



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 09:56 AM GMT

PDB ID : 3K8T
Title : Structure of eukaryotic rnr large subunit R1 complexed with designed adp analog compound
Authors : Sun, D.; Xu, H.; Dealwis, C.; Lee, R.E.
Deposited on : 2009-10-14
Resolution : 2.10 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 ⓘ](#)) 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

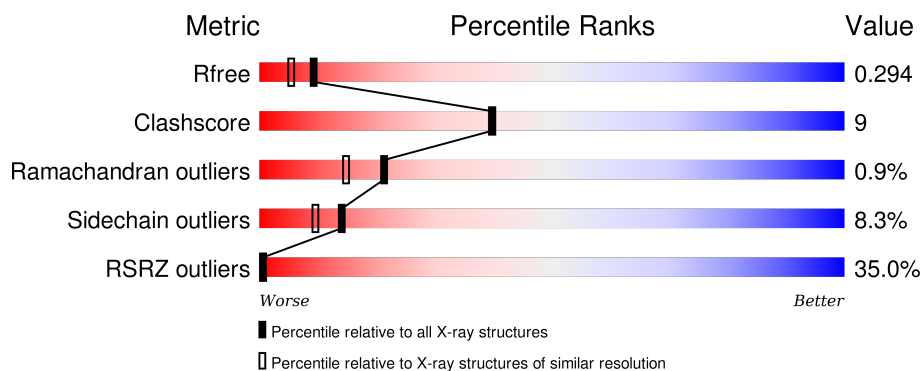
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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	3939 (2.10-2.10)
Clashscore	102246	4460 (2.10-2.10)
Ramachandran outliers	100387	4413 (2.10-2.10)
Sidechain outliers	100360	4414 (2.10-2.10)
RSRZ outliers	91569	3948 (2.10-2.10)

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	888	<div> <div>25%</div> <div>55%</div> <div>14%</div> <div>•</div> <div>28%</div> </div>

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 5322 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.

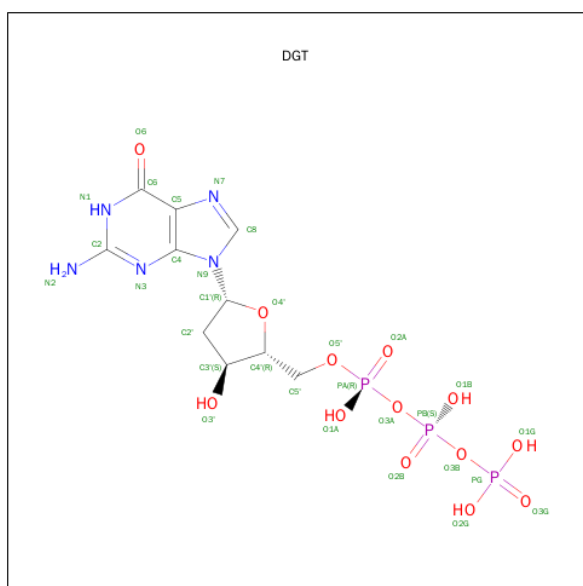
- Molecule 1 is a protein called Ribonucleoside-diphosphate reductase large chain 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	640	Total	C	N	O	S	0	0	0
			5120	3266	866	957	31			

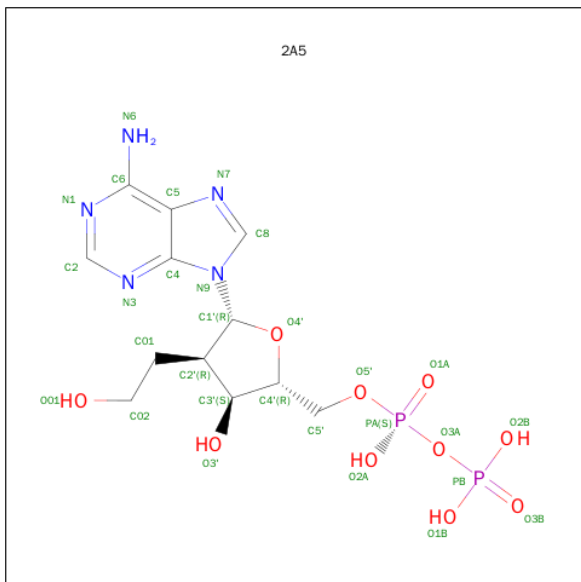
- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Mg	0	0
			1	1		

- Molecule 3 is 2'-DEOXYGUANOSINE-5'-TRIPHOSPHATE (three-letter code: DGT) (formula: C₁₀H₁₆N₅O₁₃P₃).

