



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 23, 2026 – 12:31 PM UTC

PDB ID : 3B1B / pdb_00003b1b
Title : The unique structure of wild type carbonic anhydrase alpha-CA1 from *Chlamydomonas reinhardtii*
Authors : Shimizu, S.; Takenaka, A.
Deposited on : 2011-06-29
Resolution : 1.88 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 types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

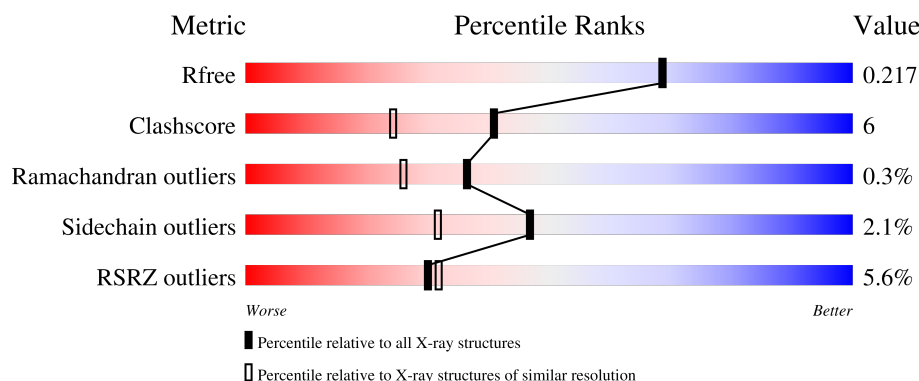
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.88 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}	180053	1220 (1.88-1.88)
Clashscore	190562	1234 (1.88-1.88)
Ramachandran outliers	187476	1222 (1.88-1.88)
Sidechain outliers	187428	1222 (1.88-1.88)
RSRZ outliers	180081	1220 (1.88-1.88)

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 of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. 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	377	5% 74% 8% 18%
1	B	377	4% 73% 8% 17%

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
4	NAG	A	382	X	-	-	-
4	NAG	B	382	X	-	-	-

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 5871 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.

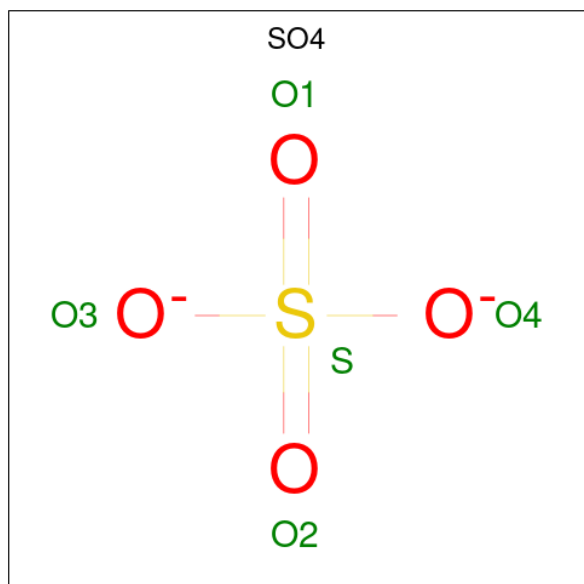
- Molecule 1 is a protein called Carbonic anhydrase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	310	Total	C	N	O	S	0	4	0
			2447	1541	436	458	12			
1	B	312	Total	C	N	O	S	0	2	0
			2449	1541	435	461	12			

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

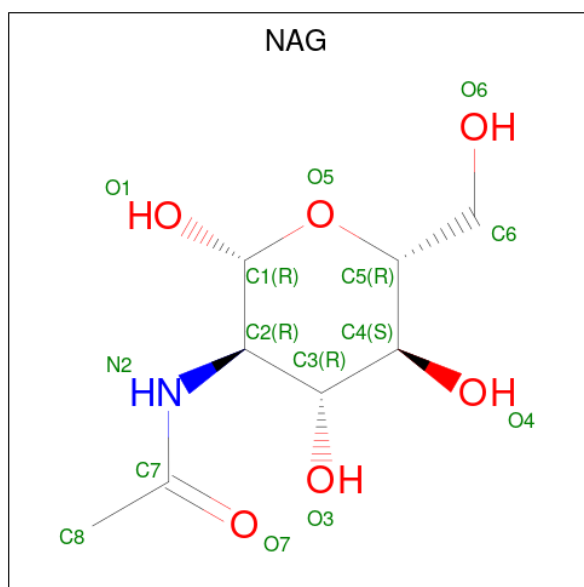
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Zn	0	0
			1	1		
2	B	1	Total	Zn	0	0
			1	1		

