



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 01:10 AM UTC

PDB ID : 3B95 / pdb_00003b95
Title : EuHMT1 (Glp) Ankyrin Repeat Domain (Structure 2)
Authors : Collins, R.E.; Horton, J.R.; Cheng, X.
Deposited on : 2007-11-02
Resolution : 2.99 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

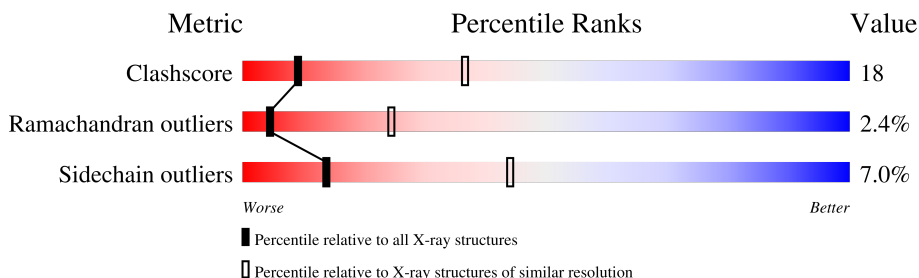
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.99 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	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)

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	237	
1	B	237	
2	P	15	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 3623 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 Euchromatic histone-lysine N-methyltransferase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	236	Total	C	N	O	S	0	0	0
			1786	1111	315	344	16			
1	B	225	Total	C	N	O	S	0	0	0
			1696	1053	298	331	14			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	HIS	-	expression tag	UNP Q5VT56
A	0	MET	-	expression tag	UNP Q5VT56
B	-1	HIS	-	expression tag	UNP Q5VT56
B	0	MET	-	expression tag	UNP Q5VT56

- Molecule 2 is a protein called Histone H3 N-terminal Peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	P	10	Total	C	N	O	0	0	0
			63	37	14	12			

- 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		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	15	Total	O	0	0
			15	15		
4	B	13	Total	O	0	0
			13	13		

3 Residue-property plots

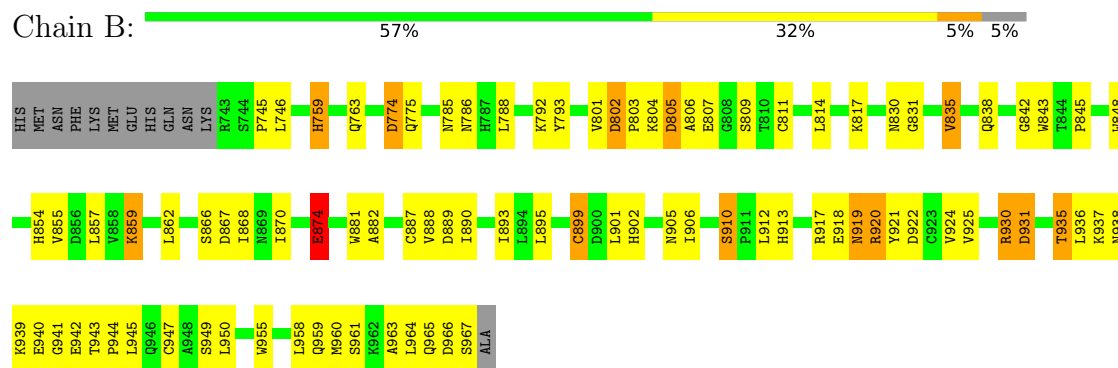
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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.

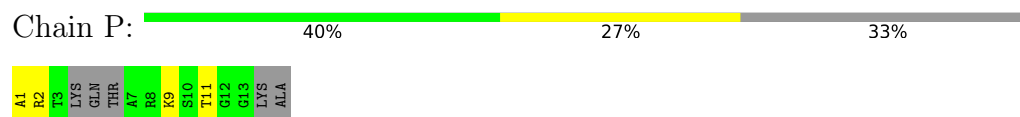
- Molecule 1: Euchromatic histone-lysine N-methyltransferase 1



- Molecule 1: Euchromatic histone-lysine N-methyltransferase 1



- Molecule 2: Histone H3 N-terminal Peptide



4 Data and refinement statistics

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

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	59.52Å 152.39Å 167.32Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	24.91 – 2.99	Depositor
% Data completeness (in resolution range)	97.1 (24.91-2.99)	Depositor
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.195 , 0.238	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	3623	wwPDB-VP
Average B, all atoms (Å ²)	48.0	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: MLY, 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	0.59	0/1819	1.07	12/2471 (0.5%)
1	B	0.69	0/1727	1.14	12/2350 (0.5%)
2	P	0.61	0/50	0.84	0/64
All	All	0.64	0/3596	1.10	24/4885 (0.5%)

There are no bond length outliers.

