



Full wwPDB EM Validation Report ⓘ

Mar 5, 2026 – 07:35 PM UTC

PDB ID : 8UXW / pdb_00008uxw
EMDB ID : EMD-42787
Title : Arp2/3 branch junction complex, ADP state
Authors : Chavali, S.S.; Chou, S.Z.; Sindelar, C.V.
Deposited on : 2023-11-11
Resolution : 2.70 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

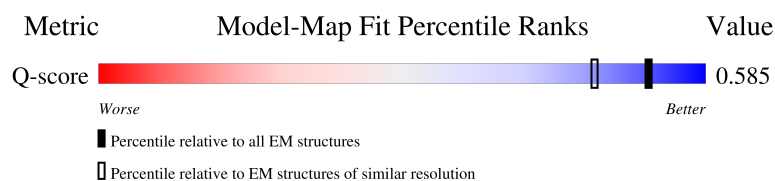
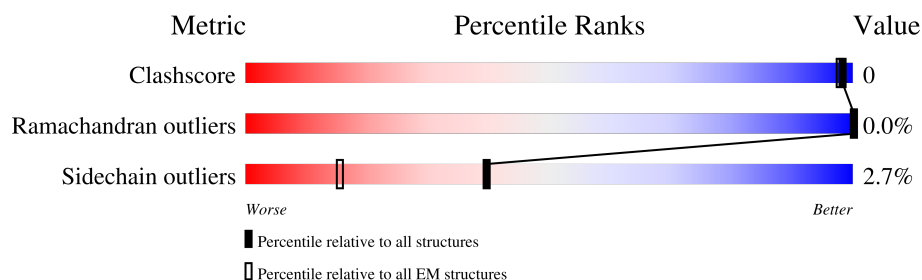
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance

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

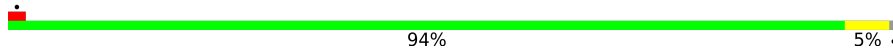
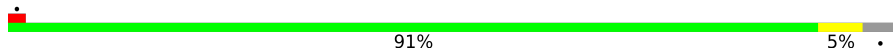
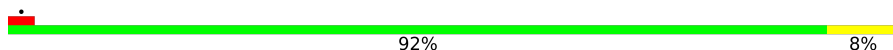
The reported resolution of this entry is 2.70 Å.

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.



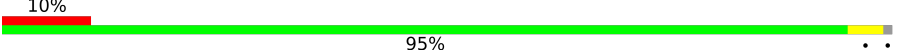
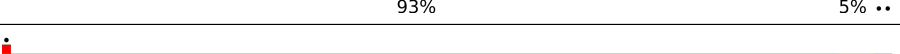
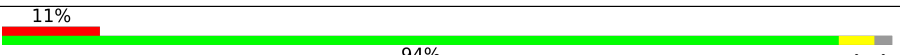
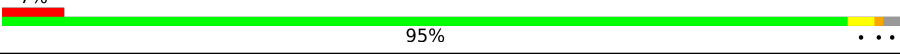
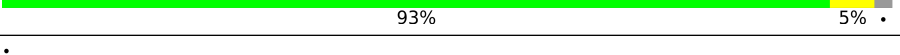
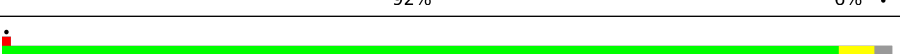
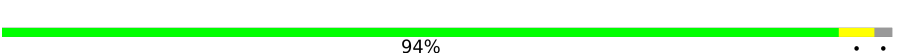
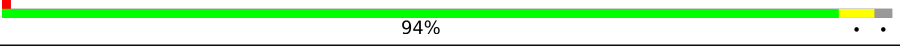
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	10327 (2.20 - 3.20)

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	A	427	
2	B	390	
3	C	377	
4	D	317	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
5	E	174	
6	F	168	
7	G	152	
8	H	377	
8	I	377	
8	M	377	
8	N	377	
8	O	377	
8	P	377	
8	Q	377	
8	R	377	

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 77479 atoms, of which 38450 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 Actin-related protein 3.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	400	Total	C	H	N	O	S	0	0
			6226	2002	3065	540	608	11		

- Molecule 2 is a protein called Actin-related protein 2.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	B	387	Total	C	H	N	O	S	0	0
			6153	1969	3073	530	566	15		

- Molecule 3 is a protein called Actin-related protein 2/3 complex subunit 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	C	362	Total	C	H	N	O	S	0	0
			5576	1785	2751	501	532	7		

- Molecule 4 is a protein called Actin-related protein 2/3 complex subunit 2.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	D	316	Total	C	H	N	O	S	0	0
			5153	1652	2563	445	482	11		

- Molecule 5 is a protein called Actin-related protein 2/3 complex subunit 3.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	E	172	Total	C	H	N	O	S	0	0
			2746	889	1361	237	251	8		

- Molecule 6 is a protein called Actin-related protein 2/3 complex subunit 4.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	F	168	Total	C	H	N	O	S	0	0
			2781	877	1404	234	258	8		

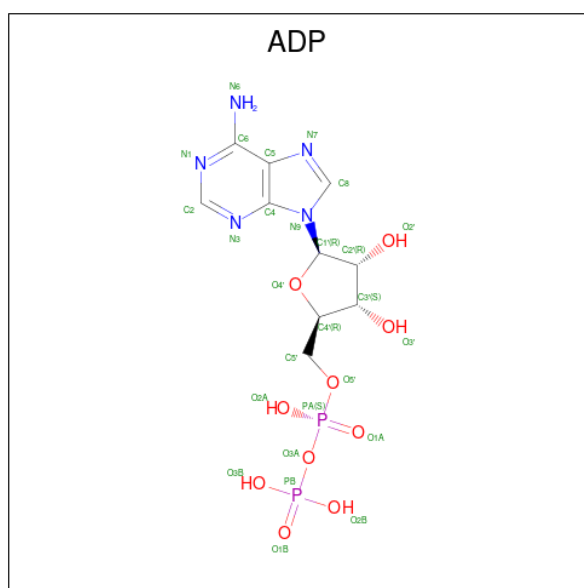
- Molecule 7 is a protein called Actin-related protein 2/3 complex subunit 5.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	G	151	Total	C	H	N	O	S	0	0
			2362	746	1179	202	233	2		

- Molecule 8 is a protein called Actin, alpha skeletal muscle.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	H	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		
8	I	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		
8	M	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		
8	N	370	Total	C	H	N	O	S	0	0
			5758	1833	2865	488	551	21		
8	O	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		
8	P	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		
8	Q	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		
8	R	370	Total	C	H	N	O	S	0	0
			5760	1833	2867	488	551	21		

- Molecule 9 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).

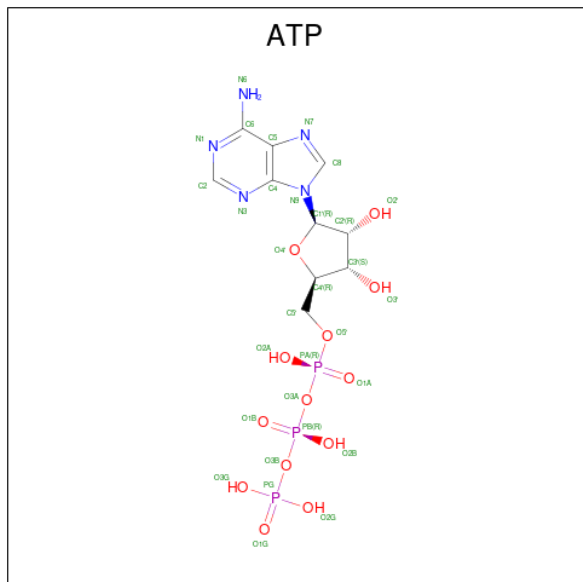


Mol	Chain	Residues	Atoms						AltConf
9	A	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	H	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	I	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	M	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	N	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	O	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	P	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	Q	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
9	R	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	

- Molecule 10 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
10	A	1	Total	Mg	0
			1	1	
10	B	1	Total	Mg	0
			1	1	
10	H	1	Total	Mg	0
			1	1	
10	I	1	Total	Mg	0
			1	1	
10	M	1	Total	Mg	0
			1	1	
10	N	1	Total	Mg	0
			1	1	
10	O	1	Total	Mg	0
			1	1	
10	P	1	Total	Mg	0
			1	1	
10	Q	1	Total	Mg	0
			1	1	
10	R	1	Total	Mg	0
			1	1	

- Molecule 11 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).

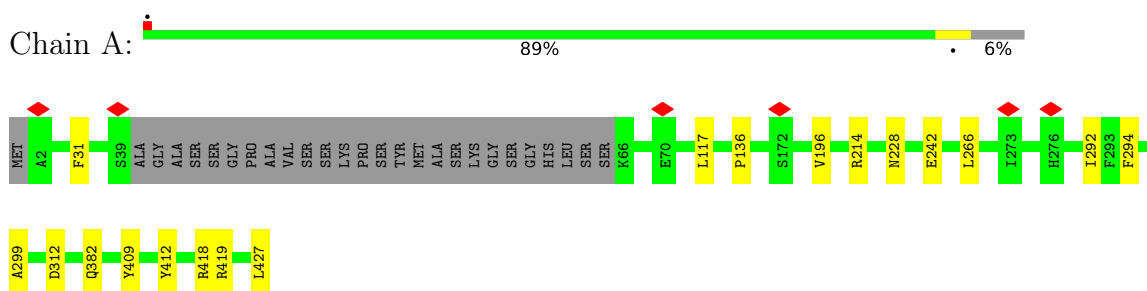


Mol	Chain	Residues	Atoms						AltConf
			Total	C	H	N	O	P	
11	B	1	43	10	12	5	13	3	0

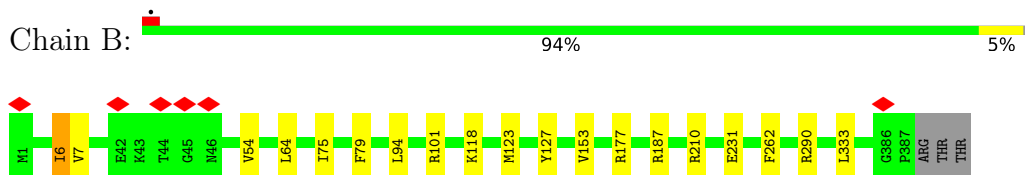
3 Residue-property plots [i](#)

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.

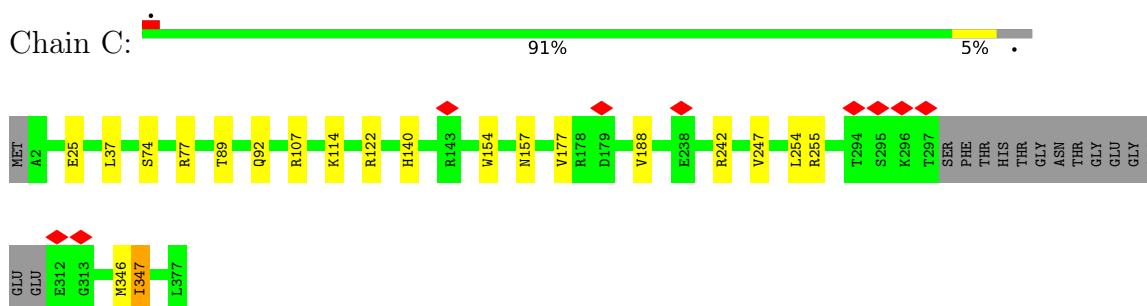
- Molecule 1: Actin-related protein 3



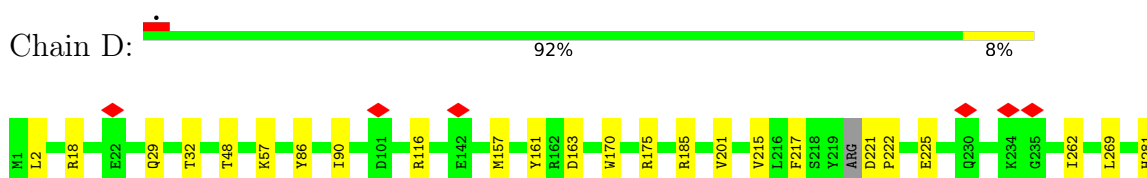
- Molecule 2: Actin-related protein 2



- Molecule 3: Actin-related protein 2/3 complex subunit 1

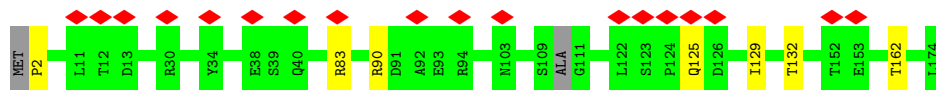


- Molecule 4: Actin-related protein 2/3 complex subunit 2

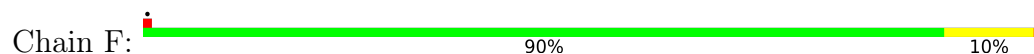




- Molecule 5: Actin-related protein 2/3 complex subunit 3



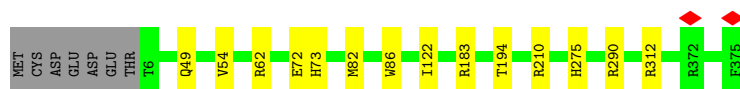
- Molecule 6: Actin-related protein 2/3 complex subunit 4



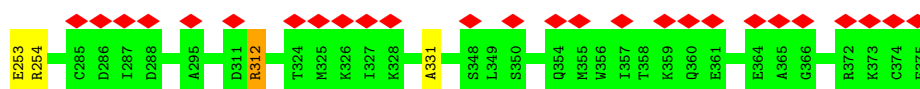
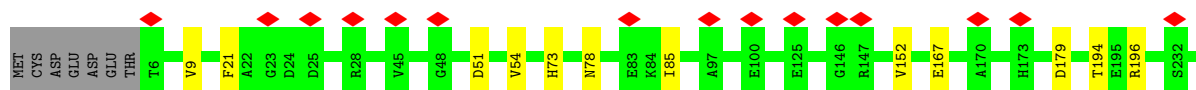
- Molecule 7: Actin-related protein 2/3 complex subunit 5



- Molecule 8: Actin, alpha skeletal muscle

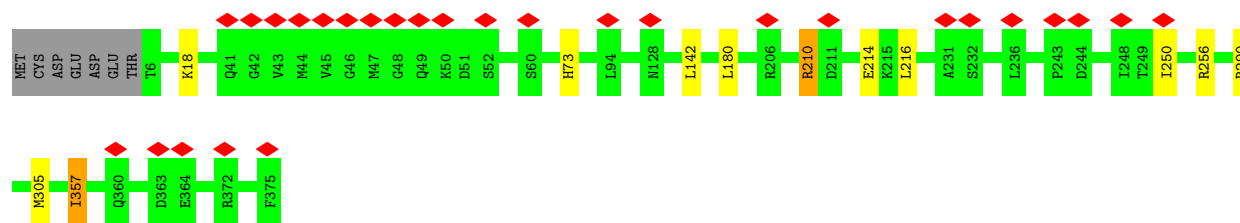


- Molecule 8: Actin, alpha skeletal muscle



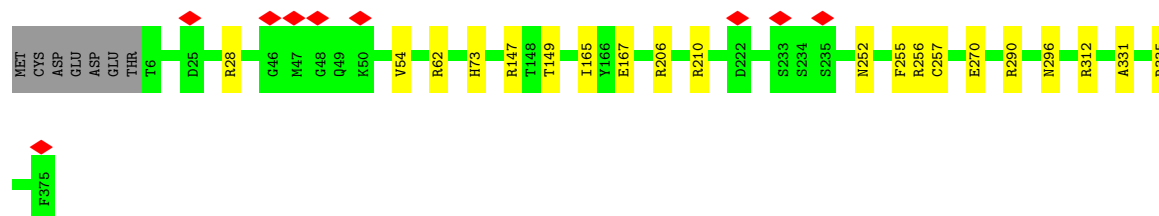
- Molecule 8: Actin, alpha skeletal muscle





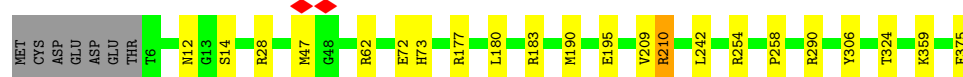
- Molecule 8: Actin, alpha skeletal muscle

Chain N: 93% 5% .



