



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2018 – 05:48 am GMT

PDB ID : 1IVF
Title : STRUCTURES OF AROMATIC INHIBITORS OF INFLUENZA VIRUS
NEURAMINIDASE
Authors : Jedrzejewski, M.J.; Luo, M.
Deposited on : 1994-12-12
Resolution : 2.40 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

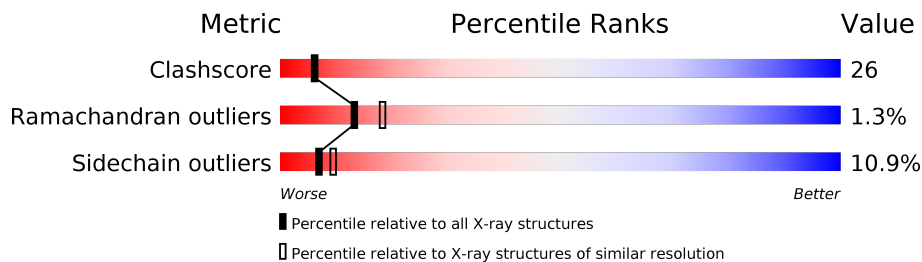
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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))
Clashscore	122126	3956 (2.40-2.40)
Ramachandran outliers	120053	3897 (2.40-2.40)
Sidechain outliers	120020	3898 (2.40-2.40)

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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	388	
1	B	388	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	NAG	B	484	-	-	X	-
5	CA	A	470	-	-	X	-
8	FUC	B	477	X	-	-	-

2 Entry composition i

There are 9 unique types of molecules in this entry. The entry contains 8629 atoms, of which 2064 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.

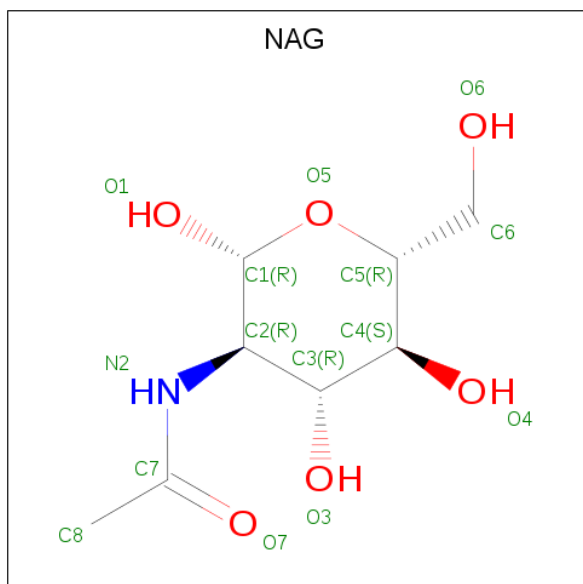
- Molecule 1 is a protein called INFLUENZA A SUBTYPE N2 NEURAMINIDASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	388	Total	C	H	N	O	S	0	0	0
			3745	1866	723	545	588	23			
1	B	388	Total	C	H	N	O	S	0	0	0
			3745	1866	723	545	588	23			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	339	ASP	ASN	CONFLICT	UNP P06820
B	339	ASP	ASN	CONFLICT	UNP P06820

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



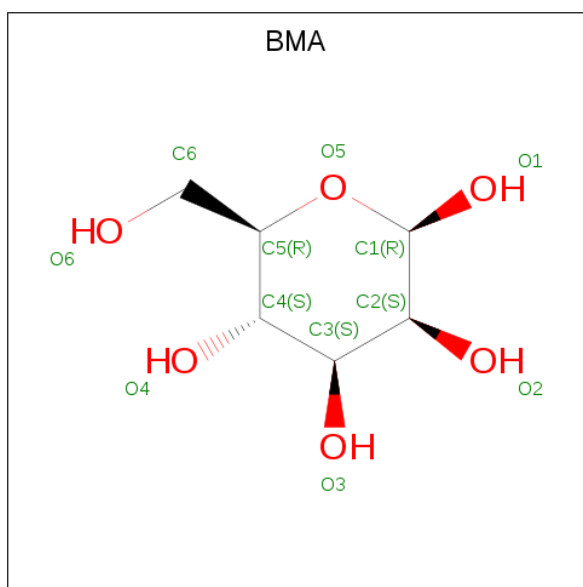
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
2	A	1	Total	C	H	N	O	0	0
			27	8	13	1	5		

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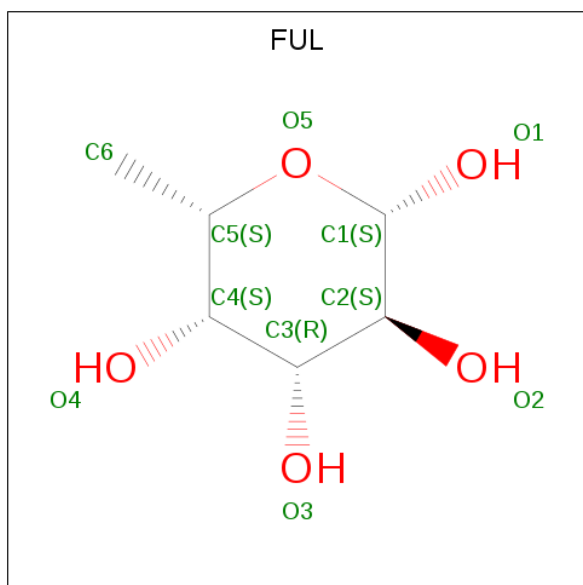
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
2	A	1	Total	C	H	N	O	0	0
			26	8	12	1	5		
2	A	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	A	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	A	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
2	B	1	Total	C	H	N	O	0	0
			26	8	12	1	5		
2	B	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	B	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	B	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
2	B	1	Total	C	H	N	O	0	0
			26	8	12	1	5		
2	B	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	B	1	Total	C	H	N	O	0	0
			26	8	12	1	5		
2	B	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	B	1	Total	C	H	N	O	0	0
			27	8	13	1	5		
2	B	1	Total	C	H	N	O	0	0
			28	8	14	1	5		

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



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	H			O
3	A	1	22	6	11	5	0	0
3	B	1	21	6	10	5	0	0
3	B	1	22	6	11	5	0	0
3	B	1	21	6	10	5	0	0

- Molecule 4 is BETA-L-FUCOSE (three-letter code: FUL) (formula: C₆H₁₂O₅).

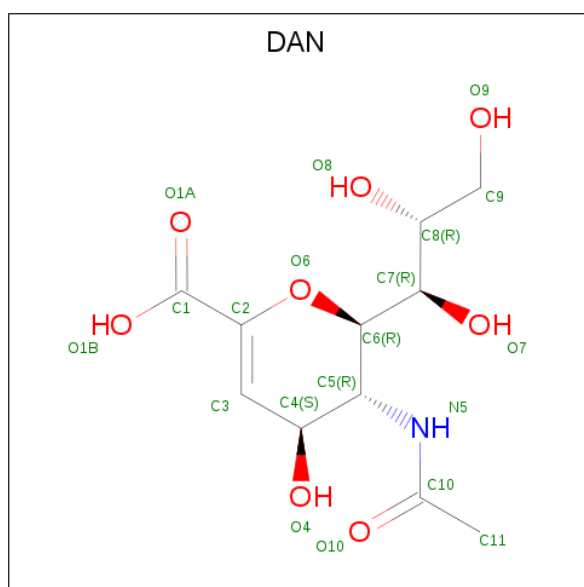


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	H	O	0	0
			21	6	11	4		

- Molecule 5 is CALCIUM ION (three-letter code: CA) (formula: Ca).

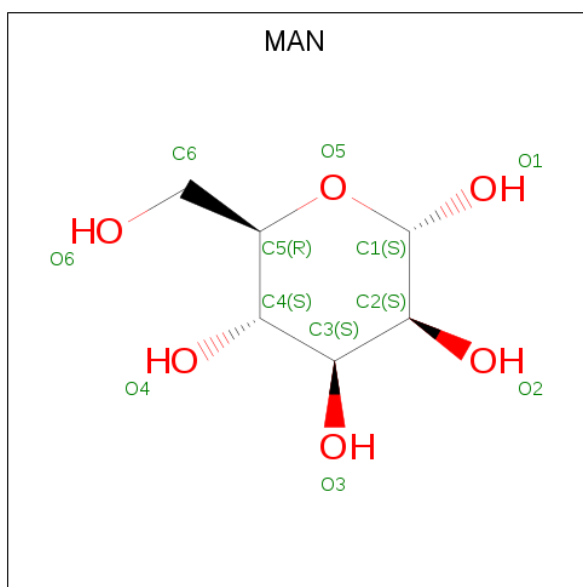
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	1	Total	Ca	0	0
			1	1		
5	A	1	Total	Ca	0	0
			1	1		

- Molecule 6 is 2-DEOXY-2,3-DEHYDRO-N-ACETYL-NEURAMINIC ACID (three-letter code: DAN) (formula: C₁₁H₁₇NO₈).



