W O R L D W I D E
wwPDB
PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 15, 2017 – 12:34 am GMT

PDB ID	:	5CX6
Title	:	Crystal structure of Thosea asigna virus RNA-dependent RNA polymerase (RdRP) complexed with CDP
Authors	:	Ferrero, D.S.; Buxaderas, M.; Rodriguez, J.F.; Verdaguer, N.
Deposited on	:	2015-07-28
Resolution	:	2.10 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix)	:	1.9-1692
EDS	:	trunk28620
Percentile statistics	:	20161228.v01 (using entries in the PDB archive December 28th 2016)
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)	:	recalc28949
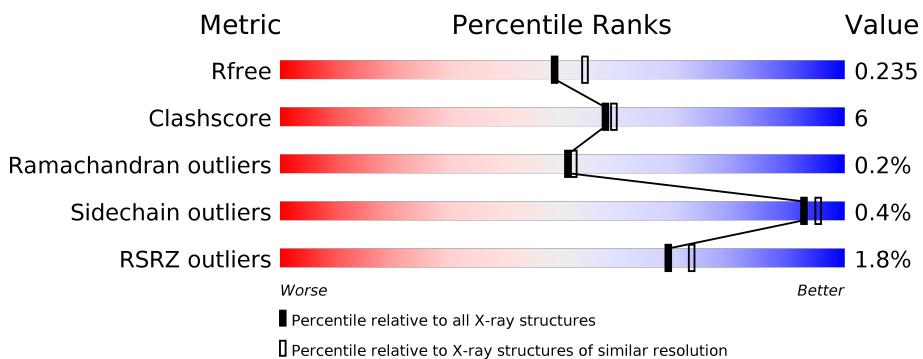
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION
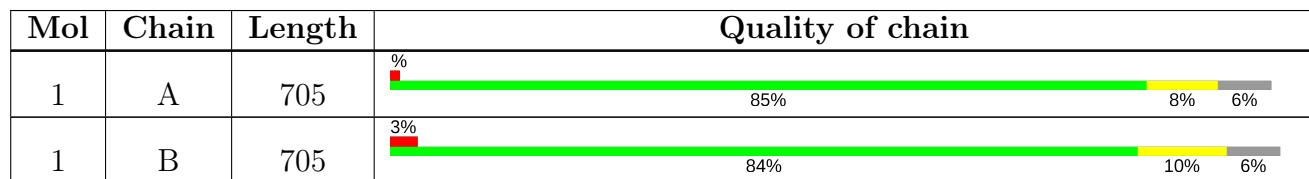
The reported resolution of this entry is 2.10 Å.

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}	100719	4243 (2.10-2.10)
Clashscore	112137	4788 (2.10-2.10)
Ramachandran outliers	110173	4740 (2.10-2.10)
Sidechain outliers	110143	4741 (2.10-2.10)
RSRZ outliers	101464	4275 (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 <=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	705	
1	B	705	

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	SO4	A	707	-	-	X	-
3	GOL	A	708	-	-	-	X
3	GOL	A	709	-	-	-	X
3	GOL	A	710	-	-	-	X
3	GOL	A	711	-	-	-	X
3	GOL	A	712	-	-	-	X
3	GOL	A	716	-	-	-	X
3	GOL	A	719	-	-	-	X
3	GOL	B	707	-	-	-	X
3	GOL	B	708	-	-	-	X
3	GOL	B	710	-	-	-	X
3	GOL	B	711	-	-	-	X
5	CDP	A	721	-	-	-	X
5	CDP	B	713	-	-	X	X

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 11360 atoms, of which 24 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 RNA-dependent RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	663	Total 5247	C 3331	N 909	O 981	S 26	0	0	0
1	B	665	Total 5265	C 3341	N 911	O 987	S 26	0	0	0

