	F	1101	ADP	C6-N6	3.12	1.45	1.34
5	B	1101	ADP	C6-N6	3.09	1.45	1.34
5	G	1101	ADP	O3'-C3'	2.97	1.50	1.43
5	F	1101	ADP	O3'-C3'	2.96	1.49	1.43
5	G	1101	ADP	O2'-C2'	-2.94	1.36	1.43
5	A	1101	ADP	O3'-C3'	2.94	1.49	1.43
5	F	1101	ADP	O2'-C2'	-2.92	1.36	1.43
5	B	1101	ADP	O3'-C3'	2.92	1.49	1.43
5	A	1101	ADP	O2'-C2'	-2.91	1.36	1.43
5	B	1101	ADP	O2'-C2'	-2.90	1.36	1.43
5	G	1101	ADP	C5-C4	-2.62	1.34	1.40
5	A	1101	ADP	C5-C4	-2.62	1.34	1.40
5	B	1101	ADP	C5-C4	-2.59	1.34	1.40
5	F	1101	ADP	C5-C4	-2.59	1.34	1.40
5	B	1101	ADP	C2-N3	2.20	1.35	1.32
5	G	1101	ADP	C2-N3	2.14	1.35	1.32
5	F	1101	ADP	C2-N3	2.12	1.35	1.32
5	A	1101	ADP	C2-N3	2.02	1.35	1.32

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	1101	ADP	C1'-N9-C4	9.01	142.48	126.64
5	A	1101	ADP	C1'-N9-C4	8.75	142.02	126.64
5	B	1101	ADP	C1'-N9-C4	7.93	140.57	126.64
5	G	1101	ADP	C1'-N9-C4	7.89	140.50	126.64
5	F	1101	ADP	N3-C2-N1	-5.54	120.03	128.68
5	A	1101	ADP	N3-C2-N1	-5.53	120.04	128.68
5	G	1101	ADP	N3-C2-N1	-5.46	120.14	128.68
5	B	1101	ADP	N3-C2-N1	-5.43	120.19	128.68
5	B	1101	ADP	C3'-C2'-C1'	3.68	106.52	100.98
5	G	1101	ADP	C3'-C2'-C1'	3.63	106.45	100.98
5	F	1101	ADP	PA-O3A-PB	-3.19	121.88	132.83
5	G	1101	ADP	PA-O3A-PB	-3.18	121.91	132.83

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	1101	ADP	PA-O3A-PB	-3.15	122.01	132.83
5	A	1101	ADP	PA-O3A-PB	-2.94	122.73	132.83
5	F	1101	ADP	C3'-C2'-C1'	2.12	104.16	100.98
5	A	1101	ADP	C3'-C2'-C1'	2.10	104.14	100.98
5	F	1101	ADP	C2'-C3'-C4'	2.05	106.62	102.64
5	A	1101	ADP	C2'-C3'-C4'	2.03	106.60	102.64
5	F	1101	ADP	O4'-C1'-C2'	-2.03	103.96	106.93

There are no chirality outliers.

All (20) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1101	ADP	C5'-O5'-PA-O1A
5	A	1101	ADP	C5'-O5'-PA-O2A
5	B	1101	ADP	C5'-O5'-PA-O2A
5	F	1101	ADP	C5'-O5'-PA-O1A
5	F	1101	ADP	C5'-O5'-PA-O2A
5	G	1101	ADP	C5'-O5'-PA-O2A
5	A	1101	ADP	C4'-C5'-O5'-PA
5	F	1101	ADP	C4'-C5'-O5'-PA
5	B	1101	ADP	C5'-O5'-PA-O3A
5	G	1101	ADP	C5'-O5'-PA-O3A
5	B	1101	ADP	PB-O3A-PA-O1A
5	B	1101	ADP	C5'-O5'-PA-O1A
5	G	1101	ADP	C5'-O5'-PA-O1A
5	F	1101	ADP	O4'-C4'-C5'-O5'
5	G	1101	ADP	O4'-C4'-C5'-O5'
5	A	1101	ADP	C5'-O5'-PA-O3A
5	F	1101	ADP	C5'-O5'-PA-O3A
5	A	1101	ADP	O4'-C4'-C5'-O5'
5	B	1101	ADP	O4'-C4'-C5'-O5'
5	G	1101	ADP	PB-O3A-PA-O1A

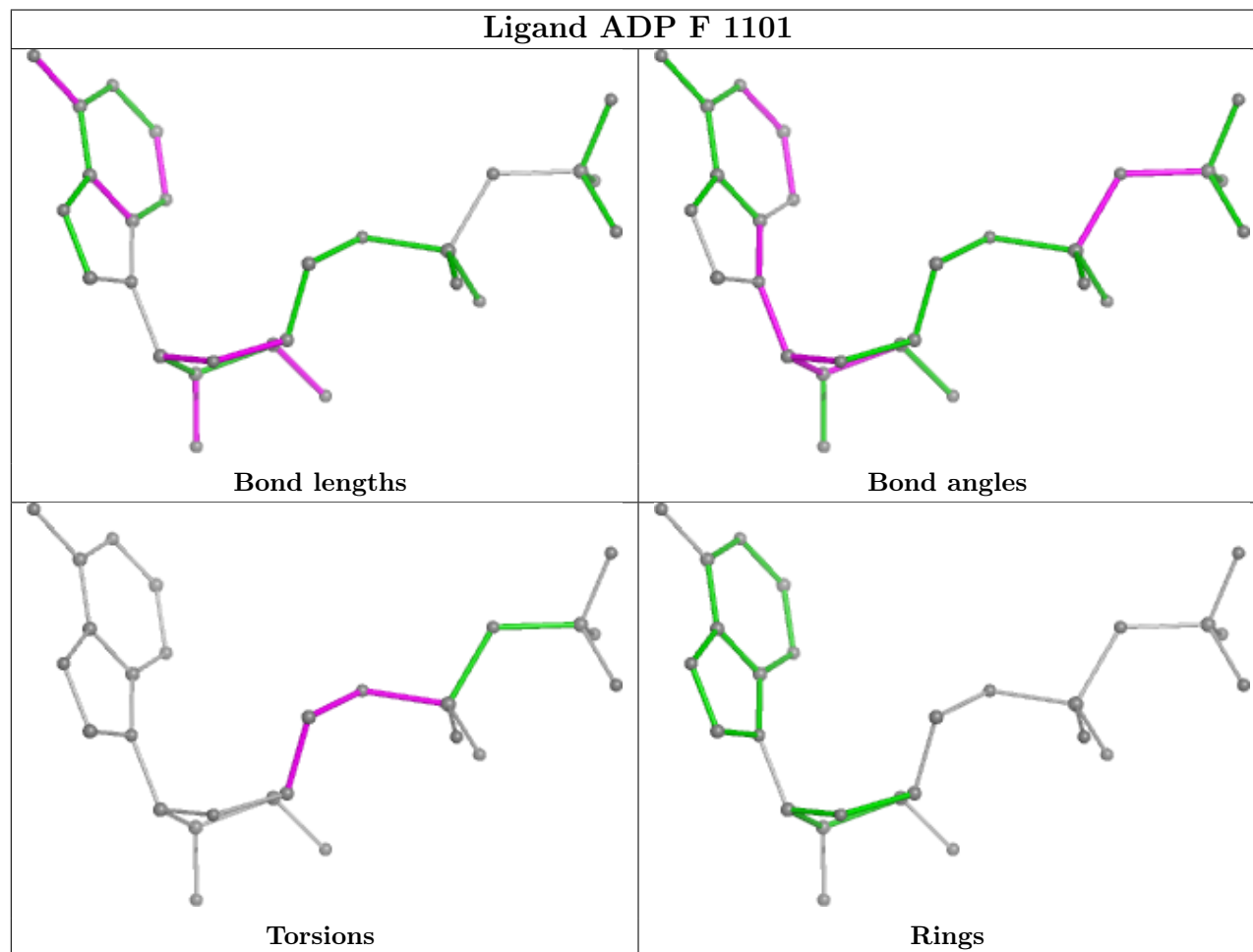
There are no ring outliers.