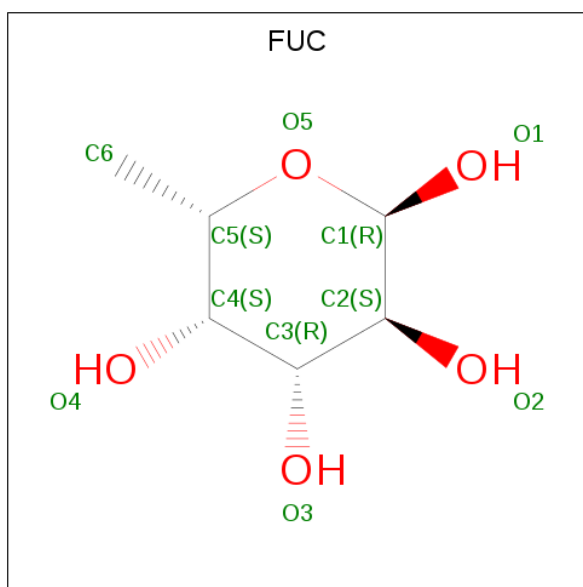
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	A	1	Total	C	H	N	O	0	0
			36	11	16	1	8		
6	B	1	Total	C	H	N	O	0	0
			36	11	16	1	8		

- Molecule 7 is ALPHA-D-MANNOSE (three-letter code: MAN) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
7	B	1	21	6	10	5	0	0
7	B	1	22	6	11	5	0	0
7	B	1	22	6	11	5	0	0
7	B	1	21	6	10	5	0	0
7	B	1	22	6	11	5	0	0
7	B	1	22	6	11	5	0	0

- Molecule 8 is ALPHA-L-FUCOSE (three-letter code: FUC) (formula: C₆H₁₂O₅).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
8	B	1	21	6	11	4	0	0

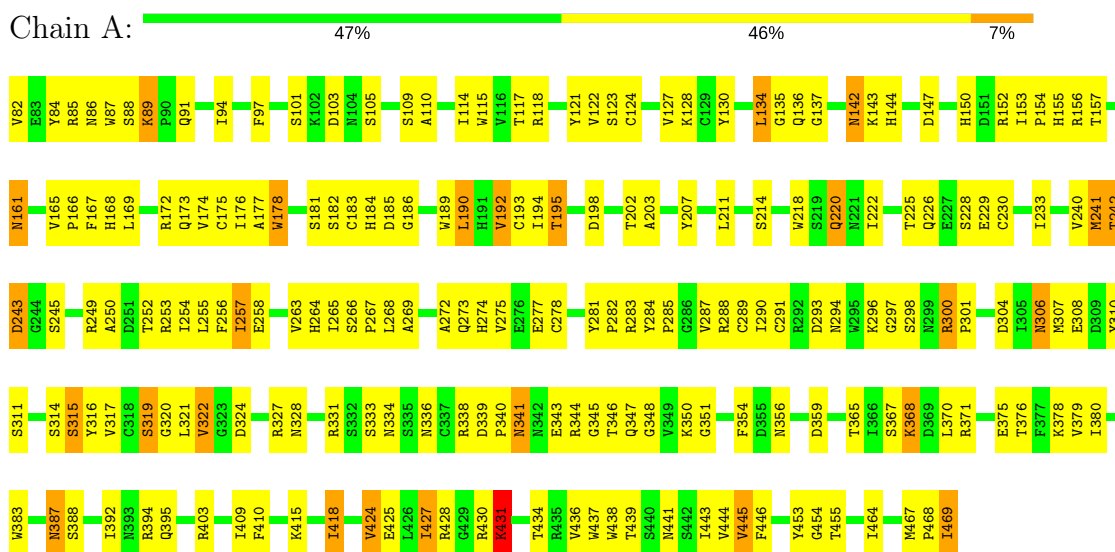
- Molecule 9 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	H	O		
9	A	119	357	238	119	0	0
9	B	6	18	12	6	0	0

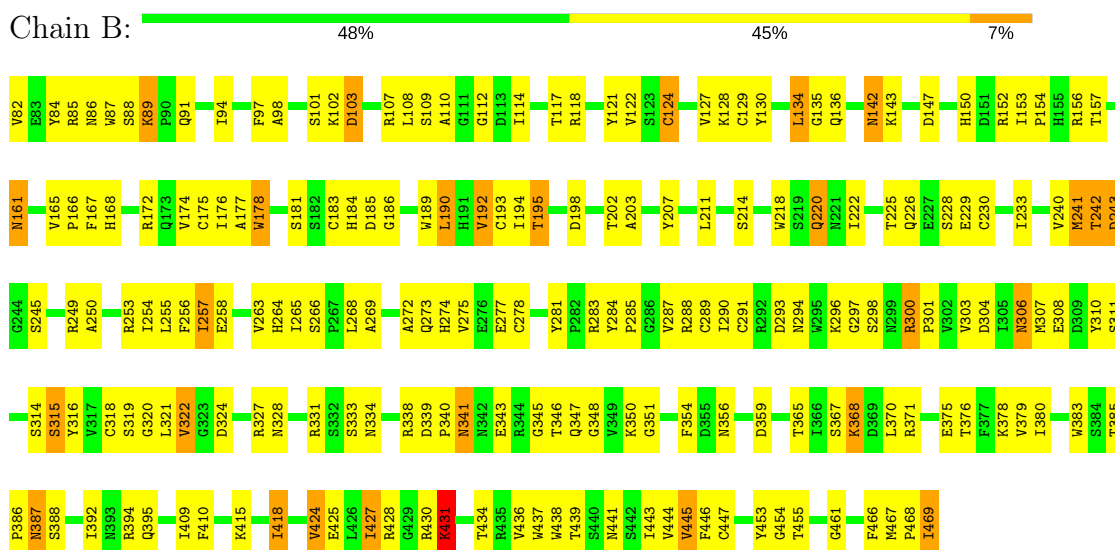
3 Residue-property plots i

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. 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. 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: INFLUENZA A SUBTYPE N2 NEURAMINIDASE



- Molecule 1: INFLUENZA A SUBTYPE N2 NEURAMINIDASE



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	119.38Å 139.63Å 140.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	6.00 – 2.40 25.55 – 2.36	Depositor EDS
% Data completeness (in resolution range)	(Not available) (6.00-2.40) 47.7 (25.55-2.36)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.03 (at 2.36Å)	Xtrriage
Refinement program	X-PLOR	Depositor
R, R_{free}	0.163 , (Not available) 0.208 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	10.6	Xtrriage
Anisotropy	1.046	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.45 , 88.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.41$, $\langle L^2 \rangle = 0.23$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.86	EDS
Total number of atoms	8629	wwPDB-VP
Average B, all atoms (Å ²)	12.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.77% 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, DAN, FUC, FUL, CA, 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	0.59	0/3092	0.90	3/4194 (0.1%)
1	B	0.59	0/3092	0.90	3/4194 (0.1%)
All	All	0.59	0/6184	0.90	6/8388 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	2
All	All	0	4

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	243	ASP	CB-CG-OD1	5.41	123.17	118.30
1	B	243	ASP	CB-CG-OD1	5.41	123.17	118.30
1	A	300	ARG	NE-CZ-NH1	5.33	122.97	120.30
1	B	300	ARG	NE-CZ-NH1	5.33	122.97	120.30
1	A	134	LEU	CA-CB-CG	5.06	126.93	115.30
1	B	134	LEU	CA-CB-CG	5.06	126.93	115.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	121	TYR	Sidechain
1	A	84	TYR	Sidechain
1	B	121	TYR	Sidechain
1	B	84	TYR	Sidechain

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3022	723	2851	169	22
1	B	3022	723	2850	172	1
2	A	84	79	73	2	0
2	B	140	129	116	8	21
3	A	11	11	10	0	0
3	B	33	31	28	0	0
4	A	10	11	10	0	0
5	A	1	0	0	2	0
5	B	1	0	0	1	0
6	A	20	16	16	0	0
6	B	20	16	16	0	0
7	B	66	64	58	4	1
8	B	10	11	10	0	0
9	A	119	238	0	11	2
9	B	6	12	0	8	0
All	All	6565	2064	6038	327	24

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 26.

