Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 08:55 PM GMT

PDB ID	:	4UC1
Title	:	High resolution crystal structure of translocator protein 18kDa (TSPO) from Rhodobacter sphaeroides (A139T Mutant) in C2 space group
Authors	:	Li, F.; Liu, J.; Zheng, Y.; Garavito, R.M.; Ferguson-Miller, S.
Deposited on	:	2014-08-13
Resolution	:	1.80 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
http://wwpdb.org/validation/2016/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see references ①) were used in the production of this report:

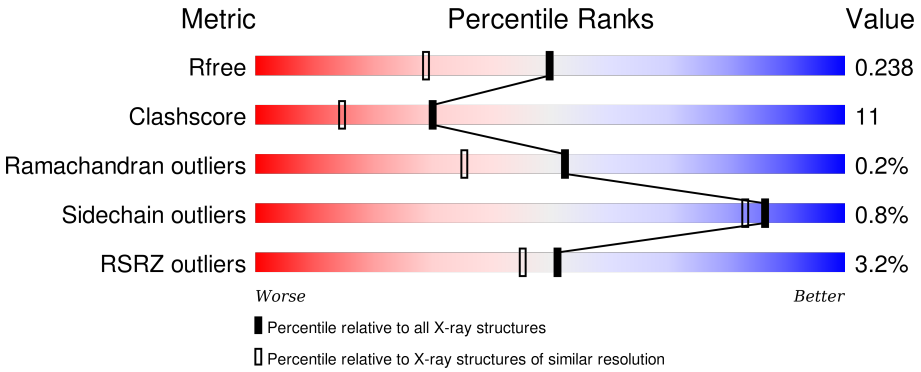
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk26865

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 1.80 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}	91344	4533 (1.80-1.80)
Clashscore	102246	5383 (1.80-1.80)
Ramachandran outliers	100387	5320 (1.80-1.80)
Sidechain outliers	100360	5319 (1.80-1.80)
RSRZ outliers	91569	4547 (1.80-1.80)

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 <=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	157	2% 83% 17%
1	B	157	2% 87% 12%
1	C	157	6% 80% 15% 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	OLC	A	201	-	-	-	X
2	OLC	A	202	-	-	-	X
2	OLC	A	203	-	-	-	X
2	OLC	A	204	-	-	-	X
2	OLC	A	205	-	-	-	X
2	OLC	A	206	-	-	-	X
2	OLC	B	201	-	-	-	X
2	OLC	B	202	-	-	-	X
2	OLC	B	203	-	-	-	X
2	OLC	B	205	-	-	-	X
2	OLC	B	206	-	-	-	X
2	OLC	B	207	-	-	-	X
2	OLC	C	201	-	-	-	X
2	OLC	C	202	-	-	-	X
2	OLC	C	203	-	-	-	X
3	PP9	A	207	-	-	X	X
4	Z0P	B	208	X	-	-	X
5	P4C	C	205	-	-	-	X
6	MOE	C	206	-	-	-	X

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 4330 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.

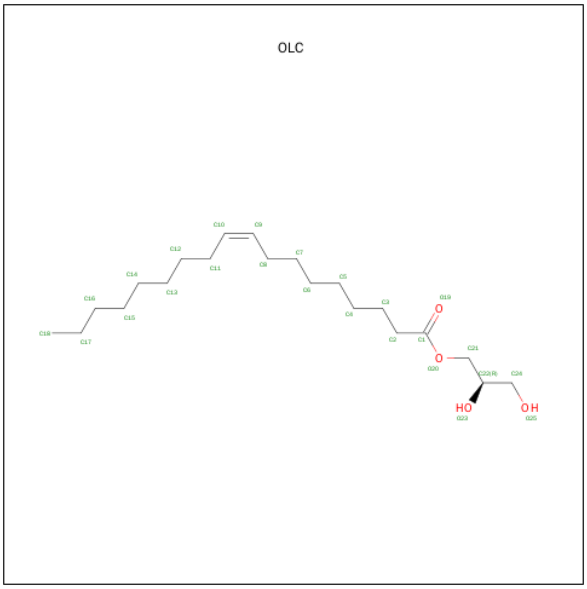
- Molecule 1 is a protein called Translocator protein TspO.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	157	Total	C	N	O	S	0	1	0
			1276	856	203	205	12			
1	B	156	Total	C	N	O	S	0	2	0
			1278	858	205	205	10			
1	C	149	Total	C	N	O	S	0	1	0
			1204	812	188	194	10			

There are 3 discrepancies between the modelled and reference sequences:

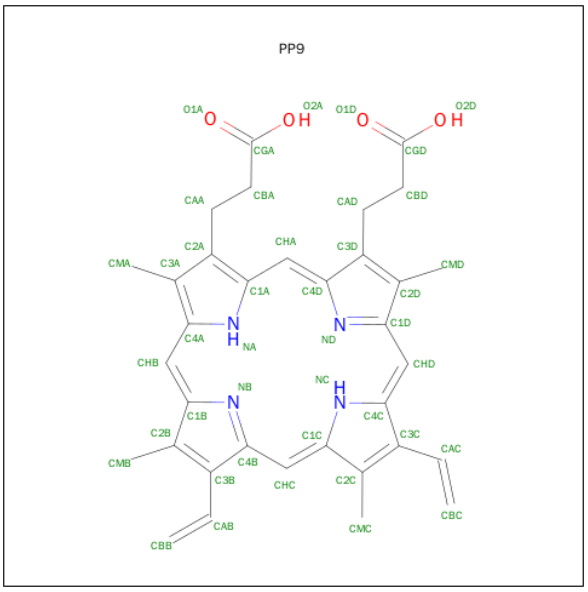
Chain	Residue	Modelled	Actual	Comment	Reference
A	139	THR	ALA	engineered mutation	UNP Q9RFC8
B	139	THR	ALA	engineered mutation	UNP Q9RFC8
C	139	THR	ALA	engineered mutation	UNP Q9RFC8

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



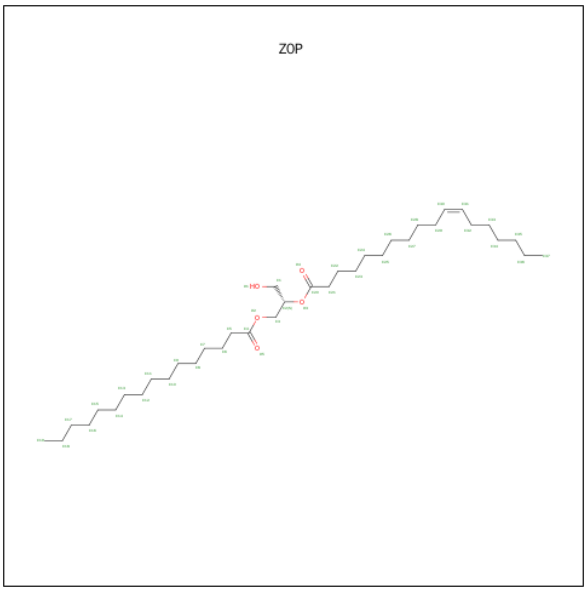
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 25 21 4	0	0
2	A	1	Total C O 25 21 4	0	0
2	A	1	Total C O 25 21 4	0	0
2	A	1	Total C O 25 21 4	0	0
2	A	1	Total C O 17 13 4	0	0
2	A	1	Total C O 25 21 4	0	0
2	B	1	Total C O 25 21 4	0	0
2	B	1	Total C O 25 21 4	0	0
2	B	1	Total C O 25 21 4	0	0
2	B	1	Total C O 13 9 4	0	0
2	B	1	Total C O 25 21 4	0	0
2	B	1	Total C O 12 8 4	0	0
2	B	1	Total C O 12 8 4	0	0
2	C	1	Total C O 24 21 3	0	0
2	C	1	Total C O 25 21 4	0	0
2	C	1	Total C O 25 21 4	0	0
2	C	1	Total C O 25 21 4	0	0

- Molecule 3 is PROTOPORPHYRIN IX (three-letter code: PP9) (formula: $C_{34}H_{34}N_4O_4$).



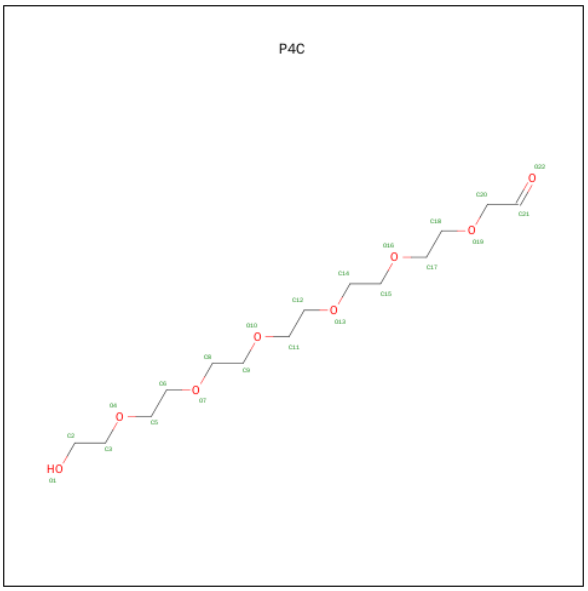
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			42	34	4	4		

- Molecule 4 is (2S)-1-(hexadecanoyloxy)-3-hydroxypropan-2-yl (11Z)-octadec-11-enoate (three-letter code: Z0P) (formula: $C_{37}H_{70}O_5$).



