WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Jul 3, 2024 – 01:12 am BST

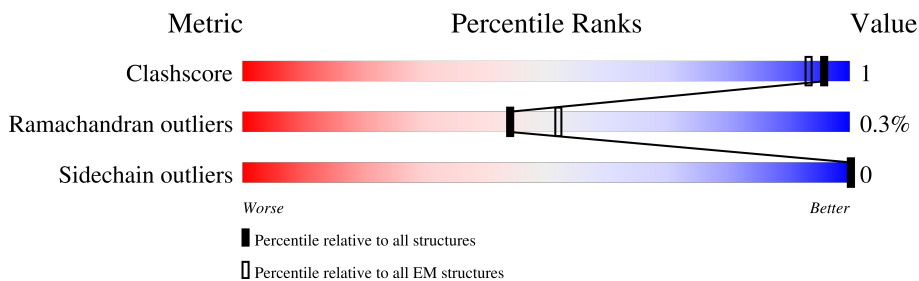|		
PDB ID	:	7NBA
EMDB ID	:	EMD-12258
Title	:	Plasmodium falciparum kinesin-5 motor domain bound to AMPPNP, complexed with 14 protofilament microtubule.
Authors	:	Cook, A.D.; Roberts, A.; Atherton, J.; Tewari, R.; Topf, M.; Moores, C.A.
Deposited on	:	2021-01-25
Resolution	:	4.00 Å(reported)
Based on initial models	:	3HQD, 3JAT

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 4.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		1
Ramachandran outliers		0.3%
Sidechain outliers		0

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	451	14% / 92% · 5%
2	B	445	17% / 93% · ·
3	K	405	46% / 76% 5% 18%

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 18742 atoms, of which 9257 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 Tubulin alpha-1B chain.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	428	Total 6636	C 2130	H 3278	N 571	O 635	S 22	0	0

- Molecule 2 is a protein called Tubulin beta chain.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	426	Total 6588	C 2106	H 3237	N 575	O 644	S 26	0	0

- Molecule 3 is a protein called Kinesin motor domain-containing protein,Kinesin motor domain-containing protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	K	331	Total 5420	C 1690	H 2742	N 453	O 523	S 12	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	1	GLY	-	expression tag	UNP W7K044
K	2	ILE	-	expression tag	UNP W7K044
K	3	ASP	-	expression tag	UNP W7K044
K	4	PRO	-	expression tag	UNP W7K044
K	5	PHE	-	expression tag	UNP W7K044
K	6	THR	-	expression tag	UNP W7K044

- Molecule 4 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).

GTP

Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	N	O	P	0
			32	10	5	14	3	

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

Mol	Chain	Residues	Atoms		AltConf
5	A	1	Total	Mg	0
			1	1	
5	B	1	Total	Mg	0
			1	1	
5	K	1	Total	Mg	0
			1	1	

- Molecule 6 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (three-letter code: G2P) (formula: $C_{11}H_{18}N_5O_{13}P_3$).

G2P
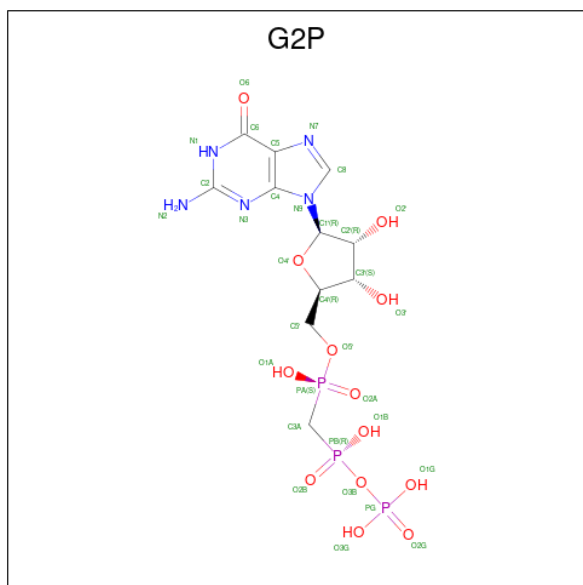
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
6	B	1	32	11	5	13	3	0

- Molecule 7 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$).


ANP
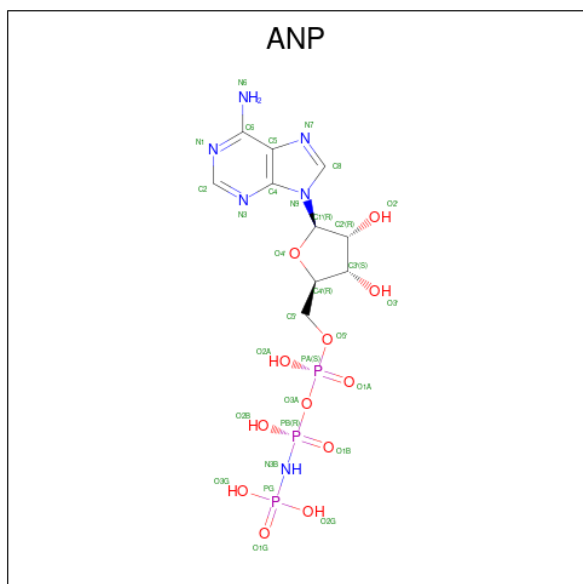
| Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
7	K	1	31	10	6	12	3	0

