Full wwPDB EM Validation Report ⓘ

Oct 13, 2024 – 03:07 am BST

PDB ID	:	8C1Q
EMDB ID	:	EMD-16380
Title	:	Resting state homomeric GluA1 AMPA receptor in complex with TARP gamma 3
Authors	:	Zhang, D.; Ivica, J.; Krieger, J.M.; Ho, H.; Yamashita, K.; Cais, O.; Greger, I.
Deposited on	:	2022-12-21
Resolution	:	2.82 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:

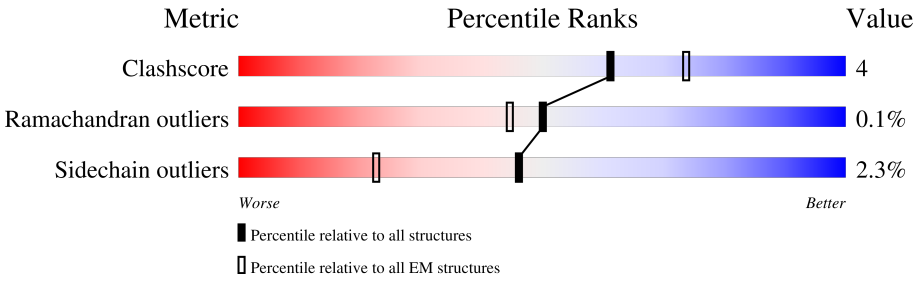
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.82 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	915	40% · 56%
1	B	915	16% 38% 5% 56%
1	C	915	18% 37% 7% 56%
1	D	915	39% · 56%
2	E	314	9% 50% 5% · 44%
2	F	314	10% 52% · 44%
2	G	314	14% 50% 5% · 44%
2	H	314	8% 52% · 44%

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 18462 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 Glutamate receptor 1 flip isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	405	Total	C	N	O	S	4	0
			3179	2064	515	580	20		
1	B	400	Total	C	N	O	S	5	0
			3012	1971	480	542	19		
1	C	406	Total	C	N	O	S	4	0
			3116	2025	500	573	18		
1	D	400	Total	C	N	O	S	5	0
			3152	2050	508	574	20		

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	ASP	-	insertion	UNP P19490
A	-5	TYR	-	insertion	UNP P19490
A	-4	LYS	-	insertion	UNP P19490
A	-3	ASP	-	insertion	UNP P19490
A	-2	ASP	-	insertion	UNP P19490
A	-1	ASP	-	insertion	UNP P19490
A	0	ASP	-	insertion	UNP P19490
A	1	LYS	-	insertion	UNP P19490
B	-6	ASP	-	insertion	UNP P19490
B	-5	TYR	-	insertion	UNP P19490
B	-4	LYS	-	insertion	UNP P19490
B	-3	ASP	-	insertion	UNP P19490
B	-2	ASP	-	insertion	UNP P19490
B	-1	ASP	-	insertion	UNP P19490
B	0	ASP	-	insertion	UNP P19490
B	1	LYS	-	insertion	UNP P19490
C	-6	ASP	-	insertion	UNP P19490
C	-5	TYR	-	insertion	UNP P19490
C	-4	LYS	-	insertion	UNP P19490
C	-3	ASP	-	insertion	UNP P19490
C	-2	ASP	-	insertion	UNP P19490
C	-1	ASP	-	insertion	UNP P19490

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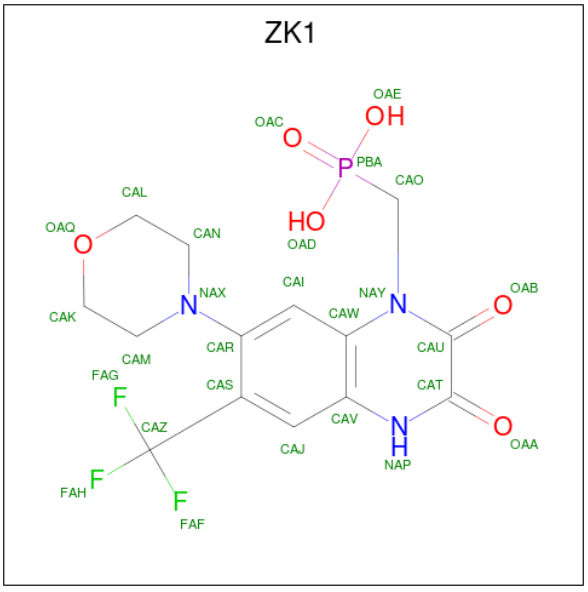
Chain	Residue	Modelled	Actual	Comment	Reference
C	0	ASP	-	insertion	UNP P19490
C	1	LYS	-	insertion	UNP P19490
D	-6	ASP	-	insertion	UNP P19490
D	-5	TYR	-	insertion	UNP P19490
D	-4	LYS	-	insertion	UNP P19490
D	-3	ASP	-	insertion	UNP P19490
D	-2	ASP	-	insertion	UNP P19490
D	-1	ASP	-	insertion	UNP P19490
D	0	ASP	-	insertion	UNP P19490
D	1	LYS	-	insertion	UNP P19490

- Molecule 2 is a protein called Voltage-dependent calcium channel gamma-3 subunit.

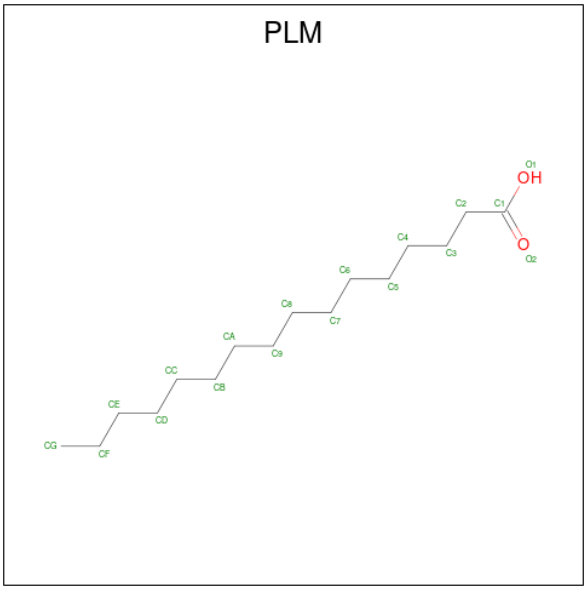
Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	176	Total	C	N	O	S	0	0
			1367	894	229	236	8		
2	F	176	Total	C	N	O	S	0	0
			1367	894	229	236	8		
2	G	176	Total	C	N	O	S	0	0
			1367	894	229	236	8		
2	H	176	Total	C	N	O	S	0	0
			1367	894	229	236	8		

- Molecule 3 is {[7-morpholin-4-yl-2,3-dioxo-6-(trifluoromethyl)-3,4-dihydroquinoxalin-1(2H)-yl]methyl}phosphonic acid (three-letter code: ZK1) (formula: $C_{14}H_{15}F_3N_3O_6P$).



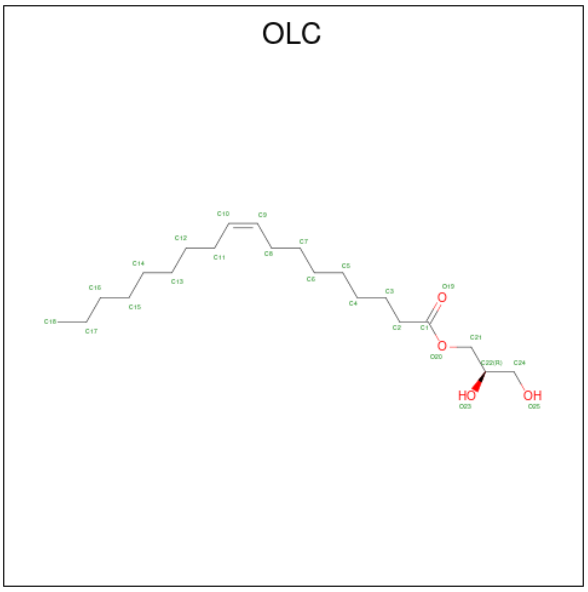
Mol	Chain	Residues	Atoms						AltConf
3	A	1	Total	C	F	N	O	P	0
			27	14	3	3	6	1	
3	B	1	Total	C	F	N	O	P	0
			27	14	3	3	6	1	
3	C	1	Total	C	F	N	O	P	0
			27	14	3	3	6	1	
3	D	1	Total	C	F	N	O	P	0
			27	14	3	3	6	1	

- Molecule 4 is PALMITIC ACID (three-letter code: PLM) (formula: $C_{16}H_{32}O_2$).



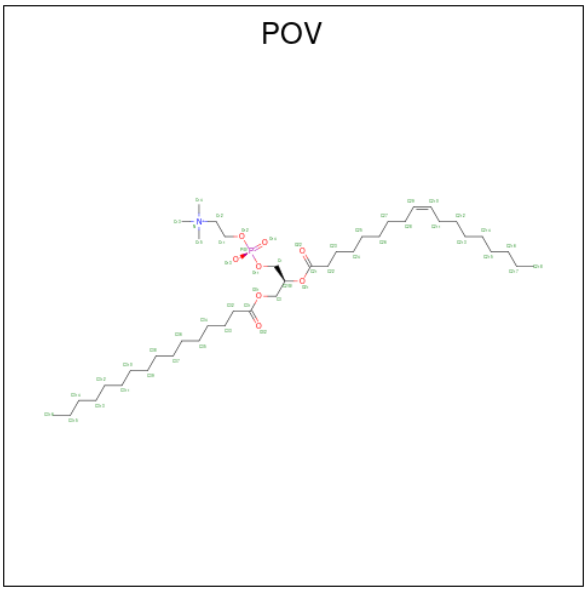
Mol	Chain	Residues	Atoms			AltConf
4	A	1	Total	C	O	0
			18	16	2	
4	B	1	Total	C	O	0
			18	16	2	
4	C	1	Total	C	O	0
			18	16	2	
4	D	1	Total	C	O	0
			18	16	2	

- Molecule 5 is (2R)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLC) (formula: $C_{21}H_{40}O_4$).



Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			25	21	4	
5	B	1	Total	C	O	0
			25	21	4	
5	C	1	Total	C	O	0
			25	21	4	
5	D	1	Total	C	O	0
			25	21	4	

- Molecule 6 is (2S)-3-(hexadecanoyloxy)-2-[(9Z)-octadec-9-enoyloxy]propyl 2-(trimethylammonio)ethyl phosphate (three-letter code: POV) (formula: $C_{42}H_{82}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
6	E	1	Total	C	N	O	P	0
			37	27	1	8	1	
6	F	1	Total	C	N	O	P	0
			39	29	1	8	1	
6	F	1	Total	C	N	O	P	0
			39	29	1	8	1	
6	G	1	Total	C	N	O	P	0
			37	27	1	8	1	
6	H	1	Total	C	N	O	P	0
			39	29	1	8	1	
6	H	1	Total	C	N	O	P	0
			39	29	1	8	1	

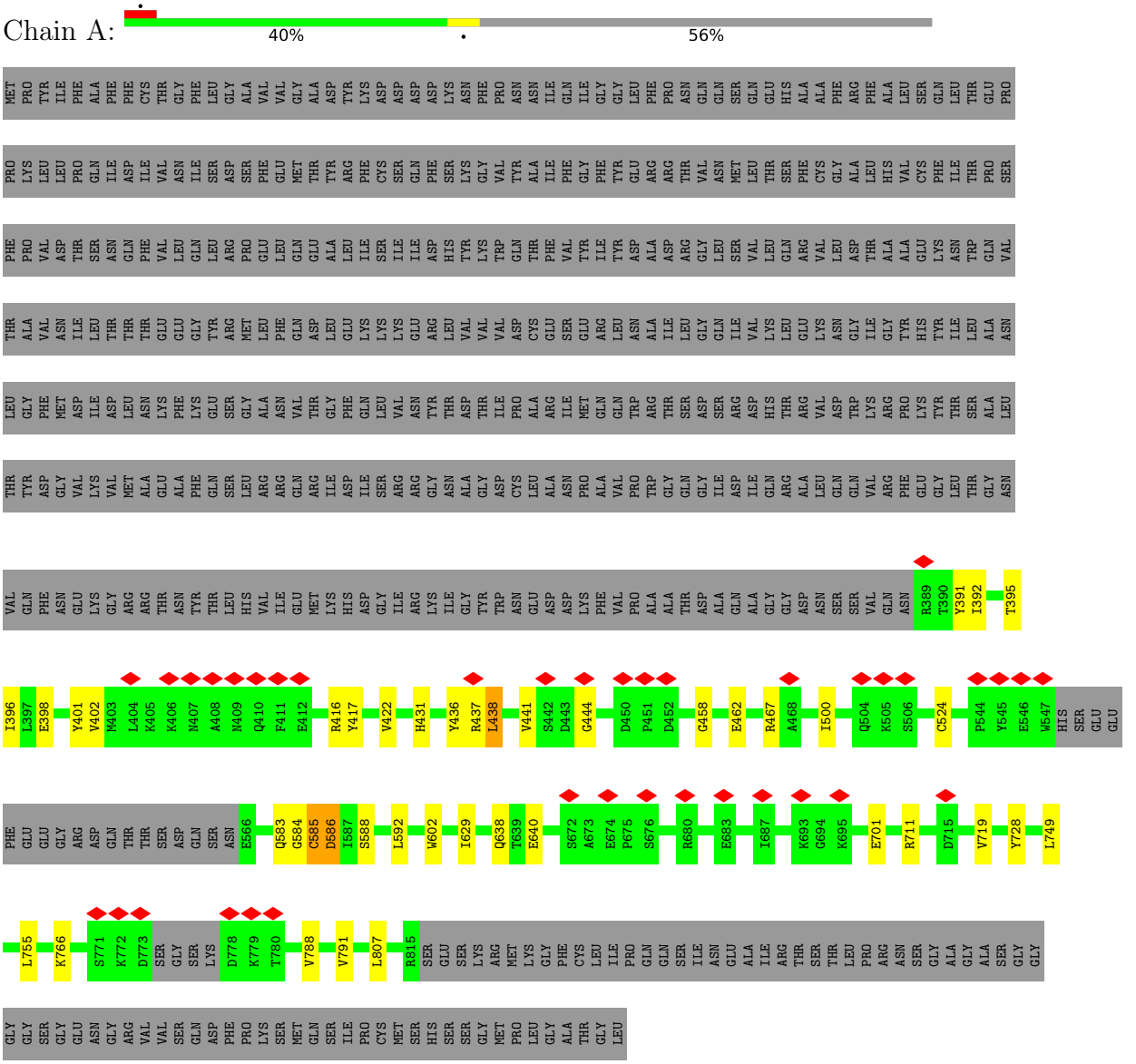
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		AltConf
7	A	6	Total	O	0
			6	6	
7	B	5	Total	O	0
			5	5	
7	C	5	Total	O	0
			5	5	
7	D	6	Total	O	0
			6	6	
7	F	1	Total	O	0
			1	1	
7	G	1	Total	O	0
			1	1	
7	H	1	Total	O	0
			1	1	

3 Residue-property plots (i)

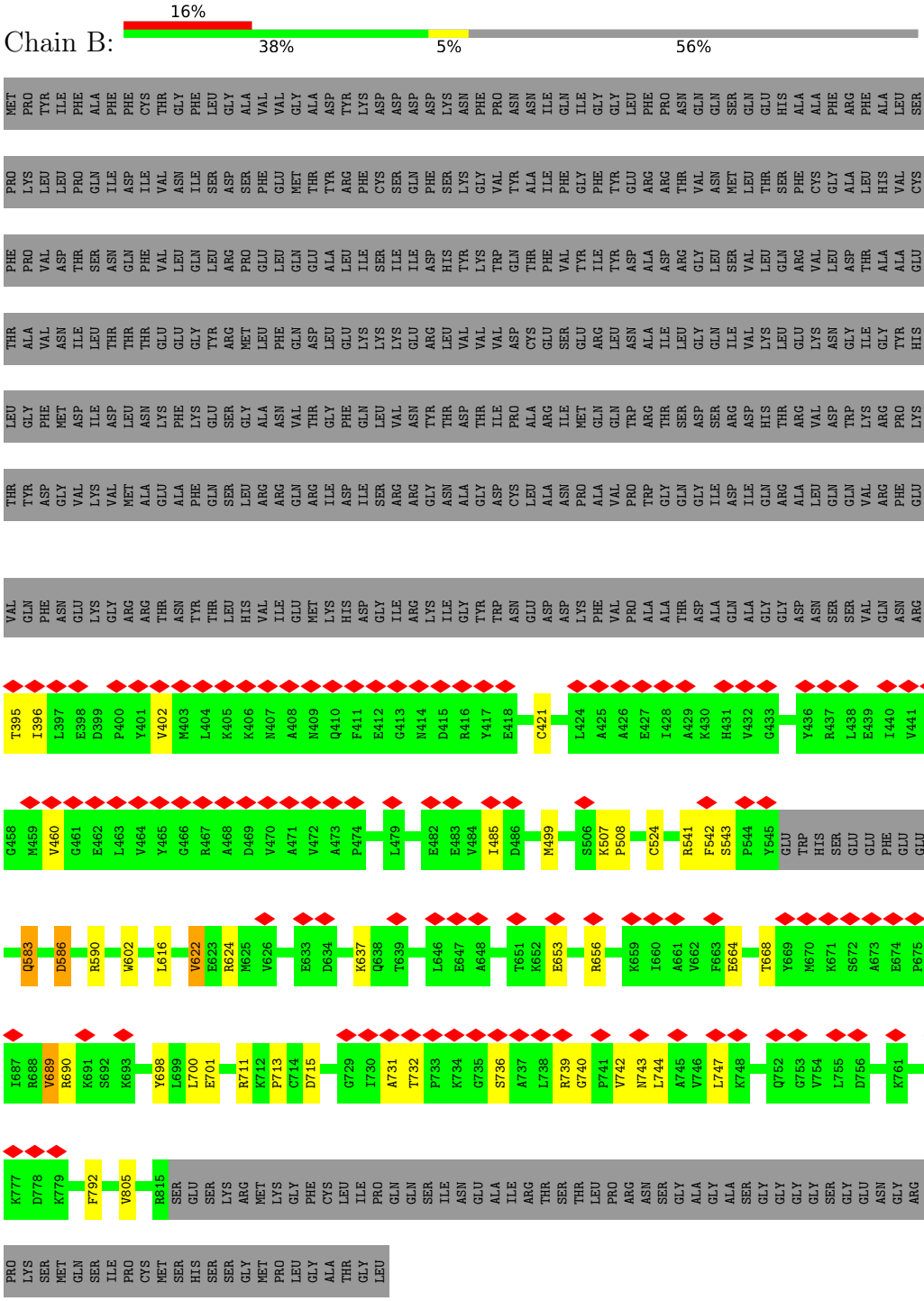
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Glutamate receptor 1 flip isoform



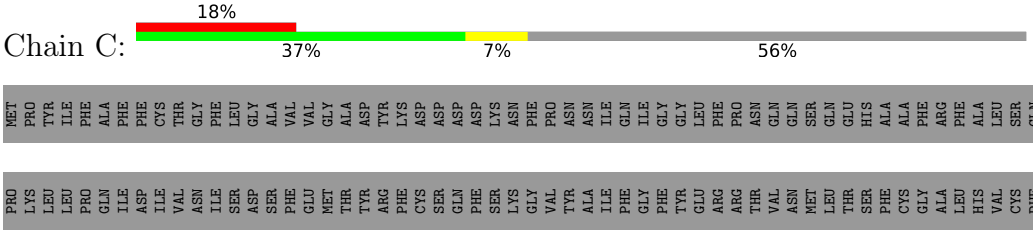
• Molecule 1: Glutamate receptor 1 flip isoform

