



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 22, 2018 – 07:29 PM EST

PDB ID : 6BUY  
Title : Crystal structure of porcine aminopeptidase-N with Glycine  
Authors : Chen, L.; Lin, Y.-L.; Li, F.  
Deposited on : 2017-12-11  
Resolution : 2.10 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20030736  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20030736

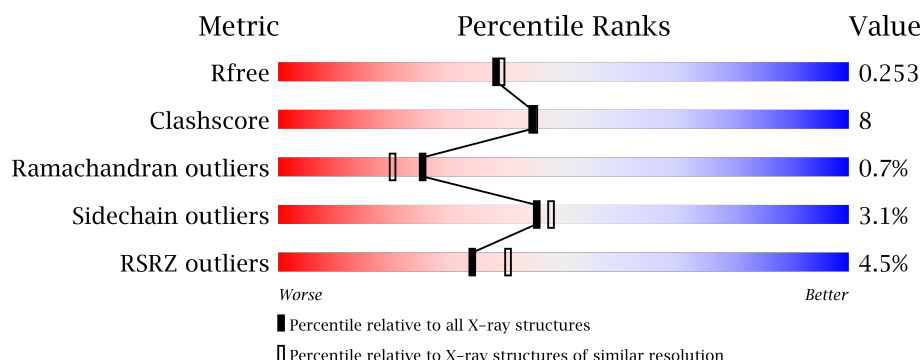
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 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))
$R_{free}$	100719	4243 (2.10-2.10)
Clashscore	112137	4788 (2.10-2.10)
Ramachandran outliers	110173	4740 (2.10-2.10)
Sidechain outliers	110143	4741 (2.10-2.10)
RSRZ outliers	101464	4275 (2.10-2.10)

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  $\geq 3$ , 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	902	

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	A	1004	-	-	-	X
2	NAG	A	1011	-	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	SO4	A	1025	-	X	-	X
4	SO4	A	1026	-	X	-	X
4	SO4	A	1027	-	-	-	X
4	SO4	A	1028	-	X	-	X
4	SO4	A	1029	-	-	-	X
4	SO4	A	1031	-	-	-	X
4	SO4	A	1032	-	X	-	-
4	SO4	A	1033	-	X	-	X

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 8551 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.

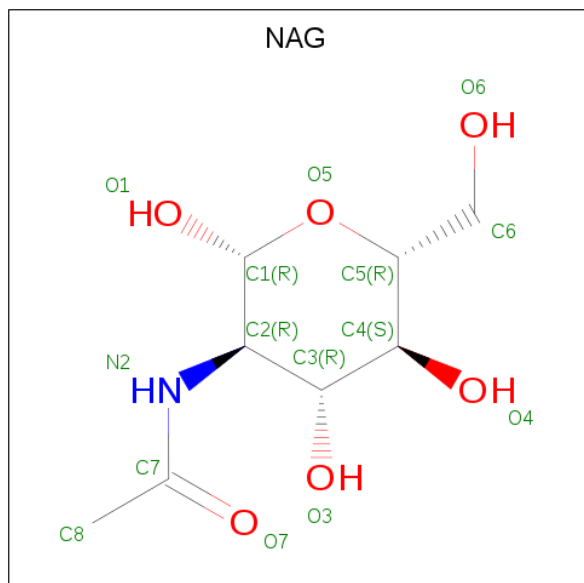
- Molecule 1 is a protein called Aminopeptidase N.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	902	7241	4622	1210	1379	30	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	107	PHE	LEU	conflict	UNP P15145
A	964	SER	-	expression tag	UNP P15145

- Molecule 2 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



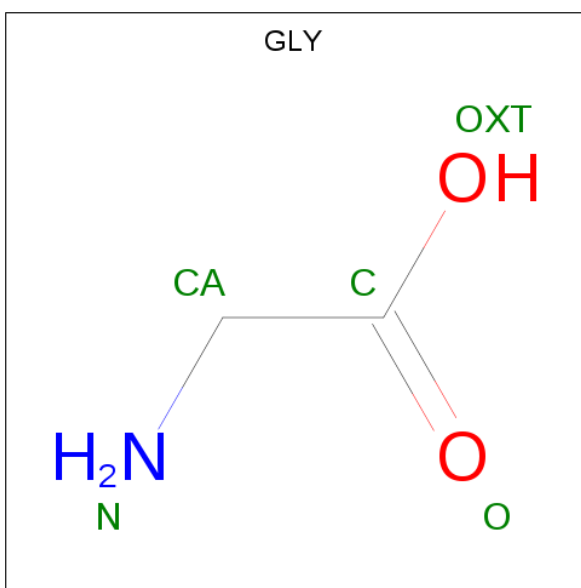
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0