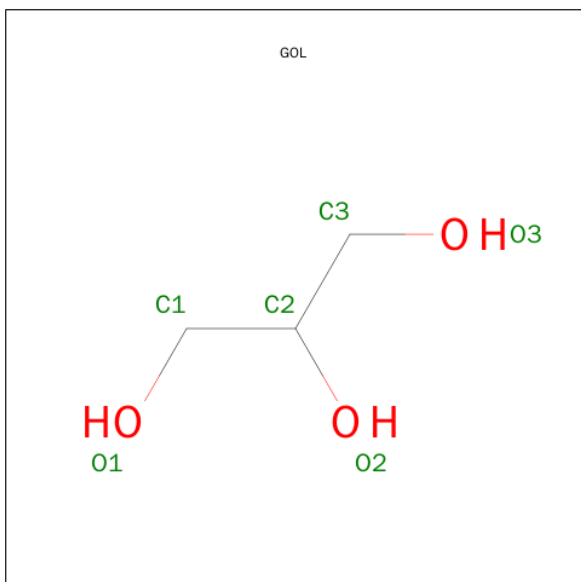


- Molecule 4 is 2'-DEOXY-2'-(2-HYDROXYETHYL)ADENOSINE 5'-(TRIHYDROGEN DIPHOSPHATE) (three-letter code: 2A5) (formula: $C_{12}H_{19}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			29	12	5	10	2		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



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

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	135	Total 135	O 135	0	0

ILE
VAL
ASP
GLU
THR
GLU
PHE
ASP
ILE
TYR
ASN
SER
LYS
VAL
ILE
ALA
CYS
ALA
ILE
ASP
ASN
PRO
GLU
ALA
CYS
GLU
MET
CYS
SER
GLY

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	107.53Å 116.92Å 64.06Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.84 – 2.10 38.84 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.3 (38.84-2.10) 99.3 (38.84-2.10)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.42 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.2.0007	Depositor
R, R_{free}	0.252 , 0.290 0.254 , 0.294	Depositor DCC
R_{free} test set	2409 reflections (5.33%)	DCC
Wilson B-factor (Å ²)	43.8	Xtriage
Anisotropy	0.421	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 64.5	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	1 of 47602 reflections (0.002%)	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	5322	wwPDB-VP
Average B, all atoms (Å ²)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.89% 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, 0.375 respectively for untwinned datasets, and 0.333, 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, MG, 2A5, DGT

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	0.77	1/5238 (0.0%)	0.97	25/7089 (0.4%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	707	ASP	CB-CG	-8.16	1.34	1.51

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	707	ASP	CB-CG-OD1	-15.32	104.51	118.30
1	A	707	ASP	CB-CG-OD2	11.93	129.04	118.30
1	A	226	ASP	CB-CG-OD2	8.49	125.94	118.30
1	A	365	ASP	CB-CG-OD2	8.16	125.64	118.30
1	A	182	ASP	CB-CG-OD2	7.72	125.24	118.30
1	A	233	ASP	CB-CG-OD2	7.13	124.72	118.30
1	A	324	ARG	NE-CZ-NH1	6.70	123.65	120.30
1	A	379	ARG	NE-CZ-NH2	-6.57	117.02	120.30
1	A	586	ASP	CB-CG-OD2	6.40	124.06	118.30
1	A	100	ASP	CB-CG-OD2	6.30	123.97	118.30
1	A	707	ASP	N-CA-C	6.13	127.55	111.00
1	A	361	ASP	CB-CG-OD2	6.12	123.81	118.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	379	ARG	NE-CZ-NH1	6.01	123.30	120.30
1	A	573	ASP	CB-CG-OD2	6.00	123.70	118.30
1	A	520	ARG	NE-CZ-NH2	-5.93	117.33	120.30
1	A	170	LEU	CA-CB-CG	5.89	128.85	115.30
1	A	287	ASP	CB-CG-OD2	5.85	123.56	118.30
1	A	118	ASP	CB-CG-OD2	5.75	123.47	118.30
1	A	576	ASP	CB-CG-OD2	5.63	123.37	118.30
1	A	140	ASP	CB-CG-OD2	5.54	123.29	118.30
1	A	524	ASP	CB-CG-OD2	5.42	123.17	118.30
1	A	324	ARG	NE-CZ-NH2	-5.38	117.61	120.30
1	A	648	ASP	CB-CG-OD2	5.34	123.10	118.30
1	A	138	ASP	CB-CG-OD2	5.21	122.98	118.30
1	A	220	LEU	CA-CB-CG	5.06	126.93	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	318	HIS	Peptide
1	A	319	GLY	Peptide

