



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 11:10 AM UTC

PDB ID : 4DDJ / pdb_00004ddj
Title : Crystal structure of saposin A in complex with lauryldimethylamine-N-oxide (LDAO)
Authors : Popovic, K.; Prive, G.G.
Deposited on : 2012-01-18
Resolution : 1.90 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) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

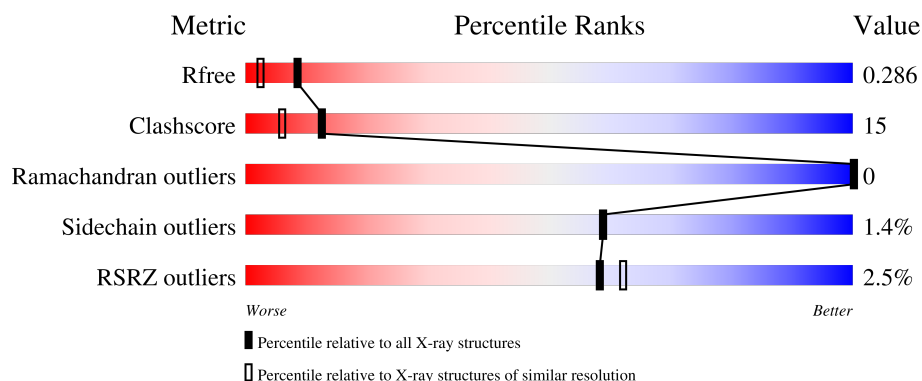
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

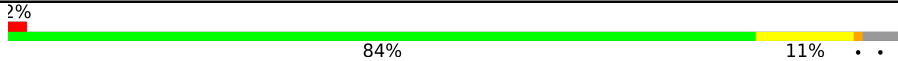
The reported resolution of this entry is 1.90 Å.

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}	180053	7789 (1.90-1.90)
Clashscore	190562	8410 (1.90-1.90)
Ramachandran outliers	187476	8333 (1.90-1.90)
Sidechain outliers	187428	8333 (1.90-1.90)
RSRZ outliers	180081	7790 (1.90-1.90)

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 $\leq 5\%$. 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	83	

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	LDA	A	119	-	-	X	-

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 991 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.

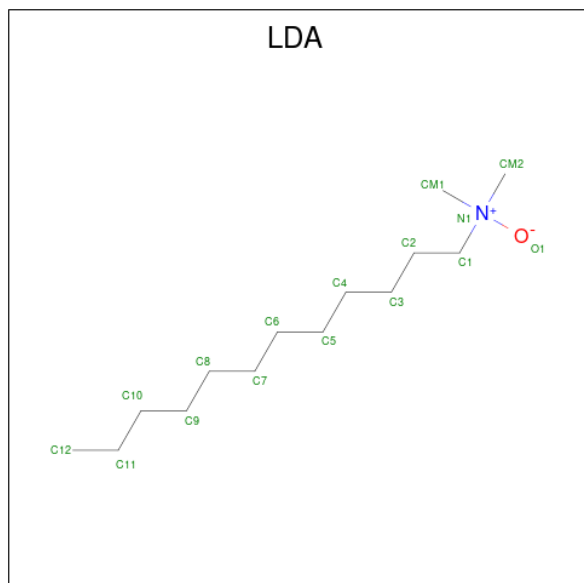
- Molecule 1 is a protein called Saposin-A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	80	606	380	93	124	9	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	expression tag	UNP P07602
A	0	GLY	-	expression tag	UNP P07602

- Molecule 2 is LAURYL DIMETHYLAMINE-N-OXIDE (CCD ID: LDA) (formula: C₁₄H₃₁NO).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	16	14	1	1	0	0
2	A	1	16	14	1	1	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		
2	A	1	Total	C	N	O	0	0
			16	14	1	1		

- Molecule 3 is water.

