Full wwPDB X-ray Structure Validation Report (i)

Jan 21, 2024 – 01:23 am GMT

PDB ID	:	7BEP
Title	:	Crystal structure of the receptor binding domain of SARS-CoV-2 Spike glycoprotein in a ternary complex with COVOX-384 and S309 Fabs
Authors	:	Zhou, D.; Zhao, Y.; Ren, J.; Stuart, D.
Deposited on	:	2020-12-24
Resolution	:	2.61 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

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

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

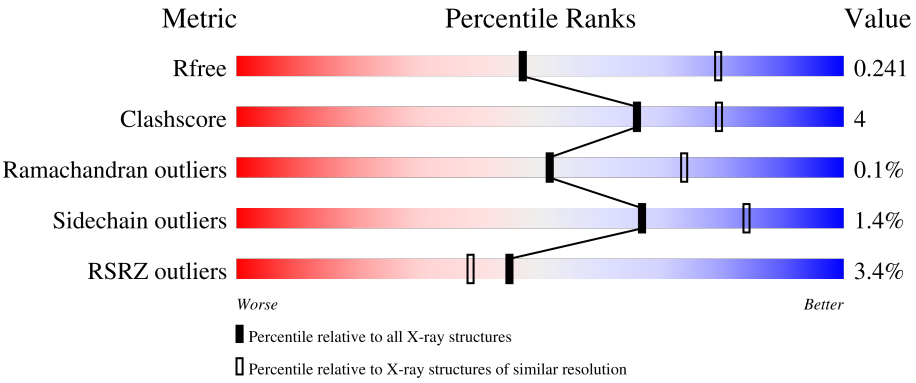
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.61 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3797 (2.64-2.60)
Clashscore	141614	4168 (2.64-2.60)
Ramachandran outliers	138981	4093 (2.64-2.60)
Sidechain outliers	138945	4093 (2.64-2.60)
RSRZ outliers	127900	3731 (2.64-2.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	C	205	2% 85% 10%
1	E	205	2% 88% 7%
2	A	243	2% 85% 9% 6%
2	D	243	84% 9% 7%
3	B	227	12% 84% 12%

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Mol	Chain	Length	Quality of chain
3	F	227	11% 87% 9%
4	G	232	89% 11%
4	H	232	% 88% 12%
5	I	214	86% 13%
5	L	214	% 85% 14%
6	J	6	17% 83%
6	K	6	50% 50%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
10	GLY	G	305	-	X	-	-
10	GLY	H	703	-	X	-	X
10	GLY	L	302	-	X	-	-
6	BMA	J	3	-	-	-	X

2 Entry composition (i)

There are 15 unique types of molecules in this entry. The entry contains 16957 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	E	197	Total	C	N	O	S	0	0	0
			1556	996	261	291	8			
1	C	197	Total	C	N	O	S	0	0	0
			1556	996	261	291	8			

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	324	GLU	-	expression tag	UNP P0DTC2
E	325	THR	-	expression tag	UNP P0DTC2
E	326	GLY	-	expression tag	UNP P0DTC2
E	327	HIS	-	expression tag	UNP P0DTC2
E	328	HIS	-	expression tag	UNP P0DTC2
E	329	HIS	-	expression tag	UNP P0DTC2
E	330	HIS	-	expression tag	UNP P0DTC2
E	331	HIS	-	expression tag	UNP P0DTC2
E	332	HIS	-	expression tag	UNP P0DTC2
E	527	LYS	PRO	engineered mutation	UNP P0DTC2
C	324	GLU	-	expression tag	UNP P0DTC2
C	325	THR	-	expression tag	UNP P0DTC2
C	326	GLY	-	expression tag	UNP P0DTC2
C	327	HIS	-	expression tag	UNP P0DTC2
C	328	HIS	-	expression tag	UNP P0DTC2
C	329	HIS	-	expression tag	UNP P0DTC2
C	330	HIS	-	expression tag	UNP P0DTC2
C	331	HIS	-	expression tag	UNP P0DTC2
C	332	HIS	-	expression tag	UNP P0DTC2
C	527	LYS	PRO	engineered mutation	UNP P0DTC2

- Molecule 2 is a protein called COVOX-384 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	228	Total	C	N	O	S	0	2	0
			1731	1099	289	335	8			
2	D	227	Total	C	N	O	S	0	2	0
			1725	1096	288	334	7			

- Molecule 3 is a protein called COVOX-384 light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	B	218	Total	C	N	O	S	0	1	0
			1664	1044	279	336	5			
3	F	218	Total	C	N	O	S	0	2	0
			1671	1051	279	336	5			

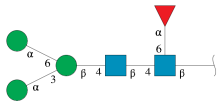
- Molecule 4 is a protein called S309 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	H	230	Total	C	N	O	S	0	1	0
			1730	1089	292	341	8			
4	G	232	Total	C	N	O	S	0	0	0
			1745	1097	295	345	8			

- Molecule 5 is a protein called S309 light chain.

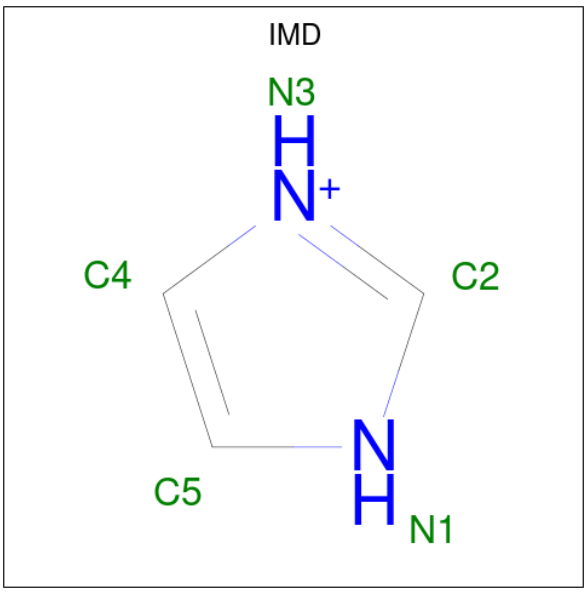
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	L	214	Total	C	N	O	S	0	1	0
			1633	1016	278	333	6			
5	I	214	Total	C	N	O	S	0	1	0
			1634	1016	278	334	6			

- Molecule 6 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	J	6	Total	C	N	O	0	0	0
			71	40	2	29			
6	K	6	Total	C	N	O	0	0	0
			71	40	2	29			

- Molecule 7 is IMIDAZOLE (three-letter code: IMD) (formula: $C_3H_5N_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	E	1	Total C N 5 3 2	0	0
7	H	1	Total C N 5 3 2	0	0
7	H	1	Total C N 5 3 2	0	0
7	C	1	Total C N 5 3 2	0	0
7	G	1	Total C N 5 3 2	0	0

- Molecule 8 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	2	Total Cl 2 2	0	0
8	B	2	Total Cl 2 2	0	0
8	H	1	Total Cl 1 1	0	0
8	C	1	Total Cl 1 1	0	0
8	D	2	Total Cl 2 2	0	0
8	F	1	Total Cl 1 1	0	0

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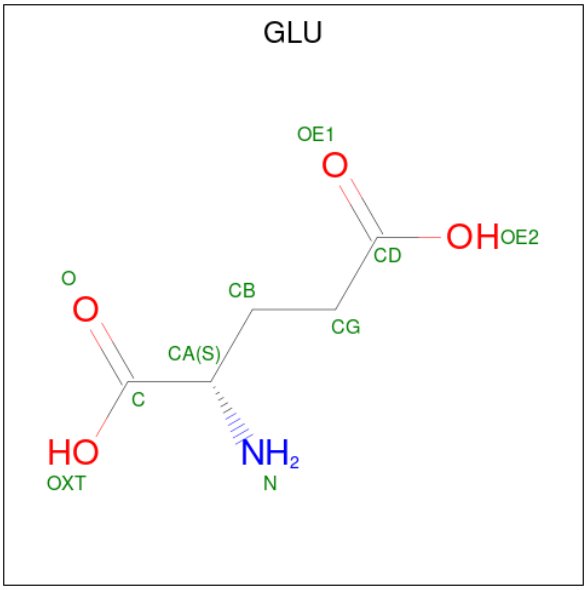
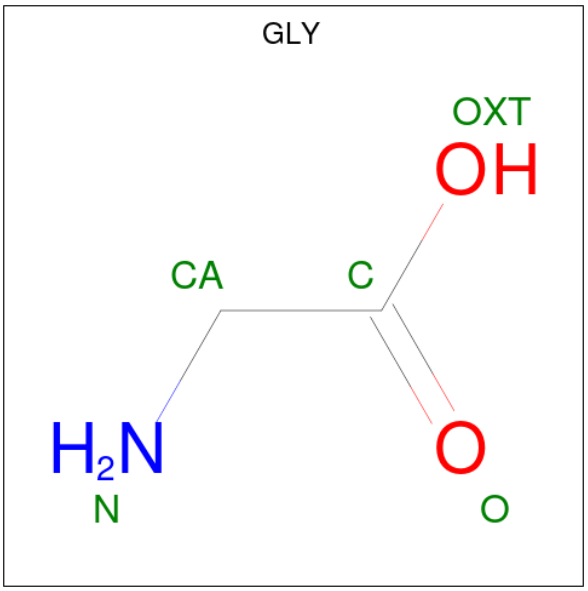
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	I	1	Total Cl 1 1	0	0

- Molecule 9 is GLUTAMIC ACID (three-letter code: GLU) (formula: $C_5H_9NO_4$).



