



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 05:25 am GMT

PDB ID : 4N7K
Title : Zinc Substituted Reaction Center of the Rhodobacter sphaeroides
Authors : Hardjasa, A.; Murphy, M.E.P.
Deposited on : 2013-10-15
Resolution : 2.85 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)
Validation Pipeline (wwPDB-VP) : trunk30967

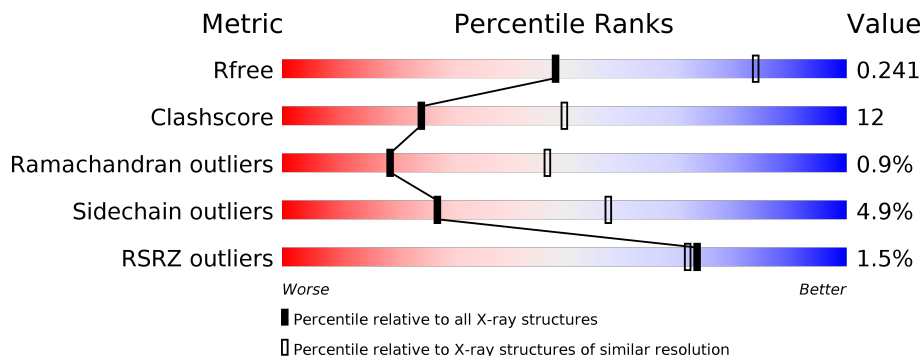
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION




The reported resolution of this entry is 2.85 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	2715 (2.90-2.82)
Clashscore	122126	2976 (2.90-2.82)
Ramachandran outliers	120053	2913 (2.90-2.82)
Sidechain outliers	120020	2916 (2.90-2.82)
RSRZ outliers	108989	2654 (2.90-2.82)

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	H	241	 3% 81% 17%
2	L	281	 % 79% 20%
3	M	303	 % 76% 22%

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
10	HTO	L	309	-	-	-	X
10	HTO	L	310	-	-	-	X
14	PC1	M	410	-	-	-	X
5	GGD	H	305	-	-	-	X
7	LDA	L	303	-	-	-	X

2 Entry composition [i](#)

There are 15 unique types of molecules in this entry. The entry contains 7634 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 Reaction Center H Chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	H	241	1849	1183	320	337	9	0	5	1

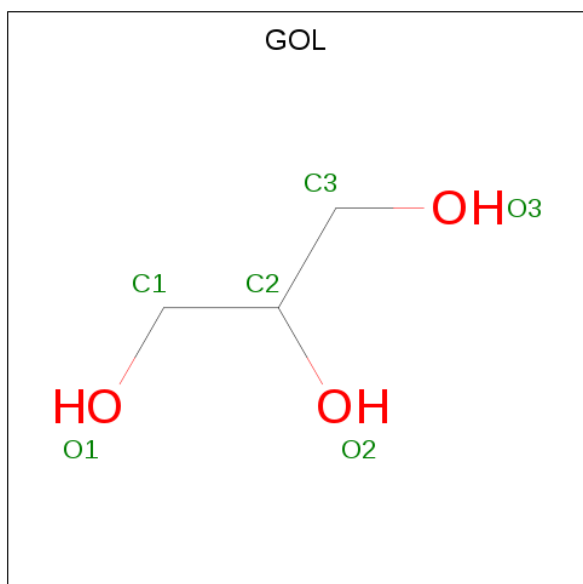
- Molecule 2 is a protein called Reaction center protein L chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	L	281	2239	1513	355	363	8	0	2	0

- Molecule 3 is a protein called Reaction center protein M chain.

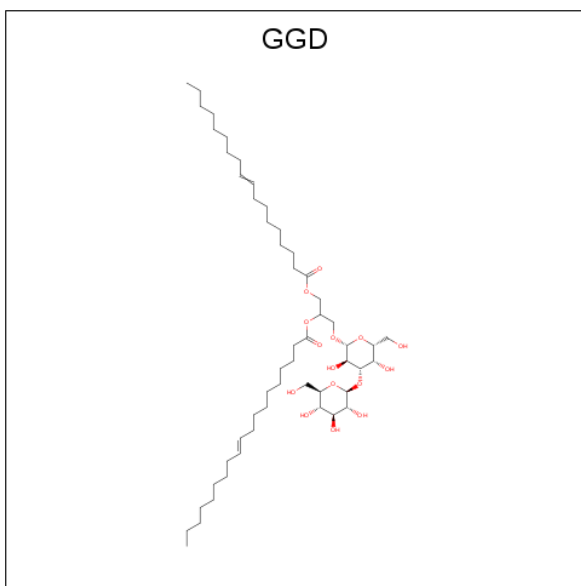
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	M	303	2411	1607	396	398	10	0	1	1

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



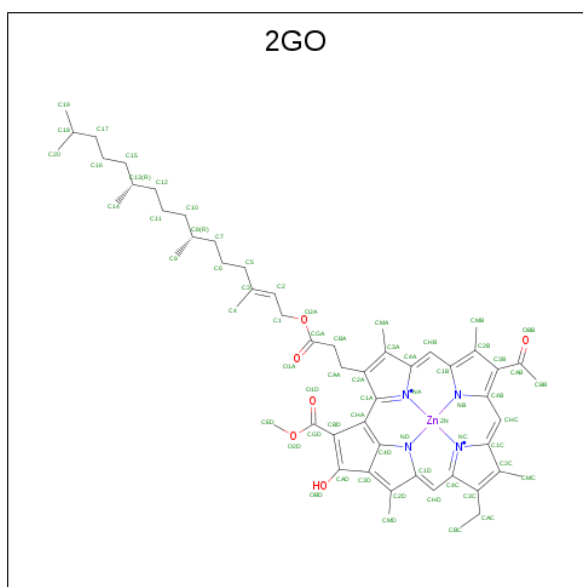
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	H	1	Total	C	O	0	0
			6	3	3		
4	H	1	Total	C	O	0	0
			6	3	3		
4	H	1	Total	C	O	0	0
			6	3	3		
4	H	1	Total	C	O	0	0
			6	3	3		
4	L	1	Total	C	O	0	0
			6	3	3		
4	L	1	Total	C	O	0	0
			6	3	3		
4	L	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is NONADEC-10-ENOIC ACID 2-[3,4-DIHYDROXY-6-HYDROXYMETHYL-5-(3,4,5-TRIHYDROXY-6-HYDROXYMETHYL-TETRAHYDRO-PYRAN-2-YLOXY)-TETRAHYDRO-PYRAN-2-YLOXY]-1-OCTADEC-9-ENOYLOXYMETHYL-ETHYL ESTER (three-letter code: GGD) (formula: C₅₂H₉₄O₁₅).



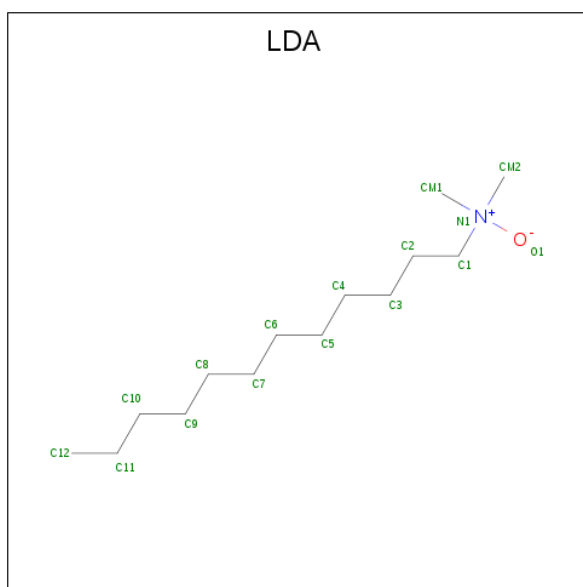
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	H	1	Total	C	O	0	0
			57	42	15		

- Molecule 6 is [methyl 9-acetyl-14-ethyl-20-hydroxy-4,8,13,18-tetramethyl-3-{3-oxo-3-[(3,7,11,15-tetramethylhexadec-2-en-1-yl)oxy]propyl}-3,4,20,21-tetradecahydrophorbine-21-carboxylato(2-)-kappa 4 N 23 ,N 24 ,N 25 ,N 26]zinc (three-letter code: 2GO) (formula: C₅₅H₇₀N₄O₆Zn).



