



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 10, 2019 – 09:31 AM EST

PDB ID : 6BM8
Title : Crystal structure of glycoprotein B from Herpes Simplex Virus type I
Authors : Cooper, R.S.; Heldwein, E.E.
Deposited on : 2017-11-13
Resolution : 4.10 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)
Xtrriage (Phenix) : 1.13
EDS : rb-20031633
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) : rb-20031633

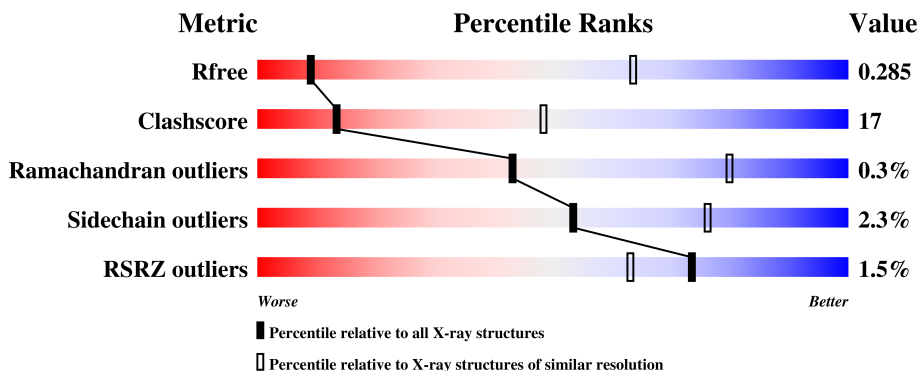
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 4.10 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	1039 (4.54-3.66)
Clashscore	122126	1052 (4.50-3.70)
Ramachandran outliers	120053	1006 (4.50-3.70)
Sidechain outliers	120020	1005 (4.52-3.68)
RSRZ outliers	108989	1161 (4.60-3.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	833	

2 Entry composition [i](#)

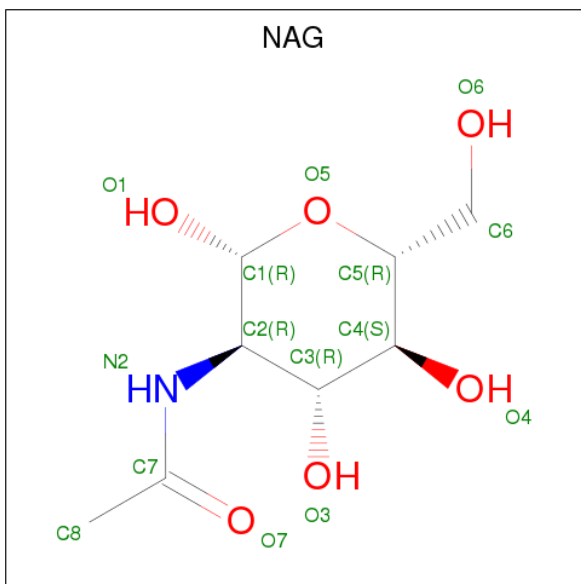
There are 3 unique types of molecules in this entry. The entry contains 5391 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Envelope glycoprotein B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	665	5296	3347	929	996	24	0	0	0

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



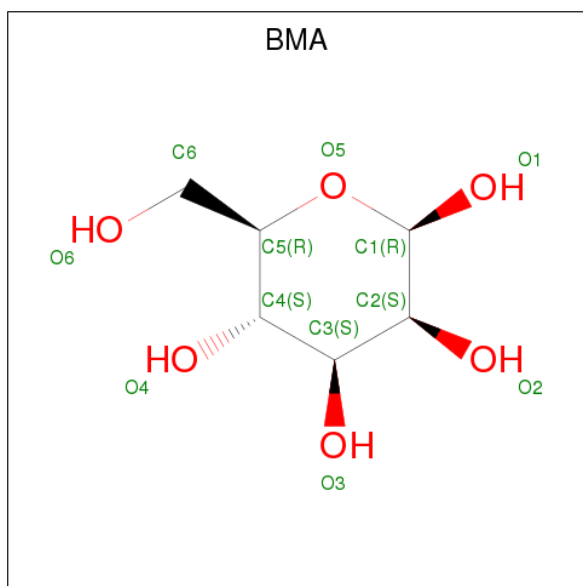
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0