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	5120	0	5055	90	0
2	A	1	0	0	0	0
3	A	31	0	12	0	0
4	A	29	0	16	8	0
5	A	6	0	8	0	0
6	A	135	0	0	7	0
All	All	5322	0	5091	90	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 9.

All (90) 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:426:ASN:HD22	4:A:891:2A5:H02	1.15	1.11
1:A:686:THR:HG21	6:A:985:HOH:O	1.74	0.86
1:A:426:ASN:HD22	4:A:891:2A5:C02	1.88	0.85
1:A:482:ASN:OD1	1:A:503:ARG:NH1	2.11	0.84
1:A:364:GLY:O	1:A:368:GLU:HG3	1.87	0.75
1:A:191:ASN:HB3	6:A:973:HOH:O	1.87	0.75
1:A:534:GLN:O	1:A:538:THR:HG22	1.88	0.74
1:A:251:HIS:HD2	6:A:896:HOH:O	1.73	0.71
1:A:502:HIS:ND1	1:A:559:THR:HG21	2.07	0.69
1:A:538:THR:HB	1:A:583:TRP:NE1	2.08	0.69
1:A:426:ASN:ND2	4:A:891:2A5:H02	1.99	0.69
1:A:126:GLU:OE2	1:A:181:ARG:NH1	2.18	0.68
1:A:505:ILE:HG22	1:A:602:THR:HA	1.76	0.67
1:A:606:MET:HE1	6:A:895:HOH:O	1.96	0.64
1:A:220:LEU:HD21	1:A:426:ASN:HB3	1.78	0.64
1:A:662:TYR:CE1	1:A:666:GLN:HG3	2.34	0.63
1:A:245:ALA:HA	1:A:288:GLN:HE21	1.64	0.62
1:A:560:PHE:CZ	1:A:596:GLY:HA2	2.34	0.62
1:A:106:ASN:OD1	1:A:109:THR:HG22	2.00	0.61
1:A:538:THR:HB	1:A:583:TRP:HE1	1.65	0.61
1:A:485:ILE:HD11	1:A:505:ILE:HD12	1.83	0.61
1:A:467:PHE:CZ	1:A:534:GLN:HG3	2.38	0.59
1:A:145:TYR:OH	1:A:640:VAL:HG11	2.02	0.59
1:A:716:LEU:HD21	1:A:723:LYS:HG2	1.85	0.58
1:A:109:THR:HG23	1:A:111:LYS:H	1.69	0.57
1:A:428:CYS:SG	4:A:891:2A5:H3'	2.44	0.57
1:A:510:GLN:OE1	1:A:612:SER:HA	2.05	0.57
1:A:426:ASN:ND2	4:A:891:2A5:C02	2.62	0.56
1:A:564:PRO:HG2	1:A:574:MET:HE1	1.88	0.56
1:A:447:SER:HB3	1:A:606:MET:HE3	1.87	0.55
1:A:401:THR:HB	1:A:402:PRO:HA	1.89	0.55
1:A:524:ASP:OD2	1:A:685:LYS:NZ	2.30	0.55
1:A:220:LEU:CD2	1:A:426:ASN:HB3	2.37	0.54
1:A:316:LYS:HD3	1:A:318:HIS:CE1	2.44	0.52
1:A:557:TYR:HE1	1:A:559:THR:HG23	1.75	0.52
1:A:486:ASP:OD1	1:A:503:ARG:NH2	2.43	0.51
1:A:454:ILE:HD13	1:A:518:LEU:HB3	1.91	0.51
1:A:481:LEU:CB	1:A:505:ILE:HG12	2.41	0.51
1:A:251:HIS:HE1	1:A:435:SER:OG	1.95	0.50
1:A:713:ASN:HD22	1:A:742:TYR:H	1.60	0.50
1:A:661:GLN:C	1:A:663:LEU:H	2.15	0.50
1:A:714:LEU:HD22	1:A:740:MET:HG3	1.94	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:686:THR:CG2	6:A:985:HOH:O	2.45	0.49