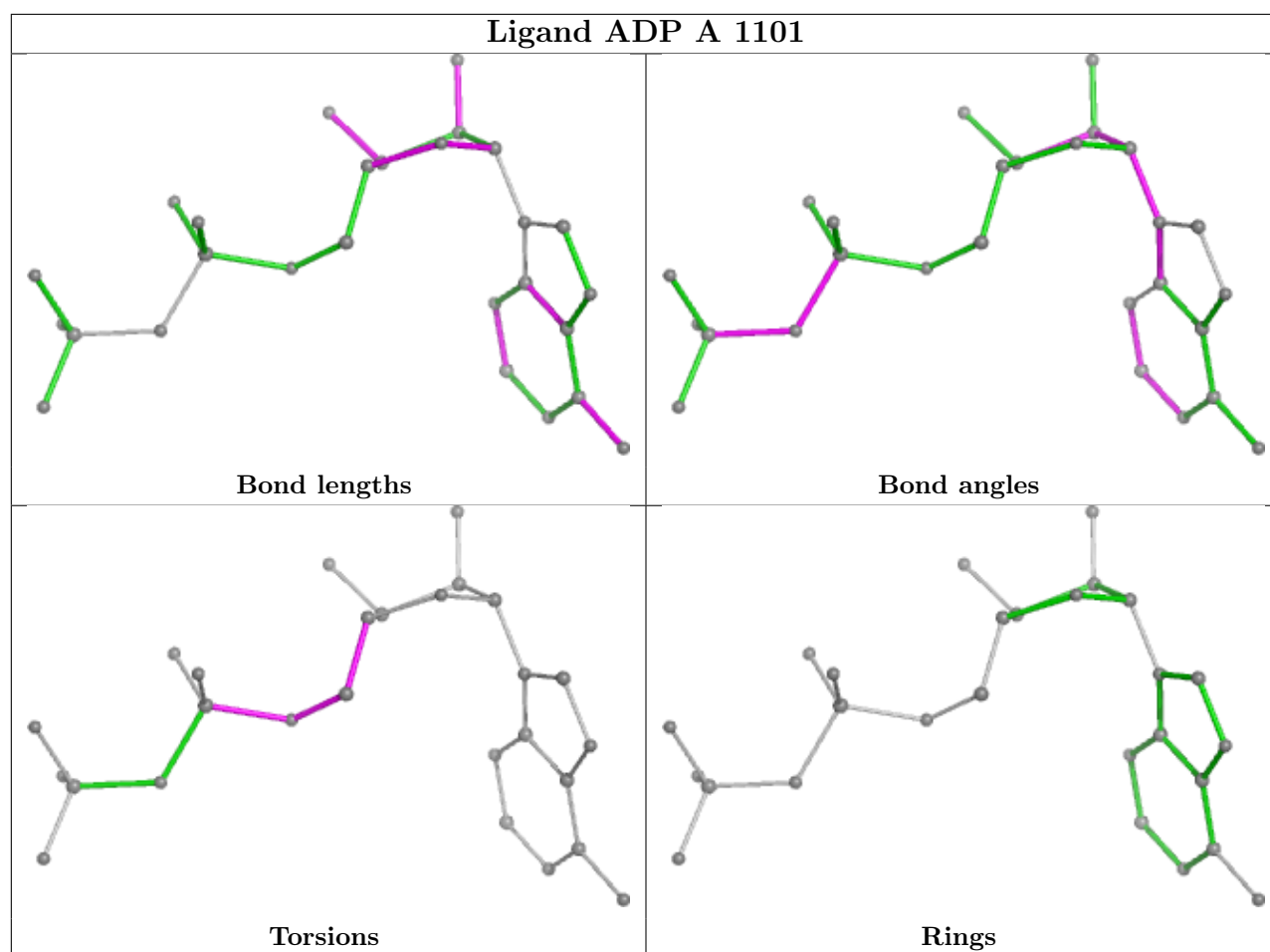
1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	G	1101	ADP	1	0

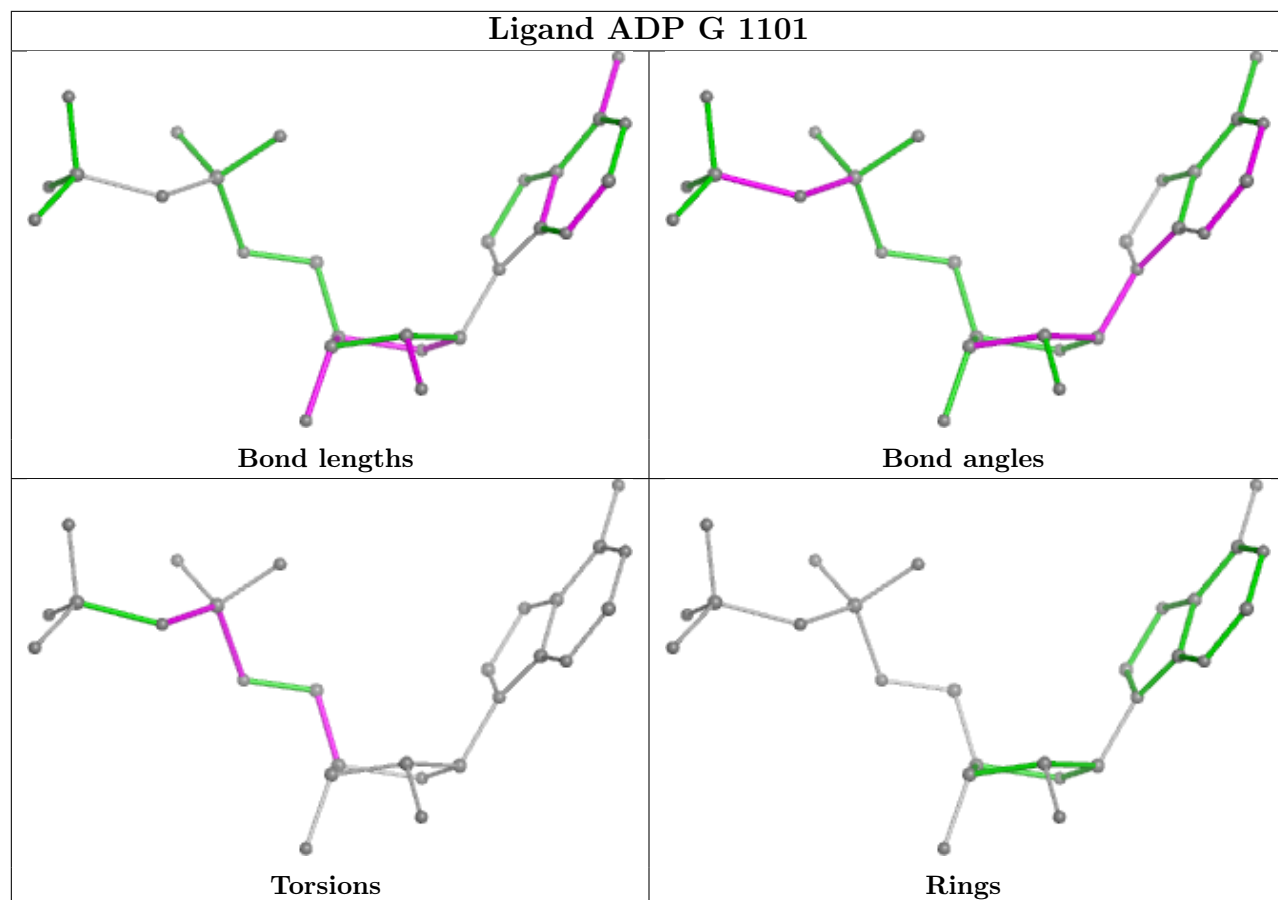
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

