Full wwPDB EM Validation Report (i)

Nov 6, 2022 – 10:23 AM EST

PDB ID	:	6C26
EMDB ID	:	EMD-7336
Title	:	The Cryo-EM structure of a eukaryotic oligosaccharyl transferase complex
Authors	:	Bai, L.; Li, H.
Deposited on	:	2018-01-06
Resolution	:	3.50 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 (i) 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 (1)) were used in the production of this report:

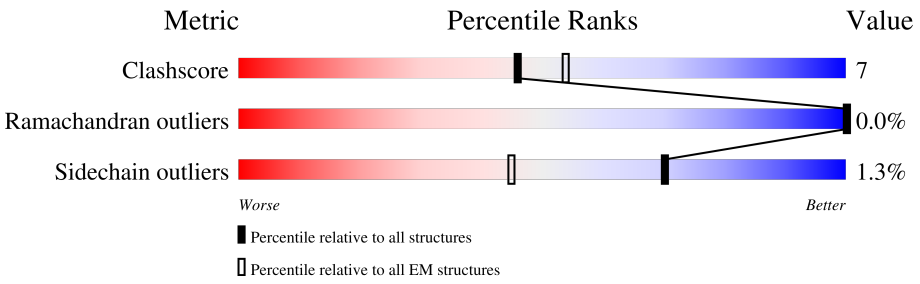
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.50 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 >=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	718	• 81% 9% • 10%
2	1	476	6% 80% 10% • 9%
3	5	86	7% 98% •
4	4	36	• 86% 8% 6%
5	2	130	5% 69% 12% • 17%
6	3	350	5% 34% • 64%
7	C	286	17% 74% 13% 13%
8	B	430	• 74% 17% • 8%

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Mol	Chain	Length	Quality of chain
9	D	7	29% 86% 14%
10	E	3	67% 100%

2 Entry composition (i)

There are 12 unique types of molecules in this entry. The entry contains 17188 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 Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit STT3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	648	5225	3456	839	907	23	0	0

- Molecule 2 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	1	432	3496	2267	560	662	7	0	0

- Molecule 3 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit OST5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	5	84	659	443	98	117	1	0	0

- Molecule 4 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit OST4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	4	34	259	167	39	50	3	0	0

- Molecule 5 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit OST2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	2	108	883	598	139	140	6	0	0

- Molecule 6 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	3	126	1028	700	154	167	7	0	0

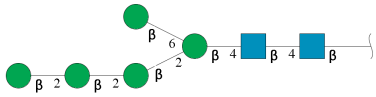
- Molecule 7 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit SWP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	C	248	1940	1272	311	353	4	0	0

- Molecule 8 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit WBP1.

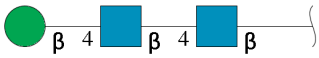
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	B	397	3218	2063	531	620	4	0	0

- Molecule 9 is an oligosaccharide called beta-D-mannopyranose-(1-2)-beta-D-mannopyranose-(1-2)-beta-D-mannopyranose-(1-2)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	D	7	83	46	2	35	0	0

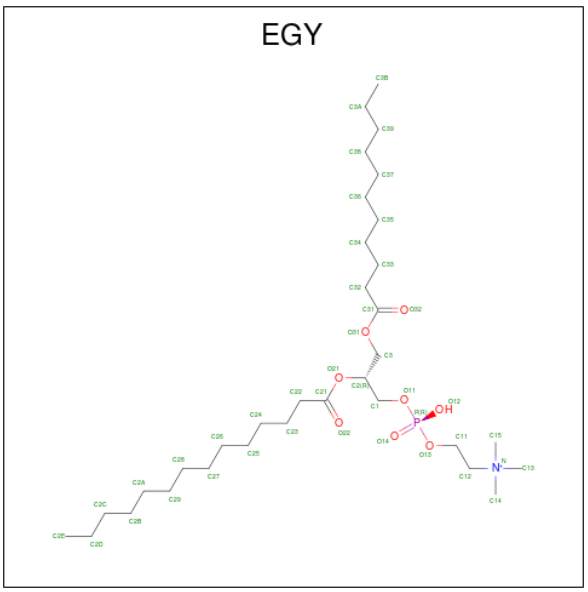
- Molecule 10 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
10	E	3	39	22	2	15	0	0

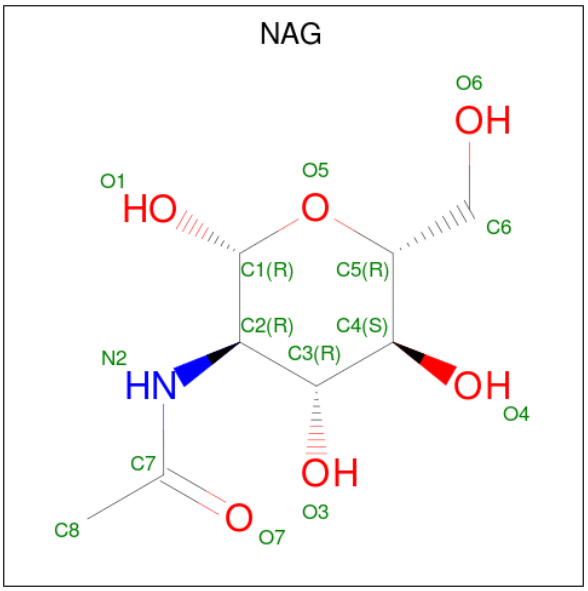
- Molecule 11 is (4R,7R)-4-hydroxy-N,N,N-trimethyl-4,9-dioxo-7-[(undecanoyloxy)methyl]-3,5,8-trioxa-4lambda 5 -phosphadocosan-1-aminium (three-letter code: EGY) (formula:

$C_{33}H_{67}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
11	A	1	Total 129	C 99	N 3	O 24	P 3	0
11	A	1	Total 129	C 99	N 3	O 24	P 3	0
11	A	1	Total 129	C 99	N 3	O 24	P 3	0
11	1	1	Total 86	C 66	N 2	O 16	P 2	0
11	1	1	Total 86	C 66	N 2	O 16	P 2	0
11	4	1	Total 43	C 33	N 1	O 8	P 1	0
11	3	1	Total 43	C 33	N 1	O 8	P 1	0
11	C	1	Total 43	C 33	N 1	O 8	P 1	0

- Molecule 12 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



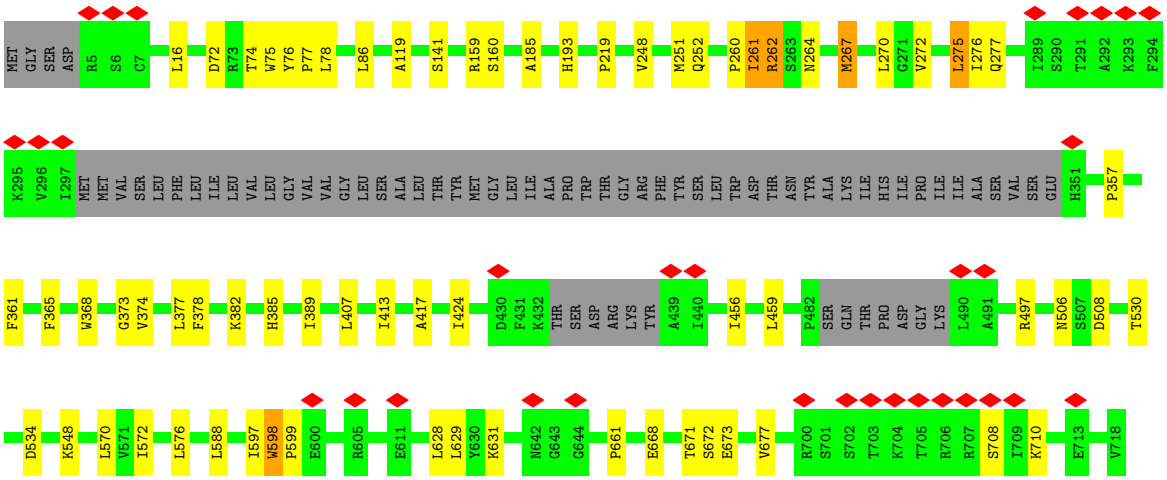
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
12	B	1	14	8	1	5	0

3 Residue-property plots (i)

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

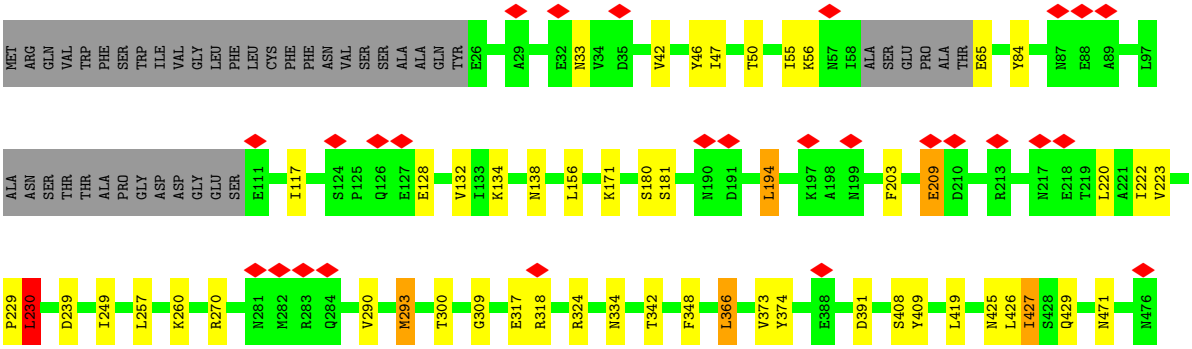
• Molecule 1: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit STT3

Chain A:



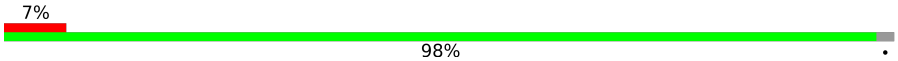
• Molecule 2: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1

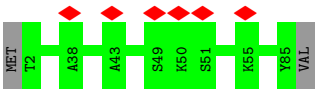
Chain 1:



• Molecule 3: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit OST5

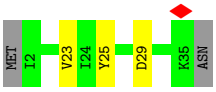
Chain 5:





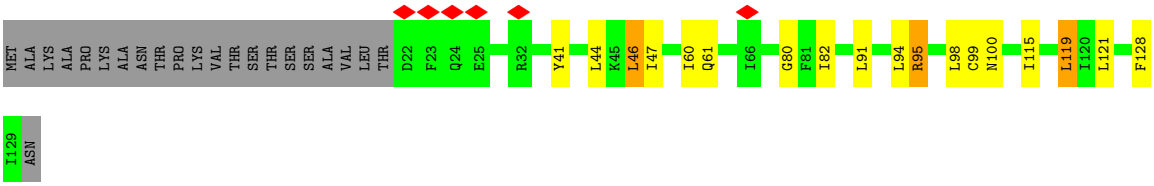
• Molecule 4: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit OST4

Chain 4:



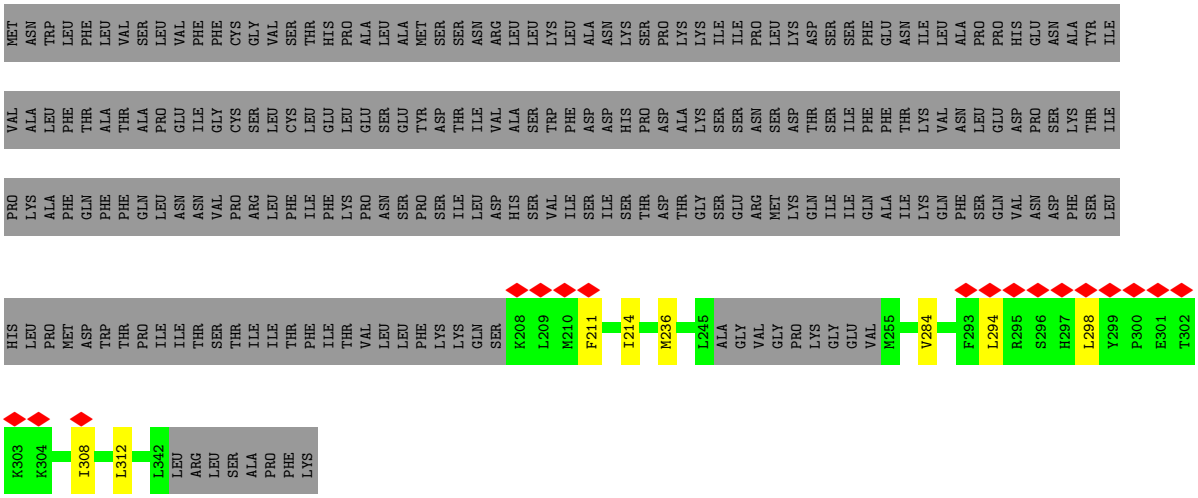
• Molecule 5: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit OST2

Chain 2:



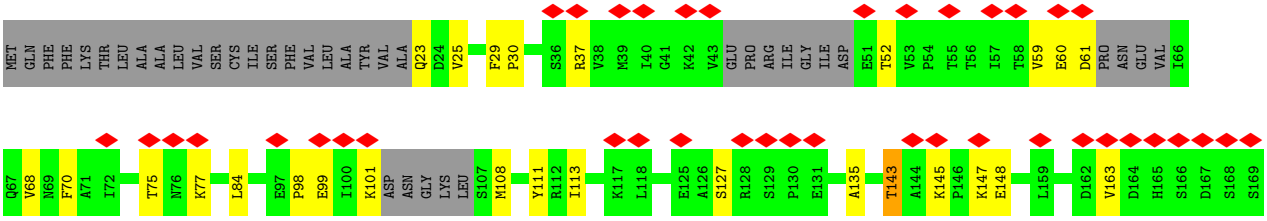
• Molecule 6: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 3

