



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 05:38 PM UTC

PDB ID : 1CCU / pdb_00001ccu
Title : STRUCTURE-ASSISTED REDESIGN OF A PROTEIN-ZINC BINDING SITE WITH FEMTOMOLAR AFFINITY
Authors : Ippolito, J.A.; Christianson, D.W.
Deposited on : 1994-12-09
Resolution : 2.25 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)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

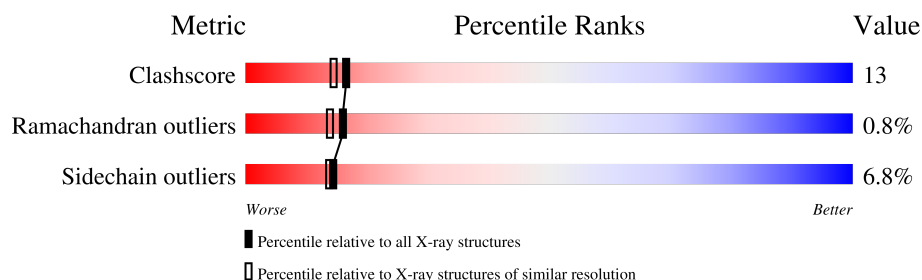
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.25 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	190562	2005 (2.26-2.26)
Ramachandran outliers	187476	1965 (2.26-2.26)
Sidechain outliers	187428	1966 (2.26-2.26)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	259	49% 39% 9% . .

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
3	SO4	A	263	-	-	X	-

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 2159 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 II.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	255	Total	C	N	O	S	0	0	0
			2032	1305	349	376	2			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	199	HIS	THR	conflict	UNP P00918

- 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		

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



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

- Molecule 4 is water.

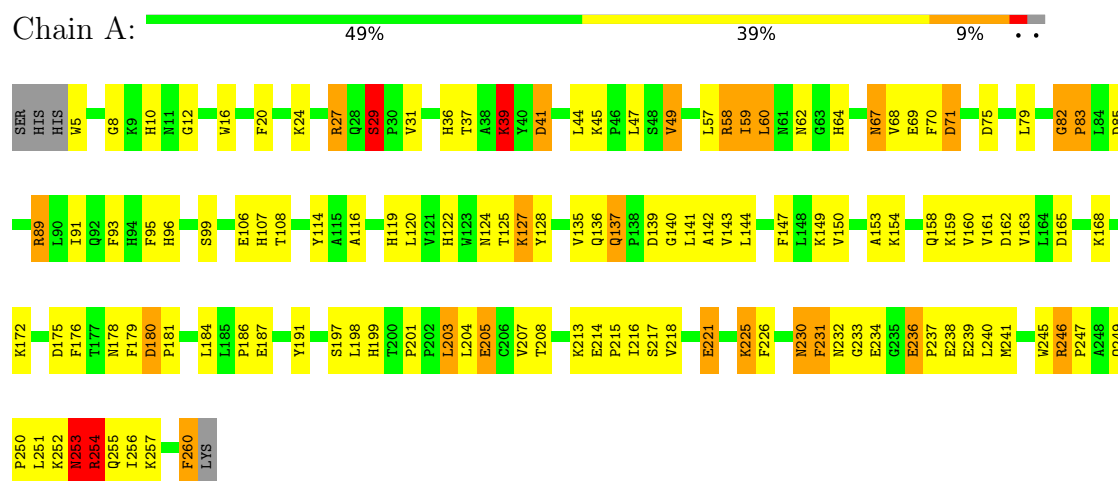
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	121	Total	O	0	0
			121	121		

3 Residue-property plots

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. 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.

Note EDS was not executed.

• Molecule 1: CARBONIC ANHYDRASE II



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	42.70Å 41.70Å 73.00Å 90.00° 104.60° 90.00°	Depositor
Resolution (Å)	7.00 – 2.25	Depositor
% Data completeness (in resolution range)	(Not available) (7.00-2.25)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	PROLSQ	Depositor
R, R_{free}	0.178 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	2159	wwPDB-VP
Average B, all atoms (Å ²)	14.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

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

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	1.83	24/2093 (1.1%)	2.21	101/2841 (3.6%)

