



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 02:04 AM UTC

PDB ID : 1EVY / pdb_00001evy
Title : CRYSTAL STRUCTURE OF LEISHMANIA MEXICANA GLYCEROL-3-PHOSPHATE DEHYDROGENASE
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Deposited on : 2000-04-20
Resolution : 1.75 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

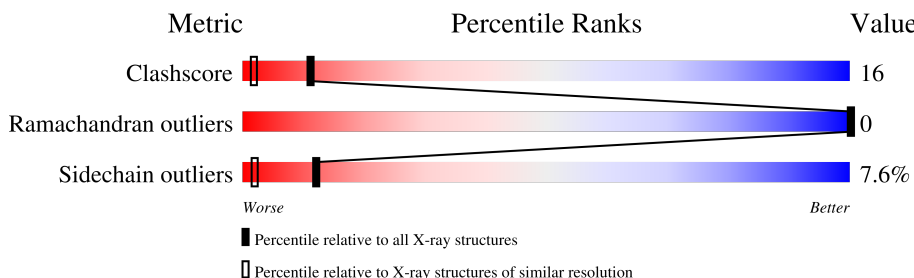
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.75 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	3299 (1.76-1.76)
Ramachandran outliers	187476	3274 (1.76-1.76)
Sidechain outliers	187428	3274 (1.76-1.76)

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	366	 63% 25% 6% • 5%

2 Entry composition [i](#)

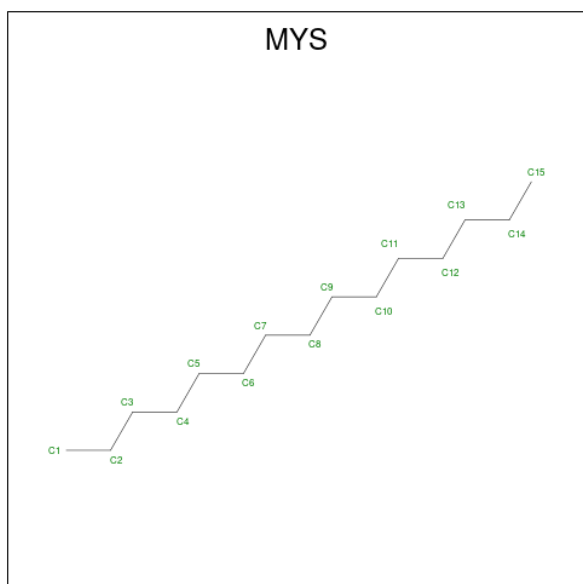
There are 3 unique types of molecules in this entry. The entry contains 2947 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 GLYCEROL-3-PHOSPHATE DEHYDROGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	346	Total	C	N	O	S	0	1	0
			2604	1664	444	479	17			

- Molecule 2 is PENTADECANE (CCD ID: MYS) (formula: C₁₅H₃₂).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	C	0	0
			15	15		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	328	Total	O	0	0
			328	328		

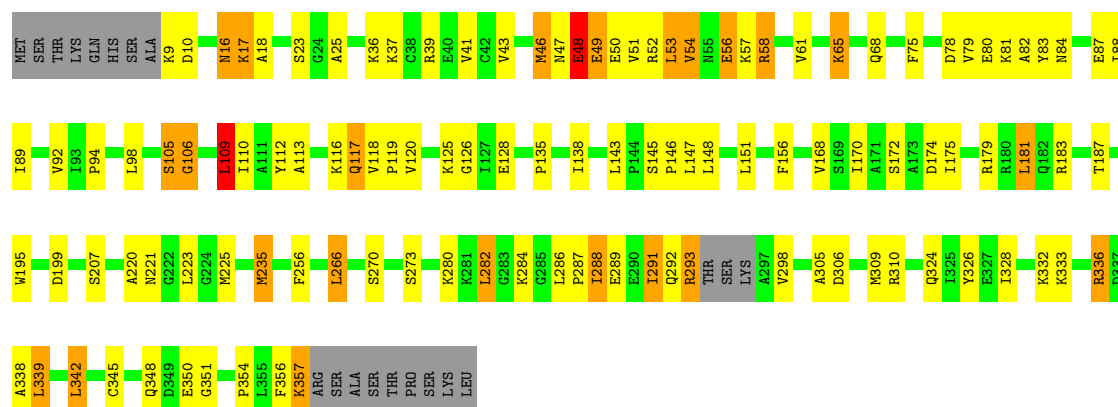
3 Residue-property plots

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: GLYCEROL-3-PHOSPHATE DEHYDROGENASE