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	806	ALA	N-CA-C	-6.93	104.44	113.17
1	A	855	VAL	N-CA-C	6.86	117.36	110.23
1	B	919	ASN	CA-CB-CG	-6.73	105.87	112.60
1	A	802	ASP	CA-C-N	-6.71	113.39	120.03
1	A	802	ASP	C-N-CA	-6.71	113.39	120.03
1	A	940	GLU	N-CA-C	-6.53	103.57	113.89
1	B	855	VAL	N-CA-C	6.34	116.83	110.23
1	B	882	ALA	N-CA-C	-6.27	104.53	111.36
1	A	882	ALA	N-CA-C	-6.16	104.56	111.28
1	A	943	THR	N-CA-C	-6.11	102.39	110.40
1	B	831	GLY	N-CA-C	-5.91	107.24	114.92
1	B	804	LYS	N-CA-C	5.80	119.02	109.85
1	A	840	ASP	N-CA-C	5.66	118.17	111.33
1	B	759	HIS	CA-CB-CG	-5.61	108.19	113.80
1	A	859	LYS	N-CA-C	-5.57	104.90	110.97
1	B	910	SER	CA-C-N	-5.55	112.89	119.05
1	B	910	SER	C-N-CA	-5.55	112.89	119.05
1	A	806	ALA	N-CA-C	-5.51	106.40	113.01
1	B	786	ASN	N-CA-C	5.49	119.14	111.90
1	A	953	GLN	N-CA-C	-5.29	104.93	111.33
1	B	874	GLU	N-CA-C	-5.20	106.71	113.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	902	HIS	CA-CB-CG	-5.08	108.72	113.80
1	A	834	ASP	N-CA-C	5.06	117.00	109.25
1	A	960	MET	N-CA-C	-5.05	103.03	111.37

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	1786	0	1712	62	0
1	B	1696	0	1620	66	0
2	P	63	0	62	12	0
3	A	25	0	0	1	0
3	B	25	0	0	0	0
4	A	15	0	0	1	0
4	B	13	0	0	0	0
All	All	3623	0	3394	128	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 18.