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

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	29	SER	N-CA	7.34	1.51	1.45
1	A	251	LEU	N-CA	7.00	1.54	1.46
1	A	203	LEU	C-O	6.54	1.32	1.24
1	A	141	LEU	N-CA	5.98	1.53	1.45
1	A	205	GLU	CA-C	-5.86	1.47	1.53
1	A	153	ALA	N-CA	5.77	1.53	1.45
1	A	93	PHE	N-CA	5.58	1.52	1.45
1	A	70	PHE	C-N	-5.56	1.25	1.33
1	A	31	VAL	C-O	5.54	1.30	1.23
1	A	36	HIS	ND1-CE1	5.46	1.38	1.32
1	A	59	ILE	C-O	5.46	1.29	1.24
1	A	253	ASN	C-O	5.41	1.30	1.24
1	A	68	VAL	C-O	5.39	1.30	1.24
1	A	256	ILE	CB-CG1	5.35	1.64	1.53
1	A	256	ILE	CA-C	5.25	1.59	1.52
1	A	119	HIS	N-CA	5.24	1.52	1.46
1	A	245	TRP	N-CA	5.14	1.52	1.45
1	A	64	HIS	CA-CB	-5.13	1.46	1.54

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	16	TRP	C-N	-5.11	1.27	1.34
1	A	140	GLY	N-CA	-5.08	1.39	1.45
1	A	216	ILE	N-CA	5.03	1.52	1.46
1	A	186	PRO	C-N	-5.03	1.27	1.33
1	A	108	THR	CB-OG1	5.03	1.51	1.43
1	A	41	ASP	C-N	5.01	1.39	1.33

All (101) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	226	PHE	CA-CB-CG	9.90	123.70	113.80
1	A	158	GLN	CA-C-O	-9.34	110.65	120.55
1	A	221	GLU	CB-CG-CD	8.06	126.30	112.60
1	A	10	HIS	CA-CB-CG	-7.97	105.83	113.80
1	A	93	PHE	CA-CB-CG	7.92	121.72	113.80
1	A	120	LEU	CA-C-N	7.88	132.21	122.37
1	A	120	LEU	C-N-CA	7.88	132.21	122.37
1	A	191	TYR	N-CA-C	7.73	120.48	108.96
1	A	96	HIS	CA-C-O	-7.57	111.92	120.32
1	A	96	HIS	CA-CB-CG	-7.45	106.35	113.80
1	A	207	VAL	CA-C-O	7.32	130.70	121.40
1	A	85	ASP	CA-CB-CG	7.31	119.91	112.60
1	A	149	LYS	N-CA-CB	7.28	123.00	111.20
1	A	37	THR	CA-CB-CG2	7.18	122.71	110.50
1	A	207	VAL	N-CA-C	7.08	119.66	108.89
1	A	89	ARG	NE-CZ-NH2	-6.91	112.98	119.20
1	A	232	ASN	CA-C-O	6.87	129.42	121.87
1	A	231	PHE	CA-CB-CG	6.73	120.53	113.80
1	A	214	GLU	N-CA-C	6.71	119.35	109.42
1	A	187	GLU	CB-CG-CD	6.59	123.80	112.60
1	A	234	GLU	CB-CA-C	-6.59	100.67	110.16
1	A	139	ASP	CA-C-N	6.58	128.57	120.22
1	A	139	ASP	C-N-CA	6.58	128.57	120.22
1	A	137	GLN	OE1-CD-NE2	-6.53	116.07	122.60
1	A	8	GLY	CA-C-N	6.45	128.92	120.28
1	A	8	GLY	C-N-CA	6.45	128.92	120.28
1	A	64	HIS	CA-CB-CG	6.42	120.22	113.80
1	A	122	HIS	CA-C-O	-6.42	113.60	121.11
1	A	197	SER	O-C-N	6.40	131.58	122.74
1	A	159	LYS	N-CA-CB	6.23	119.81	110.22
1	A	147	PHE	O-C-N	6.21	130.01	123.06
1	A	59	ILE	CB-CA-C	6.21	119.39	110.33