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 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	70.32Å 70.32Å 210.12Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 1.75	Depositor
% Data completeness (in resolution range)	(Not available) (30.00-1.75)	Depositor
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	TNT	Depositor
R, R_{free}	0.195 , 0.257	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	2947	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

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: MYS

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	1.43	4/2644 (0.2%)	1.85	55/3569 (1.5%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	117	GLN	CA-C	5.42	1.59	1.53
1	A	43	VAL	N-CA	-5.29	1.38	1.46
1	A	53	LEU	N-CA	-5.17	1.40	1.46
1	A	174	ASP	CG-OD2	5.13	1.35	1.25

All (55) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	148	LEU	N-CA-C	7.01	120.66	109.24
1	A	354	PRO	N-CA-CB	7.01	109.85	103.33
1	A	46	MET	N-CA-C	6.82	119.30	111.11
1	A	199	ASP	N-CA-C	6.78	120.17	109.39
1	A	195	TRP	CE2-CD2-CE3	6.58	125.38	118.80
1	A	48	GLU	CA-C-N	-6.52	111.54	120.28
1	A	48	GLU	C-N-CA	-6.52	111.54	120.28
1	A	195	TRP	CG-CD2-CE3	-6.33	127.57	133.90
1	A	79	VAL	N-CA-C	6.28	116.95	110.36
1	A	49	GLU	CB-CG-CD	-6.19	102.08	112.60
1	A	82	ALA	CA-C-N	-6.09	110.72	122.06
1	A	82	ALA	C-N-CA	-6.09	110.72	122.06
1	A	187	THR	N-CA-C	5.99	118.63	110.55
1	A	25	ALA	N-CA-C	5.85	118.13	111.11
1	A	106	GLY	CA-C-N	-5.83	113.50	119.98
1	A	106	GLY	C-N-CA	-5.83	113.50	119.98
1	A	41	VAL	CA-C-N	-5.83	113.48	122.87

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	41	VAL	C-N-CA	-5.83	113.48	122.87
1	A	147	LEU	N-CA-C	-5.75	106.03	113.16
1	A	39	ARG	CA-C-N	-5.68	113.76	122.62
1	A	39	ARG	C-N-CA	-5.68	113.76	122.62
1	A	282	LEU	CA-C-N	5.63	126.22	119.98
1	A	282	LEU	C-N-CA	5.63	126.22	119.98
1	A	78	ASP	CA-CB-CG	5.62	118.22	112.60
1	A	16	ASN	N-CA-CB	5.62	118.58	110.20
1	A	305	ALA	N-CA-C	5.58	118.09	111.33
1	A	113	ALA	CA-C-O	5.54	126.83	120.90
1	A	81	LYS	N-CA-C	-5.54	105.16	111.14
1	A	168	VAL	CA-C-N	-5.53	114.13	122.81
1	A	168	VAL	C-N-CA	-5.53	114.13	122.81
1	A	48	GLU	CA-C-O	5.52	126.40	120.55
1	A	23	SER	N-CA-CB	-5.39	102.30	110.92
1	A	88	ILE	N-CA-CB	5.36	118.42	111.19
1	A	109	LEU	CA-C-O	5.34	126.62	120.90
1	A	199	ASP	CA-CB-CG	5.33	117.93	112.60
1	A	288	ILE	N-CA-C	5.27	116.63	110.62
1	A	56	GLU	N-CA-CB	5.21	117.54	109.98
1	A	256	PHE	CA-C-N	-5.21	116.54	122.85
1	A	256	PHE	C-N-CA	-5.21	116.54	122.85
1	A	291	ILE	N-CA-C	-5.20	105.47	110.72
1	A	17	LYS	O-C-N	5.19	129.19	123.33
1	A	105	SER	CA-C-N	-5.16	114.46	122.30
1	A	105	SER	C-N-CA	-5.16	114.46	122.30
1	A	117	GLN	N-CA-CB	-5.15	104.35	112.13
1	A	16	ASN	CA-C-N	-5.14	112.75	121.85
1	A	16	ASN	C-N-CA	-5.14	112.75	121.85
1	A	356	PHE	CA-CB-CG	-5.12	108.68	113.80
1	A	174	ASP	CA-CB-CG	5.08	117.68	112.60
1	A	113	ALA	CA-C-N	-5.08	113.08	120.29
1	A	113	ALA	C-N-CA	-5.08	113.08	120.29
1	A	332	LYS	N-CA-C	5.06	119.31	113.38
1	A	37	LYS	O-C-N	5.06	127.40	122.19
1	A	94	PRO	N-CA-CB	5.05	107.75	103.35
1	A	266	LEU	CA-C-O	5.01	125.73	120.42
1	A	82	ALA	O-C-N	-5.00	116.89	122.09