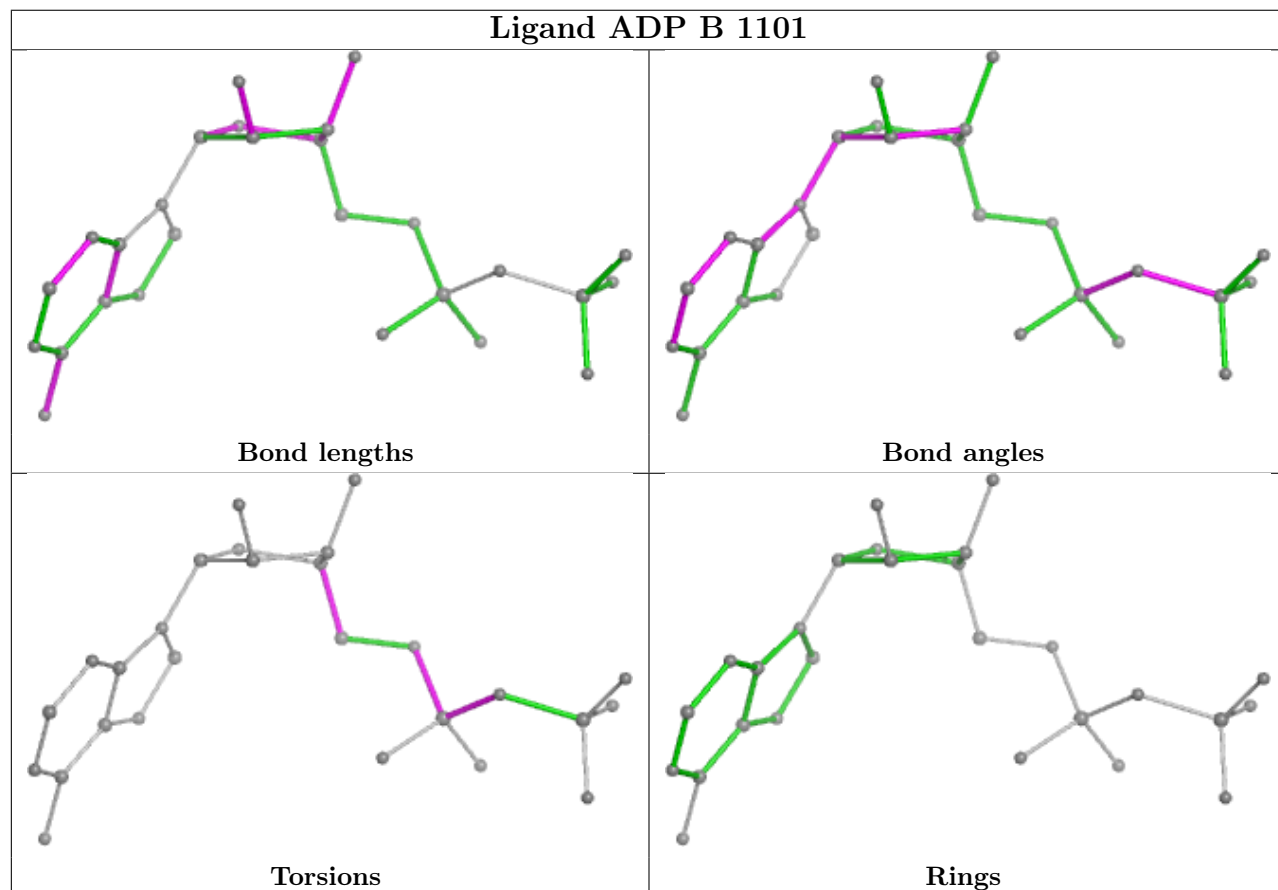




Ligand ADP G 1101



Ligand ADP B 1101



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.

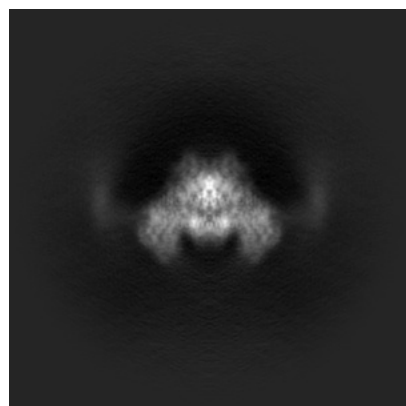
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-53447. These allow visual inspection of the internal detail of the map and identification of artifacts.

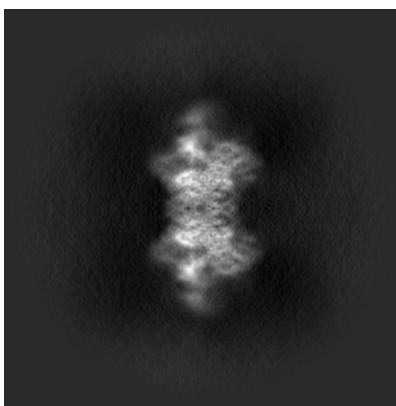
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

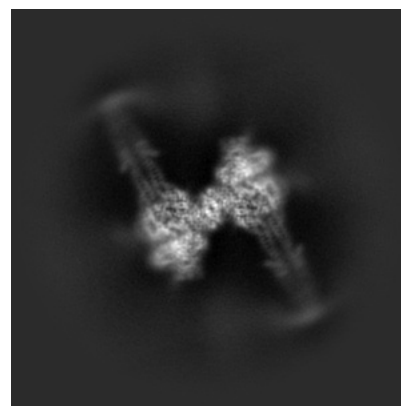
6.1.1 Primary map



X

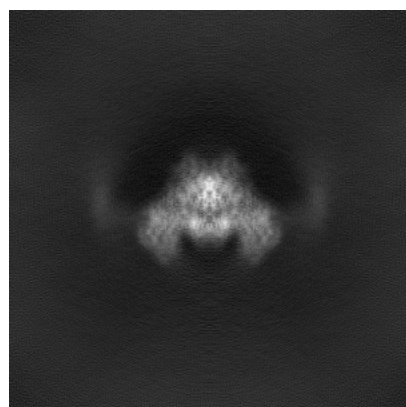


Y

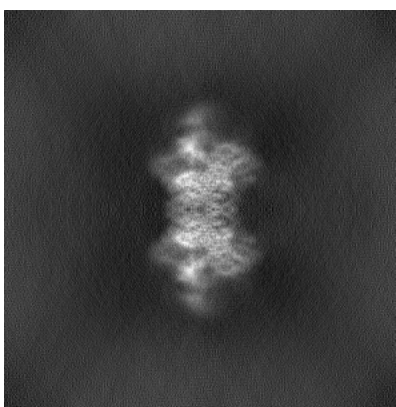


Z

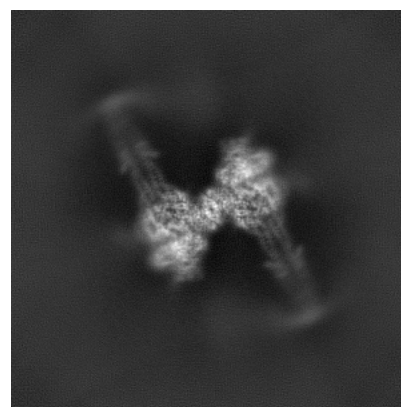
6.1.2 Raw map



X



Y

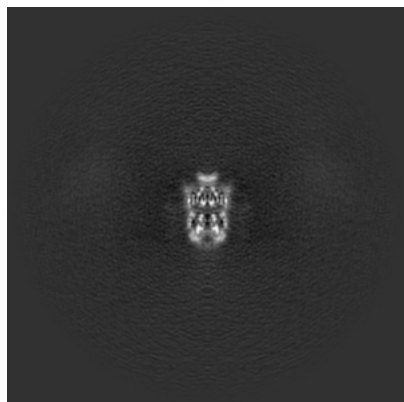


Z

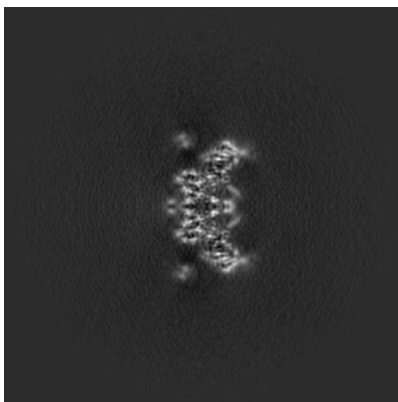
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