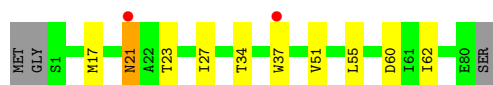
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	65	Total	O	0	0
			65	65		

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 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: Saposin-A

Chain A: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α , β , γ	39.79Å 39.79Å 247.28Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	10.00 – 1.90 10.00 – 1.90	Depositor EDS
% Data completeness (in resolution range)	99.3 (10.00-1.90) 98.3 (10.00-1.90)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.31 (at 1.90Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.230 , 0.280 0.244 , 0.286	Depositor DCC
R_{free} test set	478 reflections (4.83%)	wwPDB-VP
Wilson B-factor (Å ²)	30.8	Xtriage
Anisotropy	0.074	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 46.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	991	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.68% 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: LDA

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	1.14	0/614	1.10	2/833 (0.2%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	55	LEU	CA-C-N	-5.18	114.33	119.56
1	A	55	LEU	C-N-CA	-5.18	114.33	119.56

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	606	0	605	15	1
2	A	320	0	620	29	0
3	A	65	0	0	0	3
All	All	991	0	1225	33	3

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 15.

All (33) 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:17:MET:CE	2:A:119:LDA:H91	2.09	0.82
1:A:17:MET:HE1	2:A:119:LDA:H91	1.64	0.79
2:A:119:LDA:C12	2:A:119:LDA:H81	2.20	0.71
2:A:119:LDA:H81	2:A:119:LDA:H122	1.73	0.69
2:A:112:LDA:C12	2:A:119:LDA:H111	2.26	0.65
2:A:112:LDA:H121	2:A:119:LDA:C11	2.27	0.64
2:A:105:LDA:HM22	2:A:110:LDA:H41	1.79	0.64
2:A:102:LDA:H123	2:A:109:LDA:H111	1.79	0.63
2:A:119:LDA:H122	2:A:119:LDA:C8	2.28	0.63
1:A:34:THR:CG2	2:A:117:LDA:H81	2.30	0.62
2:A:112:LDA:H121	2:A:119:LDA:H121	1.82	0.59
1:A:21:ASN:H	1:A:21:ASN:HD22	1.51	0.59
2:A:112:LDA:H123	2:A:119:LDA:H111	1.84	0.58
1:A:17:MET:HE1	2:A:119:LDA:C9	2.32	0.56
2:A:112:LDA:C12	2:A:119:LDA:C11	2.86	0.54
2:A:113:LDA:H72	2:A:119:LDA:H72	1.90	0.54
2:A:101:LDA:H52	2:A:108:LDA:H61	1.91	0.53
2:A:112:LDA:H121	2:A:119:LDA:C12	2.40	0.51
1:A:17:MET:HE2	2:A:119:LDA:H91	1.92	0.50
1:A:34:THR:HG21	2:A:117:LDA:H81	1.93	0.50
2:A:101:LDA:H91	2:A:108:LDA:H91	1.94	0.50
2:A:102:LDA:H101	2:A:109:LDA:H102	1.95	0.49
1:A:17:MET:HE1	2:A:119:LDA:C8	2.43	0.48
2:A:119:LDA:C12	2:A:119:LDA:C8	2.87	0.47
1:A:34:THR:HG22	2:A:117:LDA:H81	1.97	0.46
2:A:112:LDA:H122	2:A:112:LDA:H92	1.69	0.45
1:A:21:ASN:H	1:A:21:ASN:ND2	2.14	0.43
1:A:62:ILE:HD13	2:A:102:LDA:H121	2.01	0.43
1:A:51:VAL:HG22	2:A:117:LDA:H111	2.00	0.43
2:A:113:LDA:H22	2:A:113:LDA:HM21	1.75	0.42
1:A:37:TRP:HE3	2:A:117:LDA:H41	1.85	0.42
1:A:23:THR:O	1:A:27:ILE:HG13	2.19	0.41
1:A:21:ASN:ND2	1:A:21:ASN:N	2.68	0.41

All (3) 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)
3:A:261:HOH:O	3:A:263:HOH:O[8_565]	1.86	0.34
3:A:232:HOH:O	3:A:233:HOH:O[10_554]	1.91	0.29

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:60:ASP:OD2	3:A:242:HOH:O[8_665]	2.10	0.10

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	78/83 (94%)	78 (100%)	0	0	100	100

There are no Ramachandran outliers to report.

