



Full wwPDB X-ray Structure Validation Report ⓘ

May 27, 2020 – 12:43 am BST

PDB ID : 3DXV
Title : The crystal structure of alpha-amino-epsilon-caprolactam racemase from *Achromobacter obae*
Authors : Okazaki, S.; Suzuki, A.; Komeda, H.; Asano, Y.; Yamane, T.
Deposited on : 2008-07-25
Resolution : 2.21 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

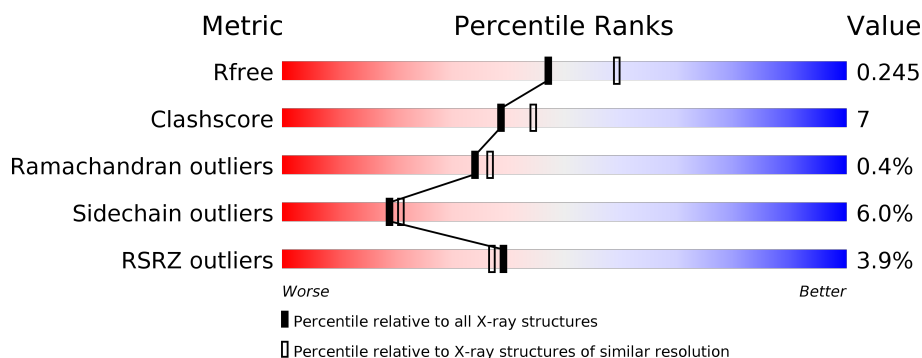
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.21 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}	130704	5912 (2.24-2.20)
Clashscore	141614	6646 (2.24-2.20)
Ramachandran outliers	138981	6543 (2.24-2.20)
Sidechain outliers	138945	6544 (2.24-2.20)
RSRZ outliers	127900	5797 (2.24-2.20)

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 on 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	439	
1	B	439	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 6486 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.

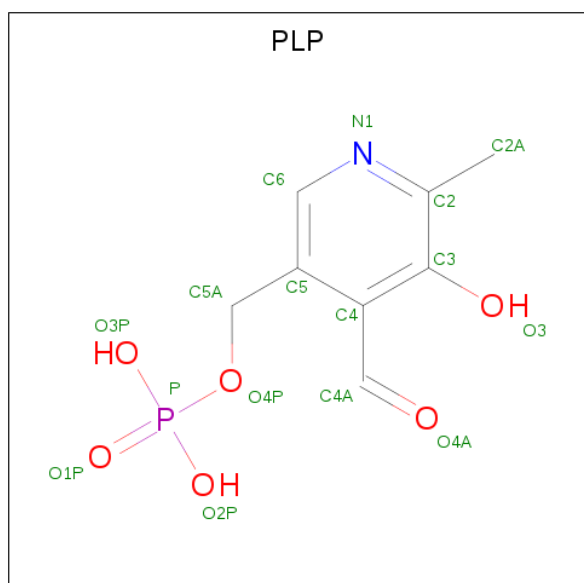
- Molecule 1 is a protein called Alpha-amino-epsilon-caprolactam racemase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	422	Total	C	N	O	S	0	2	0
			3133	1990	552	579	12			
1	B	434	Total	C	N	O	S	0	0	0
			3203	2028	567	596	12			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	EXPRESSION TAG	UNP Q7M181
A	-1	SER	-	EXPRESSION TAG	UNP Q7M181
A	0	HIS	-	EXPRESSION TAG	UNP Q7M181
B	-2	GLY	-	EXPRESSION TAG	UNP Q7M181
B	-1	SER	-	EXPRESSION TAG	UNP Q7M181
B	0	HIS	-	EXPRESSION TAG	UNP Q7M181

- Molecule 2 is PYRIDOXAL-5'-PHOSPHATE (three-letter code: PLP) (formula: C₈H₁₀NO₆P).