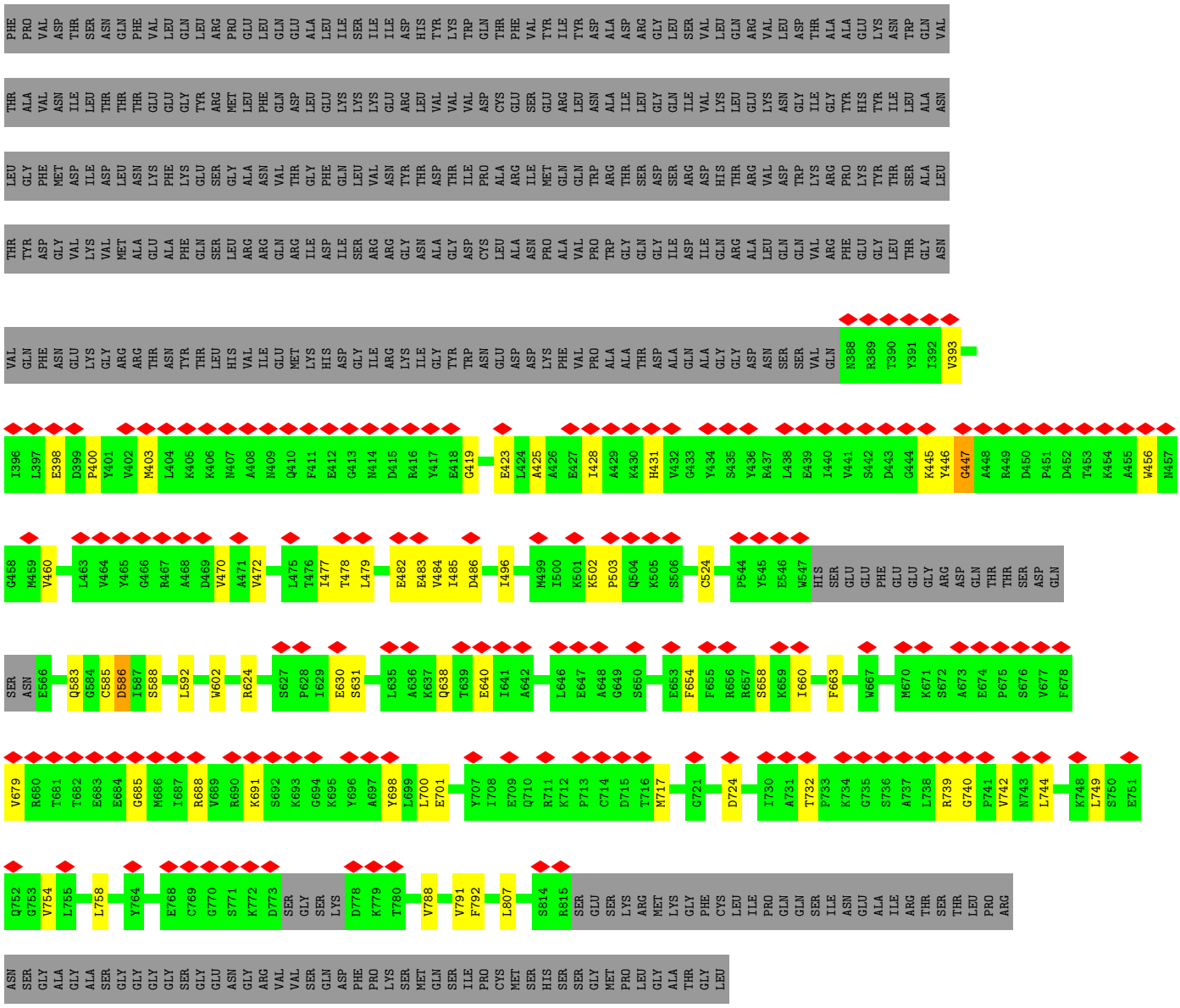
Chain B:



• Molecule 1: Glutamate receptor 1 flip isoform

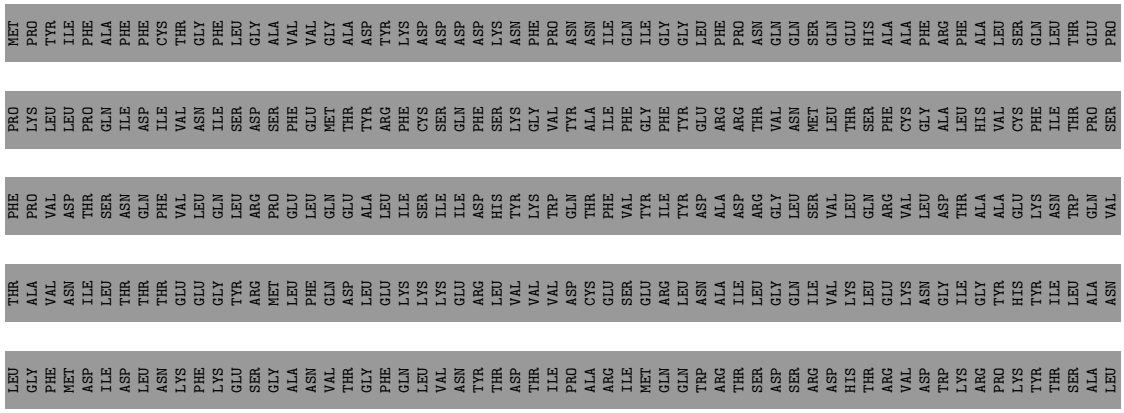
Chain C:

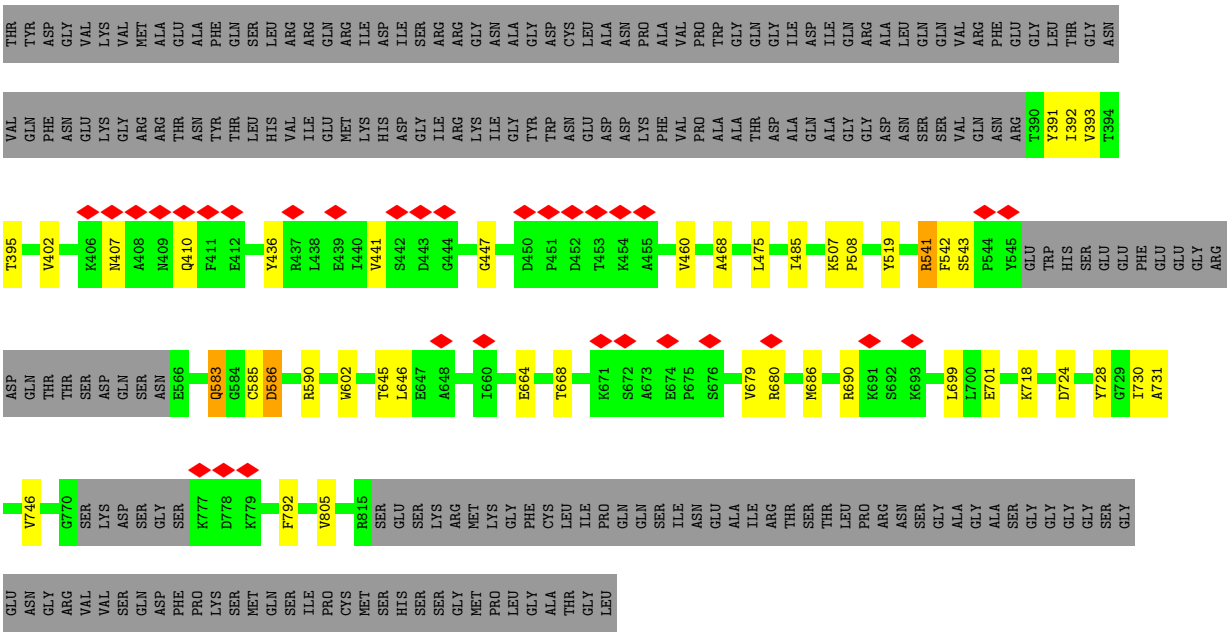




• Molecule 1: Glutamate receptor 1 flip isoform

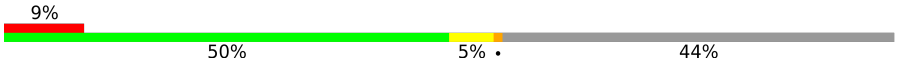
Chain D:

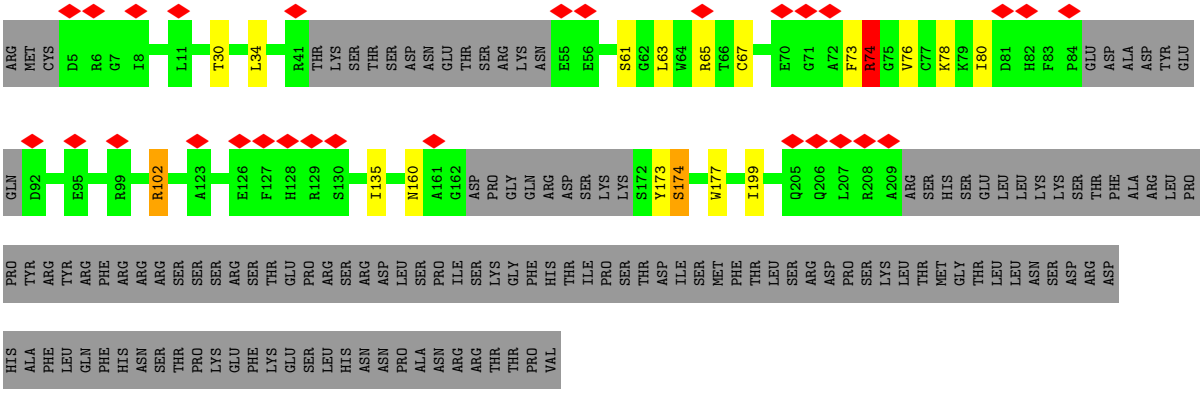




• Molecule 2: Voltage-dependent calcium channel gamma-3 subunit

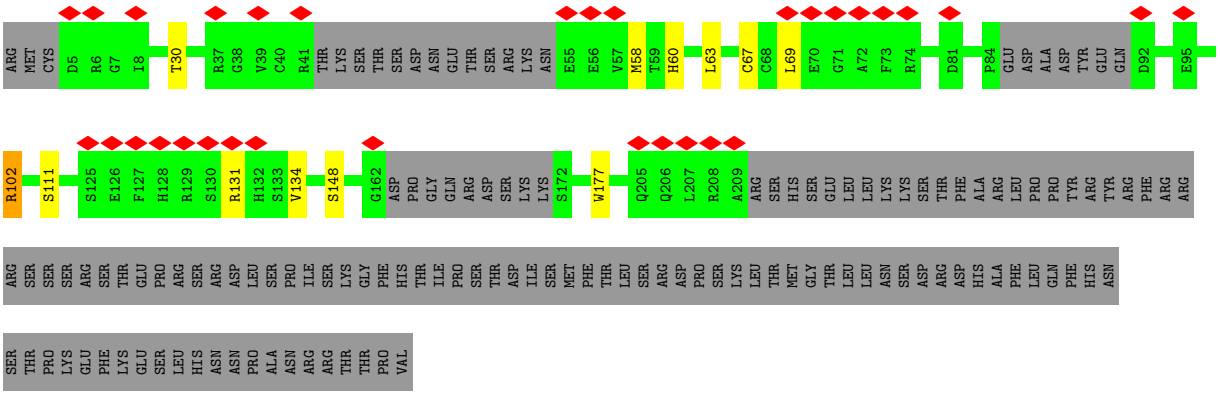
Chain E:





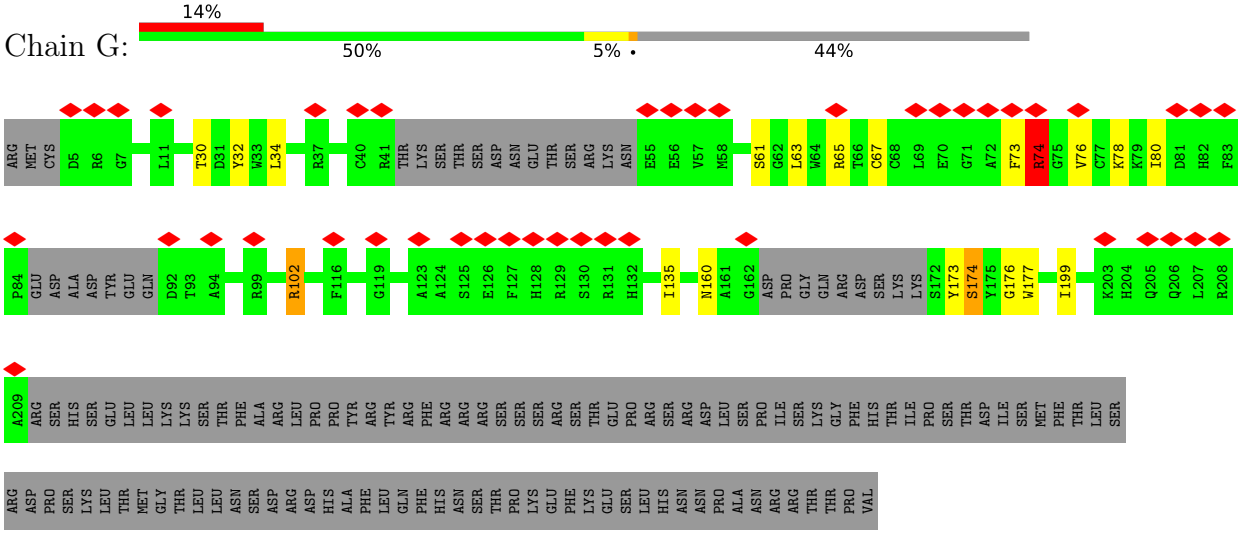
• Molecule 2: Voltage-dependent calcium channel gamma-3 subunit

Chain F:



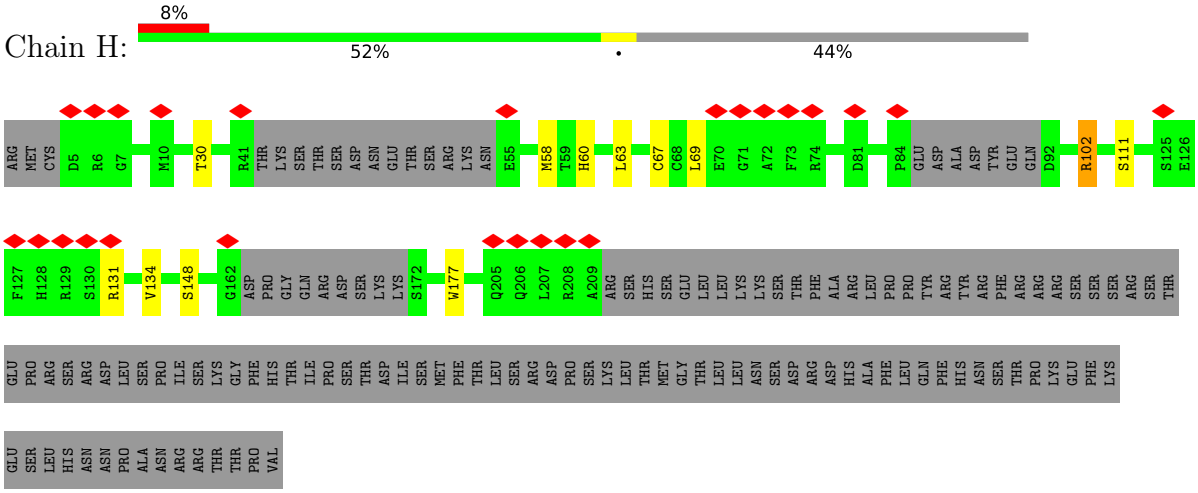
• Molecule 2: Voltage-dependent calcium channel gamma-3 subunit

Chain G:



• Molecule 2: Voltage-dependent calcium channel gamma-3 subunit

Chain H:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	252544	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.088	Depositor
Minimum map value	-0.042	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.014	Depositor
Map size (Å)	241.68, 241.68, 241.68	wwPDB
Map dimensions	228, 228, 228	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: OLC, POV, ZK1, PLM

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	0.48	0/3249	0.74	0/4389
1	B	0.48	0/3083	0.74	2/4185 (0.0%)
1	C	0.47	0/3186	0.71	0/4321
1	D	0.50	0/3225	0.75	0/4355
2	E	0.44	0/1399	0.69	1/1891 (0.1%)
2	F	0.42	0/1399	0.65	0/1891
2	G	0.41	0/1399	0.68	1/1891 (0.1%)
2	H	0.42	0/1399	0.65	0/1891
All	All	0.46	0/18339	0.72	4/24814 (0.0%)

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	1
1	B	0	1
1	D	0	4
2	E	0	1
2	G	0	1
All	All	0	8

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	74	ARG	NE-CZ-NH1	6.25	123.42	120.30
2	G	74	ARG	NE-CZ-NH1	5.96	123.28	120.30
1	B	684	GLU	CB-CA-C	5.78	121.97	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	583	GLN	CB-CA-C	5.04	120.48	110.40

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	416	ARG	Sidechain
1	B	541	ARG	Sidechain
1	D	541	ARG	Sidechain
1	D	583	GLN	Mainchain
1	D	680	ARG	Sidechain
2	E	65	ARG	Sidechain
2	G	65	ARG	Sidechain

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	3179	0	3176	26	0
1	B	3012	0	2910	30	0
1	C	3116	0	3034	45	0
1	D	3152	0	3161	28	0
2	E	1367	0	1355	10	0
2	F	1367	0	1355	7	0
2	G	1367	0	1355	12	0
2	H	1367	0	1355	8	0
3	A	27	0	13	0	0
3	B	27	0	13	0	0
3	C	27	0	13	1	0
3	D	27	0	13	0	0
4	A	18	0	31	0	0
4	B	18	0	31	0	0
4	C	18	0	31	0	0
4	D	18	0	31	0	0
5	A	25	0	40	0	0
5	B	25	0	40	0	0
5	C	25	0	40	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	D	25	0	40	0	0
6	E	37	0	46	0	0
6	F	78	0	100	0	0
6	G	37	0	46	0	0
6	H	78	0	100	0	0
7	A	6	0	0	0	0
7	B	5	0	0	0	0
7	C	5	0	0	0	0
7	D	6	0	0	0	0
7	F	1	0	0	0	0
7	G	1	0	0	0	0
7	H	1	0	0	0	0
All	All	18462	0	18329	153	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 4.

