Full wwPDB EM Validation Report

Mar 30, 2026 – 06:31 PM JST

PDB ID	:	9UB7 / pdb_00009ub7
EMDB ID	:	EMD-64000
Title	:	Structure of glycosylphosphatidylinositol transamidase,state 1
Authors	:	Hua, Z.K.; Ding, X.Y.; Zhang, M.; Liu, X.T.; Zhang, M.J.; Yu, H.J.
Deposited on	:	2025-04-02
Resolution	:	3.61 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

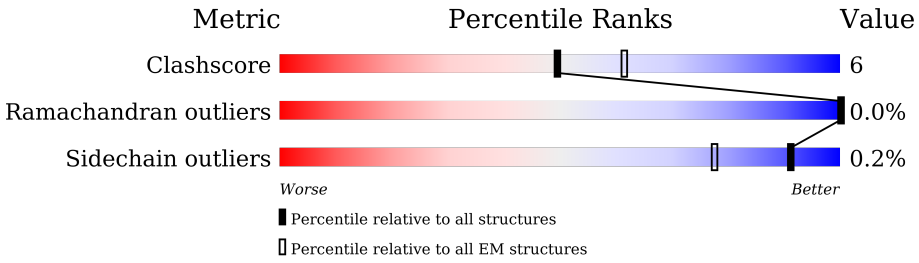
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48.1

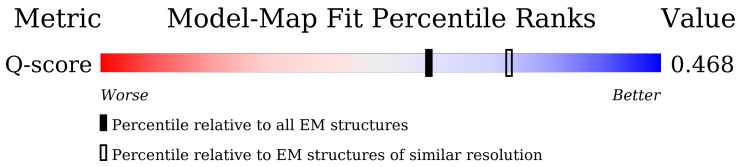
1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.61 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.





Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	11801 (3.11 - 4.10)

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	614	79% 12% 9%
2	B	394	89% 11%
3	C	411	30% 54% 15% 31%
4	D	534	13% 78% 12% 10%

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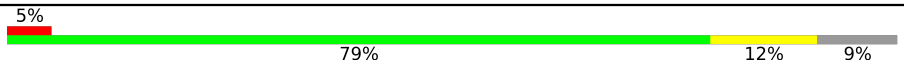
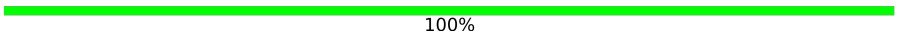
Mol	Chain	Length	Quality of chain
5	E	610	
6	F	2	
6	G	2	
7	J	4	

2 Entry composition

There are 14 unique types of molecules in this entry. The entry contains 18334 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 GPI transamidase component GAA1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	557	Total	C	N	O	S	0	0
			4424	2902	714	786	22		

- Molecule 2 is a protein called GPI transamidase component GAB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	394	Total	C	N	O	S	0	0
			3179	2159	484	527	9		

- Molecule 3 is a protein called GPI-anchor transamidase.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	283	Total	C	N	O	S	0	0
			2093	1316	357	410	10		

- Molecule 4 is a protein called GPI transamidase component GPI17.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	480	Total	C	N	O	S	0	0
			3851	2501	611	724	15		

- Molecule 5 is a protein called GPI transamidase component GPI16.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	558	Total	C	N	O	S	0	0
			4383	2800	721	839	23		

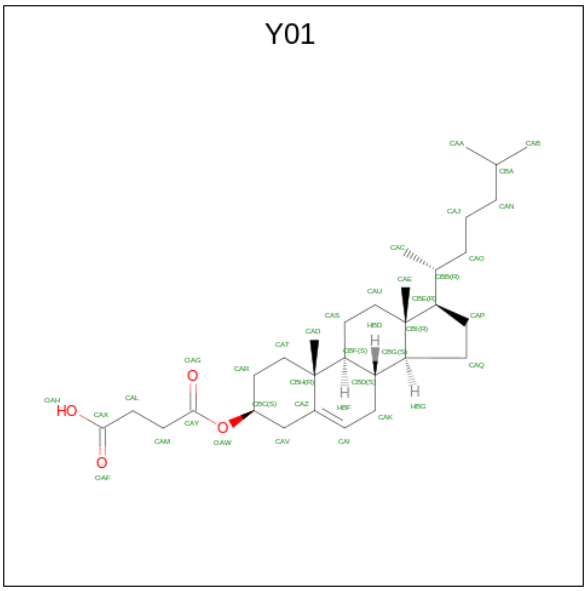
- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms	AltConf	Trace
6	F	2	Total C N O 28 16 2 10	0	0
6	G	2	Total C N O 28 16 2 10	0	0

- Molecule 7 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

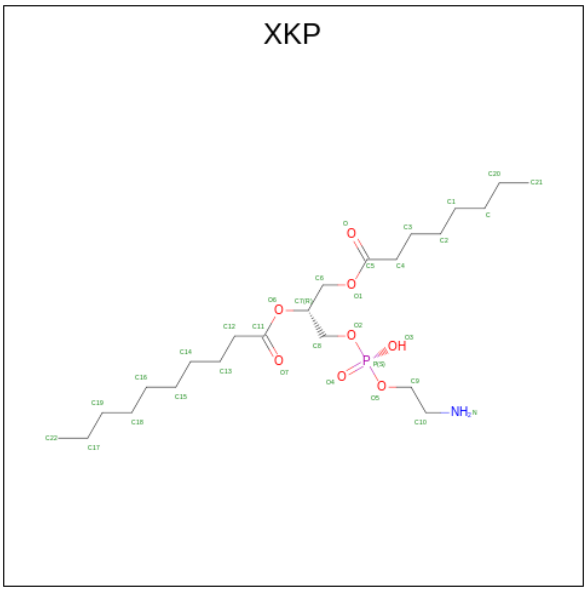
Mol	Chain	Residues	Atoms	AltConf	Trace
7	J	4	Total C N O 50 28 2 20	0	0

- Molecule 8 is CHOLESTEROL HEMISUCCINATE (CCD ID: Y01) (formula: $C_{31}H_{50}O_4$).



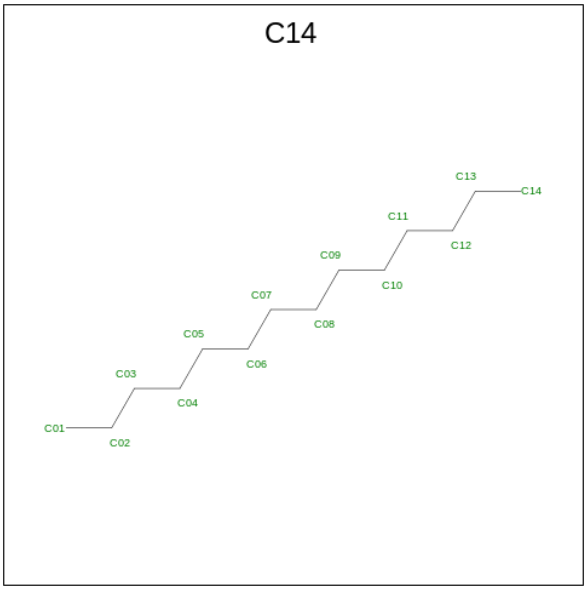
Mol	Chain	Residues	Atoms	AltConf
8	A	1	Total C O 35 31 4	0
8	B	1	Total C O 35 31 4	0

- Molecule 9 is (11R,14S)-17-amino-14-hydroxy-8,14-dioxo-9,13,15-trioxa-14lambda 5 -phosphaheptadecan-11-yl decanoate (CCD ID: XKP) (formula: $C_{23}H_{46}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
9	A	1	Total	C	N	O	P	0
			33	23	1	8	1	
9	B	1	Total	C	N	O	P	0
			33	23	1	8	1	

- Molecule 10 is TETRADECANE (CCD ID: C14) (formula: $C_{14}H_{30}$).



Mol	Chain	Residues	Atoms		AltConf
10	A	1	Total	C	0
			14	14	
10	B	1	Total	C	0
			14	14	

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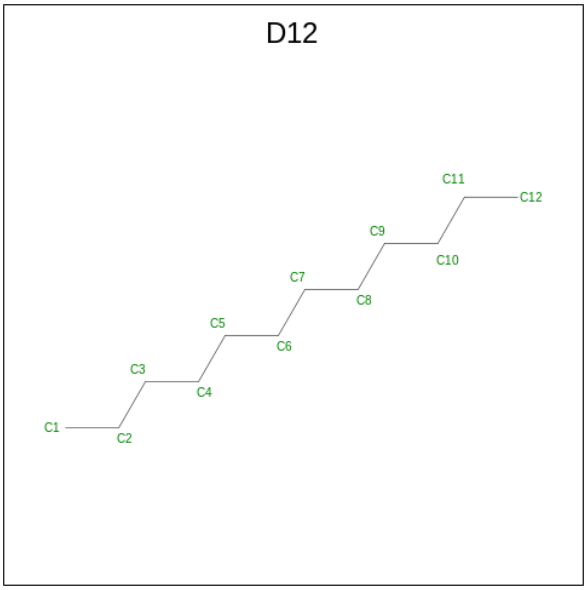
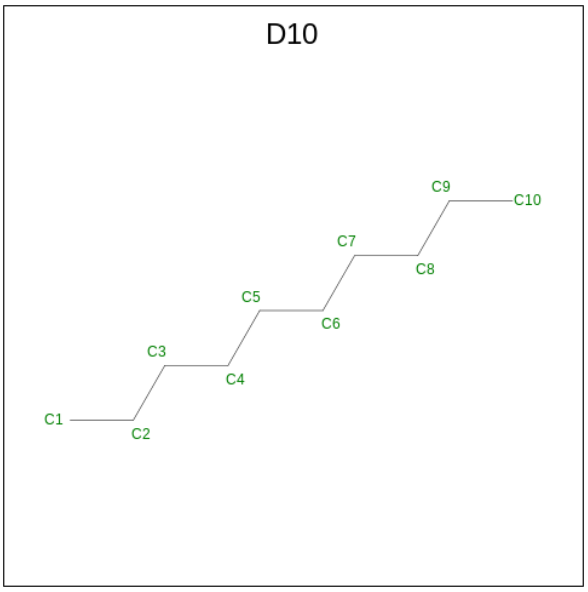
Mol	Chain	Residues	Atoms	AltConf
10	B	1	Total C 14 14	0

- Molecule 11 is DODECANE (CCD ID: D12) (formula: $C_{12}H_{26}$).



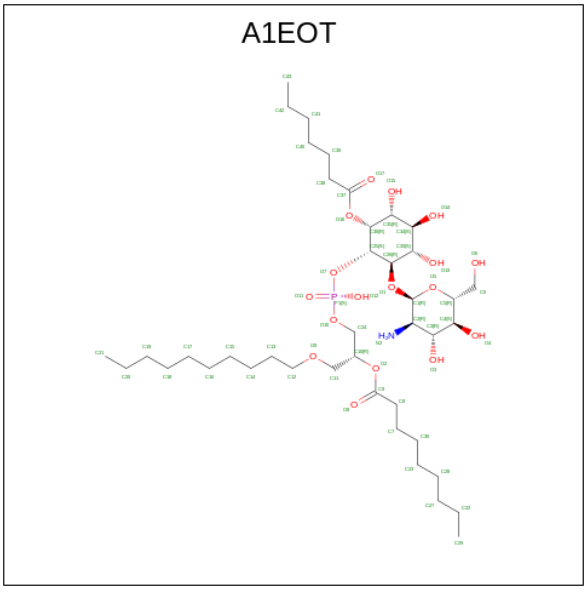
Mol	Chain	Residues	Atoms	AltConf
11	A	1	Total C 12 12	0
11	B	1	Total C 12 12	0
11	B	1	Total C 12 12	0

- Molecule 12 is DECANE (CCD ID: D10) (formula: $C_{10}H_{22}$).



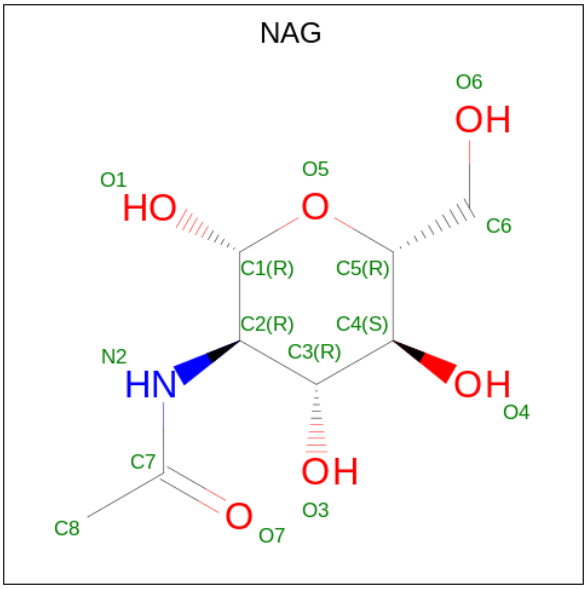
Mol	Chain	Residues	Atoms	AltConf
12	B	1	Total C 10 10	0

- Molecule 13 is [(2 {R})-1-[[(1 {S},2 {R},3 {S},4 {S},5 {R},6 {R})-2-[(2 {R},3 {R},4 {R},5 {S},6 {R})-3-azanyl-6-(hydroxymethyl)-4,5-bis(oxidanyl)oxan-2-yl]oxy-6-heptanoyloxy-3,4,5-tris(oxidanyl)cyclohexyl]oxy-oxidanyl-phosphoryl]oxy-3-decoxy-propan-2-yl] nonanoate (CCD ID: A1EOT) (formula: $C_{41}H_{78}NO_{17}P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
13	B	1	Total C N O P 60 41 1 17 1	0

- Molecule 14 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



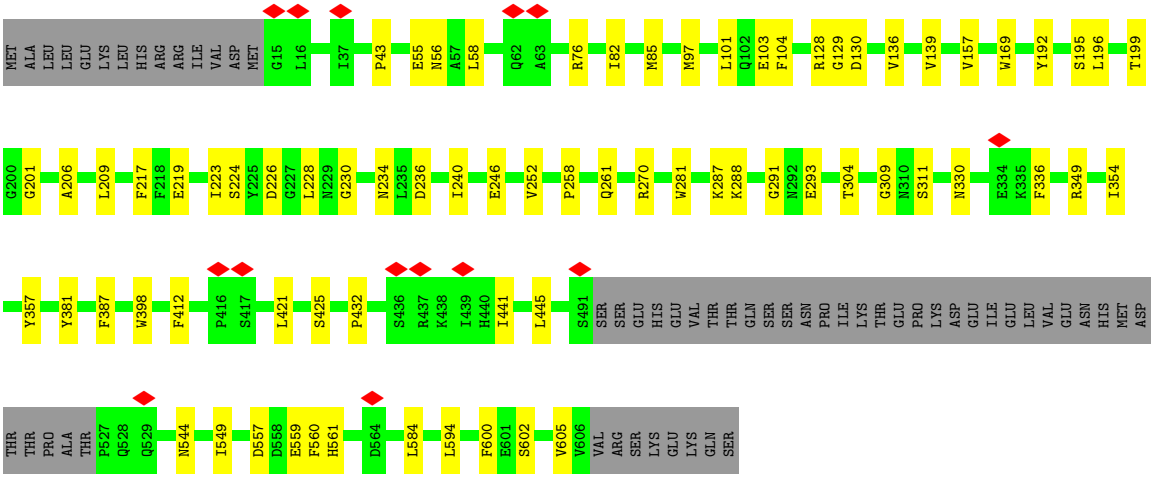
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
14	E	1	14	8	1	5	0

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.

