



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 05:49 pm GMT

PDB ID : 5GSQ
Title : Crystal structure of IgG Fc with a homogeneous glycoform and Antibody-Dependent Cellular Cytotoxicity
Authors : Chen, C.-L.; Hsu, J.-C.; Lin, C.-W.; Wu, C.-Y.; Wong, C.-H.; Ma, C.
Deposited on : 2016-08-17
Resolution : 1.85 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

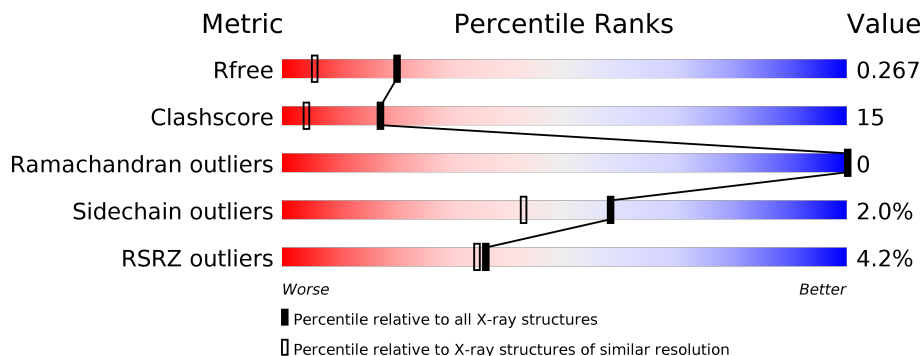
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.85 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	2111 (1.86-1.86)
Clashscore	122126	2258 (1.86-1.86)
Ramachandran outliers	120053	2234 (1.86-1.86)
Sidechain outliers	120020	2234 (1.86-1.86)
RSRZ outliers	108989	2075 (1.86-1.86)

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	225	<p>74% 16% 8%</p>
1	B	225	<p>76% 16% 8%</p>
1	C	225	<p>72% 21% 8%</p>
1	D	225	<p>11% 62% 22% 14%</p>

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	NAG	D	501	-	-	X	X
2	NAG	D	505	-	-	X	-
4	MAN	A	506	-	-	X	-

2 Entry composition [i](#)

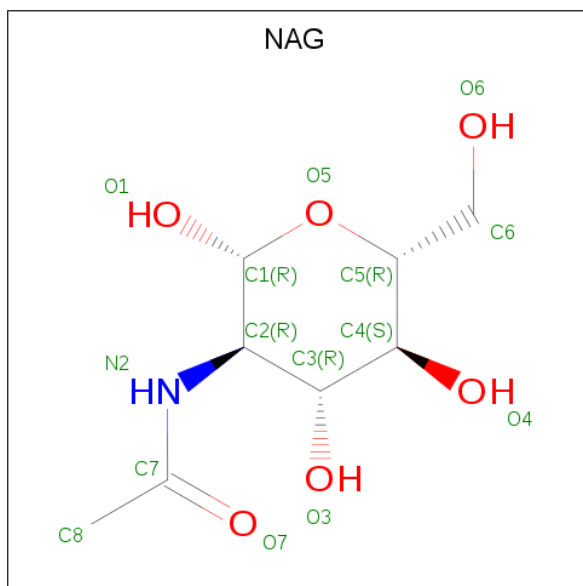
There are 7 unique types of molecules in this entry. The entry contains 7717 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Ig gamma-1 chain C region.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	208	Total 1664	C 1059	N 280	O 319	S 6	0	0	0
1	B	208	Total 1664	C 1059	N 280	O 319	S 6	0	0	0
1	C	208	Total 1664	C 1059	N 280	O 319	S 6	0	0	0
1	D	194	Total 1555	C 992	N 261	O 296	S 6	0	0	0

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



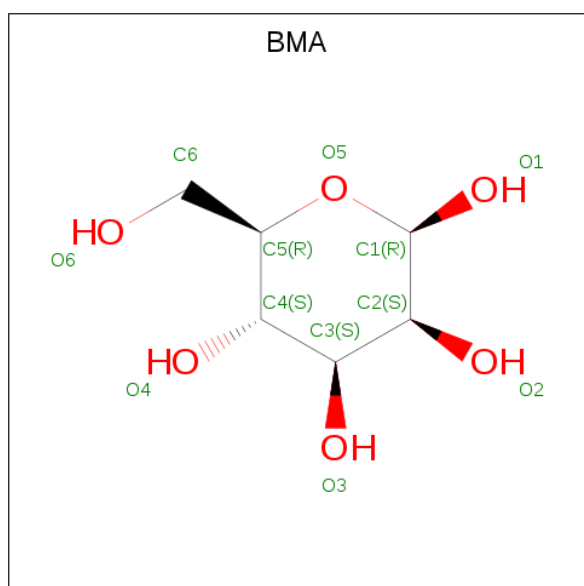
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0

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

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



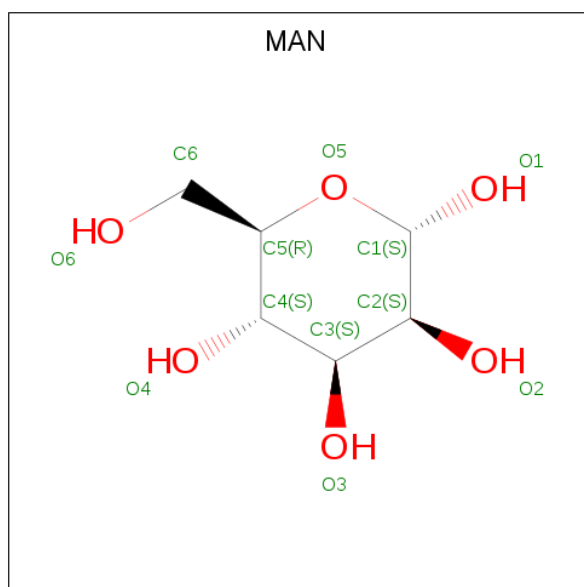
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	6	5		

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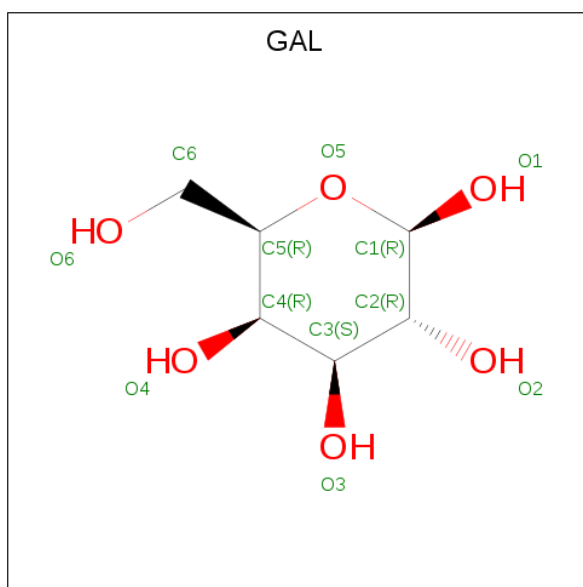
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total	C	O	0	0
			11	6	5		
3	C	1	Total	C	O	0	0
			11	6	5		
3	D	1	Total	C	O	0	0
			11	6	5		

