



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 09:56 pm GMT

PDB ID : 5FJI
Title : Three-dimensional structures of two heavily N-glycosylated *Aspergillus* sp. Family GH3 beta-D-glucosidases
Authors : Agirre, J.; Ariza, A.; Offen, W.A.; Turkenburg, J.P.; Roberts, S.M.; McNicholas, S.; Harris, P.V.; McBrayer, B.; Dohnalek, J.; Cowtan, K.D.; Davies, G.J.; Wilson, K.S.
Deposited on : 2015-10-09
Resolution : 1.95 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 : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30967

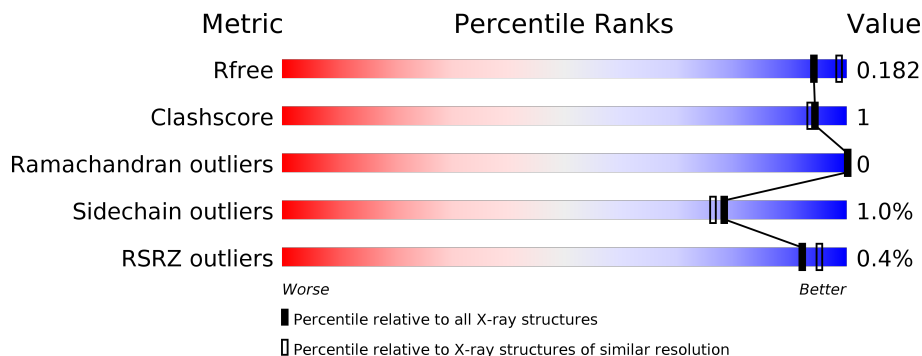
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

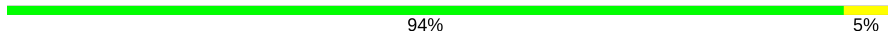

The reported resolution of this entry is 1.95 Å.

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}	111664	2220 (1.96-1.96)
Clashscore	122126	2333 (1.96-1.96)
Ramachandran outliers	120053	2314 (1.96-1.96)
Sidechain outliers	120020	2314 (1.96-1.96)
RSRZ outliers	108989	2174 (1.96-1.96)

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. 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	844	 94% 5%
1	B	844	 95%

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
5	EDO	A	1866	-	-	X	-

2 Entry composition [i](#)

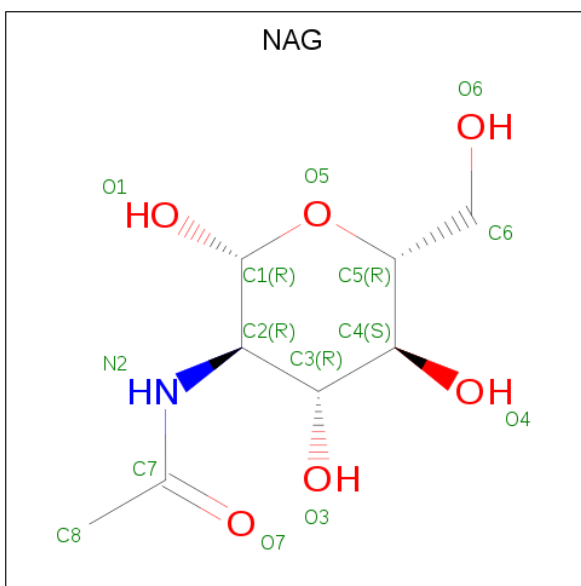
There are 7 unique types of molecules in this entry. The entry contains 15929 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 BETA-GLUCOSIDASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	840	Total 6576	C 4147	N 1140	O 1270	S 19	0	15	0
1	B	840	Total 6513	C 4116	N 1120	O 1257	S 20	0	10	0

- Molecule 2 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula: C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0

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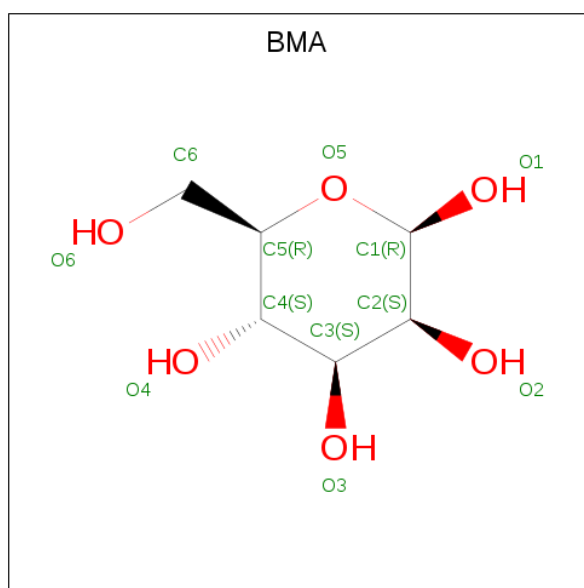
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	1
			28	16	2	10		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is BETA-D-MANNOSE (three-letter code: BMA) (formula: C₆H₁₂O₆).



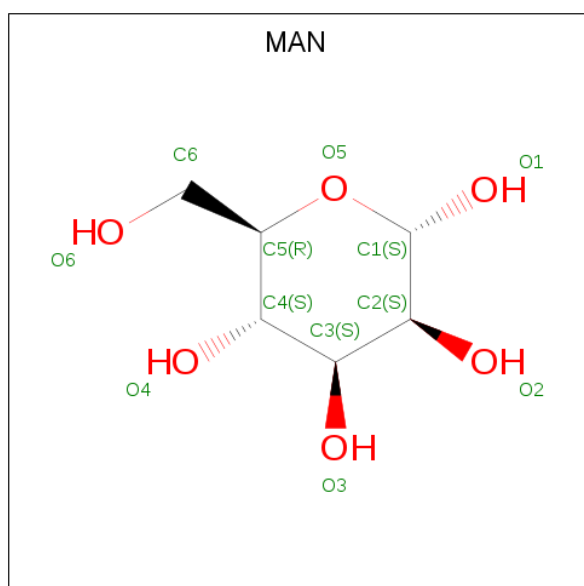
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	1
			22	12	10		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		

- Molecule 4 is ALPHA-D-MANNOSE (three-letter code: MAN) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			11	6	5		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		

