Full wwPDB EM Validation Report ⓘ

Apr 15, 2025 – 06:06 PM EDT

PDB ID	:	9CQ6 / pdb_00009cq6
EMDB ID	:	EMD-45809
Title	:	The ligation complex in the NHEJ pathway
Authors	:	Li, J.; Liu, L.; Gellert, M.; Yang, W.
Deposited on	:	2024-07-19
Resolution	:	3.10 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:

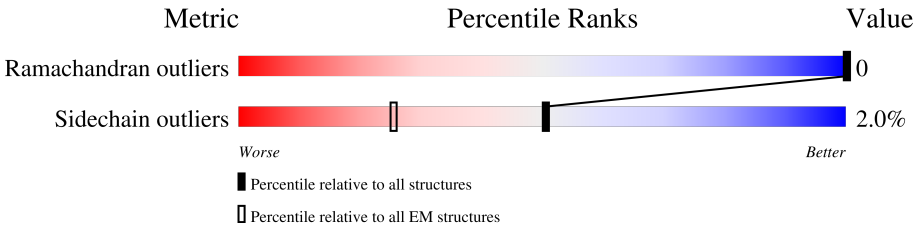
EMDB validation analysis	:	0.0.1.dev117
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.42

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.10 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)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	612	82% · 16%
1	a	612	82% · 17%
2	B	732	· 71% · 28%
2	b	732	· 71% · 28%
3	C	302	76% · 24%
3	c	302	75% · 25%
4	D	336	7% 59% · 40%
4	E	336	58% · 40%
4	d	336	· 59% · 40%

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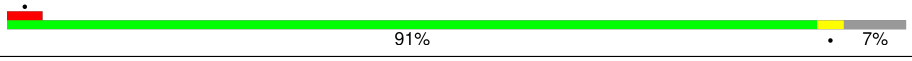
Mol	Chain	Length	Quality of chain
4	e	336	
5	F	914	
5	f	914	
6	G	218	
6	H	218	
7	I	68	
8	J	68	
9	K	51	
10	L	51	

2 Entry composition (i)

There are 11 unique types of molecules in this entry. The entry contains 39180 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 X-ray repair cross-complementing protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	514	Total	C	N	O	S	1	0
			4171	2668	706	779	18		
1	a	507	Total	C	N	O	S	0	0
			4094	2617	693	766	18		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP P12956
A	-1	PRO	-	expression tag	UNP P12956
A	0	VAL	-	expression tag	UNP P12956
a	-2	GLY	-	expression tag	UNP P12956
a	-1	PRO	-	expression tag	UNP P12956
a	0	VAL	-	expression tag	UNP P12956

- Molecule 2 is a protein called X-ray repair cross-complementing protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	526	Total	C	N	O	S	0	0
			4211	2697	707	784	23		
2	b	528	Total	C	N	O	S	0	0
			4223	2703	709	788	23		

- Molecule 3 is a protein called Non-homologous end-joining factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	231	Total	C	N	O	S	0	0
			1831	1170	306	340	15		
3	c	228	Total	C	N	O	S	0	0
			1813	1158	303	337	15		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	GLY	-	expression tag	UNP Q9H9Q4
C	-1	PRO	-	expression tag	UNP Q9H9Q4
C	0	VAL	-	expression tag	UNP Q9H9Q4
c	-2	GLY	-	expression tag	UNP Q9H9Q4
c	-1	PRO	-	expression tag	UNP Q9H9Q4
c	0	VAL	-	expression tag	UNP Q9H9Q4

- Molecule 4 is a protein called DNA repair protein XRCC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	201	Total	C	N	O	S	0	0
			1628	1031	278	312	7		
4	E	201	Total	C	N	O	S	0	0
			1628	1031	278	312	7		
4	d	201	Total	C	N	O	S	0	0
			1628	1031	278	312	7		
4	e	201	Total	C	N	O	S	0	0
			1628	1031	278	312	7		

- Molecule 5 is a protein called DNA ligase 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	853	Total	C	N	O	S	1	0
			6865	4370	1178	1272	45		
5	f	255	Total	C	N	O	S	0	0
			2069	1315	349	392	13		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	-2	GLY	-	expression tag	UNP P49917
F	-1	PRO	-	expression tag	UNP P49917
F	0	VAL	-	expression tag	UNP P49917
f	-2	GLY	-	expression tag	UNP P49917
f	-1	PRO	-	expression tag	UNP P49917
f	0	VAL	-	expression tag	UNP P49917

- Molecule 6 is a protein called Protein PAXX.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	24	Total	C	N	O	S	0	0
			174	110	28	35	1		

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Mol	Chain	Residues	Atoms					AltConf	Trace
6	H	23	Total	C	N	O	S	0	0
			165	105	27	32	1		

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	-13	MET	-	initiating methionine	UNP Q9BUH6
G	-12	GLY	-	expression tag	UNP Q9BUH6
G	-11	SER	-	expression tag	UNP Q9BUH6
G	-10	SER	-	expression tag	UNP Q9BUH6
G	-9	HIS	-	expression tag	UNP Q9BUH6
G	-8	HIS	-	expression tag	UNP Q9BUH6
G	-7	HIS	-	expression tag	UNP Q9BUH6
G	-6	HIS	-	expression tag	UNP Q9BUH6
G	-5	HIS	-	expression tag	UNP Q9BUH6
G	-4	HIS	-	expression tag	UNP Q9BUH6
G	-3	SER	-	expression tag	UNP Q9BUH6
G	-2	GLN	-	expression tag	UNP Q9BUH6
G	-1	ASP	-	expression tag	UNP Q9BUH6
G	0	PRO	-	expression tag	UNP Q9BUH6
H	-13	MET	-	initiating methionine	UNP Q9BUH6
H	-12	GLY	-	expression tag	UNP Q9BUH6
H	-11	SER	-	expression tag	UNP Q9BUH6
H	-10	SER	-	expression tag	UNP Q9BUH6
H	-9	HIS	-	expression tag	UNP Q9BUH6
H	-8	HIS	-	expression tag	UNP Q9BUH6
H	-7	HIS	-	expression tag	UNP Q9BUH6
H	-6	HIS	-	expression tag	UNP Q9BUH6
H	-5	HIS	-	expression tag	UNP Q9BUH6
H	-4	HIS	-	expression tag	UNP Q9BUH6
H	-3	SER	-	expression tag	UNP Q9BUH6
H	-2	GLN	-	expression tag	UNP Q9BUH6
H	-1	ASP	-	expression tag	UNP Q9BUH6
H	0	PRO	-	expression tag	UNP Q9BUH6

- Molecule 7 is a DNA chain called DNA (40-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	I	40	Total	C	N	O	P	0	0
			811	389	142	240	40		

- Molecule 8 is a DNA chain called DNA (38-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
8	J	38	Total	C	N	O	P	0	0
			776	371	139	228	38		

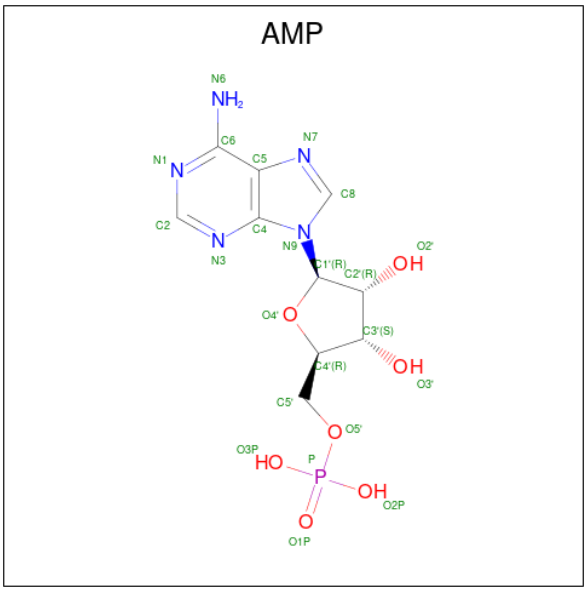
- Molecule 9 is a DNA chain called DNA (36-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
9	K	36	Total	C	N	O	P	0	0
			742	355	140	212	35		

- Molecule 10 is a DNA chain called DNA (34-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
10	L	34	Total	C	N	O	P	0	0
			700	334	128	204	34		

- Molecule 11 is ADENOSINE MONOPHOSPHATE (CCD ID: AMP) (formula: $C_{10}H_{14}N_5O_7P$) (labeled as "Ligand of Interest" by depositor).



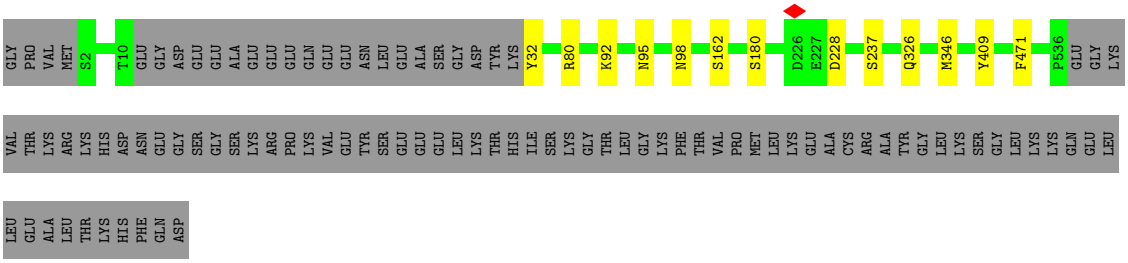
Mol	Chain	Residues	Atoms					AltConf
11	L	1	Total	C	N	O	P	0
			23	10	5	7	1	

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.