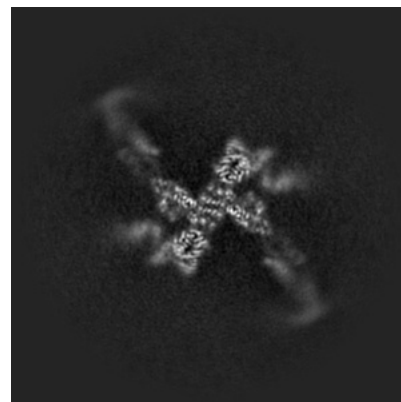
6.2.1 Primary map



X Index: 200

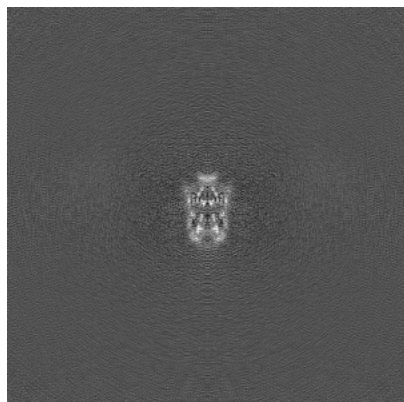


Y Index: 200

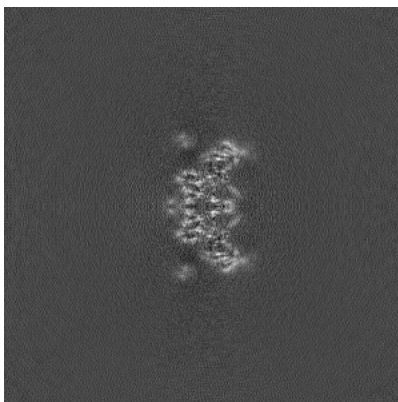


Z Index: 200

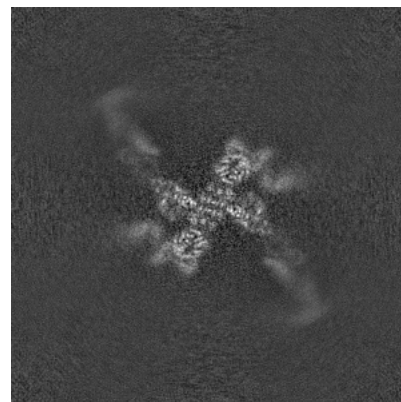
6.2.2 Raw map



X Index: 200



Y Index: 200

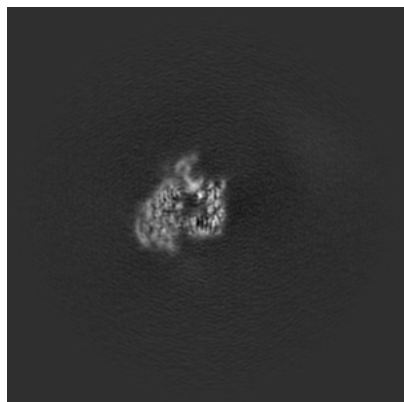


Z Index: 200

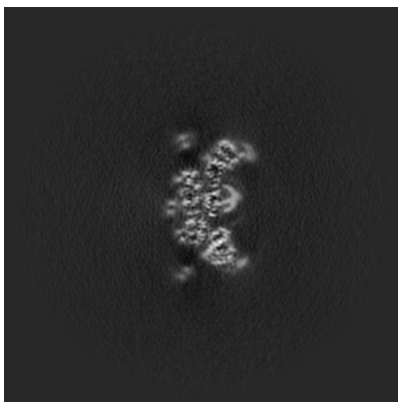
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

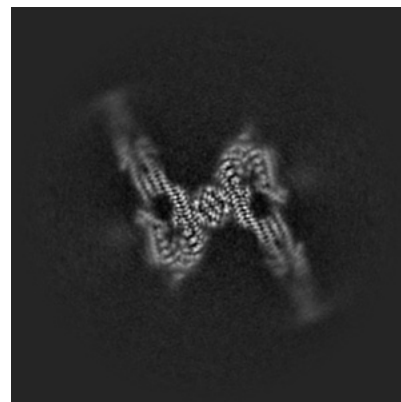
6.3.1 Primary map



X Index: 172

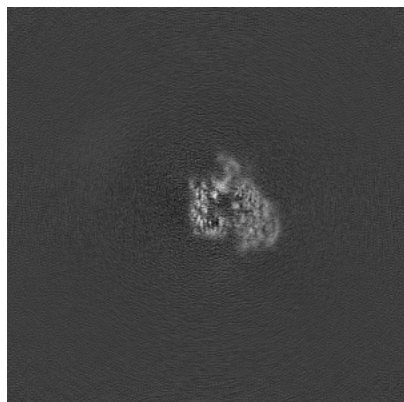


Y Index: 203

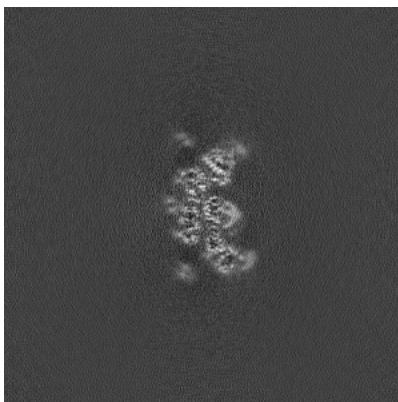


Z Index: 187

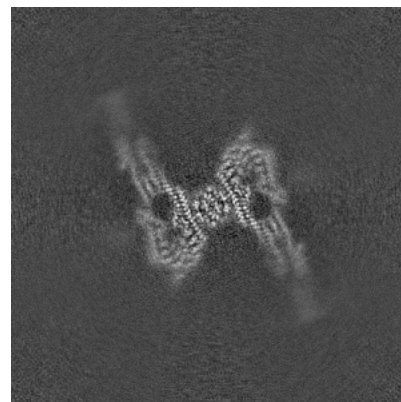
6.3.2 Raw map



X Index: 228



Y Index: 196

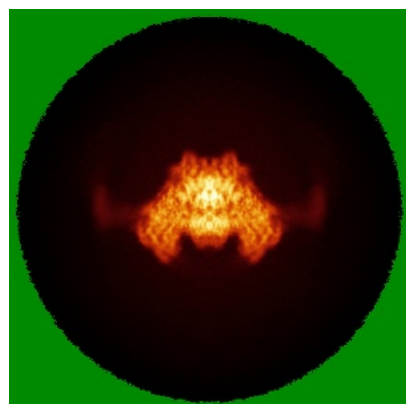


Z Index: 186

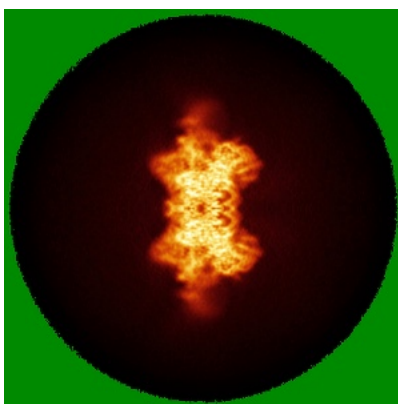
The images above show the largest variance slices of the map in three orthogonal directions.