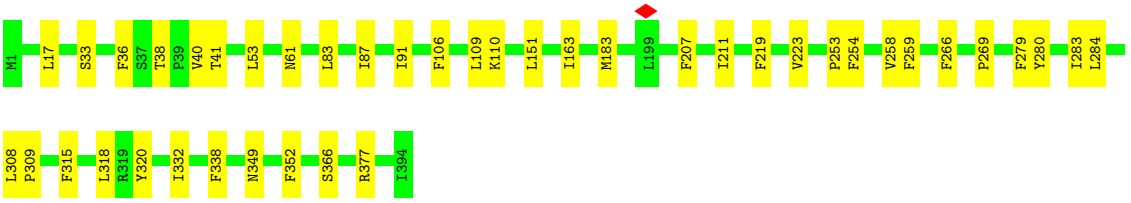
• Molecule 1: GPI transamidase component GAA1

Chain A:



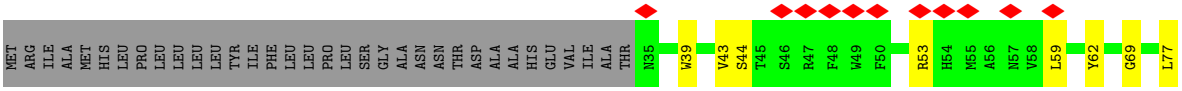
• Molecule 2: GPI transamidase component GAB1

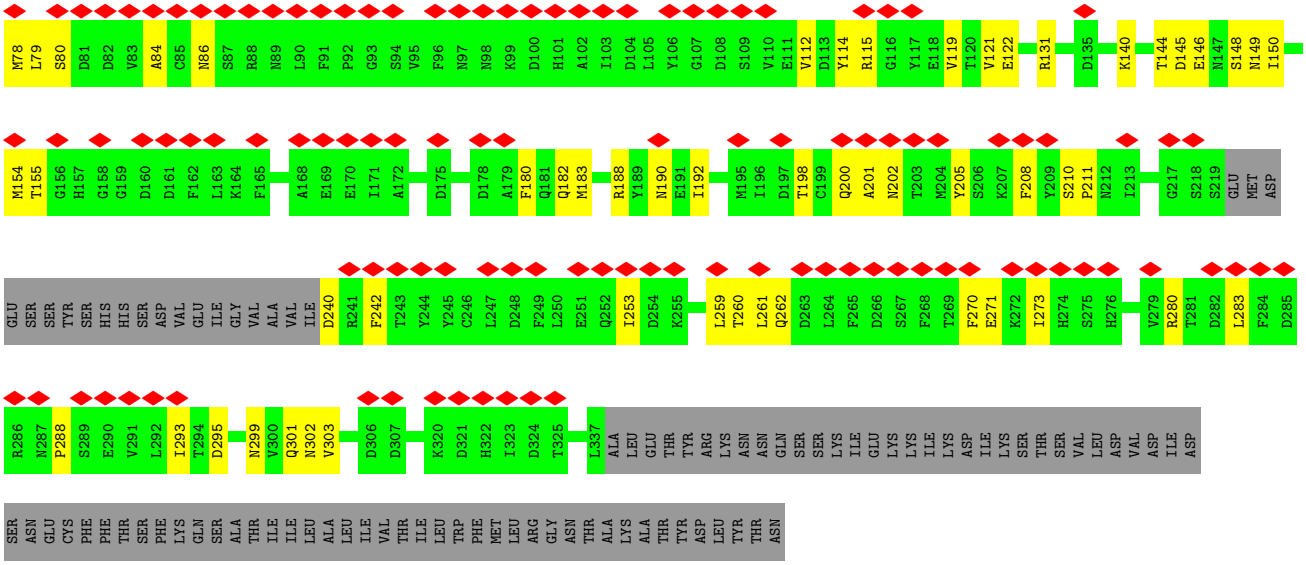
Chain B:



• Molecule 3: GPI-anchor transamidase

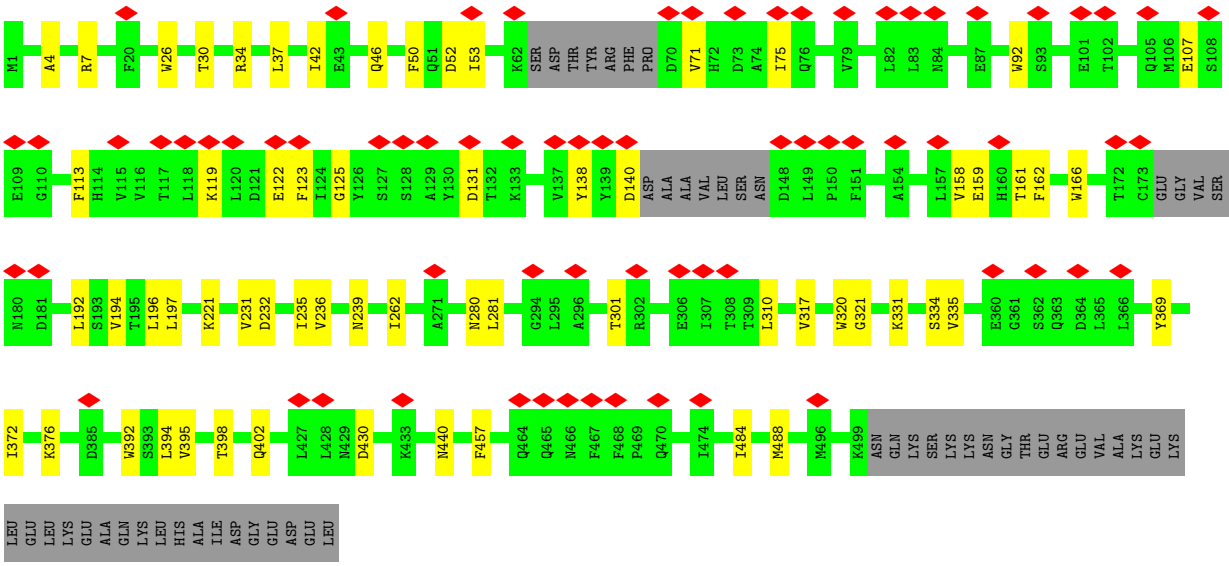
Chain C:





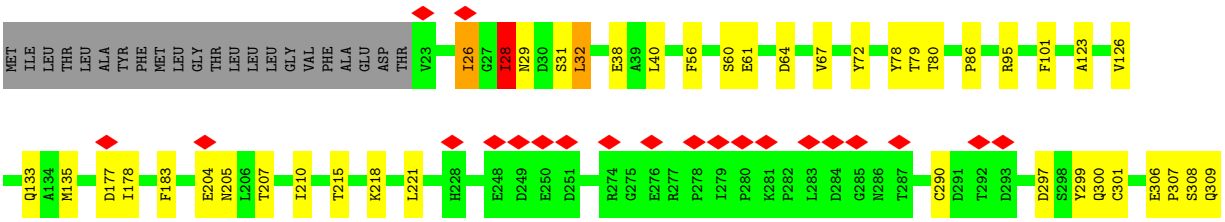
• Molecule 4: GPI transamidase component GPI17

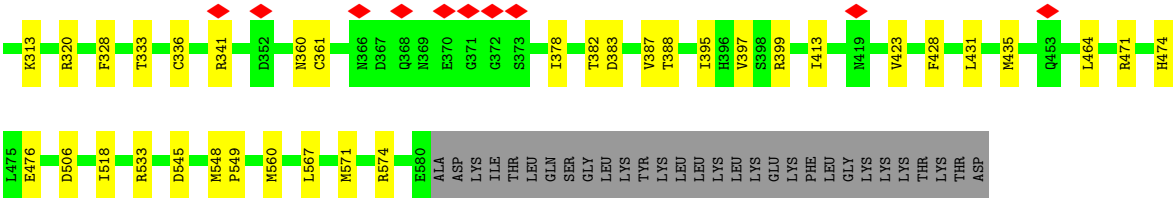
Chain D:



• Molecule 5: GPI transamidase component GPI16

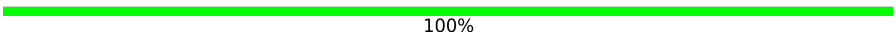
Chain E:





• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:



• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:

• Molecule 7: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	55376	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)	1100	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.100	Depositor
Minimum map value	-0.061	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.0136	Depositor
Map size (Å)	242.88, 242.88, 242.88	wwPDB
Map dimensions	264, 264, 264	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.92, 0.92, 0.92	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: D10, C14, NAG, D12, Y01, XKP, A1EOT, BMA, MAN

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	0.10	0/4541	0.29	0/6172
2	B	0.15	0/3276	0.29	0/4470
3	C	0.11	0/2132	0.33	0/2905
4	D	0.10	0/3951	0.27	0/5393
5	E	0.18	0/4498	0.38	2/6134 (0.0%)
All	All	0.14	0/18398	0.32	2/25074 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	E	32	LEU	CA-C-O	-5.79	114.83	121.54
5	E	31	SER	CA-C-O	-5.30	115.26	120.82

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4424	0	4435	47	0
2	B	3179	0	3291	32	0
3	C	2093	0	1816	40	0
4	D	3851	0	3754	42	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	E	4383	0	4219	54	0
6	F	28	0	25	0	0
6	G	28	0	25	1	0
7	J	50	0	43	0	0
8	A	35	0	49	3	0
8	B	35	0	49	5	0
9	A	33	0	0	0	0
9	B	33	0	0	0	0
10	A	14	0	30	0	0
10	B	28	0	60	0	0
11	A	12	0	26	1	0
11	B	24	0	52	1	0
12	B	10	0	22	0	0
13	B	60	0	0	1	0
14	E	14	0	13	0	0
All	All	18334	0	17909	200	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 6.