- Molecule 8: Actin, alpha skeletal muscle

Chain O: 92% 6% .



- Molecule 8: Actin, alpha skeletal muscle

Chain P: 94% . .



- Molecule 8: Actin, alpha skeletal muscle

Chain Q: 94% . .



- Molecule 8: Actin, alpha skeletal muscle

Chain R: 94% . .



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	400000	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 ($e^-/\text{\AA}^2$)	51.4	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	64000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.623	Depositor
Minimum map value	-1.936	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.090	Depositor
Recommended contour level	0.32	Depositor
Map size (Å)	344.576, 344.576, 344.576	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.673, 0.673, 0.673	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ATP, ADP, HIC, MG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.76	0/3235	1.34	9/4384 (0.2%)
2	B	0.75	0/3147	1.35	7/4257 (0.2%)
3	C	0.75	0/2902	1.34	6/3963 (0.2%)
4	D	0.77	0/2647	1.37	7/3575 (0.2%)
5	E	0.80	0/1422	1.30	1/1924 (0.1%)
6	F	0.74	0/1398	1.37	4/1879 (0.2%)
7	G	0.75	0/1202	1.39	4/1640 (0.2%)
8	H	0.76	0/2943	1.33	6/3984 (0.2%)
8	I	0.80	0/2943	1.37	7/3984 (0.2%)
8	M	0.78	0/2943	1.33	4/3984 (0.1%)
8	N	0.76	0/2943	1.33	11/3984 (0.3%)
8	O	0.73	0/2943	1.37	8/3984 (0.2%)
8	P	0.75	0/2943	1.34	3/3984 (0.1%)
8	Q	0.73	0/2943	1.36	7/3984 (0.2%)
8	R	0.76	0/2943	1.37	9/3984 (0.2%)
All	All	0.76	0/39497	1.35	93/53494 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
2	B	0	1
3	C	0	1
4	D	0	1
6	F	0	1
7	G	0	1
8	H	0	2
8	I	0	2

Continued on next page...

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
8	M	0	1
8	N	0	2
8	O	0	1
All	All	0	15

There are no bond length outliers.

All (93) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	H	183	ARG	NE-CZ-NH2	8.37	126.73	119.20
2	B	210	ARG	NE-CZ-NH2	8.26	126.64	119.20
8	O	183	ARG	NE-CZ-NH2	7.57	126.02	119.20
8	M	210	ARG	NE-CZ-NH2	7.10	125.59	119.20
8	R	244	ASP	CA-CB-CG	6.75	119.35	112.60
5	E	2	PRO	CA-N-CD	-6.57	102.81	112.00
4	D	222	PRO	N-CA-CB	6.40	106.77	103.19
8	H	210	ARG	NE-CZ-NH2	6.26	124.83	119.20
8	Q	210	ARG	NE-CZ-NH2	6.19	124.77	119.20
1	A	136	PRO	CA-C-N	6.14	128.79	120.38
1	A	136	PRO	C-N-CA	6.14	128.79	120.38
8	O	177	ARG	NE-CZ-NH2	6.12	124.71	119.20
8	R	183	ARG	NE-CZ-NH2	6.08	124.68	119.20
3	C	255	ARG	NE-CZ-NH2	6.08	124.67	119.20
8	Q	177	ARG	NE-CZ-NH2	6.07	124.67	119.20
4	D	221	ASP	CA-CB-CG	6.05	118.65	112.60
6	F	105	ARG	NE-CZ-NH2	6.04	124.64	119.20
8	I	179	ASP	CA-CB-CG	6.04	118.64	112.60
1	A	214	ARG	NE-CZ-NH2	6.03	124.62	119.20
8	R	210	ARG	NE-CZ-NH2	5.98	124.58	119.20
8	N	296	ASN	CA-CB-CG	5.95	118.55	112.60
1	A	31	PHE	CA-CB-CG	5.90	119.70	113.80
8	N	335	ARG	CA-C-N	5.90	128.46	120.38
8	N	335	ARG	C-N-CA	5.90	128.46	120.38
8	O	210	ARG	NE-CZ-NH2	5.79	124.41	119.20
6	F	101	PHE	CA-CB-CG	5.76	119.56	113.80
7	G	73	ARG	NE-CZ-NH2	5.72	124.35	119.20
4	D	283	ARG	NE-CZ-NH2	5.71	124.34	119.20
2	B	177	ARG	NE-CZ-NH2	5.70	124.33	119.20
8	H	275	HIS	CA-C-N	5.70	127.91	120.28
8	H	275	HIS	C-N-CA	5.70	127.91	120.28
8	N	210	ARG	NE-CZ-NH2	5.70	124.33	119.20
8	R	177	ARG	NE-CZ-NH2	5.68	124.32	119.20

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	R	21	PHE	CA-CB-CG	5.66	119.46	113.80
1	A	294	PHE	CA-C-N	5.64	127.62	122.37
1	A	294	PHE	C-N-CA	5.64	127.62	122.37
3	C	107	ARG	NE-CZ-NH2	5.64	124.28	119.20
8	P	254	ARG	NE-CZ-NH2	5.61	124.25	119.20
8	N	206	ARG	NE-CZ-NH2	5.60	124.24	119.20
3	C	242	ARG	NE-CZ-NH2	5.58	124.22	119.20
8	R	62	ARG	NE-CZ-NH2	5.57	124.21	119.20
8	Q	39	ARG	NE-CZ-NH2	5.56	124.21	119.20
8	O	290	ARG	NE-CZ-NH2	5.50	124.15	119.20
1	A	382	GLN	OE1-CD-NE2	-5.48	117.12	122.60
8	Q	256	ARG	NE-CZ-NH2	5.47	124.13	119.20
8	Q	335	ARG	CA-C-N	5.42	128.29	120.38
8	Q	335	ARG	C-N-CA	5.42	128.29	120.38
8	R	39	ARG	NE-CZ-NH2	5.41	124.07	119.20
7	G	148	SER	CA-C-N	5.40	128.34	120.51
7	G	148	SER	C-N-CA	5.40	128.34	120.51
7	G	151	ASP	CA-CB-CG	5.39	117.99	112.60
8	N	62	ARG	NE-CZ-NH2	5.39	124.05	119.20
1	A	418	ARG	NE-CZ-NH2	5.38	124.05	119.20
3	C	77	ARG	NE-CZ-NH2	5.38	124.05	119.20
8	I	196	ARG	NE-CZ-NH2	5.38	124.04	119.20
8	O	183	ARG	NE-CZ-NH1	-5.37	116.13	121.50
4	D	281	HIS	CB-CG-CD2	-5.36	124.24	131.20
8	N	331	ALA	CA-C-N	5.35	123.57	119.66
8	N	331	ALA	C-N-CA	5.35	123.57	119.66
2	B	290	ARG	NE-CZ-NH2	5.34	124.01	119.20
4	D	29	GLN	OE1-CD-NE2	-5.34	117.26	122.60
8	M	357	ILE	CB-CA-C	5.33	116.99	111.23
8	O	28	ARG	NE-CZ-NH2	5.31	123.98	119.20
8	N	290	ARG	NE-CZ-NH2	5.29	123.96	119.20
8	H	49	GLN	OE1-CD-NE2	-5.28	117.32	122.60
8	O	62	ARG	NE-CZ-NH2	5.27	123.94	119.20
8	M	256	ARG	NE-CZ-NH2	5.27	123.94	119.20
8	I	21	PHE	CA-CB-CG	5.26	119.06	113.80
8	P	196	ARG	NE-CZ-NH2	5.23	123.91	119.20
8	R	49	GLN	OE1-CD-NE2	-5.22	117.38	122.60
3	C	347	ILE	CB-CA-C	5.22	118.13	110.98
6	F	71	ARG	NE-CZ-NH2	5.20	123.88	119.20
4	D	185	ARG	NE-CZ-NH2	5.20	123.88	119.20
2	B	101	ARG	NE-CZ-NH2	5.20	123.88	119.20
8	R	296	ASN	CA-CB-CG	5.17	117.77	112.60

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	O	254	ARG	NE-CZ-NH2	5.17	123.85	119.20
8	H	62	ARG	NE-CZ-NH2	5.17	123.85	119.20
8	I	78	ASN	CA-CB-CG	5.16	117.76	112.60
2	B	262	PHE	CA-C-N	5.13	128.18	122.74
2	B	262	PHE	C-N-CA	5.13	128.18	122.74
8	N	256	ARG	NE-CZ-NH2	5.11	123.80	119.20
8	I	331	ALA	CA-C-N	5.11	123.39	119.66
8	I	331	ALA	C-N-CA	5.11	123.39	119.66
4	D	175	ARG	NE-CZ-NH2	5.11	123.80	119.20
8	I	312	ARG	NE-CZ-NH2	5.10	123.79	119.20
8	Q	177	ARG	NE-CZ-NH1	-5.10	116.40	121.50
8	M	290	ARG	NE-CZ-NH2	5.08	123.77	119.20
3	C	140	HIS	CB-CG-CD2	-5.06	124.62	131.20
2	B	187	ARG	NE-CZ-NH2	5.05	123.74	119.20
1	A	419	ARG	NE-CZ-NH2	5.04	123.74	119.20
8	N	28	ARG	NE-CZ-NH2	5.04	123.73	119.20
6	F	80	ASP	CA-CB-CG	5.01	117.61	112.60
8	P	62	ARG	NE-CZ-NH2	5.00	123.70	119.20

There are no chirality outliers.

All (15) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	409	TYR	Sidechain
1	A	412	TYR	Sidechain
2	B	127	TYR	Sidechain
3	C	122	ARG	Sidechain
4	D	86	TYR	Sidechain
6	F	156	ARG	Sidechain
7	G	112	TYR	Sidechain
8	H	290	ARG	Sidechain
8	H	312	ARG	Sidechain
8	I	254	ARG	Sidechain
8	I	312	ARG	Sidechain
8	M	210	ARG	Sidechain
8	N	147	ARG	Sidechain
8	N	312	ARG	Sidechain
8	O	210	ARG	Sidechain

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	3161	3065	3063	1	0
2	B	3080	3073	3073	2	0
3	C	2825	2751	2747	1	0
4	D	2590	2563	2562	3	0
5	E	1385	1361	1360	1	0
6	F	1377	1404	1404	3	0
7	G	1183	1179	1178	2	0
8	H	2893	2867	2865	2	0
8	I	2893	2867	2865	0	0
8	M	2893	2867	2865	1	0
8	N	2893	2865	2863	2	0
8	O	2893	2867	2865	3	0
8	P	2893	2867	2865	1	0
8	Q	2893	2867	2865	1	0
8	R	2893	2867	2865	0	0
9	A	27	12	12	0	0
9	H	27	12	12	0	0
9	I	27	12	12	0	0
9	M	27	12	12	0	0
9	N	27	12	12	0	0
9	O	27	12	12	0	0
9	P	27	12	12	0	0
9	Q	27	12	12	0	0
9	R	27	12	12	0	0
10	A	1	0	0	0	0
10	B	1	0	0	0	0
10	H	1	0	0	0	0
10	I	1	0	0	0	0
10	M	1	0	0	0	0
10	N	1	0	0	0	0
10	O	1	0	0	0	0
10	P	1	0	0	0	0
10	Q	1	0	0	0	0
10	R	1	0	0	0	0
11	B	31	12	12	0	0
All	All	39029	38450	38425	21	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 0.

All (21) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:15:THR:HG21	7:G:112:TYR:OH	1.88	0.73
8:P:149:THR:HG22	8:P:167:GLU:H	1.59	0.68
8:O:190:MET:HG2	8:O:209:VAL:HG11	1.81	0.62
8:O:190:MET:CG	8:O:209:VAL:HG11	2.33	0.58
4:D:201:VAL:HG21	4:D:217:PHE:CB	2.39	0.52
5:E:129:ILE:HA	5:E:132:THR:HG22	1.89	0.52
1:A:292:ILE:HD12	1:A:299:ALA:HB2	1.95	0.48
2:B:79:PHE:CD1	2:B:118:LYS:HE3	2.50	0.45
4:D:201:VAL:HG21	4:D:217:PHE:HB2	2.00	0.44
4:D:170:TRP:CZ2	4:D:225:GLU:HG3	2.53	0.43
6:F:15:THR:HG22	7:G:142:ILE:HG21	1.99	0.43
8:M:216:LEU:CD1	8:M:250:ILE:HD13	2.49	0.43
6:F:101:PHE:HB3	6:F:104:LEU:HD23	2.01	0.42
8:H:82:MET:HG3	8:H:86:TRP:CZ3	2.54	0.42
8:H:86:TRP:CZ3	8:H:122:ILE:HG21	2.55	0.42
8:N:149:THR:HG22	8:N:167:GLU:H	1.85	0.41
8:N:252:ASN:HA	8:N:255:PHE:CE2	2.55	0.41
8:Q:53:TYR:CZ	8:Q:61:LYS:HE2	2.54	0.41
2:B:6:ILE:HD12	2:B:94:LEU:CD1	2.50	0.41
3:C:114:LYS:HE3	3:C:154:TRP:CZ3	2.56	0.40
8:O:258:PRO:HG3	8:O:306:TYR:CE1	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	396/427 (93%)	387 (98%)	9 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	385/390 (99%)	373 (97%)	12 (3%)	0	100	100
3	C	358/377 (95%)	340 (95%)	18 (5%)	0	100	100
4	D	312/317 (98%)	303 (97%)	9 (3%)	0	100	100
5	E	168/174 (97%)	165 (98%)	3 (2%)	0	100	100
6	F	166/168 (99%)	160 (96%)	6 (4%)	0	100	100
7	G	149/152 (98%)	146 (98%)	3 (2%)	0	100	100
8	H	367/377 (97%)	357 (97%)	10 (3%)	0	100	100
8	I	367/377 (97%)	352 (96%)	15 (4%)	0	100	100
8	M	367/377 (97%)	355 (97%)	12 (3%)	0	100	100
8	N	367/377 (97%)	356 (97%)	10 (3%)	1 (0%)	36	60
8	O	367/377 (97%)	355 (97%)	12 (3%)	0	100	100
8	P	367/377 (97%)	358 (98%)	9 (2%)	0	100	100
8	Q	367/377 (97%)	358 (98%)	9 (2%)	0	100	100
8	R	367/377 (97%)	359 (98%)	8 (2%)	0	100	100
All	All	4870/5021 (97%)	4724 (97%)	145 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	N	257	CYS