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	2604	0	2702	87	0
2	A	15	0	32	4	0
3	A	328	0	0	15	0
All	All	2947	0	2734	87	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 (87) 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:58:ARG:HG3	1:A:58:ARG:HH11	1.26	0.97
1:A:151:LEU:HD12	1:A:170:ILE:HD11	1.58	0.84
1:A:58:ARG:NE	1:A:58:ARG:HA	1.96	0.77
1:A:289:GLU:O	1:A:293:ARG:HG3	1.86	0.75
1:A:9:LYS:HB3	1:A:183:ARG:NH1	2.03	0.73
1:A:58:ARG:N	1:A:58:ARG:HD2	1.97	0.73
1:A:9:LYS:HB3	1:A:183:ARG:HH11	1.54	0.73
1:A:280:LYS:HE2	1:A:284:LYS:HE3	1.70	0.72
1:A:146:PRO:HA	3:A:809:HOH:O	1.89	0.72
1:A:80:GLU:HA	1:A:83:TYR:CE2	2.25	0.70
1:A:52:ARG:O	1:A:56:GLU:HG3	1.91	0.68
1:A:61:VAL:O	1:A:65:LYS:HE2	1.94	0.67
1:A:289:GLU:H	1:A:289:GLU:CD	2.03	0.66
1:A:220:ALA:HB2	2:A:500:MYS:H111	1.77	0.65
1:A:225:MET:CE	1:A:339:LEU:HD11	2.26	0.65
1:A:48:GLU:O	1:A:52:ARG:HG3	1.97	0.65
1:A:288:ILE:O	1:A:292:GLN:N	2.30	0.64
1:A:52:ARG:HA	3:A:762:HOH:O	1.98	0.63
1:A:112:TYR:CE1	1:A:116:LYS:HG3	2.34	0.61
1:A:151:LEU:HD12	1:A:170:ILE:CD1	2.29	0.61
1:A:68:GLN:HG3	3:A:792:HOH:O	2.01	0.61
1:A:270:SER:HA	3:A:825:HOH:O	2.01	0.59
1:A:58:ARG:HG3	1:A:58:ARG:NH1	2.02	0.59
1:A:61:VAL:HA	1:A:65:LYS:HG3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:109:LEU:C	1:A:109:LEU:HD12	2.29	0.57
1:A:83:TYR:CD1	1:A:112:TYR:CD2	2.93	0.56
1:A:288:ILE:HG22	3:A:627:HOH:O	2.07	0.55
1:A:350:GLU:HG3	3:A:724:HOH:O	2.05	0.55
1:A:53:LEU:HD11	1:A:57:LYS:HE2	1.88	0.55
1:A:287:PRO:HB2	1:A:289:GLU:OE1	2.06	0.55
1:A:57:LYS:O	1:A:58:ARG:HB2	2.06	0.55
1:A:80:GLU:O	1:A:84:ASN:HB2	2.08	0.54
1:A:119:PRO:HB3	3:A:661:HOH:O	2.08	0.53
1:A:53:LEU:HD12	1:A:53:LEU:O	2.09	0.52
1:A:156:PHE:CE1	1:A:266:LEU:HD11	2.45	0.51
1:A:175:ILE:O	1:A:179:ARG:HG3	2.10	0.51
1:A:333:LYS:HE2	1:A:338:ALA:HA	1.92	0.51
1:A:128:GLU:HB2	1:A:138:ILE:HD11	1.93	0.51
1:A:83:TYR:HD1	1:A:112:TYR:CD2	2.29	0.51
1:A:17:LYS:HG2	1:A:18:ALA:N	2.25	0.51
1:A:342:LEU:HD13	2:A:500:MYS:H41	1.94	0.50
1:A:89:ILE:HG13	1:A:118:VAL:CG1	2.43	0.49
1:A:47:ASN:OD1	1:A:49:GLU:HB3	2.12	0.49
1:A:345:CYS:SG	2:A:500:MYS:H12	2.52	0.49
1:A:116:LYS:O	1:A:117:GLN:HB2	2.13	0.49
1:A:53:LEU:HD12	1:A:53:LEU:C	2.37	0.49
1:A:336:ARG:NE	3:A:594:HOH:O	2.25	0.48
1:A:145:SER:HB2	1:A:146:PRO:CD	2.44	0.48
1:A:289:GLU:O	1:A:293:ARG:N	2.34	0.47
1:A:48:GLU:O	1:A:49:GLU:C	2.50	0.47
1:A:16:ASN:N	1:A:87:GLU:OE1	2.44	0.47
1:A:58:ARG:HG3	3:A:708:HOH:O	2.13	0.47
1:A:48:GLU:O	1:A:48:GLU:OE1	2.33	0.47
1:A:106:GLY:O	1:A:110:ILE:HG13	2.15	0.46
1:A:225:MET:HE1	1:A:339:LEU:HD11	1.97	0.46