All (200) 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)
5:E:336:CYS:HA	5:E:361:CYS:HB2	1.57	0.87
5:E:26:ILE:HB	5:E:28:ILE:HG13	1.60	0.83
1:A:76:ARG:HH11	5:E:300:GLN:HB3	1.49	0.76
1:A:230:GLY:HA2	1:A:281:TRP:HE1	1.55	0.71
5:E:336:CYS:HA	5:E:361:CYS:CB	2.22	0.70
4:D:192:LEU:HB3	4:D:231:VAL:HG12	1.74	0.68
4:D:125:GLY:H	4:D:138:TYR:HB2	1.60	0.67
4:D:196:LEU:HB3	4:D:235:ILE:HG22	1.76	0.67
4:D:221:LYS:HB2	5:E:72:TYR:HE1	1.58	0.67
5:E:290:CYS:HB2	5:E:301:CYS:HB2	1.77	0.66
5:E:297:ASP:HB3	5:E:300:GLN:HG3	1.77	0.66
2:B:349:ASN:ND2	13:B:408:A1EOT:O12	2.29	0.66
1:A:234:ASN:HD22	1:A:336:PHE:HB3	1.61	0.65
5:E:341:ARG:NH1	5:E:360:ASN:OD1	2.29	0.65
4:D:280:ASN:O	4:D:321:GLY:HA3	1.97	0.64
1:A:223:ILE:HD13	1:A:252:VAL:HG23	1.81	0.63
4:D:320:TRP:CG	4:D:321:GLY:H	2.17	0.63
3:C:131:ARG:NH2	3:C:182:GLN:OE1	2.31	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:55:GLU:HB2	1:A:58:LEU:HD12	1.81	0.62
1:A:412:PHE:HE2	1:A:421:LEU:HD13	1.65	0.61
4:D:37:LEU:HD21	4:D:398:THR:HG21	1.82	0.61
5:E:309:GLN:NE2	5:E:382:THR:O	2.33	0.61
5:E:40:LEU:HB2	5:E:221:LEU:HD21	1.84	0.60
2:B:33:SER:HB2	8:B:401:Y01:HAV2	1.84	0.59
1:A:76:ARG:NH1	5:E:299:TYR:O	2.35	0.59
1:A:441:ILE:HG23	1:A:445:LEU:HD23	1.84	0.59
3:C:43:VAL:HG23	3:C:154:MET:HE1	1.84	0.59
5:E:545:ASP:OD2	5:E:548:MET:HE3	2.02	0.59
4:D:376:LYS:NZ	4:D:440:ASN:OD1	2.35	0.59
3:C:146:GLU:O	3:C:190:ASN:ND2	2.36	0.58
3:C:262:GLN:HB2	3:C:288:PRO:HB2	1.85	0.58
3:C:303:VAL:HG22	4:D:317:VAL:HG22	1.85	0.58
1:A:97:MET:HE1	1:A:157:VAL:HG22	1.85	0.58
2:B:40:VAL:HG23	2:B:41:THR:HG23	1.85	0.57
3:C:253:ILE:HD12	3:C:259:LEU:HB2	1.86	0.57
1:A:97:MET:HE3	1:A:101:LEU:HG	1.85	0.57
5:E:64:ASP:OD2	5:E:67:VAL:HG23	2.04	0.57
5:E:79:THR:HG23	5:E:80:THR:H	1.68	0.57
1:A:219:GLU:H	1:A:309:GLY:HA3	1.70	0.57
4:D:34:ARG:NH1	4:D:402:GLN:O	2.38	0.57
5:E:221:LEU:HD13	5:E:333:THR:HG21	1.86	0.57
4:D:50:PHE:HA	4:D:53:ILE:HD12	1.87	0.56
3:C:211:PRO:HA	3:C:283:LEU:HD22	1.87	0.56
3:C:301:GLN:NE2	4:D:262:ILE:O	2.39	0.56
8:A:701:Y01:HBC	2:B:315:PHE:HB3	1.88	0.55
3:C:260:THR:OG1	3:C:288:PRO:O	2.24	0.55
3:C:149:ASN:ND2	3:C:295:ASP:O	2.39	0.55
3:C:144:THR:HG23	3:C:188:ARG:HB2	1.88	0.55
3:C:43:VAL:HG13	3:C:78:MET:HB2	1.89	0.55
1:A:128:ARG:HH21	3:C:86:ASN:HB2	1.72	0.55
3:C:121:VAL:O	3:C:122:GLU:HG3	2.08	0.54
5:E:28:ILE:HG22	5:E:29:ASN:H	1.72	0.54
2:B:61:ASN:OD1	5:E:471:ARG:NH2	2.41	0.53
4:D:92:TRP:CH2	4:D:166:TRP:HA	2.44	0.53
2:B:269:PRO:HB2	5:E:571:MET:HE1	1.91	0.52
4:D:92:TRP:HH2	4:D:166:TRP:HA	1.74	0.52
4:D:484:ILE:HG22	4:D:488:MET:HE2	1.91	0.52
3:C:145:ASP:N	3:C:145:ASP:OD1	2.43	0.52
2:B:219:PHE:O	2:B:223:VAL:HG22	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:221:LYS:HB2	5:E:72:TYR:CE1	2.42	0.52
4:D:4:ALA:HA	4:D:7:ARG:HH21	1.74	0.51
5:E:313:LYS:HG2	5:E:378:ILE:HG12	1.92	0.51
3:C:261:LEU:HB3	3:C:293:ILE:HG22	1.91	0.51
2:B:109:LEU:O	2:B:110:LYS:HG2	2.10	0.51
3:C:69:GLY:HA3	3:C:299:ASN:H	1.74	0.51
8:A:701:Y01:HAI	2:B:318:LEU:HD12	1.93	0.51
1:A:288:LYS:NZ	1:A:559:GLU:OE2	2.37	0.51
3:C:205:TYR:HD2	3:C:280:ARG:HD3	1.76	0.51
1:A:58:LEU:HB3	1:A:240:ILE:HD11	1.93	0.51
2:B:332:ILE:HG12	8:B:401:Y01:HAP2	1.93	0.51
3:C:39:TRP:HB2	3:C:150:ILE:HG13	1.93	0.50
1:A:381:TYR:OH	1:A:605:VAL:O	2.24	0.50
5:E:474:HIS:NE2	5:E:476:GLU:OE2	2.42	0.50
4:D:123:PHE:HA	4:D:140:ASP:HB3	1.94	0.50
4:D:331:LYS:O	4:D:334:SER:OG	2.21	0.50
5:E:399:ARG:HG3	5:E:413:ILE:HG13	1.93	0.50
5:E:306:GLU:OE2	5:E:307:PRO:HD2	2.12	0.49
3:C:80:SER:HB3	3:C:119:VAL:HB	1.94	0.49
1:A:258:PRO:HG2	1:A:261:GLN:HB2	1.95	0.49
4:D:335:VAL:O	5:E:26:ILE:HG12	2.11	0.49
1:A:291:GLY:O	1:A:293:GLU:HG2	2.12	0.49
5:E:395:ILE:HD12	5:E:423:VAL:HG21	1.94	0.49
4:D:394:LEU:HD13	4:D:457:PHE:HA	1.93	0.48
1:A:139:VAL:HG12	1:A:209:LEU:HB2	1.94	0.48
5:E:428:PHE:HD1	5:E:476:GLU:HG2	1.77	0.48
1:A:398:TRP:HA	1:A:594:LEU:HD11	1.95	0.48
3:C:270:PHE:CG	3:C:271:GLU:N	2.81	0.48
4:D:369:TYR:HA	4:D:372:ILE:HG22	1.94	0.48
3:C:208:PHE:CE2	3:C:210:SER:HB2	2.49	0.48
8:B:401:Y01:HAO1	8:B:401:Y01:HAP1	1.33	0.48
5:E:431:LEU:HD22	5:E:435:MET:HE1	1.95	0.47
1:A:199:THR:HG22	1:A:201:GLY:H	1.78	0.47
3:C:115:ARG:HH22	5:E:205:ASN:HD22	1.62	0.47
8:A:701:Y01:HAC3	8:A:701:Y01:HAN2	1.97	0.47
3:C:205:TYR:O	3:C:280:ARG:NH1	2.46	0.47
1:A:128:ARG:NH2	3:C:86:ASN:HB2	2.30	0.46
2:B:280:TYR:O	2:B:284:LEU:HD23	2.15	0.46
2:B:207:PHE:O	2:B:211:ILE:HG13	2.15	0.46
5:E:215:THR:HG22	5:E:218:LYS:H	1.80	0.46
4:D:320:TRP:CG	4:D:321:GLY:N	2.84	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:177:ASP:OD1	5:E:178:ILE:HD12	2.15	0.46
1:A:234:ASN:ND2	1:A:336:PHE:HB3	2.28	0.46
1:A:387:PHE:HB3	11:A:704:D12:H92	1.97	0.46
2:B:38:THR:OG1	2:B:41:THR:OG1	2.26	0.46
2:B:253:PRO:HB3	11:B:405:D12:H123	1.98	0.46
2:B:320:TYR:HE2	2:B:366:SER:HB2	1.81	0.46
4:D:42:ILE:HG21	4:D:395:VAL:HG21	1.97	0.46
4:D:301:THR:O	4:D:310:LEU:N	2.49	0.46
4:D:197:LEU:HD13	4:D:236:VAL:HB	1.97	0.46
8:B:401:Y01:HBA	8:B:401:Y01:HAO2	1.55	0.45
4:D:71:VAL:O	4:D:75:ILE:HD12	2.16	0.45
5:E:177:ASP:OD1	5:E:177:ASP:N	2.47	0.45
1:A:236:ASP:N	1:A:236:ASP:OD1	2.50	0.45
1:A:130:ASP:N	1:A:130:ASP:OD1	2.49	0.45
2:B:266:PHE:CZ	5:E:567:LEU:HB3	2.52	0.45
5:E:464:LEU:HB3	5:E:474:HIS:HB3	1.98	0.45
1:A:549:ILE:HD13	1:A:584:LEU:HD11	1.97	0.45
3:C:200:GLN:NE2	3:C:202:ASN:OD1	2.50	0.45
5:E:207:THR:O	5:E:210:ILE:HG12	2.16	0.45
2:B:183:MET:HE1	2:B:279:PHE:HA	2.00	0.44
5:E:397:VAL:HG21	5:E:518:ILE:HD13	1.98	0.44
2:B:308:LEU:N	2:B:309:PRO:HD2	2.32	0.44
2:B:320:TYR:CE2	2:B:366:SER:HB2	2.52	0.44
3:C:242:PHE:HB2	3:C:273:ILE:HG21	1.99	0.44
3:C:198:THR:HG22	3:C:201:ALA:HB2	2.00	0.44
4:D:232:ASP:N	4:D:232:ASP:OD1	2.49	0.44
3:C:114:TYR:CE1	3:C:140:LYS:HD2	2.52	0.44
4:D:7:ARG:NH1	5:E:574:ARG:HB3	2.33	0.44
1:A:432:PRO:HG3	1:A:600:PHE:HE1	1.83	0.43
4:D:46:GLN:HG3	4:D:392:TRP:CG	2.53	0.43
4:D:52:ASP:OD1	4:D:52:ASP:N	2.50	0.43
5:E:135:MET:HE2	6:G:1:NAG:H61	1.99	0.43
2:B:279:PHE:O	2:B:283:ILE:HG12	2.19	0.43
4:D:119:LYS:HB2	4:D:138:TYR:HE1	1.82	0.43
1:A:246:GLU:OE1	1:A:349:ARG:NH2	2.36	0.43
2:B:17:LEU:HD23	2:B:17:LEU:HA	1.89	0.43
3:C:148:SER:N	3:C:190:ASN:OD1	2.51	0.43
1:A:224:SER:HB2	1:A:304:THR:HG22	2.01	0.43
1:A:228:LEU:HD13	1:A:293:GLU:HB3	2.01	0.43
3:C:183:MET:HE2	3:C:183:MET:HB3	1.92	0.43
2:B:338:PHE:CD2	2:B:352:PHE:HB3	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:PRO:O	1:A:270:ARG:NH1	2.52	0.43
2:B:106:PHE:HD2	2:B:109:LEU:HD11	1.83	0.42
4:D:194:VAL:HG22	4:D:281:LEU:HD21	2.01	0.42
5:E:38:GLU:HG2	5:E:56:PHE:CD1	2.54	0.42
5:E:95:ARG:NH2	5:E:133:GLN:OE1	2.44	0.42
5:E:320:ARG:HA	5:E:320:ARG:HD3	1.89	0.42
3:C:302:ASN:O	4:D:317:VAL:HG13	2.19	0.42
5:E:78:TYR:CE1	5:E:86:PRO:HG2	2.54	0.42
1:A:195:SER:O	1:A:195:SER:OG	2.36	0.42
1:A:425:SER:OG	1:A:544:ASN:OD1	2.36	0.42
1:A:287:LYS:NZ	1:A:557:ASP:OD1	2.53	0.42
1:A:441:ILE:O	1:A:602:SER:HA	2.19	0.42
3:C:84:ALA:HB1	5:E:204:GLU:HG2	2.01	0.42
5:E:387:VAL:HG12	5:E:388:THR:N	2.33	0.42
2:B:36:PHE:HE2	8:B:401:Y01:HAK1	1.85	0.42
5:E:28:ILE:O	5:E:29:ASN:C	2.63	0.42
5:E:133:GLN:NE2	5:E:183:PHE:O	2.45	0.42
1:A:56:ASN:OD1	1:A:56:ASN:N	2.53	0.42
2:B:106:PHE:HE1	2:B:151:LEU:HD12	1.84	0.42
3:C:77:LEU:HD23	3:C:112:VAL:HG12	2.02	0.42
3:C:79:LEU:HD23	3:C:79:LEU:HA	1.89	0.42
1:A:136:VAL:O	1:A:206:ALA:HA	2.20	0.41
1:A:354:ILE:HA	1:A:357:TYR:CE2	2.55	0.41
3:C:180:PHE:CE1	3:C:192:ILE:HD13	2.55	0.41
4:D:122:GLU:HG3	4:D:123:PHE:HD1	1.85	0.41
4:D:197:LEU:HD12	4:D:239:ASN:HB3	2.02	0.41
1:A:226:ASP:N	1:A:226:ASP:OD1	2.52	0.41
1:A:560:PHE:O	1:A:561:HIS:ND1	2.53	0.41
2:B:259:PHE:CE1	5:E:560:MET:HE1	2.54	0.41
2:B:254:PHE:O	2:B:258:VAL:HG23	2.20	0.41
2:B:83:LEU:O	2:B:87:ILE:HG12	2.20	0.41
4:D:107:GLU:OE2	4:D:113:PHE:HD1	2.03	0.41
5:E:60:SER:OG	5:E:61:GLU:N	2.53	0.41
1:A:103:GLU:HG3	1:A:104:PHE:CD1	2.54	0.41
1:A:169:TRP:HA	1:A:330:ASN:HD21	1.84	0.41
1:A:192:TYR:HA	1:A:196:LEU:HD12	2.01	0.41
2:B:87:ILE:O	2:B:91:ILE:HG12	2.21	0.41
5:E:308:SER:HG	5:E:383:ASP:HA	1.85	0.41
2:B:53:LEU:HD23	2:B:53:LEU:HA	1.94	0.41
2:B:377:ARG:HD2	2:B:377:ARG:HA	1.82	0.41
4:D:430:ASP:OD1	4:D:430:ASP:N	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:548:MET:N	5:E:549:PRO:HD3	2.35	0.41
3:C:44:SER:OG	3:C:155:THR:HB	2.21	0.41
3:C:59:LEU:HD23	3:C:62:TYR:HE1	1.86	0.41
5:E:506:ASP:OD1	5:E:506:ASP:N	2.47	0.41
1:A:82:ILE:O	1:A:85:MET:HG2	2.21	0.41
3:C:53:ARG:NE	3:C:240:ASP:OD1	2.54	0.41
4:D:161:THR:OG1	4:D:162:PHE:N	2.54	0.41
1:A:76:ARG:HD2	5:E:300:GLN:HB3	2.03	0.40
2:B:163:ILE:HD12	2:B:163:ILE:HA	1.93	0.40
4:D:131:ASP:N	4:D:131:ASP:OD1	2.54	0.40
3:C:59:LEU:HD23	3:C:59:LEU:HA	1.78	0.40
4:D:158:VAL:HG13	4:D:159:GLU:OE2	2.21	0.40
5:E:80:THR:HG22	5:E:328:PHE:HZ	1.87	0.40
1:A:128:ARG:HD3	1:A:129:GLY:N	2.36	0.40
1:A:217:PHE:HB2	1:A:311:SER:HA	2.04	0.40
4:D:26:TRP:O	4:D:30:THR:HG22	2.22	0.40
5:E:101:PHE:CD2	5:E:126:VAL:HG22	2.57	0.40
5:E:123:ALA:HB2	5:E:533:ARG:HG2	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	553/614 (90%)	527 (95%)	26 (5%)	0	100	100
2	B	392/394 (100%)	384 (98%)	8 (2%)	0	100	100
3	C	279/411 (68%)	256 (92%)	23 (8%)	0	100	100
4	D	472/534 (88%)	449 (95%)	23 (5%)	0	100	100
5	E	556/610 (91%)	524 (94%)	31 (6%)	1 (0%)	44	73
All	All	2252/2563 (88%)	2140 (95%)	111 (5%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	28	ILE

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	486/542 (90%)	486 (100%)	0	100 100
2	B	353/353 (100%)	353 (100%)	0	100 100
3	C	198/376 (53%)	198 (100%)	0	100 100
4	D	435/487 (89%)	435 (100%)	0	100 100
5	E	487/546 (89%)	484 (99%)	3 (1%)	84 91
All	All	1959/2304 (85%)	1956 (100%)	3 (0%)	91 96

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	E	26	ILE
5	E	28	ILE
5	E	32	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	102	GLN
1	A	264	ASN
1	A	265	ASN
1	A	313	HIS
2	B	55	ASN
2	B	98	GLN
2	B	275	HIS
3	C	37	ASN
3	C	51	ASN

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Mol	Chain	Res	Type
3	C	200	GLN
3	C	276	HIS
4	D	76	GLN
4	D	78	GLN
4	D	80	ASN
4	D	88	GLN
4	D	100	ASN
4	D	413	ASN
5	E	149	ASN
5	E	205	ASN
5	E	228	HIS
5	E	236	ASN

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

8 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	$\#\|Z\|>2$
6	NAG	F	1	6,4	14,14,15	0.27	0	17,19,21	0.41	0
6	NAG	F	2	6	14,14,15	0.21	0	17,19,21	0.46	0
6	NAG	G	1	6,5	14,14,15	0.37	0	17,19,21	1.29	1 (5%)
6	NAG	G	2	6	14,14,15	0.40	0	17,19,21	0.41	0
7	NAG	J	1	7,4	14,14,15	0.26	0	17,19,21	0.44	0
7	NAG	J	2	7	14,14,15	0.23	0	17,19,21	0.39	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	BMA	J	3	7	11,11,12	0.58	0	15,15,17	0.73	0
7	MAN	J	4	7	11,11,12	0.91	1 (9%)	15,15,17	1.31	2 (13%)