Chain 3:



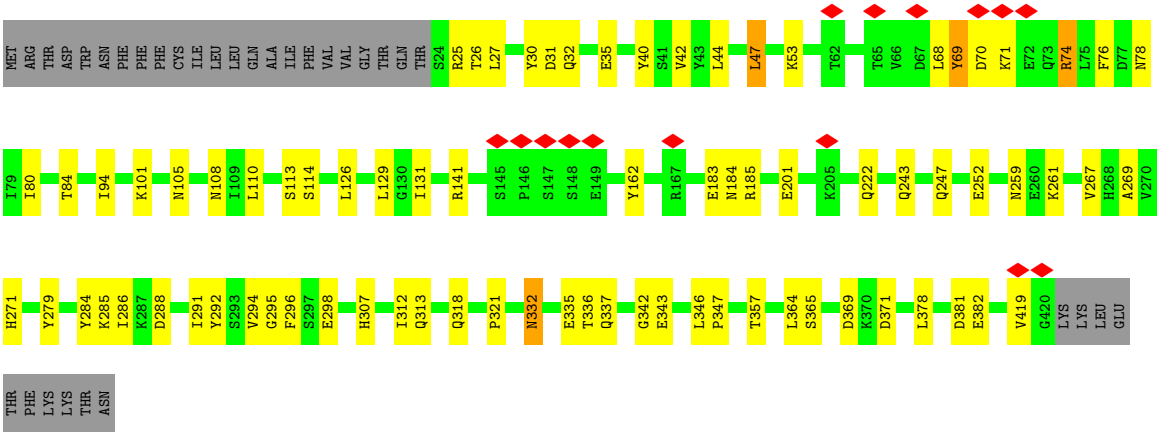
• Molecule 7: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit SWP1

Chain C:



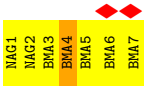
• Molecule 8: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit WBP1

Chain B:



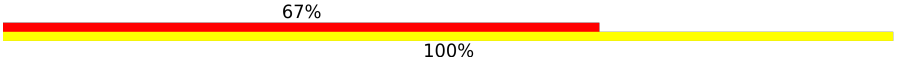
• Molecule 9: beta-D-mannopyranose-(1-2)-beta-D-mannopyranose-(1-2)-beta-D-mannopyranose-(1-2)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:



• Molecule 10: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	282202	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	2	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.290	Depositor
Minimum map value	-0.188	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	278.528, 278.528, 278.528	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.088, 1.088, 1.088	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: NAG, BMA, EGY

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	0.55	0/5377	0.70	6/7309 (0.1%)
2	1	0.53	0/3595	0.70	7/4891 (0.1%)
3	5	0.41	0/677	0.58	0/916
4	4	0.41	0/262	0.57	0/355
5	2	0.46	0/906	0.66	3/1222 (0.2%)
6	3	0.38	0/1057	0.63	0/1435
7	C	0.35	0/1981	0.66	1/2690 (0.0%)
8	B	0.47	0/3300	0.64	1/4482 (0.0%)
All	All	0.49	0/17155	0.67	18/23300 (0.1%)

There are no bond length outliers.

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	1	230	LEU	CA-CB-CG	10.39	139.20	115.30
1	A	76	TYR	C-N-CD	8.57	146.41	128.40
2	1	194	LEU	CA-CB-CG	7.53	132.62	115.30
1	A	459	LEU	CA-CB-CG	7.03	131.46	115.30
5	2	119	LEU	CA-CB-CG	6.17	129.48	115.30
2	1	257	LEU	CA-CB-CG	6.15	129.44	115.30
1	A	570	LEU	CA-CB-CG	6.06	129.25	115.30
5	2	121	LEU	CA-CB-CG	5.72	128.45	115.30
1	A	628	LEU	CA-CB-CG	5.71	128.42	115.30
2	1	427	ILE	CG1-CB-CG2	-5.51	99.29	111.40
5	2	46	LEU	CA-CB-CG	5.45	127.83	115.30
2	1	366	LEU	CB-CG-CD1	-5.42	101.79	111.00
2	1	426	LEU	CA-CB-CG	5.39	127.71	115.30
7	C	210	LEU	CA-CB-CG	5.32	127.55	115.30
1	A	629	LEU	CA-CB-CG	5.20	127.26	115.30
2	1	419	LEU	CA-CB-CG	5.19	127.23	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	459	LEU	CB-CG-CD2	-5.16	102.23	111.00
8	B	47	LEU	CA-CB-CG	5.15	127.15	115.30

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	5225	0	5201	58	0
2	1	3496	0	3376	36	0
3	5	659	0	668	0	0
4	4	259	0	268	6	0
5	2	883	0	914	16	0
6	3	1028	0	1062	4	0
7	C	1940	0	1991	25	0
8	B	3218	0	3120	95	0
9	D	83	0	70	2	0
10	E	39	0	34	0	0
11	1	86	0	0	0	0
11	3	43	0	0	0	0
11	4	43	0	0	0	0
11	A	129	0	0	1	0
11	C	43	0	0	0	0
12	B	14	0	13	0	0
All	All	17188	0	16717	222	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 7.

All (222) 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)
8:B:69:TYR:CE1	8:B:74:ARG:HB3	1.48	1.48
8:B:69:TYR:HE1	8:B:74:ARG:CB	1.39	1.33