All (327) 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:B:124:CYS:SG	9:B:518:HOH:O	1.94	1.19
1:B:453:TYR:O	2:B:478:NAG:O7	1.61	1.15
1:B:454:GLY:O	9:B:512:HOH:O	1.69	1.08
1:B:107:ARG:HD2	9:B:501:HOH:O	0.76	0.93
1:B:431:LYS:HA	1:B:431:LYS:HZ2	1.34	0.91

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:173:GLN:HE22	1:B:103:ASP:HA	1.36	0.90
1:A:177:ALA:HB2	1:A:193:CYS:HB3	1.53	0.90
1:B:453:TYR:HD1	9:B:512:HOH:O	1.55	0.89
1:A:184:HIS:HD2	1:A:186:GLY:H	1.20	0.89
1:B:184:HIS:HD2	1:B:186:GLY:H	1.20	0.89
1:B:127:VAL:HG23	1:B:128:LYS:HG2	1.53	0.88
1:B:177:ALA:HB2	1:B:193:CYS:HB3	1.53	0.88
1:A:127:VAL:HG23	1:A:128:LYS:HG2	1.53	0.88
1:B:453:TYR:C	2:B:478:NAG:O7	2.06	0.87
1:A:431:LYS:HA	1:A:431:LYS:HZ2	1.41	0.85
1:A:173:GLN:NE2	1:B:103:ASP:HA	1.93	0.84
1:A:431:LYS:HA	1:A:431:LYS:NZ	1.93	0.83
1:B:117:THR:HG22	1:B:135:GLY:HA2	1.60	0.83
1:B:431:LYS:HA	1:B:431:LYS:NZ	1.93	0.83
1:B:454:GLY:O	2:B:478:NAG:N2	1.97	0.83
1:B:453:TYR:CD1	9:B:512:HOH:O	2.31	0.81
1:A:117:THR:HG22	1:A:135:GLY:HA2	1.60	0.81
1:A:317:VAL:HB	9:A:535:HOH:O	1.82	0.80
1:A:268:LEU:HD12	1:A:269:ALA:H	1.51	0.76
1:B:268:LEU:HD12	1:B:269:ALA:H	1.51	0.75
1:B:198:ASP:HB3	1:B:222:ILE:HG12	1.68	0.75
1:A:198:ASP:HB3	1:A:222:ILE:HG12	1.68	0.74
1:B:129:CYS:SG	9:B:518:HOH:O	2.34	0.74
5:A:470:CA:CA	9:A:592:HOH:O	1.64	0.74
1:A:228:SER:HB3	1:A:350:LYS:HE2	1.69	0.73
1:B:228:SER:HB3	1:B:350:LYS:HE2	1.69	0.72
1:B:298:SER:HB2	1:B:343:GLU:O	1.90	0.72
1:A:437:TRP:H	1:A:469:ILE:HG21	1.55	0.72
1:A:298:SER:HB2	1:A:343:GLU:O	1.90	0.71
1:B:437:TRP:H	1:B:469:ILE:HG21	1.55	0.71
1:A:157:THR:HG22	1:A:176:ILE:HA	1.73	0.71
1:B:176:ILE:HG22	1:B:195:THR:HG21	1.72	0.70
1:A:176:ILE:HG22	1:A:195:THR:HG21	1.72	0.70
1:B:157:THR:HG22	1:B:176:ILE:HA	1.73	0.68
1:B:394:ARG:NH2	7:B:482:MAN:O6	2.27	0.68
1:B:436:VAL:HA	1:B:469:ILE:CG2	2.24	0.68
1:A:436:VAL:HA	1:A:469:ILE:CG2	2.24	0.68
1:A:183:CYS:HB3	1:A:230:CYS:O	1.95	0.66
1:A:211:LEU:HD11	1:B:98:ALA:HB3	1.75	0.66
1:A:320:GLY:HA3	1:A:387:ASN:HD22	1.61	0.66
1:B:183:CYS:HB3	1:B:230:CYS:O	1.95	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:226:GLN:HE21	1:B:240:VAL:H	1.45	0.65
1:B:268:LEU:HD12	1:B:269:ALA:N	2.11	0.65
1:A:268:LEU:HD12	1:A:269:ALA:N	2.11	0.64
1:A:184:HIS:HD2	1:A:186:GLY:N	1.94	0.64
1:B:184:HIS:HD2	1:B:186:GLY:N	1.94	0.64
1:A:345:GLY:O	5:A:470:CA:CA	1.75	0.64
1:B:320:GLY:HA3	1:B:387:ASN:HD22	1.61	0.64
1:B:345:GLY:O	5:B:470:CA:CA	1.75	0.64
1:A:110:ALA:HB2	1:A:467:MET:SD	2.38	0.64
1:A:226:GLN:HE21	1:A:240:VAL:H	1.45	0.63
1:B:245:SER:O	1:B:274:HIS:HE1	1.81	0.63
1:B:110:ALA:HB2	1:B:467:MET:SD	2.38	0.63
1:A:242:THR:HG21	1:A:275:VAL:O	1.98	0.63
1:A:245:SER:O	1:A:274:HIS:HE1	1.81	0.62
1:B:242:THR:HG21	1:B:275:VAL:O	1.98	0.62
1:A:137:GLY:O	1:B:107:ARG:HD3	2.00	0.62
1:B:241:MET:HG3	1:B:255:LEU:HD23	1.81	0.61
1:A:241:MET:HG3	1:A:255:LEU:HD23	1.81	0.61
1:B:129:CYS:HB3	9:B:518:HOH:O	2.01	0.61
1:B:436:VAL:HA	1:B:469:ILE:HG22	1.85	0.59
1:A:268:LEU:HD11	1:A:314:SER:HB3	1.84	0.59
1:B:268:LEU:HD11	1:B:314:SER:HB3	1.84	0.59
1:B:376:THR:O	1:B:394:ARG:HA	2.02	0.59
1:A:376:THR:O	1:A:394:ARG:HA	2.02	0.58
1:A:319:SER:HB3	9:A:535:HOH:O	2.03	0.58
1:B:322:VAL:HG12	1:B:327:ARG:HG3	1.86	0.58
1:A:184:HIS:CD2	1:A:186:GLY:H	2.12	0.58
1:A:144:HIS:CD2	1:B:466:PHE:HD2	2.22	0.58
1:A:194:ILE:HD11	1:A:241:MET:HE1	1.85	0.58
1:A:115:TRP:CH2	1:B:108:LEU:HD21	2.39	0.58
1:A:436:VAL:HA	1:A:469:ILE:HG22	1.85	0.58
1:A:86:ASN:HA	1:A:233:ILE:HG23	1.86	0.57
1:A:322:VAL:HG12	1:A:327:ARG:HG3	1.86	0.57
1:B:359:ASP:OD1	1:B:380:ILE:HA	2.05	0.57
1:B:86:ASN:HA	1:B:233:ILE:HG23	1.86	0.57
1:A:359:ASP:OD1	1:A:380:ILE:HA	2.05	0.57
1:A:255:LEU:HD13	1:A:265:ILE:HG12	1.86	0.57
1:A:155:HIS:NE2	1:B:461:GLY:HA3	2.19	0.57
1:B:300:ARG:NH2	1:B:351:GLY:N	2.53	0.57
1:A:115:TRP:CZ2	1:B:108:LEU:HD21	2.40	0.57
1:A:289:CYS:C	1:A:290:ILE:HD12	2.26	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:194:ILE:HD11	1:B:241:MET:HE1	1.86	0.56
1:B:321:LEU:HD12	1:B:379:VAL:HG22	1.87	0.56
1:B:378:LYS:HE3	1:B:392:ILE:CG2	2.35	0.56
1:A:300:ARG:NH2	1:A:351:GLY:N	2.53	0.56
1:B:255:LEU:HD13	1:B:265:ILE:HG12	1.86	0.56
1:A:317:VAL:HG23	9:A:543:HOH:O	2.04	0.56
1:A:249:ARG:HD2	9:A:526:HOH:O	2.05	0.56
1:A:378:LYS:HE3	1:A:392:ILE:CG2	2.35	0.56
1:B:184:HIS:CD2	1:B:186:GLY:H	2.12	0.56
1:B:289:CYS:C	1:B:290:ILE:HD12	2.26	0.56
1:B:161:ASN:HB2	1:B:167:PHE:CE1	2.41	0.56
1:A:258:GLU:HG3	1:A:263:VAL:CG1	2.36	0.56
1:A:161:ASN:HB2	1:A:167:PHE:CE1	2.41	0.55
1:A:258:GLU:HG3	1:A:263:VAL:HG11	1.89	0.55
1:B:129:CYS:CB	9:B:518:HOH:O	2.54	0.55
1:A:298:SER:HB3	1:A:341:ASN:HD21	1.72	0.55
1:A:202:THR:HB	1:B:454:GLY:N	2.21	0.55
1:A:321:LEU:HD12	1:A:379:VAL:HG22	1.87	0.55
1:B:258:GLU:HG3	1:B:263:VAL:CG1	2.36	0.54
1:B:274:HIS:HD2	1:B:294:ASN:H	1.55	0.54
1:A:173:GLN:HE22	1:B:103:ASP:CA	2.17	0.54
1:B:181:SER:HB3	1:B:192:VAL:HG13	1.89	0.54
1:B:258:GLU:HG3	1:B:263:VAL:HG11	1.89	0.54
1:B:254:ILE:HG22	1:B:256:PHE:CE1	2.44	0.53
1:A:274:HIS:HD2	1:A:294:ASN:H	1.55	0.53
1:A:181:SER:HB3	1:A:192:VAL:HG13	1.89	0.53
1:A:346:THR:O	1:A:347:GLN:HB2	2.09	0.53
1:B:298:SER:HB3	1:B:341:ASN:HD21	1.72	0.53
1:A:438:TRP:HD1	1:A:469:ILE:HD12	1.74	0.53
1:A:403:ARG:HD2	9:A:581:HOH:O	2.08	0.53
1:B:427:ILE:CD1	1:B:439:THR:HG23	2.39	0.53
1:A:427:ILE:CD1	1:A:439:THR:HG23	2.39	0.53
1:B:263:VAL:O	1:B:264:HIS:HB2	2.08	0.53
1:B:394:ARG:NH2	7:B:482:MAN:O2	2.42	0.53
1:A:263:VAL:O	1:A:264:HIS:HB2	2.08	0.53
1:B:89:LYS:HG3	1:B:418:ILE:HG22	1.91	0.53
1:B:172:ARG:NH1	1:B:174:VAL:HG22	2.24	0.52
1:A:172:ARG:NH1	1:A:174:VAL:HG22	2.24	0.52
1:A:94:ILE:O	1:A:94:ILE:HG13	2.09	0.52
1:B:94:ILE:HG13	1:B:94:ILE:O	2.09	0.52
1:B:346:THR:O	1:B:347:GLN:HB2	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:430:ARG:NE	1:B:436:VAL:O	2.41	0.52
1:A:430:ARG:NE	1:A:436:VAL:O	2.41	0.52
1:A:322:VAL:O	1:A:327:ARG:HD3	2.09	0.52
1:A:254:ILE:HG22	1:A:256:PHE:CE1	2.44	0.52
1:A:97:PHE:HB3	1:A:446:PHE:HB3	1.92	0.52
1:B:97:PHE:HB3	1:B:446:PHE:HB3	1.92	0.52
1:A:190:LEU:HD13	1:A:257:ILE:HD11	1.91	0.51
1:A:89:LYS:HG3	1:A:418:ILE:HG22	1.91	0.51
1:A:87:TRP:CE3	1:A:418:ILE:HD12	2.45	0.51
1:B:438:TRP:HD1	1:B:469:ILE:HD12	1.74	0.51
1:B:153:ILE:HB	1:B:154:PRO:HD2	1.92	0.51
1:A:169:LEU:HD11	1:B:112:GLY:HA3	1.91	0.51
1:B:190:LEU:HD13	1:B:257:ILE:HD11	1.91	0.51
1:B:87:TRP:CE3	1:B:418:ILE:HD12	2.45	0.51
1:A:153:ILE:HB	1:A:154:PRO:HD2	1.92	0.51
1:A:194:ILE:HD11	1:A:241:MET:CE	2.41	0.51
1:B:322:VAL:O	1:B:327:ARG:HD3	2.09	0.51
1:A:147:ASP:O	1:A:150:HIS:HD2	1.94	0.51
1:B:194:ILE:HD11	1:B:241:MET:CE	2.41	0.51
1:B:437:TRP:CD1	2:B:474:NAG:O7	2.64	0.51
1:A:143:LYS:HB2	1:B:466:PHE:HB3	1.93	0.51
1:A:161:ASN:HB2	1:A:167:PHE:HE1	1.76	0.51
1:A:327:ARG:HB3	1:A:368:LYS:HB3	1.93	0.51
1:B:453:TYR:O	2:B:478:NAG:C7	2.26	0.51
1:B:327:ARG:HB3	1:B:368:LYS:HB3	1.93	0.50
1:A:105:SER:HB3	9:A:557:HOH:O	2.10	0.50
1:A:228:SER:HB3	1:A:350:LYS:CE	2.40	0.50
1:A:166:PRO:O	1:A:168:HIS:HD2	1.94	0.50
1:A:327:ARG:NH2	1:A:367:SER:O	2.45	0.50
1:A:437:TRP:CD1	2:A:474:NAG:O7	2.64	0.50
1:B:147:ASP:O	1:B:150:HIS:HD2	1.94	0.50
1:B:161:ASN:HB2	1:B:167:PHE:HE1	1.76	0.50
1:B:273:GLN:HG3	1:B:340:PRO:HG3	1.94	0.50
1:B:327:ARG:NH2	1:B:367:SER:O	2.45	0.50