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

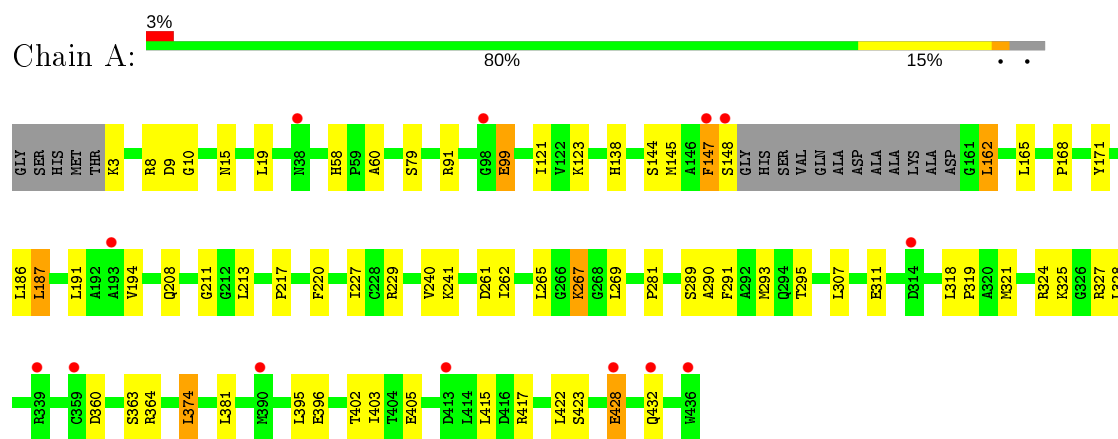
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	66	Total	O	0	0
			66	66		
3	B	54	Total	O	0	0
			54	54		

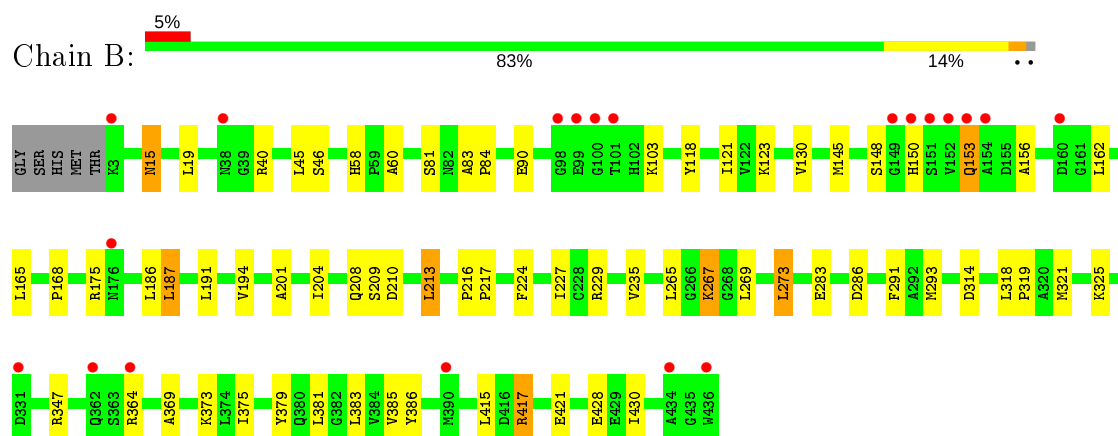
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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: Alpha-amino-epsilon-caprolactam racemase



- Molecule 1: Alpha-amino-epsilon-caprolactam racemase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	56.55Å 61.06Å 105.23Å 90.00° 103.22° 90.00°	Depositor
Resolution (Å)	19.96 – 2.21 19.96 – 2.21	Depositor EDS
% Data completeness (in resolution range)	99.6 (19.96-2.21) 99.6 (19.96-2.21)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.35 (at 2.21Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.197 , 0.245 0.197 , 0.245	Depositor DCC
R_{free} test set	1765 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	29.7	Xtriage
Anisotropy	0.056	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 34.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.017 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	6486	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.83% 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: 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	0.55	2/3197 (0.1%)	0.88	2/4338 (0.0%)
1	B	0.44	0/3268	0.62	1/4436 (0.0%)
All	All	0.50	2/6465 (0.0%)	0.76	3/8774 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	147[A]	PHE	C-N	12.19	1.62	1.34
1	A	147[B]	PHE	C-N	12.19	1.62	1.34

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	147[A]	PHE	O-C-N	-28.52	77.08	122.70
1	A	147[B]	PHE	O-C-N	-28.52	77.08	122.70
1	B	273	LEU	CA-CB-CG	7.25	131.97	115.30

There are no chirality outliers.

There are no planarity outliers.

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	3133	0	3143	48	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	3203	0	3208	57	0
2	A	15	0	6	1	0
2	B	15	0	6	1	0
3	A	66	0	0	0	0
3	B	54	0	0	0	0
All	All	6486	0	6363	95	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 7.