There are 62 discrepancies between the modelled and reference sequences:
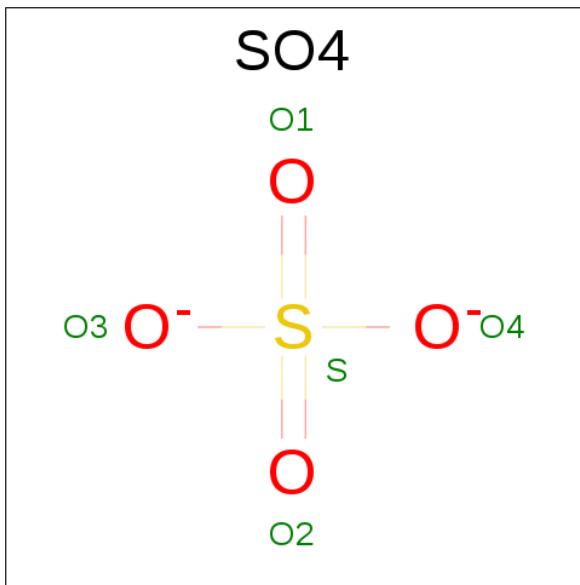
Chain	Residue	Modelled	Actual	Comment	Reference
A	-30	MET	-	initiating methionine	UNP Q6A562
A	-29	SER	-	expression tag	UNP Q6A562
A	-28	TYR	-	expression tag	UNP Q6A562
A	-27	TYR	-	expression tag	UNP Q6A562
A	-26	HIS	-	expression tag	UNP Q6A562
A	-25	HIS	-	expression tag	UNP Q6A562
A	-24	HIS	-	expression tag	UNP Q6A562
A	-23	HIS	-	expression tag	UNP Q6A562
A	-22	HIS	-	expression tag	UNP Q6A562
A	-21	HIS	-	expression tag	UNP Q6A562
A	-20	ASP	-	expression tag	UNP Q6A562
A	-19	TYR	-	expression tag	UNP Q6A562
A	-18	ASP	-	expression tag	UNP Q6A562
A	-17	ILE	-	expression tag	UNP Q6A562
A	-16	PRO	-	expression tag	UNP Q6A562
A	-15	THR	-	expression tag	UNP Q6A562
A	-14	THR	-	expression tag	UNP Q6A562
A	-13	GLU	-	expression tag	UNP Q6A562
A	-12	ASN	-	expression tag	UNP Q6A562
A	-11	LEU	-	expression tag	UNP Q6A562
A	-10	TYR	-	expression tag	UNP Q6A562
A	-9	PHE	-	expression tag	UNP Q6A562
A	-8	GLN	-	expression tag	UNP Q6A562
A	-7	GLY	-	expression tag	UNP Q6A562
A	-6	ALA	-	expression tag	UNP Q6A562

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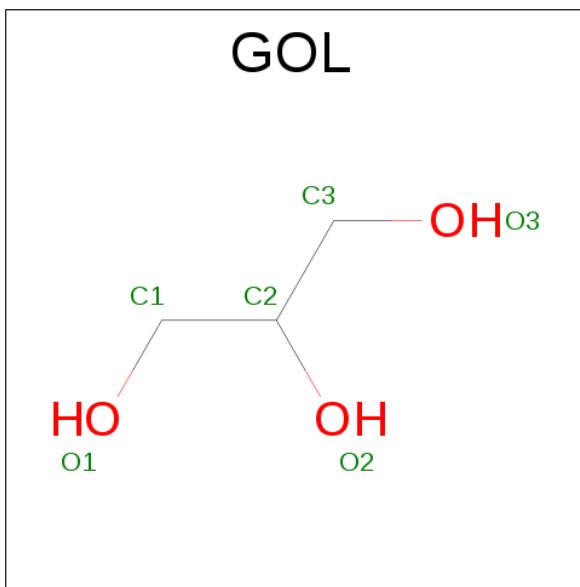
Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	MET	-	expression tag	UNP Q6A562
A	-4	GLY	-	expression tag	UNP Q6A562
A	-3	ALA	-	expression tag	UNP Q6A562
A	-2	MET	-	expression tag	UNP Q6A562
A	-1	GLY	-	expression tag	UNP Q6A562
A	0	ILE	-	expression tag	UNP Q6A562
B	-30	MET	-	initiating methionine	UNP Q6A562
B	-29	SER	-	expression tag	UNP Q6A562
B	-28	TYR	-	expression tag	UNP Q6A562
B	-27	TYR	-	expression tag	UNP Q6A562
B	-26	HIS	-	expression tag	UNP Q6A562
B	-25	HIS	-	expression tag	UNP Q6A562
B	-24	HIS	-	expression tag	UNP Q6A562
B	-23	HIS	-	expression tag	UNP Q6A562
B	-22	HIS	-	expression tag	UNP Q6A562
B	-21	HIS	-	expression tag	UNP Q6A562
B	-20	ASP	-	expression tag	UNP Q6A562
B	-19	TYR	-	expression tag	UNP Q6A562
B	-18	ASP	-	expression tag	UNP Q6A562
B	-17	ILE	-	expression tag	UNP Q6A562
B	-16	PRO	-	expression tag	UNP Q6A562
B	-15	THR	-	expression tag	UNP Q6A562
B	-14	THR	-	expression tag	UNP Q6A562
B	-13	GLU	-	expression tag	UNP Q6A562
B	-12	ASN	-	expression tag	UNP Q6A562
B	-11	LEU	-	expression tag	UNP Q6A562
B	-10	TYR	-	expression tag	UNP Q6A562
B	-9	PHE	-	expression tag	UNP Q6A562
B	-8	GLN	-	expression tag	UNP Q6A562
B	-7	GLY	-	expression tag	UNP Q6A562
B	-6	ALA	-	expression tag	UNP Q6A562
B	-5	MET	-	expression tag	UNP Q6A562
B	-4	GLY	-	expression tag	UNP Q6A562
B	-3	ALA	-	expression tag	UNP Q6A562
B	-2	MET	-	expression tag	UNP Q6A562
B	-1	GLY	-	expression tag	UNP Q6A562
B	0	ILE	-	expression tag	UNP Q6A562