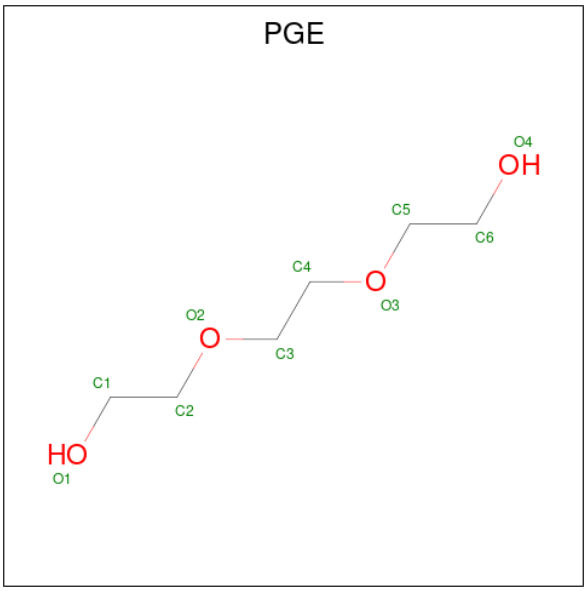
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	1	Total C N O 10 5 1 4	0	0
9	D	1	Total C N O 10 5 1 4	0	0

- Molecule 10 is GLYCINE (three-letter code: GLY) (formula: $C_2H_5NO_2$).



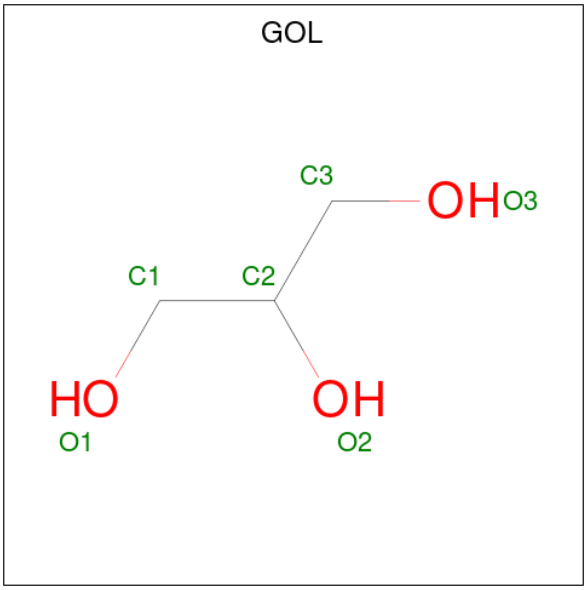
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	A	1	Total C N O 5 2 1 2	0	0
10	H	1	Total C N O 5 2 1 2	0	0
10	L	1	Total C N O 5 2 1 2	0	0
10	F	1	Total C N O 5 2 1 2	0	0
10	G	1	Total C N O 5 2 1 2	0	0
10	G	1	Total C N O 5 2 1 2	0	0

- Molecule 11 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	B	1	Total C O 10 6 4	0	0

- Molecule 12 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	H	1	Total C O 6 3 3	0	0
12	F	1	Total C O 6 3 3	0	0
12	G	1	Total C O 6 3 3	0	0

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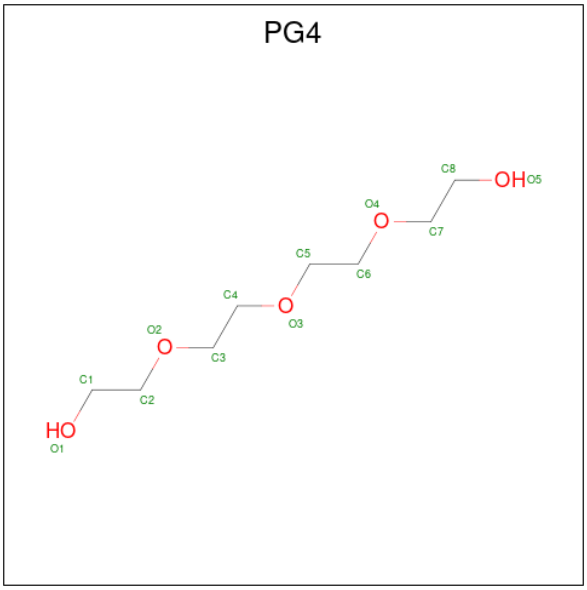
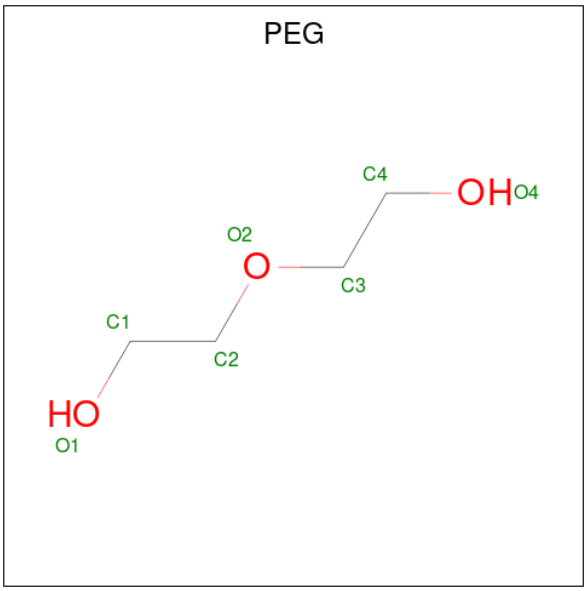
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	G	1	Total C O 6 3 3	0	0

- Molecule 13 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	L	1	Total C O 13 8 5	0	0
13	I	1	Total C O 13 8 5	0	0

- Molecule 14 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
14	D	1	Total C O 7 4 3	0	0

- Molecule 15 is water.

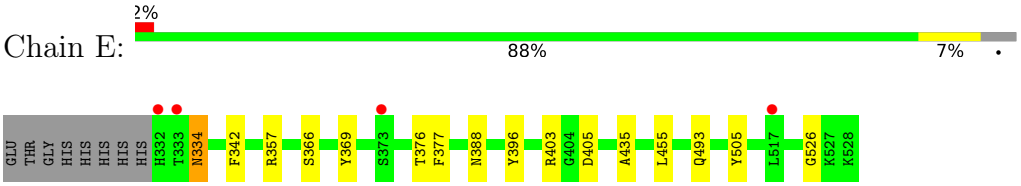
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
15	E	2	Total O 2 2	0	0
15	A	2	Total O 2 2	0	0
15	H	5	Total O 5 5	0	0
15	L	1	Total O 1 1	0	0
15	C	3	Total O 3 3	0	0
15	D	1	Total O 1 1	0	0
15	F	2	Total O 2 2	0	0
15	G	2	Total O 2 2	0	0

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 electron 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 dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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.

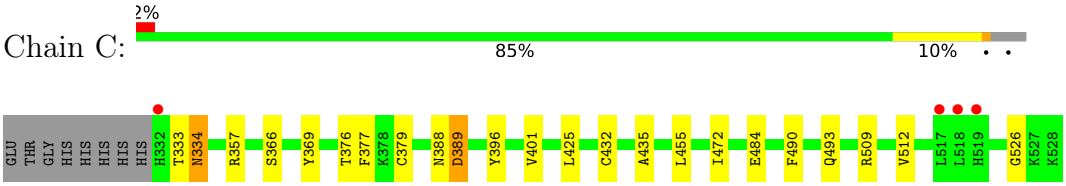
• Molecule 1: Spike glycoprotein

Chain E:



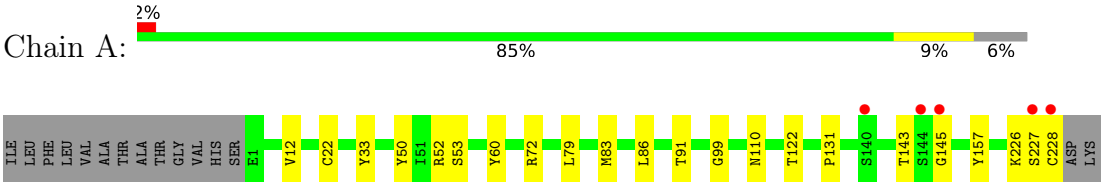
• Molecule 1: Spike glycoprotein

Chain C:



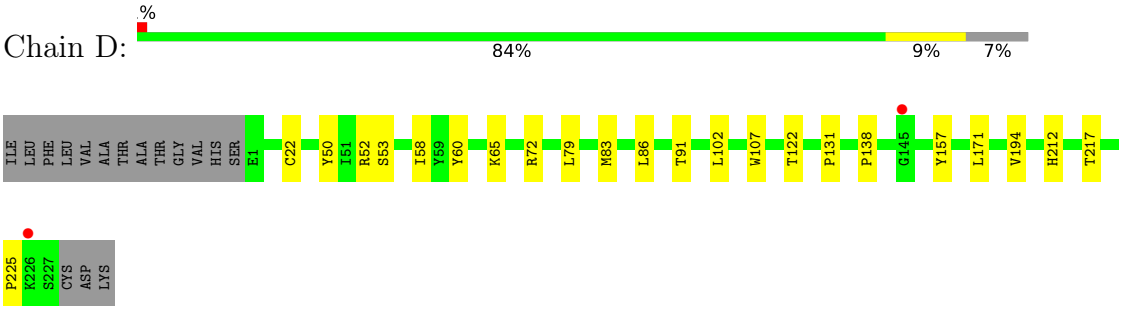
• Molecule 2: COVOX-384 heavy chain

Chain A:



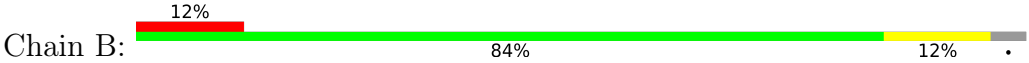
• Molecule 2: COVOX-384 heavy chain

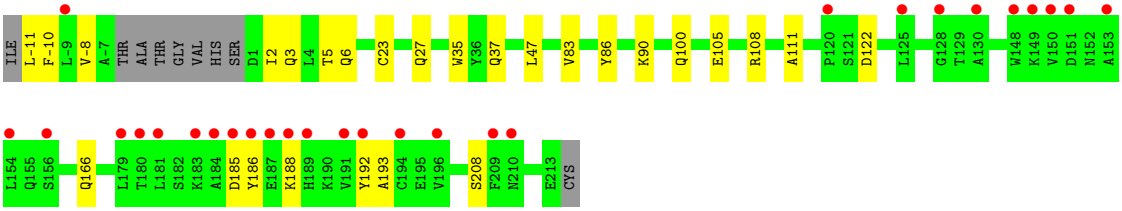
Chain D:



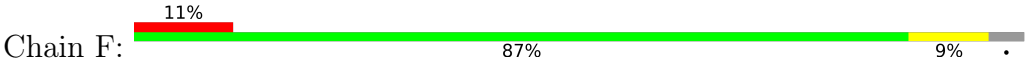
• Molecule 3: COVOX-384 light chain

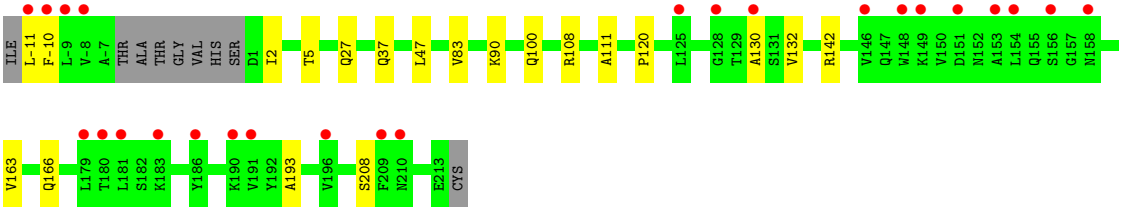
Chain B:



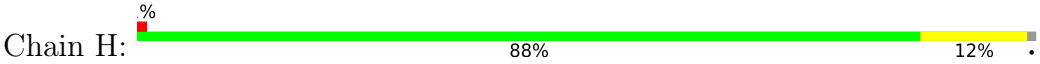


• Molecule 3: COVOX-384 light chain

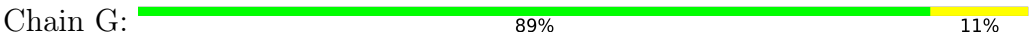


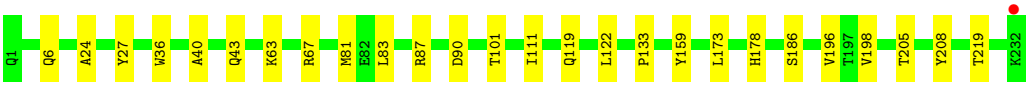


• Molecule 4: S309 heavy chain

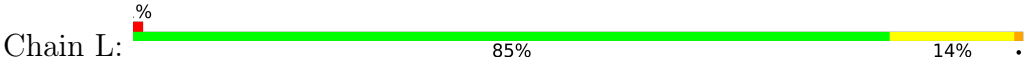


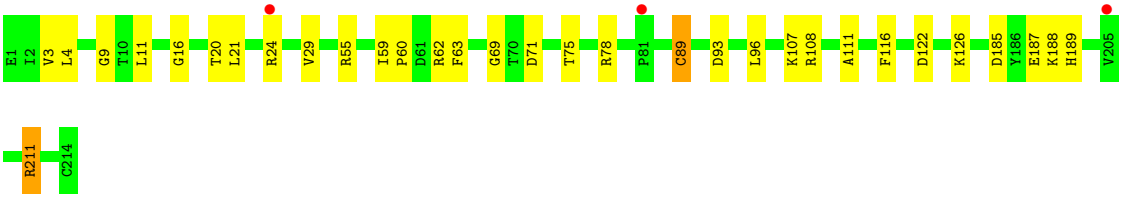
• Molecule 4: S309 heavy chain



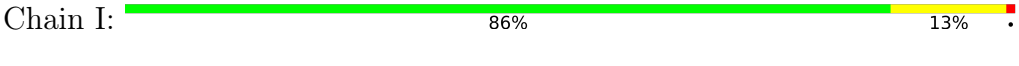


• Molecule 5: S309 light chain



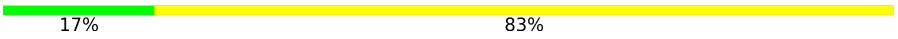


• Molecule 5: S309 light chain



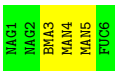
• Molecule 6: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:



• Molecule 6: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	108.76Å 113.22Å 302.77Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	62.93 – 2.61 62.93 – 2.61	Depositor EDS
% Data completeness (in resolution range)	99.8 (62.93-2.61) 99.9 (62.93-2.61)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.18 (at 2.61Å)	Xtriage
Refinement program	PHENIX 1.18.1_3865	Depositor
R, R_{free}	0.203 , 0.241 0.203 , 0.241	Depositor DCC
R_{free} test set	5586 reflections (4.88%)	wwPDB-VP
Wilson B-factor (Å^2)	78.7	Xtriage
Anisotropy	0.376	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 59.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.053 for k,h,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	16957	wwPDB-VP
Average B, all atoms (Å^2)	99.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.63% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PEG, CL, GOL, FUC, PG4, PGE, BMA, NAG, MAN, IMD

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	C	0.27	0/1600	0.45	0/2178
1	E	0.27	0/1600	0.44	0/2178
2	A	0.27	0/1780	0.48	0/2422
2	D	0.27	0/1774	0.49	0/2414
3	B	0.27	0/1699	0.50	0/2306
3	F	0.27	0/1709	0.49	0/2320
4	G	0.28	0/1788	0.49	0/2433
4	H	0.27	0/1776	0.49	0/2419
5	I	0.28	0/1670	0.57	3/2266 (0.1%)
5	L	0.28	0/1669	0.50	0/2266
All	All	0.27	0/17065	0.49	3/23202 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	I	154	LEU	CB-CG-CD2	-7.78	97.78	111.00
5	I	13	LEU	CA-CB-CG	6.45	130.14	115.30
5	I	21	LEU	CA-CB-CG	5.54	128.04	115.30