All (95) 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:168:PRO:HB2	1:B:217:PRO:HD2	1.38	1.05
1:B:168:PRO:HB2	1:B:217:PRO:CD	1.88	1.02
1:B:204:ILE:HD11	1:B:224:PHE:HE1	1.32	0.93
1:A:99:GLU:H	1:A:99:GLU:CD	1.72	0.91
1:B:168:PRO:O	1:B:217:PRO:HD3	1.78	0.83
1:B:145:MET:HE1	1:B:156:ALA:HB2	1.63	0.80
1:B:204:ILE:HD11	1:B:224:PHE:CE1	2.17	0.79
1:A:3:LYS:HE3	1:A:8:ARG:HG2	1.68	0.74
1:B:373:LYS:HG2	1:B:430:ILE:CD1	2.18	0.73
1:B:145:MET:HE3	1:B:153:GLN:HA	1.72	0.72
1:B:40:ARG:NH1	1:B:379:TYR:O	2.24	0.71
1:A:374:LEU:HD23	1:A:422:LEU:HD21	1.72	0.70
1:B:168:PRO:HB2	1:B:217:PRO:HD3	1.75	0.69
1:A:321:MET:HG2	1:A:324:ARG:HH22	1.58	0.69
1:B:145:MET:CE	1:B:153:GLN:HA	2.25	0.66
1:A:360:ASP:HB3	1:A:363:SER:OG	1.96	0.66
1:B:417:ARG:NH1	1:B:421:GLU:OE2	2.29	0.66
1:B:145:MET:CE	1:B:156:ALA:HB2	2.25	0.64
1:A:168:PRO:HB2	1:A:217:PRO:HD2	1.79	0.64
1:A:91:ARG:HH12	1:A:311:GLU:HG3	1.63	0.64
1:B:165:LEU:HD11	1:B:187:LEU:HG	1.81	0.63
1:A:99:GLU:CD	1:A:99:GLU:N	2.48	0.61
1:A:58:HIS:HD2	1:A:60:ALA:H	1.46	0.61
1:A:289:SER:HB3	1:B:15:ASN:HD22	1.66	0.60
1:B:283:GLU:H	1:B:283:GLU:CD	2.05	0.60
1:B:373:LYS:HG2	1:B:430:ILE:HD11	1.83	0.60
1:B:148:SER:HB3	1:B:153:GLN:HG3	1.85	0.59
1:A:138:HIS:HB2	1:A:148[B]:SER:HB2	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:168:PRO:HG3	1:A:220:PHE:CD2	2.38	0.59
1:B:369:ALA:O	1:B:373:LYS:HG3	2.04	0.58
1:A:123:LYS:HG3	1:A:291:PHE:CE1	2.40	0.57
1:B:417:ARG:CG	1:B:417:ARG:HH11	2.16	0.57
1:A:58:HIS:CD2	1:A:60:ALA:H	2.23	0.57
1:A:165:LEU:HD11	1:A:187:LEU:HG	1.87	0.57
1:A:240:VAL:HG12	1:A:267:LYS:HE2	1.87	0.56
1:B:168:PRO:CB	1:B:217:PRO:HD2	2.27	0.53
1:A:325:LYS:NZ	1:A:403:ILE:O	2.36	0.52
1:A:91:ARG:NH1	1:A:311:GLU:HG3	2.24	0.51
1:A:328:LEU:HD21	1:A:405:GLU:HG3	1.91	0.51
1:B:145:MET:CE	1:B:156:ALA:CB	2.89	0.51
1:A:187:LEU:HD13	1:A:227:ILE:HG21	1.93	0.50
1:A:213:LEU:HD21	1:A:396:GLU:HG3	1.94	0.50
1:B:267:LYS:NZ	2:B:450:PLP:O3	2.43	0.50
1:A:374:LEU:CD1	1:A:395:LEU:HD11	2.41	0.49
1:A:168:PRO:HB2	1:A:217:PRO:CD	2.42	0.49
1:A:374:LEU:HD12	1:A:395:LEU:HD11	1.95	0.49
1:B:168:PRO:HG2	1:B:216:PRO:HB3	1.95	0.49
1:A:147[A]:PHE:HD2	1:A:162:LEU:HG	1.77	0.48
1:A:19:LEU:HB2	1:B:293:MET:HE1	1.95	0.48
