Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2025 – 06:13 PM EDT

PDB ID	:	2YXX
Title	:	Crystal structure analysis of Diaminopimelate decarboxylate (lysA)
Authors	:	Nakamura, Y.; Bessho, Y.; Padmanabhan, B.; Yokoyama, S.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)
Deposited on	:	2007-04-27
Resolution	:	1.70 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:

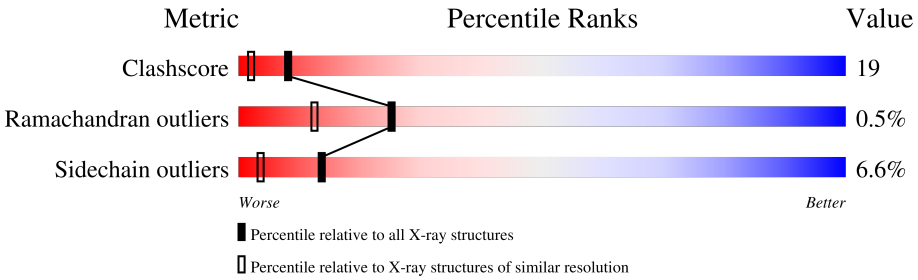
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.4

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.70 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	180529	5671 (1.70-1.70)
Ramachandran outliers	177936	5594 (1.70-1.70)
Sidechain outliers	177891	5594 (1.70-1.70)

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 <=5%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	386	71% 23% 5%

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
2	PLP	A	401	-	-	X	-

2 Entry composition

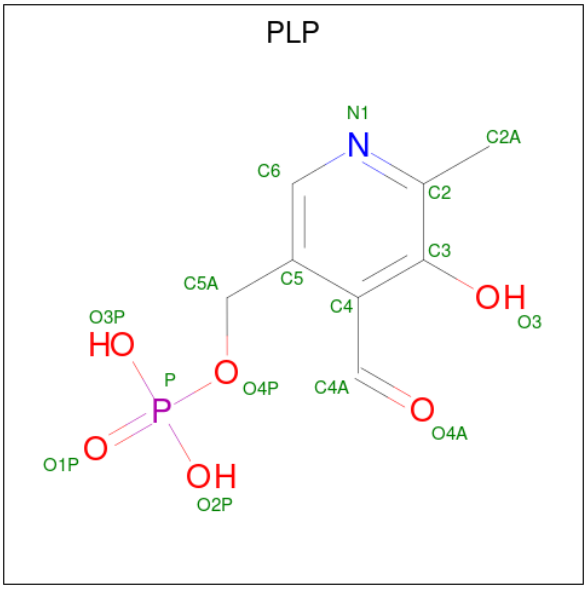
There are 3 unique types of molecules in this entry. The entry contains 3349 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Diaminopimelate decarboxylase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	385	3091	1967	550	563	1	10	0	0	0

- Molecule 2 is PYRIDOXAL-5'-PHOSPHATE (three-letter code: PLP) (formula: $C_8H_{10}NO_6P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	16	8	1	6	1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	242	242	242	0	0

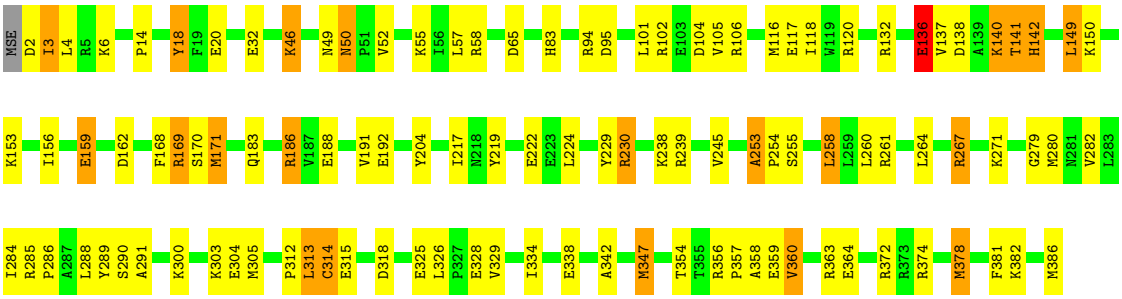
3 Residue-property plots (i)

