Full wwPDB X-ray Structure Validation Report (i)

Sep 17, 2024 – 10:15 am BST

PDB ID	:	8R38
Title	:	BIIG2 anti-integrin Fab
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Deposited on	:	2023-11-08
Resolution	:	1.38 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 (1)) were used in the production of this report:

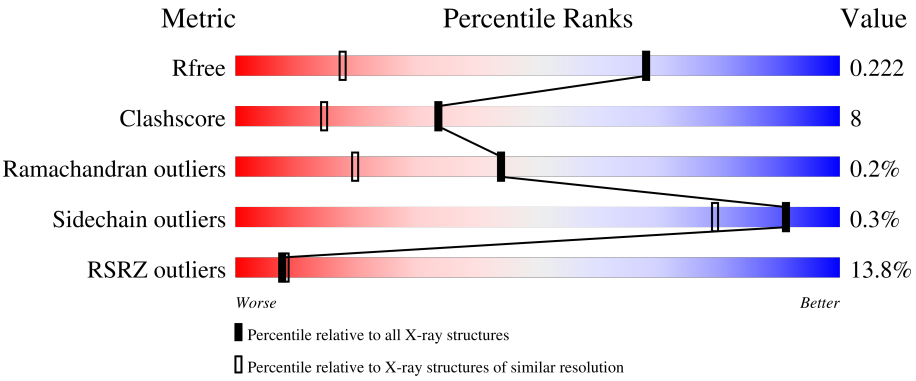
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.002 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.2

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 1.38 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}	164625	3869 (1.40-1.36)
Clashscore	180529	4183 (1.40-1.36)
Ramachandran outliers	177936	4116 (1.40-1.36)
Sidechain outliers	177891	4115 (1.40-1.36)
RSRZ outliers	164620	3867 (1.40-1.36)

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	H	220	17% 85% 13%
2	L	214	10% 88% 11%
3	S	4	25% 75%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 4185 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 BIIG2 Fab, heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	H	217	1974	1222	332	405	15	0	46	0

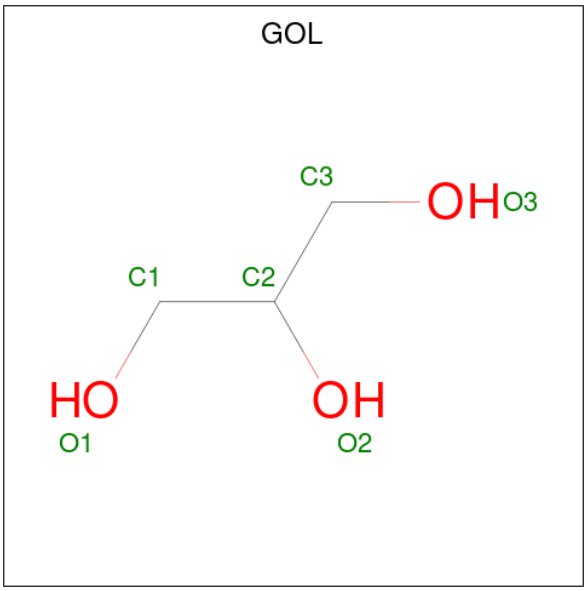
- Molecule 2 is a protein called BIIG2 Fab, light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	L	214	1906	1179	331	383	13	0	32	0

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	S	4	50	28	2	20	0	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	H	1	Total C O 6 3 3	0	0
4	L	1	Total C O 6 3 3	0	0
4	L	1	Total C O 6 3 3	0	0
4	L	1	Total C O 6 3 3	0	0
4	L	1	Total C O 6 3 3	0	0

- Molecule 5 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	L	1	Total Cl 1 1	0	0

- Molecule 6 is water.

