



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 01:51 am GMT

PDB ID : 4NC3
Title : Crystal structure of the 5-HT_{2B} receptor solved using serial femtosecond crystallography in lipidic cubic phase.
Authors : Liu, W.; Wacker, D.; Gati, C.; Han, G.W.; James, D.; Wang, D.; Nelson, G.; Weierstall, U.; Katritch, V.; Barty, A.; Zatsepin, N.A.; Li, D.; Messerschmidt, M.; Boutet, S.; Williams, G.J.; Koglin, J.E.; Seibert, M.M.; Wang, C.; Shah, S.T.A.; Basu, S.; Fromme, R.; Kupitz, C.; Rendek, K.N.; Grotjohann, I.; Fromme, P.; Kirian, R.A.; Beyerlein, K.R.; White, T.A.; Chapman, H.N.; Caffrey, M.; Spence, J.C.H.; Stevens, R.C.; Cherezov, V.; GPCR Network (GPCR)
Deposited on : 2013-10-23
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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)

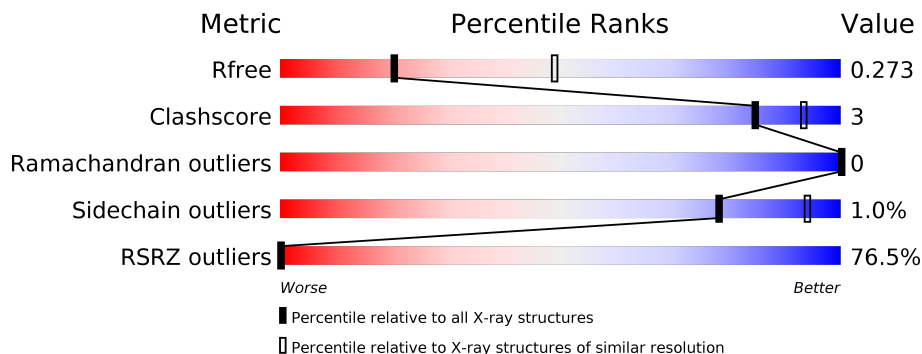
1 Overall quality at a glance

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))
R_{free}	111664	2792 (2.80-2.80)
Clashscore	122126	3209 (2.80-2.80)
Ramachandran outliers	120053	3158 (2.80-2.80)
Sidechain outliers	120020	3160 (2.80-2.80)
RSRZ outliers	108989	2726 (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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	430	

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	PLM	A	1201	-	-	-	X
5	OLC	A	1204	-	-	-	X
5	OLC	A	1205	-	-	-	X
5	OLC	A	1208	-	-	-	X
6	PEG	A	1206	-	-	-	X
7	TRS	A	1209	-	-	-	X
8	OLA	A	1210	-	-	-	X
8	OLA	A	1211	-	-	-	X
8	OLA	A	1212	-	-	-	X
9	DGA	A	1213	-	-	-	X

2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 3123 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.

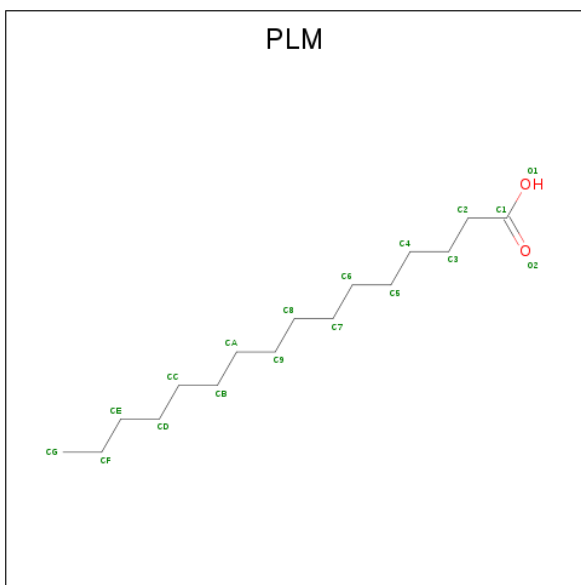
- Molecule 1 is a protein called Chimera protein of human 5-hydroxytryptamine receptor 2B and E. Coli soluble cytochrome b562.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	370	2839	1867	451	505	16	0	1	0

There are 23 discrepancies between the modelled and reference sequences:

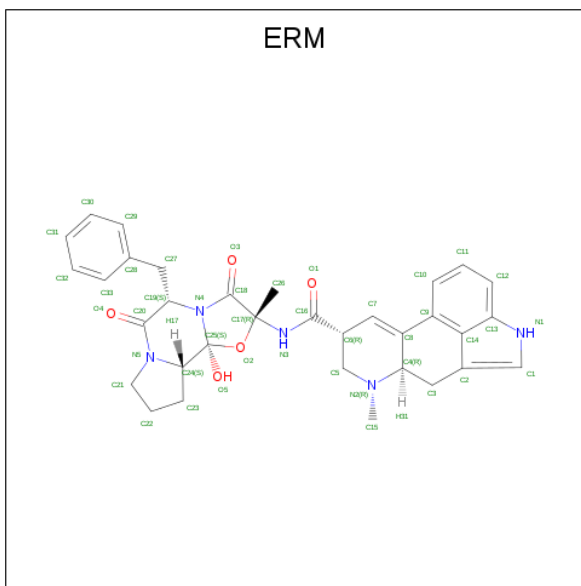
Chain	Residue	Modelled	Actual	Comment	Reference
A	26	ASP	-	EXPRESSION TAG	UNP P41595
A	27	TYR	-	EXPRESSION TAG	UNP P41595
A	28	LYS	-	EXPRESSION TAG	UNP P41595
A	29	ASP	-	EXPRESSION TAG	UNP P41595
A	30	ASP	-	EXPRESSION TAG	UNP P41595
A	31	ASP	-	EXPRESSION TAG	UNP P41595
A	32	ASP	-	EXPRESSION TAG	UNP P41595
A	33	GLY	-	EXPRESSION TAG	UNP P41595
A	34	ALA	-	EXPRESSION TAG	UNP P41595
A	35	PRO	-	EXPRESSION TAG	UNP P41595
A	144	TRP	MET	engineered mutation	UNP P41595
A	1007	TRP	MET	engineered mutation	UNP P0ABE7
A	1102	ILE	HIS	engineered mutation	UNP P0ABE7
A	1106	LEU	ARG	engineered mutation	UNP P0ABE7
A	406	GLY	-	EXPRESSION TAG	UNP P41595
A	407	ARG	-	EXPRESSION TAG	UNP P41595
A	408	PRO	-	EXPRESSION TAG	UNP P41595
A	409	LEU	-	EXPRESSION TAG	UNP P41595
A	410	GLU	-	EXPRESSION TAG	UNP P41595
A	411	VAL	-	EXPRESSION TAG	UNP P41595
A	412	LEU	-	EXPRESSION TAG	UNP P41595
A	413	PHE	-	EXPRESSION TAG	UNP P41595
A	414	GLN	-	EXPRESSION TAG	UNP P41595

- Molecule 2 is PALMITIC ACID (three-letter code: PLM) (formula: C₁₆H₃₂O₂).



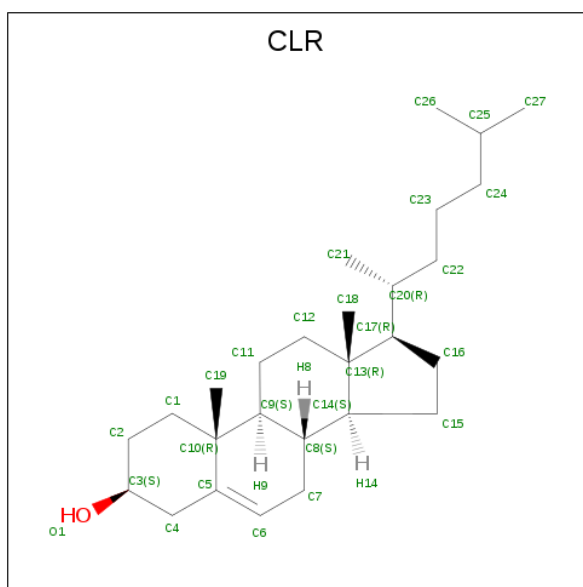
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			17	16	1		

- Molecule 3 is Ergotamine (three-letter code: ERM) (formula: $C_{33}H_{35}N_5O_5$).



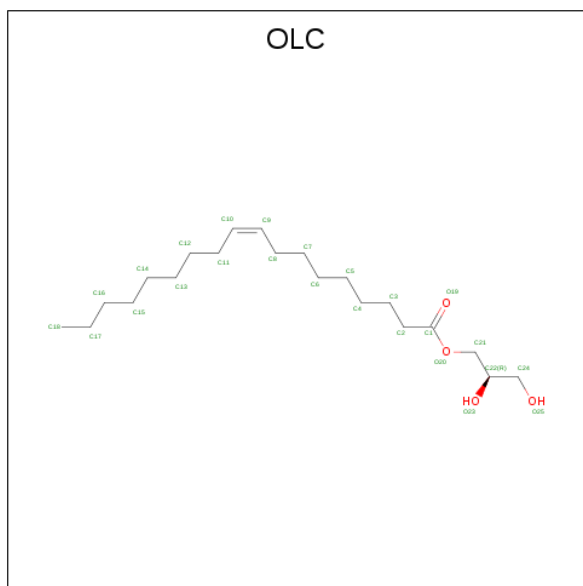
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			43	33	5	5		

- Molecule 4 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	C O	0	0
			28	27 1		

- Molecule 5 is (2R)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLC) (formula: $C_{21}H_{40}O_4$).