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:279:TYR:HD1	8:B:284:TYR:CE2	1.48	1.31
8:B:291:ILE:HG22	8:B:342:GLY:O	1.17	1.31
8:B:279:TYR:CD1	8:B:284:TYR:CE2	2.32	1.16
2:1:229:PRO:O	2:1:230:LEU:HD13	1.48	1.13
7:C:77:LYS:NZ	7:C:143:THR:OG1	1.83	1.09
7:C:52:THR:HG21	7:C:147:LYS:O	1.55	1.04
8:B:267:VAL:HG11	8:B:295:GLY:HA3	1.36	1.04
1:A:16:LEU:HD23	4:4:25:TYR:HD1	1.23	1.02
8:B:267:VAL:CG1	8:B:295:GLY:CA	2.41	0.98
8:B:243:GLN:NE2	8:B:247:GLN:CD	2.17	0.98
8:B:69:TYR:CE1	8:B:74:ARG:CB	2.25	0.97
8:B:69:TYR:OH	8:B:105:ASN:ND2	1.95	0.97
8:B:267:VAL:HG12	8:B:295:GLY:CA	1.93	0.97
8:B:296:PHE:HE2	8:B:312:ILE:HD13	1.28	0.97
8:B:267:VAL:HG12	8:B:295:GLY:O	1.68	0.94
1:A:365:PHE:HB2	1:A:368:TRP:HE3	1.33	0.93
8:B:267:VAL:CG1	8:B:295:GLY:HA3	2.00	0.92
8:B:291:ILE:CG2	8:B:342:GLY:O	2.14	0.92
2:1:229:PRO:O	2:1:230:LEU:CD1	2.20	0.89
8:B:267:VAL:HG12	8:B:295:GLY:C	1.92	0.88
7:C:25:VAL:O	7:C:108:MET:HA	1.73	0.88
7:C:52:THR:CG2	7:C:147:LYS:O	2.21	0.87
2:1:220:LEU:HD13	2:1:222:ILE:HD11	1.55	0.87
8:B:279:TYR:CD1	8:B:284:TYR:HE2	1.93	0.87
8:B:419:VAL:HG12	8:B:419:VAL:O	1.75	0.87
1:A:78:LEU:HD12	1:A:78:LEU:O	1.76	0.86
8:B:296:PHE:HE2	8:B:312:ILE:CD1	1.90	0.84
8:B:69:TYR:HE1	8:B:74:ARG:HB3	0.66	0.81
8:B:69:TYR:HD1	8:B:74:ARG:HA	1.47	0.79
8:B:243:GLN:NE2	8:B:247:GLN:OE1	2.16	0.79
2:1:171:LYS:O	2:1:209:GLU:O	2.00	0.78
5:2:95:ARG:HG3	5:2:95:ARG:HH11	1.49	0.78
8:B:286:ILE:CG2	8:B:378:LEU:HD22	2.14	0.77
8:B:44:LEU:O	8:B:47:LEU:HB3	1.84	0.77
8:B:286:ILE:HG22	8:B:378:LEU:HD22	1.64	0.77
8:B:69:TYR:CD1	8:B:74:ARG:HA	2.19	0.77
1:A:275:LEU:HD22	1:A:275:LEU:O	1.84	0.77
8:B:243:GLN:HE22	8:B:247:GLN:CD	1.87	0.76
1:A:260:PRO:O	1:A:261:ILE:HD13	1.85	0.76
8:B:267:VAL:HG12	8:B:295:GLY:N	2.02	0.75
7:C:77:LYS:CE	7:C:143:THR:OG1	2.35	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:16:LEU:CD2	4:4:25:TYR:HD1	2.01	0.74
1:A:16:LEU:HD23	4:4:25:TYR:CD1	2.15	0.73
1:A:365:PHE:HB2	1:A:368:TRP:CE3	2.22	0.73
8:B:279:TYR:CD1	8:B:284:TYR:CD2	2.76	0.71
1:A:373:GLY:O	1:A:377:LEU:HB2	1.91	0.71
1:A:262:ARG:HH21	1:A:262:ARG:HG3	1.56	0.70
2:1:220:LEU:HD13	2:1:222:ILE:CD1	2.19	0.70
2:1:220:LEU:CD1	2:1:222:ILE:HD11	2.22	0.70
8:B:267:VAL:CG1	8:B:295:GLY:N	2.54	0.70
8:B:296:PHE:CE2	8:B:312:ILE:HD13	2.19	0.70
2:1:33:ASN:HB3	2:1:55:ILE:HG22	1.74	0.69
2:1:230:LEU:CD2	2:1:260:LYS:O	2.41	0.69
8:B:286:ILE:CG2	8:B:378:LEU:CD2	2.70	0.69
8:B:286:ILE:HG21	8:B:378:LEU:CD2	2.23	0.68
8:B:243:GLN:HE21	8:B:247:GLN:CD	1.97	0.68
5:2:44:LEU:HD12	5:2:95:ARG:CZ	2.25	0.68
8:B:69:TYR:HD2	8:B:101:LYS:NZ	1.91	0.67
5:2:95:ARG:HG3	5:2:95:ARG:NH1	2.08	0.67
8:B:321:PRO:O	9:D:4:BMA:O4	2.13	0.67
2:1:230:LEU:HD22	2:1:260:LYS:O	1.96	0.66
8:B:279:TYR:CE1	8:B:284:TYR:CD2	2.86	0.63
1:A:597:ILE:O	1:A:599:PRO:HD3	1.98	0.63
8:B:69:TYR:HD2	8:B:101:LYS:HZ2	1.44	0.62
8:B:267:VAL:HG11	8:B:295:GLY:CA	2.10	0.62
5:2:47:ILE:HG23	5:2:91:LEU:HD12	1.81	0.61
8:B:27:LEU:HD12	8:B:76:PHE:CZ	2.35	0.61
8:B:129:LEU:O	8:B:185:ARG:NH1	2.34	0.61
7:C:77:LYS:HE3	7:C:143:THR:HG1	1.67	0.60
8:B:296:PHE:CE2	8:B:312:ILE:CD1	2.79	0.60
1:A:374:VAL:O	1:A:378:PHE:HB2	2.02	0.59
1:A:262:ARG:HH21	1:A:262:ARG:CG	2.15	0.59
8:B:267:VAL:CG1	8:B:295:GLY:C	2.67	0.59
7:C:77:LYS:HE3	7:C:143:THR:OG1	2.02	0.59
2:1:220:LEU:CD1	2:1:222:ILE:CD1	2.81	0.59
1:A:251:MET:CE	1:A:261:ILE:HG12	2.32	0.59
5:2:99:CYS:SG	5:2:100:ASN:N	2.76	0.59
8:B:69:TYR:CD1	8:B:74:ARG:CA	2.85	0.58
8:B:80:ILE:HG22	8:B:110:LEU:HB3	1.86	0.58
8:B:357:THR:HG23	8:B:357:THR:O	2.03	0.58
7:C:29:PHE:HB3	7:C:68:VAL:HA	1.86	0.57
2:1:42:VAL:HG12	2:1:47:ILE:HG12	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:597:ILE:O	1:A:599:PRO:CD	2.53	0.57
1:A:506:ASN:HD21	2:1:334:ASN:H	1.50	0.57
1:A:119:ALA:HB1	1:A:160:SER:HB2	1.87	0.57
1:A:260:PRO:C	1:A:261:ILE:HD13	2.25	0.57
6:3:294:LEU:O	6:3:298:LEU:HB2	2.04	0.57
8:B:69:TYR:CE1	8:B:74:ARG:CA	2.88	0.57
7:C:256:SER:OG	7:C:259:GLU:OE1	2.23	0.56
1:A:673:GLU:OE1	2:1:270:ARG:NH1	2.38	0.56
7:C:60:GLU:HB3	7:C:70:PHE:HE1	1.71	0.56
8:B:295:GLY:HA2	8:B:337:GLN:O	2.06	0.56
1:A:413:ILE:O	1:A:417:ALA:HB3	2.06	0.55
8:B:267:VAL:HG12	8:B:295:GLY:H	1.70	0.55
2:1:230:LEU:HD21	2:1:260:LYS:O	2.06	0.55
7:C:59:VAL:HG12	7:C:61:ASP:H	1.71	0.55
2:1:471:ASN:HB3	7:C:280:ARG:HH12	1.71	0.54
8:B:69:TYR:CE1	8:B:74:ARG:HB2	2.38	0.54
2:1:65:GLU:N	2:1:117:ILE:O	2.40	0.54
8:B:419:VAL:O	8:B:419:VAL:CG1	2.48	0.54
5:2:60:ILE:HD11	7:C:203:ILE:HD11	1.89	0.54
1:A:530:THR:O	1:A:530:THR:OG1	2.25	0.54
8:B:31:ASP:HB2	8:B:84:THR:HG22	1.90	0.54
8:B:74:ARG:NH1	8:B:105:ASN:O	2.41	0.54
2:1:50:THR:HG22	2:1:134:LYS:HG2	1.89	0.53
2:1:293:MET:SD	2:1:293:MET:N	2.78	0.53
7:C:99:GLU:HG2	7:C:101:LYS:H	1.72	0.53
1:A:267:MET:CE	11:A:803:EGY:C29	2.87	0.53
1:A:251:MET:HE1	1:A:261:ILE:HG12	1.91	0.53
8:B:35:GLU:HG3	8:B:40:TYR:HE2	1.74	0.53
8:B:69:TYR:CD2	8:B:101:LYS:NZ	2.73	0.53
1:A:77:PRO:O	8:B:318:GLN:NE2	2.39	0.52
2:1:180:SER:OG	2:1:181:SER:N	2.42	0.52
5:2:94:LEU:O	5:2:98:LEU:HB2	2.09	0.52
2:1:46:TYR:OH	2:1:429:GLN:NE2	2.42	0.52
8:B:69:TYR:CD1	8:B:74:ARG:CB	2.91	0.52
8:B:108:ASN:HD21	8:B:259:ASN:HD22	1.58	0.51
1:A:262:ARG:CG	1:A:262:ARG:NH2	2.73	0.51
1:A:275:LEU:HD22	1:A:275:LEU:C	2.30	0.51
1:A:270:LEU:HD23	1:A:270:LEU:O	2.11	0.51
8:B:42:VAL:HG11	8:B:243:GLN:HG3	1.92	0.50
8:B:25:ARG:HG2	8:B:53:LYS:HD2	1.93	0.50
2:1:156:LEU:O	2:1:223:VAL:HA	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:141:ARG:HH22	8:B:201:GLU:HB2	1.76	0.49
2:1:229:PRO:C	2:1:230:LEU:CD1	2.81	0.49
8:B:26:THR:HG22	8:B:78:ASN:HD22	1.76	0.49
6:3:308:ILE:O	6:3:312:LEU:HB2	2.13	0.49
8:B:279:TYR:CE1	8:B:284:TYR:CE2	2.96	0.49
1:A:368:TRP:CD1	1:A:368:TRP:C	2.86	0.48
5:2:41:TYR:HD1	8:B:419:VAL:CG2	2.26	0.48
1:A:78:LEU:HD22	9:D:1:NAG:H83	1.94	0.48
5:2:61:GLN:HE22	5:2:80:GLY:HA3	1.78	0.48
7:C:52:THR:HG23	7:C:147:LYS:O	2.12	0.48
1:A:413:ILE:O	1:A:417:ALA:CB	2.61	0.48
1:A:424:ILE:HD11	6:3:284:VAL:HG13	1.96	0.47
5:2:46:LEU:HD23	7:C:219:ALA:HB1	1.96	0.47
1:A:251:MET:HE2	1:A:261:ILE:HG12	1.96	0.47
8:B:222:GLN:HE22	8:B:365:SER:HA	1.78	0.47
8:B:30:TYR:HE2	8:B:32:GLN:HE21	1.63	0.47
1:A:708:SER:OG	1:A:710:LYS:NZ	2.48	0.47
8:B:279:TYR:C	8:B:279:TYR:CD2	2.88	0.47
2:1:56:LYS:HA	2:1:128:GLU:HA	1.96	0.47
7:C:225:ILE:HG22	7:C:227:THR:HG23	1.97	0.47
1:A:141:SER:OG	4:4:29:ASP:OD2	2.33	0.47
7:C:30:PRO:HA	7:C:113:ILE:HG13	1.97	0.47
8:B:68:LEU:HD11	8:B:94:ILE:HG21	1.97	0.47
8:B:162:TYR:CD1	8:B:364:LEU:HD11	2.50	0.47
1:A:631:LYS:HE2	1:A:661:PRO:HG2	1.96	0.46
2:1:373:VAL:HG22	2:1:427:ILE:HG23	1.96	0.46
8:B:243:GLN:O	8:B:247:GLN:HB2	2.15	0.46
1:A:456:ILE:HD13	4:4:23:VAL:HG21	1.96	0.46
1:A:72:ASP:OD1	1:A:72:ASP:N	2.41	0.46
8:B:291:ILE:HG23	8:B:343:GLU:HG2	1.98	0.46
2:1:209:GLU:N	2:1:209:GLU:OE1	2.49	0.45
8:B:269:ALA:HB2	8:B:294:VAL:HG23	1.97	0.45
8:B:371:ASP:N	8:B:371:ASP:OD1	2.49	0.45
8:B:252:GLU:OE2	8:B:261:LYS:NZ	2.39	0.45
5:2:41:TYR:CD1	8:B:419:VAL:CG2	2.99	0.45
1:A:185:ALA:HB2	1:A:193:HIS:HB2	1.97	0.45
2:1:300:THR:HB	2:1:342:THR:HG23	1.97	0.45
7:C:23:GLN:HA	7:C:75:THR:HG21	1.98	0.45
1:A:497:ARG:HH12	2:1:309:GLY:HA3	1.82	0.45
7:C:127:SER:HB3	7:C:163:VAL:HG22	1.99	0.45
8:B:26:THR:HG22	8:B:78:ASN:HB2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:1:290:VAL:HG12	2:1:324:ARG:HG2	1.99	0.45
8:B:279:TYR:HE1	8:B:284:TYR:CD2	2.35	0.44
8:B:243:GLN:HE21	8:B:247:GLN:CG	2.31	0.44
1:A:508:ASP:OD1	1:A:508:ASP:N	2.49	0.44
8:B:381:ASP:OD1	8:B:381:ASP:O	2.36	0.44
1:A:248:VAL:HG21	5:2:82:ILE:HG21	1.98	0.44
1:A:382:LYS:HB2	1:A:385:HIS:CE1	2.52	0.44
1:A:672:SER:OG	1:A:673:GLU:N	2.49	0.44
2:1:239:ASP:OD1	2:1:239:ASP:N	2.49	0.44
1:A:368:TRP:CD1	1:A:368:TRP:O	2.70	0.44
8:B:298:GLU:HB2	8:B:307:HIS:HB2	2.00	0.44
1:A:159:ARG:HG3	1:A:407:LEU:HD22	1.98	0.44
2:1:317:GLU:HG3	2:1:318:ARG:H	1.83	0.44
5:2:115:ILE:O	5:2:119:LEU:HB2	2.18	0.43
8:B:279:TYR:HE1	8:B:284:TYR:HD2	1.65	0.43
8:B:286:ILE:HG22	8:B:378:LEU:CD2	2.35	0.43
7:C:84:LEU:O	7:C:135:ALA:HA	2.17	0.43
2:1:138:ASN:HD22	2:1:425:ASN:HD22	1.66	0.43
1:A:219:PRO:HB3	1:A:272:VAL:HG21	2.01	0.43
8:B:285:LYS:HD3	8:B:382:GLU:OE1	2.19	0.43
8:B:286:ILE:HG21	8:B:378:LEU:HD22	1.90	0.43
6:3:211:PHE:HA	6:3:214:ILE:HG22	2.00	0.43
1:A:16:LEU:CD2	4:4:25:TYR:CD1	2.91	0.43
7:C:277:LYS:HE2	7:C:277:LYS:HB3	1.87	0.43
1:A:262:ARG:CZ	1:A:262:ARG:CB	2.96	0.43
1:A:262:ARG:NH2	1:A:262:ARG:HB2	2.34	0.42
1:A:357:PRO:O	1:A:361:PHE:HB2	2.19	0.42
2:1:249:ILE:HD12	2:1:348:PHE:HD2	1.84	0.42
8:B:183:GLU:HG2	8:B:184:ASN:H	1.84	0.42
8:B:346:LEU:HA	8:B:347:PRO:HD3	1.83	0.42
8:B:369:ASP:OD1	8:B:369:ASP:N	2.51	0.42
8:B:113:SER:OG	8:B:114:SER:N	2.52	0.42
8:B:312:ILE:HG22	8:B:313:GLN:N	2.35	0.42
8:B:332:ASN:ND2	8:B:332:ASN:C	2.73	0.42
5:2:44:LEU:HD12	5:2:95:ARG:NH2	2.35	0.42
7:C:145:LYS:HB3	7:C:148:GLU:HB2	2.02	0.42
8:B:243:GLN:NE2	8:B:247:GLN:NE2	2.66	0.42
1:A:277:GLN:HA	1:A:277:GLN:OE1	2.20	0.42
1:A:378:PHE:HD1	1:A:389:ILE:HD13	1.84	0.42
1:A:572:ILE:HG22	1:A:677:VAL:HG12	2.02	0.42
8:B:271:HIS:HB3	8:B:292:TYR:HD1	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:1:391:ASP:OD1	2:1:391:ASP:N	2.53	0.41
2:1:366:LEU:HD11	2:1:374:TYR:CD2	2.56	0.41
2:1:408:SER:OG	2:1:409:TYR:N	2.49	0.41
8:B:126:LEU:HD13	8:B:131:ILE:HD11	2.01	0.41
1:A:252:GLN:HE22	5:2:128:PHE:HB2	1.85	0.41
5:2:95:ARG:NH1	5:2:95:ARG:CG	2.79	0.41
7:C:176:ILE:HD12	7:C:176:ILE:HA	1.98	0.41
1:A:75:TRP:NE1	1:A:534:ASP:OD1	2.54	0.41
1:A:548:LYS:HD2	1:A:598:TRP:CE3	2.56	0.41
8:B:335:GLU:HG3	8:B:336:THR:HG23	2.02	0.41
1:A:668:GLU:OE2	1:A:671:THR:OG1	2.23	0.40
1:A:78:LEU:O	1:A:78:LEU:CD1	2.59	0.40
2:1:84:TYR:HB2	2:1:132:VAL:HG22	2.02	0.40
7:C:98:PRO:HD2	7:C:111:TYR:CD1	2.56	0.40
8:B:288:ASP:N	8:B:288:ASP:OD1	2.54	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	640/718 (89%)	592 (92%)	47 (7%)	1 (0%)	47	81
2	1	426/476 (90%)	368 (86%)	58 (14%)	0	100	100
3	5	82/86 (95%)	82 (100%)	0	0	100	100
4	4	32/36 (89%)	31 (97%)	1 (3%)	0	100	100
5	2	106/130 (82%)	100 (94%)	6 (6%)	0	100	100
6	3	122/350 (35%)	107 (88%)	15 (12%)	0	100	100
7	C	240/286 (84%)	201 (84%)	39 (16%)	0	100	100
8	B	395/430 (92%)	361 (91%)	34 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	2043/2512 (81%)	1842 (90%)	200 (10%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	598	TRP

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	552/613 (90%)	542 (98%)	10 (2%)	59	81
2	1	391/426 (92%)	386 (99%)	5 (1%)	69	86
3	5	73/75 (97%)	73 (100%)	0	100	100
4	4	31/33 (94%)	31 (100%)	0	100	100
5	2	97/115 (84%)	96 (99%)	1 (1%)	76	88
6	3	112/316 (35%)	111 (99%)	1 (1%)	78	90
7	C	216/249 (87%)	214 (99%)	2 (1%)	78	90
8	B	361/392 (92%)	356 (99%)	5 (1%)	67	85
All	All	1833/2219 (83%)	1809 (99%)	24 (1%)	70	86

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	74	THR
1	A	86	LEU
1	A	261	ILE
1	A	262	ARG
1	A	264	ASN
1	A	267	MET
1	A	275	LEU
1	A	276	ILE
1	A	576	LEU

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Mol	Chain	Res	Type
1	A	588	LEU
2	1	194	LEU
2	1	203	PHE
2	1	209	GLU
2	1	230	LEU
2	1	293	MET
5	2	95	ARG
6	3	236	MET
7	C	37	ARG
7	C	143	THR
8	B	69	TYR
8	B	70	ASP
8	B	71	LYS
8	B	74	ARG
8	B	332	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	51	ASN
1	A	186	GLN
1	A	266	HIS
1	A	506	ASN
2	1	425	ASN
2	1	429	GLN
5	2	61	GLN
8	B	78	ASN
8	B	105	ASN
8	B	222	GLN
8	B	243	GLN
8	B	259	ASN
8	B	307	HIS
8	B	332	ASN

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)

10 monosaccharides 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	$\#\|Z\| > 2$
9	NAG	D	1	9,1	14,14,15	0.34	0	17,19,21	0.72	0
9	NAG	D	2	9	14,14,15	0.50	0	17,19,21	0.77	1 (5%)
9	BMA	D	3	9	11,11,12	1.71	1 (9%)	15,15,17	2.05	4 (26%)
9	BMA	D	4	9	11,11,12	2.98	5 (45%)	15,15,17	2.61	6 (40%)
9	BMA	D	5	9	11,11,12	2.11	3 (27%)	15,15,17	1.74	4 (26%)
9	BMA	D	6	9	11,11,12	0.92	0	15,15,17	0.87	1 (6%)
9	BMA	D	7	9	11,11,12	0.84	0	15,15,17	1.06	1 (6%)
10	NAG	E	1	10,2	14,14,15	0.59	0	17,19,21	2.30	4 (23%)
10	NAG	E	2	10	14,14,15	1.30	2 (14%)	17,19,21	2.58	4 (23%)
10	BMA	E	3	10	11,11,12	1.03	1 (9%)	15,15,17	0.90	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	D	1	9,1	-	3/6/23/26	0/1/1/1
9	NAG	D	2	9	-	2/6/23/26	0/1/1/1
9	BMA	D	3	9	-	2/2/19/22	0/1/1/1
9	BMA	D	4	9	-	1/2/19/22	0/1/1/1
9	BMA	D	5	9	-	2/2/19/22	0/1/1/1
9	BMA	D	6	9	-	2/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	BMA	D	7	9	-	0/2/19/22	0/1/1/1
10	NAG	E	1	10,2	-	5/6/23/26	0/1/1/1
10	NAG	E	2	10	-	3/6/23/26	0/1/1/1
10	BMA	E	3	10	-	2/2/19/22	0/1/1/1