- Molecule 3 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



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

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	431	Total O 431 431	0	0

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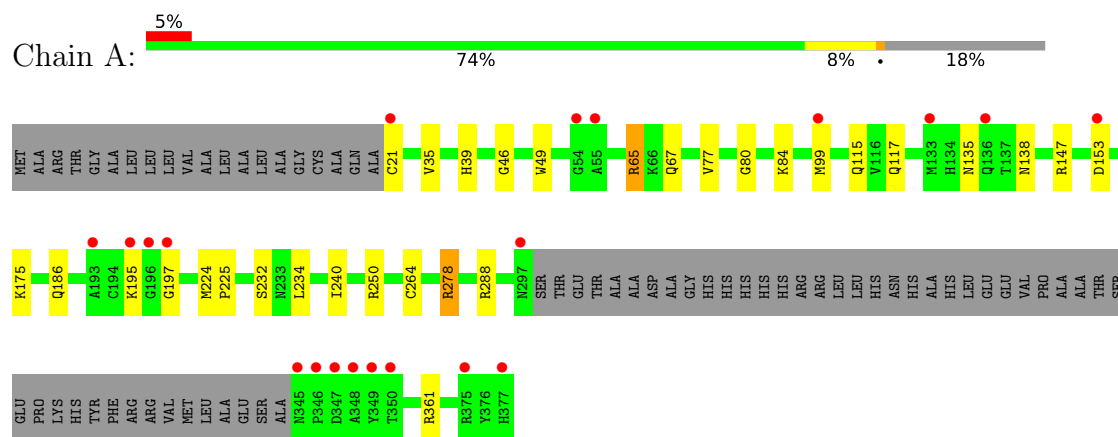
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	457	Total 457	O 457	0	0

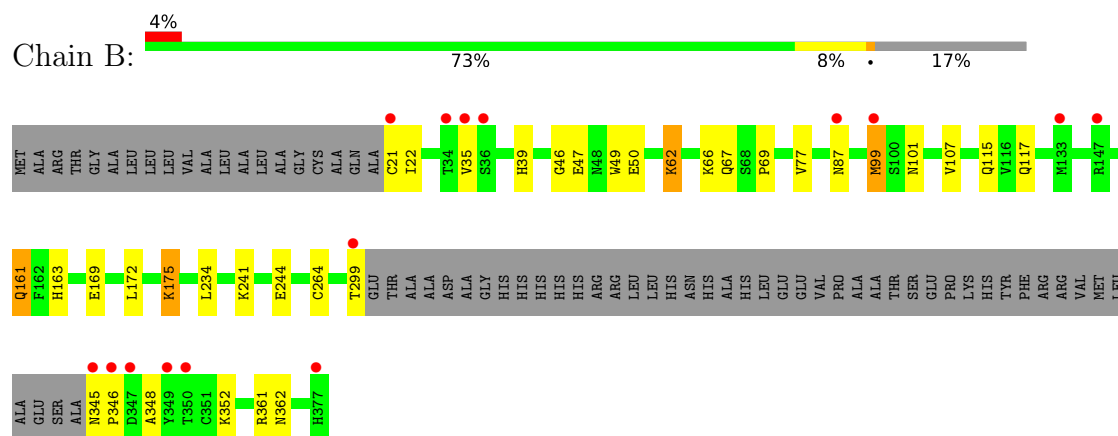
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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: Carbonic anhydrase 1



• Molecule 1: Carbonic anhydrase 1



4 Data and refinement statistics

Property	Value	Source
Space group	P 65	Depositor
Cell constants a, b, c, α , β , γ	134.30Å 134.30Å 120.10Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	41.30 – 1.88 41.30 – 1.88	Depositor EDS
% Data completeness (in resolution range)	99.7 (41.30-1.88) 99.6 (41.30-1.88)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	8.77 (at 1.88Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.187 , 0.218 0.187 , 0.217	Depositor DCC
R_{free} test set	4968 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	24.2	Xtriage
Anisotropy	0.444	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 65.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.027 for h,-h-k,-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	5871	wwPDB-VP
Average B, all atoms (Å ²)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.33% 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: SO4, ZN, 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	0.83	0/2523	0.89	1/3433 (0.0%)
1	B	0.87	0/2520	0.89	1/3429 (0.0%)
All	All	0.85	0/5043	0.89	2/6862 (0.0%)

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	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	250	ARG	N-CA-C	5.17	119.75	112.72
1	B	101	ASN	N-CA-C	-5.12	106.62	112.92