1:B:166:PRO:O	1:B:168:HIS:HD2	1.94	0.50
1:B:101:SER:HB3	1:B:445:VAL:HG13	1.93	0.49
1:B:296:LYS:C	1:B:345:GLY:HA3	2.32	0.49
1:A:296:LYS:C	1:A:345:GLY:HA3	2.32	0.49
1:A:101:SER:HB3	1:A:445:VAL:HG13	1.93	0.49
1:A:365:THR:HG21	1:A:371:ARG:HA	1.95	0.49
1:B:117:THR:HG22	1:B:135:GLY:CA	2.37	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:278:CYS:HB3	1:B:289:CYS:HB3	1.95	0.49
1:B:202:THR:HB	2:B:484:NAG:H81	1.95	0.48
1:A:333:SER:HA	1:A:343:GLU:OE1	2.14	0.48
1:A:109:SER:OG	1:A:114:ILE:HB	2.14	0.48
1:B:365:THR:HG21	1:B:371:ARG:HA	1.95	0.48
1:A:288:ARG:NH1	1:A:383:TRP:HZ2	2.12	0.48
1:A:278:CYS:HB3	1:A:289:CYS:HB3	1.95	0.48
1:B:109:SER:OG	1:B:114:ILE:HB	2.14	0.47
1:A:324:ASP:OD1	1:A:348:GLY:HA2	2.14	0.47
1:A:273:GLN:HG3	1:A:340:PRO:HG3	1.94	0.47
1:A:437:TRP:HB2	1:A:469:ILE:HD13	1.96	0.47
1:A:425:GLU:HG3	1:A:441:ASN:ND2	2.30	0.47
1:B:228:SER:HB3	1:B:350:LYS:CE	2.40	0.47
1:A:424:VAL:HG13	1:A:444:VAL:HG13	1.96	0.47
1:B:283:ARG:NE	1:B:288:ARG:HH21	2.13	0.47
1:B:136:GLN:NE2	1:B:156:ARG:NE	2.63	0.47
1:B:324:ASP:OD1	1:B:348:GLY:HA2	2.14	0.47
1:A:283:ARG:NE	1:A:288:ARG:HH21	2.13	0.47
1:B:333:SER:HA	1:B:343:GLU:OE1	2.14	0.47
1:B:425:GLU:HG3	1:B:441:ASN:ND2	2.30	0.47
1:A:272:ALA:HA	1:A:316:TYR:HE1	1.80	0.47
1:A:338:ARG:NH2	1:A:339:ASP:OD2	2.48	0.47
1:B:272:ALA:HA	1:B:316:TYR:HE1	1.80	0.47
1:B:380:ILE:HD11	1:B:392:ILE:HB	1.97	0.47
1:B:437:TRP:HB2	1:B:469:ILE:HD13	1.96	0.47
1:B:288:ARG:NH1	1:B:383:TRP:HZ2	2.12	0.47
1:A:182:SER:HB2	9:A:509:HOH:O	2.15	0.46
1:A:152:ARG:HG2	1:A:178:TRP:CD2	2.51	0.46
1:B:338:ARG:NH2	1:B:339:ASP:OD2	2.48	0.46
1:B:424:VAL:HG13	1:B:444:VAL:HG13	1.96	0.46
1:A:157:THR:HB	1:A:175:CYS:O	2.15	0.46
1:A:91:GLN:NE2	1:A:354:PHE:HE1	2.13	0.46
1:B:91:GLN:NE2	1:B:354:PHE:HE1	2.13	0.46
1:B:468:PRO:O	1:B:469:ILE:HB	2.16	0.46
1:A:117:THR:HG22	1:A:135:GLY:CA	2.37	0.46
1:B:152:ARG:HG2	1:B:178:TRP:CD2	2.51	0.46
1:B:157:THR:HB	1:B:175:CYS:O	2.15	0.46
1:A:225:THR:HB	1:A:241:MET:HE3	1.98	0.45
1:B:394:ARG:NH1	7:B:482:MAN:O6	2.48	0.45
1:A:283:ARG:CZ	1:A:288:ARG:HH21	2.29	0.45
1:B:430:ARG:HA	1:B:430:ARG:HD3	1.69	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:136:GLN:NE2	1:A:156:ARG:NE	2.63	0.45
1:A:226:GLN:O	1:A:277:GLU:HB2	2.16	0.45
1:A:176:ILE:HG12	1:B:102:LYS:HB2	1.99	0.45
1:B:225:THR:HB	1:B:241:MET:HE3	1.98	0.45
1:B:130:TYR:CD1	1:B:189:TRP:HZ2	2.35	0.45
1:B:394:ARG:CZ	7:B:482:MAN:O6	2.65	0.45
1:B:226:GLN:O	1:B:277:GLU:HB2	2.16	0.45
1:A:245:SER:O	1:A:274:HIS:CE1	2.68	0.45
1:A:268:LEU:HD21	1:A:275:VAL:HG21	1.99	0.45
1:B:293:ASP:OD2	1:B:316:TYR:OH	2.35	0.45
1:A:267:PRO:HD2	9:A:527:HOH:O	2.16	0.44
1:A:430:ARG:HD3	1:A:430:ARG:HA	1.69	0.44
1:A:130:TYR:CD1	1:A:189:TRP:HZ2	2.35	0.44
1:A:380:ILE:HD11	1:A:392:ILE:HB	1.97	0.44
1:B:268:LEU:HD21	1:B:275:VAL:HG21	1.99	0.44
1:A:464:ILE:HB	9:A:605:HOH:O	2.17	0.44
1:B:283:ARG:CZ	1:B:288:ARG:HH21	2.29	0.44
1:A:282:PRO:HB2	9:A:530:HOH:O	2.17	0.44
1:B:218:TRP:NE1	1:B:243:ASP:HB3	2.33	0.44
1:A:218:TRP:CZ2	1:A:253:ARG:HG3	2.53	0.44
1:B:136:GLN:NE2	1:B:156:ARG:CZ	2.81	0.44
1:B:218:TRP:CZ2	1:B:253:ARG:HG3	2.53	0.44
1:A:328:ASN:ND2	1:A:343:GLU:HB3	2.33	0.44
1:B:211:LEU:HD23	1:B:211:LEU:C	2.38	0.44
1:A:211:LEU:HD23	1:A:211:LEU:C	2.38	0.43
1:A:468:PRO:O	1:A:469:ILE:HB	2.16	0.43
1:B:287:VAL:HG23	1:B:307:MET:SD	2.58	0.43
1:B:394:ARG:HG2	1:B:395:GLN:N	2.33	0.43
1:A:218:TRP:NE1	1:A:243:ASP:HB3	2.33	0.43
1:A:293:ASP:OD2	1:A:316:TYR:OH	2.35	0.43
1:B:118:ARG:HD2	1:B:427:ILE:HD13	2.00	0.43
1:A:136:GLN:NE2	1:A:156:ARG:CZ	2.81	0.43
1:A:321:LEU:HD23	1:A:321:LEU:HA	1.67	0.43
1:B:321:LEU:O	1:B:322:VAL:HB	2.18	0.43
1:A:394:ARG:HG2	1:A:395:GLN:N	2.33	0.43
1:A:287:VAL:HG23	1:A:307:MET:SD	2.58	0.43
1:B:328:ASN:ND2	1:B:343:GLU:HB3	2.33	0.43
1:A:300:ARG:HA	1:A:301:PRO:HD3	1.92	0.43
1:A:409:ILE:HG12	1:A:410:PHE:H	1.84	0.43
1:A:467:MET:HA	1:A:468:PRO:HD3	1.83	0.43
1:A:211:LEU:HD13	1:B:447:CYS:HB2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:152:ARG:CZ	1:B:222:ILE:HD13	2.49	0.42
1:B:245:SER:O	1:B:274:HIS:CE1	2.68	0.42
1:B:288:ARG:HD3	1:B:304:ASP:OD1	2.19	0.42
1:A:434:THR:CG2	1:A:434:THR:O	2.67	0.42
1:B:296:LYS:HD3	1:B:340:PRO:HG3	2.00	0.42
1:B:434:THR:CG2	1:B:434:THR:O	2.67	0.42
1:A:155:HIS:HE2	1:B:461:GLY:HA3	1.83	0.42
1:A:226:GLN:NE2	1:A:240:VAL:H	2.15	0.42
1:A:266:SER:OG	1:A:310:TYR:HB3	2.20	0.42
1:A:88:SER:O	1:A:89:LYS:HB3	2.19	0.42
1:B:409:ILE:HG12	1:B:410:PHE:H	1.84	0.42
1:A:152:ARG:CZ	1:A:222:ILE:HD13	2.49	0.42
1:A:315:SER:HB2	1:A:316:TYR:H	1.70	0.42
1:A:321:LEU:O	1:A:322:VAL:HB	2.18	0.42
1:A:327:ARG:O	1:A:344:ARG:NH1	2.53	0.42
1:A:296:LYS:HD3	1:A:340:PRO:HG3	2.00	0.42
1:B:300:ARG:HA	1:B:301:PRO:HD3	1.92	0.42
1:A:431:LYS:CA	1:A:431:LYS:NZ	2.76	0.42
1:B:300:ARG:HH21	1:B:351:GLY:N	2.17	0.42
1:B:436:VAL:HB	1:B:438:TRP:NE1	2.35	0.42
1:A:436:VAL:HG12	1:A:469:ILE:HG22	2.02	0.42
1:B:266:SER:OG	1:B:310:TYR:HB3	2.20	0.42
1:B:88:SER:O	1:B:89:LYS:HB3	2.19	0.42
1:B:436:VAL:HG12	1:B:469:ILE:HG22	2.02	0.42
1:A:300:ARG:HH21	1:A:351:GLY:N	2.17	0.42
1:B:254:ILE:HG22	1:B:256:PHE:HE1	1.85	0.42
1:B:315:SER:HB2	1:B:316:TYR:H	1.70	0.42
1:B:430:ARG:O	1:B:431:LYS:CB	2.68	0.42
1:B:430:ARG:O	1:B:431:LYS:HB2	2.19	0.42
1:A:130:TYR:CD1	1:A:189:TRP:CZ2	3.08	0.42
1:A:430:ARG:O	1:A:431:LYS:CB	2.68	0.42
1:A:430:ARG:O	1:A:431:LYS:HB2	2.19	0.42
1:A:436:VAL:HB	1:A:438:TRP:NE1	2.35	0.42
1:B:297:GLY:C	1:B:345:GLY:HA2	2.41	0.42
1:A:144:HIS:CD2	1:B:466:PHE:CD2	3.05	0.41
1:A:249:ARG:HG3	1:A:250:ALA:N	2.34	0.41
1:B:130:TYR:CD1	1:B:189:TRP:CZ2	3.08	0.41
1:A:118:ARG:HD2	1:A:427:ILE:HD13	2.00	0.41
1:A:142:ASN:HD21	1:B:110:ALA:HB3	1.85	0.41
1:A:203:ALA:O	1:A:214:SER:HA	2.20	0.41
1:A:254:ILE:HG22	1:A:256:PHE:HE1	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:288:ARG:HD3	1:A:304:ASP:OD1	2.19	0.41
1:A:322:VAL:HG12	1:A:327:ARG:CG	2.50	0.41
1:A:436:VAL:CA	1:A:469:ILE:CG2	2.98	0.41
1:B:455:THR:OG1	2:B:478:NAG:C1	2.67	0.41
1:A:252:THR:HG21	1:A:268:LEU:HD22	2.02	0.41
1:B:203:ALA:O	1:B:214:SER:HA	2.20	0.41
1:B:249:ARG:HG3	1:B:250:ALA:N	2.34	0.41
1:B:385:THR:HA	1:B:386:PRO:HD2	1.85	0.41
1:A:256:PHE:O	1:A:263:VAL:HG22	2.21	0.41
1:A:297:GLY:C	1:A:345:GLY:HA2	2.41	0.41
1:A:336:ASN:ND2	1:A:338:ARG:NH1	2.69	0.41
1:B:185:ASP:OD2	1:B:207:TYR:HE1	2.04	0.41
1:A:142:ASN:HD22	1:A:143:LYS:N	2.18	0.41
1:B:142:ASN:HD22	1:B:143:LYS:N	2.18	0.41
1:B:289:CYS:O	1:B:290:ILE:HD12	2.21	0.41
1:A:281:TYR:OH	1:A:354:PHE:HA	2.21	0.41
1:B:284:TYR:CD1	1:B:285:PRO:HA	2.56	0.41
1:A:185:ASP:OD2	1:A:207:TYR:HE1	2.04	0.40
1:A:85:ARG:HG3	1:A:186:GLY:HA3	2.03	0.40
1:B:289:CYS:HB2	1:B:303:VAL:HB	2.03	0.40
1:B:321:LEU:HD23	1:B:321:LEU:HA	1.67	0.40
1:A:220:GLN:NE2	1:A:220:GLN:N	2.70	0.40
1:B:85:ARG:HG3	1:B:186:GLY:HA3	2.03	0.40
1:B:281:TYR:OH	1:B:354:PHE:HA	2.21	0.40
1:A:123:SER:HB2	1:A:229:GLU:HB2	2.04	0.40
1:A:306:ASN:HB3	1:A:311:SER:OG	2.22	0.40
2:A:474:NAG:C1	2:A:474:NAG:O7	2.69	0.40
1:B:229:GLU:OE1	1:B:410:PHE:HA	2.22	0.40
1:B:256:PHE:O	1:B:263:VAL:HG22	2.21	0.40
1:A:273:GLN:O	1:A:274:HIS:HB2	2.22	0.40
1:B:220:GLN:NE2	1:B:220:GLN:N	2.70	0.40
2:B:474:NAG:C1	2:B:474:NAG:O7	2.69	0.40
1:A:284:TYR:CD1	1:A:285:PRO:HA	2.56	0.40
1:B:273:GLN:O	1:B:274:HIS:HB2	2.22	0.40
1:B:306:ASN:HB3	1:B:311:SER:OG	2.22	0.40