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



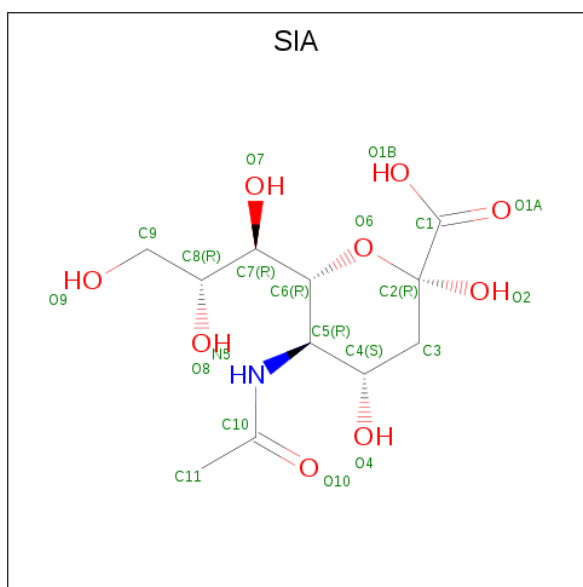
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			11	6	5		
4	A	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	B	1	Total	C	O	0	0
			11	6	5		
4	C	1	Total	C	O	0	0
			11	6	5		
4	C	1	Total	C	O	0	0
			11	6	5		
4	D	1	Total	C	O	0	0
			11	6	5		

- Molecule 5 is BETA-D-GALACTOSE (three-letter code: GAL) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			11	6	5		
5	B	1	Total	C	O	0	0
			11	6	5		
5	C	1	Total	C	O	0	0
			10	6	4		

- Molecule 6 is O-SIALIC ACID (three-letter code: SIA) (formula: $C_{11}H_{19}NO_9$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	C	1	Total	C	N	O	0	0
			21	11	1	9		

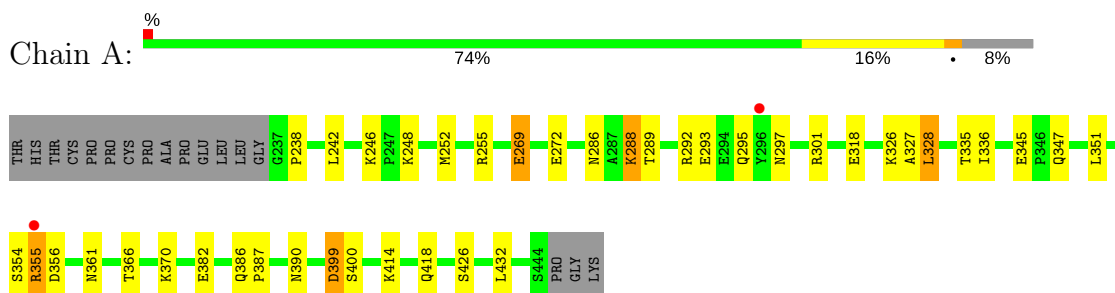
- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	231	Total O 231 231	0	0
7	B	221	Total O 221 221	0	0
7	C	198	Total O 198 198	0	0
7	D	178	Total O 178 178	0	0

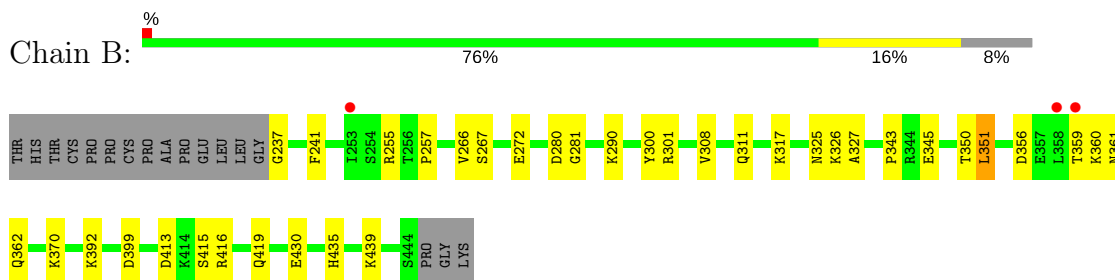
3 Residue-property plots

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.

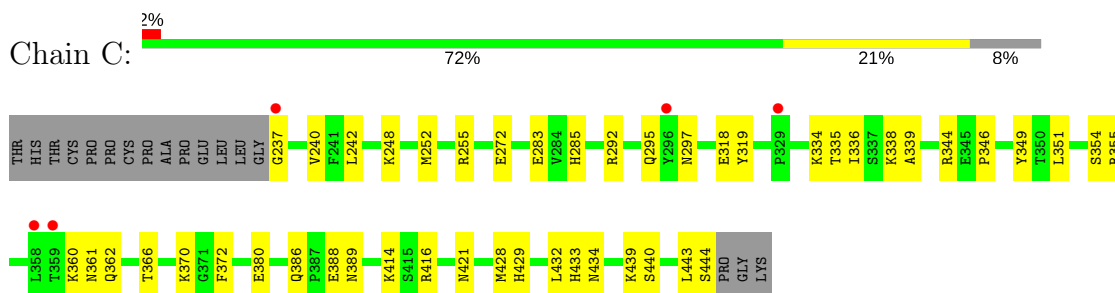
- Molecule 1: Ig gamma-1 chain C region



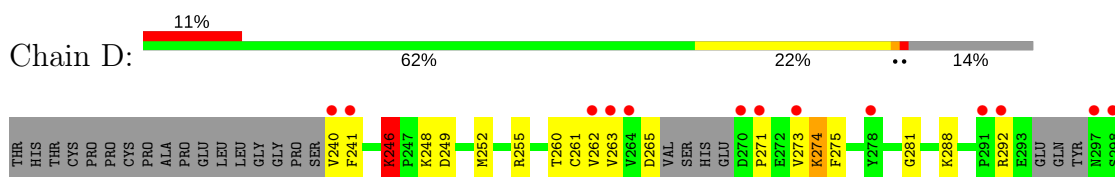
- Molecule 1: Ig gamma-1 chain C region

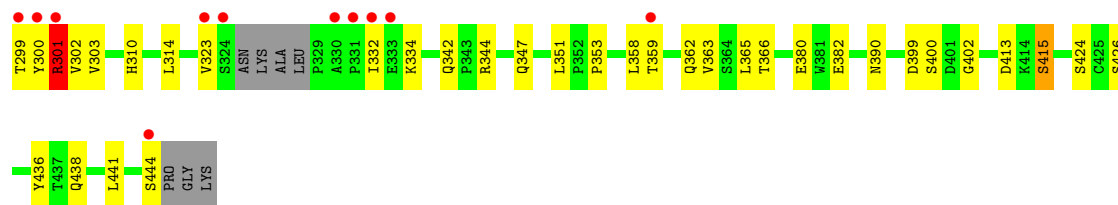


- Molecule 1: Ig gamma-1 chain C region



- Molecule 1: Ig gamma-1 chain C region





4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	50.18Å 158.41Å 66.91Å 90.00° 109.04° 90.00°	Depositor
Resolution (Å)	49.42 – 1.85 49.42 – 1.85	Depositor EDS
% Data completeness (in resolution range)	86.8 (49.42-1.85) 84.0 (49.42-1.85)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	0.03	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.98 (at 1.86Å)	Xtrriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.227 , 0.267 0.227 , 0.267	Depositor DCC
R_{free} test set	3640 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	16.6	Xtrriage
Anisotropy	0.105	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 48.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.036 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7717	wwPDB-VP
Average B, all atoms (Å ²)	28.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.56% 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: GAL, SIA, 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	0.61	3/1710 (0.2%)	0.69	2/2330 (0.1%)
1	B	0.44	0/1710	0.60	1/2330 (0.0%)
1	C	0.45	0/1710	0.58	0/2330
1	D	0.70	6/1595 (0.4%)	0.64	0/2168
All	All	0.56	9/6725 (0.1%)	0.63	3/9158 (0.0%)