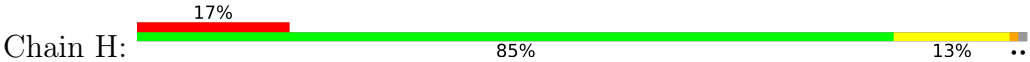
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	H	116	Total O 116 116	0	0
6	L	108	Total O 108 108	0	0

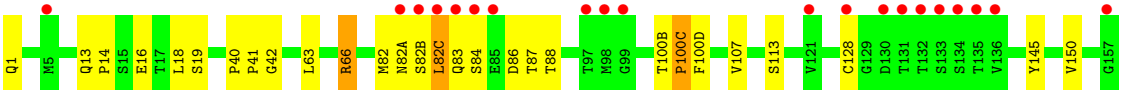
3 Residue-property plots (i)

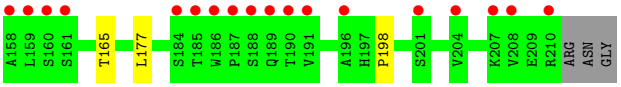
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: BIIG2 Fab, heavy chain

Chain H:

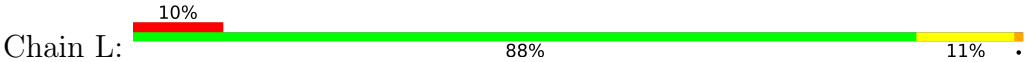


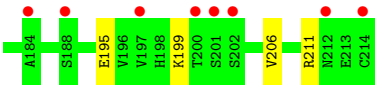




• Molecule 2: BIIG2 Fab, light chain

Chain L:





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

Chain S:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	62.93Å 80.88Å 87.47Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	59.38 – 1.38 59.38 – 1.38	Depositor EDS
% Data completeness (in resolution range)	99.3 (59.38-1.38) 99.3 (59.38-1.38)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.00 (at 1.38Å)	Xtriage
Refinement program	REFMAC 5.8.0415	Depositor
R, R_{free}	0.195 , 0.217 0.200 , 0.222	Depositor DCC
R_{free} test set	4740 reflections (5.14%)	wwPDB-VP
Wilson B-factor (Å^2)	20.9	Xtriage
Anisotropy	0.013	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 35.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	4185	wwPDB-VP
Average B, all atoms (Å^2)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.35% 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: GOL, CL, MAN, MLZ, BMA, PCA, NAG, XRE

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	H	0.51	0/2000	0.92	2/2726 (0.1%)
2	L	0.55	0/1930	0.88	1/2601 (0.0%)
All	All	0.53	0/3930	0.90	3/5327 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	H	0	2
2	L	0	3
All	All	0	5

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	L	61	ARG	NE-CZ-NH2	-5.93	117.33	120.30
1	H	1	PCA	O-C-N	5.82	132.01	122.70
1	H	100(D)	PHE	CB-CG-CD2	-5.47	116.97	120.80

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	H	42[A]	GLY	Peptide
1	H	66[A]	ARG	Sidechain
2	L	142[A]	ARG	Sidechain

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Mol	Chain	Res	Type	Group
2	L	211	ARG	Sidechain
2	L	28[A]	ARG	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	H	1974	0	1888	32	0
2	L	1906	0	1858	28	0
3	S	50	0	43	0	0
4	H	6	0	8	1	0
4	L	24	0	32	1	0
5	L	1	0	0	0	0
6	H	116	0	0	2	0
6	L	108	0	0	0	0
All	All	4185	0	3829	59	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 8.