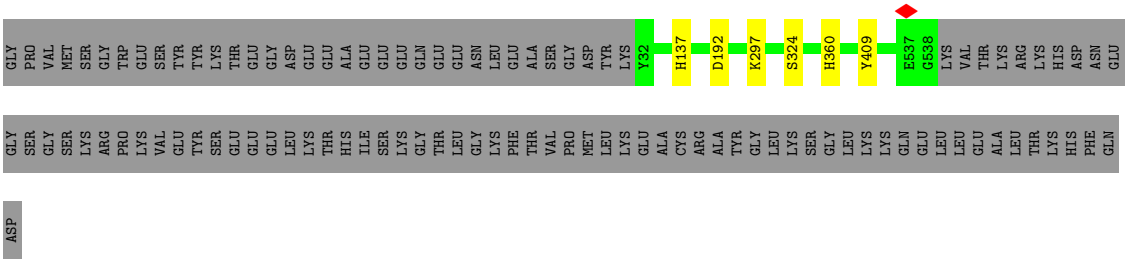
• Molecule 1: X-ray repair cross-complementing protein 6

Chain A:



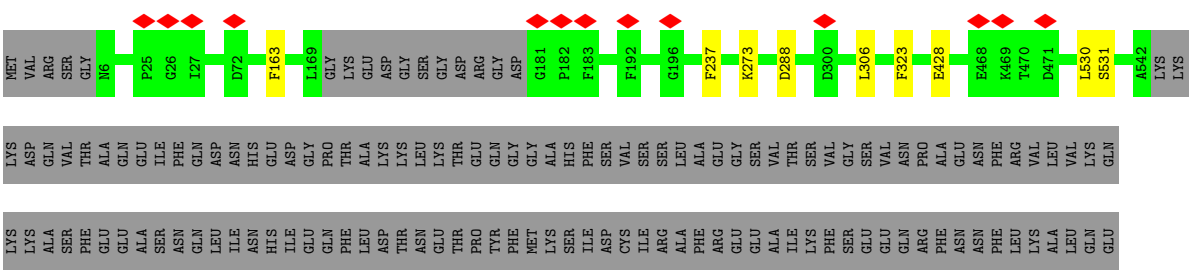
• Molecule 1: X-ray repair cross-complementing protein 6

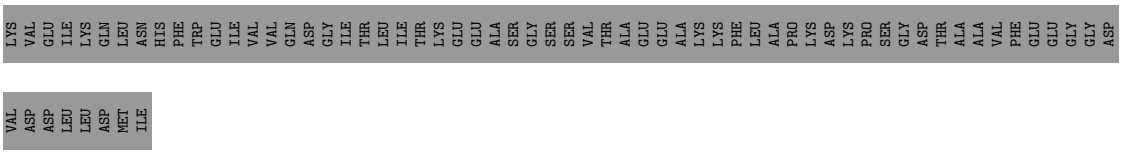
Chain a:



• Molecule 2: X-ray repair cross-complementing protein 5

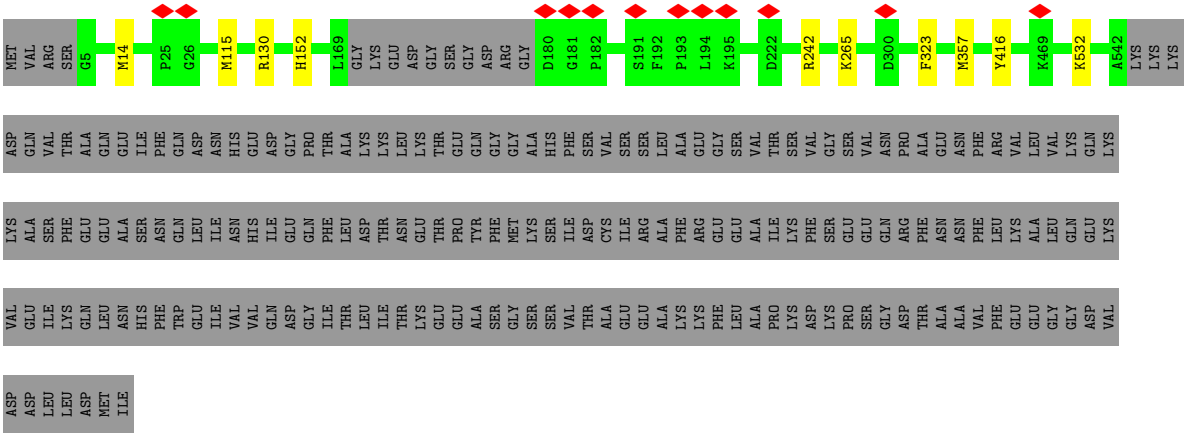
Chain B:





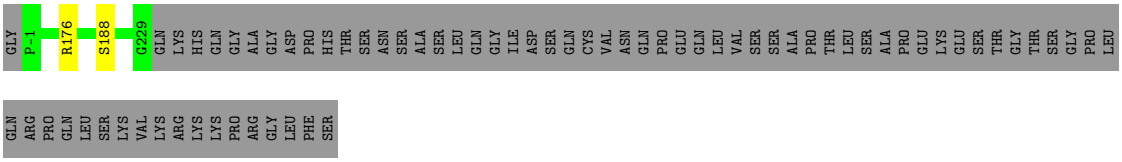
• Molecule 2: X-ray repair cross-complementing protein 5

Chain b:



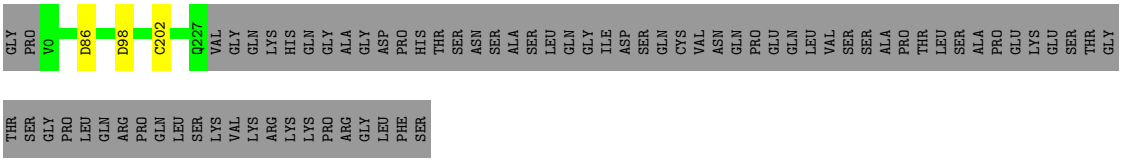
• Molecule 3: Non-homologous end-joining factor 1

Chain C:



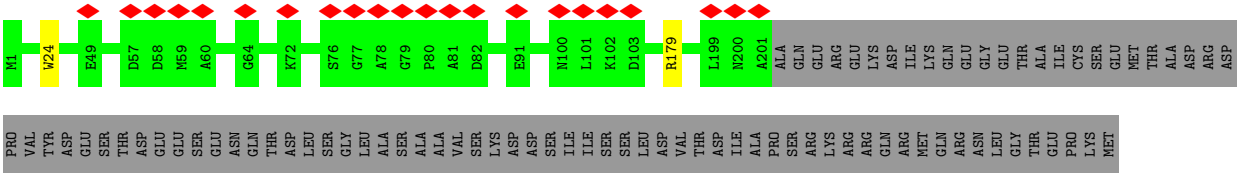
• Molecule 3: Non-homologous end-joining factor 1

Chain c:



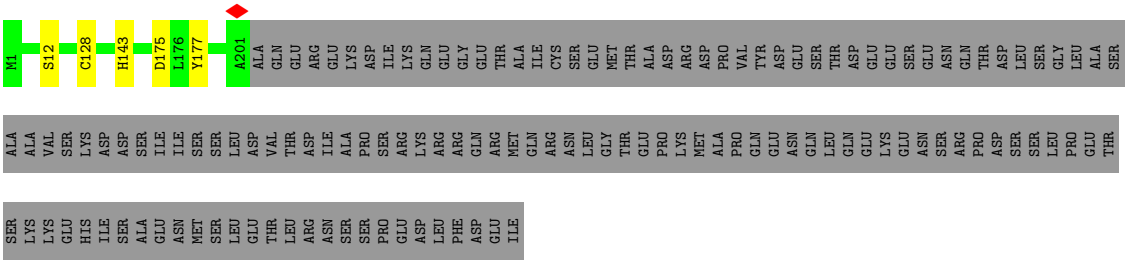
• Molecule 4: DNA repair protein XRCC4

Chain D:



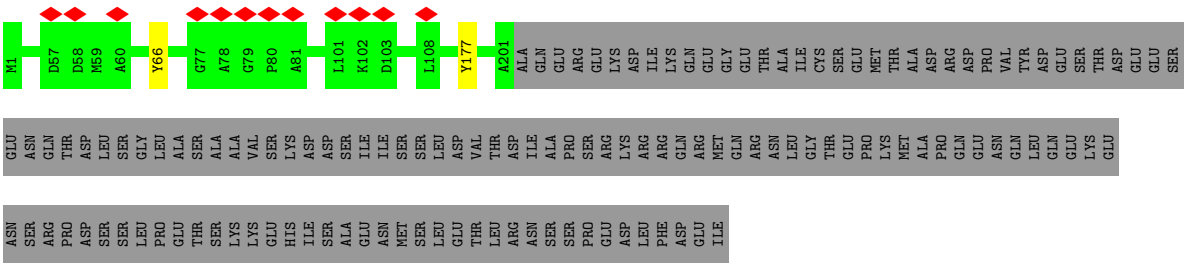
• Molecule 4: DNA repair protein XRCC4

Chain E:



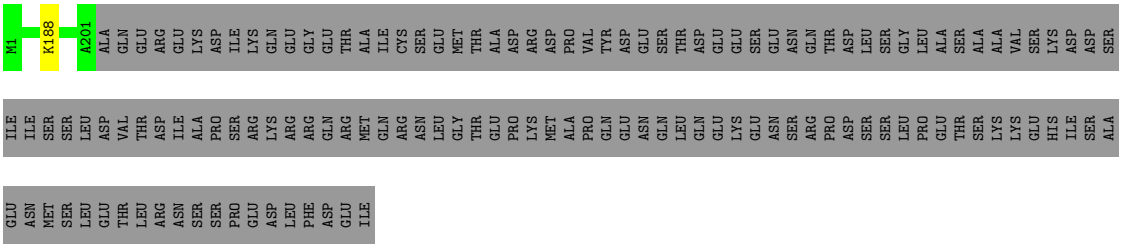
• Molecule 4: DNA repair protein XRCC4

Chain d:



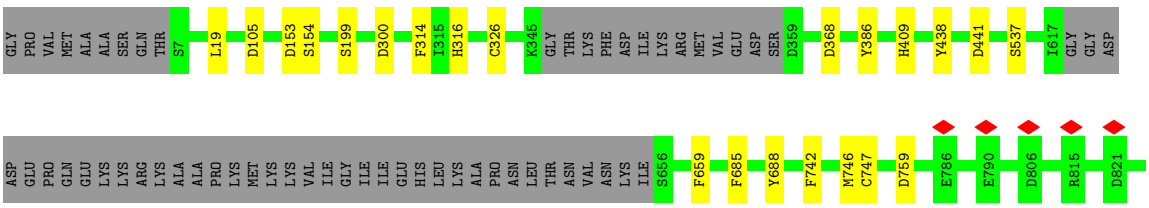
• Molecule 4: DNA repair protein XRCC4

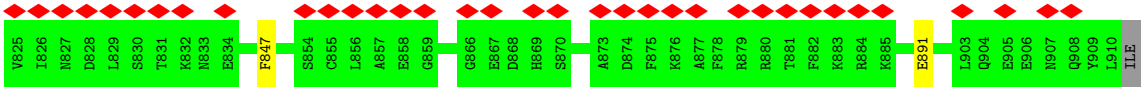
Chain e:



• Molecule 5: DNA ligase 4

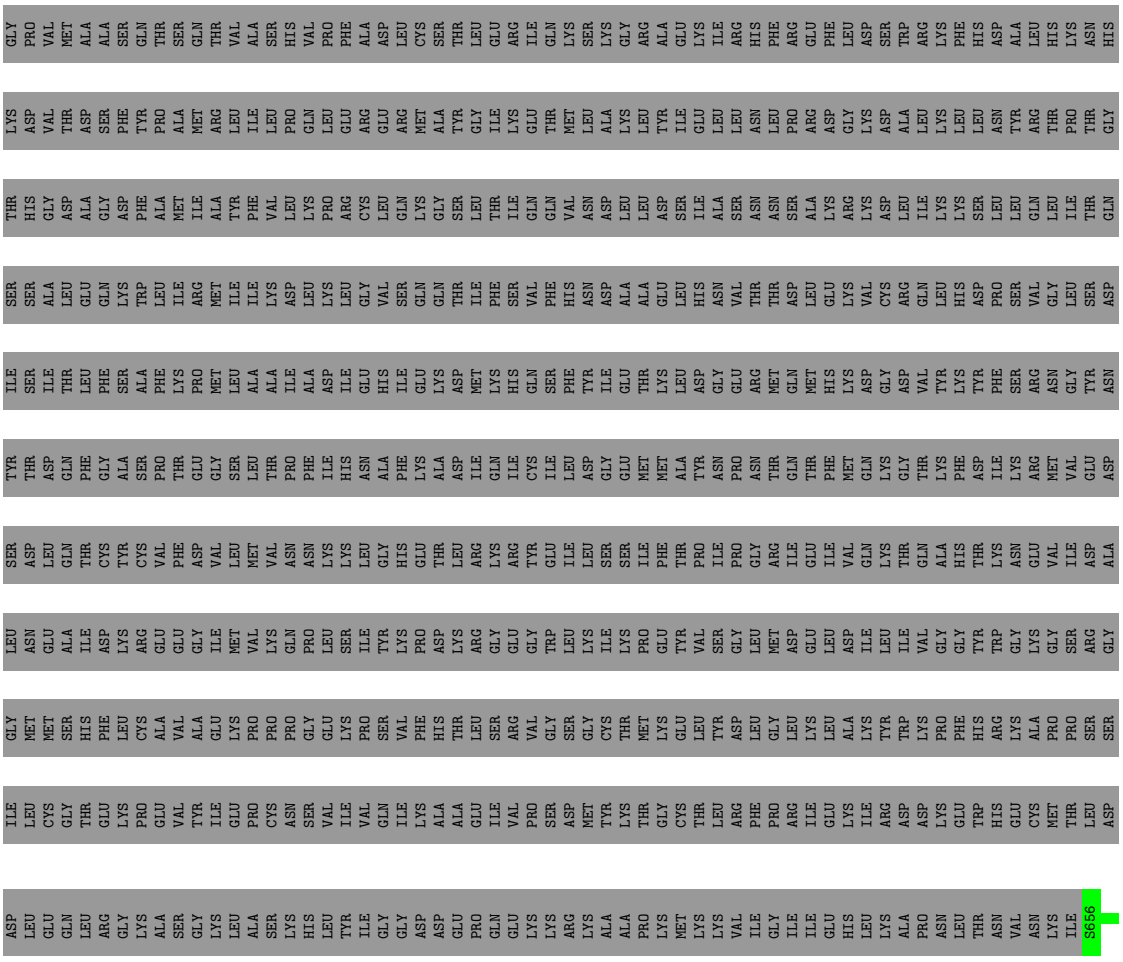
Chain F:

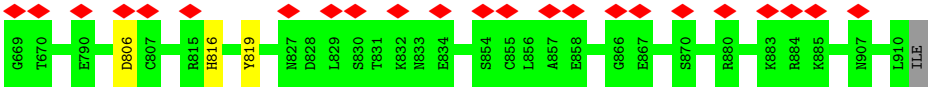




• Molecule 5: DNA ligase 4

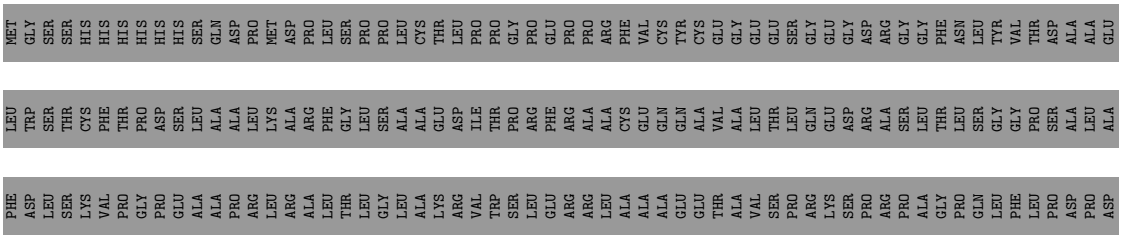
Chain f:

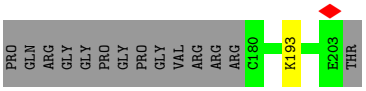




• Molecule 6: Protein PAXX

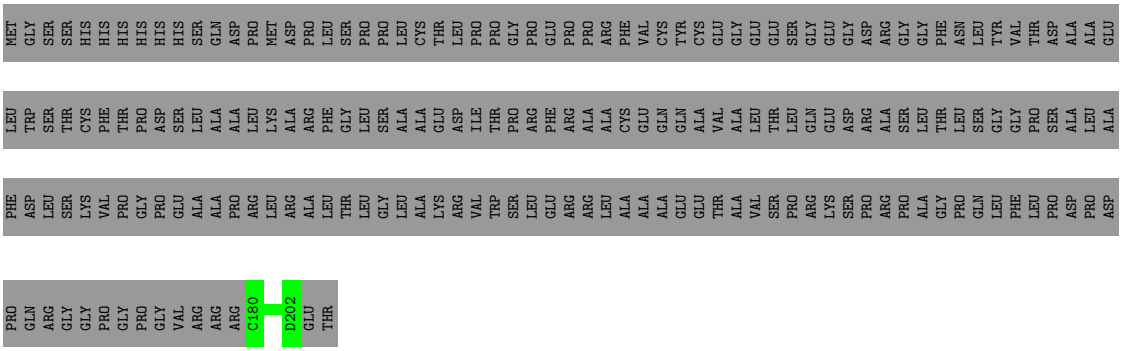
Chain G:





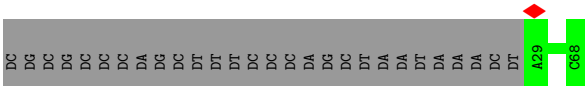
• Molecule 6: Protein PAXX

Chain H:



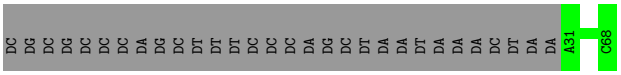
• Molecule 7: DNA (40-MER)

Chain I:



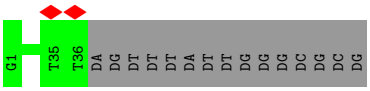
• Molecule 8: DNA (38-MER)

Chain J:



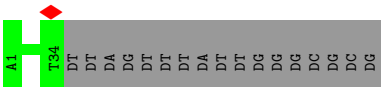
• Molecule 9: DNA (36-MER)

Chain K:



• Molecule 10: DNA (34-MER)