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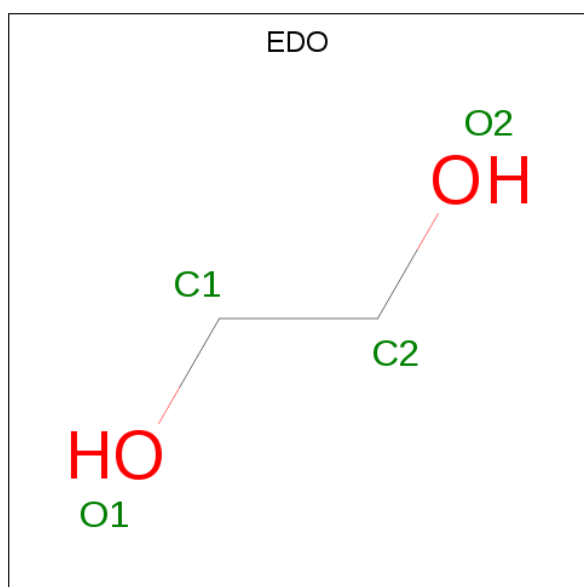
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		

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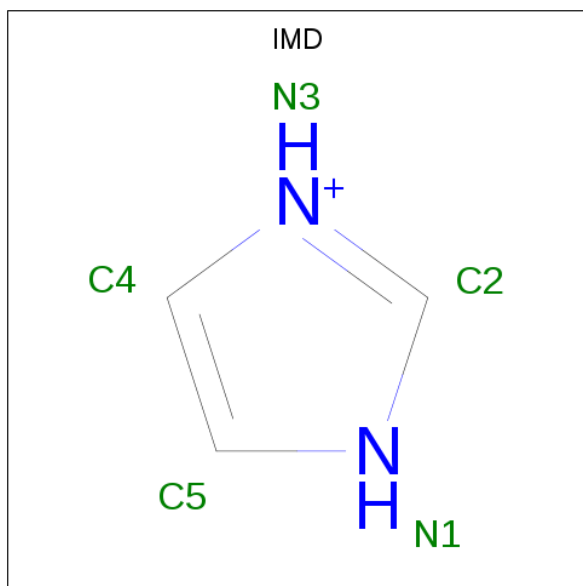
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0

- Molecule 6 is IMIDAZOLE (three-letter code: IMD) (formula: C₃H₅N₂).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C N 5 3 2	0	0
6	A	1	Total C N 5 3 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	N	0	0
			5	3	2		
6	B	1	Total	C	N	0	0
			5	3	2		
6	B	1	Total	C	N	0	0
			5	3	2		
6	B	1	Total	C	N	0	0
			5	3	2		
6	B	1	Total	C	N	0	0
			5	3	2		

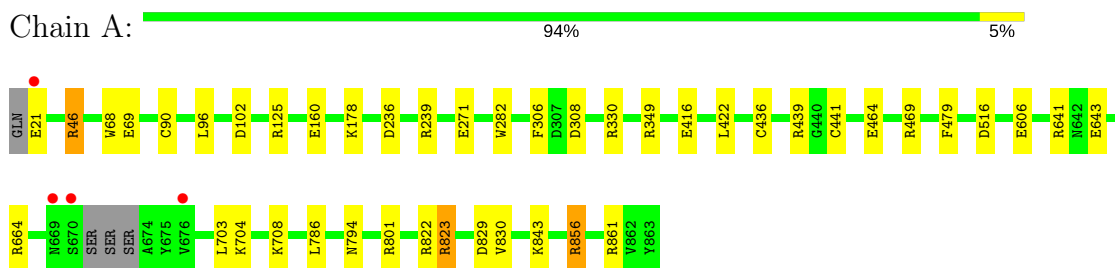
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	807	Total	O	0	5
			812	812		
7	B	715	Total	O	0	0
			715	715		

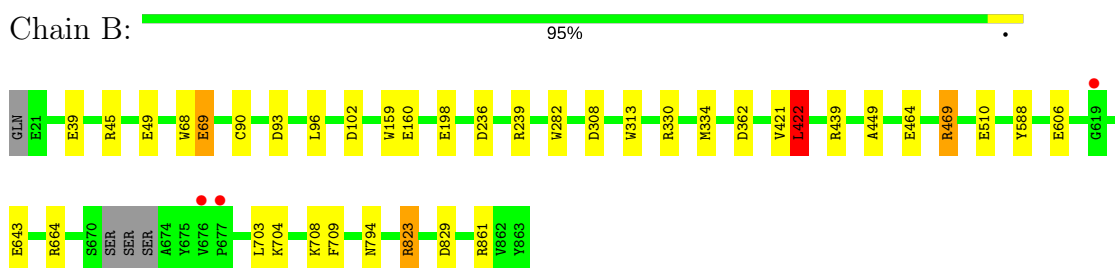
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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: BETA-GLUCOSIDASE



- Molecule 1: BETA-GLUCOSIDASE



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	88.52Å 129.67Å 217.72Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	111.41 – 1.95 69.31 – 1.95	Depositor EDS
% Data completeness (in resolution range)	96.8 (111.41-1.95) 96.8 (69.31-1.95)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.37 (at 1.95Å)	Xtrriage
Refinement program	REFMAC 5.8.0131	Depositor
R, R_{free}	0.149 , 0.174 0.159 , 0.182	Depositor DCC
R_{free} test set	8876 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å ²)	19.2	Xtrriage
Anisotropy	0.619	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 49.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	15929	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.87% 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: MAN, BMA, NAG, IMD, EDO

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	1.04	7/6765 (0.1%)	0.97	21/9222 (0.2%)
1	B	1.02	9/6705 (0.1%)	0.98	21/9144 (0.2%)
All	All	1.03	16/13470 (0.1%)	0.97	42/18366 (0.2%)

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	160	GLU	CD-OE1	8.30	1.34	1.25
1	B	823	ARG	CD-NE	-7.11	1.34	1.46
1	B	69	GLU	CD-OE1	-6.17	1.18	1.25
1	B	510	GLU	CD-OE2	6.16	1.32	1.25
1	A	464	GLU	CD-OE2	6.05	1.32	1.25
1	A	416	GLU	CD-OE2	5.65	1.31	1.25
1	B	160	GLU	CD-OE1	5.42	1.31	1.25
1	B	49	GLU	CD-OE2	5.42	1.31	1.25
1	A	606	GLU	CD-OE2	5.28	1.31	1.25
1	B	198	GLU	CD-OE2	5.23	1.31	1.25
1	A	823	ARG	CD-NE	-5.14	1.37	1.46
1	A	271	GLU	CD-OE2	5.13	1.31	1.25
1	B	464	GLU	CD-OE2	5.11	1.31	1.25
1	B	39	GLU	CG-CD	5.07	1.59	1.51
1	A	479	PHE	CG-CD2	-5.04	1.31	1.38
1	B	606	GLU	CG-CD	5.02	1.59	1.51

