



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 01:15 AM UTC

PDB ID : 3B7B / pdb_00003b7b
Title : EuHMT1 (Glp) Ankyrin Repeat Domain (Structure 1)
Authors : Collins, R.E.; Horton, J.R.; Cheng, X.
Deposited on : 2007-10-30
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

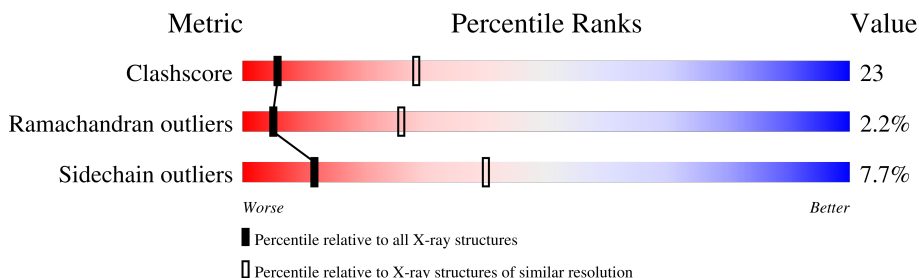
1 Overall quality at a glance

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 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 3533 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.

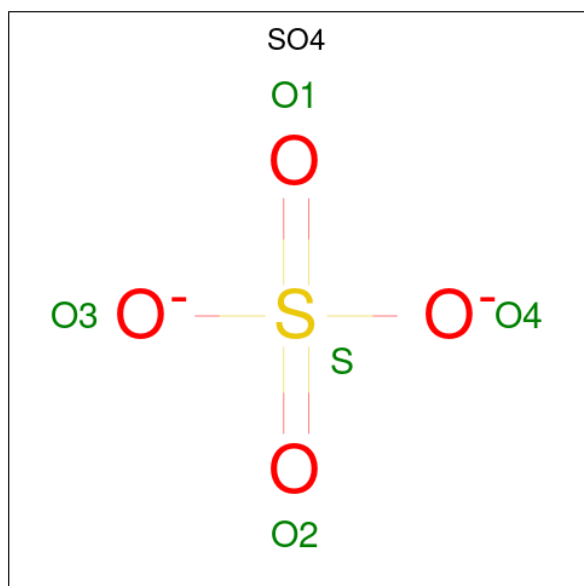
- Molecule 1 is a protein called Euchromatic histone-lysine N-methyltransferase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	236	Total	C	N	O	S	0	0	0
			1781	1107	314	344	16			
1	B	224	Total	C	N	O	S	0	0	0
			1684	1046	294	330	14			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	HIS	-	expression tag	UNP Q9H9B1
A	0	MET	-	expression tag	UNP Q9H9B1
B	732	HIS	-	expression tag	UNP Q9H9B1
B	733	MET	-	expression tag	UNP Q9H9B1

- Molecule 2 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



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

- Molecule 3 is water.

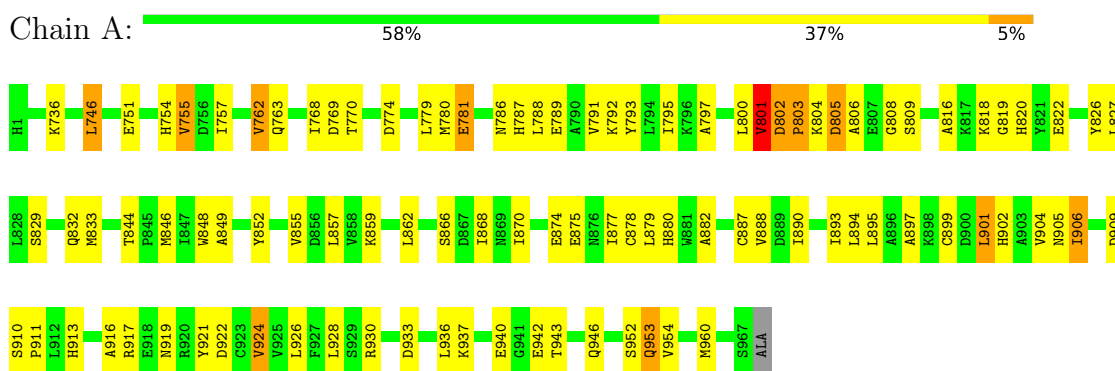
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	11	Total O 11 11	0	0
3	B	17	Total O 17 17	0	0