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	269	GLU	CD-OE1	-10.17	1.14	1.25
1	D	301	ARG	CZ-NH2	-9.86	1.20	1.33
1	D	301	ARG	NE-CZ	-9.18	1.21	1.33
1	A	269	GLU	CD-OE2	-8.78	1.16	1.25
1	D	301	ARG	CZ-NH1	-8.65	1.21	1.33
1	D	301	ARG	CD-NE	-7.96	1.32	1.46
1	D	246	LYS	CE-NZ	-7.82	1.29	1.49
1	D	246	LYS	CD-CE	-6.99	1.33	1.51
1	A	355	ARG	NE-CZ	-6.77	1.24	1.33

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	355	ARG	NE-CZ-NH1	-15.16	112.72	120.30
1	A	355	ARG	NH1-CZ-NH2	5.83	125.82	119.40
1	B	351	LEU	CA-CB-CG	5.30	127.49	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1664	0	1630	38	0
1	B	1664	0	1630	38	0
1	C	1664	0	1630	38	0
1	D	1555	0	1528	69	1
2	A	42	0	36	1	0
2	B	42	0	36	1	0
2	C	42	0	36	0	0
2	D	42	0	35	25	0
3	A	11	0	8	0	0
3	B	11	0	8	0	0
3	C	11	0	8	0	0
3	D	11	0	9	1	0
4	A	22	0	19	6	0
4	B	22	0	19	1	0
4	C	22	0	19	1	0
4	D	11	0	9	1	0
5	A	11	0	10	0	0
5	B	11	0	10	0	0
5	C	10	0	7	0	0
6	C	21	0	17	1	0
7	A	231	0	0	26	1
7	B	221	0	0	22	1
7	C	198	0	0	19	1
7	D	178	0	0	20	0
All	All	7717	0	6704	201	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 15.