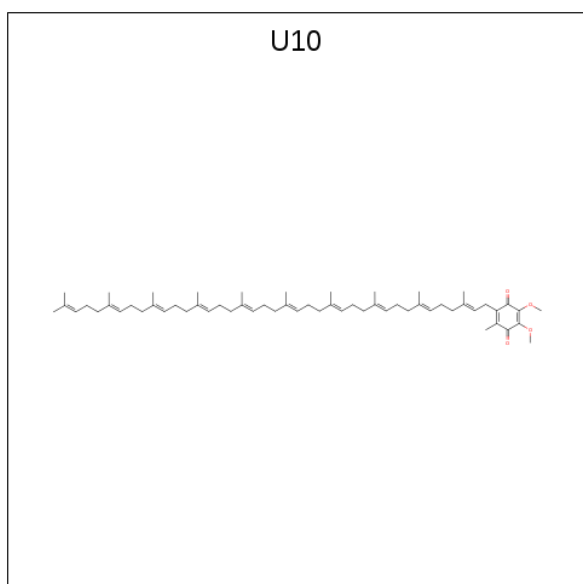
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	Zn		
6	L	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
6	L	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
6	L	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
6	M	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
6	M	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
6	M	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		

- Molecule 7 is LAURYL DIMETHYLAMINE-N-OXIDE (three-letter code: LDA) (formula: $C_{14}H_{31}NO$).



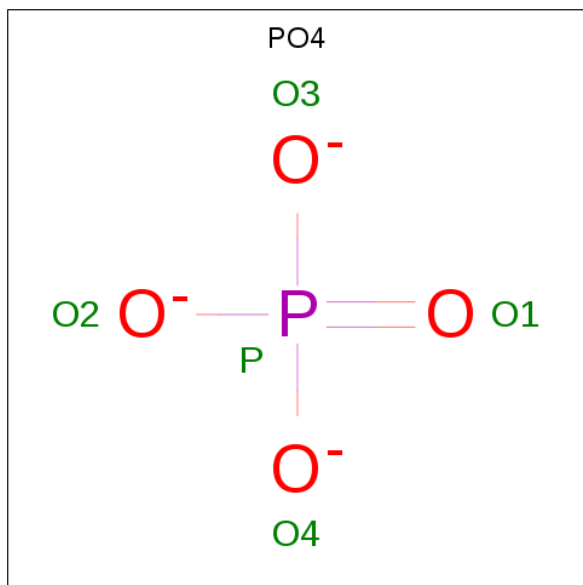
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
7	L	1	Total	C	N	O	0	0
			16	14	1	1		
7	L	1	Total	C	N	O	0	0
			16	14	1	1		
7	L	1	Total	C	N	O	0	0
			16	14	1	1		
7	M	1	Total	C	N	O	0	0
			16	14	1	1		
7	M	1	Total	C	N	O	0	0
			16	14	1	1		

- Molecule 8 is UBIQUINONE-10 (three-letter code: U10) (formula: $C_{59}H_{90}O_4$).



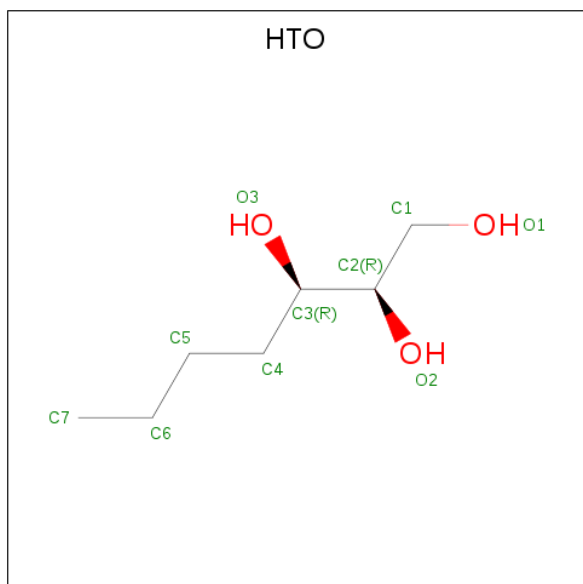
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	L	1	Total	C	O	0	1
			46	38	8		
8	M	1	Total	C	O	0	0
			48	44	4		

- Molecule 9 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	L	1	Total	O	P	0	0
			5	4	1		

- Molecule 10 is HEPTANE-1,2,3-TRIOL (three-letter code: HTO) (formula: C₇H₁₆O₃).

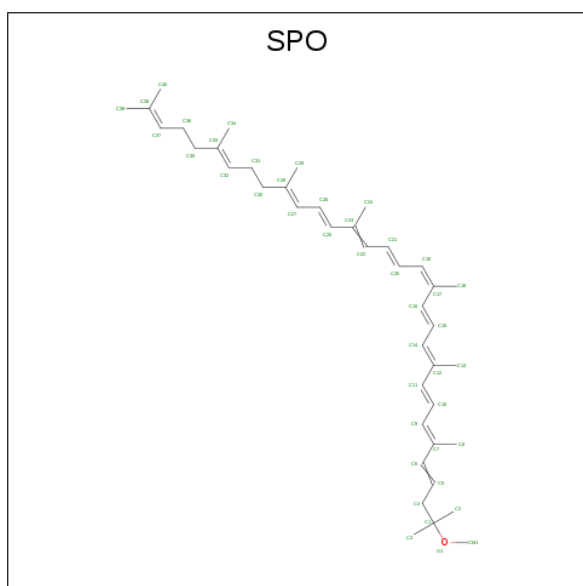


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	L	1	Total	C	O	0	0
			10	7	3		
10	L	1	Total	C	O	0	0
			10	7	3		

- Molecule 11 is FE (III) ION (three-letter code: FE) (formula: Fe).

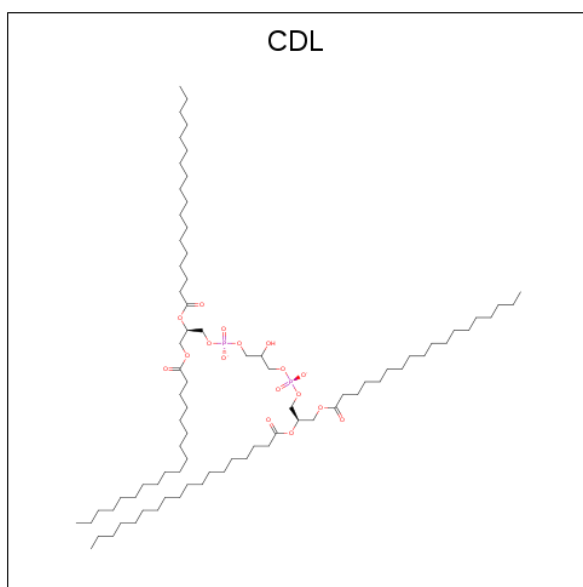
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	M	1	Total	Fe	0	0
			1	1		

- Molecule 12 is SPHEROIDENE (three-letter code: SPO) (formula: C₄₁H₆₀O).



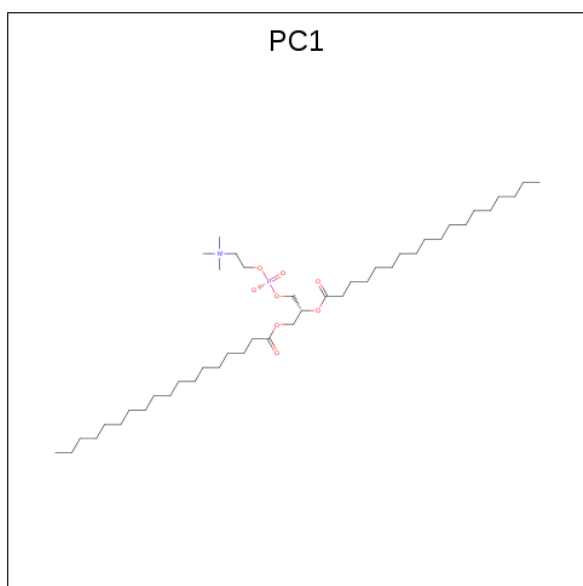
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
12	M	1	Total	C	O	0	0
			42	41	1		

- Molecule 13 is CARDIOLIPIN (three-letter code: CDL) (formula: C₈₁H₁₅₆O₁₇P₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	O	P		
13	M	1	81	62	17	2	0	0

- Molecule 14 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
14	M	1	43	33	1	8	1	0	0

