W O R L D W I D E
wwPDB
P R O T E I N   D A T A   B A N K

wwPDB X-ray Structure Validation Summary Report (i)

Feb 19, 2024 – 08:18 PM EST

PDB ID	:	4K4X
Title	:	Coxsackievirus B3 polymerase elongation complex (r2_form), rna
Authors	:	Gong, P.; Peersen, O.B.
Deposited on	:	2013-04-12
Resolution	:	2.37 Å(reported)

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

create

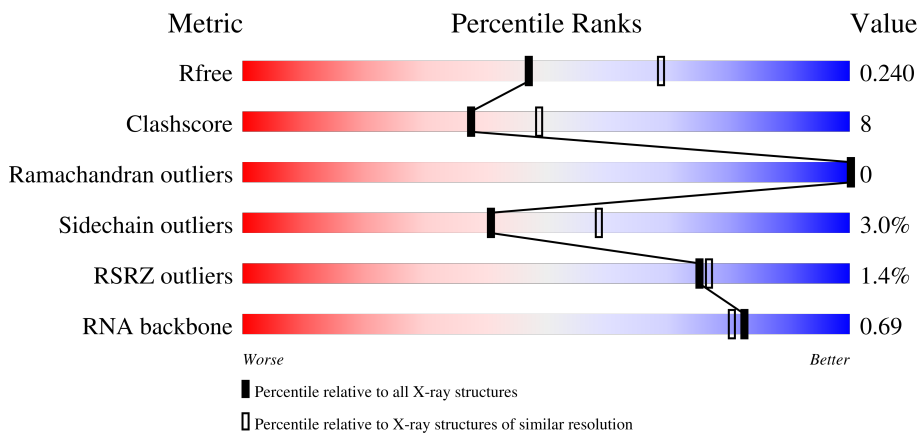|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

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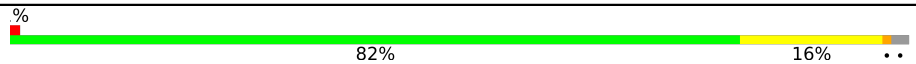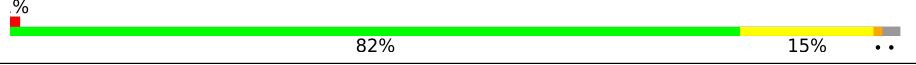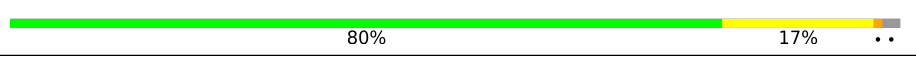*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.37 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.
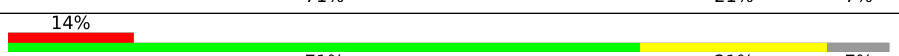
Metric	Percentile Ranks	Value
Rfree		0.240
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		3.0%
RSRZ outliers		1.4%
RNA backbone		0.69

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	5509 (2.40-2.36)
Clashscore	141614	6082 (2.40-2.36)
Ramachandran outliers	138981	5973 (2.40-2.36)
Sidechain outliers	138945	5975 (2.40-2.36)
RSRZ outliers	127900	5397 (2.40-2.36)
RNA backbone	3102	1017 (2.76-2.00)

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	A	472	% 82% ... 16% ..
1	E	472	% 82% ... 15% ..
1	I	472	80% ... 17% ..
1	M	472	82% ... 15% ..

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Mol	Chain	Length	Quality of chain
2	B	24	17% 33% 17% 33%
2	F	24	4% 17% 33% 17% 33%
2	J	24	4% 17% 42% 8% 33%
2	N	24	17% 38% 12% 33%
3	C	14	14% 71% 14% 7% 7%
3	G	14	21% 79% 7% 7% 7%
3	K	14	14% 71% 21% 7%
3	O	14	14% 71% 21% 7%
4	D	9	11% 22% 78%
4	H	9	22% 11% 11% 78%
4	L	9	22% 22% 78%
4	P	9	22% 22% 78%