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

SO4

O1

O

O3 O⁻ — S — O⁻ O4

S

O

O2

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL

C3

OH O3

C1   C2

HO

O1

OH

O2

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

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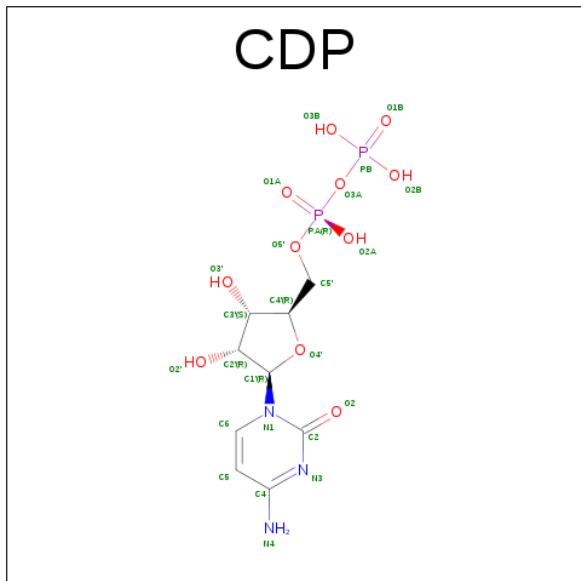
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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	B	1	Total 6	C 3	O 3		0	0
3	B	1	Total 6	C 3	O 3		0	0
3	B	1	Total 6	C 3	O 3		0	0
3	B	1	Total 6	C 3	O 3		0	0
3	B	1	Total 6	C 3	O 3		0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 5 is CYTIDINE-5'-DIPHOSPHATE (three-letter code: CDP) (formula: $C_9H_{15}N_3O_{11}P_2$).

