Full wwPDB X-ray Structure Validation Report ⓘ

Aug 20, 2023 – 07:10 PM EDT

PDB ID	:	2O59
Title	:	Structure of E. coli topoisomerase III in complex with an 8-base single stranded oligonucleotide. Frozen in glycerol pH 8.0
Authors	:	Changela, A.; DiGate, R.J.; Mondragon, A.
Deposited on	:	2006-12-05
Resolution	:	2.50 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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

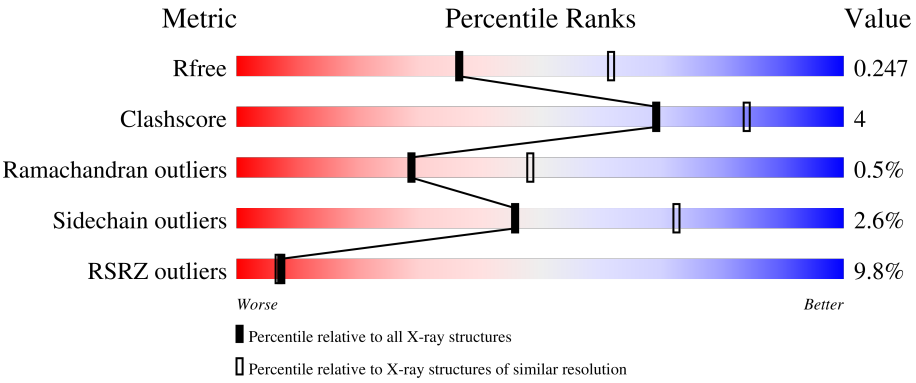
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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 of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. 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	C	8	12% 38% 50% 12%
1	D	8	62% 38%
2	A	659	13% 81% 12% • 6%
2	B	659	6% 86% 9% 5%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 10353 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 DNA chain called 5'-D(*CP*GP*CP*AP*AP*CP*TP*T)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	7	Total	C	N	O	P	0	0	0
			138	67	26	39	6			
1	D	8	Total	C	N	O	P	0	0	0
			158	77	28	46	7			

- Molecule 2 is a protein called DNA topoisomerase 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	619	Total	C	N	O	S	0	0	0
			4927	3117	898	892	20			
2	B	626	Total	C	N	O	S	0	0	0
			4982	3149	904	909	20			

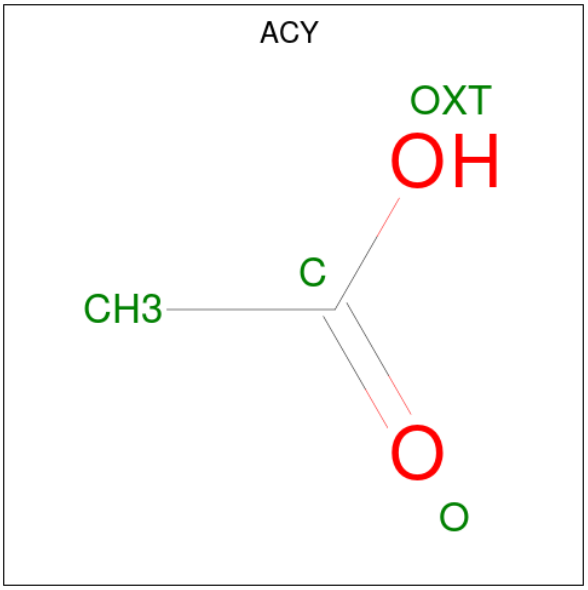
There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	654	HIS	-	expression tag	UNP P14294
A	655	HIS	-	expression tag	UNP P14294
A	656	HIS	-	expression tag	UNP P14294
A	657	HIS	-	expression tag	UNP P14294
A	658	HIS	-	expression tag	UNP P14294
A	659	HIS	-	expression tag	UNP P14294
B	654	HIS	-	expression tag	UNP P14294
B	655	HIS	-	expression tag	UNP P14294
B	656	HIS	-	expression tag	UNP P14294
B	657	HIS	-	expression tag	UNP P14294
B	658	HIS	-	expression tag	UNP P14294
B	659	HIS	-	expression tag	UNP P14294

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Cl 1 1	0	0
3	B	1	Total Cl 1 1	0	0

- Molecule 4 is ACETIC ACID (three-letter code: ACY) (formula: $C_2H_4O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 4 2 2	0	0