All (24) 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:454:GLY:CA	2:B:484:NAG:C8[4_555]	0.63	1.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:454:GLY:CA	2:B:484:NAG:C7[4_555]	0.91	1.29
1:A:454:GLY:N	2:B:484:NAG:C8[4_555]	1.31	0.89
1:A:454:GLY:H	2:B:484:NAG:H81[4_555]	0.74	0.86
1:A:454:GLY:N	2:B:484:NAG:H81[4_555]	0.76	0.84
1:A:454:GLY:C	2:B:484:NAG:H83[4_555]	0.89	0.71
1:A:454:GLY:C	2:B:484:NAG:C8[4_555]	1.51	0.69
1:A:453:TYR:O	2:B:484:NAG:O7[4_555]	1.61	0.59
1:B:318:CYS:H	9:A:544:HOH:H2[7_544]	1.16	0.44
1:A:454:GLY:C	2:B:484:NAG:N2[4_555]	1.84	0.36
1:A:454:GLY:O	2:B:484:NAG:HN2[4_555]	1.26	0.34
1:A:455:THR:N	2:B:484:NAG:H83[4_555]	1.27	0.33
1:A:454:GLY:CA	2:B:484:NAG:O7[4_555]	1.87	0.33
1:A:454:GLY:C	2:B:484:NAG:HN2[4_555]	1.28	0.32
9:A:588:HOH:H1	9:A:599:HOH:H2[3_654]	1.29	0.31
1:A:454:GLY:N	2:B:484:NAG:C7[4_555]	1.89	0.31
1:A:394:ARG:HH12	7:B:488:MAN:HO6[4_555]	1.32	0.28
1:A:454:GLY:C	2:B:484:NAG:C7[4_555]	1.92	0.28
1:A:454:GLY:CA	2:B:484:NAG:N2[4_555]	1.92	0.28
1:A:454:GLY:O	2:B:484:NAG:N2[4_555]	1.97	0.23
1:A:454:GLY:CA	2:B:484:NAG:H82[4_555]	1.38	0.22
1:A:454:GLY:CA	2:B:484:NAG:H83[4_555]	1.45	0.15
1:A:453:TYR:C	2:B:484:NAG:O7[4_555]	2.06	0.14
1:A:454:GLY:CA	2:B:484:NAG:H81[4_555]	1.50	0.10