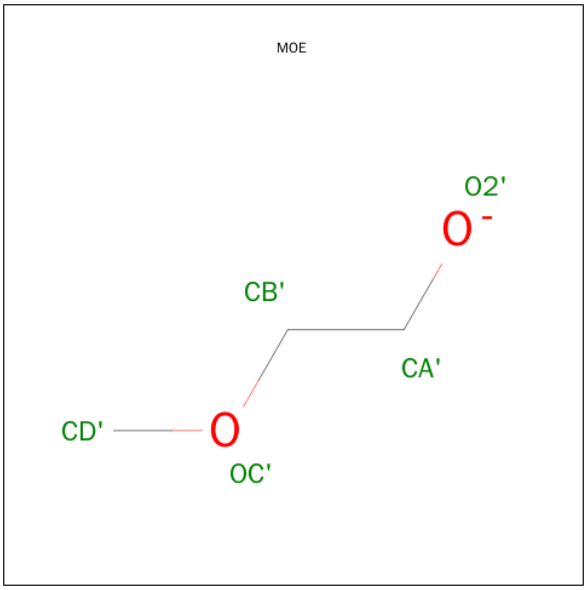
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			42	37	5		

- Molecule 5 is O-ACETALDEHYDYL-HEXAETHYLENE GLYCOL (three-letter code: P4C) (formula: $C_{14}H_{28}O_8$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	1	Total C O 22 14 8	0	0

- Molecule 6 is METHOXY-ETHOXYL (three-letter code: MOE) (formula: $C_3H_7O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	1	Total C O 5 3 2	0	0

- Molecule 7 is water.

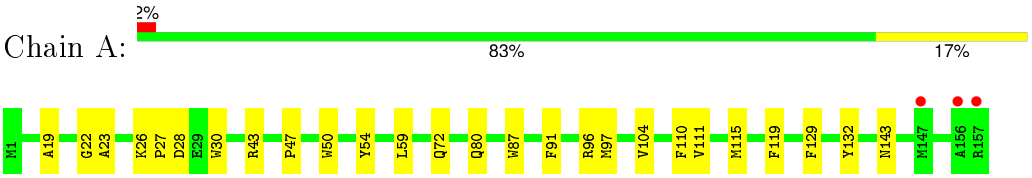
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	34	Total O 34 34	0	0
7	B	22	Total O 22 22	0	0
7	C	27	Total O 27 27	0	0

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 errors 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.

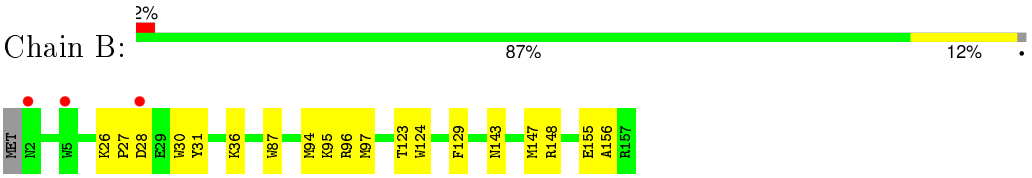
- Molecule 1: Translocator protein TspO

Chain A:



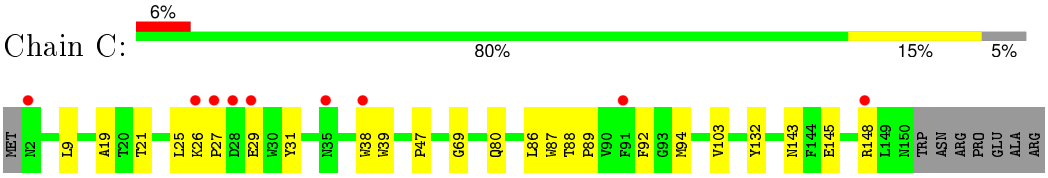
- Molecule 1: Translocator protein TspO

Chain B:



- Molecule 1: Translocator protein TspO

Chain C:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	58.63Å 99.54Å 95.21Å 90.00° 99.92° 90.00°	Depositor
Resolution (Å)	43.97 – 1.80 43.96 – 1.65	Depositor EDS
% Data completeness (in resolution range)	99.7 (43.97-1.80) 83.6 (43.96-1.65)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.19 (at 1.65Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.9_1692)	Depositor
R, R_{free}	0.201 , 0.247 0.203 , 0.238	Depositor DCC
R_{free} test set	1542 reflections (3.51%)	DCC
Wilson B-factor (Å^2)	16.8	Xtriage
Anisotropy	0.120	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 69.7	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Outliers	2 of 64467 reflections (0.003%)	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	4330	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.90% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: Z0P, PP9, OLC, P4C, MOE

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	0.53	1/1325 (0.1%)	0.51	0/1817
1	B	0.42	0/1327	0.50	0/1820
1	C	0.45	0/1250	0.52	0/1715
All	All	0.47	1/3902 (0.0%)	0.51	0/5352

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	115	MET	CG-SD	5.04	1.94	1.81

There are no bond angle outliers.

