



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 04:40 PM UTC

PDB ID : 1DGE / pdb_00001dge
Title : AN ALKALI METAL ION SIZE-DEPENDENT SWITCH IN THE ACTIVE SITE STRUCTURE OF DIALKYLGLYCINE DECARBOXYLASE
Authors : Hohenester, E.; Jansonius, J.N.
Deposited on : 1994-06-29
Resolution : 2.80 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

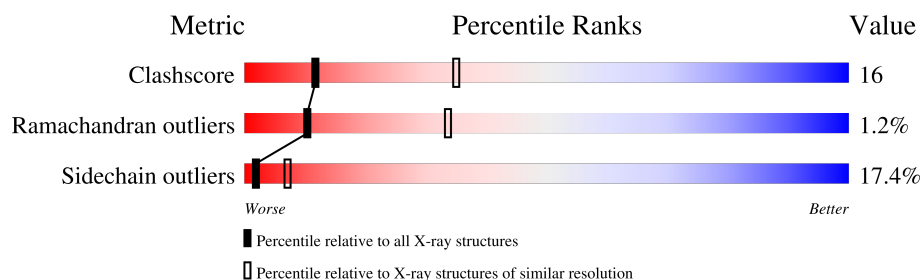
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)

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	432	58% 32% 8% .

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 3370 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 DIALKYLGLYCINE DECARBOXYLASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	431	Total	C	N	O	S	55	0	0
			3247	2048	576	605	18			

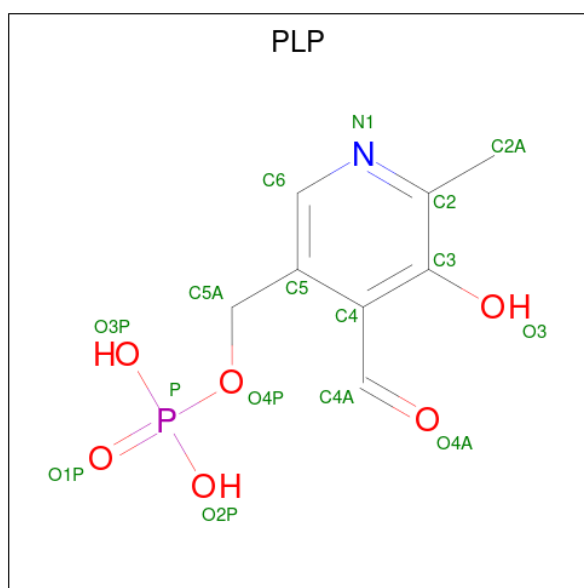
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	15	HIS	GLN	conflict	UNP P16932

- Molecule 2 is RUBIDIUM ION (CCD ID: RB) (formula: Rb).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Rb	0	0
			2	2		

- Molecule 3 is PYRIDOXAL-5'-PHOSPHATE (CCD ID: PLP) (formula: C₈H₁₀NO₆P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			15	8	1	5	1		

- Molecule 4 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (CCD ID: MES) (formula: $C_6H_{13}NO_4S$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	S	0	0
			12	6	1	4	1		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	94	Total	O	0	0
			94	94		