All (42) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	823	ARG	NE-CZ-NH2	-17.16	111.72	120.30
1	A	823	ARG	NE-CZ-NH2	-17.04	111.78	120.30
1	B	469	ARG	NE-CZ-NH1	13.52	127.06	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	469	ARG	NE-CZ-NH2	-12.41	114.09	120.30
1	B	823	ARG	NE-CZ-NH1	11.51	126.05	120.30
1	A	823	ARG	NE-CZ-NH1	11.38	125.99	120.30
1	A	861	ARG	NE-CZ-NH2	-8.71	115.94	120.30
1	B	102	ASP	CB-CG-OD1	8.17	125.66	118.30
1	A	102	ASP	CB-CG-OD1	7.85	125.36	118.30
1	A	46	ARG	NE-CZ-NH1	7.54	124.07	120.30
1	A	439	ARG	NE-CZ-NH1	7.53	124.06	120.30
1	B	45	ARG	NE-CZ-NH1	7.17	123.89	120.30
1	A	822	ARG	NE-CZ-NH1	7.11	123.85	120.30
1	A	102	ASP	CB-CG-OD2	-6.92	112.08	118.30
1	B	439	ARG	NE-CZ-NH1	6.77	123.69	120.30
1	A	125	ARG	NE-CZ-NH2	-6.46	117.07	120.30
1	B	330	ARG	NE-CZ-NH1	6.40	123.50	120.30
1	A	861	ARG	NE-CZ-NH1	6.35	123.47	120.30
1	B	664	ARG	NE-CZ-NH1	6.30	123.45	120.30
1	A	236	ASP	CB-CG-OD1	6.21	123.89	118.30
1	B	236	ASP	CB-CG-OD1	6.20	123.88	118.30
1	B	829	ASP	CB-CG-OD1	6.18	123.86	118.30
1	A	308	ASP	CB-CG-OD1	6.08	123.77	118.30
1	B	861	ARG	NE-CZ-NH1	6.02	123.31	120.30
1	B	239	ARG	NE-CZ-NH2	-5.92	117.34	120.30
1	B	102	ASP	CB-CG-OD2	-5.76	113.11	118.30
1	A	708	LYS	CD-CE-NZ	-5.72	98.54	111.70
1	A	664	ARG	NE-CZ-NH1	5.70	123.15	120.30
1	A	794	ASN	N-CA-C	5.69	126.37	111.00
1	A	829	ASP	CB-CG-OD1	5.61	123.34	118.30
1	B	362	ASP	CB-CG-OD2	-5.49	113.36	118.30
1	B	45	ARG	NE-CZ-NH2	-5.41	117.60	120.30
1	A	801	ARG	NE-CZ-NH1	5.40	123.00	120.30
1	A	46	ARG	NE-CZ-NH2	-5.35	117.62	120.30
1	B	469	ARG	CD-NE-CZ	5.23	130.92	123.60
1	B	708	LYS	CD-CE-NZ	-5.22	99.69	111.70
1	B	93	ASP	CB-CG-OD1	-5.18	113.64	118.30
1	A	239	ARG	NE-CZ-NH2	-5.12	117.74	120.30
1	B	308	ASP	CB-CG-OD1	5.10	122.89	118.30
1	A	160	GLU	OE1-CD-OE2	5.08	129.39	123.30
1	B	422	LEU	CA-CB-CG	-5.05	103.67	115.30
1	A	330	ARG	NE-CZ-NH1	5.03	122.81	120.30

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	A	6576	0	6298	23	0
1	B	6513	0	6246	12	0
2	A	238	0	206	1	0
2	B	224	0	194	1	0
3	A	77	0	62	0	0
3	B	88	0	71	0	0
4	A	242	0	206	0	0
4	B	253	0	215	0	0
5	A	80	0	120	5	0
5	B	76	0	114	1	0
6	A	15	0	15	0	0
6	B	20	0	20	0	0
7	A	812	0	0	5	0
7	B	715	0	0	3	0
All	All	15929	0	13767	36	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 1.

All (36) 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:641[A]:ARG:NE	1:A:643[A]:GLU:OE2	1.69	1.25
1:A:641[A]:ARG:NH2	1:A:643[A]:GLU:OE2	1.77	1.18
1:A:641[A]:ARG:CZ	1:A:643[A]:GLU:OE2	1.95	1.12
1:A:843:LYS:NZ	1:A:856[B]:ARG:HH22	1.76	0.83
1:A:641[A]:ARG:HE	1:A:643[A]:GLU:CD	1.87	0.78
1:A:436:CYS:HG	1:A:441:CYS:HG	0.96	0.74
1:A:349[B]:ARG:HD3	7:A:2314:HOH:O	1.91	0.71
1:A:843:LYS:HZ1	1:A:856[B]:ARG:HH22	1.37	0.71
1:A:843:LYS:NZ	1:A:856[B]:ARG:NH2	2.49	0.58
1:B:643[B]:GLU:HG3	7:B:2512:HOH:O	2.05	0.56
1:A:178:LYS:HE2	7:A:2245:HOH:O	2.11	0.51
1:B:794[A]:ASN:HB3	7:B:2621:HOH:O	2.11	0.51
1:A:436:CYS:HG	1:A:441:CYS:CB	2.23	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:641[A]:ARG:HH21	1:A:643[A]:GLU:CD	2.10	0.49
1:B:313:TRP:CH2	1:B:334[B]:MET:HE3	2.48	0.48
1:A:843:LYS:HZ2	1:A:856[B]:ARG:HH22	1.57	0.48
5:A:1866:EDO:H22	7:A:2805:HOH:O	2.15	0.47
1:A:306:PHE:CZ	5:A:1882:EDO:H21	2.51	0.45
1:B:588:TYR:CD2	5:B:1881:EDO:H22	2.53	0.43
1:B:313:TRP:CH2	1:B:334[B]:MET:CE	3.01	0.43
5:A:1866:EDO:H12	1:B:469:ARG:HB2	2.01	0.43
1:A:786:LEU:HD23	1:A:786:LEU:C	2.38	0.43
1:A:516:ASP:CB	2:A:1502[A]:NAG:H82	2.49	0.43
1:A:843:LYS:HZ1	1:A:856[B]:ARG:NH2	2.10	0.43
1:A:823:ARG:HD3	7:A:2719:HOH:O	2.19	0.42
1:B:159:TRP:CE2	1:B:449:ALA:HB3	2.55	0.42
1:A:469[B]:ARG:HB2	5:A:1866:EDO:H21	2.02	0.41
1:B:823:ARG:HD3	7:B:2644:HOH:O	2.20	0.41
1:A:68:TRP:CD1	1:A:69:GLU:HG3	2.56	0.41
1:B:96:LEU:C	1:B:96:LEU:HD12	2.41	0.41
1:A:469[A]:ARG:HB2	5:A:1866:EDO:H21	2.02	0.41
1:A:46:ARG:NH1	7:A:2049:HOH:O	2.47	0.41
1:A:96:LEU:C	1:A:96:LEU:HD12	2.41	0.41
1:B:68:TRP:CD1	1:B:69:GLU:HG3	2.56	0.41
1:B:421:VAL:C	1:B:422:LEU:HG	2.40	0.40
1:B:709:PHE:CZ	2:B:1002:NAG:H82	2.55	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	852/844 (101%)	828 (97%)	24 (3%)	0	100	100
1	B	846/844 (100%)	825 (98%)	21 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	1698/1688 (101%)	1653 (97%)	45 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	698/686 (102%)	689 (99%)	9 (1%)	71	68
1	B	692/686 (101%)	687 (99%)	5 (1%)	85	84
All	All	1390/1372 (101%)	1376 (99%)	14 (1%)	78	76