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

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



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

4 Data and refinement statistics

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α , β , γ	118.60Å 118.60Å 800.58Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	101.87 – 4.10 101.87 – 3.99	Depositor EDS
% Data completeness (in resolution range)	98.2 (101.87-4.10) 83.9 (101.87-3.99)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.90 (at 4.01Å)	Xtrriage
Refinement program	PHENIX (1.11.1_2575)	Depositor
R, R_{free}	0.269 , 0.285 0.268 , 0.285	Depositor DCC
R_{free} test set	1871 reflections (10.00%)	wwPDB-VP
Wilson B-factor (Å ²)	140.0	Xtrriage
Anisotropy	0.146	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.26 , 107.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.84	EDS
Total number of atoms	5391	wwPDB-VP
Average B, all atoms (Å ²)	190.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.80% 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

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	0.34	0/5426	0.61	6/7376 (0.1%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	474	ARG	NE-CZ-NH1	-7.43	116.59	120.30
1	A	470	ARG	CG-CD-NE	7.30	127.13	111.80
1	A	404	LEU	CB-CG-CD2	-6.06	100.70	111.00
1	A	179	TYR	CB-CG-CD2	-5.85	117.49	121.00
1	A	474	ARG	NE-CZ-NH2	5.22	122.91	120.30
1	A	404	LEU	CA-CB-CG	5.21	127.29	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	5296	0	5108	183	2
2	A	84	0	75	3	0
3	A	11	0	10	0	0
All	All	5391	0	5193	183	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 17.

