



# wwPDB EM Validation Summary Report ⓘ

May 25, 2024 – 06:46 AM EDT

PDB ID : 7RKZ  
EMDB ID : EMD-24511  
Title : Structure of ACLY D1026A-substrates-asym-int  
Authors : Wei, X.; Marmorstein, R.  
Deposited on : 2021-07-22  
Resolution : 2.60 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

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<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>.

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

EMDB validation analysis : 0.0.1.dev92  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

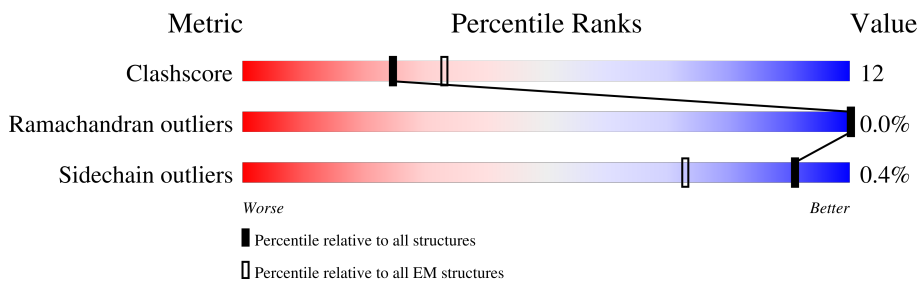
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.60 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)
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  $\geq 3$ , 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	1101	
1	B	1101	
1	C	1101	
1	D	1101	

## 2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 32610 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 ATP-citrate synthase.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1032	7989	5114	1354	1474	47	2	0
1	B	1032	7989	5114	1354	1474	47	2	0
1	C	1032	7989	5114	1354	1474	47	2	0
1	D	1030	7974	5105	1350	1472	47	2	0

There are 4 discrepancies between the modelled and reference sequences:

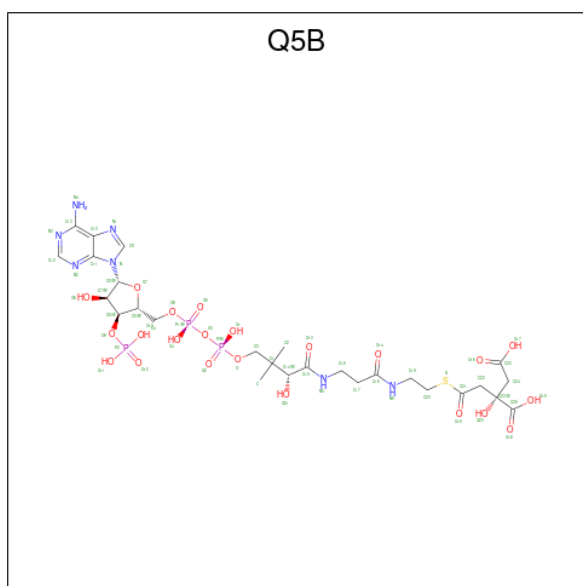
Chain	Residue	Modelled	Actual	Comment	Reference
A	1026	ALA	ASP	engineered mutation	UNP P53396
B	1026	ALA	ASP	engineered mutation	UNP P53396
C	1026	ALA	ASP	engineered mutation	UNP P53396
D	1026	ALA	ASP	engineered mutation	UNP P53396

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).



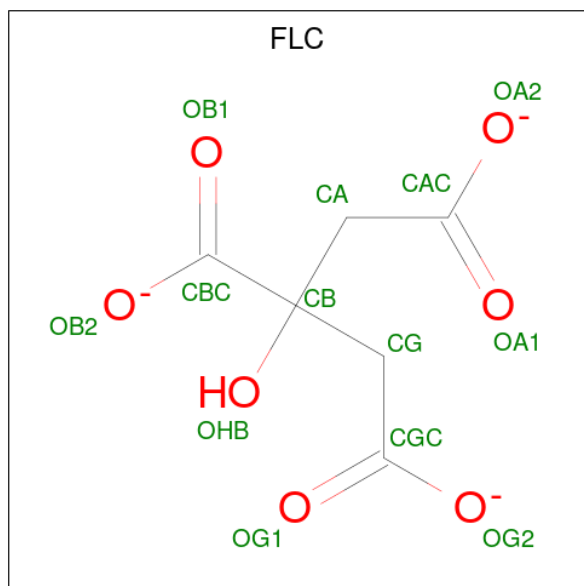
Mol	Chain	Residues	Atoms				AltConf	
			Total	C	N	O		P
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	D	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 3 is (3S)-citryl-Coenzyme A (three-letter code: Q5B) (formula:  $C_{27}H_{42}N_7O_{22}P_3S$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf	
			Total	C	N	O	P		S
3	A	1	60	27	7	22	3	1	0
3	B	1	60	27	7	22	3	1	0
3	D	1	60	27	7	22	3	1	0

- Molecule 4 is CITRATE ANION (three-letter code: FLC) (formula: C<sub>6</sub>H<sub>5</sub>O<sub>7</sub>).

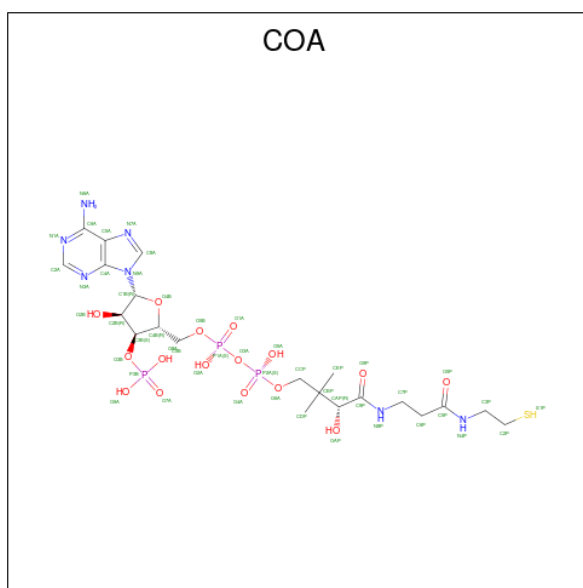


Mol	Chain	Residues	Atoms		AltConf
			Total	O	
4	A	1	13	7	0
4	B	1	13	7	0
4	C	1	13	7	0
4	D	1	13	7	0

- Molecule 5 is UNKNOWN LIGAND (three-letter code: UNL) (formula: ).

Mol	Chain	Residues	Atoms		AltConf
			Total	C	
5	A	1	1	1	0
5	C	1	1	1	0

- Molecule 6 is COENZYME A (three-letter code: COA) (formula:  $C_{21}H_{36}N_7O_{16}P_3S$ ).



Mol	Chain	Residues	Atoms					AltConf	
			Total	C	N	O	P		S
6	A	1	Total	C	N	O	P	S	0
			48	21	7	16	3	1	
6	B	1	Total	C	N	O	P	S	0
			48	21	7	16	3	1	
6	C	1	Total	C	N	O	P	S	0
			48	21	7	16	3	1	
6	C	1	Total	C	N	O	P	S	0
			48	21	7	16	3	1	

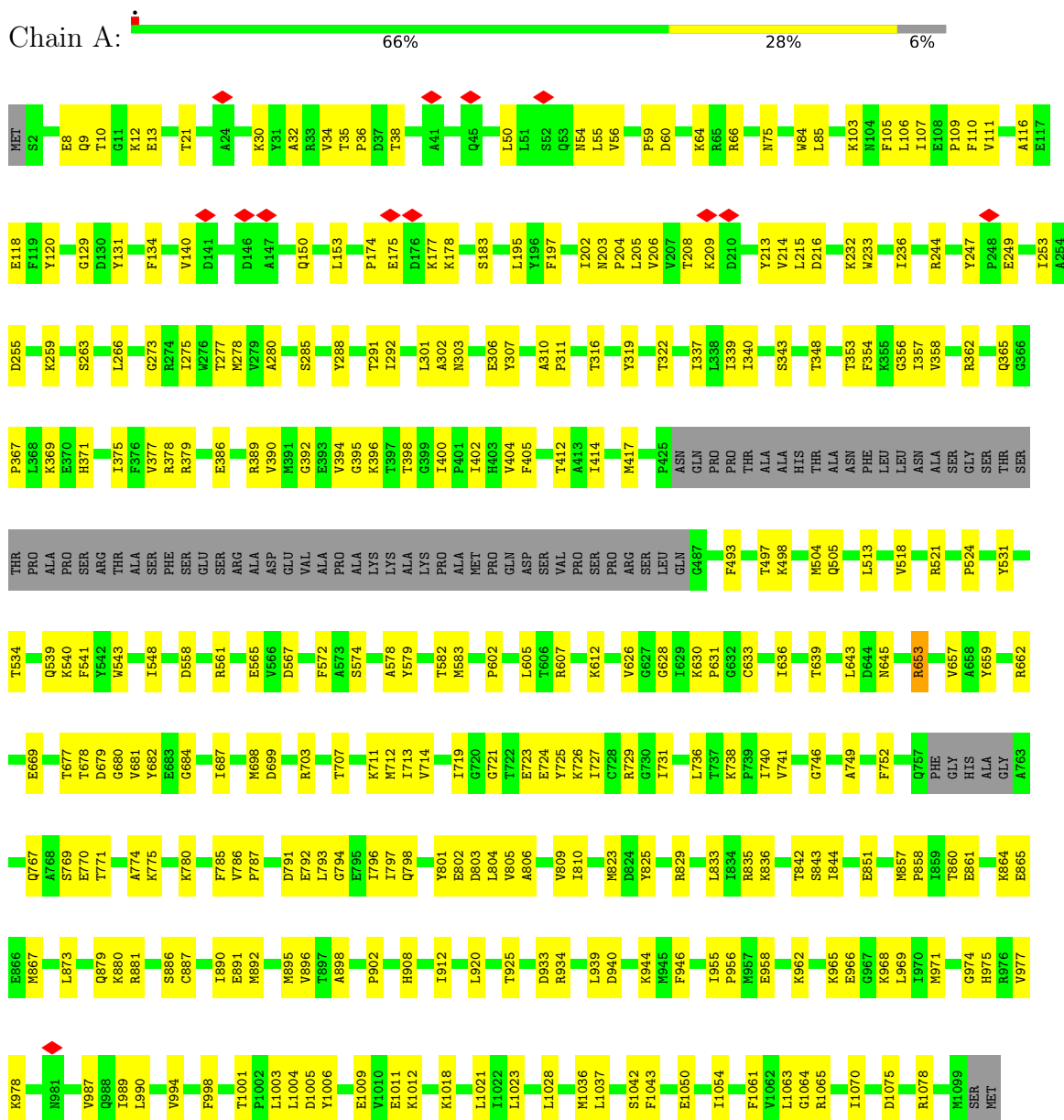
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		AltConf
7	A	35	Total	O	0
			35	35	
7	B	47	Total	O	0
			47	47	
7	C	37	Total	O	0
			37	37	
7	D	43	Total	O	0
			43	43	