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

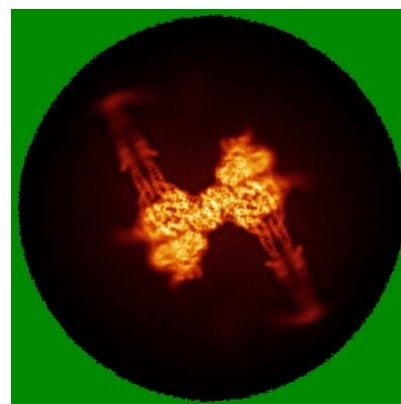
6.4.1 Primary map



X

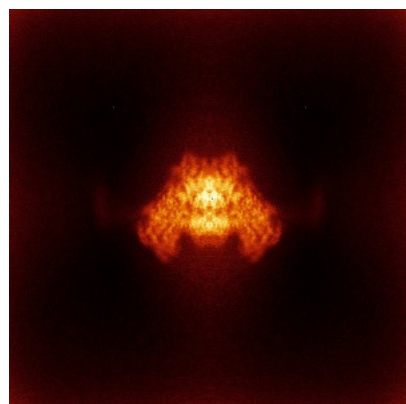


Y

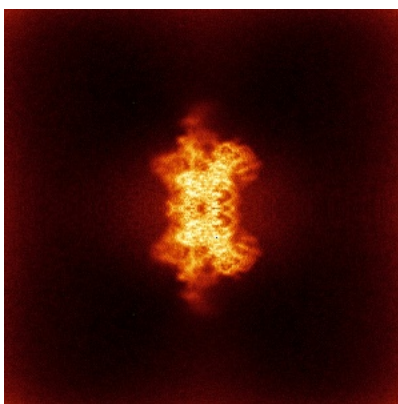


Z

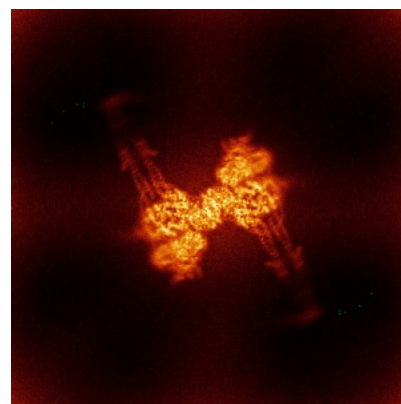
6.4.2 Raw map



X



Y

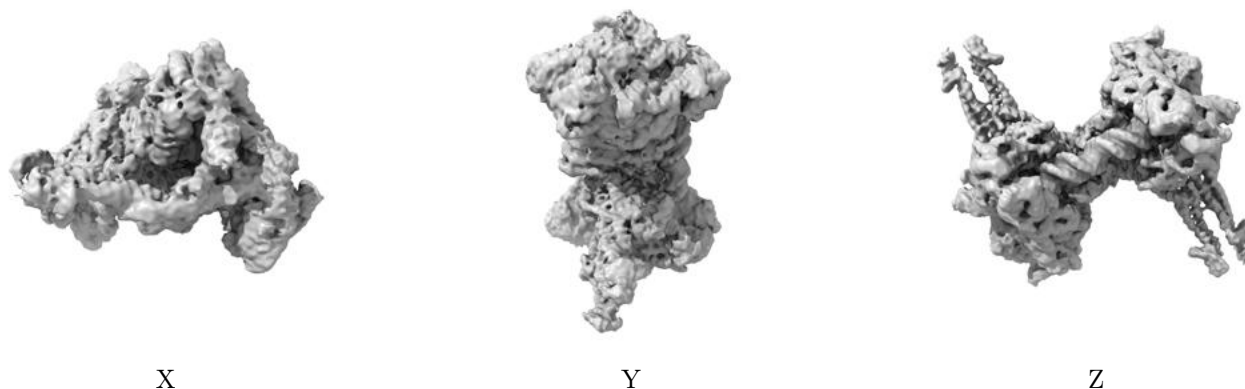


Z

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.

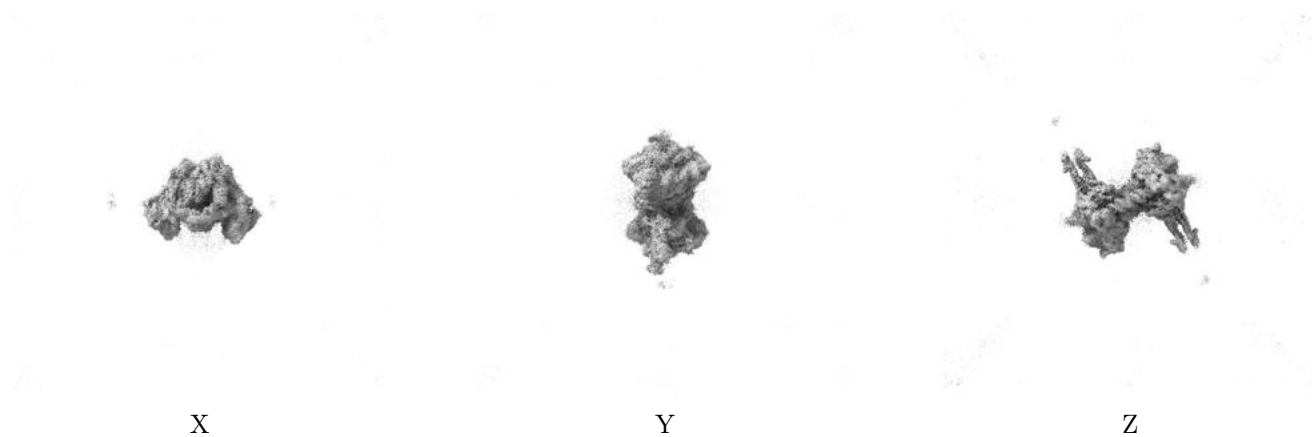
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.08. 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



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.

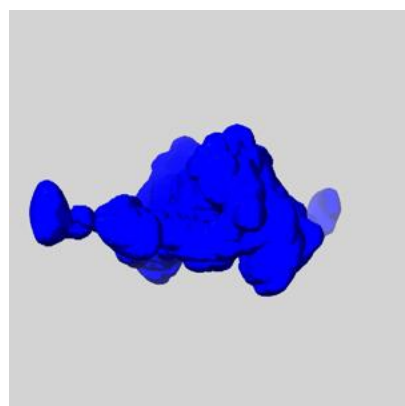
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

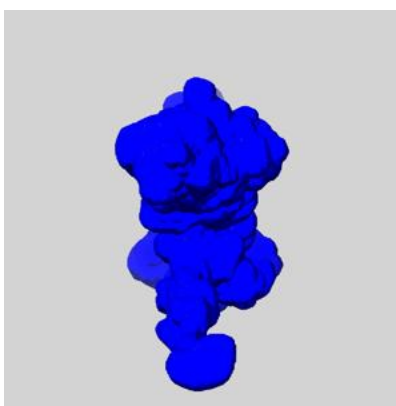
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

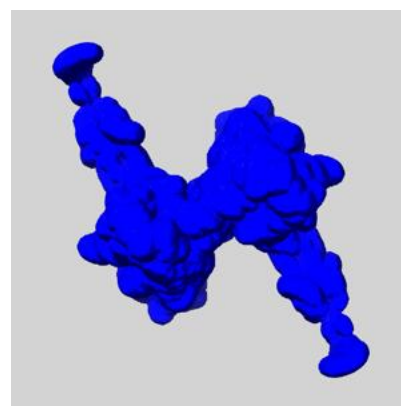
6.6.1 emd_53447_msk_1.map [i](#)