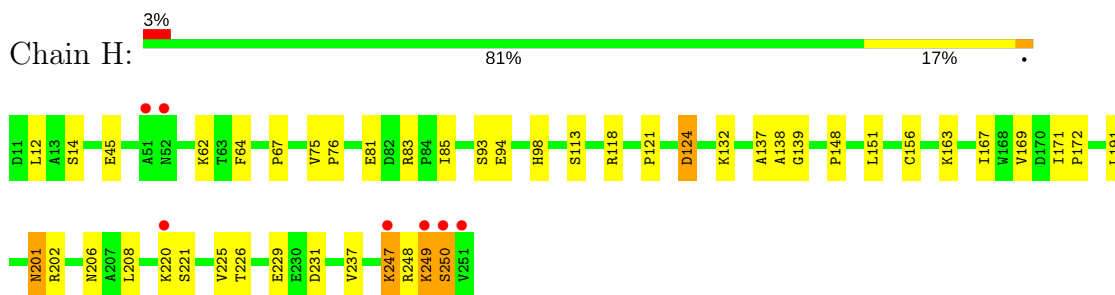
- Molecule 15 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
15	H	109	Total 109	O 109	0	0
15	L	81	Total 81	O 81	0	0
15	M	84	Total 84	O 84	0	0

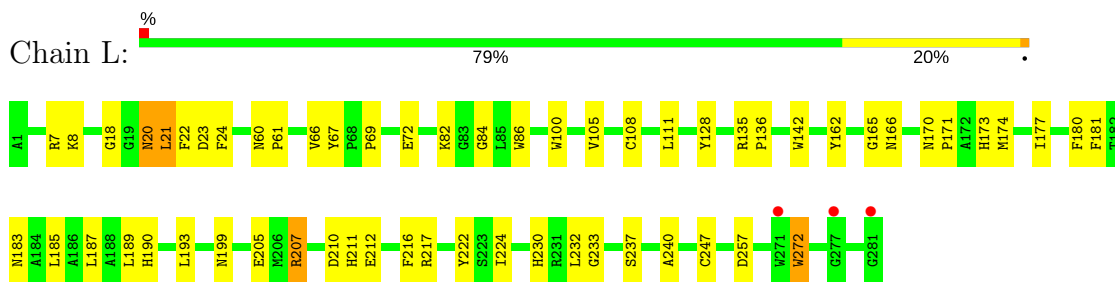
3 Residue-property plots

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.

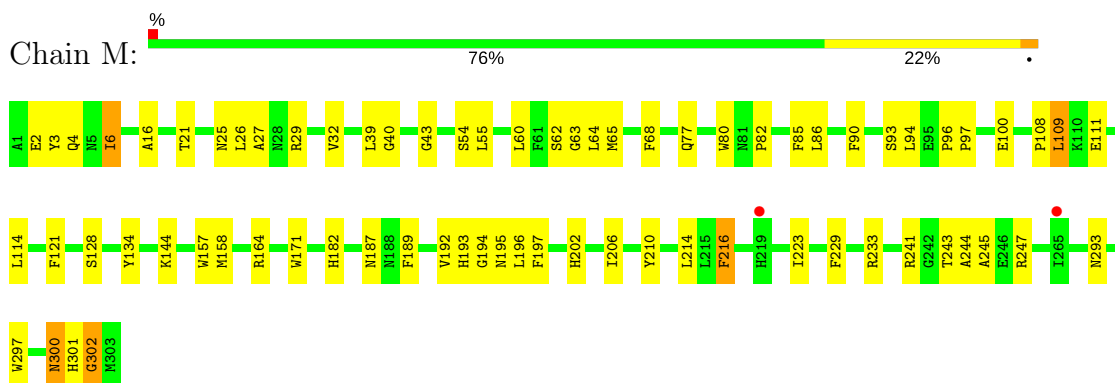
- Molecule 1: Reaction Center H Chain



- Molecule 2: Reaction center protein L chain



- Molecule 3: Reaction center protein M chain



4 Data and refinement statistics

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	139.45Å 139.45Å 184.18Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	36.91 – 2.85 36.89 – 2.85	Depositor EDS
% Data completeness (in resolution range)	96.0 (36.91-2.85) 96.1 (36.89-2.85)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.83 (at 2.85Å)	Xtrriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.182 , 0.243 0.182 , 0.241	Depositor DCC
R_{free} test set	2368 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	61.9	Xtrriage
Anisotropy	0.072	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 60.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.012 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	7634	wwPDB-VP
Average B, all atoms (Å ²)	59.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.73% 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: GOL, LDA, GGD, CDL, PO4, PC1, HTO, FE, SPO, U10, 2GO

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	H	0.57	0/1929	0.75	0/2619
2	L	0.57	0/2339	0.66	0/3203
3	M	0.58	0/2508	0.69	0/3424
All	All	0.57	0/6776	0.70	0/9246

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	H	1849	0	1872	35	0
2	L	2239	0	2185	61	0
3	M	2411	0	2319	59	0
4	H	24	0	32	3	0
4	L	18	0	24	3	0
5	H	57	0	68	2	0
6	L	198	0	207	14	0
6	M	198	0	207	27	0
7	L	48	0	93	1	0
7	M	32	0	62	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	L	46	0	46	14	0
8	M	48	0	63	2	0
9	L	5	0	0	1	0
10	L	20	0	32	0	0
11	M	1	0	0	0	0
12	M	42	0	60	5	0
13	M	81	0	106	2	0
14	M	43	0	60	0	0
15	H	109	0	0	6	0
15	L	81	0	0	3	0
15	M	84	0	0	5	0
All	All	7634	0	7436	173	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 12.

