



## wwPDB EM Validation Summary Report ⓘ

May 4, 2023 – 10:23 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.dev50  
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 : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.32.2

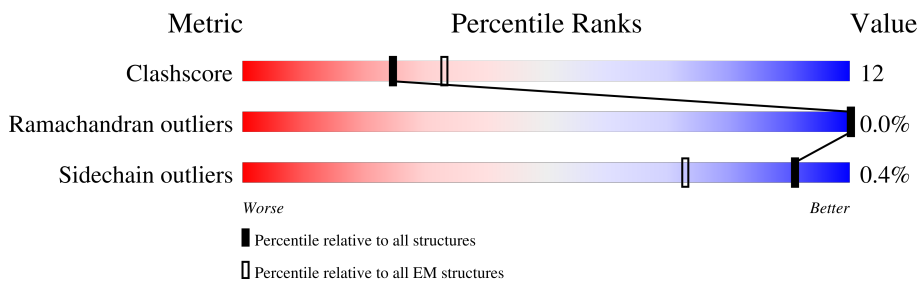
# 1 Overall quality at a glance

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.

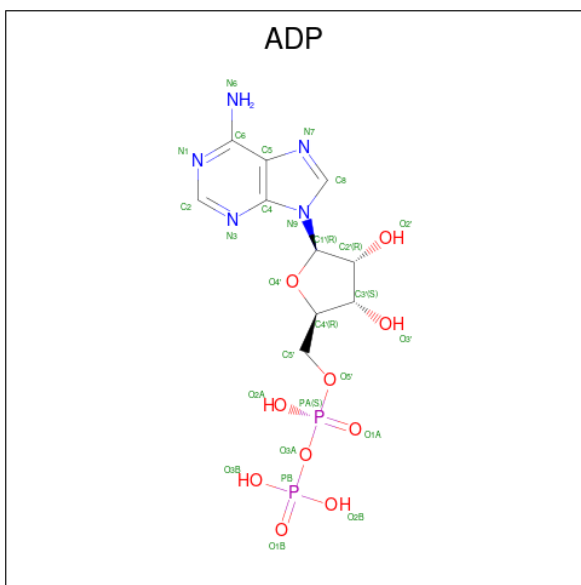
- Molecule 1 is a protein called ATP-citrate synthase.

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:

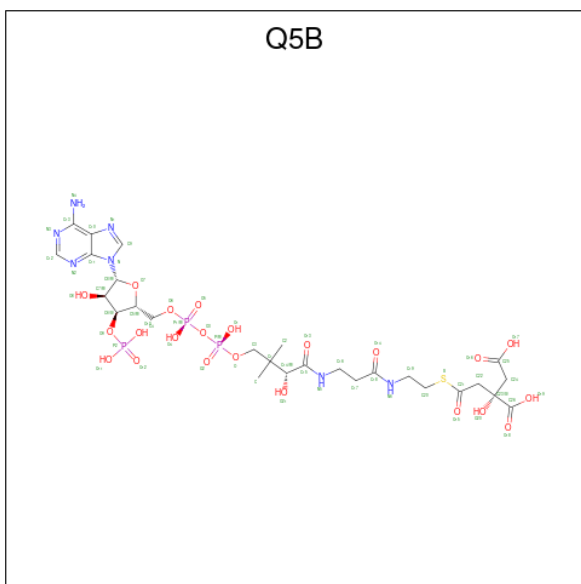
Chain	Residue	Modelled	Actual	Comment	Reference
A	1026	ALA	ASP	engineered mutation	UNP P53396
B	1026	ALA	ASP	engineered mutation	UNP P53396
C	1026	ALA	ASP	engineered mutation	UNP P53396
D	1026	ALA	ASP	engineered mutation	UNP P53396

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



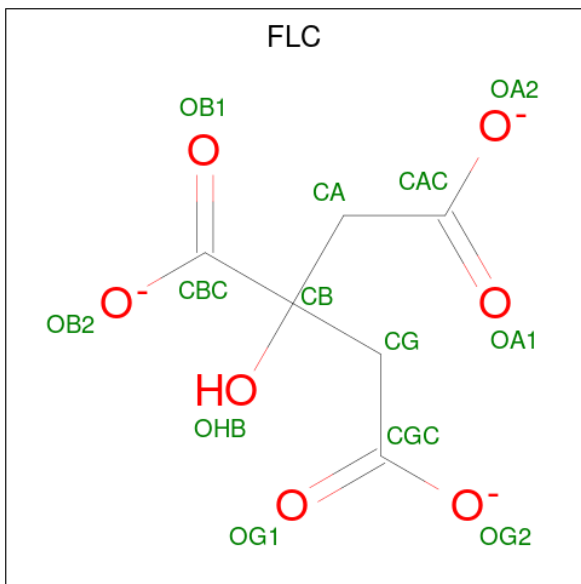
Mol	Chain	Residues	Atoms				AltConf	
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	D	1	Total	C	N	O	P	0
			27	10	5	10	2	

- 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:  $C_6H_5O_7$ ).

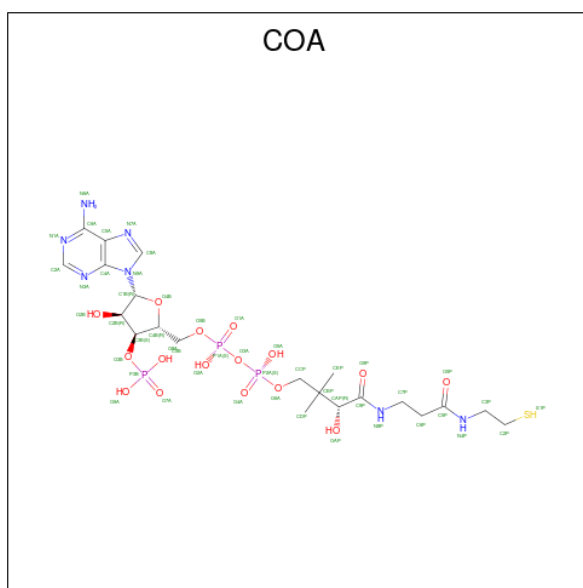


Mol	Chain	Residues	Atoms		AltConf
			Total	O	
4	A	1	13	7	0
4	B	1	13	7	0
4	C	1	13	7	0
4	D	1	13	7	0

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

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

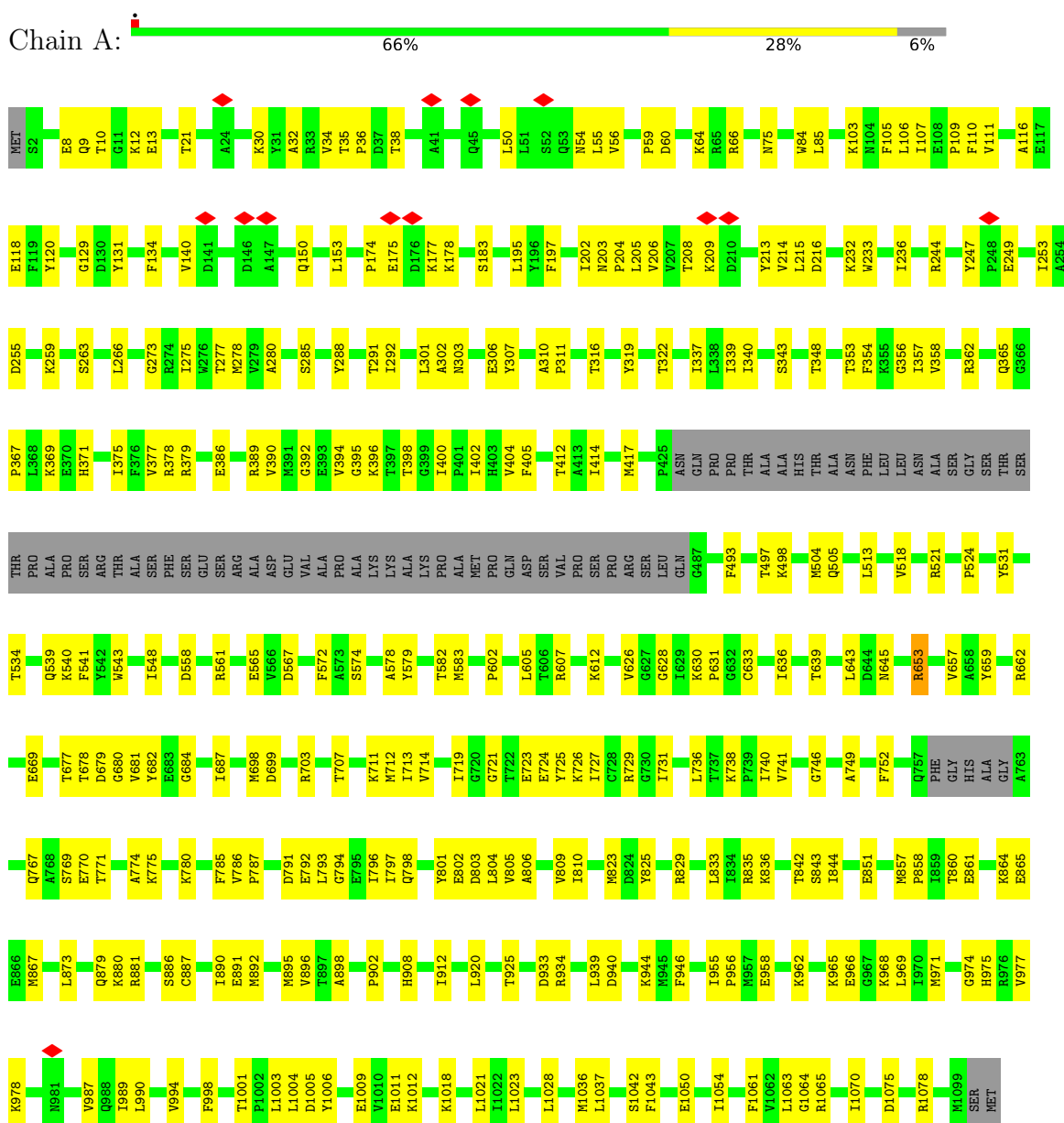
- Molecule 7 is water.