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.
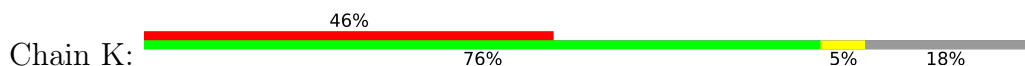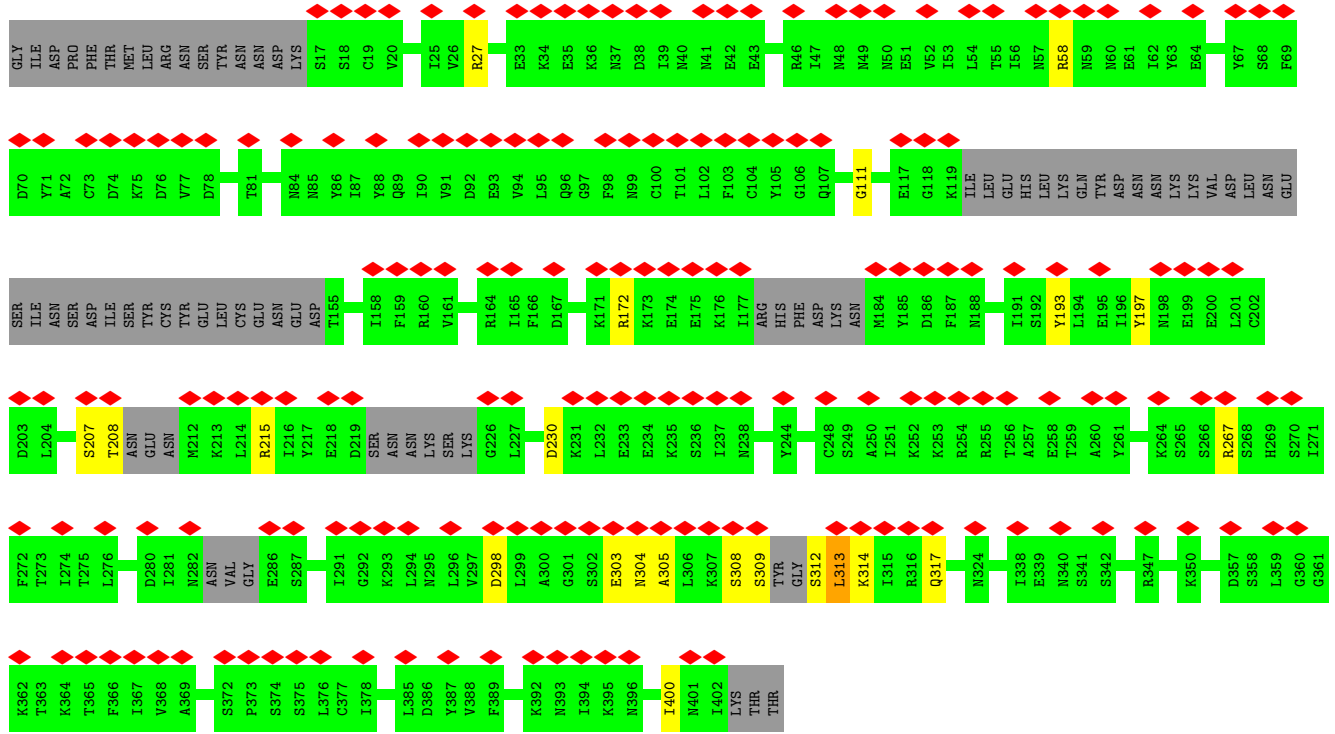
- Molecule 1: Tubulin alpha-1B chain
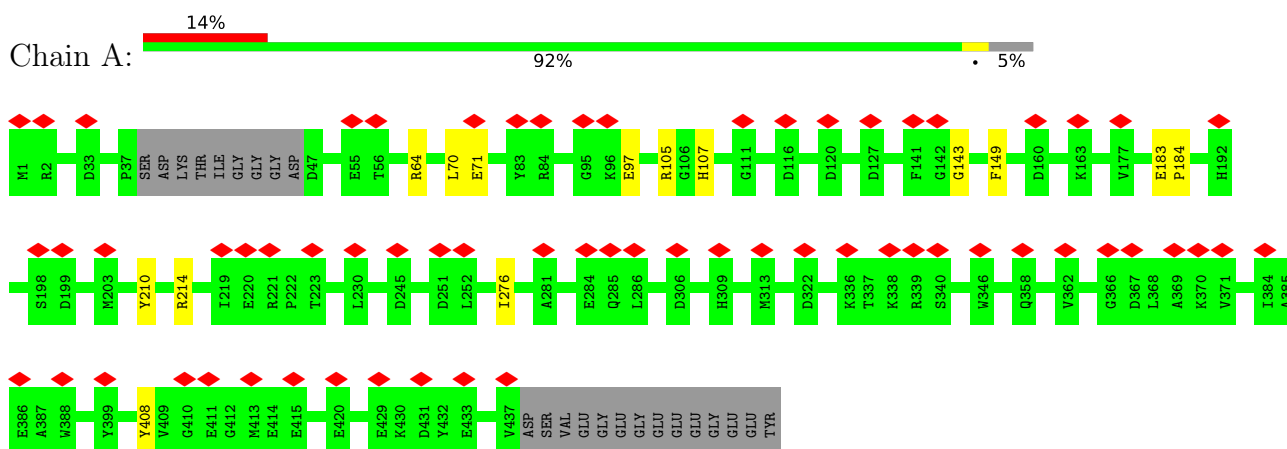
- Molecule 2: Tubulin beta chain
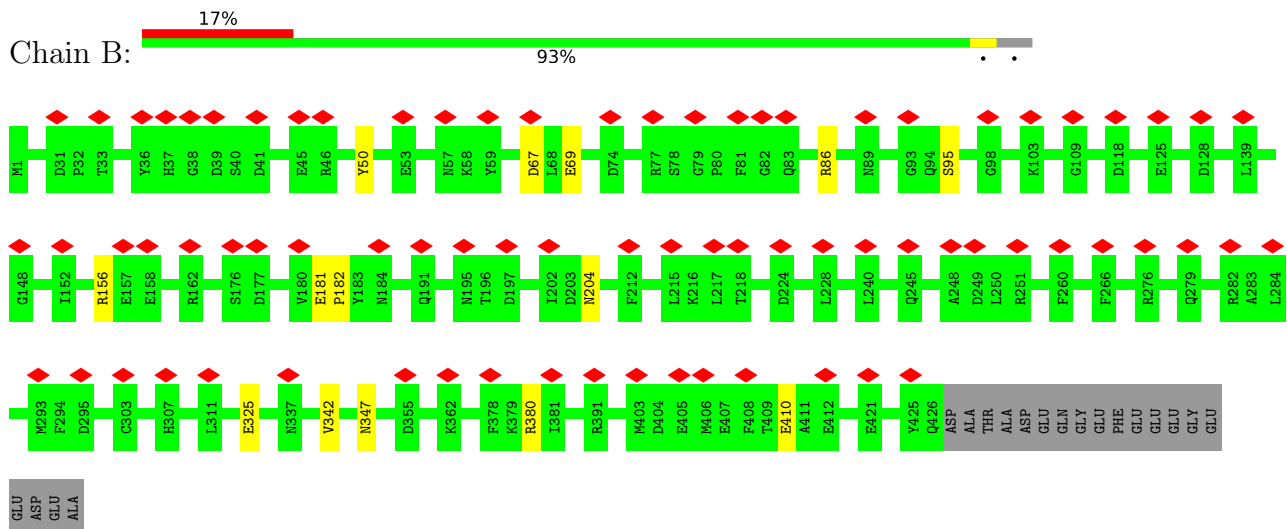
- Molecule 3: Kinesin motor domain-containing protein,Kinesin motor domain-containing protein

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=-25.75°, rise=9 Å, axial sym=C1	Depositor
Number of segments used	166375	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/Å^2)$	58	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.231	Depositor
Minimum map value	0.000	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.022	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	93.13, 108.42, 107.03	wwPDB
Map dimensions	67, 78, 77	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.39, 1.39, 1.39	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ANP, MG, GTP, G2P

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	0.93	3/3435 (0.1%)	0.89	8/4663 (0.2%)
2	B	0.90	5/3426 (0.1%)	0.85	5/4641 (0.1%)
3	K	0.95	3/2703 (0.1%)	1.06	8/3626 (0.2%)
All	All	0.92	11/9564 (0.1%)	0.93	21/12930 (0.2%)