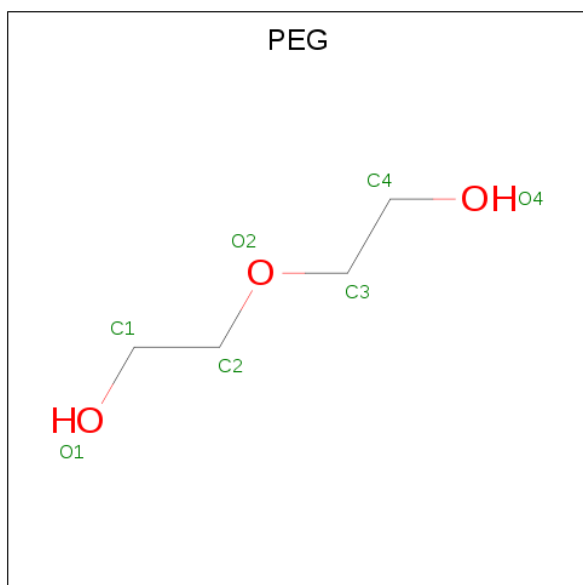
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	C O	0	0
			19	15 4		
5	A	1	Total	C O	0	0
			16	12 4		

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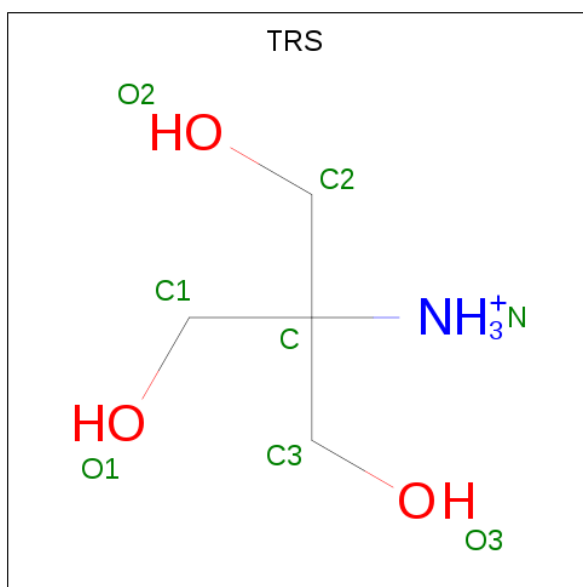
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			25	21	4		
5	A	1	Total	C	O	0	0
			19	15	4		

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C₄H₁₀O₃).



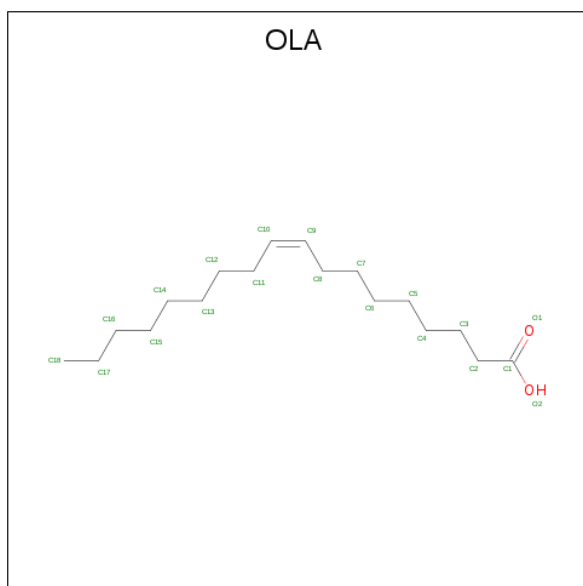
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			7	4	3		

- Molecule 7 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: C₄H₁₂NO₃).



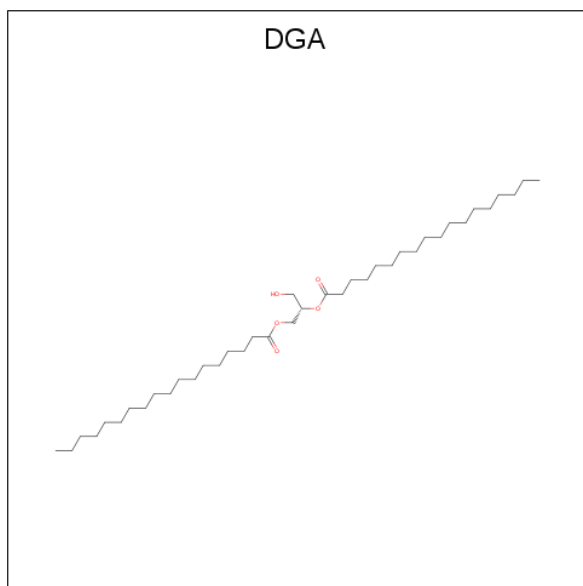
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	N			O
7	A	1	8	4	1	3	0	0

- Molecule 8 is OLEIC ACID (three-letter code: OLA) (formula: C₁₈H₃₄O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
8	A	1	10	10		0	0
8	A	1	20	18	2	0	0
8	A	1	19	17	2	0	0

- Molecule 9 is DIACYL GLYCEROL (three-letter code: DGA) (formula: $C_{39}H_{76}O_5$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total	C	O	0	0
			26	21	5		
9	A	1	Total	C	O	0	0
			20	15	5		