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	1276	0	1251	40	0
1	B	1278	0	1256	18	0
1	C	1204	0	1183	23	0
2	A	142	0	222	9	0
2	B	137	0	201	6	0
2	C	99	0	158	9	0
3	A	42	0	32	31	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	42	0	70	1	0
5	C	22	0	28	2	0
6	C	5	0	7	2	0
7	A	34	0	0	1	0
7	B	22	0	0	0	0
7	C	27	0	0	2	0
All	All	4330	0	4408	96	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 11.

All (96) 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:C:69:GLY:H	6:C:206:MOE:HB'2	1.29	0.98
1:A:50:TRP:HE1	3:A:207:PP9:HBA1	1.36	0.91
1:A:43:ARG:HB3	3:A:207:PP9:HBB1	1.53	0.90
1:A:54:TYR:OH	3:A:207:PP9:HAD1	1.74	0.86
2:B:201:OLC:H10	2:B:202:OLC:H9	1.58	0.85
3:A:207:PP9:CAB	1:C:39:TRP:HB3	2.14	0.78
1:A:54:TYR:HH	3:A:207:PP9:HAD1	1.52	0.75
1:C:80:GLN:NE2	1:C:132:TYR:OH	2.21	0.74
1:A:87:TRP:HZ3	3:A:207:PP9:HAA2	1.53	0.73
1:A:50:TRP:NE1	3:A:207:PP9:HBA1	2.03	0.72
3:A:207:PP9:HAB	1:C:39:TRP:HB3	1.72	0.71
1:A:59:LEU:HD13	2:A:201:OLC:H4A	1.72	0.71
1:A:43:ARG:HB3	3:A:207:PP9:HMB1	1.74	0.70
1:C:29:GLU:OE1	1:C:31:TYR:OH	2.11	0.68
3:A:207:PP9:HMC2	1:C:39:TRP:NE1	2.10	0.66
1:A:26:LYS:NZ	1:B:96:ARG:NH1	2.42	0.66
3:A:207:PP9:HMB1	3:A:207:PP9:HBB1	1.77	0.64
1:A:26:LYS:HZ1	1:B:96:ARG:NH1	1.95	0.64
1:B:148:ARG:HG3	2:B:205:OLC:H24A	1.80	0.62
1:A:80:GLN:NE2	1:A:132:TYR:OH	2.32	0.62
1:A:54:TYR:OH	3:A:207:PP9:HMD1	1.99	0.62
1:A:72:GLN:HG2	2:B:202:OLC:H21	1.81	0.62
1:B:87:TRP:HE1	1:B:143:ASN:HD22	1.46	0.62
2:A:201:OLC:H7A	2:A:202:OLC:H6A	1.84	0.60
1:B:87:TRP:HE1	1:B:143:ASN:ND2	2.00	0.58
1:A:87:TRP:CZ3	3:A:207:PP9:HAA2	2.37	0.58
2:C:204:OLC:H11A	5:C:205:P4C:H52	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:207:PP9:HBD1	3:A:207:PP9:CHA	2.35	0.57
1:C:145:GLU:HG2	1:C:148:ARG:HH21	1.70	0.56
4:B:208:Z0P:H62	4:B:208:Z0P:H261	1.87	0.56
1:C:47:PRO:HB2	2:C:204:OLC:H12	1.87	0.55
1:C:25:LEU:HB3	1:C:26:LYS:HB2	1.88	0.55
1:A:87:TRP:HE1	1:A:143:ASN:HD22	1.53	0.55
1:A:28:ASP:OD2	1:A:30:TRP:HB3	2.07	0.55
1:A:87:TRP:HE1	1:A:143:ASN:ND2	2.07	0.53
1:C:87:TRP:HE1	1:C:143:ASN:ND2	2.06	0.53
1:A:91:PHE:CE2	1:A:97:MET:HG2	2.44	0.53
3:A:207:PP9:HMC2	1:C:39:TRP:CD1	2.44	0.52
1:A:26:LYS:NZ	1:B:96:ARG:HH12	2.05	0.52
1:B:97:MET:HE2	1:B:156:ALA:HA	1.91	0.52
1:A:54:TYR:CE2	3:A:207:PP9:HMD1	2.45	0.52
1:A:50:TRP:CD1	3:A:207:PP9:HBD2	2.45	0.52
1:A:27:PRO:HD3	1:C:38:TRP:CD2	2.44	0.51
1:A:87:TRP:CD1	1:A:104:VAL:HB	2.46	0.51
1:A:43:ARG:HE	3:A:207:PP9:HMB3	1.75	0.51
1:B:97:MET:CE	1:B:147:MET:HA	2.40	0.51
1:C:69:GLY:N	6:C:206:MOE:HB'2	2.12	0.50
1:A:50:TRP:CE2	3:A:207:PP9:HBD2	2.47	0.50
1:C:21:THR:HG21	1:C:88:THR:HG22	1.93	0.50
1:C:86:LEU:O	1:C:89:PRO:HD2	2.11	0.50
1:B:28:ASP:HB3	1:B:31:TYR:H	1.78	0.49
2:C:201:OLC:O25	7:C:314:HOH:O	2.15	0.48