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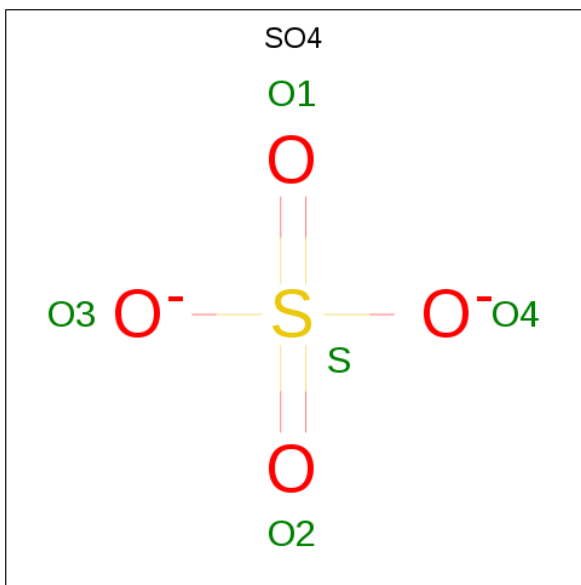
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1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

- Molecule 3 is GLYCINE (three-letter code: GLY) (formula:  $C_2H_5NO_2$ ).



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

- Molecule 4 is SULFATE ION (three-letter code: SO<sub>4</sub>) (formula:  $O_4S$ ).



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

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

- Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Zn	0	0
			1	1		

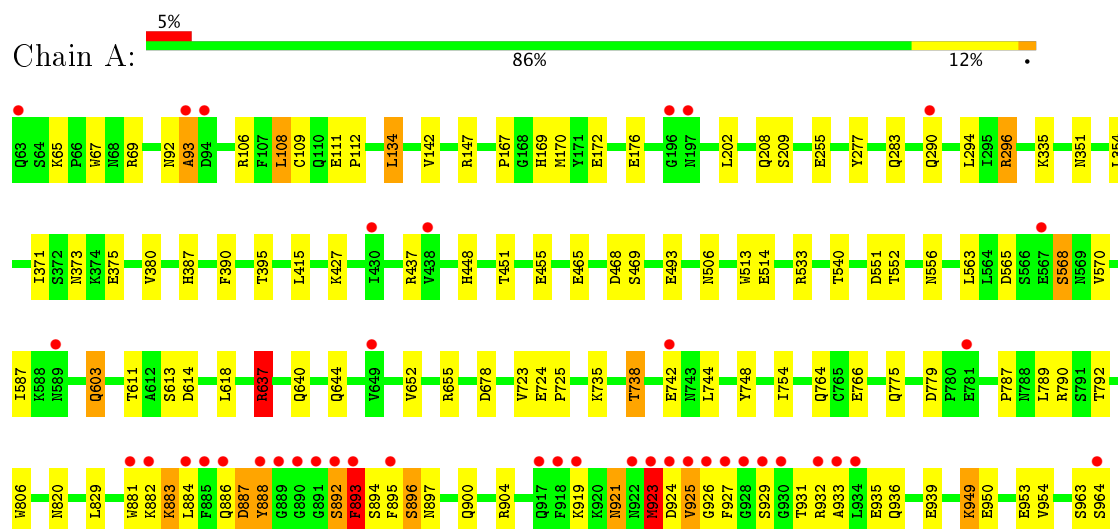
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	932	Total	O	0	0
			932	932		

### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

#### • Molecule 1: Aminopeptidase N





## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	260.61Å 62.73Å 81.64Å 90.00° 100.26° 90.00°	Depositor
Resolution (Å)	128.22 – 2.10 47.59 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.8 (128.22-2.10) 99.8 (47.59-2.10)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.06	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.11 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.8.0158	Depositor
R, $R_{free}$	0.197 , 0.248 0.202 , 0.253	Depositor DCC
$R_{free}$ test set	3817 reflections (5.29%)	DCC
Wilson B-factor (Å <sup>2</sup> )	33.9	Xtriage
Anisotropy	0.121	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 35.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	8551	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.05% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, NAG, SO4

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	0.96	17/7429 (0.2%)	0.74	6/10124 (0.1%)

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	111	GLU	CD-OE2	9.75	1.36	1.25
1	A	766	GLU	CD-OE1	-7.26	1.17	1.25
1	A	455	GLU	CD-OE2	7.06	1.33	1.25
1	A	375	GLU	CD-OE1	-6.83	1.18	1.25
1	A	455	GLU	CD-OE1	6.68	1.32	1.25
1	A	888	TYR	CG-CD2	6.43	1.47	1.39
1	A	953	GLU	CD-OE1	6.37	1.32	1.25
1	A	742	GLU	CD-OE1	5.81	1.32	1.25
1	A	514	GLU	CD-OE2	5.59	1.31	1.25
1	A	493	GLU	CG-CD	5.51	1.60	1.51
1	A	255	GLU	CD-OE2	5.49	1.31	1.25
1	A	465	GLU	CD-OE1	5.45	1.31	1.25
1	A	888	TYR	CE1-CZ	5.44	1.45	1.38
1	A	469	SER	CB-OG	-5.14	1.35	1.42
1	A	255	GLU	CD-OE1	5.07	1.31	1.25
1	A	939	GLU	CD-OE2	5.02	1.31	1.25
1	A	950	GLU	CD-OE1	5.02	1.31	1.25

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	637	ARG	NE-CZ-NH2	7.18	123.89	120.30
1	A	533	ARG	NE-CZ-NH1	-6.76	116.92	120.30
1	A	437	ARG	NE-CZ-NH1	-5.80	117.40	120.30
1	A	147	ARG	NE-CZ-NH1	5.77	123.18	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	296	ARG	NE-CZ-NH2	-5.22	117.69	120.30
1	A	551	ASP	CB-CG-OD1	5.11	122.89	118.30

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7241	0	6994	101	0
2	A	322	0	287	10	0
3	A	5	0	2	2	0
4	A	50	0	0	2	1
5	A	1	0	0	0	0
6	A	932	0	0	24	4
All	All	8551	0	7283	112	4

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 8.