Chain L:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	500830	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	42.2	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	73.849	Depositor
Minimum map value	-22.344	Depositor
Average map value	0.006	Depositor
Map value standard deviation	1.373	Depositor
Recommended contour level	8	Depositor
Map size (Å)	426.496, 426.496, 426.496	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.833, 0.833, 0.833	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.24	0/4255	0.47	0/5733
1	a	0.24	0/4175	0.47	0/5626
2	B	0.24	0/4298	0.44	0/5800
2	b	0.24	0/4310	0.44	0/5816
3	C	0.24	0/1869	0.46	0/2536
3	c	0.24	0/1850	0.45	0/2510
4	D	0.25	0/1657	0.46	0/2228
4	E	0.26	0/1657	0.48	0/2228
4	d	0.25	0/1657	0.46	0/2228
4	e	0.25	0/1657	0.49	0/2228
5	F	0.24	0/7015	0.45	0/9458
5	f	0.24	0/2118	0.45	0/2862
6	G	0.25	0/178	0.35	0/238
6	H	0.25	0/169	0.36	0/226
7	I	0.49	0/907	0.92	0/1395
8	J	0.52	0/869	0.94	0/1338
9	K	0.50	0/834	0.92	0/1287
10	L	0.54	0/785	0.95	0/1210
All	All	0.28	0/40260	0.52	0/54947

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

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	511/612 (84%)	500 (98%)	11 (2%)	0	100	100
1	a	505/612 (82%)	496 (98%)	9 (2%)	0	100	100
2	B	522/732 (71%)	518 (99%)	4 (1%)	0	100	100
2	b	524/732 (72%)	516 (98%)	8 (2%)	0	100	100
3	C	229/302 (76%)	221 (96%)	8 (4%)	0	100	100
3	c	226/302 (75%)	222 (98%)	4 (2%)	0	100	100
4	D	199/336 (59%)	194 (98%)	5 (2%)	0	100	100
4	E	199/336 (59%)	196 (98%)	3 (2%)	0	100	100
4	d	199/336 (59%)	192 (96%)	7 (4%)	0	100	100
4	e	199/336 (59%)	193 (97%)	6 (3%)	0	100	100
5	F	848/914 (93%)	832 (98%)	16 (2%)	0	100	100
5	f	253/914 (28%)	249 (98%)	4 (2%)	0	100	100
6	G	22/218 (10%)	22 (100%)	0	0	100	100
6	H	21/218 (10%)	20 (95%)	1 (5%)	0	100	100
All	All	4457/6900 (65%)	4371 (98%)	86 (2%)	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	468/550 (85%)	455 (97%)	13 (3%)	38	66
1	a	460/550 (84%)	454 (99%)	6 (1%)	65	82
2	B	474/649 (73%)	465 (98%)	9 (2%)	52	75
2	b	475/649 (73%)	465 (98%)	10 (2%)	48	72
3	C	204/264 (77%)	202 (99%)	2 (1%)	73	86
3	c	202/264 (76%)	199 (98%)	3 (2%)	60	80
4	D	180/303 (59%)	178 (99%)	2 (1%)	70	84
4	E	180/303 (59%)	175 (97%)	5 (3%)	38	66
4	d	180/303 (59%)	178 (99%)	2 (1%)	70	84
4	e	180/303 (59%)	179 (99%)	1 (1%)	84	91
5	F	760/810 (94%)	736 (97%)	24 (3%)	34	63
5	f	231/810 (28%)	228 (99%)	3 (1%)	65	82
6	G	19/173 (11%)	18 (95%)	1 (5%)	19	48
6	H	18/173 (10%)	18 (100%)	0	100	100
All	All	4031/6104 (66%)	3950 (98%)	81 (2%)	50	74

All (81) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	32	TYR
1	A	80	ARG
1	A	92	LYS
1	A	95	ASN
1	A	98	ASN
1	A	162	SER
1	A	180	SER
1	A	228	ASP
1	A	237	SER
1	A	326	GLN
1	A	346	MET
1	A	409	TYR
1	A	471	PHE
2	B	163	PHE
2	B	237	PHE
2	B	273	LYS
2	B	288	ASP
2	B	306	LEU
2	B	323	PHE

Continued on next page...

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Mol	Chain	Res	Type
2	B	428	GLU
2	B	530	LEU
2	B	531	SER
3	C	176	ARG
3	C	188	SER
4	D	24	TRP
4	D	179	ARG
4	E	12	SER
4	E	128	CYS
4	E	143	HIS
4	E	175	ASP
4	E	177	TYR
5	F	19	LEU
5	F	105	ASP
5	F	153	ASP
5	F	154	SER
5	F	199	SER
5	F	300	ASP
5	F	314	PHE
5	F	316	HIS
5	F	326	CYS
5	F	368	ASP
5	F	386	TYR
5	F	409	HIS
5	F	438	TYR
5	F	441	ASP
5	F	537	SER
5	F	659	PHE
5	F	685	PHE
5	F	688	TYR
5	F	742	PHE
5	F	746	MET
5	F	747	CYS
5	F	759	ASP
5	F	847	PHE
5	F	891	GLU
6	G	193	LYS
1	a	137	HIS
1	a	192	ASP
1	a	297	LYS
1	a	324	SER
1	a	360	HIS

Continued on next page...

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Mol	Chain	Res	Type
1	a	409	TYR
2	b	14	MET
2	b	115	MET
2	b	130	ARG
2	b	152	HIS
2	b	242	ARG
2	b	265	LYS
2	b	323	PHE
2	b	357	MET
2	b	416	TYR
2	b	532	LYS
3	c	86	ASP
3	c	98	ASP
3	c	202	CYS
4	d	66	TYR
4	d	177	TYR
4	e	188	LYS
5	f	806	ASP
5	f	816	HIS
5	f	819	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	21	ASN
5	F	183	GLN
2	b	330	GLN
5	f	718	HIS

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)

1 ligand is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
11	AMP	L	1001	10	21,25,25	0.80	0	23,38,38	1.29	2 (8%)

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	AMP	L	1001	10	-	1/6/26/26	0/3/3/3

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	L	1001	AMP	N3-C2-N1	-4.15	123.04	128.67
11	L	1001	AMP	C4-C5-N7	-2.73	106.45	109.34

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	L	1001	AMP	C4'-C5'-O5'-P

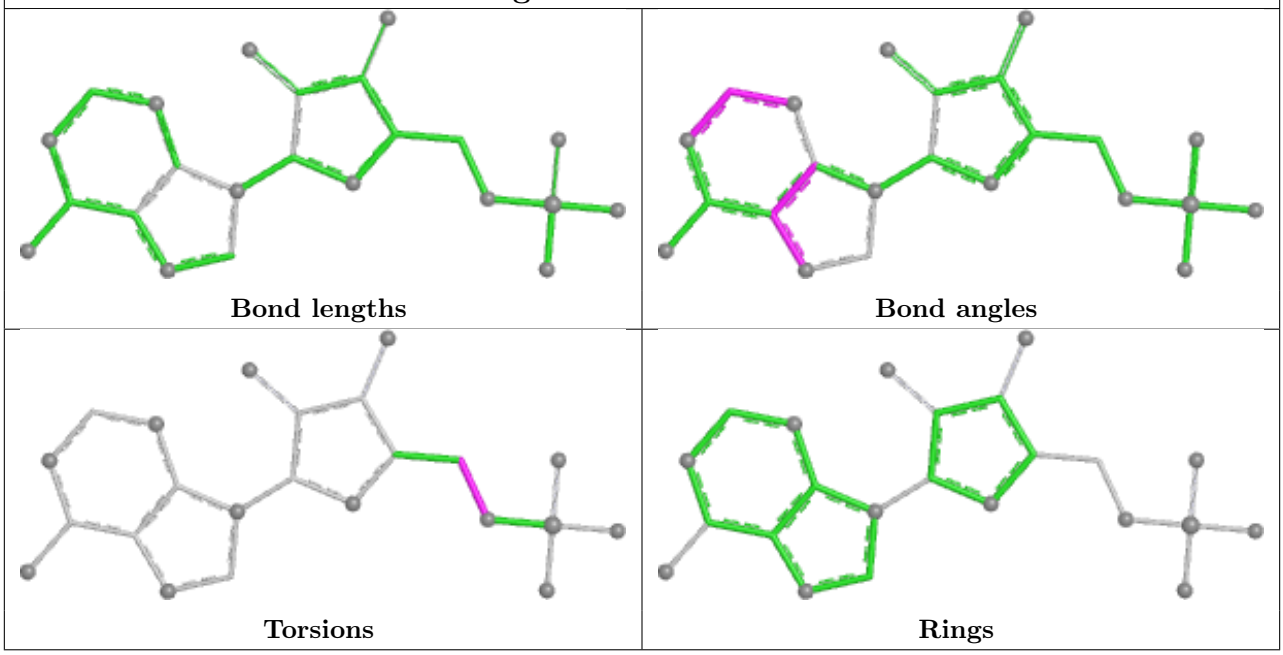
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is

within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand AMP L 1001



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

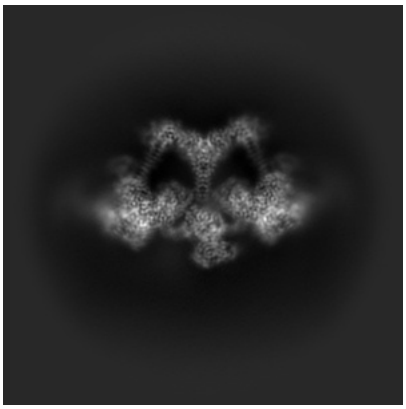
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-45809. These allow visual inspection of the internal detail of the map and identification of artifacts.