X



Y

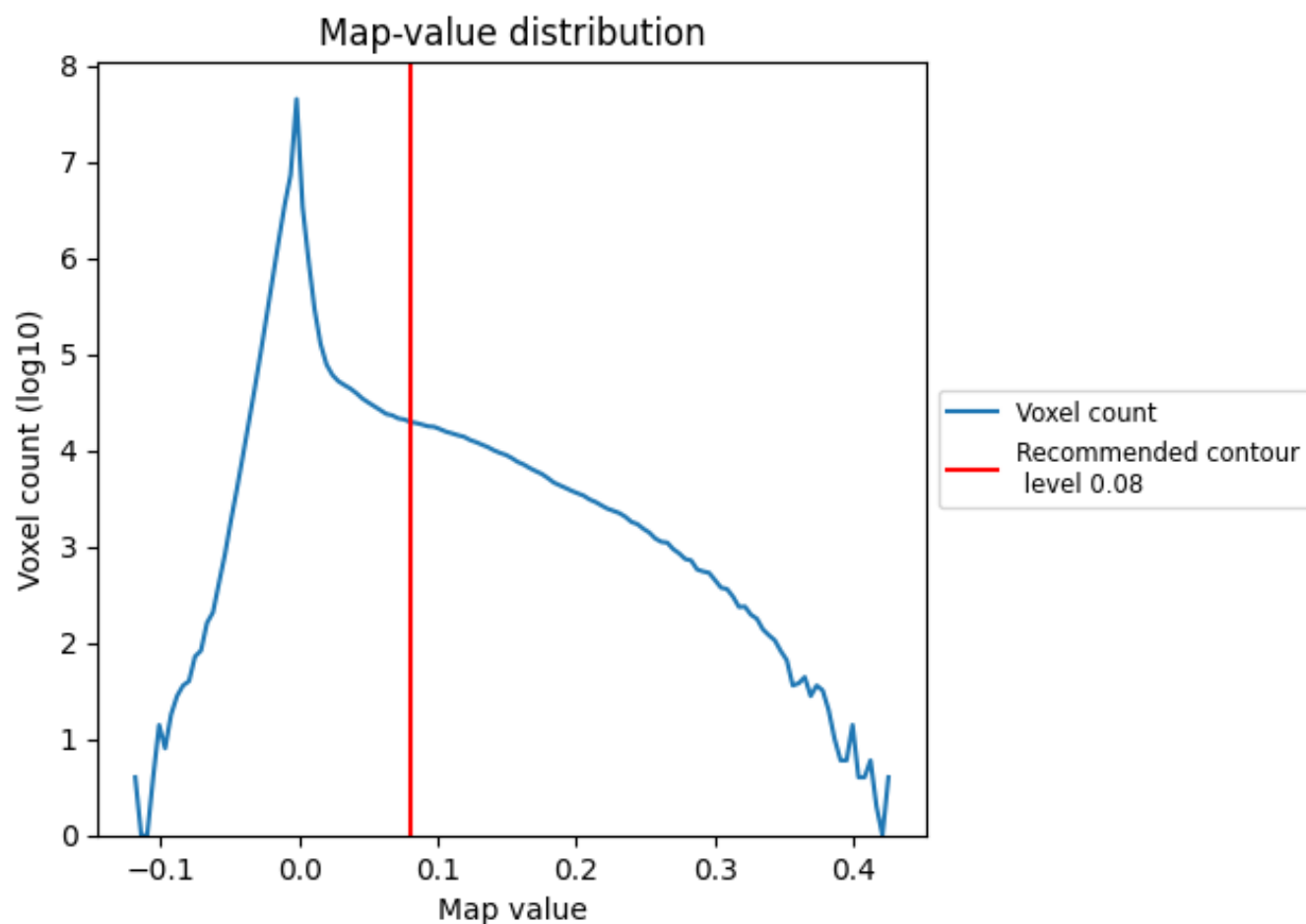


Z

7 Map analysis [i](#)

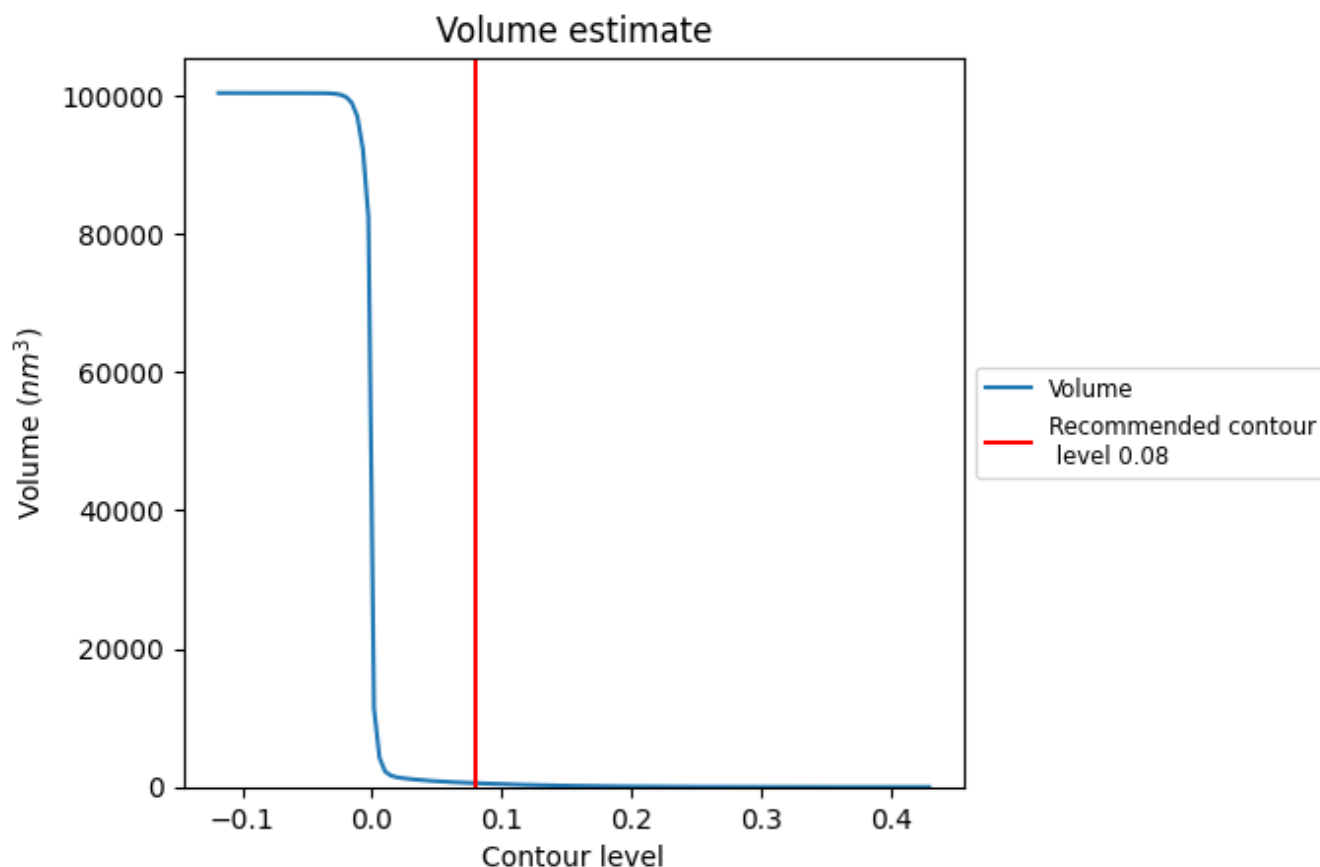
This section contains the results of statistical analysis of the map.

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.