All (183) 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:728:ASN:H	1:A:728:ASN:HD22	1.16	0.92
1:A:385:ARG:HA	1:A:395:PHE:O	1.69	0.92
1:A:115:VAL:HG22	1:A:623:LEU:HB2	1.54	0.88
1:A:387:SER:HA	1:A:393:THR:O	1.74	0.88
1:A:444:ALA:HB3	1:A:448:PHE:O	1.82	0.80
1:A:728:ASN:N	1:A:728:ASN:HD22	1.83	0.77
1:A:404:LEU:HG	1:A:441:TYR:HD2	1.50	0.76
1:A:373:ASP:OD1	1:A:373:ASP:N	2.19	0.73
1:A:436:VAL:HG21	1:A:456:LEU:HD13	1.69	0.73
1:A:386:PHE:HB2	1:A:395:PHE:HB2	1.71	0.73
1:A:175:PHE:CE2	1:A:258:ARG:HA	2.24	0.72
1:A:404:LEU:H	1:A:404:LEU:HD12	1.53	0.72
1:A:172:GLN:HG2	1:A:265:TYR:CE1	2.26	0.70
1:A:188:ASP:OD1	1:A:215:ARG:NH1	2.24	0.69
1:A:393:THR:HG23	1:A:504:ALA:HB1	1.76	0.68
1:A:297:MET:HG3	1:A:312:THR:HB	1.77	0.67
1:A:766:GLY:O	1:A:769:SER:OG	2.11	0.67
1:A:443:LEU:HD23	2:A:1002:NAG:H81	1.78	0.66
1:A:224:HIS:CD2	1:A:225:ARG:HG2	2.31	0.66
1:A:227:ASP:OD1	1:A:228:HIS:N	2.29	0.66
1:A:325:PHE:HB3	1:A:340:THR:O	1.96	0.65
1:A:441:TYR:HA	1:A:450:ILE:O	1.97	0.65
1:A:360:ARG:NE	1:A:411:ASP:OD2	2.27	0.65
1:A:464:TYR:CD1	1:A:464:TYR:C	2.72	0.64
1:A:189:ARG:NH1	1:A:293:ASP:OD2	2.30	0.63
1:A:464:TYR:HD1	1:A:464:TYR:C	2.02	0.62
1:A:580:ASN:ND2	1:A:608:ASP:OD1	2.27	0.61
1:A:113:PHE:HD2	1:A:581:VAL:HG21	1.63	0.61
1:A:150:PHE:CD1	1:A:368:LYS:HA	2.35	0.60
1:A:181:GLN:HG2	1:A:182:PHE:O	2.00	0.60
1:A:212:LYS:HA	1:A:220:THR:O	2.01	0.60
1:A:319:PHE:HA	1:A:344:LEU:O	2.01	0.60
1:A:211:ALA:O	1:A:221:THR:HA	2.02	0.59
1:A:425:PHE:HD1	1:A:429:TYR:HB2	1.66	0.59
1:A:481:PRO:HG2	1:A:482:PRO:HD3	1.85	0.59
1:A:444:ALA:CB	1:A:448:PHE:O	2.49	0.59
1:A:179:TYR:C	1:A:179:TYR:HD1	2.07	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:386:PHE:O	1:A:394:THR:HA	2.03	0.57
1:A:398:ASN:HD22	2:A:1002:NAG:H83	1.69	0.57
1:A:425:PHE:CD2	1:A:435:LYS:HE3	2.38	0.57
1:A:386:PHE:HD2	1:A:450:ILE:HD13	1.68	0.57
1:A:377:ARG:NH2	1:A:471:GLU:OE2	2.38	0.57
1:A:297:MET:HE1	1:A:345:LEU:HD13	1.85	0.56
1:A:781:GLY:O	1:A:785:LEU:HG	2.06	0.56
1:A:602:VAL:HG21	1:A:623:LEU:HD22	1.86	0.56
1:A:650:PHE:CD1	1:A:655:TYR:HA	2.41	0.56
1:A:582:ILE:O	1:A:602:VAL:HA	2.06	0.55
1:A:616:GLN:NE2	1:A:629:ALA:HB3	2.21	0.55
1:A:726:ASP:OD2	1:A:729:ALA:N	2.38	0.55
1:A:540:ASN:O	1:A:543:ARG:HG2	2.07	0.55
1:A:181:GLN:NE2	1:A:183:MET:SD	2.81	0.54
1:A:536:LEU:O	1:A:540:ASN:HB2	2.07	0.54
1:A:179:TYR:CD1	1:A:179:TYR:C	2.81	0.54
1:A:728:ASN:N	1:A:728:ASN:ND2	2.52	0.54
1:A:444:ALA:HB3	1:A:448:PHE:HB2	1.89	0.54
1:A:540:ASN:HA	1:A:543:ARG:HG2	1.90	0.54
1:A:471:GLU:HA	1:A:474:ARG:HG3	1.91	0.53
1:A:589:ILE:HG21	1:A:592:ARG:HG2	1.89	0.53
1:A:437:GLY:HA2	1:A:468:HIS:CE1	2.43	0.53
1:A:127:PHE:HE2	1:A:543:ARG:HE	1.56	0.53
1:A:108:ASN:N	1:A:108:ASN:OD1	2.41	0.53
1:A:329:ASP:OD1	1:A:330:LEU:N	2.41	0.53