All (173) 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)
6:L:301:2GO:H9	3:M:206:ILE:HD13	1.48	0.94
3:M:197:PHE:HZ	6:M:402:2GO:H21	1.33	0.93
1:H:118[B]:ARG:HD2	15:M:566:HOH:O	1.72	0.89
3:M:197:PHE:CZ	6:M:402:2GO:H21	2.08	0.88
2:L:69:PRO:HG2	2:L:142:TRP:HB2	1.58	0.86
6:M:402:2GO:H19	6:M:402:2GO:CBB	2.05	0.86
6:L:305:2GO:H22	6:L:305:2GO:H19	1.59	0.84
2:L:20:ASN:HD22	2:L:20:ASN:H	1.27	0.81
3:M:16:ALA:HB1	3:M:32:VAL:HG11	1.63	0.81
6:L:305:2GO:H21	3:M:210:TYR:HB3	1.62	0.81
2:L:199:ASN:HA	4:L:311:GOL:H31	1.66	0.76
4:L:313:GOL:H12	7:M:403:LDA:O1	1.87	0.75
1:H:248:ARG:HA	1:H:249[B]:LYS:HB3	1.67	0.74
2:L:67:TYR:HB3	15:L:424:HOH:O	1.87	0.74
2:L:181:PHE:CD2	6:M:406:2GO:H20	2.22	0.73
2:L:224:ILE:HG22	8:L:306[A]:U10:H8	1.71	0.73
2:L:230:HIS:CD2	3:M:223:ILE:HG13	2.23	0.73
6:M:402:2GO:H22	6:M:402:2GO:H19	1.70	0.72
3:M:300:ASN:C	3:M:302:GLY:H	1.93	0.72
1:H:98:HIS:CD2	2:L:7:ARG:HE	2.07	0.71
2:L:187:LEU:HD13	3:M:216:PHE:CG	2.26	0.71
1:H:137:ALA:HA	15:H:464:HOH:O	1.92	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:177:ILE:HD13	6:M:401:2GO:H9	1.73	0.69
1:H:81:GLU:HG3	1:H:85[B]:ILE:HD11	1.74	0.69
2:L:224:ILE:HB	8:L:306[A]:U10:C10	2.23	0.68
6:M:406:2GO:H22	6:M:406:2GO:H19	1.76	0.67
2:L:181:PHE:HB3	6:M:406:2GO:H21	1.74	0.67
1:H:248:ARG:HA	1:H:249[A]:LYS:HB3	1.76	0.67
3:M:108:PRO:HG2	3:M:111:GLU:HB2	1.77	0.67
3:M:63:GLY:HA3	6:M:406:2GO:H40	1.75	0.67
1:H:81:GLU:OE1	2:L:8:LYS:NZ	2.27	0.66
6:M:401:2GO:CBB	12:M:408:SPO:H243	2.25	0.66
8:L:306[B]:U10:O3	8:L:306[B]:U10:C4M	2.44	0.65
6:M:402:2GO:H19	6:M:402:2GO:H21	1.79	0.65
3:M:297:TRP:CE2	3:M:302:GLY:HA2	2.32	0.64
2:L:60:ASN:ND2	2:L:61:PRO:HD2	2.12	0.64
2:L:224:ILE:HB	8:L:306[A]:U10:H103	1.79	0.64
2:L:100:TRP:CH2	8:M:407:U10:H251	2.32	0.64
2:L:128:TYR:HD1	6:L:301:2GO:H20	1.63	0.64
6:L:305:2GO:CBB	3:M:210:TYR:HB3	2.26	0.64
3:M:21:THR:HG23	3:M:26:LEU:HD21	1.81	0.63
1:H:121:PRO:HB3	1:H:225:VAL:O	1.99	0.63
8:L:306[B]:U10:H4M2	8:L:306[B]:U10:O3	1.96	0.63
3:M:189:PHE:O	3:M:193:HIS:HD2	1.81	0.63
1:H:132:LYS:HD2	1:H:171:ILE:HD13	1.82	0.62
2:L:189:LEU:HD23	6:M:406:2GO:H8	1.82	0.61
6:L:305:2GO:H20	3:M:210:TYR:CD2	2.34	0.61
2:L:135:ARG:HB3	2:L:136:PRO:HD3	1.82	0.61
3:M:300:ASN:O	3:M:302:GLY:N	2.34	0.60
6:M:401:2GO:H21	12:M:408:SPO:H243	1.83	0.60
2:L:180:PHE:CD2	2:L:240:ALA:HB1	2.36	0.59
2:L:181:PHE:HB3	6:M:406:2GO:CBB	2.33	0.59
6:L:301:2GO:H19	6:L:301:2GO:H21	1.85	0.59
6:M:401:2GO:H22	6:M:402:2GO:H37	1.84	0.59
1:H:201:ASN:HD22	1:H:201:ASN:H	1.49	0.59
2:L:20:ASN:ND2	2:L:20:ASN:H	1.99	0.58
6:M:402:2GO:CBD	6:M:402:2GO:H31	2.34	0.58
2:L:187:LEU:HD13	3:M:216:PHE:CD2	2.38	0.58
1:H:137:ALA:O	15:H:462:HOH:O	2.17	0.58
2:L:180:PHE:CE2	2:L:240:ALA:HB1	2.39	0.58
3:M:202:HIS:CE1	3:M:206:ILE:HD11	2.39	0.57
3:M:55:LEU:HD22	3:M:128:SER:HB2	1.87	0.57
3:M:229:PHE:HB2	3:M:244:ALA:HB2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:M:300:ASN:C	3:M:302:GLY:N	2.56	0.57
6:M:401:2GO:CBB	6:M:401:2GO:H19	2.35	0.57
1:H:156:CYS:HB3	1:H:206:ASN:O	2.05	0.57
2:L:190:HIS:HA	8:L:306[A]:U10:O2	2.05	0.57
15:H:401:HOH:O	13:M:409:CDL:HA32	2.05	0.57
1:H:62:LYS:HE2	1:H:64:PHE:CZ	2.41	0.56
7:L:304:LDA:H121	8:L:306[B]:U10:H1M1	1.87	0.56
3:M:164:ARG:HD3	15:M:551:HOH:O	2.04	0.56
1:H:138:ALA:N	15:H:464:HOH:O	2.32	0.56
5:H:305:GGD:H351	8:M:407:U10:H23	1.89	0.55
4:H:303:GOL:O1	5:H:305:GGD:C44	2.55	0.54
1:H:81:GLU:O	1:H:83:ARG:HG2	2.07	0.54
2:L:22:PHE:HA	2:L:24:PHE:CE2	2.43	0.53
3:M:4:GLN:HA	3:M:4:GLN:NE2	2.24	0.52
2:L:232:LEU:HD21	8:L:306[B]:U10:H1M2	1.91	0.52
3:M:193:HIS:O	3:M:293:ASN:HA	2.09	0.52
2:L:224:ILE:H	8:L:306[A]:U10:H8	1.74	0.51
3:M:189:PHE:O	3:M:193:HIS:CD2	2.62	0.51
3:M:2:GLU:HG3	3:M:3:TYR:N	2.25	0.51
3:M:90:PHE:CD1	3:M:90:PHE:N	2.78	0.51
1:H:98:HIS:HD2	2:L:7:ARG:HH21	1.58	0.51
3:M:194:GLY:O	3:M:195:ASN:HB3	2.11	0.51
6:M:401:2GO:H20	12:M:408:SPO:H243	1.92	0.51
3:M:300:ASN:N	3:M:300:ASN:ND2	2.58	0.51
1:H:226:THR:OG1	1:H:229:GLU:HG3	2.11	0.51
1:H:148:PRO:HA	1:H:151:LEU:HD12	1.93	0.51
6:L:301:2GO:H19	6:L:301:2GO:CBB	2.41	0.51
3:M:197:PHE:HZ	6:M:402:2GO:CBB	2.14	0.50
1:H:62:LYS:NZ	4:H:301:GOL:H32	2.27	0.50
2:L:189:LEU:CD2	6:M:406:2GO:H8	2.41	0.50
6:L:305:2GO:H19	6:L:305:2GO:CBB	2.38	0.50
3:M:90:PHE:HD1	3:M:90:PHE:N	2.10	0.50
1:H:75:VAL:HA	1:H:76:PRO:C	2.33	0.49
2:L:183:ASN:ND2	2:L:237[B]:SER:OG	2.45	0.49
3:M:80:TRP:O	3:M:82:PRO:HD3	2.11	0.49
3:M:109:LEU:O	3:M:114:LEU:HB2	2.12	0.49
8:L:306[B]:U10:C3M	8:L:306[B]:U10:O2	2.61	0.49
3:M:157:TRP:CE2	12:M:408:SPO:H293	2.48	0.48
3:M:194:GLY:O	3:M:195:ASN:CB	2.60	0.48
3:M:192:VAL:O	3:M:192:VAL:HG12	2.12	0.48
2:L:174:MET:CE	6:M:401:2GO:H3	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:M:97:PRO:HG2	3:M:171:TRP:HB2	1.95	0.48
2:L:185:LEU:HD13	6:M:406:2GO:ND	2.29	0.48
2:L:224:ILE:HB	8:L:306[A]:U10:H102	1.93	0.48
6:L:305:2GO:H20	3:M:210:TYR:CG	2.49	0.48
13:M:409:CDL:H421	13:M:409:CDL:H381	1.96	0.47
3:M:25:ASN:OD1	3:M:27:ALA:HB3	2.14	0.47
2:L:257:ASP:HB3	15:L:468:HOH:O	2.15	0.47
2:L:187:LEU:HD13	3:M:216:PHE:CB	2.44	0.47
2:L:217:ARG:HD2	15:L:477:HOH:O	2.14	0.47
2:L:233:GLY:HA3	3:M:216:PHE:CE1	2.50	0.46
6:M:401:2GO:H54	6:M:401:2GO:H47	1.96	0.46
3:M:233:ARG:HA	15:M:505:HOH:O	2.14	0.46
6:L:301:2GO:H13	6:L:307:2GO:CGA	2.45	0.46
2:L:82:LYS:HE2	9:L:308:PO4:O1	2.16	0.46
3:M:134:TYR:CE2	3:M:144:LYS:HG3	2.51	0.45
2:L:105:VAL:O	2:L:108:CYS:HB2	2.16	0.45
1:H:167:ILE:HG22	1:H:169:VAL:HG12	1.98	0.45
2:L:216:PHE:CG	8:L:306[A]:U10:H72	2.51	0.45
3:M:85:PHE:HD2	3:M:86:LEU:HD23	1.82	0.45
2:L:162:TYR:OH	3:M:187:ASN:ND2	2.50	0.45
1:H:118[B]:ARG:NH2	15:H:509:HOH:O	2.47	0.45
1:H:98:HIS:HE1	15:H:409:HOH:O	2.00	0.44
3:M:64:LEU:HB3	3:M:68:PHE:CE1	2.52	0.44
1:H:118[B]:ARG:CD	15:M:566:HOH:O	2.47	0.44
2:L:162:TYR:HA	2:L:165:GLY:O	2.17	0.44
2:L:166:ASN:OD1	2:L:166:ASN:C	2.56	0.44
2:L:173:HIS:CE1	2:L:177:ILE:HD11	2.52	0.44
3:M:62:SER:OG	3:M:121:PHE:O	2.35	0.44
1:H:124:ASP:CB	1:H:172:PRO:HG3	2.47	0.44
2:L:207:ARG:CG	2:L:211:HIS:CG	3.01	0.44
2:L:66:VAL:HG12	2:L:86:TRP:HB2	1.99	0.43
2:L:18:GLY:O	2:L:21:LEU:HB2	2.18	0.43
2:L:207:ARG:HG2	2:L:211:HIS:CG	2.53	0.43
2:L:222:TYR:HD2	8:L:306[B]:U10:O5	2.02	0.43
2:L:230:HIS:CD2	3:M:223:ILE:CG1	2.98	0.43
3:M:243:THR:O	3:M:247:ARG:HG3	2.18	0.43
6:M:401:2GO:H21	6:M:401:2GO:H19	2.00	0.43
8:L:306[B]:U10:H3M3	8:L:306[B]:U10:O2	2.18	0.43
1:H:138:ALA:HA	1:H:139:GLY:HA2	1.65	0.42
3:M:65:MET:HB3	3:M:121:PHE:CD2	2.55	0.42
1:H:124:ASP:HB2	1:H:172:PRO:HG3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:67:PRO:HA	2:L:205:GLU:OE1	2.18	0.42
2:L:170:ASN:O	2:L:173:HIS:HB3	2.18	0.42
1:H:247:LYS:HD2	1:H:247:LYS:H	1.84	0.42
1:H:208:LEU:HD21	1:H:237:VAL:HA	2.02	0.42
3:M:77:GLN:HE22	3:M:93:SER:H	1.67	0.42
3:M:6:ILE:HG12	15:M:517:HOH:O	2.19	0.42
2:L:193:LEU:HD21	2:L:212:GLU:HB3	2.02	0.42
3:M:241:ARG:HG3	3:M:245:ALA:HB3	2.01	0.42
1:H:62:LYS:HZ2	4:H:301:GOL:H32	1.85	0.42
3:M:196:LEU:HD12	6:M:402:2GO:C1D	2.50	0.41
2:L:230:HIS:NE2	3:M:223:ILE:HG13	2.34	0.41
1:H:156:CYS:HB2	1:H:248:ARG:HG3	2.03	0.41
3:M:2:GLU:HG3	3:M:3:TYR:H	1.85	0.41
12:M:408:SPO:H10	12:M:408:SPO:H81	1.98	0.41
2:L:111:LEU:HD23	2:L:111:LEU:HA	1.85	0.41
6:L:307:2GO:C1C	6:M:402:2GO:H22	2.51	0.41
3:M:157:TRP:CE3	3:M:158:MET:HG2	2.56	0.41
2:L:171:PRO:O	2:L:174:MET:HB2	2.20	0.41
2:L:187:LEU:HD13	3:M:216:PHE:HB2	2.02	0.41
2:L:66:VAL:O	2:L:86:TRP:HD1	2.03	0.40
1:H:45:GLU:HG3	1:H:94:GLU:CD	2.41	0.40
3:M:40:GLY:HA2	3:M:43:GLY:O	2.21	0.40
6:L:305:2GO:H22	6:L:305:2GO:CHC	2.41	0.40
2:L:84:GLY:HA3	4:L:312:GOL:H11	2.04	0.40
2:L:181:PHE:CG	6:M:406:2GO:H20	2.56	0.40
6:L:305:2GO:H36	6:L:305:2GO:H43	1.62	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	245/241 (102%)	230 (94%)	11 (4%)	4 (2%)	11	31
2	L	281/281 (100%)	262 (93%)	17 (6%)	2 (1%)	24	54
3	M	302/303 (100%)	277 (92%)	23 (8%)	2 (1%)	24	54
All	All	828/825 (100%)	769 (93%)	51 (6%)	8 (1%)	19	44