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	344/364 (94%)	337 (98%)	7 (2%)	48	76
2	B	329/335 (98%)	320 (97%)	9 (3%)	39	69
3	C	305/317 (96%)	293 (96%)	12 (4%)	28	57
4	D	285/287 (99%)	271 (95%)	14 (5%)	22	49

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	E	149/150 (99%)	145 (97%)	4 (3%)	39	69
6	F	157/157 (100%)	147 (94%)	10 (6%)	16	38
7	G	133/134 (99%)	129 (97%)	4 (3%)	36	66
8	H	312/319 (98%)	309 (99%)	3 (1%)	68	86
8	I	312/319 (98%)	304 (97%)	8 (3%)	40	70
8	M	312/319 (98%)	306 (98%)	6 (2%)	50	77
8	N	312/319 (98%)	309 (99%)	3 (1%)	68	86
8	O	312/319 (98%)	302 (97%)	10 (3%)	34	64
8	P	312/319 (98%)	301 (96%)	11 (4%)	32	61
8	Q	312/319 (98%)	306 (98%)	6 (2%)	50	77
8	R	312/319 (98%)	306 (98%)	6 (2%)	50	77
All	All	4198/4296 (98%)	4085 (97%)	113 (3%)	40	69

All (113) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	117	LEU
1	A	196	VAL
1	A	228	ASN
1	A	242	GLU
1	A	266	LEU
1	A	312	ASP
1	A	427	LEU
2	B	6	ILE
2	B	7	VAL
2	B	54	VAL
2	B	64	LEU
2	B	75	ILE
2	B	123	MET
2	B	153	VAL
2	B	231	GLU
2	B	333	LEU
3	C	25	GLU
3	C	37	LEU
3	C	74	SER
3	C	89	THR
3	C	92	GLN
3	C	157	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	C	177	VAL
3	C	188	VAL
3	C	247	VAL
3	C	254	LEU
3	C	346	MET
3	C	347	ILE
4	D	2	LEU
4	D	18	ARG
4	D	32	THR
4	D	48	THR
4	D	57	LYS
4	D	90	ILE
4	D	116	ARG
4	D	157	MET
4	D	161	TYR
4	D	163	ASP
4	D	215	VAL
4	D	262	ILE
4	D	269	LEU
4	D	283	ARG
5	E	83	ARG
5	E	90	ARG
5	E	125	GLN
5	E	162	THR
6	F	17	THR
6	F	26	SER
6	F	31	GLU
6	F	40	VAL
6	F	63	ILE
6	F	76	ILE
6	F	136	ILE
6	F	139	MET
6	F	159	LEU
6	F	160	VAL
7	G	13	GLU
7	G	17	THR
7	G	70	GLN
7	G	146	LEU
8	H	54	VAL
8	H	72	GLU
8	H	194	THR
8	I	9	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
8	I	51	ASP
8	I	54	VAL
8	I	85	ILE
8	I	152	VAL
8	I	167	GLU
8	I	194	THR
8	I	253	GLU
8	M	18	LYS
8	M	142	LEU
8	M	180	LEU
8	M	214	GLU
8	M	305	MET
8	M	357	ILE
8	N	54	VAL
8	N	165	ILE
8	N	270	GLU
8	O	12	ASN
8	O	14	SER
8	O	47	MET
8	O	72	GLU
8	O	180	LEU
8	O	195	GLU
8	O	242	LEU
8	O	324	THR
8	O	359	LYS
8	O	375	PHE
8	P	64	ILE
8	P	71	ILE
8	P	149	THR
8	P	163	VAL
8	P	180	LEU
8	P	194	THR
8	P	195	GLU
8	P	202	THR
8	P	203	THR
8	P	236	LEU
8	P	320	LEU
8	Q	9	VAL
8	Q	44	MET
8	Q	54	VAL
8	Q	106	THR
8	Q	194	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
8	Q	330	ILE
8	R	123	MET
8	R	152	VAL
8	R	163	VAL
8	R	234	SER
8	R	278	THR
8	R	289	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (52) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	104	HIS
1	A	221	GLN
1	A	316	GLN
1	A	344	ASN
1	A	395	GLN
1	A	404	HIS
1	A	425	ASN
2	B	73	ASN
2	B	201	ASN
2	B	319	GLN
2	B	364	ASN
3	C	92	GLN
3	C	131	GLN
3	C	209	HIS
4	D	40	HIS
4	D	214	GLN
4	D	253	GLN
4	D	281	HIS
4	D	282	GLN
5	E	97	ASN
6	F	58	GLN
6	F	129	HIS
6	F	154	ASN
7	G	48	GLN
7	G	67	ASN
7	G	122	ASN
8	H	40	HIS
8	I	92	ASN
8	I	161	HIS
8	I	246	GLN
8	M	263	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
8	M	354	GLN
8	N	49	GLN
8	N	92	ASN
8	N	173	HIS
8	N	263	GLN
8	O	92	ASN
8	O	161	HIS
8	O	162	ASN
8	O	173	HIS
8	O	314	GLN
8	P	92	ASN
8	P	173	HIS
8	Q	40	HIS
8	Q	161	HIS
8	Q	162	ASN
8	Q	173	HIS
8	R	49	GLN
8	R	92	ASN
8	R	128	ASN
8	R	137	GLN
8	R	173	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

8 non-standard protein/DNA/RNA residues 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	$\# Z > 2$
8	HIC	I	73	8	10,11,12	0.52	0	9,14,16	1.32	1 (11%)
8	HIC	Q	73	8	10,11,12	0.47	0	9,14,16	1.38	1 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	HIC	M	73	8	10,11,12	0.43	0	9,14,16	1.49	1 (11%)
8	HIC	N	73	8	10,11,12	0.45	0	9,14,16	1.30	1 (11%)
8	HIC	O	73	8	10,11,12	0.44	0	9,14,16	1.41	1 (11%)
8	HIC	H	73	8	10,11,12	0.46	0	9,14,16	1.33	1 (11%)
8	HIC	R	73	8	10,11,12	0.45	0	9,14,16	1.31	1 (11%)
8	HIC	P	73	8	10,11,12	0.44	0	9,14,16	1.35	1 (11%)

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
8	HIC	I	73	8	-	0/5/6/8	0/1/1/1
8	HIC	Q	73	8	-	0/5/6/8	0/1/1/1
8	HIC	M	73	8	-	0/5/6/8	0/1/1/1
8	HIC	N	73	8	-	0/5/6/8	0/1/1/1
8	HIC	O	73	8	-	0/5/6/8	0/1/1/1
8	HIC	H	73	8	-	0/5/6/8	0/1/1/1
8	HIC	R	73	8	-	0/5/6/8	0/1/1/1
8	HIC	P	73	8	-	0/5/6/8	0/1/1/1

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	M	73	HIC	NE2-CE1-ND1	-3.82	111.20	112.66
8	O	73	HIC	NE2-CE1-ND1	-3.61	111.28	112.66
8	Q	73	HIC	NE2-CE1-ND1	-3.58	111.29	112.66
8	H	73	HIC	NE2-CE1-ND1	-3.48	111.33	112.66
8	P	73	HIC	NE2-CE1-ND1	-3.45	111.34	112.66
8	R	73	HIC	NE2-CE1-ND1	-3.36	111.38	112.66
8	I	73	HIC	NE2-CE1-ND1	-3.32	111.39	112.66
8	N	73	HIC	NE2-CE1-ND1	-3.21	111.43	112.66

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 10 are monoatomic - leaving 10 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
9	ADP	P	802	10	28,29,29	1.11	3 (10%)	43,45,45	1.46	11 (25%)
9	ADP	Q	802	10	28,29,29	1.09	2 (7%)	43,45,45	1.21	6 (13%)
9	ADP	O	802	10	28,29,29	1.08	1 (3%)	43,45,45	1.24	5 (11%)
9	ADP	I	802	10	28,29,29	1.07	2 (7%)	43,45,45	1.48	9 (20%)
11	ATP	B	902	10	32,33,33	1.13	3 (9%)	48,52,52	1.13	3 (6%)
9	ADP	N	802	10	28,29,29	1.15	3 (10%)	43,45,45	1.46	8 (18%)
9	ADP	M	802	10	28,29,29	1.10	1 (3%)	43,45,45	1.29	7 (16%)
9	ADP	H	802	10	28,29,29	1.06	2 (7%)	43,45,45	1.42	8 (18%)
9	ADP	R	802	10	28,29,29	1.10	2 (7%)	43,45,45	1.27	6 (13%)
9	ADP	A	901	10	28,29,29	1.11	3 (10%)	43,45,45	1.46	10 (23%)

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
9	ADP	P	802	10	-	1/16/32/32	0/3/3/3
9	ADP	Q	802	10	-	2/16/32/32	0/3/3/3
9	ADP	O	802	10	-	0/16/32/32	0/3/3/3
9	ADP	I	802	10	-	1/16/32/32	0/3/3/3
11	ATP	B	902	10	-	1/22/38/38	0/3/3/3
9	ADP	N	802	10	-	5/16/32/32	0/3/3/3
9	ADP	M	802	10	-	2/16/32/32	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	ADP	H	802	10	-	1/16/32/32	0/3/3/3
9	ADP	R	802	10	-	2/16/32/32	0/3/3/3
9	ADP	A	901	10	-	1/16/32/32	0/3/3/3

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	Q	802	ADP	PA-O3A	-2.82	1.56	1.59
9	N	802	ADP	PA-O3A	-2.59	1.56	1.59
9	P	802	ADP	PA-O3A	-2.40	1.56	1.59
9	A	901	ADP	PA-O3A	-2.39	1.56	1.59
9	O	802	ADP	PA-O3A	-2.37	1.56	1.59
9	M	802	ADP	PA-O3A	-2.36	1.56	1.59
11	B	902	ATP	PA-O3A	-2.34	1.57	1.59
9	A	901	ADP	PB-O3B	-2.28	1.46	1.54
11	B	902	ATP	PB-O3A	-2.28	1.57	1.59
9	I	802	ADP	PA-O3A	-2.26	1.57	1.59
9	H	802	ADP	PA-O3A	-2.16	1.57	1.59
9	R	802	ADP	PA-O3A	-2.13	1.57	1.59
9	P	802	ADP	PB-O2B	-2.10	1.47	1.54
9	R	802	ADP	C5-C4	-2.09	1.35	1.39
9	H	802	ADP	PB-O2B	-2.09	1.47	1.54
9	A	901	ADP	C5-C4	-2.07	1.35	1.39
9	N	802	ADP	PB-O2B	-2.06	1.47	1.54
9	N	802	ADP	C5-C4	-2.06	1.35	1.39
9	P	802	ADP	C5-C4	-2.05	1.35	1.39
9	I	802	ADP	C8-N7	2.05	1.35	1.31
9	Q	802	ADP	C5-C4	-2.02	1.35	1.39
11	B	902	ATP	C5-C4	-2.01	1.35	1.39

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	N	802	ADP	O2B-PB-O3A	3.75	117.20	104.64
9	I	802	ADP	O2A-PA-O3A	3.67	117.19	107.27
9	I	802	ADP	O2B-PB-O1B	-3.58	96.90	110.83
9	P	802	ADP	O3B-PB-O1B	-3.52	97.12	110.83
9	H	802	ADP	O3B-PB-O1B	-3.52	97.13	110.83
9	R	802	ADP	O2A-PA-O3A	3.45	116.61	107.27
9	A	901	ADP	O2A-PA-O3A	3.43	116.54	107.27
9	H	802	ADP	O2A-PA-O3A	3.28	116.15	107.27
9	N	802	ADP	O3B-PB-O1B	-3.18	98.44	110.83

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	901	ADP	O2B-PB-O1B	-3.14	98.58	110.83
9	R	802	ADP	C4-C5-N7	3.14	114.17	110.58
9	A	901	ADP	C4-C5-N7	3.08	114.11	110.58
9	H	802	ADP	C4-C5-N7	3.07	114.09	110.58
9	I	802	ADP	C4-C5-N7	3.05	114.07	110.58
9	H	802	ADP	O2B-PB-O3A	3.01	114.73	104.64
11	B	902	ATP	C4-C5-N7	3.01	114.02	110.58
9	O	802	ADP	C4-C5-N7	2.95	113.95	110.58
9	M	802	ADP	O3B-PB-O2B	-2.92	96.84	107.80
9	M	802	ADP	C4-C5-N7	2.92	113.92	110.58
9	P	802	ADP	C4-C5-N7	2.91	113.91	110.58
9	P	802	ADP	O2A-PA-O3A	2.89	115.09	107.27
9	Q	802	ADP	C4-C5-N7	2.89	113.88	110.58
9	Q	802	ADP	C5-C4-N3	-2.88	122.75	126.72
9	P	802	ADP	C5-C4-N3	-2.85	122.80	126.72
9	P	802	ADP	O2B-PB-O3A	2.79	114.00	104.64
9	M	802	ADP	C5-C4-N3	-2.70	123.00	126.72
9	A	901	ADP	O2B-PB-O3A	2.69	113.65	104.64
9	R	802	ADP	O3B-PB-O2B	-2.67	97.77	107.80
9	A	901	ADP	O3B-PB-O3A	2.67	113.59	104.64
9	N	802	ADP	C4-C5-N7	2.65	113.61	110.58
9	A	901	ADP	C5-C4-N3	-2.64	123.08	126.72
9	O	802	ADP	O2B-PB-O3A	2.64	113.48	104.64
9	N	802	ADP	O2A-PA-O3A	2.60	114.31	107.27
9	M	802	ADP	O2B-PB-O3A	2.59	113.32	104.64
9	I	802	ADP	O3B-PB-O3A	2.55	113.19	104.64
9	P	802	ADP	O3B-PB-O3A	2.55	113.17	104.64
9	O	802	ADP	C5-C4-N3	-2.52	123.25	126.72
9	I	802	ADP	O2B-PB-O3A	2.51	113.07	104.64
9	H	802	ADP	C5-C4-N3	-2.46	123.33	126.72
11	B	902	ATP	C5-C4-N3	-2.44	123.36	126.72
9	I	802	ADP	C5-C4-N3	-2.43	123.36	126.72
9	R	802	ADP	O2B-PB-O3A	2.37	112.58	104.64
9	N	802	ADP	C5-C4-N3	-2.37	123.46	126.72
9	H	802	ADP	O4'-C1'-C2'	-2.27	101.75	106.62
9	R	802	ADP	C5-C4-N3	-2.26	123.60	126.72
11	B	902	ATP	O2B-PB-O3B	2.25	113.35	107.27
9	O	802	ADP	O3B-PB-O2B	-2.20	99.56	107.80
9	Q	802	ADP	O2B-PB-O3A	2.20	112.00	104.64
9	N	802	ADP	O3'-C3'-C4'	2.16	117.29	111.08
9	A	901	ADP	O4'-C1'-C2'	-2.15	102.03	106.62
9	I	802	ADP	N6-C6-N1	-2.13	113.64	118.38