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	386/388 (100%)	327 (85%)	54 (14%)	5 (1%)	13	18
1	B	386/388 (100%)	327 (85%)	54 (14%)	5 (1%)	13	18
All	All	772/776 (100%)	654 (85%)	108 (14%)	10 (1%)	13	18

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	431	LYS
1	B	431	LYS
1	A	89	LYS
1	A	322	VAL
1	A	341	ASN
1	A	356	ASN
1	B	89	LYS
1	B	322	VAL
1	B	341	ASN
1	B	356	ASN

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	338/338 (100%)	301 (89%)	37 (11%)	7 9
1	B	338/338 (100%)	301 (89%)	37 (11%)	7 9
All	All	676/676 (100%)	602 (89%)	74 (11%)	7 9

All (74) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	82	VAL
1	A	103	ASP
1	A	122	VAL
1	A	124	CYS
1	A	134	LEU
1	A	142	ASN
1	A	161	ASN
1	A	165	VAL
1	A	178	TRP
1	A	190	LEU
1	A	192	VAL
1	A	195	THR
1	A	220	GLN
1	A	241	MET

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Mol	Chain	Res	Type
1	A	242	THR
1	A	257	ILE
1	A	291	CYS
1	A	306	ASN
1	A	308	GLU
1	A	315	SER
1	A	319	SER
1	A	331	ARG
1	A	334	ASN
1	A	368	LYS
1	A	370	LEU
1	A	375	GLU
1	A	387	ASN
1	A	388	SER
1	A	415	LYS
1	A	418	ILE
1	A	424	VAL
1	A	427	ILE
1	A	428	ARG
1	A	431	LYS
1	A	443	ILE
1	A	445	VAL
1	A	469	ILE
1	B	82	VAL
1	B	103	ASP
1	B	122	VAL
1	B	124	CYS
1	B	134	LEU
1	B	142	ASN
1	B	161	ASN
1	B	165	VAL
1	B	178	TRP
1	B	190	LEU
1	B	192	VAL
1	B	195	THR
1	B	220	GLN
1	B	241	MET
1	B	242	THR
1	B	257	ILE
1	B	291	CYS
1	B	306	ASN
1	B	308	GLU

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Mol	Chain	Res	Type
1	B	315	SER
1	B	319	SER
1	B	331	ARG
1	B	334	ASN
1	B	368	LYS
1	B	370	LEU
1	B	375	GLU
1	B	387	ASN
1	B	388	SER
1	B	415	LYS
1	B	418	ILE
1	B	424	VAL
1	B	427	ILE
1	B	428	ARG
1	B	431	LYS
1	B	443	ILE
1	B	445	VAL
1	B	469	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	104	ASN
1	A	131	GLN
1	A	136	GLN
1	A	142	ASN
1	A	144	HIS
1	A	161	ASN
1	A	168	HIS
1	A	173	GLN
1	A	184	HIS
1	A	220	GLN
1	A	226	GLN
1	A	274	HIS
1	A	334	ASN
1	A	356	ASN
1	A	358	ASN
1	A	387	ASN
1	A	393	ASN
1	B	104	ASN
1	B	131	GLN
1	B	136	GLN

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Mol	Chain	Res	Type
1	B	142	ASN
1	B	161	ASN
1	B	168	HIS
1	B	184	HIS
1	B	220	GLN
1	B	226	GLN
1	B	274	HIS
1	B	334	ASN
1	B	356	ASN
1	B	358	ASN
1	B	387	ASN
1	B	393	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](#)

Of 32 ligands modelled in this entry, 2 are monoatomic - leaving 30 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	DAN	A	471	-	17,20,20	2.83	9 (52%)	18,28,28	2.10	7 (38%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	A	472	1,2	14,14,15	0.85	0	17,19,21	1.17	1 (5%)
2	NAG	A	473	2	14,14,15	1.67	4 (28%)	17,19,21	1.96	3 (17%)
2	NAG	A	474	1,2,4	14,14,15	0.78	0	17,19,21	3.12	5 (29%)
2	NAG	A	475	3,2	14,14,15	1.81	5 (35%)	17,19,21	1.94	4 (23%)
3	BMA	A	476	2	11,11,12	1.69	4 (36%)	15,15,17	2.22	1 (6%)
4	FUL	A	477	2	9,10,11	2.08	3 (33%)	13,14,16	1.50	2 (15%)
2	NAG	A	484	1,2	14,14,15	0.87	0	17,19,21	1.82	3 (17%)
2	NAG	A	485	2	14,14,15	1.51	2 (14%)	17,19,21	2.08	4 (23%)
6	DAN	B	471	-	17,20,20	2.83	9 (52%)	18,28,28	2.10	7 (38%)
2	NAG	B	472	1,2	14,14,15	0.85	0	17,19,21	1.17	1 (5%)
2	NAG	B	473	2	14,14,15	1.67	4 (28%)	17,19,21	1.96	3 (17%)
2	NAG	B	474	1,8,2	14,14,15	0.78	0	17,19,21	3.12	5 (29%)
2	NAG	B	475	3,2	14,14,15	1.81	5 (35%)	17,19,21	1.94	4 (23%)
3	BMA	B	476	2	11,11,12	1.69	4 (36%)	15,15,17	2.22	1 (6%)
8	FUC	B	477	2	9,10,11	2.08	3 (33%)	13,14,16	1.50	2 (15%)
2	NAG	B	478	1,2,7	14,14,15	2.49	6 (42%)	17,19,21	2.30	6 (35%)
2	NAG	B	479	3,2	14,14,15	1.45	2 (14%)	17,19,21	3.84	7 (41%)
3	BMA	B	480	2,7	11,11,12	1.48	1 (9%)	15,15,17	3.52	5 (33%)
7	MAN	B	481	3,7	11,11,12	2.31	6 (54%)	15,15,17	3.19	6 (40%)
7	MAN	B	482	7	11,11,12	2.81	6 (54%)	15,15,17	3.72	6 (40%)
7	MAN	B	483	2	11,11,12	1.49	1 (9%)	15,15,17	2.55	6 (40%)
2	NAG	B	484	1,2,7	14,14,15	2.49	6 (42%)	17,19,21	2.30	6 (35%)
2	NAG	B	485	3,2	14,14,15	1.45	2 (14%)	17,19,21	3.84	7 (41%)
3	BMA	B	486	2,7	11,11,12	1.48	1 (9%)	15,15,17	3.52	5 (33%)
7	MAN	B	487	3,7	11,11,12	2.31	6 (54%)	15,15,17	3.19	6 (40%)
7	MAN	B	488	7	11,11,12	2.81	6 (54%)	15,15,17	3.72	6 (40%)
7	MAN	B	489	2	11,11,12	1.49	1 (9%)	15,15,17	2.55	6 (40%)
2	NAG	B	490	1,2	14,14,15	0.87	0	17,19,21	1.82	3 (17%)
2	NAG	B	491	2	14,14,15	1.51	2 (14%)	17,19,21	2.08	4 (23%)