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	K	313	LEU	C-O	-10.54	1.03	1.23
1	A	149	PHE	CB-CG	-9.78	1.34	1.51
3	K	298	ASP	CB-CG	7.92	1.68	1.51
3	K	314	LYS	C-N	7.82	1.52	1.34
1	A	71	GLU	CD-OE1	-7.18	1.17	1.25
2	B	325	GLU	CG-CD	5.95	1.60	1.51
2	B	410	GLU	CD-OE2	-5.84	1.19	1.25
2	B	69	GLU	CG-CD	5.84	1.60	1.51
1	A	71	GLU	CD-OE2	-5.63	1.19	1.25
2	B	67	ASP	CB-CG	5.52	1.63	1.51
2	B	69	GLU	CD-OE1	-5.35	1.19	1.25

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	314	LYS	O-C-N	-26.77	79.86	122.70
3	K	314	LYS	CA-C-N	18.75	158.45	117.20
3	K	314	LYS	C-N-CA	13.16	154.61	121.70
3	K	193	TYR	CB-CG-CD1	-7.56	116.47	121.00
2	B	86	ARG	NE-CZ-NH2	-7.20	116.70	120.30
1	A	210	TYR	CB-CG-CD1	-7.16	116.71	121.00
2	B	380	ARG	NE-CZ-NH2	-7.04	116.78	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	64	ARG	NE-CZ-NH2	-6.94	116.83	120.30
1	A	71	GLU	OE1-CD-OE2	-6.41	115.61	123.30
3	K	172	ARG	NE-CZ-NH2	-6.25	117.18	120.30
3	K	27	ARG	NE-CZ-NH2	-6.20	117.20	120.30
2	B	69	GLU	OE1-CD-OE2	-6.20	115.86	123.30
2	B	156	ARG	NE-CZ-NH2	-6.19	117.21	120.30
1	A	105	ARG	NE-CZ-NH2	-6.06	117.27	120.30
2	B	50	TYR	CB-CG-CD2	-5.64	117.62	121.00
3	K	58	ARG	NE-CZ-NH1	5.45	123.02	120.30
1	A	214	ARG	NE-CZ-NH2	-5.38	117.61	120.30
1	A	210	TYR	CB-CG-CD2	5.31	124.19	121.00
3	K	313	LEU	N-CA-C	-5.29	96.71	111.00
1	A	408	TYR	CB-CG-CD2	-5.11	117.93	121.00
1	A	210	TYR	CA-CB-CG	5.01	122.92	113.40

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	3358	3278	3277	4	0
2	B	3351	3237	3237	3	0
3	K	2678	2742	2732	9	0
4	A	32	0	12	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	K	1	0	0	0	0
6	B	32	0	14	1	0
7	K	31	0	13	2	0
All	All	9485	9257	9285	17	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 1.

All (17) 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)
3:K:303:GLU:C	3:K:304:ASN:N	2.04	1.10
7:K:700:ANP:H8	7:K:700:ANP:O2A	2.02	0.59
2:B:181:GLU:HB3	2:B:182:PRO:HD3	1.94	0.50
3:K:308:SER:O	3:K:309:SER:HB3	2.12	0.50
1:A:276:ILE:O	1:A:276:ILE:HG13	2.10	0.50
3:K:111:GLY:HA2	7:K:700:ANP:O2A	2.12	0.49
3:K:197:TYR:OH	3:K:267:ARG:NH2	2.48	0.47
3:K:207:SER:OG	3:K:208:THR:N	2.48	0.46
3:K:312:SER:O	3:K:313:LEU:C	2.56	0.44
1:A:70:LEU:HB3	1:A:97:GLU:O	2.18	0.44
2:B:342:VAL:O	2:B:342:VAL:HG13	2.18	0.43
3:K:305:ALA:HB1	3:K:317:GLN:HG2	2.03	0.41
1:A:183:GLU:N	1:A:184:PRO:HD2	2.36	0.41
3:K:215:ARG:HB3	3:K:230:ASP:HB3	2.02	0.41
1:A:107:HIS:HD2	1:A:107:HIS:O	2.04	0.41
2:B:204:ASN:HD21	6:B:600:G2P:H1'	1.86	0.40
3:K:400:ILE:HD12	3:K:400:ILE:HG23	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	424/451 (94%)	416 (98%)	7 (2%)	1 (0%)	47	79
2	B	424/445 (95%)	407 (96%)	15 (4%)	2 (0%)	29	67
3	K	315/405 (78%)	305 (97%)	10 (3%)	0	100	100
All	All	1163/1301 (89%)	1128 (97%)	32 (3%)	3 (0%)	44	75

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	347	ASN

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Mol	Chain	Res	Type
2	B	95	SER
1	A	143	GLY

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	362/379 (96%)	362 (100%)	0	100	100
2	B	367/381 (96%)	367 (100%)	0	100	100
3	K	311/382 (81%)	311 (100%)	0	100	100
All	All	1040/1142 (91%)	1040 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
3	K	262	ASN

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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 6 ligands modelled in this entry, 3 are monoatomic - leaving 3 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
6	G2P	B	600	5	27,34,34	2.09	9 (33%)	33,54,54	2.53	16 (48%)
7	ANP	K	700	5	29,33,33	1.86	7 (24%)	31,52,52	3.23	17 (54%)
4	GTP	A	500	5	26,34,34	0.94	1 (3%)	32,54,54	1.22	4 (12%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	G2P	B	600	5	-	2/15/38/38	0/3/3/3
7	ANP	K	700	5	-	2/14/38/38	0/3/3/3
4	GTP	A	500	5	-	6/18/38/38	0/3/3/3

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	K	700	ANP	PG-O1G	4.87	1.53	1.46
6	B	600	G2P	C5-C6	4.50	1.49	1.41
6	B	600	G2P	PA-O2A	4.18	1.61	1.51
6	B	600	G2P	PB-O2B	4.12	1.61	1.51
7	K	700	ANP	PA-O5'	3.99	1.75	1.59
7	K	700	ANP	O4'-C1'	3.94	1.46	1.41
6	B	600	G2P	O4'-C1'	3.63	1.46	1.41
6	B	600	G2P	PB-O1B	-3.54	1.48	1.56
6	B	600	G2P	PA-O1A	-3.37	1.48	1.56
7	K	700	ANP	O5'-C5'	-3.22	1.32	1.44
6	B	600	G2P	PA-O5'	2.70	1.61	1.57
7	K	700	ANP	PB-N3B	2.62	1.70	1.63
6	B	600	G2P	PB-O3B	2.56	1.61	1.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	500	GTP	C6-N1	-2.52	1.34	1.37
6	B	600	G2P	C5-C4	2.41	1.47	1.40
7	K	700	ANP	PG-O3G	-2.37	1.50	1.56
7	K	700	ANP	PG-O2G	-2.07	1.51	1.56