2:A:203:OLC:H18	2:A:205:OLC:H21A	1.94	0.48
1:B:31:TYR:O	1:B:36:LYS:NZ	2.33	0.48
1:C:87:TRP:HB2	1:C:103:VAL:HG12	1.96	0.47
1:B:95[B]:LYS:O	1:B:155:GLU:HB2	2.14	0.47
1:A:22:GLY:HA3	3:A:207:PP9:ND	2.29	0.47
2:A:202:OLC:H13A	2:A:206:OLC:H17	1.96	0.47
1:C:19:ALA:HA	2:C:204:OLC:H3A	1.97	0.47
1:C:94:MET:O	7:C:315:HOH:O	2.20	0.47
2:A:201:OLC:H15A	2:A:202:OLC:H12	1.96	0.47
1:A:19:ALA:HA	3:A:207:PP9:CMD	2.46	0.46
3:A:207:PP9:NC	3:A:207:PP9:NB	2.64	0.46
1:A:26:LYS:HZ2	1:B:96:ARG:NH1	2.14	0.46
1:A:23:ALA:HB2	3:A:207:PP9:HAC	1.98	0.45
1:C:87:TRP:HE1	1:C:143:ASN:HD22	1.63	0.45
1:A:50:TRP:NE1	3:A:207:PP9:HBD2	2.32	0.45
2:A:206:OLC:H8	2:A:206:OLC:H11	1.74	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:19:ALA:HA	3:A:207:PP9:HMD3	1.99	0.44
1:A:43:ARG:CB	3:A:207:PP9:HMB1	2.45	0.44
1:B:30:TRP:NE1	1:B:95[A]:LYS:HE3	2.33	0.44
1:B:123:THR:HG23	2:B:203:OLC:H22	2.00	0.44
1:B:94:MET:HE2	1:B:94:MET:HB3	1.79	0.44
1:A:96:ARG:NE	7:A:301:HOH:O	2.26	0.44
2:C:204:OLC:H7A	2:C:204:OLC:H10	1.63	0.44
1:C:80:GLN:HE21	1:C:132:TYR:HH	1.62	0.43
2:A:201:OLC:H18B	2:A:206:OLC:H13A	2.00	0.43
1:B:124:TRP:CD1	2:B:207:OLC:H22	2.53	0.43
1:A:110:PHE:HZ	2:B:202:OLC:H10	1.84	0.43
2:A:201:OLC:C18	2:A:206:OLC:H13A	2.48	0.43
1:A:80:GLN:HG2	1:A:111:VAL:HG22	2.00	0.43
1:C:88:THR:HB	1:C:89:PRO:HD3	2.01	0.43
2:C:201:OLC:H10	2:C:201:OLC:H13A	1.70	0.43
2:C:202:OLC:H5	2:C:202:OLC:H2A	1.83	0.42
3:A:207:PP9:HMA2	3:A:207:PP9:O1A	2.20	0.42
1:C:9:LEU:HD23	1:C:9:LEU:HA	1.91	0.42
3:A:207:PP9:CHA	3:A:207:PP9:CBD	2.94	0.42
2:C:204:OLC:H13A	2:C:204:OLC:H16A	1.79	0.42
1:A:47:PRO:HG3	3:A:207:PP9:NC	2.35	0.42
1:C:92:PHE:CG	2:C:204:OLC:H22	2.55	0.41
1:B:27:PRO:HB3	1:B:31:TYR:CD2	2.55	0.41
1:A:23:ALA:HA	3:A:207:PP9:CMC	2.49	0.41
1:A:119:PHE:HB3	2:A:203:OLC:H24	2.02	0.41
1:A:54:TYR:CZ	3:A:207:PP9:HMD1	2.56	0.41
1:A:26:LYS:HZ2	1:B:96:ARG:HH12	1.66	0.40
5:C:205:P4C:H172	5:C:205:P4C:H142	1.87	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	156/157 (99%)	154 (99%)	2 (1%)	0	100 100
1	B	156/157 (99%)	152 (97%)	4 (3%)	0	100 100
1	C	148/157 (94%)	144 (97%)	3 (2%)	1 (1%)	26 11
All	All	460/471 (98%)	450 (98%)	9 (2%)	1 (0%)	52 35

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	27	PRO

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	125/124 (101%)	124 (99%)	1 (1%)	86 83
1	B	125/124 (101%)	122 (98%)	3 (2%)	57 41
1	C	118/124 (95%)	118 (100%)	0	100 100
All	All	368/372 (99%)	364 (99%)	4 (1%)	86 74

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	129	PHE
1	B	26[A]	LYS
1	B	26[B]	LYS
1	B	129	PHE

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	80	GLN
1	A	143	ASN
1	B	143	ASN

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Continued from previous page...

