



wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 14, 2023 – 06:00 PM EDT

PDB ID : 4S20
Title : Structural basis for transcription reactivation by RapA
Authors : Liu, B.; Zuo, Y.; Steitz, T.A.
Deposited on : 2015-01-16
Resolution : 4.70 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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
Xtriage (Phenix) : 1.13
EDS : 2.35.1
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

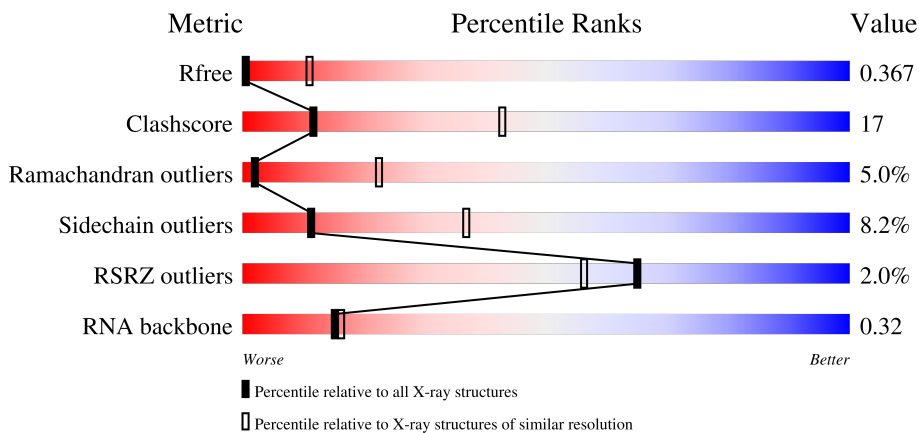
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 4.70 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	1085 (5.58-3.80)
Clashscore	141614	1159 (5.60-3.80)
Ramachandran outliers	138981	1094 (5.58-3.80)
Sidechain outliers	138945	1074 (5.58-3.80)
RSRZ outliers	127900	1118 (5.70-3.70)
RNA backbone	3102	1064 (6.22-3.00)

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 $\leq 5\%$. 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	329	 4% 62% 7% 31%
1	B	329	 4% 62% 7% 31%
1	F	329	 6% 62% 6% 31%
1	G	329	 % 62% 7% 31%

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Mol	Chain	Length	Quality of chain
2	C	1342	<p>2% 63% 22% 12%</p>
2	H	1342	<p>2% 62% 22% 13%</p>
3	D	1416	<p>2% 64% 15% 19%</p>
3	I	1416	<p>2% 64% 16% 18%</p>
4	E	90	<p>2% 63% 17% 17%</p>
4	J	90	<p>3% 66% 14% 17%</p>
5	K	974	<p>2% 56% 36% 6% ..</p>
5	L	974	<p>2% 58% 34% 6% .</p>
6	M	15	<p>13% 47% 53%</p>
6	O	15	<p>13% 73% 27%</p>
7	N	9	<p>44% 22% 33%</p>
7	P	9	<p>33% 56% 11%</p>

2 Entry composition

There are 9 unique types of molecules in this entry. The entry contains 61154 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	227	Total	C	N	O	S	0	0	0
			1759	1096	311	346	6			
1	B	227	Total	C	N	O	S	0	0	0
			1759	1096	311	346	6			
1	F	227	Total	C	N	O	S	0	0	0
			1759	1096	311	346	6			
1	G	227	Total	C	N	O	S	0	0	0
			1759	1096	311	346	6			

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	1179	Total	C	N	O	S	0	0	0
			9285	5828	1620	1798	39			
2	H	1173	Total	C	N	O	S	0	0	0
			9235	5799	1609	1788	39			

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	D	1149	Total	C	N	O	S	0	0	0
			8990	5649	1614	1681	46			
3	I	1160	Total	C	N	O	S	0	0	0
			9068	5701	1626	1695	46			

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	1408	LEU	-	expression tag	UNP K0BCS5
D	1409	GLU	-	expression tag	UNP K0BCS5
D	1410	VAL	-	expression tag	UNP K0BCS5
D	1411	HIS	-	expression tag	UNP K0BCS5

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Chain	Residue	Modelled	Actual	Comment	Reference
D	1412	HIS	-	expression tag	UNP K0BCS5
D	1413	HIS	-	expression tag	UNP K0BCS5
D	1414	HIS	-	expression tag	UNP K0BCS5
D	1415	HIS	-	expression tag	UNP K0BCS5
D	1416	HIS	-	expression tag	UNP K0BCS5
I	1408	LEU	-	expression tag	UNP K0BCS5
I	1409	GLU	-	expression tag	UNP K0BCS5
I	1410	VAL	-	expression tag	UNP K0BCS5
I	1411	HIS	-	expression tag	UNP K0BCS5
I	1412	HIS	-	expression tag	UNP K0BCS5
I	1413	HIS	-	expression tag	UNP K0BCS5
I	1414	HIS	-	expression tag	UNP K0BCS5
I	1415	HIS	-	expression tag	UNP K0BCS5
I	1416	HIS	-	expression tag	UNP K0BCS5

