



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 21, 2020 – 02:04 PM EDT

PDB ID : 6P8I
Title : N-terminal 5 domains of IGFIIR
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Deposited on : 2019-06-07
Resolution : 2.54 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 ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.14.6
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) : 2.14.6

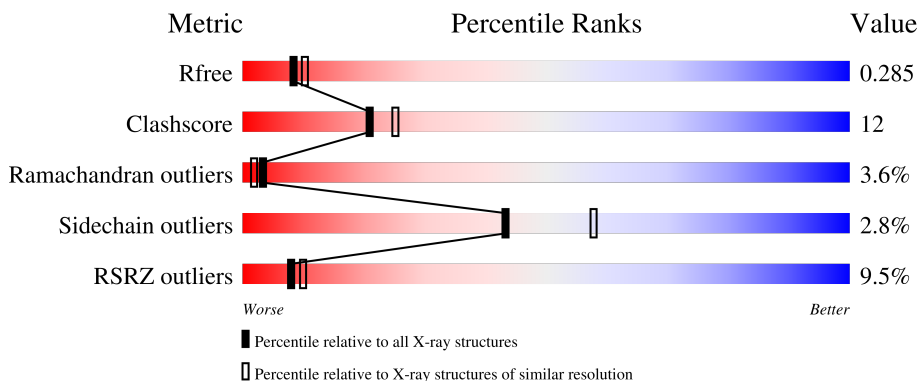
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.54 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	1284 (2.56-2.52)
Clashscore	141614	1332 (2.56-2.52)
Ramachandran outliers	138981	1315 (2.56-2.52)
Sidechain outliers	138945	1315 (2.56-2.52)
RSRZ outliers	127900	1272 (2.56-2.52)

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 on 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 $\leq 5\%$. 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	A	735	
2	B	4	

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
2	NAG	B	2	-	-	-	X
2	BMA	B	3	-	-	-	X
2	MAN	B	4	-	-	-	X

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 5293 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 Cation-independent mannose-6-phosphate receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	666	5215	3275	886	1015	39	0	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	ALA	-	expression tag	UNP P11717
A	0	ALA	-	expression tag	UNP P11717
A	729	ALA	-	expression tag	UNP P11717
A	730	LEU	-	expression tag	UNP P11717
A	731	VAL	-	expression tag	UNP P11717
A	732	PRO	-	expression tag	UNP P11717
A	733	LEU	-	expression tag	UNP P11717

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



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

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	28	Total	O	0	0
			28	28		

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	50.79Å 66.23Å 123.07Å 90.00° 99.18° 90.00°	Depositor
Resolution (Å)	39.97 – 2.54 36.61 – 2.54	Depositor EDS
% Data completeness (in resolution range)	94.2 (39.97-2.54) 86.2 (36.61-2.54)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.29 (at 2.54Å)	Xtrriage
Refinement program	REFMAC 1.17.1_3660, PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.224 , 0.282 0.231 , 0.285	Depositor DCC
R_{free} test set	1895 reflections (7.48%)	wwPDB-VP
Wilson B-factor (Å ²)	49.7	Xtrriage
Anisotropy	0.133	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 52.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.029 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	5293	wwPDB-VP
Average B, all atoms (Å ²)	65.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.93% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.42	0/5325	0.64	5/7206 (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	A	0	3

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	236	LYS	CD-CE-NZ	-9.33	90.24	111.70
1	A	728	GLU	OE1-CD-OE2	6.80	131.46	123.30
1	A	28	LEU	CA-CB-CG	6.71	130.75	115.30
1	A	318	ILE	CA-CB-CG1	-5.48	100.58	111.00
1	A	90	ARG	NE-CZ-NH1	5.10	122.85	120.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	40	VAL	Peptide
1	A	435	LYS	Peptide
1	A	459	GLU	Peptide

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5215	0	4976	125	2
2	B	50	0	43	0	0
3	A	28	0	0	2	0
All	All	5293	0	5019	125	2

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 12.

