Full wwPDB EM Validation Report ⓘ

Nov 15, 2022 – 02:20 PM EST

PDB ID	:	6X5C
EMDB ID	:	EMD-22049
Title	:	Asymmetric model of CD4-bound B41 HIV-1 Env SOSIP in complex with small molecule GO52
Authors	:	Ozorowski, G.; Torres, J.L.; Ward, A.B.
Deposited on	:	2020-05-25
Resolution	:	4.04 Å(reported)
Based on initial model	:	5VN3

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:

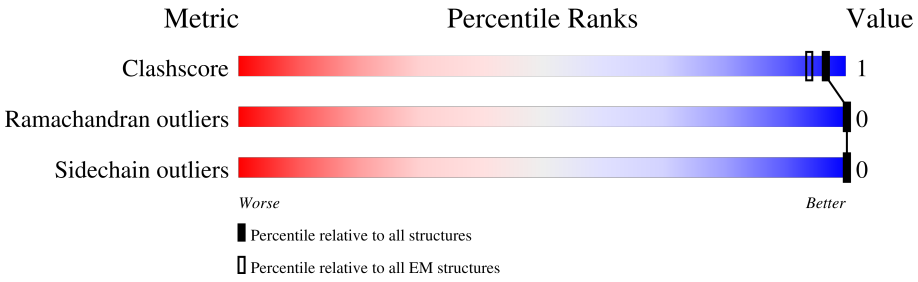
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (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 4.04 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	524	63% · 33%
1	D	524	63% · 33%
1	E	524	62% · 34%
2	B	153	96% · ·
2	F	153	5% 90% · 6%
2	G	153	7% 91% 6% ·
3	C	208	14% 44% · 54%
3	I	208	8% 46% 54%

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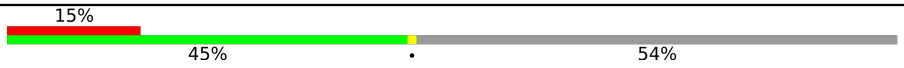
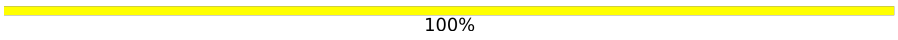
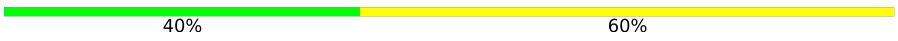
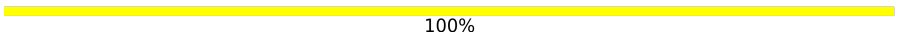
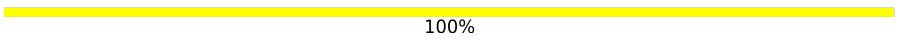
Mol	Chain	Length	Quality of chain
3	J	208	
4	H	5	
4	K	5	
4	M	5	
5	L	2	

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 14644 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 Envelope glycoprotein gp160.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	350	Total 2745	C 1729	N 485	O 510	S 21	0	0
1	D	350	Total 2752	C 1734	N 487	O 510	S 21	0	0
1	E	347	Total 2719	C 1709	N 482	O 507	S 21	0	0

There are 120 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	MET	-	initiating methionine	UNP B3UES2
A	-3	ASP	-	expression tag	UNP B3UES2
A	-2	ALA	-	expression tag	UNP B3UES2
A	-1	MET	-	expression tag	UNP B3UES2
A	0	LYS	-	expression tag	UNP B3UES2
A	1	ARG	-	expression tag	UNP B3UES2
A	2	GLY	-	expression tag	UNP B3UES2
A	3	LEU	-	expression tag	UNP B3UES2
A	4	CYS	-	expression tag	UNP B3UES2
A	5	CYS	-	expression tag	UNP B3UES2
A	6	VAL	-	expression tag	UNP B3UES2
A	7	LEU	-	expression tag	UNP B3UES2
A	8	LEU	-	expression tag	UNP B3UES2
A	9	LEU	-	expression tag	UNP B3UES2
A	10	CYS	-	expression tag	UNP B3UES2
A	11	GLY	-	expression tag	UNP B3UES2
A	12	ALA	-	expression tag	UNP B3UES2
A	13	VAL	-	expression tag	UNP B3UES2
A	14	PHE	-	expression tag	UNP B3UES2
A	15	VAL	-	expression tag	UNP B3UES2
A	16	SER	-	expression tag	UNP B3UES2
A	17	PRO	-	expression tag	UNP B3UES2
A	18	SER	-	expression tag	UNP B3UES2
A	19	GLN	-	expression tag	UNP B3UES2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	20	GLU	-	expression tag	UNP B3UES2
A	21	ILE	-	expression tag	UNP B3UES2
A	22	HIS	-	expression tag	UNP B3UES2
A	23	ALA	-	expression tag	UNP B3UES2
A	24	ARG	-	expression tag	UNP B3UES2
A	25	PHE	-	expression tag	UNP B3UES2
A	26	ARG	-	expression tag	UNP B3UES2
A	27	ARG	-	expression tag	UNP B3UES2
A	28	GLY	-	expression tag	UNP B3UES2
A	29	ALA	-	expression tag	UNP B3UES2
A	30	ARG	-	expression tag	UNP B3UES2
A	501	CYS	ALA	engineered mutation	UNP B3UES2
A	509	ARG	GLU	engineered mutation	UNP B3UES2
A	510	ARG	LYS	engineered mutation	UNP B3UES2
A	512	ARG	ALA	engineered mutation	UNP B3UES2
A	513	ARG	VAL	engineered mutation	UNP B3UES2
D	-4	MET	-	initiating methionine	UNP B3UES2
D	-3	ASP	-	expression tag	UNP B3UES2
D	-2	ALA	-	expression tag	UNP B3UES2
D	-1	MET	-	expression tag	UNP B3UES2
D	0	LYS	-	expression tag	UNP B3UES2
D	1	ARG	-	expression tag	UNP B3UES2
D	2	GLY	-	expression tag	UNP B3UES2
D	3	LEU	-	expression tag	UNP B3UES2
D	4	CYS	-	expression tag	UNP B3UES2
D	5	CYS	-	expression tag	UNP B3UES2
D	6	VAL	-	expression tag	UNP B3UES2
D	7	LEU	-	expression tag	UNP B3UES2
D	8	LEU	-	expression tag	UNP B3UES2
D	9	LEU	-	expression tag	UNP B3UES2
D	10	CYS	-	expression tag	UNP B3UES2
D	11	GLY	-	expression tag	UNP B3UES2
D	12	ALA	-	expression tag	UNP B3UES2
D	13	VAL	-	expression tag	UNP B3UES2
D	14	PHE	-	expression tag	UNP B3UES2
D	15	VAL	-	expression tag	UNP B3UES2
D	16	SER	-	expression tag	UNP B3UES2
D	17	PRO	-	expression tag	UNP B3UES2
D	18	SER	-	expression tag	UNP B3UES2
D	19	GLN	-	expression tag	UNP B3UES2
D	20	GLU	-	expression tag	UNP B3UES2
D	21	ILE	-	expression tag	UNP B3UES2

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Chain	Residue	Modelled	Actual	Comment	Reference
D	22	HIS	-	expression tag	UNP B3UES2
D	23	ALA	-	expression tag	UNP B3UES2
D	24	ARG	-	expression tag	UNP B3UES2
D	25	PHE	-	expression tag	UNP B3UES2
D	26	ARG	-	expression tag	UNP B3UES2
D	27	ARG	-	expression tag	UNP B3UES2
D	28	GLY	-	expression tag	UNP B3UES2
D	29	ALA	-	expression tag	UNP B3UES2
D	30	ARG	-	expression tag	UNP B3UES2
D	501	CYS	ALA	engineered mutation	UNP B3UES2
D	509	ARG	GLU	engineered mutation	UNP B3UES2
D	510	ARG	LYS	engineered mutation	UNP B3UES2
D	512	ARG	ALA	engineered mutation	UNP B3UES2
D	513	ARG	VAL	engineered mutation	UNP B3UES2
E	-4	MET	-	initiating methionine	UNP B3UES2
E	-3	ASP	-	expression tag	UNP B3UES2
E	-2	ALA	-	expression tag	UNP B3UES2
E	-1	MET	-	expression tag	UNP B3UES2
E	0	LYS	-	expression tag	UNP B3UES2
E	1	ARG	-	expression tag	UNP B3UES2
E	2	GLY	-	expression tag	UNP B3UES2
E	3	LEU	-	expression tag	UNP B3UES2
E	4	CYS	-	expression tag	UNP B3UES2
E	5	CYS	-	expression tag	UNP B3UES2
E	6	VAL	-	expression tag	UNP B3UES2
E	7	LEU	-	expression tag	UNP B3UES2
E	8	LEU	-	expression tag	UNP B3UES2
E	9	LEU	-	expression tag	UNP B3UES2
E	10	CYS	-	expression tag	UNP B3UES2
E	11	GLY	-	expression tag	UNP B3UES2
E	12	ALA	-	expression tag	UNP B3UES2
E	13	VAL	-	expression tag	UNP B3UES2
E	14	PHE	-	expression tag	UNP B3UES2
E	15	VAL	-	expression tag	UNP B3UES2
E	16	SER	-	expression tag	UNP B3UES2
E	17	PRO	-	expression tag	UNP B3UES2
E	18	SER	-	expression tag	UNP B3UES2
E	19	GLN	-	expression tag	UNP B3UES2
E	20	GLU	-	expression tag	UNP B3UES2
E	21	ILE	-	expression tag	UNP B3UES2
E	22	HIS	-	expression tag	UNP B3UES2
E	23	ALA	-	expression tag	UNP B3UES2

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Chain	Residue	Modelled	Actual	Comment	Reference
E	24	ARG	-	expression tag	UNP B3UES2
E	25	PHE	-	expression tag	UNP B3UES2
E	26	ARG	-	expression tag	UNP B3UES2
E	27	ARG	-	expression tag	UNP B3UES2
E	28	GLY	-	expression tag	UNP B3UES2
E	29	ALA	-	expression tag	UNP B3UES2
E	30	ARG	-	expression tag	UNP B3UES2
E	501	CYS	ALA	engineered mutation	UNP B3UES2
E	509	ARG	GLU	engineered mutation	UNP B3UES2
E	510	ARG	LYS	engineered mutation	UNP B3UES2
E	512	ARG	ALA	engineered mutation	UNP B3UES2
E	513	ARG	VAL	engineered mutation	UNP B3UES2

- Molecule 2 is a protein called Envelope glycoprotein gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	149	Total	C	N	O	S	0	0
			1184	751	206	219	8		
2	F	144	Total	C	N	O	S	0	0
			1156	733	201	214	8		
2	G	148	Total	C	N	O	S	0	0
			1176	745	205	218	8		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	559	PRO	ILE	engineered mutation	UNP B3UEZ6
B	605	CYS	THR	engineered mutation	UNP B3UEZ6
F	559	PRO	ILE	engineered mutation	UNP B3UEZ6
F	605	CYS	THR	engineered mutation	UNP B3UEZ6
G	559	PRO	ILE	engineered mutation	UNP B3UEZ6
G	605	CYS	THR	engineered mutation	UNP B3UEZ6

- Molecule 3 is a protein called T-cell surface glycoprotein CD4.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	96	Total	C	N	O	S	0	0
			768	482	135	149	2		
3	I	96	Total	C	N	O	S	0	0
			768	482	135	149	2		
3	J	96	Total	C	N	O	S	0	0
			768	482	135	149	2		

There are 87 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-19	MET	-	initiating methionine	UNP P01730
C	-18	GLU	-	expression tag	UNP P01730
C	-17	THR	-	expression tag	UNP P01730
C	-16	ASP	-	expression tag	UNP P01730
C	-15	THR	-	expression tag	UNP P01730
C	-14	LEU	-	expression tag	UNP P01730
C	-13	LEU	-	expression tag	UNP P01730
C	-12	LEU	-	expression tag	UNP P01730
C	-11	TRP	-	expression tag	UNP P01730
C	-10	VAL	-	expression tag	UNP P01730
C	-9	LEU	-	expression tag	UNP P01730
C	-8	LEU	-	expression tag	UNP P01730
C	-7	LEU	-	expression tag	UNP P01730
C	-6	TRP	-	expression tag	UNP P01730
C	-5	VAL	-	expression tag	UNP P01730
C	-4	PRO	-	expression tag	UNP P01730
C	-3	GLY	-	expression tag	UNP P01730
C	-2	SER	-	expression tag	UNP P01730
C	-1	THR	-	expression tag	UNP P01730
C	179	GLY	-	expression tag	UNP P01730
C	180	GLY	-	expression tag	UNP P01730
C	181	SER	-	expression tag	UNP P01730
C	182	GLY	-	expression tag	UNP P01730
C	183	HIS	-	expression tag	UNP P01730
C	184	HIS	-	expression tag	UNP P01730
C	185	HIS	-	expression tag	UNP P01730
C	186	HIS	-	expression tag	UNP P01730
C	187	HIS	-	expression tag	UNP P01730
C	188	HIS	-	expression tag	UNP P01730
I	-19	MET	-	initiating methionine	UNP P01730
I	-18	GLU	-	expression tag	UNP P01730
I	-17	THR	-	expression tag	UNP P01730
I	-16	ASP	-	expression tag	UNP P01730
I	-15	THR	-	expression tag	UNP P01730
I	-14	LEU	-	expression tag	UNP P01730
I	-13	LEU	-	expression tag	UNP P01730
I	-12	LEU	-	expression tag	UNP P01730
I	-11	TRP	-	expression tag	UNP P01730
I	-10	VAL	-	expression tag	UNP P01730
I	-9	LEU	-	expression tag	UNP P01730
I	-8	LEU	-	expression tag	UNP P01730
I	-7	LEU	-	expression tag	UNP P01730

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Chain	Residue	Modelled	Actual	Comment	Reference
I	-6	TRP	-	expression tag	UNP P01730
I	-5	VAL	-	expression tag	UNP P01730
I	-4	PRO	-	expression tag	UNP P01730
I	-3	GLY	-	expression tag	UNP P01730
I	-2	SER	-	expression tag	UNP P01730
I	-1	THR	-	expression tag	UNP P01730
I	179	GLY	-	expression tag	UNP P01730
I	180	GLY	-	expression tag	UNP P01730
I	181	SER	-	expression tag	UNP P01730
I	182	GLY	-	expression tag	UNP P01730
I	183	HIS	-	expression tag	UNP P01730
I	184	HIS	-	expression tag	UNP P01730
I	185	HIS	-	expression tag	UNP P01730
I	186	HIS	-	expression tag	UNP P01730
I	187	HIS	-	expression tag	UNP P01730
I	188	HIS	-	expression tag	UNP P01730
J	-19	MET	-	initiating methionine	UNP P01730
J	-18	GLU	-	expression tag	UNP P01730
J	-17	THR	-	expression tag	UNP P01730
J	-16	ASP	-	expression tag	UNP P01730
J	-15	THR	-	expression tag	UNP P01730
J	-14	LEU	-	expression tag	UNP P01730
J	-13	LEU	-	expression tag	UNP P01730
J	-12	LEU	-	expression tag	UNP P01730
J	-11	TRP	-	expression tag	UNP P01730
J	-10	VAL	-	expression tag	UNP P01730
J	-9	LEU	-	expression tag	UNP P01730
J	-8	LEU	-	expression tag	UNP P01730
J	-7	LEU	-	expression tag	UNP P01730
J	-6	TRP	-	expression tag	UNP P01730
J	-5	VAL	-	expression tag	UNP P01730
J	-4	PRO	-	expression tag	UNP P01730
J	-3	GLY	-	expression tag	UNP P01730
J	-2	SER	-	expression tag	UNP P01730
J	-1	THR	-	expression tag	UNP P01730
J	179	GLY	-	expression tag	UNP P01730
J	180	GLY	-	expression tag	UNP P01730
J	181	SER	-	expression tag	UNP P01730
J	182	GLY	-	expression tag	UNP P01730
J	183	HIS	-	expression tag	UNP P01730
J	184	HIS	-	expression tag	UNP P01730
J	185	HIS	-	expression tag	UNP P01730

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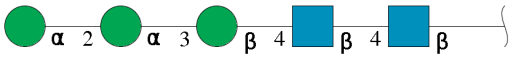
Chain	Residue	Modelled	Actual	Comment	Reference
J	186	HIS	-	expression tag	UNP P01730
J	187	HIS	-	expression tag	UNP P01730
J	188	HIS	-	expression tag	UNP P01730

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-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.