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	C	1556	0	1463	12	0
1	E	1556	0	1463	9	1
2	A	1731	0	1708	12	0
2	D	1725	0	1703	14	0
3	B	1664	0	1636	15	0
3	F	1671	0	1654	13	0
4	G	1745	0	1699	17	1
4	H	1730	0	1687	17	0
5	I	1634	0	1590	19	0
5	L	1633	0	1590	23	0
6	J	71	0	61	1	0
6	K	71	0	61	0	0
7	C	5	0	5	0	0
7	E	5	0	5	0	0
7	G	5	0	5	0	0
7	H	10	0	10	0	0
8	A	2	0	0	1	0
8	B	2	0	0	2	0
8	C	1	0	0	0	0
8	D	2	0	0	0	0
8	F	1	0	0	1	0
8	H	1	0	0	0	0
8	I	1	0	0	0	0
9	A	10	0	5	1	0
9	D	10	0	5	2	0
10	A	5	0	2	0	0
10	F	5	0	2	0	0
10	G	10	0	4	1	0
10	H	5	0	2	1	0
10	L	5	0	2	0	0
11	B	10	0	14	0	0
12	F	6	0	8	0	0
12	G	12	0	16	1	0
12	H	6	0	8	0	0
13	I	13	0	18	0	0
13	L	13	0	18	0	0
14	D	7	0	10	1	0
15	A	2	0	0	0	0
15	C	3	0	0	0	0
15	D	1	0	0	0	0
15	E	2	0	0	0	0
15	F	2	0	0	0	0
15	G	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
15	H	5	0	0	0	0
15	L	1	0	0	0	0
All	All	16957	0	16454	134	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (134) 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:L:55:ARG:NH1	5:L:60:PRO:O	2.18	0.77
5:L:189:HIS:O	5:L:211:ARG:NH1	2.17	0.77
3:B:5:THR:HA	3:B:100:GLN:HE22	1.51	0.76
3:F:5:THR:HA	3:F:100:GLN:HE22	1.50	0.76
3:F:83:VAL:HG11	3:F:166:GLN:HB2	1.69	0.74
5:I:189:HIS:O	5:I:211:ARG:NH1	2.22	0.73
2:D:91:THR:HG23	2:D:122:THR:HA	1.75	0.69
3:B:83:VAL:HG11	3:B:166:GLN:HB2	1.76	0.67
1:C:490:PHE:HB3	2:D:52:ARG:HH11	1.59	0.66
5:L:9:GLY:H	5:I:156:SER:HB3	1.61	0.66
5:L:29:VAL:HG23	5:L:93:ASP:HB2	1.77	0.66
3:F:108:ARG:HH22	3:F:111:ALA:HB2	1.59	0.66
3:B:3:GLN:NE2	8:B:303:CL:CL	2.66	0.65
3:F:90:LYS:NZ	8:F:301:CL:CL	2.65	0.65
5:I:60:PRO:HG3	5:I:62:ARG:HH21	1.61	0.65
1:C:334:ASN:N	1:C:334:ASN:OD1	2.27	0.64
5:L:55:ARG:NH2	5:L:63:PHE:O	2.31	0.63
5:L:108:ARG:HH22	5:L:111:ALA:HB2	1.63	0.63
5:I:29:VAL:HG23	5:I:93:ASP:HB2	1.82	0.62
2:D:131:PRO:HB3	2:D:157:TYR:HB3	1.81	0.62
9:D:304:GLU:N	3:F:-11:LEU:H2	1.97	0.62
2:A:131:PRO:HB3	2:A:157:TYR:HB3	1.83	0.61
4:G:133:PRO:HD2	4:G:219:THR:HG21	1.82	0.60
9:A:303:GLU:N	3:B:-11:LEU:H2	1.99	0.60
1:E:334:ASN:OD1	1:E:334:ASN:N	2.33	0.59
2:D:52:ARG:O	2:D:72:ARG:NH2	2.36	0.59
1:C:389:ASP:OD1	1:C:389:ASP:N	2.34	0.59
2:D:131:PRO:HD2	2:D:217:THR:HG21	1.86	0.58
3:B:108:ARG:HH22	3:B:111:ALA:HB2	1.69	0.57
3:B:37:GLN:HB2	3:B:47:LEU:HD11	1.85	0.57
1:C:455:LEU:HD22	1:C:493:GLN:HG3	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:90:LYS:NZ	8:B:302:CL:CL	2.75	0.55
5:L:24:ARG:HH12	5:I:181:LEU:HG	1.71	0.55
5:L:24:ARG:NH2	5:I:185:ASP:OD2	2.40	0.55
4:H:67:ARG:NH2	4:H:90:ASP:OD2	2.40	0.55
2:A:52:ARG:O	2:A:72:ARG:NH2	2.39	0.54
3:B:186:TYR:O	3:B:192:TYR:OH	2.25	0.54
4:G:40:ALA:HB3	4:G:43:GLN:HG3	1.88	0.54
4:H:85:ARG:NH2	10:H:703:GLY:OXT	2.39	0.54
3:F:37:GLN:HB2	3:F:47:LEU:HD11	1.89	0.54
1:C:472:ILE:HD12	1:C:484:GLU:HB3	1.90	0.54
4:H:87:ARG:HD2	4:G:63:LYS:HA	1.88	0.53
5:I:55:ARG:NH2	5:I:60:PRO:O	2.42	0.53
1:C:366:SER:HA	1:C:369:TYR:CZ	2.44	0.53
4:H:40:ALA:HB3	4:H:43:GLN:HG3	1.91	0.52
2:A:22:CYS:HB3	2:A:79:LEU:HB3	1.90	0.52
4:G:36:TRP:CE2	4:G:81:MET:HB2	2.45	0.52
5:L:24:ARG:NH1	5:I:180:THR:O	2.43	0.52
5:I:24:ARG:HA	5:I:70:THR:O	2.09	0.52
5:I:20:THR:HG22	5:I:75:THR:HG22	1.92	0.52
2:D:102:LEU:HD21	2:D:107:TRP:CZ3	2.45	0.51
2:A:91:THR:HG23	2:A:122:THR:HA	1.93	0.51
4:G:67:ARG:NH2	4:G:90:ASP:OD2	2.44	0.51
5:L:122:ASP:O	5:L:126:LYS:HG3	2.11	0.51
1:C:357:ARG:HG3	1:C:396:TYR:HE1	1.75	0.51
3:B:193:ALA:HB2	3:B:208:SER:HB3	1.93	0.50
1:C:376:THR:HB	1:C:435:ALA:HB3	1.93	0.50
3:B:6:GLN:NE2	3:B:86:TYR:O	2.44	0.50
5:I:210:ASN:HB2	5:I:213:GLU:HG3	1.92	0.50
4:H:36:TRP:CE2	4:H:81:MET:HB2	2.46	0.50
5:L:20:THR:HG22	5:L:75:THR:HG22	1.94	0.49
4:H:29:PHE:HB2	4:H:77:THR:HG23	1.94	0.49
3:F:193:ALA:HB2	3:F:208:SER:HB3	1.94	0.49
2:A:226:LYS:NZ	3:B:122:ASP:OD1	2.34	0.49
5:I:34:LEU:HD22	5:I:72:PHE:CD2	2.47	0.49
2:A:33:TYR:CE2	2:A:99:GLY:HA3	2.48	0.48
4:G:24:ALA:HB1	4:G:27:TYR:HE2	1.79	0.48
5:L:187:GLU:HA	5:L:211:ARG:NH1	2.29	0.47
1:E:366:SER:HA	1:E:369:TYR:CZ	2.50	0.47
4:H:18:VAL:HG12	4:H:86:LEU:HD11	1.97	0.47
5:L:16:GLY:HA2	5:L:78:ARG:CG	2.44	0.47
1:E:334:ASN:HB3	4:H:30:THR:HG21	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:388:ASN:O	1:E:526:GLY:HA3	2.14	0.47
3:F:2:ILE:HG12	3:F:27:GLN:HB2	1.97	0.47
5:L:16:GLY:O	5:L:78:ARG:HG3	2.15	0.47
2:D:58:ILE:O	9:D:304:GLU:HB2	2.15	0.47
4:G:111:ILE:HG12	5:I:32:THR:HB	1.95	0.47
5:I:91:GLN:OE1	5:I:93:ASP:N	2.47	0.46
3:B:2:ILE:HG12	3:B:27:GLN:HB2	1.98	0.46
2:D:212:HIS:HB3	2:D:217:THR:HB	1.98	0.46
2:A:60:TYR:O	3:B:-10:PHE:HE2	1.98	0.46
4:H:133:PRO:HD2	4:H:219:THR:HG21	1.96	0.46
5:L:55:ARG:HD3	5:L:59:ILE:O	2.15	0.46
1:C:388:ASN:O	1:C:526:GLY:HA3	2.15	0.46
4:H:63:LYS:HA	4:G:87:ARG:HD2	1.97	0.46
1:E:455:LEU:HD22	1:E:493:GLN:HG3	1.99	0.45
2:A:143:THR:HG22	2:A:145:GLY:H	1.81	0.45
4:G:198:VAL:HG11	4:G:208:TYR:CE1	2.51	0.45
4:H:23:LYS:NZ	4:H:77:THR:HB	2.31	0.45
4:H:133:PRO:HB3	4:H:159:TYR:HB3	1.99	0.45
2:D:171:LEU:HD21	2:D:194:VAL:HG21	1.98	0.45
5:L:16:GLY:HA2	5:L:78:ARG:HG2	1.99	0.44
2:D:83:MET:HB3	2:D:86:LEU:HD21	2.00	0.44
4:H:130:THR:HB	14:D:303:PEG:H22	1.98	0.44
3:F:120:PRO:HG3	3:F:130:ALA:HB1	1.99	0.44
4:H:32:TYR:O	4:H:53:THR:OG1	2.31	0.44
3:F:120:PRO:HD3	3:F:132:VAL:HG22	2.00	0.44
2:A:83:MET:HB3	2:A:86:LEU:HD21	1.99	0.43
2:A:52:ARG:HG2	2:A:53:SER:H	1.83	0.43
5:I:11:LEU:HD22	5:I:13:LEU:HD21	1.98	0.43
1:E:357:ARG:HG3	1:E:396:TYR:HE1	1.83	0.43
5:L:185:ASP:HA	5:L:188:LYS:HD3	1.99	0.43
2:A:12:VAL:HG11	2:A:86:LEU:HD12	2.01	0.43
2:A:52:ARG:HD3	8:A:302:CL:CL	2.55	0.43
3:B:185:ASP:HA	3:B:188:LYS:HD3	1.99	0.43
5:L:4:LEU:HD13	5:L:89:CYS:SG	2.58	0.43
2:D:22:CYS:HB3	2:D:79:LEU:HB3	2.00	0.43
3:F:142:ARG:HH21	3:F:163[B]:VAL:HG21	1.83	0.43
3:B:23:CYS:HB2	3:B:35:TRP:CH2	2.54	0.43
1:C:401:VAL:HG22	1:C:509:ARG:HG2	1.99	0.43
1:C:425:LEU:HD21	1:C:512:VAL:HG11	2.01	0.43
4:G:101:THR:OG1	12:G:302:GOL:O1	2.30	0.42
1:E:342:PHE:HB2	6:J:1:NAG:H82	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:L:11:LEU:HA	5:L:11:LEU:HD23	1.79	0.42
4:G:101:THR:HB	5:I:92:HIS:CD2	2.54	0.42
4:G:173:LEU:HD21	4:G:196:VAL:HG21	2.02	0.42
5:I:21:LEU:HD23	5:I:21:LEU:N	2.35	0.42
1:C:379:CYS:HA	1:C:432:CYS:HA	2.01	0.42
3:F:100:GLN:H	3:F:100:GLN:CD	2.23	0.41
1:E:376:THR:HB	1:E:435:ALA:HB3	2.02	0.41
5:L:3:VAL:HB	4:G:186:SER:HB2	2.03	0.41
2:D:138:PRO:HG2	2:D:225:PRO:HG3	2.03	0.41
4:H:145:THR:HG21	5:L:116:PHE:CE2	2.55	0.41
4:H:6:GLN:H	4:H:119:GLN:HE22	1.68	0.41
5:L:71:ASP:OD2	5:I:182:SER:OG	2.18	0.41
2:D:60:TYR:O	3:F:-10:PHE:HE2	2.04	0.41
1:E:403:ARG:NH1	1:E:405:ASP:OD2	2.53	0.41
2:D:60:TYR:HB2	2:D:65:LYS:HG2	2.03	0.41
4:G:133:PRO:HB3	4:G:159:TYR:HB3	2.03	0.41
4:G:24:ALA:HB1	4:G:27:TYR:CE2	2.56	0.41
4:G:178:HIS:ND1	10:G:303:GLY:OXT	2.36	0.41
4:H:47:TRP:CD1	5:L:96:LEU:HD22	2.56	0.40
4:G:6:GLN:H	4:G:119:GLN:HE22	1.69	0.40
5:I:126:LYS:HB2	5:I:126:LYS:HE2	1.95	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:505:TYR:OH	4:G:205:THR:O[4_545]	2.13	0.07