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
6	DAN	A	471	-	-	0/14/34/34	0/1/1/1
2	NAG	A	472	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	473	2	-	0/6/23/26	0/1/1/1
2	NAG	A	474	1,2,4	-	0/6/23/26	0/1/1/1
2	NAG	A	475	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	476	2	-	0/2/19/22	0/1/1/1
4	FUL	A	477	2	-	0/0/17/20	0/1/1/1
2	NAG	A	484	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	485	2	-	0/6/23/26	0/1/1/1
6	DAN	B	471	-	-	0/14/34/34	0/1/1/1
2	NAG	B	472	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	473	2	-	0/6/23/26	0/1/1/1
2	NAG	B	474	1,8,2	-	0/6/23/26	0/1/1/1
2	NAG	B	475	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	476	2	-	0/2/19/22	0/1/1/1
8	FUC	B	477	2	1/1/5/5	0/0/17/20	0/1/1/1
2	NAG	B	478	1,2,7	-	0/6/23/26	0/1/1/1
2	NAG	B	479	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	480	2,7	-	0/2/19/22	0/1/1/1
7	MAN	B	481	3,7	-	0/2/19/22	0/1/1/1
7	MAN	B	482	7	-	0/2/19/22	0/1/1/1
7	MAN	B	483	2	-	0/2/19/22	0/1/1/1
2	NAG	B	484	1,2,7	-	0/6/23/26	0/1/1/1
2	NAG	B	485	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	486	2,7	-	0/2/19/22	0/1/1/1
7	MAN	B	487	3,7	-	0/2/19/22	0/1/1/1
7	MAN	B	488	7	-	0/2/19/22	0/1/1/1
7	MAN	B	489	2	-	0/2/19/22	0/1/1/1
2	NAG	B	490	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	491	2	-	0/6/23/26	0/1/1/1

All (98) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	B	471	DAN	C4-C5	-4.68	1.47	1.52
6	A	471	DAN	C4-C5	-4.68	1.47	1.52
2	B	479	NAG	C1-C2	-3.64	1.47	1.52
2	B	485	NAG	C1-C2	-3.64	1.47	1.52
2	A	473	NAG	C1-C2	-2.58	1.48	1.52
2	B	473	NAG	C1-C2	-2.58	1.48	1.52
7	B	481	MAN	O5-C1	-2.29	1.40	1.43
7	B	487	MAN	O5-C1	-2.29	1.40	1.43
6	B	471	DAN	O7-C7	-2.05	1.37	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	471	DAN	O7-C7	-2.05	1.37	1.43
2	B	475	NAG	C8-C7	2.05	1.54	1.50
2	A	475	NAG	C8-C7	2.05	1.54	1.50
6	B	471	DAN	O6-C2	2.05	1.41	1.37
6	A	471	DAN	O6-C2	2.05	1.41	1.37
2	B	475	NAG	C6-C5	2.07	1.58	1.51
2	A	475	NAG	C6-C5	2.07	1.58	1.51
7	B	481	MAN	O2-C2	2.08	1.47	1.43
7	B	487	MAN	O2-C2	2.08	1.47	1.43
2	B	484	NAG	C2-N2	2.12	1.49	1.46
2	B	478	NAG	C2-N2	2.12	1.49	1.46
7	B	481	MAN	O4-C4	2.14	1.48	1.43
7	B	487	MAN	O4-C4	2.14	1.48	1.43
3	B	476	BMA	O5-C1	2.21	1.47	1.43
3	A	476	BMA	O5-C1	2.21	1.47	1.43
3	B	476	BMA	C2-C3	2.34	1.55	1.52
3	A	476	BMA	C2-C3	2.34	1.55	1.52
3	B	476	BMA	C1-C2	2.38	1.57	1.52
3	A	476	BMA	C1-C2	2.38	1.57	1.52
2	A	473	NAG	C4-C3	2.39	1.58	1.52
2	B	473	NAG	C4-C3	2.39	1.58	1.52
7	B	481	MAN	C6-C5	2.42	1.60	1.51
7	B	487	MAN	C6-C5	2.42	1.60	1.51
2	B	475	NAG	O5-C1	2.43	1.47	1.43
2	A	475	NAG	O5-C1	2.43	1.47	1.43
2	A	473	NAG	C4-C5	2.44	1.58	1.53
2	B	473	NAG	C4-C5	2.44	1.58	1.53
2	B	484	NAG	C6-C5	2.50	1.60	1.51
2	B	478	NAG	C6-C5	2.50	1.60	1.51
6	B	471	DAN	C9-C8	2.58	1.59	1.52
6	A	471	DAN	C9-C8	2.58	1.59	1.52
2	B	479	NAG	O5-C5	2.58	1.48	1.43
2	B	485	NAG	O5-C5	2.58	1.48	1.43
8	B	477	FUC	O5-C1	2.61	1.48	1.43
4	A	477	FUL	O5-C1	2.61	1.48	1.43
6	B	471	DAN	O6-C6	2.72	1.50	1.46
6	A	471	DAN	O6-C6	2.72	1.50	1.46
7	B	488	MAN	C6-C5	2.76	1.61	1.51
7	B	482	MAN	C6-C5	2.76	1.61	1.51
3	B	480	BMA	C2-C3	2.79	1.56	1.52
3	B	486	BMA	C2-C3	2.79	1.56	1.52
2	A	485	NAG	C4-C5	2.79	1.59	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	491	NAG	C4-C5	2.79	1.59	1.53
7	B	488	MAN	O5-C1	2.92	1.48	1.43
7	B	482	MAN	O5-C1	2.92	1.48	1.43
6	B	471	DAN	C4-C3	3.11	1.54	1.50
6	A	471	DAN	C4-C3	3.11	1.54	1.50
2	A	473	NAG	C3-C2	3.13	1.59	1.52
2	B	473	NAG	C3-C2	3.13	1.59	1.52
7	B	481	MAN	C4-C3	3.19	1.60	1.52
7	B	487	MAN	C4-C3	3.19	1.60	1.52
2	B	484	NAG	C3-C2	3.32	1.59	1.52
2	B	478	NAG	C3-C2	3.32	1.59	1.52
7	B	488	MAN	C2-C3	3.42	1.57	1.52
7	B	482	MAN	C2-C3	3.42	1.57	1.52
2	B	475	NAG	O5-C5	3.46	1.50	1.43
2	A	475	NAG	O5-C5	3.46	1.50	1.43
3	B	476	BMA	O5-C5	3.47	1.50	1.43
3	A	476	BMA	O5-C5	3.47	1.50	1.43
2	B	484	NAG	O5-C5	3.59	1.50	1.43
2	B	478	NAG	O5-C5	3.59	1.50	1.43
8	B	477	FUC	C4-C5	3.64	1.60	1.52
4	A	477	FUL	C4-C5	3.64	1.60	1.52
7	B	488	MAN	C1-C2	3.72	1.61	1.52
7	B	482	MAN	C1-C2	3.72	1.61	1.52
2	B	475	NAG	C4-C5	3.79	1.61	1.53
2	A	475	NAG	C4-C5	3.79	1.61	1.53
7	B	488	MAN	O5-C5	3.85	1.51	1.43
7	B	482	MAN	O5-C5	3.85	1.51	1.43
2	A	485	NAG	C4-C3	3.88	1.62	1.52
2	B	491	NAG	C4-C3	3.88	1.62	1.52
8	B	477	FUC	C4-C3	3.97	1.62	1.52
4	A	477	FUL	C4-C3	3.97	1.62	1.52
7	B	489	MAN	C1-C2	4.03	1.61	1.52
7	B	483	MAN	C1-C2	4.03	1.61	1.52
6	B	471	DAN	C6-C5	4.14	1.60	1.53
6	A	471	DAN	C6-C5	4.14	1.60	1.53
2	B	484	NAG	C1-C2	4.26	1.58	1.52
2	B	478	NAG	C1-C2	4.26	1.58	1.52
6	B	471	DAN	C7-C6	4.67	1.58	1.52
6	A	471	DAN	C7-C6	4.67	1.58	1.52
2	B	484	NAG	O5-C1	4.77	1.51	1.43
2	B	478	NAG	O5-C1	4.77	1.51	1.43
7	B	481	MAN	C4-C5	4.87	1.63	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	B	487	MAN	C4-C5	4.87	1.63	1.53
7	B	488	MAN	C4-C5	5.26	1.64	1.53
7	B	482	MAN	C4-C5	5.26	1.64	1.53
6	B	471	DAN	C3-C2	6.13	1.40	1.32
6	A	471	DAN	C3-C2	6.13	1.40	1.32