1:B:417:ARG:HG2	1:B:417:ARG:HH11	1.78	0.48
1:A:10:GLY:O	1:B:103:LYS:NZ	2.43	0.48
1:B:187:LEU:HD13	1:B:227:ILE:HG21	1.94	0.48
1:A:145:MET:HA	1:A:148[B]:SER:HB3	1.95	0.48
1:B:150:HIS:NE2	1:B:210:ASP:HB3	2.29	0.48
1:B:118:TYR:CE1	1:B:130:VAL:HG22	2.49	0.47
1:A:295:THR:OG1	1:B:267:LYS:HE3	2.14	0.47
1:B:417:ARG:HG2	1:B:417:ARG:NH1	2.30	0.46
1:B:58:HIS:HD2	1:B:60:ALA:H	1.63	0.46
1:A:289:SER:HB3	1:B:15:ASN:ND2	2.31	0.46
1:B:321:MET:CE	1:B:325:LYS:HE3	2.46	0.45
1:B:121:ILE:HD13	1:B:201:ALA:HB2	1.99	0.45
1:B:145:MET:HE2	1:B:156:ALA:CB	2.46	0.45
1:A:168:PRO:O	1:A:217:PRO:CD	2.65	0.45
1:A:241:LYS:HB2	2:A:450:PLP:O3	2.16	0.45
1:A:208:GLN:OE1	1:A:211:GLY:HA3	2.18	0.44
1:A:318:LEU:N	1:A:319:PRO:CD	2.81	0.44
1:A:171:TYR:CZ	1:A:364:ARG:HG2	2.51	0.44
1:B:123:LYS:HG3	1:B:291:PHE:CZ	2.52	0.44
1:A:9:ASP:HB2	1:B:81:SER:OG	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:ILE:HG22	1:B:385:VAL:HG13	1.98	0.44
1:A:290:ALA:HA	1:A:293:MET:CE	2.47	0.44
1:A:321:MET:HG2	1:A:324:ARG:NH2	2.29	0.44
1:B:45:LEU:HG	1:B:383:LEU:HD11	2.00	0.43
1:B:153:GLN:H	1:B:153:GLN:HG2	1.65	0.43
1:B:83:ALA:HB3	1:B:84:PRO:HD3	2.00	0.43
1:A:168:PRO:O	1:A:217:PRO:HD2	2.18	0.43
1:B:417:ARG:CG	1:B:417:ARG:NH1	2.79	0.43
1:B:145:MET:HE2	1:B:156:ALA:HB3	2.02	0.42
1:A:79:SER:HB2	1:B:386:TYR:CZ	2.54	0.42
1:B:318:LEU:N	1:B:319:PRO:CD	2.83	0.42
1:B:373:LYS:HA	1:B:430:ILE:HD11	2.02	0.42
1:B:145:MET:HG2	1:B:153:GLN:HB3	2.01	0.42
1:A:121:ILE:HD11	1:A:262:ILE:HD12	2.01	0.41
1:A:15:ASN:HB2	1:B:286:ASP:HA	2.02	0.41
1:A:8:ARG:HD2	1:B:90:GLU:OE2	2.21	0.41
1:A:208:GLN:O	1:A:213:LEU:HA	2.20	0.41
1:B:46:SER:HG	1:B:386:TYR:HD1	1.67	0.41
1:A:293:MET:HE1	1:B:19:LEU:HB2	2.03	0.41
1:B:204:ILE:HD13	1:B:235:VAL:HG13	2.02	0.41
1:A:144:SER:O	1:A:148[B]:SER:HB3	2.21	0.41
1:B:118:TYR:HE1	1:B:130:VAL:HG22	1.85	0.41
1:A:428:GLU:O	1:A:432:GLN:HG2	2.21	0.41
1:A:261:ASP:O	1:A:281:PRO:HD3	2.21	0.40
1:B:213:LEU:O	1:B:347:ARG:HD2	2.22	0.40
1:B:58:HIS:CD2	1:B:60:ALA:H	2.39	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	419/439 (95%)	399 (95%)	19 (4%)	1 (0%)	47	54
1	B	432/439 (98%)	417 (96%)	13 (3%)	2 (0%)	29	30
All	All	851/878 (97%)	816 (96%)	32 (4%)	3 (0%)	34	37