Mol	Chain	Res	Type
1	C	80	GLN
1	C	84	ASN
1	C	143	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 carbohydrates in this entry.

5.6 Ligand geometry

21 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	OLC	A	201	-	24,24,24	0.69	1 (4%)	25,25,25	1.22	3 (12%)
2	OLC	A	202	-	24,24,24	0.68	1 (4%)	25,25,25	0.84	1 (4%)
2	OLC	A	203	-	24,24,24	0.72	1 (4%)	25,25,25	0.96	2 (8%)
2	OLC	A	204	-	24,24,24	0.68	1 (4%)	25,25,25	0.94	1 (4%)
2	OLC	A	205	-	16,16,24	0.88	1 (6%)	17,17,25	1.21	1 (5%)
2	OLC	A	206	-	24,24,24	0.69	1 (4%)	25,25,25	0.95	1 (4%)
3	PP9	A	207	-	33,46,46	3.55	21 (63%)	35,68,68	2.56	15 (42%)
2	OLC	B	201	-	24,24,24	0.67	1 (4%)	25,25,25	0.99	1 (4%)
2	OLC	B	202	-	24,24,24	0.71	1 (4%)	25,25,25	1.03	1 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	OLC	B	203	-	24,24,24	0.66	1 (4%)	25,25,25	1.05	1 (4%)
2	OLC	B	204	-	12,12,24	0.93	1 (8%)	13,13,25	1.27	2 (15%)
2	OLC	B	205	-	24,24,24	0.69	1 (4%)	25,25,25	0.95	2 (8%)
2	OLC	B	206	-	11,11,24	0.94	1 (9%)	12,12,25	0.93	1 (8%)
2	OLC	B	207	-	11,11,24	0.94	1 (9%)	12,12,25	1.02	1 (8%)
4	Z0P	B	208	-	41,41,41	1.30	4 (9%)	43,43,43	1.33	4 (9%)
2	OLC	C	201	-	23,23,24	0.64	1 (4%)	23,23,25	1.12	1 (4%)
2	OLC	C	202	-	24,24,24	0.72	1 (4%)	25,25,25	0.92	1 (4%)
2	OLC	C	203	-	24,24,24	0.68	1 (4%)	25,25,25	0.96	1 (4%)
2	OLC	C	204	-	24,24,24	0.72	1 (4%)	25,25,25	0.97	1 (4%)
5	P4C	C	205	-	21,21,21	0.42	0	19,20,20	0.77	0
6	MOE	C	206	-	4,4,4	0.60	0	3,3,3	1.09	0

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	OLC	A	201	-	-	0/24/24/24	0/0/0/0
2	OLC	A	202	-	-	0/24/24/24	0/0/0/0
2	OLC	A	203	-	-	0/24/24/24	0/0/0/0
2	OLC	A	204	-	-	0/24/24/24	0/0/0/0
2	OLC	A	205	-	-	0/16/16/24	0/0/0/0
2	OLC	A	206	-	-	0/24/24/24	0/0/0/0
3	PP9	A	207	-	-	0/20/62/62	0/0/5/5
2	OLC	B	201	-	-	0/24/24/24	0/0/0/0
2	OLC	B	202	-	-	0/24/24/24	0/0/0/0
2	OLC	B	203	-	-	0/24/24/24	0/0/0/0
2	OLC	B	204	-	-	0/12/12/24	0/0/0/0
2	OLC	B	205	-	-	0/24/24/24	0/0/0/0
2	OLC	B	206	-	-	0/11/11/24	0/0/0/0
2	OLC	B	207	-	-	0/11/11/24	0/0/0/0
4	Z0P	B	208	-	1/1/3/5	1/43/43/43	0/0/0/0
2	OLC	C	201	-	-	0/22/22/24	0/0/0/0
2	OLC	C	202	-	-	0/24/24/24	0/0/0/0
2	OLC	C	203	-	-	0/24/24/24	0/0/0/0
2	OLC	C	204	-	-	0/24/24/24	0/0/0/0
5	P4C	C	205	-	-	0/18/19/19	0/0/0/0
6	MOE	C	206	-	-	0/2/2/2	0/0/0/0