2   Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 18197 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 RNA-dependent RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	463	Total	C	N	O	S	0	0	0
			3693	2372	614	685	22			
1	E	463	Total	C	N	O	S	0	0	0
			3693	2372	614	685	22			
1	I	463	Total	C	N	O	S	0	0	0
			3693	2372	614	685	22			
1	M	463	Total	C	N	O	S	0	0	0
			3693	2372	614	685	22			

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	252	ILE	LEU	variant	UNP Q66338
A	463	GLY	-	expression tag	UNP Q66338
A	464	SER	-	expression tag	UNP Q66338
A	465	SER	-	expression tag	UNP Q66338
A	466	SER	-	expression tag	UNP Q66338
A	467	HIS	-	expression tag	UNP Q66338
A	468	HIS	-	expression tag	UNP Q66338
A	469	HIS	-	expression tag	UNP Q66338
A	470	HIS	-	expression tag	UNP Q66338
A	471	HIS	-	expression tag	UNP Q66338
A	472	HIS	-	expression tag	UNP Q66338
E	252	ILE	LEU	variant	UNP Q66338
E	463	GLY	-	expression tag	UNP Q66338
E	464	SER	-	expression tag	UNP Q66338
E	465	SER	-	expression tag	UNP Q66338
E	466	SER	-	expression tag	UNP Q66338
E	467	HIS	-	expression tag	UNP Q66338
E	468	HIS	-	expression tag	UNP Q66338
E	469	HIS	-	expression tag	UNP Q66338
E	470	HIS	-	expression tag	UNP Q66338
E	471	HIS	-	expression tag	UNP Q66338

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Chain	Residue	Modelled	Actual	Comment	Reference
E	472	HIS	-	expression tag	UNP Q66338
I	252	ILE	LEU	variant	UNP Q66338
I	463	GLY	-	expression tag	UNP Q66338
I	464	SER	-	expression tag	UNP Q66338
I	465	SER	-	expression tag	UNP Q66338
I	466	SER	-	expression tag	UNP Q66338
I	467	HIS	-	expression tag	UNP Q66338
I	468	HIS	-	expression tag	UNP Q66338
I	469	HIS	-	expression tag	UNP Q66338
I	470	HIS	-	expression tag	UNP Q66338
I	471	HIS	-	expression tag	UNP Q66338
I	472	HIS	-	expression tag	UNP Q66338
M	252	ILE	LEU	variant	UNP Q66338
M	463	GLY	-	expression tag	UNP Q66338
M	464	SER	-	expression tag	UNP Q66338
M	465	SER	-	expression tag	UNP Q66338
M	466	SER	-	expression tag	UNP Q66338
M	467	HIS	-	expression tag	UNP Q66338
M	468	HIS	-	expression tag	UNP Q66338
M	469	HIS	-	expression tag	UNP Q66338
M	470	HIS	-	expression tag	UNP Q66338
M	471	HIS	-	expression tag	UNP Q66338
M	472	HIS	-	expression tag	UNP Q66338

- Molecule 2 is a RNA chain called RNA (5'-R(*AP*AP*GP*UP*CP*UP*CP*CP*AP*GP* GP*UP*CP*UP*CP*UP*CP*GP*UP*CP*GP*AP*AP*A)-3').

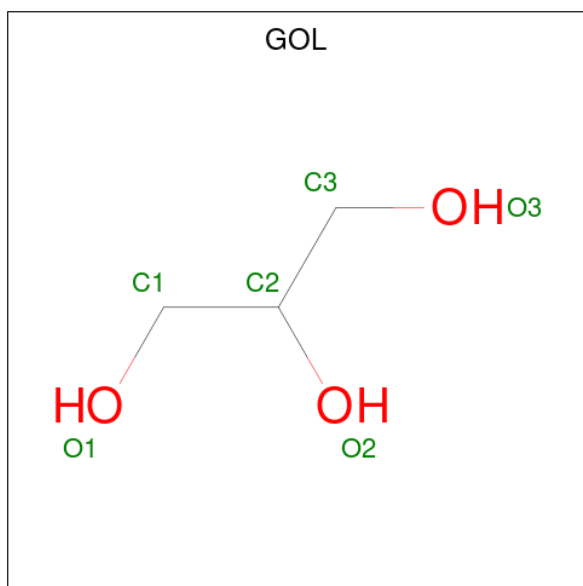| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	16	Total	C	N	O	P	0	0	0
			338	151	58	113	16			
2	F	16	Total	C	N	O	P	0	0	0
			338	151	58	113	16			
2	J	16	Total	C	N	O	P	0	0	0
			338	151	58	113	16			
2	N	16	Total	C	N	O	P	0	0	0
			338	151	58	113	16			