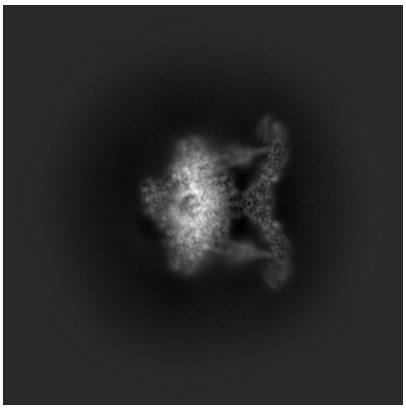
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

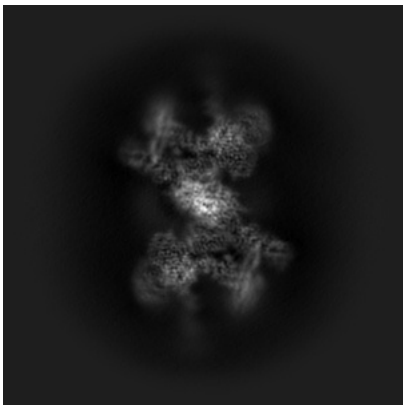
6.1.1 Primary map



X

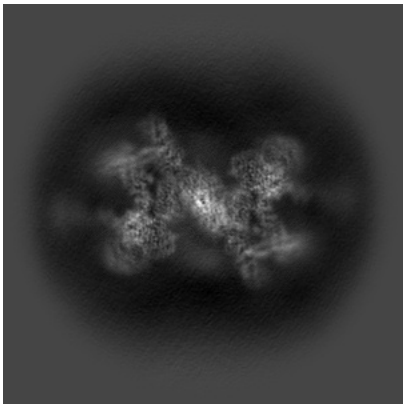


Y

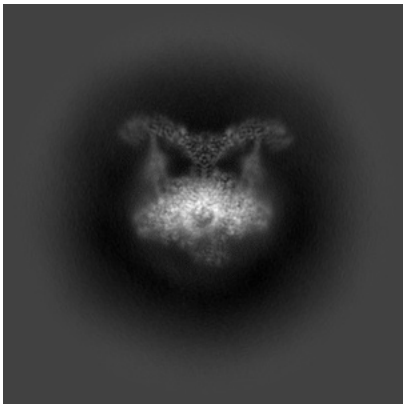


Z

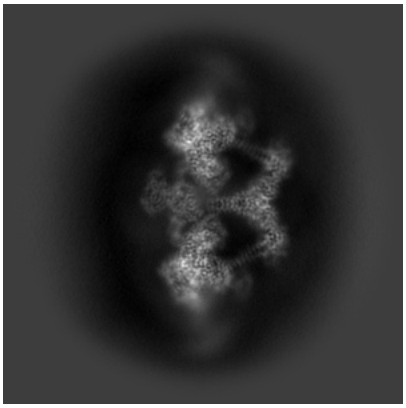
6.1.2 Raw map



X



Y



Z

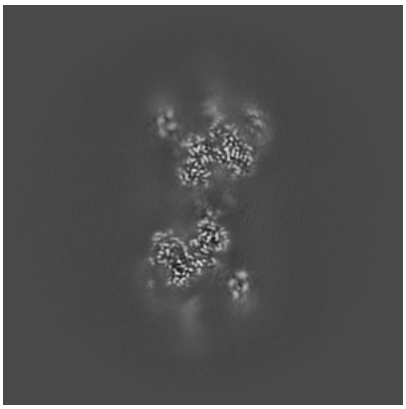
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map

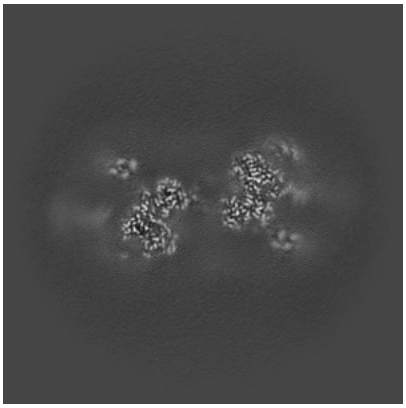
X Index: 256

Y Index: 256



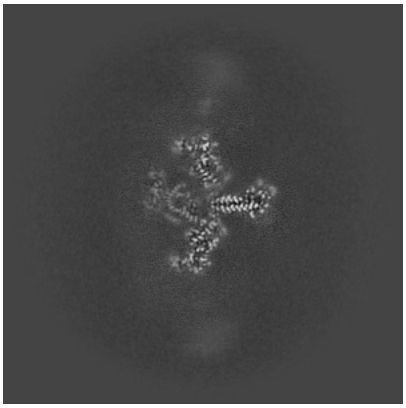
Z Index: 256

6.2.2 Raw map



X Index: 256

Y Index: 256



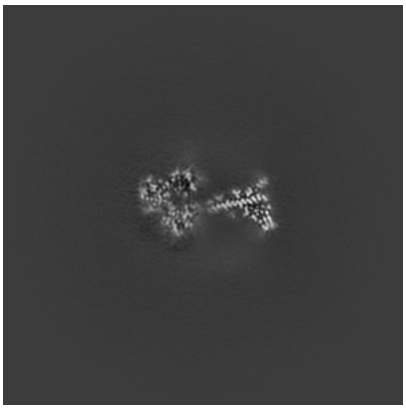
Z Index: 256

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

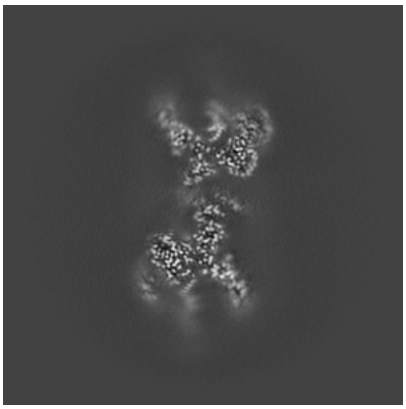
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 271

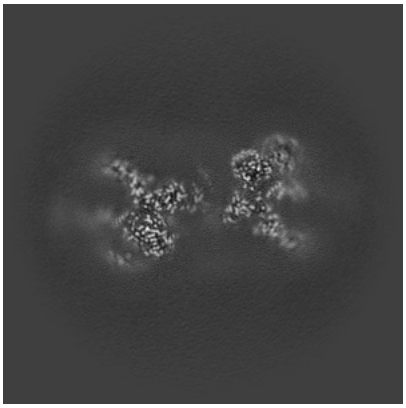


Y Index: 262

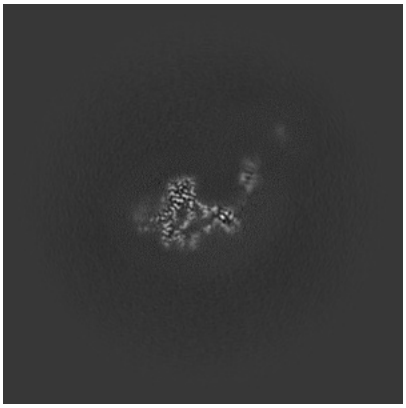


Z Index: 248

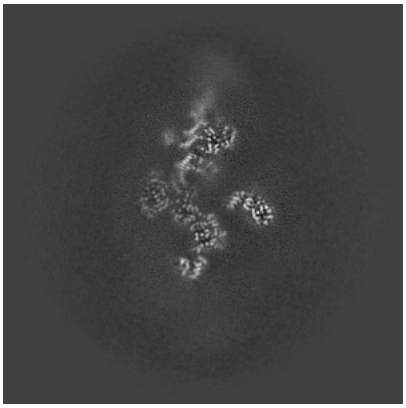
6.3.2 Raw map



X Index: 249



Y Index: 172

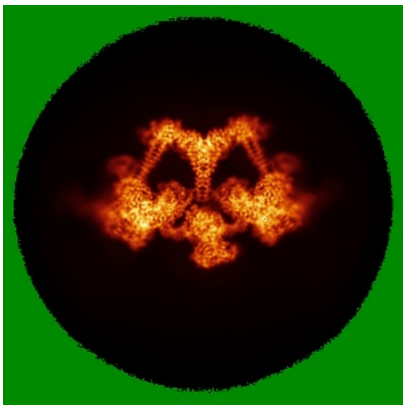


Z Index: 271

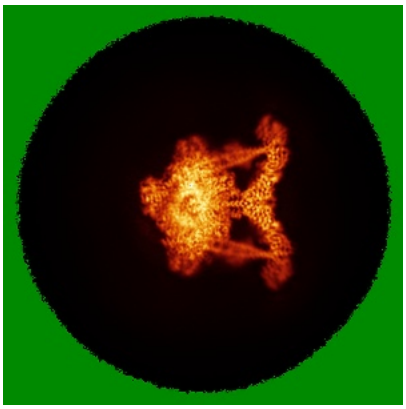
The images above show the largest variance slices of the map in three orthogonal directions.