All (112) 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:820:ASN:HB3	6:A:1617:HOH:O	1.41	1.19
1:A:556:ASN:HD22	2:A:1018:NAG:H83	1.23	1.03
1:A:380:VAL:HG13	6:A:1187:HOH:O	1.63	0.98
1:A:779:ASP:OD2	6:A:1101:HOH:O	1.88	0.92
1:A:69:ARG:NH1	4:A:1034:SO4:O2	2.01	0.92
1:A:176:GLU:OE1	6:A:1102:HOH:O	1.93	0.85
1:A:892:SER:O	1:A:893:PHE:HB2	1.77	0.84
1:A:108:LEU:HD12	1:A:109:CYS:N	1.94	0.83
1:A:92:ASN:O	1:A:93:ALA:HB3	1.80	0.81
4:A:1026:SO4:O2	6:A:1103:HOH:O	1.99	0.80
1:A:415:LEU:HD22	1:A:427:LYS:HE3	1.61	0.79
1:A:924:ASP:O	1:A:925:VAL:HG22	1.82	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1018:NAG:C6	6:A:1105:HOH:O	2.30	0.79
1:A:896:SER:HB2	6:A:1177:HOH:O	1.83	0.78
1:A:883:LYS:HD3	1:A:883:LYS:C	2.05	0.77
1:A:884:LEU:HD22	1:A:925:VAL:O	1.85	0.76
1:A:552:THR:HB	1:A:611:THR:HG22	1.69	0.73
1:A:92:ASN:O	1:A:93:ALA:CB	2.36	0.73
1:A:556:ASN:HD22	2:A:1018:NAG:C8	2.00	0.72
1:A:887:ASP:O	1:A:892:SER:O	2.09	0.70
1:A:92:ASN:HB3	6:A:1175:HOH:O	1.92	0.68
1:A:371:ILE:HG13	1:A:744:LEU:CD1	2.24	0.67
1:A:735:LYS:O	1:A:738:THR:OG1	2.13	0.67
1:A:900:GLN:NE2	1:A:904:ARG:HG3	2.09	0.67
1:A:883:LYS:CD	1:A:883:LYS:C	2.60	0.66
1:A:637:ARG:NH2	1:A:640:GLN:HE22	1.94	0.66
1:A:923:MET:O	1:A:924:ASP:HB2	1.96	0.65
1:A:112:PRO:HD3	1:A:167:PRO:HG3	1.79	0.65
1:A:892:SER:O	1:A:893:PHE:CB	2.46	0.64
1:A:883:LYS:HD3	1:A:883:LYS:O	1.97	0.63
1:A:603:GLN:HB3	6:A:1581:HOH:O	2.00	0.61
2:A:1022:NAG:H82	6:A:1433:HOH:O	2.00	0.61
1:A:371:ILE:HG13	1:A:744:LEU:HD12	1.82	0.60
1:A:371:ILE:CG1	1:A:744:LEU:HD12	2.32	0.60
1:A:883:LYS:CG	1:A:883:LYS:O	2.51	0.58
1:A:283:GLN:OE1	6:A:1107:HOH:O	2.17	0.58
1:A:881:TRP:O	1:A:883:LYS:N	2.25	0.57
1:A:884:LEU:CD2	1:A:925:VAL:O	2.51	0.56
2:A:1005:NAG:H62	2:A:1006:NAG:O5	2.05	0.56
2:A:1018:NAG:O6	6:A:1105:HOH:O	2.11	0.56
1:A:754:ILE:HD13	1:A:789:LEU:HD13	1.88	0.55
1:A:894:SER:OG	1:A:897:ASN:ND2	2.41	0.54
1:A:892:SER:OG	1:A:893:PHE:N	2.40	0.54
1:A:108:LEU:C	1:A:108:LEU:HD12	2.28	0.54
1:A:552:THR:HB	1:A:611:THR:CG2	2.37	0.54
3:A:1024:GLY:HA3	6:A:1607:HOH:O	2.08	0.53
1:A:787:PRO:HA	1:A:790:ARG:HD2	1.89	0.53
2:A:1003:NAG:O7	2:A:1003:NAG:C3	2.56	0.53
1:A:172:GLU:OE1	6:A:1109:HOH:O	2.19	0.53
1:A:395:THR:O	1:A:506:ASN:HA	2.08	0.53
1:A:208:GLN:HE21	1:A:209:SER:HA	1.74	0.53
1:A:563:LEU:HD11	1:A:570:VAL:CG2	2.38	0.53
1:A:134:LEU:HD13	1:A:142:VAL:CG2	2.39	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:900:GLN:NE2	6:A:1111:HOH:O	2.20	0.53
1:A:927:PHE:HD2	1:A:931:THR:HG23	1.74	0.52