- Molecule 3 is a RNA chain called RNA (5'-R(*UP*GP*UP*UP*CP*GP*AP*CP*GP*AP* GP*AP*GP*A)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	13	Total 283	C 126	N 55	O 89	P 13	0	0	0
3	G	13	Total 283	C 126	N 55	O 89	P 13	0	0	0
3	K	13	Total 283	C 126	N 55	O 89	P 13	0	0	0
3	O	13	Total 283	C 126	N 55	O 89	P 13	0	0	0

- Molecule 4 is a RNA chain called RNA (5'-R(P*GP*GP*GP*AP*GP*AP*UP*GP*A)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	2	Total 46	C 20	N 10	O 14	P 2	0	0	0
4	H	2	Total 46	C 20	N 10	O 14	P 2	0	0	0
4	L	2	Total 46	C 20	N 10	O 14	P 2	0	0	0
4	P	2	Total 46	C 20	N 10	O 14	P 2	0	0	0

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

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

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

• Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total 1	Mg 1	0	0
6	E	1	Total 1	Mg 1	0	0
6	I	1	Total 1	Mg 1	0	0
6	M	1	Total 1	Mg 1	0	0

• Molecule 7 is water.

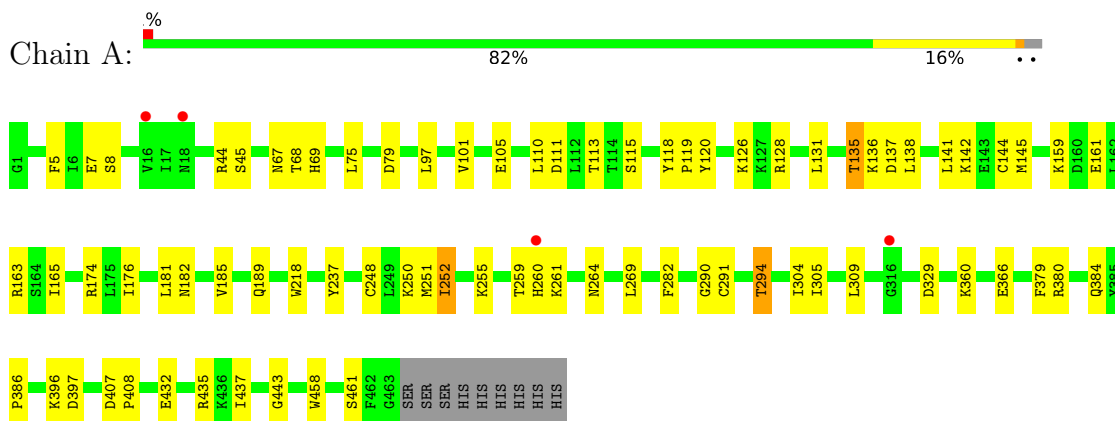| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	161	Total 161	O 161	0	0
7	B	17	Total 17	O 17	0	0
7	C	22	Total 22	O 22	0	0
7	E	120	Total 120	O 120	0	0
7	F	18	Total 18	O 18	0	0
7	G	11	Total 11	O 11	0	0
7	I	153	Total 153	O 153	0	0
7	J	19	Total 19	O 19	0	0
7	K	21	Total 21	O 21	0	0
7	M	156	Total 156	O 156	0	0
7	N	16	Total 16	O 16	0	0