All (128) 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:912:LEU:HD11	1:B:924:VAL:HG23	1.35	1.07
1:B:918:GLU:O	1:B:920:ARG:HD3	1.75	0.86
1:B:888:VAL:HG11	1:B:922:ASP:HB3	1.56	0.86
1:B:912:LEU:CD1	1:B:924:VAL:HG23	2.09	0.82
1:A:801:VAL:HG13	1:A:833:MET:SD	2.20	0.81
1:B:937:LYS:HD3	1:B:941:GLY:HA2	1.64	0.79
1:B:868:ILE:HD12	1:B:899:CYS:HB2	1.67	0.75
1:A:827:LEU:HB3	1:A:833:MET:HE3	1.71	0.73
1:B:801:VAL:C	1:B:803:PRO:HD2	2.13	0.73
1:B:960:MET:HE3	1:B:960:MET:HA	1.70	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:960:MET:O	1:A:960:MET:HE3	1.91	0.70
1:B:868:ILE:HD12	1:B:899:CYS:CB	2.22	0.70
1:A:912:LEU:HD11	1:A:924:VAL:HG23	1.75	0.69
1:A:827:LEU:HB3	1:A:833:MET:CE	2.24	0.68
1:A:827:LEU:HD22	1:A:833:MET:HE1	1.76	0.67
1:A:894:LEU:O	1:A:899:CYS:HB2	1.99	0.63
1:B:921:TYR:O	1:B:924:VAL:HG12	2.00	0.62
1:A:816:ALA:HA	1:A:857:LEU:HD21	1.81	0.61
1:A:792:LYS:HG2	1:A:826:TYR:CE1	2.35	0.61
1:B:965:GLN:C	1:B:967:SER:H	2.09	0.61
1:B:889:ASP:O	1:B:893:ILE:HG13	2.01	0.60
1:B:854:HIS:CE1	2:P:2:ARG:HH12	2.20	0.59
1:A:887:CYS:SG	1:A:890:ILE:HG13	2.43	0.58
1:A:921:TYR:O	1:A:924:VAL:HG12	2.03	0.58
1:B:910:SER:OG	1:B:913:HIS:HD2	1.86	0.58
1:B:843:TRP:CD2	2:P:9:MLY:HH12	2.39	0.57
1:B:774:ASP:OD1	1:B:774:ASP:N	2.33	0.56
1:B:930:ARG:O	1:B:931:ASP:CB	2.52	0.56
1:B:785:ASN:HD22	1:B:785:ASN:N	2.03	0.56
1:B:917:ARG:NH1	1:B:947:CYS:SG	2.79	0.56
1:A:862:LEU:C	1:A:864:LYS:H	2.12	0.56
1:B:888:VAL:HG11	1:B:922:ASP:CB	2.32	0.55
1:A:862:LEU:O	1:A:864:LYS:N	2.41	0.54
1:B:859:LYS:HD3	1:B:893:ILE:HD13	1.88	0.54
1:B:774:ASP:O	1:B:775:GLN:HB2	2.06	0.54
1:A:901:LEU:HD11	1:A:930:ARG:HB2	1.90	0.54
1:B:788:LEU:HD11	1:B:792:LYS:HE3	1.89	0.54
1:A:819:GLY:HA2	1:A:857:LEU:HD22	1.91	0.53
1:B:912:LEU:HD11	1:B:924:VAL:CG2	2.24	0.53
1:A:746:LEU:HD13	1:A:778:PRO:HG2	1.90	0.52
1:A:774:ASP:OD1	1:A:774:ASP:N	2.41	0.52
1:A:786:ASN:HB2	1:A:820:HIS:CE1	2.45	0.52
1:A:788:LEU:HG	1:A:792:LYS:HE3	1.92	0.52
1:B:881:TRP:CH2	2:P:11:THR:HG23	2.45	0.52
1:B:811:CYS:HA	1:B:814:LEU:HD12	1.91	0.51
1:A:844:THR:CG2	1:A:870:ILE:HG21	2.41	0.51
1:B:930:ARG:O	1:B:931:ASP:HB2	2.11	0.51
1:A:0:MET:HG2	1:A:734:ASN:N	2.26	0.51
1:B:848:TRP:CZ2	2:P:9:MLY:HH13	2.45	0.51
1:A:754:HIS:CE1	1:A:757:ILE:HG13	2.45	0.51
1:B:935:THR:O	1:B:943:THR:HG22	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:759:HIS:HA	1:B:793:TYR:OH	2.11	0.50
1:B:887:CYS:SG	1:B:890:ILE:HG13	2.52	0.50
1:A:805:ASP:HB3	1:A:809:SER:H	1.75	0.50
1:A:895:LEU:C	1:A:897:ALA:N	2.70	0.50
1:A:959:GLN:O	1:A:960:MET:C	2.54	0.49
1:B:802:ASP:N	1:B:803:PRO:HD2	2.26	0.49
1:A:888:VAL:HG23	1:A:889:ASP:N	2.28	0.49
1:A:902:HIS:HE1	1:A:933:ASP:H	1.60	0.49
1:A:871:ARG:HD3	1:A:875:GLU:O	2.13	0.48
1:B:945:LEU:HA	1:B:958:LEU:HD13	1.95	0.48
1:B:843:TRP:CZ2	2:P:9:MLY:HE2	2.49	0.48