3 Residue-property plots

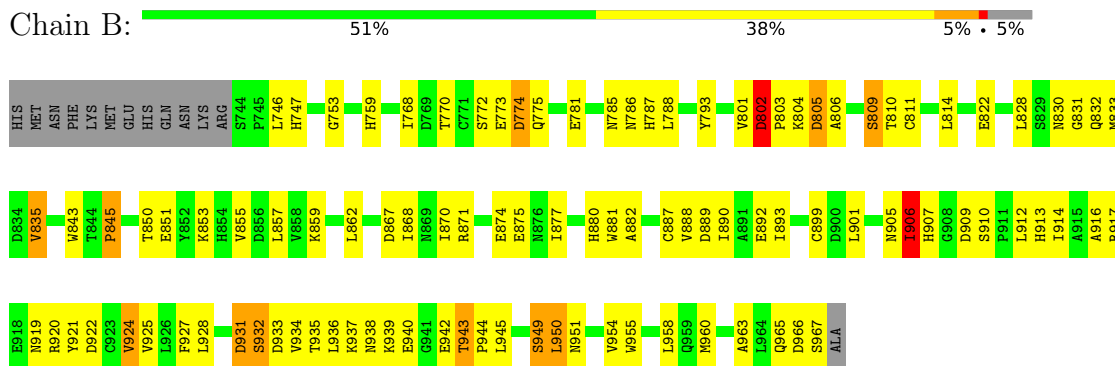
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded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



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	59.79Å 151.26Å 167.85Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.75 – 2.99	Depositor
% Data completeness (in resolution range)	97.9 (28.75-2.99)	Depositor
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.205 , 0.261	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	3533	wwPDB-VP
Average B, all atoms (Å ²)	47.0	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

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	0.56	0/1812	1.09	8/2463 (0.3%)
1	B	0.62	0/1713	1.09	11/2332 (0.5%)
All	All	0.59	0/3525	1.09	19/4795 (0.4%)

There are no bond length outliers.

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	953	GLN	N-CA-C	-8.04	102.52	111.28
1	B	806	ALA	N-CA-C	-7.64	103.55	113.17
1	A	882	ALA	N-CA-C	-6.95	103.71	111.28
1	B	882	ALA	N-CA-C	-6.69	104.07	111.36
1	B	786	ASN	N-CA-C	6.61	120.70	112.24
1	A	755	VAL	N-CA-C	6.28	117.03	110.62
1	B	855	VAL	N-CA-C	6.17	116.84	110.36
1	A	806	ALA	N-CA-C	-6.09	105.34	112.89
1	A	803	PRO	CB-CA-C	6.01	119.19	111.56
1	B	931	ASP	N-CA-C	5.78	119.63	112.58
1	A	940	GLU	N-CA-C	-5.62	106.77	113.97
1	B	932	SER	N-CA-C	-5.50	102.75	110.50
1	B	802	ASP	CA-C-N	-5.45	114.17	119.78
1	B	802	ASP	C-N-CA	-5.45	114.17	119.78
1	A	801	VAL	N-CA-C	5.37	119.71	113.42
1	A	801	VAL	N-CA-CB	-5.31	105.02	112.35
1	B	775	GLN	N-CA-C	5.13	118.67	111.74
1	B	831	GLY	N-CA-C	-5.11	108.57	115.21
1	B	804	LYS	N-CA-C	5.02	118.26	110.17

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	1781	0	1699	82	0
1	B	1684	0	1605	76	0
2	A	20	0	0	1	0
2	B	20	0	0	0	0
3	A	11	0	0	1	0
3	B	17	0	0	0	0
All	All	3533	0	3304	158	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 23.