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	D	4	BMA	O2-C2	6.45	1.57	1.43
9	D	4	BMA	C1-C2	5.09	1.63	1.52
9	D	3	BMA	C1-C2	5.02	1.63	1.52
9	D	5	BMA	C2-C3	3.83	1.58	1.52
9	D	5	BMA	O2-C2	3.77	1.51	1.43
9	D	5	BMA	C1-C2	3.40	1.60	1.52
9	D	4	BMA	C4-C5	3.39	1.60	1.53
10	E	2	NAG	O5-C1	3.26	1.48	1.43
10	E	2	NAG	C1-C2	3.16	1.57	1.52
10	E	3	BMA	C1-C2	2.43	1.57	1.52
9	D	4	BMA	C2-C3	2.35	1.56	1.52
9	D	4	BMA	C4-C3	2.29	1.58	1.52

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	E	2	NAG	C2-N2-C7	7.83	134.05	122.90
10	E	1	NAG	C2-N2-C7	7.77	133.97	122.90
9	D	4	BMA	O2-C2-C1	6.07	121.56	109.15
10	E	2	NAG	C1-O5-C5	5.46	119.59	112.19
9	D	3	BMA	O2-C2-C3	-5.19	99.74	110.14
9	D	4	BMA	C1-C2-C3	-4.30	104.38	109.67
9	D	3	BMA	C1-C2-C3	-4.01	104.73	109.67
9	D	4	BMA	O5-C1-C2	-3.99	104.62	110.77
9	D	5	BMA	O2-C2-C1	3.74	116.81	109.15
10	E	1	NAG	C1-C2-N2	3.70	116.82	110.49
10	E	2	NAG	C1-C2-N2	3.51	116.48	110.49
9	D	5	BMA	O2-C2-C3	3.02	116.18	110.14
9	D	4	BMA	C3-C4-C5	2.85	115.32	110.24
9	D	3	BMA	O2-C2-C1	2.81	114.90	109.15
9	D	5	BMA	C2-C3-C4	2.79	115.72	110.89
9	D	2	NAG	C1-O5-C5	2.63	115.76	112.19
9	D	4	BMA	C2-C3-C4	2.55	115.31	110.89

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	D	5	BMA	O5-C1-C2	-2.52	106.88	110.77
9	D	3	BMA	O5-C1-C2	-2.28	107.25	110.77
9	D	4	BMA	O2-C2-C3	2.24	114.62	110.14
10	E	1	NAG	C1-O5-C5	2.19	115.16	112.19
10	E	1	NAG	C8-C7-N2	2.15	119.73	116.10
10	E	2	NAG	C8-C7-N2	2.14	119.72	116.10
9	D	7	BMA	O2-C2-C3	-2.05	106.04	110.14
9	D	6	BMA	O2-C2-C3	-2.00	106.13	110.14

There are no chirality outliers.

All (22) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	D	2	NAG	O5-C5-C6-O6
9	D	3	BMA	C4-C5-C6-O6
9	D	6	BMA	O5-C5-C6-O6
10	E	3	BMA	O5-C5-C6-O6
9	D	2	NAG	C4-C5-C6-O6
9	D	5	BMA	O5-C5-C6-O6
9	D	1	NAG	C8-C7-N2-C2
9	D	1	NAG	O7-C7-N2-C2
10	E	1	NAG	C8-C7-N2-C2
10	E	1	NAG	O7-C7-N2-C2
10	E	2	NAG	C8-C7-N2-C2
10	E	2	NAG	O7-C7-N2-C2
9	D	3	BMA	O5-C5-C6-O6
9	D	6	BMA	C4-C5-C6-O6
9	D	5	BMA	C4-C5-C6-O6
9	D	4	BMA	O5-C5-C6-O6
10	E	3	BMA	C4-C5-C6-O6
10	E	1	NAG	C4-C5-C6-O6
10	E	1	NAG	O5-C5-C6-O6
10	E	1	NAG	C3-C2-N2-C7
9	D	1	NAG	C4-C5-C6-O6
10	E	2	NAG	C3-C2-N2-C7

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	D	4	BMA	1	0

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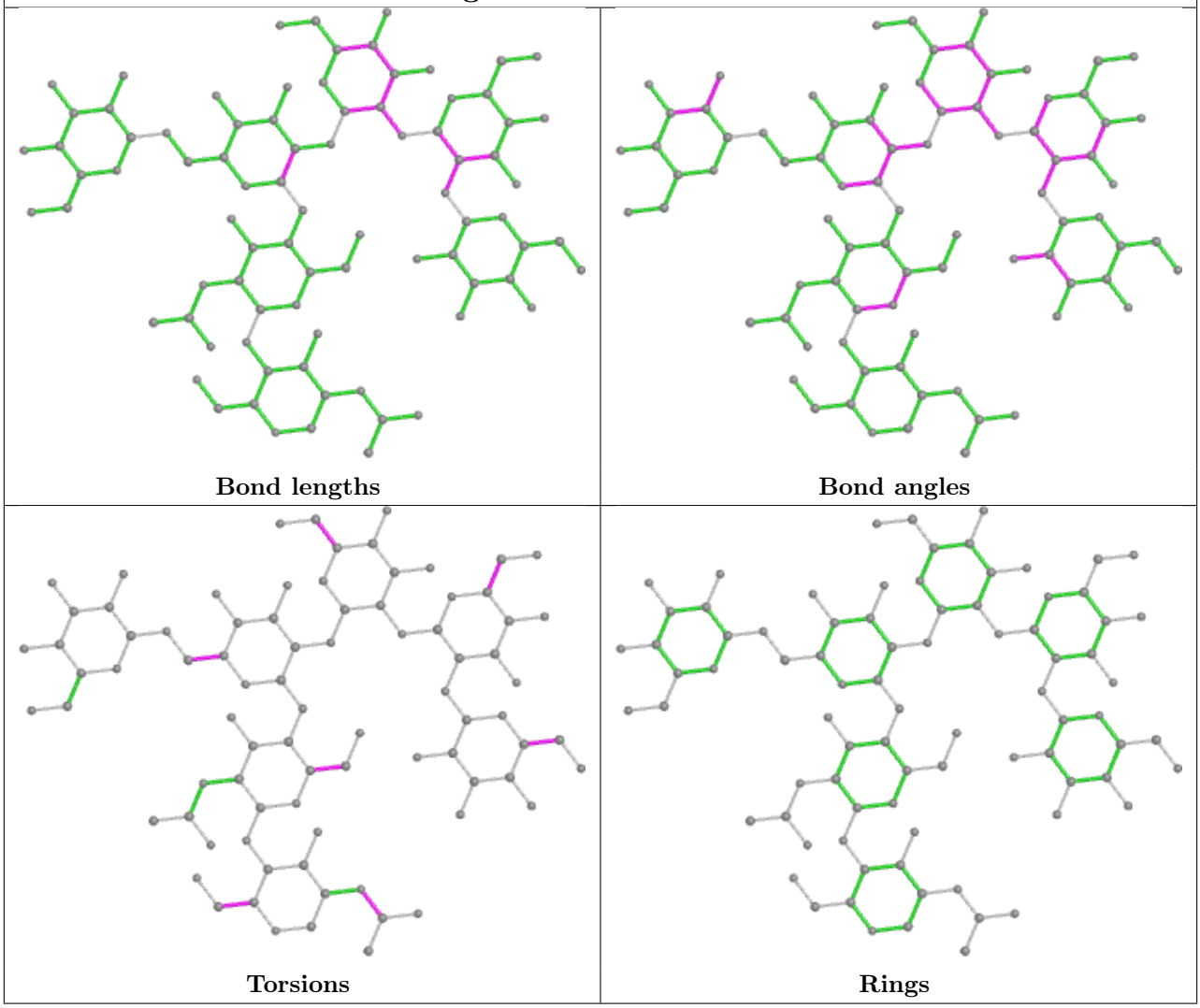
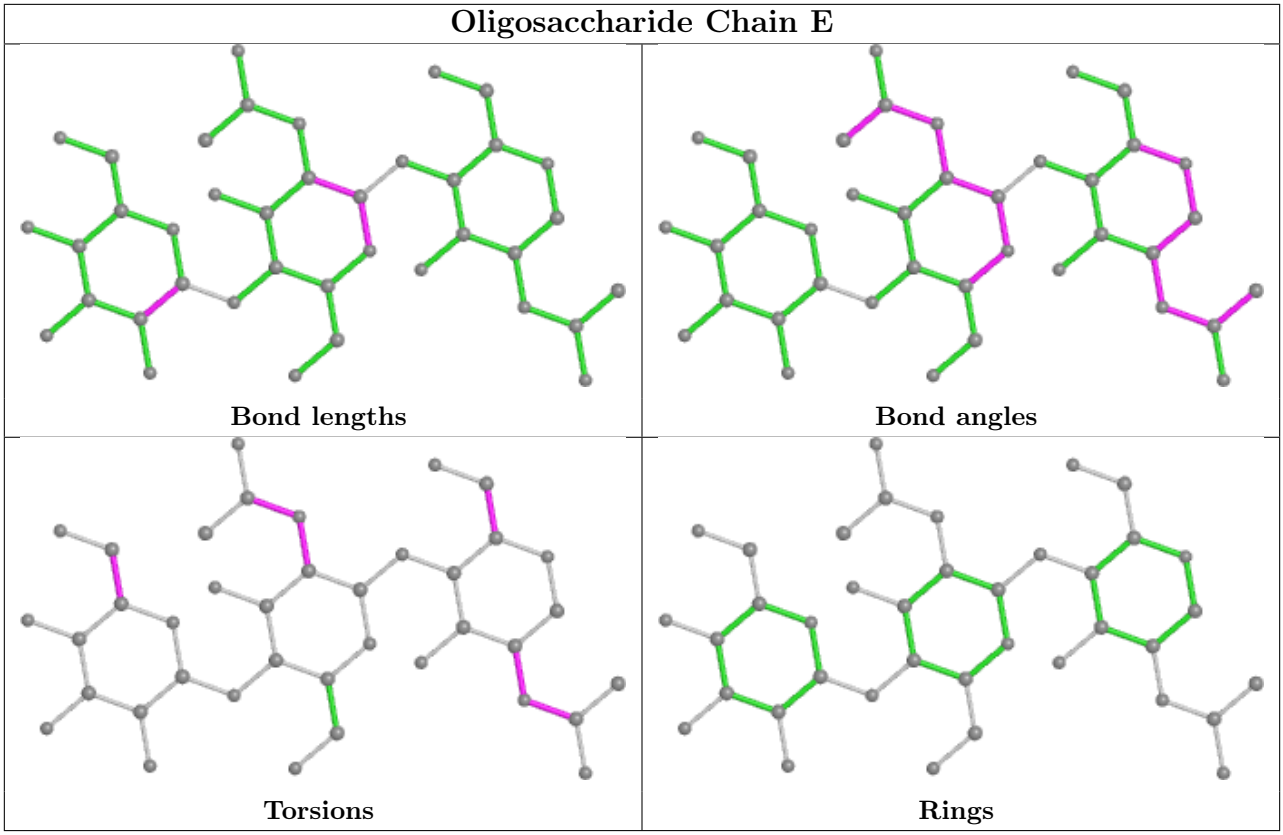
Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	D	1	NAG	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

Oligosaccharide Chain D





5.6 Ligand geometry (i)

9 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	$\#\|Z\| > 2$
11	EGY	A	803	-	42,42,42	1.26	4 (9%)	48,50,50	1.05	3 (6%)
11	EGY	3	401	-	42,42,42	1.25	4 (9%)	48,50,50	1.09	2 (4%)
11	EGY	A	802	-	42,42,42	1.25	5 (11%)	48,50,50	1.13	3 (6%)
11	EGY	C	301	-	42,42,42	1.29	4 (9%)	48,50,50	1.13	2 (4%)
12	NAG	B	601	8	14,14,15	0.62	0	17,19,21	1.00	2 (11%)
11	EGY	A	801	-	42,42,42	1.23	3 (7%)	48,50,50	1.10	2 (4%)
11	EGY	4	101	-	42,42,42	1.25	4 (9%)	48,50,50	1.06	2 (4%)
11	EGY	1	501	-	42,42,42	1.24	4 (9%)	48,50,50	1.12	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
11	EGY	1	502	-	42,42,42	1.25	4 (9%)	48,50,50	1.09	2 (4%)

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
11	EGY	A	803	-	-	18/46/46/46	-
11	EGY	3	401	-	-	26/46/46/46	-
11	EGY	A	802	-	-	18/46/46/46	-
11	EGY	C	301	-	-	20/46/46/46	-
12	NAG	B	601	8	-	2/6/23/26	0/1/1/1
11	EGY	A	801	-	-	26/46/46/46	-
11	EGY	4	101	-	-	17/46/46/46	-
11	EGY	1	501	-	-	18/46/46/46	-
11	EGY	1	502	-	-	24/46/46/46	-