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	E	75	600	365	114	120	1	0	0	0
4	J	75	600	365	114	120	1	0	0	0

- Molecule 5 is a protein called RNA polymerase-associated protein RapA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	K	961	7665	4797	1370	1468	30	0	0	0
5	L	961	7665	4797	1370	1468	30	0	0	0

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	-5	HIS	-	expression tag	UNP P60240
K	-4	HIS	-	expression tag	UNP P60240
K	-3	HIS	-	expression tag	UNP P60240
K	-2	HIS	-	expression tag	UNP P60240
K	-1	HIS	-	expression tag	UNP P60240
K	0	HIS	-	expression tag	UNP P60240
K	350	CYS	ARG	engineered mutation	UNP P60240
L	-5	HIS	-	expression tag	UNP P60240

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Chain	Residue	Modelled	Actual	Comment	Reference
L	-4	HIS	-	expression tag	UNP P60240
L	-3	HIS	-	expression tag	UNP P60240
L	-2	HIS	-	expression tag	UNP P60240
L	-1	HIS	-	expression tag	UNP P60240
L	0	HIS	-	expression tag	UNP P60240
L	350	CYS	ARG	engineered mutation	UNP P60240

- Molecule 6 is a DNA chain called 5'-D(P*AP*CP*GP*AP*CP*TP*GP*AP*GP*CP*CP*GP*AP*TP*G)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
6	M	15	Total	C	N	O	P	0	0	0
			311	146	61	89	15			
6	O	15	Total	C	N	O	P	0	0	0
			311	146	61	89	15			

- Molecule 7 is a RNA chain called 5'-R(P*AP*UP*CP*GP*GP*CP*UP*CP*A)-3'.

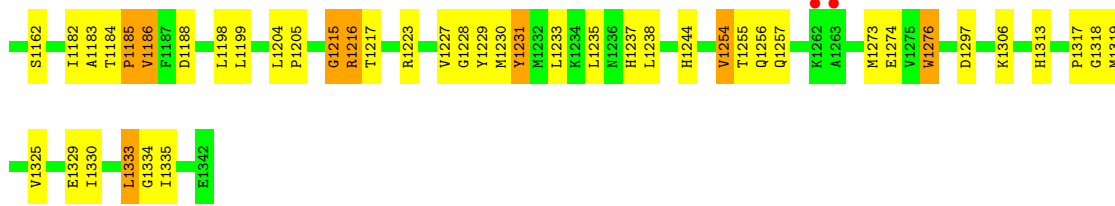
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
7	N	9	Total	C	N	O	P	0	0	0
			191	85	33	64	9			
7	P	9	Total	C	N	O	P	0	0	0
			191	85	33	64	9			

- Molecule 8 is ZINC ION (three-letter code: ZN) (formula: Zn).