1:A:606:MET:HE2	1:A:608:THR:CG2	2.43	0.49
1:A:509:VAL:O	1:A:620:CYS:HA	2.13	0.48
1:A:663:LEU:HD11	1:A:670:ILE:HG22	1.94	0.48
1:A:649:LEU:HD13	1:A:655:TRP:CE3	2.49	0.47
1:A:520:ARG:HH22	1:A:648:ASP:CG	2.17	0.47
1:A:168:GLN:NE2	1:A:190:TYR:OH	2.44	0.47
1:A:273:ILE:HD12	1:A:314:ILE:HD11	1.96	0.47
1:A:481:LEU:HB2	1:A:505:ILE:HG12	1.95	0.47
1:A:439:GLU:OE2	1:A:497:LYS:NZ	2.47	0.47
1:A:170:LEU:HD22	1:A:173:ARG:NH2	2.31	0.46
1:A:702:ARG:HH11	1:A:710:HIS:CE1	2.33	0.46
1:A:606:MET:HE2	1:A:608:THR:HG23	1.98	0.46
1:A:450:LEU:N	1:A:451:PRO:CD	2.80	0.45
1:A:444:ASN:N	1:A:444:ASN:ND2	2.64	0.45
1:A:312:ILE:HD13	1:A:392:ILE:HD13	1.98	0.45
1:A:427:LEU:HB3	4:A:891:2A5:H02A	1.99	0.45
1:A:557:TYR:CE1	1:A:559:THR:HG23	2.52	0.44
1:A:642:ASN:HB3	1:A:645:LEU:HB3	1.99	0.44
1:A:276:ILE:HD13	1:A:276:ILE:N	2.33	0.44
1:A:686:THR:HG22	1:A:688:TRP:H	1.84	0.43
1:A:662:TYR:CD1	1:A:666:GLN:HG3	2.54	0.43
1:A:713:ASN:ND2	1:A:742:TYR:H	2.17	0.43
1:A:140:ASP:OD2	1:A:168:GLN:HG2	2.19	0.43
1:A:445:LEU:CD2	1:A:506:ALA:HB3	2.49	0.43
1:A:135:ILE:HG23	1:A:168:GLN:HB3	2.01	0.43
1:A:273:ILE:CD1	1:A:314:ILE:HD11	2.49	0.42
1:A:319:GLY:O	1:A:320:LYS:HB2	2.20	0.42
1:A:356:ALA:HB1	1:A:374:TYR:CD1	2.55	0.42
1:A:745:THR:OG1	1:A:746:GLN:N	2.52	0.42
1:A:475:LYS:O	1:A:479:ARG:HG3	2.20	0.42
1:A:468:LYS:NZ	6:A:1007:HOH:O	2.53	0.42
1:A:534:GLN:O	1:A:538:THR:CG2	2.64	0.41
1:A:247:GLY:N	4:A:891:2A5:N3	2.68	0.41
1:A:594:LYS:HA	1:A:594:LYS:HE3	2.02	0.41
1:A:253:HIS:ND1	1:A:301:LEU:HA	2.35	0.41
1:A:377:GLU:OE1	1:A:379:ARG:HD2	2.21	0.41
1:A:481:LEU:HB3	1:A:505:ILE:CG1	2.49	0.41
1:A:244:THR:O	1:A:245:ALA:O	2.39	0.41
1:A:135:ILE:HG21	1:A:137:TYR:CE2	2.55	0.41
1:A:191:ASN:CB	6:A:973:HOH:O	2.55	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:661:GLN:O	1:A:664:ILE:HG12	2.21	0.41
1:A:693:LYS:HD2	1:A:730:TYR:CD2	2.56	0.41
1:A:299:LEU:HD11	1:A:328:LEU:HD13	2.03	0.40
1:A:467:PHE:CE2	1:A:534:GLN:HG3	2.56	0.40
1:A:218:CYS:SG	4:A:891:2A5:H02	2.62	0.40
1:A:481:LEU:HB3	1:A:505:ILE:HG12	2.03	0.40
1:A:475:LYS:NZ	1:A:549:GLU:OE1	2.55	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	632/888 (71%)	609 (96%)	17 (3%)	6 (1%)	21	15