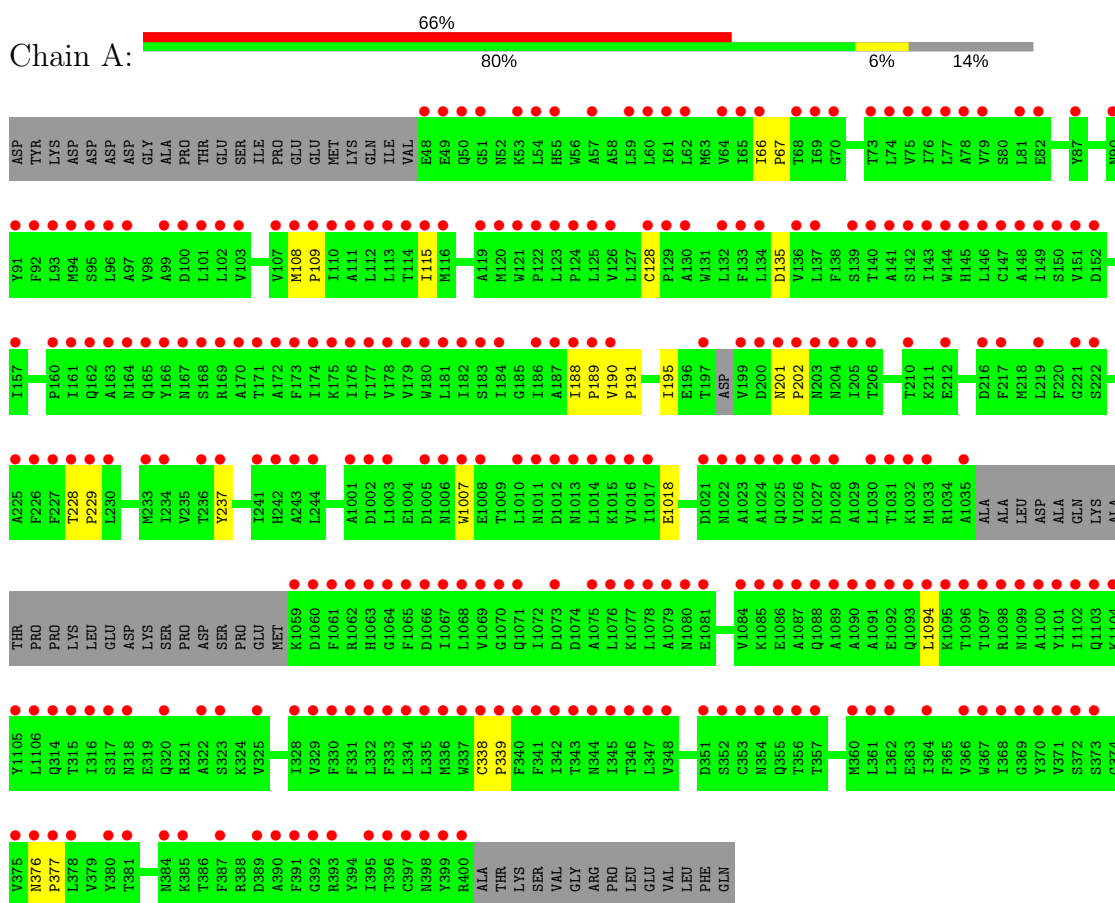
- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	7	Total	O	0	0
			7	7		

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: Chimera protein of human 5-hydroxytryptamine receptor 2B and E. Coli soluble cytochrome b562



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	61.50Å 122.20Å 168.50Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.68 – 2.80 34.68 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.9 (34.68-2.80) 93.5 (34.68-2.50)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.94 (at 2.51Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.8_1069)	Depositor
R, R_{free}	0.227 , 0.270 0.235 , 0.273	Depositor DCC
R_{free} test set	1078 reflections (5.15%)	wwPDB-VP
Wilson B-factor (Å ²)	106.8	Xtrriage
Anisotropy	0.053	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 88.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.52$, $\langle L^2 \rangle = 0.36$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	3123	wwPDB-VP
Average B, all atoms (Å ²)	98.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.11% 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: OLA, OLC, DGA, ERM, TRS, PEG, PLM, CLR

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	0.22	0/2903	0.36	0/3965

There are no bond length outliers.

There are no bond angle outliers.

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	2839	0	2823	13	0
2	A	17	0	31	0	0
3	A	43	0	35	0	0
4	A	28	0	46	1	0
5	A	79	0	111	3	0
6	A	7	0	9	0	0
7	A	8	0	12	0	0
8	A	49	0	76	0	0
9	A	46	0	56	0	0
10	A	7	0	0	0	0
All	All	3123	0	3199	16	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 3.