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	250	SER
3	M	301	HIS
1	H	249[A]	LYS
1	H	249[B]	LYS
3	M	302	GLY
1	H	124	ASP
2	L	23	ASP
2	L	272	TRP

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	H	199/196 (102%)	184 (92%)	15 (8%)	15	37
2	L	221/220 (100%)	214 (97%)	7 (3%)	42	73
3	M	237/237 (100%)	224 (94%)	13 (6%)	24	53
All	All	657/653 (101%)	622 (95%)	35 (5%)	27	54

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	12	LEU
1	H	14	SER
1	H	93	SER
1	H	113	SER
1	H	163[A]	LYS

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Mol	Chain	Res	Type
1	H	163[B]	LYS
1	H	191	LEU
1	H	201	ASN
1	H	202	ARG
1	H	220[A]	LYS
1	H	220[B]	LYS
1	H	220[C]	LYS
1	H	221	SER
1	H	231	ASP
1	H	247	LYS
2	L	20	ASN
2	L	21	LEU
2	L	72	GLU
2	L	207	ARG
2	L	210	ASP
2	L	247	CYS
2	L	272	TRP
3	M	6	ILE
3	M	29	ARG
3	M	39	LEU
3	M	54	SER
3	M	60	LEU
3	M	94	LEU
3	M	96	PRO
3	M	100	GLU
3	M	109	LEU
3	M	182	HIS
3	M	214	LEU
3	M	216	PHE
3	M	300	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	H	98	HIS
1	H	201	ASN
2	L	20	ASN
2	L	159	ASN
2	L	183	ASN
3	M	4	GLN
3	M	77	GLN
3	M	187	ASN

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Mol	Chain	Res	Type
3	M	193	HIS
3	M	300	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 29 ligands modelled in this entry, 1 is monoatomic - leaving 28 for Mogul analysis.

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
4	GOL	H	301	-	5,5,5	0.40	0	5,5,5	0.54	0
4	GOL	H	302	-	5,5,5	0.77	0	5,5,5	1.05	0
4	GOL	H	303	-	5,5,5	0.49	0	5,5,5	0.43	0
4	GOL	H	304	-	5,5,5	0.42	0	5,5,5	0.58	0
5	GGD	H	305	-	58,58,68	1.03	3 (5%)	72,72,82	1.53	13 (18%)
6	2GO	L	301	2	60,74,74	2.11	15 (25%)	49,115,115	2.62	15 (30%)
7	LDA	L	302	-	12,15,15	2.02	1 (8%)	14,17,17	0.63	0
7	LDA	L	303	-	12,15,15	2.01	1 (8%)	14,17,17	0.71	1 (7%)
7	LDA	L	304	-	12,15,15	2.05	1 (8%)	14,17,17	0.63	0
6	2GO	L	305	-	60,74,74	2.05	16 (26%)	49,115,115	2.70	14 (28%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	U10	L	306[A]	-	23,23,63	1.84	2 (8%)	26,31,79	1.33	3 (11%)
8	U10	L	306[B]	-	23,23,63	1.72	2 (8%)	26,31,79	1.30	4 (15%)
6	2GO	L	307	2	60,74,74	1.94	15 (25%)	49,115,115	2.42	12 (24%)
9	PO4	L	308	-	4,4,4	0.82	0	6,6,6	0.34	0
10	HTO	L	309	-	9,9,9	0.72	0	9,10,10	0.81	0
10	HTO	L	310	-	9,9,9	0.68	0	9,10,10	0.70	0
4	GOL	L	311	-	5,5,5	0.42	0	5,5,5	0.42	0
4	GOL	L	312	-	5,5,5	0.31	0	5,5,5	0.42	0
4	GOL	L	313	-	5,5,5	0.34	0	5,5,5	0.53	0
6	2GO	M	401	3	60,74,74	1.99	14 (23%)	49,115,115	2.73	13 (26%)
6	2GO	M	402	3	60,74,74	1.98	17 (28%)	49,115,115	2.92	12 (24%)
7	LDA	M	403	-	12,15,15	2.11	1 (8%)	14,17,17	0.98	1 (7%)
7	LDA	M	404	-	12,15,15	2.01	1 (8%)	14,17,17	0.62	0
6	2GO	M	406	-	60,74,74	2.05	17 (28%)	49,115,115	2.75	13 (26%)
8	U10	M	407	-	48,48,63	1.36	4 (8%)	56,61,79	1.54	11 (19%)
12	SPO	M	408	-	40,41,41	0.78	0	49,50,50	1.60	13 (26%)
13	CDL	M	409	-	80,80,99	3.51	5 (6%)	86,92,111	1.26	9 (10%)
14	PC1	M	410	-	42,42,53	1.16	2 (4%)	48,50,61	2.55	11 (22%)