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	C	301	EGY	O21-C21	3.24	1.43	1.34
11	4	101	EGY	O31-C31	3.17	1.42	1.33
11	A	803	EGY	O31-C31	3.14	1.42	1.33
11	C	301	EGY	O31-C31	3.14	1.42	1.33
11	3	401	EGY	O31-C31	3.09	1.42	1.33
11	A	801	EGY	O31-C31	3.08	1.42	1.33
11	4	101	EGY	O21-C21	3.06	1.42	1.34
11	1	502	EGY	O31-C31	3.06	1.42	1.33
11	1	501	EGY	O31-C31	3.05	1.42	1.33
11	A	802	EGY	O21-C21	3.05	1.42	1.34
11	1	502	EGY	O21-C21	3.00	1.42	1.34
11	3	401	EGY	O21-C21	2.94	1.42	1.34
11	1	501	EGY	O21-C21	2.92	1.42	1.34
11	A	801	EGY	O21-C21	2.92	1.42	1.34
11	A	803	EGY	O21-C21	2.86	1.42	1.34
11	A	802	EGY	O31-C31	2.70	1.41	1.33
11	A	803	EGY	O21-C2	-2.42	1.40	1.46
11	3	401	EGY	O21-C2	-2.39	1.40	1.46
11	1	501	EGY	O21-C2	-2.31	1.40	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	A	801	EGY	O21-C2	-2.31	1.40	1.46
11	A	802	EGY	O21-C2	-2.28	1.40	1.46
11	1	502	EGY	O21-C2	-2.27	1.40	1.46
11	4	101	EGY	O21-C2	-2.21	1.41	1.46
11	A	802	EGY	P-O13	2.15	1.68	1.59
11	C	301	EGY	O21-C2	-2.12	1.41	1.46
11	C	301	EGY	C22-C21	2.12	1.56	1.50
11	A	803	EGY	P-O13	2.08	1.67	1.59
11	A	802	EGY	C22-C21	2.08	1.56	1.50
11	1	501	EGY	P-O13	2.06	1.67	1.59
11	1	502	EGY	P-O13	2.06	1.67	1.59
11	3	401	EGY	P-O13	2.04	1.67	1.59
11	4	101	EGY	P-O13	2.01	1.67	1.59

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	C	301	EGY	O21-C21-C22	4.57	121.35	111.50
11	1	501	EGY	O21-C21-C22	4.25	120.67	111.50
11	A	802	EGY	O21-C21-C22	4.14	120.42	111.50
11	A	801	EGY	O21-C21-C22	4.05	120.23	111.50
11	1	502	EGY	O21-C21-C22	4.05	120.23	111.50
11	3	401	EGY	O21-C21-C22	4.02	120.16	111.50
11	A	803	EGY	O21-C21-C22	3.65	119.37	111.50
11	4	101	EGY	O21-C21-C22	3.59	119.24	111.50
12	B	601	NAG	C2-N2-C7	3.03	127.22	122.90
11	C	301	EGY	O31-C31-C32	2.89	120.97	111.91
11	A	803	EGY	O31-C31-C32	2.72	120.43	111.91
11	1	502	EGY	O31-C31-C32	2.63	120.17	111.91
11	4	101	EGY	O31-C31-C32	2.54	119.88	111.91
11	3	401	EGY	O31-C31-C32	2.51	119.78	111.91
11	A	801	EGY	O31-C31-C32	2.49	119.71	111.91
11	A	802	EGY	O31-C31-C32	2.35	119.27	111.91
11	1	501	EGY	O31-C31-C32	2.31	119.17	111.91
11	A	802	EGY	C3-C2-C1	-2.15	106.71	111.79
12	B	601	NAG	C1-O5-C5	2.03	114.95	112.19
11	A	803	EGY	C23-C22-C21	-2.02	106.28	113.62

There are no chirality outliers.

All (169) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	A	801	EGY	C11-O13-P-O12
11	A	801	EGY	C11-O13-P-O14
11	A	801	EGY	C11-O13-P-O11
11	A	801	EGY	C1-O11-P-O12
11	A	801	EGY	C1-O11-P-O14
11	A	801	EGY	C22-C21-O21-C2
11	A	803	EGY	C11-O13-P-O11
11	A	803	EGY	C1-O11-P-O12
11	A	803	EGY	C1-O11-P-O14
11	1	501	EGY	C11-O13-P-O14
11	1	501	EGY	C1-O11-P-O14
11	1	501	EGY	C12-C11-O13-P
11	1	502	EGY	C11-O13-P-O14
11	1	502	EGY	C1-O11-P-O14
11	1	502	EGY	C12-C11-O13-P
11	4	101	EGY	C11-O13-P-O12
11	4	101	EGY	C11-O13-P-O14
11	4	101	EGY	O13-C11-C12-N
11	3	401	EGY	C11-O13-P-O12
11	3	401	EGY	C1-O11-P-O12
11	3	401	EGY	C12-C11-O13-P
11	3	401	EGY	O13-C11-C12-N
11	3	401	EGY	O11-C1-C2-O21
11	3	401	EGY	C22-C21-O21-C2
11	C	301	EGY	C11-O13-P-O12
11	C	301	EGY	C11-O13-P-O14
11	C	301	EGY	C1-O11-P-O13
11	C	301	EGY	O13-C11-C12-N
11	C	301	EGY	O22-C21-O21-C2
11	C	301	EGY	C22-C21-O21-C2
11	A	801	EGY	O32-C31-O31-C3
11	A	803	EGY	O32-C31-O31-C3
11	A	801	EGY	C32-C31-O31-C3
11	1	502	EGY	O32-C31-O31-C3
11	C	301	EGY	O32-C31-O31-C3
11	A	801	EGY	O22-C21-O21-C2
11	3	401	EGY	O22-C21-O21-C2
11	A	803	EGY	C32-C31-O31-C3
11	1	502	EGY	C32-C31-O31-C3
11	C	301	EGY	C32-C31-O31-C3
11	A	802	EGY	C32-C31-O31-C3
11	1	501	EGY	C32-C31-O31-C3
11	4	101	EGY	C32-C31-O31-C3

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Mol	Chain	Res	Type	Atoms
11	A	802	EGY	O32-C31-O31-C3
11	1	501	EGY	O32-C31-O31-C3
11	A	801	EGY	C21-C22-C23-C24
11	1	502	EGY	C21-C22-C23-C24
11	4	101	EGY	O32-C31-O31-C3
11	A	801	EGY	C1-O11-P-O13
11	A	802	EGY	C11-O13-P-O11
11	A	803	EGY	C1-O11-P-O13
11	1	501	EGY	C11-O13-P-O11
11	1	501	EGY	C1-O11-P-O13
11	1	502	EGY	C1-O11-P-O13
11	4	101	EGY	C11-O13-P-O11
11	3	401	EGY	C11-O13-P-O11
11	3	401	EGY	C1-O11-P-O13
11	C	301	EGY	C11-O13-P-O11
11	3	401	EGY	C11-C12-N-C13
11	3	401	EGY	C11-C12-N-C14
11	3	401	EGY	C11-C12-N-C15
11	4	101	EGY	C22-C23-C24-C25
11	3	401	EGY	C36-C37-C38-C39
11	C	301	EGY	C36-C37-C38-C39
11	A	801	EGY	C37-C38-C39-C3A
11	A	803	EGY	C33-C34-C35-C36
11	A	802	EGY	C31-C32-C33-C34
11	3	401	EGY	C23-C24-C25-C26
11	C	301	EGY	C37-C38-C39-C3A
11	1	502	EGY	C35-C36-C37-C38
11	4	101	EGY	C23-C24-C25-C26
11	C	301	EGY	C25-C26-C27-C28
11	A	802	EGY	C26-C27-C28-C29
11	1	502	EGY	C34-C35-C36-C37
11	1	501	EGY	C29-C2A-C2B-C2C
11	4	101	EGY	C34-C35-C36-C37
11	1	502	EGY	C22-C21-O21-C2
11	1	502	EGY	C36-C37-C38-C39
11	1	501	EGY	C26-C27-C28-C29
11	1	501	EGY	C28-C29-C2A-C2B
11	1	501	EGY	C25-C26-C27-C28
11	C	301	EGY	C24-C25-C26-C27
11	A	803	EGY	C21-C22-C23-C24
11	A	801	EGY	C25-C26-C27-C28
11	1	502	EGY	C31-C32-C33-C34

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Mol	Chain	Res	Type	Atoms
11	4	101	EGY	C21-C22-C23-C24
11	3	401	EGY	C31-C32-C33-C34
11	1	502	EGY	C37-C38-C39-C3A
11	1	502	EGY	O22-C21-O21-C2
11	A	801	EGY	C32-C33-C34-C35
11	1	501	EGY	O11-C1-C2-C3
11	1	502	EGY	O11-C1-C2-C3
11	C	301	EGY	C1-C2-C3-O31
11	A	801	EGY	C27-C28-C29-C2A
11	1	501	EGY	C27-C28-C29-C2A
11	A	801	EGY	C26-C27-C28-C29
11	3	401	EGY	C28-C29-C2A-C2B
11	3	401	EGY	C29-C2A-C2B-C2C
11	A	803	EGY	C28-C29-C2A-C2B
11	A	802	EGY	C22-C21-O21-C2
11	3	401	EGY	C26-C27-C28-C29
11	3	401	EGY	O11-C1-C2-C3
11	3	401	EGY	C1-C2-C3-O31
11	1	501	EGY	O11-C1-C2-O21
11	A	802	EGY	O22-C21-O21-C2
11	A	802	EGY	C33-C34-C35-C36
11	A	803	EGY	O21-C2-C3-O31
11	C	301	EGY	O21-C2-C3-O31
11	4	101	EGY	C38-C39-C3A-C3B
11	A	803	EGY	C36-C37-C38-C39
11	A	801	EGY	C24-C25-C26-C27
11	3	401	EGY	C32-C33-C34-C35
11	A	803	EGY	C32-C33-C34-C35
11	A	803	EGY	C1-C2-C3-O31
11	3	401	EGY	C33-C34-C35-C36
11	1	502	EGY	O11-C1-C2-O21
11	1	501	EGY	C38-C39-C3A-C3B
11	C	301	EGY	C34-C35-C36-C37
11	1	502	EGY	C11-O13-P-O11
11	A	802	EGY	C11-O13-P-O12
11	A	802	EGY	C11-O13-P-O14
11	3	401	EGY	C1-O11-P-O14
11	C	301	EGY	C1-O11-P-O12
11	C	301	EGY	O11-C1-C2-C3
11	A	802	EGY	C34-C35-C36-C37
11	4	101	EGY	C31-C32-C33-C34
12	B	601	NAG	C4-C5-C6-O6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
11	C	301	EGY	O11-C1-C2-O21
11	A	802	EGY	C11-C12-N-C14
11	1	502	EGY	C2B-C2C-C2D-C2E
11	A	801	EGY	O13-C11-C12-N
11	A	803	EGY	O13-C11-C12-N
11	3	401	EGY	O21-C2-C3-O31
11	1	501	EGY	C2B-C2C-C2D-C2E
11	1	502	EGY	C33-C34-C35-C36
11	4	101	EGY	C37-C38-C39-C3A
11	A	803	EGY	C27-C28-C29-C2A
11	A	802	EGY	C11-C12-N-C13
11	A	802	EGY	C11-C12-N-C15
11	A	801	EGY	C23-C24-C25-C26
11	1	502	EGY	C23-C24-C25-C26
11	3	401	EGY	O31-C31-C32-C33
11	C	301	EGY	C2B-C2C-C2D-C2E
11	A	801	EGY	C22-C23-C24-C25
11	A	801	EGY	C38-C39-C3A-C3B
11	1	502	EGY	C22-C23-C24-C25
11	1	502	EGY	C38-C39-C3A-C3B
11	A	802	EGY	O11-C1-C2-O21
11	A	803	EGY	C23-C24-C25-C26
11	A	803	EGY	O31-C31-C32-C33
11	4	101	EGY	O21-C21-C22-C23
11	1	502	EGY	O21-C21-C22-C23
11	A	801	EGY	C33-C34-C35-C36
11	1	501	EGY	O22-C21-O21-C2
11	4	101	EGY	O31-C31-C32-C33
11	3	401	EGY	C2A-C2B-C2C-C2D
11	A	801	EGY	O21-C2-C3-O31
11	A	802	EGY	C38-C39-C3A-C3B
12	B	601	NAG	C3-C2-N2-C7
11	A	802	EGY	O21-C21-C22-C23
11	1	502	EGY	O22-C21-C22-C23
11	A	803	EGY	O32-C31-C32-C33
11	4	101	EGY	O32-C31-C32-C33
11	4	101	EGY	O22-C21-C22-C23
11	A	801	EGY	O31-C31-C32-C33
11	1	501	EGY	C22-C21-O21-C2
11	A	801	EGY	C12-C11-O13-P
11	A	802	EGY	O22-C21-C22-C23
11	A	801	EGY	O32-C31-C32-C33

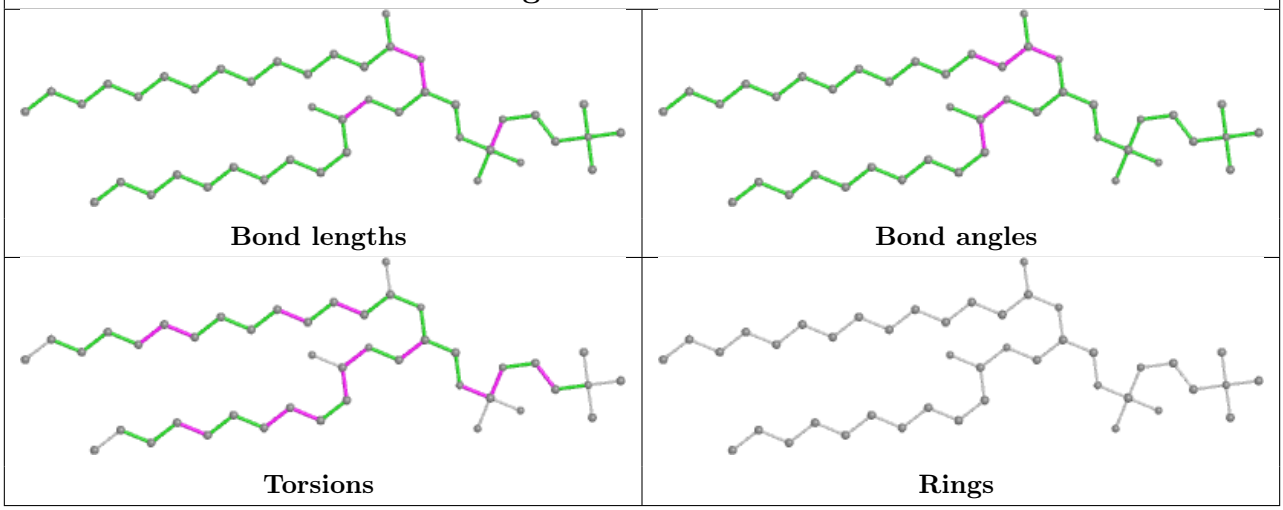
There are no ring outliers.