3:A:1024:GLY:CA	6:A:1607:HOH:O	2.58	0.51
1:A:637:ARG:CD	1:A:640:GLN:OE1	2.59	0.50
2:A:1003:NAG:H82	6:A:1940:HOH:O	2.10	0.50
2:A:1003:NAG:H3	2:A:1003:NAG:O7	2.11	0.50
1:A:933:ALA:HA	1:A:936:GLN:OE1	2.12	0.50
2:A:1012:NAG:O7	6:A:1110:HOH:O	2.19	0.50
1:A:883:LYS:CD	1:A:883:LYS:O	2.60	0.50
1:A:587:ILE:HG22	1:A:618:LEU:HB3	1.94	0.50
1:A:884:LEU:HD12	1:A:895:PHE:CZ	2.47	0.49
1:A:108:LEU:HD12	1:A:109:CYS:O	2.12	0.49
1:A:448:HIS:HE1	1:A:468:ASP:OD2	1.94	0.49
1:A:202:LEU:C	1:A:202:LEU:HD12	2.33	0.49
1:A:373:ASN:ND2	6:A:1128:HOH:O	2.39	0.49
1:A:883:LYS:HG2	1:A:883:LYS:O	2.13	0.49
1:A:415:LEU:CD2	1:A:427:LYS:HE3	2.36	0.48
1:A:883:LYS:HE3	1:A:893:PHE:HE2	1.79	0.48
1:A:900:GLN:HE22	1:A:904:ARG:HG3	1.79	0.48
1:A:637:ARG:HD3	1:A:640:GLN:OE1	2.14	0.48
1:A:108:LEU:CD1	1:A:109:CYS:N	2.72	0.47
1:A:896:SER:OG	1:A:933:ALA:HB2	2.14	0.47
1:A:754:ILE:HG22	1:A:792:THR:HG21	1.96	0.47
1:A:904:ARG:HD2	6:A:1111:HOH:O	2.15	0.47
1:A:451:THR:HG23	1:A:540:THR:HB	1.97	0.47
1:A:108:LEU:HD13	1:A:169:HIS:O	2.15	0.46
1:A:106:ARG:HG2	1:A:170:MET:CE	2.45	0.46
1:A:919:LYS:C	1:A:921:ASN:H	2.19	0.46
1:A:888:TYR:HE1	1:A:929:SER:HB3	1.79	0.46
1:A:820:ASN:CB	6:A:1617:HOH:O	2.23	0.46
1:A:779:ASP:OD1	6:A:1112:HOH:O	2.21	0.46
1:A:963:SER:O	1:A:964:SER:HB3	2.16	0.46
1:A:351:ASN:HB2	1:A:354:LEU:O	2.16	0.45
1:A:919:LYS:NZ	1:A:935:GLU:OE1	2.40	0.45
1:A:611:THR:HG21	6:A:1291:HOH:O	2.16	0.45
1:A:724:GLU:HB3	1:A:725:PRO:HD3	1.99	0.45
1:A:949:LYS:HB2	1:A:949:LYS:HE3	1.46	0.45
1:A:552:THR:CB	1:A:611:THR:HG22	2.44	0.45
1:A:106:ARG:HG2	1:A:170:MET:HE1	1.99	0.44
1:A:881:TRP:C	1:A:883:LYS:H	2.14	0.43
1:A:371:ILE:HG12	1:A:744:LEU:HD12	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:806:TRP:CE2	1:A:829:LEU:HD22	2.54	0.42
1:A:603:GLN:HB3	1:A:603:GLN:HE21	1.55	0.42
1:A:637:ARG:NH2	1:A:678:ASP:OD2	2.53	0.42
1:A:371:ILE:HG23	1:A:748:TYR:HE1	1.83	0.42
1:A:65:LYS:HB3	1:A:67:TRP:CE2	2.54	0.42
1:A:881:TRP:C	1:A:883:LYS:N	2.72	0.42
1:A:954:VAL:HG23	6:A:1449:HOH:O	2.20	0.42
1:A:387:HIS:HA	1:A:390:PHE:O	2.20	0.42
1:A:448:HIS:CE1	1:A:468:ASP:OD2	2.72	0.41
1:A:637:ARG:HA	1:A:637:ARG:HD3	1.74	0.41
1:A:565:ASP:O	1:A:568:SER:HB2	2.20	0.41
1:A:170:MET:HB3	1:A:170:MET:HE2	1.87	0.41
1:A:652:VAL:HA	1:A:655:ARG:HG3	2.02	0.41
1:A:208:GLN:HA	1:A:209:SER:HA	1.82	0.41
1:A:208:GLN:HE21	1:A:209:SER:CA	2.32	0.41
1:A:108:LEU:HD12	1:A:109:CYS:C	2.42	0.40
1:A:294:LEU:HD21	1:A:296:ARG:CZ	2.52	0.40
1:A:924:ASP:C	1:A:926:GLY:H	2.24	0.40