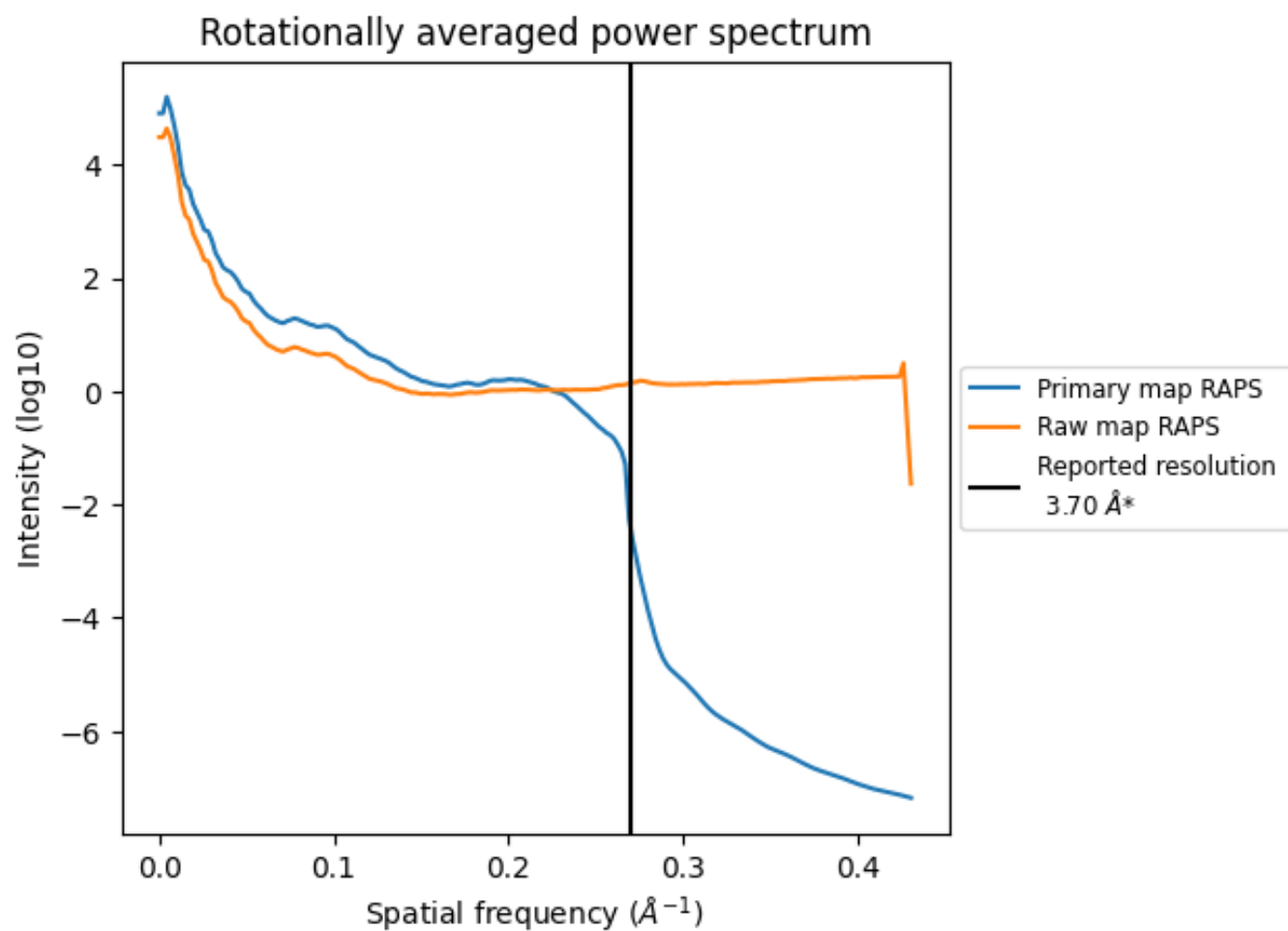
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 550 nm³; this corresponds to an approximate mass of 497 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 ⓘ

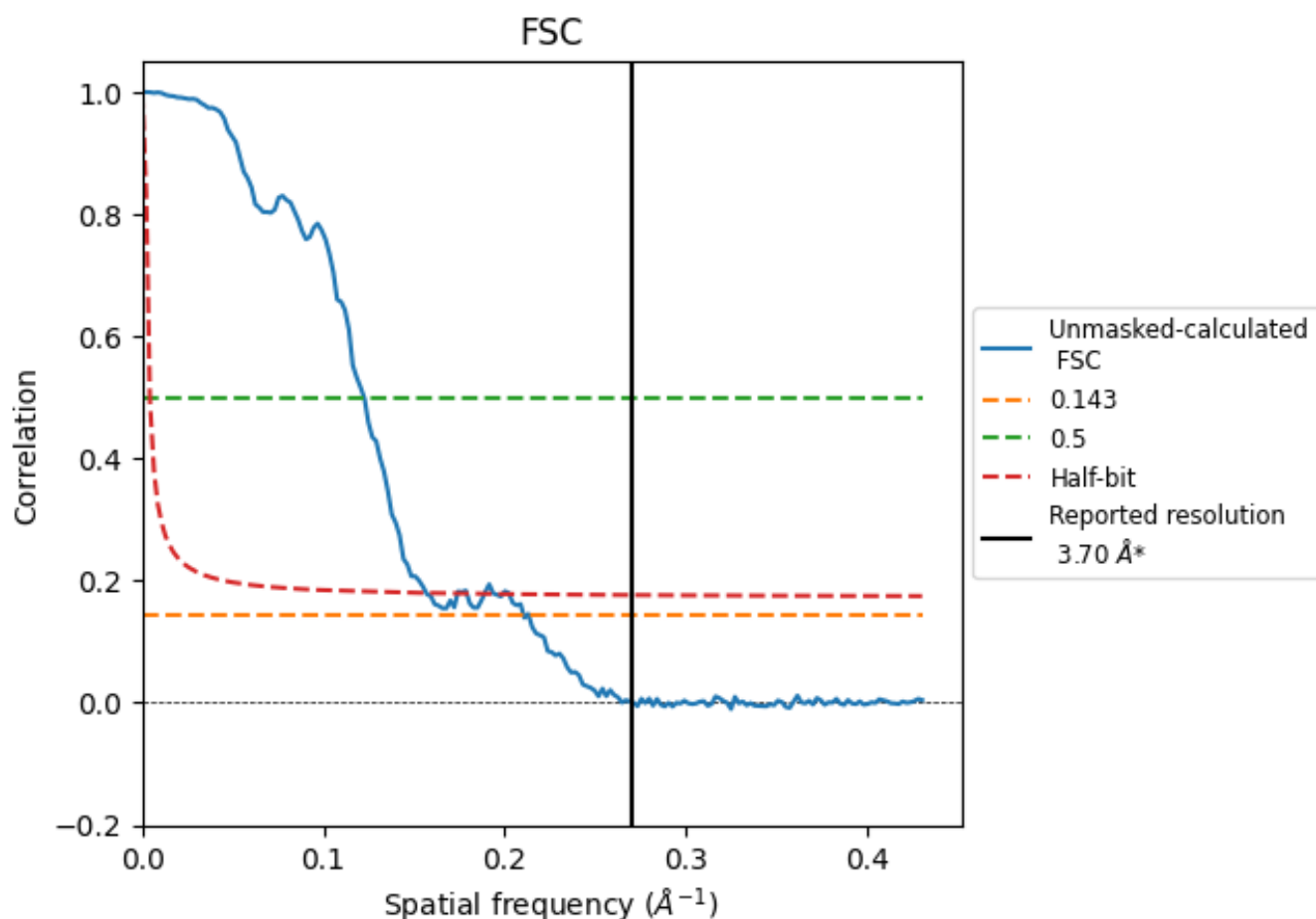


*Reported resolution corresponds to spatial frequency of 0.270 Å⁻¹

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 0.270 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

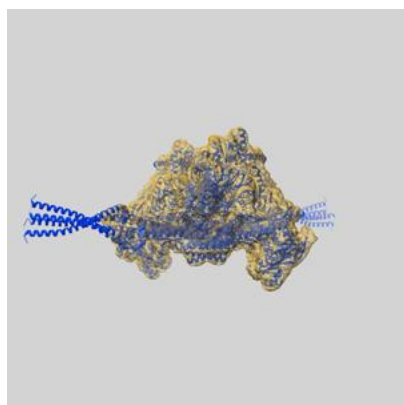
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.75	8.17	6.38

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.75 differs from the reported value 3.7 by more than 10 %

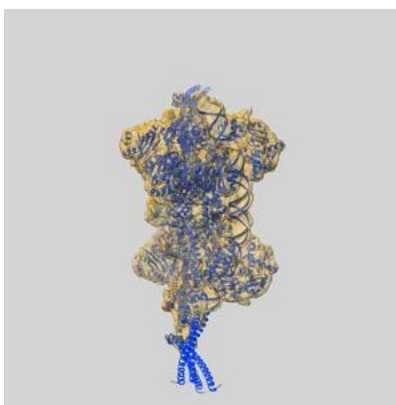
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-53447 and PDB model 9QXX. Per-residue inclusion information can be found in [section 3](#) on [page 6](#).