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
6	NAG	F	1	6,4	-	1/6/23/26	0/1/1/1
6	NAG	F	2	6	-	4/6/23/26	0/1/1/1
6	NAG	G	1	6,5	-	5/6/23/26	0/1/1/1
6	NAG	G	2	6	-	2/6/23/26	0/1/1/1
7	NAG	J	1	7,4	-	2/6/23/26	0/1/1/1
7	NAG	J	2	7	-	0/6/23/26	0/1/1/1
7	BMA	J	3	7	-	1/2/19/22	0/1/1/1
7	MAN	J	4	7	-	1/2/19/22	1/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	J	4	MAN	C1-C2	2.31	1.57	1.52

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	G	1	NAG	O5-C1-C2	4.37	118.19	111.29
7	J	4	MAN	C1-O5-C5	3.47	116.89	112.19
7	J	4	MAN	O2-C2-C3	-2.26	105.61	110.14

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	G	1	NAG	C8-C7-N2-C2
6	G	1	NAG	O7-C7-N2-C2
6	F	2	NAG	C4-C5-C6-O6
6	F	2	NAG	O5-C5-C6-O6
6	G	1	NAG	C1-C2-N2-C7
6	F	2	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
6	F	2	NAG	O7-C7-N2-C2
7	J	1	NAG	C8-C7-N2-C2
7	J	1	NAG	O7-C7-N2-C2
6	G	2	NAG	C8-C7-N2-C2
7	J	3	BMA	O5-C5-C6-O6
7	J	4	MAN	O5-C5-C6-O6
6	F	1	NAG	O5-C5-C6-O6
6	G	2	NAG	O7-C7-N2-C2
6	G	1	NAG	O5-C5-C6-O6
6	G	1	NAG	C4-C5-C6-O6

All (1) ring outliers are listed below:

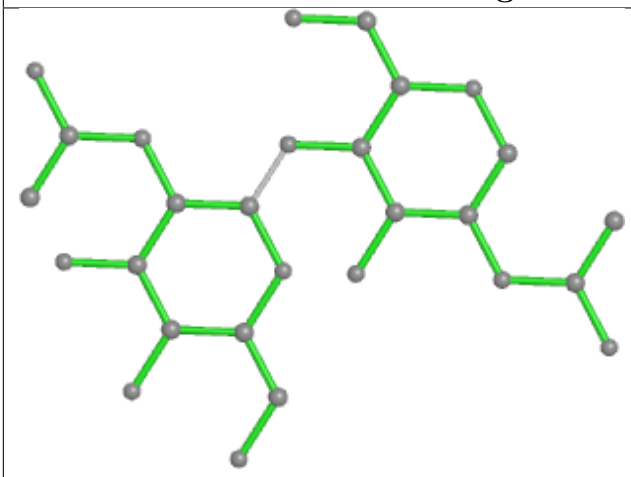
Mol	Chain	Res	Type	Atoms
7	J	4	MAN	C1-C2-C3-C4-C5-O5

1 monomer is involved in 1 short contact:

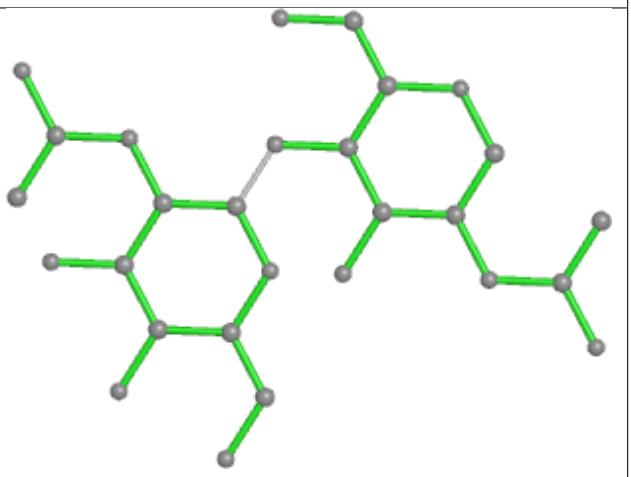
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	G	1	NAG	1	0

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

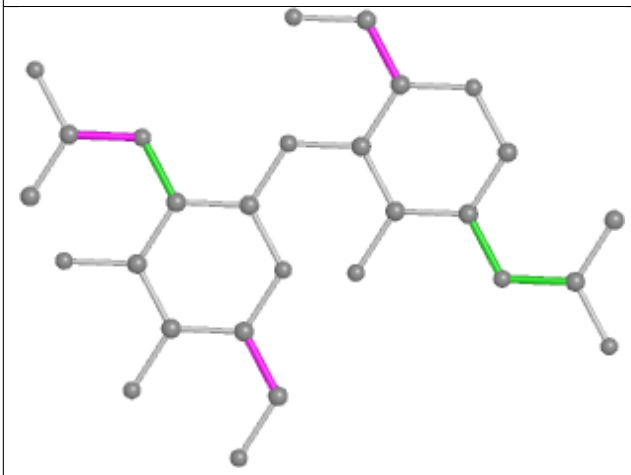
Oligosaccharide Chain F



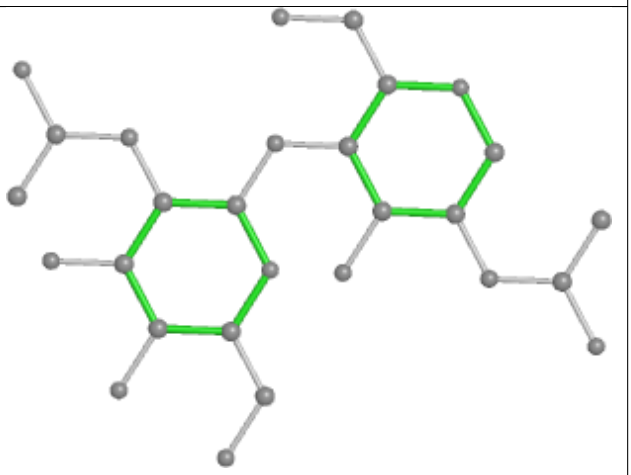
Bond lengths



Bond angles

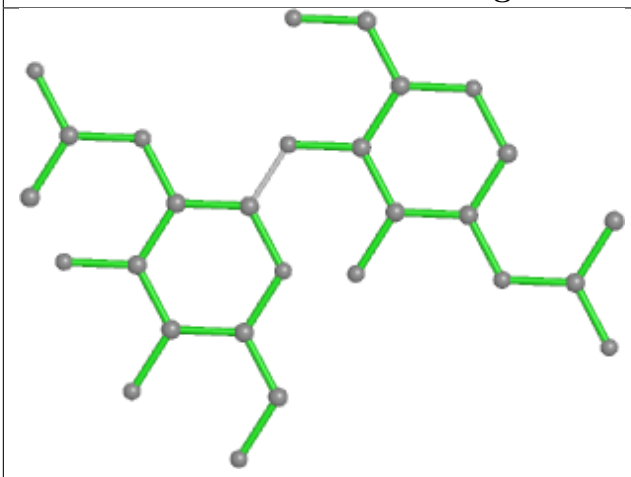


Torsions

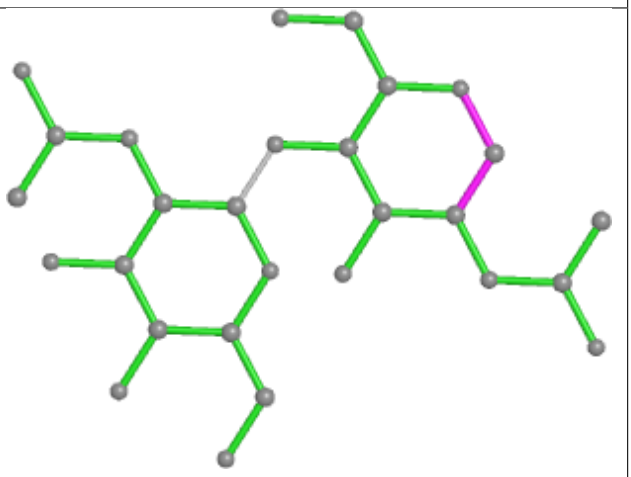


Rings

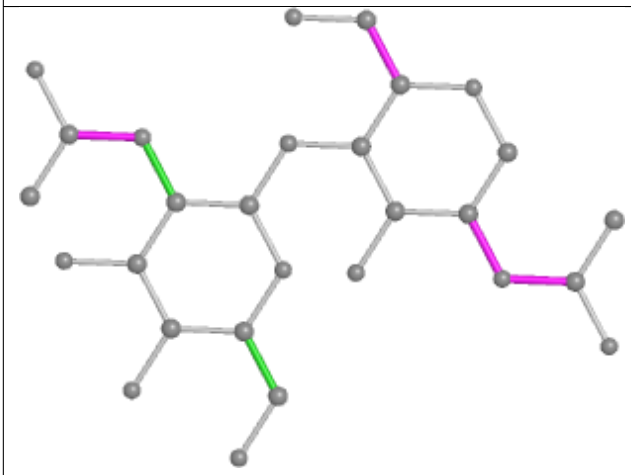
Oligosaccharide Chain G



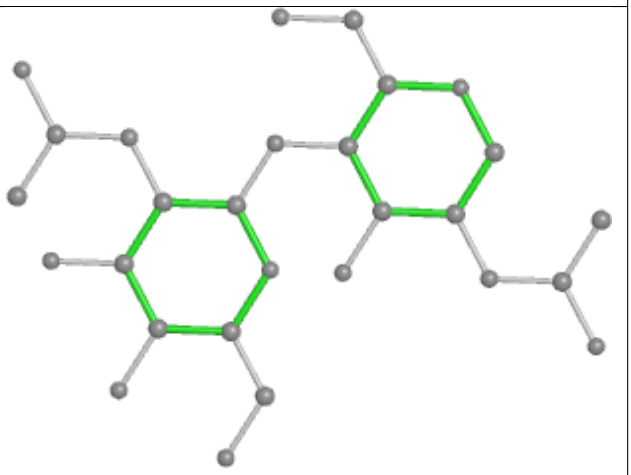
Bond lengths



Bond angles

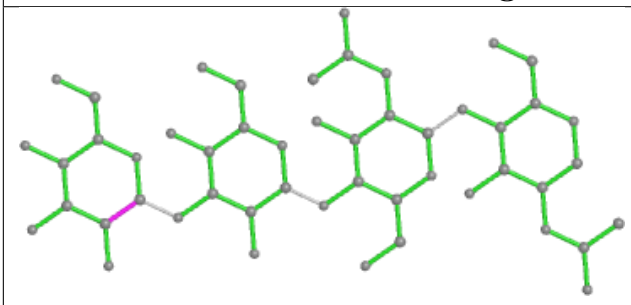


Torsions

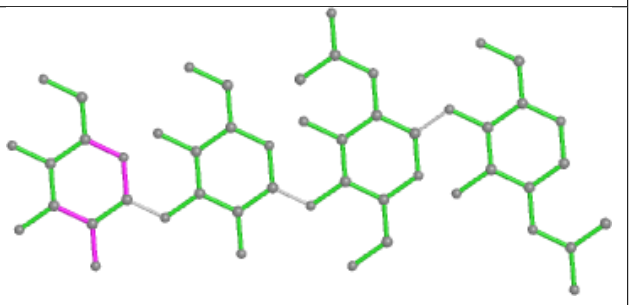


Rings

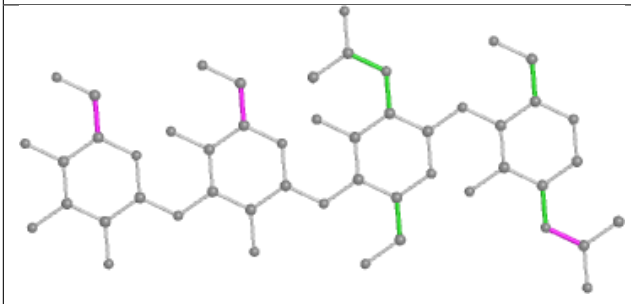
Oligosaccharide Chain J



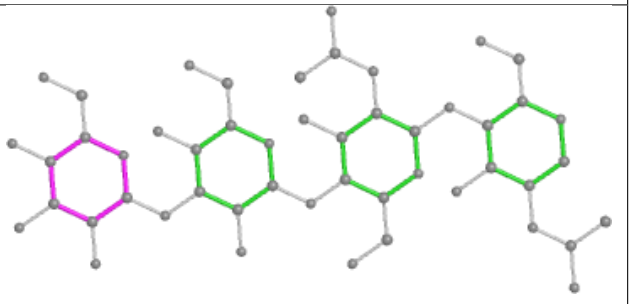
Bond lengths



Bond angles



Torsions



Rings

5.6 Ligand geometry (i)

13 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	$\#\|Z\| > 2$
10	C14	B	403	-	13,13,13	0.29	0	12,12,12	0.38	0
10	C14	A	703	-	13,13,13	0.29	0	12,12,12	0.37	0
8	Y01	B	401	-	38,38,38	0.45	0	57,57,57	0.50	0
9	XKP	B	402	-	32,32,32	0.33	0	35,37,37	0.38	0
9	XKP	A	702	-	32,32,32	0.32	0	35,37,37	0.44	0
11	D12	B	406	-	11,11,11	0.30	0	10,10,10	0.35	0
13	A1EOT	B	408	-	61,61,61	0.98	4 (6%)	77,79,79	1.20	5 (6%)
8	Y01	A	701	-	38,38,38	0.44	0	57,57,57	0.67	0
11	D12	A	704	-	11,11,11	0.29	0	10,10,10	0.36	0
11	D12	B	405	-	11,11,11	0.29	0	10,10,10	0.37	0
10	C14	B	404	-	13,13,13	0.29	0	12,12,12	0.37	0
14	NAG	E	701	5	14,14,15	0.38	0	17,19,21	0.63	1 (5%)
12	D10	B	407	-	9,9,9	0.29	0	8,8,8	0.35	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
10	C14	B	403	-	-	7/11/11/11	-
10	C14	A	703	-	-	5/11/11/11	-
8	Y01	B	401	-	-	13/19/77/77	0/4/4/4
9	XKP	B	402	-	-	6/36/36/36	-
9	XKP	A	702	-	-	6/36/36/36	-
11	D12	B	406	-	-	5/9/9/9	-
13	A1EOT	B	408	-	-	24/51/95/95	0/2/2/2
8	Y01	A	701	-	-	7/19/77/77	0/4/4/4
11	D12	A	704	-	-	3/9/9/9	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	D12	B	405	-	-	3/9/9/9	-
10	C14	B	404	-	-	8/11/11/11	-
14	NAG	E	701	5	-	0/6/23/26	0/1/1/1
12	D10	B	407	-	-	4/7/7/7	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	B	408	A1EOT	O16-C36	-2.96	1.40	1.44
13	B	408	A1EOT	O2-C10	-2.49	1.40	1.46
13	B	408	A1EOT	O2-C9	2.15	1.40	1.34
13	B	408	A1EOT	O16-C37	2.14	1.40	1.34

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
13	B	408	A1EOT	O2-C9-C8	3.98	120.08	111.50
13	B	408	A1EOT	C1-O5-C5	3.96	121.46	113.69
13	B	408	A1EOT	O16-C37-C38	3.78	119.64	111.50
13	B	408	A1EOT	O12-P1-O11	-2.25	101.12	112.24
13	B	408	A1EOT	C34-C33-C26	2.17	114.64	109.68
14	E	701	NAG	C1-O5-C5	2.15	115.10	112.19

There are no chirality outliers.