All (153) 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:A:395:THR:HG21	1:A:402:VAL:HG21	1.56	0.86
1:B:690:ARG:NH1	1:B:715:ASP:OD1	2.18	0.75
1:A:711:ARG:NH2	1:A:766:LYS:O	2.20	0.74
2:E:34:LEU:HD12	2:E:174:SER:O	1.97	0.64
1:C:701:GLU:OE1	3:C:901:ZK1:HAN	1.98	0.63
2:G:34:LEU:HD12	2:G:174:SER:O	1.98	0.63
1:B:698:TYR:CD2	1:B:700:LEU:HD23	2.35	0.61
1:C:654:PHE:O	1:C:658:SER:OG	2.17	0.61
1:C:700:LEU:HD12	1:C:701:GLU:O	2.01	0.61
1:B:700:LEU:HD12	1:B:701:GLU:O	2.02	0.60
1:D:395:THR:CG2	1:D:402:VAL:HG21	2.30	0.60
1:A:749:LEU:HB3	1:A:755:LEU:CD1	2.32	0.60
1:C:447:GLY:CA	1:C:460:VAL:HG22	2.32	0.59
1:C:698:TYR:CD2	1:C:700:LEU:HD23	2.38	0.59
2:G:135:ILE:HD13	2:G:199:ILE:HG21	1.85	0.59
1:C:660:ILE:HD11	1:C:663:PHE:CE1	2.37	0.58
1:C:638:GLN:OE1	1:C:640:GLU:N	2.35	0.58
1:C:679:VAL:HG12	1:C:688:ARG:HH12	1.68	0.58
2:E:73:PHE:O	2:E:76:VAL:HB	2.04	0.57
1:B:586[A]:ASP:OD1	1:B:586[A]:ASP:N	2.28	0.57
2:G:73:PHE:O	2:G:76:VAL:HB	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:30:THR:HG21	2:G:177:TRP:HH2	1.71	0.55
2:E:34:LEU:HD22	2:E:160:ASN:ND2	2.22	0.55
1:D:586[B]:ASP:OD1	1:D:586[B]:ASP:N	2.24	0.55
1:C:398:GLU:HG3	1:C:446:TYR:OH	2.06	0.55
2:E:61:SER:OG	2:E:80:ILE:HD11	2.07	0.54
2:G:34:LEU:HD22	2:G:160:ASN:ND2	2.22	0.54
2:F:30:THR:HG21	2:F:177:TRP:HH2	1.72	0.54
1:A:584[B]:GLY:O	1:A:585[B]:CYS:HB3	2.07	0.54
2:E:30:THR:HG21	2:E:177:TRP:HH2	1.71	0.54
2:E:135:ILE:HD13	2:E:199:ILE:HG21	1.89	0.54
1:D:646:LEU:CD1	1:D:679:VAL:HG23	2.38	0.54
1:C:679:VAL:HG12	1:C:688:ARG:NH1	2.23	0.53
2:H:30:THR:HG21	2:H:177:TRP:HH2	1.74	0.53
1:A:638:GLN:OE1	1:A:640:GLU:N	2.41	0.53
2:G:61:SER:OG	2:G:80:ILE:HD11	2.09	0.53
1:B:686:MET:O	1:B:689:VAL:HG12	2.10	0.52
1:A:431:HIS:CE1	1:A:749:LEU:HD21	2.45	0.52
1:C:456:TRP:CE3	1:C:460:VAL:HG21	2.45	0.52
1:A:392:ILE:HD11	1:A:467:ARG:O	2.10	0.51
1:C:447:GLY:HA2	1:C:460:VAL:HG22	1.91	0.51
1:C:586[A]:ASP:OD1	1:C:586[A]:ASP:N	2.42	0.51
1:D:392:ILE:HG23	1:D:468:ALA:HA	1.92	0.51
1:C:447:GLY:HA3	1:C:460:VAL:HG13	1.92	0.50
1:D:586[A]:ASP:OD1	1:D:586[A]:ASP:N	2.22	0.50
1:A:395:THR:CG2	1:A:402:VAL:HG21	2.36	0.50
1:A:586[A]:ASP:OD1	1:A:586[A]:ASP:N	2.39	0.50
1:B:698:TYR:CE2	1:B:700:LEU:HD23	2.46	0.50
1:B:499:MET:HE3	1:B:700:LEU:HD21	1.93	0.49
1:B:402:VAL:CG2	1:B:421:CYS:SG	3.00	0.49
1:A:583:GLN:HG3	1:D:602:TRP:CG	2.47	0.49
1:C:472:VAL:O	1:C:472:VAL:HG13	2.12	0.49
1:C:788:VAL:O	1:C:791:VAL:HG12	2.13	0.49
1:B:740:GLY:O	1:B:744:LEU:HD23	2.11	0.49
1:A:436:TYR:HE2	1:A:438:LEU:HD12	1.78	0.49
1:B:747:LEU:HD11	1:C:477:ILE:HG22	1.93	0.49
1:B:402:VAL:HG23	1:B:421:CYS:SG	2.53	0.49
2:F:30:THR:HG21	2:F:177:TRP:CH2	2.48	0.49
1:C:740:GLY:O	1:C:744:LEU:HD23	2.13	0.48
1:A:586[B]:ASP:OD1	1:A:586[B]:ASP:N	2.45	0.48
1:A:788:VAL:O	1:A:791:VAL:HG12	2.13	0.48
1:C:503:PRO:HD3	1:C:717:MET:SD	2.54	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:585[B]:CYS:SG	1:C:586[B]:ASP:N	2.86	0.48
2:H:30:THR:HG21	2:H:177:TRP:CH2	2.49	0.47
1:C:679:VAL:HG11	1:C:685:GLY:HA2	1.97	0.47
1:B:602:TRP:CG	1:C:583:GLN:HG3	2.49	0.47
1:C:431:HIS:CE1	1:C:749:LEU:HD11	2.49	0.47
1:C:479:LEU:O	1:C:483:GLU:OE1	2.33	0.47
1:D:686:MET:SD	1:D:690:ARG:CZ	3.02	0.47
1:D:645:THR:HG22	1:D:699:LEU:HB2	1.96	0.47
1:B:711:ARG:NH2	1:B:766:LYS:O	2.45	0.47
1:B:732:THR:CG2	1:B:736:SER:HB3	2.44	0.47
1:C:496:ILE:HD12	1:C:724:ASP:HB3	1.97	0.47
2:G:34:LEU:HD11	2:G:173:TYR:HB2	1.95	0.47
1:A:395:THR:HG22	1:A:396:ILE:N	2.30	0.47
1:A:701:GLU:OE1	1:A:728:TYR:OH	2.30	0.46
1:C:485:ILE:HG23	1:C:732:THR:O	2.15	0.46
1:D:485:ILE:HD12	1:D:731:ALA:HB1	1.97	0.46
1:D:585[B]:CYS:HB2	1:D:586[B]:ASP:OD1	2.14	0.46
2:E:34:LEU:HD11	2:E:173:TYR:HB2	1.96	0.46
1:D:395:THR:HG23	1:D:402:VAL:HG21	1.96	0.46
2:E:30:THR:HG21	2:E:177:TRP:CH2	2.50	0.46
1:A:391:TYR:O	1:A:436:TYR:HA	2.14	0.46
2:G:30:THR:HG21	2:G:177:TRP:CH2	2.50	0.46
1:D:701:GLU:OE1	1:D:728:TYR:OH	2.28	0.46
1:D:585[B]:CYS:HB2	1:D:586[B]:ASP:H	1.47	0.46
1:D:393:VAL:HG23	1:D:436:TYR:HB2	1.98	0.46
1:D:686:MET:SD	1:D:690:ARG:NH1	2.89	0.45
1:C:419:GLY:O	1:C:423:GLU:OE1	2.34	0.45
1:C:586[B]:ASP:N	1:C:586[B]:ASP:OD1	2.48	0.45
1:D:407:ASN:HB2	1:D:410:GLN:HB3	1.99	0.45
1:B:524:CYS:HB3	1:C:792:PHE:CE1	2.52	0.45
1:A:602:TRP:CG	1:B:583:GLN:HG3	2.52	0.45
1:A:402:VAL:HG22	1:A:422:VAL:HG23	1.99	0.45
2:H:111:SER:HB2	2:H:148:SER:OG	2.16	0.45
2:G:74:ARG:NH1	2:G:74:ARG:HG3	2.31	0.44
1:B:622:VAL:HG22	1:C:624:ARG:HE	1.82	0.44
1:C:400:PRO:HA	1:C:403:MET:SD	2.57	0.44
1:D:395:THR:O	1:D:441:VAL:HG12	2.17	0.44
2:E:63:LEU:HA	2:E:102:ARG:HH22	1.83	0.44
2:F:131:ARG:O	2:F:134:VAL:HG12	2.18	0.44
1:B:664:GLU:O	1:B:668:THR:HG23	2.18	0.44
1:D:664:GLU:O	1:D:668:THR:HG23	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:486:ASP:HB3	1:C:739:ARG:CD	2.48	0.44
1:D:646:LEU:HD12	1:D:679:VAL:HG23	1.98	0.44
2:H:60:HIS:CE1	2:H:67:CYS:HB2	2.53	0.43
1:B:743:ASN:O	1:B:747:LEU:HD23	2.18	0.43
1:C:478:THR:O	1:C:482:GLU:HB2	2.18	0.43
2:H:131:ARG:O	2:H:134:VAL:HG12	2.19	0.43
1:A:524:CYS:HB3	1:B:792:PHE:CE1	2.53	0.43
1:D:391:TYR:O	1:D:436:TYR:HA	2.19	0.43
2:H:58:MET:HG3	2:H:69:LEU:HD21	2.00	0.43
1:C:485:ILE:CG2	1:C:732:THR:O	2.66	0.43
2:F:111:SER:HB2	2:F:148:SER:OG	2.18	0.43
1:D:395:THR:HG21	1:D:402:VAL:HG21	1.99	0.43
1:B:690:ARG:NH1	1:B:713:PRO:HD2	2.34	0.43
2:F:58:MET:HG3	2:F:69:LEU:HD21	1.99	0.43
1:B:653:GLU:HA	1:B:656:ARG:HG2	1.99	0.43
1:C:425:ALA:HB2	1:C:472:VAL:HG11	2.01	0.43
1:B:507:LYS:HG3	1:B:508:PRO:HD2	2.01	0.42
1:D:447:GLY:HA3	1:D:460:VAL:HB	2.01	0.42
2:F:60:HIS:CE1	2:F:67:CYS:HB2	2.54	0.42
2:H:63:LEU:HA	2:H:102:ARG:HH22	1.84	0.42
1:A:592:LEU:HD23	1:B:805:VAL:HG11	2.01	0.42
1:C:484:VAL:HG23	1:C:485:ILE:HG13	2.01	0.42
1:A:398:GLU:O	1:A:401:TYR:N	2.50	0.42
2:E:74:ARG:NH1	2:E:74:ARG:HG3	2.31	0.42
2:G:63:LEU:HA	2:G:102:ARG:HH22	1.83	0.42
1:B:485:ILE:HD12	1:B:731:ALA:HB1	2.02	0.42
1:B:622:VAL:HG22	1:C:624:ARG:NE	2.34	0.42
1:D:507:LYS:HG3	1:D:508:PRO:HD2	2.02	0.42
1:A:807:LEU:HD23	1:A:807:LEU:C	2.39	0.42
1:B:743:ASN:ND2	1:C:482:GLU:OE2	2.52	0.42
1:C:602:TRP:CG	1:D:583:GLN:HG3	2.55	0.42
1:C:807:LEU:C	1:C:807:LEU:HD23	2.40	0.42
2:G:135:ILE:HD13	2:G:199:ILE:CG2	2.49	0.42
1:D:646:LEU:HD12	1:D:646:LEU:HA	1.92	0.42
1:C:754:VAL:O	1:C:758:LEU:HD23	2.20	0.42
1:B:456:TRP:CZ3	1:B:460:VAL:HG11	2.56	0.41
1:B:395:THR:HG22	1:B:396:ILE:N	2.34	0.41
1:D:730:ILE:HD12	1:D:746:VAL:CG2	2.50	0.41
1:A:441:VAL:HG13	1:A:444:GLY:HA2	2.03	0.41
1:B:739:ARG:O	1:B:742:VAL:HG22	2.20	0.41
2:G:32:TYR:O	2:G:176:GLY:HA3	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:524:CYS:HB3	1:D:792:PHE:CE1	2.55	0.41
1:C:428:ILE:HD11	1:C:742:VAL:HG13	2.02	0.41
1:A:585[B]:CYS:SG	1:A:586[B]:ASP:N	2.94	0.41
1:A:458:GLY:O	1:A:462:GLU:HG2	2.21	0.40
2:H:102:ARG:O	2:H:102:ARG:NH1	2.42	0.40
1:C:393:VAL:HG23	1:C:470:VAL:HG13	2.02	0.40
1:A:500:ILE:CD1	1:A:719:VAL:HG11	2.51	0.40
2:F:63:LEU:HA	2:F:102:ARG:HH22	1.86	0.40
1:C:592:LEU:HD23	1:D:805:VAL:HG11	2.04	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	403/915 (44%)	387 (96%)	14 (4%)	2 (0%)	25 54
1	B	399/915 (44%)	389 (98%)	10 (2%)	0	100 100
1	C	404/915 (44%)	386 (96%)	17 (4%)	1 (0%)	44 71
1	D	399/915 (44%)	387 (97%)	12 (3%)	0	100 100
2	E	168/314 (54%)	163 (97%)	5 (3%)	0	100 100
2	F	168/314 (54%)	165 (98%)	3 (2%)	0	100 100
2	G	168/314 (54%)	163 (97%)	5 (3%)	0	100 100
2	H	168/314 (54%)	166 (99%)	2 (1%)	0	100 100
All	All	2277/4916 (46%)	2206 (97%)	68 (3%)	3 (0%)	50 76

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	585[A]	CYS

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Mol	Chain	Res	Type
1	A	585[B]	CYS
1	C	447	GLY

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	335/778 (43%)	328 (98%)	7 (2%)	48 79
1	B	296/778 (38%)	286 (97%)	10 (3%)	32 64
1	C	318/778 (41%)	310 (98%)	8 (2%)	42 74
1	D	334/778 (43%)	324 (97%)	10 (3%)	36 69
2	E	142/273 (52%)	137 (96%)	5 (4%)	31 63
2	F	142/273 (52%)	141 (99%)	1 (1%)	81 94
2	G	142/273 (52%)	137 (96%)	5 (4%)	31 63
2	H	142/273 (52%)	141 (99%)	1 (1%)	81 94
All	All	1851/4204 (44%)	1804 (98%)	47 (2%)	46 74

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	417	TYR
1	A	437	ARG
1	A	438	LEU
1	A	586[A]	ASP
1	A	586[B]	ASP
1	A	588	SER
1	A	629	ILE
1	B	542	PHE
1	B	543	SER
1	B	586[A]	ASP
1	B	586[B]	ASP
1	B	590	ARG
1	B	616	LEU

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Mol	Chain	Res	Type
1	B	622	VAL
1	B	624	ARG
1	B	637	LYS
1	B	689	VAL
1	C	445	LYS
1	C	502	LYS
1	C	586[A]	ASP
1	C	586[B]	ASP
1	C	588	SER
1	C	630	GLU
1	C	631	SER
1	C	691	LYS
1	D	475	LEU
1	D	519	TYR
1	D	541	ARG
1	D	542	PHE
1	D	543	SER
1	D	586[A]	ASP
1	D	586[B]	ASP
1	D	590	ARG
1	D	718	LYS
1	D	724	ASP
2	E	67	CYS
2	E	74	ARG
2	E	78	LYS
2	E	102	ARG
2	E	174	SER
2	F	102	ARG
2	G	67	CYS
2	G	74	ARG
2	G	78	LYS
2	G	102	ARG
2	G	174	SER
2	H	102	ARG

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

Mol	Chain	Res	Type
1	C	504	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

18 ligands 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	$\#\|Z\| > 2$
4	PLM	B	902	-	17,17,17	0.68	0	17,17,17	0.64	0
5	OLC	C	903	-	24,24,24	0.29	0	25,25,25	0.37	0
6	POV	F	1302	-	38,38,51	0.50	0	44,46,59	0.59	0
5	OLC	B	903	-	24,24,24	0.37	0	25,25,25	0.50	0
6	POV	H	1302	-	38,38,51	0.48	0	44,46,59	0.59	0
3	ZK1	C	901	-	28,29,29	1.02	4 (14%)	42,45,45	1.04	3 (7%)
6	POV	G	1201	-	36,36,51	0.43	0	42,44,59	0.73	0
4	PLM	D	902	-	17,17,17	0.62	0	17,17,17	0.71	0
5	OLC	D	903	-	24,24,24	0.38	0	25,25,25	0.53	0
6	POV	E	1201	-	36,36,51	0.45	0	42,44,59	0.70	0
3	ZK1	D	901	-	28,29,29	0.91	2 (7%)	42,45,45	0.90	0
6	POV	F	1301	-	38,38,51	0.43	0	44,46,59	0.72	2 (4%)
6	POV	H	1301	-	38,38,51	0.41	0	44,46,59	0.78	2 (4%)
4	PLM	A	902	-	17,17,17	0.58	0	17,17,17	0.58	0
5	OLC	A	903	-	24,24,24	0.27	0	25,25,25	0.30	0
4	PLM	C	902	-	17,17,17	0.55	0	17,17,17	0.56	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	ZK1	A	901	-	28,29,29	0.85	1 (3%)	42,45,45	1.06	3 (7%)
3	ZK1	B	901	-	28,29,29	1.06	3 (10%)	42,45,45	1.07	4 (9%)

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
4	PLM	B	902	-	-	8/15/15/15	-
5	OLC	C	903	-	-	6/24/24/24	-
6	POV	F	1302	-	-	15/42/42/55	-
5	OLC	B	903	-	-	10/24/24/24	-
6	POV	H	1302	-	-	14/42/42/55	-
3	ZK1	C	901	-	-	13/13/23/23	0/3/3/3
6	POV	G	1201	-	-	10/40/40/55	-
4	PLM	D	902	-	-	8/15/15/15	-
5	OLC	D	903	-	-	11/24/24/24	-
6	POV	E	1201	-	-	11/40/40/55	-
3	ZK1	D	901	-	-	10/13/23/23	0/3/3/3
6	POV	F	1301	-	-	19/42/42/55	-
6	POV	H	1301	-	-	18/42/42/55	-
4	PLM	A	902	-	-	9/15/15/15	-
5	OLC	A	903	-	-	7/24/24/24	-
4	PLM	C	902	-	-	9/15/15/15	-
3	ZK1	A	901	-	-	12/13/23/23	0/3/3/3
3	ZK1	B	901	-	-	13/13/23/23	0/3/3/3

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	901	ZK1	CAU-NAY	2.87	1.43	1.38
3	D	901	ZK1	CAU-NAY	2.67	1.43	1.38
3	B	901	ZK1	PBA-OAD	-2.56	1.49	1.54
3	C	901	ZK1	PBA-OAD	-2.45	1.49	1.54
3	C	901	ZK1	PBA-OAE	-2.44	1.49	1.54
3	B	901	ZK1	PBA-OAE	-2.31	1.49	1.54
3	D	901	ZK1	PBA-OAE	-2.30	1.49	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	901	ZK1	CAU-NAY	2.26	1.42	1.38
3	A	901	ZK1	PBA-OAE	-2.20	1.49	1.54
3	C	901	ZK1	CAO-NAY	2.03	1.49	1.46

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	H	1301	POV	O21-C2-C1	3.12	119.71	108.40
3	C	901	ZK1	CAI-CAR-NAX	-2.76	118.44	122.52
3	A	901	ZK1	CAI-CAR-CAS	-2.61	118.10	121.43
6	H	1301	POV	C2-O21-C21	2.60	124.19	117.79
3	B	901	ZK1	CAO-NAY-CAW	2.56	123.27	120.12
6	F	1301	POV	O21-C2-C1	2.54	117.58	108.40
3	C	901	ZK1	CAK-CAM-NAX	2.53	114.68	110.02
6	F	1301	POV	C2-O21-C21	2.44	123.80	117.79
3	B	901	ZK1	CAI-CAR-NAX	-2.29	119.14	122.52
3	C	901	ZK1	CAI-CAR-CAS	-2.28	118.52	121.43
3	B	901	ZK1	CAL-CAN-NAX	2.17	114.02	110.02
3	A	901	ZK1	CAK-CAM-NAX	2.15	113.98	110.02
3	B	901	ZK1	CAW-NAY-CAU	-2.11	120.18	122.79
3	A	901	ZK1	CAO-NAY-CAW	2.02	122.61	120.12

There are no chirality outliers.