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	267	LYS
1	B	209	SER
1	B	267	LYS

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	312/322 (97%)	294 (94%)	18 (6%)	20	22
1	B	318/322 (99%)	298 (94%)	20 (6%)	18	19
All	All	630/644 (98%)	592 (94%)	38 (6%)	19	21

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	99	GLU
1	A	162	LEU
1	A	186	LEU
1	A	187	LEU
1	A	191	LEU
1	A	194	VAL
1	A	229	ARG
1	A	265	LEU
1	A	269	LEU
1	A	307	LEU
1	A	327	ARG
1	A	374	LEU
1	A	381	LEU

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Mol	Chain	Res	Type
1	A	402	THR
1	A	415	LEU
1	A	417	ARG
1	A	423	SER
1	A	428	GLU
1	B	15	ASN
1	B	153	GLN
1	B	162	LEU
1	B	175	ARG
1	B	186	LEU
1	B	187	LEU
1	B	191	LEU
1	B	194	VAL
1	B	208	GLN
1	B	213	LEU
1	B	229	ARG
1	B	265	LEU
1	B	269	LEU
1	B	273	LEU
1	B	314	ASP
1	B	364	ARG
1	B	381	LEU
1	B	415	LEU
1	B	417	ARG
1	B	428	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	58	HIS
1	A	231	HIS
1	A	294	GLN
1	B	15	ASN
1	B	58	HIS
1	B	294	GLN

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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

2 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	PLP	A	450	1	15,15,16	1.84	2 (13%)	20,22,23	2.04	6 (30%)
2	PLP	B	450	1	15,15,16	1.90	2 (13%)	20,22,23	1.51	1 (5%)

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	PLP	A	450	1	-	0/6/6/8	0/1/1/1
2	PLP	B	450	1	-	0/6/6/8	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	450	PLP	O3-C3	-5.93	1.23	1.37
2	A	450	PLP	O3-C3	-5.56	1.24	1.37
2	A	450	PLP	C2-N1	2.68	1.38	1.33
2	B	450	PLP	C2-N1	2.34	1.38	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	450	PLP	O4P-C5A-C5	5.35	119.55	109.35
2	B	450	PLP	O4P-C5A-C5	4.80	118.49	109.35
2	A	450	PLP	C6-C5-C4	4.06	121.36	118.16
2	A	450	PLP	C4A-C4-C5	-3.28	117.56	120.94
2	A	450	PLP	C5-C6-N1	-2.38	119.86	123.82
2	A	450	PLP	C4A-C4-C3	2.32	124.43	120.50
2	A	450	PLP	O3P-P-O4P	-2.01	101.38	106.73

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	450	PLP	1	0
2	B	450	PLP	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	422/439 (96%)	-0.02	13 (3%) 49 46	13, 28, 44, 54	2 (0%)
1	B	434/439 (98%)	0.03	20 (4%) 32 30	17, 30, 45, 54	2 (0%)
All	All	856/878 (97%)	0.01	33 (3%) 39 37	13, 29, 44, 54	4 (0%)

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	148[B]	SER	3.9
1	B	150	HIS	3.5
1	B	99	GLU	3.3
1	A	147[A]	PHE	3.2
1	B	362	GLN	3.1
1	B	98	GLY	3.1
1	B	176	ASN	3.0
1	B	390	MET	3.0
1	A	432	GLN	2.7
1	A	390	MET	2.7
1	A	98	GLY	2.7
1	B	3	LYS	2.6
1	B	160	ASP	2.6
1	A	339	ARG	2.5
1	A	359	CYS	2.5
1	B	149	GLY	2.4
1	B	364	ARG	2.4
1	B	38	ASN	2.4
1	A	413	ASP	2.4
1	B	101	THR	2.4
1	B	152	VAL	2.3
1	B	436	TRP	2.3
1	B	153	GLN	2.3
1	A	193	ALA	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	436	TRP	2.2
1	B	151	SER	2.2
1	A	314	ASP	2.1
1	A	428	GLU	2.1
1	B	434	ALA	2.1
1	A	38	ASN	2.0
1	B	331	ASP	2.0
1	B	100	GLY	2.0
1	B	154	ALA	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 carbohydrates 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(\AA^2)	Q<0.9
2	PLP	A	450	15/16	0.98	0.07	20,21,22,22	0
2	PLP	B	450	15/16	0.98	0.09	17,23,24,24	0

6.5 Other polymers [i](#)

There are no such residues in this entry.