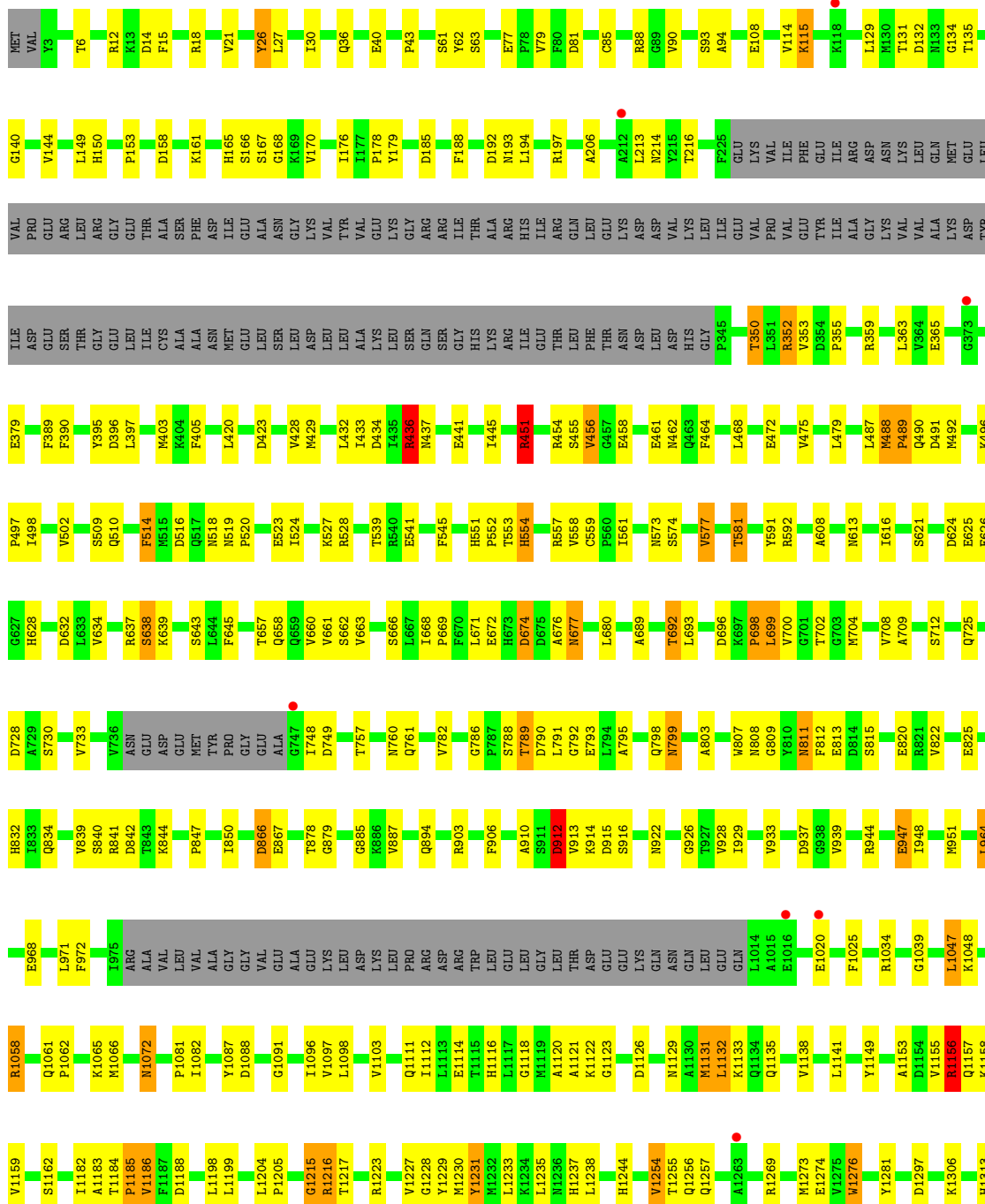
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	D	2	Total	Zn	0	0
			2	2		
8	I	2	Total	Zn	0	0
			2	2		

- Molecule 9 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	D	1	Total	Mg	0	0
			1	1		
9	I	1	Total	Mg	0	0
			1	1		