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	245	ALA
1	A	320	LYS
1	A	707	ASP
1	A	662	TYR
1	A	321	GLU
1	A	642	ASN

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	555/761 (73%)	509 (92%)	46 (8%)	14 9

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	131	LEU
1	A	138	ASP
1	A	153	ARG
1	A	170	LEU
1	A	176	LEU
1	A	187	LEU
1	A	214	GLN
1	A	276	ILE
1	A	277	ARG
1	A	297	PHE
1	A	301	LEU
1	A	314	ILE
1	A	320	LYS
1	A	321	GLU
1	A	324	ARG
1	A	337	LEU
1	A	359	LEU
1	A	388	LEU
1	A	443	CYS
1	A	462	THR
1	A	468	LYS
1	A	505	ILE
1	A	512	LEU
1	A	518	LEU
1	A	520	ARG
1	A	530	LEU
1	A	538	THR
1	A	594	LYS
1	A	606	MET
1	A	610	SER
1	A	611	THR
1	A	639	GLN
1	A	656	ASP
1	A	659	MET
1	A	663	LEU
1	A	673	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	679	GLU
1	A	686	THR
1	A	696	ILE
1	A	712	LEU
1	A	714	LEU
1	A	716	LEU
1	A	717	ARG
1	A	721	MET
1	A	724	LEU
1	A	743	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	168	GLN
1	A	214	GLN
1	A	251	HIS
1	A	266	ASN
1	A	270	ASN
1	A	288	GLN
1	A	317	ASN
1	A	561	GLN
1	A	567	GLN
1	A	692	GLN
1	A	710	HIS
1	A	713	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

Of 4 ligands modelled in this entry, 1 is monoatomic - leaving 3 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$
3	DGT	A	890	2	25,33,33	0.93	1 (4%)	35,52,52	1.43	6 (17%)
4	2A5	A	891	-	25,31,31	1.10	3 (12%)	26,47,47	1.97	2 (7%)
5	GOL	A	892	-	5,5,5	0.41	0	5,5,5	0.52	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
3	DGT	A	890	2	-	0/18/34/34	0/3/3/3
4	2A5	A	891	-	-	0/15/35/35	0/3/3/3
5	GOL	A	892	-	-	0/4/4/4	0/0/0/0

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	890	DGT	O4'-C4'	-2.06	1.40	1.45
4	A	891	2A5	C2-N3	2.06	1.35	1.32
4	A	891	2A5	O4'-C1'	2.90	1.44	1.41
4	A	891	2A5	C5-C4	3.17	1.47	1.40

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	891	2A5	N3-C2-N1	-8.31	122.53	128.89
3	A	890	DGT	N3-C2-N1	-3.65	121.89	127.44
3	A	890	DGT	C5-C6-N1	-2.96	119.54	123.59
3	A	890	DGT	PB-O3B-PG	-2.55	124.11	132.67
3	A	890	DGT	PA-O3A-PB	-2.55	125.57	132.73

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	891	2A5	C4-C5-N7	-2.43	107.25	109.48
3	A	890	DGT	O1G-PG-O3B	2.39	115.92	105.09
3	A	890	DGT	C6-N1-C2	3.05	120.17	115.94

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	891	2A5	8	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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	640/888 (72%)	1.81	224 (35%) 0 0	41, 52, 70, 79	0