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	Q	802	ADP	N6-C6-N1	-2.11	113.68	118.38
9	O	802	ADP	O2A-PA-O3A	2.11	112.96	107.27
9	M	802	ADP	N6-C6-N1	-2.10	113.70	118.38
9	M	802	ADP	C2-N1-C6	-2.09	115.30	118.73
9	A	901	ADP	C2-N1-C6	-2.09	115.30	118.73
9	H	802	ADP	O3B-PB-O3A	2.08	111.62	104.64
9	I	802	ADP	O4'-C1'-C2'	-2.08	102.16	106.62
9	Q	802	ADP	C5-C6-N1	2.08	122.79	117.51
9	Q	802	ADP	C2-N1-C6	-2.08	115.32	118.73
9	P	802	ADP	N6-C6-N1	-2.06	113.78	118.38
9	A	901	ADP	N3-C4-N9	2.05	130.66	127.17
9	P	802	ADP	C2-N1-C6	-2.05	115.36	118.73
9	A	901	ADP	C5-C6-N1	2.05	122.72	117.51
9	M	802	ADP	C5-C6-N1	2.04	122.68	117.51
9	P	802	ADP	N3-C4-N9	2.04	130.63	127.17
9	R	802	ADP	N6-C6-N1	-2.04	113.84	118.38
9	N	802	ADP	N6-C6-N1	-2.03	113.86	118.38
9	H	802	ADP	N3-C4-N9	2.03	130.61	127.17
9	I	802	ADP	C5-C6-N1	2.02	122.65	117.51
9	N	802	ADP	C5-C6-N1	2.02	122.64	117.51
9	P	802	ADP	C3'-C2'-C1'	2.02	105.29	101.46
9	P	802	ADP	C5-C6-N1	2.02	122.64	117.51

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	N	802	ADP	C5'-O5'-PA-O2A
9	N	802	ADP	C5'-O5'-PA-O3A
9	N	802	ADP	C3'-C4'-C5'-O5'
9	Q	802	ADP	C3'-C4'-C5'-O5'
9	N	802	ADP	O4'-C4'-C5'-O5'
9	R	802	ADP	C3'-C4'-C5'-O5'
9	A	901	ADP	PA-O3A-PB-O1B
9	Q	802	ADP	O4'-C4'-C5'-O5'
9	M	802	ADP	C5'-O5'-PA-O1A
9	N	802	ADP	C4'-C5'-O5'-PA
11	B	902	ATP	PG-O3B-PB-O2B
9	H	802	ADP	PA-O3A-PB-O1B
9	P	802	ADP	PA-O3A-PB-O1B
9	R	802	ADP	O4'-C4'-C5'-O5'
9	I	802	ADP	PA-O3A-PB-O1B

Continued on next page...

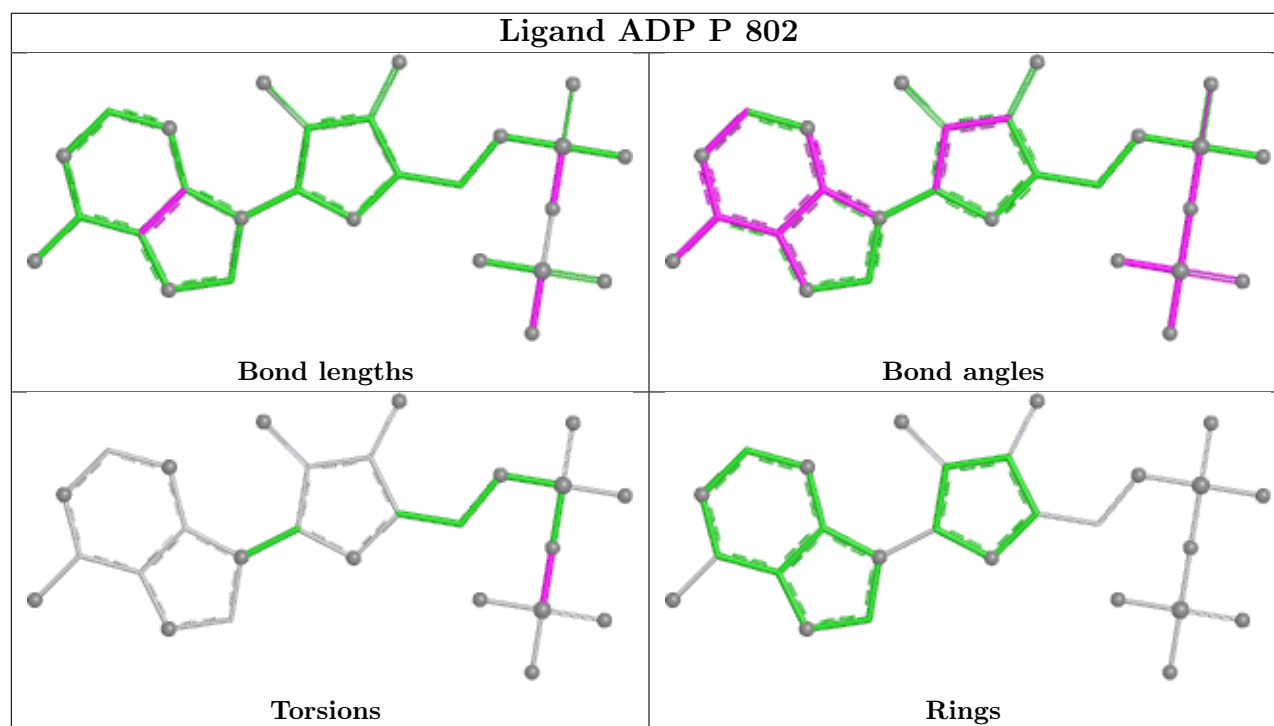
Continued from previous page...

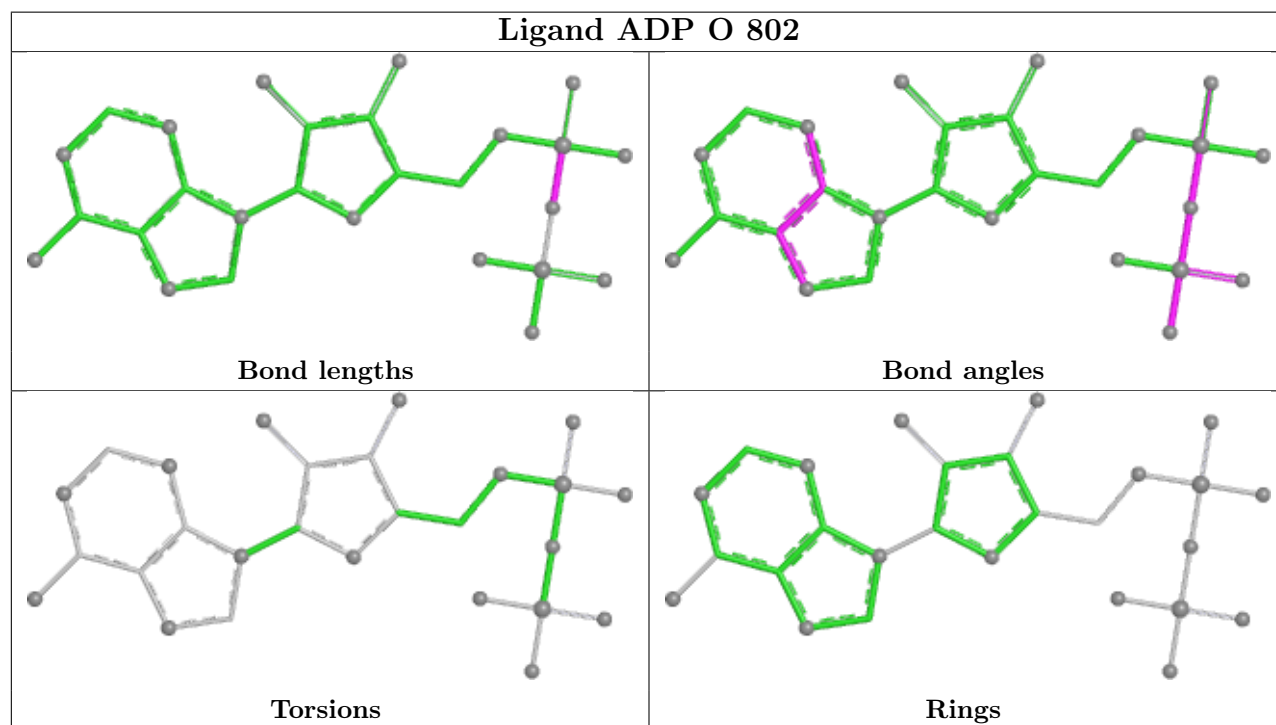
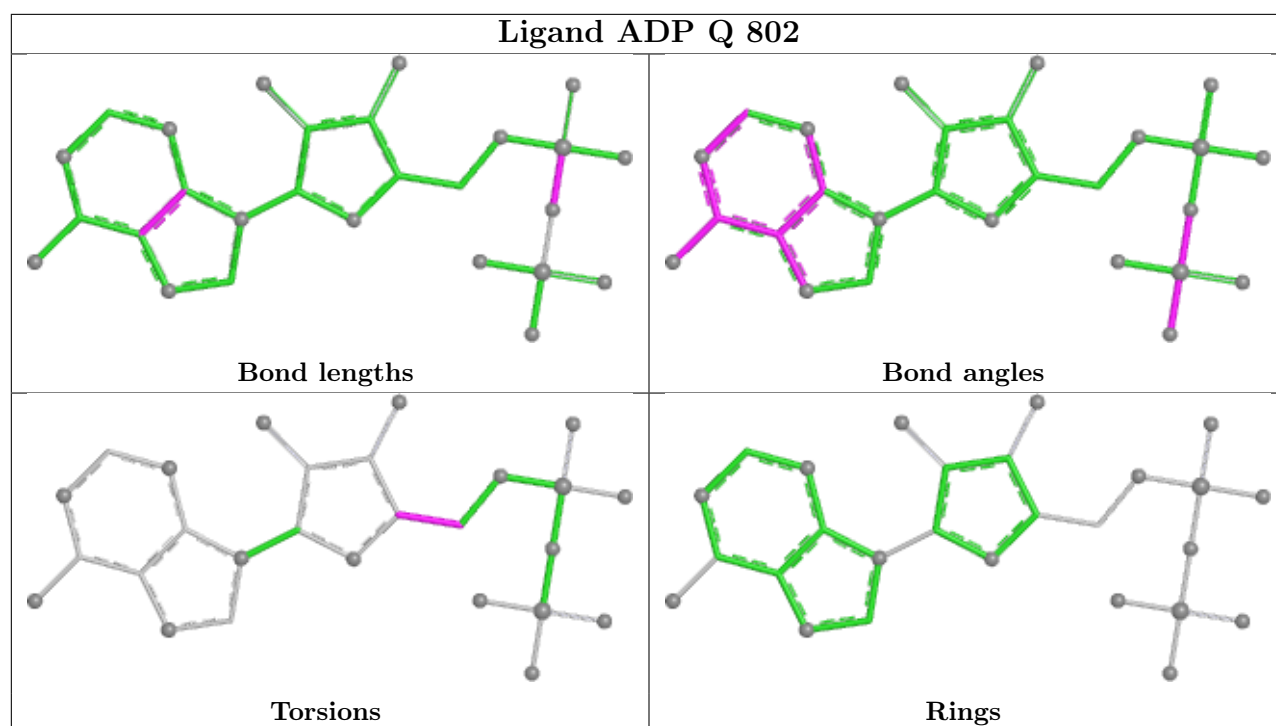
Mol	Chain	Res	Type	Atoms
9	M	802	ADP	PA-O3A-PB-O3B

There are no ring outliers.

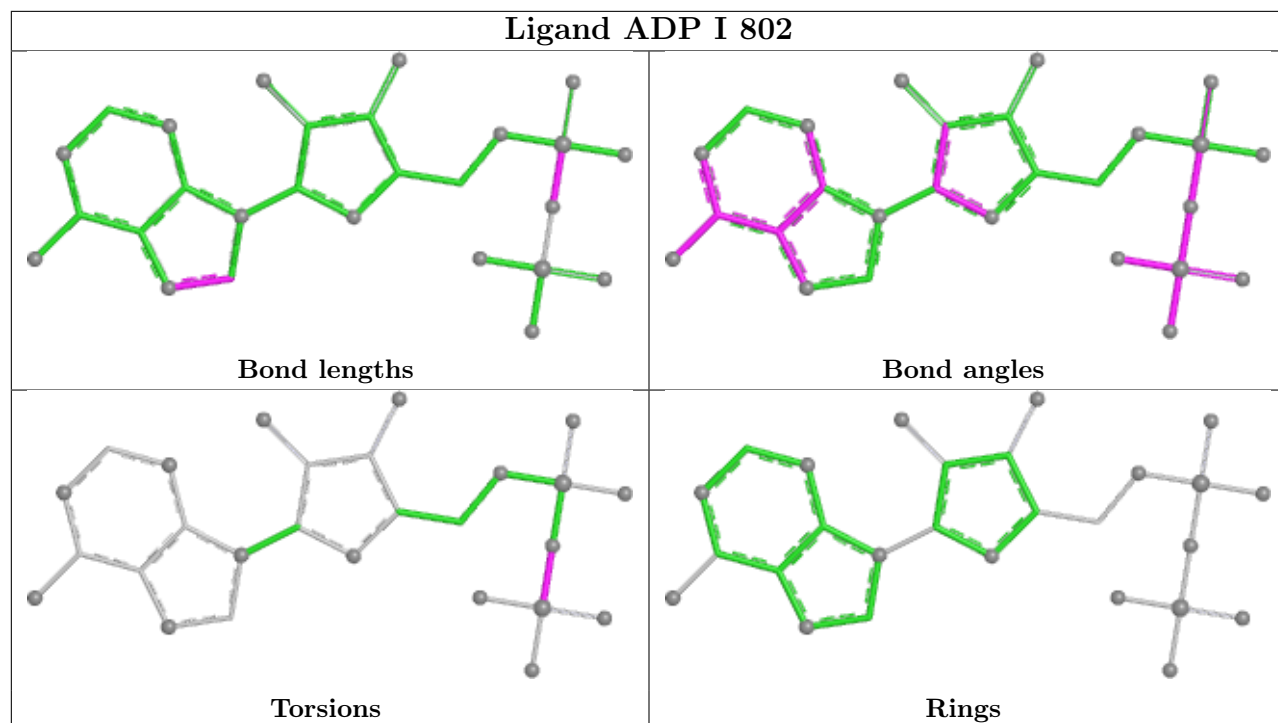
No monomer is involved in short contacts.

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 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.