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	K	700	ANP	C5'-C4'-C3'	-7.22	88.13	115.18
7	K	700	ANP	PB-O3A-PA	-6.61	109.35	132.62
7	K	700	ANP	O5'-C5'-C4'	6.02	129.73	108.99
7	K	700	ANP	O3A-PB-N3B	-5.32	91.83	106.59
6	B	600	G2P	C2-N3-C4	4.94	121.00	115.36
7	K	700	ANP	O2A-PA-O5'	-4.88	85.07	107.75
7	K	700	ANP	N3-C2-N1	-4.86	121.08	128.68
7	K	700	ANP	O5'-PA-O1A	-4.85	90.13	109.07
6	B	600	G2P	O4'-C4'-C3'	-4.63	95.96	105.11
6	B	600	G2P	C5-C6-N1	-4.25	117.62	123.43
6	B	600	G2P	C2-N1-C6	4.20	122.61	115.93
6	B	600	G2P	C3'-C2'-C1'	-4.17	94.70	100.98
6	B	600	G2P	C4-C5-C6	-3.57	117.39	120.80
7	K	700	ANP	O2B-PB-O3A	3.55	116.50	104.64
6	B	600	G2P	C4-C5-N7	-3.53	105.72	109.40
6	B	600	G2P	N3-C2-N1	-3.49	122.56	127.22
6	B	600	G2P	O2'-C2'-C3'	-3.38	100.88	111.82
6	B	600	G2P	O2A-PA-C3A	3.24	117.63	109.07
7	K	700	ANP	PA-O5'-C5'	-3.09	103.58	121.68
4	A	500	GTP	PB-O3B-PG	-2.99	122.56	132.83
6	B	600	G2P	PB-O3B-PG	-2.91	122.37	132.62
6	B	600	G2P	O1B-PB-O2B	2.84	119.56	110.07
7	K	700	ANP	O1G-PG-N3B	2.80	115.90	111.77
4	A	500	GTP	C8-N7-C5	2.71	108.14	102.99
7	K	700	ANP	O2A-PA-O1A	2.69	125.53	112.24
6	B	600	G2P	O4'-C1'-C2'	-2.67	103.02	106.93
7	K	700	ANP	O4'-C4'-C5'	-2.66	100.63	109.37
7	K	700	ANP	C2'-C3'-C4'	2.57	107.64	102.64
6	B	600	G2P	O2'-C2'-C1'	2.50	120.10	110.85
4	A	500	GTP	PA-O3A-PB	-2.44	124.45	132.83
7	K	700	ANP	C1'-N9-C4	-2.44	122.36	126.64
7	K	700	ANP	O2G-PG-O1G	-2.41	107.39	113.45
4	A	500	GTP	C5-C6-N1	2.38	118.16	113.95
7	K	700	ANP	O4'-C1'-C2'	2.37	110.38	106.93

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	B	600	G2P	C1'-N9-C4	-2.07	123.01	126.64
7	K	700	ANP	C3'-C2'-C1'	2.04	104.05	100.98
6	B	600	G2P	O5'-C5'-C4'	-2.03	102.02	108.99

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	500	GTP	PB-O3B-PG-O3G
4	A	500	GTP	C5'-O5'-PA-O1A
4	A	500	GTP	C5'-O5'-PA-O2A
7	K	700	ANP	PB-N3B-PG-O1G
7	K	700	ANP	PG-N3B-PB-O1B
6	B	600	G2P	C5'-O5'-PA-O1A
6	B	600	G2P	PB-O3B-PG-O1G
4	A	500	GTP	C5'-O5'-PA-O3A
4	A	500	GTP	PB-O3A-PA-O1A
4	A	500	GTP	C4'-C5'-O5'-PA

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	600	G2P	1	0
7	K	700	ANP	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 G2P B 600