All (158) 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:878:CYS:SG	1:A:894:LEU:HD11	2.17	0.83
1:A:859:LYS:HE2	1:A:893:ILE:HD11	1.59	0.82
1:A:875:GLU:HB3	1:A:905:ASN:HA	1.61	0.82
1:A:875:GLU:HB2	1:A:906:ILE:H	1.49	0.77
1:B:928:LEU:HD11	1:B:958:LEU:HD23	1.64	0.77
1:A:792:LYS:HG2	1:A:826:TYR:CE1	2.24	0.73
1:A:802:ASP:N	1:A:803:PRO:CD	2.52	0.72
1:B:912:LEU:HD22	1:B:932:SER:HB2	1.70	0.72
1:A:779:LEU:HD21	1:A:801:VAL:HG22	1.71	0.71
1:A:801:VAL:C	1:A:803:PRO:HD2	2.16	0.71
1:A:960:MET:O	1:A:960:MET:HE3	1.91	0.71
1:B:933:ASP:OD1	1:B:935:THR:HG23	1.91	0.70
1:A:802:ASP:N	1:A:803:PRO:HD2	2.07	0.70
1:A:878:CYS:SG	1:A:894:LEU:CD1	2.80	0.69
1:B:901:LEU:HD11	1:B:932:SER:OG	1.95	0.67
1:A:805:ASP:HB3	1:A:809:SER:H	1.60	0.67
1:A:819:GLY:HA2	1:A:857:LEU:HD22	1.78	0.66
1:A:816:ALA:HA	1:A:857:LEU:HD21	1.78	0.65
1:B:888:VAL:HG11	1:B:922:ASP:HB3	1.76	0.65
1:B:901:LEU:HD13	1:B:901:LEU:O	1.97	0.65
1:B:924:VAL:HG11	1:B:954:VAL:HG13	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:786:ASN:HB2	1:A:820:HIS:CE1	2.32	0.64
1:A:802:ASP:N	1:A:802:ASP:OD1	2.32	0.63
1:A:827:LEU:HD22	1:A:833:MET:HE1	1.81	0.63
1:A:827:LEU:HB3	1:A:833:MET:CE	2.29	0.63
1:B:805:ASP:HB3	1:B:809:SER:H	1.65	0.61
1:B:888:VAL:O	1:B:892:GLU:HB2	2.01	0.61
1:B:909:ASP:OD1	1:B:917:ARG:NH2	2.34	0.60
1:B:916:ALA:HA	1:B:954:VAL:HG11	1.85	0.59
1:B:960:MET:HE3	1:B:960:MET:HA	1.84	0.58
1:B:811:CYS:HA	1:B:814:LEU:HD12	1.84	0.58
1:B:877:ILE:HD12	1:B:899:CYS:SG	2.44	0.58
1:B:935:THR:O	1:B:943:THR:HG22	2.03	0.58
1:B:938:ASN:O	1:B:940:GLU:N	2.36	0.58
1:B:805:ASP:HB2	1:B:809:SER:O	2.04	0.57
1:B:889:ASP:O	1:B:893:ILE:HG13	2.03	0.57
1:B:801:VAL:C	1:B:803:PRO:HD2	2.30	0.57
1:A:901:LEU:HD11	1:A:930:ARG:HB2	1.85	0.57
1:A:937:LYS:HA	1:A:942:GLU:O	2.04	0.57
1:A:769:ASP:CG	1:A:800:LEU:HB2	2.29	0.57
1:B:830:ASN:CG	1:B:832:GLN:HE21	2.13	0.57
1:A:780:MET:HE3	1:A:803:PRO:HB2	1.87	0.57
1:B:887:CYS:SG	1:B:890:ILE:HG13	2.44	0.57
1:A:846:MET:HE1	1:A:868:ILE:HG22	1.85	0.56
1:A:769:ASP:OD2	1:A:800:LEU:HB2	2.04	0.56
1:A:827:LEU:HB3	1:A:833:MET:HE3	1.86	0.55
1:B:938:ASN:C	1:B:940:GLU:H	2.13	0.55
1:A:751:GLU:HB2	1:A:781:GLU:HG3	1.89	0.55
1:A:887:CYS:SG	1:A:890:ILE:HG13	2.47	0.54
1:B:937:LYS:HA	1:B:942:GLU:O	2.07	0.54
1:A:762:VAL:HG12	1:A:763:GLN:N	2.23	0.54
1:A:804:LYS:HD3	1:A:808:GLY:HA2	1.90	0.54
1:B:910:SER:OG	1:B:913:HIS:HD2	1.91	0.54