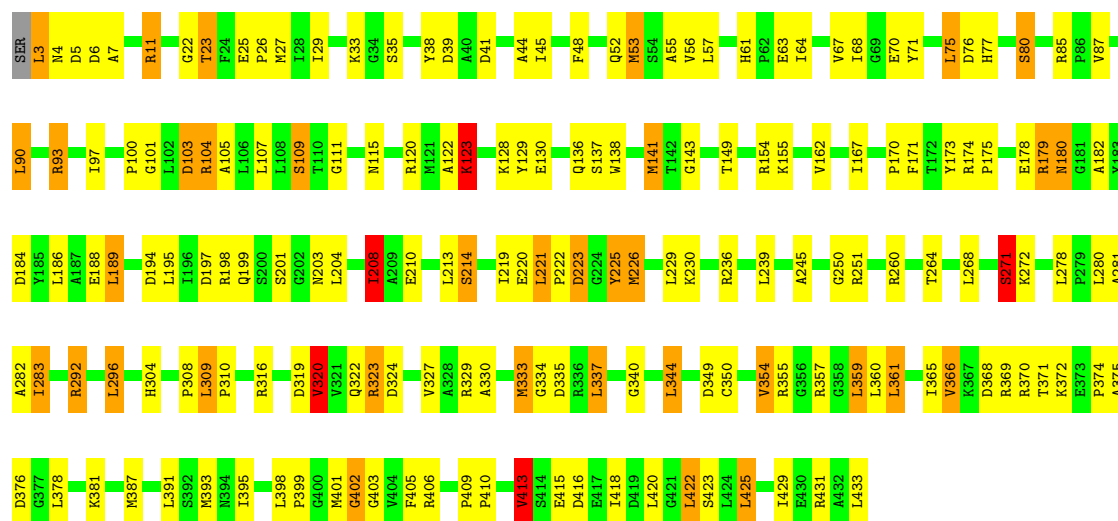
3 Residue-property plots

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: DIALKYLGLYCINE DECARBOXYLASE

Chain A: 



4 Data and refinement statistics

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

Property	Value	Source
Space group	P 64 2 2	Depositor
Cell constants a, b, c, α , β , γ	153.50Å 153.50Å 86.60Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	8.00 – 2.80	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-2.80)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	TNT	Depositor
R, R_{free}	0.195 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	3370	wwPDB-VP
Average B, all atoms (Å ²)	23.0	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: MES, RB, PLP

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	1.20	3/3304 (0.1%)	1.66	50/4471 (1.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	11	ARG	NE-CZ	5.82	1.39	1.33
1	A	260	ARG	NE-CZ	5.17	1.38	1.33
1	A	220	GLU	CD-OE1	5.04	1.34	1.25

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	180	ASN	CA-CB-CG	-11.60	101.00	112.60
1	A	320	VAL	N-CA-CB	8.86	120.91	110.55
1	A	167	ILE	N-CA-CB	8.57	118.95	111.67
1	A	323	ARG	N-CA-CB	8.12	122.16	109.82
1	A	103	ASP	N-CA-C	7.40	122.76	113.43
1	A	182	ALA	N-CA-C	7.06	119.20	109.18
1	A	100	PRO	CA-C-N	-7.05	115.19	123.08
1	A	100	PRO	C-N-CA	-7.05	115.19	123.08
1	A	188	GLU	N-CA-C	-6.92	103.82	111.36
1	A	304	HIS	N-CA-C	6.63	121.08	112.92
1	A	283	ILE	N-CA-CB	6.49	122.08	111.44
1	A	5	ASP	N-CA-C	6.37	120.65	113.01
1	A	413	VAL	CB-CA-C	-6.33	101.00	111.32
1	A	349	ASP	CA-CB-CG	6.00	118.60	112.60
1	A	402	GLY	N-CA-C	-5.88	103.60	112.89
1	A	214	SER	N-CA-C	5.87	117.55	111.03
1	A	70	GLU	CB-CA-C	-5.68	99.43	110.46
1	A	178	GLU	N-CA-C	5.63	118.27	108.76

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	225	TYR	N-CA-C	5.63	117.28	111.03
1	A	354	VAL	N-CA-CB	5.50	119.14	112.10
1	A	101	GLY	N-CA-C	-5.47	107.97	114.48
1	A	71	TYR	N-CA-C	5.44	120.05	113.41
1	A	210	GLU	N-CA-C	-5.42	103.24	110.07
1	A	11	ARG	CD-NE-CZ	5.41	131.97	124.40
1	A	174	ARG	CA-C-N	5.38	125.38	119.90
1	A	174	ARG	C-N-CA	5.38	125.38	119.90
1	A	11	ARG	N-CA-C	-5.37	105.07	111.03
1	A	271	SER	N-CA-CB	-5.32	101.49	110.49
1	A	223	ASP	N-CA-C	5.32	118.02	110.10
1	A	368	ASP	CA-CB-CG	-5.30	107.30	112.60
1	A	335	ASP	CA-CB-CG	5.28	117.88	112.60
1	A	123	LYS	N-CA-CB	5.27	117.96	110.16
1	A	115	ASN	N-CA-CB	5.27	118.33	110.22
1	A	26	PRO	CB-CA-C	-5.24	105.48	112.97
1	A	85	ARG	N-CA-C	5.23	119.87	112.75
1	A	137	SER	CA-C-N	5.22	130.01	122.44
1	A	137	SER	C-N-CA	5.22	130.01	122.44
1	A	320	VAL	N-CA-C	5.21	115.42	110.42
1	A	75	LEU	CA-C-N	-5.21	116.25	122.44
1	A	75	LEU	C-N-CA	-5.21	116.25	122.44
1	A	180	ASN	N-CA-C	5.19	118.49	111.17
1	A	80	SER	N-CA-C	5.19	121.86	110.80
1	A	282	ALA	N-CA-CB	-5.17	103.50	111.46
1	A	109	SER	N-CA-C	5.14	119.52	112.68
1	A	175	PRO	CB-CA-C	-5.13	105.04	111.56
1	A	208	ILE	CA-CB-CG2	5.11	119.19	110.50
1	A	154	ARG	N-CA-C	5.03	119.13	112.89
1	A	7	ALA	N-CA-C	5.01	117.47	111.71
1	A	221	LEU	CA-C-N	5.00	125.72	120.11
1	A	221	LEU	C-N-CA	5.00	125.72	120.11