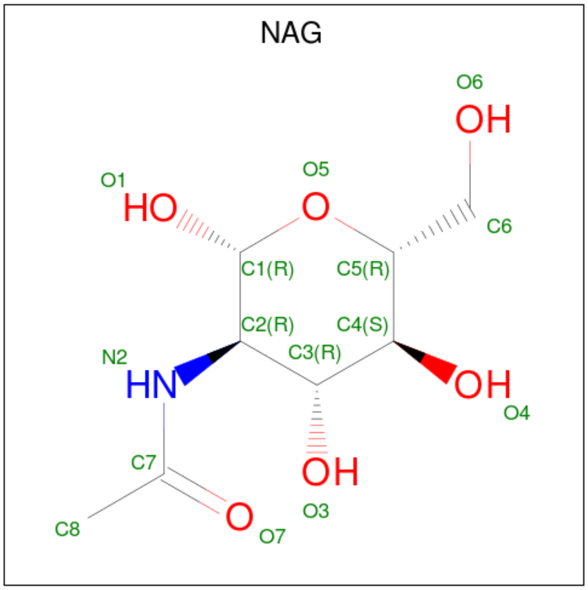


Mol	Chain	Residues	Atoms				AltConf	Trace
4	H	5	Total	C	N	O	0	0
			61	34	2	25		
4	K	5	Total	C	N	O	0	0
			61	34	2	25		
4	M	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 5 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
5	L	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	A	1	Total 126	C 72	N 9	O 45	0
6	D	1	Total 112	C 64	N 8	O 40	0
6	D	1	Total 112	C 64	N 8	O 40	0
6	D	1	Total 112	C 64	N 8	O 40	0
6	D	1	Total 112	C 64	N 8	O 40	0
6	D	1	Total 112	C 64	N 8	O 40	0

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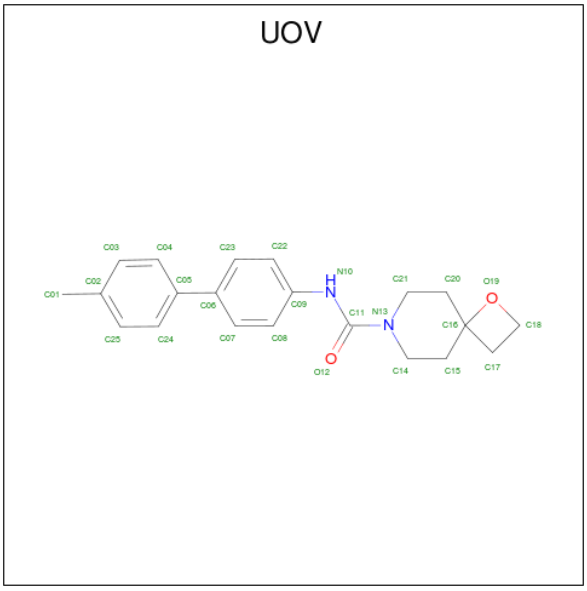
Mol	Chain	Residues	Atoms	AltConf
6	D	1	Total C N O 112 64 8 40	0
6	D	1	Total C N O 112 64 8 40	0
6	D	1	Total C N O 112 64 8 40	0
6	E	1	Total C N O 84 48 6 30	0
6	E	1	Total C N O 84 48 6 30	0
6	E	1	Total C N O 84 48 6 30	0
6	E	1	Total C N O 84 48 6 30	0
6	E	1	Total C N O 84 48 6 30	0
6	E	1	Total C N O 84 48 6 30	0

- Molecule 7 is N-(4'-methyl[1,1'-biphenyl]-4-yl)-1-oxa-7-azaspiro[3.5]nonane-7-carboxamide (three-letter code: UOV) (formula: $C_{21}H_{24}N_2O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
7	B	1	Total C N O 25 21 2 2	0

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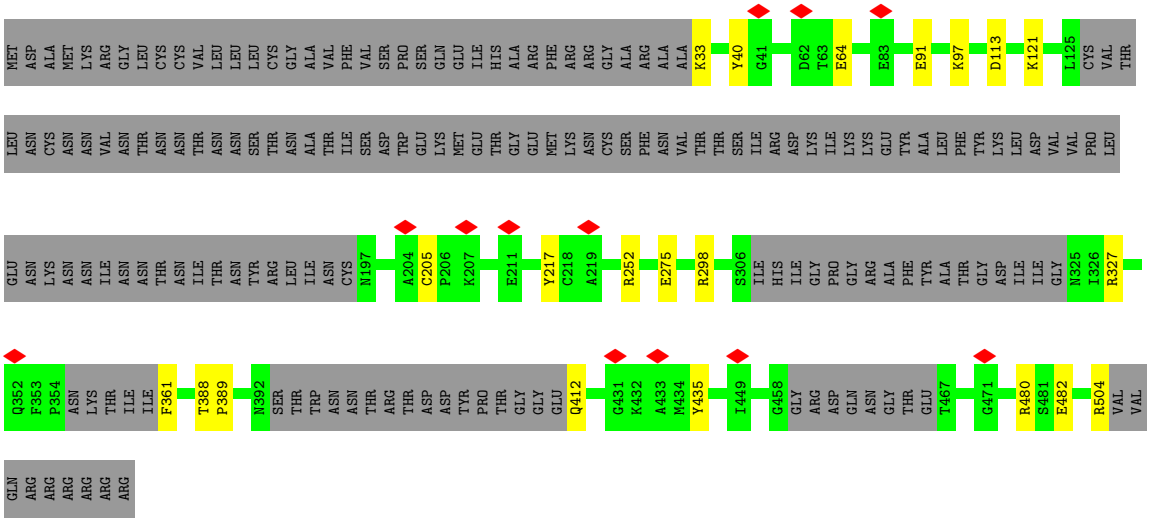
Mol	Chain	Residues	Atoms				AltConf
7	F	1	Total	C	N	O	0
			25	21	2	2	
7	G	1	Total	C	N	O	0
			25	21	2	2	

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.

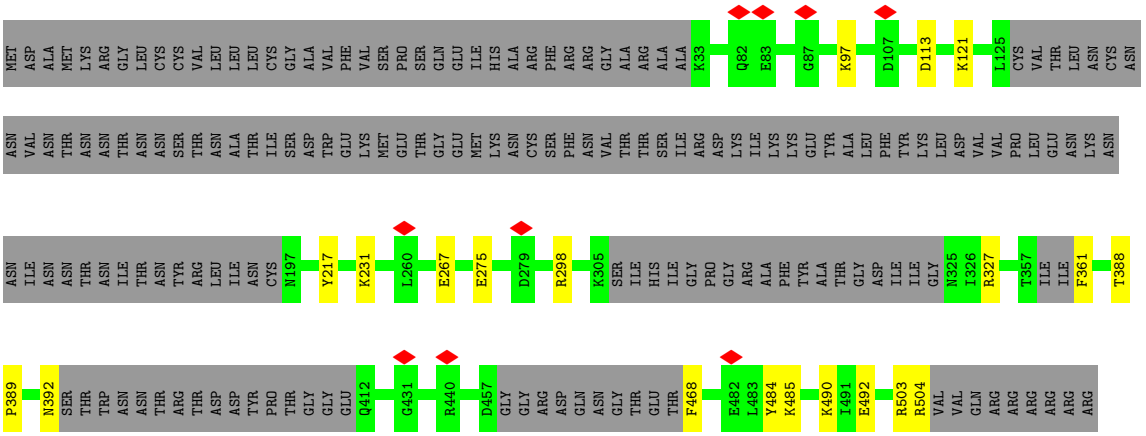
• Molecule 1: Envelope glycoprotein gp160

Chain A:



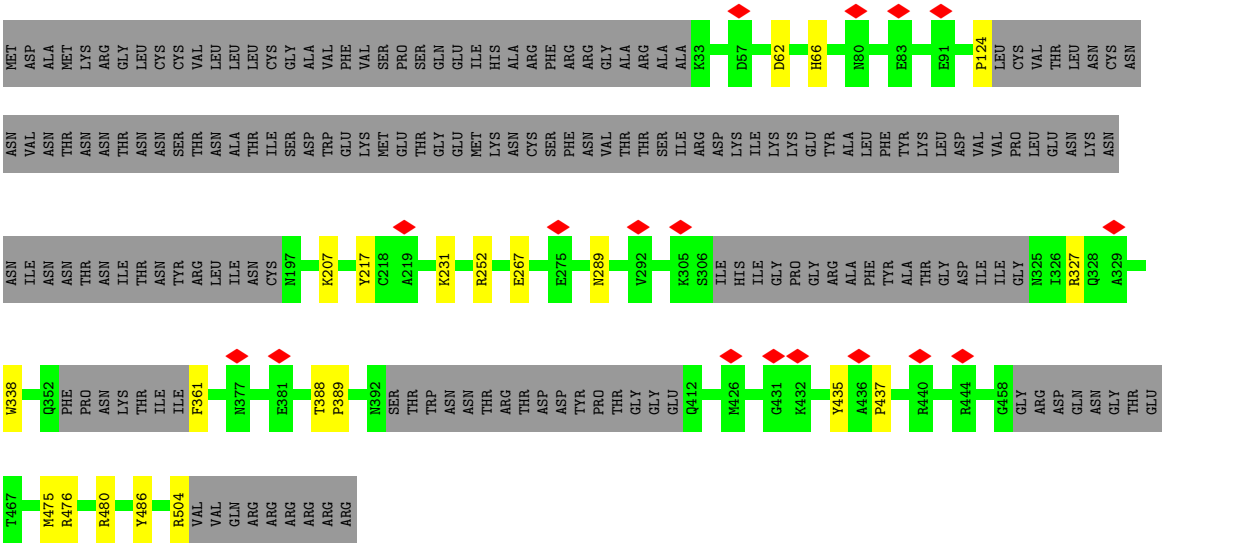
• Molecule 1: Envelope glycoprotein gp160

Chain D:



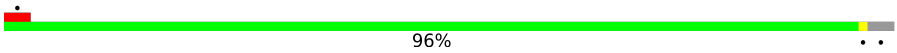
• Molecule 1: Envelope glycoprotein gp160

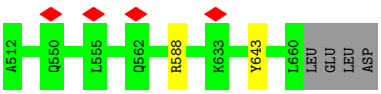
Chain E:



• Molecule 2: Envelope glycoprotein gp41

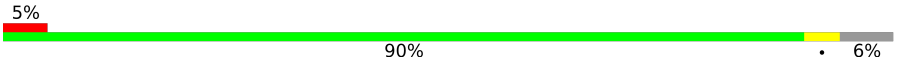
Chain B:

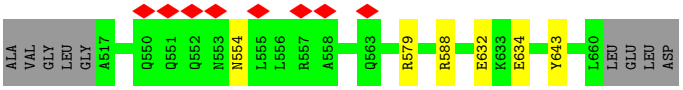




• Molecule 2: Envelope glycoprotein gp41

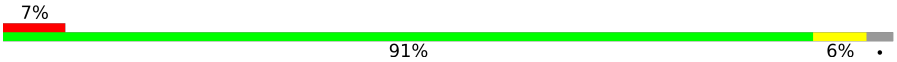
Chain F:

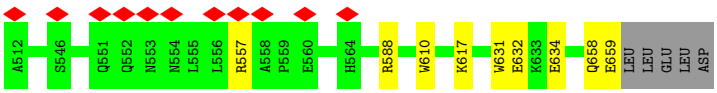




• Molecule 2: Envelope glycoprotein gp41

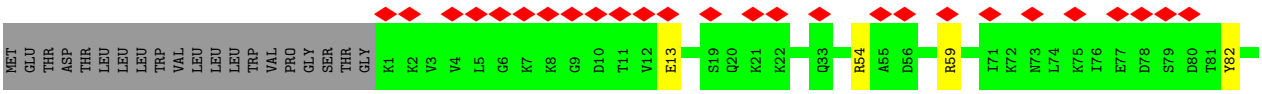
Chain G:

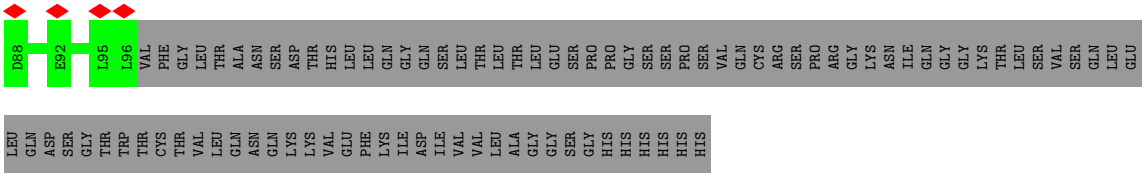




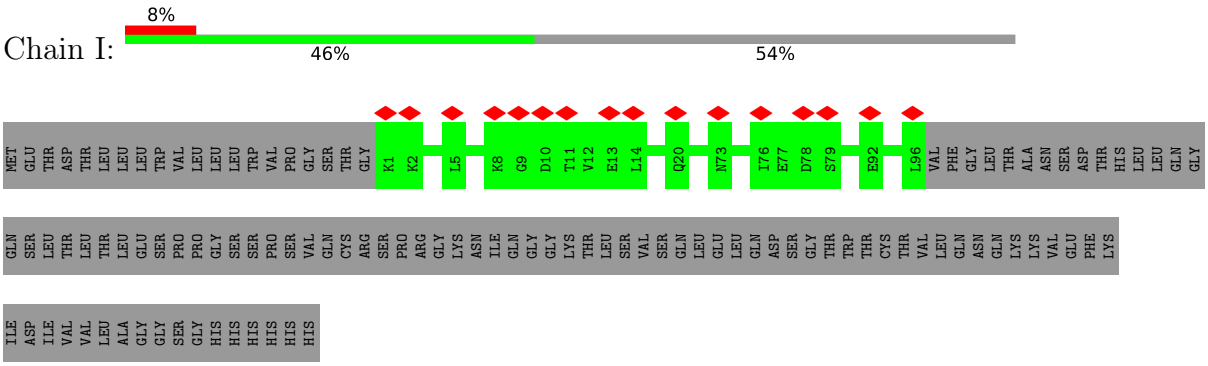
• Molecule 3: T-cell surface glycoprotein CD4

Chain C:

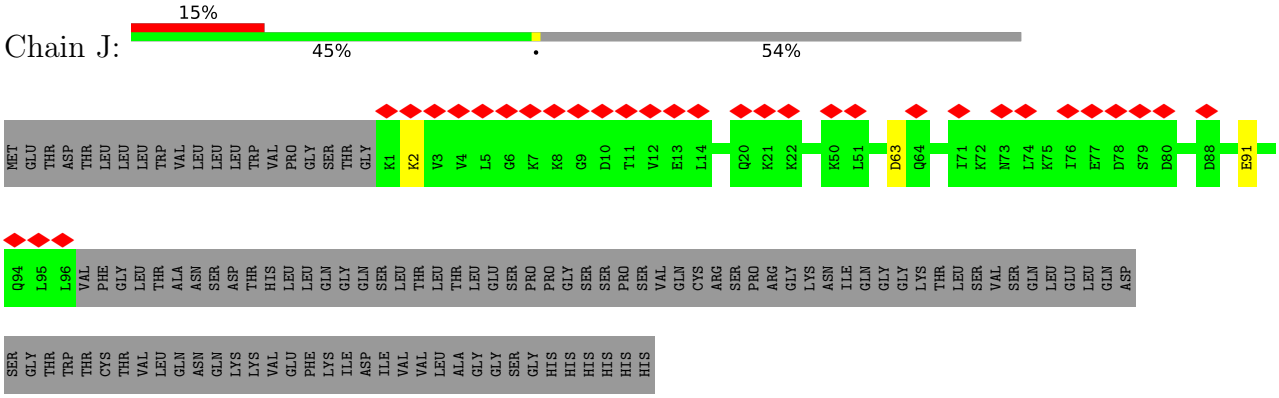




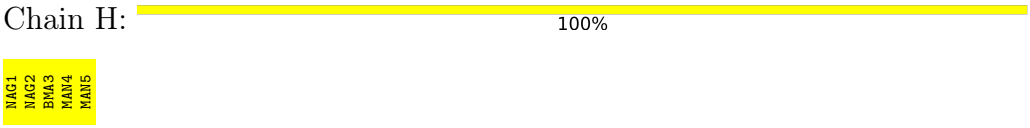
• Molecule 3: T-cell surface glycoprotein CD4



• Molecule 3: T-cell surface glycoprotein CD4



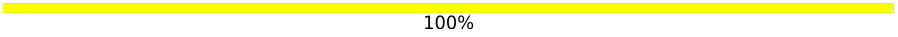
• Molecule 4: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



• Molecule 4: alpha-D-mannopyranose-(1-2)-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

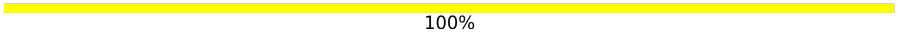
• Molecule 4: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M:



• Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	228502	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	49	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	36000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.099	Depositor
Minimum map value	-0.051	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	331.19998, 331.19998, 331.19998	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.15, 1.15, 1.15	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MAN, BMA, NAG, UOV