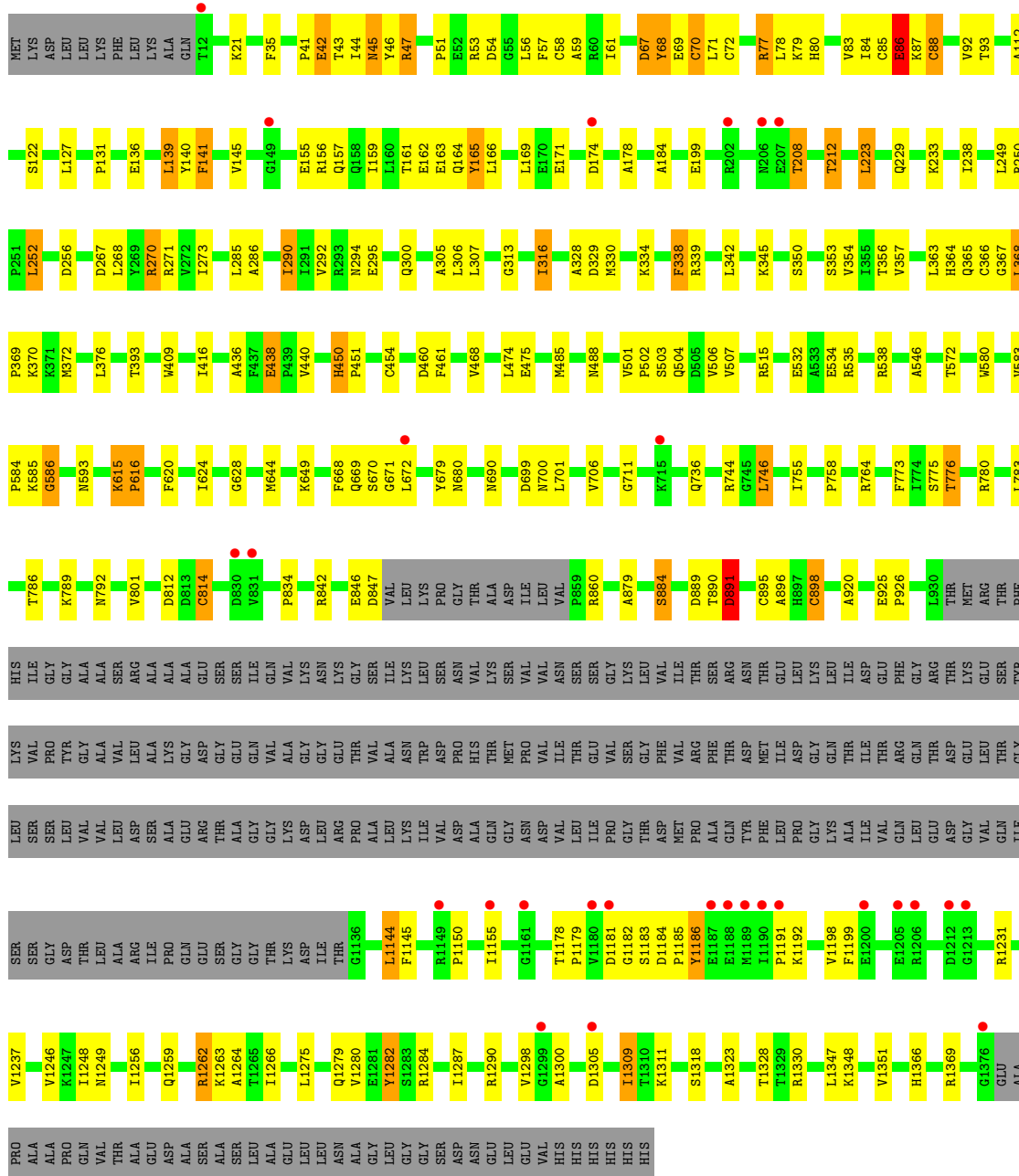


• Molecule 2: DNA-directed RNA polymerase subunit beta



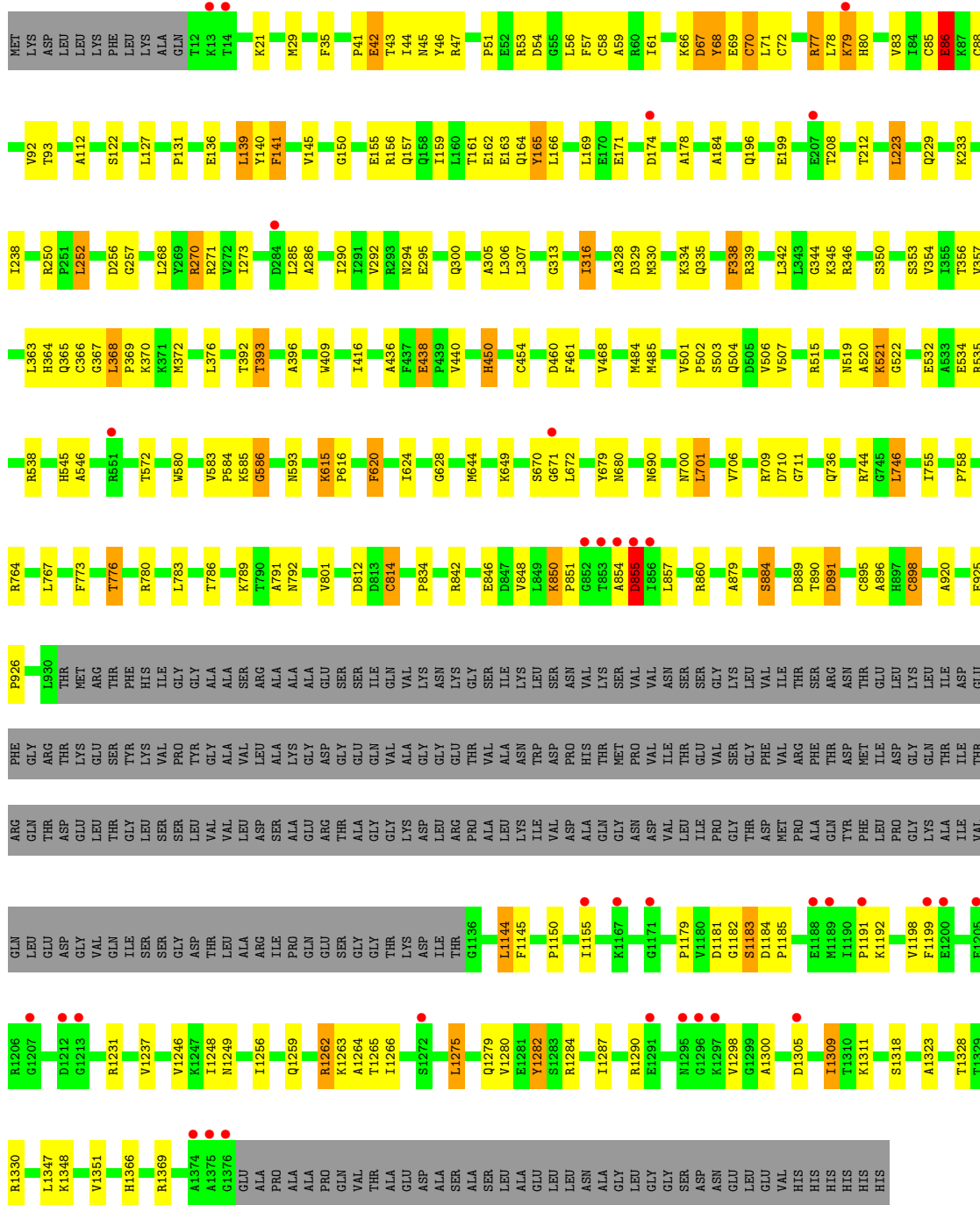


• Molecule 3: DNA-directed RNA polymerase subunit beta'