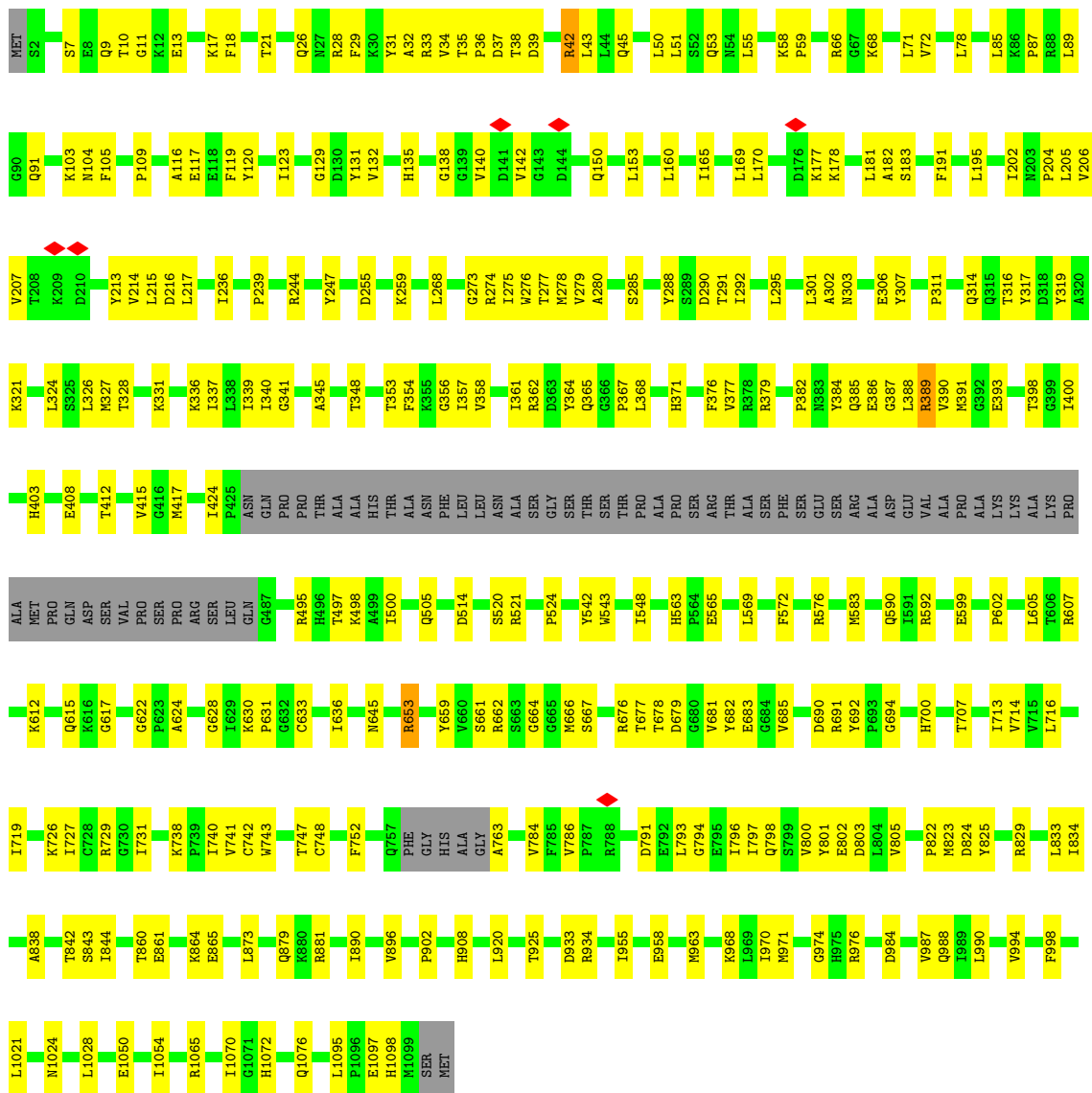
### 3 Residue-property plots

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: ATP-citrate synthase



• Molecule 1: ATP-citrate synthase



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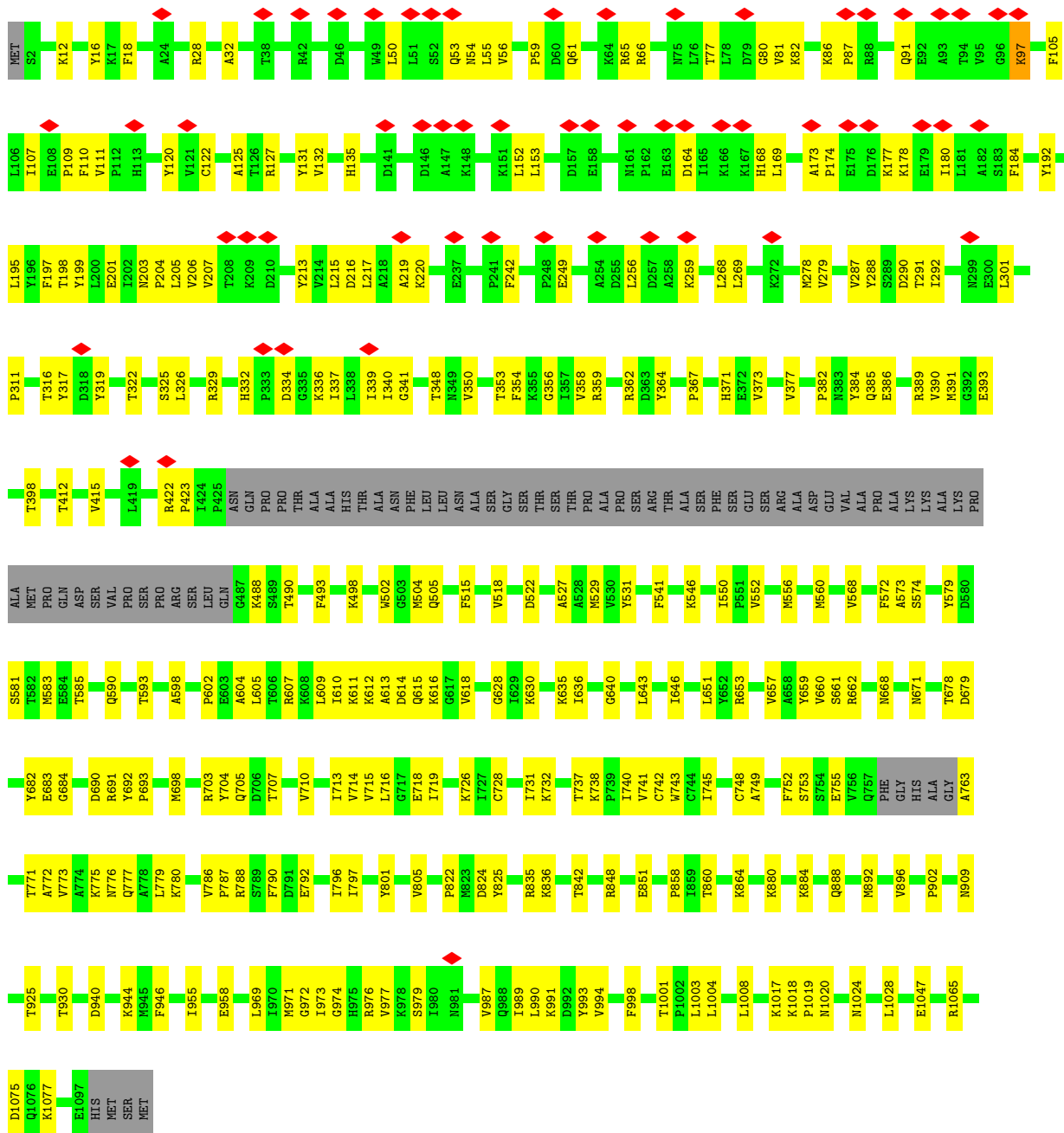




V121	C122	I123	Y124	A125	T126	R127	E128	G129	D130	Y131	V132	L133	F134	H135	H136	E137	G138	G139	V140	D141	V142	G143	D144	V145	D146	A147	K148	A149	Q150	K151	L152	L153	V154	G155	V156	D157	E158	K159	L160	N161	P162	E163	D164	I165	A166	K167	H168	L169	L170	V171	H172	A173	P174	E175	D176	K177	K178	E179	L180
L181	A182	S183	F184	I185	S186	G187	L188	F189	N190	F191	Y192	E193	D194	L195	Y196	F197	T198	Y199	L200	E201	I202	N203	P204	L205	V206	V207	T208	K209	D210	G211	V212	Y213	V214	L215	D216	L217	A218	A219	K220	V221	D222	A223	T224	A225	D226	Y227	I228	C229	K230	V231	K232	W233	G234	D235	I236	E237	F238	P239	P240
P241	F242	G243	R244	E245	A246	Y247	P248	E249	E250	A251	Y252	I253	A254	D255	L256	D257	A258	K259	S260	G261	A262	S263	L264	K265	L266	T267	L268	L269	N270	P271	K272	G273	R274	I275	I276	W276	T277	M278	V279	G280	G281	G282	G283	V286	V287	Y288	S289	I292	L295	G296	G297	V298	N299	E300	L301	A302	N303		
Y304	G305	E306	T307	S308	G309	A310	F311	S312	E313	Q314	Q315	T316	Y317	D318	Y319	A320	K321	I322	I323	L324	S325	L326	N327	T328	R329	E330	K331	H332	F333	D334	G335	K336	I337	L338	I339	I340	G341	G342	S343	I344	A345	N346	F347	T348	A352	T353	F354	K355	G356	I357	V358	R359	A360	I361	R362	E300	D363	Y364	Q365
G366	P367	L368	K369	E370	H371	E372	V373	T374	I375	F376	V377	R378	R379	G380	F381	G382	N383	E386	G387	L388	R389	V390	N391	G392	E393	V394	G395	K396	T397	T398	G399	L400	L402	H403	V404	F405	E408	T409	H410	M411	T412	A413	I414	V415	G416	M417	A418	L419	G420	H421	R422	P423	I424	P425	ASN	GLN			
PRO	PRO	THR	ALA	ALA	HIS	THR	ALA	ASN	PHE	LEU	LEU	LEU	ASN	ALA	GLY	SER	THR	SER	THR	THR	THR	THR	THR	PRO	ALA	ALA	PRO	SER	SER	ARG	THR	SER	PHE	SER	GLU	SER	ARG	ALA	ASP	GLU	VAL	ALA	PRO	ALA	LYS	LYS	LYS	PRO	VAL	PRO	PRO	PRO	ARG	SER	LEU	GLN	G487		
K488	S489	T490	T491	H496	A499	I500	V501	H502	G503	M504	L513	Y517	V518	R521	D522	E523	P524	S525	V526	A527	A528	M529	V530	Y531	F532	P533	T534	G535	D536	H537	K538	Q539	R540	F541	Y542	H543	G544	H545	K546	E547	I548	L549	I550	V552	F553	K554	N555	M556	A559	M560	K562								
H563	P564	E565	V566	D567	V568	L569	L570	N571	S574	L575	R576	S577	A578	Y579	D580	S581	T582	M583	E584	S585	M586	N587	Y588	A589	Q590	L591	T592	T593	L594	A595	A598	E599	P602	E603	A604	L605	T606	R607	K608	L609	I610	G611	K612	P651	A613	D614	Q615	K616	G617	I620	I621	A624	T625	G628					
I629	C633	F634	K635	L636	G637	M638	L647	A648	S649	K650	L651	V652	R653	P654	V657	G665	K666	S667	N668	E669	L670	M671	L674	T677	T678	D679	G680	V681	V682	V685	G688	R689	V692	P693	F697	M698	D699	H700	V701	L702	R703	Y704	Q705	K711	M712	I713	V714	V715											
L716	G717	E718	I719	G720	G721	T722	E724	V725	K726	L727	C728	N729	G730	L731	K732	E733	G734	N735	L736	T737	K738	P739	I740	V741	I745	C748	A749	T750	M751	F752	S753	S754	E755	V756	W756	Q757	PHE	GLY	HIS	ALA	ALA	A763	C764	A765	N766	Q767	A768	S769	E770	Q777	K780	E781	A782	F785					
V786	F787	R788	S789	F790	D791	E792	L793	G794	E795	Q798	H801	E802	D803	L804	W805	A806	R807	G808	L810	H811	P812	A813	Q814	E815	S816	F817	P818	P819	T820	H821	P822	Y825	S826	K827	A828	R829	L831	R835	T842	S843	I844	G856	M857	T860	E861	V862	F863	F878	Q879										
M892	V896	T897	A898	P902	H908	I912	T925	L939	D940	A941	I955	P956	M957	E958	F959	V960	M961	K962	M963	E966	I970	M971	G972	G973	H974	H975	R976	R986	V987	R995	T1001	L1004	D1005	L1008	N1024	L1028	S843	F1043	E1047	F1061																			
G1064	R1065	S1066	M1067	D1075	K1076	L1077	R1085	Y1094	M1099	SER	MET																																																