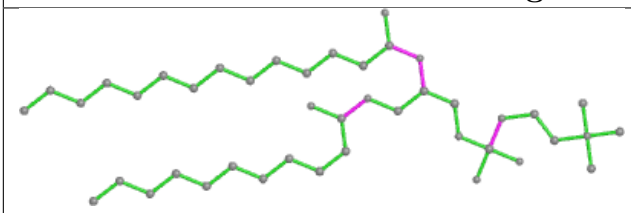
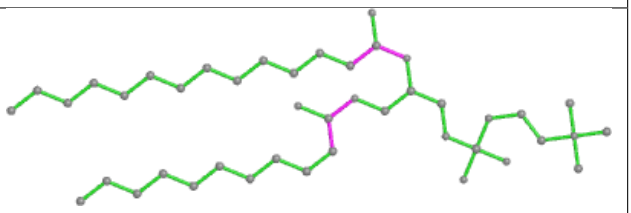
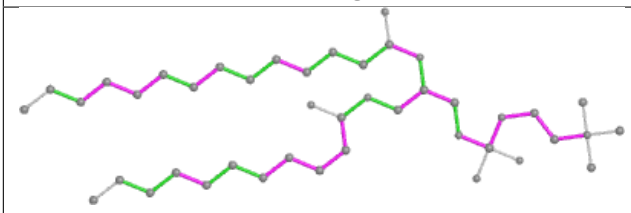
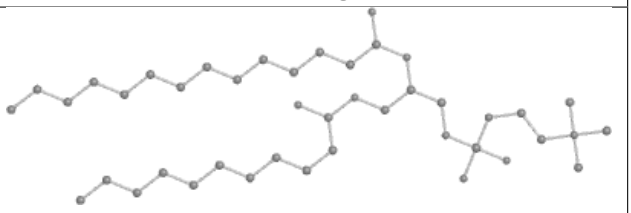
1 monomer is involved in 1 short contact:

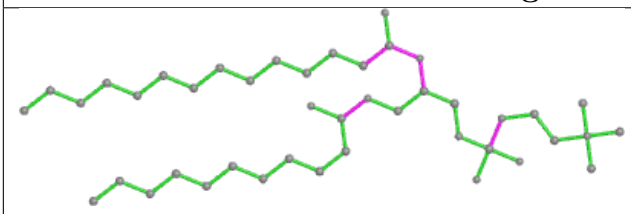
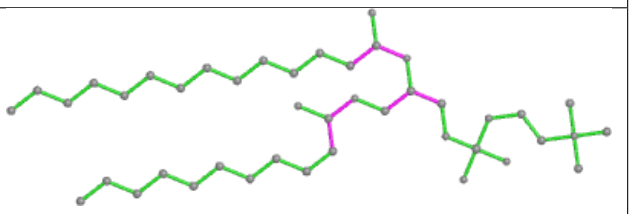
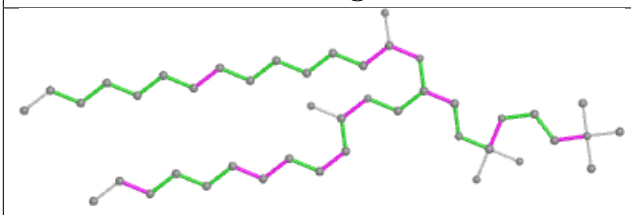
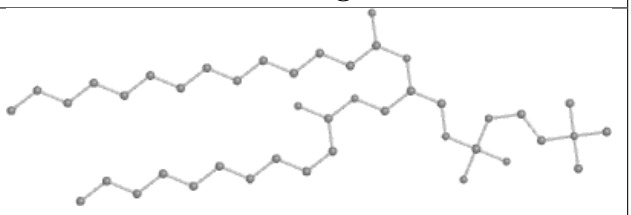
Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	A	803	EGY	1	0

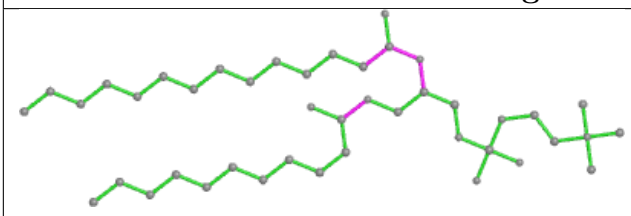
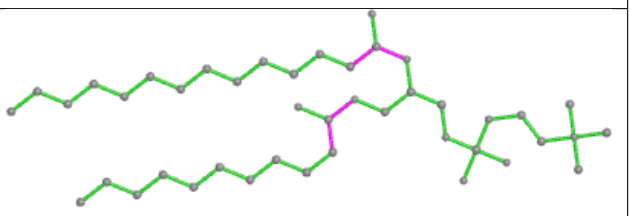
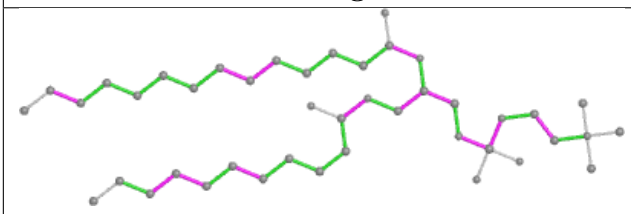
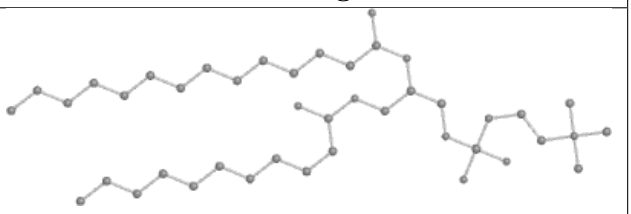
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

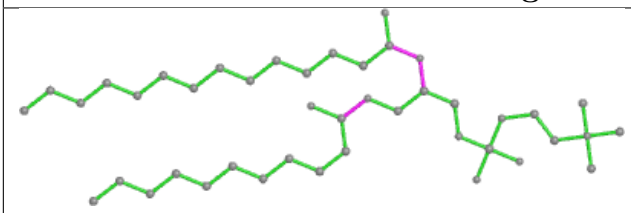
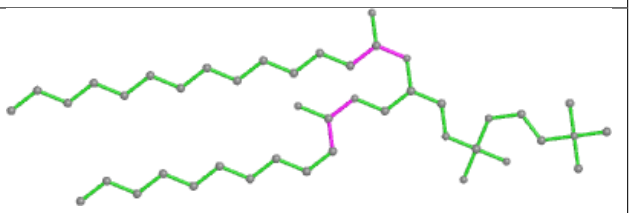
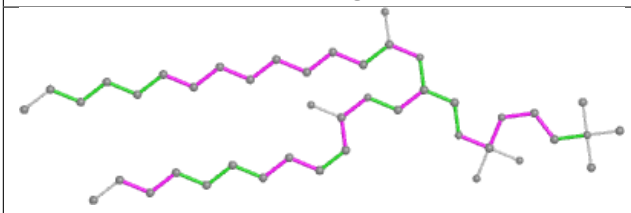
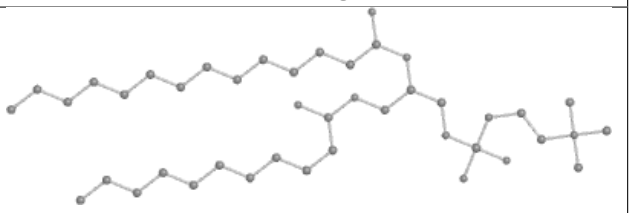
Ligand EGY A 803

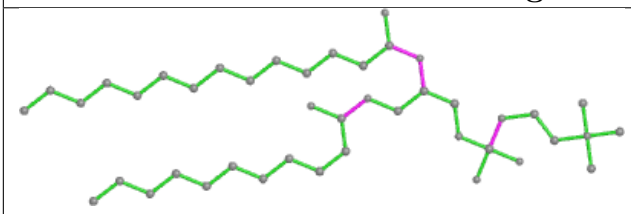
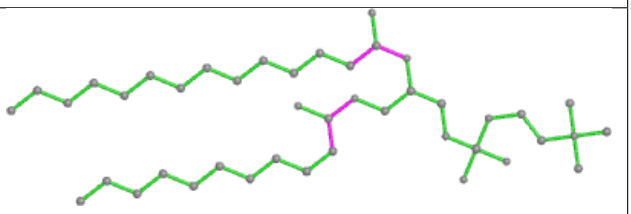
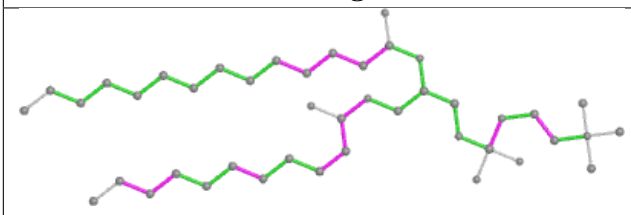
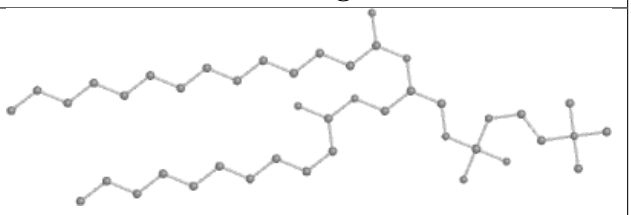


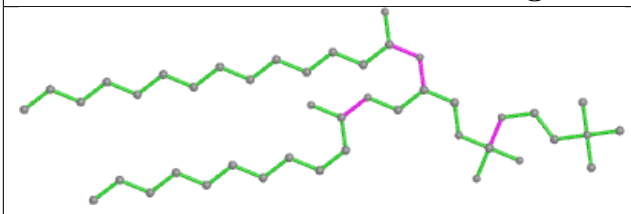
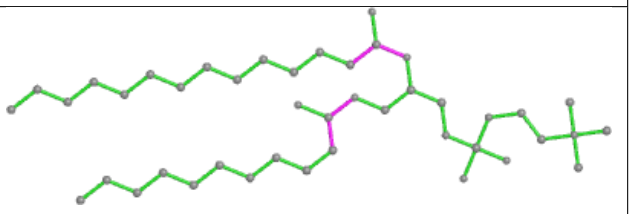
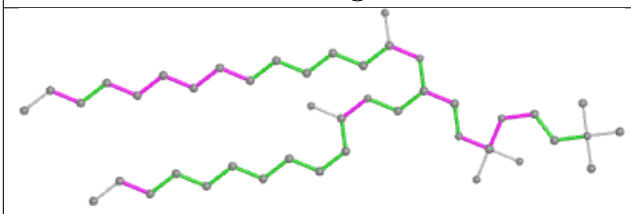
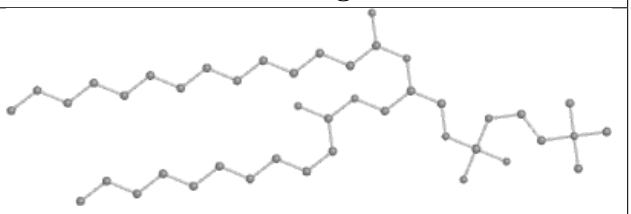
Ligand EGY 3 401	
 Bond lengths	 Bond angles
 Torsions	 Rings

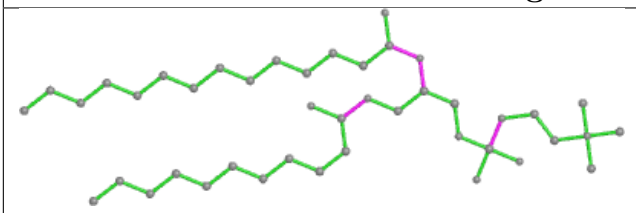
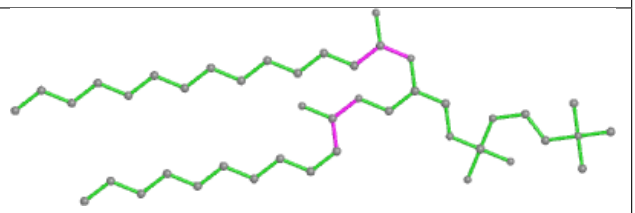
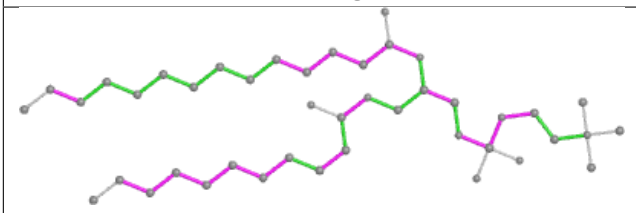
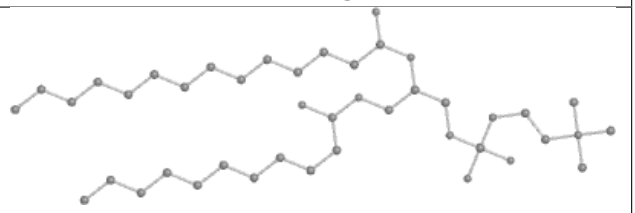
Ligand EGY A 802	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand EGY C 301	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand EGY A 801	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand EGY 4 101	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand EGY 1 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand EGY 1 502	
 Bond lengths	 Bond angles
 Torsions	 Rings

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.