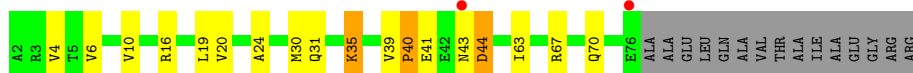


• Molecule 3: DNA-directed RNA polymerase subunit beta'

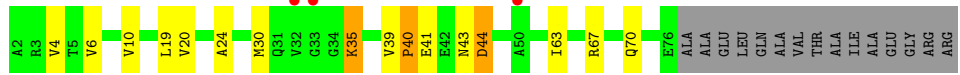




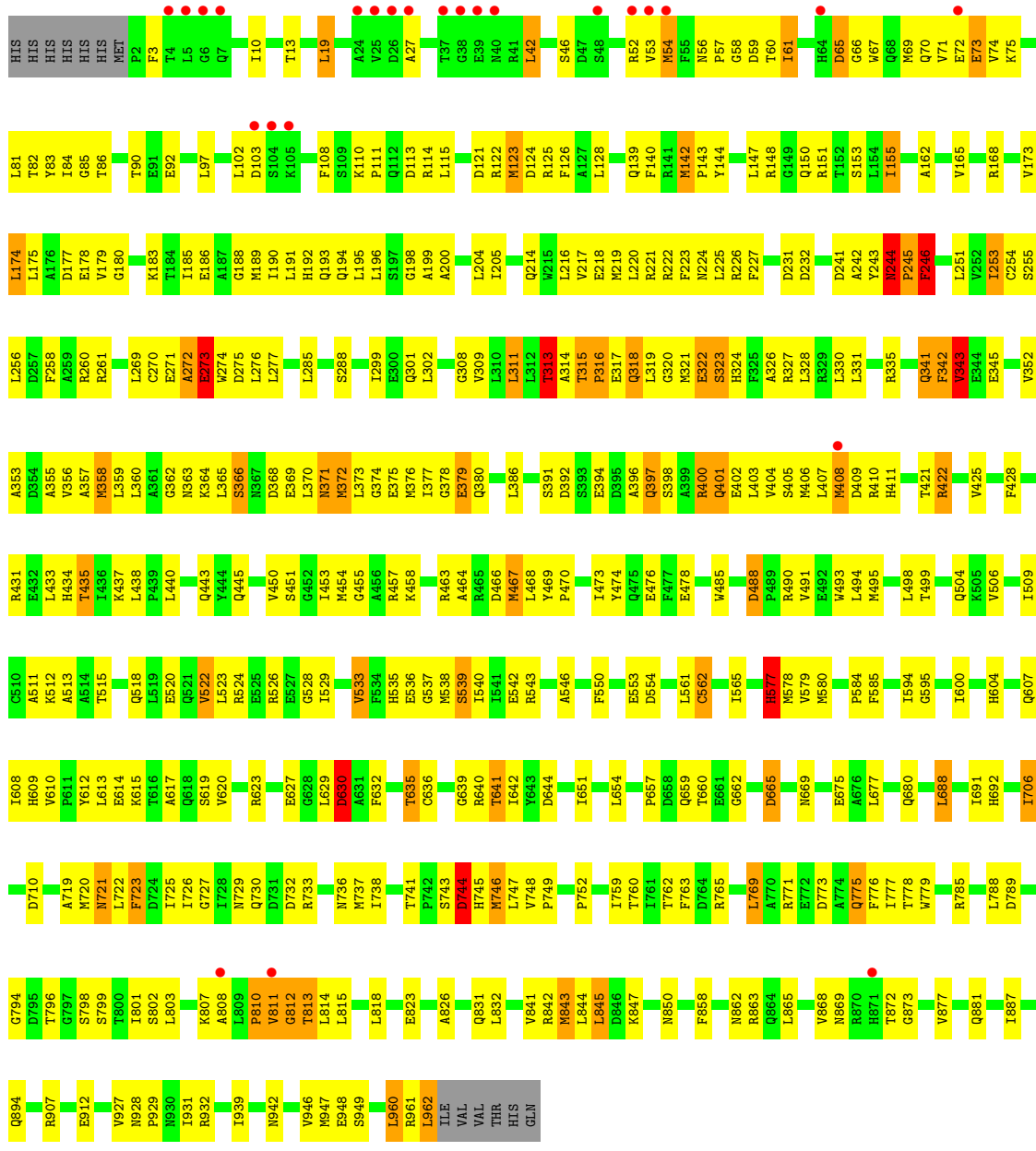
• Molecule 4: DNA-directed RNA polymerase subunit omega