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 X-ray entries followed by that with respect to entries of similar resolution.

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	C	195/205 (95%)	183 (94%)	12 (6%)	0	100	100
1	E	195/205 (95%)	182 (93%)	13 (7%)	0	100	100
2	A	228/243 (94%)	220 (96%)	7 (3%)	1 (0%)	34	55
2	D	227/243 (93%)	220 (97%)	7 (3%)	0	100	100
3	B	215/227 (95%)	203 (94%)	12 (6%)	0	100	100
3	F	216/227 (95%)	202 (94%)	14 (6%)	0	100	100
4	G	230/232 (99%)	227 (99%)	3 (1%)	0	100	100
4	H	229/232 (99%)	226 (99%)	3 (1%)	0	100	100
5	I	213/214 (100%)	206 (97%)	6 (3%)	1 (0%)	29	50
5	L	213/214 (100%)	205 (96%)	7 (3%)	1 (0%)	29	50
All	All	2161/2242 (96%)	2074 (96%)	84 (4%)	3 (0%)	51	74

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	L	69	GLY
2	A	227	SER
5	I	69	GLY

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	C	168/177 (95%)	164 (98%)	4 (2%)	49	72
1	E	168/177 (95%)	166 (99%)	2 (1%)	71	86
2	A	195/205 (95%)	192 (98%)	3 (2%)	65	82
2	D	194/205 (95%)	192 (99%)	2 (1%)	76	89
3	B	189/196 (96%)	187 (99%)	2 (1%)	73	88
3	F	191/196 (97%)	191 (100%)	0	100	100
4	G	194/194 (100%)	192 (99%)	2 (1%)	76	89
4	H	193/194 (100%)	191 (99%)	2 (1%)	76	89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
5	I	186/185 (100%)	183 (98%)	3 (2%)	62 81
5	L	186/185 (100%)	181 (97%)	5 (3%)	44 69
All	All	1864/1914 (97%)	1839 (99%)	25 (1%)	67 85

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	334	ASN
1	E	377	PHE
2	A	50	TYR
2	A	110	ASN
2	A	228	CYS
3	B	-8	VAL
3	B	105	GLU
4	H	83	LEU
4	H	122	LEU
5	L	21	LEU
5	L	62	ARG
5	L	89	CYS
5	L	107	LYS
5	L	211	ARG
1	C	333	THR
1	C	334	ASN
1	C	377	PHE
1	C	389	ASP
2	D	50	TYR
2	D	53	SER
4	G	83	LEU
4	G	122	LEU
5	I	13	LEU
5	I	21	LEU
5	I	89	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA

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)

12 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	J	1	6,1	14,14,15	0.23	0	17,19,21	0.56	0
6	NAG	J	2	6	14,14,15	0.41	0	17,19,21	0.58	0
6	BMA	J	3	6	11,11,12	0.60	0	15,15,17	1.62	3 (20%)
6	MAN	J	4	6	11,11,12	0.72	0	15,15,17	1.22	1 (6%)
6	MAN	J	5	6	11,11,12	0.74	0	15,15,17	1.29	2 (13%)
6	FUC	J	6	6	10,10,11	0.89	1 (10%)	14,14,16	0.73	0
6	NAG	K	1	6,1	14,14,15	0.28	0	17,19,21	0.52	0
6	NAG	K	2	6	14,14,15	0.35	0	17,19,21	0.55	0
6	BMA	K	3	6	11,11,12	0.49	0	15,15,17	1.49	4 (26%)
6	MAN	K	4	6	11,11,12	0.83	0	15,15,17	1.27	1 (6%)
6	MAN	K	5	6	11,11,12	0.79	0	15,15,17	1.33	2 (13%)
6	FUC	K	6	6	10,10,11	0.89	0	14,14,16	0.83	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
6	NAG	J	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	J	2	6	-	0/6/23/26	0/1/1/1
6	BMA	J	3	6	-	0/2/19/22	0/1/1/1
6	MAN	J	4	6	-	0/2/19/22	0/1/1/1
6	MAN	J	5	6	-	1/2/19/22	0/1/1/1
6	FUC	J	6	6	-	-	0/1/1/1

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

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	J	6	FUC	O5-C1	-2.05	1.40	1.43

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	J	3	BMA	C1-C2-C3	4.41	115.08	109.67
6	K	5	MAN	C1-O5-C5	4.15	117.81	112.19
6	K	4	MAN	C1-O5-C5	3.88	117.45	112.19
6	J	5	MAN	C1-O5-C5	3.87	117.44	112.19
6	J	4	MAN	C1-O5-C5	3.67	117.17	112.19
6	K	3	BMA	C1-C2-C3	3.58	114.07	109.67
6	K	3	BMA	C1-O5-C5	2.32	115.34	112.19
6	J	5	MAN	O2-C2-C3	-2.32	105.49	110.14
6	K	3	BMA	O5-C1-C2	2.30	114.31	110.77
6	K	5	MAN	O2-C2-C3	-2.21	105.70	110.14
6	J	3	BMA	O5-C1-C2	2.20	114.17	110.77
6	J	3	BMA	O2-C2-C3	-2.18	105.77	110.14
6	K	3	BMA	O2-C2-C3	-2.10	105.92	110.14

There are no chirality outliers.

All (2) torsion outliers are listed below:

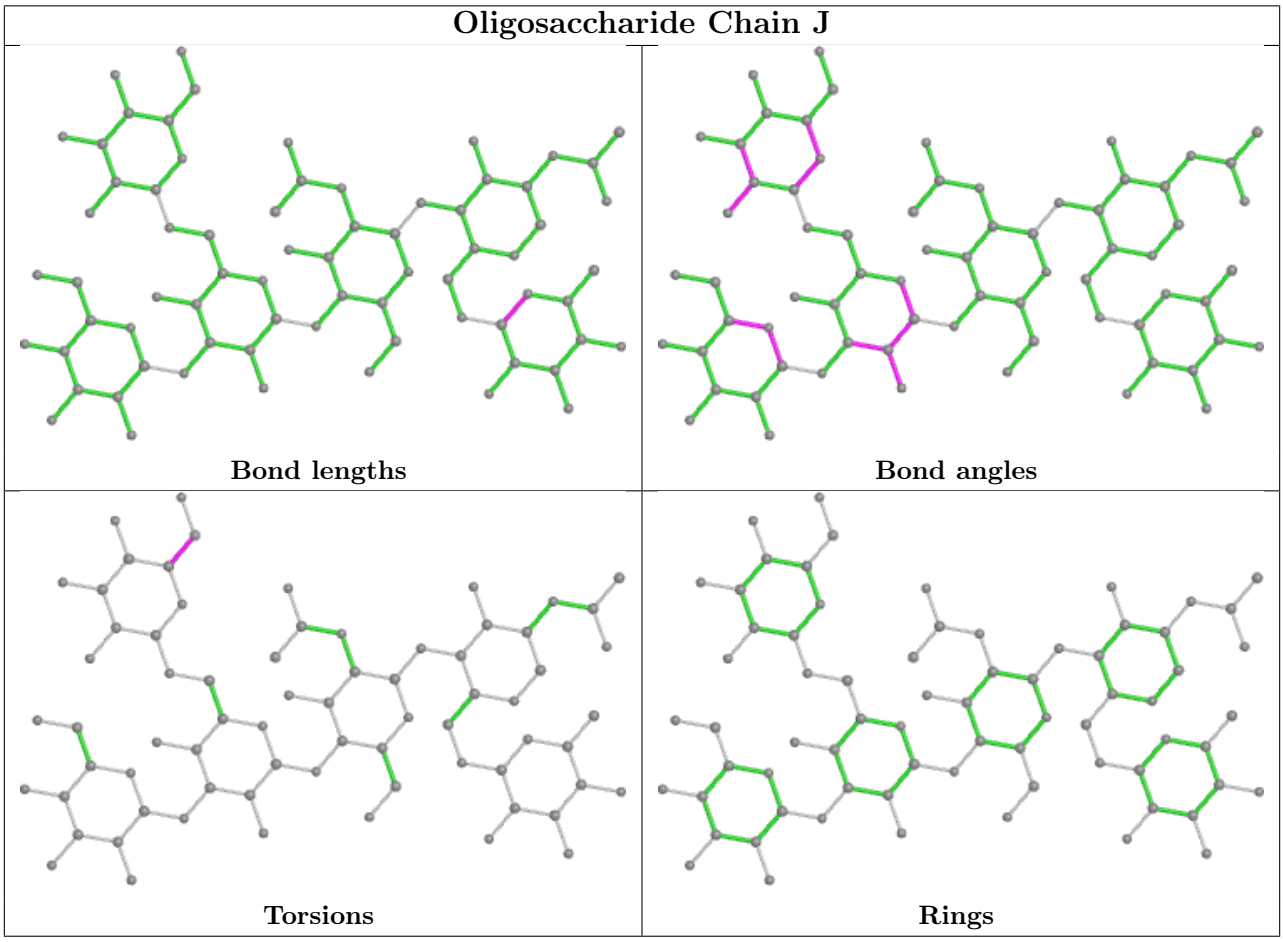
Mol	Chain	Res	Type	Atoms
6	J	5	MAN	O5-C5-C6-O6
6	K	5	MAN	O5-C5-C6-O6