1:A:875:GLU:HB3	1:A:905:ASN:HA	1.95	0.48
1:B:930:ARG:HD3	1:B:930:ARG:HA	1.62	0.48
1:B:938:ASN:C	1:B:940:GLU:H	2.22	0.48
1:A:787:HIS:O	1:A:791:VAL:HG23	2.14	0.48
1:B:835:VAL:O	1:B:845:PRO:HD2	2.14	0.47
1:B:854:HIS:NE2	2:P:2:ARG:NH1	2.63	0.47
1:B:838:GLN:NE2	1:B:842:GLY:O	2.45	0.47
1:B:805:ASP:HB3	1:B:807:GLU:H	1.79	0.47
1:A:802:ASP:N	1:A:803:PRO:HD2	2.30	0.47
1:A:919:ASN:O	1:A:919:ASN:CG	2.57	0.47
1:A:895:LEU:C	1:A:897:ALA:H	2.20	0.47
1:B:843:TRP:CG	2:P:9:MLY:HH12	2.50	0.47
1:A:862:LEU:C	1:A:864:LYS:N	2.73	0.47
1:B:949:SER:O	1:B:955:TRP:HB2	2.14	0.47
1:A:802:ASP:N	1:A:803:PRO:CD	2.79	0.46
1:B:881:TRP:CZ2	2:P:11:THR:HG23	2.49	0.46
1:A:818:LYS:NZ	4:A:970:HOH:O	2.46	0.46
1:A:912:LEU:HD23	1:A:944:PRO:HG3	1.96	0.46
1:A:0:MET:CG	1:A:734:ASN:N	2.79	0.46
1:B:843:TRP:CE2	2:P:9:MLY:HE2	2.50	0.46
1:B:912:LEU:HD23	1:B:944:PRO:HG3	1.96	0.46
1:B:802:ASP:N	1:B:803:PRO:CD	2.79	0.46
1:B:859:LYS:HD3	1:B:893:ILE:CD1	2.45	0.45
1:A:886:GLY:HA3	1:A:920:ARG:HD2	1.97	0.45
1:A:855:VAL:HB	3:A:7:SO4:O3	2.17	0.45
1:A:846:MET:HG3	1:A:858:VAL:HG13	1.98	0.45
1:A:888:VAL:HG11	1:A:922:ASP:HB3	1.98	0.45
1:A:921:TYR:O	1:A:922:ASP:C	2.60	0.44
1:B:805:ASP:OD1	1:B:809:SER:HB2	2.18	0.44
1:B:805:ASP:HB2	1:B:809:SER:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:854:HIS:CE1	2:P:2:ARG:NH1	2.85	0.44
1:A:943:THR:HG23	1:A:946:GLN:NE2	2.32	0.44
1:B:874:GLU:O	1:B:905:ASN:HB2	2.18	0.44
1:A:921:TYR:CD1	1:A:953:GLN:HB3	2.53	0.44
1:B:817:LYS:NZ	2:P:1:ALA:N	2.66	0.44
1:A:736:LYS:HA	1:A:736:LYS:HD3	1.84	0.43
1:A:867:ASP:HB3	1:A:870:ILE:HG12	2.01	0.43
1:A:937:LYS:HA	1:A:942:GLU:O	2.18	0.43
1:A:875:GLU:HB2	1:A:906:ILE:H	1.84	0.43
1:A:846:MET:CG	1:A:858:VAL:HG13	2.49	0.42
1:A:862:LEU:HD23	1:A:866:SER:HB2	2.00	0.42
1:B:965:GLN:C	1:B:967:SER:N	2.76	0.42
1:A:820:HIS:O	1:A:824:VAL:HG23	2.20	0.42
1:B:938:ASN:O	1:B:940:GLU:N	2.52	0.42
1:A:862:LEU:HD23	1:A:862:LEU:HA	1.90	0.42
1:A:875:GLU:HB2	1:A:906:ILE:N	2.35	0.42
1:A:824:VAL:O	1:A:828:LEU:HG	2.20	0.42
1:A:874:GLU:O	1:A:875:GLU:HB2	2.18	0.42
1:B:959:GLN:HA	1:B:959:GLN:OE1	2.20	0.42
1:B:867:ASP:HB3	1:B:870:ILE:HG12	2.02	0.42
1:A:924:VAL:O	1:A:928:LEU:HG	2.21	0.41
1:B:848:TRP:CH2	2:P:9:MLY:HH13	2.56	0.41
1:B:862:LEU:HA	1:B:862:LEU:HD23	1.66	0.41
1:B:921:TYR:CE2	1:B:925:VAL:HG21	2.55	0.41
1:A:751:GLU:HG3	1:A:785:ASN:ND2	2.36	0.41
1:B:936:LEU:HD12	1:B:937:LYS:N	2.36	0.41
1:B:912:LEU:O	1:B:913:HIS:C	2.61	0.41
1:A:868:ILE:HD12	1:A:899:CYS:HA	2.02	0.41
1:B:895:LEU:HD21	1:B:901:LEU:HD23	2.01	0.41
1:A:902:HIS:CE1	1:A:933:ASP:H	2.36	0.40
1:A:761:LEU:HA	1:A:761:LEU:HD23	1.83	0.40
1:A:912:LEU:CD1	1:A:924:VAL:HG23	2.47	0.40
1:B:937:LYS:HA	1:B:942:GLU:O	2.21	0.40
1:B:963:ALA:O	1:B:965:GLN:N	2.54	0.40
1:B:862:LEU:HD23	1:B:866:SER:HB3	2.04	0.40
1:B:895:LEU:HD23	1:B:895:LEU:HA	1.85	0.40