All (91) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
13	B	408	A1EOT	C8-C9-O2-C10
8	B	401	Y01	CAC-CBB-CBE-CAP
8	B	401	Y01	CAC-CBB-CBE-CBI
13	B	408	A1EOT	O8-C9-O2-C10
8	B	401	Y01	CAO-CBB-CBE-CAP
8	B	401	Y01	CAO-CBB-CBE-CBI
13	B	408	A1EOT	O5-C1-O1-C26
8	B	401	Y01	CAO-CAJ-CAN-CBA
8	B	401	Y01	CAJ-CAO-CBB-CBE
8	B	401	Y01	CAJ-CAO-CBB-CAC
13	B	408	A1EOT	C30-C23-C28-C27
13	B	408	A1EOT	C4-C5-C6-O6
13	B	408	A1EOT	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
8	B	401	Y01	CAJ-CAN-CBA-CAA
13	B	408	A1EOT	C38-C39-C40-C41
10	A	703	C14	C02-C03-C04-C05
10	B	403	C14	C02-C03-C04-C05
10	A	703	C14	C08-C09-C10-C11
10	B	403	C14	C05-C06-C07-C08
11	B	406	D12	C4-C5-C6-C7
13	B	408	A1EOT	C15-C16-C17-C18
10	A	703	C14	C06-C07-C08-C09
11	A	704	D12	C2-C3-C4-C5
10	B	404	C14	C02-C03-C04-C05
12	B	407	D10	C4-C5-C6-C7
10	B	404	C14	C08-C09-C10-C11
11	B	406	D12	C6-C7-C8-C9
11	A	704	D12	C3-C4-C5-C6
8	B	401	Y01	CAJ-CAN-CBA-CAB
13	B	408	A1EOT	C28-C23-C30-C7
11	B	406	D12	C3-C4-C5-C6
12	B	407	D10	C2-C3-C4-C5
10	B	404	C14	C05-C06-C07-C08
10	B	403	C14	C06-C07-C08-C09
8	B	401	Y01	CAN-CAJ-CAO-CBB
10	B	404	C14	C06-C07-C08-C09
13	B	408	A1EOT	C10-C11-O9-C12
13	B	408	A1EOT	C13-C12-O9-C11
11	B	405	D12	C3-C4-C5-C6
9	A	702	XKP	O1-C6-C7-C8
11	B	405	D12	C2-C3-C4-C5
11	B	406	D12	C11-C10-C9-C8
13	B	408	A1EOT	C29-C22-C27-C28
12	B	407	D10	C3-C4-C5-C6
9	A	702	XKP	C8-O2-P-O5
9	B	402	XKP	C11-C12-C13-C14
8	A	701	Y01	CAL-CAM-CAY-OAW
13	B	408	A1EOT	C11-C10-C24-O10
13	B	408	A1EOT	C23-C30-C7-C8
10	B	403	C14	C11-C12-C13-C14
11	B	405	D12	C6-C7-C8-C9
8	B	401	Y01	CAX-CAL-CAM-CAY
8	A	701	Y01	CAN-CAJ-CAO-CBB
10	B	403	C14	C07-C08-C09-C10
9	B	402	XKP	C6-C7-C8-O2

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Mol	Chain	Res	Type	Atoms
13	B	408	A1EOT	C17-C18-C19-C20
11	A	704	D12	C6-C7-C8-C9
10	B	403	C14	C03-C04-C05-C06
13	B	408	A1EOT	C25-C26-O1-C1
10	B	403	C14	C01-C02-C03-C04
13	B	408	A1EOT	O2-C10-C24-O10
9	A	702	XKP	C9-O5-P-O2
9	B	402	XKP	C8-O2-P-O5
9	B	402	XKP	C9-O5-P-O2
13	B	408	A1EOT	C24-O10-P1-O7
13	B	408	A1EOT	C33-C26-O1-C1
12	B	407	D10	C5-C6-C7-C8
10	A	703	C14	C11-C12-C13-C14
10	A	703	C14	C09-C10-C11-C12
10	B	404	C14	C11-C12-C13-C14
9	A	702	XKP	C8-C7-O6-C11
8	B	401	Y01	CAM-CAL-CAX-OAH
13	B	408	A1EOT	C7-C8-C9-O2
8	A	701	Y01	CAR-CBC-OAW-CAY
13	B	408	A1EOT	C14-C15-C16-C17
8	A	701	Y01	CAM-CAL-CAX-OAH
8	B	401	Y01	CAM-CAL-CAX-OAF
10	B	404	C14	C09-C10-C11-C12
13	B	408	A1EOT	C25-O7-P1-O10
8	A	701	Y01	CAM-CAL-CAX-OAF
10	B	404	C14	C04-C05-C06-C07
13	B	408	A1EOT	C39-C40-C41-C42
8	A	701	Y01	CAV-CBC-OAW-CAY
13	B	408	A1EOT	C7-C8-C9-O8
9	A	702	XKP	C8-O2-P-O4
9	A	702	XKP	C9-O5-P-O4
9	B	402	XKP	C8-O2-P-O4
9	B	402	XKP	C9-O5-P-O4
11	B	406	D12	C2-C3-C4-C5
10	B	404	C14	C03-C04-C05-C06
8	A	701	Y01	CAL-CAM-CAY-OAG

There are no ring outliers.

5 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	B	401	Y01	5	0

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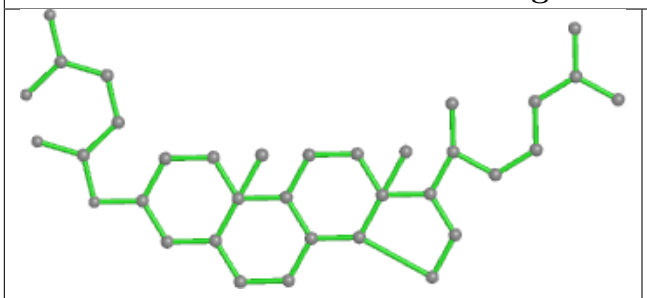
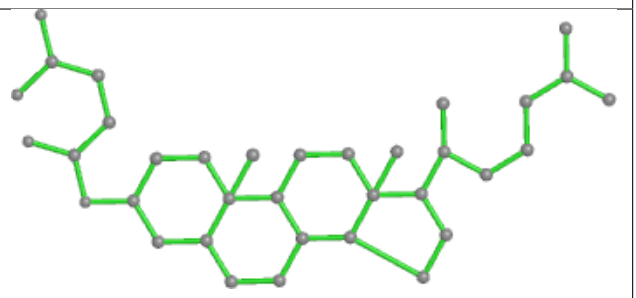
Mol	Chain	Res	Type	Clashes	Symm-Clashes
13	B	408	A1EOT	1	0
8	A	701	Y01	3	0
11	A	704	D12	1	0
11	B	405	D12	1	0

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.