1:A:377:ARG:HH22	1:A:471:GLU:CD	2.12	0.53
1:A:616:GLN:HE22	1:A:629:ALA:HB3	1.73	0.53
1:A:163:MET:HG2	1:A:352:VAL:HG12	1.90	0.53
1:A:113:PHE:CD1	1:A:621:ASN:HB3	2.44	0.53
1:A:151:LYS:HD3	1:A:369:TRP:CD1	2.44	0.52
1:A:581:VAL:HA	1:A:604:PHE:HA	1.90	0.52
1:A:188:ASP:OD1	1:A:189:ARG:N	2.42	0.52
1:A:510:TYR:O	1:A:514:GLN:HB2	2.10	0.52
1:A:166:LYS:HA	1:A:270:ASN:O	2.10	0.51
1:A:328:ARG:HG2	1:A:333:LYS:HD3	1.92	0.51
1:A:776:GLY:O	1:A:780:VAL:HG23	2.10	0.51
1:A:510:TYR:O	1:A:514:GLN:CB	2.59	0.51
1:A:306:GLY:HA2	1:A:308:HIS:CE1	2.46	0.51
1:A:788:LEU:O	1:A:792:PHE:HD2	1.93	0.51
1:A:181:GLN:HG2	1:A:182:PHE:N	2.26	0.51
1:A:175:PHE:HE2	1:A:259:VAL:H	1.56	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:397:THR:HG22	1:A:444:ALA:HA	1.93	0.51
1:A:387:SER:HB3	1:A:394:THR:HG22	1.92	0.50
1:A:208:ARG:NH1	1:A:229:GLU:OE2	2.44	0.50
1:A:166:LYS:HG3	1:A:192:VAL:HG22	1.93	0.50
1:A:649:TYR:O	1:A:656:SER:HB3	2.11	0.50
1:A:637:HIS:HB3	1:A:652:GLU:HA	1.93	0.49
1:A:616:GLN:HB2	1:A:627:ARG:HG2	1.93	0.49
1:A:404:LEU:HG	1:A:441:TYR:CD2	2.38	0.49
1:A:502:GLU:O	1:A:506:LEU:HG	2.13	0.49
1:A:149:VAL:HG22	1:A:450:ILE:HG12	1.93	0.49
1:A:166:LYS:NZ	1:A:210:THR:O	2.43	0.48
1:A:375:MET:SD	1:A:386:PHE:HB3	2.54	0.48
1:A:377:ARG:HG3	1:A:386:PHE:HE1	1.78	0.48
1:A:129:GLN:HB3	1:A:130:PRO:HD2	1.95	0.48
1:A:107:GLU:HG2	1:A:658:GLN:OE1	2.13	0.48
1:A:384:PHE:HB2	1:A:397:THR:OG1	2.13	0.48
1:A:247:TRP:CD2	1:A:330:LEU:HD23	2.49	0.48
1:A:402:TYR:HB2	1:A:443:LEU:HB2	1.95	0.48
1:A:225:ARG:HD2	1:A:254:TYR:CG	2.49	0.48
1:A:567:VAL:HG22	1:A:568:MET:H	1.78	0.48
1:A:352:VAL:HG23	1:A:354:TRP:HZ3	1.78	0.48
1:A:149:VAL:HG21	1:A:395:PHE:HE2	1.79	0.48
1:A:326:TYR:HE2	1:A:339:PRO:HB3	1.79	0.47
1:A:428:ARG:HD3	1:A:429:TYR:CD1	2.50	0.47
1:A:448:PHE:HE1	1:A:497:THR:HG23	1.79	0.47
1:A:245:ARG:HE	1:A:247:TRP:HH2	1.60	0.47
1:A:448:PHE:CE1	1:A:497:THR:HG23	2.49	0.47
1:A:386:PHE:CD2	1:A:450:ILE:HD13	2.50	0.47
1:A:515:ARG:O	1:A:519:ASP:HB2	2.16	0.46
1:A:561:ALA:HA	1:A:569:ALA:O	2.16	0.46
1:A:425:PHE:CE1	1:A:430:ASN:HA	2.51	0.46
1:A:464:TYR:HD1	1:A:465:VAL:N	2.14	0.46
1:A:116:CYS:SG	1:A:560:SER:HB2	2.56	0.46
1:A:197:VAL:HA	1:A:201:ILE:HB	1.98	0.46
1:A:444:ALA:HB2	1:A:450:ILE:CD1	2.46	0.46
1:A:789:ALA:HB1	1:A:793:PHE:HE2	1.81	0.46
1:A:492:VAL:HG12	1:A:493:GLU:H	1.81	0.45
1:A:113:PHE:CD2	1:A:581:VAL:HG21	2.48	0.45
1:A:408:ASP:OD1	1:A:409:LEU:HD13	2.15	0.45
1:A:459:THR:HB	1:A:460:LEU:HD23	1.98	0.45
1:A:492:VAL:HG12	1:A:493:GLU:N	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:503:PHE:O	1:A:507:GLN:HB2	2.17	0.45
1:A:401:GLU:OE2	1:A:440:GLN:HG2	2.17	0.45
1:A:176:GLY:HA3	1:A:179:TYR:CE1	2.52	0.45
1:A:581:VAL:HG22	1:A:604:PHE:HB3	1.99	0.45