1:B:909:ASP:HB3	1:B:914:ILE:CD1	2.37	0.54
1:A:754:HIS:CE1	1:A:757:ILE:HG13	2.43	0.53
1:B:835:VAL:O	1:B:845:PRO:HD2	2.08	0.53
1:B:788:LEU:HD22	1:B:822:GLU:HB3	1.90	0.52
1:A:844:THR:HG23	1:A:870:ILE:HG21	1.92	0.52
1:B:949:SER:O	1:B:955:TRP:HB2	2.09	0.52
1:A:751:GLU:HB2	1:A:781:GLU:CG	2.39	0.52
1:A:895:LEU:C	1:A:897:ALA:H	2.17	0.52
1:B:906:ILE:HG23	1:B:906:ILE:O	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:868:ILE:HD12	1:B:899:CYS:HB2	1.92	0.52
1:A:779:LEU:CD2	1:A:801:VAL:HG22	2.40	0.52
1:A:910:SER:OG	1:A:913:HIS:HD2	1.93	0.52
1:A:855:VAL:HB	2:A:7:SO4:O3	2.10	0.51
1:A:936:LEU:HD12	1:A:937:LYS:N	2.25	0.51
1:A:890:ILE:O	1:A:894:LEU:HG	2.11	0.51
1:B:785:ASN:HD22	1:B:785:ASN:N	2.07	0.51
1:B:965:GLN:C	1:B:967:SER:H	2.19	0.51
1:A:924:VAL:O	1:A:928:LEU:HG	2.11	0.50
1:A:862:LEU:HD23	1:A:866:SER:HB2	1.93	0.50
1:B:774:ASP:OD1	1:B:774:ASP:N	2.42	0.50
1:B:927:PHE:HB3	1:B:932:SER:OG	2.12	0.50
1:B:909:ASP:CG	1:B:917:ARG:HH22	2.19	0.50
1:A:875:GLU:HB2	1:A:906:ILE:N	2.21	0.50
1:B:810:THR:O	1:B:814:LEU:HD12	2.12	0.50
1:A:888:VAL:HG11	1:A:922:ASP:HB3	1.93	0.50
1:B:853:LYS:HG2	1:B:887:CYS:HB2	1.93	0.50
1:A:827:LEU:HB3	1:A:833:MET:HE1	1.94	0.49
1:A:877:ILE:HD11	1:A:899:CYS:SG	2.51	0.49
1:A:868:ILE:HD12	1:A:899:CYS:HB2	1.94	0.49
1:A:916:ALA:HA	1:A:954:VAL:HG11	1.94	0.49
1:A:894:LEU:O	1:A:899:CYS:HB2	2.13	0.49
1:B:910:SER:H	1:B:913:HIS:CD2	2.30	0.49
1:A:919:ASN:ND2	1:A:952:SER:HB3	2.28	0.49
1:B:874:GLU:O	1:B:905:ASN:HB2	2.12	0.48
1:A:895:LEU:C	1:A:897:ALA:N	2.72	0.48
1:A:787:HIS:O	1:A:791:VAL:HG23	2.13	0.48
1:A:859:LYS:HG2	1:A:893:ILE:HD13	1.94	0.48
1:B:802:ASP:N	1:B:803:PRO:CD	2.77	0.48
1:A:943:THR:HG23	1:A:946:GLN:NE2	2.29	0.48
1:A:874:GLU:O	1:A:875:GLU:HB2	2.13	0.48
1:B:909:ASP:HB3	1:B:914:ILE:HD12	1.95	0.47
1:B:788:LEU:HD12	1:B:788:LEU:O	2.14	0.47
1:B:802:ASP:N	1:B:803:PRO:HD2	2.29	0.47
1:A:795:ILE:HG21	1:A:826:TYR:HE2	1.80	0.47
1:A:788:LEU:HD22	1:A:822:GLU:HB3	1.97	0.46
1:A:754:HIS:ND1	1:A:757:ILE:HG13	2.30	0.46
1:B:935:THR:O	1:B:936:LEU:C	2.56	0.46
1:A:844:THR:CG2	1:A:870:ILE:HG21	2.45	0.46
1:B:843:TRP:HZ2	1:B:881:TRP:CH2	2.34	0.46
1:B:963:ALA:C	1:B:965:GLN:N	2.74	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:849:ALA:HB2	1:A:857:LEU:HD23	1.98	0.45
1:A:877:ILE:HG13	1:A:879:LEU:H	1.81	0.45
1:B:772:SER:O	1:B:773:GLU:C	2.59	0.45
1:A:877:ILE:CD1	1:A:899:CYS:SG	3.05	0.45
1:B:938:ASN:C	1:B:940:GLU:N	2.72	0.45