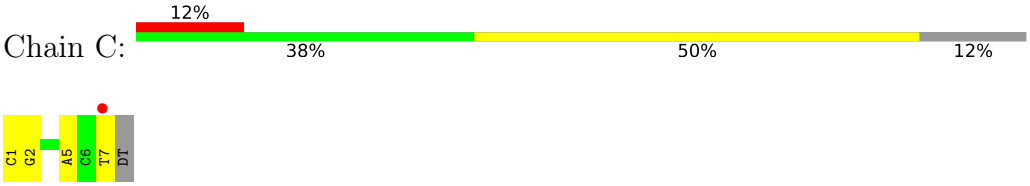
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	4	Total O 4 4	0	0
5	D	6	Total O 6 6	0	0
5	A	53	Total O 53 53	0	0
5	B	79	Total O 79 79	0	0

3 Residue-property plots (i)

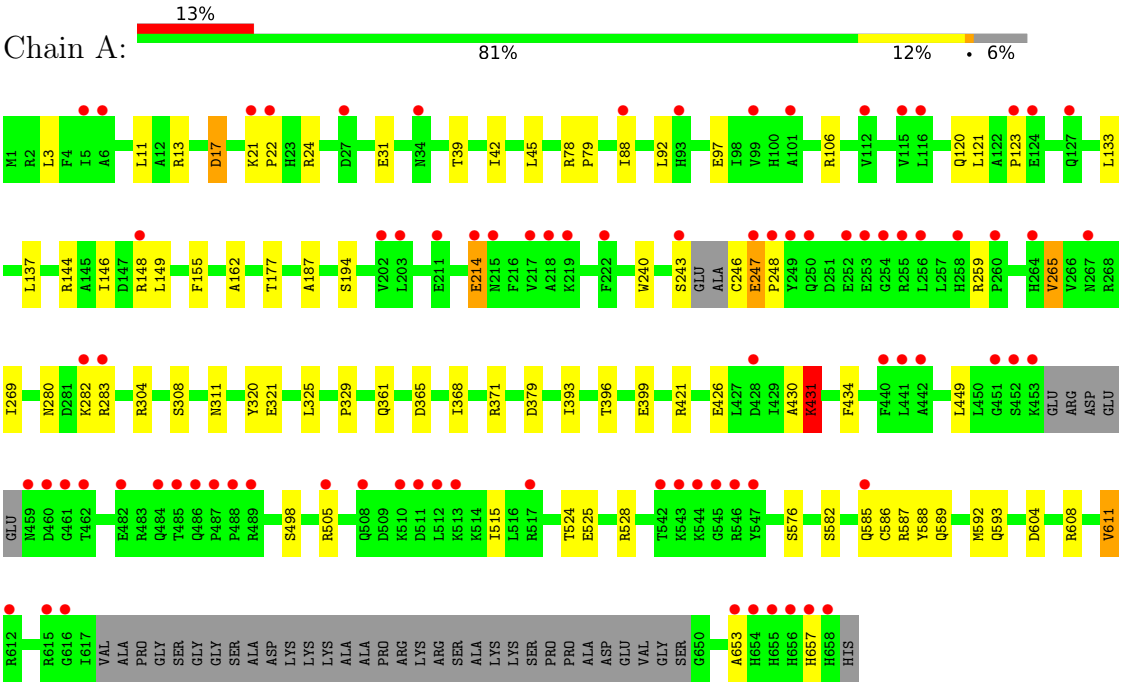
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: 5'-D(*CP*GP*CP*AP*AP*CP*TP*T)-3'



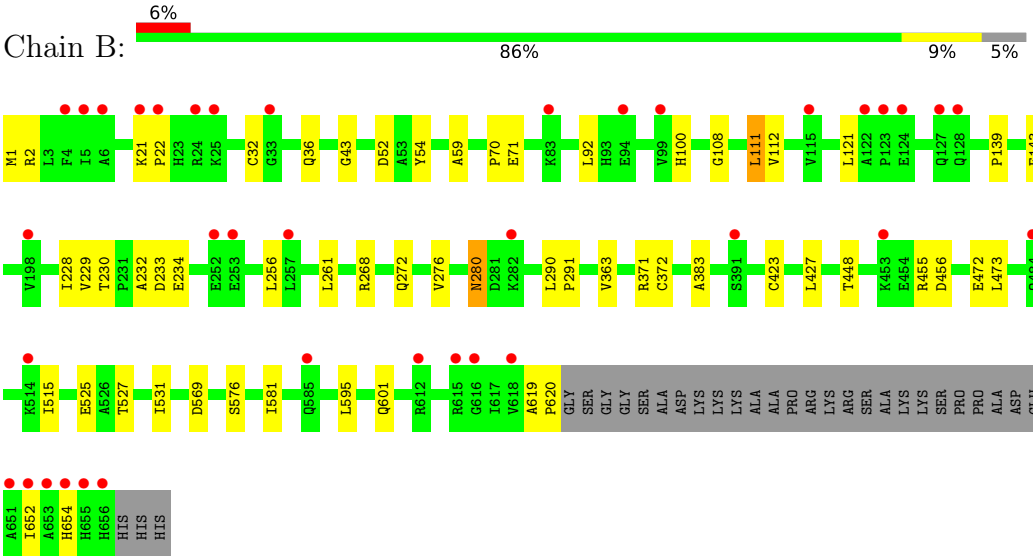
• Molecule 1: 5'-D(*CP*GP*CP*AP*AP*CP*TP*T)-3'