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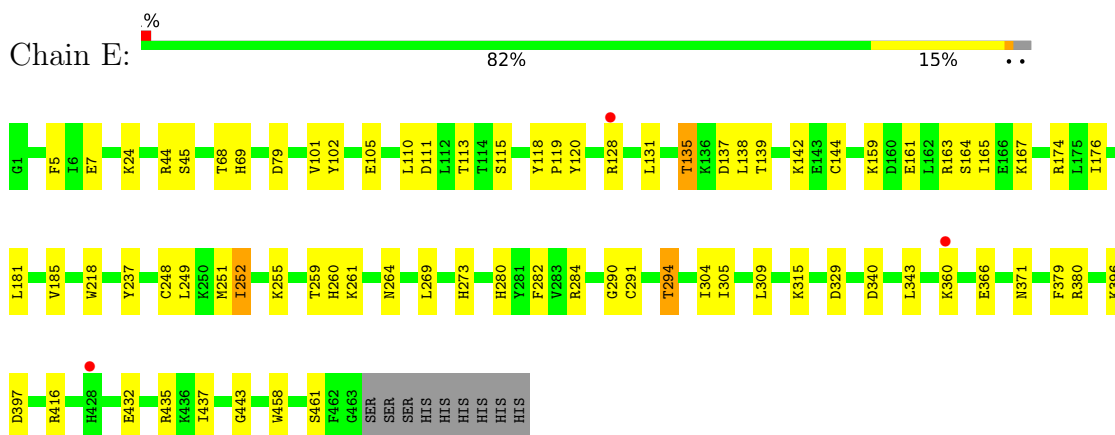| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	O	15	Total　O 15　　15		0	0

3 Residue-property plots ⓘ

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.
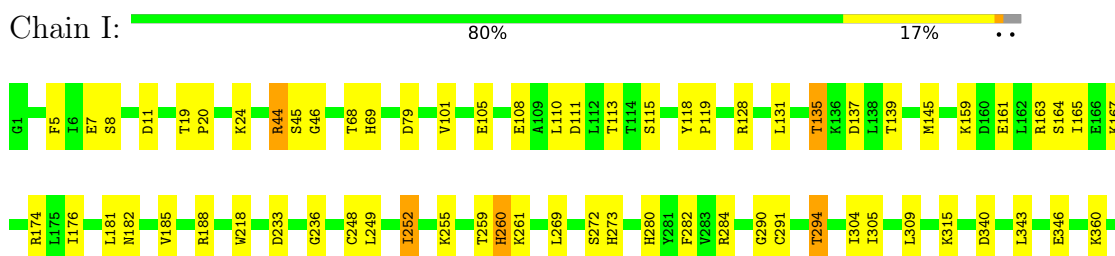
- Molecule 1: RNA-dependent RNA polymerase
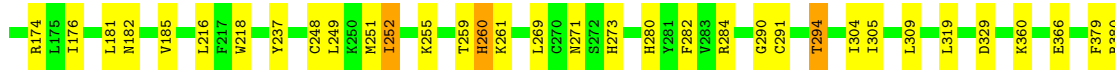

- Molecule 1: RNA-dependent RNA polymerase

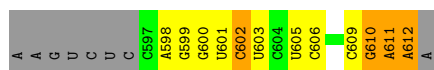- Molecule 1: RNA-dependent RNA polymerase

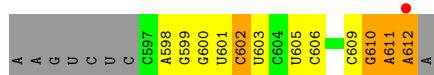E366 N371 F379 R380 Q384 Y385 P386 K396 D397 D407 P408 K409 E432 R435 K436 I437 R438 G443 R456 K457 W458 S461 F462 G463 SER SER HIS HIS HIS HIS HIS HIS

• Molecule 1: RNA-dependent RNA polymerase

Chain M:

82%   15%

G1 F5 I6 E7 S8 T19 P20 R44 S45 T68 H69 D79 V101 E105 L110 D111 L112 T113 T114 S115 Y118 P119 Y120 V121 K126 L131 T135 K136 D137 L138 T139 K140 L141 C144 M145 G149 K159 D160 E161 L162 R163 S164 I165 E166 K167

R174 L175 I176 L181 N182 V185 L216 F217 W218 Y237 C248 L249 K250 M251 I252 K255 T259 H260 K261 L269 C270 N271 S272 H273 H280 Y281 F282 V283 R284 G290 C291 T294 I304 I305 L309 L319 D329 K360 E366 F379 R380