• Molecule 4: DNA-directed RNA polymerase subunit omega

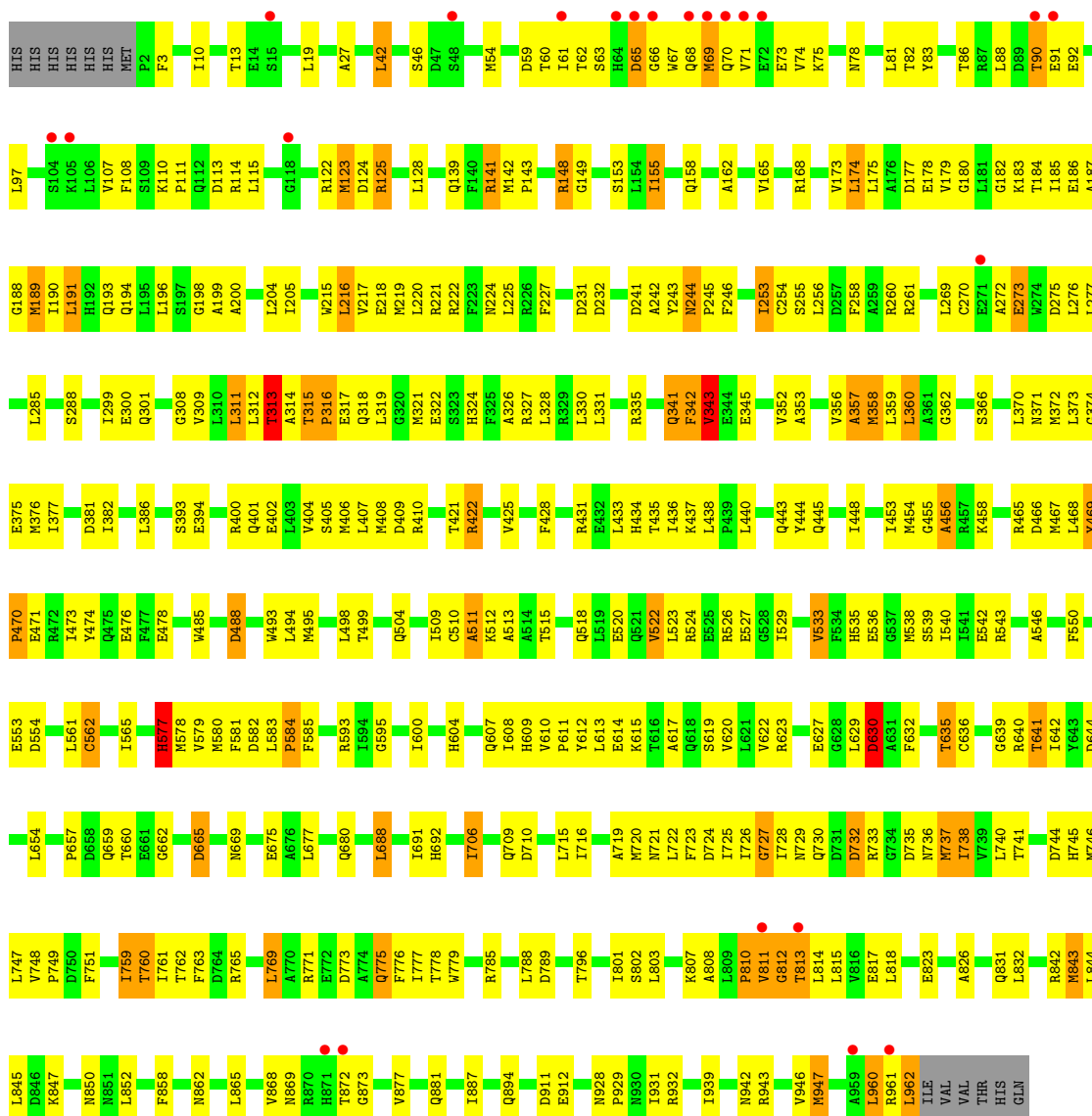


• Molecule 5: RNA polymerase-associated protein RapA



• Molecule 5: RNA polymerase-associated protein RapA

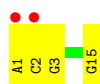




- Molecule 6: 5'-D(P*AP*CP*GP*AP*CP*TP*GP*AP*GP*CP*CP*GP*AP*TP*G)-3'



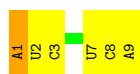
- Molecule 6: 5'-D(P*AP*CP*GP*AP*CP*TP*GP*AP*GP*CP*CP*GP*AP*TP*G)-3'