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
5	A	1	Total 37	C 9	H 12	N 3	O 11	P 2	0	0
5	B	1	Total 33	C 9	H 12	N 3	O 8	P 1	0	0
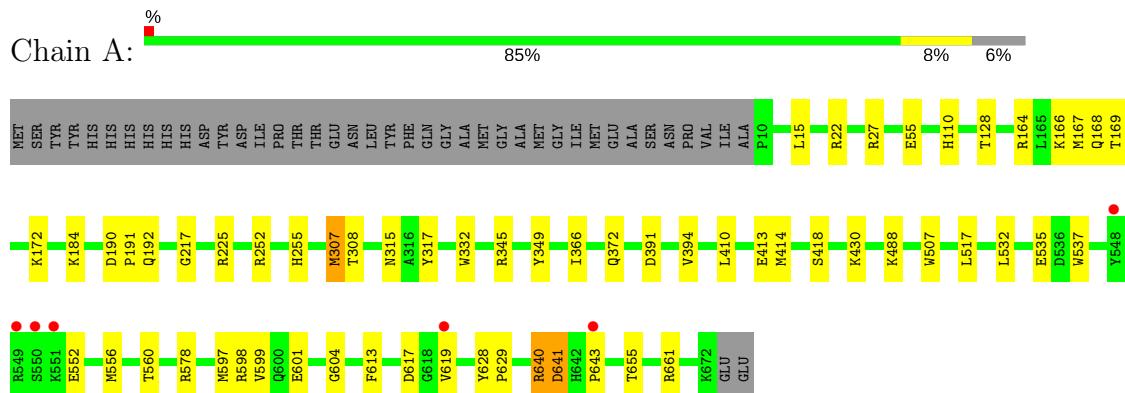
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	306	Total O 306 306	0	0
6	B	297	Total O 297 297	0	0
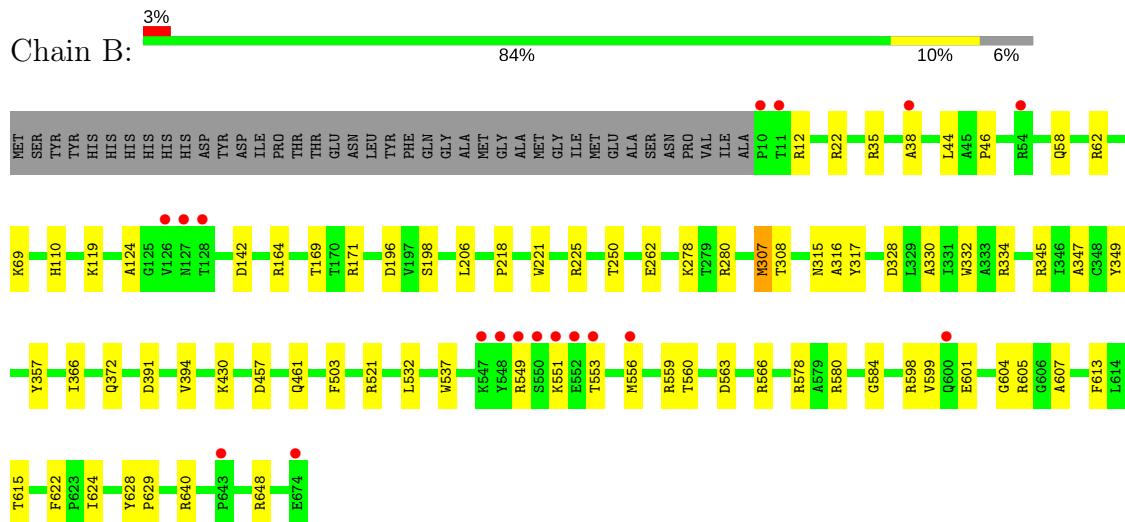
3 Residue-property plots ⓘ

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: RNA-dependent RNA polymerase

Chain A:

- Molecule 1: RNA-dependent RNA polymerase

Chain B:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	133.70Å 149.60Å 100.11Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	66.85 – 2.10 66.85 – 2.10	Depositor EDS
% Data completeness (in resolution range)	98.3 (66.85-2.10) 98.3 (66.85-2.10)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	0.12	Depositor
$< I/\sigma(I) >$ [1]	2.10 (at 2.10Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.4_1496)	Depositor
R, R_{free}	0.184 , 0.232 0.190 , 0.235	Depositor DCC
R_{free} test set	5795 reflections (5.02%)	DCC
Wilson B-factor (Å^2)	26.6	Xtriage
Anisotropy	0.440	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 42.5	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11360	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.16% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 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: GOL, MG, CDP, SO4

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	0.40	1/5366 (0.0%)	0.54	1/7267 (0.0%)
1	B	0.37	0/5384	0.53	1/7291 (0.0%)
All	All	0.39	1/10750 (0.0%)	0.53	2/14558 (0.0%)

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	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	307	MET	CG-SD	-5.01	1.68	1.81

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	307	MET	CA-CB-CG	-8.01	99.68	113.30
1	B	142	ASP	CB-CG-OD2	5.22	123.00	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	640	ARG	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	5247	0	5210	53	0
1	B	5265	0	5222	60	1
2	A	35	0	0	4	0
2	B	25	0	0	0	0
3	A	72	0	96	8	1
3	B	42	0	56	10	0
4	A	1	0	0	0	0
5	A	25	12	12	7	0
5	B	21	12	12	10	0
6	A	306	0	0	12	1
6	B	297	0	0	9	1
All	All	11336	24	10608	119	2

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 6.