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	72/74 (97%)	71 (99%)	1 (1%)	59	59

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	21	ASN

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 ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

20 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	LDA	A	111	-	13,15,15	2.14	2 (15%)	14,17,17	0.59	0
2	LDA	A	112	-	13,15,15	2.25	2 (15%)	14,17,17	0.89	0
2	LDA	A	105	-	13,15,15	2.40	2 (15%)	14,17,17	0.61	0
2	LDA	A	113	-	13,15,15	2.27	2 (15%)	14,17,17	0.58	0
2	LDA	A	110	-	13,15,15	2.13	2 (15%)	14,17,17	0.60	0
2	LDA	A	108	-	13,15,15	2.24	2 (15%)	14,17,17	0.69	0
2	LDA	A	117	-	13,15,15	2.30	2 (15%)	14,17,17	0.74	0
2	LDA	A	119	-	13,15,15	2.19	2 (15%)	14,17,17	0.63	0
2	LDA	A	114	-	13,15,15	2.26	2 (15%)	14,17,17	0.51	0
2	LDA	A	115	-	13,15,15	2.17	2 (15%)	14,17,17	0.53	0
2	LDA	A	109	-	13,15,15	2.27	2 (15%)	14,17,17	0.68	0
2	LDA	A	101	-	13,15,15	2.43	2 (15%)	14,17,17	1.04	1 (7%)
2	LDA	A	107	-	13,15,15	2.15	2 (15%)	14,17,17	0.61	0
2	LDA	A	120	-	13,15,15	2.42	2 (15%)	14,17,17	0.54	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	LDA	A	116	-	13,15,15	2.25	2 (15%)	14,17,17	0.63	0
2	LDA	A	103	-	13,15,15	2.26	2 (15%)	14,17,17	0.71	0
2	LDA	A	106	-	13,15,15	2.07	2 (15%)	14,17,17	0.66	0
2	LDA	A	118	-	13,15,15	2.42	2 (15%)	14,17,17	0.80	0
2	LDA	A	102	-	13,15,15	2.30	2 (15%)	14,17,17	0.84	0
2	LDA	A	104	-	13,15,15	2.34	2 (15%)	14,17,17	1.14	1 (7%)

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	LDA	A	111	-	-	5/13/13/13	-
2	LDA	A	112	-	-	10/13/13/13	-
2	LDA	A	105	-	-	4/13/13/13	-
2	LDA	A	113	-	-	6/13/13/13	-
2	LDA	A	110	-	-	8/13/13/13	-
2	LDA	A	108	-	-	9/13/13/13	-
2	LDA	A	117	-	-	8/13/13/13	-
2	LDA	A	119	-	-	11/13/13/13	-
2	LDA	A	114	-	-	4/13/13/13	-
2	LDA	A	115	-	-	8/13/13/13	-
2	LDA	A	109	-	-	11/13/13/13	-
2	LDA	A	101	-	-	5/13/13/13	-
2	LDA	A	107	-	-	7/13/13/13	-
2	LDA	A	120	-	-	7/13/13/13	-
2	LDA	A	116	-	-	6/13/13/13	-
2	LDA	A	103	-	-	11/13/13/13	-
2	LDA	A	106	-	-	5/13/13/13	-
2	LDA	A	118	-	-	10/13/13/13	-
2	LDA	A	102	-	-	6/13/13/13	-
2	LDA	A	104	-	-	8/13/13/13	-