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: Diaminopimelate decarboxylase

Chain A:



4 Data and refinement statistics (i)

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

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	87.82Å 98.28Å 109.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.96 – 1.70	Depositor
% Data completeness (in resolution range)	98.1 (19.96-1.70)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.189 , 0.220	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	3349	wwPDB-VP
Average B, all atoms (Å^2)	20.0	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: 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	1.39	15/3143 (0.5%)	1.24	16/4227 (0.4%)

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	378	MSE	CG-SE	14.86	2.46	1.95
1	A	378	MSE	SE-CE	9.52	2.51	1.95
1	A	338	GLU	CB-CG	-8.43	1.36	1.52
1	A	136	GLU	CG-CD	7.77	1.63	1.51
1	A	314	CYS	CB-SG	-6.45	1.71	1.82
1	A	55	LYS	CE-NZ	6.22	1.64	1.49
1	A	253	ALA	CA-CB	6.16	1.65	1.52
1	A	18	TYR	CG-CD2	6.00	1.47	1.39
1	A	32	GLU	CD-OE1	5.82	1.32	1.25
1	A	342	ALA	CA-CB	5.53	1.64	1.52
1	A	156	ILE	CB-CG2	5.46	1.69	1.52
1	A	338	GLU	CG-CD	5.44	1.60	1.51
1	A	95	ASP	CB-CG	5.42	1.63	1.51
1	A	245	VAL	CB-CG2	5.35	1.64	1.52
1	A	245	VAL	CB-CG1	-5.00	1.42	1.52

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	378	MSE	CB-CG-SE	-9.16	85.21	112.70
1	A	58	ARG	NE-CZ-NH2	-9.07	115.76	120.30
1	A	360	VAL	CG1-CB-CG2	8.06	123.80	110.90
1	A	347	MSE	CG-SE-CE	-7.52	82.36	98.90
1	A	171	MSE	CG-SE-CE	-5.95	85.82	98.90
1	A	169	ARG	NE-CZ-NH1	-5.70	117.45	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	46	LYS	CD-CE-NZ	-5.59	98.83	111.70
1	A	132	ARG	NE-CZ-NH2	-5.55	117.53	120.30
1	A	363	ARG	NE-CZ-NH1	5.48	123.04	120.30
1	A	381	PHE	CB-CG-CD2	-5.41	117.01	120.80
1	A	149	LEU	CA-CB-CG	5.38	127.67	115.30
1	A	230	ARG	NE-CZ-NH2	-5.35	117.62	120.30
1	A	95	ASP	CB-CG-OD2	5.33	123.10	118.30
1	A	229	TYR	CB-CG-CD1	-5.15	117.91	121.00
1	A	57	LEU	CB-CG-CD1	-5.05	102.41	111.00
1	A	58	ARG	NE-CZ-NH1	5.05	122.83	120.30

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	3091	0	3116	118	1
2	A	16	0	8	7	0
3	A	242	0	0	17	0
All	All	3349	0	3124	119	1

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 19.