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	1.08	10/2804 (0.4%)	0.91	7/3809 (0.2%)
1	D	1.07	6/2811 (0.2%)	0.91	6/3818 (0.2%)
1	E	1.06	7/2776 (0.3%)	0.89	6/3770 (0.2%)
2	B	0.98	0/1206	0.84	2/1637 (0.1%)
2	F	1.03	2/1178 (0.2%)	0.85	4/1599 (0.3%)
2	G	1.04	6/1198 (0.5%)	0.85	2/1626 (0.1%)
3	C	1.00	1/778 (0.1%)	0.91	3/1043 (0.3%)
3	I	0.99	0/778	0.85	0/1043
3	J	1.06	1/778 (0.1%)	0.86	0/1043
All	All	1.05	33/14307 (0.2%)	0.89	30/19388 (0.2%)

All (33) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	40	TYR	CB-CG	-7.86	1.39	1.51
3	J	63	ASP	CB-CG	7.77	1.68	1.51
1	E	361	PHE	CG-CD1	7.51	1.50	1.38
1	D	361	PHE	CG-CD1	7.49	1.50	1.38
1	A	361	PHE	CG-CD1	7.30	1.49	1.38
1	D	468	PHE	CG-CD1	7.17	1.49	1.38
1	D	468	PHE	CG-CD2	7.01	1.49	1.38
1	A	361	PHE	CG-CD2	6.89	1.49	1.38
1	E	361	PHE	CG-CD2	6.72	1.48	1.38
1	A	64	GLU	CD-OE1	-6.69	1.18	1.25
1	D	361	PHE	CG-CD2	6.66	1.48	1.38
1	A	504	ARG	NE-CZ	5.79	1.40	1.33
1	E	504	ARG	NE-CZ	5.72	1.40	1.33
1	D	361	PHE	CE2-CZ	5.70	1.48	1.37
1	D	504	ARG	NE-CZ	5.40	1.40	1.33
1	E	338	TRP	CB-CG	-5.39	1.40	1.50
2	G	632	GLU	CD-OE1	-5.35	1.19	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	361	PHE	CE2-CZ	5.33	1.47	1.37
1	A	40	TYR	CG-CD1	-5.29	1.32	1.39
2	F	634	GLU	CD-OE2	-5.27	1.19	1.25
2	G	631	TRP	CD2-CE2	-5.26	1.35	1.41
1	A	205	CYS	CB-SG	-5.24	1.73	1.81
1	E	486	TYR	CB-CG	-5.16	1.44	1.51
1	A	482	GLU	CD-OE2	-5.13	1.20	1.25
3	C	13	GLU	CD-OE2	-5.13	1.20	1.25
2	G	659	GLU	CB-CG	5.11	1.61	1.52
1	E	66	HIS	CB-CG	-5.10	1.40	1.50
2	G	631	TRP	CB-CG	-5.10	1.41	1.50
1	A	91	GLU	CD-OE1	-5.07	1.20	1.25
2	G	632	GLU	CD-OE2	-5.07	1.20	1.25
2	G	610	TRP	CB-CG	-5.07	1.41	1.50
2	F	632	GLU	CD-OE1	-5.05	1.20	1.25
1	E	124	PRO	N-CD	5.02	1.54	1.47

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	59	ARG	NE-CZ-NH2	-8.34	116.13	120.30
1	D	503	ARG	NE-CZ-NH1	7.67	124.14	120.30
1	D	298	ARG	NE-CZ-NH2	-7.26	116.67	120.30
2	F	579	ARG	NE-CZ-NH1	7.04	123.82	120.30
1	D	298	ARG	NE-CZ-NH1	6.55	123.58	120.30
2	B	588	ARG	NE-CZ-NH2	-6.18	117.21	120.30
1	E	217	TYR	CB-CG-CD2	-6.17	117.30	121.00
1	D	504	ARG	NE-CZ-NH1	6.16	123.38	120.30
1	A	217	TYR	CB-CG-CD2	-6.15	117.31	121.00
1	E	480	ARG	NE-CZ-NH1	6.05	123.32	120.30
3	C	54	ARG	NE-CZ-NH1	6.00	123.30	120.30
1	A	298	ARG	NE-CZ-NH1	5.96	123.28	120.30
1	D	327	ARG	NE-CZ-NH2	-5.88	117.36	120.30
2	G	588	ARG	NE-CZ-NH2	-5.81	117.39	120.30
2	B	643	TYR	CB-CG-CD2	-5.72	117.57	121.00
2	F	588	ARG	NE-CZ-NH2	-5.71	117.44	120.30
1	E	435	TYR	CB-CG-CD2	-5.71	117.57	121.00
1	A	435	TYR	CB-CG-CD2	-5.67	117.60	121.00
2	F	579	ARG	NE-CZ-NH2	-5.59	117.50	120.30
1	D	217	TYR	CB-CG-CD2	-5.55	117.67	121.00
1	E	327	ARG	NE-CZ-NH2	-5.46	117.57	120.30
1	E	480	ARG	NE-CZ-NH2	-5.45	117.58	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	504	ARG	NE-CZ-NH1	5.29	122.95	120.30
1	A	252	ARG	NE-CZ-NH1	5.25	122.92	120.30
2	F	643	TYR	CB-CG-CD2	-5.24	117.86	121.00
1	A	327	ARG	NE-CZ-NH2	-5.21	117.69	120.30
3	C	82	TYR	CB-CG-CD2	-5.18	117.89	121.00
1	A	480	ARG	NE-CZ-NH1	5.13	122.86	120.30
1	E	252	ARG	NE-CZ-NH1	5.11	122.86	120.30
2	G	557	ARG	NE-CZ-NH2	-5.06	117.77	120.30

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	2745	0	2692	5	0
1	D	2752	0	2704	7	0
1	E	2719	0	2667	6	0
2	B	1184	0	1175	0	0
2	F	1156	0	1144	1	0
2	G	1176	0	1164	2	0
3	C	768	0	786	0	0
3	I	768	0	786	0	0
3	J	768	0	786	1	0
4	H	61	0	52	0	0
4	K	61	0	52	0	0
4	M	61	0	52	0	0
5	L	28	0	25	0	0
6	A	126	0	117	1	0
6	D	112	0	104	1	0
6	E	84	0	78	0	0
7	B	25	0	0	0	0
7	F	25	0	0	0	0
7	G	25	0	0	0	0
All	All	14644	0	14384	21	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 1.

All (21) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:231:LYS:NZ	1:E:267:GLU:OE1	2.41	0.54
1:A:113:ASP:OD1	1:A:121:LYS:NZ	2.41	0.53
1:D:113:ASP:OD1	1:D:121:LYS:NZ	2.43	0.52
1:D:231:LYS:NZ	1:D:267:GLU:OE1	2.42	0.52
1:D:392:ASN:HA	6:D:610:NAG:H81	1.92	0.51
1:D:490:LYS:NZ	1:D:492:GLU:OE2	2.44	0.50
1:A:412:GLN:HB2	6:A:612:NAG:H82	1.94	0.49
3:J:2:LYS:NZ	3:J:91:GLU:OE2	2.45	0.48
1:D:484:TYR:O	1:D:485:LYS:HB2	2.16	0.45
1:E:207:LYS:NZ	1:E:437:PRO:O	2.45	0.45
2:G:617:LYS:NZ	2:G:634:GLU:OE1	2.50	0.44
1:E:62:ASP:N	1:E:62:ASP:OD1	2.43	0.43
1:E:475:MET:O	1:E:476:ARG:HB3	2.18	0.43
1:E:388:THR:N	1:E:389:PRO:CD	2.82	0.43
1:E:289:ASN:N	1:E:289:ASN:OD1	2.49	0.42
2:F:554:ASN:OD1	2:F:554:ASN:N	2.52	0.42
1:A:33:LYS:NZ	2:G:658:GLN:O	2.51	0.42
1:A:388:THR:N	1:A:389:PRO:CD	2.82	0.41
1:D:388:THR:N	1:D:389:PRO:CD	2.84	0.41
1:A:97:LYS:NZ	1:A:275:GLU:OE2	2.54	0.41
1:D:97:LYS:NZ	1:D:275:GLU:OE1	2.55	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	338/524 (64%)	327 (97%)	11 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	338/524 (64%)	328 (97%)	10 (3%)	0	100	100
1	E	335/524 (64%)	327 (98%)	8 (2%)	0	100	100
2	B	147/153 (96%)	146 (99%)	1 (1%)	0	100	100
2	F	142/153 (93%)	141 (99%)	1 (1%)	0	100	100
2	G	146/153 (95%)	141 (97%)	5 (3%)	0	100	100
3	C	94/208 (45%)	91 (97%)	3 (3%)	0	100	100
3	I	94/208 (45%)	94 (100%)	0	0	100	100
3	J	94/208 (45%)	93 (99%)	1 (1%)	0	100	100
All	All	1728/2655 (65%)	1688 (98%)	40 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	309/461 (67%)	309 (100%)	0	100	100
1	D	310/461 (67%)	310 (100%)	0	100	100
1	E	306/461 (66%)	306 (100%)	0	100	100
2	B	126/130 (97%)	126 (100%)	0	100	100
2	F	124/130 (95%)	124 (100%)	0	100	100
2	G	125/130 (96%)	125 (100%)	0	100	100
3	C	88/186 (47%)	88 (100%)	0	100	100
3	I	88/186 (47%)	88 (100%)	0	100	100
3	J	88/186 (47%)	88 (100%)	0	100	100
All	All	1564/2331 (67%)	1564 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	328	GLN
1	D	328	GLN
1	E	328	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

17 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	$\#\|Z\| > 2$
4	NAG	H	1	4,1	14,14,15	2.14	6 (42%)	17,19,21	1.18	2 (11%)
4	NAG	H	2	4	14,14,15	2.00	5 (35%)	17,19,21	1.18	2 (11%)
4	BMA	H	3	4	11,11,12	0.70	0	15,15,17	0.77	1 (6%)
4	MAN	H	4	4	11,11,12	0.73	0	15,15,17	0.94	1 (6%)
4	MAN	H	5	4	11,11,12	1.91	5 (45%)	15,15,17	0.77	0
4	NAG	K	1	4,1	14,14,15	2.07	4 (28%)	17,19,21	1.12	2 (11%)
4	NAG	K	2	4	14,14,15	1.86	6 (42%)	17,19,21	0.98	1 (5%)
4	BMA	K	3	4	11,11,12	0.53	0	15,15,17	0.80	0
4	MAN	K	4	4	11,11,12	0.67	0	15,15,17	0.77	0
4	MAN	K	5	4	11,11,12	1.93	6 (54%)	15,15,17	0.73	0
5	NAG	L	1	5,1	14,14,15	2.20	7 (50%)	17,19,21	1.39	2 (11%)
5	NAG	L	2	5	14,14,15	2.02	6 (42%)	17,19,21	0.87	1 (5%)
4	NAG	M	1	4,1	14,14,15	2.08	4 (28%)	17,19,21	1.18	2 (11%)
4	NAG	M	2	4	14,14,15	1.95	6 (42%)	17,19,21	1.26	4 (23%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	BMA	M	3	4	11,11,12	0.62	0	15,15,17	0.77	1 (6%)
4	MAN	M	4	4	11,11,12	0.73	0	15,15,17	0.88	1 (6%)
4	MAN	M	5	4	11,11,12	1.90	5 (45%)	15,15,17	0.74	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
4	NAG	H	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	H	2	4	-	1/6/23/26	0/1/1/1
4	BMA	H	3	4	-	1/2/19/22	0/1/1/1
4	MAN	H	4	4	-	0/2/19/22	0/1/1/1
4	MAN	H	5	4	-	0/2/19/22	0/1/1/1
4	NAG	K	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	K	2	4	-	0/6/23/26	0/1/1/1
4	BMA	K	3	4	-	1/2/19/22	0/1/1/1
4	MAN	K	4	4	-	0/2/19/22	0/1/1/1
4	MAN	K	5	4	-	0/2/19/22	0/1/1/1
5	NAG	L	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	L	2	5	-	1/6/23/26	0/1/1/1
4	NAG	M	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	M	2	4	-	1/6/23/26	0/1/1/1
4	BMA	M	3	4	-	1/2/19/22	0/1/1/1
4	MAN	M	4	4	-	0/2/19/22	0/1/1/1
4	MAN	M	5	4	-	0/2/19/22	0/1/1/1

All (60) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	K	1	NAG	C1-C2	5.42	1.60	1.52
4	H	1	NAG	C1-C2	5.38	1.60	1.52
4	M	1	NAG	C1-C2	5.31	1.60	1.52
5	L	1	NAG	C1-C2	5.21	1.60	1.52
5	L	2	NAG	C1-C2	4.59	1.59	1.52
4	H	2	NAG	C1-C2	4.43	1.59	1.52
4	K	2	NAG	C1-C2	4.14	1.58	1.52
4	M	2	NAG	C1-C2	4.14	1.58	1.52
5	L	2	NAG	O5-C5	3.23	1.50	1.43
4	M	5	MAN	C2-C3	3.22	1.57	1.52
4	K	5	MAN	C2-C3	3.11	1.57	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	L	1	NAG	O5-C5	3.09	1.49	1.43
4	H	5	MAN	C2-C3	3.08	1.57	1.52
4	K	5	MAN	O5-C5	3.04	1.49	1.43
5	L	1	NAG	C4-C5	2.90	1.59	1.53
4	M	5	MAN	O5-C5	2.87	1.49	1.43
4	H	5	MAN	O5-C5	2.86	1.49	1.43
4	M	2	NAG	C4-C5	2.80	1.58	1.53
4	H	5	MAN	C1-C2	2.77	1.58	1.52
4	H	2	NAG	O5-C5	2.71	1.48	1.43
4	H	2	NAG	C4-C5	2.70	1.58	1.53
4	M	5	MAN	C1-C2	2.69	1.58	1.52
4	M	2	NAG	O5-C5	2.66	1.48	1.43
4	K	5	MAN	C1-C2	2.61	1.58	1.52
4	H	1	NAG	O5-C5	2.59	1.48	1.43
4	H	1	NAG	C3-C2	2.51	1.57	1.52
4	M	2	NAG	C4-C3	2.50	1.58	1.52
4	M	1	NAG	O5-C5	2.49	1.48	1.43
4	M	1	NAG	C3-C2	2.45	1.57	1.52
4	K	2	NAG	O5-C5	2.45	1.48	1.43
4	K	1	NAG	O5-C5	2.44	1.48	1.43
5	L	2	NAG	C4-C5	2.44	1.58	1.53
4	H	2	NAG	C3-C2	2.43	1.57	1.52
4	K	2	NAG	C4-C3	2.42	1.58	1.52
4	H	2	NAG	C4-C3	2.40	1.58	1.52
4	M	1	NAG	O5-C1	2.40	1.47	1.43
4	H	1	NAG	O5-C1	2.38	1.47	1.43
5	L	1	NAG	C4-C3	2.37	1.58	1.52
4	K	5	MAN	O5-C1	2.36	1.47	1.43
5	L	2	NAG	C3-C2	2.35	1.57	1.52
4	H	5	MAN	C4-C5	2.31	1.57	1.53
4	K	1	NAG	C3-C2	2.31	1.57	1.52
4	K	2	NAG	C3-C2	2.28	1.57	1.52
4	K	1	NAG	O5-C1	2.27	1.47	1.43
4	M	2	NAG	C3-C2	2.27	1.57	1.52
5	L	1	NAG	C2-N2	2.18	1.50	1.46
5	L	1	NAG	C3-C2	2.16	1.57	1.52
4	M	5	MAN	C4-C5	2.15	1.57	1.53
5	L	1	NAG	O5-C1	2.13	1.47	1.43
4	K	2	NAG	C4-C5	2.13	1.57	1.53
4	K	5	MAN	C4-C5	2.12	1.57	1.53
5	L	2	NAG	C2-N2	2.09	1.49	1.46
4	H	1	NAG	C4-C5	2.08	1.57	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	H	5	MAN	C4-C3	2.07	1.57	1.52
4	M	5	MAN	O5-C1	2.05	1.47	1.43
4	M	2	NAG	C2-N2	2.05	1.49	1.46
5	L	2	NAG	O5-C1	2.04	1.47	1.43
4	K	5	MAN	C4-C3	2.03	1.57	1.52
4	K	2	NAG	C2-N2	2.02	1.49	1.46
4	H	1	NAG	C4-C3	2.02	1.57	1.52

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	L	1	NAG	O4-C4-C3	-3.05	103.30	110.35
4	M	1	NAG	C8-C7-N2	2.64	120.57	116.10
4	K	1	NAG	C8-C7-N2	2.56	120.43	116.10
4	H	1	NAG	C8-C7-N2	2.43	120.22	116.10
4	H	3	BMA	C2-C3-C4	-2.41	106.72	110.89
4	M	2	NAG	C8-C7-N2	2.38	120.13	116.10
4	H	4	MAN	C2-C3-C4	-2.34	106.85	110.89
4	M	3	BMA	C2-C3-C4	-2.29	106.92	110.89
4	H	1	NAG	C1-O5-C5	2.23	115.21	112.19
4	H	2	NAG	C8-C7-N2	2.21	119.84	116.10
4	M	2	NAG	O5-C5-C6	-2.14	103.84	107.20
4	K	1	NAG	C1-O5-C5	2.14	115.09	112.19
5	L	2	NAG	C8-C7-N2	2.10	119.66	116.10
4	M	2	NAG	O7-C7-C8	-2.10	118.16	122.06
5	L	1	NAG	C8-C7-N2	2.09	119.64	116.10
4	K	2	NAG	C8-C7-N2	2.08	119.62	116.10
4	H	2	NAG	O7-C7-C8	-2.04	118.27	122.06
4	M	4	MAN	C2-C3-C4	-2.03	107.39	110.89
4	M	2	NAG	O4-C4-C5	-2.00	104.33	109.30
4	M	1	NAG	C1-O5-C5	2.00	114.90	112.19

There are no chirality outliers.