All (201) 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:400:SER:N	7:A:603:HOH:O	1.95	0.99
1:D:344:ARG:NH2	7:D:601:HOH:O	1.93	0.99
1:C:370:LYS:NZ	7:C:601:HOH:O	1.97	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:301:ARG:HE	2:D:501:NAG:H81	1.25	0.96
1:C:338:LYS:NZ	1:C:339:ALA:O	2.02	0.91
1:D:248:LYS:NZ	1:D:380:GLU:OE2	2.04	0.91
1:B:267:SER:C	7:B:604:HOH:O	2.08	0.90
1:A:293:GLU:OE1	7:A:601:HOH:O	1.90	0.89
1:D:402:GLY:O	7:D:601:HOH:O	1.89	0.88
1:A:272:GLU:OE2	7:A:602:HOH:O	1.92	0.86
1:B:272:GLU:O	1:B:325:ASN:ND2	2.09	0.86
1:B:430:GLU:OE1	7:B:601:HOH:O	1.93	0.85
1:D:400:SER:O	7:D:602:HOH:O	1.96	0.84
1:D:390:ASN:ND2	7:D:605:HOH:O	2.11	0.83
1:D:246:LYS:NZ	2:D:505:NAG:HN2	1.76	0.82
1:B:280:ASP:OD1	7:B:602:HOH:O	1.95	0.82
2:D:505:NAG:O7	7:D:603:HOH:O	1.97	0.81
1:B:267:SER:OG	7:B:604:HOH:O	1.98	0.80
2:D:501:NAG:O4	2:D:501:NAG:N2	2.14	0.79
1:C:344:ARG:NH1	7:C:607:HOH:O	2.15	0.79
1:B:360:LYS:HD2	1:B:362:GLN:H	1.47	0.79
1:A:361:ASN:O	7:A:604:HOH:O	2.02	0.78
1:D:415:SER:HB2	7:D:728:HOH:O	1.84	0.78
1:D:301:ARG:HE	2:D:501:NAG:C8	1.97	0.77
1:D:246:LYS:HZ1	2:D:505:NAG:H3	1.48	0.77
1:C:386:GLN:OE1	7:C:602:HOH:O	2.03	0.77
1:D:240:VAL:O	1:D:334:LYS:NZ	2.12	0.77
1:C:346:PRO:HB3	1:C:372:PHE:HB3	1.65	0.77
1:B:360:LYS:HE3	1:B:362:GLN:HB2	1.66	0.76
1:B:317:LYS:HA	7:B:602:HOH:O	1.86	0.76
1:C:429:HIS:HB3	1:C:432:LEU:HD23	1.67	0.75
1:D:246:LYS:HZ2	2:D:505:NAG:HN2	1.31	0.75
1:C:252:MET:SD	7:C:745:HOH:O	2.44	0.74
1:D:246:LYS:H	1:D:246:LYS:HD3	1.52	0.74
1:B:326:LYS:O	7:B:605:HOH:O	2.03	0.74
1:D:275:PHE:N	7:D:608:HOH:O	2.20	0.74
1:D:301:ARG:CZ	2:D:501:NAG:O7	2.36	0.73
1:D:240:VAL:HG21	1:D:323:VAL:HG21	1.71	0.73
1:C:237:GLY:N	7:C:610:HOH:O	2.21	0.72
1:B:301:ARG:NH2	7:B:608:HOH:O	2.19	0.72
1:A:297:ASN:O	7:A:606:HOH:O	2.07	0.72
1:B:345:GLU:O	7:B:606:HOH:O	2.07	0.72
1:C:318:GLU:CD	1:C:335:THR:HG23	2.11	0.71
1:A:328:LEU:O	7:A:607:HOH:O	2.07	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:260:THR:OG1	2:D:505:NAG:H62	1.90	0.71
1:B:416:ARG:NH2	7:B:610:HOH:O	2.23	0.70
1:C:439:LYS:NZ	7:C:613:HOH:O	2.24	0.70
1:D:301:ARG:NH2	2:D:501:NAG:O7	2.25	0.70
1:A:382:GLU:OE1	7:A:609:HOH:O	2.10	0.69
1:B:281:GLY:O	7:B:607:HOH:O	2.09	0.69
1:B:435:HIS:NE2	7:B:611:HOH:O	2.25	0.69
6:C:508:SIA:O1B	7:C:603:HOH:O	2.09	0.69
1:D:246:LYS:HE2	7:D:607:HOH:O	1.94	0.68
1:D:246:LYS:CE	2:D:505:NAG:HN2	2.06	0.67
1:D:444:SER:O	7:D:606:HOH:O	2.12	0.67
1:D:261:CYS:SG	7:D:704:HOH:O	2.51	0.67
1:C:318:GLU:OE2	1:C:335:THR:HG23	1.95	0.66
1:A:386:GLN:NE2	1:A:387:PRO:HD2	2.10	0.66
1:C:421:ASN:ND2	7:C:615:HOH:O	2.25	0.66
2:D:505:NAG:C7	7:D:603:HOH:O	2.44	0.66
1:B:267:SER:O	7:B:604:HOH:O	2.07	0.66
1:B:290:LYS:HE3	7:B:706:HOH:O	1.96	0.65
1:D:246:LYS:NZ	2:D:505:NAG:H3	2.12	0.65
1:D:246:LYS:HD3	1:D:246:LYS:N	2.11	0.64
1:A:390:ASN:OD1	7:A:610:HOH:O	2.15	0.64
1:B:327:ALA:HB3	7:B:657:HOH:O	1.97	0.64
1:A:327:ALA:O	7:A:611:HOH:O	2.15	0.63
2:D:501:NAG:H4	2:D:502:NAG:N2	2.12	0.63
1:B:343:PRO:HG3	7:B:613:HOH:O	1.99	0.62
1:A:248:LYS:NZ	1:A:255:ARG:HH12	1.97	0.62
1:D:301:ARG:NE	2:D:501:NAG:O7	2.32	0.62
1:D:438:GLN:NE2	7:D:610:HOH:O	2.32	0.62
1:B:419:GLN:NE2	7:B:603:HOH:O	1.96	0.62
1:D:249:ASP:OD2	7:D:607:HOH:O	2.16	0.62
1:A:248:LYS:HZ2	1:A:255:ARG:HH12	1.47	0.61
1:A:295:GLN:O	1:A:297:ASN:N	2.32	0.61
1:D:299:THR:CG2	2:D:501:NAG:H2	2.32	0.60
2:A:505:NAG:H82	7:A:638:HOH:O	2.00	0.60
1:D:382:GLU:OE2	1:D:426:SER:OG	2.20	0.59
1:B:360:LYS:HE2	1:B:362:GLN:O	2.02	0.59
1:D:240:VAL:O	1:D:241:PHE:HD2	1.85	0.59
4:B:506:MAN:H62	7:B:729:HOH:O	2.02	0.59
1:D:292:ARG:HD2	1:D:300:TYR:CD1	2.38	0.59
1:A:361:ASN:OD1	7:A:612:HOH:O	2.17	0.59
4:C:506:MAN:H61	7:C:691:HOH:O	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:504:MAN:O4	2:D:505:NAG:H2	2.03	0.58
1:C:272:GLU:OE2	7:C:608:HOH:O	2.17	0.58
1:D:248:LYS:HD2	1:D:252:MET:SD	2.44	0.57
1:C:240:VAL:O	1:C:334:LYS:HE2	2.06	0.56
1:C:252:MET:HG3	1:C:428:MET:HE3	1.86	0.56
1:A:292:ARG:NH1	7:A:629:HOH:O	2.38	0.55
1:C:283:GLU:HG2	1:C:285:HIS:CE1	2.41	0.55
1:B:311:GLN:N	1:B:311:GLN:OE1	2.38	0.55
4:A:506:MAN:H2	7:A:785:HOH:O	2.07	0.55
4:A:506:MAN:O2	7:A:605:HOH:O	2.04	0.55
1:B:272:GLU:OE2	1:B:326:LYS:HB2	2.07	0.55
1:D:281:GLY:N	7:D:614:HOH:O	2.40	0.55
1:C:355:ARG:HG2	7:C:620:HOH:O	2.06	0.54
1:C:389:ASN:ND2	7:C:604:HOH:O	2.12	0.54
1:A:242:LEU:HD23	1:A:336:ILE:HG23	1.90	0.54
1:A:345:GLU:HG3	1:A:432:LEU:HD23	1.90	0.54
1:C:388:GLU:OE1	1:C:416:ARG:NH2	2.42	0.53
2:D:502:NAG:HO3	3:D:503:BMA:C2	2.19	0.53
1:B:360:LYS:HD2	1:B:361:ASN:N	2.23	0.53
1:D:362:GLN:OE1	1:D:413:ASP:HA	2.07	0.53
1:D:262:VAL:HG13	1:D:303:VAL:HG22	1.90	0.53
1:D:323:VAL:HG22	1:D:332:ILE:HG23	1.91	0.53
4:A:506:MAN:C3	7:A:686:HOH:O	2.57	0.53
1:A:289:THR:HG23	7:A:698:HOH:O	2.09	0.52
1:B:237:GLY:N	7:B:624:HOH:O	2.42	0.52
4:A:506:MAN:H2	7:A:686:HOH:O	2.10	0.51
1:B:255:ARG:NE	7:B:621:HOH:O	2.40	0.51
1:D:271:PRO:O	1:D:292:ARG:NH1	2.43	0.51
1:A:347:GLN:NE2	7:A:614:HOH:O	2.23	0.51
1:A:399:ASP:OD1	7:A:603:HOH:O	2.19	0.51
1:B:266:VAL:O	1:B:300:TYR:N	2.34	0.51
1:D:248:LYS:O	1:D:252:MET:HG3	2.11	0.51
1:C:292:ARG:NH1	7:C:629:HOH:O	2.44	0.51
1:A:361:ASN:HB3	7:A:718:HOH:O	2.11	0.50
1:A:326:LYS:N	7:A:602:HOH:O	2.45	0.50
1:C:255:ARG:NH1	7:C:622:HOH:O	2.36	0.50
1:B:272:GLU:OE2	1:B:326:LYS:N	2.40	0.50
1:D:301:ARG:HE	2:D:501:NAG:C7	2.24	0.50
1:A:355:ARG:HG3	1:A:356:ASP:H	1.78	0.49
1:C:338:LYS:NZ	7:C:621:HOH:O	2.36	0.49
1:D:353:PRO:HD3	1:D:365:LEU:CD2	2.43	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:359:THR:C	7:D:609:HOH:O	2.51	0.49
1:C:361:ASN:ND2	7:C:630:HOH:O	2.45	0.49
4:A:506:MAN:H3	7:A:686:HOH:O	2.13	0.48
1:D:288:LYS:NZ	7:D:618:HOH:O	2.46	0.48
1:D:301:ARG:NE	2:D:501:NAG:C7	2.77	0.48
1:D:252:MET:HB2	1:D:255:ARG:HG3	1.95	0.48
1:A:355:ARG:HG3	1:A:356:ASP:N	2.30	0.47
1:D:310:HIS:O	1:D:314:LEU:HD13	2.13	0.47
1:D:332:ILE:HD11	1:D:334:LYS:HE3	1.96	0.47
1:D:365:LEU:HB3	1:D:441:LEU:HD23	1.96	0.47
1:A:269:GLU:H	1:A:269:GLU:CD	2.18	0.47
1:D:275:PHE:HE1	7:D:704:HOH:O	1.98	0.47
2:D:501:NAG:H4	2:D:502:NAG:C7	2.45	0.47
1:B:370:LYS:NZ	7:B:620:HOH:O	2.39	0.47
1:C:318:GLU:OE2	1:C:319:TYR:N	2.48	0.46
1:B:413:ASP:OD1	1:B:415:SER:OG	2.30	0.46
1:A:288:LYS:HD3	7:A:739:HOH:O	2.14	0.46
1:D:240:VAL:CG2	1:D:323:VAL:HG21	2.42	0.46
1:D:351:LEU:HB2	1:D:366:THR:HB	1.98	0.46
1:B:360:LYS:CD	1:B:362:GLN:H	2.24	0.46
1:D:359:THR:O	7:D:609:HOH:O	2.20	0.46
1:D:390:ASN:ND2	7:D:621:HOH:O	2.48	0.46
1:D:271:PRO:HB2	1:D:292:ARG:NH1	2.31	0.45
1:D:347:GLN:HG3	7:D:626:HOH:O	2.16	0.45
1:A:318:GLU:HG3	1:A:335:THR:CG2	2.46	0.45
1:B:241:PHE:CZ	2:B:502:NAG:H61	2.51	0.45
1:D:240:VAL:HG21	1:D:323:VAL:CG2	2.45	0.45
1:A:301:ARG:HD3	7:A:601:HOH:O	2.15	0.45
1:C:252:MET:HG3	1:C:428:MET:CE	2.46	0.45
1:D:248:LYS:HG2	1:D:255:ARG:NH2	2.32	0.45
1:D:358:LEU:HD23	1:D:363:VAL:HG11	2.00	0.44
1:C:388:GLU:OE2	7:C:609:HOH:O	2.20	0.44
1:A:246:LYS:HA	1:A:246:LYS:HD3	1.86	0.44
1:A:414:LYS:HD3	1:A:418:GLN:NE2	2.33	0.44
1:D:301:ARG:NE	2:D:501:NAG:H81	2.10	0.43
1:C:433:HIS:CE1	1:C:434:ASN:OD1	2.71	0.43
1:D:265:ASP:HA	1:D:299:THR:OG1	2.18	0.43
1:C:349:TYR:HD1	7:C:613:HOH:O	2.02	0.43
1:D:246:LYS:CD	1:D:246:LYS:N	2.79	0.43
1:B:392:LYS:HB3	7:B:663:HOH:O	2.19	0.42
1:A:414:LYS:HG2	1:A:414:LYS:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:311:GLN:CD	1:B:311:GLN:H	2.11	0.42
1:B:360:LYS:CE	1:B:362:GLN:HB2	2.45	0.42
1:B:350:THR:HG23	1:B:439:LYS:HB3	2.02	0.42
1:D:246:LYS:HE3	2:D:505:NAG:HN2	1.81	0.42
1:A:426:SER:OG	7:A:613:HOH:O	2.20	0.42
1:D:273:VAL:O	1:D:274:LYS:HD3	2.20	0.42
1:A:370:LYS:HE2	1:A:370:LYS:HB2	1.90	0.42
1:D:436:TYR:OH	1:D:438:GLN:NE2	2.48	0.42
1:B:356:ASP:O	1:B:359:THR:HG23	2.20	0.41
1:C:242:LEU:HG	1:C:336:ILE:HG12	2.02	0.41
1:D:263:VAL:HG12	1:D:302:VAL:O	2.20	0.41
1:D:353:PRO:HD3	1:D:365:LEU:HD23	2.01	0.41
1:C:248:LYS:HE2	1:C:380:GLU:OE1	2.21	0.41
1:D:240:VAL:C	1:D:241:PHE:HD2	2.23	0.41
1:D:299:THR:HG23	2:D:501:NAG:H2	2.02	0.41
1:C:351:LEU:HB2	1:C:366:THR:HB	2.03	0.41
1:A:286:ASN:HD22	1:A:286:ASN:H	1.68	0.41
1:A:286:ASN:H	1:A:286:ASN:ND2	2.19	0.41
1:C:361:ASN:HA	1:C:414:LYS:HE2	2.03	0.41
1:A:238:PRO:HD2	1:A:328:LEU:HD13	2.02	0.41
1:C:360:LYS:HG3	1:C:362:GLN:H	1.86	0.41
1:C:295:GLN:O	1:C:297:ASN:N	2.51	0.41
1:C:444:SER:HB3	7:C:702:HOH:O	2.21	0.41
1:D:323:VAL:HG22	1:D:332:ILE:CG2	2.51	0.41
1:D:271:PRO:HB3	1:D:300:TYR:HE1	1.86	0.40
1:C:429:HIS:HB3	1:C:432:LEU:CD2	2.46	0.40
1:A:351:LEU:HB2	1:A:366:THR:HB	2.03	0.40
4:A:506:MAN:C2	7:A:686:HOH:O	2.68	0.40
1:B:257:PRO:HG2	1:B:308:VAL:O	2.22	0.40
1:C:443:LEU:O	1:C:444:SER:OG	2.36	0.40
2:D:505:NAG:H5	2:D:505:NAG:N2	2.36	0.40
1:A:248:LYS:HG3	1:A:252:MET:HE1	2.03	0.40
1:C:338:LYS:HZ2	1:C:338:LYS:HG3	1.71	0.40
1:B:267:SER:CA	7:B:604:HOH:O	2.61	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:D:252:MET:SD	7:A:807:HOH:O[1_655]	2.15	0.05
7:B:667:HOH:O	7:C:707:HOH:O[2_649]	2.17	0.03