All (125) 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:A:435:LYS:HE2	1:A:437:ASP:CB	1.59	1.32
1:A:435:LYS:CE	1:A:437:ASP:HB3	1.69	1.21
1:A:435:LYS:CE	1:A:437:ASP:CB	2.30	1.06
1:A:435:LYS:HE2	1:A:437:ASP:H	1.26	1.00
1:A:435:LYS:HE2	1:A:437:ASP:N	1.78	0.99
1:A:435:LYS:HE2	1:A:437:ASP:CA	1.96	0.94
1:A:302:VAL:HG21	1:A:434:GLU:OE2	1.66	0.94
1:A:435:LYS:CE	1:A:437:ASP:H	1.82	0.91
1:A:36:SER:HB2	1:A:45:SER:HA	1.59	0.85
1:A:435:LYS:HE2	1:A:437:ASP:HB2	1.55	0.85
1:A:435:LYS:HE3	1:A:437:ASP:HB3	1.61	0.83
1:A:170:THR:HG22	1:A:203:ARG:HG3	1.61	0.82
1:A:454:LEU:HD21	1:A:578:THR:HG21	1.62	0.80
1:A:28:LEU:HB3	1:A:51:HIS:NE2	1.96	0.79
1:A:14:CYS:SG	1:A:34:CYS:HB2	2.22	0.78
1:A:39:ILE:HG22	1:A:41:GLN:H	1.49	0.77
1:A:707:TYR:HE2	1:A:709:GLU:OE1	1.69	0.76
1:A:255:SER:OG	1:A:258:ARG:N	2.19	0.74
1:A:23:THR:HG23	1:A:24:LYS:HD2	1.69	0.72
1:A:71:ARG:HD2	1:A:415:GLY:HA2	1.71	0.71
1:A:302:VAL:CG2	1:A:434:GLU:OE2	2.38	0.71
1:A:28:LEU:HB3	1:A:51:HIS:CD2	2.30	0.66
1:A:362:ARG:HG2	1:A:381:GLY:HA3	1.77	0.66
1:A:51:HIS:HB2	1:A:58:TYR:CD1	2.30	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:723:TYR:HD1	1:A:728:GLU:OE1	1.77	0.66
1:A:435:LYS:O	1:A:436:GLU:CD	2.34	0.65
1:A:109:VAL:O	1:A:369:ARG:NH1	2.30	0.65
1:A:151:LEU:HD22	1:A:154:LEU:HD12	1.78	0.65
1:A:515:LYS:HB2	1:A:531:TYR:HB3	1.78	0.64
1:A:25:ASN:O	1:A:54:LYS:NZ	2.30	0.64
1:A:303:SER:O	1:A:432:VAL:HG11	2.01	0.60
1:A:435:LYS:NZ	1:A:437:ASP:HB3	2.16	0.60
1:A:256:GLU:O	1:A:698:ARG:NH1	2.36	0.58
1:A:302:VAL:O	3:A:901:HOH:O	2.17	0.58
1:A:435:LYS:CE	1:A:437:ASP:N	2.52	0.57
1:A:517:ILE:HD12	1:A:518:SER:HB2	1.86	0.57
1:A:28:LEU:O	1:A:51:HIS:HD2	1.87	0.57
1:A:304:ILE:HD12	1:A:305:ASP:H	1.70	0.57
1:A:435:LYS:NZ	1:A:437:ASP:O	2.38	0.56
1:A:304:ILE:HD11	1:A:429:TYR:O	2.07	0.55
1:A:533:ASP:HB2	1:A:544:LYS:HZ2	1.71	0.55
1:A:435:LYS:CD	1:A:437:ASP:H	2.19	0.55
1:A:28:LEU:HD12	1:A:51:HIS:NE2	2.22	0.55
1:A:302:VAL:HG11	1:A:434:GLU:HB2	1.89	0.54
1:A:281:TYR:OH	1:A:435:LYS:HD3	2.08	0.54
1:A:24:LYS:HE3	1:A:24:LYS:HA	1.89	0.54
1:A:292:THR:OG1	1:A:294:SER:O	2.23	0.53
1:A:725:CYS:O	1:A:727:GLU:N	2.41	0.53
1:A:13:LEU:HD22	1:A:120:TRP:CZ2	2.44	0.53
1:A:40:VAL:HG13	1:A:41:GLN:N	2.24	0.53
1:A:55:THR:O	1:A:55:THR:OG1	2.27	0.52
1:A:257:ARG:HG3	1:A:699:ASP:HB2	1.90	0.52
1:A:640:ASP:OD1	1:A:640:ASP:N	2.35	0.52
1:A:243:HIS:CG	1:A:270:ASN:HB3	2.46	0.50
1:A:494:ARG:NH1	1:A:496:CYS:HB3	2.26	0.50
1:A:39:ILE:HG22	1:A:41:GLN:N	2.22	0.50
1:A:610:LYS:HB3	1:A:613:GLY:HA2	1.93	0.50
1:A:327:TYR:O	1:A:346:VAL:HA	2.11	0.50
1:A:55:THR:O	1:A:57:THR:N	2.45	0.50
1:A:135:LYS:HG3	1:A:213:PRO:HB2	1.93	0.50
1:A:435:LYS:O	1:A:436:GLU:CG	2.60	0.50
1:A:578:THR:HG22	1:A:580:ALA:H	1.77	0.50