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	195	LYS	Peptide

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	2447	0	2361	27	0
1	B	2449	0	2352	38	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	10	0	0	0	0
3	B	5	0	0	0	0
4	A	28	0	26	0	0
4	B	42	0	39	1	0
5	A	431	0	0	3	0
5	B	457	0	0	4	0
All	All	5871	0	4778	62	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

All (62) 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:175:LYS:NZ	1:B:175:LYS:HB3	1.28	1.23
1:B:175:LYS:NZ	1:B:175:LYS:CB	2.22	1.01
1:B:50:GLU:HG3	1:B:62[B]:LYS:HE3	1.47	0.96
1:B:161:GLN:HE22	1:B:163:HIS:HD1	1.04	0.95
1:B:175:LYS:HB3	1:B:175:LYS:HZ3	1.16	0.93
1:A:278:ARG:HG2	1:A:278:ARG:HH11	1.30	0.93
1:B:175:LYS:HB3	1:B:175:LYS:HZ2	1.10	0.89
1:A:115:GLN:HE21	1:A:117:GLN:HE21	1.23	0.87
1:B:115:GLN:HE21	1:B:117:GLN:HE21	1.25	0.84
1:A:288:ARG:HH22	1:B:362:ASN:HD21	1.23	0.82
1:A:278:ARG:HH11	1:A:278:ARG:CG	1.93	0.82
1:A:67:GLN:HE22	1:A:264:CYS:HB3	1.48	0.78
1:A:135:ASN:H	1:A:138:ASN:HD22	1.35	0.73
1:B:67:GLN:HE22	1:B:264:CYS:HB3	1.53	0.72
1:A:175:LYS:HE2	5:A:822:HOH:O	1.89	0.71
1:B:50:GLU:CG	1:B:62[B]:LYS:HE3	2.19	0.70
1:B:47:GLU:O	1:B:62[B]:LYS:HE2	1.94	0.68
1:B:21:CYS:N	1:B:22:ILE:HA	2.10	0.67
1:B:175:LYS:CB	1:B:175:LYS:HZ3	1.95	0.65
1:A:278:ARG:HG2	1:A:278:ARG:NH1	2.09	0.64
1:A:135:ASN:H	1:A:138:ASN:ND2	1.97	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:67:GLN:HE21	1:A:361:ARG:HH22	1.47	0.63
1:A:67:GLN:NE2	1:A:361:ARG:HH12	1.98	0.62
1:B:67:GLN:HE21	1:B:361:ARG:HH22	1.47	0.61
1:B:175:LYS:CB	1:B:175:LYS:HZ2	1.99	0.60
1:B:241:LYS:HB3	1:B:244:GLU:HG3	1.83	0.59
1:B:35:VAL:HG11	1:B:39[B]:HIS:CE1	2.37	0.58
1:B:50:GLU:HG3	1:B:62[B]:LYS:CE	2.30	0.58
1:A:35:VAL:HG11	1:A:39:HIS:NE2	2.19	0.58
1:B:66:LYS:NZ	5:B:847:HOH:O	2.37	0.57
1:B:172:LEU:O	1:B:175:LYS:HG2	2.04	0.57
1:B:62[A]:LYS:HE3	5:B:453:HOH:O	2.05	0.57
1:A:65[B]:ARG:HD2	5:A:740:HOH:O	2.04	0.56
1:B:67:GLN:NE2	1:B:361:ARG:HH12	2.04	0.55
1:A:278:ARG:CG	1:A:278:ARG:NH1	2.62	0.53
1:B:46:GLY:HA2	1:B:49:TRP:CD2	2.45	0.51
1:B:62[B]:LYS:NZ	5:B:479:HOH:O	2.41	0.51
1:B:352:LYS:HE2	4:B:382:NAG:H5	1.92	0.51
1:A:186:GLN:HE21	1:A:197:GLY:HA3	1.76	0.50
1:A:21:CYS:SG	1:B:21:CYS:O	2.70	0.50
1:A:46:GLY:HA2	1:A:49:TRP:CD2	2.47	0.49
1:A:46:GLY:HA2	1:A:49:TRP:CE2	2.48	0.48
1:B:46:GLY:HA2	1:B:49:TRP:CE2	2.48	0.47
1:A:186:GLN:HE21	1:A:197:GLY:CA	2.28	0.47
1:B:107:VAL:HG23	1:B:234:LEU:HD21	1.96	0.46
1:B:299:THR:N	1:B:348:ALA:O	2.48	0.46
1:B:39[B]:HIS:HD2	5:B:917:HOH:O	2.00	0.45
1:A:21:CYS:SG	1:B:21:CYS:C	3.00	0.44
1:A:67:GLN:HE21	1:A:361:ARG:HH12	1.65	0.44
1:B:107:VAL:CG2	1:B:234:LEU:HD21	2.47	0.44
1:A:39:HIS:HD2	5:A:487:HOH:O	1.99	0.44
1:A:80:GLY:O	1:A:84:LYS:HE3	2.19	0.43
1:B:21:CYS:N	1:B:22:ILE:CA	2.81	0.43
1:B:345:ASN:HA	1:B:346:PRO:HD2	1.86	0.42
1:A:67:GLN:HE21	1:A:361:ARG:NH2	2.15	0.42
1:A:234:LEU:HD11	1:A:240:ILE:HD11	2.01	0.42
1:B:35:VAL:O	1:B:35:VAL:HG13	2.19	0.41
1:B:362:ASN:HD22	1:B:362:ASN:HA	1.71	0.41
1:B:99:MET:HE3	1:B:99:MET:HB3	1.77	0.41
1:B:69:PRO:HG3	1:B:169:GLU:HB3	2.04	0.40
1:A:35:VAL:HG11	1:A:39:HIS:CD2	2.57	0.40
1:A:224:MET:HA	1:A:225:PRO:HD3	1.96	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	310/377 (82%)	300 (97%)	9 (3%)	1 (0%)	36	26
1	B	310/377 (82%)	299 (96%)	10 (3%)	1 (0%)	36	26
All	All	620/754 (82%)	599 (97%)	19 (3%)	2 (0%)	36	26