All (59) 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)
2:L:142[B]:ARG:O	2:L:142[B]:ARG:HD2	1.48	1.13
1:H:41[B]:PRO:HG3	1:H:87[B]:THR:OG1	1.60	1.02
1:H:40:PRO:HA	1:H:88[B]:THR:HG22	1.47	0.95
2:L:136[B]:MET:SD	2:L:146:VAL:HG21	2.10	0.91
2:L:142[B]:ARG:HH11	2:L:142[B]:ARG:HG2	1.35	0.91
1:H:41[B]:PRO:HG3	1:H:87[B]:THR:HG1	1.40	0.86
1:H:88[B]:THR:HG21	6:H:467:HOH:O	1.76	0.84
2:L:136[B]:MET:SD	2:L:146:VAL:CG2	2.68	0.81
2:L:142[B]:ARG:HG2	2:L:142[B]:ARG:NH1	1.93	0.79
1:H:107[B]:VAL:HG22	6:H:419:HOH:O	1.82	0.78
2:L:142[B]:ARG:HB2	2:L:173:TYR:CE2	2.21	0.75
2:L:142[B]:ARG:NH1	2:L:142[B]:ARG:CG	2.49	0.75
1:H:16[B]:GLU:O	1:H:82(C)[B]:LEU:HD13	1.88	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:4:MET:CE	2:L:23[B]:CYS:SG	2.77	0.72
2:L:195[A]:GLU:HG2	2:L:206:VAL:HG22	1.75	0.69
1:H:14[B]:PRO:HB3	1:H:83[B]:GLN:OE1	1.93	0.69
1:H:13[A]:GLN:HG2	1:H:14[A]:PRO:HD2	1.74	0.68
2:L:4:MET:HE2	2:L:23[B]:CYS:SG	2.34	0.67
2:L:142[B]:ARG:HD2	2:L:142[B]:ARG:C	2.16	0.66
1:H:83[B]:GLN:O	1:H:84[B]:SER:OG	2.15	0.65
2:L:150:ILE:HD12	2:L:155[B]:ARG:HG3	1.82	0.62
2:L:61:ARG:HB2	2:L:76[B]:ARG:O	2.02	0.60
1:H:16[B]:GLU:O	1:H:82(C)[B]:LEU:CD1	2.51	0.58
1:H:83[B]:GLN:O	1:H:84[B]:SER:CB	2.50	0.57
2:L:4:MET:HE3	2:L:23[B]:CYS:SG	2.46	0.55
1:H:41[B]:PRO:HG3	1:H:87[B]:THR:O	2.08	0.54
1:H:177[B]:LEU:HD12	1:H:177[B]:LEU:C	2.29	0.54
2:L:142[B]:ARG:O	2:L:142[B]:ARG:CD	2.40	0.53
1:H:13[A]:GLN:HG3	1:H:113[A]:SER:HA	1.89	0.53
2:L:110:ASP:OD2	2:L:199:MLZ:HCM3	2.08	0.53
2:L:136[B]:MET:CE	2:L:146:VAL:HG21	2.38	0.53
1:H:83[B]:GLN:C	1:H:84[B]:SER:OG	2.46	0.52
1:H:86[B]:ASP:C	1:H:87[B]:THR:HG23	2.31	0.51
2:L:47[B]:LEU:O	2:L:48[B]:ILE:HG13	2.11	0.51
1:H:107[B]:VAL:O	1:H:107[B]:VAL:HG13	2.11	0.51
1:H:165:THR:HG23	1:H:177[A]:LEU:HD21	1.94	0.49
2:L:8:PRO:HG2	2:L:11[B]:LEU:HG	1.94	0.49
1:H:18[B]:LEU:HD12	1:H:19[B]:SER:H	1.79	0.48
2:L:136[B]:MET:SD	2:L:146:VAL:HG22	2.51	0.48
1:H:145:TYR:CE2	1:H:150[B]:VAL:HG23	2.49	0.48
2:L:47[B]:LEU:C	2:L:48[B]:ILE:HG13	2.34	0.48
2:L:150:ILE:HD11	2:L:179:LEU:HD21	1.96	0.48
1:H:177[B]:LEU:HD12	1:H:177[B]:LEU:O	2.14	0.47
2:L:181:LEU:HD23	2:L:181:LEU:N	2.30	0.46
2:L:142[B]:ARG:HB2	2:L:173:TYR:CD2	2.51	0.46
1:H:41[B]:PRO:CG	1:H:87[B]:THR:OG1	2.49	0.46
1:H:128[A]:CYS:SG	2:L:119:PRO:HG2	2.55	0.46
1:H:41[B]:PRO:HD3	1:H:88[B]:THR:HG22	1.99	0.45
1:H:82(A)[A]:ASN:O	1:H:82(B)[A]:SER:HB2	2.16	0.45
2:L:69:THR:OG1	4:L:303:GOL:H12	2.17	0.45
1:H:177[B]:LEU:HA	4:H:301:GOL:O3	2.17	0.44
1:H:63:LEU:HD23	1:H:66[B]:ARG:NH1	2.33	0.44
2:L:8:PRO:HG3	2:L:11[B]:LEU:HD21	2.00	0.44
2:L:11[A]:LEU:HD13	2:L:19:VAL:HB	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:82(A)[B]:ASN:HA	1:H:82(C)[B]:LEU:CD1	2.49	0.42
1:H:18[A]:LEU:HD23	1:H:82[A]:MET:SD	2.60	0.42
1:H:82(A)[B]:ASN:HA	1:H:82(C)[B]:LEU:HD12	2.01	0.41
1:H:100(B):THR:HB	1:H:100(C):XRE:OD	2.21	0.41
1:H:14[B]:PRO:O	1:H:82(C)[B]:LEU:HB2	2.21	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 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	H	260/220 (118%)	250 (96%)	8 (3%)	2 (1%)	16 3
2	L	242/214 (113%)	238 (98%)	4 (2%)	0	100 100
All	All	502/434 (116%)	488 (97%)	12 (2%)	2 (0%)	44 11