All (16) 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:128:CYS:SG	1:A:195:ILE:CD1	2.84	0.65
1:A:201:ASN:HB3	1:A:202:PRO:HD3	1.84	0.58
1:A:188:ILE:N	1:A:189:PRO:CD	2.70	0.55
1:A:376:ASN:HB3	1:A:377:PRO:HD3	1.92	0.52
4:A:1203:CLR:H183	4:A:1203:CLR:H212	1.91	0.51
5:A:1207:OLC:C14	5:A:1207:OLC:H18A	2.42	0.49
1:A:1007:TRP:C	1:A:1007:TRP:CD1	2.86	0.48
1:A:135:ASP:OD1	1:A:135:ASP:C	2.53	0.47
1:A:237:TYR:HA	5:A:1204:OLC:H22	1.97	0.46
1:A:201:ASN:HB3	1:A:202:PRO:CD	2.47	0.44
1:A:66:ILE:HB	1:A:67:PRO:HD3	2.00	0.44
5:A:1207:OLC:H14	5:A:1207:OLC:H18A	1.99	0.43
1:A:338:CYS:N	1:A:339:PRO:CD	2.82	0.42
1:A:228:THR:HB	1:A:229:PRO:CD	2.50	0.42
1:A:108:MET:HB2	1:A:109:PRO:HD3	2.02	0.42
1:A:190:VAL:HB	1:A:191:PRO:CD	2.50	0.41

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	365/430 (85%)	352 (96%)	13 (4%)	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	293/371 (79%)	290 (99%)	3 (1%)	78 94

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	115	ILE
1	A	1018	GLU
1	A	1094	LEU

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

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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

14 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	PLM	A	1201	1	16,16,17	0.83	1 (6%)	15,15,17	0.53	0
3	ERM	A	1202	-	47,50,50	1.32	8 (17%)	67,79,79	2.05	18 (26%)
4	CLR	A	1203	-	31,31,31	0.64	1 (3%)	48,48,48	1.65	12 (25%)
5	OLC	A	1204	-	18,18,24	1.21	2 (11%)	19,19,25	1.10	1 (5%)
5	OLC	A	1205	-	15,15,24	1.25	2 (13%)	16,16,25	1.13	1 (6%)
6	PEG	A	1206	-	6,6,6	0.59	0	5,5,5	0.25	0
5	OLC	A	1207	-	24,24,24	1.05	2 (8%)	25,25,25	1.16	2 (8%)
5	OLC	A	1208	-	18,18,24	1.20	2 (11%)	19,19,25	1.19	2 (10%)
7	TRS	A	1209	-	7,7,7	0.34	0	9,9,9	0.61	0
8	OLA	A	1210	-	9,9,19	0.97	1 (11%)	8,8,19	0.67	0
8	OLA	A	1211	-	16,19,19	0.74	1 (6%)	15,19,19	0.58	0
8	OLA	A	1212	-	15,18,19	0.76	1 (6%)	14,18,19	0.59	0
9	DGA	A	1213	-	25,25,43	0.95	2 (8%)	27,27,45	1.29	2 (7%)
9	DGA	A	1214	-	19,19,43	1.08	2 (10%)	21,21,45	1.45	2 (9%)

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	PLM	A	1201	1	-	0/14/14/15	0/0/0/0
3	ERM	A	1202	-	-	0/13/87/87	0/7/8/8
4	CLR	A	1203	-	-	0/10/68/68	0/4/4/4
5	OLC	A	1204	-	-	0/18/18/24	0/0/0/0
5	OLC	A	1205	-	-	0/15/15/24	0/0/0/0
6	PEG	A	1206	-	-	0/4/4/4	0/0/0/0
5	OLC	A	1207	-	-	0/24/24/24	0/0/0/0
5	OLC	A	1208	-	-	0/18/18/24	0/0/0/0
7	TRS	A	1209	-	-	0/9/9/9	0/0/0/0
8	OLA	A	1210	-	-	0/7/7/17	0/0/0/0
8	OLA	A	1211	-	-	0/15/17/17	0/0/0/0
8	OLA	A	1212	-	-	0/14/16/17	0/0/0/0
9	DGA	A	1213	-	-	0/27/27/45	0/0/0/0
9	DGA	A	1214	-	-	0/21/21/45	0/0/0/0

All (25) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1202	ERM	C12-C13	-3.82	1.35	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1201	PLM	O1-C1	-3.18	1.25	1.42
3	A	1202	ERM	C19-N4	-2.49	1.43	1.47
3	A	1202	ERM	C24-N5	-2.14	1.44	1.47
3	A	1202	ERM	C27-C19	-2.05	1.50	1.54
4	A	1203	CLR	C10-C9	-2.01	1.52	1.56
3	A	1202	ERM	C5-N2	2.12	1.50	1.47
3	A	1202	ERM	C6-C16	2.18	1.56	1.53
5	A	1205	OLC	C2-C1	2.48	1.57	1.50
5	A	1207	OLC	C2-C1	2.51	1.57	1.50
9	A	1213	DGA	OG2-CB1	2.52	1.41	1.34
9	A	1214	DGA	OG2-CB1	2.54	1.41	1.34
9	A	1213	DGA	OG1-CA1	2.61	1.40	1.33
5	A	1208	OLC	C2-C1	2.62	1.58	1.50
5	A	1204	OLC	C2-C1	2.62	1.58	1.50
9	A	1214	DGA	OG1-CA1	2.63	1.40	1.33
3	A	1202	ERM	C11-C12	2.63	1.42	1.36
8	A	1210	OLA	C10-C9	2.83	1.47	1.28
8	A	1212	OLA	C10-C9	2.83	1.47	1.31
8	A	1211	OLA	C10-C9	2.84	1.47	1.31
3	A	1202	ERM	C9-C8	3.28	1.51	1.45
5	A	1208	OLC	O20-C1	3.53	1.43	1.33
5	A	1207	OLC	O20-C1	3.54	1.43	1.33
5	A	1204	OLC	O20-C1	3.55	1.43	1.33
5	A	1205	OLC	O20-C1	3.58	1.43	1.33