All (4) 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)
6:A:1697:HOH:O	6:A:2032:HOH:O[4_557]	1.26	0.94
6:A:1874:HOH:O	6:A:2031:HOH:O[4_557]	1.41	0.79
4:A:1029:SO4:O1	6:A:1352:HOH:O[2_556]	2.10	0.10
6:A:1641:HOH:O	6:A:1949:HOH:O[2_556]	2.12	0.08

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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	900/902 (100%)	873 (97%)	21 (2%)	6 (1%)	25 20

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	93	ALA
1	A	882	LYS
1	A	892	SER
1	A	893	PHE
1	A	923	MET
1	A	925	VAL

### 5.3.2 Protein sidechains ⓘ

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	797/797 (100%)	772 (97%)	25 (3%)	45 48

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	108	LEU
1	A	134	LEU
1	A	277	TYR
1	A	290	GLN
1	A	335	LYS
1	A	513	TRP
1	A	568	SER
1	A	603	GLN
1	A	613	SER
1	A	614	ASP
1	A	637	ARG
1	A	644	GLN
1	A	723	VAL
1	A	738	THR
1	A	764	GLN

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Mol	Chain	Res	Type
1	A	775	GLN
1	A	883	LYS
1	A	886	GLN
1	A	887	ASP
1	A	893	PHE
1	A	896	SER
1	A	921	ASN
1	A	923	MET
1	A	932	ARG
1	A	949	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	63	GLN
1	A	208	GLN
1	A	448	HIS
1	A	603	GLN
1	A	728	GLN
1	A	782	ASN
1	A	897	ASN
1	A	900	GLN
1	A	913	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 [i](#)

Of 35 ligands modelled in this entry, 1 is monoatomic - leaving 34 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$
2	NAG	A	1001	1,2	14,14,15	1.01	2 (14%)	15,19,21	1.02	1 (6%)
2	NAG	A	1002	2	14,14,15	1.10	1 (7%)	15,19,21	1.66	3 (20%)
2	NAG	A	1003	2	14,14,15	1.19	1 (7%)	15,19,21	1.58	2 (13%)
2	NAG	A	1004	1,2	14,14,15	0.65	0	15,19,21	1.49	2 (13%)
2	NAG	A	1005	2	14,14,15	1.20	2 (14%)	15,19,21	2.26	6 (40%)
2	NAG	A	1006	2	14,14,15	1.27	1 (7%)	15,19,21	1.55	3 (20%)
2	NAG	A	1007	1,2	14,14,15	0.92	0	15,19,21	1.04	0
2	NAG	A	1008	2	14,14,15	0.97	0	15,19,21	1.59	3 (20%)
2	NAG	A	1009	1,2	14,14,15	0.76	0	15,19,21	1.17	1 (6%)
2	NAG	A	1010	2	14,14,15	0.78	0	15,19,21	1.52	2 (13%)
2	NAG	A	1011	1,2	14,14,15	0.60	0	15,19,21	1.45	2 (13%)
2	NAG	A	1012	2	14,14,15	0.93	0	15,19,21	1.77	5 (33%)
2	NAG	A	1013	2	14,14,15	1.49	1 (7%)	15,19,21	1.57	4 (26%)
2	NAG	A	1014	1,2	14,14,15	1.28	2 (14%)	15,19,21	1.03	0
2	NAG	A	1015	2	14,14,15	0.95	1 (7%)	15,19,21	1.14	1 (6%)
2	NAG	A	1016	1,2	14,14,15	1.00	1 (7%)	15,19,21	1.33	1 (6%)
2	NAG	A	1017	2	14,14,15	0.77	0	15,19,21	1.98	4 (26%)
2	NAG	A	1018	1,2	14,14,15	1.17	1 (7%)	15,19,21	1.73	5 (33%)
2	NAG	A	1019	2	14,14,15	1.19	1 (7%)	15,19,21	1.37	2 (13%)
2	NAG	A	1020	1	14,14,15	1.29	1 (7%)	15,19,21	1.50	2 (13%)
2	NAG	A	1021	1,2	14,14,15	0.72	0	15,19,21	1.26	1 (6%)
2	NAG	A	1022	2	14,14,15	1.41	2 (14%)	15,19,21	1.89	4 (26%)
2	NAG	A	1023	1	14,14,15	1.25	1 (7%)	15,19,21	1.43	2 (13%)
3	GLY	A	1024	-	1,4,4	1.07	0	0,4,4	0.00	-
4	SO4	A	1025	-	4,4,4	2.78	2 (50%)	6,6,6	3.42	4 (66%)
4	SO4	A	1026	-	4,4,4	2.01	2 (50%)	6,6,6	2.16	4 (66%)
4	SO4	A	1027	-	4,4,4	2.63	3 (75%)	6,6,6	1.26	0
4	SO4	A	1028	-	4,4,4	2.90	3 (75%)	6,6,6	1.47	1 (16%)
4	SO4	A	1029	-	4,4,4	1.94	1 (25%)	6,6,6	0.76	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	SO4	A	1030	-	4,4,4	1.53	1 (25%)	6,6,6	0.58	0
4	SO4	A	1031	-	4,4,4	2.57	2 (50%)	6,6,6	1.62	1 (16%)
4	SO4	A	1032	-	4,4,4	2.50	3 (75%)	6,6,6	1.29	1 (16%)
4	SO4	A	1033	-	4,4,4	2.38	3 (75%)	6,6,6	1.64	2 (33%)
4	SO4	A	1034	-	4,4,4	2.19	3 (75%)	6,6,6	1.01	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	A	1001	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1002	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1003	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1004	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1005	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1006	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1007	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1008	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1009	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1010	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1011	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1012	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1013	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1014	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1015	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1016	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1017	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1018	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1019	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1020	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1021	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	1022	2	-	0/6/23/26	0/1/1/1
2	NAG	A	1023	1	-	0/6/23/26	0/1/1/1
3	GLY	A	1024	-	-	0/0/2/2	0/0/0/0
4	SO4	A	1025	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1026	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1027	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1028	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1029	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	SO4	A	1030	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1031	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1032	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1033	-	-	0/0/0/0	0/0/0/0
4	SO4	A	1034	-	-	0/0/0/0	0/0/0/0