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

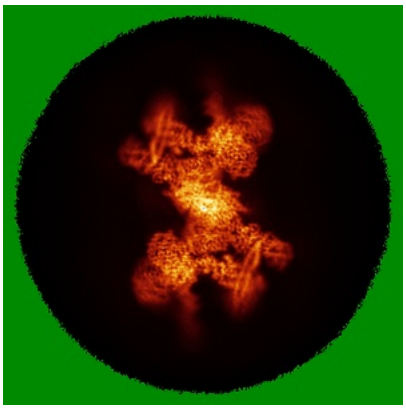
6.4.1 Primary map



X

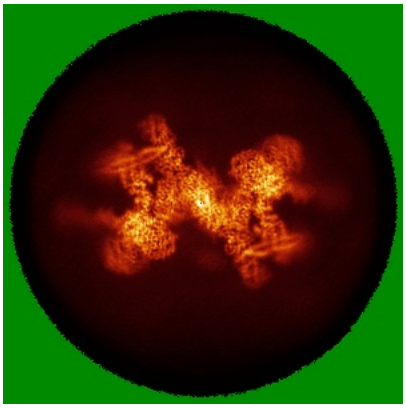


Y

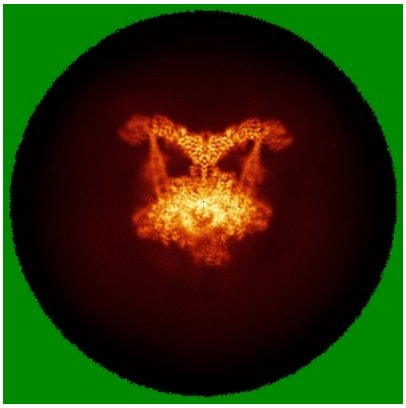


Z

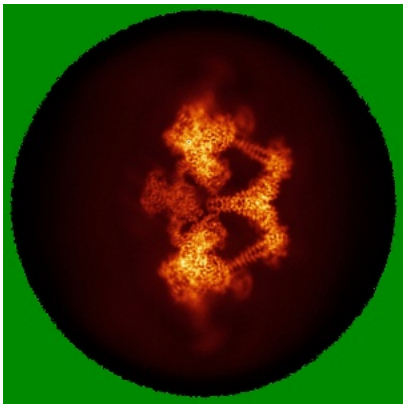
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 8.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

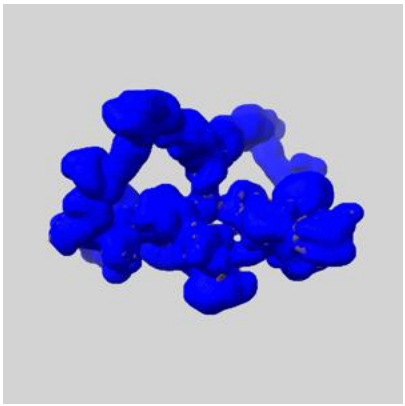
6.6 Mask visualisation (i)

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

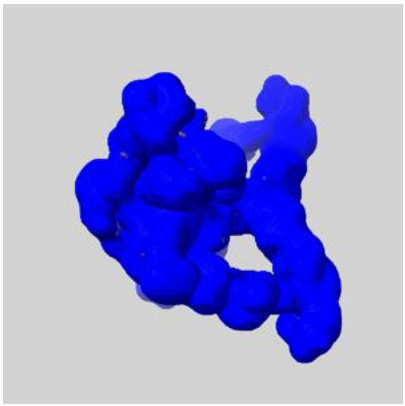
A mask typically either:

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

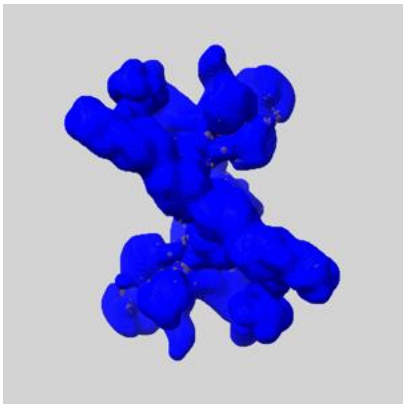
6.6.1 emd_45809_msk_1.map (i)



X



Y

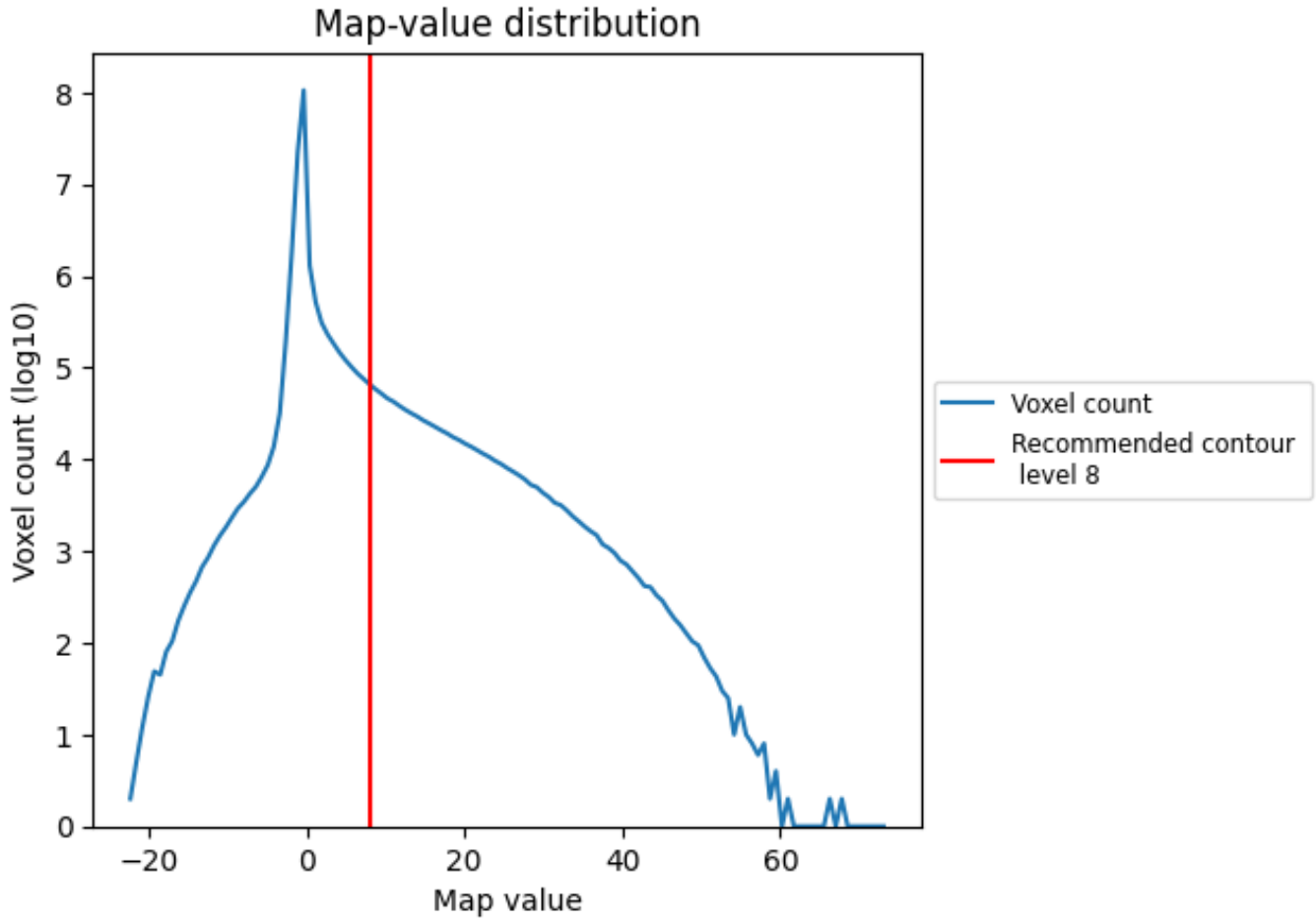


Z

7 Map analysis

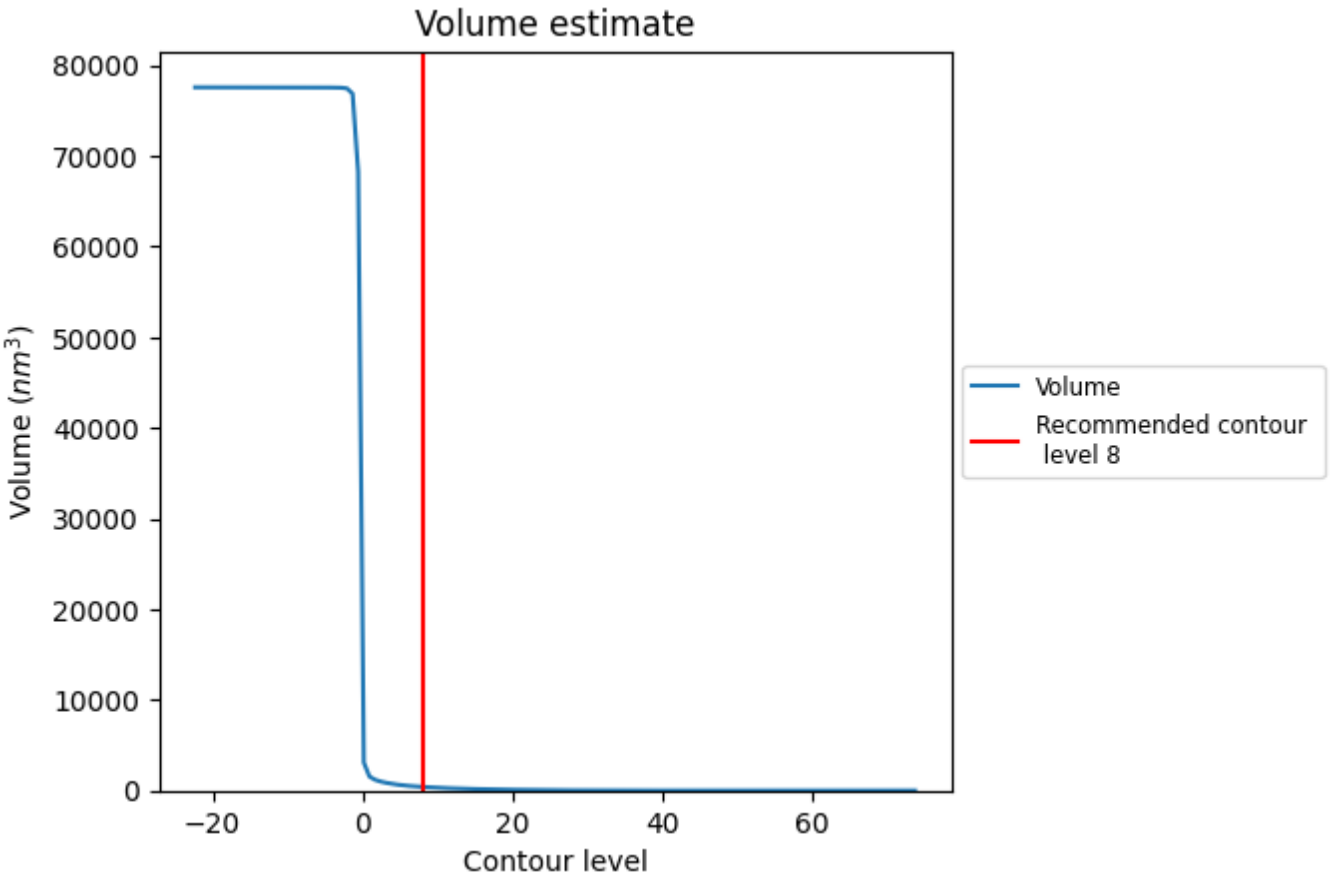
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