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1202	ERM	O2-C25-N4	-5.70	98.94	104.00
3	A	1202	ERM	C21-N5-C24	-3.65	105.87	111.44
4	A	1203	CLR	C3-C4-C5	-3.51	105.92	112.02
4	A	1203	CLR	C16-C17-C20	-3.47	106.62	112.15
3	A	1202	ERM	C19-N4-C18	-3.19	122.50	125.93
4	A	1203	CLR	C21-C20-C22	-3.15	105.38	110.34
3	A	1202	ERM	C23-C24-C25	-3.09	114.44	117.65
4	A	1203	CLR	C19-C10-C9	-3.07	107.91	111.67
3	A	1202	ERM	O5-C25-N4	-3.05	110.23	112.86
4	A	1203	CLR	C18-C13-C14	-2.71	106.58	111.72
3	A	1202	ERM	C10-C9-C14	-2.64	116.30	120.12
3	A	1202	ERM	O4-C20-N5	-2.45	119.37	123.00
3	A	1202	ERM	O1-C16-C6	-2.37	118.85	121.48
4	A	1203	CLR	C7-C8-C14	-2.32	107.44	110.92

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1207	OLC	O20-C1-O19	-2.30	117.97	123.58
4	A	1203	CLR	C15-C14-C8	-2.29	115.44	119.07
3	A	1202	ERM	C25-C24-N5	-2.12	106.52	109.01
5	A	1208	OLC	O20-C1-O19	-2.11	118.42	123.58
4	A	1203	CLR	C13-C17-C20	-2.05	116.18	119.47
4	A	1203	CLR	C13-C14-C8	-2.02	111.32	114.38
4	A	1203	CLR	C2-C1-C10	2.12	117.24	112.77
3	A	1202	ERM	C5-N2-C4	2.22	113.49	110.96
3	A	1202	ERM	C21-N5-C20	2.31	126.61	122.96
4	A	1203	CLR	C1-C10-C5	2.48	113.40	108.76
3	A	1202	ERM	C24-C25-N4	2.62	110.96	108.13
9	A	1213	DGA	OG1-CA1-CA2	2.65	119.58	111.92
5	A	1204	OLC	O20-C1-C2	2.74	119.84	111.92
5	A	1207	OLC	O20-C1-C2	2.75	119.88	111.92
9	A	1214	DGA	OG1-CA1-CA2	2.84	120.14	111.92
5	A	1208	OLC	O20-C1-C2	2.90	120.31	111.92
3	A	1202	ERM	O2-C25-C24	3.00	114.08	110.37
5	A	1205	OLC	O20-C1-C2	3.00	120.60	111.92
3	A	1202	ERM	O2-C17-C26	3.60	113.49	109.61
9	A	1213	DGA	OG2-CB1-CB2	3.79	119.54	111.55
9	A	1214	DGA	OG2-CB1-CB2	3.83	119.61	111.55
4	A	1203	CLR	C1-C2-C3	3.88	115.40	110.45
3	A	1202	ERM	C23-C24-N5	4.72	107.90	102.73
3	A	1202	ERM	C6-C16-N3	4.86	120.54	114.60
3	A	1202	ERM	C25-N4-C18	5.06	117.70	112.64
3	A	1202	ERM	C25-O2-C17	5.13	114.49	111.29

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1203	CLR	1	0
5	A	1204	OLC	1	0
5	A	1207	OLC	2	0

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	370/430 (86%)	3.01	283 (76%) 0 0	57, 89, 153, 196	0

All (283) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	163	ALA	11.6
1	A	161	ILE	9.3
1	A	1070	GLY	9.1
1	A	1028	ASP	8.6
1	A	201	ASN	8.5
1	A	204	ASN	8.4
1	A	1093	GLN	8.1
1	A	200	ASP	8.0
1	A	203	ASN	7.9
1	A	119	ALA	7.1
1	A	1024	ALA	6.2
1	A	202	PRO	6.2
1	A	165	GLN	6.2
1	A	1069	VAL	6.1
1	A	199	VAL	6.0
1	A	160	PRO	6.0
1	A	128	CYS	5.9
1	A	50	GLN	5.9
1	A	315	THR	5.9
1	A	1080	ASN	5.7
1	A	1073	ASP	5.6
1	A	1065	PHE	5.5
1	A	164	ASN	5.5
1	A	48	GLU	5.5
1	A	389	ASP	5.4
1	A	316	ILE	5.4
1	A	1068	LEU	5.3