• Molecule 2: DNA topoisomerase 3



• Molecule 2: DNA topoisomerase 3

Chain B:


6%
86%
9%
5%
M1 R2 L3 F4 I5 A6 K21 P22 H23 R24 K25 C32 G33 Q36 G43 D52 A53 Y54 A59 P70 E71 K83 L92 H93 E94 V99 H100 G108 L111 V112 V115 L121 A122 P123 E124 Q127 Q128 P139 E143 V156 V160
V198 I228 V229 T230 P231 A232 D233 E234 E252 E253 L256 L257 L261 R268 Q272 V276 N280 D281 K282 L290 P291 V363 R371 C372 A383 S391 C423 L427 T448 K453 E454 R455 D456 E472 L473 Q484 D509 K510 D511
K514 I515 E525 A526 T527 I531 D569 S576 I581 Q585 L595 Q601 R612 R615 G616 I617 V618 A619 P620 GLY SER GLY GLY SER ALA ASP LYS LYS LYS ALA ALA PRO ARG LYS ARG SER ALA LYS LYS SER PRO PRO ALA ASP GLU VAL GLY SER GLY
A651 I652 A653 H654 H655 H656 HIS HIS HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α, β, γ	101.59Å 101.59Å 453.59Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.53 – 2.50 29.53 – 2.50	Depositor EDS
% Data completeness (in resolution range)	97.2 (29.53-2.50) 97.3 (29.53-2.50)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	0.05	Depositor
$< I/\sigma(I) >$ [1]	2.86 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.221 , 0.258 0.211 , 0.247	Depositor DCC
R_{free} test set	4038 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å^2)	55.9	Xtriage
Anisotropy	0.254	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 40.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.43$, $< L^2 > = 0.26$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	10353	wwPDB-VP
Average B, all atoms (Å^2)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.99% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 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: CL, ACY

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	C	1.02	0/154	1.78	4/235 (1.7%)
1	D	1.06	0/176	1.75	6/269 (2.2%)
2	A	0.48	0/5035	0.58	0/6824
2	B	0.50	0/5091	0.62	1/6904 (0.0%)
All	All	0.51	0/10456	0.68	11/14232 (0.1%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	5	DA	O4'-C4'-C3'	-6.81	101.78	104.50
1	C	7	DT	O4'-C1'-N1	6.41	112.49	108.00
1	D	6	DC	O4'-C4'-C3'	-6.35	101.96	104.50
2	B	595	LEU	CA-CB-CG	-6.09	101.28	115.30
1	C	1	DC	O4'-C1'-N1	5.95	112.17	108.00
1	C	2	DG	O5'-P-OP2	-5.90	100.39	105.70
1	D	1	DC	O4'-C1'-N1	5.86	112.10	108.00
1	D	6	DC	O4'-C1'-N1	5.70	111.99	108.00
1	D	6	DC	C4'-C3'-C2'	-5.69	97.98	103.10
1	D	8	DT	O4'-C4'-C3'	-5.63	102.25	104.50
1	D	6	DC	O5'-P-OP2	-5.57	100.69	105.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	138	0	80	0	0
1	D	158	0	92	0	0
2	A	4927	0	4943	46	0
2	B	4982	0	4995	30	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	B	4	0	3	0	0
5	A	53	0	0	2	0
5	B	79	0	0	1	0
5	C	4	0	0	0	0
5	D	6	0	0	0	0
All	All	10353	0	10113	76	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 4.