All (224) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	659	MET	12.8
1	A	145	TYR	12.4
1	A	148	PHE	10.5
1	A	662	TYR	9.8
1	A	640	VAL	9.3
1	A	639	GLN	8.9
1	A	319	GLY	8.3
1	A	641	VAL	8.1
1	A	718	ALA	7.8
1	A	320	LYS	7.8
1	A	462	THR	7.7
1	A	629	TYR	7.6
1	A	664	ILE	7.2
1	A	655	TRP	7.1
1	A	91	THR	7.0
1	A	162	GLN	6.6
1	A	146	PHE	6.6
1	A	163	VAL	6.5
1	A	717	ARG	6.2
1	A	686	THR	6.2
1	A	675	ASN	6.1
1	A	628	MET	6.0
1	A	518	LEU	6.0
1	A	658	GLY	5.8
1	A	137	TYR	5.7
1	A	673	LEU	5.7
1	A	431	ILE	5.7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	712	LEU	5.4
1	A	489	TYR	5.3
1	A	429	CYS	5.3
1	A	650	VAL	5.2
1	A	506	ALA	5.1
1	A	657	GLU	5.1
1	A	509	VAL	5.0
1	A	318	HIS	4.9
1	A	604	ALA	4.8
1	A	317	ASN	4.8
1	A	614	ILE	4.8
1	A	147	GLY	4.8
1	A	152	GLU	4.8
1	A	660	LYS	4.6
1	A	654	ILE	4.6
1	A	183	ILE	4.6
1	A	445	LEU	4.6
1	A	643	PRO	4.5
1	A	432	VAL	4.5
1	A	601	LEU	4.5
1	A	325	ALA	4.4
1	A	153	ARG	4.4
1	A	646	LEU	4.3
1	A	653	GLY	4.3
1	A	390	TYR	4.3
1	A	709	SER	4.3
1	A	333	TRP	4.2
1	A	144	SER	4.2
1	A	652	LEU	4.2
1	A	505	ILE	4.2
1	A	741	TYR	4.2
1	A	143	TYR	4.1
1	A	201	ALA	4.0
1	A	181	ARG	4.0
1	A	323	ILE	4.0
1	A	160	ASN	3.9
1	A	427	LEU	3.9
1	A	141	PHE	3.9
1	A	461	LYS	3.9
1	A	723	LYS	3.8
1	A	611	THR	3.7
1	A	156	LEU	3.7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	129	ASP	3.7
1	A	578	LYS	3.7
1	A	582	MET	3.7
1	A	481	LEU	3.7
1	A	447	SER	3.6
1	A	746	GLN	3.6
1	A	477	VAL	3.6
1	A	300	TYR	3.6
1	A	504	PRO	3.6
1	A	107	ALA	3.6
1	A	710	HIS	3.5
1	A	321	GLU	3.5
1	A	607	PRO	3.4
1	A	644	TYR	3.4
1	A	667	ASN	3.4
1	A	142	GLN	3.4
1	A	523	PHE	3.3
1	A	149	LYS	3.3
1	A	621	PHE	3.3
1	A	507	LEU	3.3
1	A	133	SER	3.3
1	A	536	PHE	3.3
1	A	739	GLY	3.2
1	A	711	SER	3.2
1	A	624	VAL	3.2
1	A	605	PRO	3.2
1	A	672	GLY	3.2
1	A	656	ASP	3.2
1	A	465	TYR	3.2
1	A	161	GLY	3.1
1	A	508	GLY	3.1
1	A	742	TYR	3.1
1	A	405	VAL	3.1
1	A	164	ALA	3.1
1	A	478	THR	3.1
1	A	688	TRP	3.1
1	A	218	CYS	3.1
1	A	331	ALA	3.1
1	A	138	ASP	3.1
1	A	184	GLU	3.1
1	A	393	LEU	3.1
1	A	190	TYR	3.0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	159	ILE	3.0
1	A	425	SER	3.0
1	A	397	THR	3.0
1	A	613	GLN	3.0
1	A	647	ARG	2.9
1	A	443	CYS	2.9
1	A	670	ILE	2.9
1	A	663	LEU	2.9
1	A	572	PHE	2.9
1	A	176	LEU	2.9
1	A	530	LEU	2.9