All (41) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1016	NAG	C2-N2	-2.52	1.41	1.46
2	A	1001	NAG	O5-C5	-2.17	1.38	1.43
2	A	1001	NAG	C2-N2	-2.14	1.42	1.46
4	A	1034	SO4	O3-S	2.00	1.64	1.47
2	A	1023	NAG	O4-C4	2.00	1.47	1.43
4	A	1033	SO4	O4-S	2.06	1.64	1.47
4	A	1032	SO4	O2-S	2.10	1.56	1.45
2	A	1015	NAG	O7-C7	2.13	1.28	1.23
2	A	1014	NAG	O6-C6	2.20	1.51	1.42
2	A	1005	NAG	O7-C7	2.27	1.28	1.23
4	A	1033	SO4	O2-S	2.31	1.58	1.45
4	A	1034	SO4	O1-S	2.32	1.58	1.45
4	A	1025	SO4	O4-S	2.32	1.66	1.47
4	A	1026	SO4	O2-S	2.32	1.58	1.45
4	A	1032	SO4	O4-S	2.35	1.67	1.47
4	A	1027	SO4	O1-S	2.35	1.58	1.45
4	A	1030	SO4	O2-S	2.37	1.58	1.45
4	A	1027	SO4	O4-S	2.41	1.67	1.47
2	A	1022	NAG	O3-C3	2.44	1.48	1.43
4	A	1034	SO4	O2-S	2.45	1.58	1.45
2	A	1019	NAG	O5-C5	2.49	1.48	1.43
2	A	1002	NAG	O5-C5	2.49	1.48	1.43
4	A	1028	SO4	O4-S	2.54	1.68	1.47
4	A	1026	SO4	O1-S	2.60	1.59	1.45
2	A	1006	NAG	O7-C7	2.70	1.29	1.23
4	A	1028	SO4	O2-S	2.78	1.60	1.45
4	A	1031	SO4	O1-S	2.79	1.60	1.45
2	A	1003	NAG	O4-C4	2.80	1.49	1.43
4	A	1029	SO4	O1-S	2.80	1.60	1.45
2	A	1005	NAG	O4-C4	2.84	1.49	1.43
2	A	1020	NAG	O5-C1	2.89	1.48	1.43
2	A	1022	NAG	O5-C5	2.96	1.49	1.43
2	A	1014	NAG	O5-C1	3.10	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1018	NAG	C8-C7	3.21	1.57	1.50
4	A	1033	SO4	O1-S	3.42	1.64	1.45
4	A	1032	SO4	O1-S	3.56	1.65	1.45
2	A	1013	NAG	O7-C7	3.67	1.31	1.23
4	A	1027	SO4	O2-S	3.67	1.65	1.45
4	A	1031	SO4	O2-S	3.76	1.66	1.45
4	A	1028	SO4	O1-S	4.40	1.69	1.45
4	A	1025	SO4	O2-S	4.84	1.72	1.45