● Molecule 1: ATP-citrate synthase





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	237362	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 ( $e^-/\text{\AA}^2$ )	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.024	Depositor
Minimum map value	-1.514	Depositor
Average map value	0.011	Depositor
Map value standard deviation	0.157	Depositor
Recommended contour level	0.2	Depositor
Map size (Å)	182.59999, 182.59999, 182.59999	wwPDB
Map dimensions	220, 220, 220	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: COA, UNL, FLC, Q5B, ADP

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.27	0/8167	0.51	0/11054
1	B	0.28	0/8167	0.51	0/11054
1	C	0.26	0/8167	0.49	0/11054
1	D	0.26	0/8151	0.50	0/11032
All	All	0.27	0/32652	0.50	0/44194

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7989	0	8040	212	0
1	B	7989	0	8040	196	0
1	C	7989	0	8040	184	0
1	D	7974	0	8031	199	0
2	A	27	0	12	6	0
2	B	27	0	12	2	0
2	D	27	0	12	2	0
3	A	60	0	0	1	0
3	B	60	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	D	60	0	0	1	0
4	A	13	0	5	1	0
4	B	13	0	5	1	0
4	C	13	0	5	1	0
4	D	13	0	5	1	0
5	A	1	0	0	0	0
5	C	1	0	0	0	0
6	A	48	0	32	4	0
6	B	48	0	32	3	0
6	C	96	0	64	11	0
7	A	35	0	0	0	0
7	B	47	0	0	0	0
7	C	37	0	0	1	0
7	D	43	0	0	0	0
All	All	32610	0	32335	758	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 12.

The worst 5 of 758 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)
1:D:279:VAL:HG12	1:D:341:GLY:H	1.36	0.89
1:C:1085:ARG:HE	6:C:2102:COA:H62A	1.21	0.86
1:A:719:ILE:HD11	1:A:746:GLY:HA3	1.59	0.83
1:D:316:THR:HG21	1:D:353:THR:HA	1.60	0.82
1:C:835:ARG:HG3	1:D:822:PRO:HB2	1.62	0.81

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	1028/1101 (93%)	994 (97%)	34 (3%)	0	100	100
1	B	1028/1101 (93%)	997 (97%)	31 (3%)	0	100	100
1	C	1028/1101 (93%)	1002 (98%)	26 (2%)	0	100	100
1	D	1026/1101 (93%)	991 (97%)	34 (3%)	1 (0%)	51	75
All	All	4110/4404 (93%)	3984 (97%)	125 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	690	ASP

### 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	852/908 (94%)	849 (100%)	3 (0%)	91	97
1	B	852/908 (94%)	848 (100%)	4 (0%)	88	96
1	C	852/908 (94%)	848 (100%)	4 (0%)	88	96
1	D	851/908 (94%)	847 (100%)	4 (0%)	88	96
All	All	3407/3632 (94%)	3392 (100%)	15 (0%)	91	97

5 of 15 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	97	LYS
1	D	691	ARG
1	C	321	LYS
1	D	864	LYS
1	D	97	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	909	ASN
1	D	777	GLN
1	C	1024	ASN
1	B	908	HIS
1	D	615	GLN

### 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 monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 16 ligands modelled in this entry, 2 are unknown - leaving 14 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$
3	Q5B	B	1202	-	54,62,62	2.58	16 (29%)	70,93,93	1.65	15 (21%)
4	FLC	A	1203	-	12,12,12	1.06	0	17,17,17	1.48	1 (5%)
4	FLC	B	1203	-	12,12,12	1.08	0	17,17,17	1.49	1 (5%)
2	ADP	A	1201	-	24,29,29	0.95	1 (4%)	29,45,45	1.38	4 (13%)
6	COA	A	1205	-	41,50,50	0.83	1 (2%)	52,75,75	1.10	4 (7%)
4	FLC	C	2103	-	12,12,12	1.06	0	17,17,17	1.42	1 (5%)
3	Q5B	A	1202	-	54,62,62	2.59	15 (27%)	70,93,93	1.55	11 (15%)
2	ADP	D	1201	-	24,29,29	0.95	1 (4%)	29,45,45	1.53	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	FLC	D	1203	-	12,12,12	1.06	0	17,17,17	1.44	1 (5%)
3	Q5B	D	1202	-	54,62,62	2.59	15 (27%)	70,93,93	1.53	11 (15%)
6	COA	C	2101	-	41,50,50	0.85	1 (2%)	52,75,75	1.08	3 (5%)
6	COA	C	2102	-	41,50,50	0.85	1 (2%)	52,75,75	1.18	4 (7%)
2	ADP	B	1201	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
6	COA	B	1204	-	41,50,50	0.85	1 (2%)	52,75,75	1.17	3 (5%)

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
3	Q5B	B	1202	-	-	22/62/83/83	0/3/3/3
4	FLC	A	1203	-	-	7/16/16/16	-
4	FLC	B	1203	-	-	2/16/16/16	-
2	ADP	A	1201	-	-	3/12/32/32	0/3/3/3
6	COA	A	1205	-	-	18/44/64/64	0/3/3/3
4	FLC	C	2103	-	-	12/16/16/16	-
3	Q5B	A	1202	-	-	19/62/83/83	0/3/3/3
2	ADP	D	1201	-	-	3/12/32/32	0/3/3/3
4	FLC	D	1203	-	-	8/16/16/16	-
3	Q5B	D	1202	-	-	21/62/83/83	0/3/3/3
6	COA	C	2101	-	-	8/44/64/64	0/3/3/3
6	COA	C	2102	-	-	14/44/64/64	0/3/3/3
2	ADP	B	1201	-	-	5/12/32/32	0/3/3/3
6	COA	B	1204	-	-	15/44/64/64	0/3/3/3

The worst 5 of 53 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	1202	Q5B	C18-N6	7.65	1.50	1.33
3	A	1202	Q5B	C18-N6	7.64	1.50	1.33
3	B	1202	Q5B	C6-C5	-7.61	1.32	1.52
3	D	1202	Q5B	C6-C5	-7.61	1.32	1.52
3	A	1202	Q5B	C6-C5	-7.60	1.32	1.52

The worst 5 of 67 bond angle outliers are listed below:



Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	1202	Q5B	N2-C12-N3	-5.64	119.86	128.68
3	A	1202	Q5B	C22-C21-S	5.17	120.03	113.63
3	A	1202	Q5B	N2-C12-N3	-5.07	120.76	128.68
3	D	1202	Q5B	C22-C21-S	5.05	119.88	113.63
3	D	1202	Q5B	N2-C12-N3	-4.98	120.90	128.68

There are no chirality outliers.