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	GLU
1	A	90	CYS
1	A	282	TRP
1	A	422	LEU
1	A	703	LEU
1	A	704	LYS
1	A	830	VAL
1	A	856[A]	ARG
1	A	856[B]	ARG
1	B	90	CYS
1	B	282	TRP
1	B	422	LEU
1	B	703	LEU
1	B	704	LYS

Some 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](#)

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

139 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	A	1001	1,2	14,14,15	0.47	0	17,19,21	0.41	0
2	NAG	A	1002	3,2	14,14,15	0.43	0	17,19,21	0.65	0
3	BMA	A	1003	2,4	11,11,12	0.29	0	15,15,17	0.54	0
4	MAN	A	1004	3	11,11,12	0.25	0	15,15,17	0.41	0
4	MAN	A	1005	3,4	11,11,12	0.26	0	15,15,17	0.51	0
4	MAN	A	1006	4	11,11,12	0.49	0	15,15,17	0.72	1 (6%)
4	MAN	A	1007	4	11,11,12	0.28	0	15,15,17	0.45	0
2	NAG	A	1101	1,2	14,14,15	0.60	0	17,19,21	0.58	0
2	NAG	A	1102	3,2	14,14,15	0.68	0	17,19,21	1.13	1 (5%)
3	BMA	A	1103	2,4	11,11,12	0.21	0	15,15,17	0.51	0
4	MAN	A	1104	3,4	11,11,12	0.28	0	15,15,17	0.61	0
4	MAN	A	1105	4	11,11,12	0.27	0	15,15,17	0.55	0
4	MAN	A	1106	4	11,11,12	0.23	0	15,15,17	0.44	0
2	NAG	A	1201	1,2	14,14,15	0.51	0	17,19,21	0.54	0
2	NAG	A	1202	3,2	14,14,15	0.56	0	17,19,21	0.61	0
3	BMA	A	1203	2	11,11,12	0.33	0	15,15,17	0.48	0
2	NAG	A	1301	1,2	14,14,15	0.85	1 (7%)	17,19,21	0.63	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	A	1302	3,2	14,14,15	0.97	1 (7%)	17,19,21	0.71	0
3	BMA	A	1303	2,4	11,11,12	0.16	0	15,15,17	0.49	0
4	MAN	A	1304	3,4	11,11,12	0.21	0	15,15,17	0.40	0
4	MAN	A	1305	4	11,11,12	0.39	0	15,15,17	0.76	1 (6%)
4	MAN	A	1306	4	11,11,12	0.32	0	15,15,17	0.55	0
4	MAN	A	1307	3,4	11,11,12	0.28	0	15,15,17	0.52	0
4	MAN	A	1308	4	11,11,12	0.37	0	15,15,17	0.74	0
4	MAN	A	1309	4	11,11,12	0.27	0	15,15,17	0.36	0
4	MAN	A	1310	4	11,11,12	0.39	0	15,15,17	0.76	0
4	MAN	A	1311	4	11,11,12	0.41	0	15,15,17	0.69	0
2	NAG	A	1401	1,2	14,14,15	0.62	0	17,19,21	0.55	0
2	NAG	A	1402	3,2	14,14,15	0.53	0	17,19,21	0.58	0
3	BMA	A	1403	2,4	11,11,12	0.31	0	15,15,17	0.49	0
4	MAN	A	1404	3	11,11,12	0.29	0	15,15,17	0.46	0
2	NAG	A	1501	1,2	14,14,15	0.54	0	17,19,21	0.67	0
2	NAG	A	1502[A]	3,2	14,14,15	0.51	0	17,19,21	0.77	1 (5%)
2	NAG	A	1502[B]	3,2	14,14,15	0.49	0	17,19,21	0.60	0
3	BMA	A	1503	2,4	11,11,12	0.21	0	15,15,17	0.52	0
4	MAN	A	1504	3,4	11,11,12	0.28	0	15,15,17	0.47	0
4	MAN	A	1505	4	11,11,12	0.24	0	15,15,17	0.49	0
4	MAN	A	1506	3,4	11,11,12	0.28	0	15,15,17	0.43	0
4	MAN	A	1507	4	11,11,12	0.41	0	15,15,17	0.71	1 (6%)
4	MAN	A	1508	4	11,11,12	0.34	0	15,15,17	0.37	0
4	MAN	A	1509	4	11,11,12	0.36	0	15,15,17	0.66	1 (6%)
2	NAG	A	1601	1	14,14,15	0.49	0	17,19,21	0.66	1 (5%)
2	NAG	A	1701	1,2	14,14,15	0.35	0	17,19,21	0.40	0
2	NAG	A	1702	3,2	14,14,15	0.53	0	17,19,21	0.52	0
3	BMA	A	1703	2	11,11,12	0.34	0	15,15,17	0.40	0
2	NAG	A	1801	1	14,14,15	0.79	1 (7%)	17,19,21	0.48	0
5	EDO	A	1864	-	3,3,3	0.93	0	2,2,2	0.11	0
5	EDO	A	1865	-	3,3,3	0.74	0	2,2,2	0.31	0
5	EDO	A	1866	-	3,3,3	1.03	0	2,2,2	1.68	0
5	EDO	A	1867	-	3,3,3	0.79	0	2,2,2	0.11	0
5	EDO	A	1868	-	3,3,3	0.85	0	2,2,2	0.91	0
5	EDO	A	1869	-	3,3,3	0.37	0	2,2,2	0.39	0
5	EDO	A	1870	-	3,3,3	0.43	0	2,2,2	0.16	0
5	EDO	A	1871	-	3,3,3	0.59	0	2,2,2	0.15	0
5	EDO	A	1872	-	3,3,3	0.74	0	2,2,2	0.34	0
5	EDO	A	1873	-	3,3,3	0.48	0	2,2,2	0.50	0
5	EDO	A	1874	-	3,3,3	0.30	0	2,2,2	0.44	0
5	EDO	A	1875	-	3,3,3	0.63	0	2,2,2	0.27	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	EDO	A	1876	-	3,3,3	0.90	0	2,2,2	0.68	0
5	EDO	A	1877	-	3,3,3	0.48	0	2,2,2	0.22	0
5	EDO	A	1878	-	3,3,3	0.41	0	2,2,2	0.66	0
5	EDO	A	1879	-	3,3,3	0.39	0	2,2,2	1.10	0
5	EDO	A	1880	-	3,3,3	0.51	0	2,2,2	0.28	0
5	EDO	A	1881	-	3,3,3	0.38	0	2,2,2	0.46	0
5	EDO	A	1882	-	3,3,3	0.18	0	2,2,2	0.89	0
6	IMD	A	1883	-	3,5,5	0.58	0	4,5,5	0.50	0
6	IMD	A	1884	-	3,5,5	0.21	0	4,5,5	0.44	0
6	IMD	A	1885	-	3,5,5	0.36	0	4,5,5	0.61	0
5	EDO	A	1900	-	3,3,3	0.47	0	2,2,2	0.33	0
2	NAG	B	1001	1,2	14,14,15	0.44	0	17,19,21	0.62	0
2	NAG	B	1002	3,2	14,14,15	0.51	0	17,19,21	0.40	0
3	BMA	B	1003	2,4	11,11,12	0.28	0	15,15,17	0.58	0
4	MAN	B	1004	3	11,11,12	0.38	0	15,15,17	0.56	0
4	MAN	B	1006	3,4	11,11,12	0.26	0	15,15,17	0.48	0
4	MAN	B	1007	4	11,11,12	0.40	0	15,15,17	0.72	1 (6%)
4	MAN	B	1008	4	11,11,12	0.29	0	15,15,17	0.54	0
2	NAG	B	1101	1,2	14,14,15	0.45	0	17,19,21	0.59	0
2	NAG	B	1102	3,2	14,14,15	0.90	1 (7%)	17,19,21	1.13	1 (5%)
3	BMA	B	1103[A]	2,4	11,11,12	0.26	0	15,15,17	0.51	0
3	BMA	B	1103[B]	2,4	11,11,12	0.23	0	15,15,17	0.45	0
4	MAN	B	1104	3,4	11,11,12	0.32	0	15,15,17	0.57	0
4	MAN	B	1105	4	11,11,12	0.28	0	15,15,17	0.67	1 (6%)
4	MAN	B	1106	4	11,11,12	0.23	0	15,15,17	0.44	0
2	NAG	B	1201	1,2	14,14,15	0.72	1 (7%)	17,19,21	0.76	1 (5%)
2	NAG	B	1202	3,2	14,14,15	0.59	0	17,19,21	0.51	0
3	BMA	B	1203	2	11,11,12	0.30	0	15,15,17	0.41	0
2	NAG	B	1301	1,2	14,14,15	0.40	0	17,19,21	0.49	0
2	NAG	B	1302	3,2	14,14,15	1.04	1 (7%)	17,19,21	0.61	0
3	BMA	B	1303	2,4	11,11,12	0.19	0	15,15,17	0.45	0
4	MAN	B	1304	3,4	11,11,12	0.26	0	15,15,17	0.53	0