All (69) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1022	NAG	O5-C1-C2	-4.73	104.89	111.47
4	A	1025	SO4	O4-S-O2	-4.67	83.53	109.26
2	A	1004	NAG	O5-C1-C2	-4.59	105.09	111.47
2	A	1008	NAG	O5-C1-C2	-4.21	105.62	111.47
2	A	1017	NAG	C2-N2-C7	-4.08	116.99	122.94
2	A	1017	NAG	O7-C7-C8	-3.82	115.10	122.06
2	A	1009	NAG	O4-C4-C3	-3.71	102.29	110.36
2	A	1023	NAG	O5-C1-C2	-3.70	106.33	111.47
2	A	1005	NAG	O4-C4-C3	-3.44	102.87	110.36
2	A	1021	NAG	O7-C7-C8	-3.31	116.03	122.06
2	A	1020	NAG	C1-O5-C5	-3.30	107.62	112.17
2	A	1011	NAG	C2-N2-C7	-3.26	118.19	122.94
4	A	1025	SO4	O3-S-O1	-3.09	92.20	109.26
2	A	1017	NAG	C1-O5-C5	-3.05	107.96	112.17
2	A	1016	NAG	O5-C1-C2	-3.05	107.23	111.47
2	A	1020	NAG	C4-C3-C2	-3.02	106.59	111.02
2	A	1018	NAG	O5-C1-C2	-2.92	107.41	111.47
2	A	1002	NAG	O4-C4-C3	-2.90	104.04	110.36
2	A	1011	NAG	O5-C1-C2	-2.90	107.44	111.47
2	A	1010	NAG	O5-C1-C2	-2.85	107.51	111.47
2	A	1013	NAG	C4-C3-C2	-2.78	106.95	111.02
2	A	1005	NAG	O3-C3-C4	-2.76	104.35	110.36
2	A	1010	NAG	C2-N2-C7	-2.76	118.92	122.94
2	A	1006	NAG	C1-C2-N2	-2.76	105.78	110.49
2	A	1012	NAG	O5-C1-C2	-2.75	107.64	111.47
2	A	1005	NAG	O5-C1-C2	-2.70	107.72	111.47
2	A	1018	NAG	C6-C5-C4	-2.69	106.72	113.00
2	A	1019	NAG	O5-C1-C2	-2.68	107.74	111.47
2	A	1018	NAG	O7-C7-N2	-2.67	116.77	121.92
2	A	1003	NAG	O3-C3-C2	-2.61	103.80	109.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1012	NAG	C1-O5-C5	-2.57	108.62	112.17
4	A	1028	SO4	O4-S-O3	-2.49	97.74	108.96
2	A	1013	NAG	C1-C2-N2	-2.49	106.24	110.49
2	A	1012	NAG	O4-C4-C5	-2.40	103.23	109.28
2	A	1013	NAG	C8-C7-N2	-2.39	111.79	116.11
4	A	1026	SO4	O3-S-O1	-2.32	96.44	109.26
2	A	1008	NAG	C1-O5-C5	-2.31	108.98	112.17
2	A	1008	NAG	O4-C4-C3	-2.30	105.36	110.36
2	A	1015	NAG	C4-C3-C2	-2.30	107.65	111.02
2	A	1018	NAG	O3-C3-C2	-2.28	104.50	109.39
2	A	1012	NAG	C1-C2-N2	-2.27	106.62	110.49
2	A	1022	NAG	O4-C4-C3	-2.27	105.43	110.36
4	A	1033	SO4	O3-S-O1	-2.17	97.28	109.26
2	A	1005	NAG	O6-C6-C5	-2.13	104.17	111.34
2	A	1002	NAG	C1-O5-C5	-2.08	109.30	112.17
4	A	1026	SO4	O2-S-O1	-2.06	95.21	109.64
2	A	1019	NAG	C4-C3-C2	-2.02	108.06	111.02
2	A	1023	NAG	C1-C2-N2	-2.01	107.05	110.49
4	A	1032	SO4	O2-S-O1	2.01	123.68	109.64
4	A	1033	SO4	O4-S-O1	2.06	120.60	109.26
2	A	1017	NAG	C8-C7-N2	2.10	119.90	116.11
4	A	1025	SO4	O2-S-O1	2.30	125.69	109.64
2	A	1013	NAG	C2-N2-C7	2.32	126.33	122.94
2	A	1004	NAG	C2-N2-C7	2.39	126.42	122.94
2	A	1022	NAG	C3-C4-C5	2.40	114.44	110.22
2	A	1006	NAG	C3-C4-C5	2.41	114.46	110.22
2	A	1018	NAG	C1-O5-C5	2.55	115.68	112.17
2	A	1005	NAG	C3-C4-C5	2.59	114.78	110.22
2	A	1022	NAG	C1-C2-N2	2.65	115.02	110.49
4	A	1026	SO4	O4-S-O1	2.90	125.23	109.26
2	A	1001	NAG	C1-O5-C5	2.93	116.21	112.17
4	A	1026	SO4	O3-S-O2	3.11	126.40	109.26
2	A	1006	NAG	C4-C3-C2	3.12	115.58	111.02
4	A	1031	SO4	O4-S-O2	3.16	126.70	109.26
2	A	1012	NAG	C4-C3-C2	3.59	116.28	111.02
2	A	1002	NAG	C4-C3-C2	3.70	116.45	111.02
2	A	1003	NAG	C4-C3-C2	4.40	117.47	111.02
2	A	1005	NAG	C4-C3-C2	4.82	118.08	111.02
4	A	1025	SO4	O4-S-O3	5.60	134.21	108.96