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	

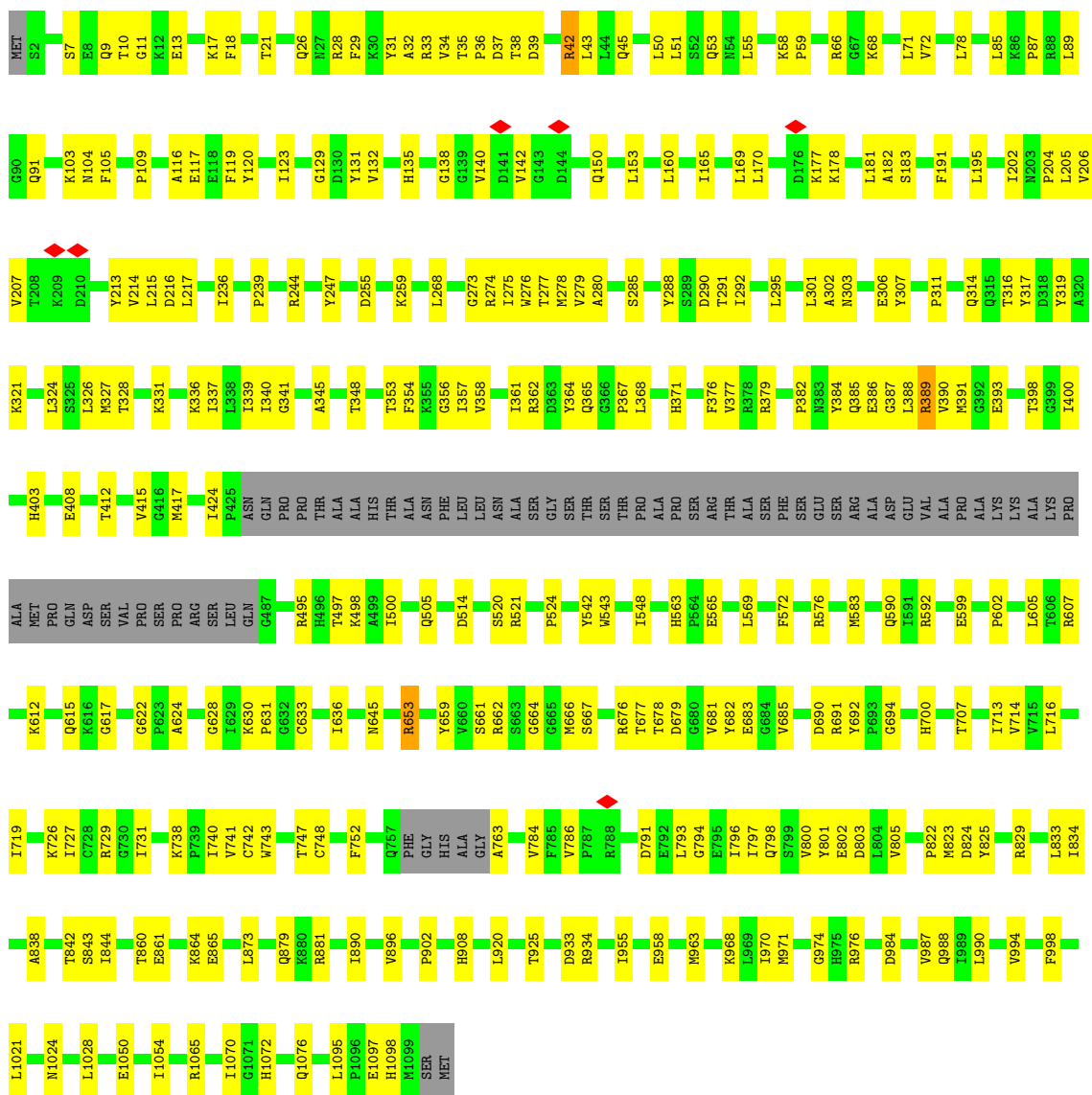
### 3 Residue-property plots

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.