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Mol	Chain	Res	Type	RSRZ
1	A	49	GLU	5.1
1	A	1021	ASP	5.0
1	A	1076	LEU	4.9
1	A	1026	VAL	4.9
1	A	1103	GLN	4.8
1	A	1100	ALA	4.8
1	A	317	SER	4.7
1	A	205	ILE	4.7
1	A	242	HIS	4.6
1	A	392	GLY	4.6
1	A	177	THR	4.5
1	A	1096	THR	4.5
1	A	357	THR	4.5
1	A	140	THR	4.4
1	A	143	ILE	4.4
1	A	229	PRO	4.4
1	A	1066	ASP	4.4
1	A	397	CYS	4.4
1	A	1097	THR	4.4
1	A	103	VAL	4.4
1	A	1012	ASP	4.3
1	A	345	ILE	4.3
1	A	1030	LEU	4.3
1	A	141	ALA	4.3
1	A	1063	HIS	4.3
1	A	337	TRP	4.3
1	A	176	ILE	4.3
1	A	197	THR	4.3
1	A	1017	ILE	4.3
1	A	92	PHE	4.3
1	A	146	LEU	4.3
1	A	162	GLN	4.3
1	A	167	ASN	4.1
1	A	1033	MET	4.1
1	A	1079	ALA	4.1
1	A	384	ASN	4.0
1	A	175	LYS	4.0
1	A	96	LEU	4.0
1	A	1015	LYS	4.0
1	A	338	CYS	4.0
1	A	1084	VAL	4.0
1	A	342	ILE	4.0

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Mol	Chain	Res	Type	RSRZ
1	A	331	PHE	4.0
1	A	139	SER	4.0
1	A	335	LEU	4.0
1	A	190	VAL	3.9
1	A	1062	ARG	3.9
1	A	78	ALA	3.9
1	A	1001	ALA	3.9
1	A	115	ILE	3.9
1	A	373	SER	3.9
1	A	147	CYS	3.8
1	A	178	VAL	3.8
1	A	97	ALA	3.8
1	A	206	THR	3.8
1	A	1075	ALA	3.8
1	A	396	THR	3.8
1	A	1094	LEU	3.8
1	A	340	PHE	3.8
1	A	376	ASN	3.8
1	A	395	ILE	3.8
1	A	1077	LYS	3.8
1	A	166	TYR	3.8
1	A	228	THR	3.7
1	A	70	GLY	3.7
1	A	346	THR	3.7
1	A	356	THR	3.7
1	A	241	ILE	3.7
1	A	1031	THR	3.7
1	A	1078	LEU	3.7
1	A	339	PRO	3.7
1	A	1014	LEU	3.7
1	A	361	LEU	3.7
1	A	172	ALA	3.7
1	A	1101	TYR	3.7
1	A	1007	TRP	3.6
1	A	1061	PHE	3.6
1	A	64	VAL	3.6
1	A	149	ILE	3.6
1	A	390	ALA	3.6
1	A	230	LEU	3.6
1	A	354	ASN	3.6
1	A	60	LEU	3.5
1	A	188	ILE	3.5