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	251	LEU	CB-CA-C	6.16	121.32	110.85
1	A	198	LEU	N-CA-C	-6.15	101.82	110.50
1	A	208	THR	O-C-N	6.14	130.86	123.13
1	A	260	PHE	CA-C-O	-6.10	110.44	120.80
1	A	62	ASN	OD1-CG-ND2	-6.07	116.53	122.60
1	A	143	VAL	O-C-N	6.05	129.79	123.26
1	A	49	VAL	CA-C-O	-6.03	113.74	120.74
1	A	186	PRO	N-CA-C	-6.01	102.81	111.22
1	A	107	HIS	N-CA-C	-5.99	101.61	110.48
1	A	70	PHE	CA-CB-CG	5.98	119.78	113.80
1	A	95	PHE	CA-CB-CG	5.96	119.76	113.80
1	A	140	GLY	CA-C-N	-5.95	113.24	122.59
1	A	140	GLY	C-N-CA	-5.95	113.24	122.59
1	A	180	ASP	CA-C-N	5.93	125.80	119.28
1	A	180	ASP	C-N-CA	5.93	125.80	119.28
1	A	39	LYS	N-CA-C	5.82	117.77	108.41
1	A	37	THR	CA-CB-OG1	-5.80	100.90	109.60
1	A	230	ASN	CB-CG-ND2	5.79	125.08	116.40
1	A	168	LYS	O-C-N	5.76	128.23	122.12
1	A	137	GLN	CA-C-N	5.68	125.35	119.56
1	A	137	GLN	C-N-CA	5.68	125.35	119.56
1	A	253	ASN	CA-CB-CG	5.68	118.28	112.60
1	A	114	TYR	CA-C-O	-5.64	114.78	121.66
1	A	96	HIS	O-C-N	5.64	129.91	123.31
1	A	142	ALA	CA-C-O	-5.62	114.28	120.24
1	A	204	LEU	CA-C-N	5.59	130.48	122.21
1	A	204	LEU	C-N-CA	5.59	130.48	122.21
1	A	47	LEU	N-CA-C	-5.58	102.23	110.48
1	A	254	ARG	CD-NE-CZ	-5.53	116.65	124.40
1	A	256	ILE	N-CA-CB	5.50	117.64	111.21
1	A	85	ASP	CA-C-O	-5.48	114.44	120.30
1	A	162	ASP	CA-C-O	-5.47	113.92	120.10
1	A	120	LEU	CB-CA-C	5.47	119.53	110.78
1	A	191	TYR	CA-C-N	5.46	130.84	122.93
1	A	191	TYR	C-N-CA	5.46	130.84	122.93
1	A	233	GLY	N-CA-C	-5.40	104.44	113.02
1	A	158	GLN	OE1-CD-NE2	-5.38	117.22	122.60
1	A	67	ASN	N-CA-C	5.34	117.68	109.07
1	A	107	HIS	O-C-N	5.32	128.97	122.96
1	A	168	LYS	N-CA-C	5.32	117.08	111.28
1	A	172	LYS	O-C-N	5.32	128.85	122.79
1	A	67	ASN	CA-C-N	-5.31	116.22	123.12

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	67	ASN	C-N-CA	-5.31	116.22	123.12
1	A	83	PRO	CA-C-O	5.27	125.41	118.98
1	A	236	GLU	CA-C-O	-5.25	116.41	121.08
1	A	91	ILE	CA-CB-CG2	5.25	119.42	110.50
1	A	162	ASP	CA-CB-CG	-5.23	107.37	112.60
1	A	41	ASP	CA-C-O	5.20	124.38	119.59
1	A	71	ASP	CA-CB-CG	5.20	117.80	112.60
1	A	175	ASP	N-CA-C	-5.20	102.69	110.23
1	A	215	PRO	CA-C-O	-5.17	115.71	122.12
1	A	255	GLN	OE1-CD-NE2	5.16	127.76	122.60
1	A	230	ASN	CA-CB-CG	5.15	117.75	112.60
1	A	197	SER	CA-C-O	-5.14	115.52	121.49
1	A	236	GLU	O-C-N	5.13	124.83	121.14
1	A	99	SER	CA-C-O	-5.12	113.75	119.79
1	A	251	LEU	N-CA-CB	-5.11	102.60	110.16
1	A	27	ARG	CG-CD-NE	5.10	123.22	112.00
1	A	116	ALA	O-C-N	5.10	128.61	123.26
1	A	108	THR	CA-CB-CG2	5.07	119.12	110.50
1	A	68	VAL	N-CA-C	-5.06	100.46	107.80
1	A	114	TYR	O-C-N	5.03	128.71	123.03
1	A	178	ASN	N-CA-C	5.02	118.37	111.54
1	A	12	GLY	O-C-N	5.02	126.79	121.77
1	A	225	LYS	CG-CD-CE	5.01	122.83	111.30
1	A	257	LYS	O-C-N	5.01	128.86	123.10
1	A	82	GLY	CA-C-N	5.01	126.01	120.45
1	A	82	GLY	C-N-CA	5.01	126.01	120.45
1	A	16	TRP	CA-C-O	-5.00	114.45	120.10

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	246	ARG	Sidechain
1	A	254	ARG	Sidechain

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	2032	0	1982	52	0
2	A	1	0	0	0	0
3	A	5	0	0	2	0
4	A	121	0	0	5	0
All	All	2159	0	1982	52	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 13.