4	MAN	B	1305	4	11,11,12	0.47	0	15,15,17	0.67	0
4	MAN	B	1306	4	11,11,12	0.31	0	15,15,17	0.66	1 (6%)
4	MAN	B	1307	3,4	11,11,12	0.22	0	15,15,17	0.47	0
4	MAN	B	1308	4	11,11,12	0.37	0	15,15,17	0.72	0
4	MAN	B	1309	4	11,11,12	0.27	0	15,15,17	0.35	0
4	MAN	B	1310	4	11,11,12	0.38	0	15,15,17	0.65	0
4	MAN	B	1311	4	11,11,12	0.38	0	15,15,17	0.75	1 (6%)
2	NAG	B	1401	1,2	14,14,15	0.64	0	17,19,21	0.45	0
2	NAG	B	1402	3,2	14,14,15	0.43	0	17,19,21	0.57	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	BMA	B	1403	2,4	11,11,12	0.24	0	15,15,17	0.39	0
4	MAN	B	1404	3,4	11,11,12	0.33	0	15,15,17	0.65	1 (6%)
4	MAN	B	1405	4	11,11,12	0.25	0	15,15,17	0.46	0
2	NAG	B	1501	1,2	14,14,15	0.62	0	17,19,21	0.58	0
2	NAG	B	1502	3,2	14,14,15	0.59	0	17,19,21	0.68	1 (5%)
3	BMA	B	1503	2,4	11,11,12	0.32	0	15,15,17	0.47	0
4	MAN	B	1504	3,4	11,11,12	0.24	0	15,15,17	0.45	0
4	MAN	B	1505	4	11,11,12	0.28	0	15,15,17	0.51	0
4	MAN	B	1506	3,4	11,11,12	0.22	0	15,15,17	0.42	0
4	MAN	B	1507	4	11,11,12	0.34	0	15,15,17	0.66	0
4	MAN	B	1509	4	11,11,12	0.31	0	15,15,17	0.41	0
4	MAN	B	1510	4	11,11,12	0.39	0	15,15,17	0.71	1 (6%)
2	NAG	B	1601	1	14,14,15	1.22	1 (7%)	17,19,21	1.40	1 (5%)
2	NAG	B	1701	1,2	14,14,15	0.57	0	17,19,21	0.55	0
2	NAG	B	1702	3,2	14,14,15	0.81	1 (7%)	17,19,21	0.81	1 (5%)
3	BMA	B	1703	2	11,11,12	0.30	0	15,15,17	0.35	0
2	NAG	B	1801	1	14,14,15	0.42	0	17,19,21	0.53	0
5	EDO	B	1864	-	3,3,3	0.57	0	2,2,2	0.30	0
5	EDO	B	1865	-	3,3,3	0.98	0	2,2,2	0.24	0
5	EDO	B	1866	-	3,3,3	0.48	0	2,2,2	0.54	0
5	EDO	B	1867	-	3,3,3	0.79	0	2,2,2	0.25	0
5	EDO	B	1868	-	3,3,3	0.61	0	2,2,2	0.44	0
5	EDO	B	1869	-	3,3,3	0.66	0	2,2,2	0.22	0
5	EDO	B	1870	-	3,3,3	0.76	0	2,2,2	0.17	0
5	EDO	B	1871	-	3,3,3	0.30	0	2,2,2	0.54	0
5	EDO	B	1872	-	3,3,3	0.33	0	2,2,2	0.90	0
5	EDO	B	1873	-	3,3,3	0.32	0	2,2,2	0.67	0
5	EDO	B	1874	-	3,3,3	0.32	0	2,2,2	0.26	0
5	EDO	B	1875	-	3,3,3	0.45	0	2,2,2	0.49	0
5	EDO	B	1876	-	3,3,3	0.49	0	2,2,2	0.65	0
5	EDO	B	1877	-	3,3,3	0.47	0	2,2,2	0.09	0
5	EDO	B	1878	-	3,3,3	0.24	0	2,2,2	0.68	0
5	EDO	B	1879	-	3,3,3	0.75	0	2,2,2	0.20	0
5	EDO	B	1880	-	3,3,3	0.54	0	2,2,2	0.39	0
5	EDO	B	1881	-	3,3,3	0.67	0	2,2,2	0.90	0
6	IMD	B	1882	-	3,5,5	0.35	0	4,5,5	0.88	0
6	IMD	B	1883	-	3,5,5	0.25	0	4,5,5	0.71	0
6	IMD	B	1884	-	3,5,5	0.44	0	4,5,5	0.53	0
6	IMD	B	1885	-	3,5,5	0.53	0	4,5,5	0.57	0
5	EDO	B	1900	-	3,3,3	0.50	0	2,2,2	0.33	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	A	1001	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1002	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1003	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1004	3	-	0/2/19/22	0/1/1/1
4	MAN	A	1005	3,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1006	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1007	4	-	0/2/19/22	0/1/1/1
2	NAG	A	1101	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1102	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1103	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1104	3,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1105	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1106	4	-	0/2/19/22	0/1/1/1
2	NAG	A	1201	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1202	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1203	2	-	0/2/19/22	0/1/1/1
2	NAG	A	1301	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1302	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1303	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1304	3,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1305	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1306	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1307	3,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1308	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1309	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1310	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1311	4	-	0/2/19/22	0/1/1/1
2	NAG	A	1401	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1402	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1403	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1404	3	-	0/2/19/22	0/1/1/1
2	NAG	A	1501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1502[A]	3,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1502[B]	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1503	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1504	3,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1505	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1506	3,4	-	0/2/19/22	0/1/1/1
4	MAN	A	1507	4	-	0/2/19/22	0/1/1/1
4	MAN	A	1508	4	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	MAN	A	1509	4	-	0/2/19/22	0/1/1/1
2	NAG	A	1601	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1701	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1702	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1703	2	-	0/2/19/22	0/1/1/1
2	NAG	A	1801	1	-	0/6/23/26	0/1/1/1