All (76) 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)
2:A:396:THR:HG23	2:A:399:GLU:H	1.43	0.83
2:B:230:THR:HG22	2:B:232:ALA:H	1.44	0.82
2:A:308:SER:OG	2:A:311:ASN:HB2	1.88	0.72
2:A:187:ALA:HB2	2:A:611:VAL:HG13	1.74	0.70
2:A:24:ARG:HB3	2:A:31:GLU:HG3	1.76	0.66
2:A:396:THR:HG22	2:A:399:GLU:CG	2.29	0.62
2:B:619:ALA:HB1	2:B:620:PRO:HD2	1.81	0.62
2:A:283:ARG:HE	2:A:421:ARG:HH21	1.47	0.61
2:A:430:ALA:O	2:A:431:LYS:HB3	1.99	0.60
2:B:525:GLU:OE2	2:B:525:GLU:HA	2.03	0.59
2:A:396:THR:HG22	2:A:399:GLU:HG3	1.86	0.57
2:B:290:LEU:HB3	2:B:291:PRO:HD2	1.87	0.56
2:A:42:ILE:H	2:A:45:LEU:HD21	1.71	0.56
2:B:256:LEU:HD11	2:B:261:LEU:HD23	1.87	0.56
2:B:32:CYS:HB2	2:B:36:GLN:HB2	1.88	0.55
2:B:43:GLY:C	2:B:111:LEU:HD12	2.27	0.55
2:A:524:THR:O	2:A:528:ARG:HG3	2.08	0.54
2:B:363:VAL:HG21	2:B:448:THR:HG21	1.90	0.53
2:A:88:ILE:O	2:A:92:LEU:HB2	2.09	0.52
2:A:21:LYS:HB3	2:A:22:PRO:HA	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:587:ARG:NH1	5:A:853:HOH:O	2.42	0.51
2:A:361:GLN:HG2	2:A:449:LEU:HD21	1.91	0.51
2:A:265:VAL:O	2:A:269:ILE:HG12	2.11	0.50
2:A:280:ASN:HD21	2:A:282:LYS:HE3	1.77	0.49
2:A:92:LEU:HG	2:A:121:LEU:HD13	1.95	0.48
2:A:396:THR:CG2	2:A:399:GLU:HG3	2.43	0.48
2:B:228:ILE:HG21	2:B:473:LEU:HD23	1.96	0.48
2:A:243:SER:HG	2:A:246:CYS:N	2.12	0.47
2:A:11:LEU:HD12	2:A:137:LEU:HD21	1.96	0.47
2:A:515:ILE:HD13	2:A:576:SER:HB2	1.95	0.47
2:A:13:ARG:O	2:A:17:ASP:HB2	2.15	0.47
2:A:320:TYR:CG	2:A:329:PRO:HD3	2.51	0.46
2:B:455:ARG:HD2	2:B:456:ASP:OD2	2.16	0.45
2:A:106:ARG:HG2	2:A:162:ALA:HB2	1.99	0.45
2:A:246:CYS:SG	2:A:247:GLU:N	2.90	0.45
2:A:588:TYR:CE1	2:A:592:MET:HE3	2.52	0.45
2:B:100:HIS:NE2	2:B:112:VAL:HB	2.32	0.45
2:B:276:VAL:HA	2:B:427:LEU:HD23	2.00	0.44
2:B:156:VAL:HG11	2:B:654:HIS:HB2	1.99	0.44
2:A:3:LEU:HD11	2:A:39:THR:HG22	1.99	0.44
2:B:160:VAL:HG12	2:B:581:ILE:HG21	1.99	0.44
2:A:146:ILE:O	2:A:149:LEU:HG	2.17	0.44
2:B:108:GLY:HA2	2:B:111:LEU:HD22	1.99	0.44
2:A:365:ASP:HB3	2:A:368:ILE:HD12	1.99	0.44
2:A:604:ASP:O	2:A:608:ARG:HD2	2.17	0.44
2:B:291:PRO:HB2	2:B:383:ALA:CB	2.48	0.44
2:B:515:ILE:HD13	2:B:576:SER:HB2	2.00	0.43
2:A:78:ARG:HA	2:A:79:PRO:HD3	1.89	0.43
2:B:92:LEU:HG	2:B:121:LEU:HD13	2.00	0.43
2:A:247:GLU:H	2:A:248:PRO:CD	2.31	0.43
2:B:21:LYS:HE2	2:B:22:PRO:HA	2.01	0.43
2:B:527:THR:O	2:B:531:ILE:HG12	2.19	0.43
2:B:139:PRO:O	2:B:143:GLU:HB2	2.18	0.42
2:B:268:ARG:O	2:B:272:GLN:HG3	2.19	0.42
2:A:177:THR:HG23	2:A:194:SER:HA	2.00	0.42
2:B:509:ASP:OD1	2:B:509:ASP:C	2.58	0.42
2:A:133:LEU:HD11	2:A:155:PHE:CZ	2.54	0.42
2:B:54:TYR:CE2	2:B:70:PRO:HB3	2.54	0.42
2:B:228:ILE:CG2	2:B:229:VAL:N	2.82	0.42
2:A:133:LEU:HD11	2:A:155:PHE:HZ	1.85	0.42
2:A:653:ALA:O	2:A:657:HIS:ND1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:509:ASP:OD1	2:B:511:ASP:N	2.52	0.42
2:B:52:ASP:HB3	2:B:59:ALA:HB2	2.02	0.41
2:B:371:ARG:HG2	5:B:805:HOH:O	2.19	0.41
2:A:240:TRP:HB2	2:A:434:PHE:CE2	2.55	0.41
2:A:396:THR:CG2	2:A:399:GLU:H	2.22	0.41
2:A:589:GLN:HG3	2:A:593:GLN:HG2	2.02	0.41
2:A:144:ARG:O	2:A:148:ARG:HG3	2.21	0.41
2:A:79:PRO:HD2	5:A:813:HOH:O	2.20	0.41
2:B:230:THR:HB	2:B:234:GLU:HG2	2.03	0.41
2:A:11:LEU:HD12	2:A:137:LEU:CD2	2.51	0.41
2:A:137:LEU:HD12	2:A:321:GLU:HA	2.03	0.41
2:A:325:LEU:HD21	2:A:393:ILE:HD12	2.03	0.41
2:A:396:THR:HG22	2:A:399:GLU:CD	2.40	0.41
2:A:78:ARG:HH11	2:A:78:ARG:HG2	1.87	0.40
2:B:280:ASN:O	2:B:423:CYS:HA	2.21	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
2	A	611/659 (93%)	590 (97%)	15 (2%)	6 (1%)	15 28
2	B	622/659 (94%)	606 (97%)	16 (3%)	0	100 100
All	All	1233/1318 (94%)	1196 (97%)	31 (2%)	6 (0%)	29 48