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	77	VAL
1	A	77	VAL

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	265/310 (86%)	257 (97%)	8 (3%)	36	19
1	B	265/310 (86%)	259 (98%)	6 (2%)	44	29
All	All	530/620 (86%)	516 (97%)	14 (3%)	47	24

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

Mol	Chain	Res	Type
1	A	65[A]	ARG

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Mol	Chain	Res	Type
1	A	65[B]	ARG
1	A	99	MET
1	A	147[A]	ARG
1	A	147[B]	ARG
1	A	153	ASP
1	A	232	SER
1	A	278	ARG
1	B	62[A]	LYS
1	B	62[B]	LYS
1	B	87	ASN
1	B	99	MET
1	B	161	GLN
1	B	175	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	67	GLN
1	A	115	GLN
1	A	117	GLN
1	A	125	HIS
1	A	136	GLN
1	A	138	ASN
1	A	186	GLN
1	A	233	ASN
1	A	345	ASN
1	B	67	GLN
1	B	115	GLN
1	B	117	GLN
1	B	161	GLN
1	B	186	GLN
1	B	362	ASN
1	B	377	HIS

5.3.3 RNA ⓘ

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 2 are monoatomic - leaving 8 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	$\# Z > 2$
4	NAG	A	381	1	14,14,15	0.76	1 (7%)	17,19,21	1.48	3 (17%)
4	NAG	B	380	1	14,14,15	0.89	1 (7%)	17,19,21	1.36	3 (17%)
3	SO4	B	379	-	4,4,4	0.31	0	6,6,6	0.18	0
4	NAG	A	382	1	14,14,15	0.65	0	17,19,21	1.07	1 (5%)
3	SO4	A	380	-	4,4,4	0.25	0	6,6,6	0.21	0
3	SO4	A	379	-	4,4,4	0.21	0	6,6,6	0.45	0
4	NAG	B	382	1	14,14,15	1.12	1 (7%)	17,19,21	2.59	7 (41%)
4	NAG	B	381	1	14,14,15	0.70	0	17,19,21	1.31	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
4	NAG	A	381	1	-	4/6/23/26	0/1/1/1
4	NAG	B	380	1	-	3/6/23/26	0/1/1/1
4	NAG	A	382	1	1/1/5/7	4/6/23/26	0/1/1/1
4	NAG	B	382	1	2/2/5/7	5/6/23/26	0/1/1/1
4	NAG	B	381	1	-	2/6/23/26	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	382	NAG	C1-C2	2.63	1.55	1.52
4	A	381	NAG	C1-C2	2.48	1.55	1.52
4	B	380	NAG	C1-C2	2.41	1.55	1.52