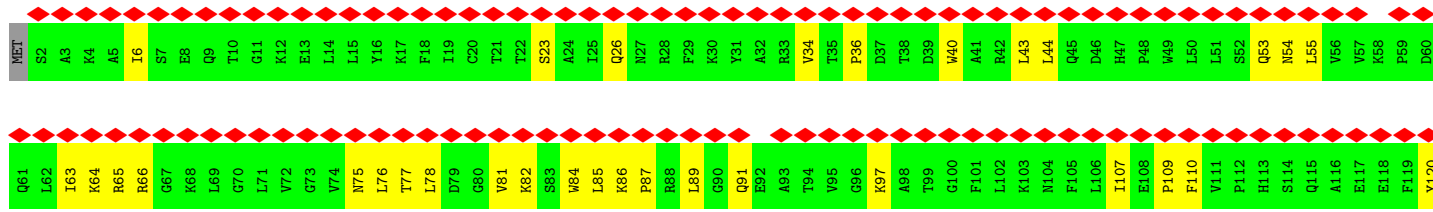
- Molecule 1: ATP-citrate synthase



• Molecule 1: ATP-citrate synthase



• Molecule 1: ATP-citrate synthase

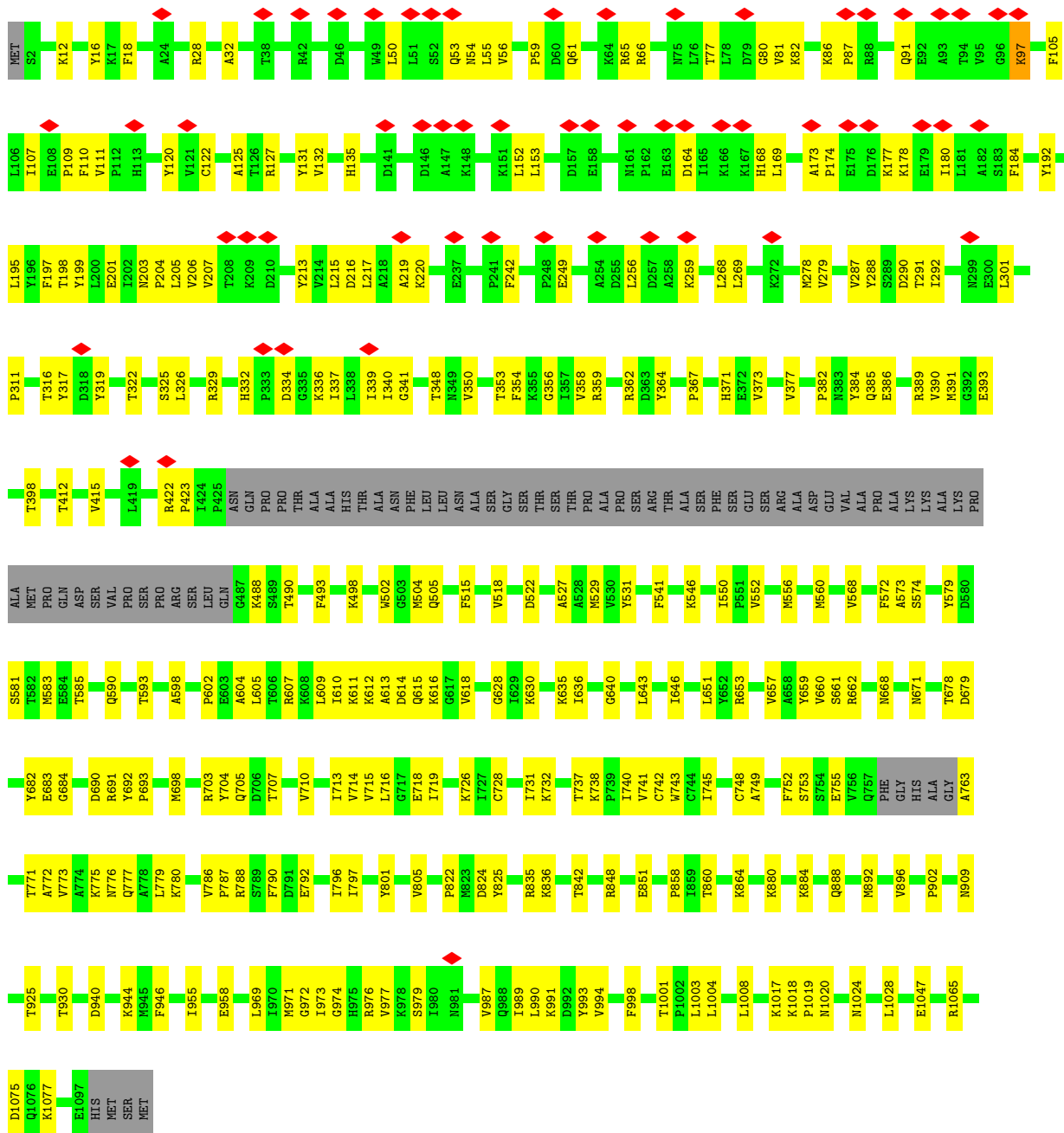




V121	L181	P241	Y304	G366	PRO	K488	HB63	I629	L716	V786	M892	G1064
C122	A182	F242	G305	P367	PRO	S489	P664	C633	G717	F787	V896	R1065
I123	S183	G243	E306	L368	THR	T490	E666	F634	E718	R788	V896	S1066
Y124	F184	R244	T307	K369	ALA	T491	V566	A635	I719	S789	A997	M1067
A125	I185	E245	S308	E370	HIS	H496	D567	I636	G720	F790	A998	D1075
T126	A186	A246	G309	H371	THR	H496	V568	I637	G721	D791	P902	D1076
R127	G187	Y247	A310	E372	ALA	A499	L669	M638	T722	E792	L793	K1077
E128	L188	P248	F311	E373	ASN	I500	N571	L647	E724	G794	H908	R1085
G129	F189	E249	S312	V373	PHE	I500	N571	L647	E725	E795	I912	Y1094
D130	L190	E250	E313	T374	LEU	H502	S574	A648	K726	D940	L839	M1099
Y131	M190	A251	Q314	I375	LEU	G503	L575	S649	K727	E941	D940	SER
V132	F191	Y252	Q315	R376	ALA	M504	R576	K650	C728	K651	T925	MET
L133	Y192	Y253	T316	F377	GLY	L513	S577	L651	G729	L652	L839	
F134	E193	I254	Y317	R379	SER	Y517	A578	R653	N729	R654	D940	
H135	D194	A255	Y318	G380	THR	V518	Y579	P654	G730	P654	A941	
H136	L195	D255	D319	F381	SER	V518	D580	V657	I731	I731	I955	
E137	Y196	L256	Y319	G382	THR	R521	D580	V657	K732	K732	P956	
G138	F197	D257	A320	N383	ALA	D522	S581	G665	E733	E733	M957	
G139	T198	A258	K321	E386	PRO	E523	T582	K666	G734	G734	A958	
V140	Y199	K259	I323	G387	SER	P524	M583	I667	N735	N735	F959	
D141	L200	S260	L324	L388	ARG	S525	E584	S667	L736	L736	V960	
V142	E201	G261	S325	R389	THR	V526	M586	E669	T737	T737	M961	
G143	I202	A262	L326	V390	SER	A528	N587	L670	K738	K738	K962	
D144	N203	S263	N327	M391	PHE	M529	Y588	M671	P739	P739	M963	
V145	P204	L264	T328	G392	GLU	V530	Q590	I674	W740	W740	E966	
D146	L205	K265	T329	E393	SER	V531	I591	T677	W741	W741	I970	
V206	V206	L266	R329	V394	ARG	F532	L592	T678	I745	I745	M971	
V207	V207	L267	E330	G395	ALA	P533	R593	T678	C748	C748	G972	
K148	T208	L268	K331	K396	ASP	F533	T593	T678	A749	A749	I973	
A149	K209	L269	H332	K396	GLU	T534	L594	D679	T750	T750	G974	
Q150	D210	N270	P333	T397	VAL	G535	A595	G680	M751	M751	H975	
K151	G211	P271	D334	T398	ALA	D536	I598	V681	F752	F752	R976	
L152	V212	K272	G335	G399	PRO	H537	A598	V682	S753	S753	R986	
L153	Y213	G273	G336	L400	ALA	Q539	E599	V685	S754	S754	V987	
V154	V214	R274	I337	P401	LYS	K538	E599	V685	E755	E755	R995	
G155	L215	I275	L338	L402	ALA	R540	P602	G688	F756	F756	T1001	
V156	D216	W276	I340	H403	PRO	F541	A603	G688	W756	W756	L1004	
D157	L217	W277	G342	F405	ALA	H543	L605	R691	P757	P757	D1005	
E158	L218	M278	S343	E408	PRO	G544	T606	P693	PHE	PHE	L1008	
K159	A218	V279	S343	T409	GLN	H544	R607	F697	HIS	HIS	L1008	
L160	K220	G280	A345	T409	ASP	K546	K608	M698	ALA	ALA	N1008	
P162	V221	G282	N346	H410	SER	E547	L609	D699	GLY	GLY	N1024	
E163	A223	G283	F347	M411	VAL	I948	I610	H700	A763	A763	L1028	
D164	T224	G283	T348	T412	PRO	I550	K612	H701	C764	C764	L1028	
I165	A225	V286	A352	A414	PRO	V552	A613	W701	A765	A765	F1043	
K166	D226	V287	T353	V415	ARG	F553	D614	Y704	Q767	Q767	E1047	
K167	Y227	Y288	F354	M417	SER	K554	Q615	Q705	A768	A768	M857	
H168	I228	Y288	K355	M417	GLN	N555	G617	K711	S769	S769	T860	
L169	C229	I292	G356	A418	LEU	M556	G617	W712	E770	E770	E861	
L170	K230	L295	I357	L419	LEU	I556	I620	I713	I777	I777	F863	
V171	V231	G296	R358	G420	ALA	A559	I621	W714	A777	A777	F878	
H172	K232	G297	R359	H421	ALA	M560	I621	W715	K780	K780	Q879	
A173	W233	V298	A360	R422	ALA	K562	A624		E781	E781		
P174	G234	N299	I361	P423	ALA		T625		A782	A782		
E175	G234	E300	R362	I424	ALA		G628		F785	F785		
D176	D235	L301	D363	I424	ASN							
K177	I236	A302	Y364	P425	GLN							
K178	E237	E302	Y365	GLN								
E179	P239	N303										
L180	P240											

• 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 ( $\text{\AA}$ )	182.59999, 182.59999, 182.59999	wwPDB
Map dimensions	220, 220, 220	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	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: UNL, Q5B, FLC, ADP, COA

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$
2	ADP	A	1201	-	24,29,29	0.95	1 (4%)	29,45,45	1.38	4 (13%)
3	Q5B	D	1202	-	54,62,62	2.59	15 (27%)	70,93,93	1.53	11 (15%)
6	COA	B	1204	-	41,50,50	0.85	1 (2%)	52,75,75	1.17	3 (5%)
2	ADP	B	1201	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
6	COA	C	2102	-	41,50,50	0.85	1 (2%)	52,75,75	1.18	4 (7%)
2	ADP	D	1201	-	24,29,29	0.95	1 (4%)	29,45,45	1.53	4 (13%)
4	FLC	C	2103	-	12,12,12	1.06	0	17,17,17	1.42	1 (5%)
6	COA	A	1205	-	41,50,50	0.83	1 (2%)	52,75,75	1.10	4 (7%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	FLC	B	1203	-	12,12,12	1.08	0	17,17,17	1.49	1 (5%)
4	FLC	A	1203	-	12,12,12	1.06	0	17,17,17	1.48	1 (5%)
3	Q5B	A	1202	-	54,62,62	2.59	15 (27%)	70,93,93	1.55	11 (15%)
6	COA	C	2101	-	41,50,50	0.85	1 (2%)	52,75,75	1.08	3 (5%)
3	Q5B	B	1202	-	54,62,62	2.58	16 (29%)	70,93,93	1.65	15 (21%)
4	FLC	D	1203	-	12,12,12	1.06	0	17,17,17	1.44	1 (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
2	ADP	A	1201	-	-	3/12/32/32	0/3/3/3
3	Q5B	D	1202	-	-	21/62/83/83	0/3/3/3
6	COA	B	1204	-	-	15/44/64/64	0/3/3/3
2	ADP	B	1201	-	-	5/12/32/32	0/3/3/3
6	COA	C	2102	-	-	14/44/64/64	0/3/3/3
2	ADP	D	1201	-	-	3/12/32/32	0/3/3/3
4	FLC	C	2103	-	-	12/16/16/16	-
6	COA	A	1205	-	-	18/44/64/64	0/3/3/3
4	FLC	B	1203	-	-	2/16/16/16	-
4	FLC	A	1203	-	-	7/16/16/16	-
3	Q5B	A	1202	-	-	19/62/83/83	0/3/3/3
6	COA	C	2101	-	-	8/44/64/64	0/3/3/3
3	Q5B	B	1202	-	-	22/62/83/83	0/3/3/3
4	FLC	D	1203	-	-	8/16/16/16	-

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'

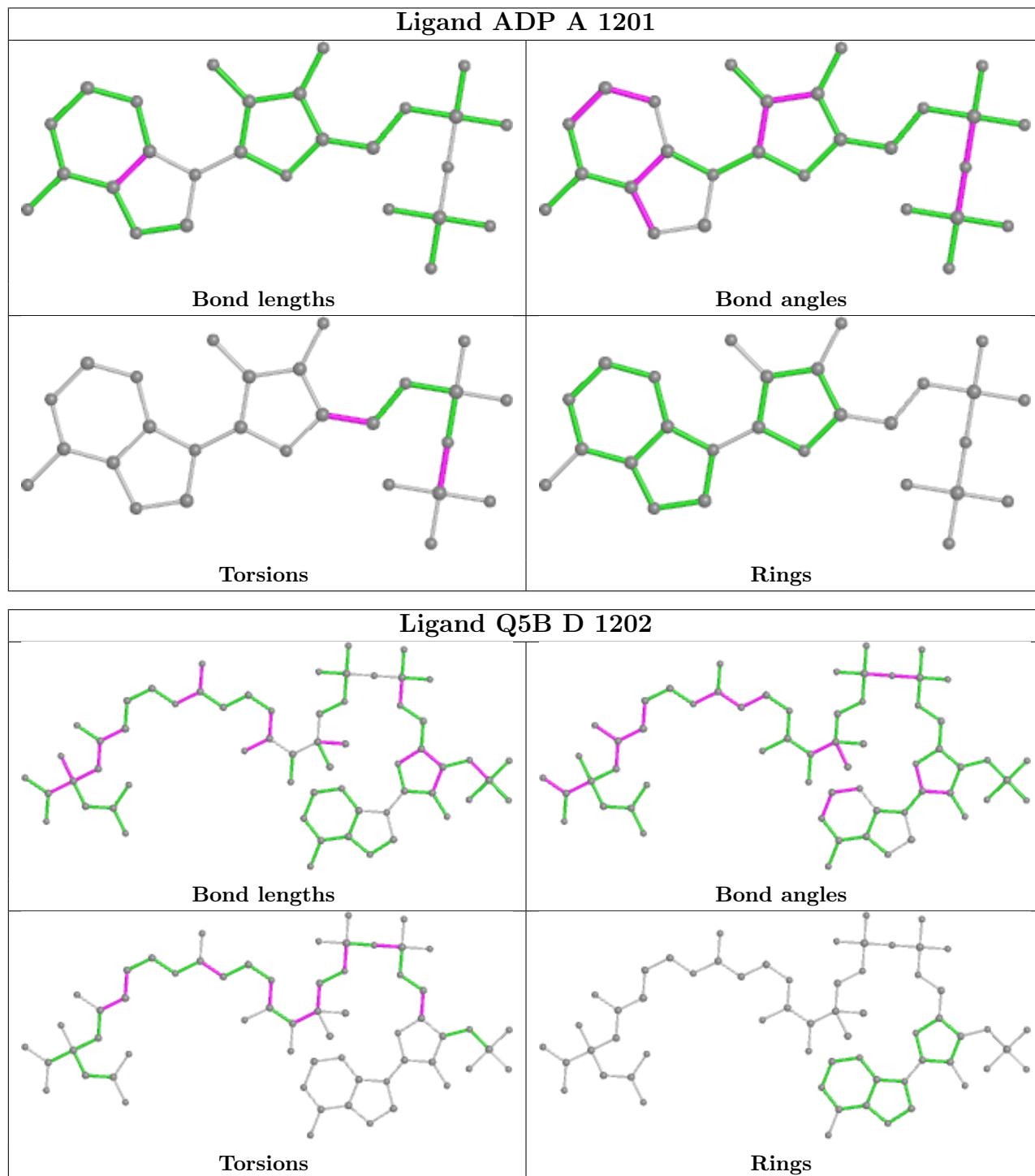
There are no ring outliers.