5 of 157 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1201	ADP	O4'-C4'-C5'-O5'
2	A	1201	ADP	C3'-C4'-C5'-O5'
2	B	1201	ADP	C5'-O5'-PA-O1A
2	B	1201	ADP	O4'-C4'-C5'-O5'
2	B	1201	ADP	C3'-C4'-C5'-O5'

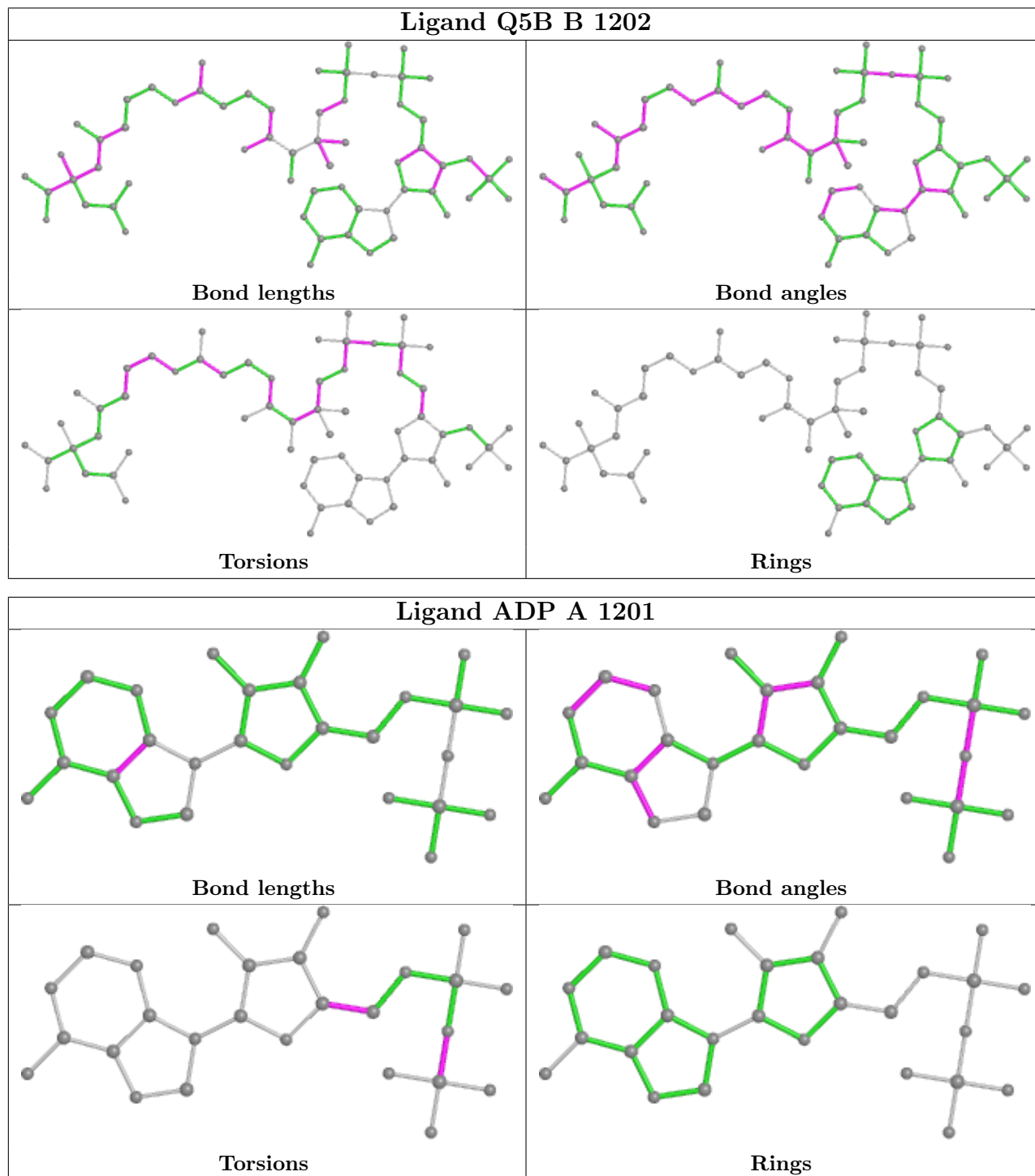
There are no ring outliers.

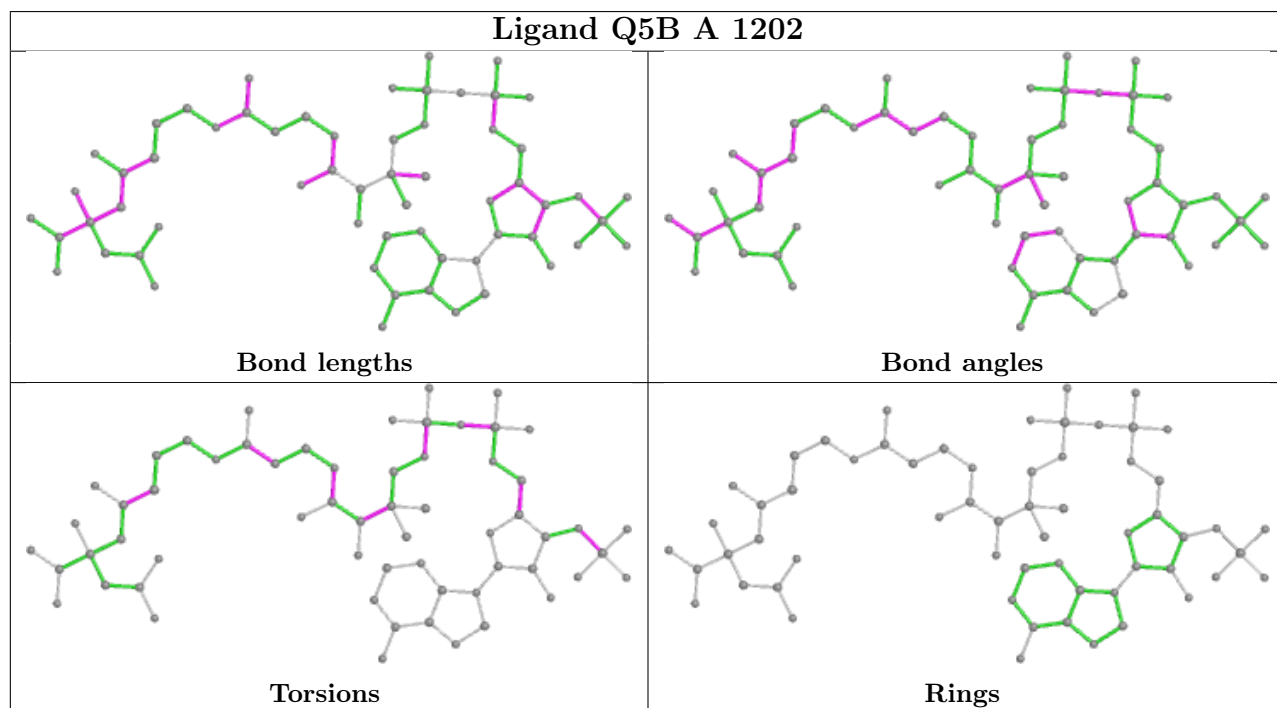
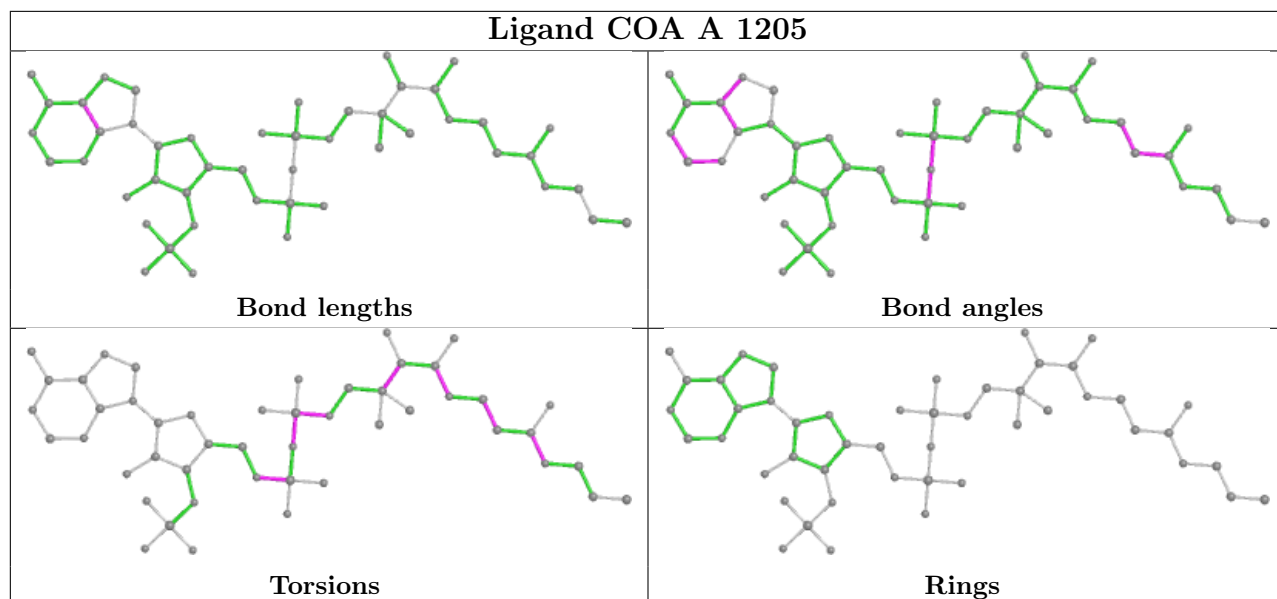
14 monomers are involved in 37 short contacts:

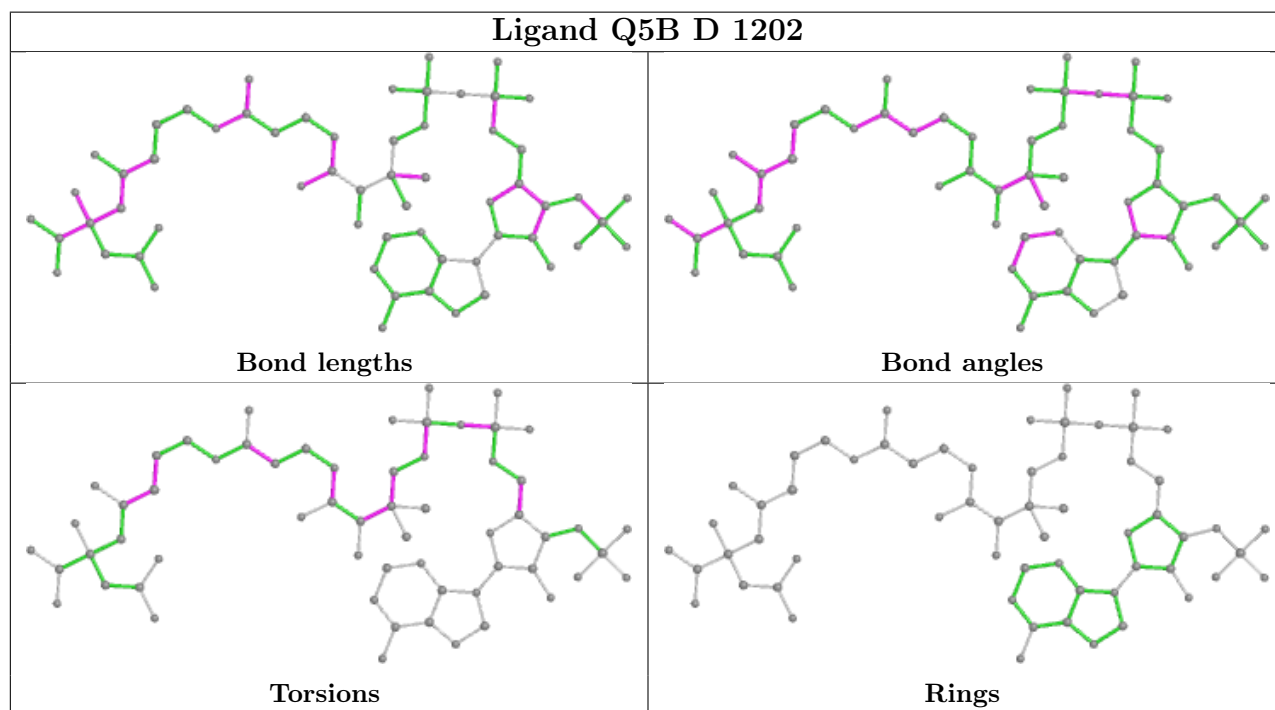
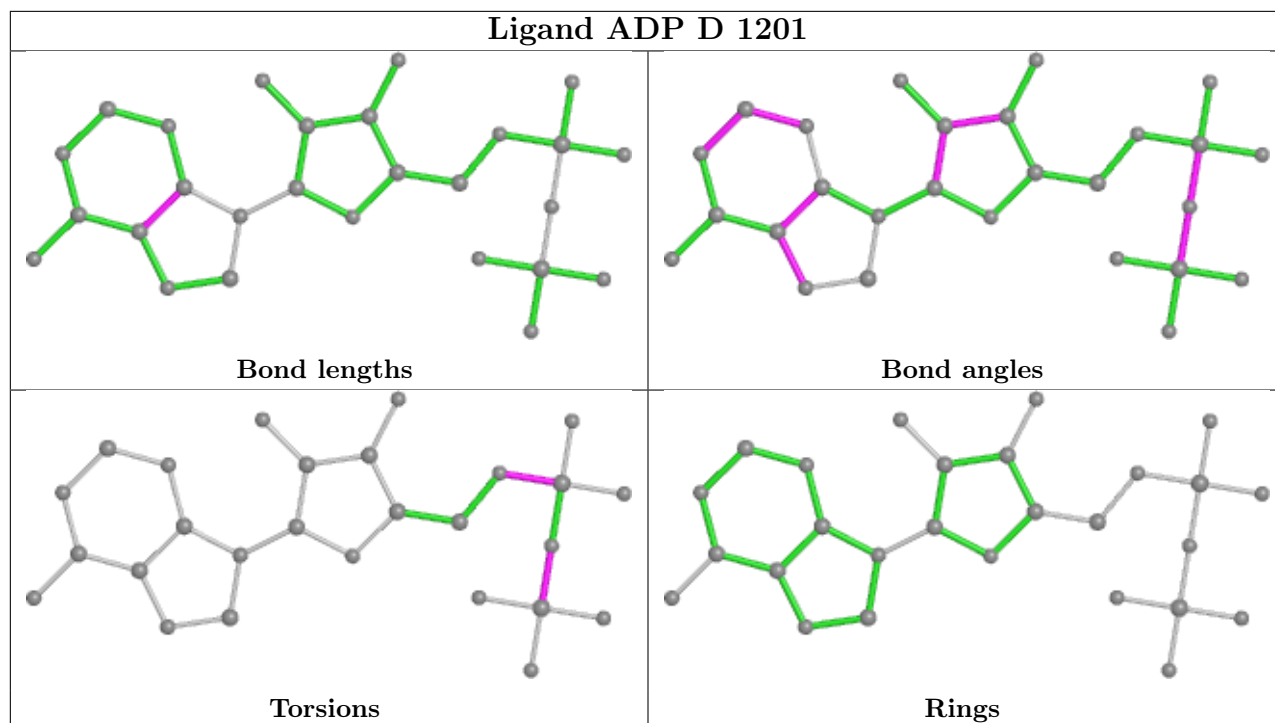
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1202	Q5B	3	0
4	A	1203	FLC	1	0
4	B	1203	FLC	1	0
2	A	1201	ADP	6	0
6	A	1205	COA	4	0
4	C	2103	FLC	1	0
3	A	1202	Q5B	1	0
2	D	1201	ADP	2	0
4	D	1203	FLC	1	0
3	D	1202	Q5B	1	0
6	C	2101	COA	4	0
6	C	2102	COA	7	0
2	B	1201	ADP	2	0
6	B	1204	COA	3	0

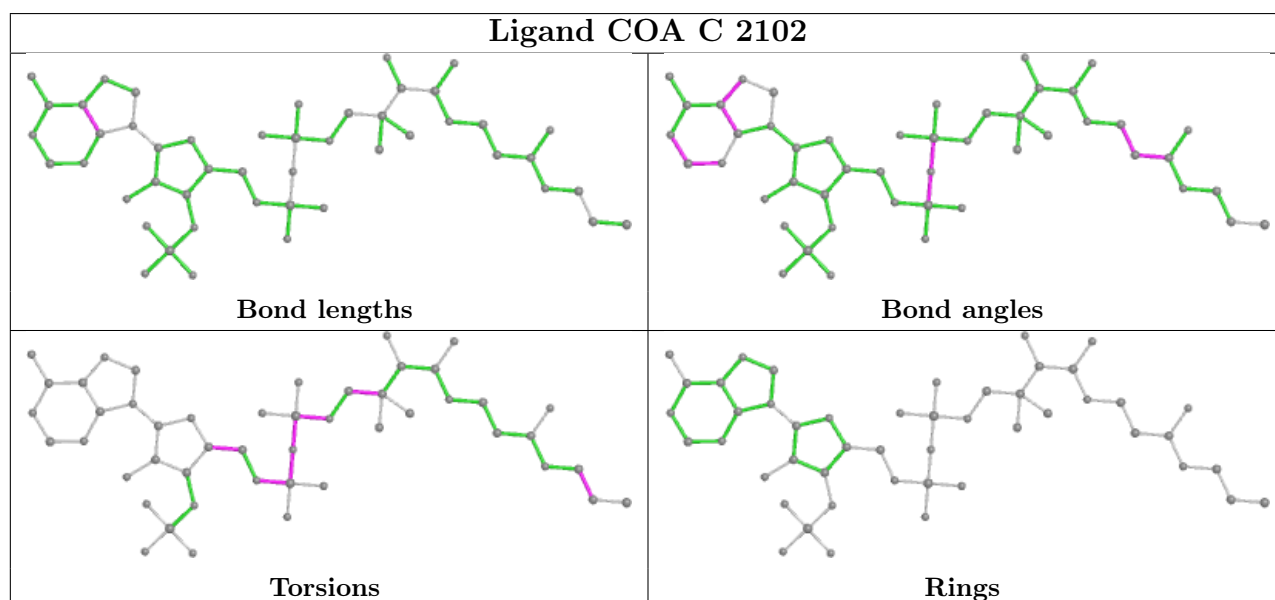
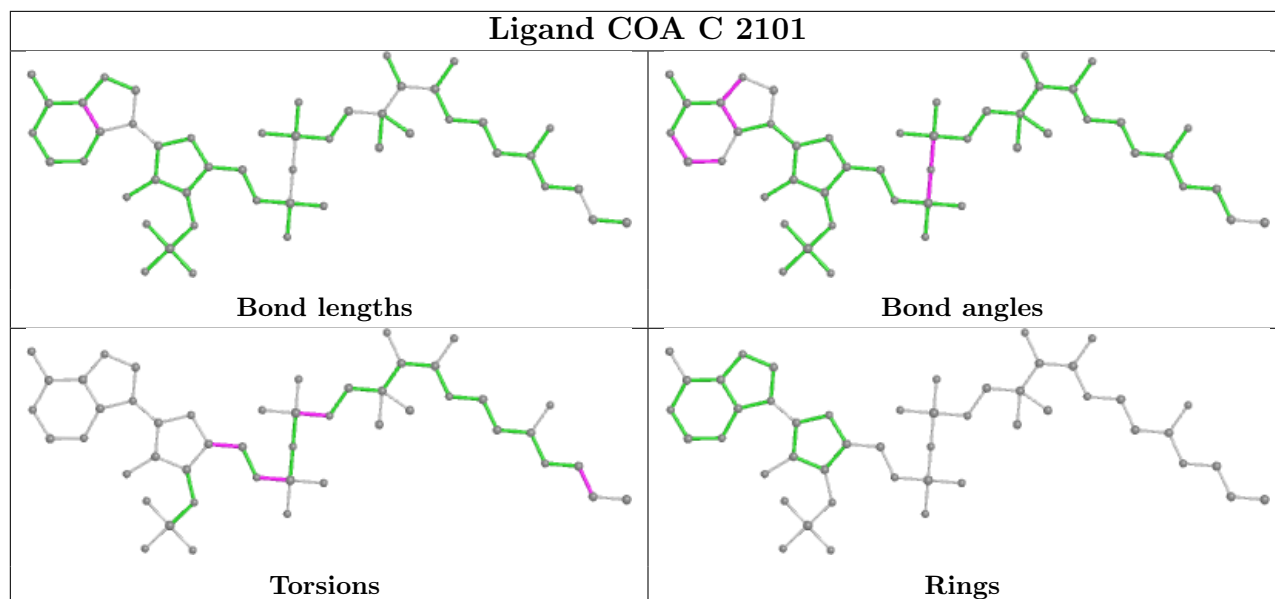
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

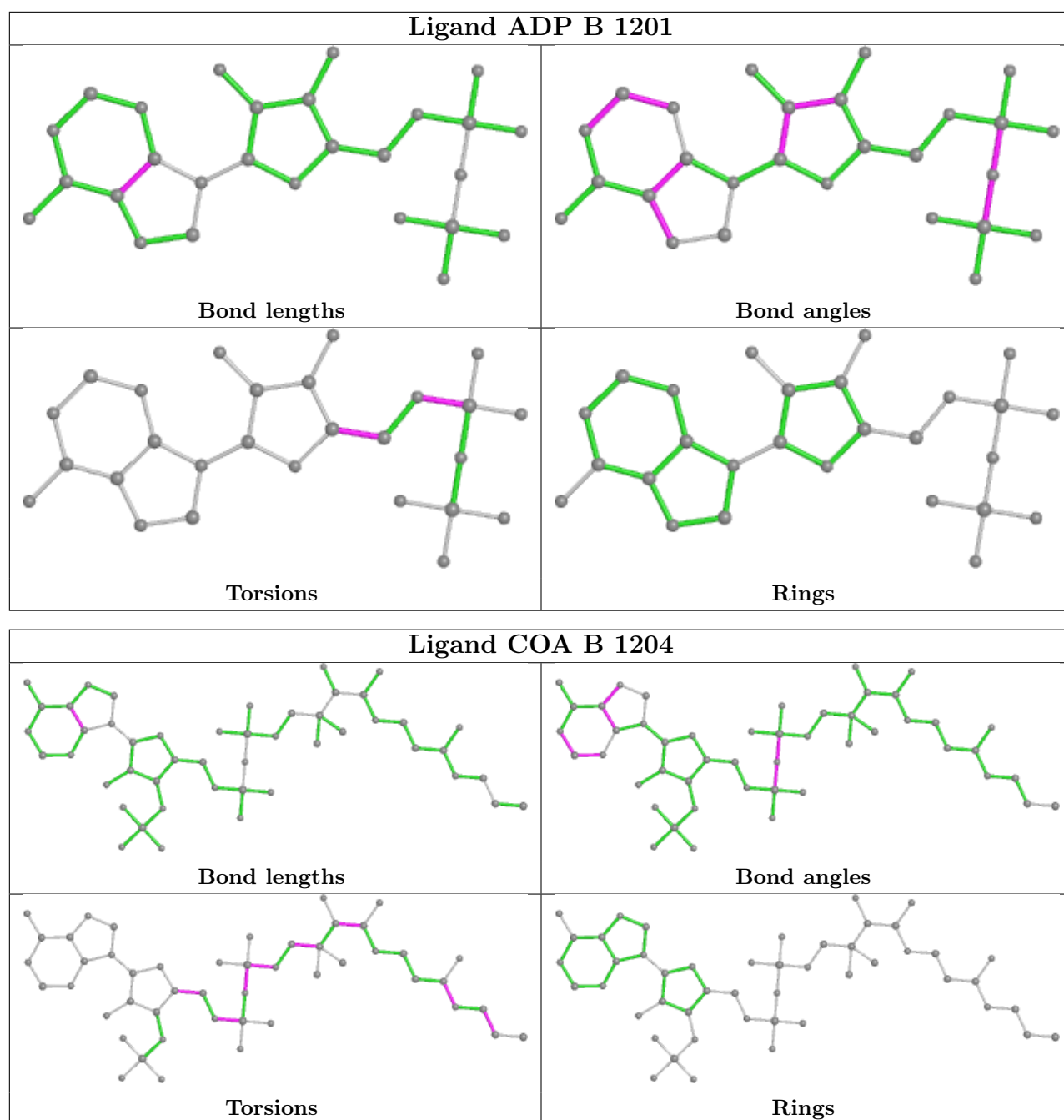
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