1:A:270:SER:OG	1:A:273:SER:HB3	2.16	0.46
1:A:36:LYS:NZ	3:A:656:HOH:O	2.44	0.46
1:A:89:ILE:HG13	1:A:118:VAL:HG11	1.98	0.46
1:A:324:GLN:O	1:A:328:ILE:HG13	2.16	0.45
1:A:351:GLY:N	3:A:719:HOH:O	2.28	0.45
1:A:328:ILE:HD11	2:A:500:MYS:H151	1.97	0.45
1:A:47:ASN:O	1:A:51:VAL:HG23	2.16	0.45
1:A:151:LEU:CD1	1:A:170:ILE:HD11	2.39	0.44
1:A:221:ASN:OD1	1:A:280:LYS:HE3	2.18	0.44
1:A:357:LYS:HA	3:A:815:HOH:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:282:LEU:HD23	1:A:286:LEU:O	2.18	0.44
1:A:47:ASN:OD1	1:A:50:GLU:N	2.44	0.43
1:A:58:ARG:NH1	1:A:58:ARG:CG	2.78	0.43
1:A:120:VAL:HG21	1:A:143:LEU:HD13	2.01	0.42
1:A:65:LYS:HB2	1:A:65:LYS:HE3	1.71	0.42
1:A:287:PRO:O	1:A:291:ILE:HG13	2.19	0.42
1:A:310:ARG:HD2	3:A:779:HOH:O	2.19	0.42
1:A:80:GLU:H	1:A:80:GLU:HG2	1.69	0.42
1:A:109:LEU:HD12	1:A:109:LEU:O	2.19	0.42
1:A:306:ASP:O	1:A:310:ARG:HG3	2.19	0.42
1:A:336:ARG:NH2	3:A:594:HOH:O	2.37	0.42
1:A:125:LYS:HG2	1:A:207:SER:HB3	2.01	0.42
1:A:282:LEU:HG	1:A:291:ILE:CD1	2.50	0.42
1:A:309:MET:HE2	1:A:326:TYR:CZ	2.54	0.42
1:A:126:GLY:O	1:A:135:PRO:HD3	2.20	0.41
1:A:54:VAL:HG11	1:A:75:PHE:CD2	2.55	0.41
1:A:83:TYR:CD1	1:A:83:TYR:C	2.98	0.41
1:A:181:LEU:N	1:A:181:LEU:CD2	2.82	0.41
1:A:181:LEU:N	1:A:181:LEU:HD23	2.37	0.41
1:A:58:ARG:NH2	3:A:668:HOH:O	2.31	0.40
1:A:151:LEU:C	1:A:151:LEU:HD23	2.46	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	343/366 (94%)	332 (97%)	11 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	278/297 (94%)	256 (92%)	22 (8%)	11 2

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

Mol	Chain	Res	Type
1	A	10	ASP
1	A	46	MET
1	A	48	GLU
1	A	54	VAL
1	A	58	ARG
1	A	65	LYS
1	A	92	VAL
1	A	98	LEU
1	A	105	SER
1	A	109	LEU
1	A	172	SER
1	A	181	LEU
1	A	223	LEU
1	A	235[A]	MET
1	A	235[B]	MET
1	A	293	ARG
1	A	298	VAL
1	A	336	ARG
1	A	339	LEU
1	A	342	LEU
1	A	348	GLN
1	A	357	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 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	MYS	A	500	-	14,14,14	0.22	0	13,13,13	1.80	4 (30%)

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	MYS	A	500	-	-	2/12/12/12	-

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	500	MYS	C11-C10-C9	-3.01	99.18	114.37
2	A	500	MYS	C6-C5-C4	2.65	127.78	114.37
2	A	500	MYS	C13-C12-C11	2.27	125.86	114.37
2	A	500	MYS	C12-C11-C10	-2.05	104.01	114.37

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	500	MYS	C10-C11-C12-C13
2	A	500	MYS	C7-C8-C9-C10

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	500	MYS	4	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.