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	82(C)[A]	LEU
1	H	82(C)[B]	LEU

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	H	230/192 (120%)	229 (100%)	1 (0%)	89 77
2	L	219/187 (117%)	219 (100%)	0	100 100
All	All	449/379 (118%)	448 (100%)	1 (0%)	91 80

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	198	PRO

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

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

3 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
1	PCA	H	1	1	7,8,9	0.83	0	9,10,12	1.02	1 (11%)
1	XRE	H	100(C)	1	6,8,9	1.08	0	7,10,12	1.86	2 (28%)
2	MLZ	L	199	2	8,9,10	0.42	0	4,9,11	0.70	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
1	PCA	H	1	1	-	0/0/11/13	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	XRE	H	100(C)	1	-	0/0/11/13	0/1/1/1
2	MLZ	L	199	2	-	4/7/8/10	-

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	H	100(C)	XRE	CB-CA-C	2.98	116.80	112.70
1	H	100(C)	XRE	CG-CB-CA	-2.90	100.09	103.83
1	H	1	PCA	O-C-CA	-2.22	118.95	124.78

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	L	199	MLZ	CD-CE-NZ-CM
2	L	199	MLZ	CA-CB-CG-CD
2	L	199	MLZ	CE-CD-CG-CB
2	L	199	MLZ	CG-CD-CE-NZ

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	H	100(C)	XRE	1	0
2	L	199	MLZ	1	0

5.5 Carbohydrates (i)

4 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	$\#\|Z\|>2$
3	NAG	S	1	1,3	14,14,15	0.64	0	17,19,21	0.92	2 (11%)
3	NAG	S	2	3	14,14,15	0.52	0	17,19,21	0.51	0
3	BMA	S	3	3	11,11,12	0.55	0	15,15,17	1.06	1 (6%)
3	MAN	S	4	3	11,11,12	0.80	0	15,15,17	1.12	2 (13%)

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

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

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	S	3	BMA	O2-C2-C3	3.07	116.28	110.14
3	S	4	MAN	O2-C2-C3	2.43	115.01	110.14
3	S	4	MAN	C1-O5-C5	2.25	115.23	112.19
3	S	1	NAG	C1-C2-N2	-2.11	106.89	110.49
3	S	1	NAG	O5-C1-C2	-2.00	108.13	111.29

There are no chirality outliers.