All (132) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	479	NAG	O5-C1-C2	-7.50	101.17	111.52
2	B	485	NAG	O5-C1-C2	-7.50	101.17	111.52
2	A	473	NAG	C1-C2-N2	-5.68	100.78	110.49
2	B	473	NAG	C1-C2-N2	-5.68	100.78	110.49
6	B	471	DAN	O6-C2-C3	-5.00	117.20	124.27
6	A	471	DAN	O6-C2-C3	-5.00	117.20	124.27
7	B	488	MAN	C1-C2-C3	-4.77	103.62	109.66
7	B	482	MAN	C1-C2-C3	-4.77	103.62	109.66
2	B	479	NAG	C4-C3-C2	-4.74	104.08	111.02
2	B	485	NAG	C4-C3-C2	-4.74	104.08	111.02
7	B	481	MAN	C3-C4-C5	-4.55	102.10	110.24
7	B	487	MAN	C3-C4-C5	-4.55	102.10	110.24
7	B	481	MAN	C1-C2-C3	-4.31	104.21	109.66
7	B	487	MAN	C1-C2-C3	-4.31	104.21	109.66
2	A	484	NAG	C4-C3-C2	-4.27	104.76	111.02
2	B	490	NAG	C4-C3-C2	-4.27	104.76	111.02
3	B	480	BMA	O2-C2-C1	-4.27	100.57	109.17
3	B	486	BMA	O2-C2-C1	-4.27	100.57	109.17
6	B	471	DAN	O4-C4-C5	-3.50	106.11	112.43
6	A	471	DAN	O4-C4-C5	-3.50	106.11	112.43
3	B	480	BMA	C2-C3-C4	-3.47	104.83	110.87
3	B	486	BMA	C2-C3-C4	-3.47	104.83	110.87
2	B	474	NAG	O5-C5-C6	-3.39	101.79	107.15
2	A	474	NAG	O5-C5-C6	-3.39	101.79	107.15
2	B	475	NAG	O5-C1-C2	-3.18	107.13	111.52
2	A	475	NAG	O5-C1-C2	-3.18	107.13	111.52
2	B	484	NAG	C3-C4-C5	-3.04	104.80	110.24
2	B	478	NAG	C3-C4-C5	-3.04	104.80	110.24
2	B	474	NAG	O4-C4-C3	-2.96	103.44	110.34
2	A	474	NAG	O4-C4-C3	-2.96	103.44	110.34
2	B	475	NAG	C2-N2-C7	-2.91	118.69	122.94
2	A	475	NAG	C2-N2-C7	-2.91	118.69	122.94
7	B	489	MAN	O2-C2-C3	-2.86	104.62	110.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	B	483	MAN	O2-C2-C3	-2.86	104.62	110.19
6	B	471	DAN	O10-C10-C11	-2.83	116.95	122.07
6	A	471	DAN	O10-C10-C11	-2.83	116.95	122.07
7	B	481	MAN	C2-C3-C4	-2.61	106.33	110.87
7	B	487	MAN	C2-C3-C4	-2.61	106.33	110.87
2	B	472	NAG	O3-C3-C2	-2.59	103.84	109.39
2	A	472	NAG	O3-C3-C2	-2.59	103.84	109.39
8	B	477	FUC	O3-C3-C2	-2.48	105.42	110.04
4	A	477	FUL	O3-C3-C2	-2.48	105.42	110.04
2	B	484	NAG	C1-C2-N2	-2.45	106.30	110.49
2	B	478	NAG	C1-C2-N2	-2.45	106.30	110.49
2	B	474	NAG	O7-C7-C8	-2.17	118.14	122.07
2	A	474	NAG	O7-C7-C8	-2.17	118.14	122.07
2	A	473	NAG	O7-C7-C8	-2.17	118.15	122.07
2	B	473	NAG	O7-C7-C8	-2.17	118.15	122.07
3	B	480	BMA	O4-C4-C3	-2.11	105.41	110.34
3	B	486	BMA	O4-C4-C3	-2.11	105.41	110.34
2	B	479	NAG	C8-C7-N2	-2.06	112.50	116.10
2	B	485	NAG	C8-C7-N2	-2.06	112.50	116.10
2	B	475	NAG	O3-C3-C2	-2.05	105.00	109.39
2	A	475	NAG	O3-C3-C2	-2.05	105.00	109.39
6	B	471	DAN	C4-C3-C2	2.00	124.99	121.60
6	A	471	DAN	C4-C3-C2	2.00	124.99	121.60
6	B	471	DAN	C11-C10-N5	2.02	119.64	116.10
6	A	471	DAN	C11-C10-N5	2.02	119.64	116.10
2	A	484	NAG	O3-C3-C4	2.04	115.11	110.34
2	B	490	NAG	O3-C3-C4	2.04	115.11	110.34
7	B	489	MAN	O2-C2-C1	2.13	113.47	109.17
7	B	483	MAN	O2-C2-C1	2.13	113.47	109.17
2	B	479	NAG	O4-C4-C3	2.26	115.63	110.34
2	B	485	NAG	O4-C4-C3	2.26	115.63	110.34
2	B	484	NAG	O4-C4-C5	2.29	115.03	109.31
2	B	478	NAG	O4-C4-C5	2.29	115.03	109.31
7	B	488	MAN	O4-C4-C3	2.41	115.97	110.34
7	B	482	MAN	O4-C4-C3	2.41	115.97	110.34
2	A	485	NAG	C3-C4-C5	2.50	114.72	110.24
2	B	491	NAG	C3-C4-C5	2.50	114.72	110.24
6	B	471	DAN	O4-C4-C3	2.51	115.03	109.28
6	A	471	DAN	O4-C4-C3	2.51	115.03	109.28
7	B	488	MAN	O2-C2-C3	2.70	115.46	110.19
7	B	482	MAN	O2-C2-C3	2.70	115.46	110.19
2	A	485	NAG	C1-C2-N2	2.79	115.26	110.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	491	NAG	C1-C2-N2	2.79	115.26	110.49
6	B	471	DAN	C6-C5-N5	2.85	115.87	110.94
6	A	471	DAN	C6-C5-N5	2.85	115.87	110.94
2	A	473	NAG	C6-C5-C4	3.06	120.23	112.99
2	B	473	NAG	C6-C5-C4	3.06	120.23	112.99
2	B	484	NAG	O4-C4-C3	3.16	117.73	110.34
2	B	478	NAG	O4-C4-C3	3.16	117.73	110.34
7	B	489	MAN	C6-C5-C4	3.43	121.11	112.99
7	B	483	MAN	C6-C5-C4	3.43	121.11	112.99
7	B	481	MAN	O4-C4-C5	3.46	117.98	109.31
7	B	487	MAN	O4-C4-C5	3.46	117.98	109.31
8	B	477	FUC	O2-C2-C1	3.49	116.22	109.17
4	A	477	FUL	O2-C2-C1	3.49	116.22	109.17
2	A	485	NAG	C6-C5-C4	3.53	121.34	112.99
2	B	491	NAG	C6-C5-C4	3.53	121.34	112.99
7	B	488	MAN	C3-C4-C5	3.59	116.66	110.24
7	B	482	MAN	C3-C4-C5	3.59	116.66	110.24
7	B	489	MAN	C1-C2-C3	3.74	114.40	109.66
7	B	483	MAN	C1-C2-C3	3.74	114.40	109.66
7	B	481	MAN	C1-O5-C5	3.75	117.34	112.19
7	B	487	MAN	C1-O5-C5	3.75	117.34	112.19
3	B	480	BMA	C6-C5-C4	4.07	122.61	112.99
3	B	486	BMA	C6-C5-C4	4.07	122.61	112.99
2	B	484	NAG	C2-N2-C7	4.16	129.01	122.94
2	B	478	NAG	C2-N2-C7	4.16	129.01	122.94
2	A	484	NAG	C1-O5-C5	4.33	118.14	112.19
2	B	490	NAG	C1-O5-C5	4.33	118.14	112.19
2	B	475	NAG	C1-O5-C5	4.73	118.69	112.19
2	A	475	NAG	C1-O5-C5	4.73	118.69	112.19
7	B	489	MAN	C1-O5-C5	4.86	118.87	112.19
7	B	483	MAN	C1-O5-C5	4.86	118.87	112.19
7	B	489	MAN	O5-C1-C2	5.08	118.70	110.78
7	B	483	MAN	O5-C1-C2	5.08	118.70	110.78
2	B	479	NAG	C1-O5-C5	5.31	119.49	112.19
2	B	485	NAG	C1-O5-C5	5.31	119.49	112.19
2	B	474	NAG	C1-C2-N2	5.37	119.67	110.49
2	A	474	NAG	C1-C2-N2	5.37	119.67	110.49
2	B	484	NAG	C1-O5-C5	5.58	119.86	112.19
2	B	478	NAG	C1-O5-C5	5.58	119.86	112.19
2	A	485	NAG	C1-O5-C5	6.08	120.55	112.19
2	B	491	NAG	C1-O5-C5	6.08	120.55	112.19
2	B	479	NAG	C2-N2-C7	7.32	133.62	122.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	485	NAG	C2-N2-C7	7.32	133.62	122.94
3	B	476	BMA	C1-O5-C5	7.63	122.69	112.19
3	A	476	BMA	C1-O5-C5	7.63	122.69	112.19
7	B	481	MAN	O3-C3-C2	8.27	125.41	110.04
7	B	487	MAN	O3-C3-C2	8.27	125.41	110.04
2	B	479	NAG	C1-C2-N2	8.38	124.81	110.49
2	B	485	NAG	C1-C2-N2	8.38	124.81	110.49
7	B	488	MAN	O3-C3-C2	8.63	126.09	110.04
7	B	482	MAN	O3-C3-C2	8.63	126.09	110.04
7	B	488	MAN	C1-O5-C5	8.71	124.16	112.19
7	B	482	MAN	C1-O5-C5	8.71	124.16	112.19
2	B	474	NAG	C1-O5-C5	9.67	125.50	112.19
2	A	474	NAG	C1-O5-C5	9.67	125.50	112.19
3	B	480	BMA	O3-C3-C2	10.94	130.38	110.04
3	B	486	BMA	O3-C3-C2	10.94	130.38	110.04

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
8	B	477	FUC	C1

There are no torsion outliers.

There are no ring outliers.

6 monomers are involved in 36 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	474	NAG	2	0
2	B	474	NAG	2	0
2	B	478	NAG	5	0
7	B	482	MAN	4	0
2	B	484	NAG	1	21
7	B	488	MAN	0	1

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

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.