A381 D382 Y385 K396 D397 H428 K436 I437 G443 W458 S461 F462 G463 SER SER HIS HIS HIS HIS HIS HIS

• Molecule 2: RNA (5'-R(*AP*AP*GP*UP*CP*UP*CP*CP*AP*GP*GP*UP*CP*UP*CP*UP *CP*GP*UP*CP*GP*AP*AP*A)-3')

Chain B: 17%   33%   17%   33%

A A G U U C C597 A598 G599 G600 U601 C602 U603 C604 U605 C606 C609 G610 A611 A612 A

• Molecule 2: RNA (5'-R(*AP*AP*GP*UP*CP*UP*CP*CP*AP*GP*GP*UP*CP*UP*CP*UP *CP*GP*UP*CP*GP*AP*AP*A)-3')

4%

Chain F: 17%   33%   17%   33%

A A G U U C C597 A598 G599 G600 U601 C602 U603 C604 U605 C606 C609 G610 A611 A612 A

• Molecule 2: RNA (5'-R(*AP*AP*GP*UP*CP*UP*CP*CP*AP*GP*GP*UP*CP*UP*CP*UP *CP*GP*UP*CP*GP*AP*AP*A)-3')

4%

Chain J: 17%   42%   8%   33%

A A G U U C C597 A598 G599 G600 U601 C602 U603 C604 U605 C606 C609 G610 A611 A612 A
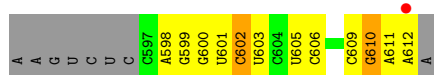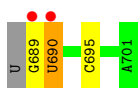
• Molecule 2: RNA (5'-R(*AP*AP*GP*UP*CP*UP*CP*CP*AP*GP*GP*UP*CP*UP*CP*UP *CP*GP*UP*CP*GP*AP*AP*A)-3')

Chain N: 17%   38%   12%   33%

A A G U U C C597 A598 G599 G600 U601 C602 U603 C604 U605 C606 C609 G610 A611 A612 A

• Molecule 3: RNA (5'-R(*UP*GP*UP*UP*CP*GP*AP*CP*GP*AP*GP*AP*GP*A)-3')

Chain C:

• Molecule 3: RNA (5'-R(*UP*GP*UP*UP*CP*GP*AP*CP*GP*AP*GP*AP*GP*A)-3')

Chain G:
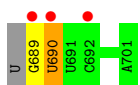
• Molecule 3: RNA (5'-R(*UP*GP*UP*UP*CP*GP*AP*CP*GP*AP*GP*AP*GP*A)-3')
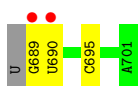
Chain K:

• Molecule 3: RNA (5'-R(*UP*GP*UP*UP*CP*GP*AP*CP*GP*AP*GP*AP*GP*A)-3')
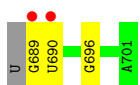
Chain O:

• Molecule 4: RNA (5'-R(P*GP*GP*GP*AP*GP*AP*UP*GP*A)-3')

Chain D:

• Molecule 4: RNA (5'-R(P*GP*GP*GP*AP*GP*AP*UP*GP*A)-3')

Chain H:

• Molecule 4: RNA (5'-R(P*GP*GP*GP*AP*GP*AP*UP*GP*A)-3')

Chain L:

• Molecule 4: RNA (5'-R(P*GP*GP*GP*AP*GP*AP*UP*GP*A)-3')

Chain P:

4   Data and refinement statistics   ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	61.00Å 61.01Å 195.14Å 90.02° 89.98° 78.36°	Depositor
Resolution (Å)	44.01 – 2.37 44.01 – 2.37	Depositor EDS
% Data completeness (in resolution range)	97.7 (44.01-2.37) 97.6 (44.01-2.37)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.96 (at 2.37Å)	Xtriage
Refinement program	PHENIX 1.8.2_1309	Depositor
R, R_{free}	0.204 , 0.241 0.203 , 0.240	Depositor DCC
R_{free} test set	5508 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	41.7	Xtriage
Anisotropy	0.422	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 32.4	EDS
L-test for twinning[2]	$< |L| > = 0.52, < L^2 > = 0.36$	Xtriage
Estimated twinning fraction	0.467 for -h,-k,l 0.459 for -k,-h,-l 0.466 for k,h,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	18197	wwPDB-VP
Average B, all atoms (Å^2)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.05% 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: MG, GOL