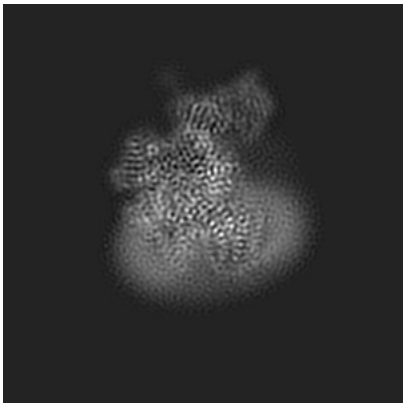
6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-7336. These allow visual inspection of the internal detail of the map and identification of artifacts.

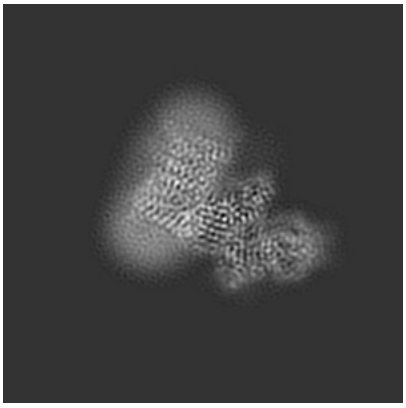
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections (i)

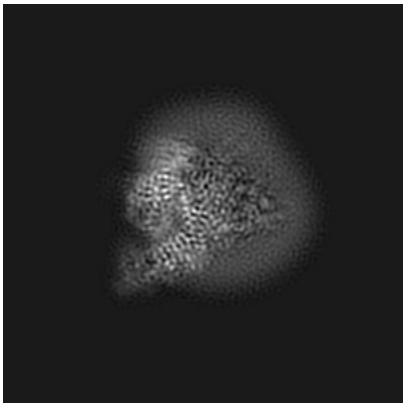
6.1.1 Primary map



X



Y

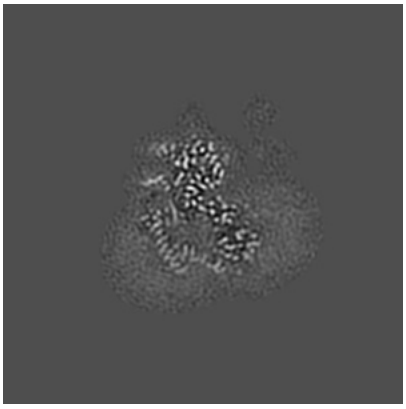


Z

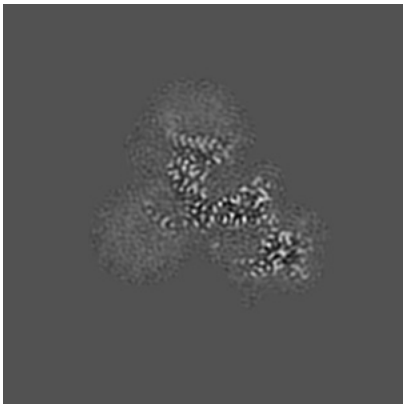
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

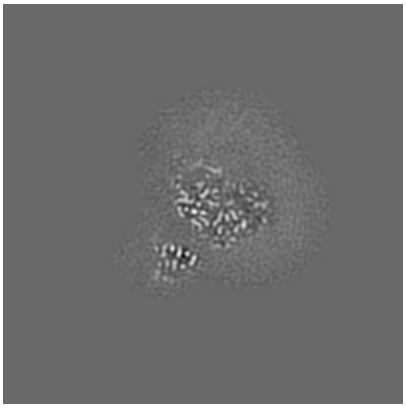
6.2.1 Primary map



X Index: 128



Y Index: 128

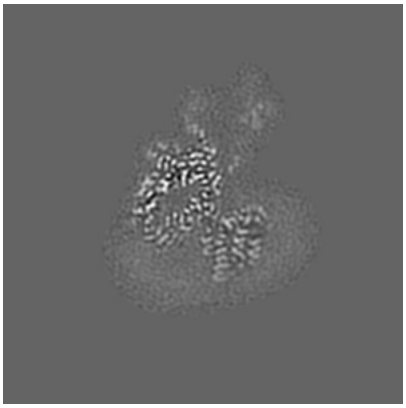


Z Index: 128

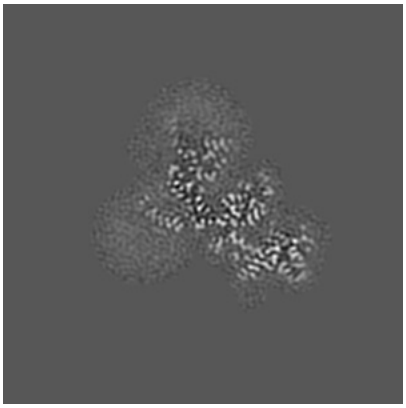
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

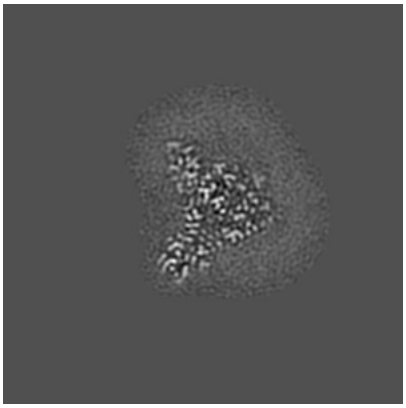
6.3.1 Primary map



X Index: 118



Y Index: 131



Z Index: 118

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

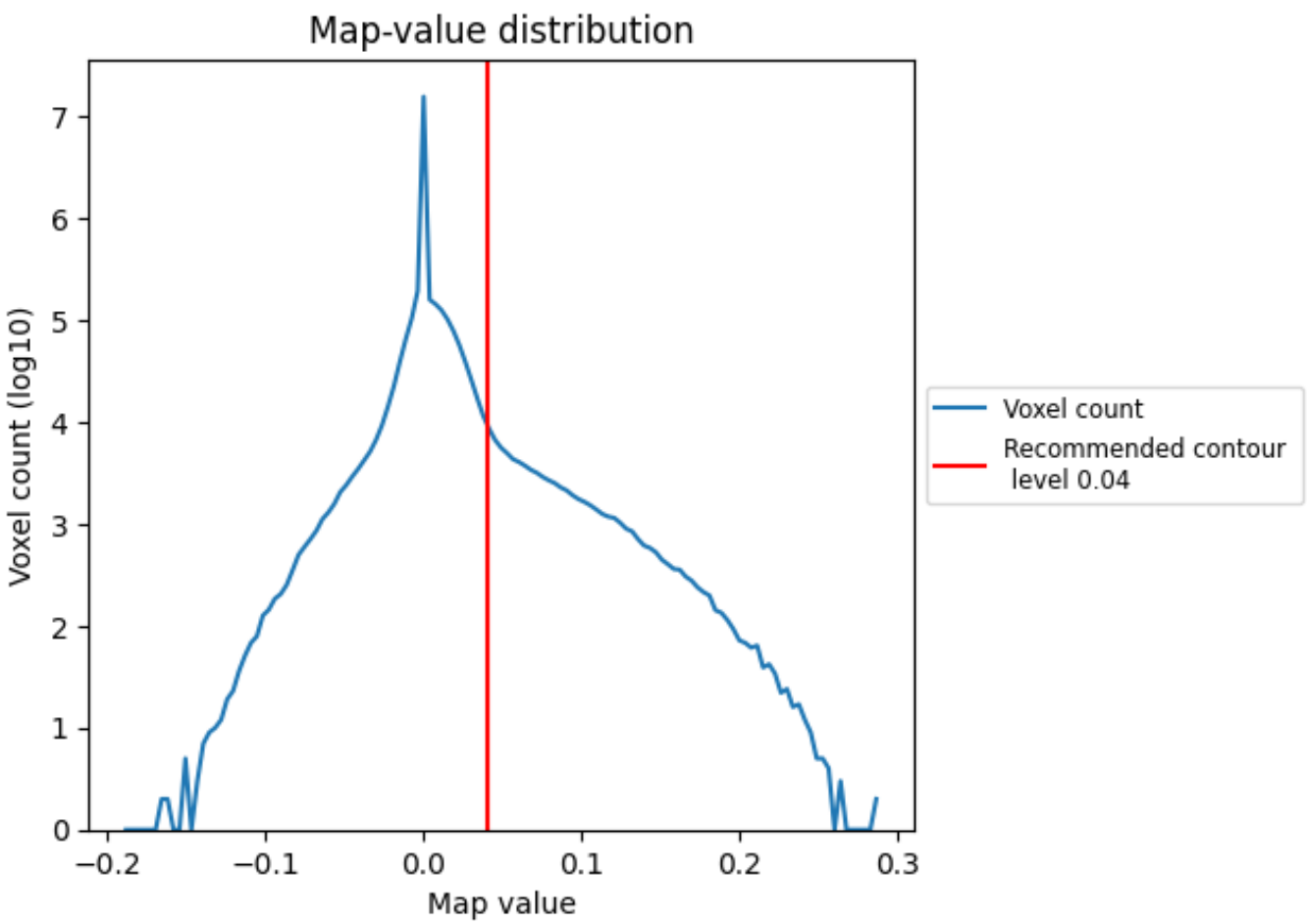
6.5 Mask visualisation (i)

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

7 Map analysis (i)

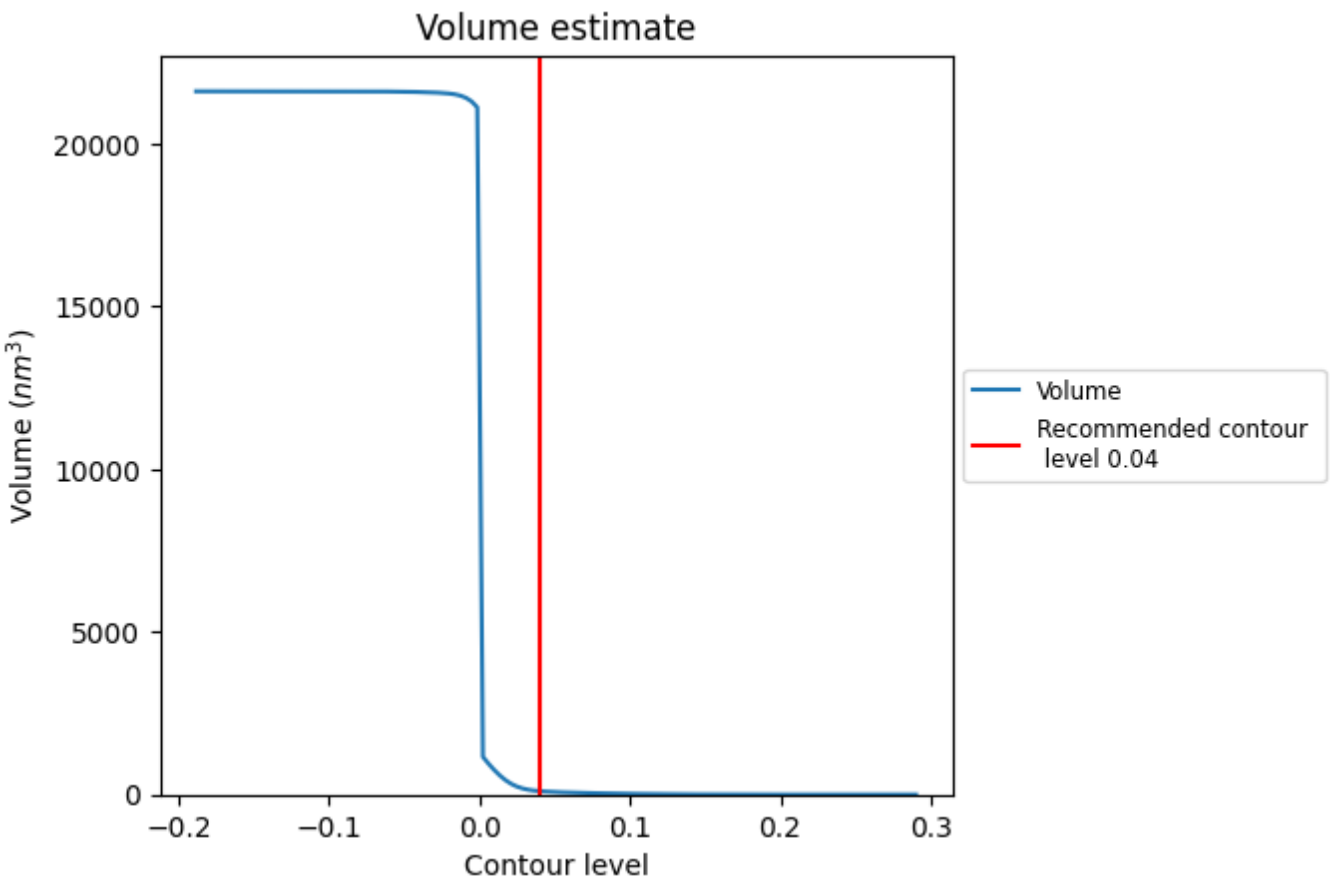
This section contains the results of statistical analysis of the map.