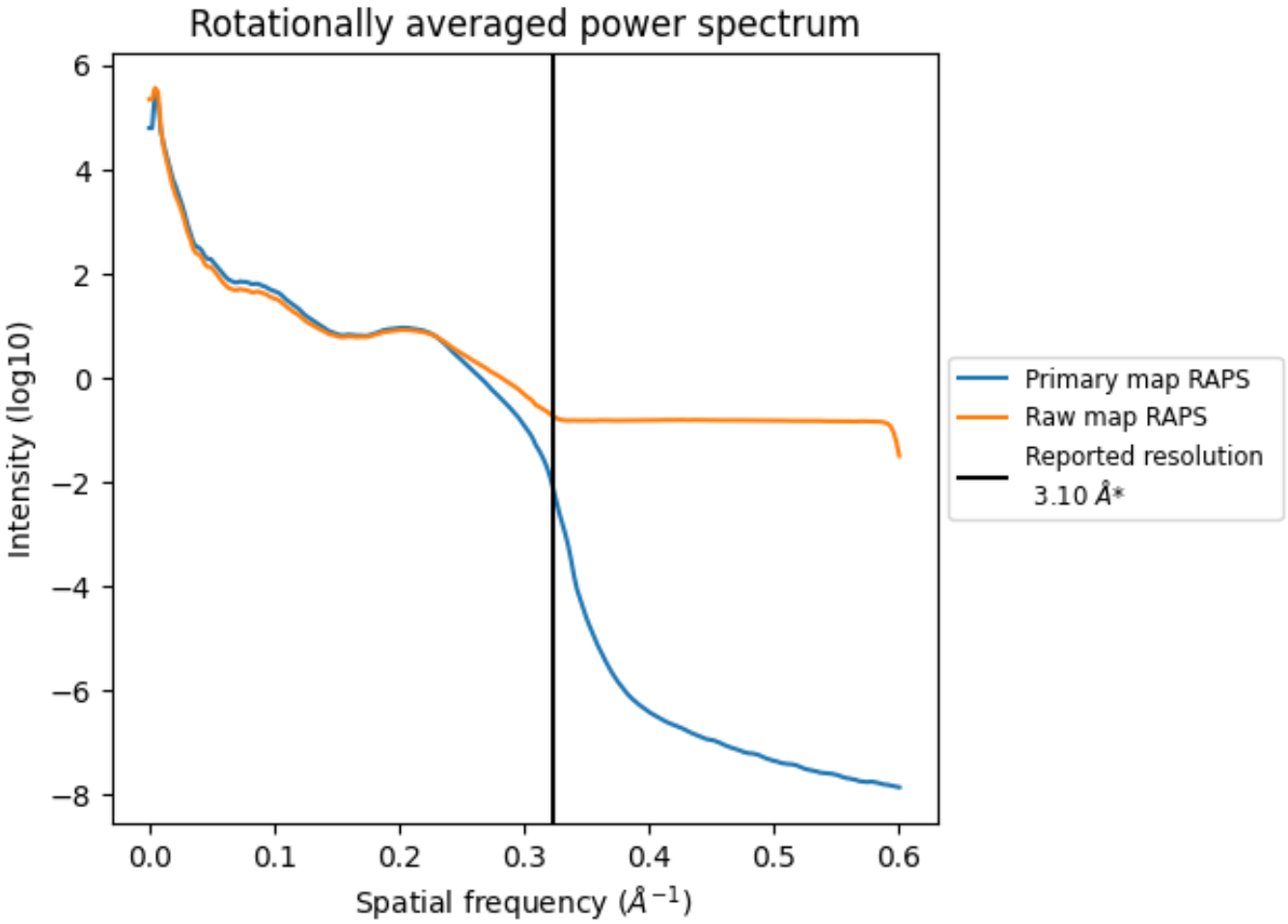
7.2 Volume estimate (i)



The volume at the recommended contour level is 405 nm^3; this corresponds to an approximate mass of 366 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 (i)

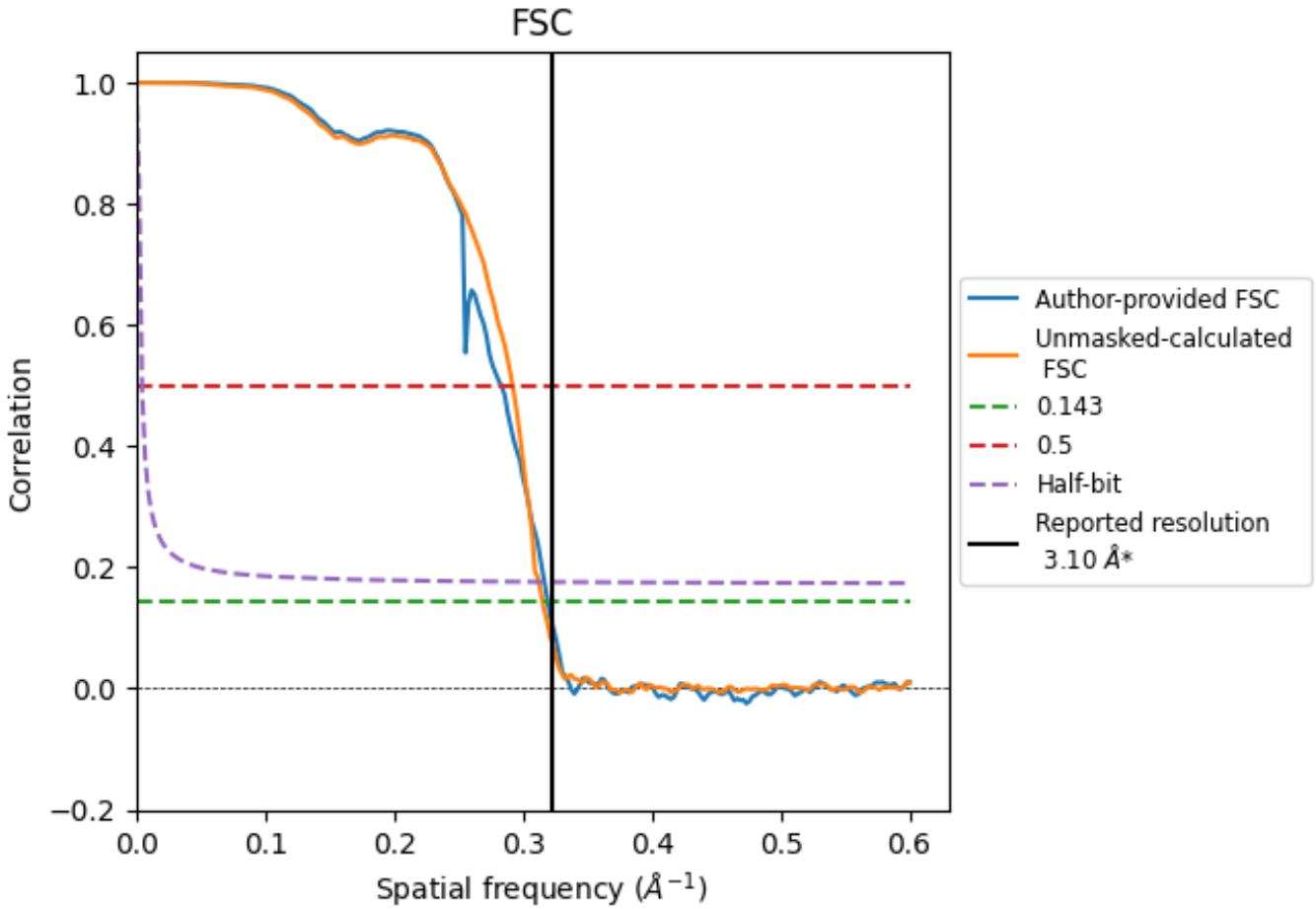


*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8.2 Resolution estimates (i)

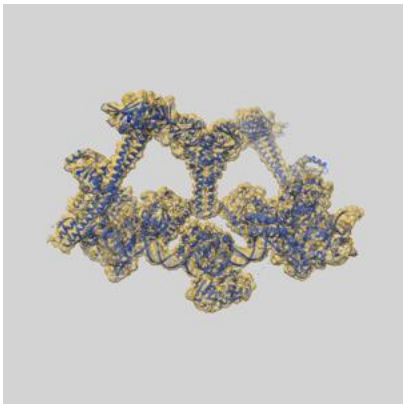
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.13	3.53	3.16
Unmasked-calculated*	3.17	3.42	3.20

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

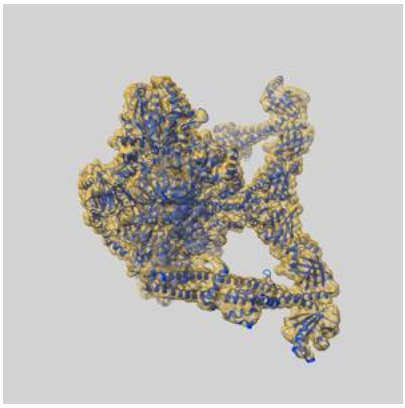
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-45809 and PDB model 9CQ6. Per-residue inclusion information can be found in section 3 on page 8.