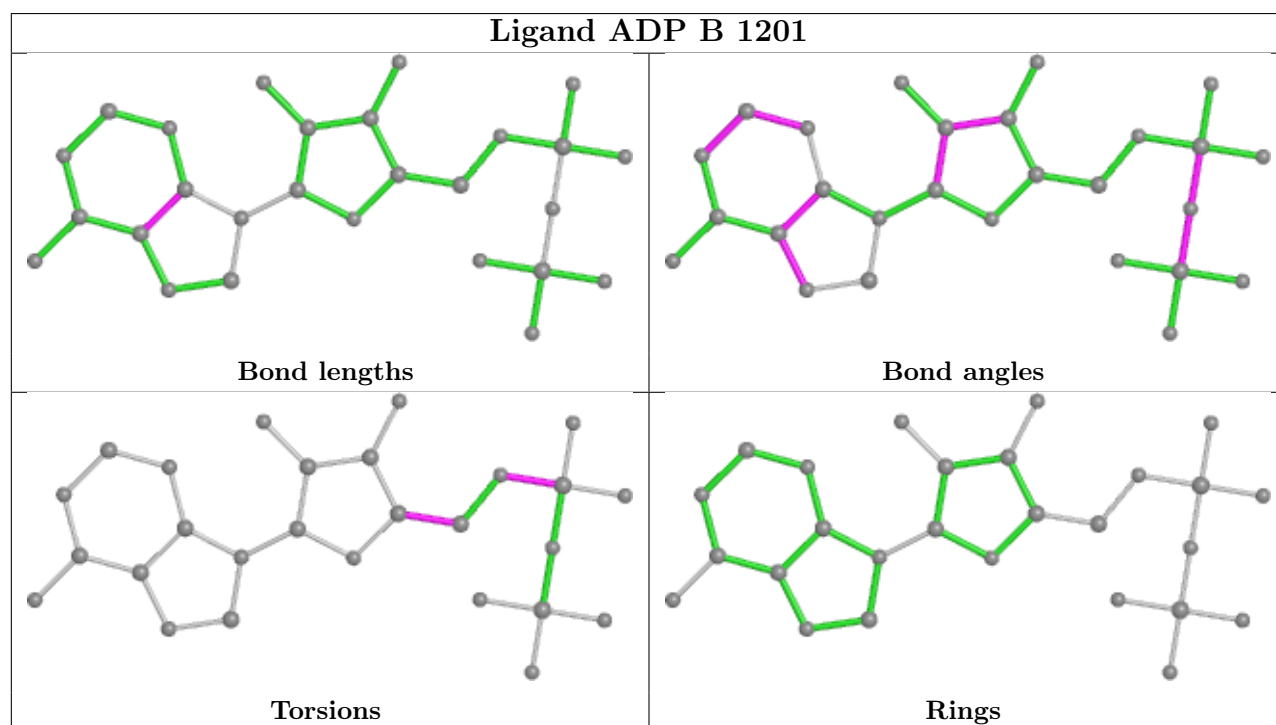
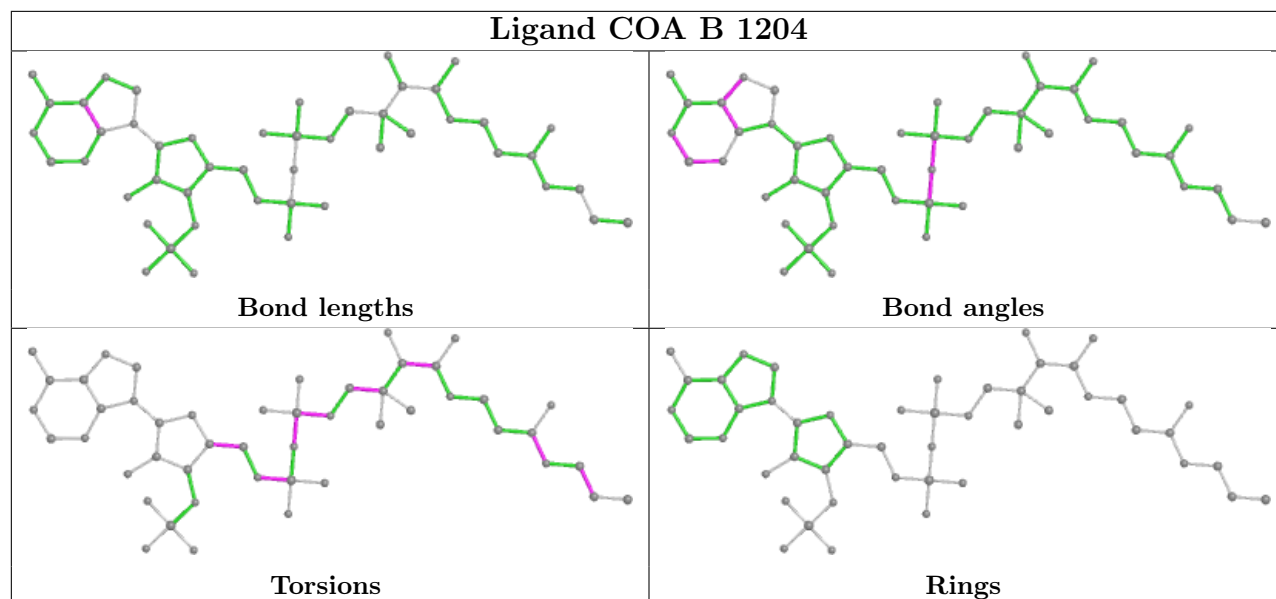
14 monomers are involved in 37 short contacts:

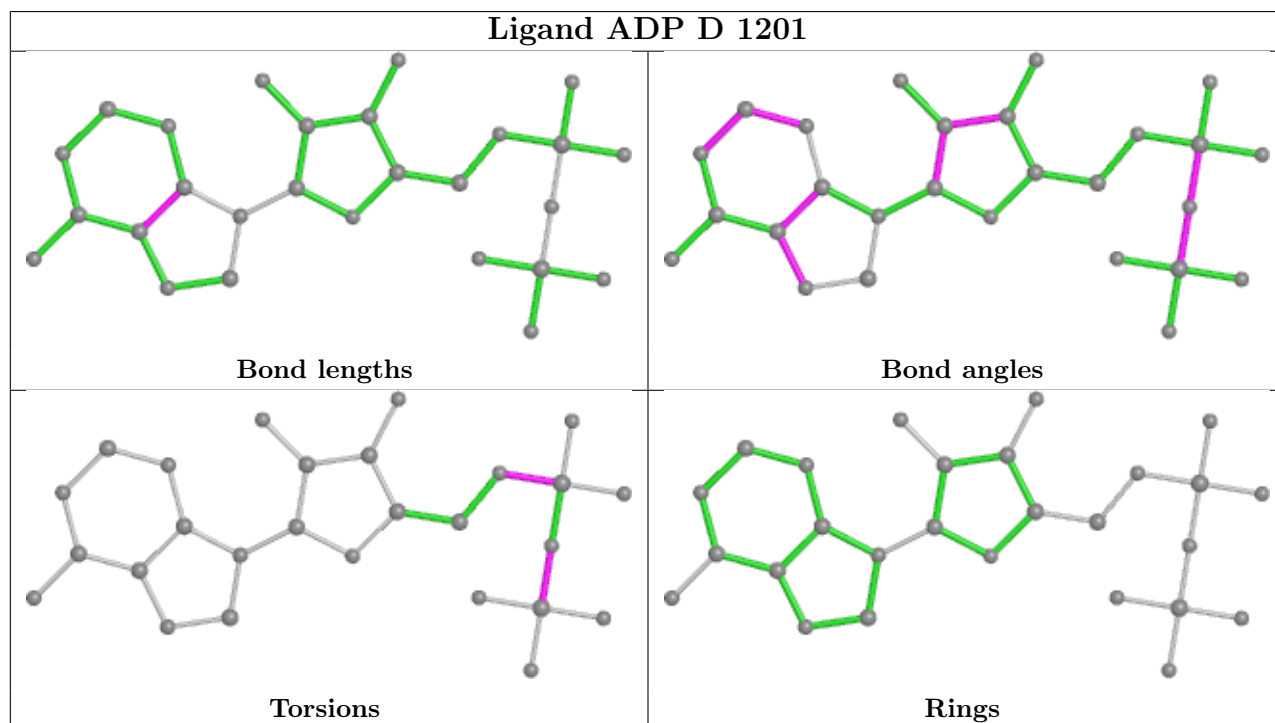
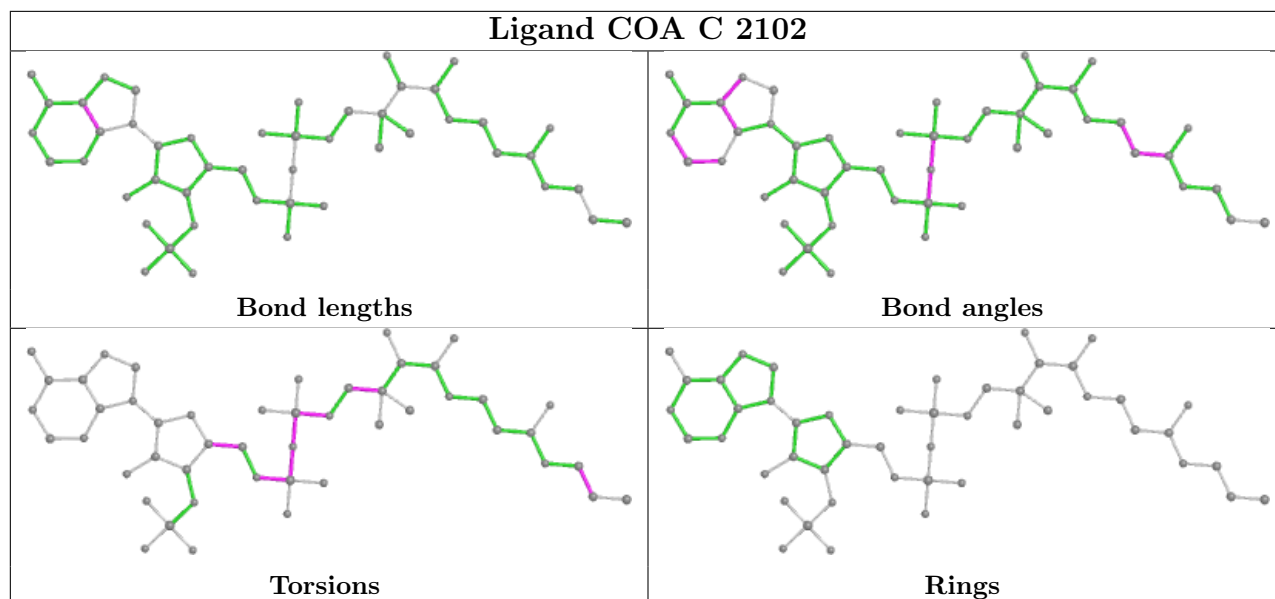
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1201	ADP	6	0
3	D	1202	Q5B	1	0
6	B	1204	COA	3	0
2	B	1201	ADP	2	0
6	C	2102	COA	7	0
2	D	1201	ADP	2	0
4	C	2103	FLC	1	0
6	A	1205	COA	4	0
4	B	1203	FLC	1	0
4	A	1203	FLC	1	0
3	A	1202	Q5B	1	0
6	C	2101	COA	4	0
3	B	1202	Q5B	3	0
4	D	1203	FLC	1	0