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	206/225 (92%)	203 (98%)	3 (2%)	0	100	100
1	B	206/225 (92%)	203 (98%)	3 (2%)	0	100	100
1	C	206/225 (92%)	197 (96%)	9 (4%)	0	100	100
1	D	186/225 (83%)	183 (98%)	3 (2%)	0	100	100
All	All	804/900 (89%)	786 (98%)	18 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	194/208 (93%)	190 (98%)	4 (2%)	56	40
1	B	194/208 (93%)	192 (99%)	2 (1%)	78	72
1	C	194/208 (93%)	192 (99%)	2 (1%)	78	72
1	D	182/208 (88%)	175 (96%)	7 (4%)	36	17
All	All	764/832 (92%)	749 (98%)	15 (2%)	58	43

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	288	LYS
1	A	328	LEU

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Mol	Chain	Res	Type
1	A	354	SER
1	A	399	ASP
1	B	351	LEU
1	B	399	ASP
1	C	354	SER
1	C	440	SER
1	D	246	LYS
1	D	274	LYS
1	D	301	ARG
1	D	342	GLN
1	D	399	ASP
1	D	415	SER
1	D	424	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	386	GLN
1	C	285	HIS
1	C	315	ASN
1	C	361	ASN
1	C	384	ASN
1	D	390	ASN
1	D	438	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](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry

27 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	501	1,2	14,14,15	1.80	3 (21%)	17,19,21	1.42	3 (17%)
2	NAG	A	502	3,2	14,14,15	1.87	3 (21%)	17,19,21	1.50	2 (11%)
3	BMA	A	503	2,4	11,11,12	1.48	2 (18%)	15,15,17	2.16	2 (13%)
4	MAN	A	504	3,2	11,11,12	1.78	2 (18%)	15,15,17	1.64	2 (13%)
2	NAG	A	505	5,4	14,14,15	1.82	3 (21%)	17,19,21	1.19	2 (11%)
4	MAN	A	506	3	11,11,12	1.91	4 (36%)	15,15,17	1.46	3 (20%)
5	GAL	A	507	2	11,11,12	1.58	1 (9%)	15,15,17	1.27	1 (6%)
2	NAG	B	501	1,2	14,14,15	1.70	2 (14%)	17,19,21	1.42	2 (11%)
2	NAG	B	502	3,2	14,14,15	1.78	3 (21%)	17,19,21	1.11	1 (5%)
3	BMA	B	503	2,4	11,11,12	1.64	3 (27%)	15,15,17	1.56	3 (20%)
4	MAN	B	504	3,2	11,11,12	1.83	3 (27%)	15,15,17	1.16	1 (6%)
2	NAG	B	505	5,4	14,14,15	1.77	4 (28%)	17,19,21	1.35	2 (11%)
4	MAN	B	506	3	11,11,12	2.03	4 (36%)	15,15,17	1.86	3 (20%)
5	GAL	B	507	2	11,11,12	1.61	2 (18%)	15,15,17	0.98	1 (6%)
2	NAG	C	501	1,2	14,14,15	2.50	4 (28%)	17,19,21	1.76	7 (41%)
2	NAG	C	502	3,2	14,14,15	1.81	4 (28%)	17,19,21	1.26	1 (5%)
3	BMA	C	503	2,4	11,11,12	1.41	1 (9%)	15,15,17	1.64	3 (20%)
4	MAN	C	504	3,2	11,11,12	1.85	2 (18%)	15,15,17	1.09	2 (13%)
2	NAG	C	505	5,4	14,14,15	1.78	3 (21%)	17,19,21	1.58	4 (23%)
4	MAN	C	506	3	11,11,12	1.89	4 (36%)	15,15,17	0.84	0
5	GAL	C	507	2,6	9,10,12	1.48	2 (22%)	13,14,17	1.16	1 (7%)
6	SIA	C	508	5	18,21,21	2.69	8 (44%)	19,31,31	1.36	2 (10%)
2	NAG	D	501	1,2	14,14,15	1.62	3 (21%)	17,19,21	3.38	7 (41%)
2	NAG	D	502	1,3,2	14,14,15	2.07	4 (28%)	17,19,21	2.28	7 (41%)
3	BMA	D	503	2,4	11,11,12	1.82	1 (9%)	15,15,17	3.55	6 (40%)
4	MAN	D	504	3,2	11,11,12	2.09	3 (27%)	15,15,17	2.73	5 (33%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	D	505	4	14,14,15	2.28	4 (28%)	17,19,21	5.34	8 (47%)

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	A	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	503	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	504	3,2	-	0/2/19/22	0/1/1/1
2	NAG	A	505	5,4	-	0/6/23/26	0/1/1/1
4	MAN	A	506	3	-	0/2/19/22	1/1/1/1
5	GAL	A	507	2	-	0/2/19/22	0/1/1/1
2	NAG	B	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	503	2,4	-	0/2/19/22	0/1/1/1
4	MAN	B	504	3,2	-	0/2/19/22	0/1/1/1
2	NAG	B	505	5,4	-	0/6/23/26	0/1/1/1
4	MAN	B	506	3	-	0/2/19/22	0/1/1/1
5	GAL	B	507	2	-	0/2/19/22	0/1/1/1
2	NAG	C	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	C	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	C	503	2,4	-	0/2/19/22	0/1/1/1
4	MAN	C	504	3,2	-	0/2/19/22	0/1/1/1
2	NAG	C	505	5,4	-	0/6/23/26	0/1/1/1
4	MAN	C	506	3	-	0/2/19/22	0/1/1/1
5	GAL	C	507	2,6	-	0/0/17/22	0/1/1/1
6	SIA	C	508	5	-	0/14/38/38	0/1/1/1
2	NAG	D	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	D	502	1,3,2	-	0/6/23/26	0/1/1/1
3	BMA	D	503	2,4	-	0/2/19/22	0/1/1/1
4	MAN	D	504	3,2	-	0/2/19/22	0/1/1/1
2	NAG	D	505	4	-	0/6/23/26	0/1/1/1