1:A:349:VAL:HG22	1:A:357:VAL:HG12	1.93	0.49
1:A:257:ARG:CG	1:A:699:ASP:HB2	2.41	0.49
1:A:489:GLN:HG3	1:A:492:LYS:HG2	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:433:LYS:N	1:A:434:GLU:OE1	2.45	0.48
1:A:318:ILE:HA	1:A:326:PHE:O	2.13	0.48
1:A:363:TYR:O	1:A:365:ASN:N	2.47	0.48
1:A:645:GLN:HB2	1:A:656:LEU:HD11	1.95	0.48
1:A:459:GLU:CB	1:A:461:GLU:HB3	2.43	0.48
1:A:56:ARG:HG2	1:A:58:TYR:CE1	2.49	0.47
1:A:658:LEU:HG	1:A:676:GLY:HA3	1.97	0.47
1:A:432:VAL:CG1	1:A:434:GLU:OE2	2.61	0.47
1:A:515:LYS:HB3	1:A:532:SER:N	2.29	0.47
1:A:555:ASP:OD2	1:A:557:GLU:HG3	2.15	0.47
1:A:54:LYS:O	1:A:55:THR:OG1	2.33	0.47
1:A:457:HIS:O	1:A:457:HIS:ND1	2.45	0.47
1:A:627:ASN:HB3	1:A:630:GLY:O	2.15	0.47
1:A:320:ASP:OD2	1:A:351:LYS:NZ	2.43	0.47
1:A:432:VAL:HG12	1:A:434:GLU:OE2	2.15	0.47
1:A:196:GLY:O	1:A:212:GLN:HG2	2.15	0.46
1:A:88:ASN:HA	1:A:389:PHE:CZ	2.51	0.46
1:A:101:LYS:HB3	1:A:157:LEU:HD11	1.98	0.46
1:A:147:ARG:N	3:A:902:HOH:O	2.41	0.45
1:A:73:LEU:HD23	1:A:96:ALA:HA	1.97	0.45
1:A:197:THR:HG22	1:A:199:ALA:H	1.81	0.45
1:A:343:GLN:O	1:A:362:ARG:HB3	2.17	0.45
1:A:302:VAL:HG11	1:A:434:GLU:CB	2.47	0.45
1:A:457:HIS:CE1	1:A:727:GLU:OE1	2.71	0.44
1:A:28:LEU:O	1:A:51:HIS:CD2	2.69	0.44
1:A:638:GLN:HA	1:A:639:PRO:HD3	1.87	0.44
1:A:392:MET:HB3	1:A:420:THR:HG23	1.99	0.44
1:A:590:GLU:O	1:A:593:THR:HG22	2.18	0.43
1:A:304:ILE:HD12	1:A:305:ASP:N	2.32	0.43
1:A:351:LYS:C	1:A:354:THR:HG21	2.38	0.43
1:A:387:SER:OG	1:A:388:GLY:N	2.51	0.43
1:A:434:GLU:N	1:A:434:GLU:OE1	2.52	0.43
1:A:533:ASP:H	1:A:544:LYS:HZ2	1.66	0.43
1:A:309:LEU:O	1:A:311:GLN:N	2.52	0.43
1:A:147:ARG:HB3	1:A:284:HIS:HB2	2.01	0.43
1:A:702:VAL:HG12	1:A:723:TYR:HE2	1.83	0.43
1:A:456:ARG:HD3	1:A:462:GLN:O	2.19	0.42
1:A:459:GLU:HB2	1:A:461:GLU:HB3	2.01	0.42
1:A:494:ARG:CZ	1:A:496:CYS:HA	2.49	0.42
1:A:257:ARG:NH2	1:A:697:ASP:OD2	2.48	0.42
1:A:290:SER:C	1:A:291:LYS:HD3	2.40	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:658:LEU:H	1:A:676:GLY:H	1.67	0.42
1:A:245:PRO:HA	1:A:271:CYS:O	2.18	0.42
1:A:324:TYR:O	1:A:325:LEU:HD23	2.18	0.42
1:A:606:SER:N	1:A:607:PRO:HD2	2.33	0.42
1:A:514:GLY:C	1:A:515:LYS:HD2	2.40	0.42
1:A:610:LYS:CB	1:A:613:GLY:HA2	2.50	0.42
1:A:546:ASN:O	1:A:573:GLU:HA	2.19	0.42
1:A:191:ARG:HG3	1:A:191:ARG:HH11	1.84	0.42
1:A:448:ARG:HD3	1:A:584:LEU:HD12	2.02	0.42
1:A:529:LEU:HD21	1:A:531:TYR:CE1	2.55	0.41
1:A:707:TYR:CE2	1:A:709:GLU:OE1	2.60	0.41
1:A:27:VAL:HG13	1:A:51:HIS:O	2.20	0.41
1:A:304:ILE:HD13	1:A:432:VAL:CG2	2.51	0.41
1:A:156:LYS:HE2	1:A:160:ALA:O	2.21	0.41
1:A:435:LYS:HZ1	1:A:437:ASP:HB3	1.86	0.41
1:A:237:LEU:HD22	1:A:243:HIS:O	2.21	0.40
1:A:94:SER:HB2	1:A:117:TYR:HD1	1.86	0.40
1:A:127:LYS:HD2	1:A:127:LYS:N	2.36	0.40
1:A:243:HIS:HD2	1:A:711:ASP:OD2	2.05	0.40