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
4	GOL	H	301	-	-	0/4/4/4	0/0/0/0
4	GOL	H	302	-	-	0/4/4/4	0/0/0/0
4	GOL	H	303	-	-	0/4/4/4	0/0/0/0
4	GOL	H	304	-	-	0/4/4/4	0/0/0/0
5	GGD	H	305	-	-	0/47/87/97	0/2/2/2
6	2GO	L	301	2	-	0/37/97/97	0/0/9/9
7	LDA	L	302	-	-	0/13/13/13	0/0/0/0
7	LDA	L	303	-	-	0/13/13/13	0/0/0/0
7	LDA	L	304	-	-	0/13/13/13	0/0/0/0
6	2GO	L	305	-	-	0/37/97/97	0/0/9/9
8	U10	L	306[A]	-	-	0/15/39/87	0/1/1/1
8	U10	L	306[B]	-	-	0/15/39/87	0/1/1/1
6	2GO	L	307	2	-	0/37/97/97	0/0/9/9
9	PO4	L	308	-	-	0/0/0/0	0/0/0/0
10	HTO	L	309	-	-	0/10/10/10	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	HTO	L	310	-	-	0/10/10/10	0/0/0/0
4	GOL	L	311	-	-	0/4/4/4	0/0/0/0
4	GOL	L	312	-	-	0/4/4/4	0/0/0/0
4	GOL	L	313	-	-	0/4/4/4	0/0/0/0
6	2GO	M	401	3	-	0/37/97/97	0/0/9/9
6	2GO	M	402	3	-	0/37/97/97	0/0/9/9
7	LDA	M	403	-	-	0/13/13/13	0/0/0/0
7	LDA	M	404	-	-	0/13/13/13	0/0/0/0
6	2GO	M	406	-	-	0/37/97/97	0/0/9/9
8	U10	M	407	-	-	0/45/69/87	0/1/1/1
12	SPO	M	408	-	-	0/47/47/47	0/0/0/0
13	CDL	M	409	-	-	0/91/91/110	0/0/0/0
14	PC1	M	410	-	-	0/46/46/57	0/0/0/0

All (117) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	M	403	LDA	O1-N1	-6.99	1.25	1.42
7	L	304	LDA	O1-N1	-6.97	1.25	1.42
7	M	404	LDA	O1-N1	-6.88	1.25	1.42
7	L	302	LDA	O1-N1	-6.82	1.25	1.42
7	L	303	LDA	O1-N1	-6.79	1.25	1.42
6	L	307	2GO	C4C-NC	-3.81	1.30	1.35
6	M	402	2GO	C1C-NC	-3.79	1.32	1.37
6	L	301	2GO	C4C-NC	-3.77	1.30	1.35
6	M	401	2GO	C4C-NC	-3.34	1.30	1.35
6	L	301	2GO	C1D-ND	-3.26	1.32	1.37
6	M	406	2GO	C4C-NC	-3.25	1.30	1.35
6	M	402	2GO	C4C-NC	-3.07	1.31	1.35
6	M	402	2GO	C1D-ND	-2.92	1.33	1.37
6	L	305	2GO	C4C-NC	-2.61	1.31	1.35
6	M	406	2GO	OBD-CAD	-2.28	1.26	1.33
6	L	305	2GO	C1D-ND	-2.19	1.34	1.37
6	M	401	2GO	C1D-ND	-2.06	1.34	1.37
6	L	301	2GO	C4A-NA	-2.06	1.34	1.37
6	M	406	2GO	C1D-ND	-2.02	1.34	1.37
6	L	307	2GO	C1A-CHA	2.00	1.46	1.43
6	L	307	2GO	C4B-CHC	2.13	1.45	1.40
5	H	305	GGD	OA1-CA1	2.16	1.43	1.40
8	M	407	U10	C31-C29	2.18	1.56	1.51
6	M	402	2GO	C4B-CHC	2.18	1.45	1.40
6	M	402	2GO	C1B-CHB	2.24	1.46	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	M	407	U10	C33-C34	2.27	1.38	1.33
6	L	307	2GO	C1D-C2D	2.40	1.48	1.42
6	L	307	2GO	C4C-CHD	2.41	1.46	1.40
6	L	305	2GO	C4B-CHC	2.45	1.46	1.40
6	L	305	2GO	C1A-CHA	2.49	1.47	1.43
6	L	307	2GO	C1B-CHB	2.68	1.47	1.40
6	L	301	2GO	C1A-CHA	2.70	1.47	1.43
6	M	402	2GO	C4C-CHD	2.74	1.47	1.40
6	M	406	2GO	C1B-CHB	2.76	1.47	1.40
6	M	406	2GO	C4B-CHC	2.76	1.47	1.40
6	L	301	2GO	C1D-C2D	2.77	1.49	1.42
6	M	402	2GO	C1D-C2D	2.79	1.49	1.42
6	L	305	2GO	C1B-CHB	2.82	1.47	1.40
6	L	305	2GO	C4C-CHD	2.84	1.47	1.40
6	M	406	2GO	C4C-CHD	2.86	1.47	1.40
6	M	401	2GO	C4C-CHD	2.89	1.47	1.40
6	L	301	2GO	C1B-CHB	2.94	1.47	1.40
6	M	401	2GO	C1B-CHB	2.96	1.48	1.40
6	L	305	2GO	C3B-C2B	2.98	1.45	1.39
6	L	305	2GO	C1D-C2D	3.02	1.49	1.42
6	M	406	2GO	C1D-C2D	3.04	1.49	1.42
8	L	306[B]	U10	C4-C3	3.18	1.48	1.36
6	M	402	2GO	C1A-CHA	3.21	1.48	1.43
6	M	402	2GO	C1C-C2C	3.22	1.50	1.42
6	M	401	2GO	C1D-C2D	3.25	1.50	1.42
8	L	306[A]	U10	C4-C3	3.41	1.49	1.36
6	M	402	2GO	C4A-C3A	3.41	1.50	1.42
6	M	401	2GO	C4A-C3A	3.43	1.50	1.42
6	L	307	2GO	C4A-C3A	3.47	1.50	1.42
6	L	301	2GO	C4A-C3A	3.52	1.50	1.42
6	L	301	2GO	C3D-C2D	3.57	1.46	1.39
6	M	401	2GO	C1C-C2C	3.58	1.50	1.42
6	M	406	2GO	C4A-C3A	3.60	1.50	1.42
8	M	407	U10	C4-C3	3.62	1.50	1.36
6	L	307	2GO	C1C-C2C	3.65	1.51	1.42
6	L	305	2GO	C1C-C2C	3.66	1.51	1.42
6	M	406	2GO	C3C-C2C	3.79	1.48	1.37
6	M	406	2GO	C1C-C2C	3.79	1.51	1.42
6	M	401	2GO	C2A-C3A	3.80	1.48	1.37
6	L	307	2GO	C3B-C2B	3.81	1.47	1.39
6	M	406	2GO	C3B-C2B	3.83	1.47	1.39
6	L	305	2GO	C4A-C3A	3.91	1.51	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	L	301	2GO	C1C-C2C	3.92	1.51	1.42
6	M	402	2GO	C3D-C2D	3.93	1.47	1.39
6	M	402	2GO	C3C-C2C	3.97	1.49	1.37
6	L	307	2GO	C3D-C2D	4.01	1.47	1.39
6	M	402	2GO	C3B-C2B	4.02	1.47	1.39
6	M	401	2GO	C1A-C2A	4.05	1.51	1.40
5	H	305	GGD	OC6-CC5	4.07	1.46	1.34
6	L	307	2GO	C1A-C2A	4.08	1.51	1.40
6	M	402	2GO	C2A-C3A	4.11	1.49	1.37
6	L	301	2GO	C3B-C2B	4.12	1.48	1.39
6	M	402	2GO	C1A-C2A	4.14	1.51	1.40
6	M	401	2GO	C3B-C2B	4.14	1.48	1.39
6	M	406	2GO	C1A-CHA	4.22	1.50	1.43
6	M	401	2GO	C3D-C2D	4.24	1.48	1.39
6	L	301	2GO	C1A-C2A	4.26	1.52	1.40
6	M	401	2GO	C3C-C2C	4.29	1.50	1.37
6	L	307	2GO	O2A-CGA	4.37	1.46	1.33
6	L	307	2GO	C2A-C3A	4.40	1.50	1.37
6	L	305	2GO	C1A-C2A	4.44	1.52	1.40
5	H	305	GGD	OC8-CC7	4.44	1.46	1.33
6	M	406	2GO	C3D-C2D	4.49	1.48	1.39
6	L	301	2GO	C2A-C3A	4.52	1.51	1.37
6	M	406	2GO	C1A-C2A	4.53	1.52	1.40
14	M	410	PC1	O21-C21	4.56	1.47	1.34
6	M	406	2GO	C2A-C3A	4.56	1.51	1.37
6	M	402	2GO	O2A-CGA	4.56	1.46	1.33
6	L	301	2GO	C3C-C2C	4.57	1.51	1.37
13	M	409	CDL	OA6-CA5	4.61	1.47	1.34
6	L	305	2GO	O2A-CGA	4.62	1.46	1.33
13	M	409	CDL	OA8-CA7	4.68	1.46	1.33
6	L	305	2GO	C3C-C2C	4.73	1.51	1.37
6	M	406	2GO	O2A-CGA	4.74	1.47	1.33
6	L	307	2GO	C3C-C2C	4.76	1.51	1.37
6	L	305	2GO	C2A-C3A	4.76	1.51	1.37
14	M	410	PC1	O31-C31	4.78	1.47	1.33
6	L	305	2GO	C3D-C2D	4.80	1.49	1.39
13	M	409	CDL	OB6-CB5	4.87	1.48	1.34
13	M	409	CDL	OB8-CB7	4.93	1.47	1.33
6	M	406	2GO	O2D-CGD	4.95	1.44	1.33
6	M	401	2GO	O2A-CGA	4.98	1.47	1.33
6	M	402	2GO	O2D-CGD	5.05	1.44	1.33
6	L	301	2GO	O2A-CGA	5.10	1.48	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	L	307	2GO	O2D-CGD	5.22	1.45	1.33
6	M	401	2GO	O2D-CGD	5.30	1.45	1.33
8	M	407	U10	C6-C1	6.02	1.48	1.35
6	L	305	2GO	O2D-CGD	6.06	1.46	1.33
6	L	301	2GO	O2D-CGD	6.56	1.48	1.33
8	L	306[B]	U10	C6-C1	6.85	1.50	1.35
8	L	306[A]	U10	C6-C1	7.18	1.50	1.35
13	M	409	CDL	C35-C34	29.51	3.19	1.51