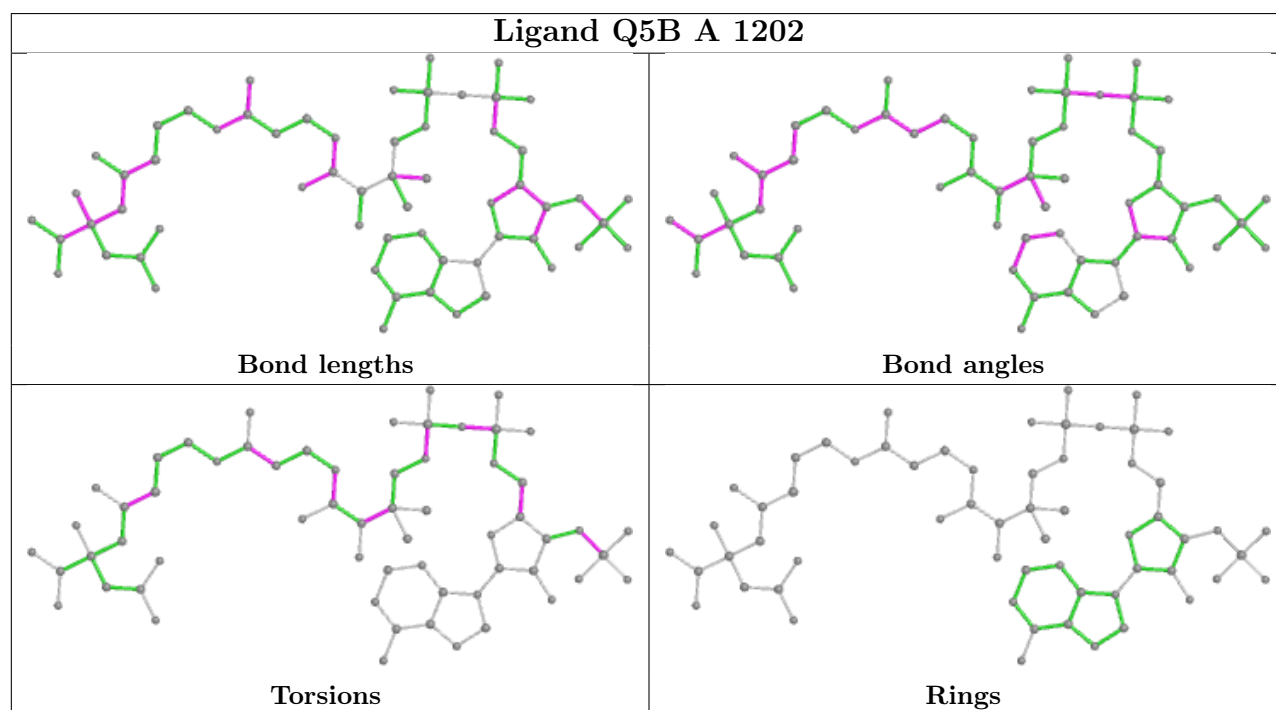
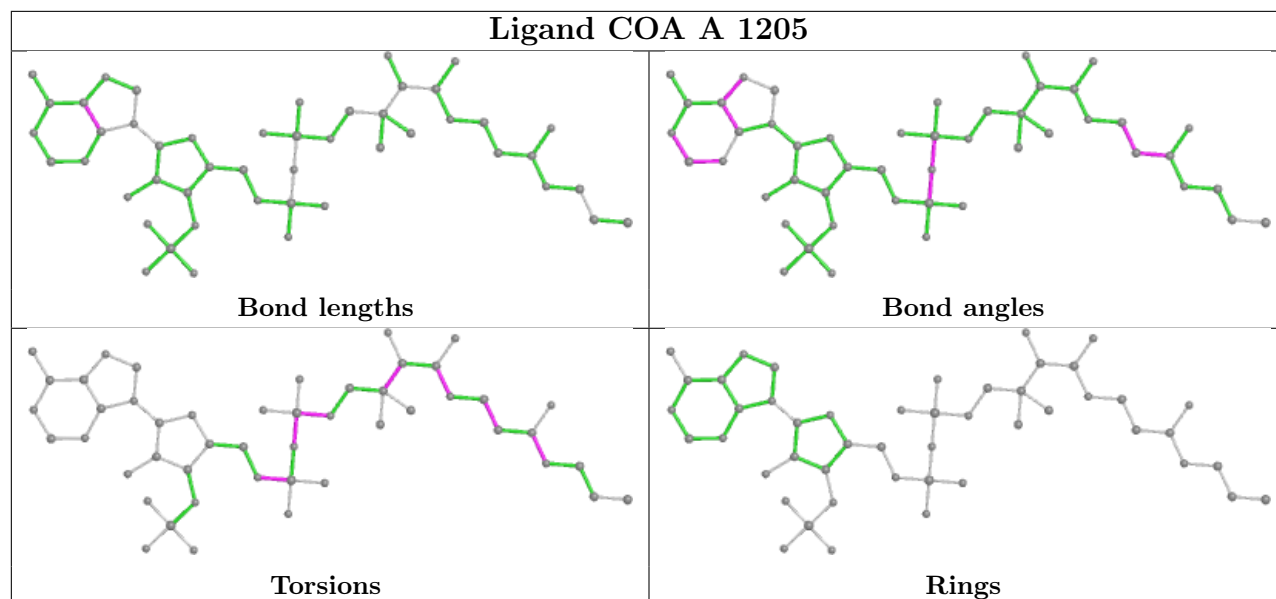
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

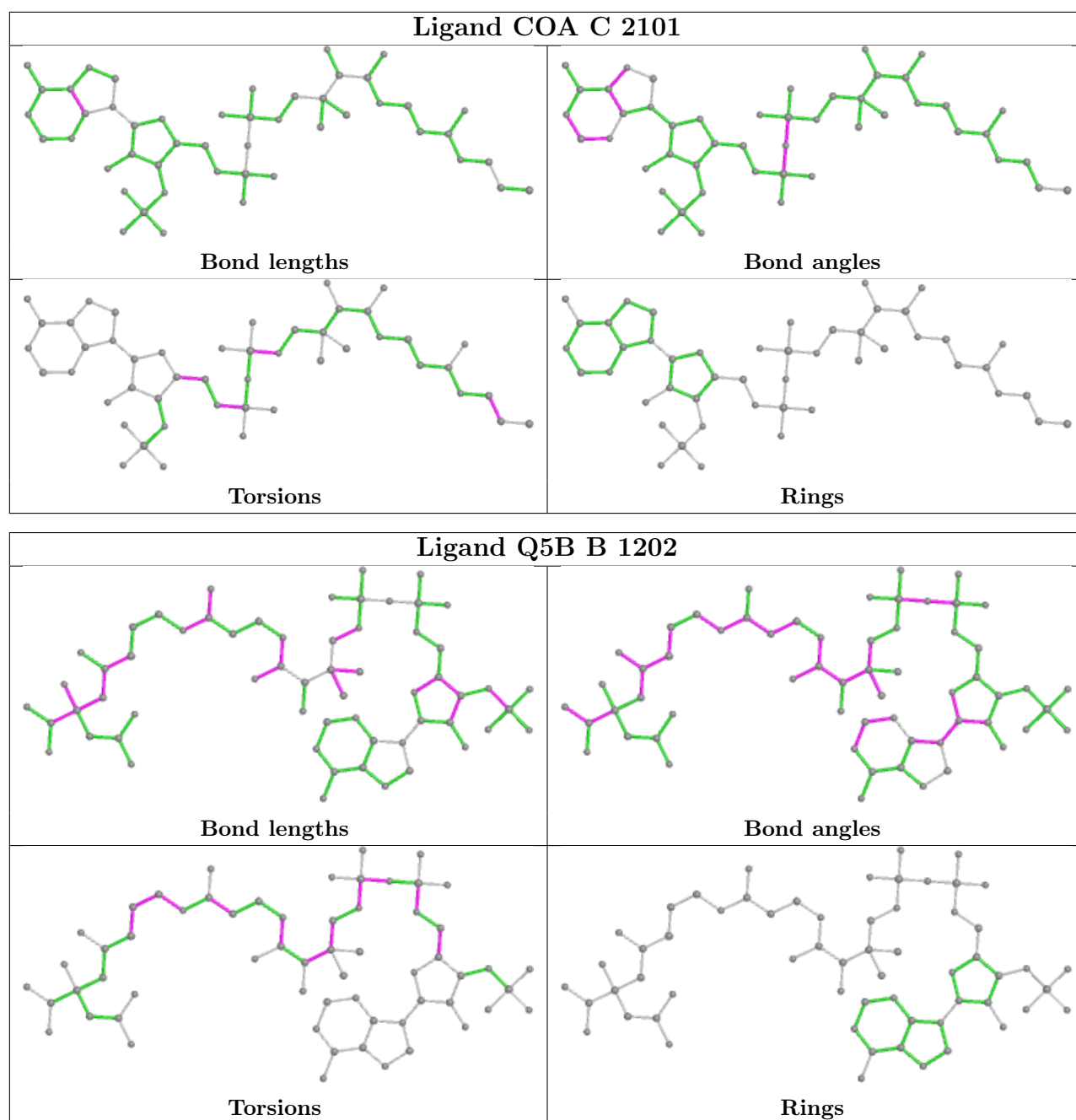
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents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











## 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.

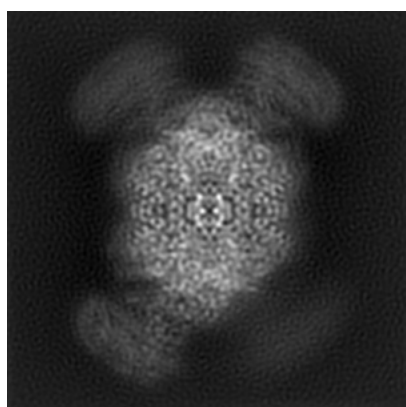
## 6 Map visualisation [i](#)

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.