All (119) 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:238:LYS:HE3	3:A:448:HOH:O	1.37	1.25
1:A:378:MSE:SE	1:A:378:MSE:CG	2.46	1.14
1:A:120:ARG:NH1	1:A:171:MSE:HE2	1.67	1.09
1:A:378:MSE:SE	1:A:378:MSE:CE	2.51	1.08
1:A:120:ARG:HH11	1:A:171:MSE:HE2	1.22	1.01
1:A:168:PHE:HD1	1:A:171:MSE:HE1	1.26	0.99
1:A:168:PHE:CD1	1:A:171:MSE:HE1	2.01	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:359:GLU:OE1	1:A:372:ARG:HD2	1.66	0.93
1:A:285:ARG:HH12	1:A:291:ALA:HB3	1.32	0.93
1:A:120:ARG:HH11	1:A:171:MSE:CE	1.82	0.92
1:A:46:LYS:HZ1	2:A:401:PLP:C4A	1.84	0.90
1:A:46:LYS:NZ	2:A:401:PLP:O4A	2.05	0.90
1:A:46:LYS:NZ	2:A:401:PLP:C4A	2.37	0.88
1:A:140:LYS:O	1:A:141:THR:HG23	1.74	0.88
1:A:267:ARG:HG3	1:A:267:ARG:HH11	1.39	0.88
1:A:136:GLU:H	1:A:136:GLU:CD	1.79	0.85
1:A:2:ASP:OD2	1:A:6:LYS:HE3	1.78	0.84
1:A:183:GLN:HE22	1:A:217:ILE:H	1.25	0.83
1:A:286:PRO:HB3	3:A:615:HOH:O	1.78	0.83
1:A:186:ARG:CG	1:A:186:ARG:HH11	1.91	0.83
1:A:285:ARG:HH12	1:A:291:ALA:CB	1.92	0.83
1:A:285:ARG:NH1	1:A:291:ALA:HB3	1.96	0.81
1:A:230:ARG:NH2	3:A:602:HOH:O	2.12	0.81
1:A:378:MSE:SE	1:A:378:MSE:CB	2.78	0.81
1:A:168:PHE:O	1:A:171:MSE:HE3	1.81	0.80
1:A:105:VAL:O	1:A:106:ARG:HD3	1.81	0.79
1:A:284:ILE:HD13	1:A:288:LEU:HD11	1.64	0.78
1:A:2:ASP:OD2	1:A:6:LYS:CE	2.34	0.75
1:A:284:ILE:HG12	1:A:288:LEU:HG	1.71	0.71
1:A:261:ARG:CZ	1:A:334:ILE:HD11	2.20	0.70
1:A:315:GLU:HB2	3:A:631:HOH:O	1.91	0.70
1:A:304:GLU:CG	1:A:328:GLU:HG2	2.22	0.70
1:A:304:GLU:HG3	1:A:328:GLU:HG2	1.75	0.69
1:A:378:MSE:SE	1:A:378:MSE:HB2	2.42	0.69
1:A:46:LYS:CE	2:A:401:PLP:O4A	2.41	0.69
1:A:285:ARG:HB2	1:A:286:PRO:HD3	1.77	0.67
1:A:186:ARG:HH11	1:A:186:ARG:HG3	1.61	0.65
1:A:304:GLU:OE1	1:A:304:GLU:N	2.28	0.65
1:A:188:GLU:O	1:A:191:VAL:HG12	1.96	0.65
1:A:382:LYS:HE3	3:A:585:HOH:O	1.97	0.65
1:A:188:GLU:HA	1:A:191:VAL:HG12	1.79	0.65
1:A:267:ARG:HH11	1:A:267:ARG:CG	2.09	0.61
1:A:168:PHE:CA	1:A:171:MSE:HE3	2.30	0.61
1:A:149:LEU:C	3:A:616:HOH:O	2.39	0.61
1:A:14:PRO:O	1:A:374:ARG:NH1	2.33	0.60
1:A:359:GLU:OE1	1:A:372:ARG:CD	2.46	0.60
1:A:168:PHE:HA	1:A:171:MSE:CE	2.32	0.60
1:A:162:ASP:OD1	1:A:204:TYR:OH	2.16	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:LEU:HD11	1:A:354:THR:HG21	1.84	0.58
1:A:305:MSE:HE1	1:A:329:VAL:CG2	2.33	0.58
1:A:186:ARG:HH11	1:A:186:ARG:HG2	1.66	0.58
1:A:303:LYS:HD3	1:A:325:GLU:HB3	1.85	0.57
1:A:168:PHE:CA	1:A:171:MSE:CE	2.83	0.57
1:A:303:LYS:HD3	1:A:325:GLU:CB	2.35	0.56
1:A:168:PHE:HB3	1:A:171:MSE:CE	2.35	0.56
1:A:46:LYS:HE3	2:A:401:PLP:O4A	2.03	0.56
1:A:168:PHE:HB3	1:A:171:MSE:HE3	1.88	0.56
1:A:261:ARG:NH2	1:A:334:ILE:HD11	2.21	0.56
1:A:142:HIS:HE1	1:A:192:GLU:OE1	1.88	0.56