All (203) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	901	ZK1	NAY-CAO-PBA-OAC
3	B	901	ZK1	NAY-CAO-PBA-OAD
3	B	901	ZK1	NAY-CAO-PBA-OAE
3	C	901	ZK1	NAY-CAO-PBA-OAD
3	C	901	ZK1	NAY-CAO-PBA-OAE
3	D	901	ZK1	NAY-CAO-PBA-OAC
3	D	901	ZK1	NAY-CAO-PBA-OAE
5	B	903	OLC	C21-C22-C24-O25
5	D	903	OLC	C21-C22-C24-O25
6	F	1301	POV	C11-O12-P-O11
6	F	1301	POV	C11-O12-P-O13
6	F	1301	POV	C11-O12-P-O14
6	F	1301	POV	O21-C2-C3-O31
6	F	1301	POV	O12-C11-C12-N
6	F	1302	POV	C210-C211-C212-C213
6	H	1301	POV	C11-O12-P-O11

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Mol	Chain	Res	Type	Atoms
6	H	1301	POV	C11-O12-P-O13
6	H	1301	POV	C11-O12-P-O14
6	H	1301	POV	O21-C2-C3-O31
6	H	1301	POV	C1-C2-O21-C21
6	H	1301	POV	O12-C11-C12-N
6	H	1302	POV	C210-C211-C212-C213
4	D	902	PLM	C1-C2-C3-C4
4	B	902	PLM	C1-C2-C3-C4
6	G	1201	POV	O32-C31-O31-C3
6	F	1301	POV	C31-C32-C33-C34
6	E	1201	POV	O32-C31-O31-C3
5	D	903	OLC	C1-C2-C3-C4
6	H	1301	POV	C31-C32-C33-C34
6	F	1302	POV	C11-O12-P-O11
6	H	1302	POV	C11-O12-P-O11
6	E	1201	POV	C32-C31-O31-C3
6	G	1201	POV	C32-C31-O31-C3
5	B	903	OLC	C1-C2-C3-C4
4	C	902	PLM	CC-CD-CE-CF
5	B	903	OLC	C11-C12-C13-C14
6	F	1302	POV	C23-C24-C25-C26
6	H	1302	POV	C23-C24-C25-C26
5	C	903	OLC	C3-C4-C5-C6
6	H	1301	POV	C34-C35-C36-C37
4	B	902	PLM	C3-C4-C5-C6
5	A	903	OLC	C3-C4-C5-C6
5	B	903	OLC	C12-C13-C14-C15
4	A	902	PLM	CC-CD-CE-CF
4	D	902	PLM	C3-C4-C5-C6
4	D	902	PLM	C4-C5-C6-C7
6	F	1301	POV	C33-C34-C35-C36
5	A	903	OLC	C10-C11-C12-C13
6	G	1201	POV	C26-C27-C28-C29
4	B	902	PLM	C4-C5-C6-C7
5	A	903	OLC	C14-C15-C16-C17
4	A	902	PLM	CA-CB-CC-CD
6	H	1301	POV	C33-C34-C35-C36
5	D	903	OLC	C11-C12-C13-C14
6	F	1301	POV	C36-C37-C38-C39
5	B	903	OLC	O23-C22-C24-O25
5	D	903	OLC	O23-C22-C24-O25
6	G	1201	POV	C23-C24-C25-C26

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Mol	Chain	Res	Type	Atoms
5	B	903	OLC	C6-C7-C8-C9
6	E	1201	POV	C26-C27-C28-C29
4	C	902	PLM	CA-CB-CC-CD
5	D	903	OLC	C14-C15-C16-C17
6	E	1201	POV	C23-C24-C25-C26
5	D	903	OLC	C12-C13-C14-C15
5	B	903	OLC	C5-C6-C7-C8
6	F	1301	POV	C34-C35-C36-C37
5	D	903	OLC	C6-C7-C8-C9
6	F	1302	POV	C25-C26-C27-C28
6	F	1301	POV	C35-C36-C37-C38
5	D	903	OLC	C5-C6-C7-C8
6	G	1201	POV	C22-C23-C24-C25
5	C	903	OLC	C10-C11-C12-C13
5	D	903	OLC	C2-C3-C4-C5
6	E	1201	POV	C22-C23-C24-C25
6	H	1302	POV	O22-C21-O21-C2
6	H	1301	POV	C25-C26-C27-C28
4	B	902	PLM	C9-CA-CB-CC
5	C	903	OLC	C14-C15-C16-C17
6	H	1301	POV	C35-C36-C37-C38
6	F	1302	POV	C24-C25-C26-C27
6	F	1301	POV	C25-C26-C27-C28
4	D	902	PLM	C9-CA-CB-CC
6	F	1301	POV	C1-C2-C3-O31
6	H	1302	POV	C24-C25-C26-C27
6	G	1201	POV	C25-C26-C27-C28
5	B	903	OLC	C4-C5-C6-C7
6	F	1301	POV	C26-C27-C28-C29
6	H	1301	POV	C26-C27-C28-C29
3	A	901	ZK1	CAI-CAR-NAX-CAM
6	G	1201	POV	C21-C22-C23-C24
4	B	902	PLM	CD-CE-CF-CG
4	D	902	PLM	CD-CE-CF-CG
6	E	1201	POV	C25-C26-C27-C28
6	F	1301	POV	C1-C2-O21-C21
3	C	901	ZK1	CAI-CAR-NAX-CAM
6	F	1302	POV	O22-C21-O21-C2
4	A	902	PLM	C5-C6-C7-C8
4	C	902	PLM	C5-C6-C7-C8
5	D	903	OLC	C4-C5-C6-C7
3	C	901	ZK1	CAR-CAS-CAZ-FAF

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Mol	Chain	Res	Type	Atoms
6	F	1302	POV	C22-C21-O21-C2
6	H	1302	POV	C22-C21-O21-C2
6	H	1302	POV	C25-C26-C27-C28
6	E	1201	POV	C21-C22-C23-C24
3	C	901	ZK1	CAR-CAS-CAZ-FAG
3	C	901	ZK1	CAR-CAS-CAZ-FAH
5	B	903	OLC	C2-C3-C4-C5
5	C	903	OLC	C11-C12-C13-C14
5	C	903	OLC	C9-C10-C11-C12
6	H	1301	POV	C1-C2-C3-O31
3	D	901	ZK1	CAI-CAR-NAX-CAN
6	F	1302	POV	O21-C2-C3-O31
6	H	1301	POV	O22-C21-O21-C2
3	A	901	ZK1	CAS-CAR-NAX-CAM
3	D	901	ZK1	CAS-CAR-NAX-CAM
3	D	901	ZK1	CAS-CAR-NAX-CAN
3	B	901	ZK1	CAR-CAS-CAZ-FAG
3	B	901	ZK1	CAR-CAS-CAZ-FAH
3	A	901	ZK1	CAI-CAR-NAX-CAN
6	G	1201	POV	O22-C21-O21-C2
3	B	901	ZK1	CAR-CAS-CAZ-FAF
3	B	901	ZK1	CAI-CAR-NAX-CAM
3	C	901	ZK1	CAI-CAR-NAX-CAN
5	A	903	OLC	C9-C10-C11-C12
4	A	902	PLM	C2-C3-C4-C5
6	E	1201	POV	O22-C21-O21-C2
3	D	901	ZK1	CAR-CAS-CAZ-FAF
3	D	901	ZK1	CAI-CAR-NAX-CAM
6	H	1302	POV	O21-C2-C3-O31
3	A	901	ZK1	CAS-CAR-NAX-CAN
3	B	901	ZK1	CAS-CAR-NAX-CAM
3	C	901	ZK1	CAS-CAR-NAX-CAM
3	C	901	ZK1	CAS-CAR-NAX-CAN
3	A	901	ZK1	NAY-CAO-PBA-OAD
3	A	901	ZK1	NAY-CAO-PBA-OAE
3	D	901	ZK1	NAY-CAO-PBA-OAD
3	A	901	ZK1	NAY-CAO-PBA-OAC
3	C	901	ZK1	NAY-CAO-PBA-OAC
4	C	902	PLM	C2-C3-C4-C5
3	A	901	ZK1	CAR-CAS-CAZ-FAH
6	F	1302	POV	C11-O12-P-O14
6	H	1302	POV	C11-O12-P-O14

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Mol	Chain	Res	Type	Atoms
5	B	903	OLC	C14-C15-C16-C17
6	F	1301	POV	C12-C11-O12-P
6	H	1301	POV	C12-C11-O12-P
3	A	901	ZK1	CAR-CAS-CAZ-FAF
3	D	901	ZK1	CAR-CAS-CAZ-FAG
4	A	902	PLM	C9-CA-CB-CC
3	D	901	ZK1	CAR-CAS-CAZ-FAH
3	A	901	ZK1	CAR-CAS-CAZ-FAG
4	C	902	PLM	C8-C9-CA-CB
3	B	901	ZK1	CAI-CAR-NAX-CAN
5	A	903	OLC	C15-C16-C17-C18
6	F	1301	POV	O22-C21-O21-C2
5	C	903	OLC	C6-C7-C8-C9
6	G	1201	POV	C24-C25-C26-C27
4	B	902	PLM	O1-C1-C2-C3
6	F	1302	POV	C1-C2-C3-O31
3	C	901	ZK1	CAJ-CAS-CAZ-FAH
4	D	902	PLM	O2-C1-C2-C3
4	B	902	PLM	O2-C1-C2-C3
4	C	902	PLM	C9-CA-CB-CC
4	D	902	PLM	O1-C1-C2-C3
3	B	901	ZK1	CAS-CAR-NAX-CAN
3	C	901	ZK1	CAJ-CAS-CAZ-FAG
6	G	1201	POV	C22-C21-O21-C2
3	C	901	ZK1	CAJ-CAS-CAZ-FAF
6	E	1201	POV	C24-C25-C26-C27
6	H	1301	POV	C24-C25-C26-C27
4	C	902	PLM	O1-C1-C2-C3
6	F	1302	POV	O31-C31-C32-C33
6	H	1301	POV	O31-C31-C32-C33
6	F	1301	POV	O31-C31-C32-C33
6	H	1302	POV	O31-C31-C32-C33
6	F	1301	POV	C24-C25-C26-C27
4	A	902	PLM	C6-C7-C8-C9
4	C	902	PLM	C6-C7-C8-C9
4	A	902	PLM	O1-C1-C2-C3
6	E	1201	POV	C29-C210-C211-C212
6	F	1302	POV	C27-C28-C29-C210
4	A	902	PLM	O2-C1-C2-C3
6	H	1301	POV	O32-C31-C32-C33
6	E	1201	POV	C22-C21-O21-C2
4	C	902	PLM	O2-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
6	H	1302	POV	C27-C28-C29-C210
6	H	1302	POV	O32-C31-C32-C33
4	D	902	PLM	CB-CC-CD-CE
6	F	1301	POV	O32-C31-C32-C33
5	A	903	OLC	C11-C12-C13-C14
3	B	901	ZK1	CAJ-CAS-CAZ-FAG
3	B	901	ZK1	CAJ-CAS-CAZ-FAH
6	F	1302	POV	O32-C31-C32-C33
4	B	902	PLM	CB-CC-CD-CE
3	A	901	ZK1	CAJ-CAS-CAZ-FAH
4	A	902	PLM	C8-C9-CA-CB
5	D	903	OLC	C13-C14-C15-C16
6	H	1302	POV	C12-C11-O12-P
6	F	1302	POV	C32-C33-C34-C35
3	B	901	ZK1	CAJ-CAS-CAZ-FAF
6	H	1302	POV	O11-C1-C2-O21
6	F	1302	POV	C22-C23-C24-C25
5	A	903	OLC	C6-C7-C8-C9
3	A	901	ZK1	CAJ-CAS-CAZ-FAF

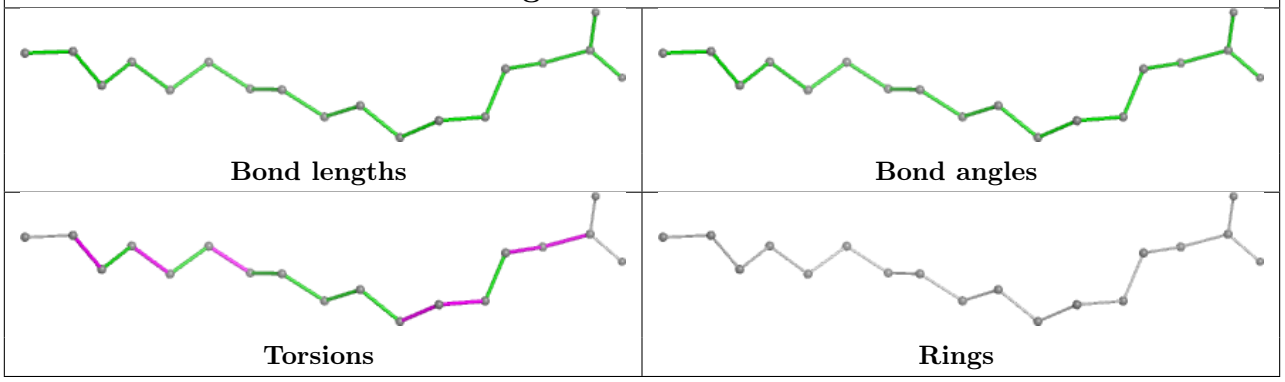
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	901	ZK1	1	0

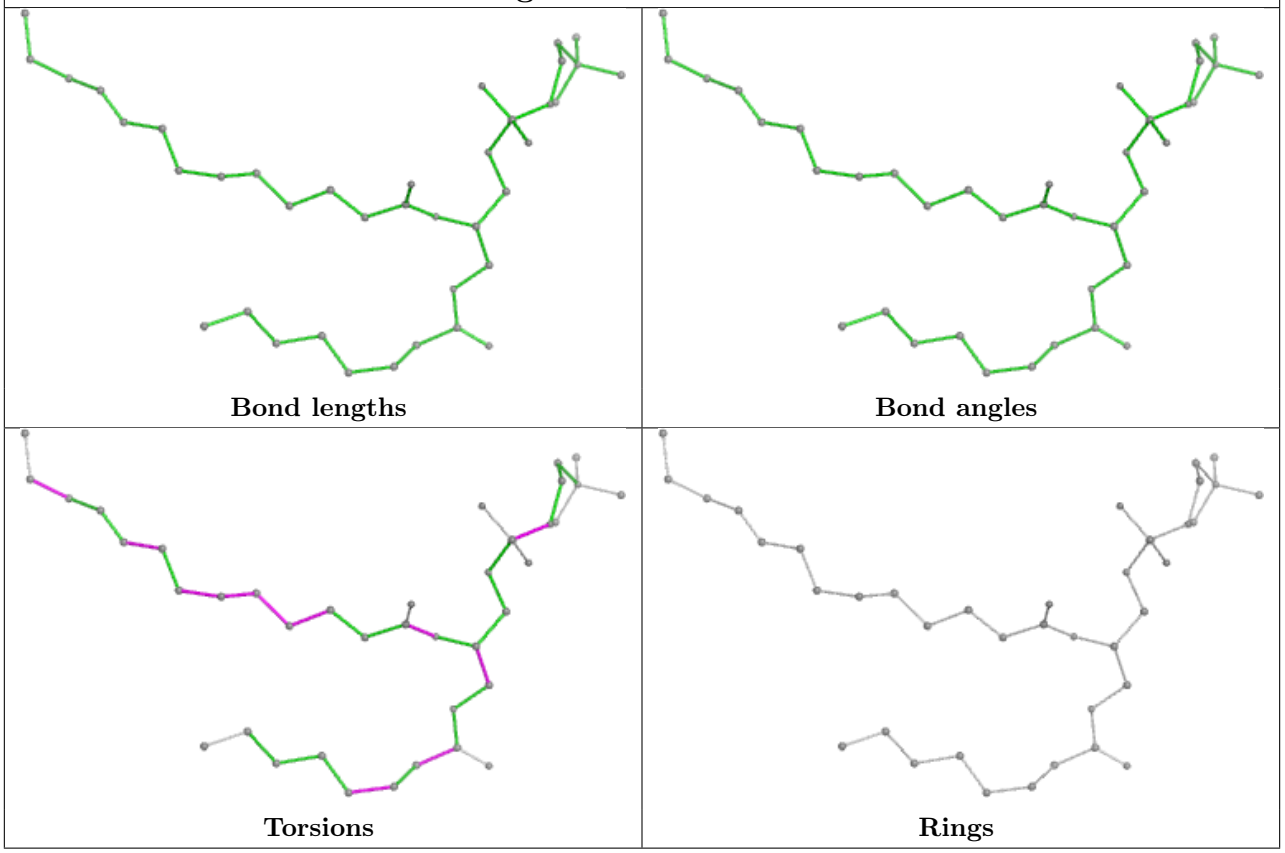
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand PLM B 902

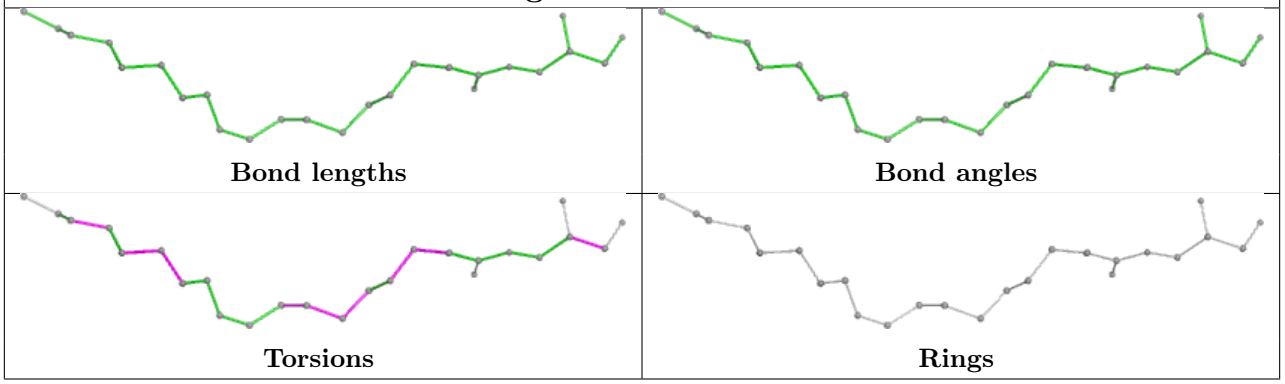


Ligand OLC C 903

Ligand POV F 1302



Ligand OLC B 903



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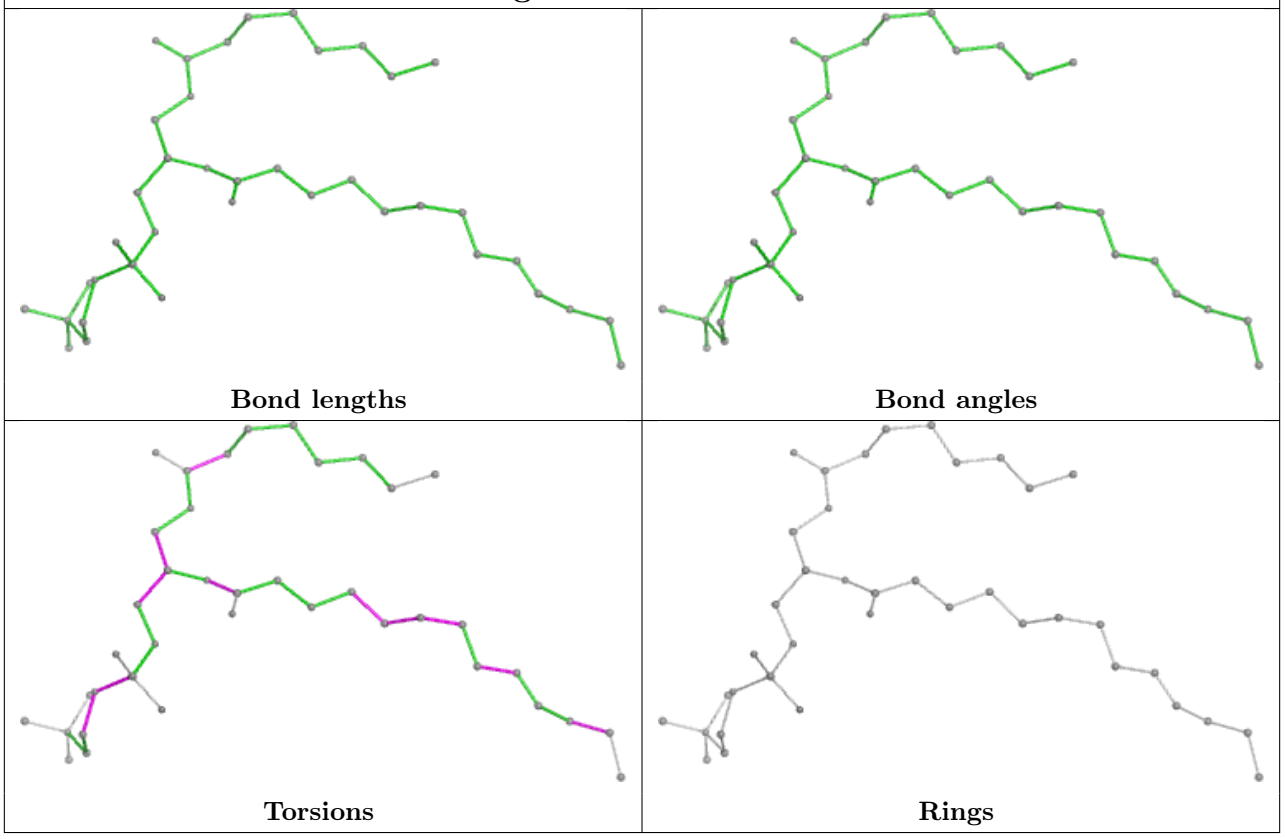
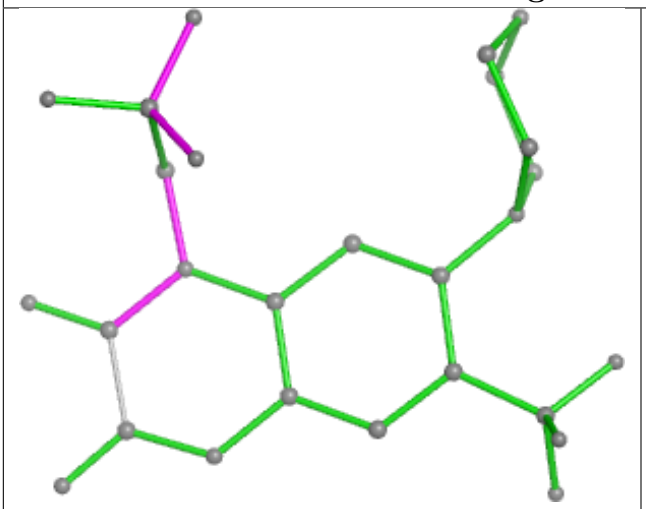
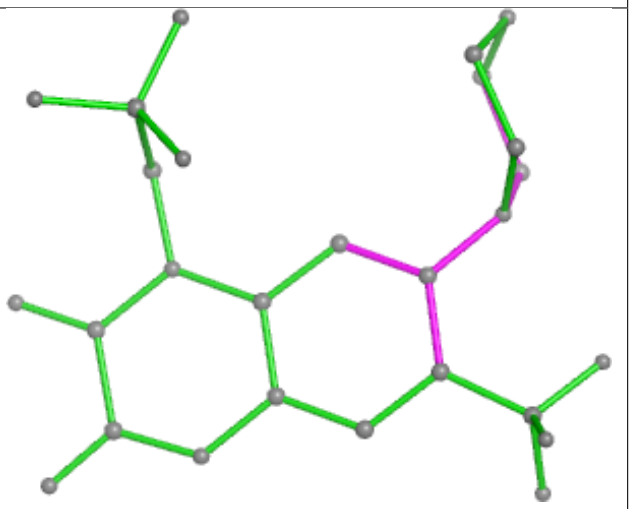