5	EDO	A	1864	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1865	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1866	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1867	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1868	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1869	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1870	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1871	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1872	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1873	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1874	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1875	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1876	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1877	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1878	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1879	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1880	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1881	-	-	0/1/1/1	0/0/0/0
5	EDO	A	1882	-	-	0/1/1/1	0/0/0/0
6	IMD	A	1883	-	-	0/0/0/0	0/1/1/1
6	IMD	A	1884	-	-	0/0/0/0	0/1/1/1
6	IMD	A	1885	-	-	0/0/0/0	0/1/1/1
5	EDO	A	1900	-	-	0/1/1/1	0/0/0/0
2	NAG	B	1001	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1002	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1003	2,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1004	3	-	0/2/19/22	0/1/1/1
4	MAN	B	1006	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1007	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1008	4	-	0/2/19/22	0/1/1/1
2	NAG	B	1101	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1102	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1103[A]	2,4	-	0/2/19/22	0/1/1/1
3	BMA	B	1103[B]	2,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1104	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1105	4	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	MAN	B	1106	4	-	0/2/19/22	0/1/1/1
2	NAG	B	1201	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1202	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1203	2	-	0/2/19/22	0/1/1/1
2	NAG	B	1301	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1302	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1303	2,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1304	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1305	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1306	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1307	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1308	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1309	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1310	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1311	4	-	0/2/19/22	0/1/1/1
2	NAG	B	1401	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1402	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1403	2,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1404	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1405	4	-	0/2/19/22	0/1/1/1
2	NAG	B	1501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1503	2,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1504	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1505	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1506	3,4	-	0/2/19/22	0/1/1/1
4	MAN	B	1507	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1509	4	-	0/2/19/22	0/1/1/1
4	MAN	B	1510	4	-	0/2/19/22	0/1/1/1
2	NAG	B	1601	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1701	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	1702	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	1703	2	-	0/2/19/22	0/1/1/1
2	NAG	B	1801	1	-	0/6/23/26	0/1/1/1
5	EDO	B	1864	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1865	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1866	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1867	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1868	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1869	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1870	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1871	-	-	0/1/1/1	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	EDO	B	1872	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1873	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1874	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1875	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1876	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1877	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1878	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1879	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1880	-	-	0/1/1/1	0/0/0/0
5	EDO	B	1881	-	-	0/1/1/1	0/0/0/0
6	IMD	B	1882	-	-	0/0/0/0	0/1/1/1
6	IMD	B	1883	-	-	0/0/0/0	0/1/1/1
6	IMD	B	1884	-	-	0/0/0/0	0/1/1/1
6	IMD	B	1885	-	-	0/0/0/0	0/1/1/1
5	EDO	B	1900	-	-	0/1/1/1	0/0/0/0