All (82) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	508	SIA	O2-C2	-5.06	1.34	1.39
6	C	508	SIA	C4-C5	-4.96	1.48	1.53
4	D	504	MAN	C2-C3	-3.88	1.46	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	504	MAN	C2-C3	-3.52	1.47	1.52
3	B	503	BMA	C2-C3	-3.19	1.47	1.52
4	A	506	MAN	C2-C3	-3.11	1.47	1.52
6	C	508	SIA	C3-C4	-3.05	1.48	1.53
4	A	504	MAN	C2-C3	-2.94	1.48	1.52
4	C	506	MAN	C2-C3	-2.90	1.48	1.52
4	B	504	MAN	C2-C3	-2.89	1.48	1.52
4	B	506	MAN	C2-C3	-2.77	1.48	1.52
3	A	503	BMA	C2-C3	-2.66	1.48	1.52
2	D	502	NAG	C3-C2	-2.56	1.46	1.52
6	C	508	SIA	O10-C10	-2.32	1.17	1.23
5	C	507	GAL	C2-C3	-2.31	1.49	1.52
5	B	507	GAL	C2-C3	-2.29	1.49	1.52
2	D	501	NAG	C3-C2	-2.27	1.47	1.52
2	B	502	NAG	C3-C2	-2.15	1.47	1.52
2	C	502	NAG	O5-C5	2.01	1.47	1.43
4	C	506	MAN	O5-C5	2.03	1.47	1.43
6	C	508	SIA	O6-C6	2.05	1.47	1.44
4	B	504	MAN	O5-C5	2.06	1.47	1.43
2	A	501	NAG	C2-N2	2.10	1.49	1.46
2	B	505	NAG	O5-C5	2.11	1.47	1.43
3	B	503	BMA	O5-C5	2.13	1.47	1.43
2	D	501	NAG	C7-N2	2.15	1.42	1.34
4	B	506	MAN	O5-C5	2.18	1.48	1.43
2	C	505	NAG	C2-N2	2.19	1.50	1.46
2	A	502	NAG	C2-N2	2.20	1.50	1.46
2	D	505	NAG	O5-C5	2.23	1.48	1.43
2	B	505	NAG	C2-N2	2.26	1.50	1.46
2	C	502	NAG	C2-N2	2.29	1.50	1.46
4	A	506	MAN	O5-C5	2.37	1.48	1.43
2	C	501	NAG	C2-N2	2.40	1.50	1.46
4	C	506	MAN	O2-C2	2.57	1.48	1.43
2	A	505	NAG	C2-N2	2.65	1.50	1.46
4	D	504	MAN	O2-C2	2.65	1.49	1.43
4	A	506	MAN	O2-C2	2.73	1.49	1.43
4	B	506	MAN	O2-C2	2.75	1.49	1.43
2	D	505	NAG	C8-C7	2.93	1.56	1.50
6	C	508	SIA	C5-N5	3.03	1.50	1.45
2	B	502	NAG	C7-N2	3.11	1.45	1.34
5	C	507	GAL	O5-C1	3.24	1.49	1.43
2	B	501	NAG	C7-N2	3.28	1.46	1.34
2	D	502	NAG	C2-N2	3.28	1.51	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	502	NAG	C7-N2	3.33	1.46	1.34
6	C	508	SIA	C10-N5	3.36	1.46	1.34
2	B	505	NAG	C7-N2	3.37	1.46	1.34
2	C	501	NAG	O5-C5	3.38	1.50	1.43
3	B	503	BMA	O5-C1	3.43	1.49	1.43
2	C	505	NAG	C7-N2	3.43	1.46	1.34
2	C	501	NAG	C7-N2	3.43	1.46	1.34
2	B	505	NAG	O5-C1	3.45	1.49	1.43
2	A	505	NAG	C7-N2	3.48	1.46	1.34
2	A	501	NAG	C7-N2	3.48	1.46	1.34
2	A	502	NAG	C7-N2	3.50	1.46	1.34
3	C	503	BMA	O5-C1	3.57	1.49	1.43
2	D	502	NAG	C7-N2	3.59	1.47	1.34
2	A	505	NAG	O5-C1	3.66	1.49	1.43
3	A	503	BMA	O5-C1	3.85	1.50	1.43
4	A	506	MAN	O5-C1	3.89	1.50	1.43
2	B	501	NAG	O5-C1	3.90	1.50	1.43
2	D	501	NAG	O5-C1	3.91	1.50	1.43
4	C	504	MAN	O5-C1	3.96	1.50	1.43
2	C	505	NAG	O5-C1	3.99	1.50	1.43
2	A	501	NAG	O5-C1	4.06	1.50	1.43
2	C	502	NAG	O5-C1	4.06	1.50	1.43
2	B	502	NAG	O5-C1	4.09	1.50	1.43
4	A	504	MAN	O5-C1	4.12	1.50	1.43
2	D	502	NAG	O5-C1	4.21	1.50	1.43
2	A	502	NAG	O5-C1	4.21	1.50	1.43
4	B	504	MAN	O5-C1	4.27	1.50	1.43
5	B	507	GAL	O5-C1	4.28	1.50	1.43
4	C	506	MAN	O5-C1	4.29	1.50	1.43
5	A	507	GAL	O5-C1	4.31	1.50	1.43
2	D	505	NAG	C7-N2	4.51	1.50	1.34
4	D	504	MAN	O5-C1	4.58	1.51	1.43
4	B	506	MAN	O5-C1	4.79	1.51	1.43
3	D	503	BMA	O5-C1	4.97	1.51	1.43
2	D	505	NAG	O5-C1	5.55	1.52	1.43
6	C	508	SIA	O6-C2	6.16	1.49	1.43
2	C	501	NAG	O5-C1	6.87	1.54	1.43

All (81) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	503	BMA	C1-O5-C5	-11.89	95.83	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	505	NAG	C1-O5-C5	-11.21	96.77	112.19
2	D	505	NAG	C1-C2-N2	-10.15	93.15	110.49
2	D	501	NAG	C1-C2-N2	-9.95	93.49	110.49
4	D	504	MAN	O3-C3-C2	-8.85	93.58	110.04
3	A	503	BMA	O3-C3-C2	-6.18	98.53	110.04
2	D	501	NAG	C2-N2-C7	-5.60	114.77	122.94
2	D	502	NAG	O3-C3-C2	-4.44	99.88	109.39
4	B	506	MAN	C1-O5-C5	-4.42	106.10	112.19
2	D	501	NAG	O7-C7-N2	-3.91	114.57	121.94
4	A	504	MAN	C1-O5-C5	-3.89	106.84	112.19
2	C	505	NAG	C2-N2-C7	-3.86	117.32	122.94
2	B	501	NAG	C2-N2-C7	-3.82	117.37	122.94
2	A	502	NAG	C2-N2-C7	-3.81	117.39	122.94
3	B	503	BMA	O3-C3-C2	-3.79	102.99	110.04
2	D	502	NAG	O4-C4-C5	-3.72	99.99	109.31
2	D	501	NAG	C1-O5-C5	-3.53	107.34	112.19
2	C	501	NAG	C2-N2-C7	-3.33	118.08	122.94
2	D	505	NAG	C3-C4-C5	-3.31	104.32	110.24
4	B	506	MAN	C6-C5-C4	-3.17	105.49	112.99
3	D	503	BMA	O5-C1-C2	-3.11	105.93	110.78
4	D	504	MAN	C1-O5-C5	-3.02	108.03	112.19
2	D	501	NAG	C4-C3-C2	-2.99	106.64	111.02
4	B	506	MAN	O5-C1-C2	-2.98	106.14	110.78
4	A	506	MAN	C1-O5-C5	-2.92	108.17	112.19
2	A	501	NAG	C2-N2-C7	-2.82	118.83	122.94
2	A	501	NAG	O5-C1-C2	-2.79	107.67	111.52
6	C	508	SIA	C4-C5-N5	-2.78	104.66	110.40
2	B	502	NAG	O4-C4-C3	-2.70	104.04	110.34
4	C	504	MAN	O2-C2-C1	-2.63	103.88	109.17
3	C	503	BMA	O6-C6-C5	-2.59	102.25	111.29
2	C	505	NAG	C1-C2-N2	-2.56	106.12	110.49
4	D	504	MAN	O2-C2-C1	-2.54	104.05	109.17
3	B	503	BMA	O2-C2-C1	-2.54	104.06	109.17
3	D	503	BMA	O6-C6-C5	-2.47	102.67	111.29
2	D	505	NAG	O4-C4-C3	-2.44	104.65	110.34
2	D	505	NAG	O5-C5-C4	-2.28	105.27	110.83
2	B	501	NAG	O4-C4-C5	-2.26	103.64	109.31
2	A	505	NAG	C2-N2-C7	-2.25	119.66	122.94
2	C	501	NAG	O4-C4-C5	-2.23	103.73	109.31
2	C	505	NAG	O4-C4-C3	-2.19	105.22	110.34
2	C	501	NAG	C6-C5-C4	-2.18	107.85	112.99
3	C	503	BMA	O5-C5-C6	-2.13	103.77	107.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	506	MAN	O5-C1-C2	-2.10	107.50	110.78
4	D	504	MAN	O2-C2-C3	-2.10	106.09	110.19
5	B	507	GAL	O2-C2-C3	-2.10	106.09	110.19
2	C	501	NAG	O5-C5-C6	-2.06	103.89	107.15
4	D	504	MAN	O5-C1-C2	-2.03	107.62	110.78
4	C	504	MAN	O5-C1-C2	2.01	113.91	110.78
2	A	501	NAG	C8-C7-N2	2.07	119.72	116.10
2	D	501	NAG	C3-C4-C5	2.14	114.07	110.24
5	C	507	GAL	C1-C2-C3	2.15	112.38	109.66
2	C	502	NAG	C8-C7-N2	2.15	119.87	116.10
2	D	502	NAG	O5-C5-C4	2.16	116.09	110.83
6	C	508	SIA	O6-C6-C7	2.17	110.71	107.33
2	C	505	NAG	C4-C3-C2	2.26	114.33	111.02
2	B	505	NAG	C3-C4-C5	2.29	114.34	110.24
2	A	502	NAG	C8-C7-N2	2.29	120.12	116.10
3	D	503	BMA	C1-C2-C3	2.35	112.63	109.66
2	C	501	NAG	O5-C5-C4	2.36	116.56	110.83
5	A	507	GAL	C1-C2-C3	2.39	112.69	109.66
2	A	505	NAG	C8-C7-N2	2.40	120.31	116.10
2	D	502	NAG	C1-O5-C5	2.42	115.52	112.19
2	C	501	NAG	C8-C7-N2	2.42	120.35	116.10
2	B	505	NAG	C4-C3-C2	2.46	114.63	111.02
3	B	503	BMA	C1-C2-C3	2.55	112.89	109.66
4	B	504	MAN	C1-C2-C3	2.60	112.95	109.66
2	D	502	NAG	C2-N2-C7	2.69	126.87	122.94
2	C	501	NAG	C1-O5-C5	2.72	115.93	112.19
2	D	505	NAG	C4-C3-C2	2.74	115.03	111.02
3	D	503	BMA	C2-C3-C4	2.76	115.66	110.87
4	A	506	MAN	O5-C5-C6	2.92	111.77	107.15
3	D	503	BMA	O5-C5-C6	2.93	111.78	107.15
4	A	504	MAN	O5-C5-C6	3.16	112.14	107.15
2	D	502	NAG	C4-C3-C2	3.17	115.66	111.02
3	A	503	BMA	C1-C2-C3	3.35	113.89	109.66
2	D	501	NAG	O7-C7-C8	3.96	129.22	122.07
2	D	502	NAG	C1-C2-N2	4.42	118.05	110.49
3	C	503	BMA	C1-C2-C3	4.43	115.26	109.66
2	D	505	NAG	O5-C5-C6	7.30	118.70	107.15
2	D	505	NAG	C2-N2-C7	12.73	141.52	122.94