1:A:230:ARG:HD2	3:A:532:HOH:O	2.06	0.55
1:A:117:GLU:HG2	3:A:547:HOH:O	2.06	0.55
1:A:136:GLU:CD	1:A:136:GLU:N	2.57	0.55
1:A:253:ALA:HB3	1:A:254:PRO:HD3	1.88	0.55
1:A:289:TYR:O	1:A:290:SER:HB2	2.07	0.54
1:A:284:ILE:CD1	1:A:288:LEU:HD11	2.37	0.54
1:A:168:PHE:CB	1:A:171:MSE:CE	2.86	0.53
1:A:267:ARG:CG	1:A:267:ARG:NH1	2.72	0.53
1:A:303:LYS:CD	1:A:325:GLU:HB2	2.39	0.53
1:A:2:ASP:OD2	1:A:6:LYS:HE2	2.07	0.53
1:A:305:MSE:HE1	1:A:329:VAL:HG21	1.91	0.52
1:A:3:ILE:O	1:A:6:LYS:HB2	2.09	0.52
1:A:168:PHE:C	1:A:171:MSE:HE3	2.31	0.51
1:A:50:ASN:HD22	1:A:52:VAL:H	1.59	0.51
1:A:20:GLU:CD	1:A:364:GLU:HG3	2.31	0.51
1:A:94:ARG:HG2	1:A:118:ILE:CG2	2.42	0.50
1:A:300:LYS:HE3	3:A:537:HOH:O	2.11	0.50
1:A:303:LYS:CD	1:A:325:GLU:CB	2.89	0.50
1:A:285:ARG:NH1	1:A:285:ARG:HB3	2.27	0.49
1:A:102:ARG:NH2	3:A:583:HOH:O	2.37	0.49
1:A:188:GLU:OE1	1:A:191:VAL:HG11	2.13	0.49
1:A:314:CYS:C	3:A:631:HOH:O	2.51	0.49
1:A:168:PHE:CB	1:A:171:MSE:HE3	2.42	0.49
1:A:137:VAL:CG2	1:A:149:LEU:HD12	2.43	0.48
1:A:258:LEU:HD11	1:A:282:VAL:CG1	2.43	0.48
1:A:359:GLU:HB2	1:A:372:ARG:CB	2.43	0.48
1:A:217:ILE:HD11	1:A:219:TYR:CZ	2.49	0.47
1:A:50:ASN:ND2	1:A:52:VAL:H	2.12	0.47
1:A:191:VAL:HG13	1:A:192:GLU:N	2.30	0.46
1:A:153:LYS:HB2	3:A:509:HOH:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:142:HIS:CE1	1:A:192:GLU:OE1	2.69	0.46
1:A:282:VAL:HG13	1:A:357:PRO:HG3	1.98	0.46
1:A:168:PHE:CB	1:A:171:MSE:HE1	2.46	0.46
1:A:159:GLU:HG2	3:A:439:HOH:O	2.17	0.45
1:A:169:ARG:O	1:A:170:SER:HB2	2.16	0.45
1:A:3:ILE:HG23	1:A:4:LEU:N	2.30	0.45
1:A:186:ARG:CG	1:A:186:ARG:NH1	2.61	0.45
1:A:50:ASN:HD22	1:A:50:ASN:C	2.20	0.45
1:A:186:ARG:HG3	1:A:186:ARG:NH1	2.25	0.45
1:A:347:MSE:HE2	1:A:347:MSE:HB3	1.56	0.44
1:A:101:LEU:HA	1:A:106:ARG:HH12	1.83	0.44
1:A:304:GLU:HG2	1:A:328:GLU:HG2	1.98	0.44
1:A:382:LYS:O	3:A:484:HOH:O	2.21	0.44
2:A:401:PLP:H5A1	2:A:401:PLP:H4A	1.02	0.43
1:A:188:GLU:O	1:A:191:VAL:CG1	2.65	0.43
1:A:279:GLY:HA3	1:A:318:ASP:OD2	2.18	0.43
1:A:359:GLU:HB2	1:A:372:ARG:HB2	2.00	0.43
1:A:14:PRO:HB3	1:A:260:LEU:HD23	2.01	0.42
1:A:303:LYS:CD	1:A:325:GLU:HB3	2.50	0.42
1:A:18:TYR:HA	1:A:255:SER:O	2.19	0.42
1:A:46:LYS:HZ3	2:A:401:PLP:C4A	2.27	0.41
1:A:150:LYS:N	3:A:616:HOH:O	2.53	0.41
1:A:83:HIS:NE2	1:A:104:ASP:OD2	2.47	0.41
1:A:120:ARG:HH12	1:A:171:MSE:HE2	1.69	0.41
1:A:356:ARG:NH2	3:A:565:HOH:O	2.54	0.41
1:A:230:ARG:NE	3:A:532:HOH:O	2.52	0.41
1:A:305:MSE:HE2	1:A:326:LEU:HB2	2.02	0.41
1:A:258:LEU:HD11	1:A:282:VAL:HG12	2.03	0.41
1:A:284:ILE:HD13	1:A:288:LEU:CD1	2.43	0.40
1:A:358:ALA:HA	1:A:372:ARG:O	2.21	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:378:MSE:CE	1:A:378:MSE:CE[3_656]	2.01	0.19