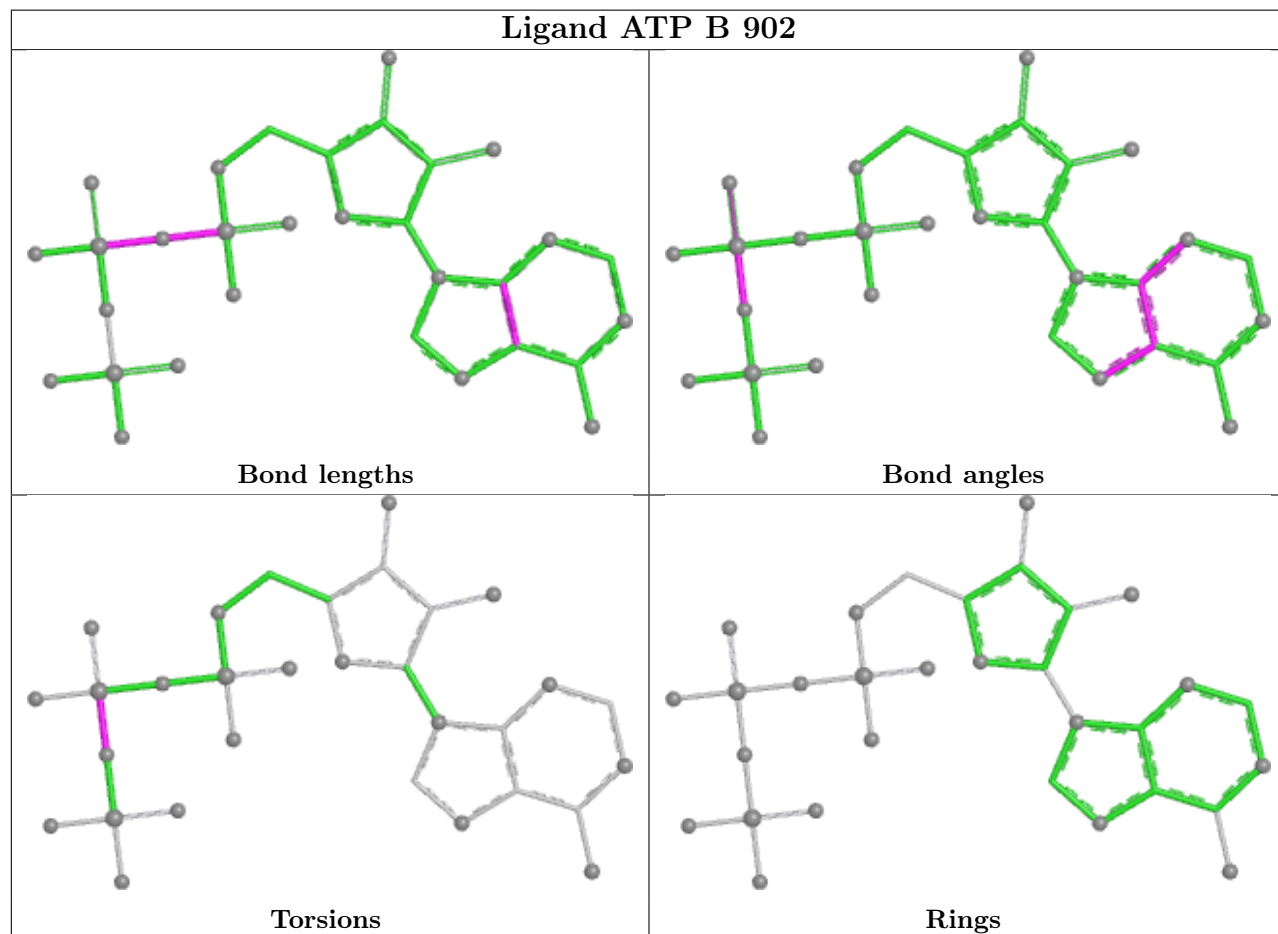


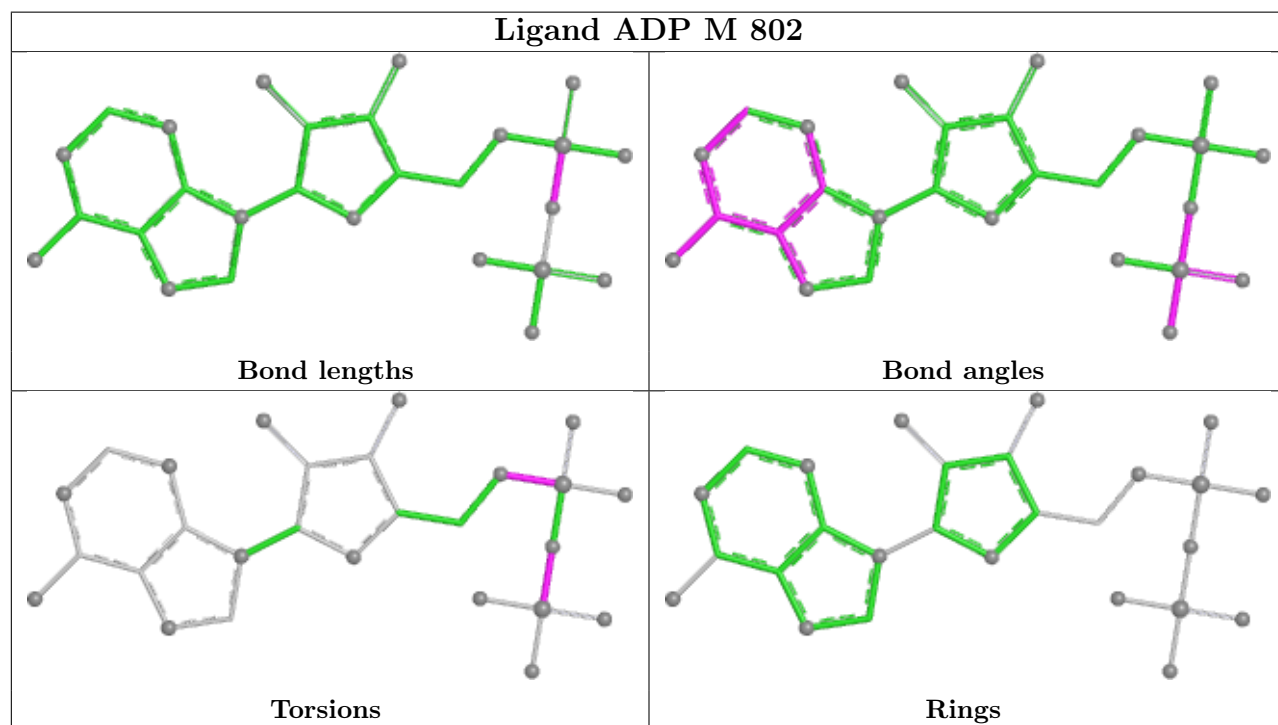
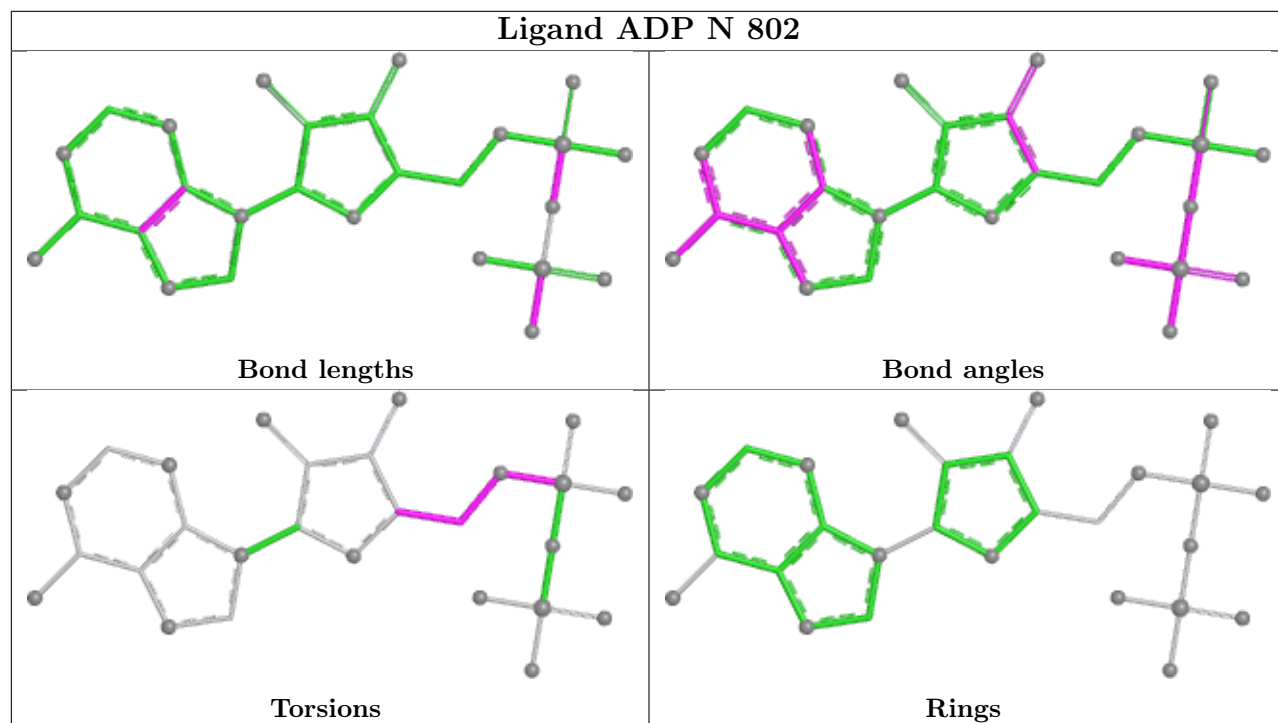


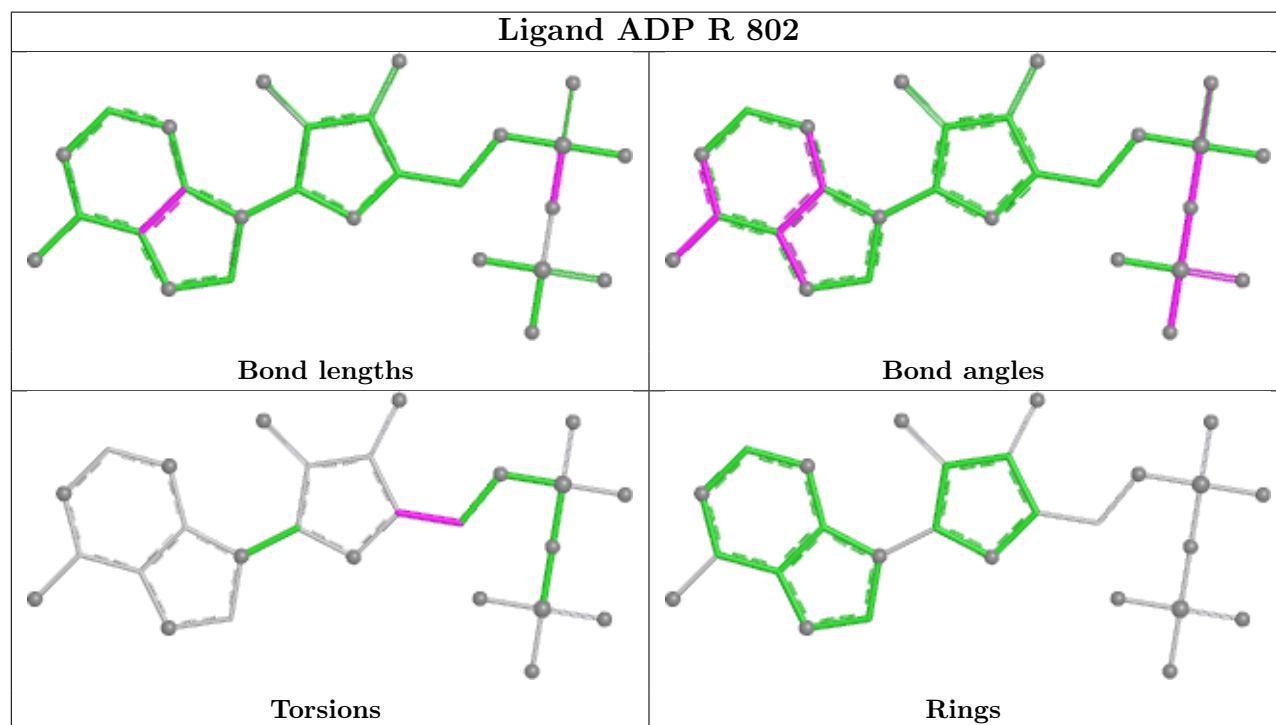
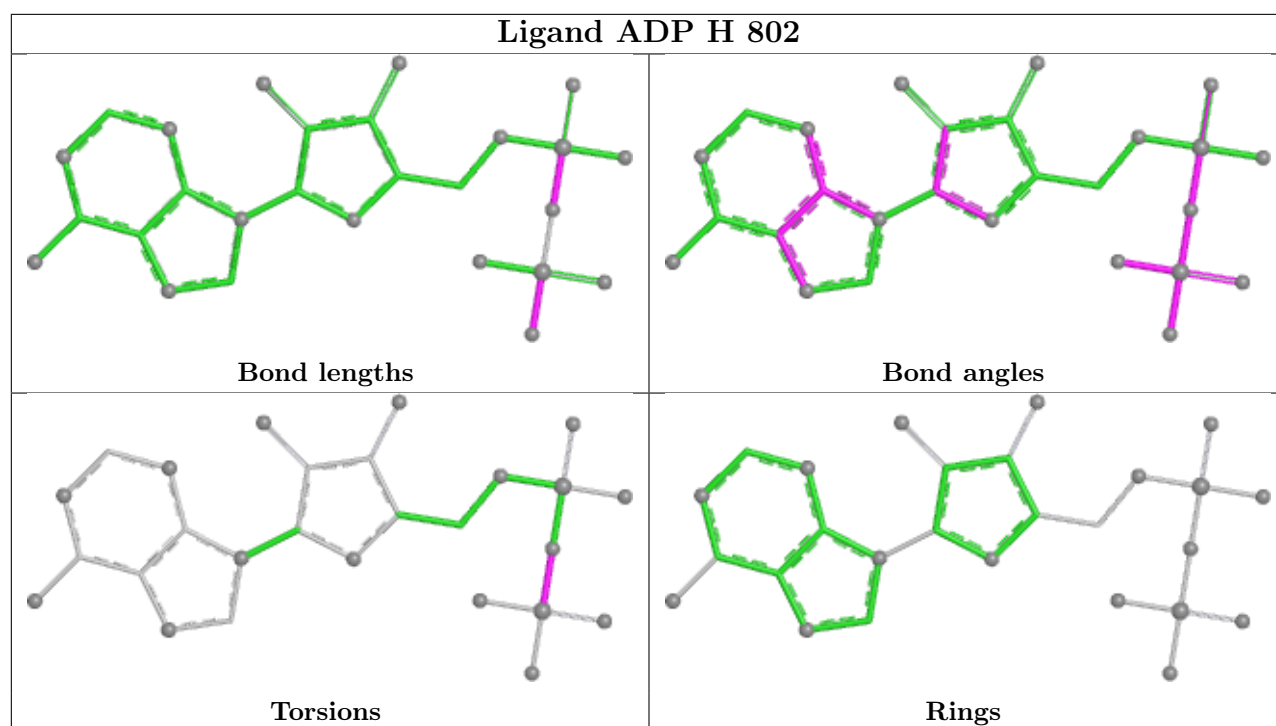
Ligand ADP I 802