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP K 700

Bond lengths

Bond angles

Torsions

Rings

Ligand GTP A 500

Bond lengths | Bond angles

Torsions | Rings
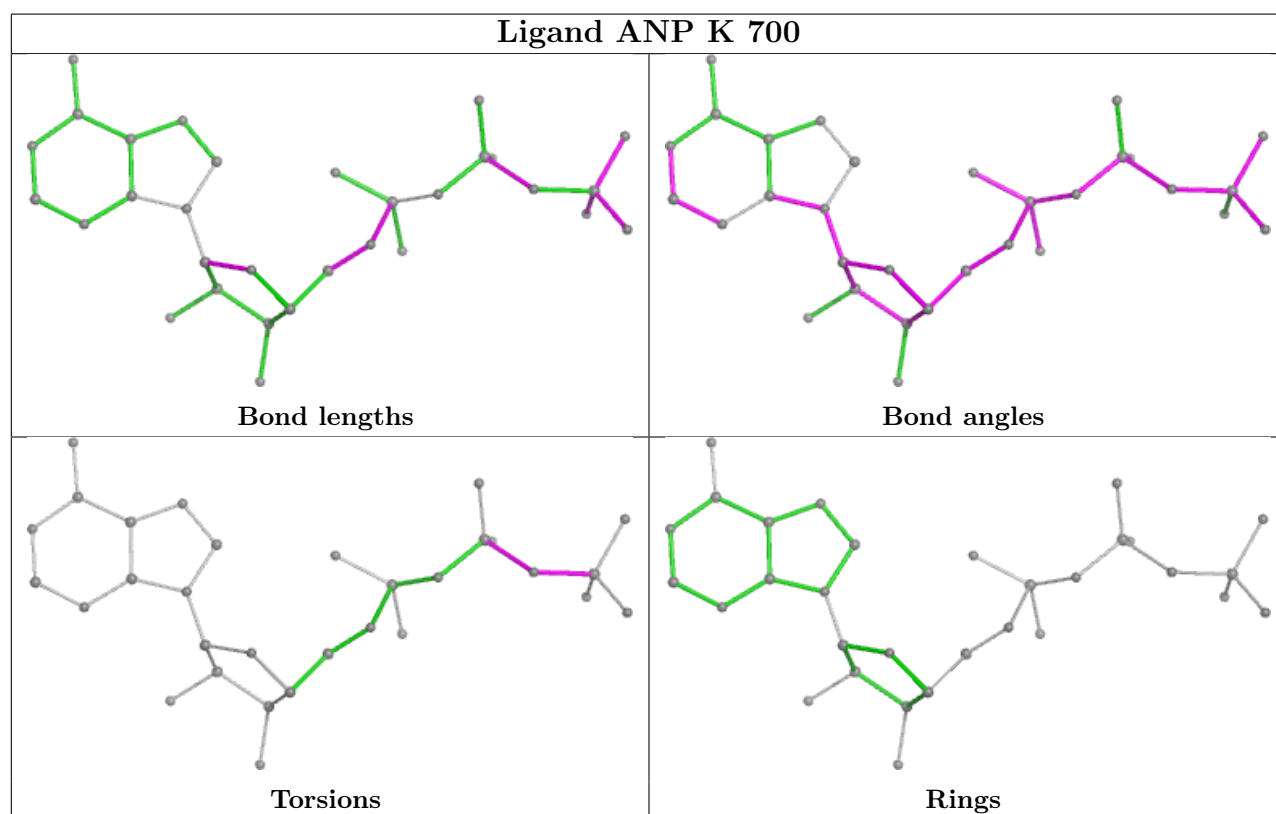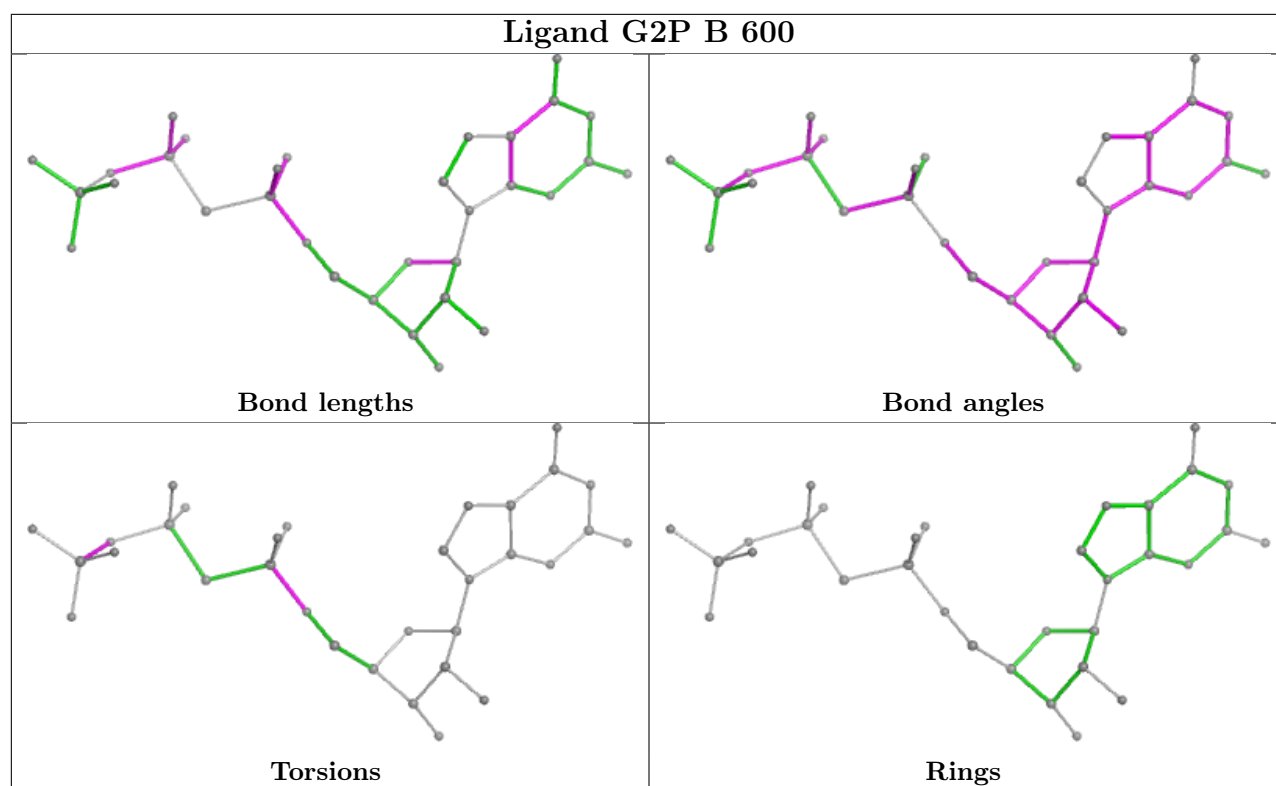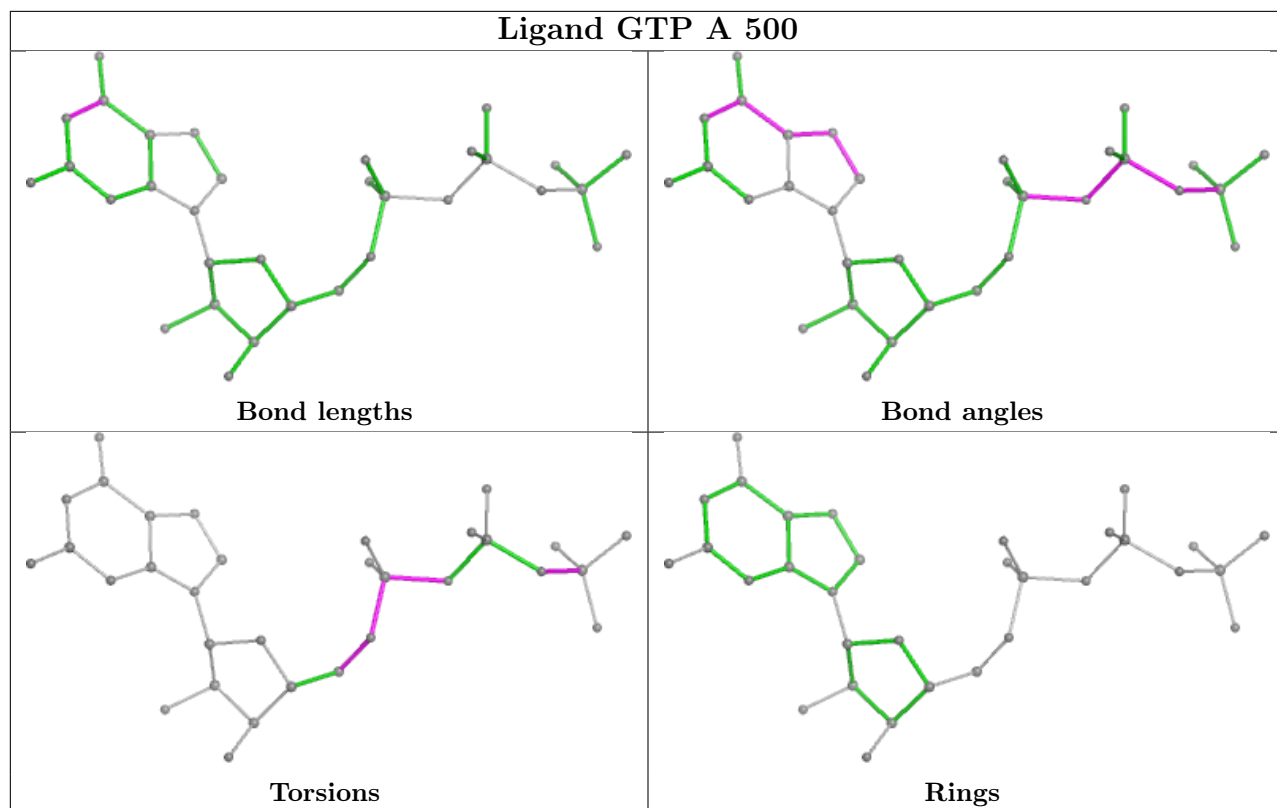
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
3	K	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	K	303:GLU	C	304:ASN	N	2.04