All (2) 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:A:90:ARG:NH2	1:A:318:ILE:CD1[2_655]	1.70	0.50
1:A:597:SER:OG	1:A:640:ASP:OD2[2_444]	2.01	0.19

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	A	646/735 (88%)	568 (88%)	55 (8%)	23 (4%)	3 2

All (23) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	477	LYS
1	A	516	PHE
1	A	562	LEU
1	A	614	ALA
1	A	310	ALA
1	A	406	ASP
1	A	524	LYS
1	A	676	GLY
1	A	232	GLU
1	A	342	LYS
1	A	364	HIS
1	A	365	ASN
1	A	436	GLU
1	A	495	GLY
1	A	518	SER
1	A	207	ALA
1	A	381	GLY
1	A	492	LYS
1	A	204	GLY
1	A	238	ASP
1	A	635	SER
1	A	726	PRO
1	A	677	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	A	575/629 (91%)	559 (97%)	16 (3%)	43 58

All (16) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	51	HIS
1	A	92	GLN

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Mol	Chain	Res	Type
1	A	139	CYS
1	A	188	SER
1	A	193	CYS
1	A	347	CYS
1	A	362	ARG
1	A	406	ASP
1	A	434	GLU
1	A	490	GLU
1	A	496	CYS
1	A	515	LYS
1	A	544	LYS
1	A	601	PHE
1	A	612	ASN
1	A	664	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	41	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](#)