All (40) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	118	LDA	O1-N1	-7.00	1.25	1.42
2	A	113	LDA	O1-N1	-6.97	1.25	1.42
2	A	105	LDA	O1-N1	-6.77	1.25	1.42
2	A	112	LDA	O1-N1	-6.76	1.25	1.42
2	A	120	LDA	O1-N1	-6.73	1.25	1.42
2	A	102	LDA	O1-N1	-6.73	1.25	1.42
2	A	119	LDA	O1-N1	-6.65	1.25	1.42
2	A	108	LDA	O1-N1	-6.65	1.25	1.42
2	A	117	LDA	O1-N1	-6.61	1.25	1.42
2	A	104	LDA	O1-N1	-6.60	1.26	1.42
2	A	111	LDA	O1-N1	-6.59	1.26	1.42
2	A	109	LDA	O1-N1	-6.55	1.26	1.42
2	A	103	LDA	O1-N1	-6.54	1.26	1.42
2	A	115	LDA	O1-N1	-6.51	1.26	1.42
2	A	116	LDA	O1-N1	-6.48	1.26	1.42
2	A	114	LDA	O1-N1	-6.45	1.26	1.42
2	A	107	LDA	O1-N1	-6.35	1.26	1.42
2	A	101	LDA	O1-N1	-6.32	1.26	1.42
2	A	106	LDA	O1-N1	-6.31	1.26	1.42
2	A	110	LDA	O1-N1	-6.25	1.26	1.42
2	A	101	LDA	C1-N1	-6.02	1.45	1.51
2	A	120	LDA	C1-N1	-5.44	1.45	1.51
2	A	105	LDA	C1-N1	-5.24	1.46	1.51
2	A	104	LDA	C1-N1	-5.20	1.46	1.51
2	A	118	LDA	C1-N1	-5.14	1.46	1.51
2	A	117	LDA	C1-N1	-4.93	1.46	1.51
2	A	109	LDA	C1-N1	-4.87	1.46	1.51
2	A	114	LDA	C1-N1	-4.83	1.46	1.51
2	A	103	LDA	C1-N1	-4.79	1.46	1.51
2	A	116	LDA	C1-N1	-4.77	1.46	1.51
2	A	102	LDA	C1-N1	-4.75	1.46	1.51
2	A	108	LDA	C1-N1	-4.50	1.46	1.51
2	A	112	LDA	C1-N1	-4.43	1.46	1.51
2	A	110	LDA	C1-N1	-4.38	1.47	1.51
2	A	107	LDA	C1-N1	-4.32	1.47	1.51
2	A	115	LDA	C1-N1	-4.22	1.47	1.51
2	A	113	LDA	C1-N1	-4.21	1.47	1.51
2	A	119	LDA	C1-N1	-4.15	1.47	1.51
2	A	106	LDA	C1-N1	-3.93	1.47	1.51
2	A	111	LDA	C1-N1	-3.84	1.47	1.51

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	104	LDA	CM2-N1-C1	-2.92	104.09	110.23
2	A	101	LDA	CM2-N1-C1	-2.68	104.61	110.23

There are no chirality outliers.

All (149) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	102	LDA	N1-C1-C2-C3
2	A	103	LDA	C2-C1-N1-CM1
2	A	104	LDA	C2-C1-N1-CM1
2	A	104	LDA	C2-C1-N1-CM2
2	A	108	LDA	C2-C1-N1-CM1
2	A	108	LDA	C2-C1-N1-CM2
2	A	109	LDA	C2-C1-N1-CM1
2	A	109	LDA	C2-C1-N1-CM2
2	A	112	LDA	C2-C1-N1-O1
2	A	112	LDA	C2-C1-N1-CM2
2	A	113	LDA	N1-C1-C2-C3
2	A	115	LDA	C2-C1-N1-CM2
2	A	118	LDA	N1-C1-C2-C3
2	A	119	LDA	C2-C1-N1-O1
2	A	119	LDA	C2-C1-N1-CM2
2	A	119	LDA	N1-C1-C2-C3
2	A	112	LDA	C1-C2-C3-C4
2	A	120	LDA	C11-C10-C9-C8
2	A	101	LDA	C2-C3-C4-C5
2	A	103	LDA	C7-C8-C9-C10
2	A	109	LDA	C11-C10-C9-C8
2	A	118	LDA	C2-C3-C4-C5
2	A	118	LDA	C5-C6-C7-C8
2	A	119	LDA	C2-C3-C4-C5
2	A	106	LDA	C7-C8-C9-C10
2	A	114	LDA	C3-C4-C5-C6
2	A	118	LDA	C4-C5-C6-C7
2	A	106	LDA	C5-C6-C7-C8
2	A	101	LDA	C3-C4-C5-C6
2	A	113	LDA	C6-C7-C8-C9
2	A	110	LDA	C7-C8-C9-C10
2	A	114	LDA	C11-C10-C9-C8
2	A	116	LDA	C2-C3-C4-C5
2	A	119	LDA	C4-C5-C6-C7
2	A	114	LDA	C6-C7-C8-C9
2	A	110	LDA	C5-C6-C7-C8