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1102	NAG	C1-C2	-2.77	1.48	1.52
2	B	1201	NAG	C1-C2	-2.11	1.49	1.52
2	B	1702	NAG	C1-C2	2.41	1.55	1.52
2	A	1801	NAG	C1-C2	2.60	1.56	1.52
2	A	1301	NAG	C1-C2	2.73	1.56	1.52
2	A	1302	NAG	C1-C2	3.02	1.56	1.52
2	B	1302	NAG	C1-C2	3.19	1.56	1.52
2	B	1601	NAG	C1-C2	4.30	1.58	1.52

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1102	NAG	O5-C1-C2	-4.03	105.96	111.52
2	A	1102	NAG	O5-C1-C2	-3.99	106.01	111.52
2	A	1502[A]	NAG	O5-C1-C2	-2.45	108.14	111.52
2	B	1201	NAG	O5-C1-C2	-2.22	108.45	111.52
2	B	1502	NAG	O5-C1-C2	-2.09	108.63	111.52
4	A	1507	MAN	C1-O5-C5	2.01	114.95	112.19
4	A	1006	MAN	C1-O5-C5	2.02	114.97	112.19
4	A	1509	MAN	C1-O5-C5	2.10	115.08	112.19
4	B	1404	MAN	C1-O5-C5	2.11	115.09	112.19
4	B	1510	MAN	C1-O5-C5	2.11	115.09	112.19
4	B	1007	MAN	C1-O5-C5	2.13	115.12	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1601	NAG	O5-C1-C2	2.13	114.47	111.52
4	B	1306	MAN	C1-O5-C5	2.17	115.18	112.19
4	B	1105	MAN	C1-O5-C5	2.19	115.19	112.19
4	A	1305	MAN	C1-O5-C5	2.25	115.28	112.19
2	B	1702	NAG	O5-C1-C2	2.28	114.67	111.52
4	B	1311	MAN	C1-O5-C5	2.34	115.41	112.19
2	B	1601	NAG	O5-C1-C2	5.36	118.92	111.52

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1502[A]	NAG	1	0
5	A	1866	EDO	4	0
5	A	1882	EDO	1	0
2	B	1002	NAG	1	0
5	B	1881	EDO	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	840/844 (99%)	-0.32	4 (0%) 90 94	12, 19, 32, 44	14 (1%)
1	B	840/844 (99%)	-0.33	3 (0%) 92 95	12, 20, 35, 46	16 (1%)
All	All	1680/1688 (99%)	-0.33	7 (0%) 92 95	12, 20, 34, 46	30 (1%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	670	SER	3.5
1	A	21	GLU	3.3
1	B	677	PRO	2.5
1	B	619	GLY	2.5
1	A	676	VAL	2.2
1	B	676	VAL	2.2
1	A	669	ASN	2.1

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](#)

There are no carbohydrates in this entry.

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, 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(\AA^2)	Q<0.9
5	EDO	B	1900	4/4	0.47	0.17	55,56,56,60	4
5	EDO	B	1879	4/4	0.70	0.31	46,50,54,63	0
5	EDO	A	1865	4/4	0.72	0.24	34,38,38,41	4
4	MAN	A	1404	11/12	0.73	0.27	60,63,69,76	0
4	MAN	B	1106	11/12	0.74	0.22	40,42,46,48	11
5	EDO	A	1900	4/4	0.74	0.20	60,60,61,65	0
4	MAN	A	1106	11/12	0.75	0.20	47,48,49,51	11
4	MAN	A	1007	11/12	0.75	0.17	45,50,54,55	11
3	BMA	B	1703	11/12	0.75	0.32	57,64,69,78	0
3	BMA	B	1203	11/12	0.76	0.25	56,64,71,76	0
4	MAN	B	1008	11/12	0.77	0.31	36,37,38,40	11
2	NAG	A	1601	14/15	0.77	0.19	47,60,66,66	0
3	BMA	A	1203	11/12	0.77	0.32	56,62,70,80	0
2	NAG	B	1601	14/15	0.77	0.21	49,62,67,74	0
2	NAG	A	1801	14/15	0.78	0.31	48,54,59,59	0
5	EDO	A	1876	4/4	0.78	0.19	37,42,45,48	0
4	MAN	A	1505	11/12	0.78	0.24	49,55,59,62	11
3	BMA	B	1403	11/12	0.79	0.23	50,59,71,73	0
4	MAN	A	1507	11/12	0.79	0.24	48,53,58,59	0
2	NAG	B	1801	14/15	0.79	0.25	52,62,64,66	0
5	EDO	B	1881	4/4	0.79	0.21	42,44,47,47	0
3	BMA	A	1403	11/12	0.81	0.31	49,60,66,67	0
5	EDO	A	1872	4/4	0.82	0.16	36,39,42,44	0
3	BMA	A	1703	11/12	0.83	0.22	58,61,66,72	0
2	NAG	A	1702	14/15	0.85	0.16	40,45,51,56	0
5	EDO	A	1873	4/4	0.85	0.17	50,50,52,55	0
4	MAN	A	1004	11/12	0.85	0.13	49,57,63,66	0
4	MAN	B	1505	11/12	0.86	0.27	57,65,70,71	0
5	EDO	A	1868	4/4	0.86	0.22	21,35,35,42	0
4	MAN	B	1507	11/12	0.86	0.21	48,52,56,56	0
5	EDO	B	1880	4/4	0.87	0.21	33,34,44,49	0
5	EDO	A	1880	4/4	0.87	0.25	64,64,67,68	0
5	EDO	A	1882	4/4	0.87	0.15	21,21,22,23	4
4	MAN	B	1004	11/12	0.87	0.11	45,52,56,57	0
4	MAN	B	1405	11/12	0.87	0.21	45,50,52,54	11
4	MAN	A	1309	11/12	0.87	0.27	51,54,65,67	0
6	IMD	B	1885	5/5	0.88	0.20	52,56,59,60	0
4	MAN	B	1309	11/12	0.88	0.25	51,54,59,61	0
4	MAN	B	1404	11/12	0.88	0.24	55,59,63,64	0
6	IMD	A	1885	5/5	0.88	0.23	44,45,46,46	0
6	IMD	B	1884	5/5	0.88	0.19	47,47,55,56	0
5	EDO	B	1873	4/4	0.88	0.31	28,29,29,30	4
4	MAN	B	1304	11/12	0.89	0.12	38,39,43,45	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
5	EDO	B	1870	4/4	0.89	0.14	37,39,42,43	0
6	IMD	A	1883	5/5	0.89	0.39	40,41,42,43	5
5	EDO	A	1877	4/4	0.89	0.22	50,51,53,61	0
4	MAN	B	1306	11/12	0.90	0.19	51,55,60,70	0
4	MAN	A	1006	11/12	0.90	0.15	45,49,55,66	0
4	MAN	B	1007	11/12	0.90	0.15	38,41,48,57	0
5	EDO	B	1877	4/4	0.90	0.18	49,56,57,58	0
5	EDO	B	1865	4/4	0.90	0.13	27,28,30,31	0
4	MAN	B	1305	11/12	0.90	0.19	47,53,57,63	0
5	EDO	A	1875	4/4	0.90	0.14	35,45,46,52	0
5	EDO	A	1871	4/4	0.91	0.13	30,36,39,43	0
2	NAG	B	1702	14/15	0.91	0.17	42,48,53,53	0
5	EDO	B	1878	4/4	0.91	0.19	52,53,54,59	0
5	EDO	A	1864	4/4	0.91	0.10	32,33,33,35	0
6	IMD	A	1884	5/5	0.91	0.13	33,33,36,37	0
5	EDO	A	1878	4/4	0.91	0.19	42,48,49,50	0
6	IMD	B	1882	5/5	0.91	0.17	39,39,42,43	5
5	EDO	B	1876	4/4	0.92	0.18	45,46,51,51	0
4	MAN	A	1305	11/12	0.92	0.22	32,41,50,53	0
4	MAN	A	1504	11/12	0.92	0.16	40,46,53,54	0
4	MAN	B	1509	11/12	0.92	0.17	27,33,42,45	0
5	EDO	B	1868	4/4	0.92	0.16	36,37,37,40	0
2	NAG	B	1202	14/15	0.92	0.13	34,38,41,51	0
4	MAN	B	1504	11/12	0.93	0.18	42,46,56,60	0
4	MAN	A	1105	11/12	0.93	0.16	45,47,48,53	0
4	MAN	B	1105	11/12	0.93	0.14	40,44,46,53	0
5	EDO	B	1872	4/4	0.93	0.16	34,36,39,41	0
4	MAN	B	1006	11/12	0.93	0.12	32,37,43,52	0
4	MAN	A	1508	11/12	0.93	0.15	29,36,42,47	0
4	MAN	A	1306	11/12	0.93	0.17	37,39,43,49	0
6	IMD	B	1883	5/5	0.93	0.13	37,39,39,41	0
5	EDO	B	1874	4/4	0.94	0.10	35,35,36,39	0
4	MAN	A	1506	11/12	0.94	0.09	27,30,34,39	0
5	EDO	B	1866	4/4	0.94	0.10	26,32,32,32	0
5	EDO	A	1866	4/4	0.94	0.10	27,28,28,29	0
4	MAN	A	1509	11/12	0.94	0.11	24,29,36,44	0
5	EDO	A	1881	4/4	0.94	0.20	31,31,32,33	0
4	MAN	A	1005	11/12	0.94	0.12	36,38,43,51	0
4	MAN	B	1510	11/12	0.94	0.17	22,27,35,41	0
4	MAN	A	1311	11/12	0.94	0.12	20,22,23,23	0
4	MAN	B	1310	11/12	0.95	0.11	23,25,27,29	0
3	BMA	B	1103[B]	11/12	0.95	0.10	26,28,29,31	11