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	0.44	0/3786	0.57	0/5125
1	E	0.44	0/3786	0.58	0/5125
1	I	0.45	0/3786	0.59	0/5125
1	M	0.45	0/3786	0.58	0/5125
2	B	0.56	0/376	0.92	0/583
2	F	0.55	0/376	0.92	0/583
2	J	0.54	0/376	0.91	0/583
2	N	0.53	0/376	0.94	0/583
3	C	0.55	0/317	0.88	0/493
3	G	0.59	0/317	0.93	0/493
3	K	0.54	0/317	0.87	0/493
3	O	0.53	0/317	0.87	0/493
4	D	0.29	0/51	0.61	0/78
4	H	0.32	0/51	0.86	0/78
4	L	0.34	0/51	0.74	0/78
4	P	0.48	0/51	1.03	0/78
All	All	0.46	0/18120	0.65	0/25116

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	I	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

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

Mol	Chain	Res	Type	Group
1	I	272	SER	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	3693	0	3661	46	0
1	E	3693	0	3661	57	0
1	I	3693	0	3661	59	0
1	M	3693	0	3661	52	1
2	B	338	0	173	12	0
2	F	338	0	173	12	0
2	J	338	0	173	10	0
2	N	338	0	173	11	0
3	C	283	0	142	4	0
3	G	283	0	142	3	0
3	K	283	0	142	3	0
3	O	283	0	142	4	0
4	D	46	0	23	0	0
4	H	46	0	23	1	0
4	L	46	0	23	0	0
4	P	46	0	23	0	0
5	A	12	0	16	0	1
5	E	6	0	8	0	0
5	I	6	0	8	2	0
6	A	1	0	0	0	0
6	E	1	0	0	0	0
6	I	1	0	0	0	0
6	M	1	0	0	0	0
7	A	161	0	0	6	0
7	B	17	0	0	0	0
7	C	22	0	0	1	0
7	E	120	0	0	8	0
7	F	18	0	0	0	0
7	G	11	0	0	0	0
7	I	153	0	0	11	0
7	J	19	0	0	0	0
7	K	21	0	0	1	0
7	M	156	0	0	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	N	16	0	0	0	0
7	O	15	0	0	0	0
All	All	18197	0	16028	253	1

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 8.

The worst 5 of 253 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)
3:C:689:G:H22	3:G:689:G:H22	1.25	0.83
3:C:689:G:H1	3:G:689:G:H1	1.27	0.82
3:K:689:G:H22	3:O:689:G:H22	1.27	0.81
3:K:689:G:H1	3:O:689:G:H1	1.29	0.81
1:E:290:GLY:H	1:E:294:THR:HG21	1.48	0.77

All (1) 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)
1:M:284:ARG:NH1	5:A:501:GOL:O2[1_556]	2.17	0.03

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	461/472 (98%)	446 (97%)	15 (3%)	0	100	100
1	E	461/472 (98%)	444 (96%)	17 (4%)	0	100	100
1	I	461/472 (98%)	446 (97%)	15 (3%)	0	100	100
1	M	461/472 (98%)	445 (96%)	16 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	1844/1888 (98%)	1781 (97%)	63 (3%)	0	100 100

There are no Ramachandran outliers to report.

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	404/413 (98%)	391 (97%)	13 (3%)	39	56
1	E	404/413 (98%)	393 (97%)	11 (3%)	44	62
1	I	404/413 (98%)	391 (97%)	13 (3%)	39	56
1	M	404/413 (98%)	392 (97%)	12 (3%)	41	59
All	All	1616/1652 (98%)	1567 (97%)	49 (3%)	41	59

5 of 49 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	I	135	THR
1	I	360	LYS
1	I	165	ILE
1	I	260	HIS
1	M	8	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	273	HIS
1	M	273	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	B	15/24 (62%)	5 (33%)	0
2	F	15/24 (62%)	5 (33%)	0
2	J	15/24 (62%)	5 (33%)	0
2	N	15/24 (62%)	5 (33%)	0
3	C	12/14 (85%)	1 (8%)	0
3	G	12/14 (85%)	1 (8%)	0
3	K	12/14 (85%)	1 (8%)	0
3	O	12/14 (85%)	1 (8%)	0
4	D	1/9 (11%)	0	0
4	H	1/9 (11%)	0	0
4	L	1/9 (11%)	0	0
4	P	1/9 (11%)	0	0
All	All	112/188 (59%)	24 (21%)	0

5 of 24 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	B	598	A
2	B	602	C
2	B	610	G
2	B	611	A
2	B	612	A

There are no RNA pucker outliers to report.