1:A:303:TYR:N	1:A:321:GLN:OE1	2.49	0.44
1:A:150:PHE:CE2	1:A:413:ILE:HA	2.52	0.44
1:A:127:PHE:HE2	1:A:543:ARG:NE	2.15	0.44
1:A:115:VAL:HG23	1:A:576:VAL:HG21	1.99	0.44
1:A:150:PHE:HE2	1:A:413:ILE:HA	1.81	0.44
1:A:114:TYR:O	1:A:622:GLU:HA	2.17	0.44
1:A:175:PHE:HD2	1:A:259:VAL:O	2.01	0.43
1:A:471:GLU:O	1:A:474:ARG:HG3	2.17	0.43
1:A:564:LEU:O	1:A:567:VAL:HG12	2.17	0.43
1:A:173:VAL:CG1	1:A:175:PHE:HE1	2.31	0.43
1:A:503:PHE:O	1:A:507:GLN:CB	2.67	0.43
1:A:109:THR:HG22	1:A:578:ALA:HB3	1.99	0.43
1:A:164:TYR:HD1	1:A:273:VAL:HG22	1.84	0.43
1:A:198:ILE:O	1:A:202:ASN:HB3	2.18	0.43
1:A:247:TRP:CE3	1:A:330:LEU:HD23	2.53	0.43
1:A:104:ILE:O	1:A:582:ILE:HA	2.18	0.43
1:A:328:ARG:CD	1:A:333:LYS:HD3	2.48	0.43
1:A:513:ILE:O	1:A:517:VAL:HG22	2.18	0.43
1:A:604:PHE:CD1	1:A:623:LEU:HD13	2.54	0.43
1:A:433:HIS:HA	1:A:457:SER:HA	1.99	0.43
1:A:392:SER:O	1:A:505:ARG:HD3	2.19	0.42
1:A:150:PHE:HE2	1:A:413:ILE:HG23	1.84	0.42
1:A:317:ASP:OD1	1:A:317:ASP:N	2.48	0.42
1:A:400:THR:HB	1:A:476:PRO:HD3	2.01	0.42
1:A:170:VAL:HA	1:A:266:GLY:O	2.19	0.42
1:A:398:ASN:ND2	2:A:1002:NAG:H83	2.34	0.42
1:A:394:THR:HG23	1:A:508:PHE:HD1	1.84	0.42
1:A:150:PHE:CE2	1:A:413:ILE:HG23	2.55	0.42
1:A:591:SER:O	1:A:593:PRO:HD3	2.19	0.42
1:A:162:THR:HA	1:A:275:GLU:HA	2.01	0.42
1:A:456:LEU:HD21	1:A:467:GLU:HG3	2.01	0.42
1:A:287:PHE:CD1	1:A:299:PRO:HG3	2.55	0.42
1:A:589:ILE:HG22	1:A:592:ARG:H	1.84	0.42
1:A:234:LEU:HD23	1:A:249:THR:HG23	2.01	0.42
1:A:404:LEU:O	1:A:407:VAL:HB	2.19	0.42
1:A:143:THR:O	1:A:452:TYR:OH	2.38	0.41
1:A:181:GLN:CG	1:A:182:PHE:N	2.82	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:255:ASN:HA	1:A:256:PRO:HD3	1.90	0.41
1:A:328:ARG:NH2	1:A:335:ARG:HB3	2.34	0.41
1:A:479:PRO:O	1:A:482:PRO:HD2	2.19	0.41
1:A:587:MET:SD	1:A:650:PHE:HD2	2.43	0.41
1:A:701:ASP:HB3	1:A:704:GLU:HG2	2.02	0.41
1:A:282:TYR:CD1	1:A:283:PRO:HA	2.56	0.41
1:A:464:TYR:O	1:A:465:VAL:C	2.58	0.41
1:A:475:LYS:HB3	1:A:475:LYS:HE2	1.56	0.41
1:A:583:VAL:HG23	1:A:643:PHE:CZ	2.54	0.41
1:A:467:GLU:O	1:A:471:GLU:HG2	2.20	0.41
1:A:650:PHE:CE1	1:A:655:TYR:HA	2.56	0.41
1:A:173:VAL:HG12	1:A:175:PHE:HE1	1.86	0.41
1:A:329:ASP:O	1:A:333:LYS:HA	2.21	0.40
1:A:373:ASP:HB3	1:A:424:ILE:HG21	2.03	0.40
1:A:588:ARG:HG2	1:A:596:CYS:CB	2.51	0.40
1:A:756:ILE:O	1:A:760:VAL:HG23	2.21	0.40
1:A:215:ARG:HA	1:A:215:ARG:HD2	1.90	0.40
1:A:329:ASP:HB3	1:A:333:LYS:H	1.86	0.40
1:A:378:SER:O	1:A:384:PHE:HA	2.22	0.40
1:A:501:ILE:O	1:A:501:ILE:HG13	2.20	0.40
1:A:582:ILE:HB	1:A:603:SER:HB2	2.04	0.40
1:A:151:LYS:O	1:A:366:MET:HA	2.22	0.40
1:A:152:GLU:HB3	1:A:497:THR:HB	2.03	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:279:ARG:NH2	1:A:696:ASP:O[3_655]	2.11	0.09
1:A:318:ARG:NH2	1:A:720:ASP:OD1[2_545]	2.13	0.07