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Mol	Chain	Res	Type	RSRZ
1	A	61	ILE	3.5
1	A	186	ILE	3.5
1	A	101	LEU	3.5
1	A	65	ILE	3.5
1	A	69	ILE	3.4
1	A	181	LEU	3.4
1	A	314	GLN	3.4
1	A	1008	GLU	3.4
1	A	126	VAL	3.4
1	A	352	SER	3.4
1	A	174	ILE	3.4
1	A	329	VAL	3.4
1	A	187	ALA	3.4
1	A	76	ILE	3.3
1	A	145	HIS	3.3
1	A	351	ASP	3.3
1	A	77	LEU	3.3
1	A	370	TYR	3.3
1	A	367	TRP	3.3
1	A	182	ILE	3.3
1	A	330	PHE	3.3
1	A	137	LEU	3.3
1	A	378	LEU	3.3
1	A	341	PHE	3.3
1	A	366	VAL	3.3
1	A	1060	ASP	3.3
1	A	1022	ASN	3.3
1	A	344	ASN	3.3
1	A	142	SER	3.2
1	A	400	ARG	3.2
1	A	372	SER	3.2
1	A	236	THR	3.2
1	A	1067	ILE	3.2
1	A	1011	ASN	3.2
1	A	179	VAL	3.2
1	A	332	LEU	3.2
1	A	144	TRP	3.2
1	A	1010	LEU	3.2
1	A	219	LEU	3.2
1	A	93	LEU	3.2
1	A	110	ILE	3.1
1	A	120	MET	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	226	PHE	3.1
1	A	102	LEU	3.1
1	A	75	VAL	3.1
1	A	124	PRO	3.1
1	A	152	ASP	3.1
1	A	1099	ASN	3.1
1	A	385	LYS	3.1
1	A	217	PHE	3.1
1	A	183	SER	3.0
1	A	114	THR	3.0
1	A	1005	ASP	3.0
1	A	318	ASN	3.0
1	A	113	LEU	3.0
1	A	233	MET	3.0
1	A	150	SER	3.0
1	A	227	PHE	2.9
1	A	371	VAL	2.9
1	A	90	ASN	2.9
1	A	82	GLU	2.9
1	A	189	PRO	2.9
1	A	1106	LEU	2.9
1	A	320	GLN	2.9
1	A	210	THR	2.9
1	A	1095	LYS	2.8
1	A	336	MET	2.8
1	A	377	PRO	2.8
1	A	399	TYR	2.8
1	A	1006	ASN	2.8
1	A	1032	LYS	2.8
1	A	343	THR	2.8
1	A	54	LEU	2.7
1	A	222	SER	2.7
1	A	51	GLY	2.7
1	A	1086	GLU	2.7
1	A	328	ILE	2.7
1	A	107	VAL	2.7
1	A	112	LEU	2.7
1	A	1002	ASP	2.7
1	A	180	TRP	2.7
1	A	173	PHE	2.6
1	A	362	LEU	2.6
1	A	334	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	148	ALA	2.6
1	A	1090	ALA	2.6
1	A	55	HIS	2.6
1	A	360	MET	2.6
1	A	322	ALA	2.6
1	A	347	LEU	2.6
1	A	121	TRP	2.6
1	A	1003	LEU	2.6
1	A	73	THR	2.6
1	A	129	PRO	2.5
1	A	123	LEU	2.5
1	A	94	MET	2.5
1	A	1089	ALA	2.5
1	A	234	ILE	2.5
1	A	368	ILE	2.5
1	A	62	LEU	2.5
1	A	74	LEU	2.5
1	A	136	VAL	2.5
1	A	375	VAL	2.5
1	A	130	ALA	2.5
1	A	184	ILE	2.5
1	A	398	ASN	2.5
1	A	1092	GLU	2.5
1	A	380	TYR	2.5
1	A	391	PHE	2.4
1	A	111	ALA	2.4
1	A	68	THR	2.4
1	A	91	TYR	2.4
1	A	1035	ALA	2.4
1	A	1098	ARG	2.4
1	A	1105	TYR	2.4
1	A	353	CYS	2.4
1	A	243	ALA	2.4
1	A	1023	ALA	2.4
1	A	109	PRO	2.4
1	A	1013	ASN	2.4
1	A	170	ALA	2.4
1	A	66	ILE	2.4
1	A	1027	LYS	2.4
1	A	168	SER	2.4
1	A	323	SER	2.4
1	A	108	MET	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	1085	LYS	2.4
1	A	122	PRO	2.3
1	A	116	MET	2.3
1	A	171	THR	2.3
1	A	99	ALA	2.3
1	A	1104	LYS	2.3
1	A	79	VAL	2.3
1	A	125	LEU	2.3
1	A	387	PHE	2.3
1	A	364	ILE	2.3
1	A	1064	GLY	2.3
1	A	348	VAL	2.3
1	A	100	ASP	2.3
1	A	157	ILE	2.3
1	A	133	PHE	2.3
1	A	132	LEU	2.3
1	A	1081	GLU	2.3
1	A	1071	GLN	2.3
1	A	355	GLN	2.3
1	A	1016	VAL	2.2
1	A	87	TYR	2.2
1	A	1088	GLN	2.2
1	A	333	PHE	2.2
1	A	225	ALA	2.2
1	A	1087	ALA	2.2
1	A	216	ASP	2.2
1	A	53	LYS	2.2
1	A	325	VAL	2.2
1	A	393	ARG	2.1
1	A	212	GLU	2.1
1	A	244	LEU	2.1
1	A	169	ARG	2.1
1	A	1025	GLN	2.1
1	A	134	LEU	2.1
1	A	95	SER	2.1
1	A	59	LEU	2.1
1	A	237	TYR	2.1
1	A	1102	ILE	2.1
1	A	81	LEU	2.1
1	A	369	GLY	2.1
1	A	381	THR	2.0
1	A	1091	ALA	2.0

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Mol	Chain	Res	Type	RSRZ
1	A	57	ALA	2.0
1	A	221	GLY	2.0
1	A	151	VAL	2.0
1	A	1059	LYS	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(Å ²)	Q<0.9
7	TRS	A	1209	8/8	0.07	0.58	133,136,137,138	0
5	OLC	A	1208	19/25	0.16	0.81	80,111,128,130	0
9	DGA	A	1213	26/44	0.19	0.44	108,130,145,147	0
8	OLA	A	1211	20/20	0.31	0.66	77,106,112,113	0
6	PEG	A	1206	7/7	0.37	0.49	94,100,104,107	0
8	OLA	A	1210	10/20	0.39	0.59	84,90,101,101	0
5	OLC	A	1205	16/25	0.39	0.47	70,101,124,125	0
9	DGA	A	1214	20/44	0.44	0.39	104,127,141,146	0
5	OLC	A	1207	25/25	0.46	0.39	99,114,150,154	0
2	PLM	A	1201	17/18	0.56	0.54	100,105,112,113	0
4	CLR	A	1203	28/28	0.68	0.33	72,93,103,105	0
5	OLC	A	1204	19/25	0.68	0.56	58,88,106,108	0
3	ERM	A	1202	43/43	0.70	0.33	56,66,79,85	0
8	OLA	A	1212	19/20	0.72	0.91	101,119,128,128	0

6.5 Other polymers [i](#)

There are no such residues in this entry.