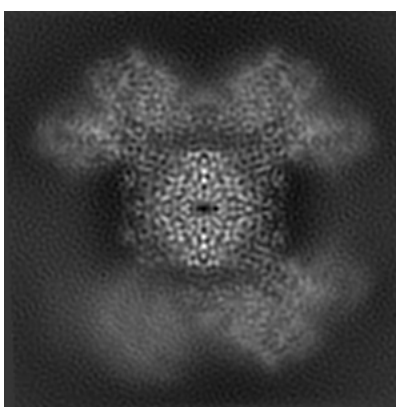
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

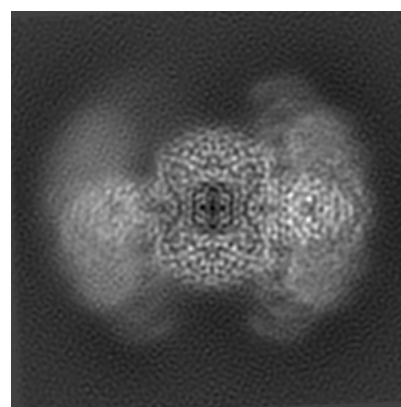
#### 6.1.1 Primary map



X



Y

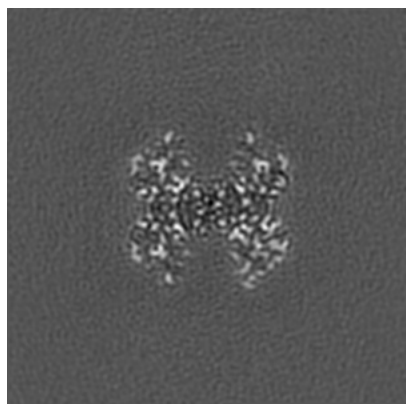


Z

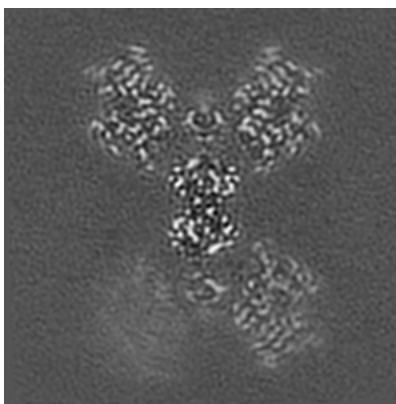
The images above show the map projected in three orthogonal directions.

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

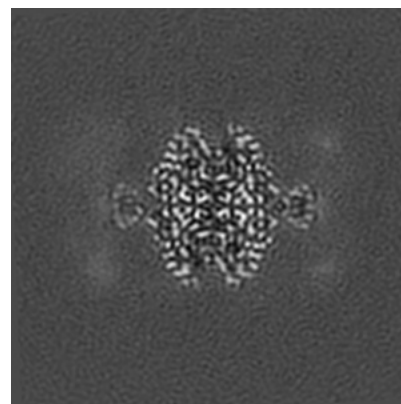
#### 6.2.1 Primary map



X Index: 110



Y Index: 110

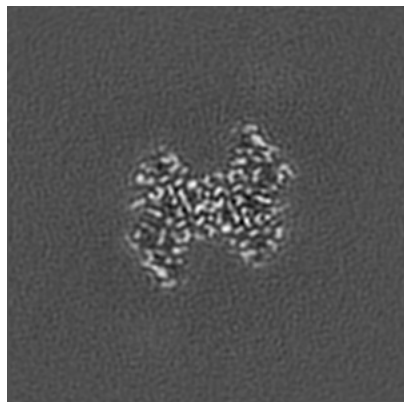


Z Index: 110

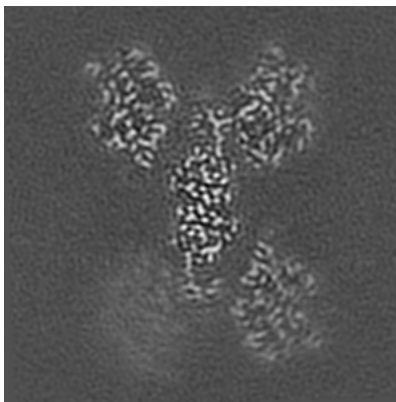
The images above show central slices of the map in three orthogonal directions.

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

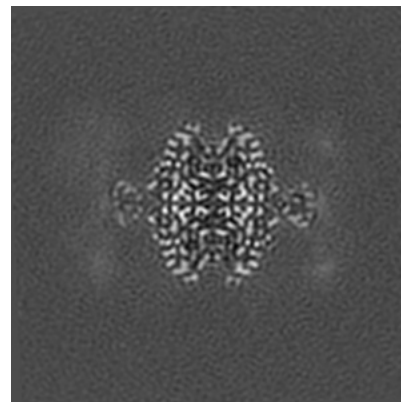
### 6.3.1 Primary map



X Index: 119



Y Index: 106

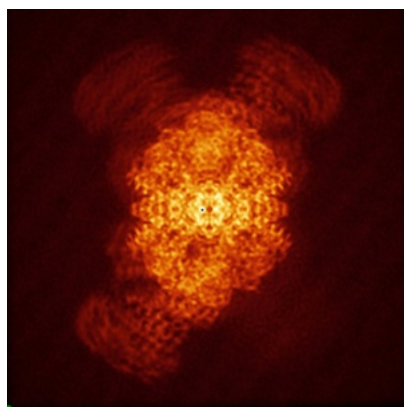


Z Index: 109

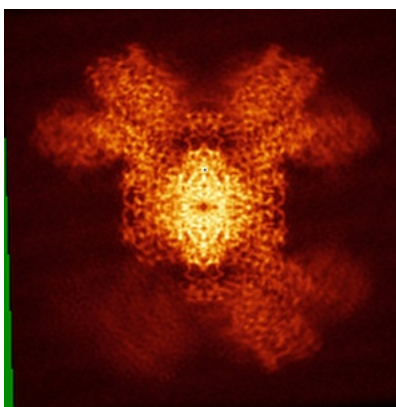
The images above show the largest variance slices of the map in three orthogonal directions.

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

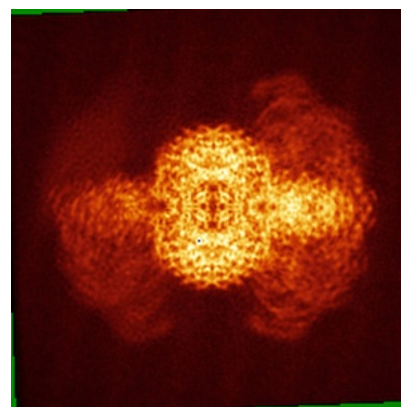
### 6.4.1 Primary map



X



Y



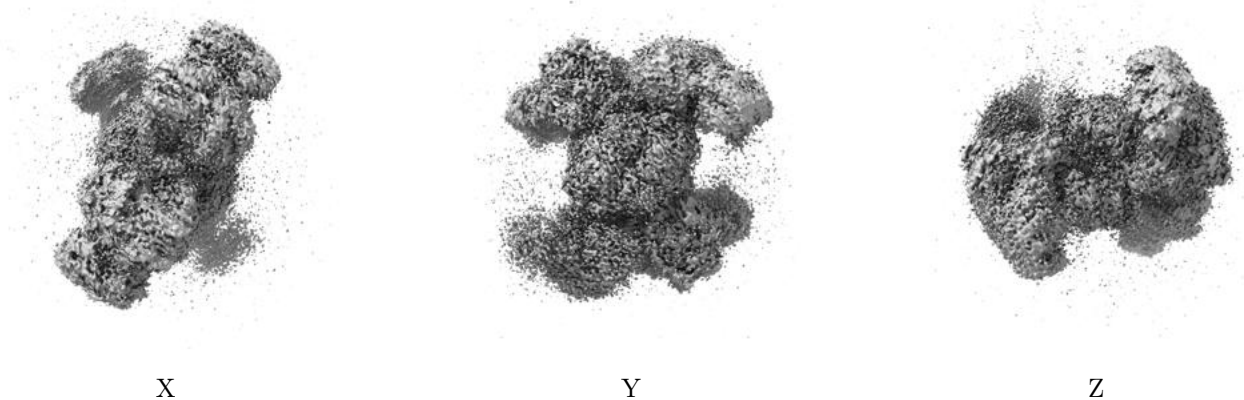
Z

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.