All (6) torsion outliers are listed below:

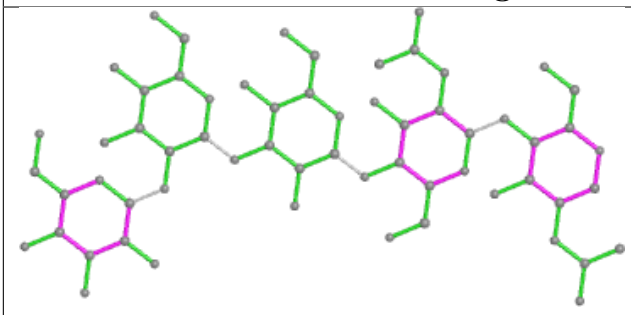
Mol	Chain	Res	Type	Atoms
4	H	3	BMA	O5-C5-C6-O6
5	L	2	NAG	O5-C5-C6-O6
4	H	2	NAG	O5-C5-C6-O6
4	M	2	NAG	O5-C5-C6-O6
4	M	3	BMA	O5-C5-C6-O6
4	K	3	BMA	O5-C5-C6-O6

There are no ring outliers.

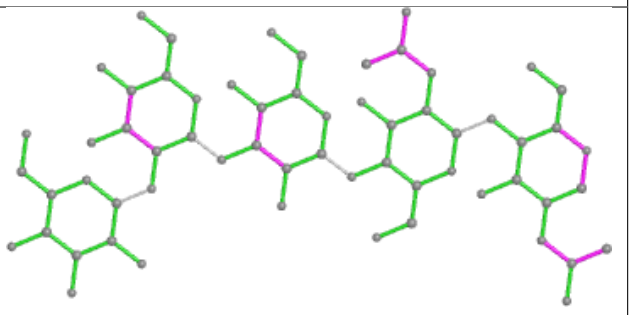
No monomer is involved in short contacts.

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

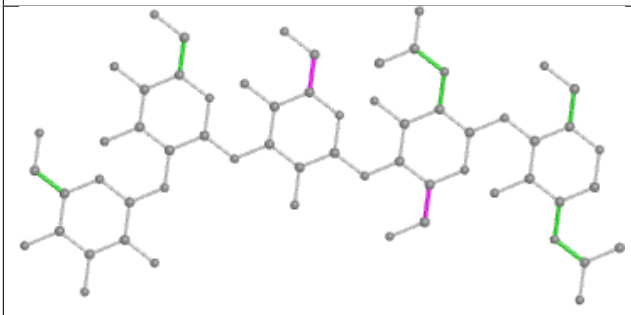
Oligosaccharide Chain H



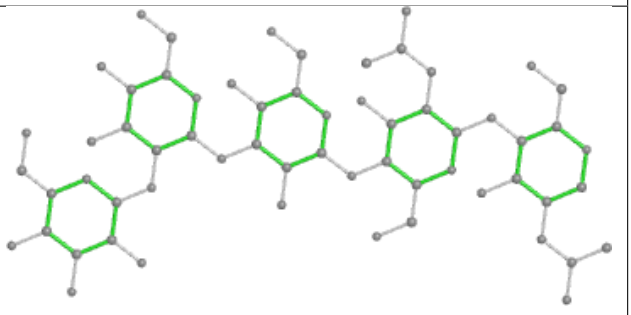
Bond lengths



Bond angles

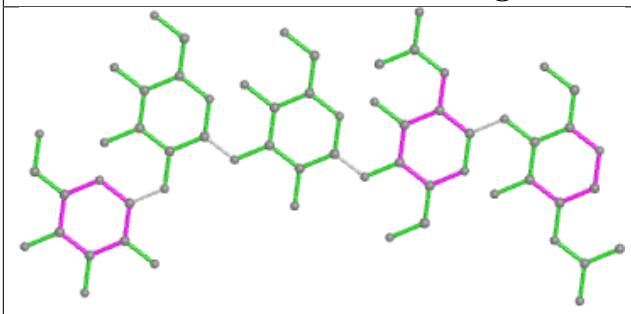


Torsions

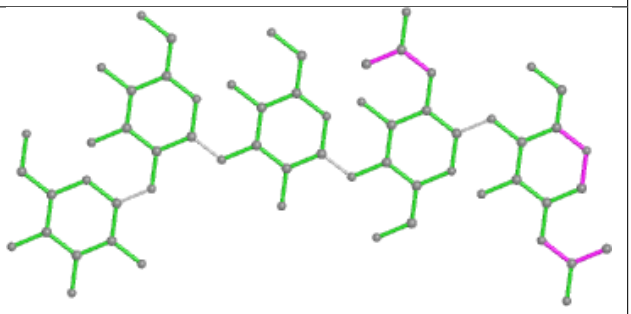


Rings

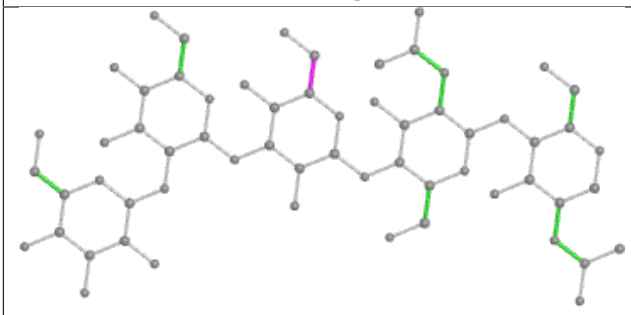
Oligosaccharide Chain K



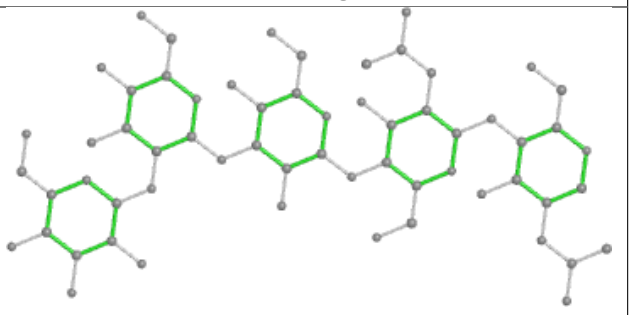
Bond lengths



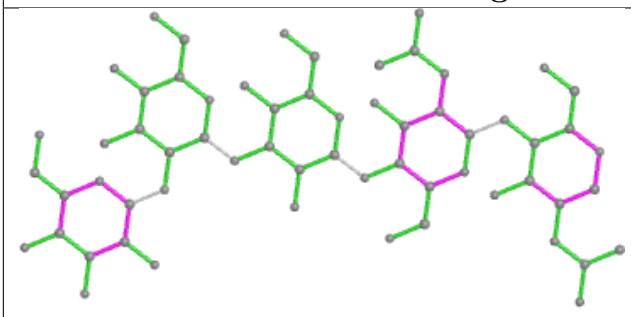
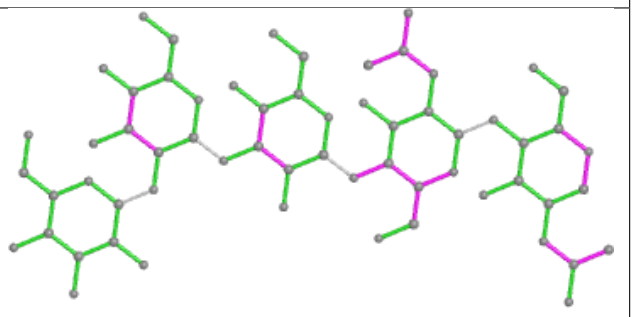
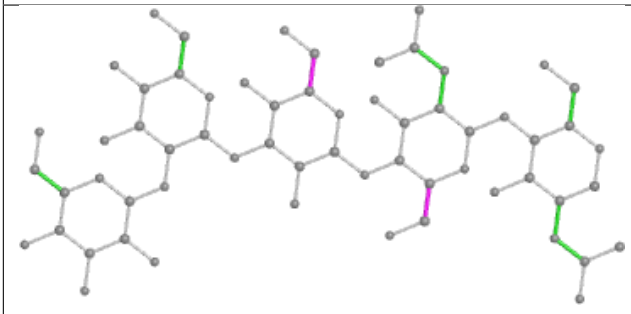
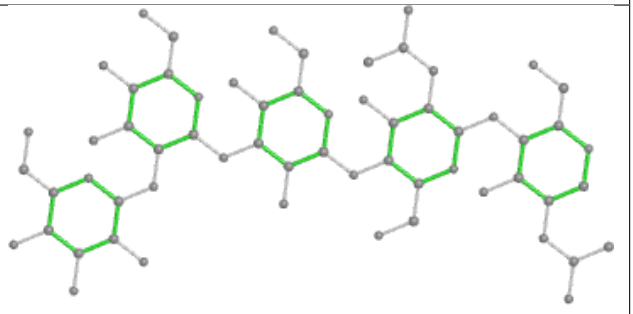
Bond angles



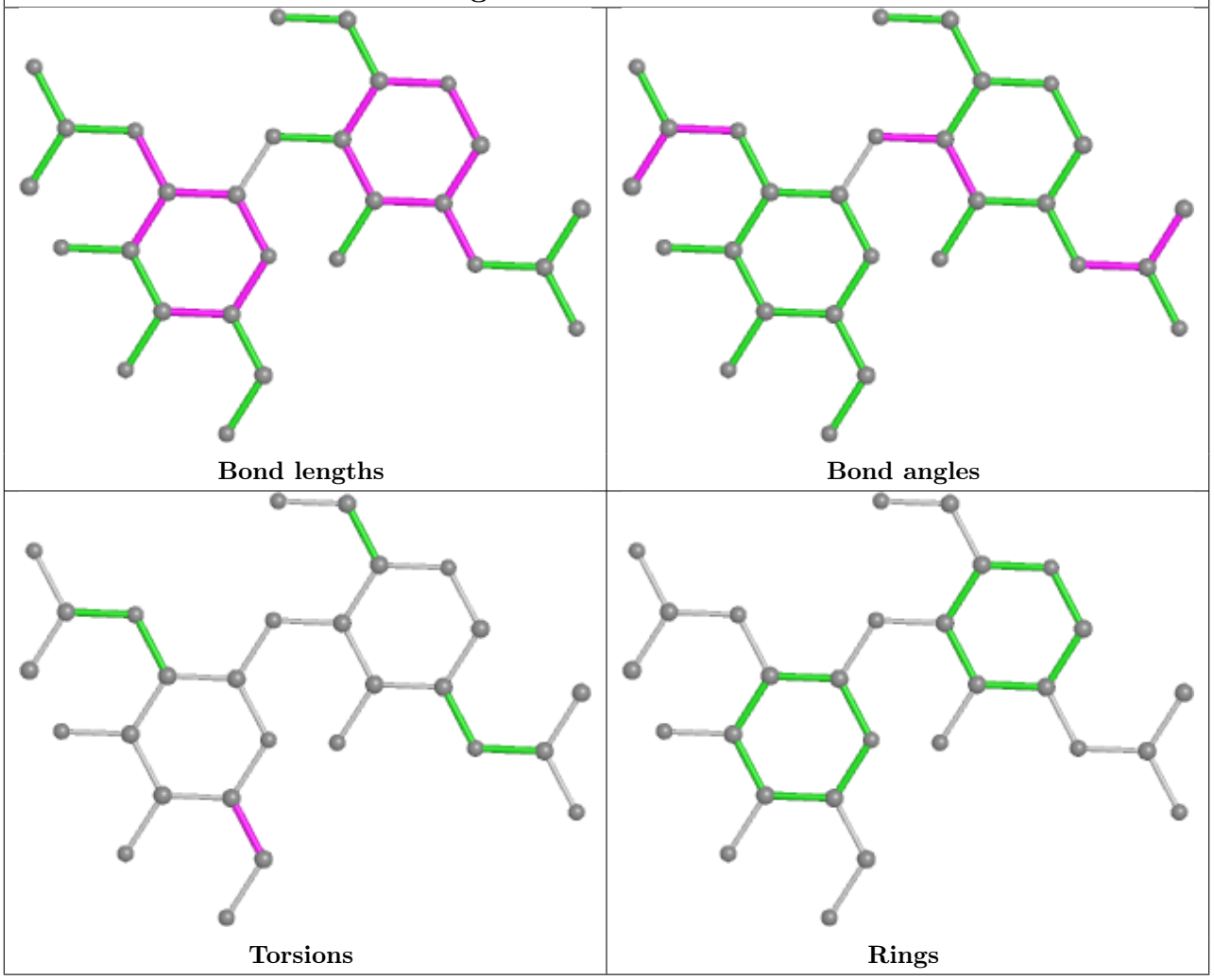
Torsions



Rings

Oligosaccharide Chain M	
	
Bond lengths	**Bond angles**
	
Torsions	**Rings**

Oligosaccharide Chain L



5.6 Ligand geometry (i)

26 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	$\#\|Z\| > 2$
6	NAG	A	614	1	14,14,15	2.06	6 (42%)	17,19,21	1.27	2 (11%)
6	NAG	E	613	1	14,14,15	2.16	5 (35%)	17,19,21	1.03	1 (5%)
6	NAG	D	608	1	14,14,15	2.21	6 (42%)	17,19,21	1.13	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	E	609	1	14,14,15	2.10	6 (42%)	17,19,21	0.94	1 (5%)
6	NAG	D	607	1	14,14,15	2.17	5 (35%)	17,19,21	0.97	1 (5%)
7	UOV	B	800	-	24,28,28	3.37	22 (91%)	32,40,40	2.29	7 (21%)
7	UOV	F	800	-	24,28,28	3.46	22 (91%)	32,40,40	2.50	7 (21%)
6	NAG	A	601	1	14,14,15	2.14	6 (42%)	17,19,21	0.92	1 (5%)
6	NAG	D	601	1	14,14,15	2.19	7 (50%)	17,19,21	0.89	1 (5%)
6	NAG	E	612	1	14,14,15	2.05	6 (42%)	17,19,21	0.97	1 (5%)
6	NAG	A	608	1	14,14,15	2.12	6 (42%)	17,19,21	1.03	1 (5%)
6	NAG	A	607	1	14,14,15	2.11	6 (42%)	17,19,21	1.12	2 (11%)
6	NAG	E	608	1	14,14,15	2.16	5 (35%)	17,19,21	0.91	0
6	NAG	A	609	1	14,14,15	2.17	6 (42%)	17,19,21	0.98	0
6	NAG	D	611	1	14,14,15	2.25	6 (42%)	17,19,21	0.90	0
6	NAG	E	610	1	14,14,15	2.12	7 (50%)	17,19,21	1.19	2 (11%)
6	NAG	D	610	1	14,14,15	2.17	6 (42%)	17,19,21	0.90	1 (5%)
6	NAG	A	613	1	14,14,15	2.11	6 (42%)	17,19,21	0.96	1 (5%)
6	NAG	D	613	1	14,14,15	2.11	6 (42%)	17,19,21	0.97	1 (5%)
6	NAG	D	609	1	14,14,15	2.09	6 (42%)	17,19,21	0.99	1 (5%)
6	NAG	A	611	1	14,14,15	2.16	5 (35%)	17,19,21	0.88	0
7	UOV	G	800	-	24,28,28	3.38	22 (91%)	32,40,40	2.07	9 (28%)
6	NAG	D	612	1	14,14,15	2.14	7 (50%)	17,19,21	1.15	2 (11%)
6	NAG	E	611	1	14,14,15	2.19	5 (35%)	17,19,21	0.94	0
6	NAG	A	612	1	14,14,15	2.24	6 (42%)	17,19,21	1.11	2 (11%)
6	NAG	A	610	1	14,14,15	2.15	5 (35%)	17,19,21	0.99	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	A	614	1	-	2/6/23/26	0/1/1/1
6	NAG	E	613	1	-	1/6/23/26	0/1/1/1
6	NAG	D	608	1	-	0/6/23/26	0/1/1/1
6	NAG	E	609	1	-	0/6/23/26	0/1/1/1
6	NAG	D	607	1	-	1/6/23/26	0/1/1/1
7	UOV	B	800	-	-	0/12/32/32	0/4/4/4
7	UOV	F	800	-	-	0/12/32/32	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	A	601	1	-	1/6/23/26	0/1/1/1
6	NAG	D	601	1	-	0/6/23/26	0/1/1/1
6	NAG	E	612	1	-	1/6/23/26	0/1/1/1
6	NAG	A	608	1	-	1/6/23/26	0/1/1/1
6	NAG	A	607	1	-	1/6/23/26	0/1/1/1
6	NAG	E	608	1	-	2/6/23/26	0/1/1/1
6	NAG	A	609	1	-	1/6/23/26	0/1/1/1
6	NAG	D	611	1	-	1/6/23/26	0/1/1/1
6	NAG	E	610	1	-	0/6/23/26	0/1/1/1
6	NAG	D	610	1	-	2/6/23/26	0/1/1/1
6	NAG	A	613	1	-	0/6/23/26	0/1/1/1
6	NAG	D	613	1	-	0/6/23/26	0/1/1/1
6	NAG	D	609	1	-	0/6/23/26	0/1/1/1
6	NAG	A	611	1	-	0/6/23/26	0/1/1/1
7	UOV	G	800	-	-	6/12/32/32	0/4/4/4
6	NAG	D	612	1	-	0/6/23/26	0/1/1/1
6	NAG	E	611	1	-	0/6/23/26	0/1/1/1
6	NAG	A	612	1	-	0/6/23/26	0/1/1/1
6	NAG	A	610	1	-	1/6/23/26	0/1/1/1