All (145) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	M	401	2GO	CMA-C3A-C2A	-10.45	105.24	124.94
6	M	406	2GO	CMC-C2C-C3C	-9.35	107.32	124.94
14	M	410	PC1	C15-N-C13	-9.30	85.42	108.96
14	M	410	PC1	C15-N-C14	-9.07	85.98	108.96
6	M	402	2GO	CMA-C3A-C2A	-8.26	109.36	124.94
6	M	402	2GO	CAA-C2A-C3A	-8.26	105.43	129.00
6	M	402	2GO	CMC-C2C-C3C	-8.17	109.53	124.94
6	L	307	2GO	CMA-C3A-C2A	-7.81	110.22	124.94
6	L	301	2GO	CMA-C3A-C2A	-7.69	110.44	124.94
6	L	305	2GO	CHA-CBD-CAD	-7.66	100.04	107.21
6	M	401	2GO	CMC-C2C-C3C	-7.35	111.08	124.94
6	M	402	2GO	CHA-CBD-CGD	-7.31	101.44	124.98
6	L	301	2GO	CAD-CBD-CGD	-7.06	106.06	126.78
6	M	402	2GO	CAD-CBD-CGD	-6.90	106.52	126.78
6	M	406	2GO	CMA-C3A-C2A	-6.89	111.96	124.94
6	L	305	2GO	CMA-C3A-C2A	-6.85	112.03	124.94
6	L	305	2GO	CAD-CBD-CGD	-6.84	106.71	126.78
6	L	301	2GO	CMC-C2C-C3C	-6.83	112.07	124.94
6	M	406	2GO	CHA-CBD-CAD	-6.74	100.90	107.21
6	L	307	2GO	CMC-C2C-C3C	-6.67	112.36	124.94
6	M	406	2GO	CAD-CBD-CGD	-6.51	107.66	126.78
6	L	305	2GO	CMC-C2C-C3C	-6.40	112.88	124.94
6	M	406	2GO	CAA-C2A-C3A	-6.38	110.79	129.00
6	L	307	2GO	CAA-C2A-C3A	-6.23	111.23	129.00
6	M	401	2GO	CAA-C2A-C3A	-6.00	111.87	129.00
6	M	402	2GO	CHA-CBD-CAD	-5.88	101.70	107.21
6	L	307	2GO	CHA-CBD-CAD	-5.78	101.80	107.21
14	M	410	PC1	C15-N-C12	-5.72	87.94	109.94
6	M	401	2GO	CHA-CBD-CAD	-5.63	101.94	107.21
6	L	301	2GO	CAA-C2A-C3A	-5.55	113.17	129.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	L	305	2GO	CAA-C2A-C3A	-5.36	113.71	129.00
6	M	401	2GO	CAD-CBD-CGD	-5.29	111.26	126.78
6	L	301	2GO	CHA-CBD-CAD	-5.26	102.28	107.21
6	L	305	2GO	CHA-CBD-CGD	-4.60	110.17	124.98
6	L	307	2GO	CAD-CBD-CGD	-4.45	113.71	126.78
6	M	406	2GO	CHA-CBD-CGD	-4.05	111.93	124.98
12	M	408	SPO	C4-C5-C6	-3.38	119.90	124.61
12	M	408	SPO	C20-C19-C17	-3.33	122.56	127.31
6	M	402	2GO	O2D-CGD-O1D	-3.32	117.11	123.55
6	M	401	2GO	CHA-CBD-CGD	-3.24	114.54	124.98
6	L	301	2GO	O1D-CGD-CBD	-3.16	118.58	124.59
6	L	305	2GO	O2A-CGA-O1A	-3.10	116.00	123.58
6	L	307	2GO	O2A-CGA-O1A	-3.03	116.18	123.58
12	M	408	SPO	C21-C22-C23	-3.01	123.01	127.31
6	L	305	2GO	O2D-CGD-O1D	-2.96	117.81	123.55
6	L	301	2GO	CHA-CBD-CGD	-2.91	115.61	124.98
6	L	301	2GO	C5-C3-C2	-2.86	115.27	121.10
8	L	306[A]	U10	C10-C9-C8	-2.82	116.29	123.70
6	M	402	2GO	O2A-CGA-O1A	-2.81	116.73	123.58
14	M	410	PC1	O21-C21-O22	-2.69	117.05	123.69
8	M	407	U10	C26-C27-C28	-2.68	102.91	111.87
7	M	403	LDA	CM2-N1-CM1	-2.63	106.71	110.91
6	L	307	2GO	O2D-CGD-O1D	-2.60	118.51	123.55
13	M	409	CDL	OA6-CA5-OA7	-2.56	117.37	123.69
6	M	401	2GO	O1D-CGD-CBD	-2.48	119.88	124.59
8	M	407	U10	C1M-C1-C6	-2.47	119.28	124.21
6	L	301	2GO	C11-C12-C13	-2.45	107.69	115.73
14	M	410	PC1	O31-C31-O32	-2.45	117.61	123.58
6	M	406	2GO	O2D-CGD-O1D	-2.43	118.84	123.55
6	M	401	2GO	CMD-C2D-C3D	-2.30	120.69	124.88
12	M	408	SPO	C14-C15-C16	-2.29	116.30	123.26
13	M	409	CDL	OA8-CA7-OA9	-2.27	118.04	123.58
8	M	407	U10	C31-C29-C28	-2.25	116.52	121.10
12	M	408	SPO	C40-C38-C37	-2.17	116.23	122.65
6	M	401	2GO	C4-C3-C2	-2.16	118.01	123.70
12	M	408	SPO	C2-C1-C4	-2.15	107.38	110.90
6	L	305	2GO	C1-C2-C3	-2.15	122.00	125.96
13	M	409	CDL	OB8-CB7-OB9	-2.12	118.42	123.58
5	H	305	GGD	OC6-CC5-OC7	-2.11	118.47	123.69
8	L	306[B]	U10	C7-C8-C9	-2.11	123.21	126.79
8	M	407	U10	C30-C29-C28	-2.11	118.16	123.70
6	M	406	2GO	O1D-CGD-CBD	-2.09	120.61	124.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	L	303	LDA	CM2-N1-CM1	-2.09	107.58	110.91
8	L	306[B]	U10	C1M-C1-C6	-2.08	120.07	124.21
8	M	407	U10	C17-C18-C19	-2.04	122.60	127.66
6	L	301	2GO	C16-C17-C18	-2.03	106.14	116.01
12	M	408	SPO	C24-C23-C25	2.05	121.36	118.10
6	L	305	2GO	C1-O2A-CGA	2.05	121.50	116.77
5	H	305	GGD	CC6-OC8-CC7	2.06	123.29	117.13
5	H	305	GGD	OA5-CA5-CA6	2.06	111.61	106.43
12	M	408	SPO	C8-C7-C6	2.10	121.44	118.10
13	M	409	CDL	CB6-OB8-CB7	2.10	123.41	117.13
12	M	408	SPO	C34-C33-C35	2.11	118.93	115.29
6	M	406	2GO	CED-O2D-CGD	2.11	119.84	115.87
8	L	306[B]	U10	C16-C14-C15	2.15	119.44	114.59
8	L	306[A]	U10	C10-C9-C11	2.20	119.08	115.29
6	L	305	2GO	CMB-C2B-C3B	2.23	128.94	124.88
6	M	401	2GO	C1-C2-C3	2.23	130.07	125.96
14	M	410	PC1	C14-N-C12	2.31	118.81	109.94
8	M	407	U10	C15-C14-C16	2.31	119.28	115.29
5	H	305	GGD	OC8-CC7-C31	2.35	118.70	111.92
8	L	306[A]	U10	C3M-O3-C3	2.36	124.84	116.45
6	L	301	2GO	O2A-CGA-CBA	2.36	118.73	111.92
14	M	410	PC1	O21-C2-C3	2.38	117.05	108.43
6	M	401	2GO	CMB-C2B-C3B	2.39	129.22	124.88
6	M	402	2GO	O2D-CGD-CBD	2.40	116.18	111.76
6	L	307	2GO	C1-O2A-CGA	2.41	122.31	116.77
12	M	408	SPO	C29-C28-C30	2.41	119.45	115.29
8	M	407	U10	C20-C19-C21	2.44	119.50	115.29
14	M	410	PC1	C13-N-C12	2.50	119.56	109.94
5	H	305	GGD	OC8-CC6-CC4	2.51	114.89	108.64
13	M	409	CDL	OB8-CB7-C71	2.52	119.20	111.92
12	M	408	SPO	C13-C12-C11	2.57	122.19	118.10
6	M	406	2GO	O2A-CGA-CBA	2.59	119.40	111.92
6	M	402	2GO	CED-O2D-CGD	2.62	120.79	115.87
6	L	307	2GO	O2D-CGD-CBD	2.64	116.62	111.76
8	M	407	U10	C32-C31-C29	2.65	121.61	112.85
12	M	408	SPO	C40-C38-C39	2.69	120.65	114.59
13	M	409	CDL	OA8-CA7-C31	2.69	119.71	111.92
8	M	407	U10	C25-C24-C26	2.70	119.95	115.29
8	L	306[B]	U10	C10-C9-C11	2.70	119.95	115.29
8	M	407	U10	C4M-O4-C4	2.81	126.47	116.45
6	L	305	2GO	CED-O2D-CGD	2.86	121.25	115.87
6	L	301	2GO	C4-C3-C5	2.88	120.26	115.29