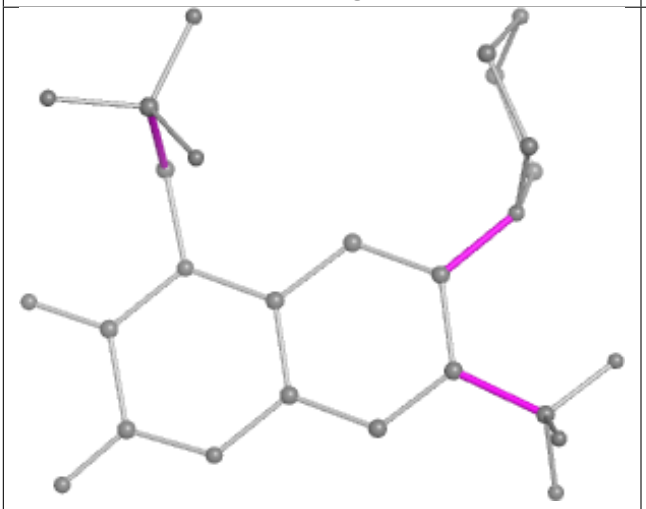
Ligand ZK1 C 901



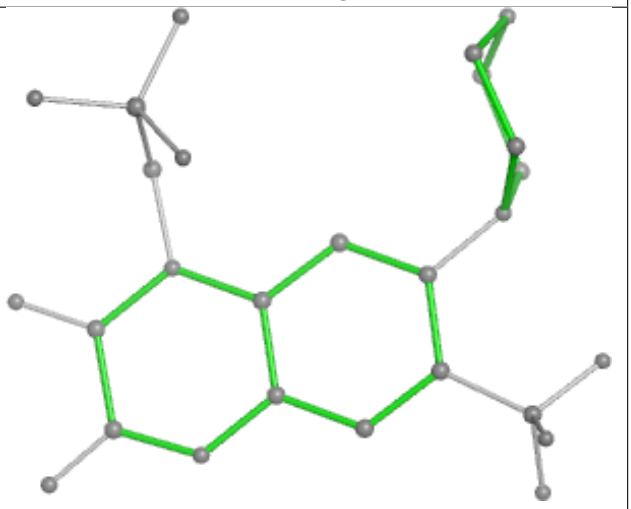
Bond lengths



Bond angles

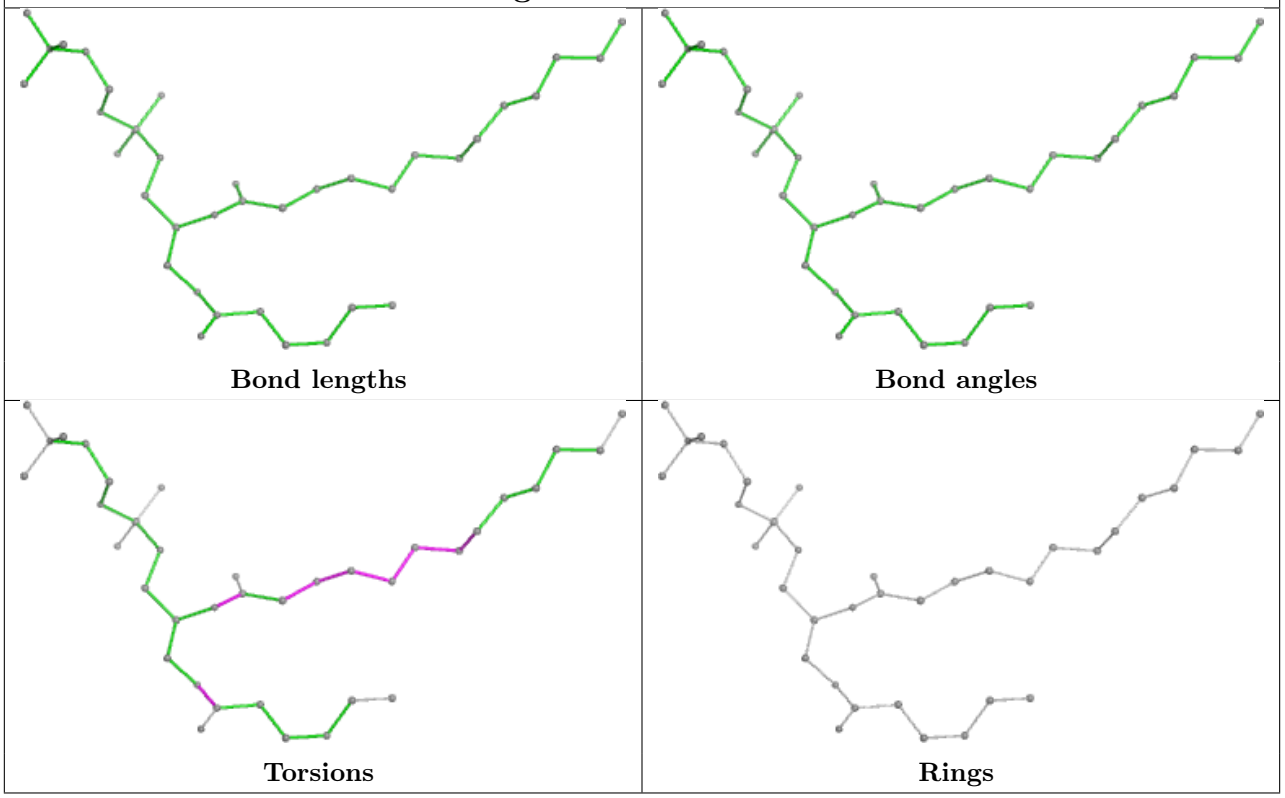


Torsions

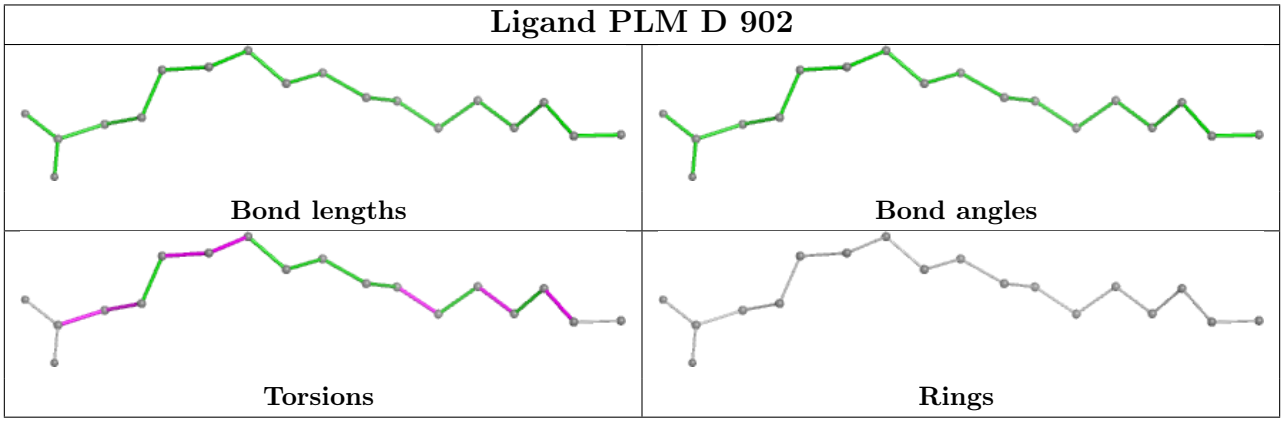


Rings

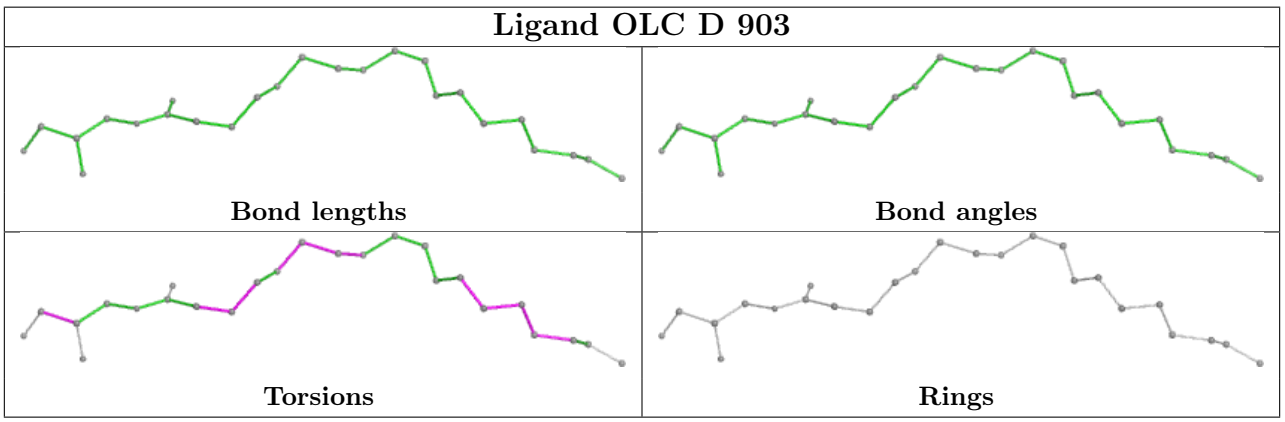
Ligand POV G 1201



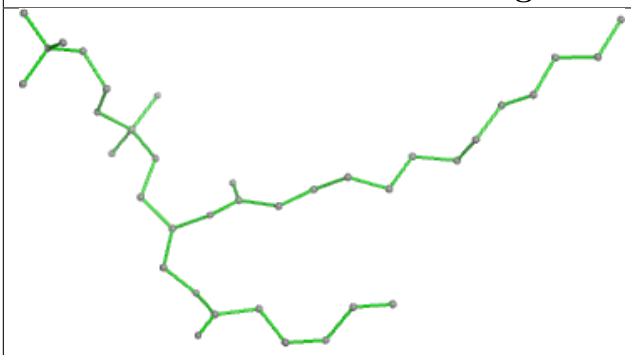
Ligand PLM D 902



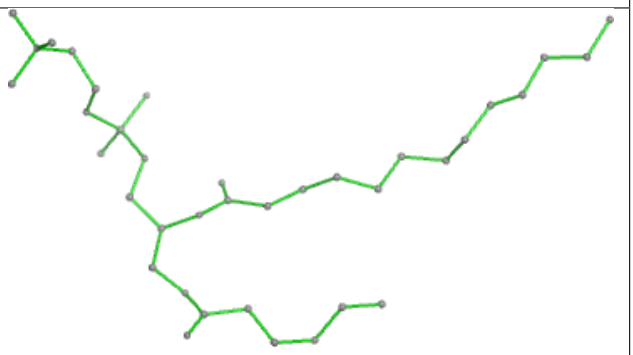
Ligand OLC D 903



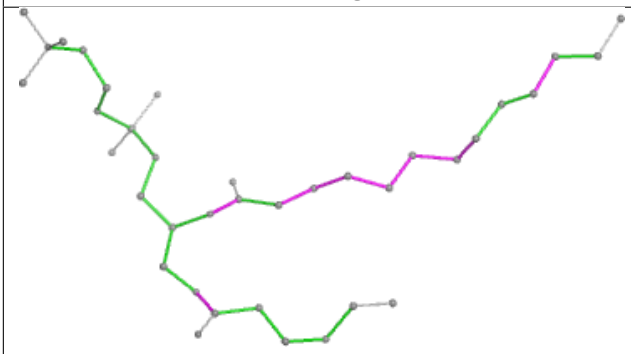
Ligand POV E 1201



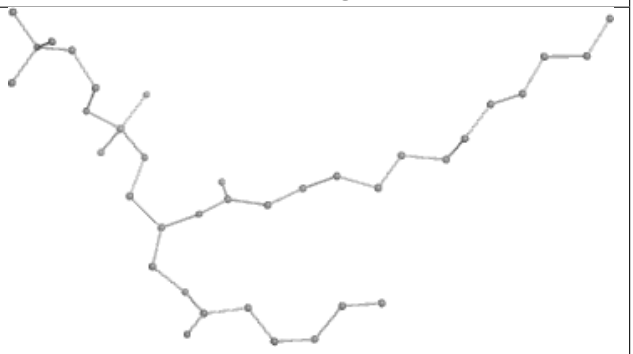
Bond lengths



Bond angles

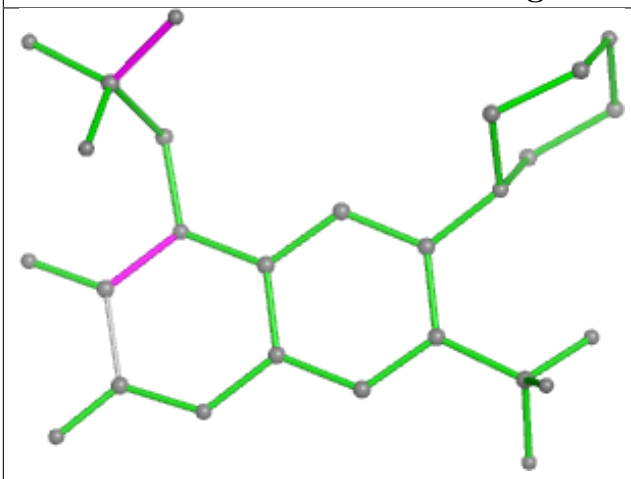


Torsions

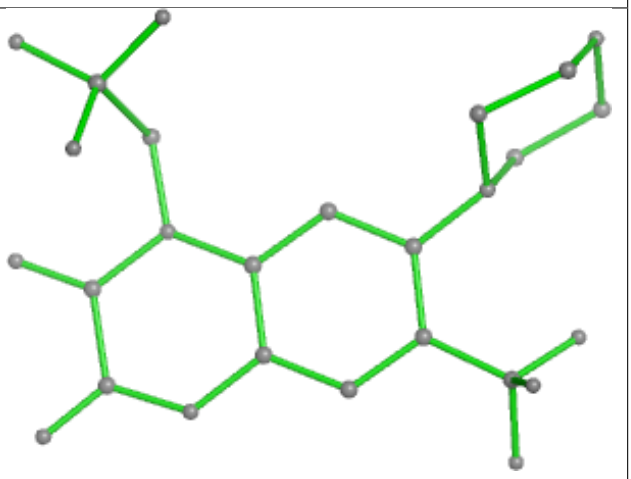


Rings

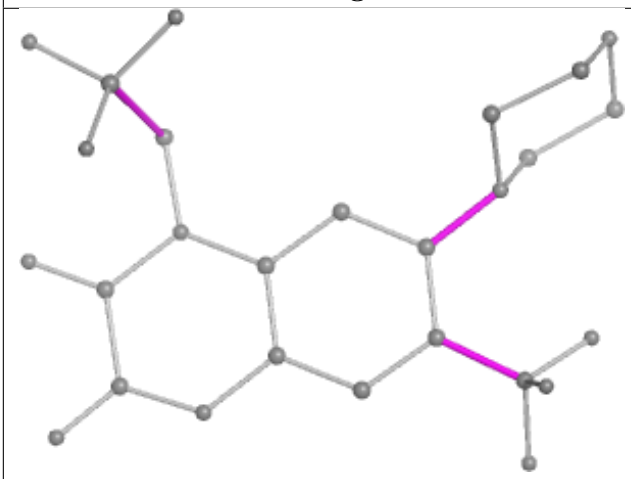
Ligand ZK1 D 901



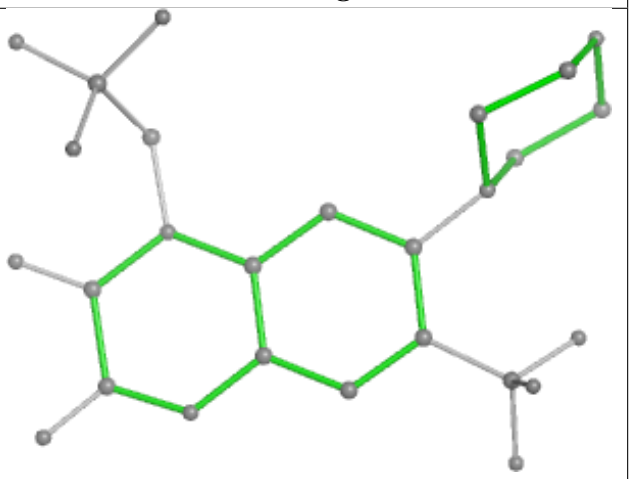
Bond lengths



Bond angles

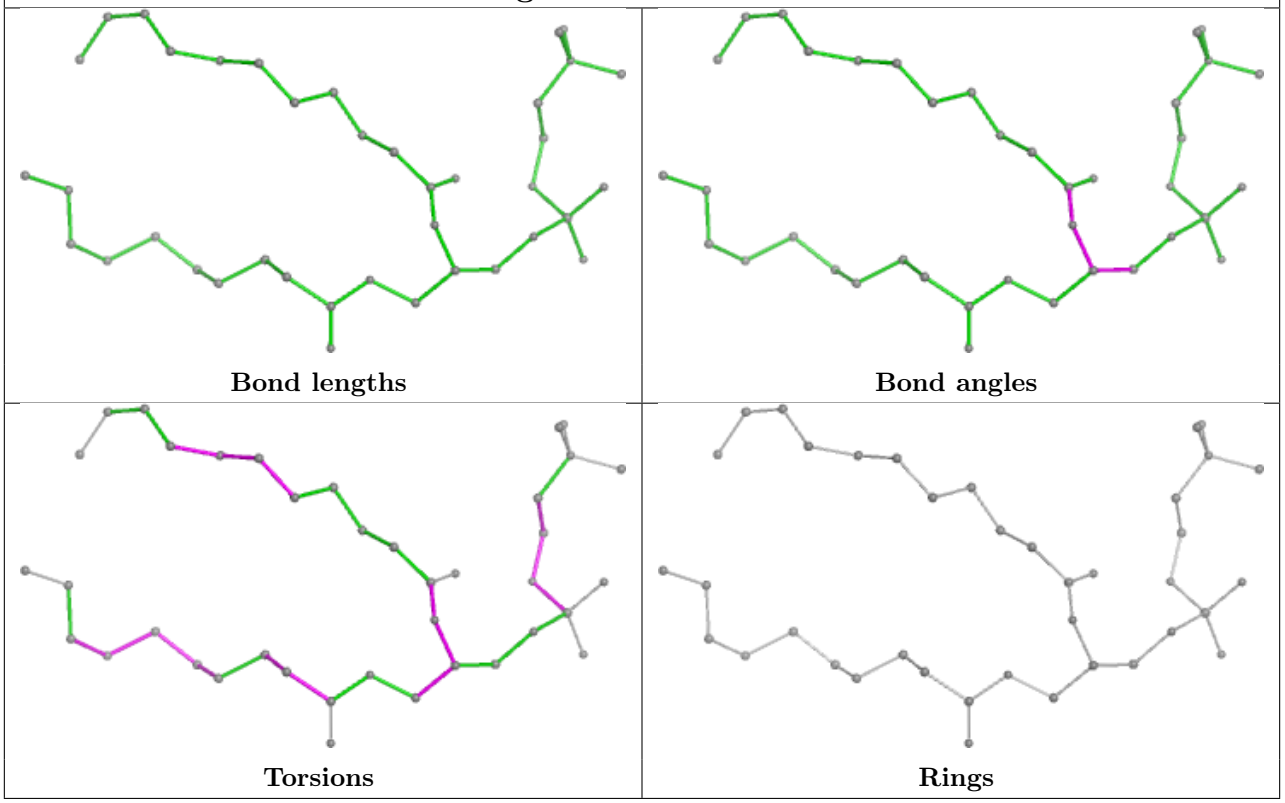