The worst 5 of 119 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)
5:B:713:CDP:H2'	5:B:713:CDP:O2	1.52	1.04
1:A:560:THR:HA	5:A:721:CDP:O1A	1.59	1.03
5:B:713:CDP:C2'	5:B:713:CDP:O2	2.20	0.89
3:A:710:GOL:H32	3:A:711:GOL:H12	1.57	0.86
1:B:563:ASP:OD2	5:B:713:CDP:O1A	1.93	0.86

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:711:GOL:O2	6:B:1062:HOH:O[1_554]	2.17	0.03
1:B:250:THR:OG1	6:A:986:HOH:O[1_556]	2.19	0.01

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	A	661/705 (94%)	645 (98%)	15 (2%)	1 (0%)	51	52
1	B	663/705 (94%)	646 (97%)	15 (2%)	2 (0%)	44	44
All	All	1324/1410 (94%)	1291 (98%)	30 (2%)	3 (0%)	51	52

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	641	ASP
1	B	307	MET
1	B	38	ALA

5.3.2 Protein sidechains ⓘ

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	562/598 (94%)	559 (100%)	3 (0%)	91	94
1	B	564/598 (94%)	562 (100%)	2 (0%)	93	95
All	All	1126/1196 (94%)	1121 (100%)	5 (0%)	93	95

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	192	GLN
1	A	349	TYR
1	A	366	ILE

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Mol	Chain	Res	Type
1	B	349	TYR
1	B	578	ARG

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

Mol	Chain	Res	Type
1	A	168	GLN

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 34 ligands modelled in this entry, 1 is monoatomic - leaving 33 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	$\#|Z| > 2$
2	SO4	A	701	-	4,4,4	0.14	0	6,6,6	0.20	0
2	SO4	A	702	-	4,4,4	0.10	0	6,6,6	0.12	0
2	SO4	A	703	-	4,4,4	0.18	0	6,6,6	0.17	0
2	SO4	A	704	-	4,4,4	0.15	0	6,6,6	0.21	0
2	SO4	A	705	-	4,4,4	0.16	0	6,6,6	0.30	0
2	SO4	A	706	-	4,4,4	0.16	0	6,6,6	0.08	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	SO4	A	707	-	4,4,4	0.12	0	6,6,6	0.12	0
3	GOL	A	708	-	5,5,5	0.29	0	5,5,5	0.51	0
3	GOL	A	709	-	5,5,5	0.32	0	5,5,5	0.56	0
3	GOL	A	710	-	5,5,5	0.35	0	5,5,5	0.30	0
3	GOL	A	711	-	5,5,5	0.41	0	5,5,5	0.22	0
3	GOL	A	712	-	5,5,5	0.34	0	5,5,5	0.16	0
3	GOL	A	713	-	5,5,5	0.29	0	5,5,5	0.40	0
3	GOL	A	714	-	5,5,5	0.37	0	5,5,5	0.25	0
3	GOL	A	715	-	5,5,5	0.34	0	5,5,5	0.21	0
3	GOL	A	716	-	5,5,5	0.33	0	5,5,5	0.37	0
3	GOL	A	717	-	5,5,5	0.39	0	5,5,5	0.66	0
3	GOL	A	718	-	5,5,5	0.34	0	5,5,5	0.30	0
3	GOL	A	719	-	5,5,5	0.42	0	5,5,5	0.48	0
5	CDP	A	721	-	22,26,26	1.02	2 (9%)	23,40,40	0.97	2 (8%)
2	SO4	B	701	-	4,4,4	0.17	0	6,6,6	0.14	0
2	SO4	B	702	-	4,4,4	0.12	0	6,6,6	0.16	0
2	SO4	B	703	-	4,4,4	0.12	0	6,6,6	0.09	0
2	SO4	B	704	-	4,4,4	0.14	0	6,6,6	0.18	0
2	SO4	B	705	-	4,4,4	0.16	0	6,6,6	0.07	0
3	GOL	B	706	-	5,5,5	0.36	0	5,5,5	0.44	0
3	GOL	B	707	-	5,5,5	0.35	0	5,5,5	0.19	0
3	GOL	B	708	-	5,5,5	0.32	0	5,5,5	0.66	0
3	GOL	B	709	-	5,5,5	0.42	0	5,5,5	0.30	0
3	GOL	B	710	-	5,5,5	0.35	0	5,5,5	0.32	0
3	GOL	B	711	-	5,5,5	0.32	0	5,5,5	0.27	0
3	GOL	B	712	-	5,5,5	0.35	0	5,5,5	0.27	0
5	CDP	B	713	-	19,22,26	1.13	2 (10%)	23,33,40	1.10	2 (8%)