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-12258. 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 ⓘ

6.1.1 Primary map

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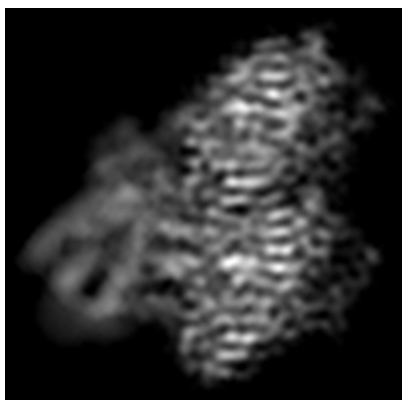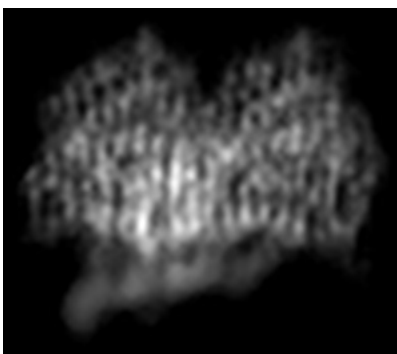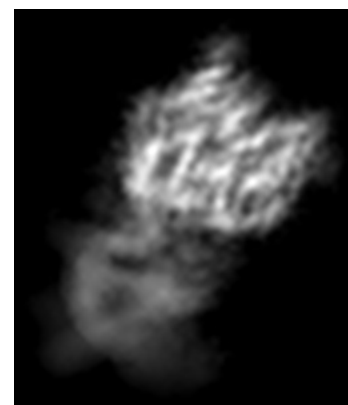
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
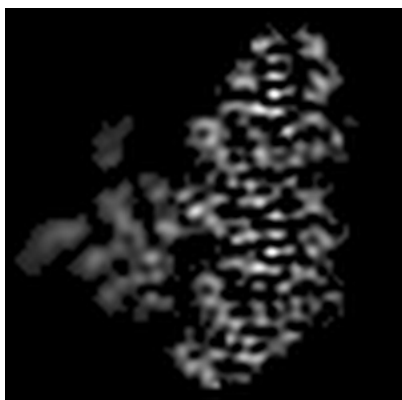
6.2.1 Primary map

| X Index: 33 | Y Index: 39 | Z Index: 38 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map

| X Index: 40 | Y Index: 45 | Z Index: 33 |

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

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

6.4.1 Primary map

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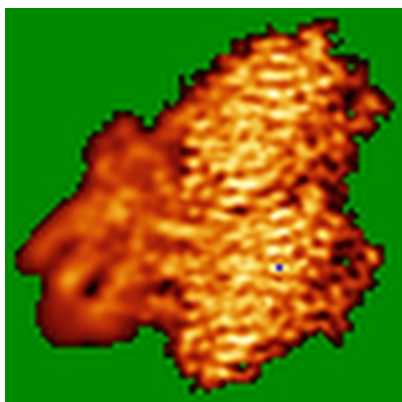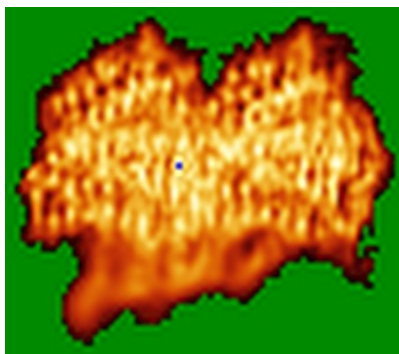
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
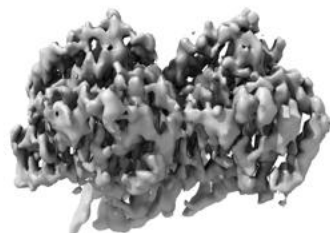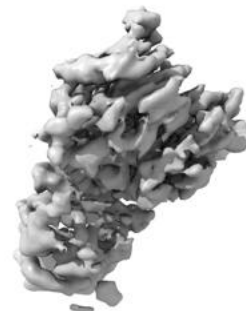
The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation ⓘ

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

7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

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

7.2 Volume estimate ⓘ
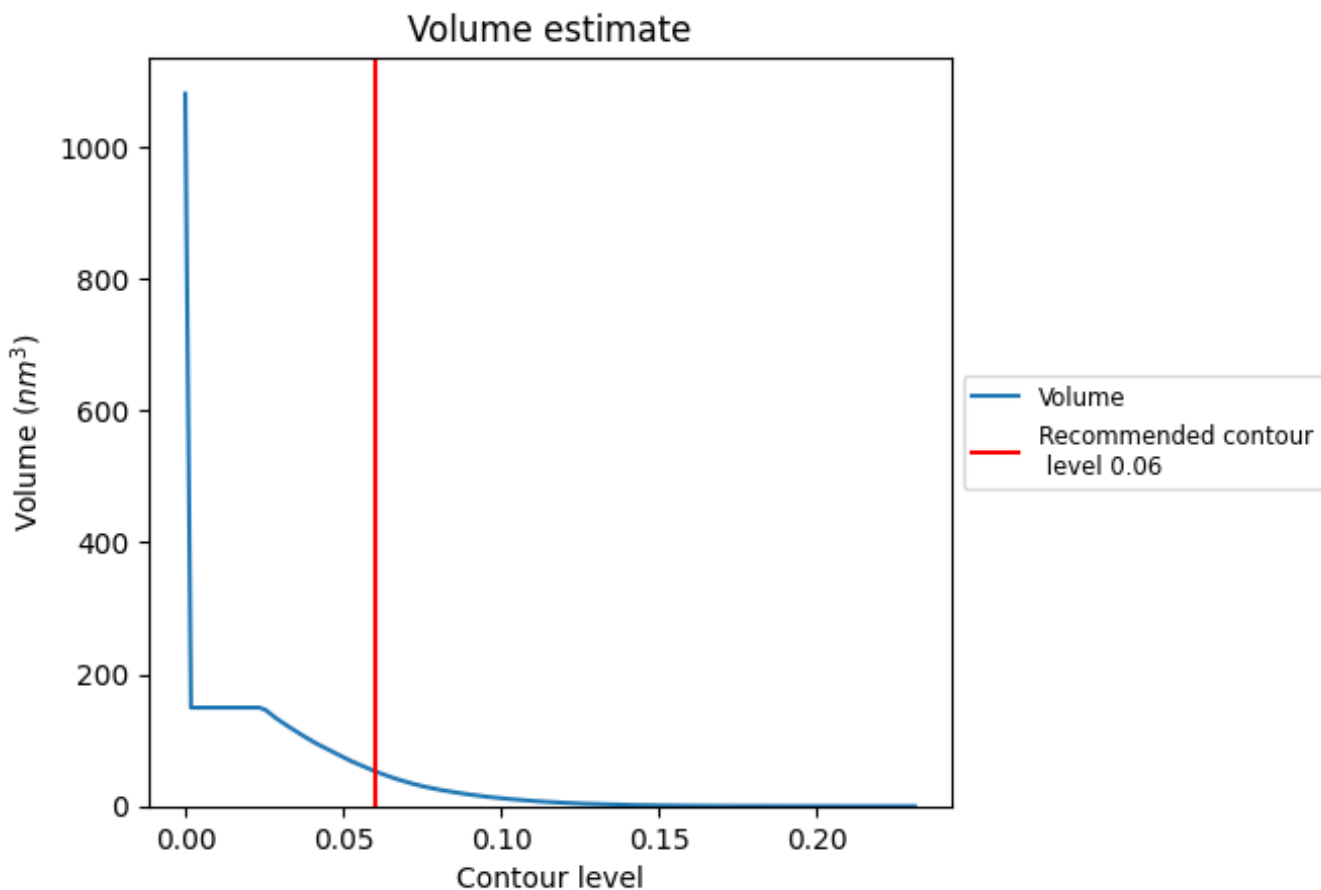
The volume at the recommended contour level is 53 nm^3; this corresponds to an approximate mass of 48 kDa.