1:B:905:ASN:C	1:B:907:HIS:H	2.25	0.45
1:A:762:VAL:HG11	1:A:793:TYR:OH	2.17	0.45
1:A:848:TRP:CZ3	1:A:852:TYR:HE1	2.34	0.45
1:A:736:LYS:HA	1:A:736:LYS:HD3	1.80	0.45
1:B:901:LEU:HD13	1:B:901:LEU:C	2.42	0.45
1:B:867:ASP:HB3	1:B:870:ILE:HG12	1.98	0.45
1:B:909:ASP:HB3	1:B:914:ILE:HD11	1.99	0.44
1:A:880:HIS:CD2	1:A:905:ASN:HD22	2.35	0.44
1:B:850:THR:HG23	1:B:890:ILE:HG21	2.00	0.44
1:A:762:VAL:CG1	1:A:763:GLN:N	2.81	0.44
1:B:871:ARG:NH1	1:B:875:GLU:O	2.48	0.44
1:B:943:THR:HB	1:B:944:PRO:HD2	2.00	0.44
1:A:805:ASP:HB2	1:A:809:SER:O	2.17	0.44
1:A:795:ILE:C	1:A:797:ALA:H	2.26	0.43
1:A:909:ASP:OD1	1:A:917:ARG:NH2	2.50	0.43
1:B:828:LEU:HD22	1:B:835:VAL:HG13	2.00	0.43
1:B:963:ALA:C	1:B:965:GLN:H	2.25	0.43
1:A:895:LEU:HD12	1:A:926:LEU:HD21	2.00	0.43
1:A:924:VAL:HG11	1:A:954:VAL:HG22	2.00	0.43
1:A:921:TYR:CD1	1:A:953:GLN:HB3	2.53	0.42
1:A:832:GLN:NE2	1:A:832:GLN:HA	2.34	0.42
1:B:843:TRP:HZ2	1:B:881:TRP:CZ2	2.37	0.42
1:A:921:TYR:O	1:A:924:VAL:HG13	2.19	0.42
1:B:801:VAL:HG12	1:B:833:MET:SD	2.59	0.42
1:A:818:LYS:NZ	3:A:971:HOH:O	2.51	0.42
1:B:862:LEU:HD23	1:B:862:LEU:HA	1.79	0.42
1:B:909:ASP:CG	1:B:917:ARG:NH2	2.77	0.42
1:A:902:HIS:HE1	1:A:933:ASP:H	1.68	0.42
1:B:945:LEU:HA	1:B:958:LEU:HD13	2.02	0.42
1:A:859:LYS:HE2	1:A:893:ILE:CD1	2.38	0.41
1:A:774:ASP:OD1	1:A:774:ASP:N	2.52	0.41
1:B:914:ILE:HD12	1:B:914:ILE:H	1.84	0.41
1:A:921:TYR:O	1:A:922:ASP:C	2.64	0.41
1:B:753:GLY:N	1:B:787:HIS:CD2	2.89	0.41
1:A:862:LEU:HD23	1:A:862:LEU:HA	1.80	0.41
1:A:924:VAL:HG11	1:A:954:VAL:HG13	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:759:HIS:HA	1:B:793:TYR:OH	2.20	0.41
1:B:920:ARG:O	1:B:921:TYR:C	2.63	0.41
1:B:935:THR:OG1	1:B:936:LEU:N	2.53	0.41
1:B:950:LEU:O	1:B:951:ASN:HB2	2.19	0.41
1:B:781:GLU:HA	1:B:781:GLU:OE1	2.21	0.40
1:B:880:HIS:HD2	1:B:914:ILE:HD13	1.87	0.40
1:B:912:LEU:HD21	1:B:928:LEU:HD21	2.03	0.40
1:B:747:HIS:HE1	1:B:770:THR:O	2.03	0.40
1:B:921:TYR:O	1:B:922:ASP:C	2.63	0.40
1:B:924:VAL:CG2	1:B:925:VAL:N	2.84	0.40
1:A:746:LEU:HA	1:A:746:LEU:HD23	1.84	0.40
1:A:833:MET:HE3	1:A:833:MET:HB2	1.90	0.40
1:B:747:HIS:HE1	1:B:770:THR:HG23	1.87	0.40
1:B:843:TRP:CZ2	1:B:881:TRP:CZ2	3.09	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	234/237 (99%)	207 (88%)	23 (10%)	4 (2%)	7	32
1	B	222/237 (94%)	203 (91%)	13 (6%)	6 (3%)	4	22
All	All	456/474 (96%)	410 (90%)	36 (8%)	10 (2%)	5	26