Torsions

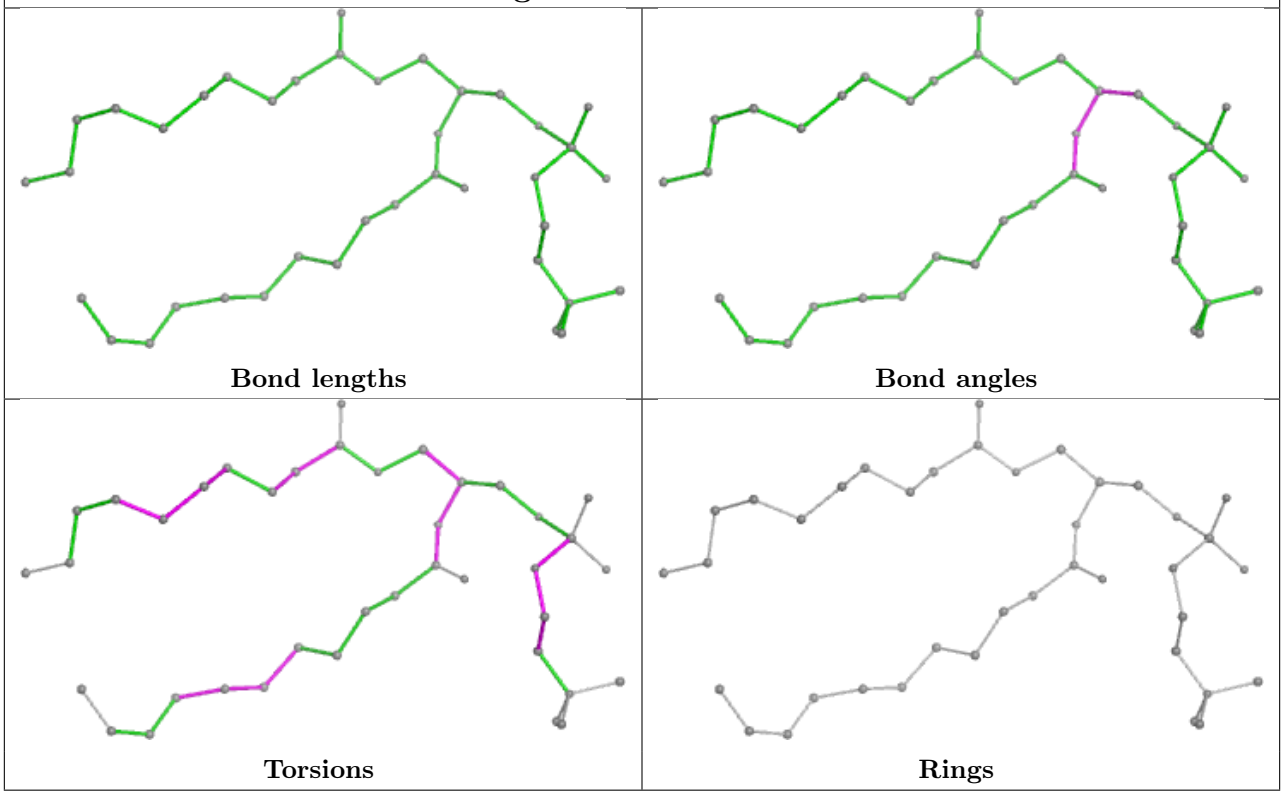


Rings

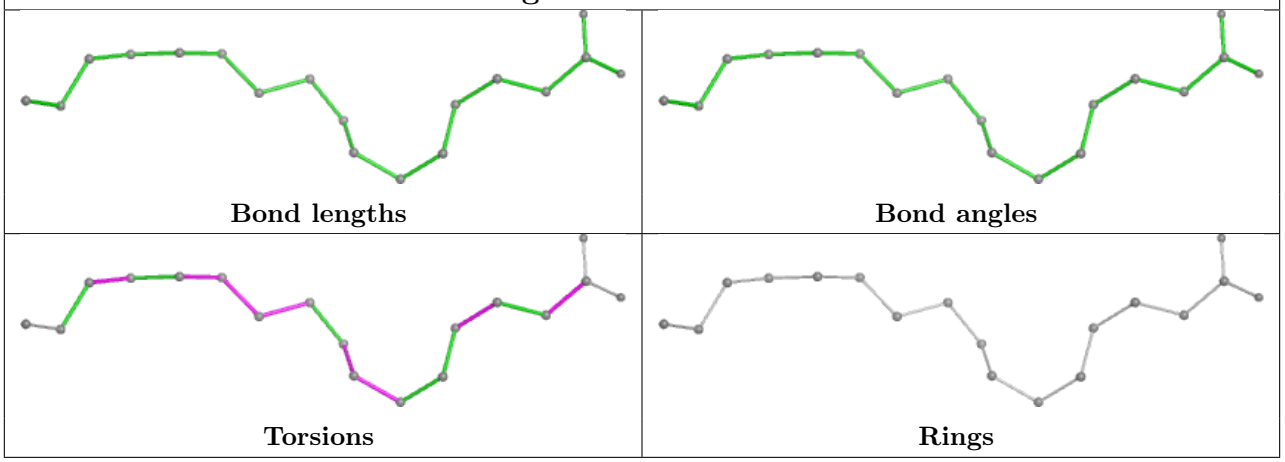
Ligand POV F 1301



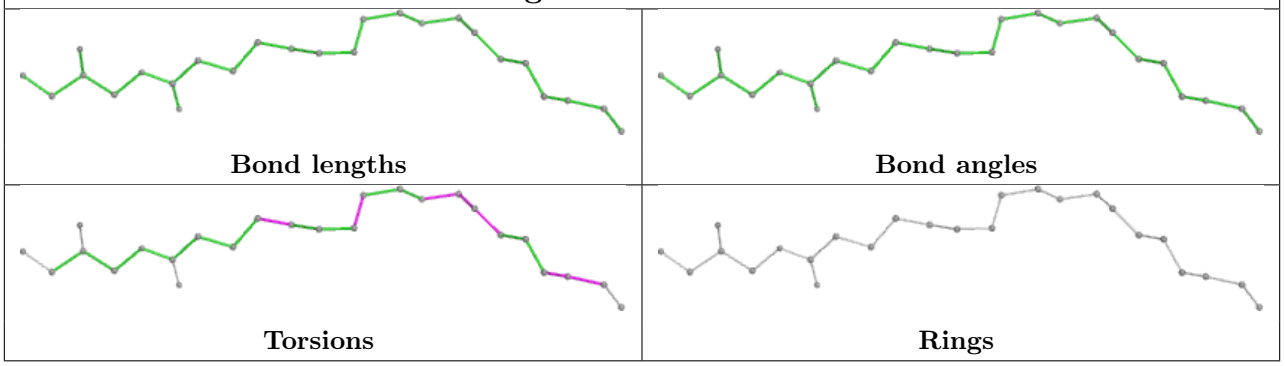
Ligand POV H 1301



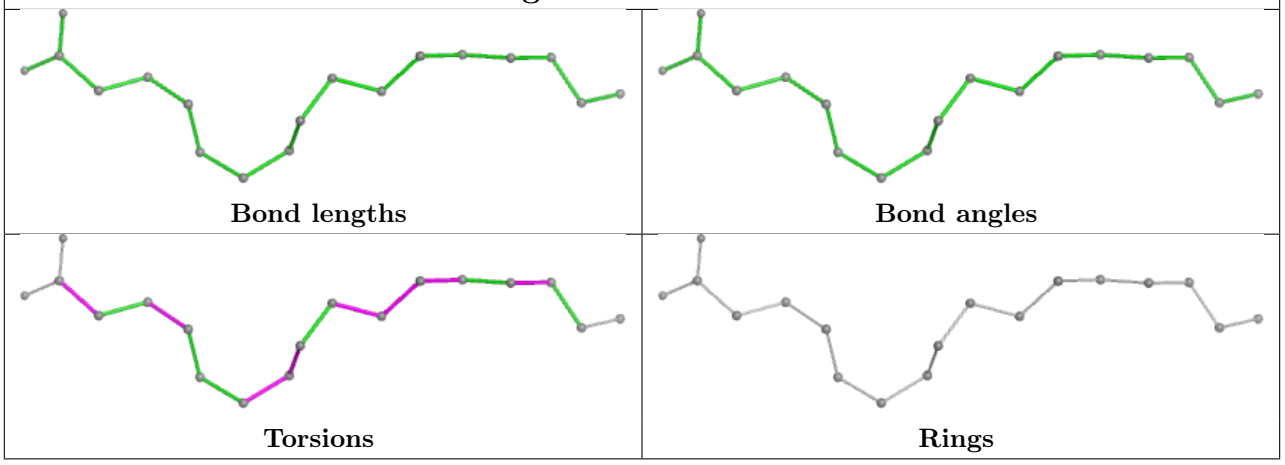
Ligand PLM A 902



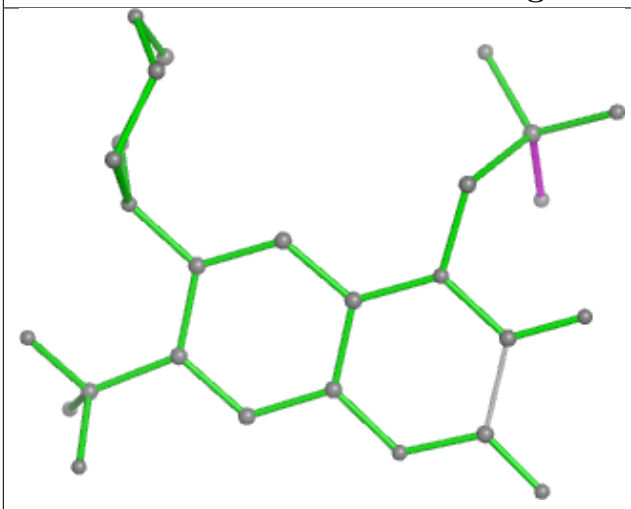
Ligand OLC A 903



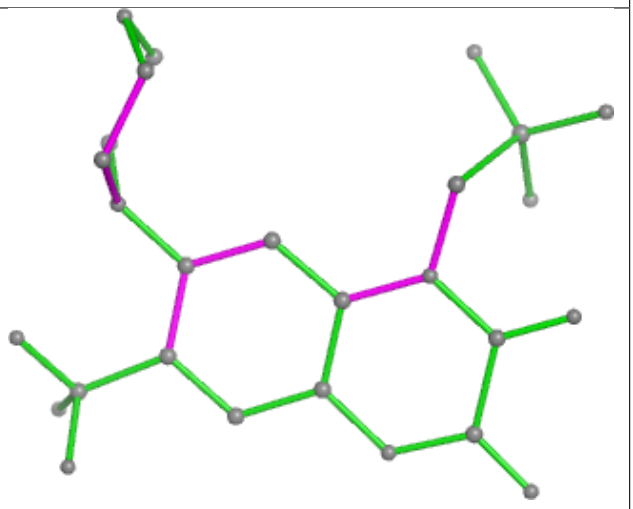
Ligand PLM C 902



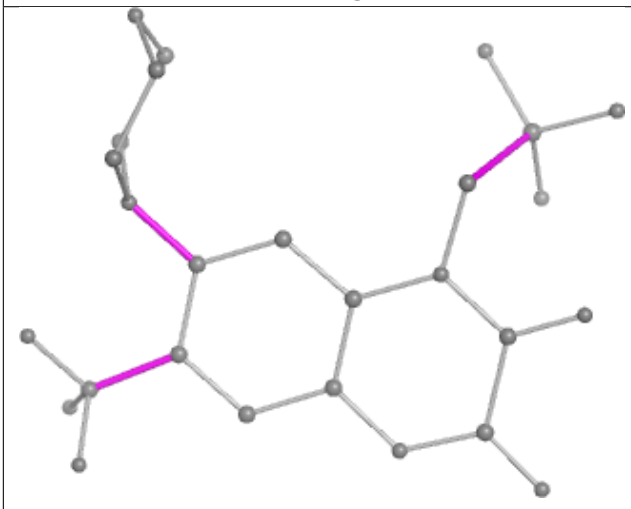
Ligand ZK1 A 901



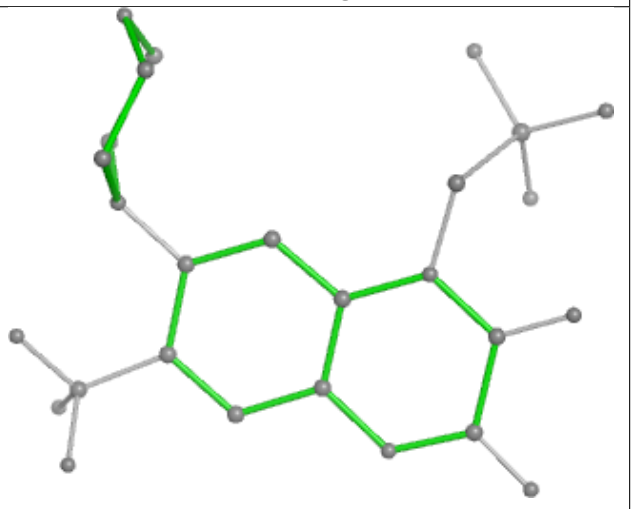
Bond lengths



Bond angles

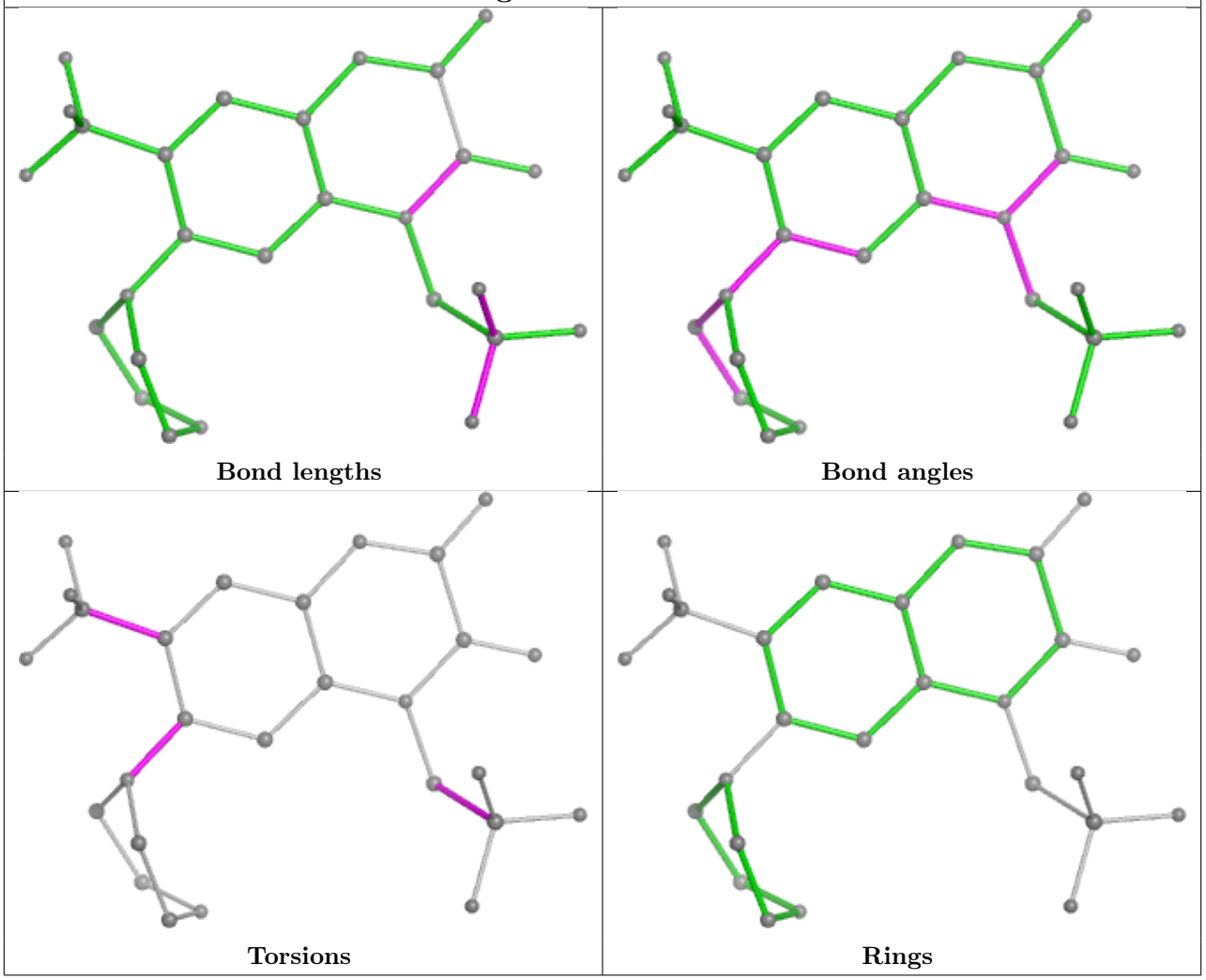


Torsions



Rings

Ligand ZK1 B 901



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.

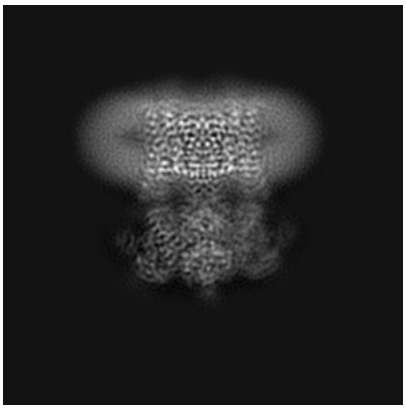
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-16380. These allow visual inspection of the internal detail of the map and identification of artifacts.