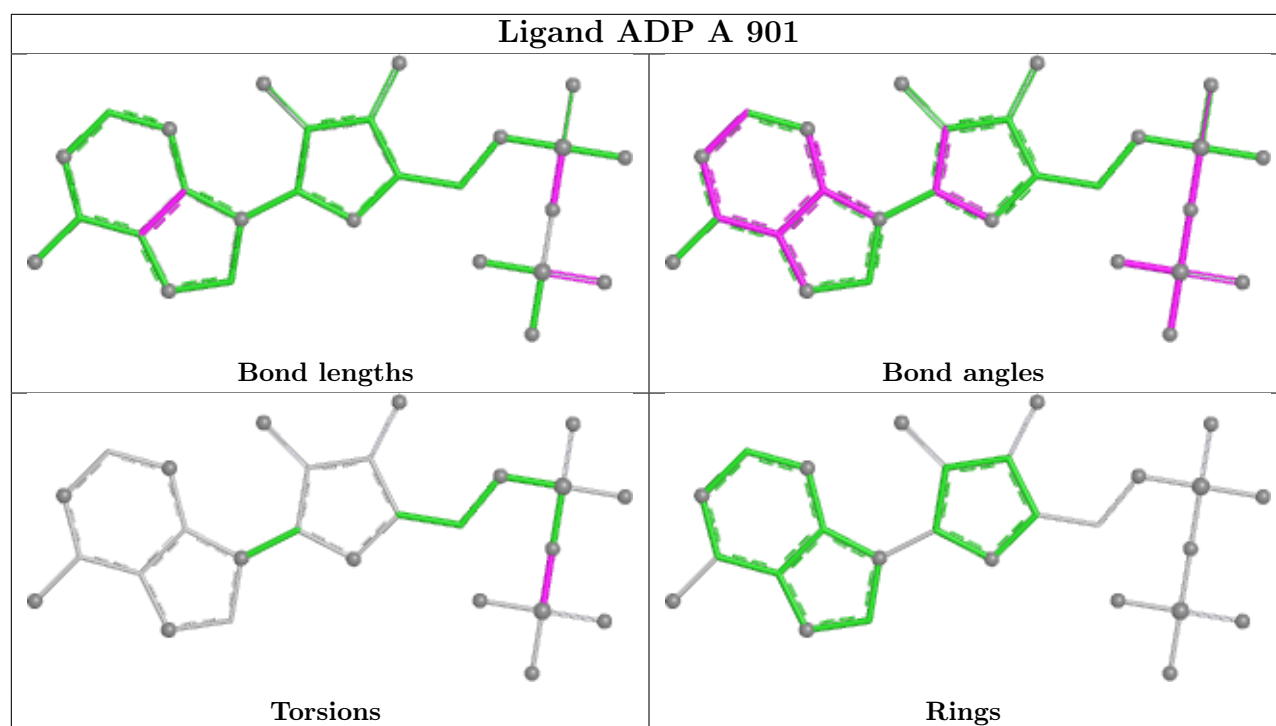


Ligand ATP B 902









5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

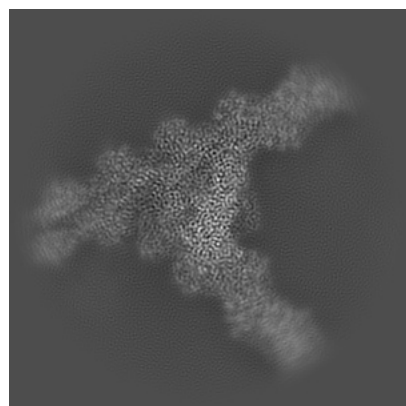
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-42787. These allow visual inspection of the internal detail of the map and identification of artifacts.

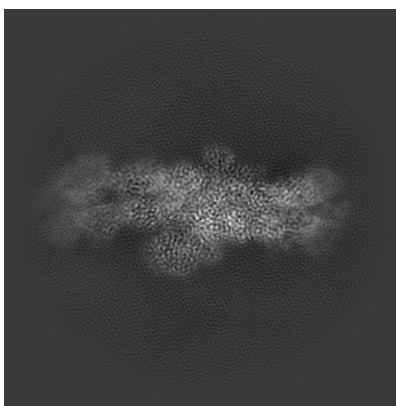
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

6.1.1 Primary map



X

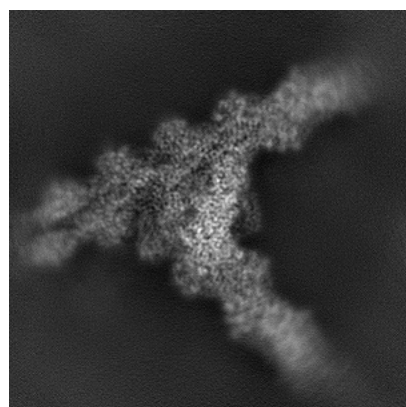


Y

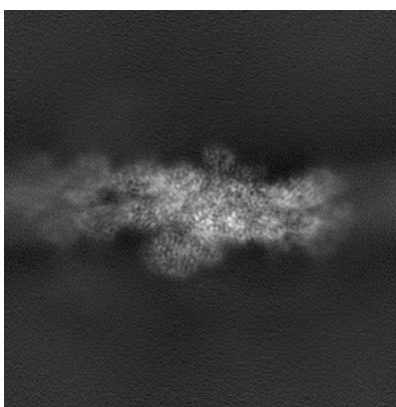


Z

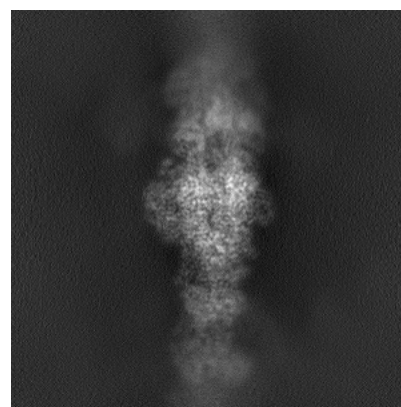
6.1.2 Raw map



X



Y

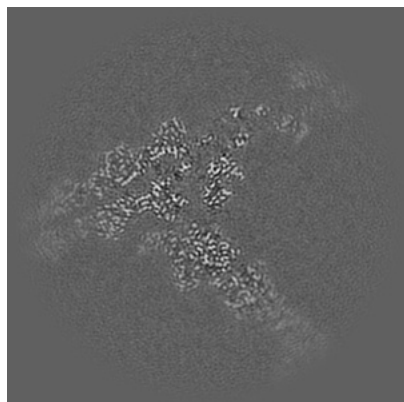


Z

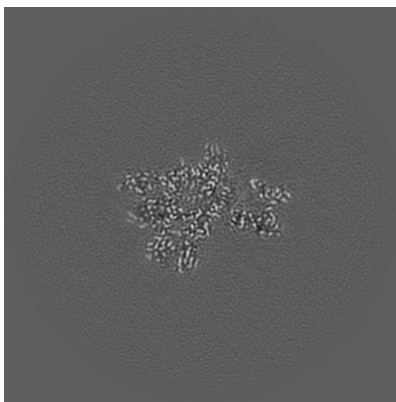
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

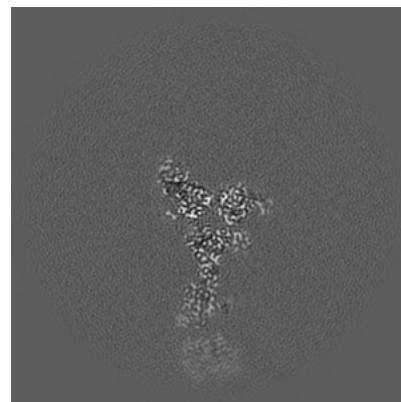
6.2.1 Primary map



X Index: 256

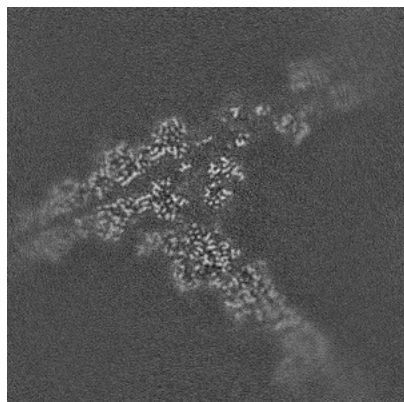


Y Index: 256

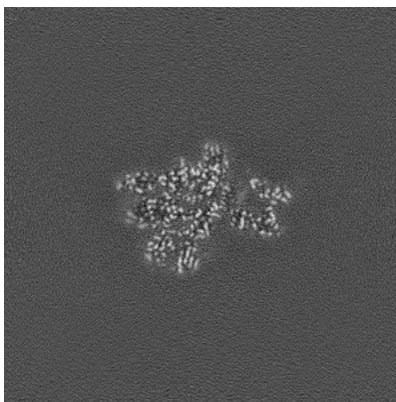


Z Index: 256

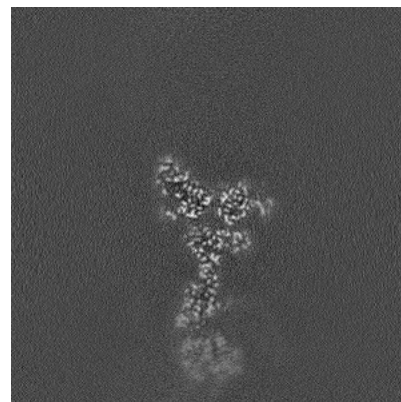
6.2.2 Raw map



X Index: 256



Y Index: 256

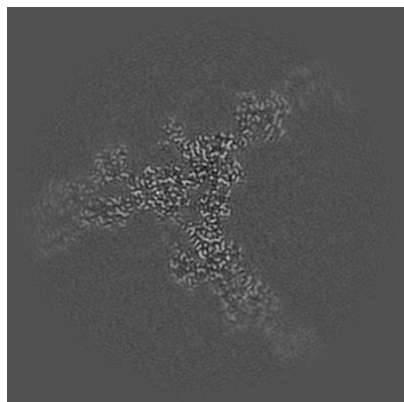


Z Index: 256

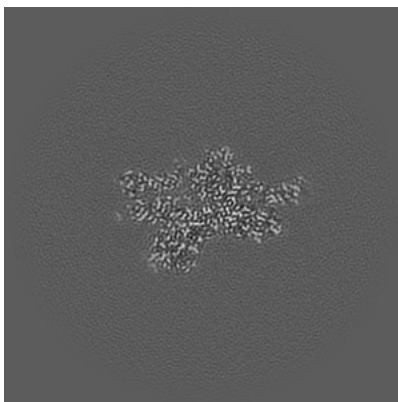
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

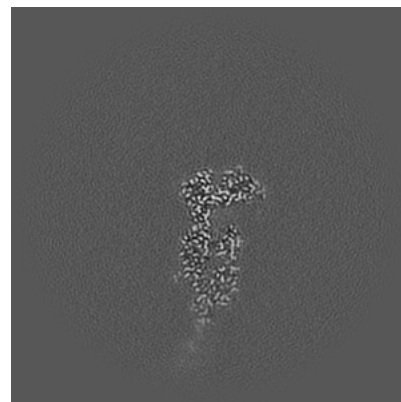
6.3.1 Primary map



X Index: 244

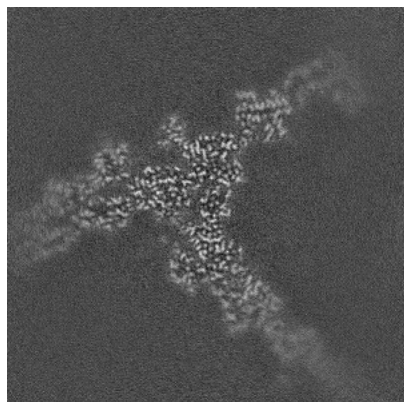


Y Index: 266

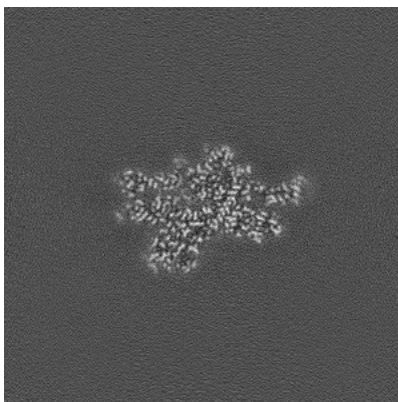


Z Index: 294

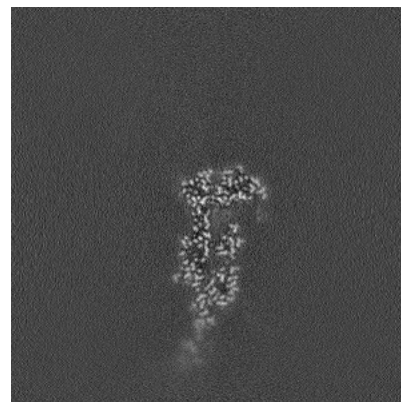
6.3.2 Raw map



X Index: 244



Y Index: 266

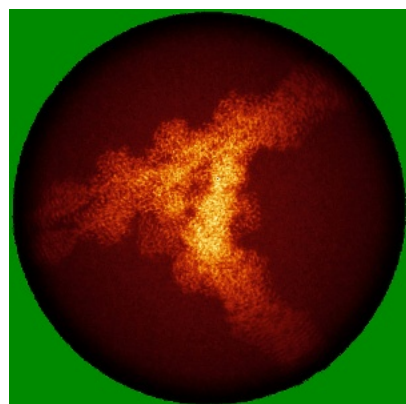


Z Index: 293

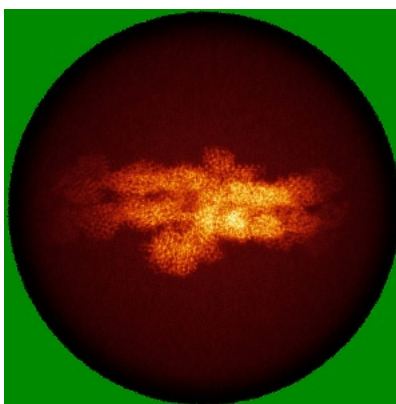
The images above show the largest variance slices of the map in three orthogonal directions.