All (201) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	G	800	UOV	C11-N13	6.50	1.48	1.36
7	F	800	UOV	C11-N13	6.36	1.48	1.36
7	B	800	UOV	C11-N13	6.16	1.47	1.36
6	D	611	NAG	C1-C2	6.02	1.61	1.52
7	G	800	UOV	C15-C16	5.90	1.60	1.52
6	E	611	NAG	C1-C2	5.76	1.60	1.52
6	A	611	NAG	C1-C2	5.72	1.60	1.52
6	A	609	NAG	C1-C2	5.65	1.60	1.52
6	D	608	NAG	C1-C2	5.63	1.60	1.52
6	E	608	NAG	C1-C2	5.57	1.60	1.52
6	D	601	NAG	C1-C2	5.44	1.60	1.52
6	A	612	NAG	C1-C2	5.43	1.60	1.52
7	B	800	UOV	C15-C16	5.36	1.60	1.52
6	A	610	NAG	C1-C2	5.28	1.60	1.52
6	E	613	NAG	C1-C2	5.26	1.60	1.52
6	D	610	NAG	C1-C2	5.25	1.60	1.52
6	D	607	NAG	C1-C2	5.25	1.60	1.52
6	A	613	NAG	C1-C2	5.21	1.60	1.52
6	A	601	NAG	C1-C2	5.08	1.59	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	608	NAG	C1-C2	5.03	1.59	1.52
6	D	613	NAG	C1-C2	4.99	1.59	1.52
6	E	610	NAG	C1-C2	4.98	1.59	1.52
6	D	612	NAG	C1-C2	4.96	1.59	1.52
6	A	607	NAG	C1-C2	4.93	1.59	1.52
6	E	609	NAG	C1-C2	4.92	1.59	1.52
6	D	609	NAG	C1-C2	4.91	1.59	1.52
6	E	612	NAG	C1-C2	4.72	1.59	1.52
7	B	800	UOV	C22-C09	4.69	1.47	1.39
7	G	800	UOV	C08-C09	4.57	1.46	1.39
7	F	800	UOV	C08-C09	4.55	1.46	1.39
7	F	800	UOV	C11-N10	4.55	1.45	1.37
6	A	614	NAG	C1-C2	4.50	1.59	1.52
7	G	800	UOV	C14-N13	4.47	1.55	1.47
7	B	800	UOV	C14-N13	4.44	1.54	1.47
7	F	800	UOV	C14-N13	4.43	1.54	1.47
7	F	800	UOV	C22-C09	4.35	1.46	1.39
7	F	800	UOV	C15-C16	4.34	1.58	1.52
7	B	800	UOV	C11-N10	4.29	1.44	1.37
7	B	800	UOV	C08-C09	4.18	1.46	1.39
7	G	800	UOV	C08-C07	4.09	1.46	1.38
7	G	800	UOV	C11-N10	3.95	1.44	1.37
7	G	800	UOV	C22-C09	3.91	1.45	1.39
7	F	800	UOV	C20-C16	3.88	1.58	1.52
7	F	800	UOV	C23-C06	3.76	1.47	1.39
7	F	800	UOV	C06-C05	3.66	1.58	1.49
7	F	800	UOV	C08-C07	3.56	1.45	1.38
7	G	800	UOV	C25-C24	3.49	1.45	1.38
7	B	800	UOV	C20-C16	3.47	1.57	1.52
7	G	800	UOV	C20-C16	3.43	1.57	1.52
7	F	800	UOV	C25-C24	3.43	1.45	1.38
6	D	613	NAG	O5-C5	3.38	1.50	1.43
6	E	609	NAG	O5-C5	3.36	1.50	1.43
6	A	612	NAG	O5-C5	3.36	1.50	1.43
6	A	601	NAG	O5-C5	3.32	1.50	1.43
6	D	601	NAG	O5-C5	3.30	1.50	1.43
6	E	613	NAG	O5-C5	3.28	1.50	1.43
6	A	607	NAG	O5-C5	3.28	1.50	1.43
7	B	800	UOV	C23-C06	3.28	1.46	1.39
6	D	612	NAG	O5-C5	3.26	1.50	1.43
7	F	800	UOV	C09-N10	3.25	1.48	1.41
7	B	800	UOV	C25-C24	3.24	1.44	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	F	800	UOV	C04-C05	3.21	1.46	1.39
6	D	607	NAG	O5-C5	3.21	1.49	1.43
6	A	608	NAG	O5-C5	3.21	1.49	1.43
6	E	612	NAG	O5-C5	3.20	1.49	1.43
7	F	800	UOV	C24-C05	3.14	1.46	1.39
6	A	612	NAG	O5-C1	3.14	1.48	1.43
6	A	610	NAG	O5-C5	3.13	1.49	1.43
6	D	608	NAG	O5-C5	3.13	1.49	1.43
7	B	800	UOV	C04-C05	3.12	1.46	1.39
6	A	613	NAG	O5-C5	3.11	1.49	1.43
7	B	800	UOV	C08-C07	3.11	1.44	1.38
6	E	608	NAG	O5-C5	3.09	1.49	1.43
6	A	614	NAG	O5-C5	3.08	1.49	1.43
7	B	800	UOV	C09-N10	3.04	1.47	1.41
6	D	610	NAG	O5-C5	3.02	1.49	1.43
6	D	607	NAG	O5-C1	3.00	1.48	1.43
7	G	800	UOV	C04-C05	3.00	1.45	1.39
6	E	611	NAG	O5-C5	2.99	1.49	1.43
6	E	610	NAG	O5-C5	2.98	1.49	1.43
7	F	800	UOV	C20-C21	2.98	1.59	1.52
6	D	611	NAG	O5-C5	2.97	1.49	1.43
6	D	612	NAG	O5-C1	2.96	1.48	1.43
6	D	609	NAG	O5-C5	2.94	1.49	1.43
6	A	611	NAG	O5-C5	2.94	1.49	1.43
6	A	607	NAG	O5-C1	2.91	1.48	1.43
6	A	608	NAG	O5-C1	2.88	1.48	1.43
6	E	613	NAG	O5-C1	2.87	1.48	1.43
6	A	614	NAG	O5-C1	2.85	1.48	1.43
7	G	800	UOV	C25-C02	2.84	1.46	1.38
6	A	601	NAG	O5-C1	2.84	1.48	1.43
7	G	800	UOV	C07-C06	2.83	1.45	1.39
7	B	800	UOV	C04-C03	2.83	1.43	1.38
6	E	609	NAG	O5-C1	2.83	1.48	1.43
6	D	608	NAG	O5-C1	2.82	1.48	1.43
7	B	800	UOV	C06-C05	2.82	1.56	1.49
6	A	610	NAG	O5-C1	2.82	1.48	1.43
6	D	609	NAG	O5-C1	2.79	1.48	1.43
6	E	610	NAG	O5-C1	2.77	1.48	1.43
6	A	609	NAG	O5-C5	2.77	1.49	1.43
6	D	610	NAG	O5-C1	2.76	1.48	1.43
7	B	800	UOV	C20-C21	2.75	1.59	1.52
7	F	800	UOV	C25-C02	2.75	1.46	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	B	800	UOV	C25-C02	2.73	1.46	1.38
7	F	800	UOV	C07-C06	2.71	1.45	1.39
6	D	613	NAG	O5-C1	2.69	1.48	1.43
6	E	608	NAG	O5-C1	2.68	1.48	1.43
6	E	612	NAG	O5-C1	2.66	1.48	1.43
6	D	601	NAG	O5-C1	2.66	1.48	1.43
7	G	800	UOV	C15-C14	2.65	1.58	1.52
7	G	800	UOV	C23-C06	2.64	1.45	1.39
7	B	800	UOV	C24-C05	2.64	1.44	1.39
7	G	800	UOV	C04-C03	2.60	1.43	1.38
6	D	611	NAG	O5-C1	2.56	1.47	1.43
6	E	611	NAG	O5-C1	2.55	1.47	1.43
7	F	800	UOV	C04-C03	2.54	1.43	1.38
7	B	800	UOV	C07-C06	2.54	1.44	1.39
6	A	613	NAG	O5-C1	2.53	1.47	1.43
7	G	800	UOV	C20-C21	2.52	1.58	1.52
7	G	800	UOV	C09-N10	2.52	1.46	1.41
7	G	800	UOV	C24-C05	2.52	1.44	1.39
7	B	800	UOV	C23-C22	2.51	1.43	1.38
6	A	614	NAG	C3-C2	2.51	1.57	1.52
6	D	610	NAG	C3-C2	2.50	1.57	1.52
6	D	609	NAG	C2-N2	2.48	1.50	1.46
6	A	609	NAG	O5-C1	2.48	1.47	1.43
6	D	611	NAG	C3-C2	2.44	1.57	1.52
6	A	611	NAG	O5-C1	2.43	1.47	1.43
6	A	614	NAG	C4-C5	2.42	1.58	1.53
6	E	612	NAG	C3-C2	2.41	1.57	1.52
6	A	609	NAG	C3-C2	2.40	1.57	1.52
6	E	611	NAG	C3-C2	2.40	1.57	1.52
7	F	800	UOV	C23-C22	2.39	1.43	1.38
7	B	800	UOV	C03-C02	2.38	1.45	1.38
6	A	611	NAG	C3-C2	2.36	1.57	1.52
6	E	610	NAG	C4-C5	2.36	1.58	1.53
6	E	613	NAG	C4-C5	2.35	1.58	1.53
6	A	613	NAG	C4-C5	2.34	1.58	1.53
7	G	800	UOV	C06-C05	2.33	1.54	1.49
6	D	612	NAG	C3-C2	2.33	1.57	1.52
7	G	800	UOV	C03-C02	2.32	1.45	1.38
7	B	800	UOV	C15-C14	2.31	1.58	1.52
6	D	613	NAG	C4-C5	2.31	1.57	1.53
6	A	610	NAG	C4-C5	2.29	1.57	1.53
6	A	609	NAG	C4-C5	2.29	1.57	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	612	NAG	C3-C2	2.29	1.57	1.52
6	D	610	NAG	C2-N2	2.27	1.50	1.46
7	F	800	UOV	C21-N13	2.27	1.51	1.47
6	E	608	NAG	C3-C2	2.27	1.57	1.52
6	E	610	NAG	C3-C2	2.26	1.57	1.52
6	A	607	NAG	C4-C5	2.26	1.57	1.53
6	D	607	NAG	C3-C2	2.26	1.57	1.52
6	A	608	NAG	C4-C5	2.26	1.57	1.53
6	A	608	NAG	C3-C2	2.25	1.57	1.52
6	D	608	NAG	C3-C2	2.23	1.57	1.52
6	E	613	NAG	C3-C2	2.23	1.57	1.52
6	E	610	NAG	C2-N2	2.23	1.50	1.46
6	A	610	NAG	C3-C2	2.23	1.57	1.52
7	G	800	UOV	C21-N13	2.23	1.51	1.47
6	D	601	NAG	C3-C2	2.22	1.57	1.52
6	E	609	NAG	C3-C2	2.21	1.57	1.52
7	F	800	UOV	C03-C02	2.21	1.44	1.38
6	D	610	NAG	C4-C5	2.21	1.57	1.53
6	E	609	NAG	C4-C5	2.20	1.57	1.53
6	D	609	NAG	C3-C2	2.20	1.57	1.52
6	D	607	NAG	C4-C5	2.20	1.57	1.53
6	A	601	NAG	C4-C5	2.19	1.57	1.53
6	A	601	NAG	C3-C2	2.19	1.57	1.52
6	A	607	NAG	C3-C2	2.19	1.57	1.52
6	A	601	NAG	C2-N2	2.18	1.50	1.46
6	D	601	NAG	C4-C5	2.18	1.57	1.53
6	D	601	NAG	C2-N2	2.17	1.50	1.46
6	A	612	NAG	C4-C5	2.17	1.57	1.53
6	D	612	NAG	C2-N2	2.17	1.50	1.46
6	E	608	NAG	C4-C5	2.17	1.57	1.53
6	D	609	NAG	C4-C5	2.15	1.57	1.53
6	E	611	NAG	C4-C5	2.13	1.57	1.53
6	D	613	NAG	C4-C3	2.13	1.57	1.52
6	E	612	NAG	C4-C5	2.12	1.57	1.53
7	B	800	UOV	C21-N13	2.12	1.50	1.47
6	A	614	NAG	C4-C3	2.09	1.57	1.52
6	D	613	NAG	C3-C2	2.09	1.57	1.52
6	D	608	NAG	C2-N2	2.09	1.49	1.46
6	D	611	NAG	C2-N2	2.09	1.49	1.46
6	D	611	NAG	C4-C5	2.08	1.57	1.53
6	D	612	NAG	C4-C5	2.08	1.57	1.53
6	A	612	NAG	C2-N2	2.08	1.49	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	613	NAG	C3-C2	2.07	1.56	1.52
6	A	613	NAG	C4-C3	2.07	1.57	1.52
7	F	800	UOV	C15-C14	2.07	1.57	1.52
6	A	609	NAG	C4-C3	2.07	1.57	1.52
6	D	608	NAG	C4-C5	2.05	1.57	1.53
7	G	800	UOV	C23-C22	2.05	1.42	1.38
6	A	608	NAG	C4-C3	2.04	1.57	1.52
6	A	611	NAG	C4-C5	2.04	1.57	1.53
6	A	607	NAG	C4-C3	2.04	1.57	1.52
6	E	610	NAG	C4-C3	2.03	1.57	1.52
6	E	612	NAG	C4-C3	2.03	1.57	1.52
6	D	601	NAG	C4-C3	2.01	1.57	1.52
6	E	609	NAG	C4-C3	2.01	1.57	1.52
6	D	612	NAG	C4-C3	2.00	1.57	1.52

All (47) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	F	800	UOV	N10-C11-N13	10.42	127.82	115.89
7	B	800	UOV	N10-C11-N13	9.25	126.48	115.89
7	G	800	UOV	N10-C11-N13	6.25	123.05	115.89
7	F	800	UOV	C15-C16-C17	-5.35	110.70	118.00
7	B	800	UOV	C15-C16-C17	-4.42	111.97	118.00
7	G	800	UOV	C09-N10-C11	4.36	134.87	126.12
7	G	800	UOV	C15-C16-C17	-4.28	112.15	118.00
7	F	800	UOV	O12-C11-N10	-3.81	115.17	123.61
7	B	800	UOV	O12-C11-N10	-3.46	115.96	123.61
7	F	800	UOV	O12-C11-N13	-3.40	117.01	121.78
6	E	610	NAG	C8-C7-N2	3.23	121.57	116.10
7	B	800	UOV	C09-N10-C11	3.20	132.54	126.12
6	D	612	NAG	C8-C7-N2	3.04	121.25	116.10
7	B	800	UOV	O12-C11-N13	-3.01	117.56	121.78
7	G	800	UOV	O12-C11-N10	-2.98	117.02	123.61
7	B	800	UOV	C22-C09-C08	-2.95	114.99	119.03
6	D	608	NAG	C8-C7-N2	2.94	121.07	116.10
7	G	800	UOV	C23-C22-C09	2.90	123.65	120.30
6	A	612	NAG	C8-C7-N2	2.89	121.00	116.10
7	F	800	UOV	C22-C09-C08	-2.87	115.10	119.03
6	A	607	NAG	C8-C7-N2	2.81	120.85	116.10
6	A	614	NAG	C2-N2-C7	2.66	126.68	122.90
6	E	610	NAG	O7-C7-C8	-2.62	117.19	122.06
7	G	800	UOV	C22-C09-C08	-2.61	115.46	119.03