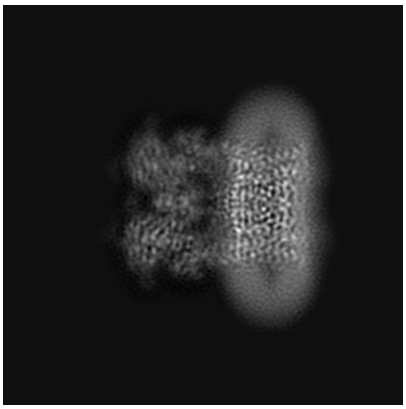
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

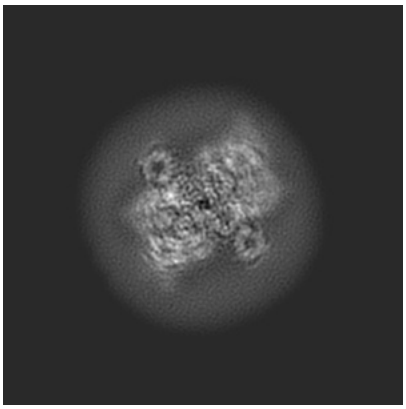
6.1.1 Primary map



X

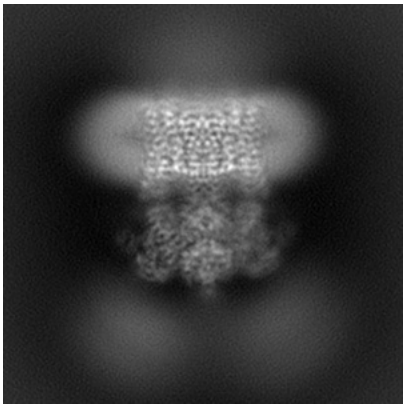


Y

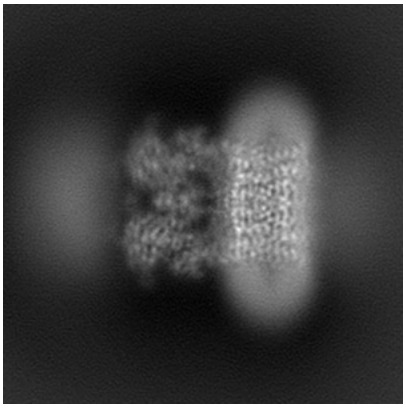


Z

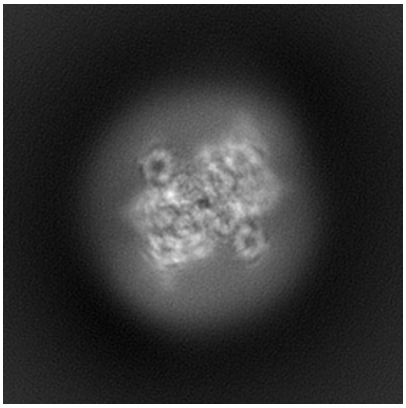
6.1.2 Raw map



X



Y

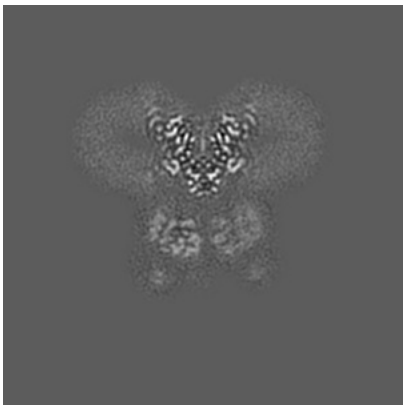


Z

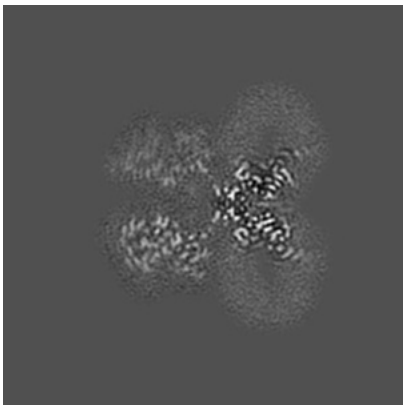
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

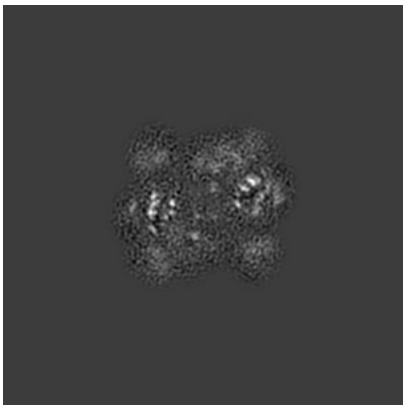
6.2.1 Primary map



X Index: 114

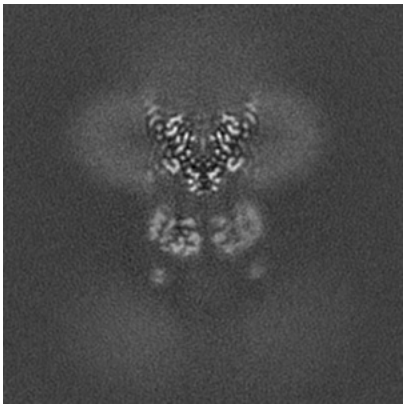


Y Index: 114

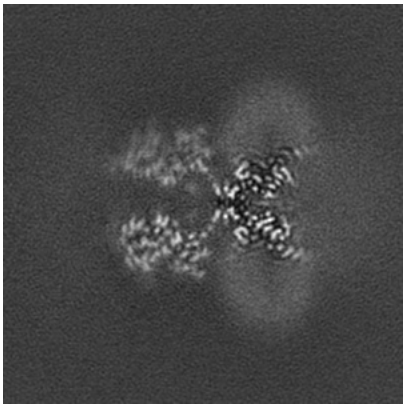


Z Index: 114

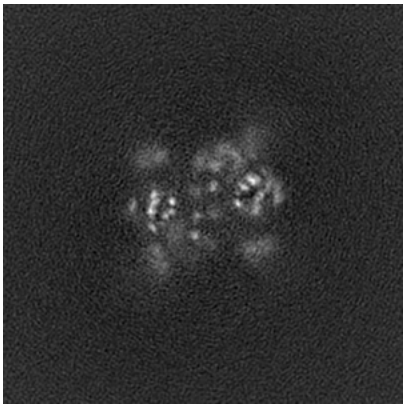
6.2.2 Raw map



X Index: 114



Y Index: 114

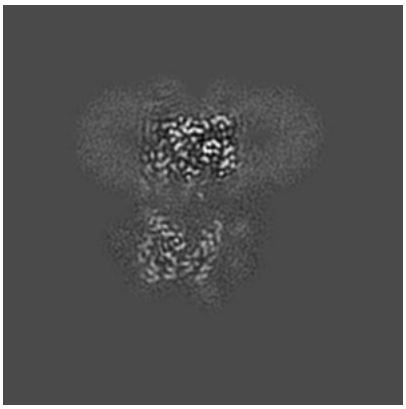


Z Index: 114

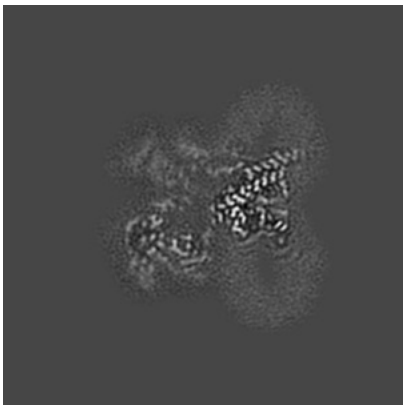
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

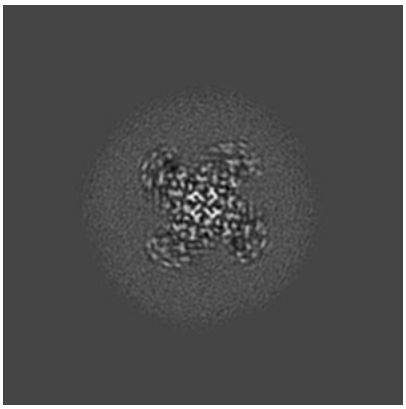
6.3.1 Primary map



X Index: 102

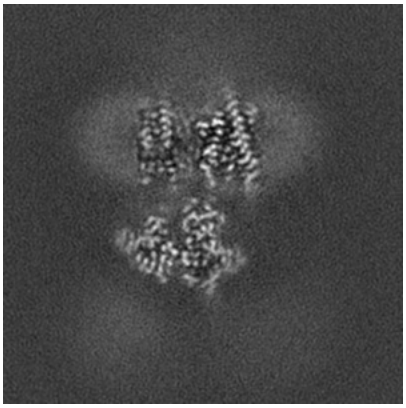


Y Index: 110

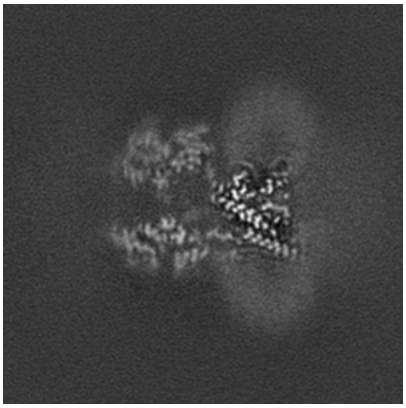


Z Index: 136

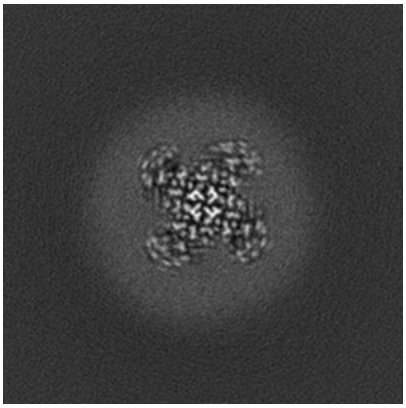
6.3.2 Raw map



X Index: 94



Y Index: 118

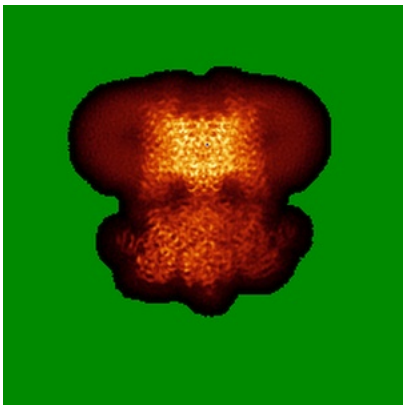


Z Index: 136

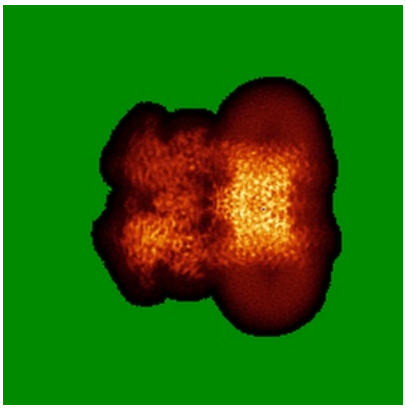
The images above show the largest variance slices of the map in three orthogonal directions.

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

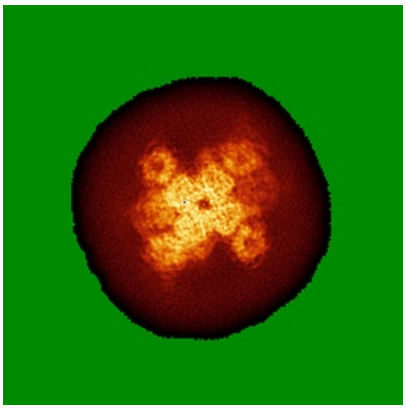
6.4.1 Primary map



X

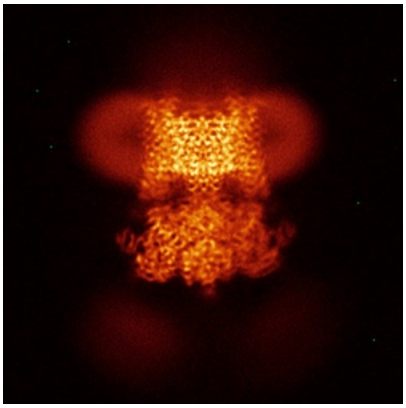


Y

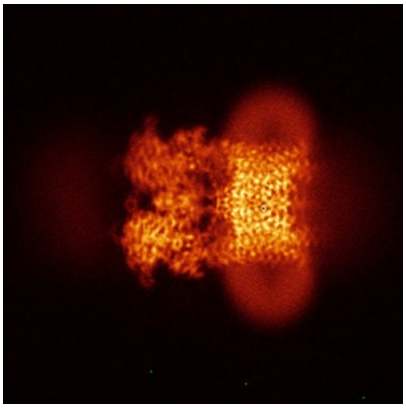


Z

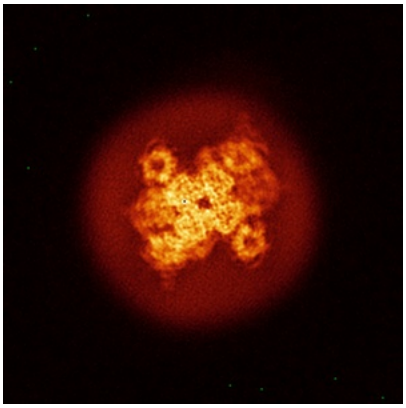
6.4.2 Raw map



X



Y

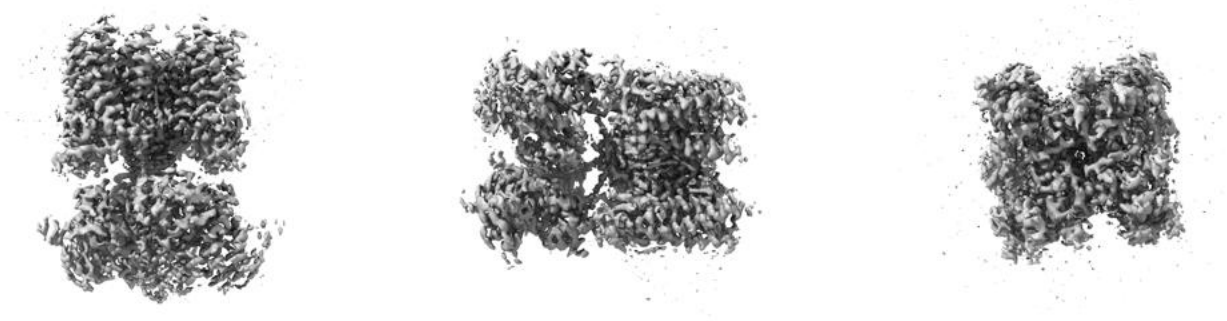


Z

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

6.5 Orthogonal surface views (i)

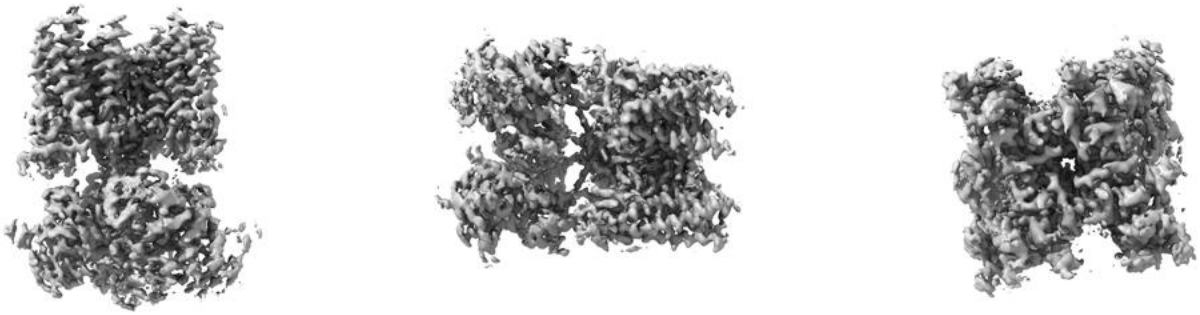
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.014. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

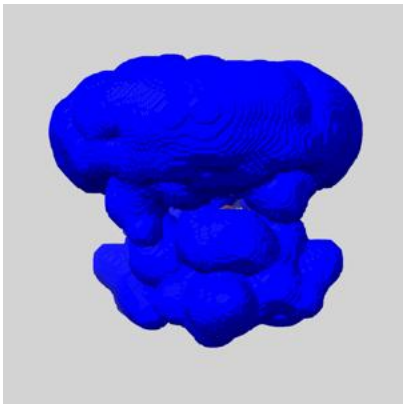
6.6 Mask visualisation (i)

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

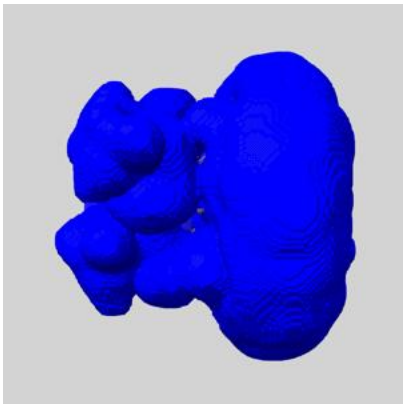
A mask typically either:

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

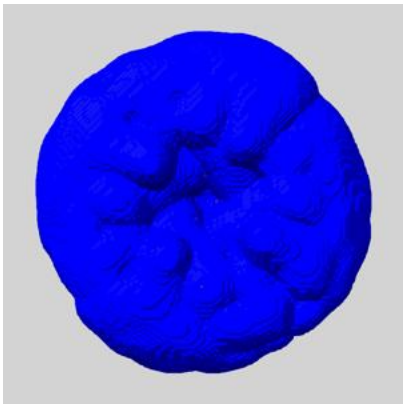
6.6.1 emd_16380_msk_1.map (i)