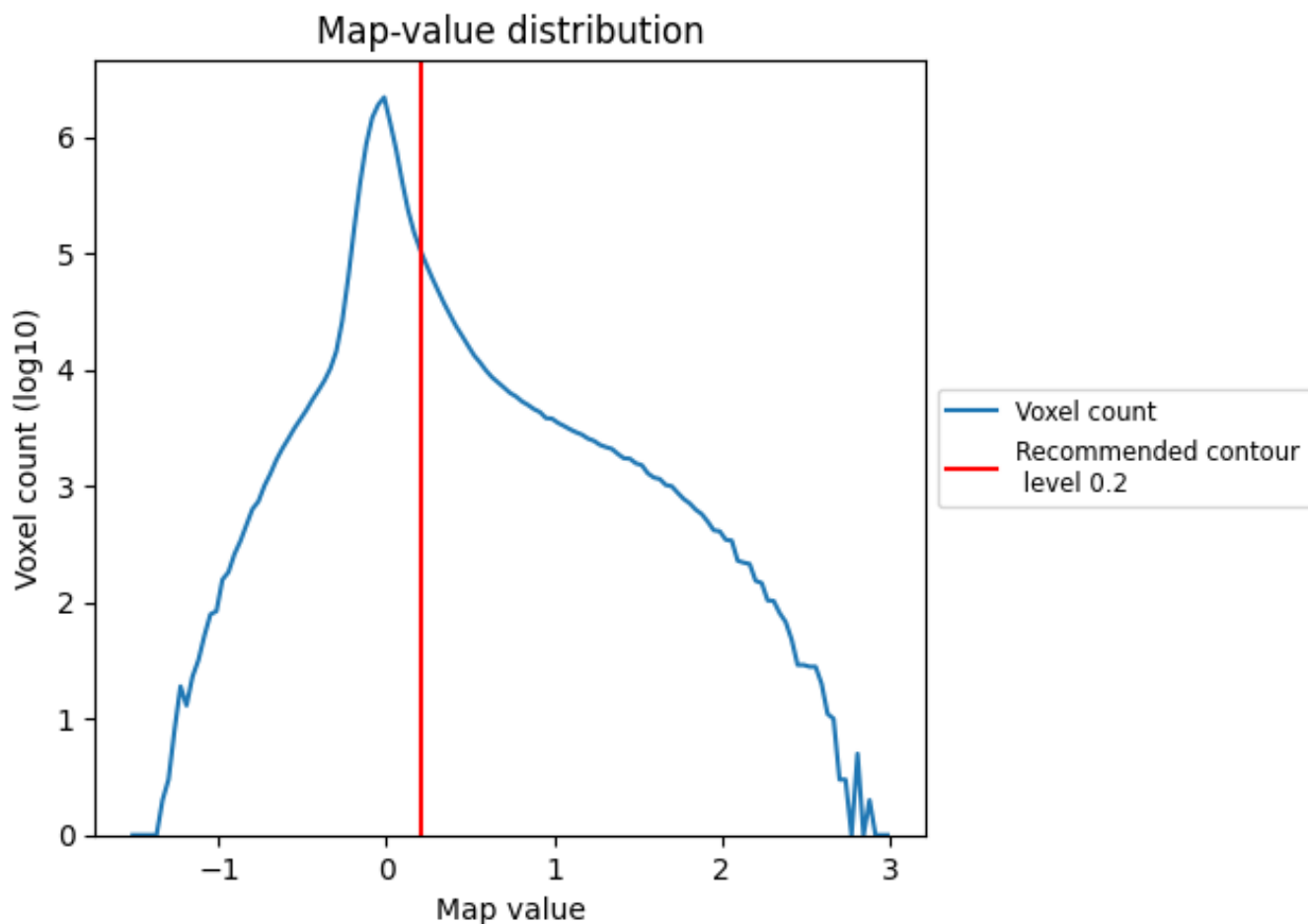
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

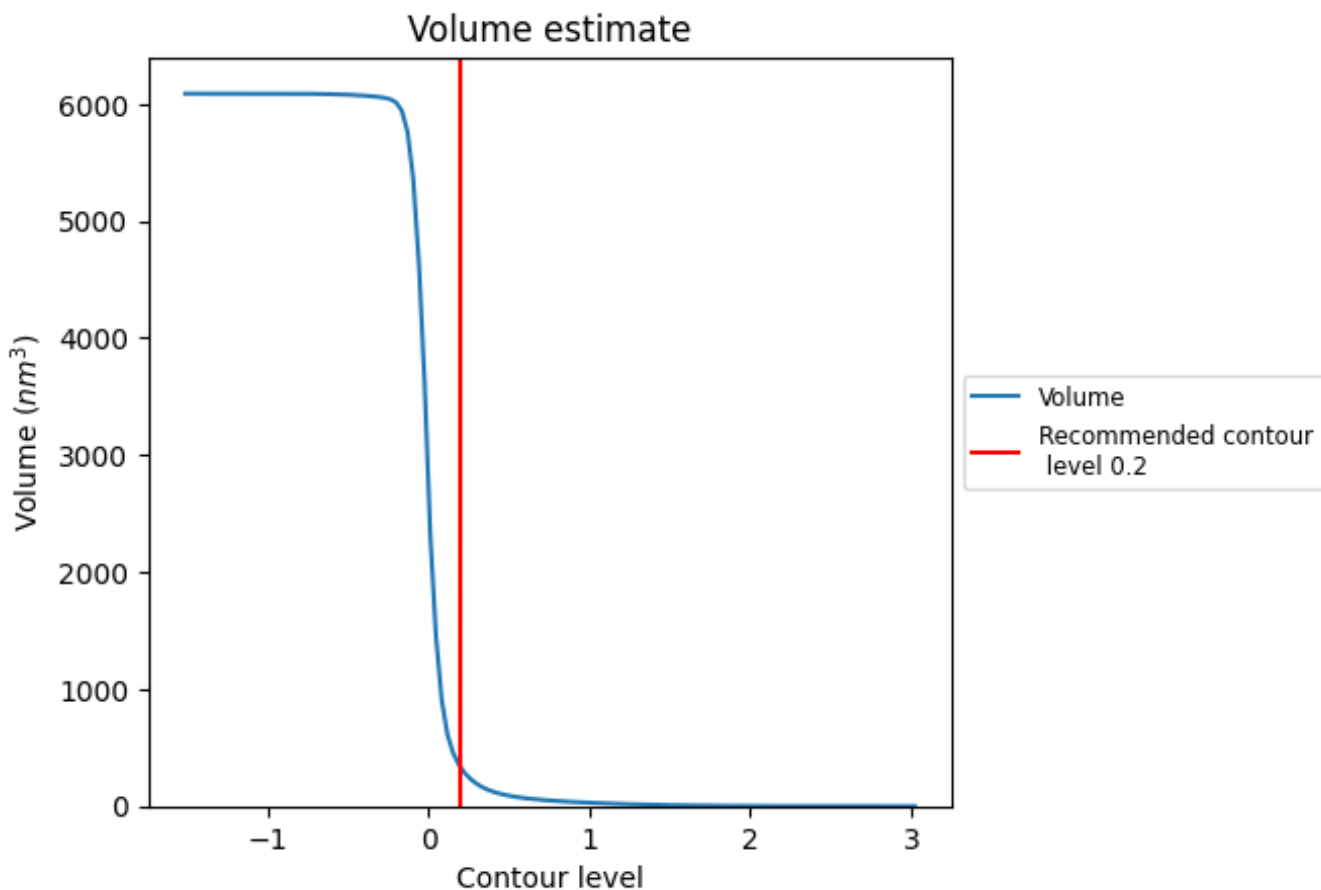
This section contains the results of statistical analysis of the map.

### 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.

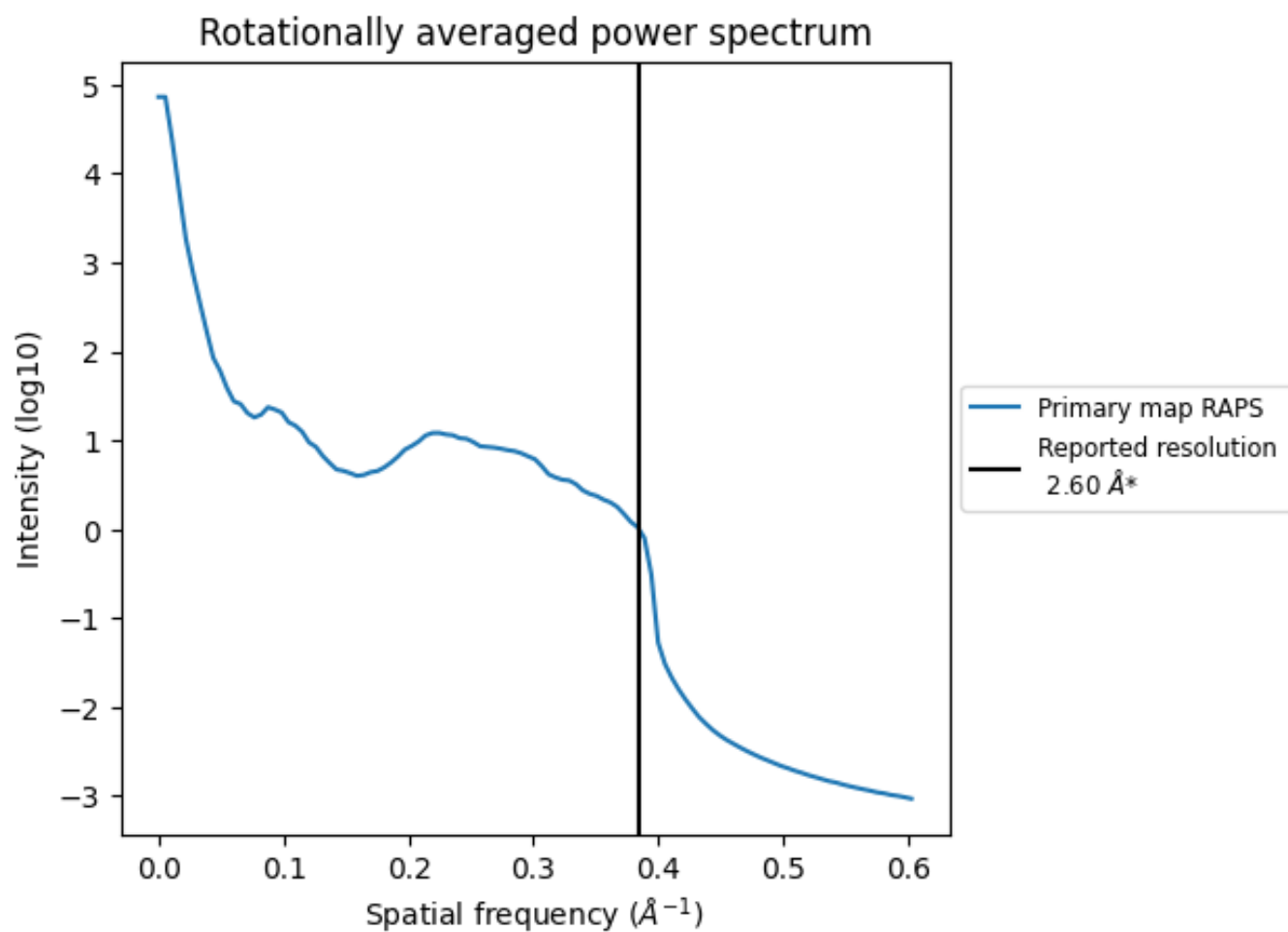
## 7.2 Volume estimate [i](#)