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 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	$\#|Z| > 2$
5	GOL	E	501	-	5,5,5	0.33	0	5,5,5	0.65	0
5	GOL	I	501	-	5,5,5	0.32	0	5,5,5	0.63	0
5	GOL	A	501	-	5,5,5	0.43	0	5,5,5	0.31	0
5	GOL	A	502	-	5,5,5	0.35	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
5	GOL	E	501	-	-	0/4/4/4	-
5	GOL	I	501	-	-	4/4/4/4	-
5	GOL	A	501	-	-	2/4/4/4	-
5	GOL	A	502	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 6 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	I	501	GOL	C1-C2-C3-O3
5	A	501	GOL	C1-C2-C3-O3
5	I	501	GOL	O1-C1-C2-C3
5	I	501	GOL	O2-C2-C3-O3
5	A	501	GOL	O2-C2-C3-O3

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	I	501	GOL	2	0
5	A	501	GOL	0	1

5.7　Other polymers ⓘ

There are no such residues in this entry.

5.8　Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Fit of model and data ⓘ

6.1　Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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(Å²)	Q<0.9
1	A	463/472 (98%)	0.01	4 (0%)	84	84	26, 40, 59, 95	0
1	E	463/472 (98%)	-0.02	3 (0%)	89	89	28, 41, 60, 94	0
1	I	463/472 (98%)	-0.02	0	100	100	27, 41, 59, 95	0
1	M	463/472 (98%)	0.02	2 (0%)	92	93	26, 41, 59, 94	0
2	B	16/24 (66%)	0.09	0	100	100	36, 53, 117, 118	0
2	F	16/24 (66%)	0.28	1 (6%)	20	21	37, 54, 117, 119	0
2	J	16/24 (66%)	0.38	1 (6%)	20	21	35, 53, 118, 118	0
2	N	16/24 (66%)	0.23	0	100	100	35, 54, 117, 118	0
3	C	13/14 (92%)	0.80	2 (15%)	2	2	32, 58, 125, 129	0
3	G	13/14 (92%)	0.82	3 (23%)	0	0	31, 60, 125, 129	0
3	K	13/14 (92%)	0.57	2 (15%)	2	2	31, 58, 126, 128	0
3	O	13/14 (92%)	0.82	2 (15%)	2	2	31, 58, 125, 130	0
4	D	2/9 (22%)	3.02	1 (50%)	0	0	125, 125, 125, 132	0
4	H	2/9 (22%)	4.36	2 (100%)	0	0	126, 126, 126, 133	0
4	L	2/9 (22%)	3.95	2 (100%)	0	0	127, 127, 127, 133	0
4	P	2/9 (22%)	3.79	2 (100%)	0	0	124, 124, 124, 132	0
All	All	1976/2076 (95%)	0.04	27 (1%)	75	77	26, 41, 64, 133	0

The worst 5 of 27 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	O	689	G	7.2
3	C	689	G	6.2
4	H	804	G	6.0
3	G	689	G	5.6
4	P	804	G	5.0

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 monosaccharides in this entry.

6.4 Ligands ⓘ

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
6	MG	A	503	1/1	0.94	0.03	47,47,47,47	0
6	MG	M	501	1/1	0.94	0.15	51,51,51,51	0
6	MG	E	502	1/1	0.95	0.11	48,48,48,48	0
5	GOL	I	501	6/6	0.96	0.11	37,41,42,45	0
6	MG	I	502	1/1	0.96	0.09	42,42,42,42	0
5	GOL	A	502	6/6	0.96	0.10	37,41,43,45	0
5	GOL	E	501	6/6	0.97	0.09	37,42,42,43	0
5	GOL	A	501	6/6	0.98	0.10	38,41,46,47	0

6.5 Other polymers ⓘ

There are no such residues in this entry.