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	3247	0	3274	102	0
2	A	2	0	0	0	0
3	A	15	0	6	1	0
4	A	12	0	13	2	0
5	A	94	0	0	2	0
All	All	3370	0	3293	103	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 16.

All (103) 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:27:MET:HE2	1:A:29:ILE:HD11	1.45	0.97
1:A:141:MET:HA	1:A:141:MET:HE2	1.53	0.90
1:A:226:MET:HE3	1:A:226:MET:HA	1.57	0.86
1:A:27:MET:HE1	1:A:45:ILE:HD13	1.58	0.85
1:A:208:ILE:HD12	1:A:208:ILE:H	1.41	0.84
1:A:3:LEU:HD12	1:A:4:ASN:H	1.42	0.83
1:A:27:MET:HE1	1:A:45:ILE:CD1	2.09	0.82
1:A:309:LEU:HB3	1:A:310:PRO:HD3	1.63	0.80
1:A:340:GLY:HA3	1:A:422:LEU:HD21	1.64	0.79
1:A:87:VAL:HG13	1:A:107:LEU:HD12	1.66	0.76
1:A:27:MET:HE2	1:A:29:ILE:CD1	2.16	0.76
1:A:38:TYR:CE1	1:A:44:ALA:HB2	2.21	0.75
1:A:141:MET:HA	1:A:141:MET:CE	2.18	0.74
1:A:410:PRO:O	1:A:413:VAL:HG22	1.88	0.73
1:A:171:PHE:CZ	1:A:173:TYR:HB3	2.24	0.73
1:A:64:ILE:O	1:A:68:ILE:HG13	1.94	0.68
1:A:226:MET:HA	1:A:226:MET:CE	2.24	0.67
1:A:93:ARG:NH2	1:A:319:ASP:OD1	2.28	0.66
1:A:123:LYS:HD3	1:A:129:TYR:HA	1.82	0.62
1:A:122:ALA:HB2	1:A:239:LEU:HD12	1.82	0.62
1:A:52:GLN:C	1:A:53:MET:HG2	2.26	0.61
1:A:61:HIS:HE1	1:A:63:GLU:HG3	1.65	0.60
1:A:128:LYS:HD3	1:A:203:ASN:HA	1.83	0.60
1:A:171:PHE:CE1	1:A:173:TYR:HB3	2.35	0.60
1:A:61:HIS:CE1	1:A:63:GLU:HG3	2.37	0.60
1:A:409:PRO:HB2	1:A:413:VAL:HG11	1.85	0.59
1:A:375:ALA:N	5:A:564:HOH:O	2.32	0.59
1:A:406:ARG:HH22	4:A:434:MES:H72	1.68	0.58
1:A:38:TYR:HE1	1:A:44:ALA:HB2	1.65	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:226:MET:HE2	1:A:229:LEU:HD23	1.84	0.58
1:A:197:ASP:CG	1:A:236:ARG:HE	2.13	0.57
1:A:27:MET:HE1	1:A:45:ILE:HD11	1.87	0.56
1:A:90:LEU:O	1:A:90:LEU:HD22	2.06	0.55
1:A:208:ILE:HD12	1:A:208:ILE:N	2.15	0.55
1:A:280:LEU:HG	1:A:281:ALA:N	2.22	0.54
1:A:337:LEU:HD13	1:A:361:LEU:HD23	1.88	0.54
1:A:105:ALA:HA	1:A:283:ILE:O	2.08	0.54
1:A:3:LEU:HD13	1:A:41:ASP:OD2	2.07	0.54
1:A:111:GLY:HA2	1:A:271:SER:OG	2.09	0.53
1:A:201:SER:OG	1:A:203:ASN:ND2	2.40	0.53
1:A:374:PRO:HB3	1:A:402:GLY:HA2	1.91	0.53
1:A:179:ARG:HB2	1:A:184:ASP:CB	2.39	0.53
1:A:425:LEU:HD22	1:A:425:LEU:O	2.10	0.52
1:A:45:ILE:HG21	1:A:387:MET:HE1	1.91	0.52
1:A:3:LEU:CD1	1:A:4:ASN:H	2.19	0.51
1:A:365:ILE:HG22	1:A:375:ALA:HB3	1.91	0.51
1:A:63:GLU:CD	1:A:323:ARG:HH22	2.19	0.50
1:A:369:ARG:O	1:A:372:LYS:HG3	2.11	0.50
1:A:221:LEU:HD13	1:A:225:TYR:CD2	2.48	0.49