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  $0.385 \text{\AA}^{-1}$

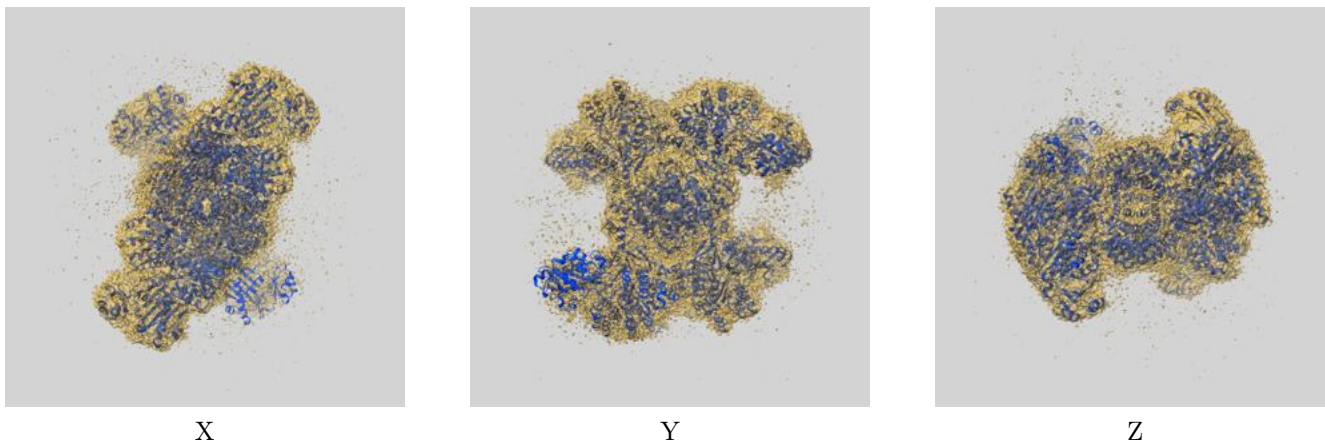
## 8 Fourier-Shell correlation

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

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

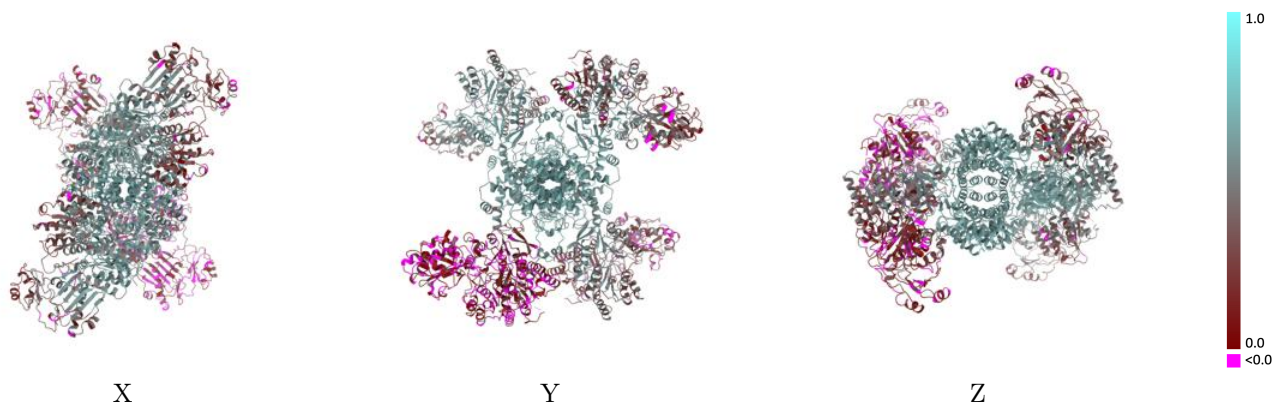
This section contains information regarding the fit between EMDB map EMD-24511 and PDB model 7RKZ. Per-residue inclusion information can be found in section 3 on page 7.

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



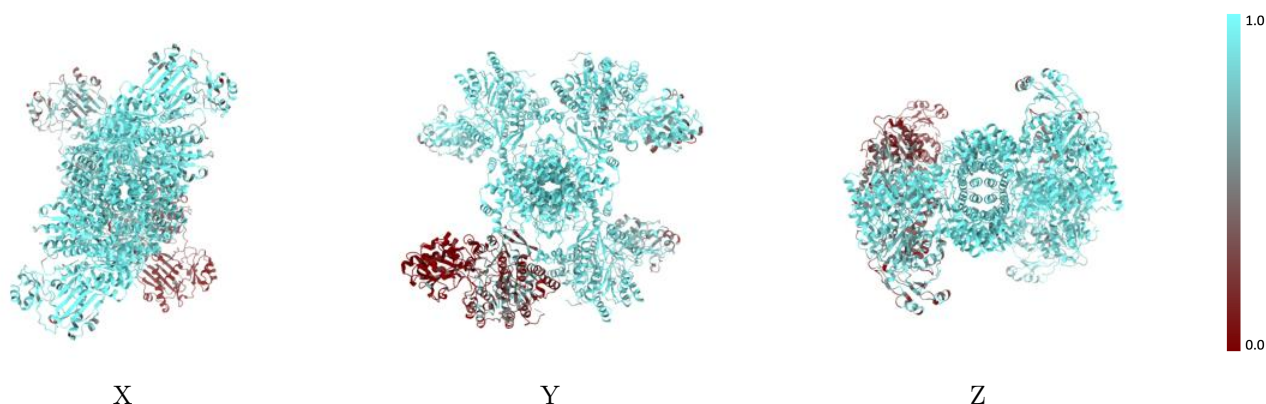
The images above show the 3D surface view of the map at the recommended contour level 0.2 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



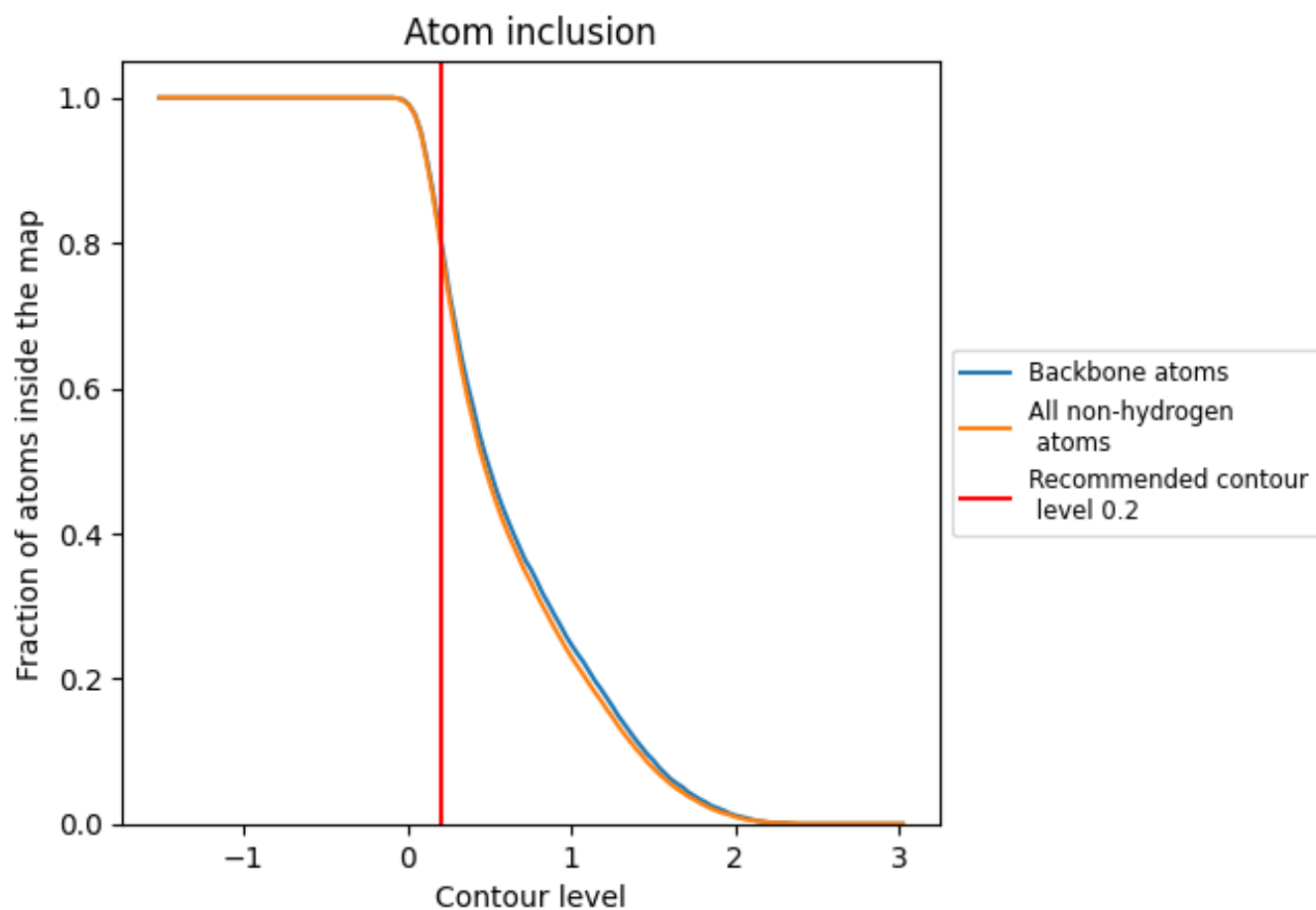
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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