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 ⓘ

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

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 ⓘ
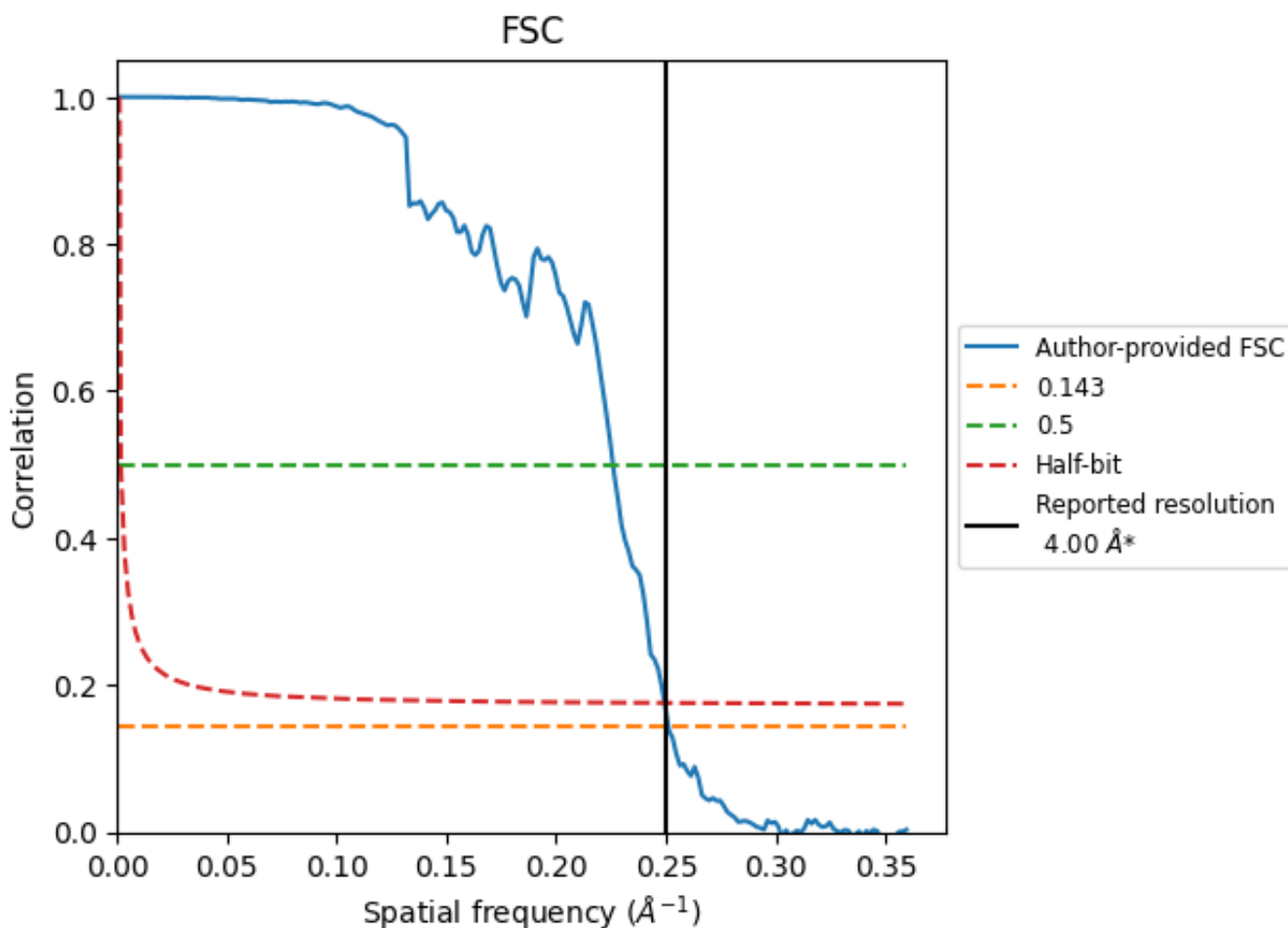
*Reported resolution corresponds to spatial frequency of 0.250 Å^{-1}

8.2　Resolution estimates　ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.00	-	-
Author-provided FSC curve	3.98	4.43	4.01
Unmasked-calculated*	-	-	-

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

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-12258 and PDB model 7NBA. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay (i)

| X | Y | Z |
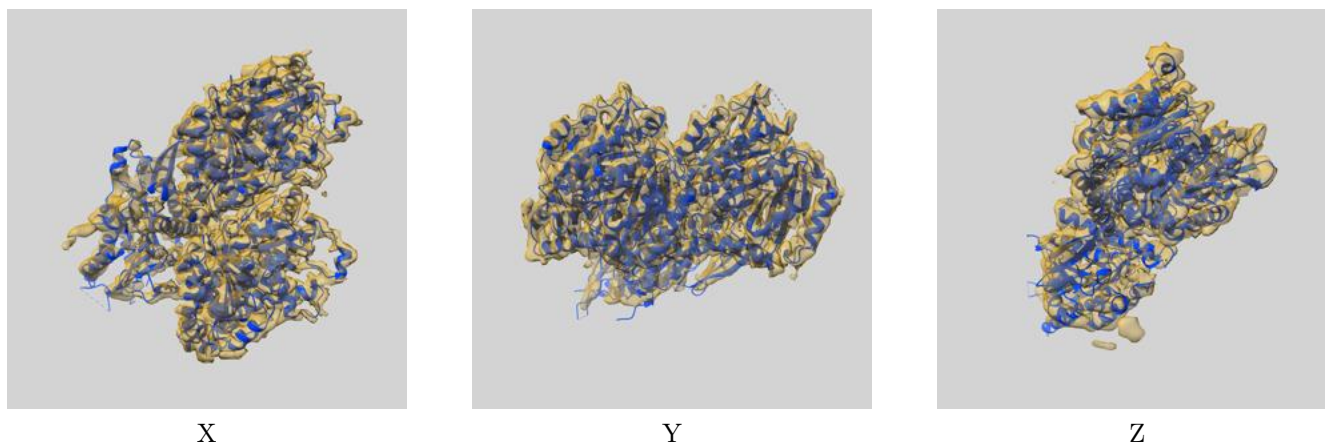
The images above show the 3D surface view of the map at the recommended contour level 0.06 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model (i)