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	A	120	GLN
2	A	247	GLU
2	A	379	ASP

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Mol	Chain	Res	Type
2	A	431	LYS
2	A	214	GLU
2	A	123	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	A	526/555 (95%)	510 (97%)	16 (3%)	41	68
2	B	532/555 (96%)	521 (98%)	11 (2%)	53	78
All	All	1058/1110 (95%)	1031 (97%)	27 (3%)	46	72

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	17	ASP
2	A	97	GLU
2	A	214	GLU
2	A	259	ARG
2	A	265	VAL
2	A	304	ARG
2	A	371	ARG
2	A	426	GLU
2	A	431	LYS
2	A	498	SER
2	A	505	ARG
2	A	525	GLU
2	A	582	SER
2	A	585	GLN
2	A	586	CYS
2	A	611	VAL
2	B	1	MET
2	B	2	ARG
2	B	71	GLU
2	B	111	LEU

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Mol	Chain	Res	Type
2	B	233	ASP
2	B	280	ASN
2	B	372	CYS
2	B	472	GLU
2	B	569	ASP
2	B	601	GLN
2	B	652	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	23	HIS
2	A	250	GLN
2	A	280	ASN
2	A	317	GLN
2	A	484	GLN
2	A	585	GLN
2	B	84	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 monosaccharides in this entry.

5.6 Ligand geometry

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 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	ACY	B	803	-	3,3,3	0.98	0	3,3,3	0.72	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	C	7/8 (87%)	0.16	1 (14%) 2 2	41, 43, 74, 104	0
1	D	8/8 (100%)	-0.34	0 100 100	34, 39, 54, 63	0
2	A	619/659 (93%)	0.69	83 (13%) 3 2	33, 66, 120, 164	0
2	B	626/659 (94%)	0.32	39 (6%) 20 21	28, 52, 95, 198	0
All	All	1260/1334 (94%)	0.50	123 (9%) 7 7	28, 58, 103, 198	0