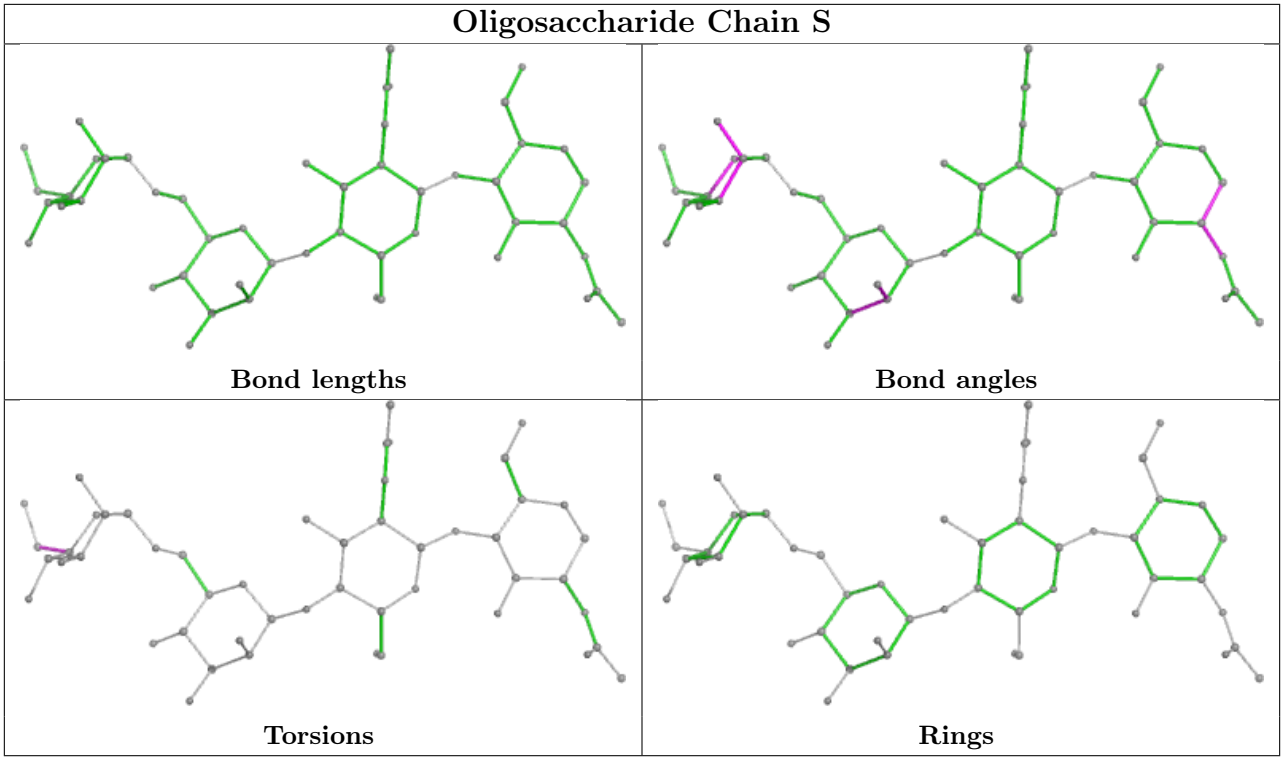
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	S	4	MAN	C4-C5-C6-O6
3	S	4	MAN	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.



5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 1 is monoatomic - leaving 5 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	$\#\|Z\| > 2$
4	GOL	L	301	-	5,5,5	0.11	0	5,5,5	0.46	0
4	GOL	L	302	-	5,5,5	0.40	0	5,5,5	0.66	0
4	GOL	L	303	-	5,5,5	0.14	0	5,5,5	0.56	0
4	GOL	H	301	-	5,5,5	0.26	0	5,5,5	0.48	0
4	GOL	L	304	-	5,5,5	0.12	0	5,5,5	0.25	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	GOL	L	301	-	-	1/4/4/4	-
4	GOL	L	302	-	-	2/4/4/4	-
4	GOL	L	303	-	-	0/4/4/4	-
4	GOL	H	301	-	-	0/4/4/4	-
4	GOL	L	304	-	-	4/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	L	302	GOL	O1-C1-C2-C3
4	L	304	GOL	O1-C1-C2-C3
4	L	304	GOL	O1-C1-C2-O2
4	L	301	GOL	C1-C2-C3-O3
4	L	304	GOL	C1-C2-C3-O3
4	L	304	GOL	O2-C2-C3-O3
4	L	302	GOL	O1-C1-C2-O2