## 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.

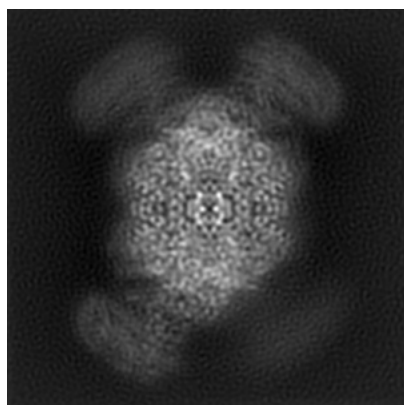
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-24511. These allow visual inspection of the internal detail of the map and identification of artifacts.

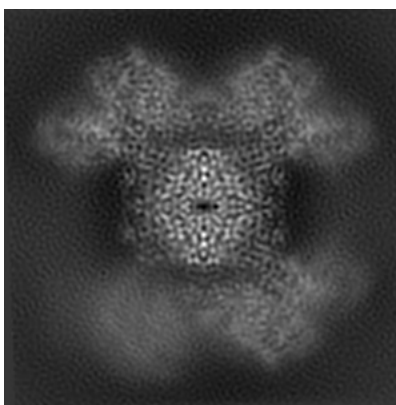
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

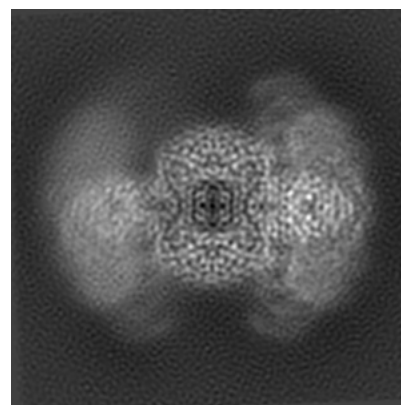
#### 6.1.1 Primary map



X



Y

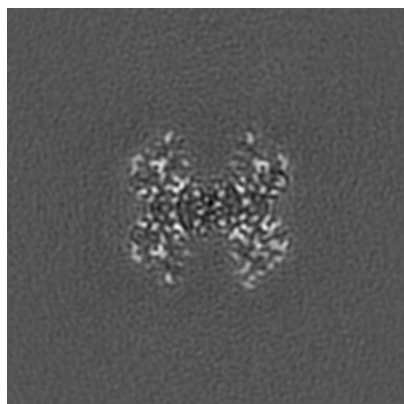


Z

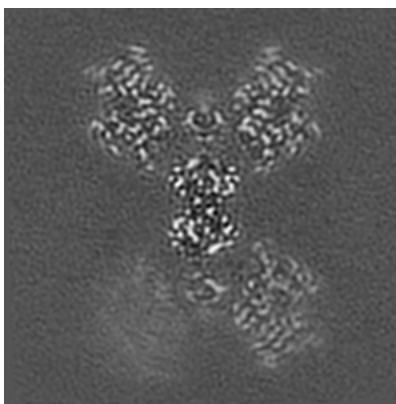
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

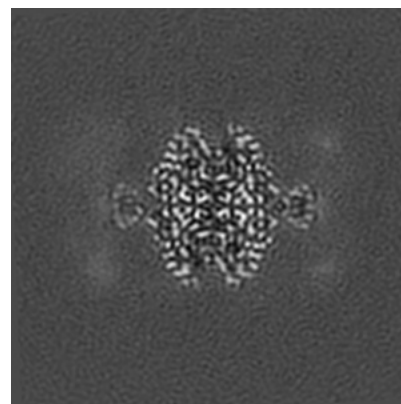
#### 6.2.1 Primary map



X Index: 110



Y Index: 110

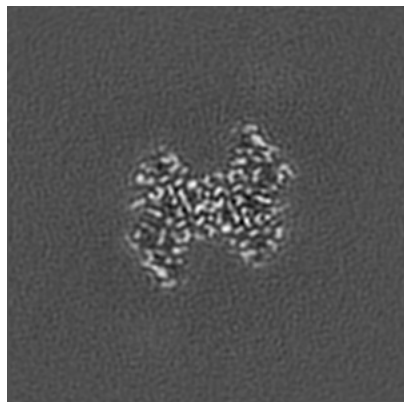


Z Index: 110

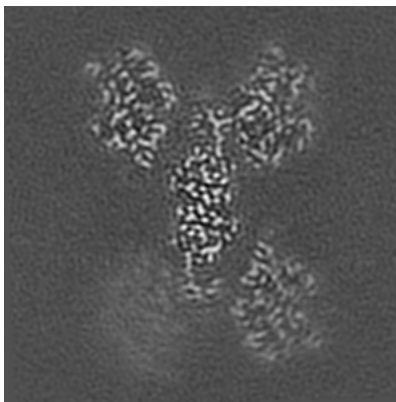
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [\(i\)](#)

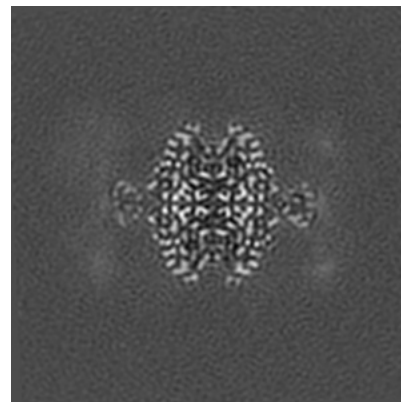
### 6.3.1 Primary map



X Index: 119



Y Index: 106

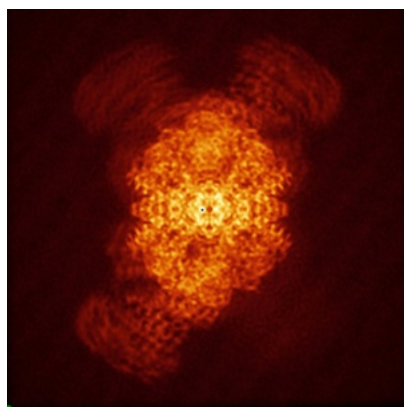


Z Index: 109

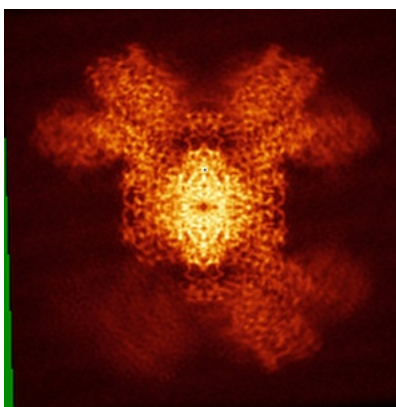
The images above show the largest variance slices of the map in three orthogonal directions.

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

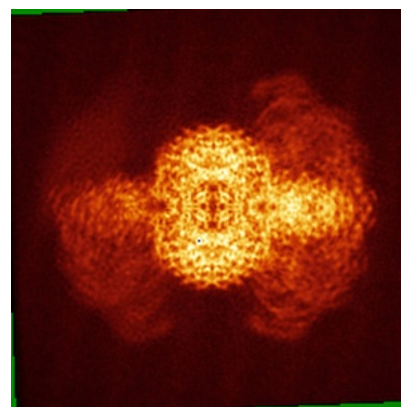
### 6.4.1 Primary map



X



Y



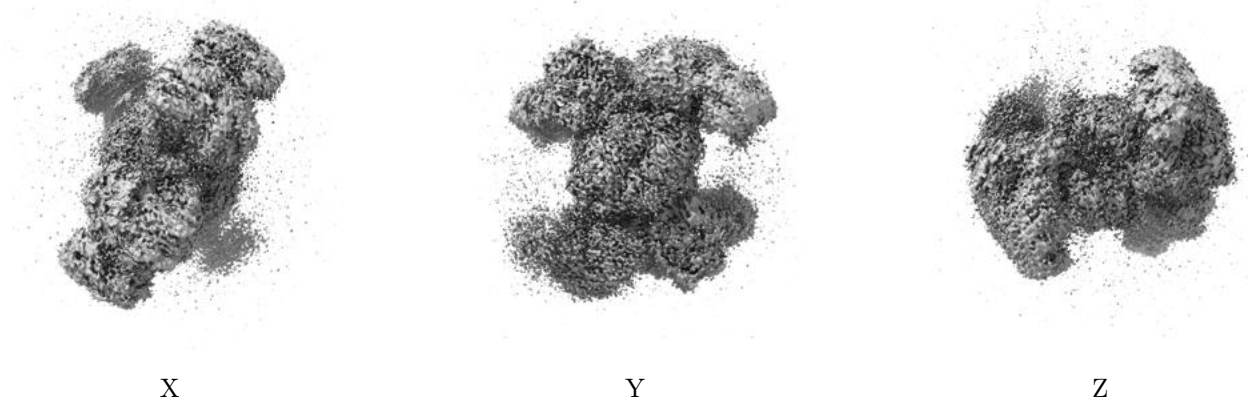
Z

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



## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.2. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