All (42) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	207	PP9	CMB-C2B	-5.90	1.38	1.50
3	A	207	PP9	CMC-C2C	-4.79	1.41	1.51
3	A	207	PP9	C1B-C2B	-4.36	1.36	1.45
3	A	207	PP9	CMD-C2D	-4.33	1.41	1.50
3	A	207	PP9	C4D-C3D	-3.39	1.39	1.45
3	A	207	PP9	CAD-C3D	-3.31	1.42	1.51
3	A	207	PP9	C1D-C2D	-3.19	1.38	1.45
3	A	207	PP9	C3C-C2C	-3.08	1.36	1.40
3	A	207	PP9	CAA-C2A	-2.83	1.47	1.52
3	A	207	PP9	C4A-NA	-2.71	1.30	1.39
3	A	207	PP9	C1A-NA	-2.63	1.30	1.39
3	A	207	PP9	CMA-C3A	-2.62	1.45	1.51
3	A	207	PP9	C4C-CHD	-2.51	1.31	1.40
3	A	207	PP9	CHA-C4D	-2.41	1.34	1.43
3	A	207	PP9	CHB-C1B	-2.35	1.34	1.43
3	A	207	PP9	C4B-NB	-2.13	1.33	1.38
4	B	208	Z0P	O3-C2	-2.11	1.41	1.46
3	A	207	PP9	C1D-ND	-2.07	1.33	1.38
3	A	207	PP9	C1C-CHC	-2.02	1.32	1.40
2	C	201	OLC	O20-C1	2.50	1.40	1.33
2	B	207	OLC	O20-C1	2.51	1.40	1.33
2	B	206	OLC	O20-C1	2.53	1.40	1.33
2	A	202	OLC	O20-C1	2.53	1.40	1.33
2	C	203	OLC	O20-C1	2.56	1.41	1.33
2	A	204	OLC	O20-C1	2.64	1.41	1.33
2	B	201	OLC	O20-C1	2.64	1.41	1.33
2	B	203	OLC	O20-C1	2.64	1.41	1.33
2	B	205	OLC	O20-C1	2.67	1.41	1.33
2	A	201	OLC	O20-C1	2.70	1.41	1.33
2	B	204	OLC	O20-C1	2.71	1.41	1.33
2	C	202	OLC	O20-C1	2.74	1.41	1.33
2	B	202	OLC	O20-C1	2.75	1.41	1.33
2	A	205	OLC	O20-C1	2.77	1.41	1.33
2	A	206	OLC	O20-C1	2.82	1.41	1.33
2	C	204	OLC	O20-C1	2.82	1.41	1.33
2	A	203	OLC	O20-C1	2.92	1.42	1.33
3	A	207	PP9	C4D-ND	2.96	1.43	1.37
4	B	208	Z0P	O3-C20	2.98	1.43	1.34
4	B	208	Z0P	O2-C4	3.27	1.43	1.33
4	B	208	Z0P	C30-C31	4.46	1.57	1.31
3	A	207	PP9	CHD-C1D	8.46	1.42	1.35
3	A	207	PP9	CHC-C4B	11.23	1.45	1.35

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	207	PP9	CMB-C2B-C1B	-5.30	116.44	125.06
3	A	207	PP9	C3C-CAC-CBC	-3.75	118.65	126.32
3	A	207	PP9	CMD-C2D-C1D	-3.39	119.54	125.06
3	A	207	PP9	CHB-C1B-C2B	-3.05	117.43	124.88
3	A	207	PP9	CAD-CBD-CGD	-2.84	107.54	112.75
2	B	205	OLC	O20-C1-O19	-2.62	116.74	123.49
3	A	207	PP9	CHD-C1D-C2D	-2.47	120.02	125.61
2	B	203	OLC	O20-C1-O19	-2.45	117.17	123.49
2	A	201	OLC	C21-O20-C1	-2.38	110.19	116.85
2	A	201	OLC	O20-C1-O19	-2.20	117.82	123.49
3	A	207	PP9	CAA-C2A-C3A	-2.16	122.84	129.00
4	B	208	Z0P	C29-C30-C31	-2.12	110.59	125.34
2	B	204	OLC	O20-C1-O19	-2.07	118.16	123.49
2	A	203	OLC	O20-C1-O19	-2.06	118.18	123.49
4	B	208	Z0P	C32-C31-C30	-2.02	111.29	125.34
2	B	205	OLC	O20-C1-C2	2.09	118.27	111.90
2	B	206	OLC	O20-C1-C2	2.16	118.48	111.90
2	A	202	OLC	O20-C1-C2	2.29	118.87	111.90
2	A	206	OLC	O20-C1-C2	2.32	118.97	111.90
2	B	207	OLC	O20-C1-C2	2.50	119.52	111.90
2	C	203	OLC	O20-C1-C2	2.53	119.59	111.90
2	C	204	OLC	O20-C1-C2	2.57	119.74	111.90
2	C	202	OLC	O20-C1-C2	2.63	119.91	111.90
2	A	204	OLC	O20-C1-C2	2.80	120.42	111.90
2	B	201	OLC	O20-C1-C2	2.84	120.55	111.90
2	C	201	OLC	O20-C1-C2	2.86	120.63	111.90
2	A	205	OLC	O20-C1-C2	2.93	120.84	111.90
3	A	207	PP9	CHB-C1B-NB	2.96	130.54	124.91
2	A	203	OLC	O20-C1-C2	3.10	121.34	111.90
3	A	207	PP9	C2D-C1D-ND	3.10	114.38	109.73
2	B	202	OLC	O20-C1-C2	3.11	121.38	111.90
2	B	204	OLC	O20-C1-C2	3.11	121.39	111.90
3	A	207	PP9	CMB-C2B-C3B	3.12	136.84	128.48
4	B	208	Z0P	O2-C4-C5	3.25	121.81	111.90
3	A	207	PP9	CMD-C2D-C3D	3.43	135.91	125.94
2	A	201	OLC	O20-C1-C2	3.53	122.66	111.90
3	A	207	PP9	CAA-CBA-CGA	3.56	119.27	112.75
3	A	207	PP9	CBA-CAA-C2A	4.12	119.91	112.53
4	B	208	Z0P	O3-C20-C21	4.73	121.80	111.53
3	A	207	PP9	CAA-C2A-C1A	5.23	132.69	127.01
3	A	207	PP9	CMC-C2C-C3C	5.62	136.08	125.09