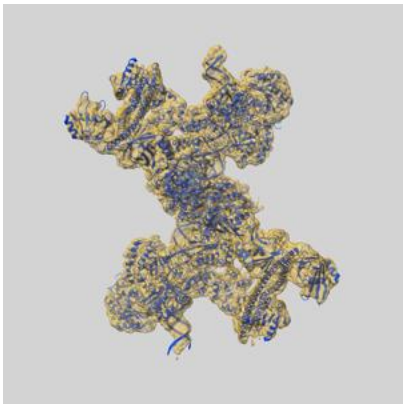
9.1 Map-model overlay



X



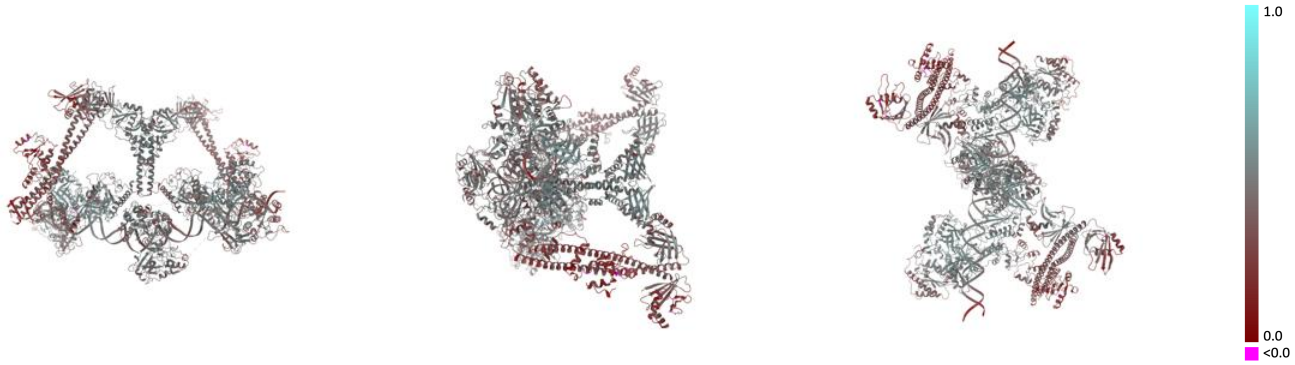
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 8.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

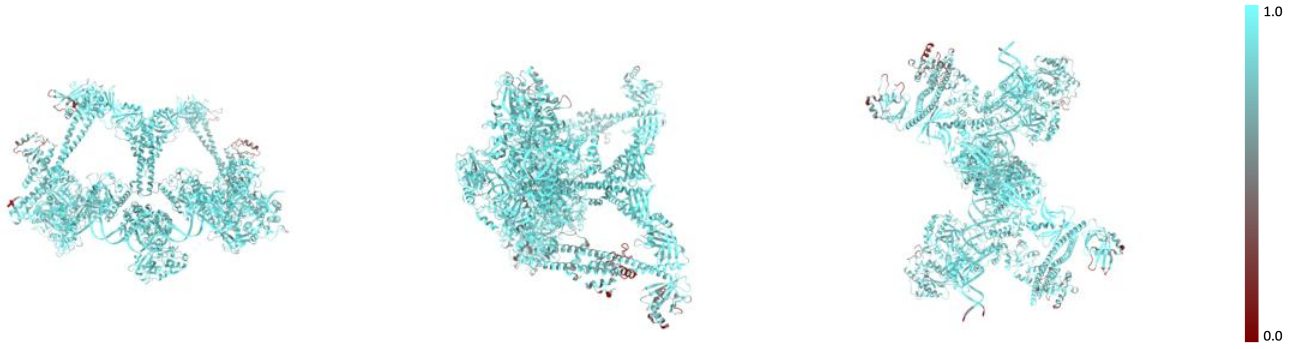
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

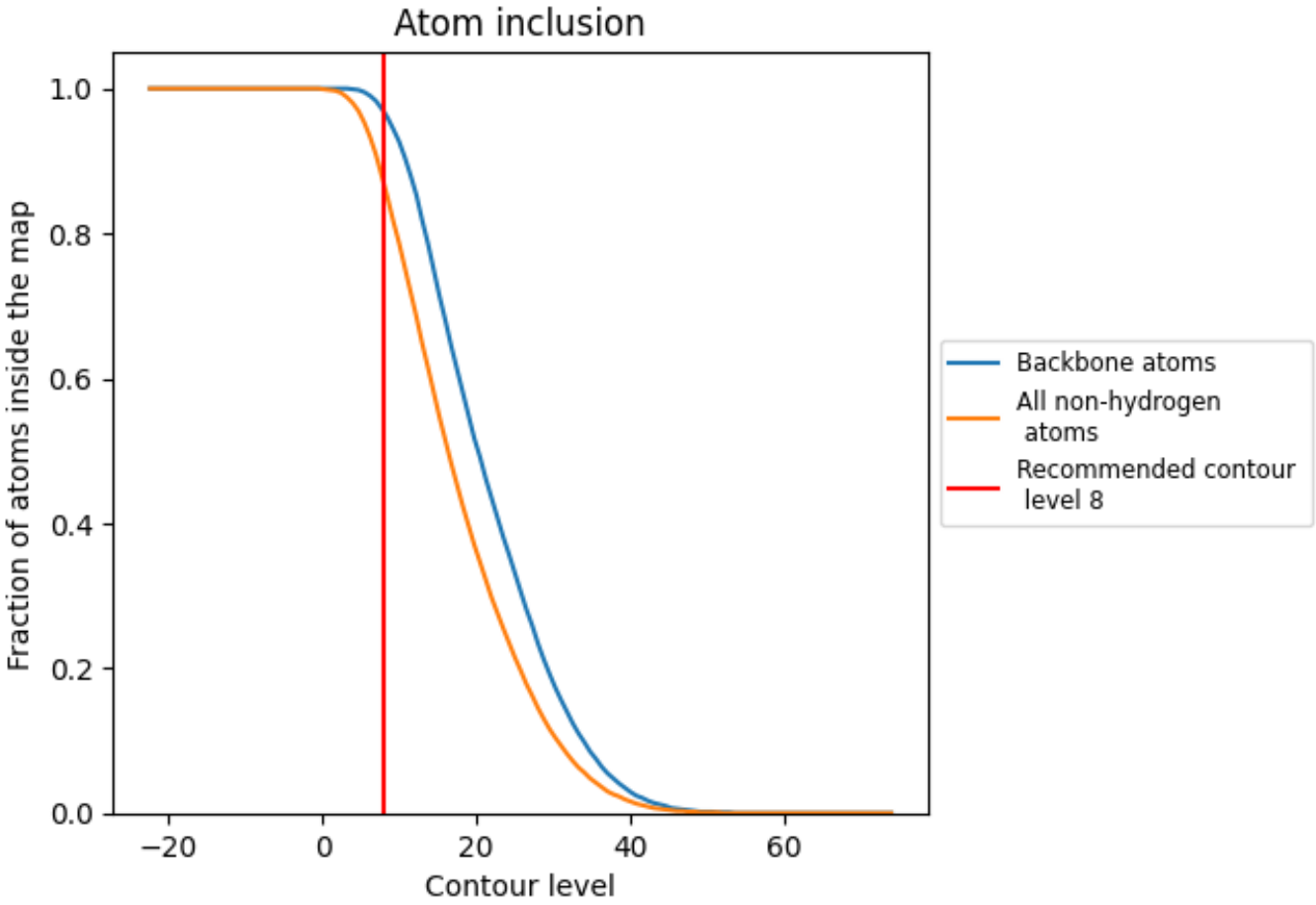
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (8).

9.4 Atom inclusion (i)



At the recommended contour level, 97% of all backbone atoms, 87% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (8) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8690	0.4270
A	0.9040	0.4830
B	0.8630	0.4530
C	0.9200	0.4860
D	0.7260	0.2730
E	0.8680	0.3560
F	0.8250	0.3970
G	0.8450	0.4890
H	0.8910	0.5260
I	0.9170	0.3970
J	0.9780	0.3980
K	0.9190	0.4030
L	0.9460	0.4130
a	0.9100	0.5040
b	0.8670	0.4730
c	0.9280	0.4850
d	0.8120	0.3380
e	0.9070	0.4000
f	0.7990	0.2980