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

10 monomers are involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1003	NAG	3	0
2	A	1005	NAG	1	0
2	A	1006	NAG	1	0
2	A	1012	NAG	1	0
2	A	1018	NAG	4	0
2	A	1022	NAG	1	0
3	A	1024	GLY	2	0
4	A	1026	SO4	1	0
4	A	1029	SO4	0	1
4	A	1034	SO4	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	902/902 (100%)	0.28	41 (4%)	34 40	24, 32, 41, 45	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	889	GLY	9.3
1	A	885	PHE	9.1
1	A	888	TYR	8.4
1	A	925	VAL	7.6
1	A	890	GLY	7.2
1	A	893	PHE	5.4
1	A	923	MET	5.3
1	A	892	SER	5.2
1	A	891	GLY	5.2
1	A	927	PHE	5.1
1	A	63	GLN	4.8
1	A	881	TRP	4.2
1	A	924	ASP	4.0
1	A	928	GLY	3.9
1	A	882	LYS	3.9
1	A	926	GLY	3.8
1	A	886	GLN	3.8
1	A	197	ASN	3.7
1	A	922	ASN	3.7
1	A	918	PHE	3.6
1	A	93	ALA	3.5
1	A	567	GLU	2.9
1	A	781	GLU	2.9
1	A	589	ASN	2.9
1	A	196	GLY	2.9
1	A	933	ALA	2.8
1	A	290	GLN	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	884	LEU	2.7
1	A	895	PHE	2.6
1	A	742	GLU	2.5
1	A	917	GLN	2.4
1	A	932	ARG	2.4
1	A	930	GLY	2.4
1	A	929	SER	2.4
1	A	964	SER	2.3
1	A	94	ASP	2.3
1	A	919	LYS	2.3
1	A	430	ILE	2.3
1	A	649	VAL	2.2
1	A	934	LEU	2.1
1	A	438	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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
4	SO4	A	1026	5/5	0.97	0.49	26.31	30,35,36,37	0
4	SO4	A	1033	5/5	0.90	0.45	20.32	32,32,39,41	0
4	SO4	A	1031	5/5	0.93	0.42	18.92	33,34,38,38	0
4	SO4	A	1028	5/5	0.81	0.38	8.27	34,36,37,39	0
4	SO4	A	1027	5/5	0.84	0.41	7.11	34,37,39,40	0
4	SO4	A	1025	5/5	0.88	0.28	6.91	30,32,35,38	0
4	SO4	A	1029	5/5	0.97	0.29	6.07	35,36,38,38	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
2	NAG	A	1004	14/15	0.92	0.16	5.01	30,32,35,37	0
2	NAG	A	1011	14/15	0.92	0.20	4.33	30,33,34,35	0
3	GLY	A	1024	5/5	0.83	0.21	1.35	29,30,34,36	0
4	SO4	A	1030	5/5	0.98	0.16	-0.17	33,33,35,36	0
2	NAG	A	1001	14/15	0.96	0.10	-1.19	28,31,32,32	0
2	NAG	A	1007	14/15	0.96	0.10	-1.35	28,31,33,33	0
2	NAG	A	1016	14/15	0.92	0.12	-1.74	28,31,32,33	0
5	ZN	A	1035	1/1	1.00	0.15	-1.77	27,27,27,27	0
2	NAG	A	1021	14/15	0.93	0.09	-2.42	31,33,37,38	0
2	NAG	A	1008	14/15	0.91	0.23	-	31,32,35,38	0
2	NAG	A	1013	14/15	0.61	0.51	-	32,35,39,39	0
2	NAG	A	1019	14/15	0.86	0.32	-	32,34,38,40	0
2	NAG	A	1003	14/15	0.84	0.32	-	33,34,39,40	0
4	SO4	A	1032	5/5	0.88	0.42	-	33,38,38,38	0
2	NAG	A	1018	14/15	0.91	0.22	-	31,34,38,42	0
2	NAG	A	1005	14/15	0.84	0.42	-	32,34,39,39	0
4	SO4	A	1034	5/5	0.89	0.52	-	36,37,38,40	0
2	NAG	A	1020	14/15	0.75	0.54	-	33,35,40,41	0
2	NAG	A	1009	14/15	0.91	0.18	-	31,33,38,38	0
2	NAG	A	1017	14/15	0.85	0.26	-	31,33,37,39	0
2	NAG	A	1010	14/15	0.84	0.31	-	31,34,40,41	0
2	NAG	A	1012	14/15	0.67	0.28	-	30,34,37,37	0
2	NAG	A	1022	14/15	0.85	0.27	-	33,35,37,40	0
2	NAG	A	1002	14/15	0.90	0.24	-	31,34,38,38	0
2	NAG	A	1023	14/15	0.84	0.41	-	31,34,41,42	0
2	NAG	A	1006	14/15	0.52	0.51	-	33,35,39,41	0
2	NAG	A	1015	14/15	0.82	0.36	-	31,34,40,41	0
2	NAG	A	1014	14/15	0.82	0.26	-	32,35,36,36	0

## 6.5 Other polymers ⓘ

There are no such residues in this entry.