X



Y

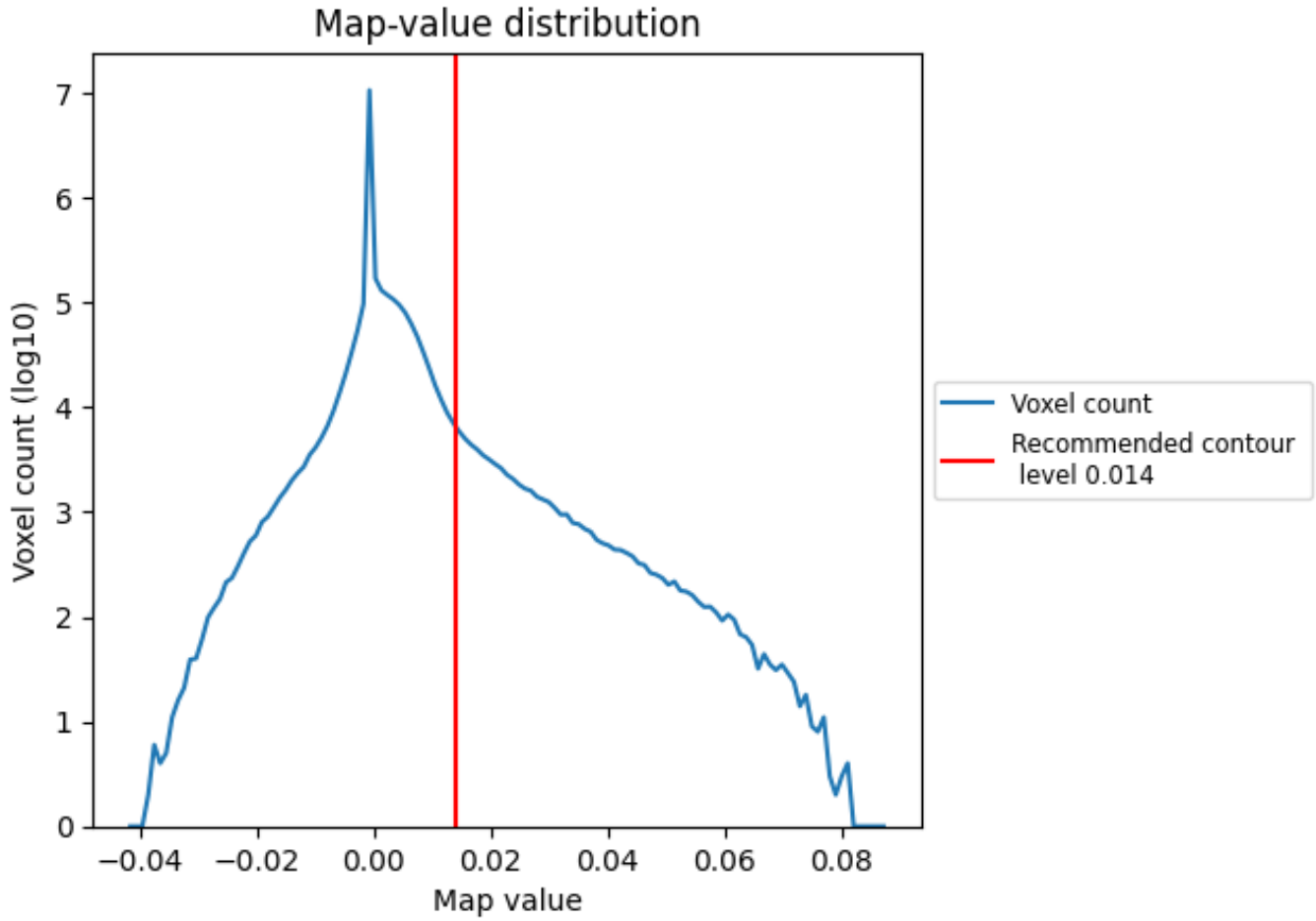


Z

7 Map analysis

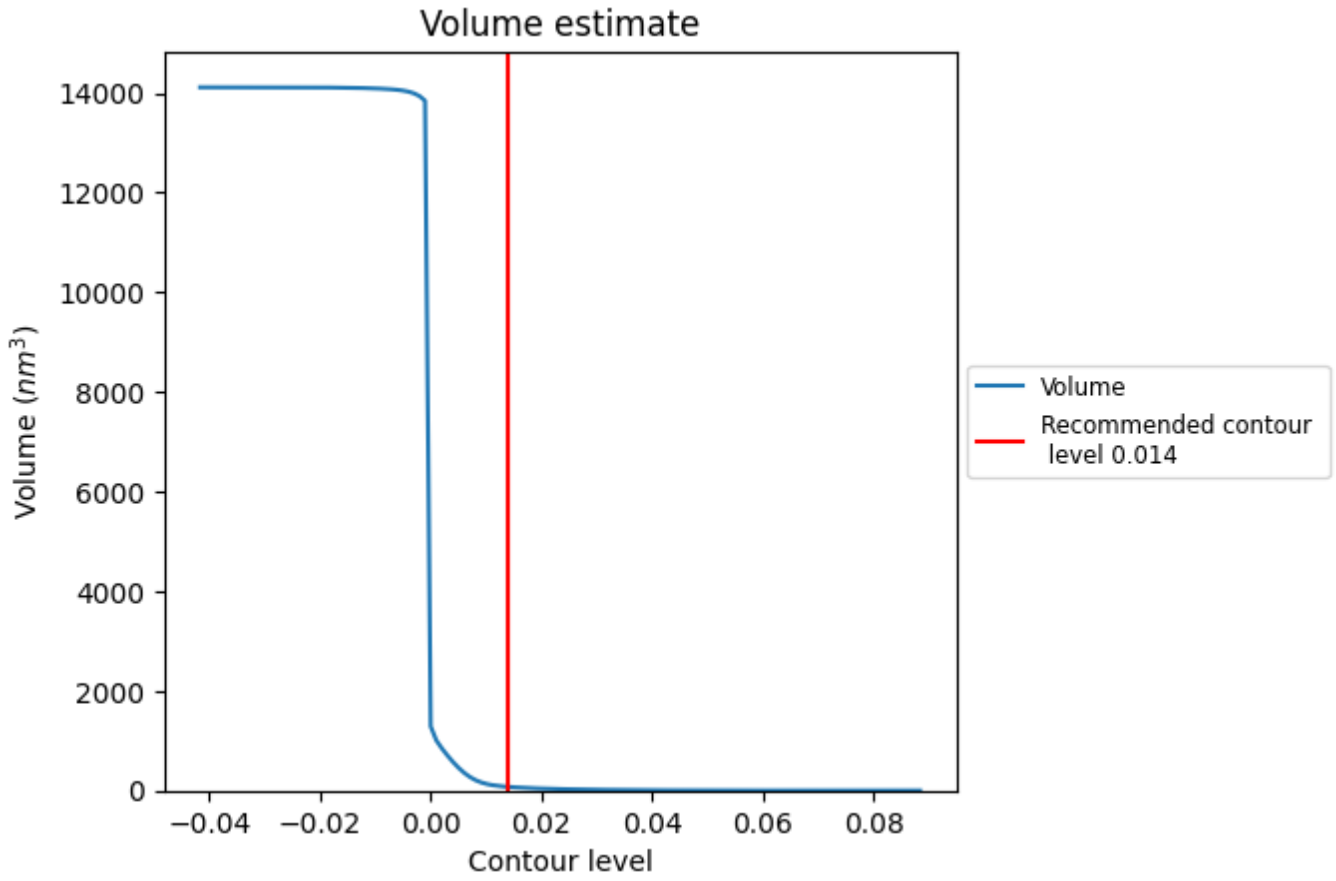
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

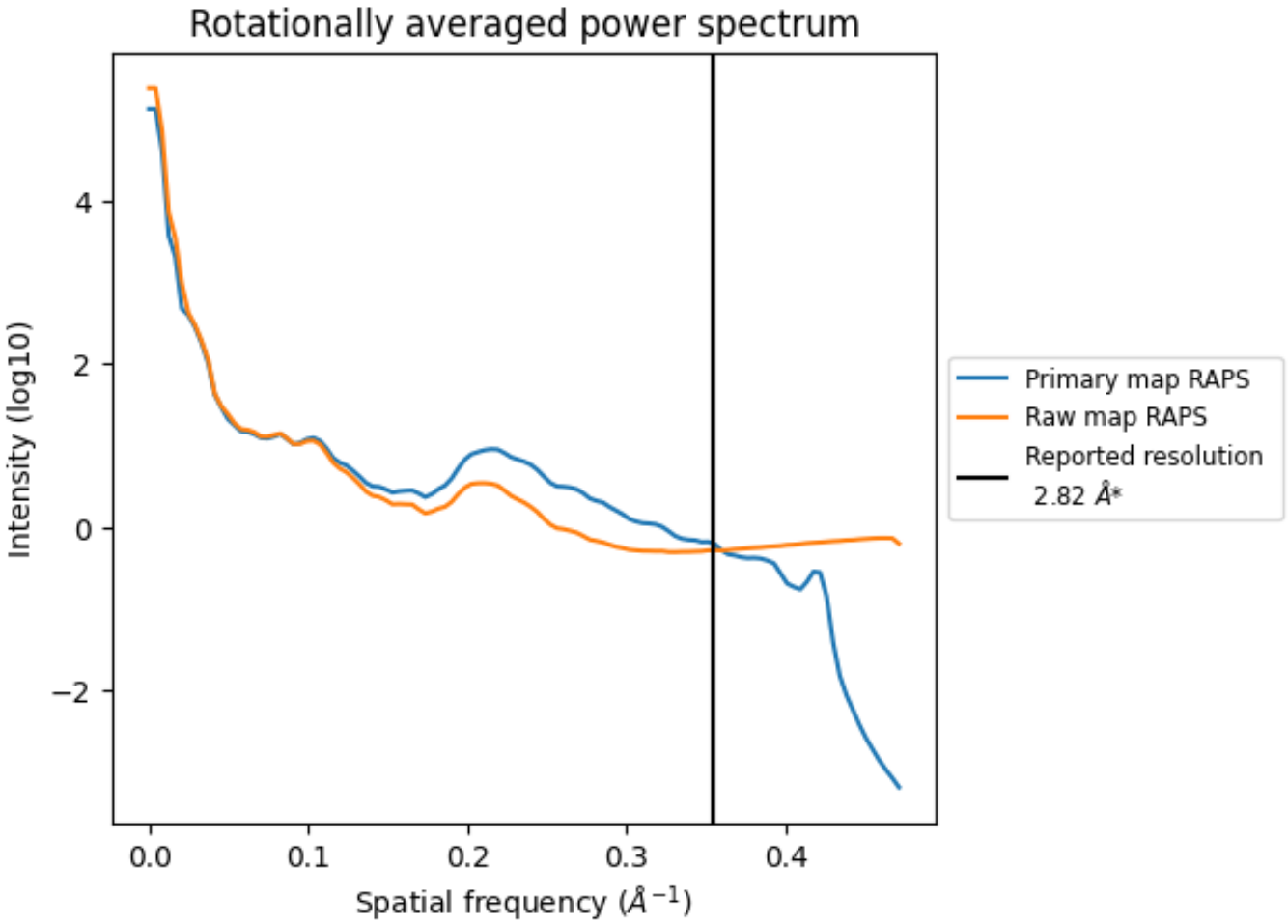
7.2 Volume estimate



The volume at the recommended contour level is 74 nm^3; this corresponds to an approximate mass of 67 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)

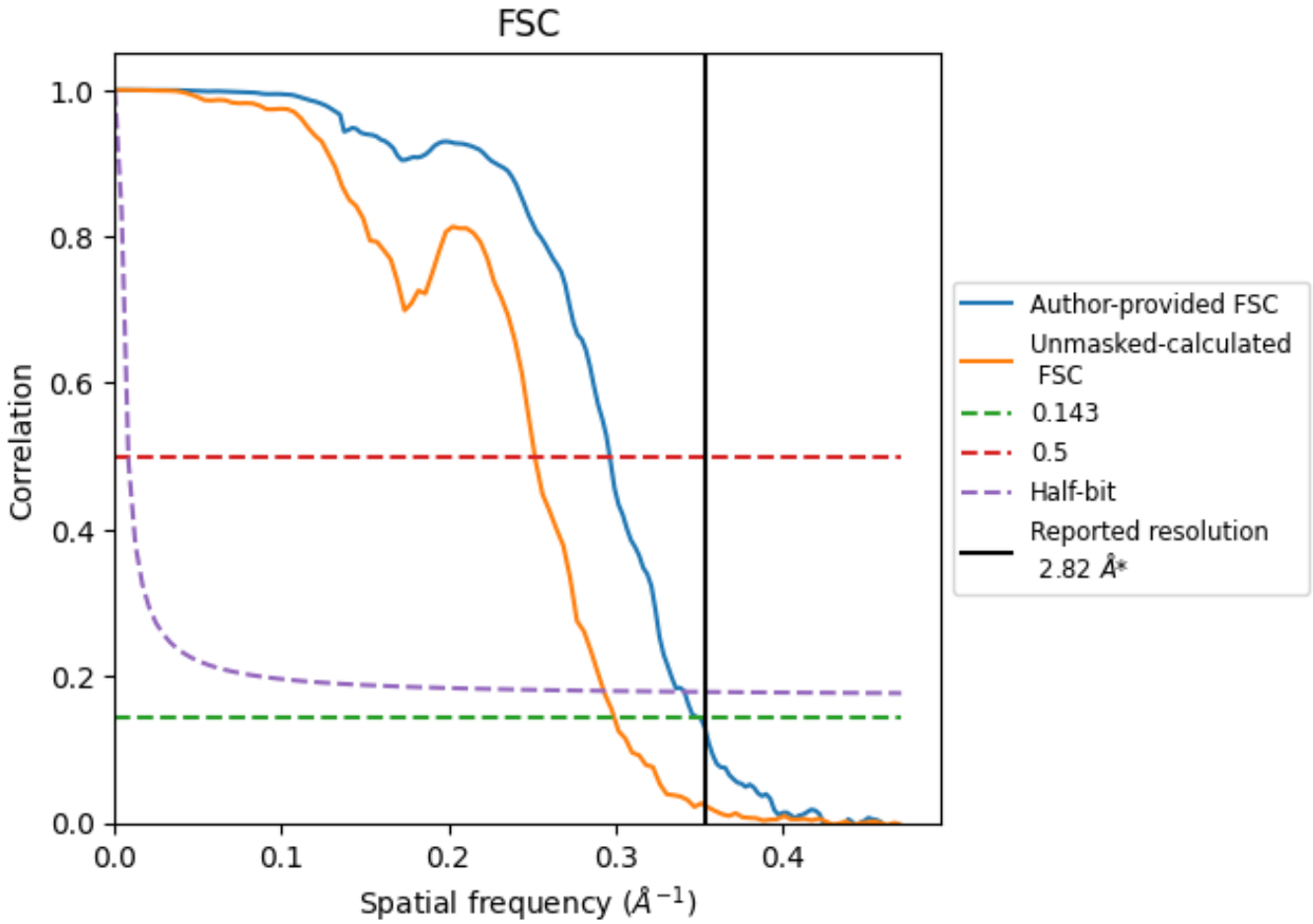


*Reported resolution corresponds to spatial frequency of 0.355 $Å^{-1}$

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.355 Å^{-1}

8.2 Resolution estimates (i)

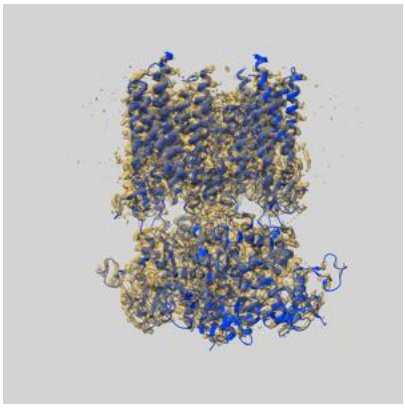
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.82	-	-
Author-provided FSC curve	2.85	3.37	2.92
Unmasked-calculated*	3.34	3.97	3.41

*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 3.34 differs from the reported value 2.82 by more than 10 %

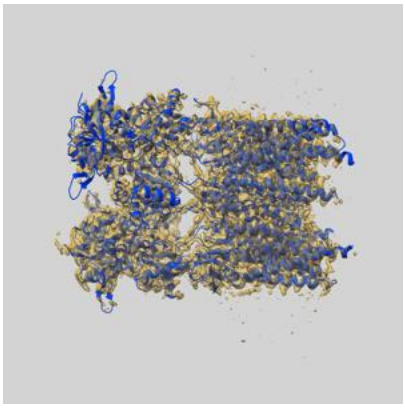
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-16380 and PDB model 8C1Q. Per-residue inclusion information can be found in section 3 on page 8.

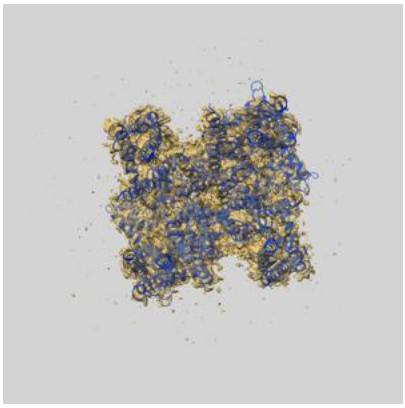
9.1 Map-model overlay



X



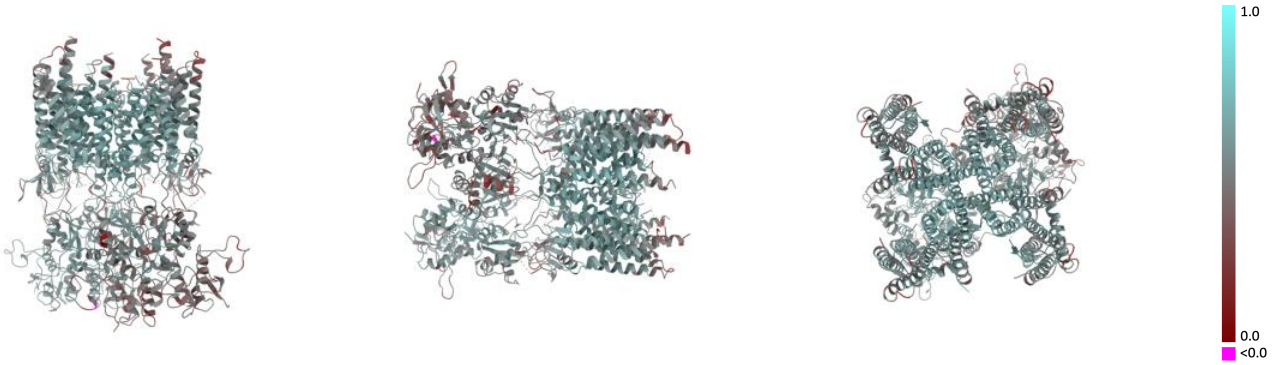
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.014 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.

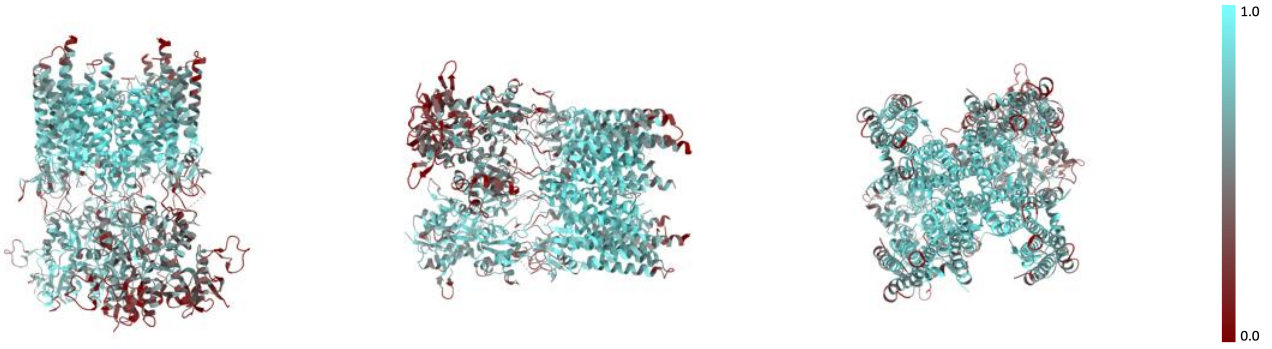
9.2 Q-score mapped to coordinate model



X Y Z

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

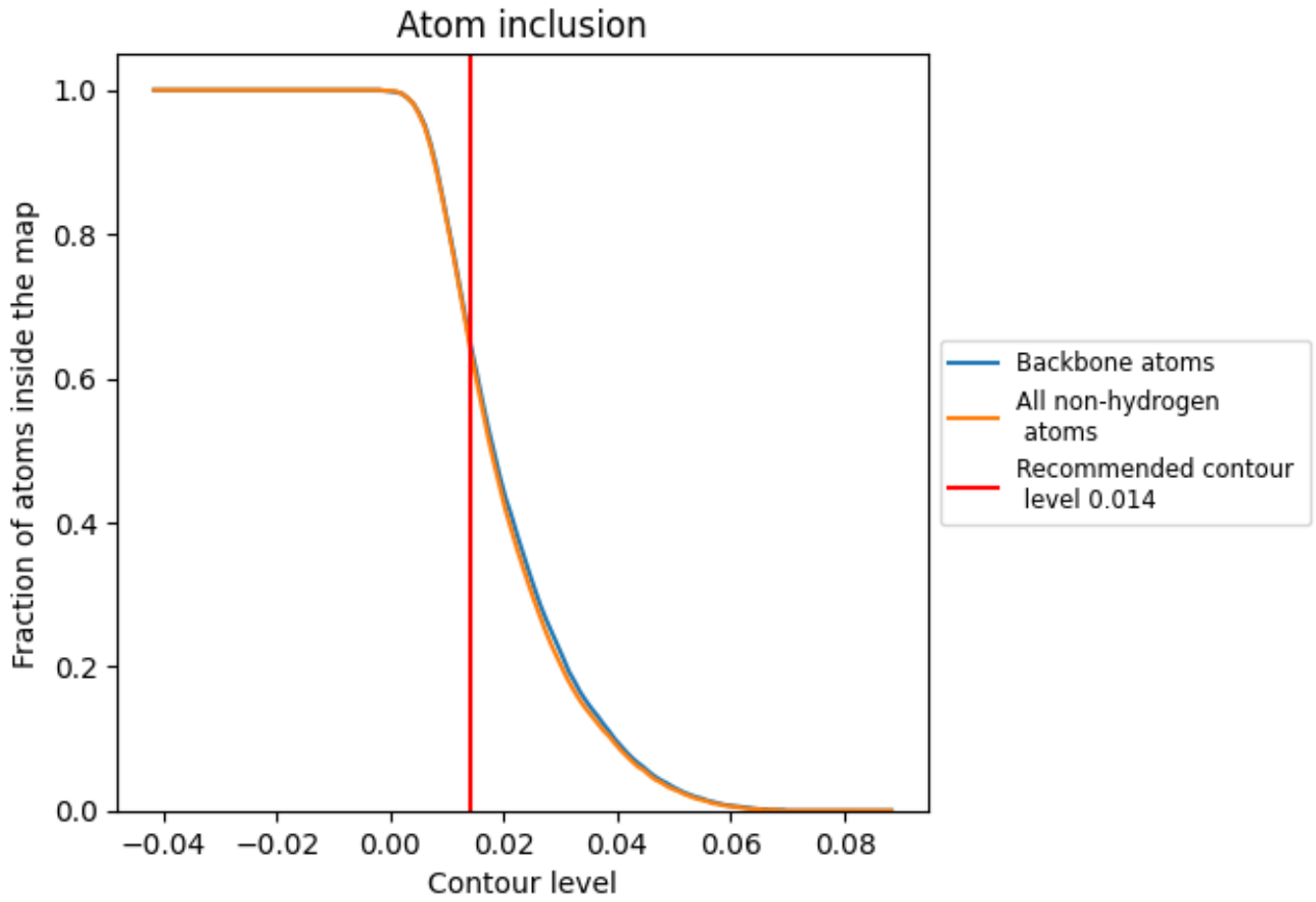
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.014).

9.4 Atom inclusion (i)



At the recommended contour level, 65% of all backbone atoms, 65% 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 (0.014) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6460	0.5400
A	0.7570	0.5810
B	0.5690	0.5140
C	0.5410	0.5060
D	0.7560	0.5750
E	0.6630	0.5440
F	0.6560	0.5480
G	0.5650	0.5010
H	0.6640	0.5210