There are no symmetry-related clashes.

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	234/237 (99%)	209 (89%)	19 (8%)	6 (3%)	4	23
1	B	223/237 (94%)	203 (91%)	15 (7%)	5 (2%)	5	26
2	P	5/15 (33%)	4 (80%)	1 (20%)	0	100	100
All	All	462/489 (94%)	416 (90%)	35 (8%)	11 (2%)	4	24

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	863	SER
1	B	939	LYS
1	B	966	ASP
1	A	797	ALA
1	A	829	SER
1	A	921	TYR
1	B	805	ASP
1	B	964	LEU
1	B	802	ASP
1	A	868	ILE
1	A	802	ASP

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	188/198 (95%)	180 (96%)	8 (4%)	26	60

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	179/198 (90%)	161 (90%)	18 (10%)	7	29
2	P	3/9 (33%)	3 (100%)	0	100	100
All	All	370/405 (91%)	344 (93%)	26 (7%)	14	44

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	746	LEU
1	A	768	ILE
1	A	781	GLU
1	A	801	VAL
1	A	833	MET
1	A	835	VAL
1	A	901	LEU
1	A	911	PRO
1	B	745	PRO
1	B	746	LEU
1	B	763	GLN
1	B	774	ASP
1	B	830	ASN
1	B	835	VAL
1	B	857	LEU
1	B	859	LYS
1	B	874	GLU
1	B	899	CYS
1	B	906	ILE
1	B	919	ASN
1	B	920	ARG
1	B	930	ARG
1	B	931	ASP
1	B	935	THR
1	B	950	LEU
1	B	961	SER

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	775	GLN
1	A	785	ASN
1	A	825	GLN

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Mol	Chain	Res	Type
1	A	873	ASN
1	A	902	HIS
1	A	913	HIS
1	A	946	GLN
1	B	754	HIS
1	B	785	ASN
1	B	787	HIS
1	B	813	HIS
1	B	830	ASN
1	B	838	GLN
1	B	854	HIS
1	B	913	HIS
1	B	946	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	MLY	P	9	2	9,10,11	0.52	0	6,11,13	0.76	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	MLY	P	9	2	-	3/8/9/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	P	9	MLY	N-CA-CB-CG
2	P	9	MLY	O-C-CA-CB
2	P	9	MLY	CG-CD-CE-NZ

There are no ring outliers.

1 monomer is involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	P	9	MLY	6	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

10 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	SO4	A	7	-	4,4,4	0.38	0	6,6,6	0.08	0
3	SO4	A	6	-	4,4,4	0.45	0	6,6,6	0.10	0
3	SO4	A	10	-	4,4,4	0.41	0	6,6,6	0.11	0
3	SO4	A	5	-	4,4,4	0.39	0	6,6,6	0.06	0
3	SO4	A	8	-	4,4,4	0.45	0	6,6,6	0.10	0
3	SO4	B	1	-	4,4,4	0.39	0	6,6,6	0.13	0
3	SO4	B	9	-	4,4,4	0.40	0	6,6,6	0.13	0
3	SO4	B	3	-	4,4,4	0.41	0	6,6,6	0.09	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	SO4	B	2	-	4,4,4	0.42	0	6,6,6	0.10	0
3	SO4	B	4	-	4,4,4	0.35	0	6,6,6	0.10	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 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	7	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

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.