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Mol	Chain	Res	Type	Atoms
2	A	103	LDA	C11-C10-C9-C8
2	A	104	LDA	C4-C5-C6-C7
2	A	118	LDA	C6-C7-C8-C9
2	A	104	LDA	C7-C8-C9-C10
2	A	113	LDA	C11-C10-C9-C8
2	A	115	LDA	C4-C5-C6-C7
2	A	106	LDA	C3-C4-C5-C6
2	A	102	LDA	C1-C2-C3-C4
2	A	117	LDA	C3-C4-C5-C6
2	A	101	LDA	C4-C5-C6-C7
2	A	112	LDA	C11-C10-C9-C8
2	A	117	LDA	C4-C5-C6-C7
2	A	113	LDA	C3-C4-C5-C6
2	A	115	LDA	C11-C10-C9-C8
2	A	112	LDA	C5-C6-C7-C8
2	A	116	LDA	C1-C2-C3-C4
2	A	119	LDA	C5-C6-C7-C8
2	A	104	LDA	C6-C7-C8-C9
2	A	106	LDA	C6-C7-C8-C9
2	A	117	LDA	C2-C3-C4-C5
2	A	119	LDA	C1-C2-C3-C4
2	A	118	LDA	C3-C4-C5-C6
2	A	102	LDA	C3-C4-C5-C6
2	A	103	LDA	C2-C3-C4-C5
2	A	120	LDA	C3-C4-C5-C6
2	A	117	LDA	C1-C2-C3-C4
2	A	117	LDA	C5-C6-C7-C8
2	A	107	LDA	C4-C5-C6-C7
2	A	110	LDA	C11-C10-C9-C8
2	A	103	LDA	C6-C7-C8-C9
2	A	119	LDA	C3-C4-C5-C6
2	A	120	LDA	C5-C6-C7-C8
2	A	107	LDA	C7-C8-C9-C10
2	A	102	LDA	C7-C8-C9-C10
2	A	113	LDA	C5-C6-C7-C8
2	A	115	LDA	C1-C2-C3-C4
2	A	109	LDA	C3-C4-C5-C6
2	A	109	LDA	C1-C2-C3-C4
2	A	108	LDA	C9-C10-C11-C12
2	A	108	LDA	C11-C10-C9-C8
2	A	115	LDA	C3-C4-C5-C6
2	A	104	LDA	C9-C10-C11-C12

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Mol	Chain	Res	Type	Atoms
2	A	109	LDA	N1-C1-C2-C3
2	A	103	LDA	C5-C6-C7-C8
2	A	116	LDA	C3-C4-C5-C6
2	A	116	LDA	C11-C10-C9-C8
2	A	107	LDA	C9-C10-C11-C12
2	A	120	LDA	C9-C10-C11-C12
2	A	104	LDA	C11-C10-C9-C8
2	A	110	LDA	C3-C4-C5-C6
2	A	106	LDA	C4-C5-C6-C7
2	A	108	LDA	C6-C7-C8-C9
2	A	118	LDA	C1-C2-C3-C4
2	A	109	LDA	C7-C8-C9-C10
2	A	114	LDA	C1-C2-C3-C4
2	A	112	LDA	C6-C7-C8-C9
2	A	110	LDA	C9-C10-C11-C12
2	A	107	LDA	C11-C10-C9-C8
2	A	120	LDA	C1-C2-C3-C4
2	A	111	LDA	C1-C2-C3-C4
2	A	117	LDA	C7-C8-C9-C10
2	A	107	LDA	C1-C2-C3-C4
2	A	116	LDA	C7-C8-C9-C10
2	A	117	LDA	C6-C7-C8-C9
2	A	107	LDA	C3-C4-C5-C6
2	A	111	LDA	C9-C10-C11-C12
2	A	117	LDA	C9-C10-C11-C12
2	A	115	LDA	C9-C10-C11-C12
2	A	111	LDA	C2-C3-C4-C5
2	A	103	LDA	C2-C1-N1-CM2
2	A	112	LDA	C2-C1-N1-CM1
2	A	115	LDA	C2-C1-N1-CM1
2	A	118	LDA	C2-C1-N1-CM1
2	A	118	LDA	C2-C1-N1-CM2
2	A	119	LDA	C2-C1-N1-CM1
2	A	110	LDA	C1-C2-C3-C4
2	A	101	LDA	C9-C10-C11-C12
2	A	112	LDA	C9-C10-C11-C12
2	A	105	LDA	C1-C2-C3-C4
2	A	104	LDA	C2-C1-N1-O1
2	A	108	LDA	C2-C1-N1-O1
2	A	118	LDA	C2-C1-N1-O1
2	A	105	LDA	C11-C10-C9-C8
2	A	120	LDA	C2-C3-C4-C5