- Molecule 7: 5'-R(P*AP*UP*CP*GP*GP*CP*UP*CP*A)-3'



- Molecule 7: 5'-R(P*AP*UP*CP*GP*GP*CP*UP*CP*A)-3'



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	336.09Å 158.93Å 255.01Å 90.00° 101.28° 90.00°	Depositor
Resolution (Å)	20.00 – 4.70 20.00 – 4.70	Depositor EDS
% Data completeness (in resolution range)	93.2 (20.00-4.70) 94.5 (20.00-4.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.21 (at 4.74Å)	Xtrriage
Refinement program	REFMAC 5.7.0032	Depositor
R, R_{free}	0.273 , 0.369 0.288 , 0.367	Depositor DCC
R_{free} test set	3240 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	196.2	Xtrriage
Anisotropy	0.118	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.19 , 247.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	61154	wwPDB-VP
Average B, all atoms (Å ²)	292.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.40% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG

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	0.33	0/1781	0.54	0/2414
1	B	0.32	0/1781	0.55	0/2414
1	F	0.33	0/1781	0.54	0/2414
1	G	0.32	0/1781	0.55	0/2414
2	C	0.36	0/9435	0.60	1/12729 (0.0%)
2	H	0.35	0/9385	0.60	1/12662 (0.0%)
3	D	0.35	0/9128	0.58	1/12313 (0.0%)
3	I	0.35	0/9208	0.58	3/12426 (0.0%)
4	E	0.36	0/602	0.52	0/810
4	J	0.35	0/602	0.52	0/810
5	K	0.38	0/7808	0.65	2/10576 (0.0%)
5	L	0.38	0/7808	0.66	2/10576 (0.0%)
6	M	0.60	1/349 (0.3%)	0.70	0/535
6	O	0.61	1/349 (0.3%)	0.72	0/535
7	N	0.73	1/212 (0.5%)	0.63	0/326
7	P	0.72	1/212 (0.5%)	0.67	0/326
All	All	0.36	4/62222 (0.0%)	0.60	10/84280 (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
5	L	0	1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	N	1	A	OP3-P	-10.19	1.49	1.61
6	O	1	DA	OP3-P	-10.18	1.49	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	P	1	A	OP3-P	-10.14	1.49	1.61
6	M	1	DA	OP3-P	-10.10	1.49	1.61

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	814	CYS	N-CA-C	-5.33	96.60	111.00
5	L	577	HIS	C-N-CA	-5.32	108.39	121.70
5	K	577	HIS	N-CA-C	-5.27	96.77	111.00
2	C	436	ARG	NE-CZ-NH1	5.24	122.92	120.30
3	I	850	LYS	C-N-CD	5.22	139.37	128.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	L	148	ARG	Sidechain

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	1759	0	1785	10	0
1	B	1759	0	1785	11	0
1	F	1759	0	1785	11	0
1	G	1759	0	1785	11	0
2	C	9285	0	9291	156	0
2	H	9235	0	9242	161	0
3	D	8990	0	9174	155	0
3	I	9068	0	9265	152	0
4	E	600	0	607	10	0
4	J	600	0	607	6	0
5	K	7665	0	7524	735	0
5	L	7665	0	7524	786	0
6	M	311	0	168	19	0
6	O	311	0	168	5	0
7	N	191	0	98	11	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	P	191	0	98	8	0
8	D	2	0	0	1	0
8	I	2	0	0	0	0
9	D	1	0	0	0	0
9	I	1	0	0	0	0
All	All	61154	0	60906	2127	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 17.

The worst 5 of 2127 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:L:720:MET:HE3	5:L:723:PHE:CE2	1.20	1.64
5:K:69:MET:CG	5:K:97:LEU:HD22	1.28	1.61
5:L:184:THR:HG22	5:L:312:LEU:CD2	1.17	1.61
5:L:219:MET:HG2	5:L:227:PHE:CE1	1.37	1.60
5:L:468:LEU:HA	5:L:617:ALA:CB	1.24	1.59

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	225/329 (68%)	202 (90%)	19 (8%)	4 (2%)	8	41
1	B	225/329 (68%)	205 (91%)	20 (9%)	0	100	100
1	F	225/329 (68%)	202 (90%)	19 (8%)	4 (2%)	8	41
1	G	225/329 (68%)	205 (91%)	19 (8%)	1 (0%)	34	72
2	C	1171/1342 (87%)	894 (76%)	211 (18%)	66 (6%)	2	21