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	SO4	A	701	-	-	0/0/0/0	0/0/0/0
2	SO4	A	702	-	-	0/0/0/0	0/0/0/0
2	SO4	A	703	-	-	0/0/0/0	0/0/0/0
2	SO4	A	704	-	-	0/0/0/0	0/0/0/0
2	SO4	A	705	-	-	0/0/0/0	0/0/0/0
2	SO4	A	706	-	-	0/0/0/0	0/0/0/0
2	SO4	A	707	-	-	0/0/0/0	0/0/0/0
3	GOL	A	708	-	-	0/4/4/4	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	709	-	-	0/4/4/4	0/0/0/0
3	GOL	A	710	-	-	0/4/4/4	0/0/0/0
3	GOL	A	711	-	-	0/4/4/4	0/0/0/0
3	GOL	A	712	-	-	0/4/4/4	0/0/0/0
3	GOL	A	713	-	-	0/4/4/4	0/0/0/0
3	GOL	A	714	-	-	0/4/4/4	0/0/0/0
3	GOL	A	715	-	-	0/4/4/4	0/0/0/0
3	GOL	A	716	-	-	0/4/4/4	0/0/0/0
3	GOL	A	717	-	-	0/4/4/4	0/0/0/0
3	GOL	A	718	-	-	0/4/4/4	0/0/0/0
3	GOL	A	719	-	-	0/4/4/4	0/0/0/0
5	CDP	A	721	-	-	0/12/32/32	0/2/2/2
2	SO4	B	701	-	-	0/0/0/0	0/0/0/0
2	SO4	B	702	-	-	0/0/0/0	0/0/0/0
2	SO4	B	703	-	-	0/0/0/0	0/0/0/0
2	SO4	B	704	-	-	0/0/0/0	0/0/0/0
2	SO4	B	705	-	-	0/0/0/0	0/0/0/0
3	GOL	B	706	-	-	0/4/4/4	0/0/0/0
3	GOL	B	707	-	-	0/4/4/4	0/0/0/0
3	GOL	B	708	-	-	0/4/4/4	0/0/0/0
3	GOL	B	709	-	-	0/4/4/4	0/0/0/0
3	GOL	B	710	-	-	0/4/4/4	0/0/0/0
3	GOL	B	711	-	-	0/4/4/4	0/0/0/0
3	GOL	B	712	-	-	0/4/4/4	0/0/0/0
5	CDP	B	713	-	-	0/6/26/32	0/2/2/2

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	713	CDP	C2-N3	-2.29	1.33	1.38
5	A	721	CDP	C2-N3	-2.25	1.33	1.38
5	A	721	CDP	O4'-C1'	2.58	1.44	1.41
5	B	713	CDP	O4'-C1'	2.63	1.44	1.41

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	B	713	CDP	C4'-O4'-C1'	-2.67	106.93	109.77
5	A	721	CDP	C4'-O4'-C1'	-2.62	106.98	109.77
5	A	721	CDP	N4-C4-N3	2.07	120.13	116.64
5	B	713	CDP	N4-C4-N3	2.09	120.16	116.64