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	EDO	B	1871	4/4	0.95	0.13	32,32,33,34	0
2	NAG	A	1701	14/15	0.95	0.09	24,28,32,35	0
5	EDO	A	1869	4/4	0.95	0.09	36,37,39,40	0
2	NAG	A	1202	14/15	0.95	0.14	27,30,33,43	0
2	NAG	B	1101	14/15	0.95	0.10	21,23,27,28	0
4	MAN	A	1104	11/12	0.95	0.10	30,32,35,40	0
4	MAN	A	1310	11/12	0.95	0.11	17,19,21,21	0
4	MAN	B	1104	11/12	0.95	0.09	29,32,33,38	0
4	MAN	B	1311	11/12	0.95	0.11	25,27,30,32	0
3	BMA	B	1103[A]	11/12	0.95	0.10	27,28,30,30	11
2	NAG	B	1001	14/15	0.96	0.09	18,20,28,29	0
2	NAG	A	1401	14/15	0.96	0.13	22,24,26,26	0
3	BMA	B	1503	11/12	0.96	0.10	24,25,30,39	0
2	NAG	A	1101	14/15	0.96	0.09	21,22,23,24	0
3	BMA	A	1103	11/12	0.96	0.09	26,30,37,47	0
2	NAG	B	1302	14/15	0.96	0.10	25,26,29,30	0
3	BMA	B	1003	11/12	0.96	0.09	31,32,40,42	0
3	BMA	A	1003	11/12	0.96	0.08	28,33,35,42	0
2	NAG	B	1401	14/15	0.96	0.11	22,24,28,28	0
5	EDO	B	1869	4/4	0.96	0.11	23,23,26,27	0
4	MAN	A	1304	11/12	0.96	0.14	27,32,37,38	0
2	NAG	B	1002	14/15	0.96	0.12	22,25,31,33	0
2	NAG	B	1301	14/15	0.96	0.09	24,28,30,31	0
4	MAN	B	1506	11/12	0.96	0.11	26,28,32,36	0
2	NAG	B	1402	14/15	0.96	0.14	23,29,35,43	0
2	NAG	A	1402	14/15	0.96	0.14	22,26,35,40	0
3	BMA	B	1303	11/12	0.96	0.11	26,28,34,36	0
5	EDO	A	1874	4/4	0.96	0.17	36,38,38,39	0
4	MAN	A	1308	11/12	0.96	0.13	27,29,37,39	0
5	EDO	A	1867	4/4	0.96	0.11	20,22,24,25	0
5	EDO	B	1875	4/4	0.96	0.19	25,29,31,36	0
5	EDO	A	1879	4/4	0.96	0.14	31,33,36,42	0
2	NAG	B	1102	14/15	0.96	0.09	21,24,27,27	0
2	NAG	B	1701	14/15	0.96	0.09	24,29,35,36	0
2	NAG	B	1502	14/15	0.96	0.11	22,24,27,33	0
5	EDO	B	1864	4/4	0.96	0.26	39,43,43,44	0
2	NAG	A	1201	14/15	0.97	0.14	16,18,20,23	0
5	EDO	A	1870	4/4	0.97	0.17	27,30,34,34	0
3	BMA	A	1303	11/12	0.97	0.11	19,20,22,25	0
2	NAG	A	1102	14/15	0.97	0.07	22,25,28,29	0
5	EDO	B	1867	4/4	0.97	0.12	24,30,31,34	0
4	MAN	A	1307	11/12	0.97	0.11	19,20,21,23	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	NAG	A	1301	14/15	0.97	0.10	17,19,21,22	0
2	NAG	A	1302	14/15	0.97	0.11	17,18,20,21	0
2	NAG	B	1501	14/15	0.97	0.07	19,22,27,27	0
2	NAG	A	1002	14/15	0.97	0.07	19,21,26,29	0
4	MAN	B	1308	11/12	0.97	0.12	30,34,38,42	0
3	BMA	A	1503	11/12	0.97	0.08	23,25,28,32	0
2	NAG	B	1201	14/15	0.97	0.09	22,26,28,29	0
4	MAN	B	1307	11/12	0.98	0.07	25,26,27,28	0
2	NAG	A	1502[A]	14/15	0.98	0.11	20,21,24,26	14
2	NAG	A	1502[B]	14/15	0.98	0.11	20,21,23,26	14
2	NAG	A	1001	14/15	0.98	0.08	17,18,24,25	0
2	NAG	A	1501	14/15	0.98	0.07	17,19,25,26	0

6.5 Other polymers [i](#)

There are no such residues in this entry.