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	805	ASP
1	B	805	ASP
1	B	939	LYS
1	B	966	ASP

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Mol	Chain	Res	Type
1	B	943	THR
1	A	829	SER
1	A	802	ASP
1	B	802	ASP
1	A	906	ILE
1	B	906	ILE

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	186/198 (94%)	174 (94%)	12 (6%)	15	47
1	B	177/198 (89%)	161 (91%)	16 (9%)	9	34
All	All	363/396 (92%)	335 (92%)	28 (8%)	12	40

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	746	LEU
1	A	755	VAL
1	A	762	VAL
1	A	768	ILE
1	A	770	THR
1	A	781	GLU
1	A	789	GLU
1	A	801	VAL
1	A	901	LEU
1	A	904	VAL
1	A	911	PRO
1	A	924	VAL
1	B	746	LEU
1	B	768	ILE
1	B	774	ASP
1	B	809	SER
1	B	835	VAL

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Mol	Chain	Res	Type
1	B	845	PRO
1	B	851	GLU
1	B	857	LEU
1	B	859	LYS
1	B	906	ILE
1	B	919	ASN
1	B	924	VAL
1	B	931	ASP
1	B	934	VAL
1	B	949	SER
1	B	950	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	825	GLN
1	A	832	GLN
1	A	880	HIS
1	A	902	HIS
1	A	913	HIS
1	A	946	GLN
1	B	785	ASN
1	B	787	HIS
1	B	813	HIS
1	B	825	GLN
1	B	832	GLN
1	B	869	ASN
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 ⓘ

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](#)

8 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	$\# Z > 2$
2	SO4	B	1	-	4,4,4	0.43	0	6,6,6	0.12	0
2	SO4	B	3	-	4,4,4	0.40	0	6,6,6	0.06	0
2	SO4	B	2	-	4,4,4	0.40	0	6,6,6	0.11	0
2	SO4	A	6	-	4,4,4	0.43	0	6,6,6	0.07	0
2	SO4	A	5	-	4,4,4	0.36	0	6,6,6	0.12	0
2	SO4	B	4	-	4,4,4	0.36	0	6,6,6	0.08	0
2	SO4	A	7	-	4,4,4	0.39	0	6,6,6	0.09	0
2	SO4	A	8	-	4,4,4	0.43	0	6,6,6	0.12	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
2	A	7	SO4	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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.