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

15 monomers are involved in 40 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	707	SO4	4	0
3	A	710	GOL	2	0
3	A	711	GOL	2	1
3	A	712	GOL	1	0
3	A	713	GOL	1	0
3	A	714	GOL	1	0
3	A	716	GOL	3	0
3	A	719	GOL	1	0
5	A	721	CDP	7	0
3	B	706	GOL	2	0
3	B	707	GOL	1	0
3	B	708	GOL	3	0
3	B	711	GOL	1	0
3	B	712	GOL	3	0
5	B	713	CDP	10	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 (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	663/705 (94%)	-0.24	6 (0%)	84	86	16, 26, 53, 103	0
1	B	665/705 (94%)	-0.24	18 (2%)	55	61	17, 29, 56, 101	0
All	All	1328/1410 (94%)	-0.24	24 (1%)	69	73	16, 27, 54, 103	0

The worst 5 of 24 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	548	TYR	6.9
1	A	548	TYR	5.4
1	A	550	SER	5.0
1	B	54	ARG	4.0
1	B	126	VAL	4.0

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. 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
3	GOL	B	711	6/6	0.76	0.24	22.82	36,52,55,57	0
3	GOL	A	710	6/6	0.56	0.28	12.43	60,78,78,84	0
5	CDP	A	721	25/25	0.69	0.60	7.66	20,20,20,20	0
3	GOL	A	712	6/6	0.80	0.20	6.23	29,61,63,66	0
3	GOL	A	711	6/6	0.89	0.20	5.68	58,63,66,71	0
3	GOL	B	708	6/6	0.66	0.23	4.98	40,44,58,61	0
3	GOL	B	710	6/6	0.94	0.10	4.88	46,58,60,60	0
3	GOL	A	709	6/6	0.93	0.18	4.58	36,39,44,50	0
3	GOL	A	708	6/6	0.93	0.17	4.33	37,52,54,57	0
5	CDP	B	713	21/25	0.70	0.56	4.19	20,20,20,20	0
3	GOL	B	707	6/6	0.81	0.20	4.16	30,43,56,59	0
3	GOL	A	719	6/6	0.91	0.17	4.11	41,54,59,60	0
3	GOL	A	716	6/6	0.84	0.20	2.56	44,50,56,62	0
3	GOL	B	706	6/6	0.73	0.19	1.66	40,49,55,56	0
3	GOL	B	709	6/6	0.91	0.14	1.51	45,51,54,55	0
2	SO4	B	701	5/5	0.98	0.13	1.47	47,48,49,51	0
2	SO4	A	702	5/5	0.99	0.12	1.36	38,40,47,48	0
2	SO4	B	703	5/5	0.98	0.11	0.80	49,49,54,56	0
2	SO4	B	705	5/5	0.93	0.14	0.61	81,82,85,86	0
3	GOL	A	713	6/6	0.97	0.11	0.50	26,36,38,38	0
2	SO4	B	704	5/5	0.98	0.12	0.44	33,35,41,49	0
2	SO4	B	702	5/5	0.99	0.12	0.41	39,40,49,49	0
2	SO4	A	705	5/5	0.99	0.10	0.13	31,39,42,46	0
2	SO4	A	707	5/5	0.97	0.13	0.12	57,60,68,69	0
2	SO4	A	704	5/5	0.99	0.12	-0.14	32,36,44,46	0
4	MG	A	720	1/1	0.94	0.09	-0.96	40,40,40,40	0
2	SO4	A	703	5/5	0.98	0.10	-1.07	41,42,46,48	0
2	SO4	A	706	5/5	0.96	0.10	-	78,81,85,87	0
3	GOL	B	712	6/6	0.76	0.29	-	43,53,54,59	0
3	GOL	A	715	6/6	0.65	0.21	-	57,60,64,65	0
3	GOL	A	717	6/6	0.84	0.27	-	36,42,64,69	0
3	GOL	A	718	6/6	0.88	0.17	-	61,65,69,74	0
3	GOL	A	714	6/6	0.93	0.12	-	59,61,61,66	0
2	SO4	A	701	5/5	0.98	0.10	-	41,44,45,48	0

6.5 Other polymers ⓘ

There are no such residues in this entry.