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	D	609	NAG	C8-C7-N2	2.52	120.36	116.10
6	A	608	NAG	C8-C7-N2	2.46	120.27	116.10
7	G	800	UOV	C23-C06-C05	-2.44	117.13	121.36
7	B	800	UOV	C23-C22-C09	2.42	123.10	120.30
6	E	613	NAG	C8-C7-N2	2.41	120.17	116.10
7	G	800	UOV	C08-C09-N10	2.40	128.48	120.40
6	D	612	NAG	O7-C7-C8	-2.40	117.60	122.06
7	F	800	UOV	C09-N10-C11	2.36	130.87	126.12
6	A	612	NAG	O7-C7-C8	-2.36	117.67	122.06
7	F	800	UOV	C23-C22-C09	2.36	123.03	120.30
6	D	610	NAG	C8-C7-N2	2.33	120.04	116.10
6	A	601	NAG	C8-C7-N2	2.28	119.96	116.10
6	D	601	NAG	C8-C7-N2	2.28	119.95	116.10
6	A	610	NAG	C8-C7-N2	2.27	119.95	116.10
6	E	612	NAG	C8-C7-N2	2.19	119.80	116.10
6	D	608	NAG	O7-C7-C8	-2.19	118.00	122.06
6	A	607	NAG	O7-C7-C8	-2.17	118.02	122.06
6	D	607	NAG	C8-C7-N2	2.16	119.75	116.10
6	D	613	NAG	C1-C2-N2	-2.11	106.88	110.49
7	G	800	UOV	C07-C06-C05	2.09	124.98	121.36
6	A	613	NAG	C8-C7-N2	2.09	119.64	116.10
6	A	614	NAG	O5-C5-C6	-2.05	103.99	107.20
6	E	609	NAG	C8-C7-N2	2.05	119.57	116.10

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	G	800	UOV	C08-C09-N10-C11
7	G	800	UOV	C22-C09-N10-C11
6	D	610	NAG	O5-C5-C6-O6
6	E	608	NAG	O5-C5-C6-O6
6	A	601	NAG	O5-C5-C6-O6
6	D	611	NAG	O5-C5-C6-O6
6	A	610	NAG	O5-C5-C6-O6
6	A	608	NAG	O5-C5-C6-O6
6	A	609	NAG	O5-C5-C6-O6
6	A	614	NAG	O5-C5-C6-O6
6	D	607	NAG	O5-C5-C6-O6
6	E	613	NAG	O5-C5-C6-O6
6	A	607	NAG	O5-C5-C6-O6
6	A	614	NAG	C3-C2-N2-C7

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Mol	Chain	Res	Type	Atoms
7	G	800	UOV	C24-C05-C06-C07
7	G	800	UOV	C04-C05-C06-C23
7	G	800	UOV	C04-C05-C06-C07
7	G	800	UOV	C24-C05-C06-C23
6	D	610	NAG	C4-C5-C6-O6
6	E	608	NAG	C4-C5-C6-O6
6	E	612	NAG	C4-C5-C6-O6

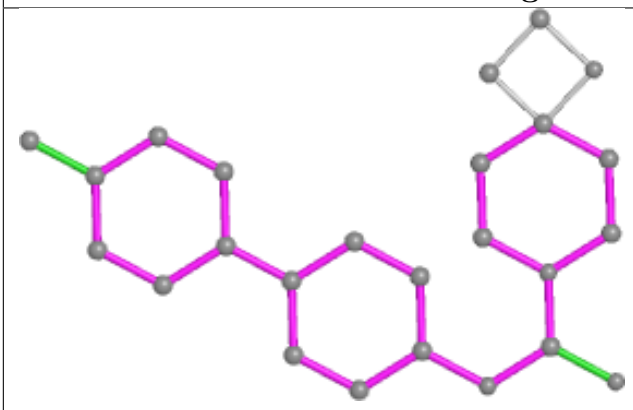
There are no ring outliers.

2 monomers are involved in 2 short contacts:

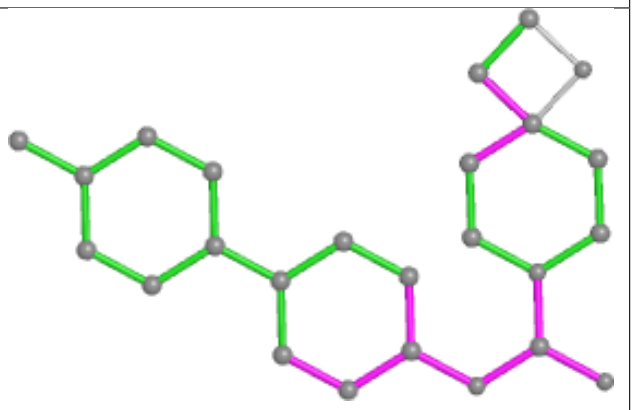
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	D	610	NAG	1	0
6	A	612	NAG	1	0

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

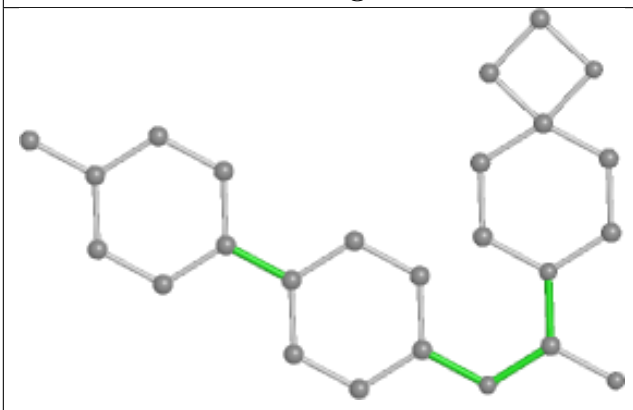
Ligand UOV B 800



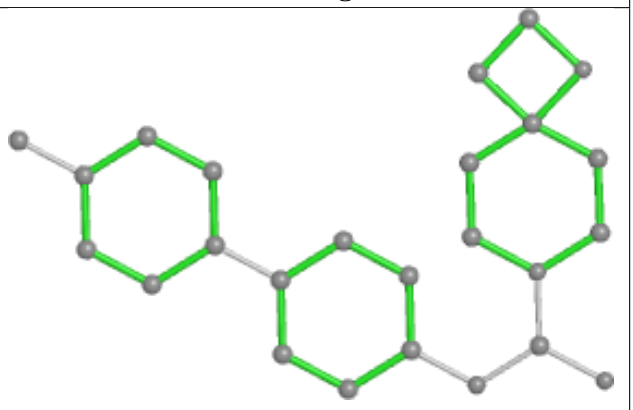
Bond lengths



Bond angles

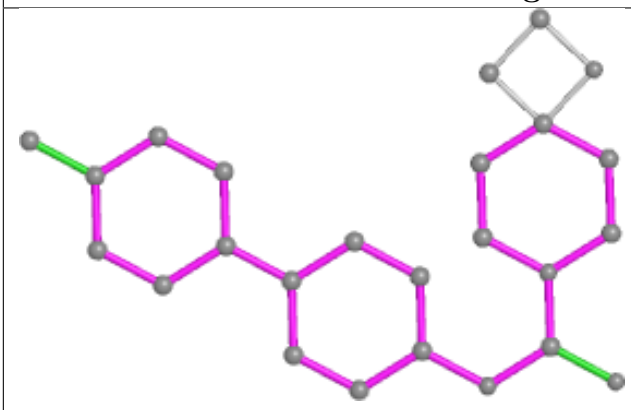


Torsions

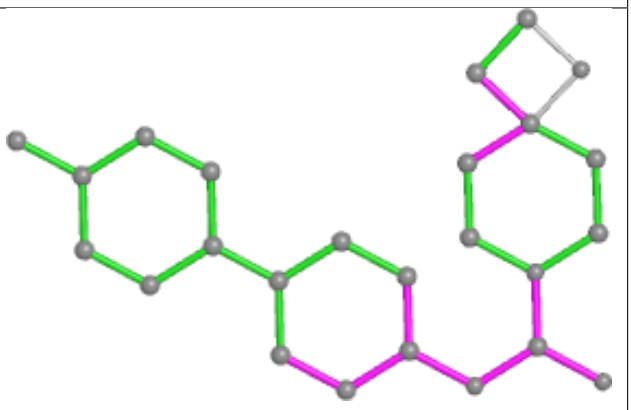


Rings

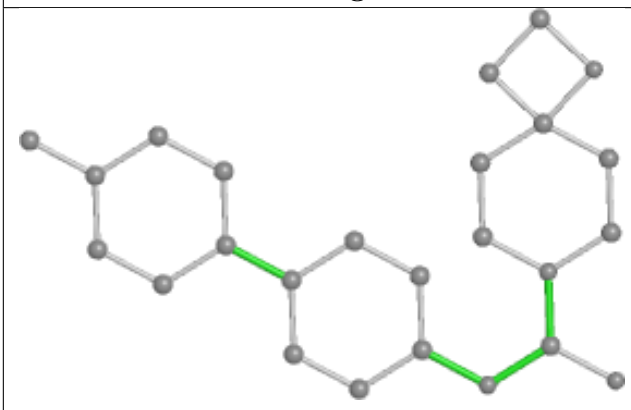
Ligand UOV F 800



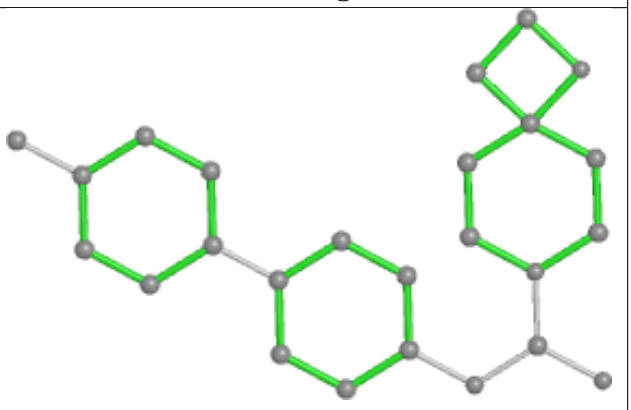
Bond lengths



Bond angles

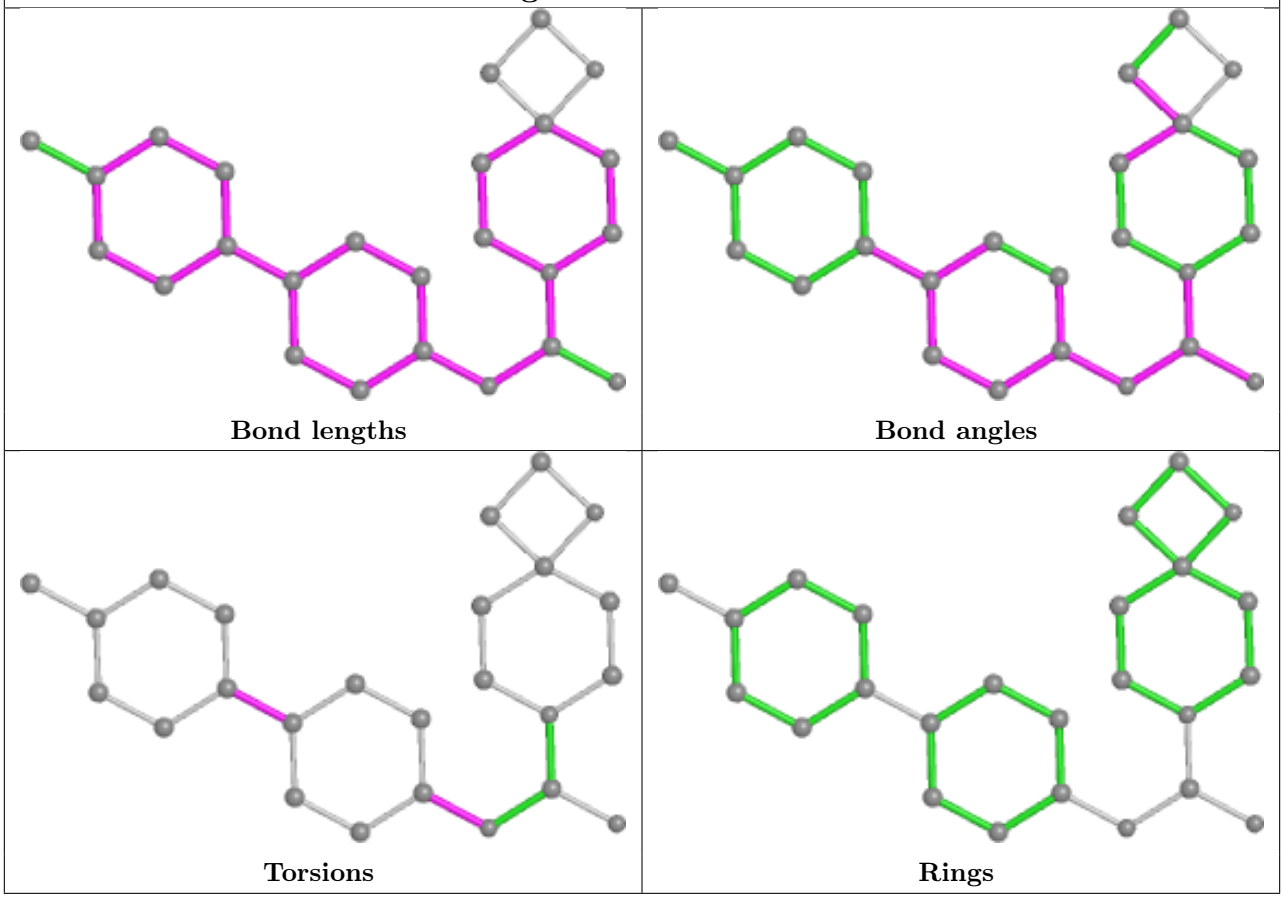


Torsions



Rings

Ligand UOV G 800



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

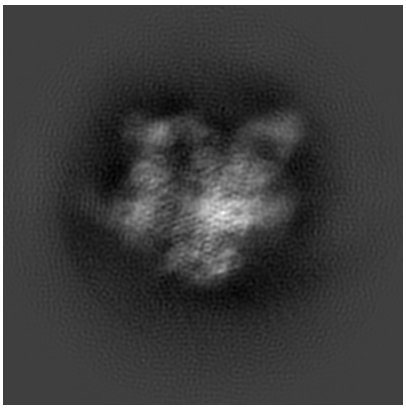
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-22049. These allow visual inspection of the internal detail of the map and identification of artifacts.

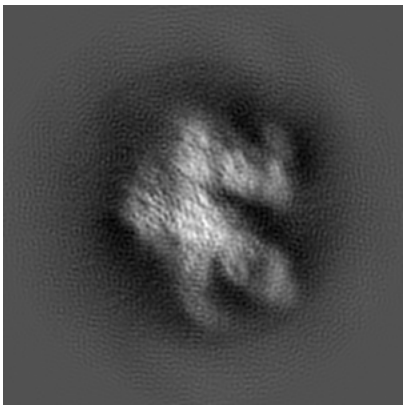
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

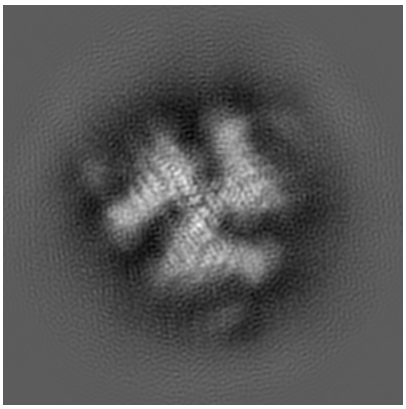
6.1.1 Primary map



X

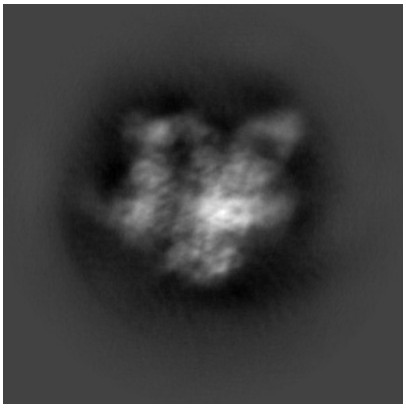


Y

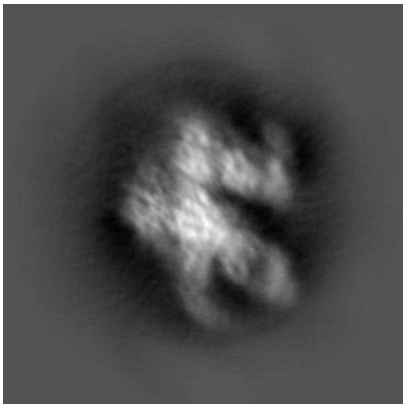


Z

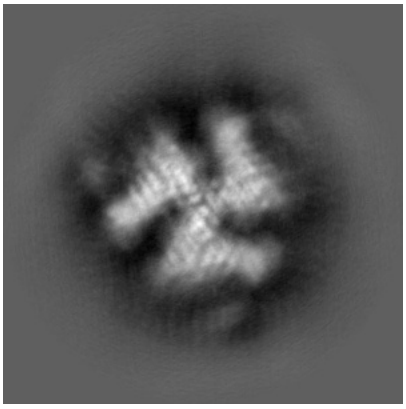
6.1.2 Raw map



X



Y

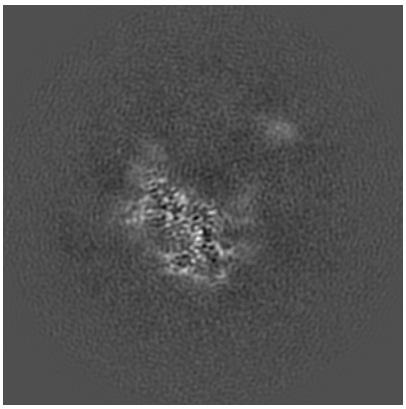


Z

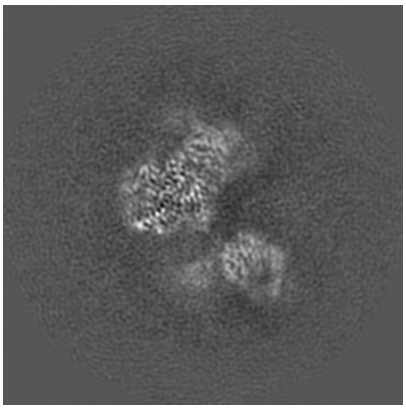
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