There are no chirality outliers.

There are no torsion outliers.

All (1) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	506	MAN	C1-C2-C3-C4-C5-O5

11 monomers are involved in 36 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	505	NAG	1	0
4	A	506	MAN	6	0
2	B	502	NAG	1	0
4	B	506	MAN	1	0
4	C	506	MAN	1	0
6	C	508	SIA	1	0
2	D	501	NAG	13	0
2	D	502	NAG	3	0
3	D	503	BMA	1	0
4	D	504	MAN	1	0
2	D	505	NAG	11	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, 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	208/225 (92%)	-0.09	2 (0%) 82 82	7, 20, 41, 62	0
1	B	208/225 (92%)	-0.01	3 (1%) 75 76	9, 24, 41, 56	0
1	C	208/225 (92%)	0.17	5 (2%) 59 57	10, 28, 46, 56	0
1	D	194/225 (86%)	0.49	24 (12%) 4 4	7, 26, 72, 99	0
All	All	818/900 (90%)	0.13	34 (4%) 36 34	7, 25, 50, 99	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	300	TYR	6.4
1	D	264	VAL	5.2
1	C	296	TYR	5.0
1	D	332	ILE	4.9
1	D	330	ALA	4.7
1	C	359	THR	4.6
1	D	270	ASP	4.6
1	D	298	SER	4.5
1	D	263	VAL	4.2
1	D	273	VAL	4.1
1	D	323	VAL	4.0
1	A	296	TYR	3.9
1	D	262	VAL	3.8
1	D	444	SER	3.5
1	C	358	LEU	3.5
1	D	291	PRO	3.3
1	B	359	THR	3.2
1	D	301	ARG	3.1
1	C	329	PRO	3.0
1	D	324	SER	3.0
1	D	240	VAL	3.0

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Mol	Chain	Res	Type	RSRZ
1	D	271	PRO	2.9
1	D	331	PRO	2.8
1	A	355	ARG	2.5
1	C	237	GLY	2.4
1	D	297	ASN	2.4
1	D	333	GLU	2.4
1	D	299	THR	2.2
1	D	278	TYR	2.2
1	B	253	ILE	2.2
1	D	292	ARG	2.2
1	D	241	PHE	2.0
1	B	358	LEU	2.0
1	D	359	THR	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](#)

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(Å ²)	Q<0.9
2	NAG	D	501	14/15	0.51	0.46	90,95,101,101	0
4	MAN	B	506	11/12	0.54	0.36	41,52,57,59	0
2	NAG	D	502	14/15	0.54	0.29	79,86,91,91	0
2	NAG	D	505	14/15	0.65	0.22	40,50,59,60	0
4	MAN	D	504	11/12	0.67	0.23	57,65,67,69	0
3	BMA	D	503	11/12	0.67	0.27	68,71,75,79	0
4	MAN	A	506	11/12	0.67	0.26	34,43,47,51	0
4	MAN	C	506	11/12	0.77	0.17	43,50,54,58	0
4	MAN	B	504	11/12	0.78	0.18	29,33,41,50	0
2	NAG	C	501	14/15	0.87	0.15	36,41,49,49	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	MAN	C	504	11/12	0.87	0.15	30,32,37,39	0
6	SIA	C	508	21/21	0.87	0.12	16,23,27,42	0
3	BMA	C	503	11/12	0.88	0.12	31,36,46,52	0
2	NAG	B	501	14/15	0.89	0.12	26,32,36,38	0
5	GAL	B	507	11/12	0.89	0.11	21,28,33,38	0
2	NAG	B	502	14/15	0.90	0.10	26,30,35,37	0
2	NAG	A	501	14/15	0.90	0.10	28,36,39,42	0
3	BMA	B	503	11/12	0.90	0.09	27,31,36,43	0
2	NAG	B	505	14/15	0.90	0.12	24,30,41,43	0
2	NAG	C	502	14/15	0.91	0.11	30,33,39,43	0
2	NAG	C	505	14/15	0.91	0.11	17,25,35,36	0
4	MAN	A	504	11/12	0.92	0.09	25,28,31,40	0
3	BMA	A	503	11/12	0.93	0.11	20,25,28,33	0
2	NAG	A	502	14/15	0.94	0.09	21,27,30,37	0
5	GAL	C	507	10/12	0.95	0.09	12,17,19,19	0
2	NAG	A	505	14/15	0.95	0.08	19,24,29,32	0
5	GAL	A	507	11/12	0.96	0.07	13,18,26,35	0

6.5 Other polymers [i](#)

There are no such residues in this entry.