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.

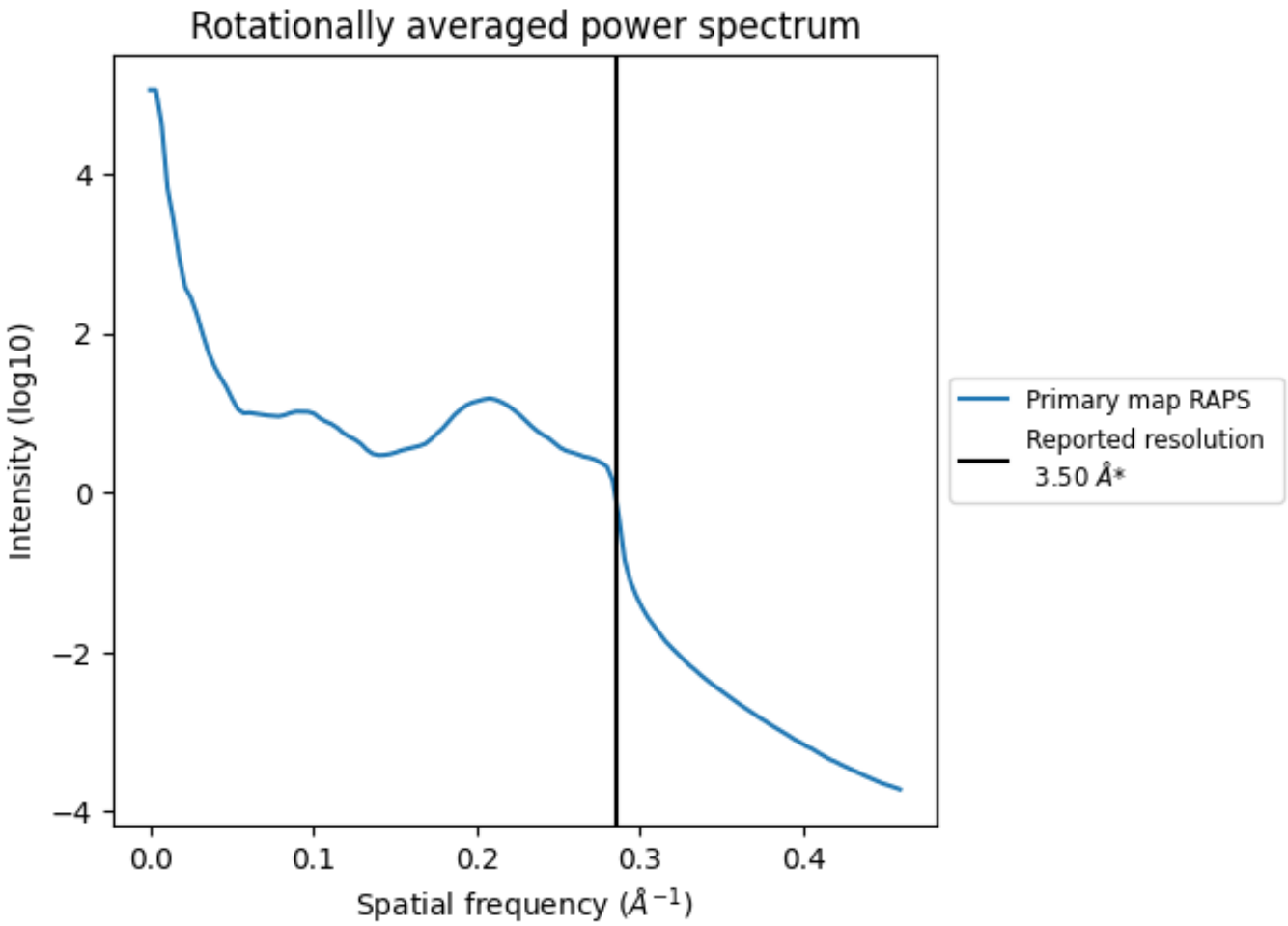
7.2 Volume estimate (i)



The volume at the recommended contour level is 105 nm^3; this corresponds to an approximate mass of 95 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 0.286 Å^{-1}

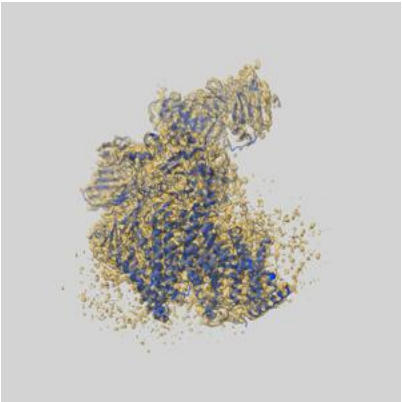
8 Fourier-Shell correlation (i)

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

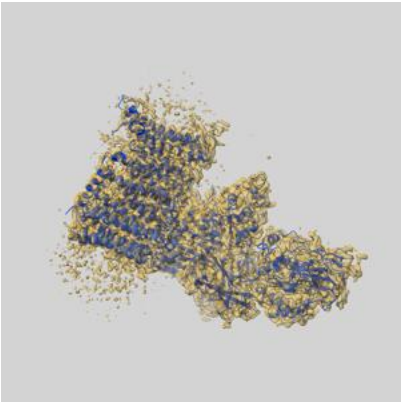
9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-7336 and PDB model 6C26. Per-residue inclusion information can be found in section 3 on page 8.

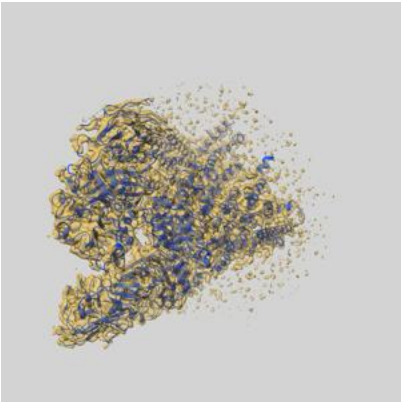
9.1 Map-model overlay (i)



X



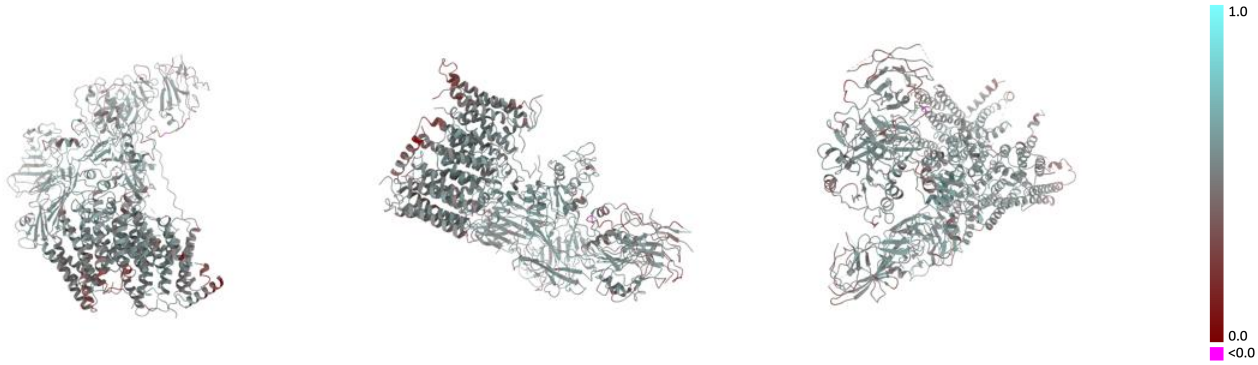
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04 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.

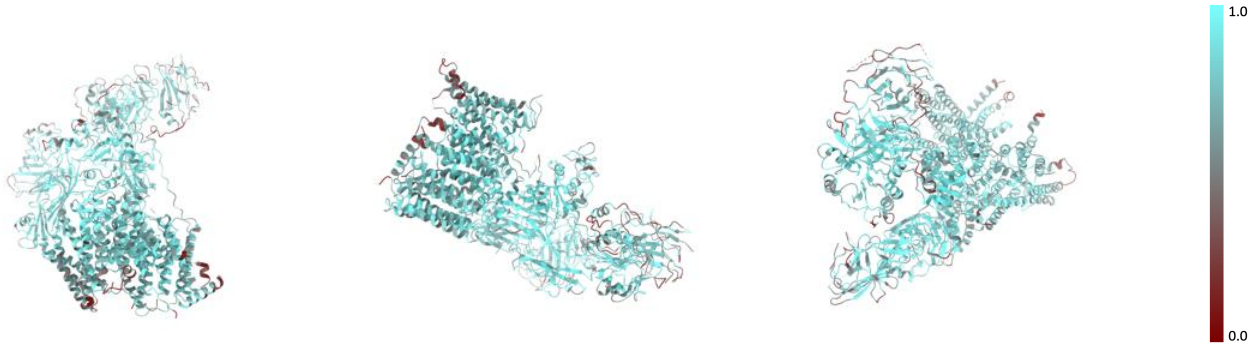
9.2 Q-score mapped to coordinate model (i)



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.

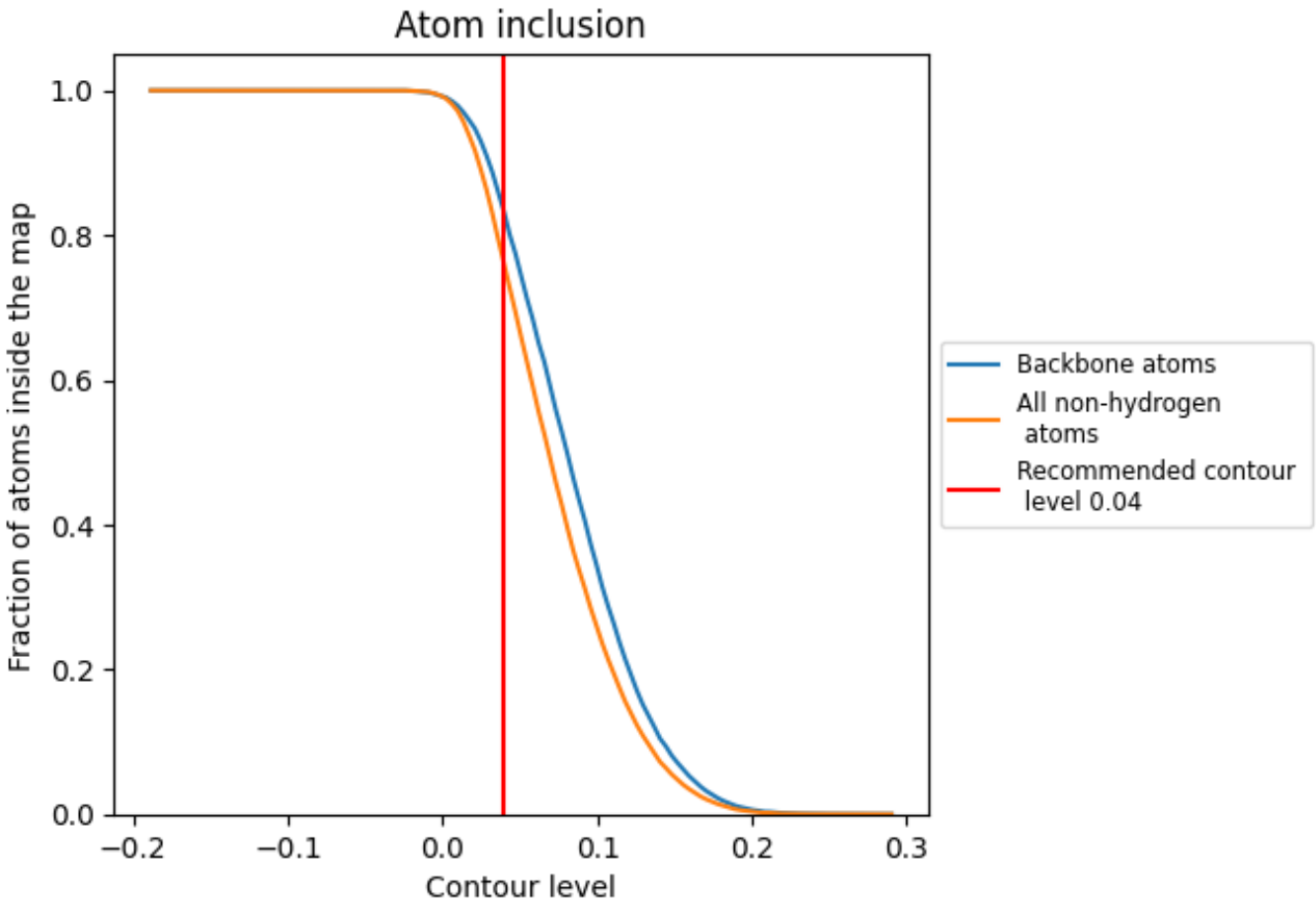
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.04).

9.4 Atom inclusion (i)



At the recommended contour level, 83% of all backbone atoms, 76% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7584	0.5030
1	0.7771	0.5110
2	0.7549	0.4790
3	0.6462	0.4520
4	0.8040	0.5200
5	0.6881	0.4810
A	0.8130	0.5270
B	0.7844	0.5090
C	0.6233	0.4580
D	0.6867	0.4880
E	0.4872	0.3960