1:A:122:ALA:CB	1:A:239:LEU:HD12	2.42	0.49
1:A:173:TYR:OH	1:A:372:LYS:HG2	2.12	0.49
1:A:378:LEU:O	1:A:381:LYS:HB2	2.13	0.49
1:A:197:ASP:OD2	1:A:236:ARG:NH2	2.43	0.48
1:A:329:ARG:NH1	1:A:333:MET:HE3	2.28	0.48
1:A:63:GLU:OE2	1:A:323:ARG:NH2	2.46	0.48
1:A:22:GLY:C	1:A:23:THR:HG22	2.39	0.48
1:A:330:ALA:HA	1:A:359:LEU:HD22	1.95	0.48
1:A:179:ARG:HB2	1:A:184:ASP:HB2	1.95	0.48
1:A:420:LEU:O	1:A:423:SER:HB2	2.13	0.48
1:A:226:MET:HE3	1:A:226:MET:CA	2.36	0.47
1:A:128:LYS:HB3	1:A:203:ASN:HB3	1.96	0.47
1:A:123:LYS:CD	1:A:129:TYR:HA	2.43	0.47
1:A:170:PRO:HG2	1:A:222:PRO:CD	2.44	0.47
1:A:75:LEU:HD22	1:A:308:PRO:HG3	1.96	0.47
1:A:103:ASP:C	1:A:104:ARG:HG2	2.23	0.47
1:A:221:LEU:HD13	1:A:225:TYR:HD2	1.80	0.47
1:A:355:ARG:HH22	1:A:401:MET:HE1	1.79	0.46
1:A:61:HIS:CE1	1:A:63:GLU:CG	2.99	0.46
1:A:395:ILE:HD11	1:A:403:GLY:HA3	1.98	0.46
1:A:292:ARG:CD	1:A:296:LEU:HD22	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:PRO:HB2	1:A:222:PRO:HG3	1.98	0.45
1:A:251:ARG:O	1:A:251:ARG:HG3	2.16	0.45
1:A:170:PRO:HG2	1:A:222:PRO:HD3	1.98	0.45
4:A:434:MES:H31	4:A:434:MES:H81	1.50	0.45
1:A:138:TRP:HA	1:A:149:THR:HG23	1.99	0.45
1:A:393:MET:HE3	1:A:405:PHE:CD1	2.51	0.45
1:A:398:LEU:HB3	1:A:399:PRO:HD2	1.99	0.45
1:A:334:GLY:HA2	1:A:359:LEU:CD1	2.47	0.44
1:A:53:MET:HE3	1:A:53:MET:HB3	1.85	0.44
1:A:316:ARG:O	1:A:320:VAL:HG13	2.18	0.43
1:A:245:ALA:O	1:A:272:LYS:HB2	2.18	0.43
1:A:350:CYS:HA	1:A:366:VAL:O	2.18	0.43
1:A:213:LEU:HB2	1:A:219:ILE:HB	2.01	0.43
1:A:309:LEU:HB3	1:A:310:PRO:CD	2.41	0.43
1:A:194:ASP:O	1:A:198:ARG:HG2	2.18	0.42
1:A:230:LYS:O	1:A:230:LYS:HG3	2.19	0.42
1:A:323:ARG:NH1	1:A:324:ASP:OD1	2.51	0.42
1:A:344:LEU:HD12	1:A:344:LEU:HA	1.60	0.42
1:A:38:TYR:CE1	1:A:44:ALA:CB	2.99	0.41
1:A:250:GLY:HA3	1:A:327:VAL:HG22	2.02	0.41
1:A:155:LYS:HA	5:A:572:HOH:O	2.19	0.41
1:A:57:LEU:HD12	1:A:64:ILE:HD11	2.02	0.41
1:A:61:HIS:HE1	1:A:63:GLU:CG	2.30	0.41
1:A:93:ARG:O	1:A:97:ILE:HG12	2.21	0.41
1:A:425:LEU:O	1:A:429:ILE:HG13	2.20	0.41
1:A:189:LEU:O	1:A:189:LEU:HD22	2.21	0.41
1:A:138:TRP:O	3:A:437:PLP:H2A3	2.20	0.41
1:A:251:ARG:HD3	1:A:360:LEU:HB2	2.02	0.41
1:A:27:MET:HE3	1:A:39:ASP:HB3	2.03	0.40
1:A:76:ASP:CG	1:A:77:HIS:H	2.28	0.40
1:A:409:PRO:HB2	1:A:413:VAL:CG1	2.51	0.40
1:A:130:GLU:HB2	1:A:204:LEU:HA	2.04	0.40
1:A:250:GLY:CA	1:A:327:VAL:HG22	2.51	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	429/432 (99%)	391 (91%)	33 (8%)	5 (1%)	10	34