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	L	303	GOL	1	0
4	H	301	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	H	215/220 (97%)	0.96	38 (17%) 4 4	8, 21, 49, 94	46 (21%)
2	L	213/214 (99%)	0.61	21 (9%) 14 15	7, 21, 37, 65	32 (15%)
All	All	428/434 (98%)	0.79	59 (13%) 8 8	7, 21, 43, 94	78 (18%)

All (59) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	84[A]	SER	5.8
1	H	99	GLY	5.1
1	H	132	THR	4.9
1	H	82(C)[A]	LEU	4.9
1	H	204	VAL	4.5
1	H	131	THR	3.7
1	H	82(B)[A]	SER	3.7
1	H	159	LEU	3.4
1	H	128[A]	CYS	3.4
2	L	212	ASN	3.3
1	H	186	TRP	3.3
2	L	201	SER	3.3
1	H	210	ARG	3.3
1	H	187	PRO	3.3
2	L	156	ARG	3.2
1	H	158	ALA	3.2
1	H	98	MET	3.1
1	H	190	THR	3.0
2	L	122[A]	THR	3.0
1	H	133	SER	3.0
1	H	130[A]	ASP	2.9
1	H	136	VAL	2.9
2	L	127	THR	2.9
1	H	82(A)[A]	ASN	2.9

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Mol	Chain	Res	Type	RSRZ
1	H	185	THR	2.8
2	L	214[A]	CYS	2.8
2	L	152	GLY	2.7
2	L	129	GLY	2.6
2	L	197	VAL	2.6
1	H	196	ALA	2.6
1	H	83[A]	GLN	2.5
1	H	188	SER	2.5
1	H	208	VAL	2.5
2	L	147[A]	LYS	2.5
1	H	135	THR	2.4
1	H	97	THR	2.4
1	H	160	SER	2.3
1	H	161	SER	2.3
2	L	150	ILE	2.3
1	H	189[A]	GLN	2.3
1	H	134	SER	2.2
2	L	130	ALA	2.2
1	H	191	VAL	2.2
1	H	157	GLY	2.2
2	L	158	GLY	2.2
2	L	188	SER	2.2
2	L	184	ALA	2.2
1	H	184	SER	2.2
2	L	157[A]	ASP	2.1
2	L	202[A]	SER	2.1
2	L	200	THR	2.1
2	L	40	PRO	2.1
1	H	207	LYS	2.1
1	H	201	SER	2.1
1	H	85[A]	GLU	2.1
2	L	3	GLN	2.0
2	L	160	LEU	2.0
1	H	5[A]	MET	2.0
1	H	121	VAL	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (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
2	MLZ	L	199	10/11	0.84	0.18	28,37,53,54	0
1	XRE	H	100(C)	8/9	0.95	0.08	18,20,23,31	1
1	PCA	H	1	8/9	0.97	0.06	20,21,23,25	0

6.3 Carbohydrates (i)

SUGAR-RSR INFOmissingINFO

6.4 Ligands (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
4	GOL	L	304	6/6	0.85	0.13	38,41,48,49	0
4	GOL	L	303	6/6	0.88	0.13	23,39,41,47	0
4	GOL	L	301	6/6	0.90	0.12	22,34,35,38	0
4	GOL	L	302	6/6	0.91	0.12	22,30,36,39	0
4	GOL	H	301	6/6	0.94	0.09	22,25,29,30	0
5	CL	L	305	1/1	0.98	0.06	28,28,28,28	0

6.5 Other polymers (i)

There are no such residues in this entry.