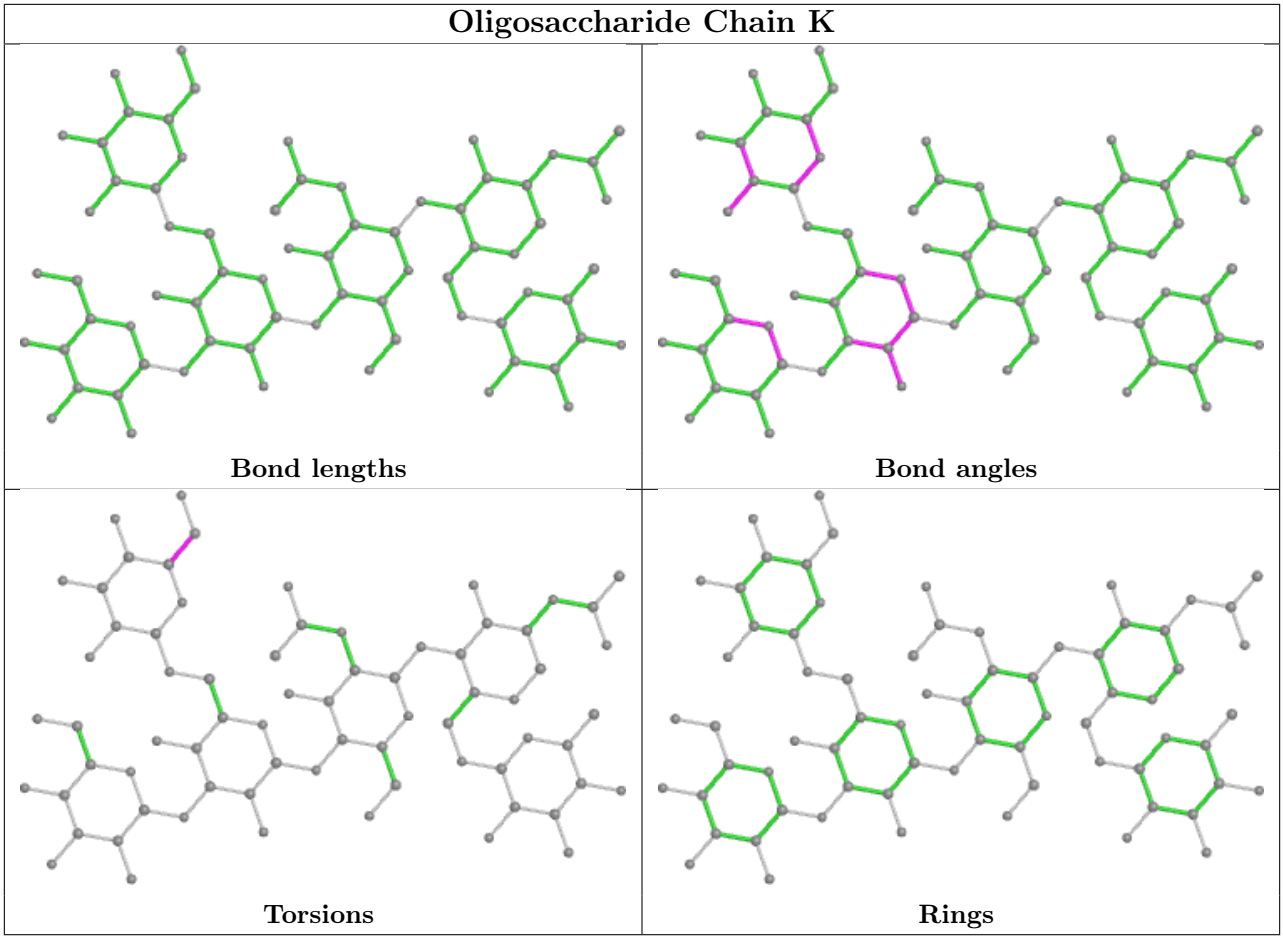
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	J	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.





5.6 Ligand geometry (i)

Of 31 ligands modelled in this entry, 10 are monoatomic - leaving 21 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
10	GLY	L	302	-	4,4,4	1.13	1 (25%)	3,4,4	1.66	1 (33%)
7	IMD	C	701	-	3,5,5	0.41	0	4,5,5	0.59	0
11	PGE	B	301	-	9,9,9	0.37	0	8,8,8	0.29	0
7	IMD	E	801	-	3,5,5	0.41	0	4,5,5	0.58	0
10	GLY	G	305	-	4,4,4	1.10	1 (25%)	3,4,4	1.72	1 (33%)
9	GLU	D	304	-	8,9,9	1.08	1 (12%)	10,11,11	1.44	2 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	IMD	G	304	-	3,5,5	0.41	0	4,5,5	0.58	0
10	GLY	G	303	-	4,4,4	1.14	1 (25%)	3,4,4	1.62	1 (33%)
9	GLU	A	303	-	8,9,9	1.13	1 (12%)	10,11,11	1.41	2 (20%)
13	PG4	L	301	-	12,12,12	0.53	0	11,11,11	0.48	0
12	GOL	F	302	-	5,5,5	0.97	0	5,5,5	0.92	0
14	PEG	D	303	-	6,6,6	0.49	0	5,5,5	0.26	0
10	GLY	F	303	-	4,4,4	1.12	1 (25%)	3,4,4	1.83	2 (66%)
7	IMD	H	702	-	3,5,5	0.40	0	4,5,5	0.59	0
12	GOL	H	701	-	5,5,5	0.94	0	5,5,5	0.91	0
12	GOL	G	301	-	5,5,5	0.94	0	5,5,5	0.99	0
10	GLY	H	703	-	4,4,4	1.07	1 (25%)	3,4,4	1.76	2 (66%)
7	IMD	H	704	-	3,5,5	0.41	0	4,5,5	0.60	0
10	GLY	A	304	-	4,4,4	1.12	1 (25%)	3,4,4	1.66	1 (33%)
13	PG4	I	301	-	12,12,12	0.53	0	11,11,11	0.28	0
12	GOL	G	302	-	5,5,5	0.90	0	5,5,5	0.99	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	GLY	L	302	-	-	2/2/2/2	-
11	PGE	B	301	-	-	4/7/7/7	-
7	IMD	C	701	-	-	-	0/1/1/1
10	GLY	G	305	-	-	2/2/2/2	-
7	IMD	E	801	-	-	-	0/1/1/1
9	GLU	D	304	-	-	3/9/9/9	-
7	IMD	G	304	-	-	-	0/1/1/1
10	GLY	G	303	-	-	0/2/2/2	-
9	GLU	A	303	-	-	4/9/9/9	-
13	PG4	L	301	-	-	5/10/10/10	-
12	GOL	F	302	-	-	2/4/4/4	-
14	PEG	D	303	-	-	1/4/4/4	-
10	GLY	F	303	-	-	0/2/2/2	-
7	IMD	H	702	-	-	-	0/1/1/1
12	GOL	H	701	-	-	2/4/4/4	-
12	GOL	G	301	-	-	0/4/4/4	-
10	GLY	H	703	-	-	2/2/2/2	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	IMD	H	704	-	-	-	0/1/1/1
10	GLY	A	304	-	-	0/2/2/2	-
13	PG4	I	301	-	-	5/10/10/10	-
12	GOL	G	302	-	-	4/4/4/4	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	G	303	GLY	OXT-C	-2.15	1.23	1.30
10	F	303	GLY	OXT-C	-2.15	1.23	1.30
10	L	302	GLY	OXT-C	-2.12	1.23	1.30
10	A	304	GLY	OXT-C	-2.11	1.23	1.30
10	G	305	GLY	OXT-C	-2.10	1.23	1.30
9	D	304	GLU	OXT-C	-2.04	1.23	1.30
9	A	303	GLU	OXT-C	-2.03	1.23	1.30
10	H	703	GLY	OXT-C	-2.02	1.23	1.30

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	D	304	GLU	OXT-C-O	-3.31	116.58	124.09
9	A	303	GLU	OXT-C-O	-3.25	116.72	124.09
9	D	304	GLU	OXT-C-CA	2.49	121.86	113.38
10	F	303	GLY	OXT-C-O	-2.43	117.25	123.30
9	A	303	GLU	OXT-C-CA	2.29	121.17	113.38
10	G	305	GLY	OXT-C-O	-2.26	117.67	123.30
10	H	703	GLY	OXT-C-O	-2.22	117.77	123.30
10	G	303	GLY	OXT-C-O	-2.16	117.90	123.30
10	L	302	GLY	OXT-C-O	-2.15	117.93	123.30
10	A	304	GLY	OXT-C-O	-2.15	117.94	123.30
10	H	703	GLY	OXT-C-CA	2.06	121.64	113.45
10	F	303	GLY	OXT-C-CA	2.03	121.54	113.45

There are no chirality outliers.