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	382	NAG	O5-C1-C2	-6.77	100.81	111.29
4	B	382	NAG	C1-O5-C5	4.03	117.58	112.19
4	B	381	NAG	C1-O5-C5	3.65	117.07	112.19
4	A	381	NAG	C8-C7-N2	3.28	121.56	116.12
4	B	382	NAG	C3-C4-C5	3.20	116.03	110.23
4	B	381	NAG	O5-C1-C2	-3.15	106.42	111.29
4	B	382	NAG	C1-C2-N2	3.06	115.26	110.43
4	A	382	NAG	C4-C3-C2	2.98	115.39	111.02
4	B	380	NAG	O5-C1-C2	-2.92	106.77	111.29
4	B	382	NAG	C4-C3-C2	2.49	114.67	111.02
4	B	382	NAG	O4-C4-C5	2.48	115.42	109.32
4	A	381	NAG	C2-N2-C7	2.42	126.14	122.90
4	B	380	NAG	O7-C7-C8	-2.28	118.00	122.05
4	A	381	NAG	O7-C7-C8	-2.27	118.02	122.05
4	B	380	NAG	C1-C2-N2	2.26	114.00	110.43
4	B	382	NAG	O5-C5-C4	2.04	115.78	110.83

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
4	A	382	NAG	C1
4	B	382	NAG	C5
4	B	382	NAG	C1

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	382	NAG	O7-C7-N2-C2
4	B	382	NAG	C8-C7-N2-C2
4	B	382	NAG	O7-C7-N2-C2
4	A	382	NAG	C8-C7-N2-C2
4	B	381	NAG	O7-C7-N2-C2
4	B	381	NAG	C8-C7-N2-C2
4	B	382	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	A	381	NAG	C8-C7-N2-C2
4	A	381	NAG	O7-C7-N2-C2
4	B	380	NAG	C8-C7-N2-C2
4	B	382	NAG	O5-C5-C6-O6
4	B	382	NAG	C3-C2-N2-C7
4	A	381	NAG	C4-C5-C6-O6
4	A	381	NAG	O5-C5-C6-O6
4	B	380	NAG	O7-C7-N2-C2
4	A	382	NAG	C4-C5-C6-O6
4	A	382	NAG	O5-C5-C6-O6
4	B	380	NAG	O5-C5-C6-O6

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	382	NAG	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, 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	310/377 (82%)	0.36	20 (6%) 25 27	14, 25, 44, 59	4 (1%)
1	B	312/377 (82%)	0.14	15 (4%) 35 37	13, 24, 41, 53	2 (0%)
All	All	622/754 (82%)	0.25	35 (5%) 30 32	13, 24, 43, 59	6 (0%)

All (35) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	21	CYS	7.3
1	A	196	GLY	5.0
1	A	377	HIS	4.4
1	B	299	THR	4.3
1	A	55	ALA	4.1
1	A	297	ASN	4.0
1	A	345	ASN	3.8
1	A	348	ALA	3.6
1	A	133	MET	3.5
1	B	377	HIS	3.3
1	B	350	THR	3.2
1	A	195	LYS	2.9
1	A	197	GLY	2.8
1	B	35	VAL	2.7
1	A	349	TYR	2.7
1	A	136	GLN	2.7
1	B	347	ASP	2.6
1	B	87	ASN	2.6
1	B	345	ASN	2.6
1	A	350	THR	2.5
1	A	375	ARG	2.4
1	B	99	MET	2.4
1	B	133	MET	2.4
1	B	34	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	147	ARG	2.4
1	A	193	ALA	2.3
1	A	54	GLY	2.3
1	A	347	ASP	2.2
1	B	349	TYR	2.1
1	B	36	SER	2.1
1	B	346	PRO	2.1
1	A	99	MET	2.0
1	A	346	PRO	2.0
1	A	21	CYS	2.0
1	A	153	ASP	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	NAG	B	382	14/15	0.50	0.28	63,68,71,72	0
4	NAG	A	382	14/15	0.68	0.19	63,69,71,74	0
4	NAG	A	381	14/15	0.72	0.17	40,43,46,48	0
4	NAG	B	380	14/15	0.73	0.16	42,46,48,49	0
4	NAG	B	381	14/15	0.78	0.16	38,44,47,49	0
3	SO4	A	380	5/5	0.91	0.13	84,85,85,86	0
2	ZN	A	378	1/1	0.98	0.04	20,20,20,20	0
3	SO4	B	379	5/5	0.99	0.03	21,23,25,26	0
3	SO4	A	379	5/5	0.99	0.05	22,26,27,28	0
2	ZN	B	378	1/1	0.99	0.02	16,16,16,16	0

6.5 Other polymers [i](#)

There are no such residues in this entry.