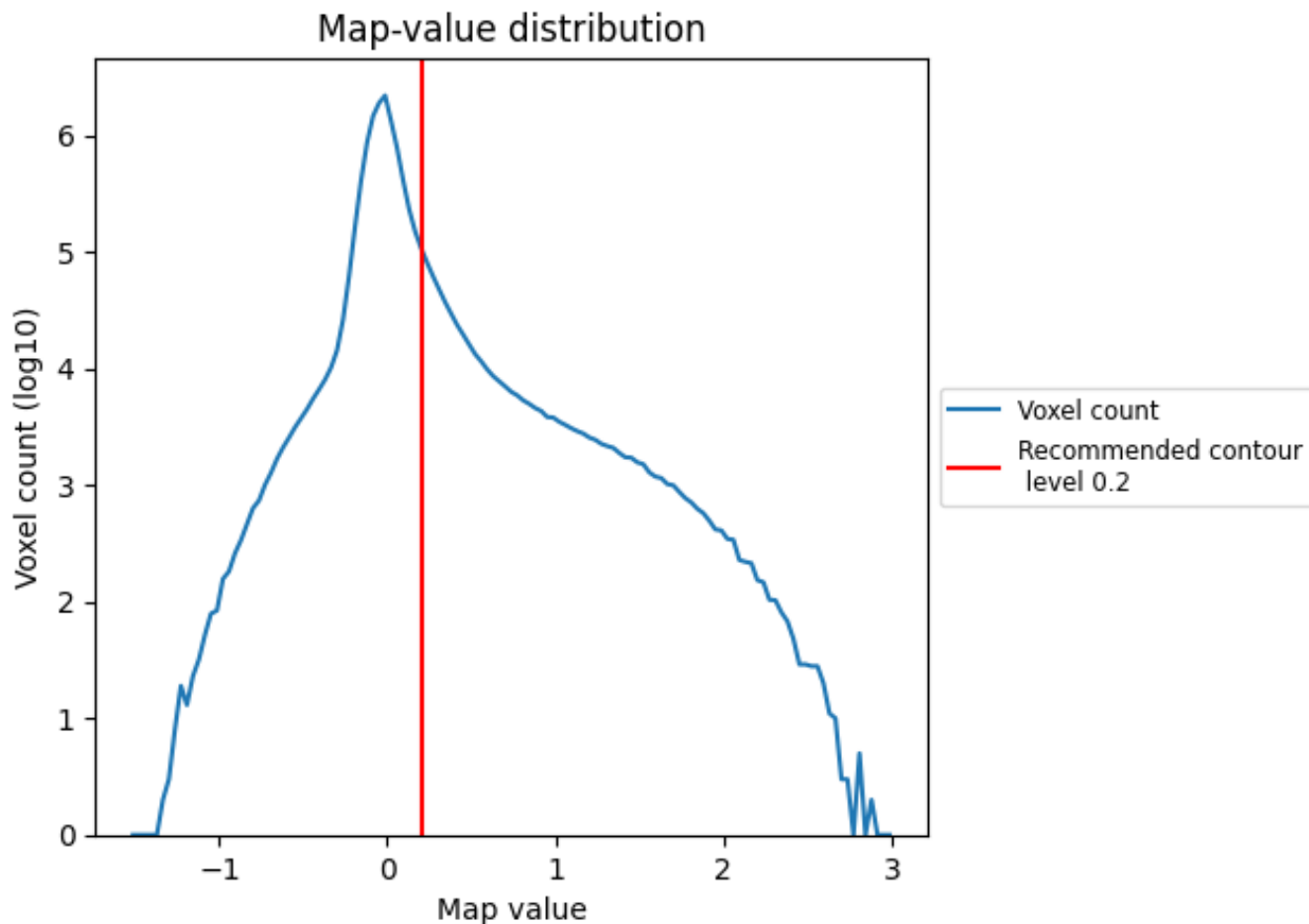
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

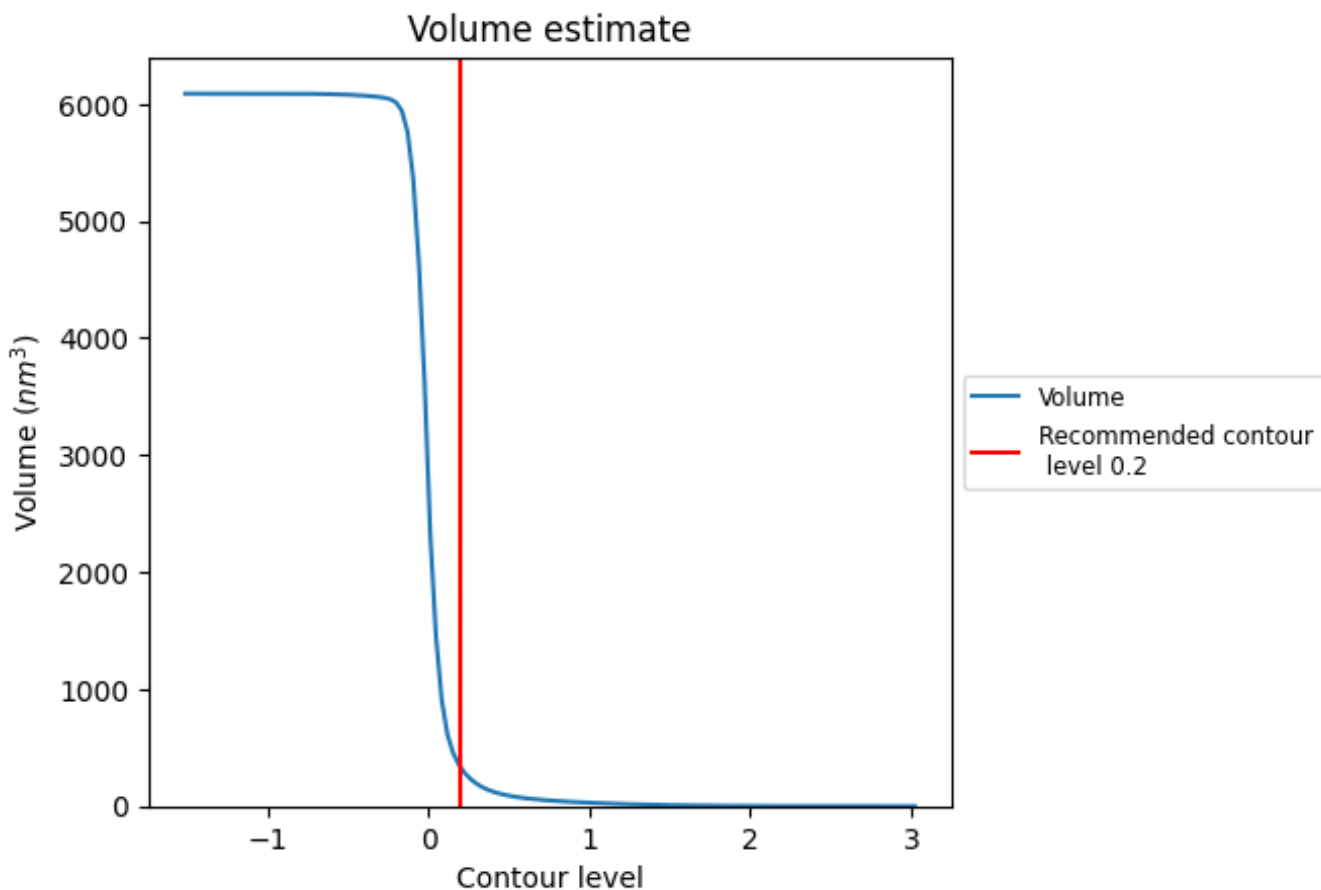
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

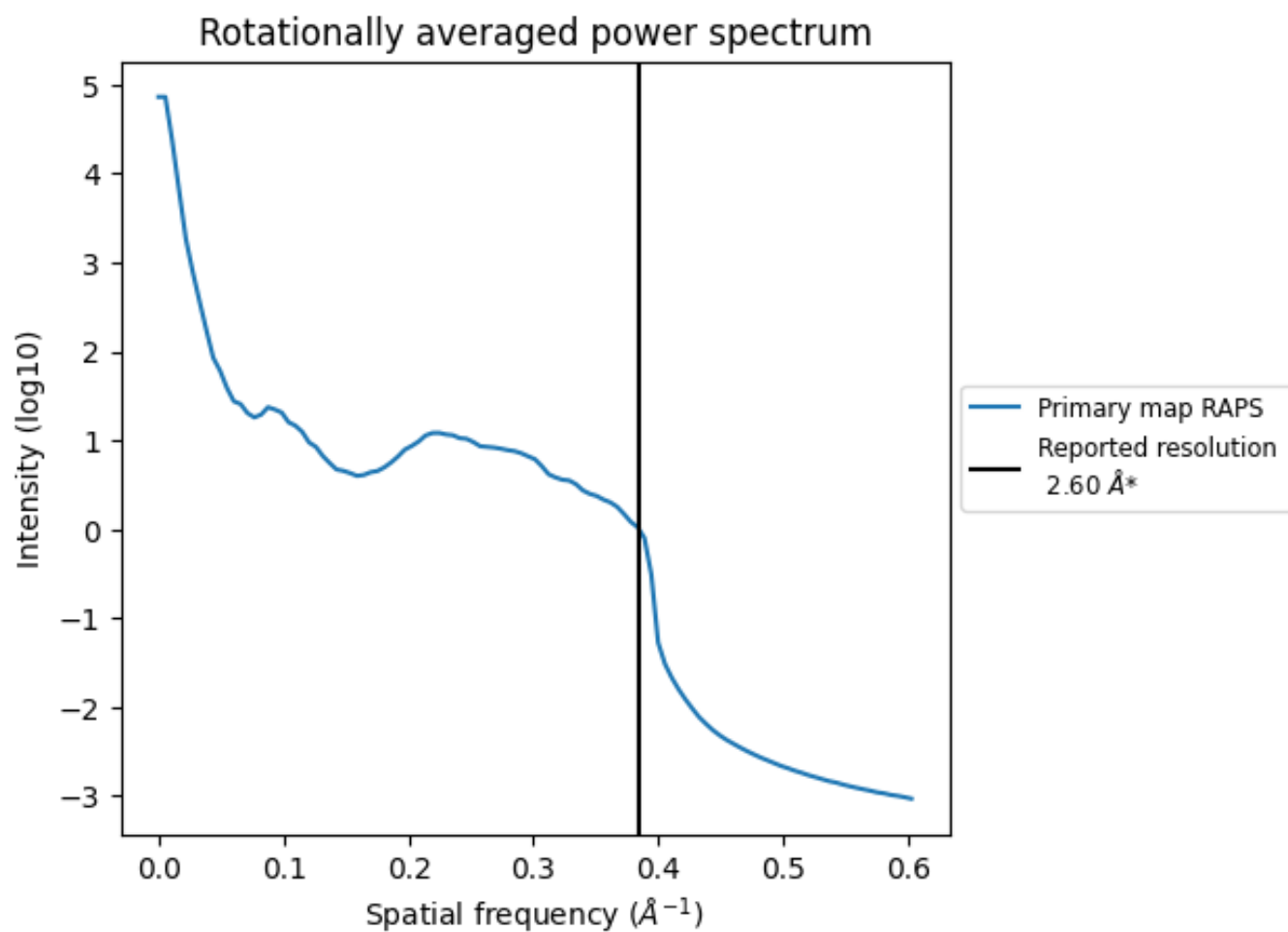
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is  $331 \text{ nm}^3$ ; this corresponds to an approximate mass of 299 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  $0.385 \text{\AA}^{-1}$