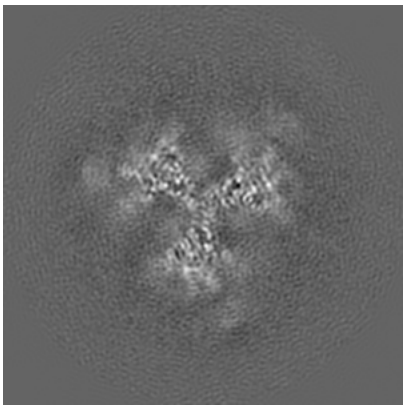
6.2.1 Primary map



X Index: 144

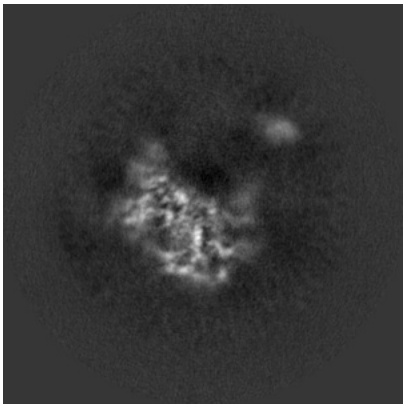


Y Index: 144

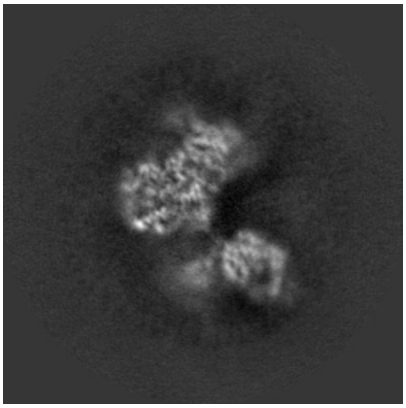


Z Index: 144

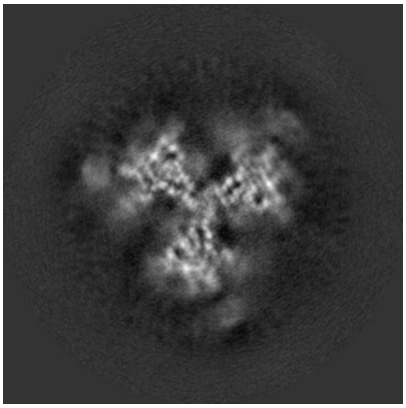
6.2.2 Raw map



X Index: 144



Y Index: 144

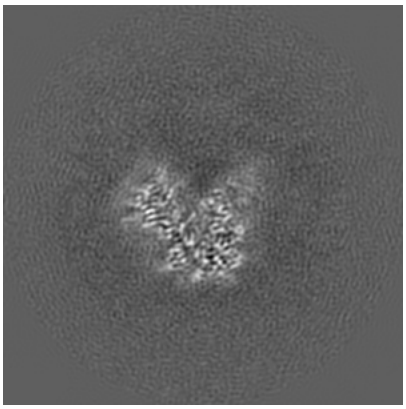


Z Index: 144

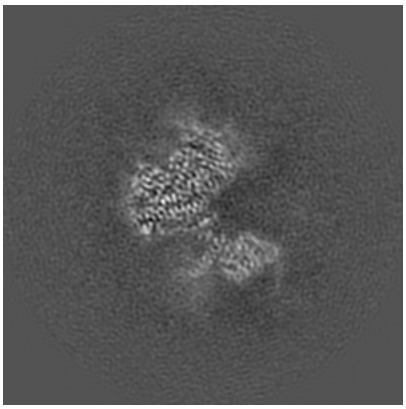
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

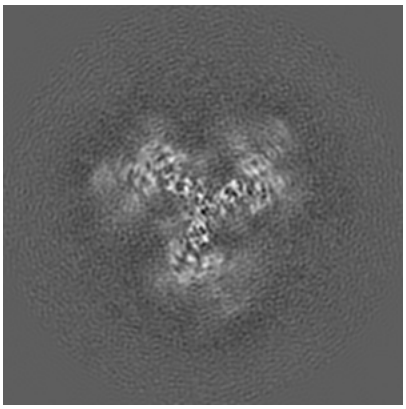
6.3.1 Primary map



X Index: 133

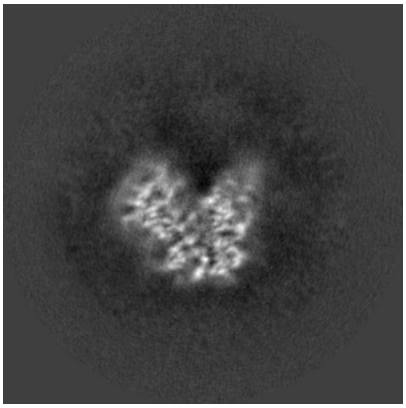


Y Index: 149

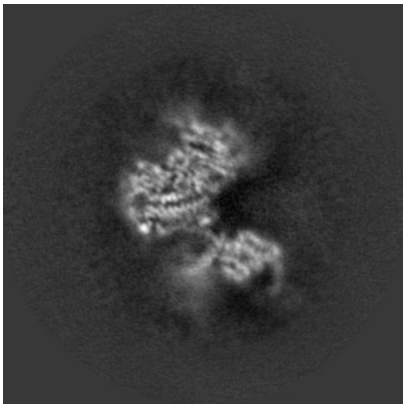


Z Index: 134

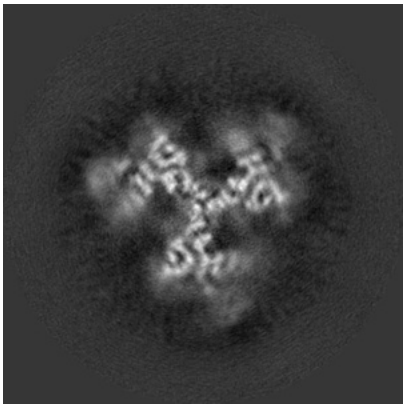
6.3.2 Raw map



X Index: 132



Y Index: 148



Z Index: 138

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 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 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.

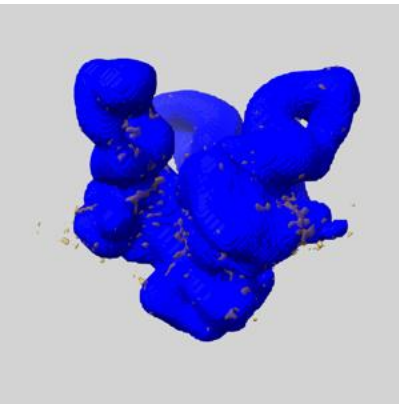
6.5 Mask visualisation (i)

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

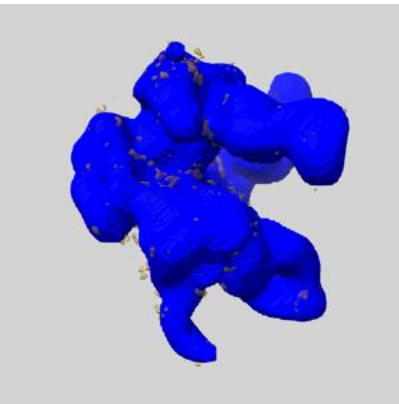
A mask typically either:

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

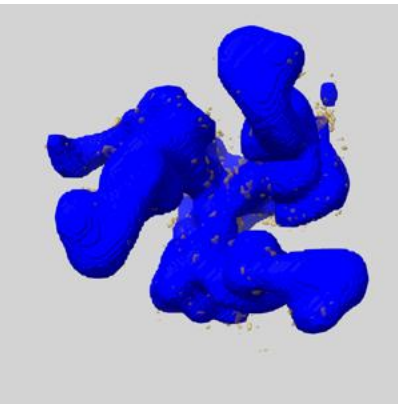
6.5.1 emd_22049_msk_1.map (i)



X



Y

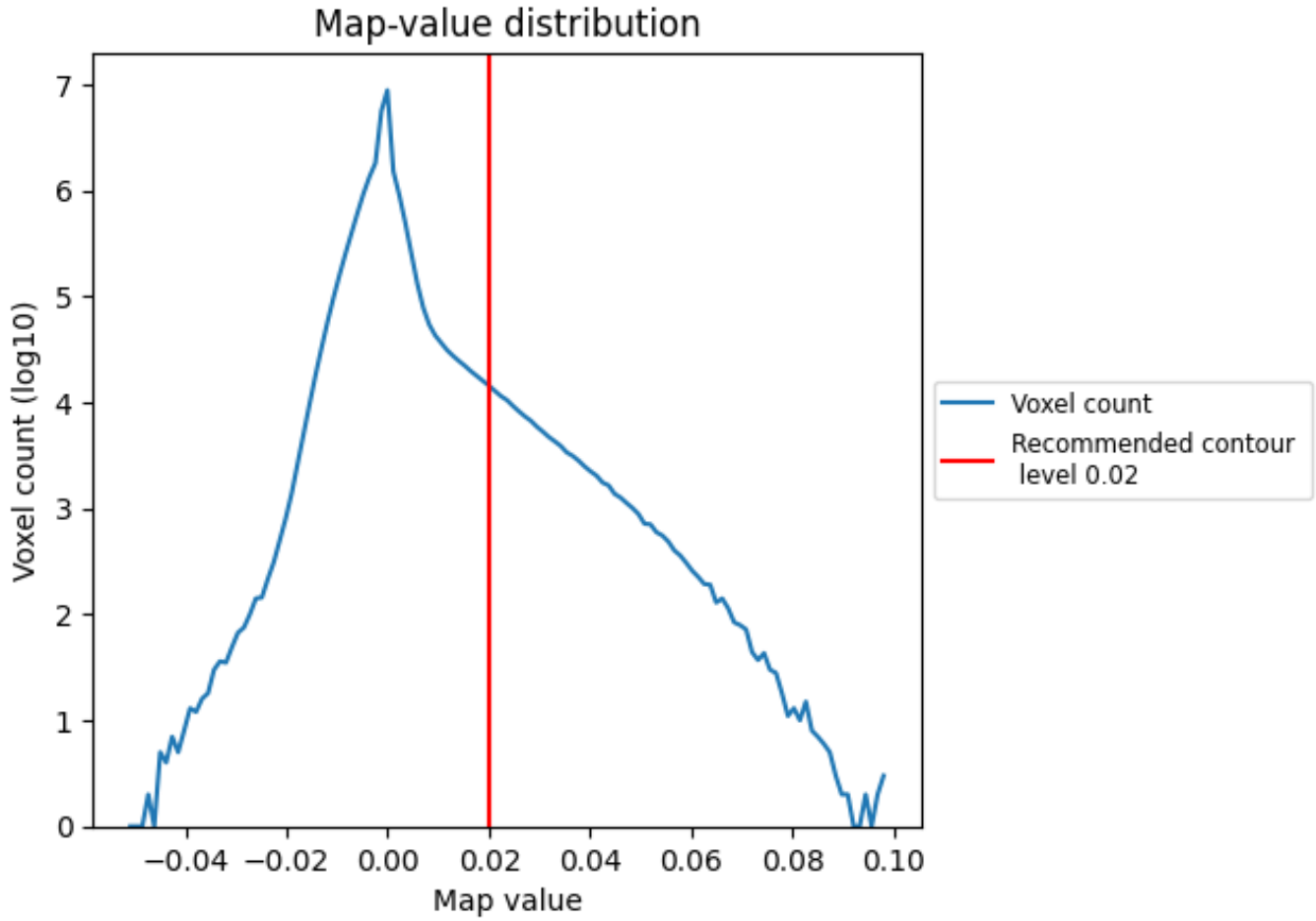


Z

7 Map analysis

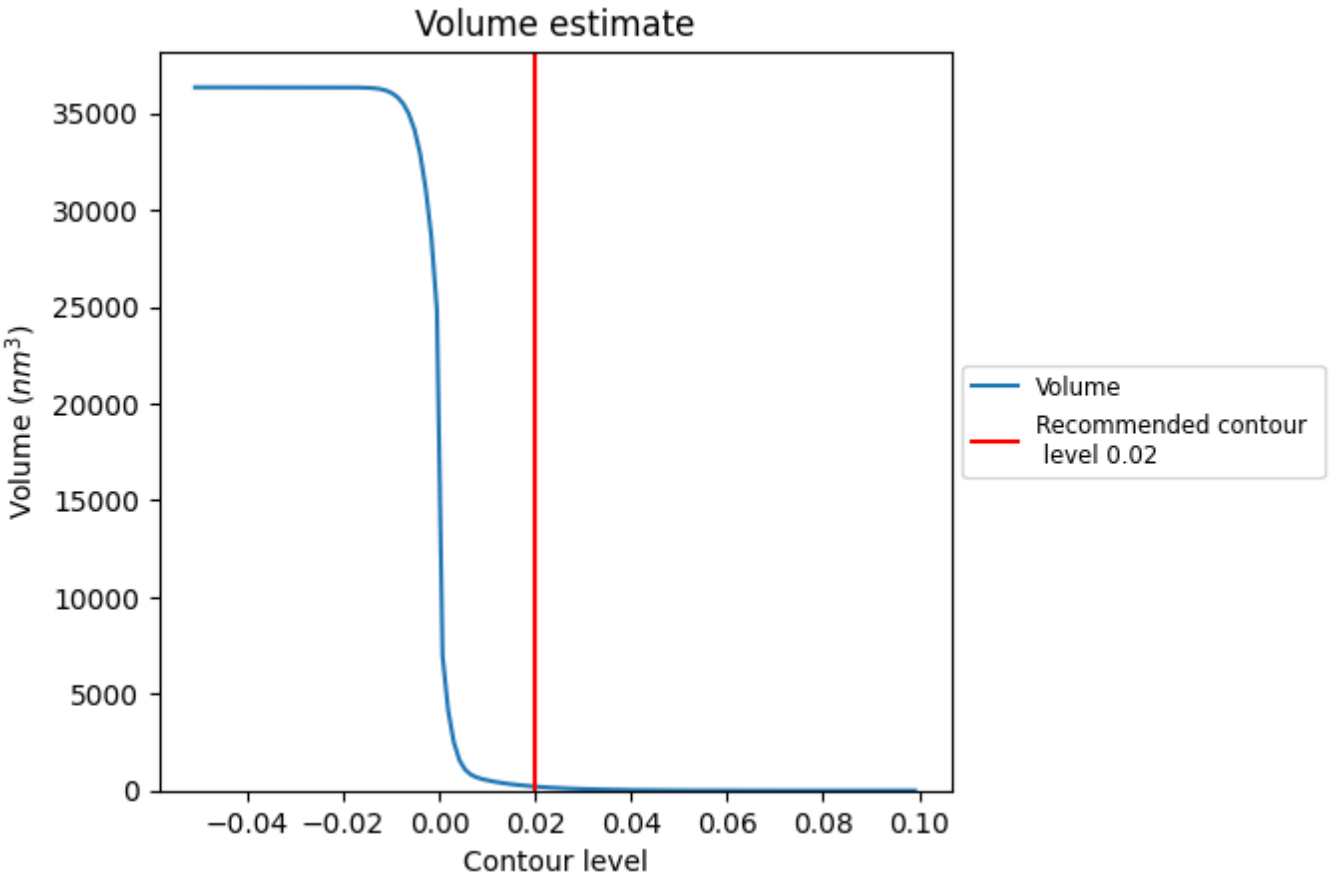
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