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
4	B	208	Z0P	C2

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	208	Z0P	C2-O3-C20-C21

There are no ring outliers.

17 monomers are involved in 59 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	201	OLC	5	0
2	A	202	OLC	3	0
2	A	203	OLC	2	0
2	A	205	OLC	1	0
2	A	206	OLC	4	0
3	A	207	PP9	31	0
2	B	201	OLC	1	0
2	B	202	OLC	3	0
2	B	203	OLC	1	0
2	B	205	OLC	1	0
2	B	207	OLC	1	0
4	B	208	Z0P	1	0
2	C	201	OLC	2	0
2	C	202	OLC	1	0
2	C	204	OLC	6	0
5	C	205	P4C	2	0
6	C	206	MOE	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, 95^{th} 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	157/157 (100%)	-0.18	3 (1%) 70 66	19, 25, 43, 68	0
1	B	156/157 (99%)	-0.38	3 (1%) 70 66	18, 30, 47, 60	0
1	C	149/157 (94%)	0.00	9 (6%) 25 20	19, 30, 55, 74	0
All	All	462/471 (98%)	-0.19	15 (3%) 51 45	18, 28, 50, 74	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	27	PRO	4.8
1	A	156	ALA	4.2
1	A	157	ARG	4.0
1	C	91	PHE	3.6
1	B	2	ASN	3.5
1	C	26	LYS	3.4
1	B	28	ASP	3.1
1	C	28	ASP	3.1
1	C	2	ASN	3.0
1	C	29	GLU	2.7
1	C	35	ASN	2.6
1	C	148	ARG	2.5
1	C	38	TRP	2.4
1	B	5	TRP	2.2
1	A	147[A]	MET	2.1

6.2 Non-standard residues in protein, DNA, RNA chains

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95^{th} 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	LLDF	B-factors(Å^2)	Q<0.9
2	OLC	B	202	25/25	0.66	0.22	11.58	39,46,56,69	0
2	OLC	A	205	17/25	0.60	0.20	11.36	34,45,64,68	0
3	PP9	A	207	42/42	0.68	0.47	10.51	20,38,45,48	42
2	OLC	B	205	25/25	0.73	0.28	8.63	40,52,58,64	0
2	OLC	B	206	12/25	0.84	0.24	7.95	33,47,58,59	0
2	OLC	A	202	25/25	0.71	0.28	7.92	44,53,58,66	0
2	OLC	C	203	25/25	0.73	0.23	7.29	37,48,62,64	0
2	OLC	C	202	25/25	0.68	0.23	7.08	36,47,59,68	0
2	OLC	B	203	25/25	0.70	0.24	6.05	40,52,58,61	0
2	OLC	B	207	12/25	0.67	0.27	5.79	56,64,71,73	0
2	OLC	B	201	25/25	0.64	0.28	5.75	36,53,72,80	0
2	OLC	A	203	25/25	0.52	0.30	5.46	37,48,61,66	0
2	OLC	A	206	25/25	0.59	0.24	5.36	48,55,73,75	0
4	Z0P	B	208	42/42	0.59	0.23	4.46	29,44,61,66	0
2	OLC	A	201	25/25	0.83	0.18	3.91	27,42,51,54	0
5	P4C	C	205	22/22	0.84	0.17	3.85	41,51,59,64	0
2	OLC	A	204	25/25	0.65	0.17	3.35	43,53,64,70	0
2	OLC	C	201	24/25	0.82	0.14	3.20	36,45,58,59	0
6	MOE	C	206	5/5	0.86	0.16	2.83	32,36,45,48	0
2	OLC	C	204	25/25	0.69	0.21	1.54	45,52,57,58	0
2	OLC	B	204	13/25	0.69	0.27	-	59,64,68,70	0

6.5 Other polymers (i)

There are no such residues in this entry.