All (36) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	303	GLU	N-CA-CB-CG
9	A	303	GLU	C-CA-CB-CG
10	H	703	GLY	O-C-CA-N
10	H	703	GLY	OXT-C-CA-N

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Mol	Chain	Res	Type	Atoms
10	L	302	GLY	O-C-CA-N
10	L	302	GLY	OXT-C-CA-N
10	G	305	GLY	O-C-CA-N
10	G	305	GLY	OXT-C-CA-N
12	F	302	GOL	O1-C1-C2-C3
12	G	302	GOL	O1-C1-C2-O2
12	G	302	GOL	O1-C1-C2-C3
12	G	302	GOL	C1-C2-C3-O3
12	G	302	GOL	O2-C2-C3-O3
12	H	701	GOL	C1-C2-C3-O3
12	F	302	GOL	O1-C1-C2-O2
9	D	304	GLU	OXT-C-CA-N
13	L	301	PG4	O1-C1-C2-O2
13	I	301	PG4	O1-C1-C2-O2
12	H	701	GOL	O2-C2-C3-O3
9	D	304	GLU	O-C-CA-N
14	D	303	PEG	C4-C3-O2-C2
13	I	301	PG4	O4-C7-C8-O5
13	L	301	PG4	O4-C7-C8-O5
13	L	301	PG4	C1-C2-O2-C3
13	I	301	PG4	C1-C2-O2-C3
13	L	301	PG4	C3-C4-O3-C5
11	B	301	PGE	C3-C4-O3-C5
11	B	301	PGE	C1-C2-O2-C3
13	I	301	PG4	C3-C4-O3-C5
9	D	304	GLU	N-CA-CB-CG
13	I	301	PG4	C8-C7-O4-C6
13	L	301	PG4	C8-C7-O4-C6
11	B	301	PGE	O2-C3-C4-O3
9	A	303	GLU	OE2-CD-CG-CB
11	B	301	PGE	O1-C1-C2-O2
9	A	303	GLU	OE1-CD-CG-CB

There are no ring outliers.

6 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	D	304	GLU	2	0
10	G	303	GLY	1	0
9	A	303	GLU	1	0
14	D	303	PEG	1	0
10	H	703	GLY	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	G	302	GOL	1	0

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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	C	197/205 (96%)	0.09	4 (2%) 65 60	69, 92, 136, 179	0
1	E	197/205 (96%)	0.13	4 (2%) 65 60	70, 93, 138, 174	0
2	A	228/243 (93%)	0.06	5 (2%) 62 57	64, 90, 141, 214	0
2	D	227/243 (93%)	0.04	2 (0%) 84 82	64, 90, 124, 193	0
3	B	218/227 (96%)	0.57	28 (12%) 3 2	64, 103, 167, 189	0
3	F	218/227 (96%)	0.51	25 (11%) 4 3	64, 102, 165, 187	0
4	G	232/232 (100%)	-0.07	1 (0%) 92 91	72, 87, 113, 188	0
4	H	230/232 (99%)	-0.01	2 (0%) 84 82	67, 89, 113, 163	0
5	I	214/214 (100%)	-0.00	0 100 100	73, 103, 129, 155	0
5	L	214/214 (100%)	0.00	3 (1%) 75 71	71, 97, 127, 168	0
All	All	2175/2242 (97%)	0.13	74 (3%) 45 38	64, 93, 151, 214	0

All (74) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	F	148	TRP	7.3
3	F	181	LEU	6.6
3	B	181	LEU	6.5
3	B	191	VAL	5.9
2	A	145	GLY	5.3
2	A	228	CYS	5.2
3	B	209	PHE	4.8
3	F	191	VAL	4.5
2	D	145	GLY	4.4
3	F	149	LYS	4.3
3	B	183	LYS	4.2
3	B	-9	LEU	4.1
3	F	130	ALA	4.0

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Mol	Chain	Res	Type	RSRZ
3	F	-9	LEU	3.8
3	B	130	ALA	3.7
3	F	158	ASN	3.6
3	B	151	ASP	3.6
3	F	125	LEU	3.6
3	B	148	TRP	3.5
3	F	183	LYS	3.5
3	F	209	PHE	3.4
3	F	186	TYR	3.3
1	E	332	HIS	3.3
4	G	232	LYS	3.2
3	B	150	VAL	3.1
3	B	120	PRO	3.1
3	B	180	THR	3.0
3	B	187	GLU	2.9
1	E	517	LEU	2.8
3	B	184	ALA	2.7
3	B	188	LYS	2.7
3	F	190	LYS	2.7
3	F	180	THR	2.7
3	B	210	ASN	2.7
3	F	151	ASP	2.7
2	A	140	SER	2.6
3	F	179	LEU	2.6
3	F	154	LEU	2.5
3	B	156	SER	2.5
1	C	332	HIS	2.5
1	C	519	HIS	2.5
3	B	128	GLY	2.5
3	B	154	LEU	2.5
3	B	186	TYR	2.5
1	E	373	SER	2.5
5	L	24	ARG	2.4
5	L	81	PRO	2.4
1	E	333	THR	2.4
5	L	205	VAL	2.4
3	F	196	VAL	2.4
3	F	-11	LEU	2.3
3	B	125	LEU	2.3
3	B	179	LEU	2.3
3	B	192	TYR	2.3
3	B	196	VAL	2.3

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Mol	Chain	Res	Type	RSRZ
3	F	-10	PHE	2.3
3	B	194[A]	CYS	2.3
3	B	149	LYS	2.3
3	F	156	SER	2.2
3	B	185	ASP	2.2
4	H	34	ILE	2.2
3	B	189	HIS	2.2
2	A	227	SER	2.1
1	C	517	LEU	2.1
3	F	153	ALA	2.1
3	F	210	ASN	2.1
3	F	146	VAL	2.1
2	A	144	SER	2.1
2	D	226	LYS	2.0
1	C	518	LEU	2.0
3	F	-8	VAL	2.0
3	B	153	ALA	2.0
3	F	128	GLY	2.0
4	H	2	VAL	2.0

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

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

6.3 Carbohydrates (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	MAN	K	4	11/12	0.66	0.40	148,162,180,181	0
6	BMA	J	3	11/12	0.69	0.41	164,177,181,181	0
6	MAN	J	4	11/12	0.74	0.36	137,159,176,183	0
6	MAN	K	5	11/12	0.74	0.26	158,168,175,177	0
6	MAN	J	5	11/12	0.75	0.22	181,185,190,192	0
6	BMA	K	3	11/12	0.85	0.33	154,158,166,169	0
6	NAG	K	2	14/15	0.90	0.26	101,128,142,147	0
6	NAG	J	2	14/15	0.91	0.23	113,126,142,164	0
6	NAG	K	1	14/15	0.94	0.16	78,89,108,110	0