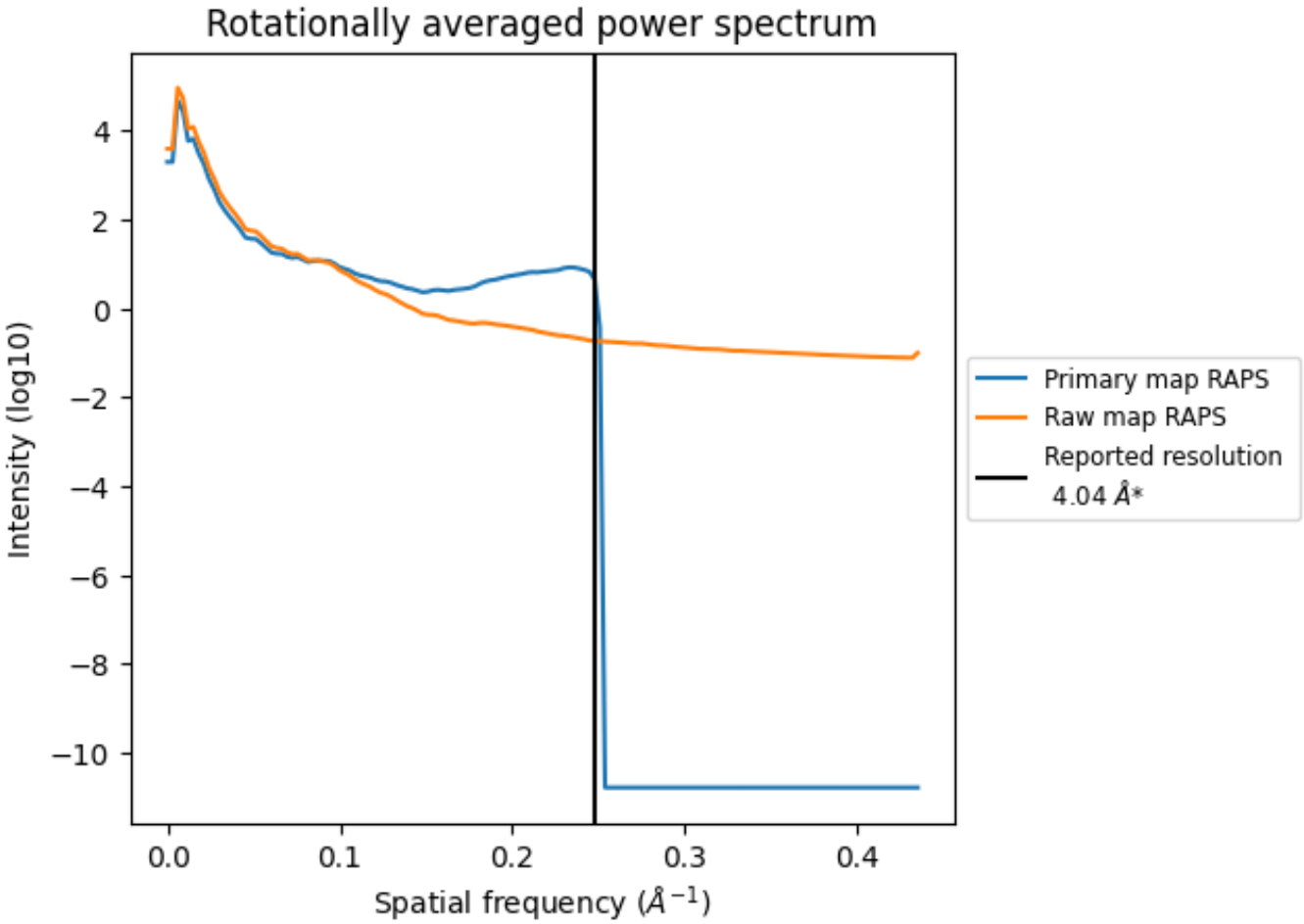
7.2 Volume estimate (i)



The volume at the recommended contour level is 206 nm^3; this corresponds to an approximate mass of 186 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)

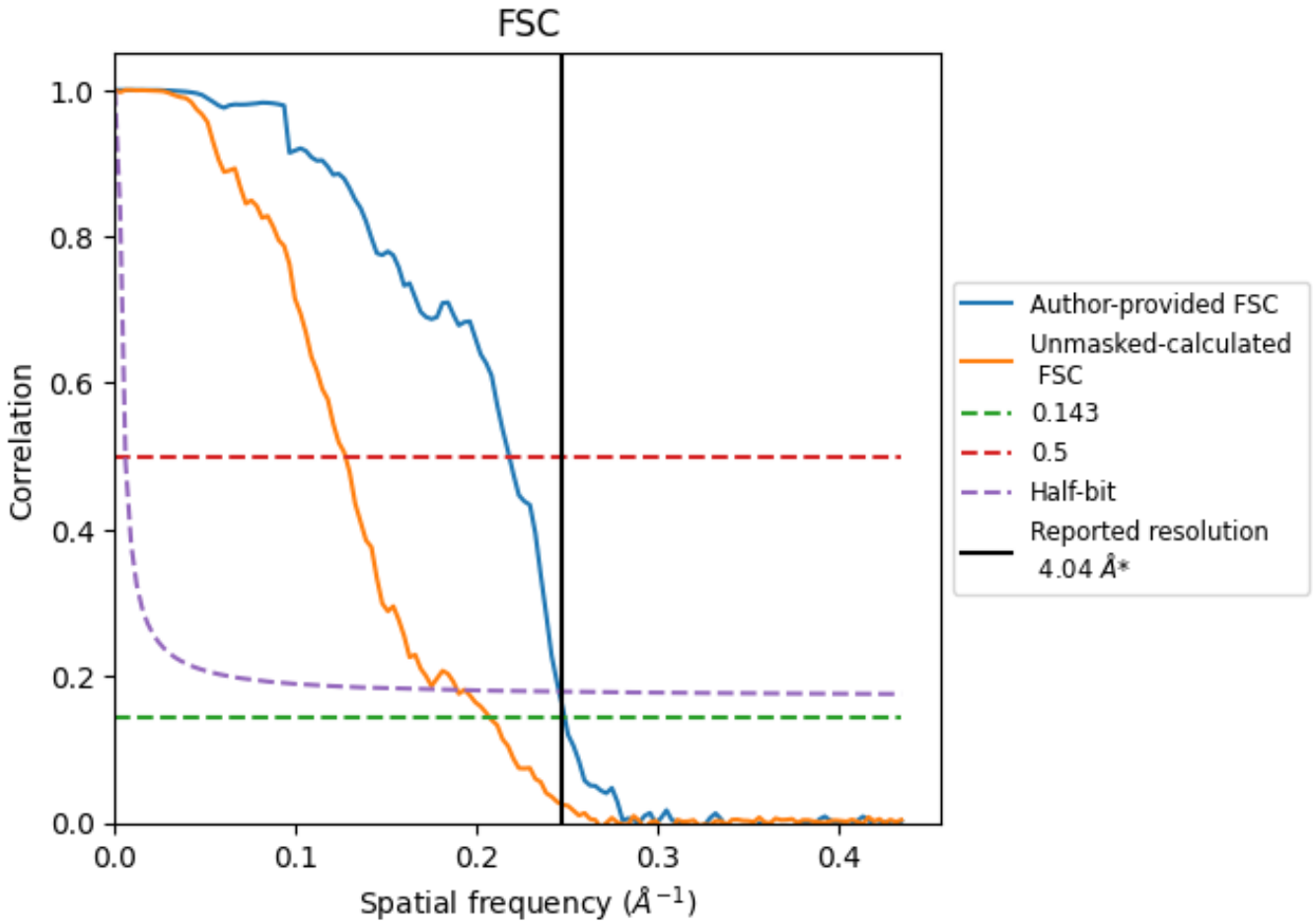


*Reported resolution corresponds to spatial frequency of 0.248 Å^{-1}

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 0.248 Å^{-1}

8.2 Resolution estimates (i)

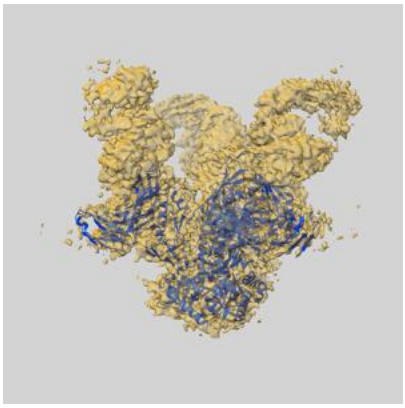
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.04	-	-
Author-provided FSC curve	4.02	4.59	4.07
Unmasked-calculated*	4.82	7.84	5.28

*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 4.82 differs from the reported value 4.04 by more than 10 %

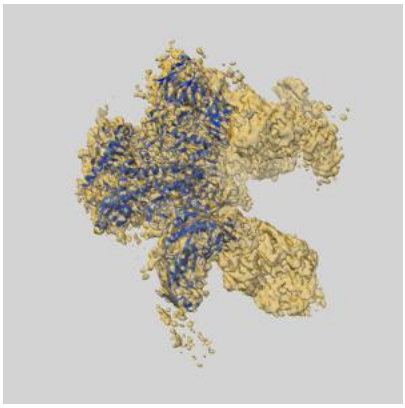
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-22049 and PDB model 6X5C. Per-residue inclusion information can be found in section 3 on page 14.

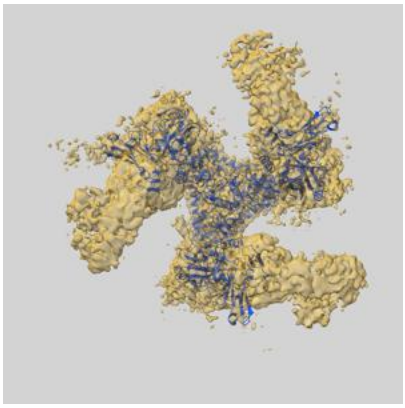
9.1 Map-model overlay



X



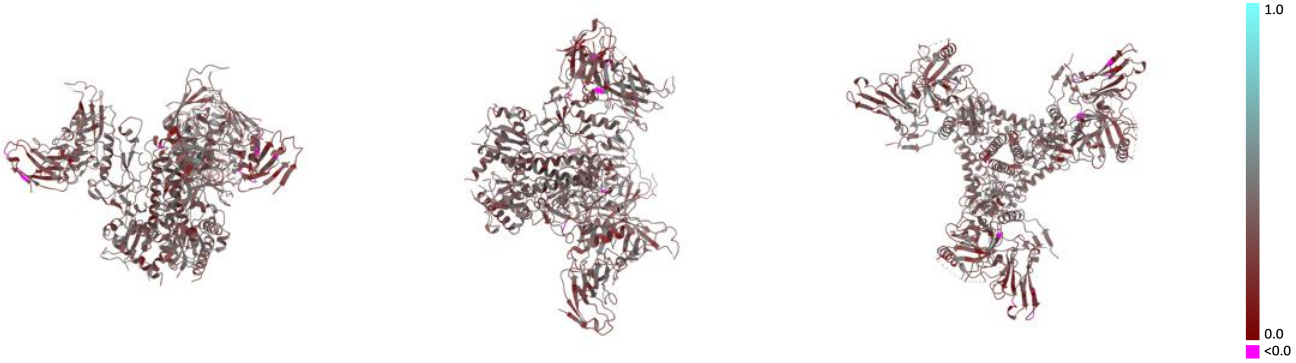
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02 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.

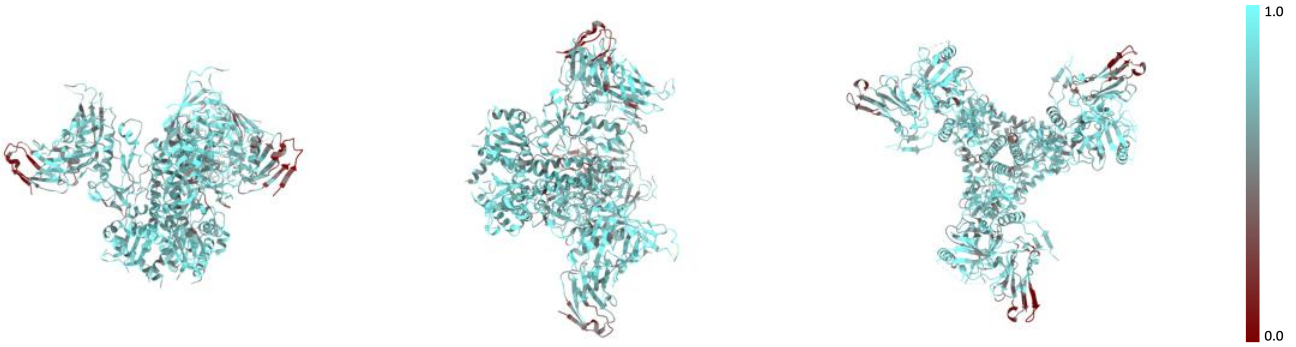
9.2 Q-score mapped to coordinate model (i)



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.

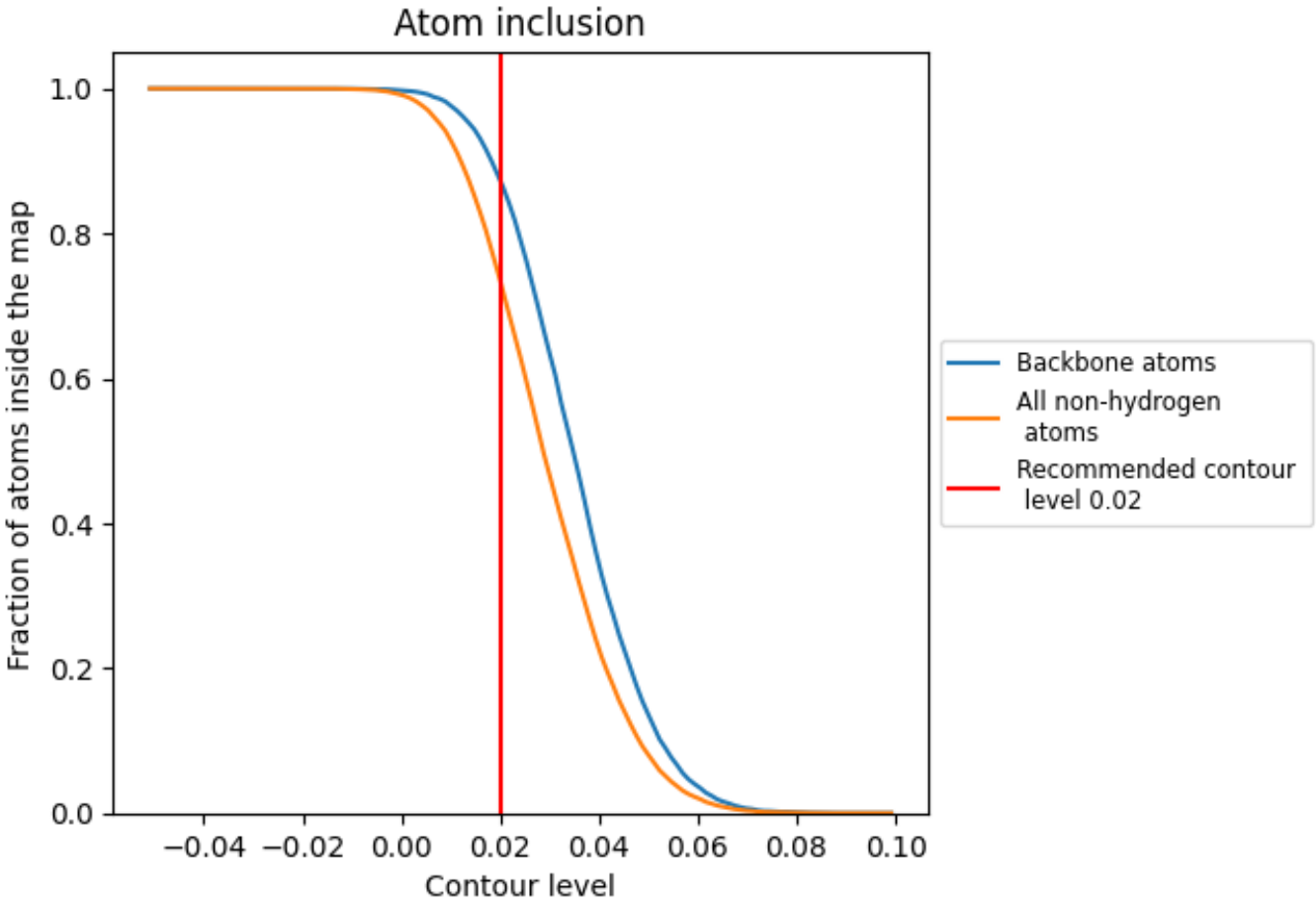
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.02).

9.4 Atom inclusion (i)



At the recommended contour level, 87% of all backbone atoms, 74% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7350	0.3410
A	0.7667	0.3500
B	0.7738	0.3550
C	0.5283	0.2690
D	0.7825	0.3560
E	0.7534	0.3470
F	0.7442	0.3560
G	0.7731	0.3380
H	0.8852	0.4300
I	0.6324	0.3210
J	0.5257	0.2590
K	0.8197	0.4200
L	0.7143	0.3200
M	0.8033	0.4200