1	A	730	TYR	2.8
1	A	220	LEU	2.8
1	A	166	ARG	2.8
1	A	603	MET	2.8
1	A	526	GLU	2.8
1	A	706	ILE	2.8
1	A	743	LEU	2.8
1	A	677	PRO	2.8
1	A	90	THR	2.8
1	A	187	LEU	2.8
1	A	403	PHE	2.8
1	A	216	SER	2.7
1	A	383	ILE	2.7
1	A	720	THR	2.7
1	A	288	GLN	2.7
1	A	198	PHE	2.7
1	A	334	ILE	2.7
1	A	473	ILE	2.7
1	A	406	TYR	2.7
1	A	617	TYR	2.7
1	A	619	GLU	2.7
1	A	719	PRO	2.7
1	A	268	THR	2.6
1	A	674	PRO	2.6
1	A	322	GLU	2.6
1	A	512	LEU	2.6
1	A	627	ASN	2.6
1	A	92	LYS	2.6
1	A	455	GLU	2.6
1	A	651	ASP	2.6
1	A	414	SER	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	738	THR	2.6
1	A	708	GLN	2.5
1	A	496	ARG	2.5
1	A	249	GLY	2.5
1	A	737	LYS	2.5
1	A	165	GLU	2.5
1	A	409	ALA	2.5
1	A	540	TYR	2.5
1	A	705	TYR	2.5
1	A	157	LEU	2.5
1	A	206	PHE	2.4
1	A	516	PHE	2.4
1	A	299	LEU	2.4
1	A	485	ILE	2.4
1	A	428	CYS	2.4
1	A	534	GLN	2.4
1	A	570	LEU	2.4
1	A	707	ASP	2.3
1	A	464	THR	2.3
1	A	395	ALA	2.3
1	A	666	GLN	2.3
1	A	665	THR	2.3
1	A	615	LEU	2.3
1	A	108	ALA	2.3
1	A	120	VAL	2.3
1	A	529	ARG	2.3
1	A	608	THR	2.3
1	A	261	TYR	2.3
1	A	626	SER	2.3
1	A	484	VAL	2.3
1	A	727	MET	2.3
1	A	474	ALA	2.3
1	A	616	GLY	2.3
1	A	535	ILE	2.3
1	A	158	ARG	2.3
1	A	661	GLN	2.3
1	A	543	SER	2.2
1	A	731	GLY	2.2
1	A	404	VAL	2.2
1	A	472	GLU	2.2
1	A	704	VAL	2.2
1	A	580	TYR	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	606	MET	2.2
1	A	444	ASN	2.2
1	A	242	SER	2.2
1	A	294	PRO	2.2
1	A	217	SER	2.2
1	A	330	PRO	2.2
1	A	555	GLY	2.2
1	A	553	LYS	2.2
1	A	648	ASP	2.1
1	A	468	LYS	2.1
1	A	191	ASN	2.1
1	A	151	LEU	2.1
1	A	219	PHE	2.1
1	A	426	ASN	2.1
1	A	297	PHE	2.1
1	A	602	THR	2.1
1	A	388	LEU	2.1
1	A	446	ALA	2.1
1	A	542	ALA	2.1
1	A	568	GLY	2.1
1	A	311	PHE	2.1
1	A	560	PHE	2.1
1	A	372	THR	2.0
1	A	314	ILE	2.0
1	A	539	ILE	2.0
1	A	588	LEU	2.0
1	A	332	LEU	2.0
1	A	527	GLU	2.0
1	A	180	GLY	2.0

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 ⓘ

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, 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	LLDF	B-factors(Å ²)	Q<0.9
4	2A5	A	891	29/29	0.78	0.26	0.31	71,81,83,84	0
3	DGT	A	890	31/31	0.96	0.09	-1.58	36,43,48,49	0
5	GOL	A	892	6/6	0.79	0.19	-	73,76,77,78	0
2	MG	A	889	1/1	0.88	0.08	-	41,41,41,41	0

6.5 Other polymers [i](#)

There are no such residues in this entry.