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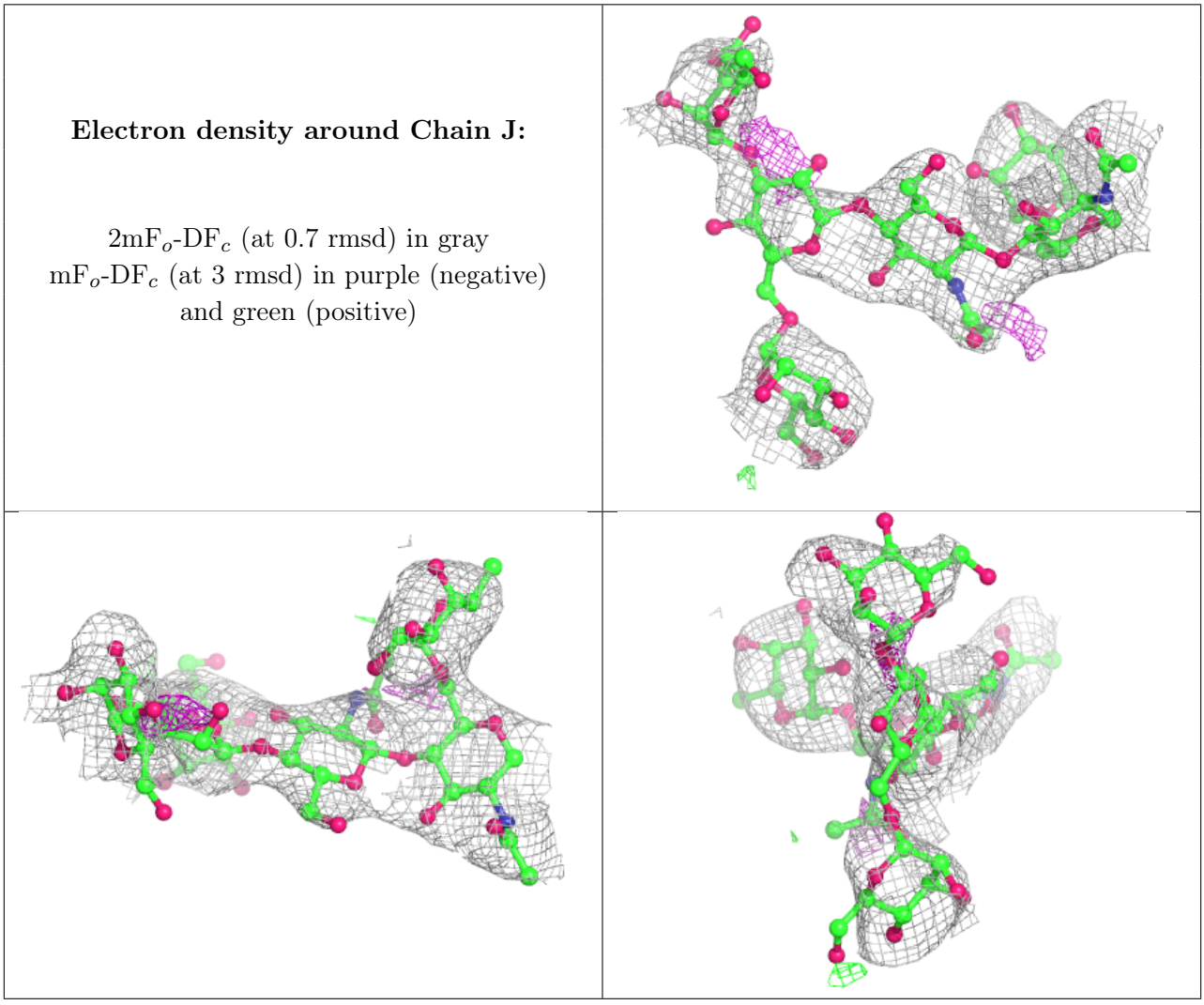
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	NAG	J	1	14/15	0.95	0.16	82,98,117,119	0
6	FUC	K	6	10/11	0.96	0.22	90,97,99,104	0
6	FUC	J	6	10/11	0.97	0.23	94,106,115,118	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

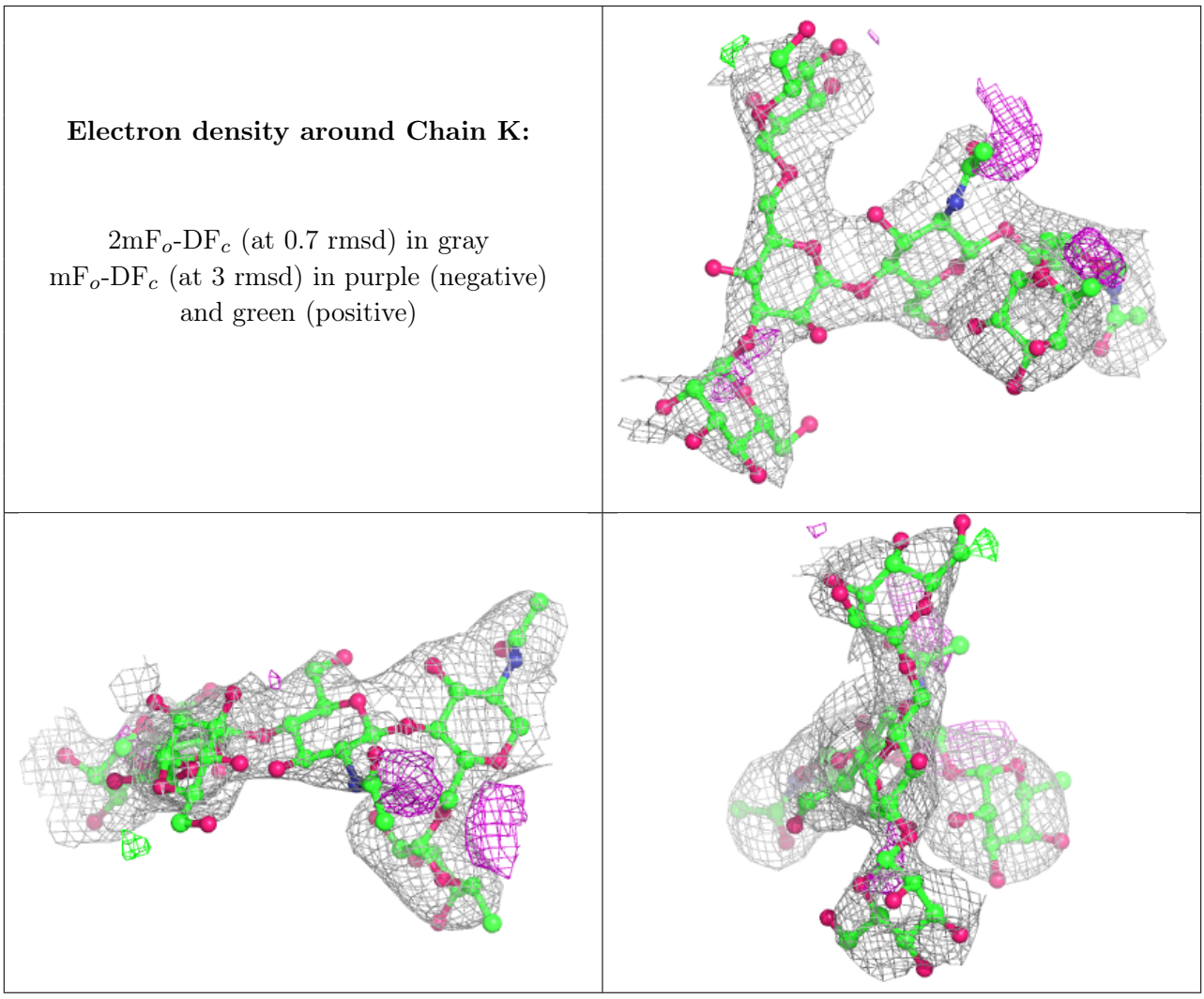
Electron density around Chain J:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around Chain K:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



6.4 Ligands

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
10	GLY	G	303	5/5	0.56	0.34	110,119,122,126	0
10	GLY	H	703	5/5	0.65	0.46	85,109,130,132	0
14	PEG	D	303	7/7	0.71	0.28	102,108,118,120	0
12	GOL	F	302	6/6	0.74	0.25	90,98,121,123	0
8	CL	I	302	1/1	0.76	0.22	97,97,97,97	0
8	CL	C	702	1/1	0.77	0.11	120,120,120,120	0
10	GLY	G	305	5/5	0.77	0.37	105,115,118,125	0
9	GLU	A	303	10/10	0.78	0.38	117,117,124,126	0
13	PG4	L	301	13/13	0.79	0.20	78,98,119,127	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
11	PGE	B	301	10/10	0.80	0.26	88,106,117,119	0
8	CL	H	705	1/1	0.80	0.13	109,109,109,109	0
8	CL	B	303	1/1	0.81	0.09	116,116,116,116	0
9	GLU	D	304	10/10	0.83	0.42	130,130,131,142	0
7	IMD	H	702	5/5	0.83	0.37	104,107,114,123	0
8	CL	D	302	1/1	0.84	0.11	84,84,84,84	0
12	GOL	G	302	6/6	0.86	0.34	88,95,101,103	0
10	GLY	A	304	5/5	0.86	0.18	120,126,135,135	0
10	GLY	F	303	5/5	0.86	0.23	86,114,127,129	0
7	IMD	E	801	5/5	0.88	0.23	103,106,109,112	0
12	GOL	H	701	6/6	0.88	0.15	94,103,105,106	0
7	IMD	H	704	5/5	0.89	0.46	133,134,139,143	0
7	IMD	C	701	5/5	0.90	0.28	105,109,115,116	0
13	PG4	I	301	13/13	0.90	0.16	78,96,111,112	0
7	IMD	G	304	5/5	0.90	0.24	127,128,133,136	0
8	CL	A	301	1/1	0.91	0.10	86,86,86,86	0
12	GOL	G	301	6/6	0.91	0.17	97,98,101,103	0
8	CL	A	302	1/1	0.92	0.12	92,92,92,92	0
8	CL	D	301	1/1	0.93	0.07	83,83,83,83	0
10	GLY	L	302	5/5	0.96	0.26	90,92,96,99	0
8	CL	F	301	1/1	0.97	0.07	77,77,77,77	0
8	CL	B	302	1/1	0.98	0.10	77,77,77,77	0

6.5 Other polymers (i)

There are no such residues in this entry.