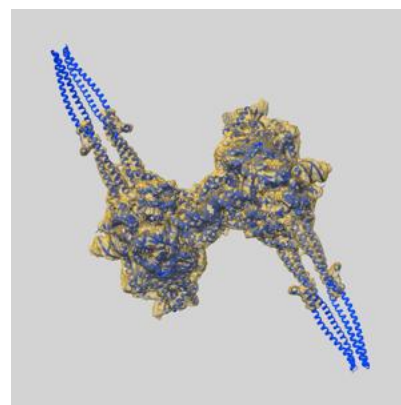
9.1 Map-model overlay [i](#)



X



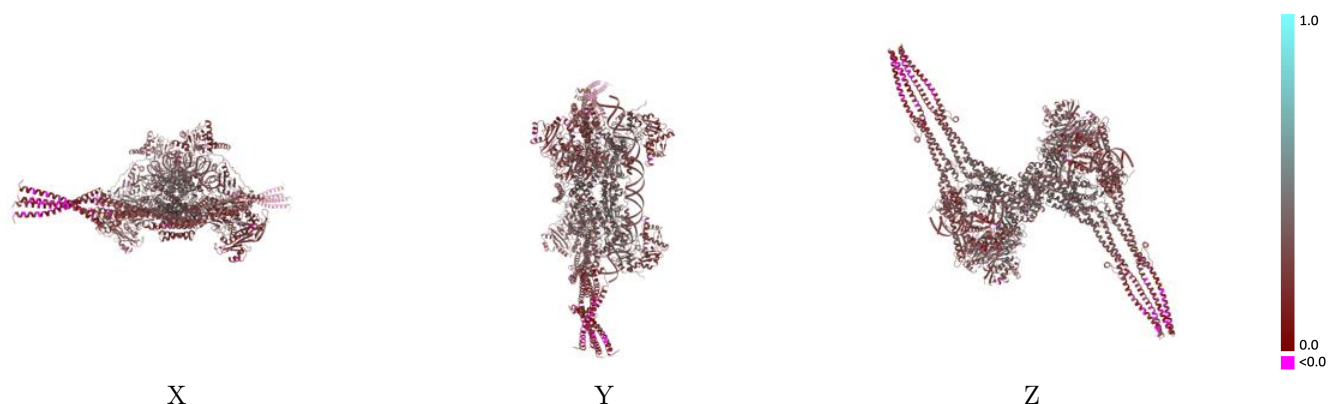
Y



Z

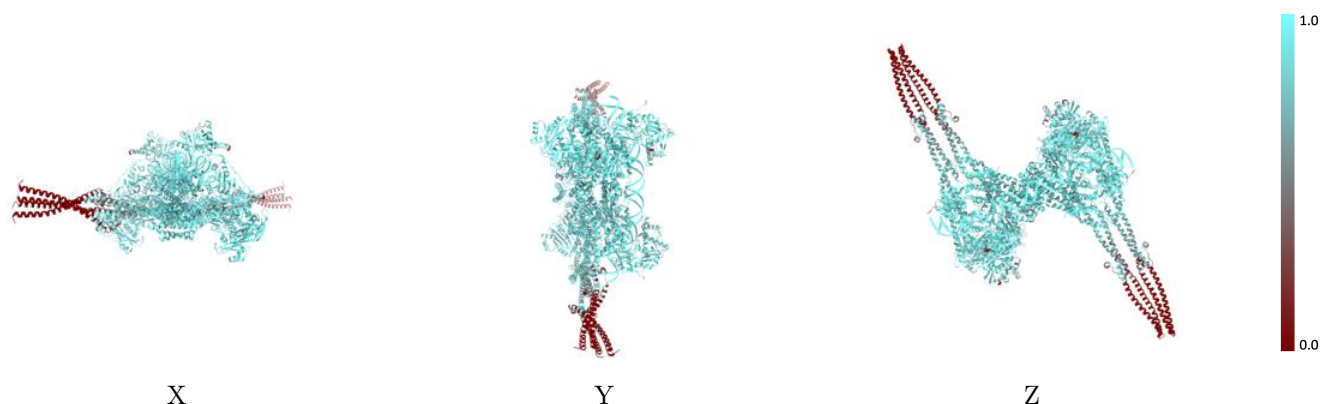
The images above show the 3D surface view of the map at the recommended contour level 0.08 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



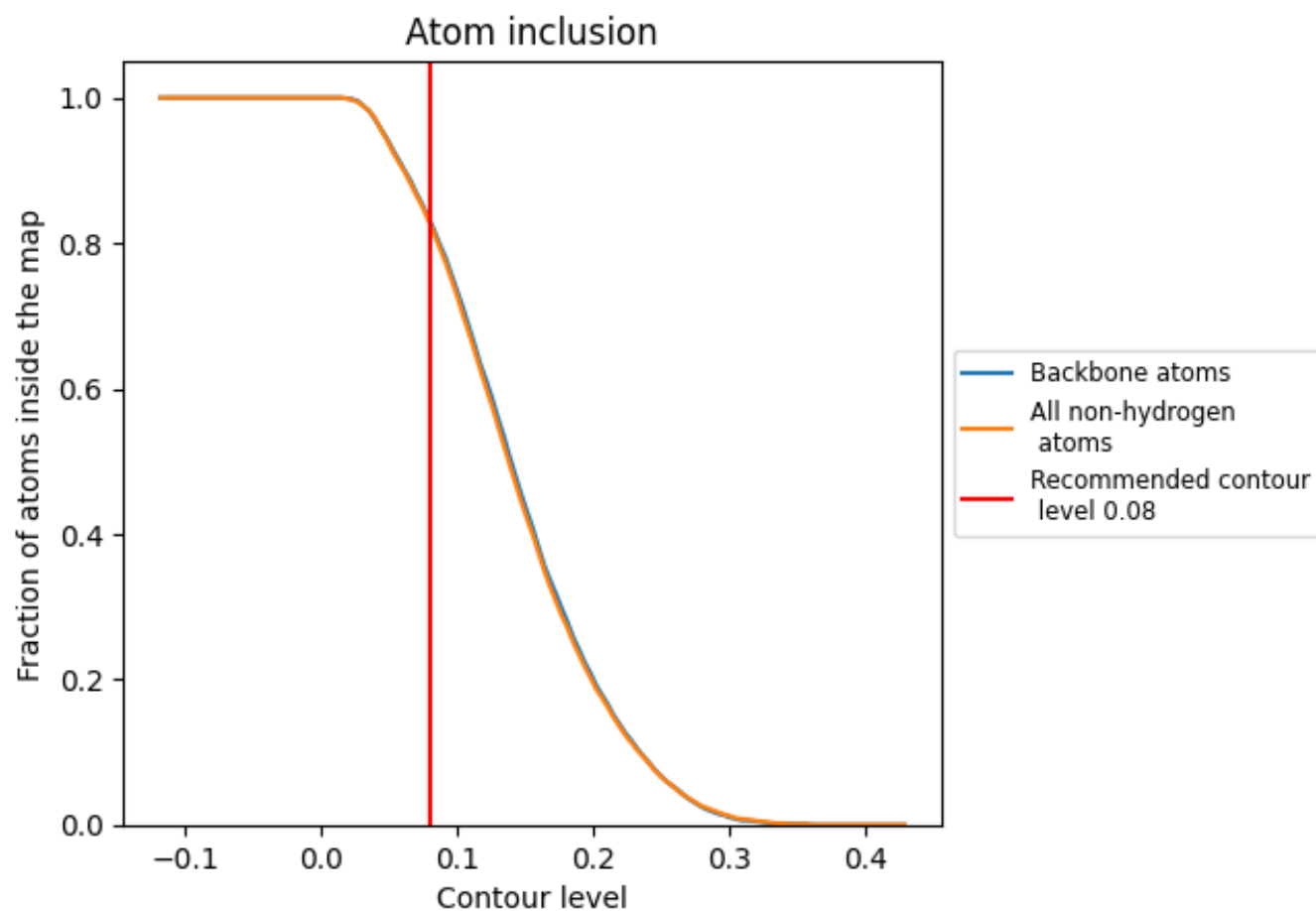
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.08).

9.4 Atom inclusion ⓘ



At the recommended contour level, 83% of all backbone atoms, 83% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8270	 0.2910
A	 0.7770	 0.3080
B	 0.7530	 0.2310
C	 0.9410	 0.3590
D	 0.8800	 0.2500
E	 0.9140	 0.3430
F	 0.7770	 0.3060
G	 0.7500	 0.2300
H	 0.9370	 0.3600
I	 0.8740	 0.2490
J	 0.9130	 0.3400
P	 0.9910	 0.3100
Q	 0.9910	 0.3090