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	M	402	2GO	CMB-C2B-C3B	2.93	130.21	124.88
5	H	305	GGD	CB3-CB4-CB5	2.97	115.55	110.24
5	H	305	GGD	OB5-CB5-CB4	2.98	115.16	109.69
12	M	408	SPO	O1-C1-C4	3.00	114.27	106.24
5	H	305	GGD	CA1-OA5-CA5	3.06	119.73	113.71
6	L	307	2GO	CMB-C2B-C3B	3.09	130.50	124.88
6	M	406	2GO	CMB-C2B-C3B	3.10	130.52	124.88
6	L	301	2GO	O2D-CGD-CBD	3.10	117.46	111.76
14	M	410	PC1	O31-C31-C32	3.10	120.89	111.92
5	H	305	GGD	OA5-CA1-CA2	3.28	117.39	110.34
6	L	307	2GO	O2A-CGA-CBA	3.39	121.71	111.92
6	L	305	2GO	O2A-CGA-CBA	3.42	121.80	111.92
5	H	305	GGD	CA3-CA4-CA5	3.72	117.65	109.67
5	H	305	GGD	OC6-CC5-C14	3.72	119.40	111.55
6	L	307	2GO	C4-C3-C5	3.82	121.87	115.29
6	L	301	2GO	C1-O2A-CGA	3.83	125.58	116.77
6	M	402	2GO	O2A-CGA-CBA	3.84	123.02	111.92
6	M	406	2GO	C1-O2A-CGA	4.01	126.02	116.77
6	M	401	2GO	C1-O2A-CGA	4.11	126.23	116.77
5	H	305	GGD	CA4-CA3-CA2	4.27	117.05	110.84
6	L	301	2GO	CED-O2D-CGD	4.28	123.91	115.87
5	H	305	GGD	CA1-CA2-CA3	4.33	117.59	110.08
6	M	401	2GO	O2D-CGD-CBD	4.42	119.89	111.76
13	M	409	CDL	OB6-CB5-C51	4.44	120.90	111.55
14	M	410	PC1	C14-N-C13	4.55	120.48	108.96
6	M	406	2GO	O2D-CGD-CBD	4.78	120.55	111.76
13	M	409	CDL	OA6-CA5-C11	5.17	122.44	111.55
6	L	305	2GO	O2D-CGD-CBD	5.22	121.36	111.76
13	M	409	CDL	C36-C35-C34	5.56	144.58	114.41
14	M	410	PC1	O21-C21-C22	5.66	123.49	111.55
8	M	407	U10	C30-C29-C31	5.81	125.31	115.29

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

20 monomers are involved in 67 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	H	301	GOL	2	0
4	H	303	GOL	1	0
5	H	305	GGD	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	L	301	2GO	5	0
7	L	304	LDA	1	0
6	L	305	2GO	8	0
8	L	306[A]	U10	7	0
8	L	306[B]	U10	7	0
6	L	307	2GO	2	0
9	L	308	PO4	1	0
4	L	311	GOL	1	0
4	L	312	GOL	1	0
4	L	313	GOL	1	0
6	M	401	2GO	9	0
6	M	402	2GO	10	0
7	M	403	LDA	1	0
6	M	406	2GO	9	0
8	M	407	U10	2	0
12	M	408	SPO	5	0
13	M	409	CDL	2	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	H	241/241 (100%)	-0.34	7 (2%) 51 46	41, 54, 77, 161	3 (1%)
2	L	281/281 (100%)	-0.56	3 (1%) 80 79	37, 53, 79, 101	0
3	M	303/303 (100%)	-0.23	2 (0%) 87 87	37, 55, 81, 123	6 (1%)
All	All	825/825 (100%)	-0.37	12 (1%) 73 72	37, 54, 80, 161	9 (1%)

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	250	SER	5.2
1	H	249[A]	LYS	3.7
2	L	281	GLY	3.4
1	H	220[A]	LYS	3.1
1	H	251	VAL	3.1
1	H	51	ALA	2.7
1	H	247	LYS	2.6
1	H	52	ASN	2.6
2	L	277	GLY	2.3
3	M	219	HIS	2.2
2	L	271[A]	TRP	2.1
3	M	265	ILE	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
14	PC1	M	410	43/54	0.39	0.49	78,117,175,190	0
7	LDA	L	303	16/16	0.44	0.56	76,95,143,148	0
7	LDA	L	304	16/16	0.57	0.39	68,96,124,125	0
5	GGD	H	305	57/67	0.62	0.54	49,107,216,221	0
10	HTO	L	309	10/10	0.64	0.87	88,103,117,127	0
4	GOL	H	303	6/6	0.71	0.31	73,85,90,96	0
4	GOL	L	312	6/6	0.73	0.35	87,88,92,95	0
10	HTO	L	310	10/10	0.75	0.82	86,114,140,156	0
7	LDA	L	302	16/16	0.80	0.40	42,105,140,143	0
4	GOL	H	304	6/6	0.81	0.24	74,85,89,94	0
13	CDL	M	409	81/100	0.83	0.37	70,101,156,164	0
4	GOL	H	301	6/6	0.85	0.43	94,109,111,112	0
8	U10	L	306[B]	23/63	0.85	0.29	43,68,73,75	23
8	U10	L	306[A]	23/63	0.85	0.29	50,71,86,91	23
7	LDA	M	404	16/16	0.87	0.39	67,87,102,106	0
4	GOL	H	302	6/6	0.89	0.45	56,65,69,81	0
4	GOL	L	313	6/6	0.89	0.14	84,89,93,93	0
4	GOL	L	311	6/6	0.90	0.36	60,73,85,104	0
8	U10	M	407	48/63	0.92	0.31	43,54,99,111	0
7	LDA	M	403	16/16	0.94	0.22	42,60,67,68	0
6	2GO	M	406	66/66	0.94	0.20	60,76,135,142	0
12	SPO	M	408	42/42	0.94	0.23	46,64,98,112	0
9	PO4	L	308	5/5	0.94	0.13	97,97,98,98	0
6	2GO	L	307	66/66	0.97	0.15	35,48,59,63	0
6	2GO	L	301	66/66	0.98	0.14	29,39,59,68	0
6	2GO	M	401	66/66	0.98	0.18	35,47,88,92	0
6	2GO	L	305	66/66	0.98	0.15	31,47,56,58	0
6	2GO	M	402	66/66	0.99	0.17	39,50,75,86	0
11	FE	M	405	1/1	1.00	0.16	46,46,46,46	0

6.5 Other polymers [i](#)

There are no such residues in this entry.