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	383/386 (99%)	365 (95%)	16 (4%)	2 (0%)	25 12

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	141	THR
1	A	138	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	335/325 (103%)	313 (93%)	22 (7%)	14 3

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	ILE
1	A	49	ASN
1	A	50	ASN
1	A	65	ASP
1	A	116	MSE
1	A	136	GLU
1	A	140	LYS
1	A	142	HIS
1	A	159	GLU

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Mol	Chain	Res	Type
1	A	186	ARG
1	A	222	GLU
1	A	224	LEU
1	A	239	ARG
1	A	258	LEU
1	A	264	LEU
1	A	267	ARG
1	A	271	LYS
1	A	280	MSE
1	A	312	PRO
1	A	313	LEU
1	A	360	VAL
1	A	386	MSE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	49	ASN
1	A	50	ASN
1	A	109	ASN
1	A	142	HIS
1	A	177	HIS
1	A	183	GLN
1	A	339	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)

1 ligand 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	PLP	A	401	-	16,16,16	2.54	7 (43%)	20,23,23	4.21	9 (45%)

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	401	-	-	3/8/8/8	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	PLP	O4P-C5A	-6.26	1.21	1.44
2	A	401	PLP	C2A-C2	3.81	1.56	1.50
2	A	401	PLP	C3-C2	-3.60	1.37	1.41
2	A	401	PLP	P-O4P	-3.33	1.49	1.60
2	A	401	PLP	C4-C5	-2.56	1.38	1.42
2	A	401	PLP	C5A-C5	2.26	1.56	1.50
2	A	401	PLP	C6-N1	2.19	1.38	1.34

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	401	PLP	C5A-C5-C6	13.91	142.04	119.36
2	A	401	PLP	O4P-C5A-C5	9.09	126.40	109.36
2	A	401	PLP	O3P-P-O4P	-4.77	94.22	106.67
2	A	401	PLP	O2P-P-O1P	3.43	124.21	110.83
2	A	401	PLP	O4P-P-O1P	3.06	114.71	106.44
2	A	401	PLP	C3-C4-C5	2.97	120.66	118.28

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	401	PLP	C4-C3-C2	-2.51	118.73	120.14
2	A	401	PLP	O2P-P-O4P	-2.47	100.22	106.67
2	A	401	PLP	C5-C6-N1	-2.10	120.41	123.83

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	PLP	C5A-O4P-P-O1P
2	A	401	PLP	C5A-O4P-P-O2P
2	A	401	PLP	C5A-O4P-P-O3P

There are no ring outliers.

1 monomer is involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	PLP	7	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.