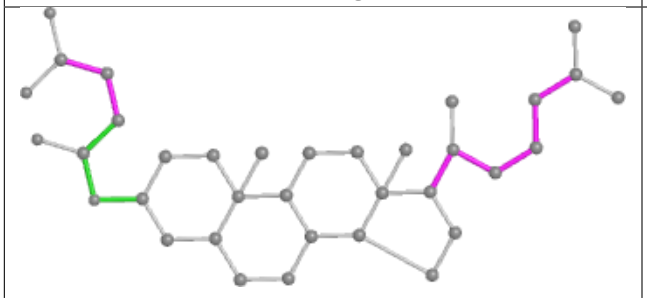
Ligand Y01 B 401



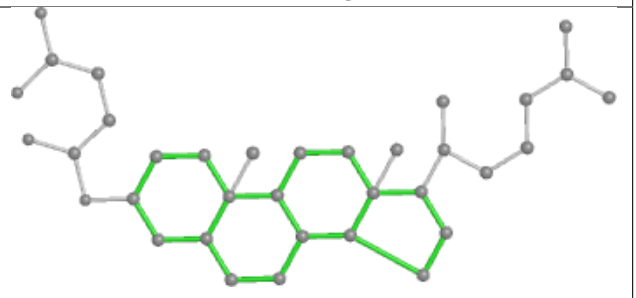
Bond lengths



Bond angles

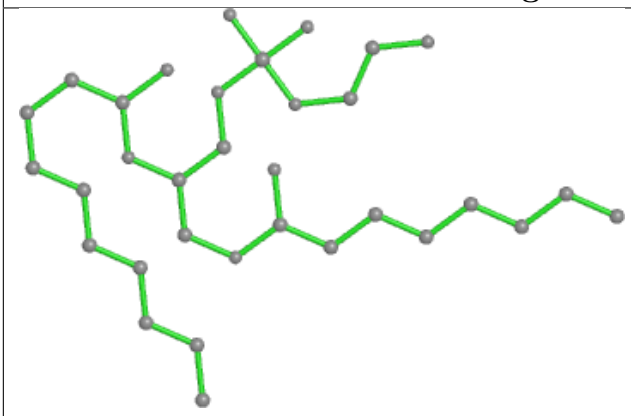


Torsions

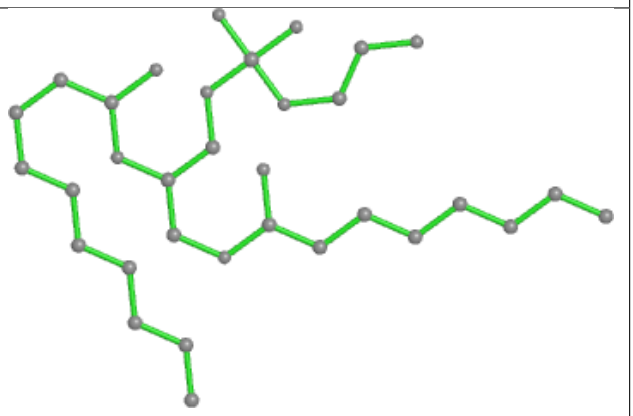


Rings

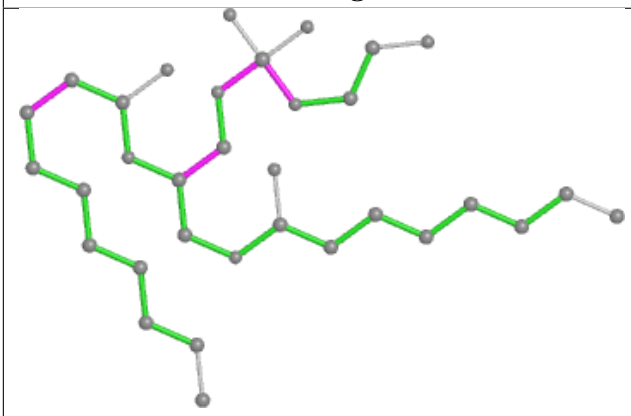
Ligand XKP B 402



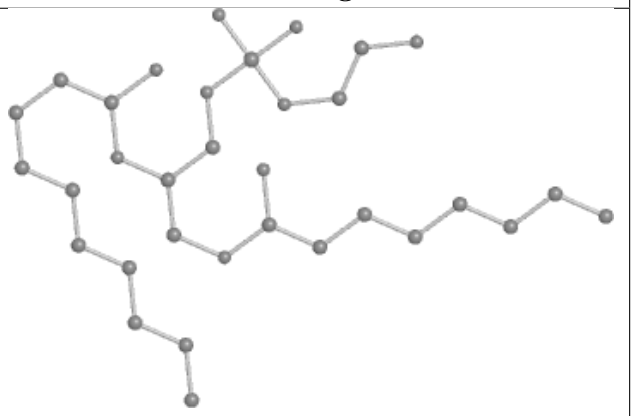
Bond lengths



Bond angles

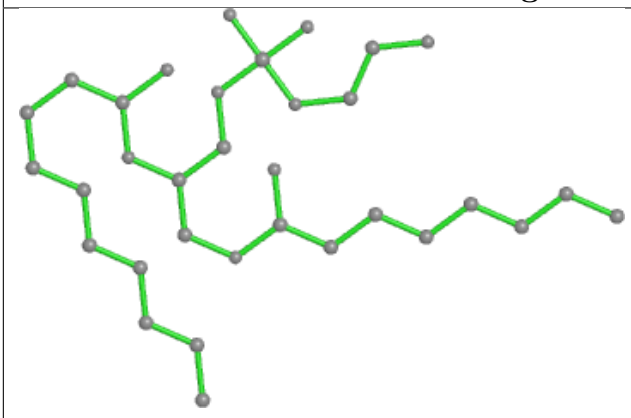


Torsions

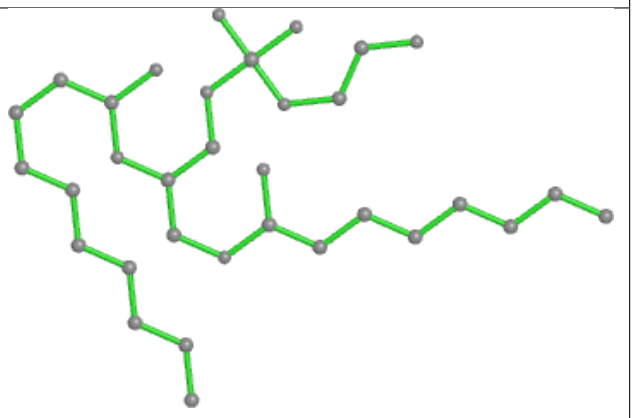


Rings

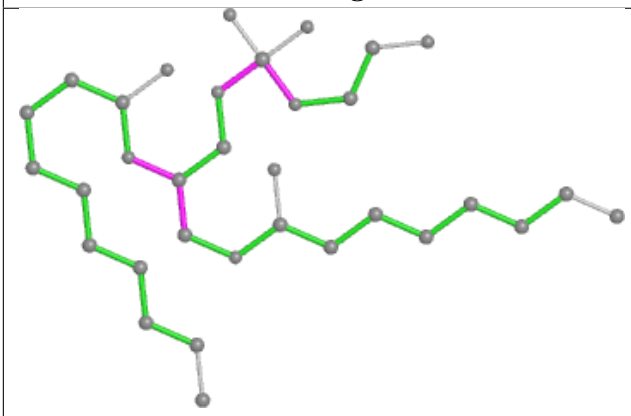
Ligand XKP A 702



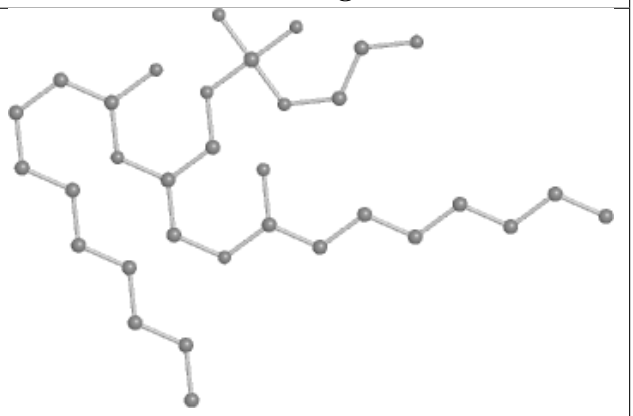
Bond lengths



Bond angles

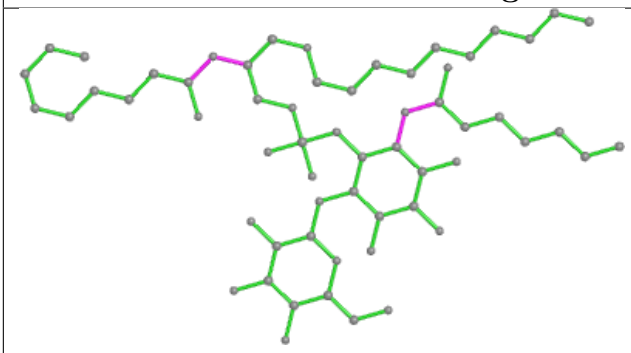


Torsions

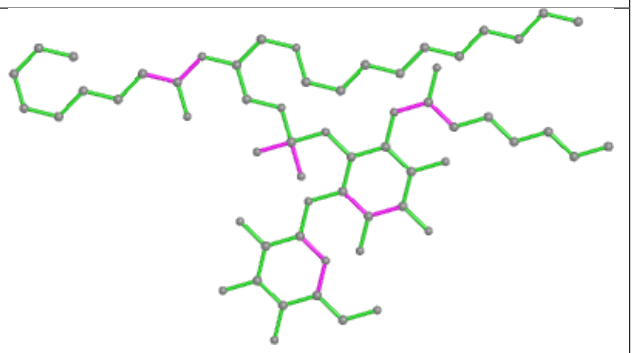


Rings

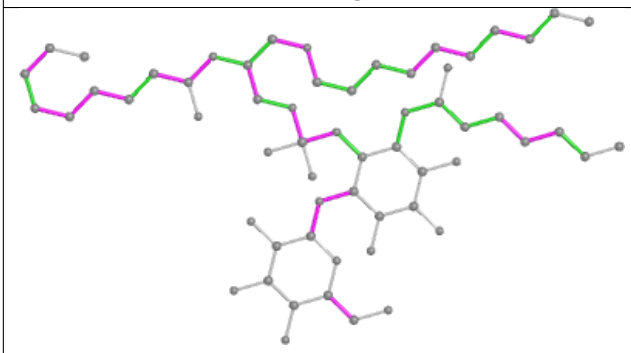
Ligand A1EOT B 408



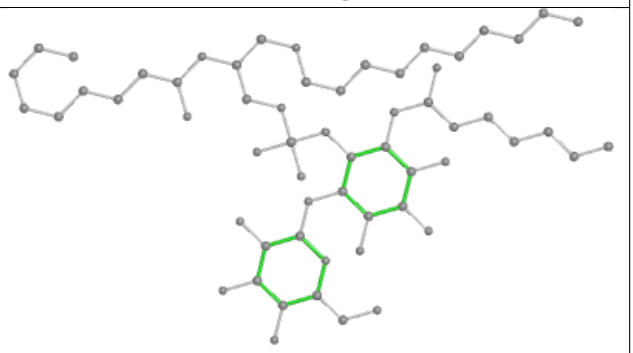
Bond lengths



Bond angles

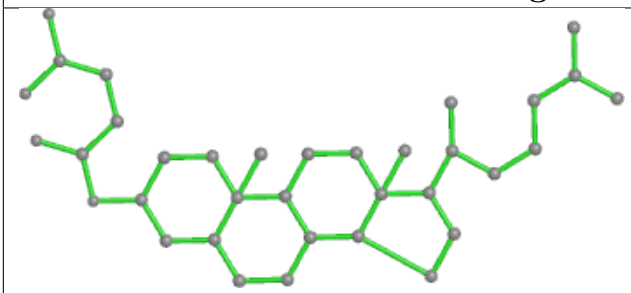


Torsions

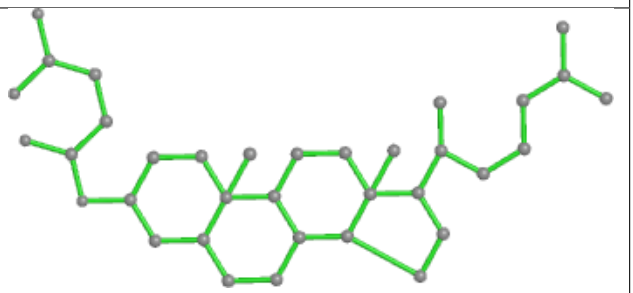


Rings

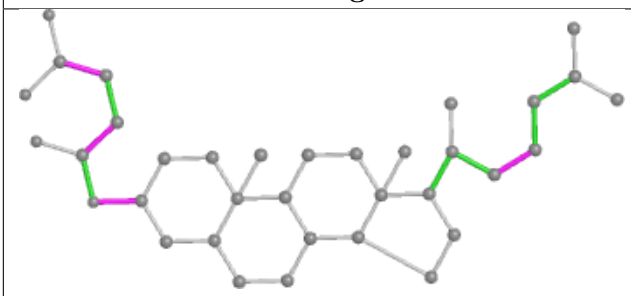
Ligand Y01 A 701



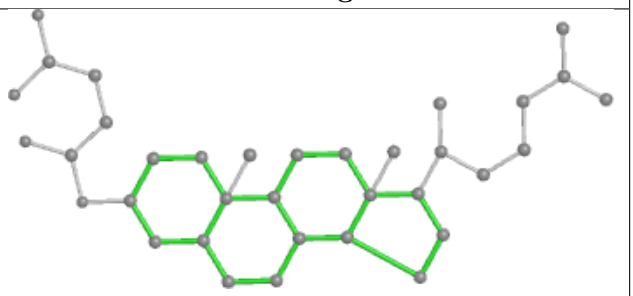
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

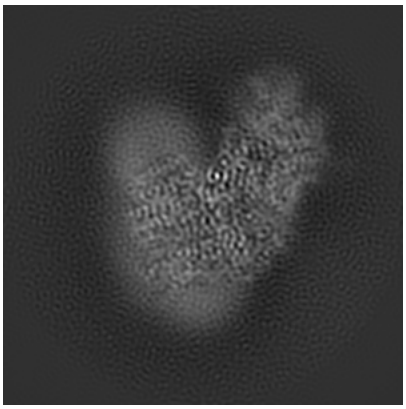
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-64000. These allow visual inspection of the internal detail of the map and identification of artifacts.

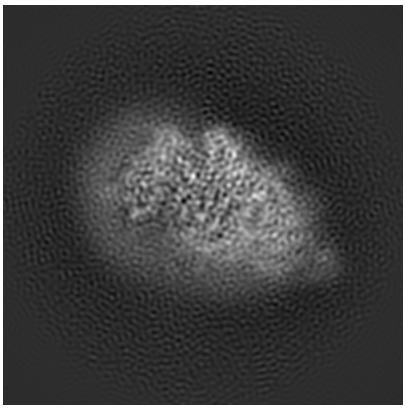
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

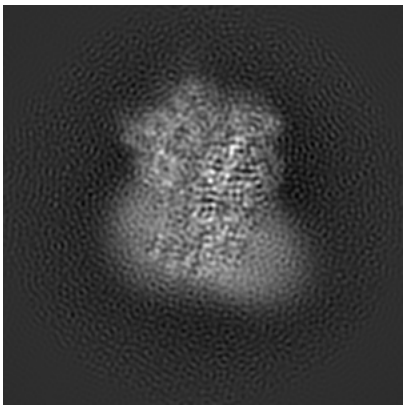
6.1.1 Primary map



X

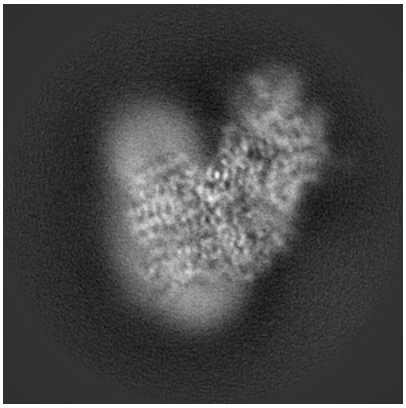


Y

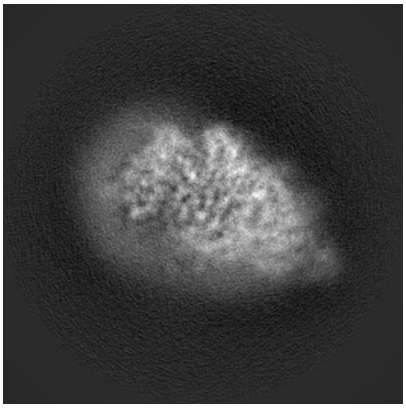


Z

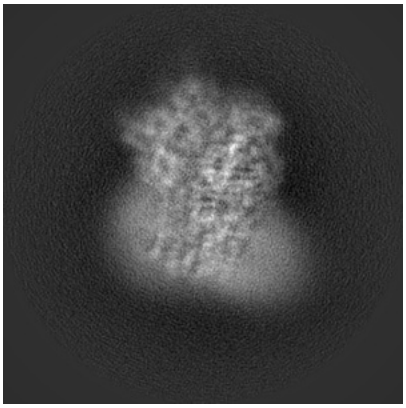
6.1.2 Raw map



X



Y

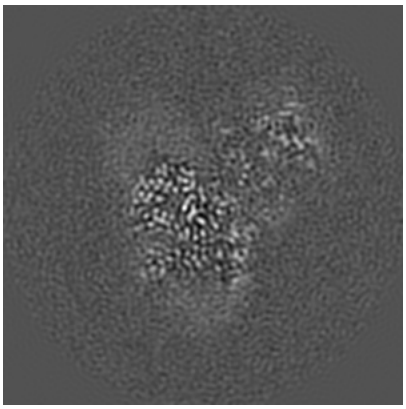


Z

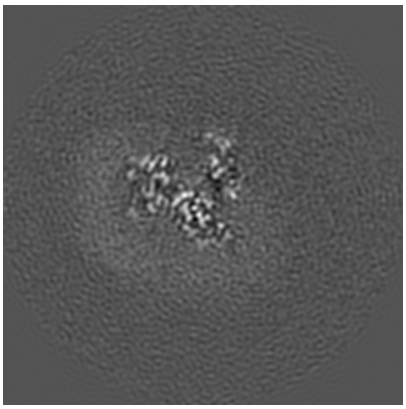
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

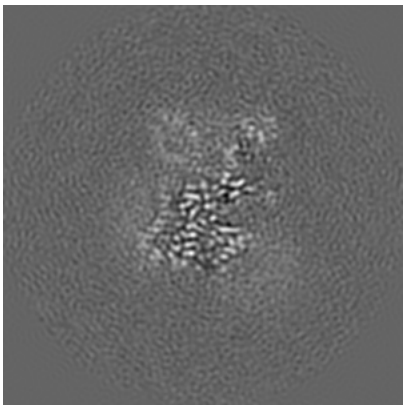
6.2.1 Primary map



X Index: 132

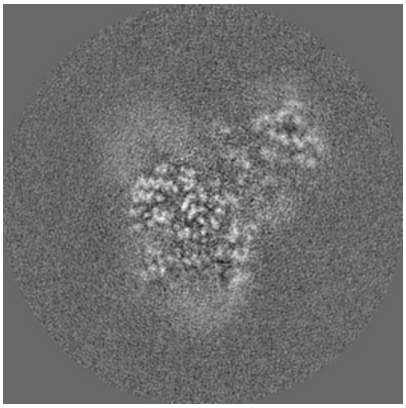


Y Index: 132

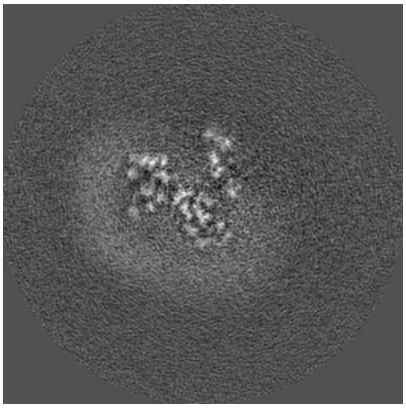


Z Index: 132

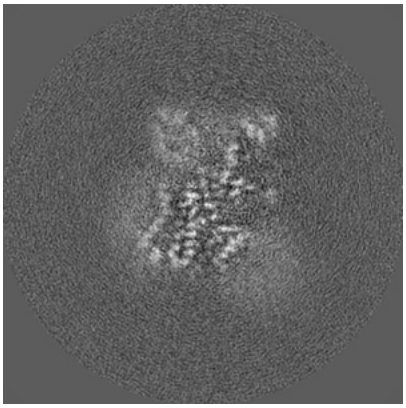
6.2.2 Raw map



X Index: 132



Y Index: 132

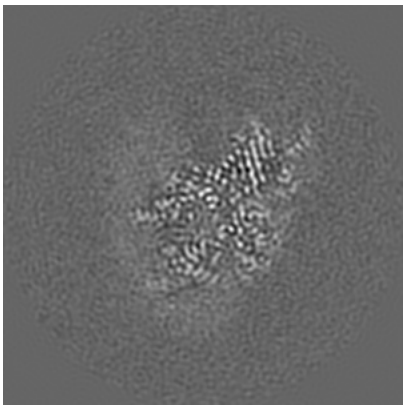


Z Index: 132

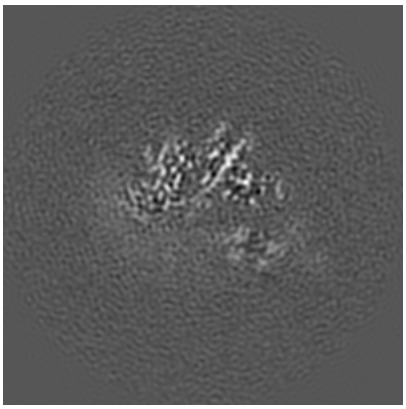
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