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
2	NAG	B	1	1,2	14,14,15	0.74	1 (7%)	17,19,21	1.07	2 (11%)
2	NAG	B	2	2	14,14,15	0.49	0	17,19,21	0.92	0
2	BMA	B	3	2	11,11,12	2.43	6 (54%)	15,15,17	3.72	7 (46%)
2	MAN	B	4	2	11,11,12	0.83	0	15,15,17	1.69	1 (6%)

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
2	NAG	B	1	1,2	-	4/6/23/26	0/1/1/1
2	NAG	B	2	2	-	2/6/23/26	0/1/1/1
2	BMA	B	3	2	-	2/2/19/22	0/1/1/1
2	MAN	B	4	2	-	2/2/19/22	1/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	3	BMA	C4-C5	5.12	1.63	1.53
2	B	3	BMA	O5-C5	3.22	1.50	1.43
2	B	3	BMA	C1-C2	2.73	1.58	1.52
2	B	3	BMA	C4-C3	2.67	1.59	1.52
2	B	1	NAG	O5-C1	2.58	1.47	1.43
2	B	3	BMA	C2-C3	-2.56	1.48	1.52
2	B	3	BMA	O5-C1	2.19	1.47	1.43

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	3	BMA	C1-C2-C3	-10.27	97.05	109.67
2	B	3	BMA	C1-O5-C5	-6.08	103.95	112.19
2	B	4	MAN	C1-O5-C5	5.59	119.77	112.19
2	B	3	BMA	O5-C1-C2	-5.10	102.90	110.77
2	B	3	BMA	O3-C3-C4	3.53	118.52	110.35
2	B	3	BMA	O5-C5-C6	2.63	111.33	107.20
2	B	3	BMA	O3-C3-C2	2.53	114.84	109.99
2	B	3	BMA	O2-C2-C1	2.39	114.04	109.15
2	B	1	NAG	C4-C3-C2	-2.16	107.85	111.02
2	B	1	NAG	C1-O5-C5	2.07	115.00	112.19

There are no chirality outliers.

All (10) torsion outliers are listed below:

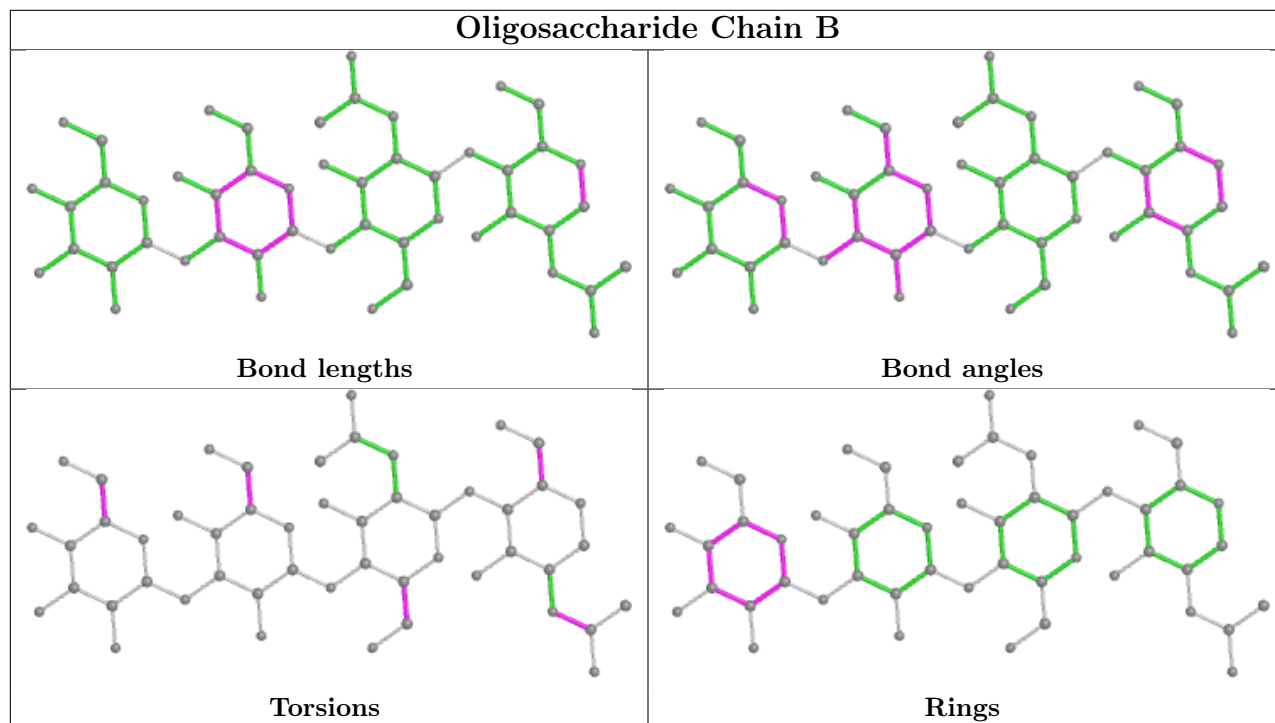
Mol	Chain	Res	Type	Atoms
2	B	4	MAN	O5-C5-C6-O6
2	B	3	BMA	O5-C5-C6-O6
2	B	2	NAG	O5-C5-C6-O6
2	B	4	MAN	C4-C5-C6-O6
2	B	2	NAG	C4-C5-C6-O6
2	B	1	NAG	C8-C7-N2-C2
2	B	1	NAG	O7-C7-N2-C2
2	B	3	BMA	C4-C5-C6-O6
2	B	1	NAG	C4-C5-C6-O6
2	B	1	NAG	O5-C5-C6-O6