The images above show the model with each residue coloured according 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)
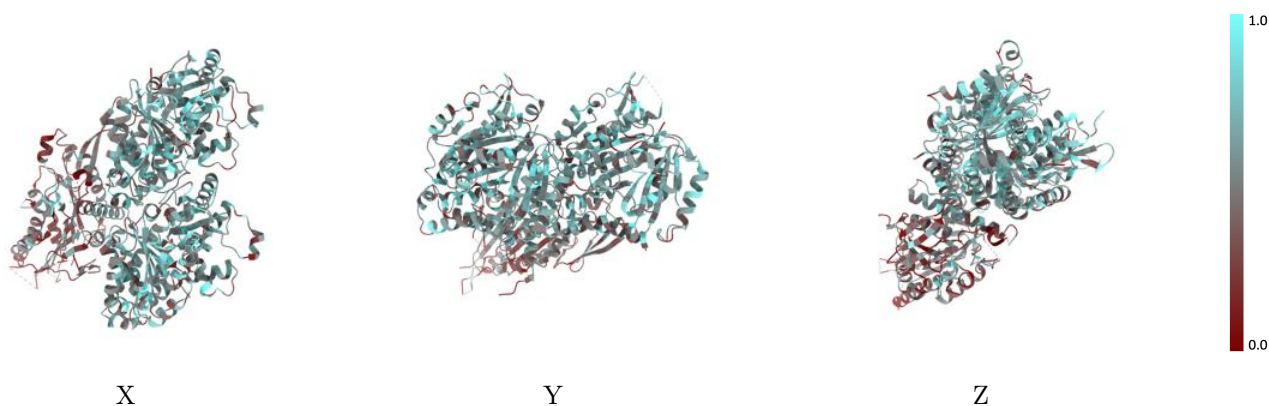
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.06).

9.4 Atom inclusion ⓘ
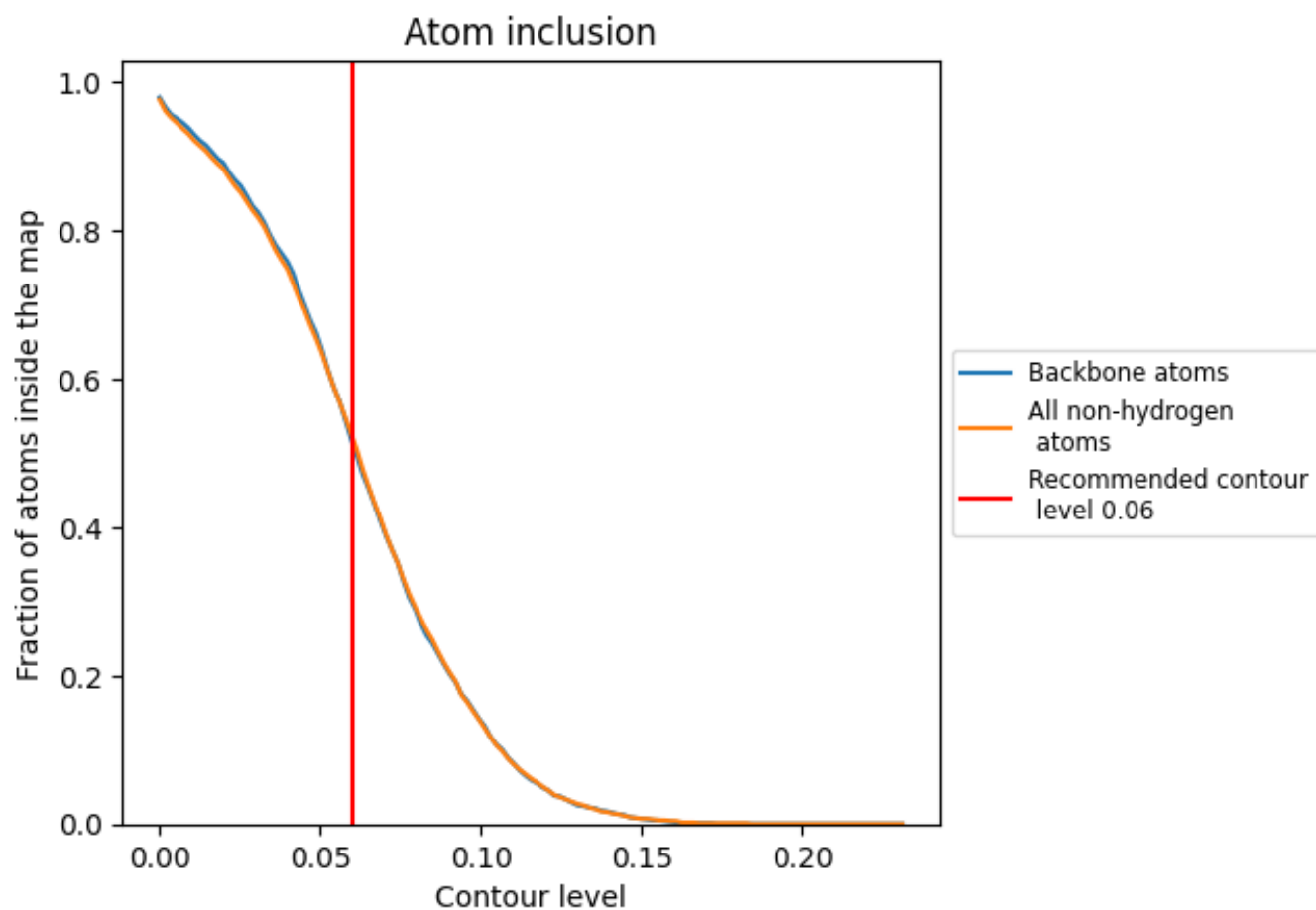
At the recommended contour level, 51% of all backbone atoms, 52% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5210	0.2680
A	0.5960	0.2990
B	0.5960	0.3010
K	0.3540	0.1880

1.0

0.0

<0.0