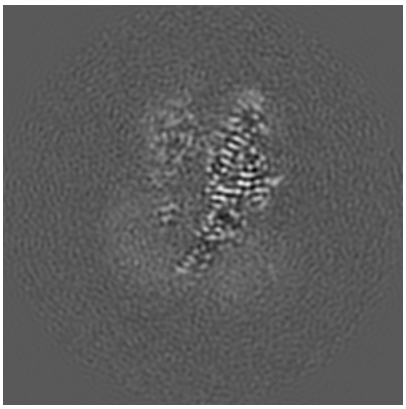
6.3.1 Primary map



X Index: 150

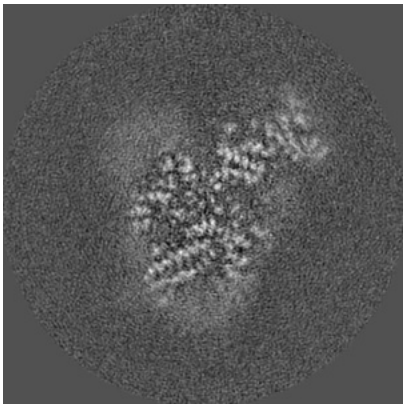


Y Index: 151

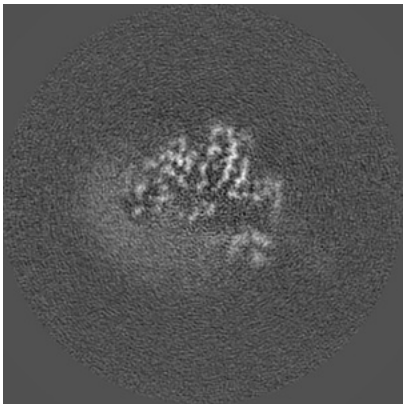


Z Index: 149

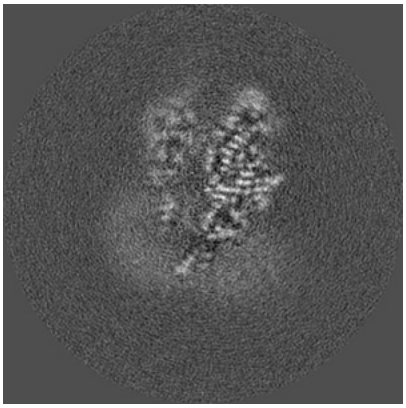
6.3.2 Raw map



X Index: 137



Y Index: 146

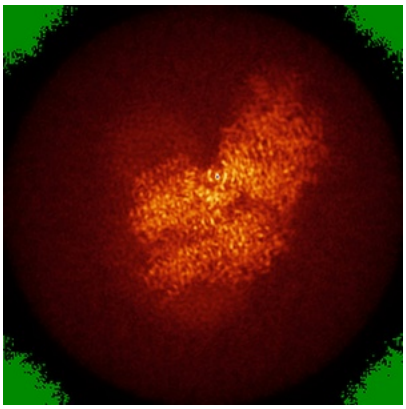


Z Index: 149

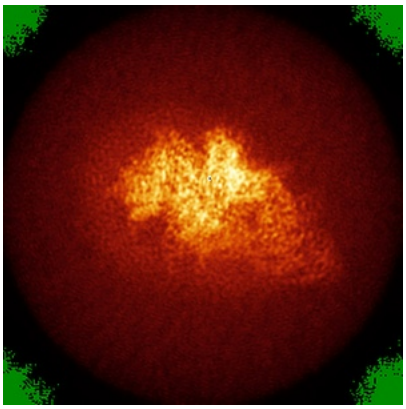
The images above show the largest variance slices of the map in three orthogonal directions.

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

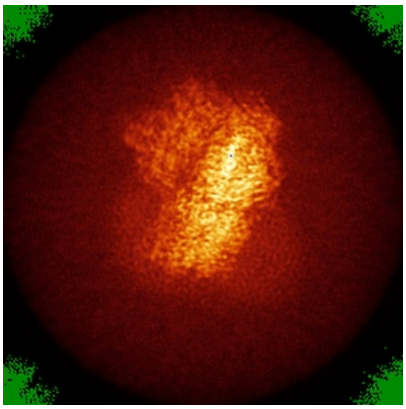
6.4.1 Primary map



X

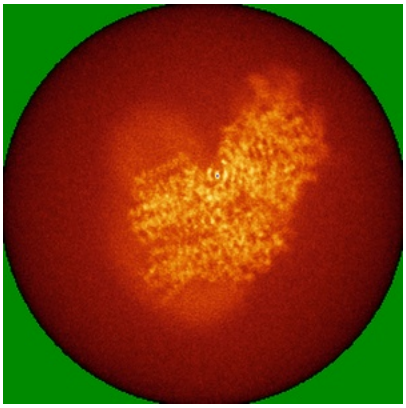


Y

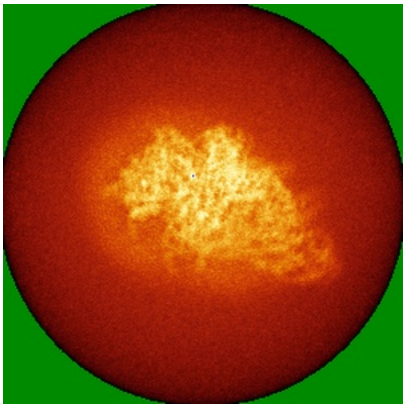


Z

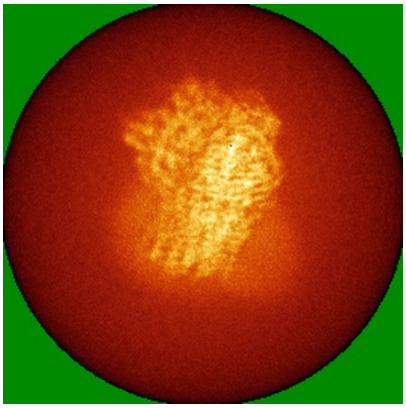
6.4.2 Raw map



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 0.0136. 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.

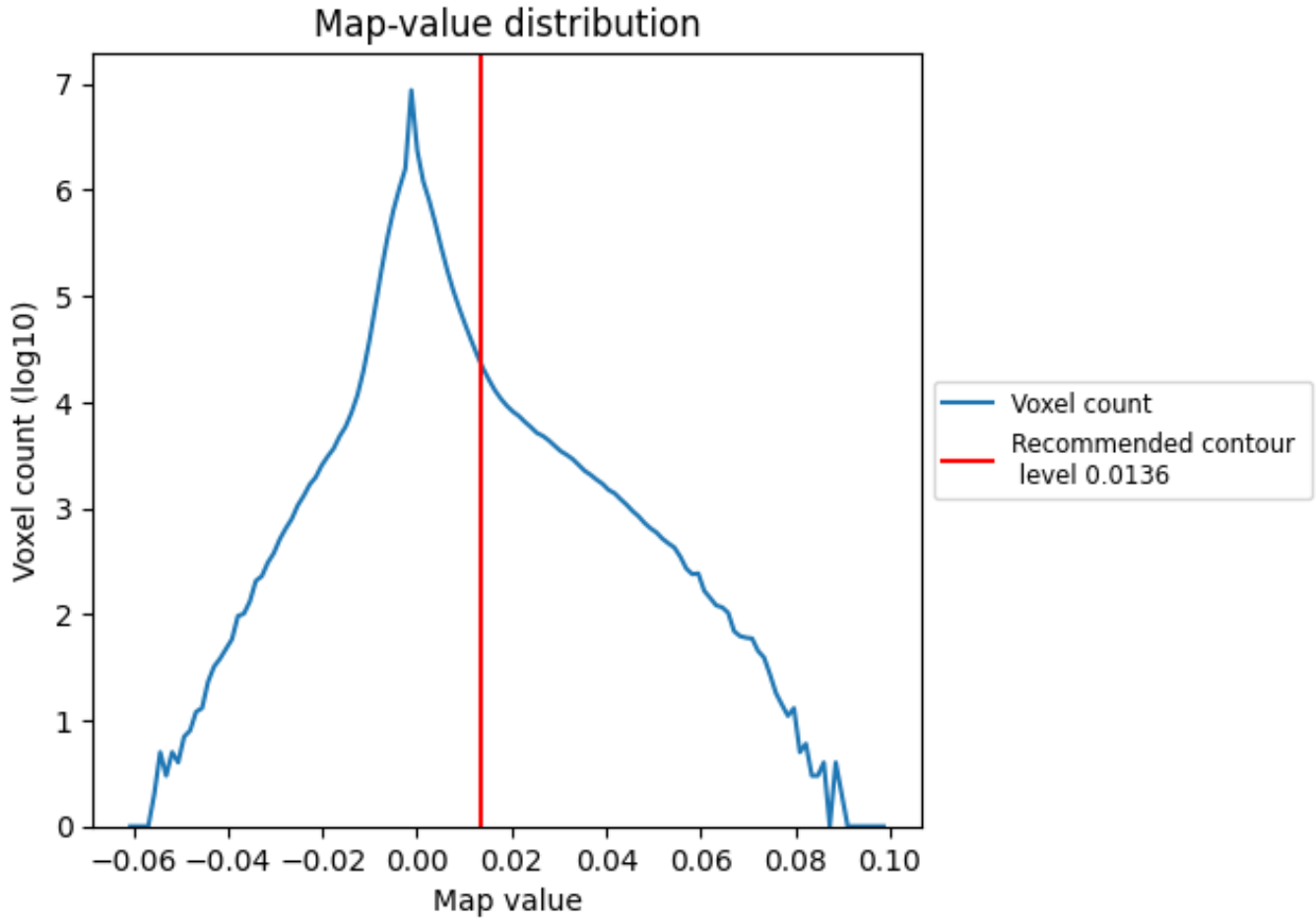
6.6 Mask visualisation (i)

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

7 Map analysis

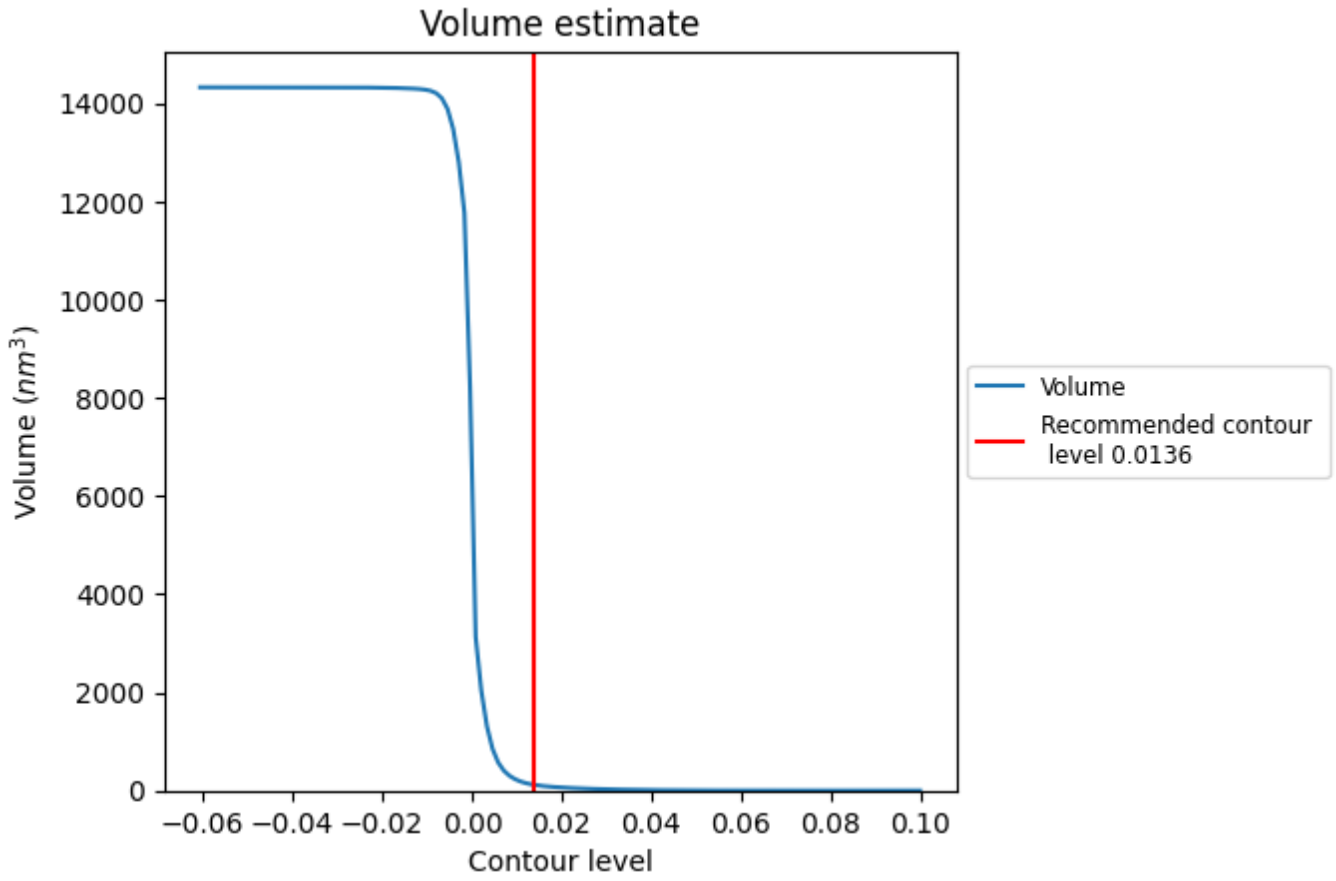
This section contains the results of statistical analysis of the map.

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.