All (1) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	4	MAN	C1-C2-C3-C4-C5-O5

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](#)

There are no ligands in this entry.

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, 95th 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	A	666/735 (90%)	0.64	63 (9%) 8 10	34, 61, 99, 115	0

All (63) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	458	ALA	11.0
1	A	514	GLY	8.1
1	A	332	GLY	5.7
1	A	53	LEU	5.3
1	A	570	CYS	5.3
1	A	479	PHE	4.7
1	A	477	LYS	4.6
1	A	311	GLN	4.3
1	A	334	THR	4.3
1	A	236	LYS	4.2
1	A	333	GLU	3.9
1	A	303	SER	3.9
1	A	436	GLU	3.9
1	A	565	SER	3.9
1	A	491	GLY	3.8
1	A	302	VAL	3.8
1	A	335	GLU	3.6
1	A	512	ASN	3.6
1	A	544	LYS	3.6
1	A	562	LEU	3.5
1	A	232	GLU	3.5
1	A	478	HIS	3.4
1	A	486	ARG	3.3
1	A	51	HIS	3.3
1	A	310	ALA	3.1
1	A	457	HIS	3.0
1	A	496	CYS	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	295	LEU	2.9
1	A	571	PHE	2.9
1	A	406	ASP	2.9
1	A	88	ASN	2.9
1	A	128	LYS	2.9
1	A	683	GLU	2.8
1	A	288	LEU	2.8
1	A	729	ALA	2.8
1	A	237	LEU	2.8
1	A	233	GLU	2.7
1	A	516	PHE	2.7
1	A	80	VAL	2.7
1	A	205	HIS	2.7
1	A	296	SER	2.6
1	A	131	PHE	2.6
1	A	572	TYR	2.6
1	A	419	CYS	2.5
1	A	354	THR	2.4
1	A	459	GLU	2.4
1	A	203	ARG	2.4
1	A	317	TYR	2.4
1	A	460	PRO	2.3
1	A	465	GLU	2.3
1	A	490	GLU	2.3
1	A	38	ASP	2.3
1	A	488	LEU	2.3
1	A	517	ILE	2.2
1	A	204	GLY	2.2
1	A	533	ASP	2.1
1	A	432	VAL	2.1
1	A	493	ALA	2.1
1	A	728	GLU	2.1
1	A	187	GLY	2.0
1	A	316	SER	2.0
1	A	684	ARG	2.0
1	A	489	GLN	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