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

The Analysed column shows the number of residues for which the backbone conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	659/833 (79%)	609 (92%)	48 (7%)	2 (0%)	43 80

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	774	PRO
1	A	130	PRO

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	567/700 (81%)	554 (98%)	13 (2%)	53 76

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	103	ASP
1	A	108	ASN
1	A	179	TYR
1	A	312	THR
1	A	373	ASP
1	A	404	LEU
1	A	409	LEU
1	A	428	ARG
1	A	460	LEU
1	A	464	TYR
1	A	691	ARG
1	A	728	ASN
1	A	774	PRO

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	728	ASN

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](#)

7 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	14,14,15	0.57	0	17,19,21	0.55	0
2	NAG	A	1002	1,2	14,14,15	0.24	0	17,19,21	0.84	1 (5%)
2	NAG	A	1003	3,2	14,14,15	1.31	2 (14%)	17,19,21	1.72	5 (29%)
3	BMA	A	1004	2	11,11,12	0.51	0	15,15,17	0.75	0
2	NAG	A	1005	1	14,14,15	0.50	0	17,19,21	0.99	1 (5%)
2	NAG	A	1006	1,2	14,14,15	0.30	0	17,19,21	0.49	0
2	NAG	A	1007	2	14,14,15	0.57	0	17,19,21	1.06	2 (11%)

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	1001	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1002	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1003	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	1004	2	-	0/2/19/22	0/1/1/1
2	NAG	A	1005	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1006	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1007	2	-	0/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1003	NAG	O5-C1	-4.04	1.37	1.43
2	A	1003	NAG	C1-C2	2.00	1.55	1.52

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1003	NAG	C1-O5-C5	-2.22	109.14	112.19
2	A	1002	NAG	C1-O5-C5	2.05	115.00	112.19
2	A	1003	NAG	C1-C2-N2	2.09	114.05	110.49
2	A	1003	NAG	C3-C4-C5	2.33	114.41	110.24
2	A	1007	NAG	C3-C4-C5	2.51	114.73	110.24
2	A	1005	NAG	C1-O5-C5	2.61	115.77	112.19
2	A	1007	NAG	C1-O5-C5	2.75	115.98	112.19
2	A	1003	NAG	C4-C3-C2	3.60	116.29	111.02
2	A	1003	NAG	C2-N2-C7	4.16	129.01	122.94

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1002	NAG	3	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

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	665/833 (79%)	-0.04	10 (1%) 73 63	120, 187, 271, 303	0

All (10) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	160	LYS	3.8
1	A	185	ILE	2.8
1	A	161	ALA	2.6
1	A	163	MET	2.4
1	A	314	TYR	2.2
1	A	712	HIS	2.2
1	A	180	SER	2.1
1	A	276	VAL	2.1
1	A	795	PHE	2.1
1	A	173	VAL	2.0

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

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

6.3 Carbohydrates [i](#)

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
2	NAG	A	1001	14/15	0.83	0.18	212,238,244,245	0
2	NAG	A	1005	14/15	0.85	0.19	218,232,240,243	0
2	NAG	A	1003	14/15	0.85	0.15	240,251,260,264	0
3	BMA	A	1004	11/12	0.86	0.14	237,253,260,261	0
2	NAG	A	1002	14/15	0.89	0.21	196,207,233,241	0
2	NAG	A	1006	14/15	0.90	0.21	176,193,205,210	0
2	NAG	A	1007	14/15	0.90	0.21	202,213,223,228	0

6.5 Other polymers [i](#)

There are no such residues in this entry.