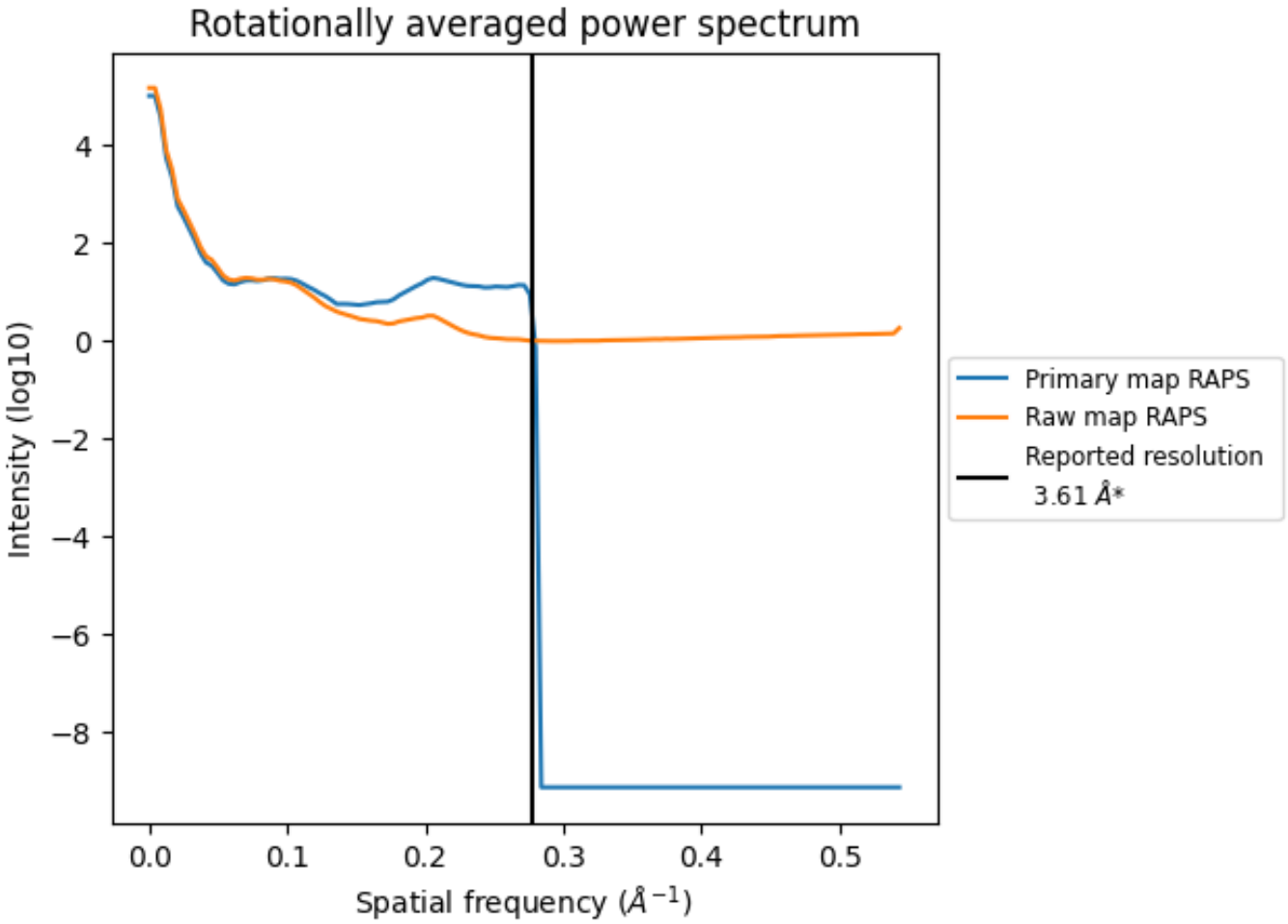
7.2 Volume estimate



The volume at the recommended contour level is 121 nm^3; this corresponds to an approximate mass of 110 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)

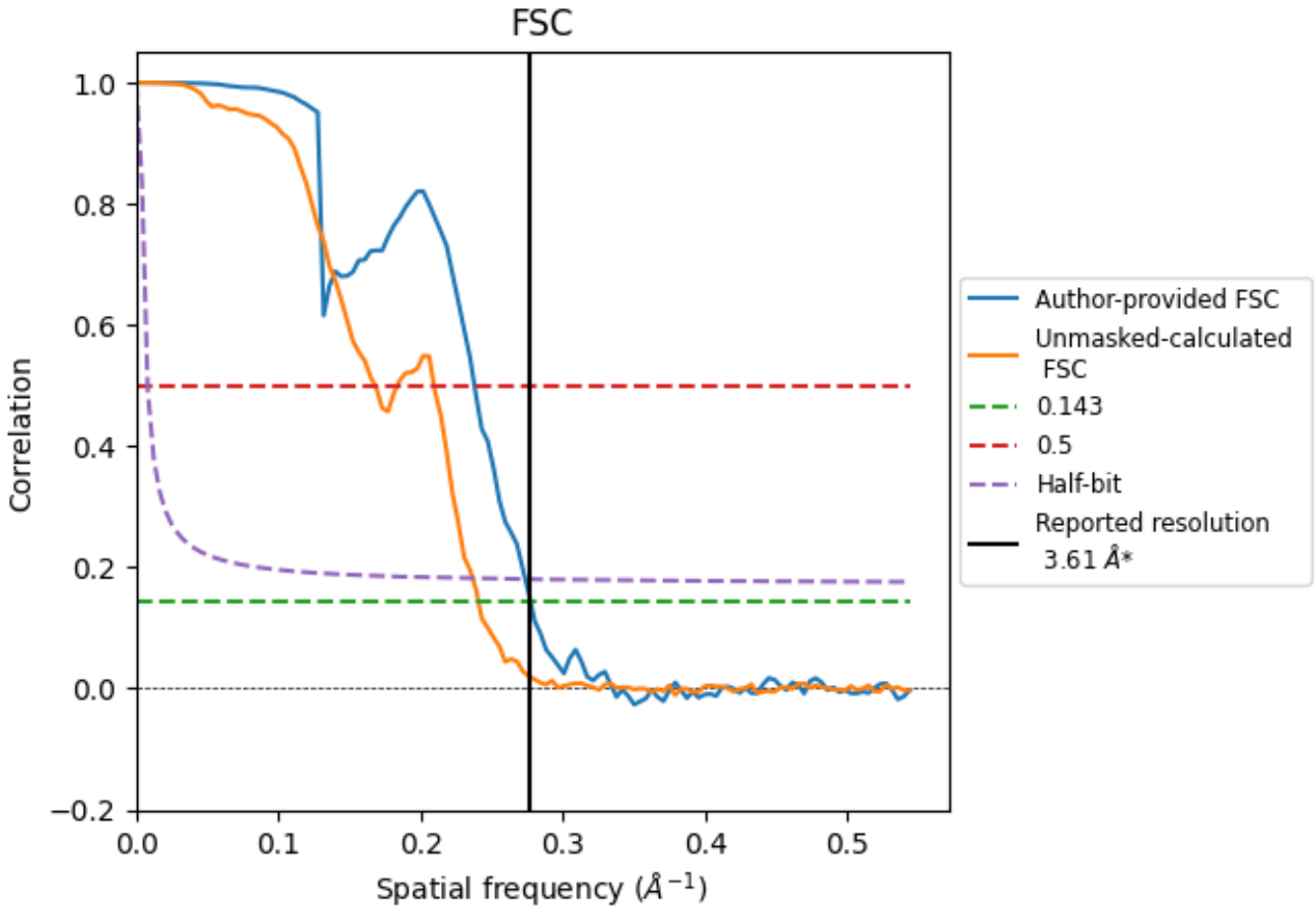


*Reported resolution corresponds to spatial frequency of 0.277 Å^{-1}

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 0.277 Å^{-1}

8.2 Resolution estimates (i)

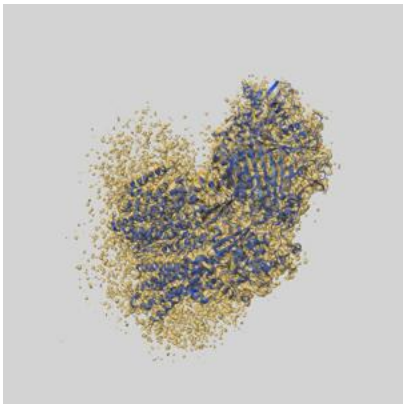
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.61	-	-
Author-provided FSC curve	3.61	4.21	3.66
Unmasked-calculated*	4.16	5.96	4.23

*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 4.16 differs from the reported value 3.61 by more than 10 %

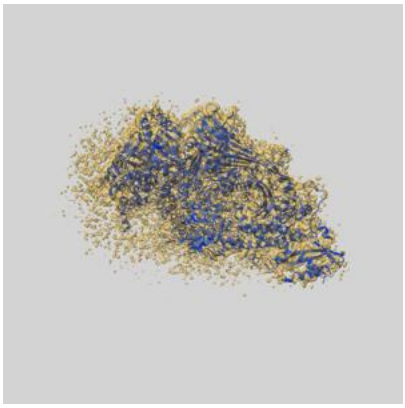
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-64000 and PDB model 9UB7. Per-residue inclusion information can be found in section 3 on page 10.

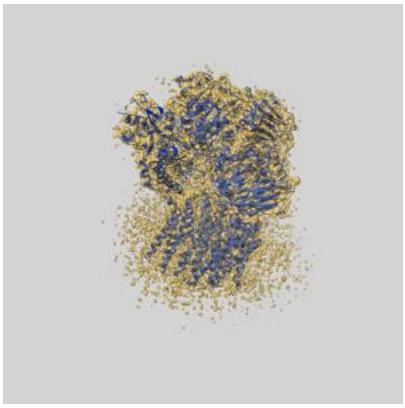
9.1 Map-model overlay



X



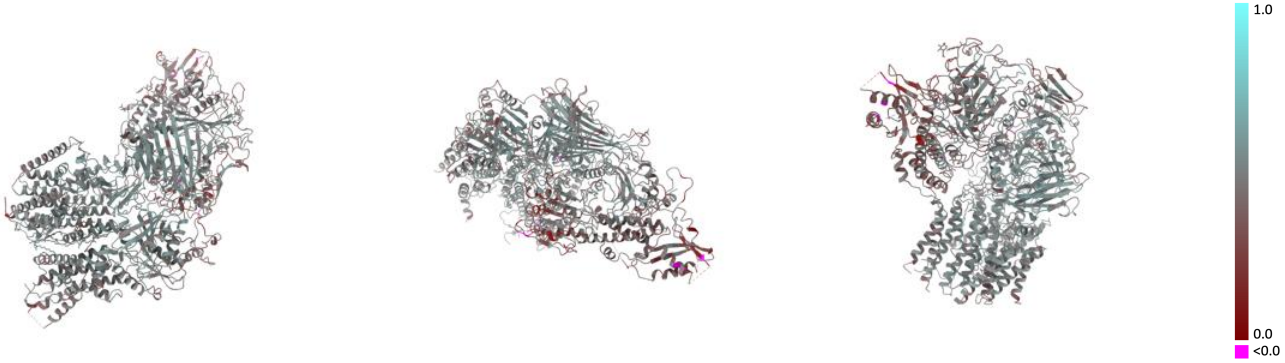
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0136 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.

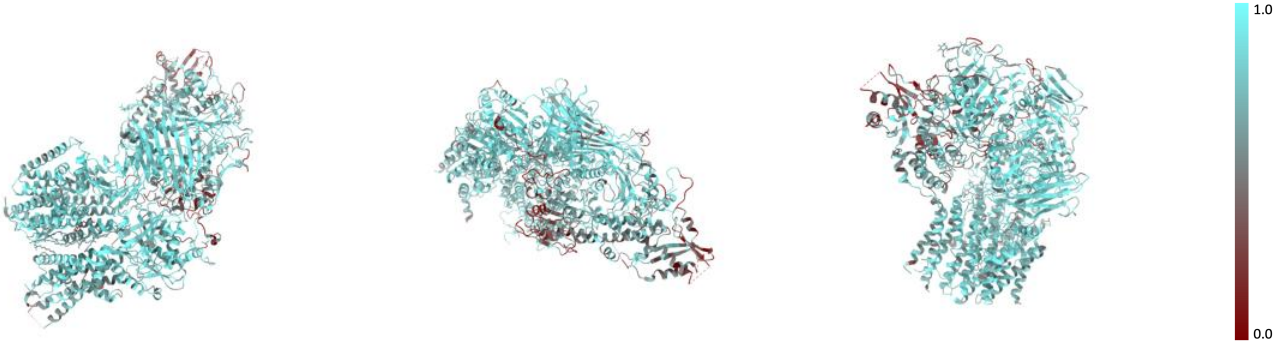
9.2 Q-score mapped to coordinate model (i)



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.

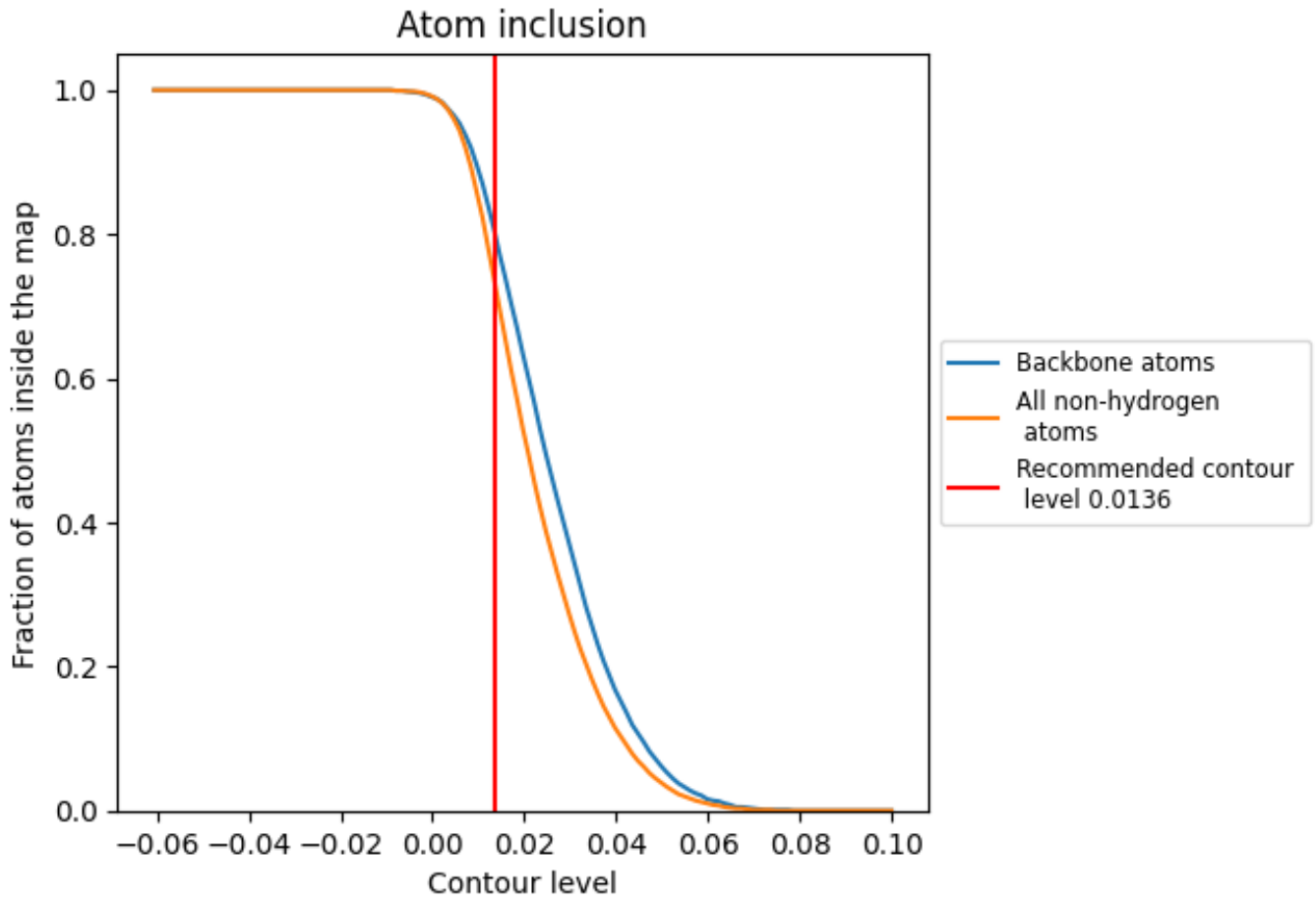
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.0136).

9.4 Atom inclusion (i)



At the recommended contour level, 80% of all backbone atoms, 73% 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 (0.0136) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7310	0.4680
A	0.7870	0.4920
B	0.8270	0.5070
C	0.4720	0.3660
D	0.6500	0.4290
E	0.7970	0.4970
F	0.5710	0.4000
G	0.7860	0.4800
J	0.6400	0.4630