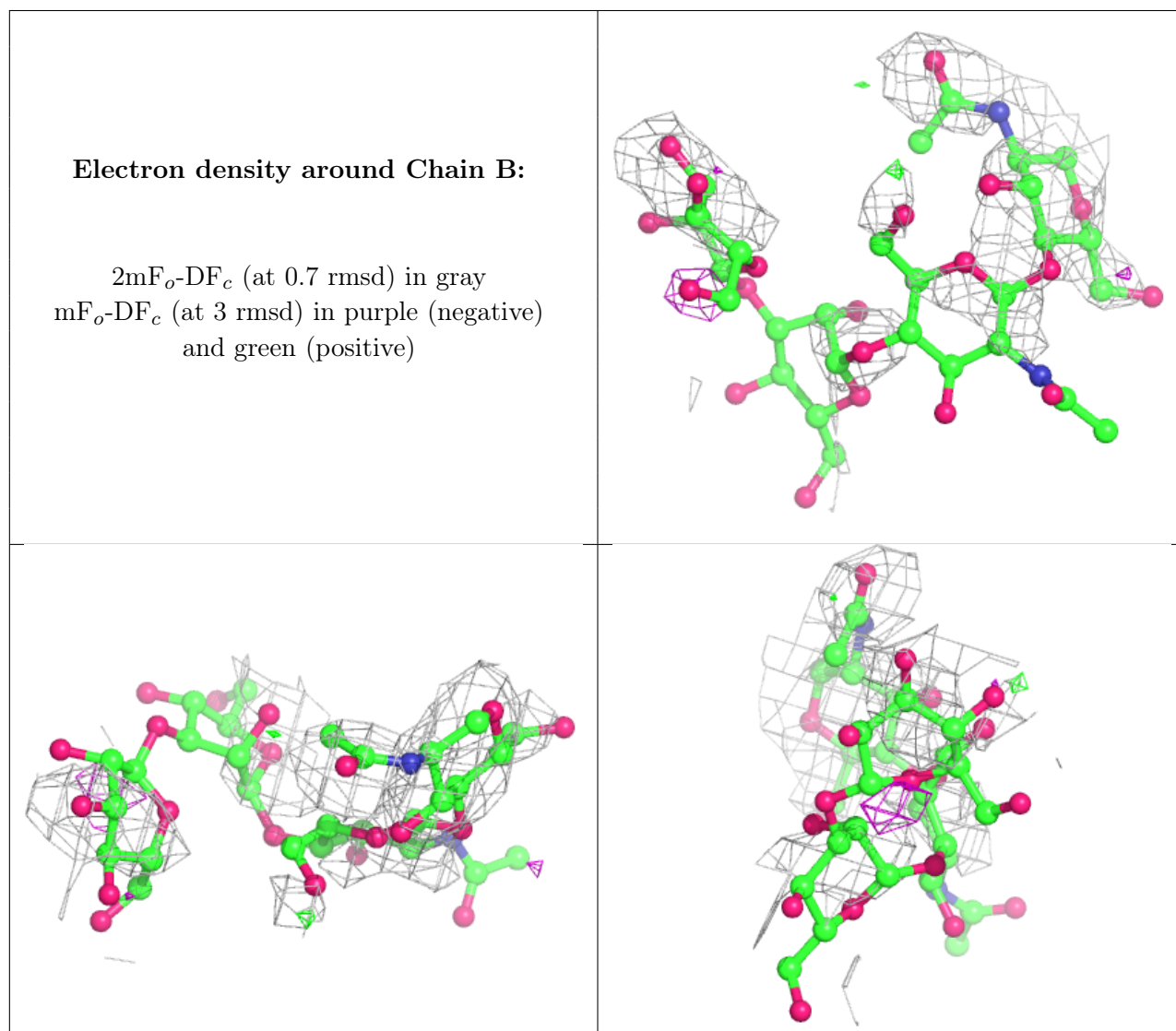
There are no non-standard protein/DNA/RNA residues in this entry.

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, 95th 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	BMA	B	3	11/12	0.43	0.69	177,185,196,203	0
2	NAG	B	2	14/15	0.52	0.64	146,172,182,188	0
2	MAN	B	4	11/12	0.55	0.69	111,143,161,164	0
2	NAG	B	1	14/15	0.72	0.28	86,115,139,150	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.



6.4 Ligands

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.