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	6	ASP
1	A	55	ALA
1	A	143	GLY
1	A	80	SER
1	A	271	SER

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	333/334 (100%)	275 (83%)	58 (17%)	2	7

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LEU
1	A	11	ARG
1	A	23	THR
1	A	25	GLU
1	A	33	LYS
1	A	35	SER

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Mol	Chain	Res	Type
1	A	48	PHE
1	A	53	MET
1	A	56	VAL
1	A	67	VAL
1	A	90	LEU
1	A	93	ARG
1	A	104	ARG
1	A	109	SER
1	A	120	ARG
1	A	123	LYS
1	A	136	GLN
1	A	141	MET
1	A	162	VAL
1	A	179	ARG
1	A	180	ASN
1	A	186	LEU
1	A	189	LEU
1	A	195	LEU
1	A	199	GLN
1	A	208	ILE
1	A	214	SER
1	A	223	ASP
1	A	226	MET
1	A	264	THR
1	A	268	LEU
1	A	271	SER
1	A	278	LEU
1	A	292	ARG
1	A	296	LEU
1	A	309	LEU
1	A	320	VAL
1	A	322	GLN
1	A	333	MET
1	A	337	LEU
1	A	344	LEU
1	A	354	VAL
1	A	357	ARG
1	A	359	LEU
1	A	361	LEU
1	A	366	VAL
1	A	370	ARG
1	A	371	THR

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Mol	Chain	Res	Type
1	A	376	ASP
1	A	391	LEU
1	A	413	VAL
1	A	415	GLU
1	A	416	ASP
1	A	418	ILE
1	A	422	LEU
1	A	425	LEU
1	A	431	ARG
1	A	433	LEU

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	16	HIS
1	A	136	GLN
1	A	259	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 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	PLP	A	437	1	15,15,16	1.57	3 (20%)	21,22,23	2.81	8 (38%)
4	MES	A	434	-	12,12,12	0.90	0	15,16,16	1.42	3 (20%)

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
3	PLP	A	437	1	-	0/6/6/8	0/1/1/1
4	MES	A	434	-	-	3/6/14/14	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	437	PLP	C5-C4	3.43	1.44	1.40
3	A	437	PLP	C4A-C4	-3.16	1.45	1.51
3	A	437	PLP	P-O2P	-2.45	1.45	1.54

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	437	PLP	C2A-C2-C3	6.46	128.36	120.80
3	A	437	PLP	O4P-C5A-C5	5.47	119.61	109.36
3	A	437	PLP	C3-C2-N1	-4.37	115.45	120.96
3	A	437	PLP	C6-N1-C2	4.22	126.85	119.20
3	A	437	PLP	C6-C5-C4	3.70	121.13	118.10
3	A	437	PLP	C5-C6-N1	-3.50	118.14	123.83
3	A	437	PLP	C5A-C5-C6	-3.43	113.76	119.36
4	A	434	MES	O1-C2-C3	-2.55	106.27	111.77
3	A	437	PLP	O3-C3-C4	2.35	124.24	118.10
4	A	434	MES	C7-N4-C3	-2.14	105.54	111.24
4	A	434	MES	O3S-S-O2S	2.09	116.63	111.40

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	434	MES	C8-C7-N4-C3
4	A	434	MES	C8-C7-N4-C5
4	A	434	MES	N4-C7-C8-S

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	437	PLP	1	0
4	A	434	MES	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.