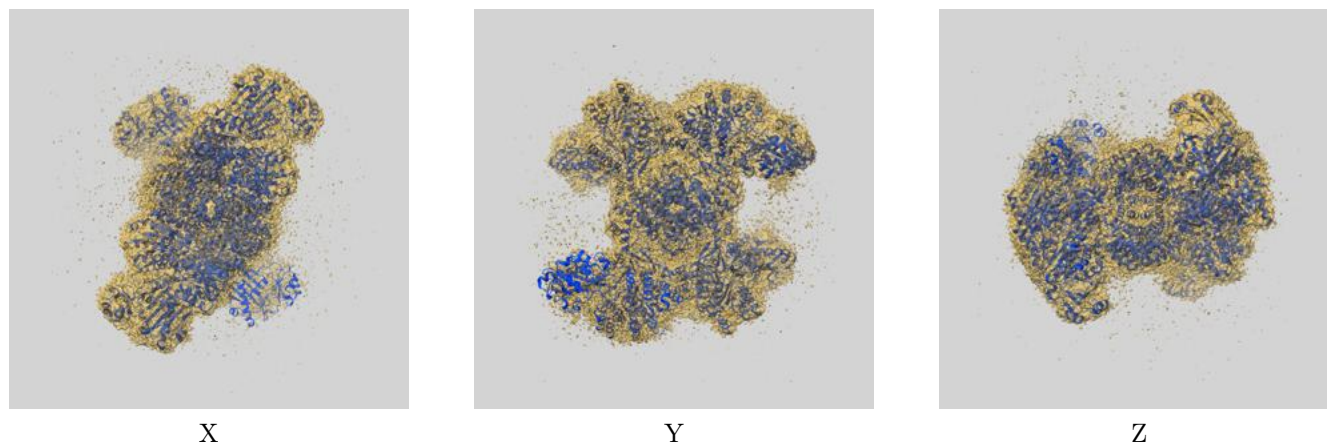
## 8 Fourier-Shell correlation

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

## 9 Map-model fit [i](#)

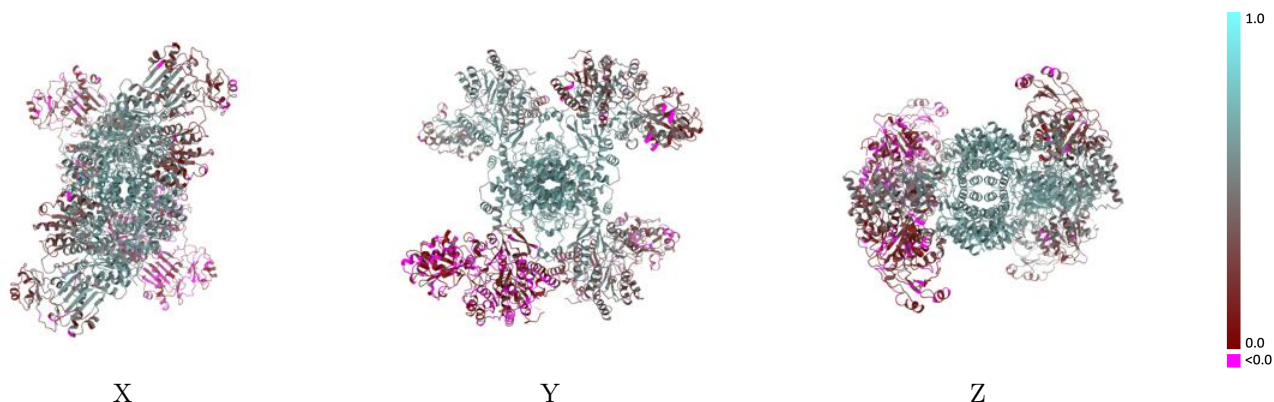
This section contains information regarding the fit between EMDB map EMD-24511 and PDB model 7RKZ. Per-residue inclusion information can be found in section 3 on page 7.

### 9.1 Map-model overlay [i](#)



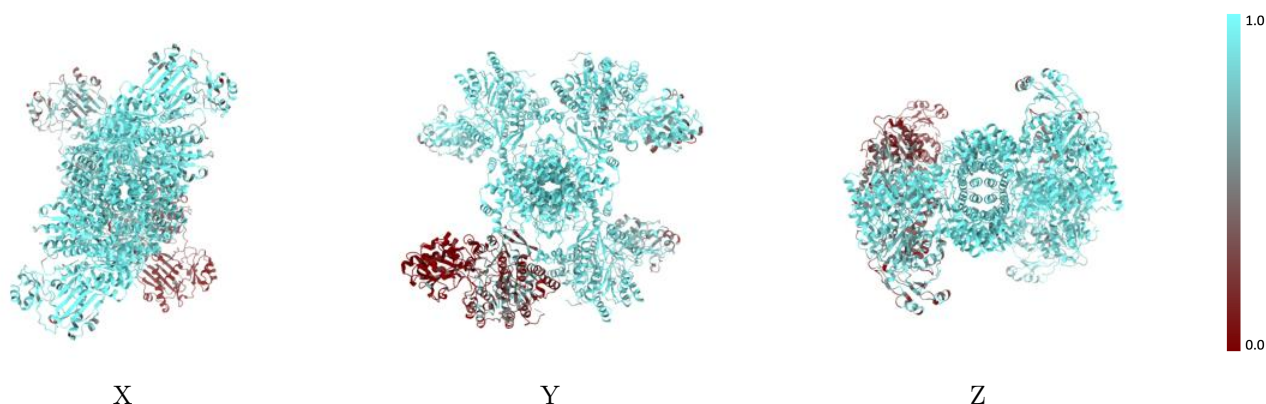
The images above show the 3D surface view of the map at the recommended contour level 0.2 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



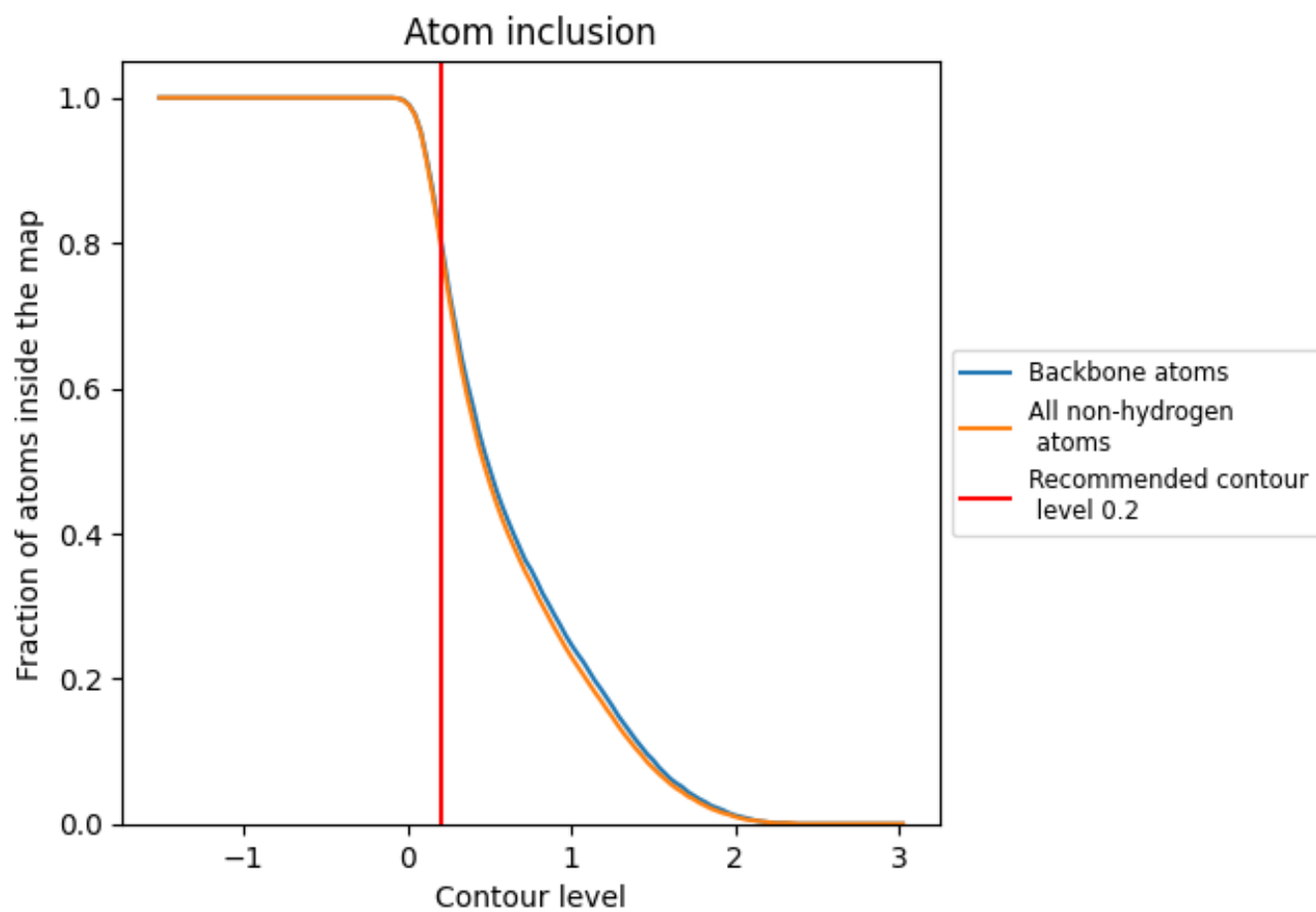
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.2).

## 9.4 Atom inclusion [i](#)













At the recommended contour level, 81% of all backbone atoms, 80% 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 (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8030	 0.4120
A	 0.9280	 0.4910
B	 0.9450	 0.5230
C	 0.4900	 0.2380
D	 0.8530	 0.3970