All (52) 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:161:VAL:HG12	1:A:225:LYS:HD2	1.48	0.94
1:A:58:ARG:HD2	1:A:69:GLU:OE1	1.73	0.89
1:A:29:SER:HB2	1:A:199:HIS:NE2	1.90	0.86
1:A:199:HIS:HB2	3:A:263:SO4:O3	1.81	0.80
1:A:5:TRP:HA	4:A:354:HOH:O	1.83	0.79
1:A:161:VAL:CG1	1:A:225:LYS:HD2	2.12	0.78
1:A:253:ASN:HD22	1:A:254:ARG:N	1.80	0.78
1:A:253:ASN:ND2	1:A:254:ARG:N	2.34	0.76
1:A:253:ASN:HD22	1:A:253:ASN:C	1.94	0.74
1:A:236:GLU:HB3	1:A:237:PRO:HD2	1.73	0.69
1:A:29:SER:HB2	1:A:199:HIS:CD2	2.31	0.66
1:A:136:GLN:HB2	4:A:367:HOH:O	2.00	0.61
1:A:127:LYS:HE3	1:A:128:TYR:CZ	2.34	0.61
1:A:253:ASN:ND2	1:A:253:ASN:C	2.58	0.59
1:A:57:LEU:HD11	1:A:71:ASP:HB2	1.86	0.57
1:A:39:LYS:HD3	4:A:317:HOH:O	2.05	0.56
1:A:252:LYS:O	1:A:253:ASN:CG	2.48	0.56
1:A:45:LYS:O	1:A:82:GLY:HA2	2.06	0.55
1:A:60:LEU:HD22	1:A:69:GLU:OE2	2.09	0.52
1:A:29:SER:O	1:A:246:ARG:NH1	2.40	0.52
1:A:127:LYS:HE3	1:A:128:TYR:OH	2.08	0.52
1:A:252:LYS:O	1:A:253:ASN:CB	2.58	0.51
1:A:201:PRO:HA	1:A:203:LEU:HG	1.93	0.51
1:A:199:HIS:HB2	3:A:263:SO4:S	2.51	0.50
1:A:27:ARG:CG	1:A:205:GLU:HB3	2.41	0.50
1:A:29:SER:CB	1:A:199:HIS:NE2	2.71	0.50
1:A:27:ARG:HG3	1:A:205:GLU:HB3	1.94	0.50
1:A:106:GLU:OE1	1:A:199:HIS:ND1	2.38	0.49
1:A:213:LYS:HD3	1:A:260:PHE:CZ	2.48	0.49
1:A:160:VAL:O	1:A:163:VAL:HG12	2.14	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:59:ILE:HA	1:A:67:ASN:O	2.14	0.48
1:A:161:VAL:HG13	1:A:225:LYS:HB2	1.96	0.48
1:A:75:ASP:OD1	1:A:89:ARG:NH2	2.43	0.47
1:A:58:ARG:HD2	1:A:69:GLU:CD	2.38	0.47
1:A:49:VAL:O	1:A:49:VAL:HG23	2.16	0.46
1:A:89:ARG:HG3	1:A:125:THR:CG2	2.46	0.45
1:A:41:ASP:C	1:A:41:ASP:OD1	2.57	0.45
1:A:20:PHE:CE2	1:A:201:PRO:HB3	2.52	0.44
1:A:163:VAL:HG11	1:A:176:PHE:CE1	2.52	0.44
1:A:240:LEU:HD23	1:A:240:LEU:HA	1.88	0.42
1:A:179:PHE:HA	4:A:316:HOH:O	2.19	0.42
1:A:231:PHE:CE1	1:A:241:MET:HG3	2.54	0.42
1:A:150:VAL:HA	1:A:218:VAL:O	2.20	0.42
1:A:154:LYS:HD2	4:A:333:HOH:O	2.20	0.42
1:A:180:ASP:HA	1:A:181:PRO:HD2	1.94	0.42
1:A:231:PHE:HD2	1:A:239:GLU:HG2	1.85	0.41
1:A:124:ASN:HB3	1:A:128:TYR:CD2	2.56	0.41
1:A:249:GLN:HB3	1:A:250:PRO:CD	2.50	0.41
1:A:213:LYS:HD3	1:A:260:PHE:CE2	2.55	0.41
1:A:246:ARG:HA	1:A:247:PRO:HD3	1.94	0.41
1:A:128:TYR:CE1	1:A:137:GLN:HG3	2.56	0.40
1:A:230:ASN:ND2	1:A:238:GLU:HG3	2.36	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	253/259 (98%)	240 (95%)	11 (4%)	2 (1%)	16 14

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	253	ASN
1	A	135	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	220/224 (98%)	205 (93%)	15 (7%)	14	14

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

Mol	Chain	Res	Type
1	A	24	LYS
1	A	29	SER
1	A	39	LYS
1	A	44	LEU
1	A	58	ARG
1	A	60	LEU
1	A	79	LEU
1	A	83	PRO
1	A	127	LYS
1	A	144	LEU
1	A	165	ASP
1	A	184	LEU
1	A	217	SER
1	A	221	GLU
1	A	253	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	136	GLN
1	A	178	ASN
1	A	253	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 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	$\# Z > 2$
3	SO4	A	263	2	4,4,4	0.69	0	6,6,6	0.45	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	263	SO4	2	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

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.