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

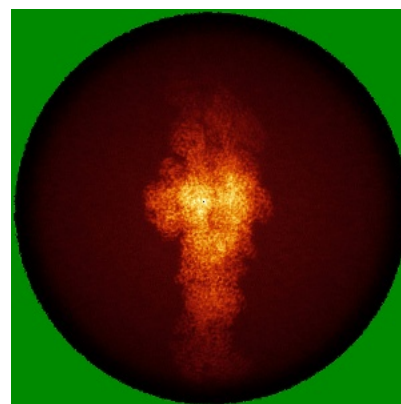
6.4.1 Primary map



X

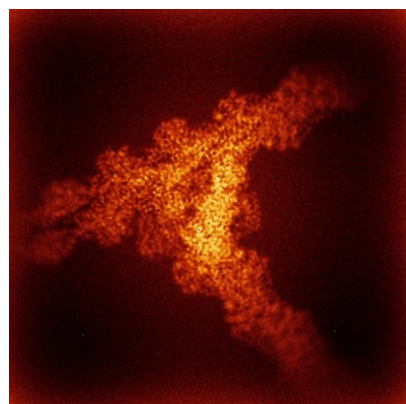


Y

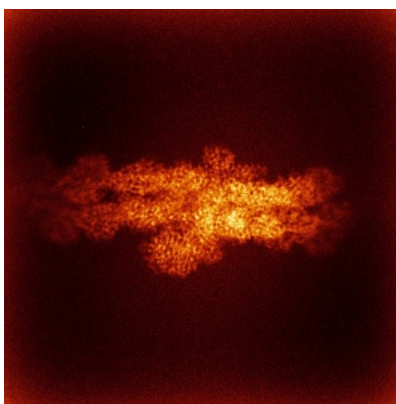


Z

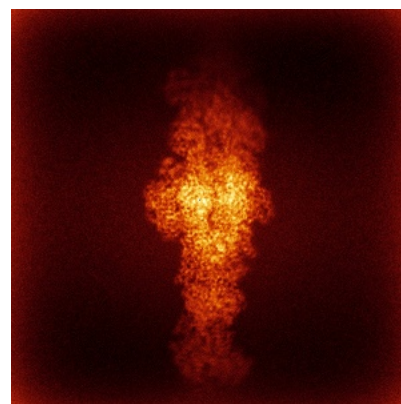
6.4.2 Raw map



X



Y

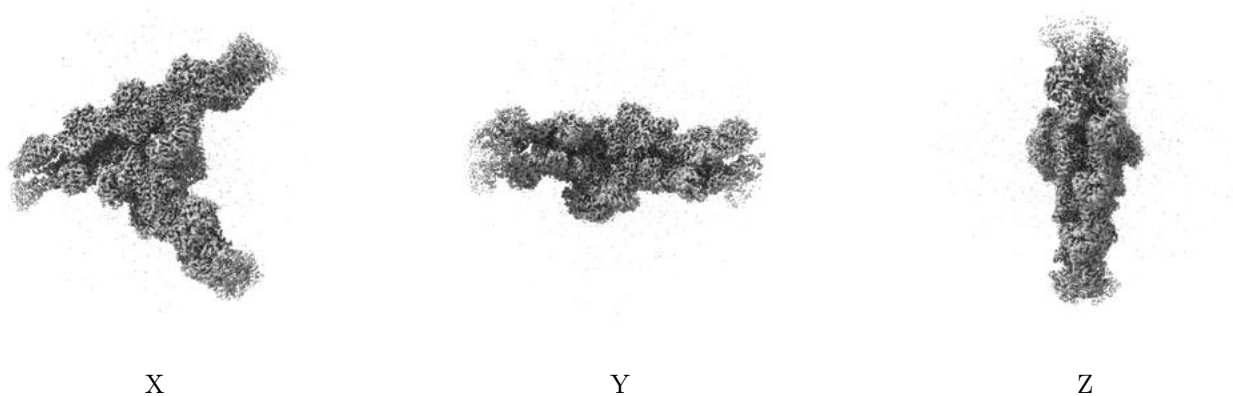


Z

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.

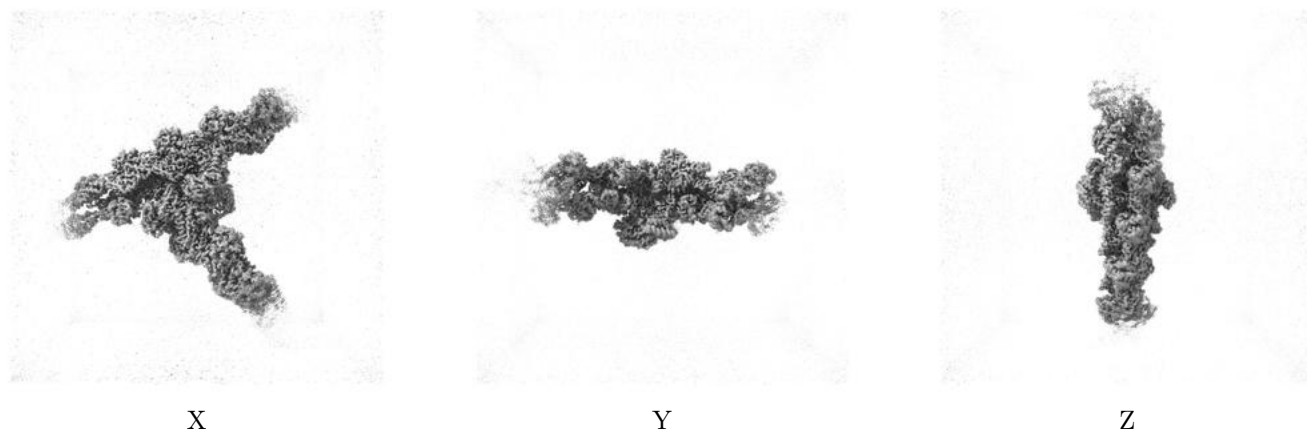
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.32. 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.

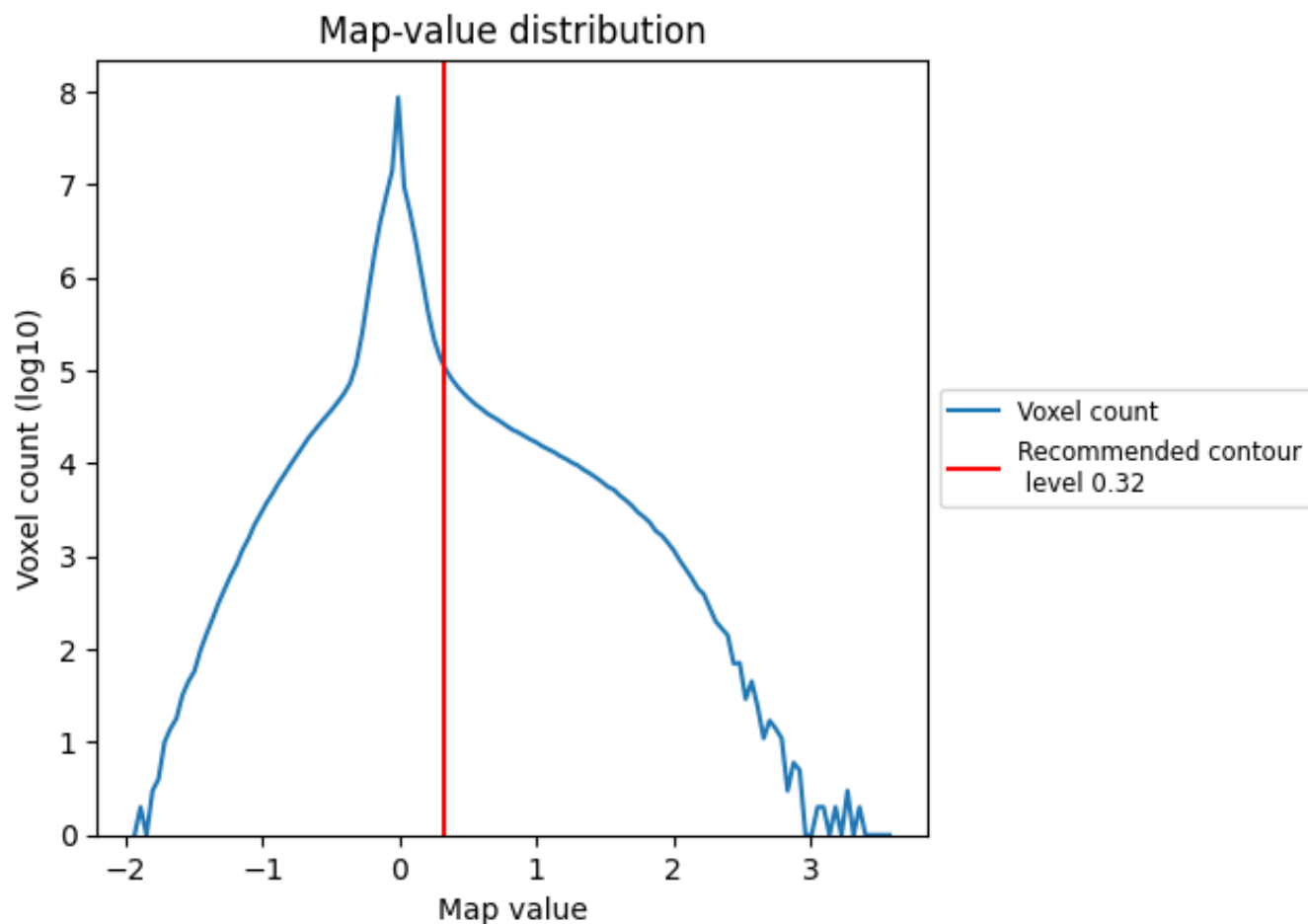
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

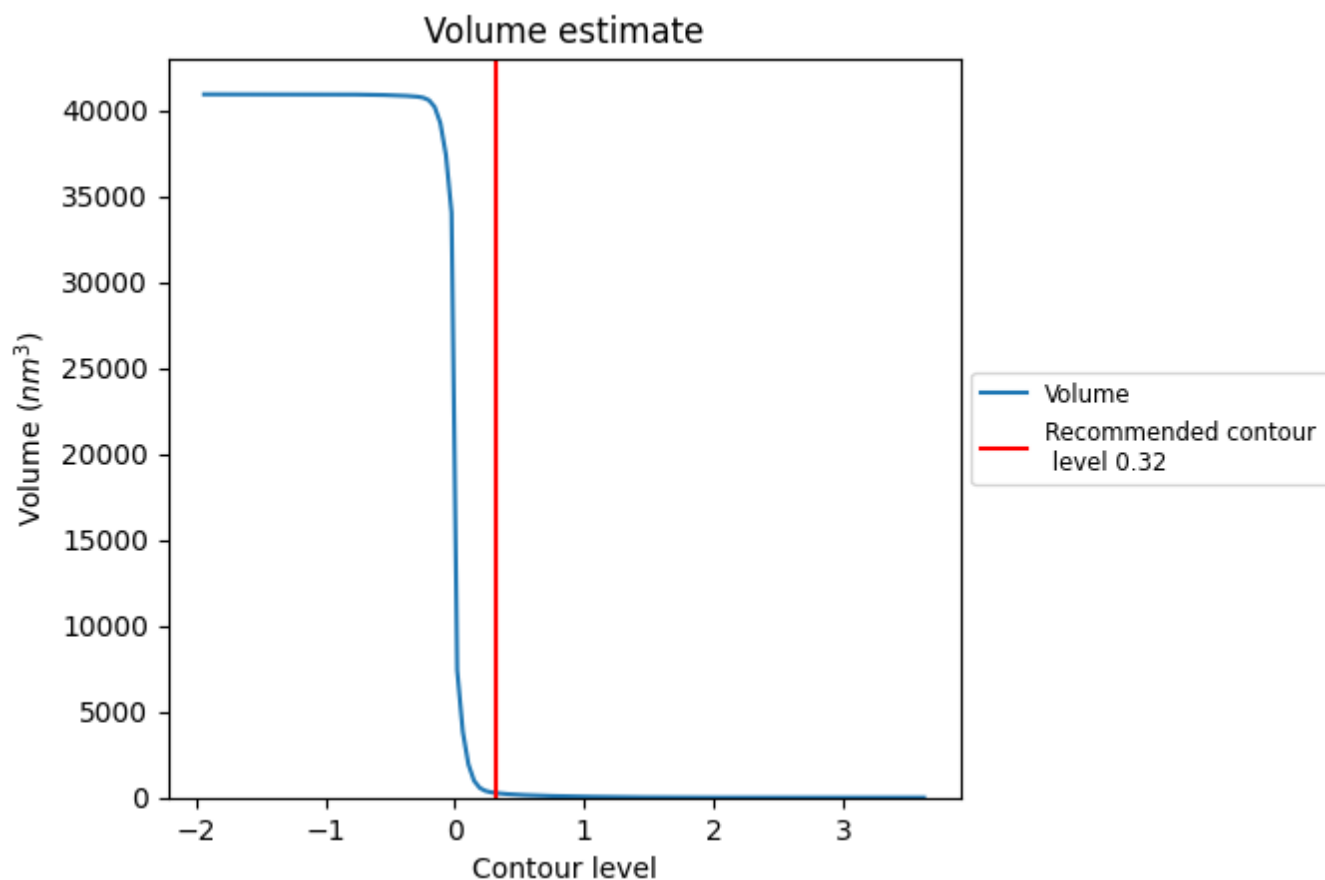
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

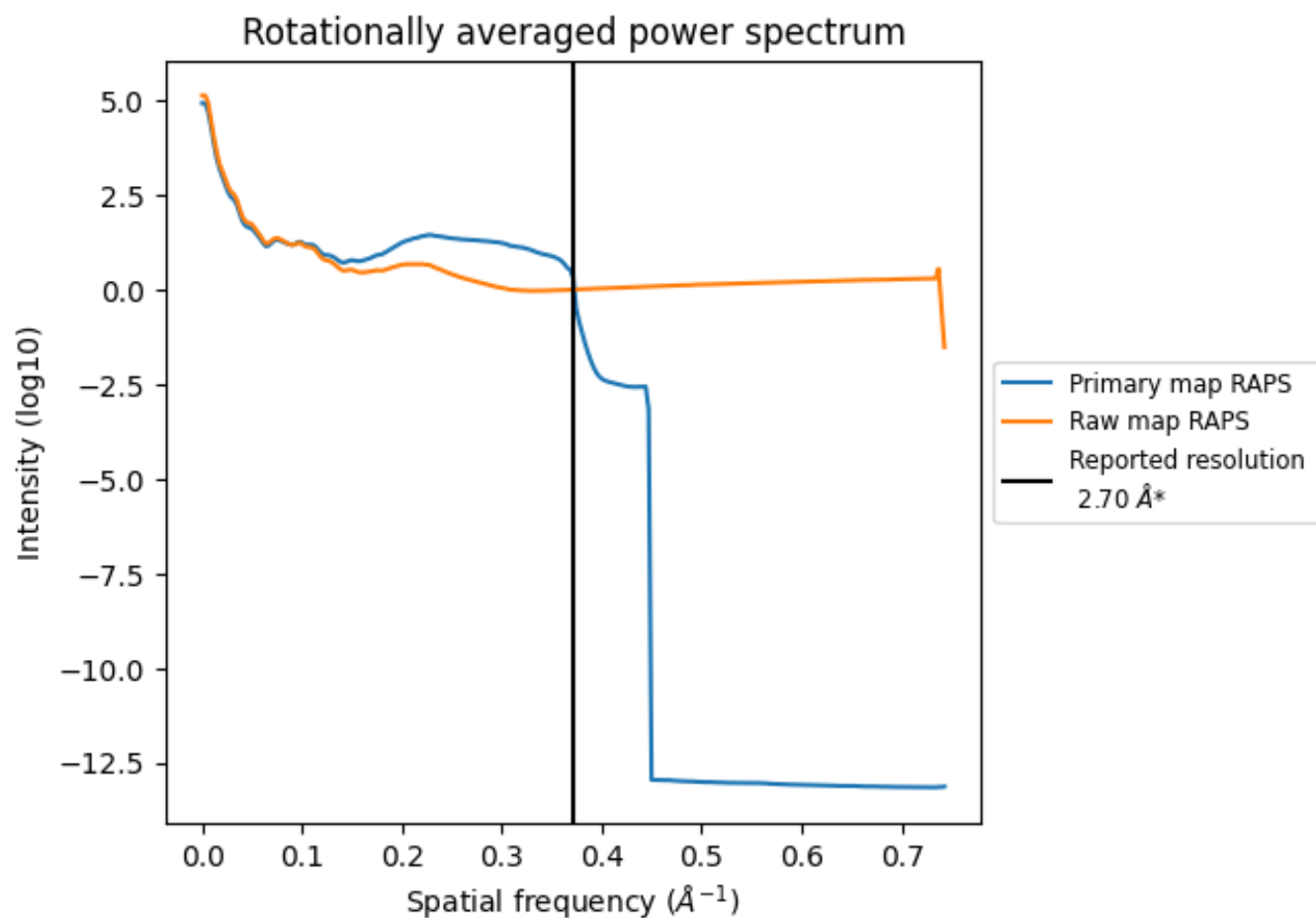
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 263 nm^3 ; this corresponds to an approximate mass of 237 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 ⓘ