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Mol	Chain	Res	Type	Atoms
2	A	113	LDA	C9-C10-C11-C12
2	A	119	LDA	C7-C8-C9-C10
2	A	103	LDA	N1-C1-C2-C3
2	A	107	LDA	N1-C1-C2-C3
2	A	111	LDA	N1-C1-C2-C3
2	A	116	LDA	N1-C1-C2-C3
2	A	101	LDA	C5-C6-C7-C8
2	A	112	LDA	C4-C5-C6-C7
2	A	109	LDA	C9-C10-C11-C12
2	A	111	LDA	C11-C10-C9-C8
2	A	108	LDA	C5-C6-C7-C8
2	A	102	LDA	C6-C7-C8-C9
2	A	115	LDA	C6-C7-C8-C9
2	A	105	LDA	C9-C10-C11-C12
2	A	103	LDA	C1-C2-C3-C4
2	A	108	LDA	C2-C3-C4-C5
2	A	119	LDA	C11-C10-C9-C8
2	A	108	LDA	C7-C8-C9-C10
2	A	110	LDA	C6-C7-C8-C9
2	A	109	LDA	C6-C7-C8-C9
2	A	120	LDA	N1-C1-C2-C3
2	A	110	LDA	C2-C1-N1-CM1
2	A	103	LDA	C3-C4-C5-C6
2	A	105	LDA	C6-C7-C8-C9
2	A	103	LDA	C2-C1-N1-O1
2	A	109	LDA	C2-C1-N1-O1
2	A	109	LDA	C2-C3-C4-C5
2	A	112	LDA	C7-C8-C9-C10
2	A	102	LDA	C5-C6-C7-C8

There are no ring outliers.

10 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	112	LDA	7	0
2	A	105	LDA	1	0
2	A	113	LDA	2	0
2	A	110	LDA	1	0
2	A	108	LDA	2	0
2	A	117	LDA	5	0
2	A	119	LDA	16	0
2	A	109	LDA	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	101	LDA	2	0
2	A	102	LDA	3	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	80/83 (96%)	0.11	2 (2%) 58 62	19, 26, 40, 57	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	21	ASN	3.4
1	A	37	TRP	2.6

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 oligosaccharides 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(Å ²)	Q<0.9
2	LDA	A	116	16/16	0.48	0.14	83,92,99,99	0
2	LDA	A	115	16/16	0.55	0.11	66,70,88,89	0
2	LDA	A	112	16/16	0.60	0.12	69,72,88,89	0
2	LDA	A	114	16/16	0.60	0.12	60,72,83,84	0
2	LDA	A	117	16/16	0.64	0.14	58,60,72,72	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	LDA	A	111	16/16	0.65	0.12	54,60,80,80	0
2	LDA	A	109	16/16	0.67	0.11	65,76,93,93	0
2	LDA	A	108	16/16	0.68	0.10	59,66,79,79	0
2	LDA	A	119	16/16	0.68	0.10	65,77,92,93	0
2	LDA	A	107	16/16	0.69	0.11	52,60,72,74	0
2	LDA	A	110	16/16	0.70	0.14	61,77,95,95	0
2	LDA	A	113	16/16	0.71	0.09	48,58,74,76	0
2	LDA	A	120	16/16	0.71	0.10	48,51,53,53	16
2	LDA	A	118	16/16	0.77	0.09	46,56,59,59	0
2	LDA	A	106	16/16	0.78	0.10	39,47,69,70	0
2	LDA	A	104	16/16	0.83	0.09	39,49,63,63	0
2	LDA	A	102	16/16	0.83	0.09	55,60,69,69	0
2	LDA	A	101	16/16	0.84	0.08	45,51,55,56	0
2	LDA	A	103	16/16	0.84	0.09	44,50,67,67	0
2	LDA	A	105	16/16	0.86	0.09	36,41,61,62	0

6.5 Other polymers [i](#)

There are no such residues in this entry.