All (123) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	A	656	HIS	10.1
2	A	657	HIS	8.3
2	A	253	GLU	7.6
2	B	656	HIS	7.3
2	A	254	GLY	7.0
2	B	653	ALA	6.3
2	A	654	HIS	6.3
2	B	654	HIS	5.8
2	A	655	HIS	5.6
2	B	651	ALA	5.6
2	A	510	LYS	5.3
2	A	460	ASP	5.3
2	A	461	GLY	5.2
2	A	547	TYR	5.2
2	A	247	GLU	5.1
2	A	612	ARG	5.0
2	A	249	TYR	4.7
2	A	489	ARG	4.7
2	A	615	ARG	4.7
2	A	214	GLU	4.6
2	A	5	ILE	4.5

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Mol	Chain	Res	Type	RSRZ
2	B	655	HIS	4.5
2	A	658	HIS	4.4
2	A	459	ASN	4.3
2	B	122	ALA	4.3
2	B	618	VAL	4.2
2	A	486	GLN	4.2
2	A	487	PRO	4.2
2	A	512	LEU	4.0
2	B	124	GLU	4.0
2	B	22	PRO	4.0
2	A	585	GLN	3.9
2	A	544	LYS	3.9
2	B	24	ARG	3.8
2	A	260	PRO	3.8
2	A	508	GLN	3.7
2	B	21	LYS	3.7
2	A	545	GLY	3.7
2	A	484	GLN	3.7
2	A	513	LYS	3.6
2	A	482	GLU	3.6
2	A	546	ARG	3.5
2	B	5	ILE	3.5
2	A	112	VAL	3.5
2	A	264	HIS	3.5
2	A	282	LYS	3.4
2	A	218	ALA	3.3
2	A	124	GLU	3.2
2	A	255	ARG	3.2
2	A	511	ASP	3.2
2	A	452	SER	3.2
2	A	616	GLY	3.2
2	A	248	PRO	3.0
2	B	510	LYS	3.0
2	A	440	PHE	2.9
2	B	252	GLU	2.9
2	A	211	GLU	2.9
2	B	612	ARG	2.8
2	A	219	LYS	2.8
2	A	34	ASN	2.8
1	C	7	DT	2.7
2	A	488	PRO	2.7
2	A	543	LYS	2.7

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Mol	Chain	Res	Type	RSRZ
2	B	127	GLN	2.7
2	A	453	LYS	2.6
2	A	123	PRO	2.6
2	B	123	PRO	2.6
2	A	283	ARG	2.6
2	A	441	LEU	2.6
2	B	83	LYS	2.6
2	A	222	PHE	2.6
2	B	99	VAL	2.6
2	B	25	LYS	2.6
2	A	462	THR	2.5
2	A	256	LEU	2.5
2	A	148	ARG	2.5
2	A	217	VAL	2.5
2	A	252	GLU	2.5
2	A	505	ARG	2.5
2	A	485	THR	2.5
2	B	6	ALA	2.4
2	B	514	LYS	2.4
2	A	115	VAL	2.4
2	A	267	ASN	2.4
2	B	94	GLU	2.4
2	B	33	GLY	2.3
2	B	652	ILE	2.3
2	A	250	GLN	2.3
2	A	451	GLY	2.3
2	A	517	ARG	2.3
2	A	215	ASN	2.3
2	A	428	ASP	2.3
2	A	93	HIS	2.3
2	A	6	ALA	2.2
2	A	653	ALA	2.2
2	B	282	LYS	2.2
2	A	243	SER	2.2
2	A	101	ALA	2.2
2	B	484	GLN	2.2
2	B	585	GLN	2.2
2	B	616	GLY	2.2
2	A	127	GLN	2.2
2	A	22	PRO	2.2
2	B	511	ASP	2.2
2	A	116	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
2	B	115	VAL	2.2
2	A	542	THR	2.2
2	A	99	VAL	2.1
2	A	21	LYS	2.1
2	A	258	HIS	2.1
2	B	198	VAL	2.1
2	A	442	ALA	2.1
2	B	453	LYS	2.1
2	B	615	ARG	2.1
2	A	203	LEU	2.1
2	A	27	ASP	2.1
2	B	4	PHE	2.0
2	A	202	VAL	2.0
2	B	253	GLU	2.0
2	B	128	GLN	2.0
2	B	391	SER	2.0
2	A	88	ILE	2.0
2	B	257	LEU	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 monosaccharides 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, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	ACY	B	803	4/4	0.96	0.31	45,45,46,46	0
3	CL	B	801	1/1	0.99	0.10	39,39,39,39	0
3	CL	A	800	1/1	0.99	0.10	37,37,37,37	0

6.5 Other polymers (i)

There are no such residues in this entry.