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	H	1165/1342 (87%)	889 (76%)	206 (18%)	70 (6%)	1	19
3	D	1143/1416 (81%)	867 (76%)	235 (21%)	41 (4%)	3	28
3	I	1156/1416 (82%)	869 (75%)	240 (21%)	47 (4%)	3	25
4	E	73/90 (81%)	59 (81%)	8 (11%)	6 (8%)	1	13
4	J	73/90 (81%)	59 (81%)	8 (11%)	6 (8%)	1	13
5	K	959/974 (98%)	689 (72%)	201 (21%)	69 (7%)	1	16
5	L	959/974 (98%)	694 (72%)	200 (21%)	65 (7%)	1	17
All	All	7599/8960 (85%)	5834 (77%)	1386 (18%)	379 (5%)	2	22

5 of 379 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	51	MET
2	C	43	PRO
2	C	63	SER
2	C	115	LYS
2	C	216	THR

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	195/286 (68%)	191 (98%)	4 (2%)	53	72
1	B	195/286 (68%)	188 (96%)	7 (4%)	35	59
1	F	195/286 (68%)	191 (98%)	4 (2%)	53	72
1	G	195/286 (68%)	188 (96%)	7 (4%)	35	59
2	C	1016/1157 (88%)	937 (92%)	79 (8%)	12	38
2	H	1011/1157 (87%)	934 (92%)	77 (8%)	13	39
3	D	962/1177 (82%)	879 (91%)	83 (9%)	10	35
3	I	971/1177 (82%)	889 (92%)	82 (8%)	11	36
4	E	65/74 (88%)	62 (95%)	3 (5%)	27	53

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	J	65/74 (88%)	62 (95%)	3 (5%)	27	53
5	K	822/835 (98%)	724 (88%)	98 (12%)	5	22
5	L	822/835 (98%)	732 (89%)	90 (11%)	6	25
All	All	6514/7630 (85%)	5977 (92%)	537 (8%)	11	37

5 of 537 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	L	191	LEU
5	L	301	GLN
5	L	178	GLU
5	L	788	LEU
2	H	192	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 62 such sidechains are listed below:

Mol	Chain	Res	Type
3	I	419	HIS
5	L	521	GLN
5	K	194	GLN
5	L	518	GLN
5	L	831	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
7	N	8/9 (88%)	3 (37%)	0
7	P	8/9 (88%)	1 (12%)	0
All	All	16/18 (88%)	4 (25%)	0

All (4) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
7	N	2	U
7	N	6	C
7	N	7	U
7	P	7	U

There are no RNA pucker outliers to report.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

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 [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	227/329 (68%)	-0.50	0 100 100	178, 268, 367, 400	0
1	B	227/329 (68%)	-0.06	12 (5%) 26 24	237, 380, 491, 539	0
1	F	227/329 (68%)	-0.50	0 100 100	192, 268, 357, 401	0
1	G	227/329 (68%)	-0.21	2 (0%) 84 77	256, 379, 484, 537	0
2	C	1179/1342 (87%)	-0.58	14 (1%) 79 70	126, 241, 378, 510	0
2	H	1173/1342 (87%)	-0.57	7 (0%) 89 84	143, 251, 375, 532	0
3	D	1149/1416 (81%)	-0.39	28 (2%) 59 50	181, 301, 441, 641	0
3	I	1160/1416 (81%)	-0.39	34 (2%) 51 41	175, 282, 433, 662	0
4	E	75/90 (83%)	0.17	2 (2%) 54 45	285, 343, 385, 396	0
4	J	75/90 (83%)	0.12	3 (4%) 38 31	329, 349, 365, 376	0
5	K	961/974 (98%)	-0.36	25 (2%) 56 46	178, 278, 461, 664	0
5	L	961/974 (98%)	-0.35	23 (2%) 59 50	169, 269, 469, 638	0
6	M	15/15 (100%)	0.49	2 (13%) 3 4	321, 353, 461, 465	0
6	O	15/15 (100%)	0.46	2 (13%) 3 4	331, 351, 543, 550	0
7	N	9/9 (100%)	0.00	0 100 100	258, 268, 381, 391	0
7	P	9/9 (100%)	-0.06	0 100 100	236, 245, 375, 395	0
All	All	7689/9008 (85%)	-0.42	154 (2%) 65 56	126, 279, 441, 664	0

The worst 5 of 154 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
5	L	65	ASP	14.6
5	K	6	GLY	8.2
5	L	64	HIS	7.8
5	K	5	LEU	6.4
5	K	25	VAL	6.2

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, 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(\AA^2)	Q<0.9
8	ZN	I	1501	1/1	0.75	0.13	131,131,131,131	0
9	MG	D	1503	1/1	0.80	0.25	10,10,10,10	0
9	MG	I	1503	1/1	0.85	0.12	52,52,52,52	0
8	ZN	D	1501	1/1	0.90	0.17	106,106,106,106	0
8	ZN	I	1502	1/1	0.96	0.10	117,117,117,117	0
8	ZN	D	1502	1/1	0.98	0.19	84,84,84,84	0

6.5 Other polymers [i](#)

There are no such residues in this entry.