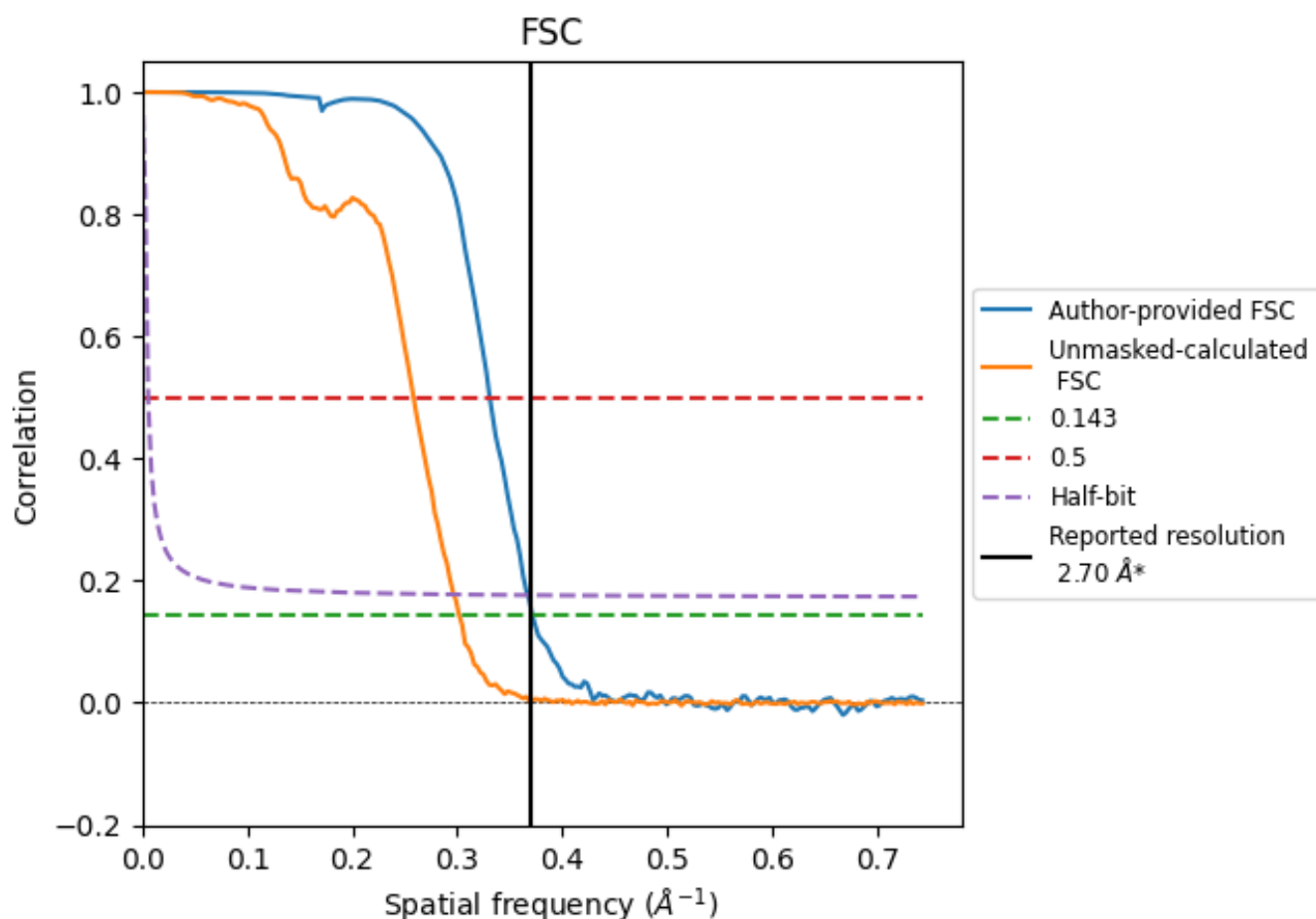


*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

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 0.370 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

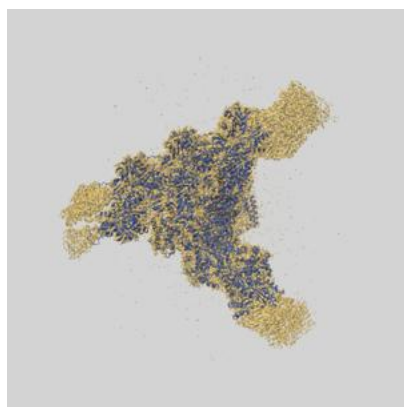
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	2.69	3.02	2.72
Unmasked-calculated*	3.31	3.87	3.37

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.31 differs from the reported value 2.7 by more than 10 %

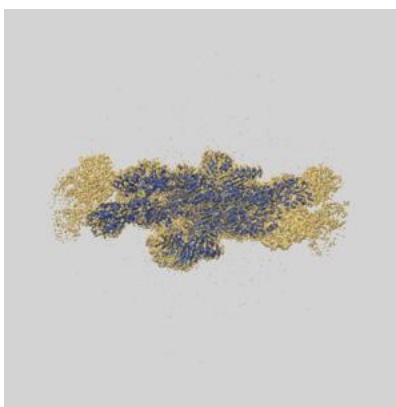
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-42787 and PDB model 8UXW. Per-residue inclusion information can be found in [section 3](#) on [page 8](#).

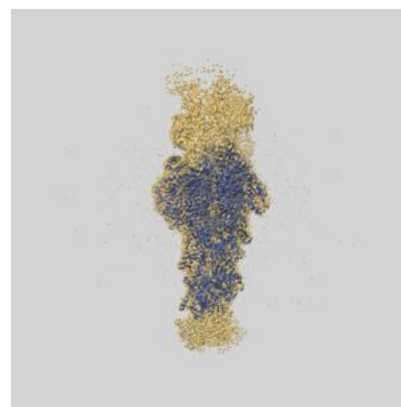
9.1 Map-model overlay [i](#)



X



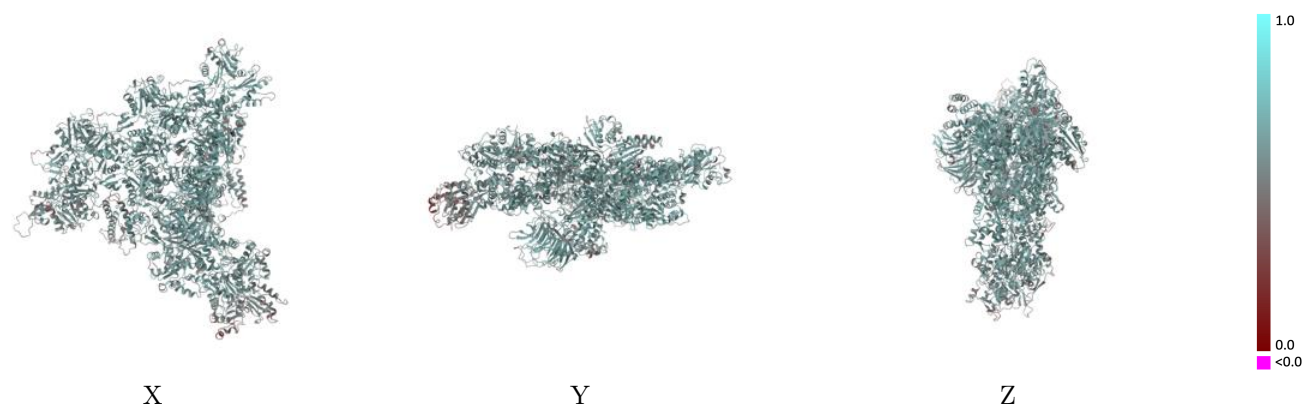
Y



Z

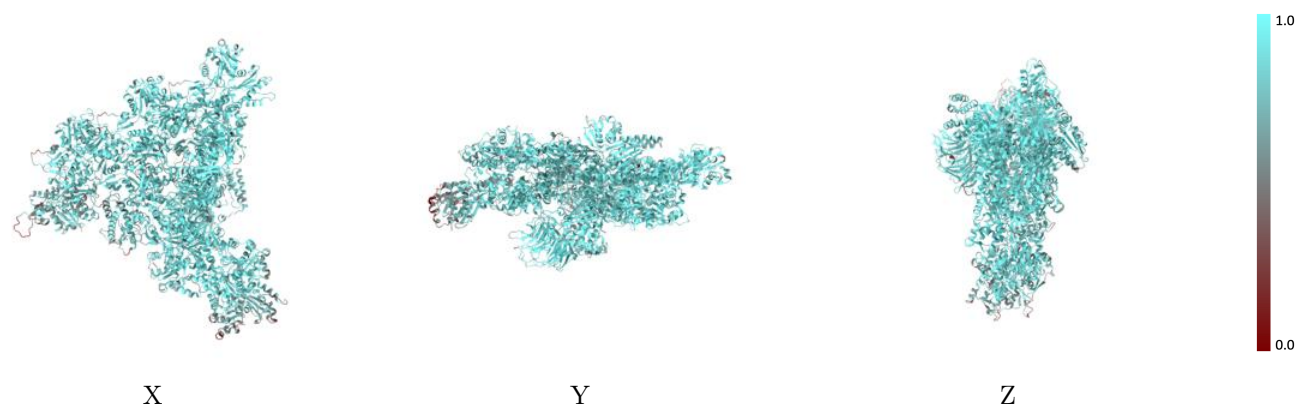
The images above show the 3D surface view of the map at the recommended contour level 0.32 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



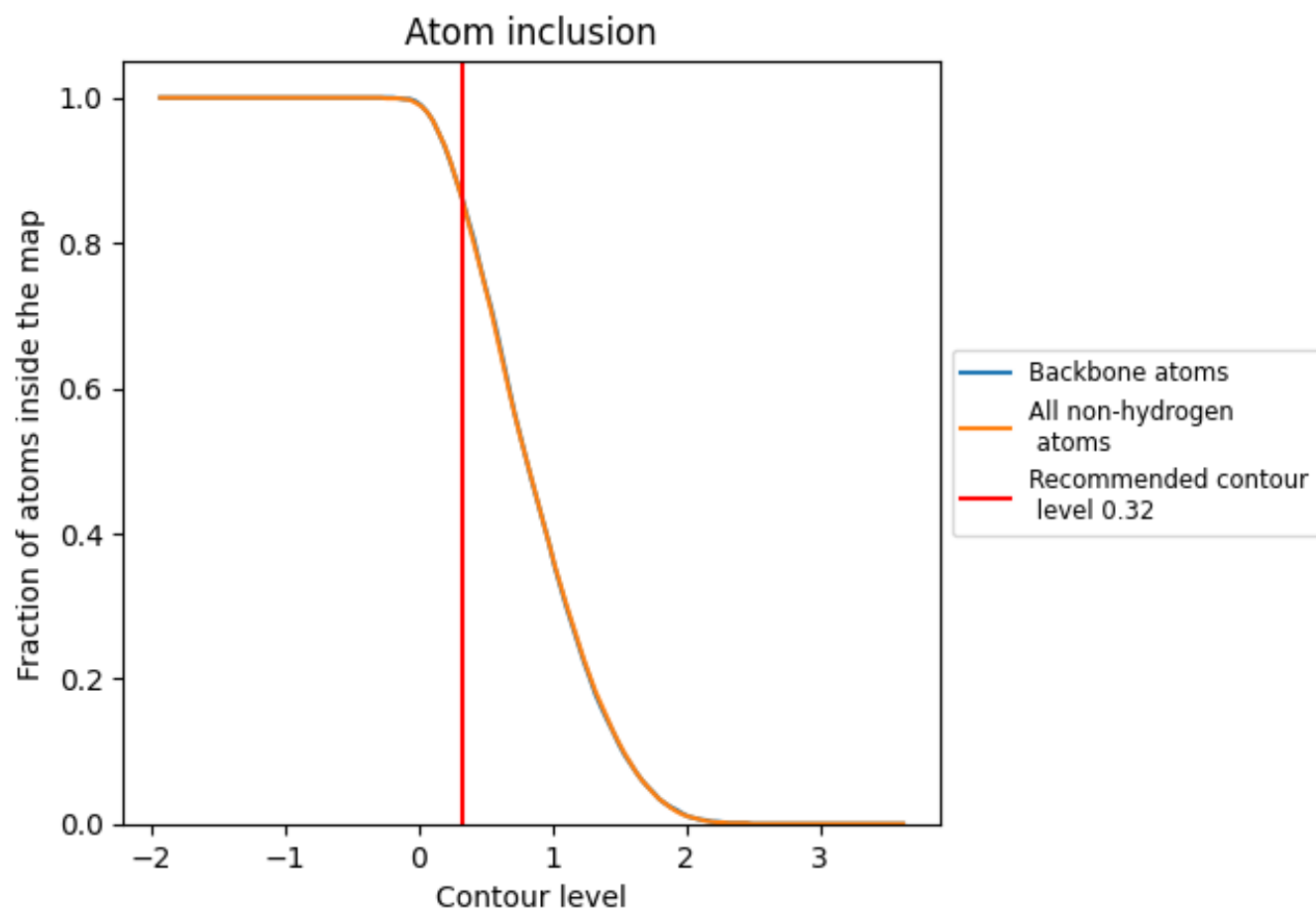
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.32).

9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 86% 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 (0.32) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8620	0.5850
A	0.8960	0.6000
B	0.8990	0.6010
C	0.9050	0.6030
D	0.8660	0.5840
E	0.7410	0.5300
F	0.9440	0.6230
G	0.8470	0.5680
H	0.8730	0.5800
I	0.7070	0.4950
M	0.7560	0.5470
N	0.8430	0.5700
O	0.9370	0.6230
P	0.9210	0.6120
Q	0.9460	0.6280
R	0.8950	0.5950

