



# Full wwPDB X-ray Structure Validation Report ⓘ

Jul 16, 2024 – 12:05 PM EDT

PDB ID : 8VM9  
Title : The crystal structure of rhinovirus B14 RNA replication element sD-loop mutant in complex with Fab BL3-6  
Authors : Das, N.K.; Koirala, D.  
Deposited on : 2024-01-13  
Resolution : 2.20 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](mailto: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>.

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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 : 2.37.1  
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) : 2.37.1

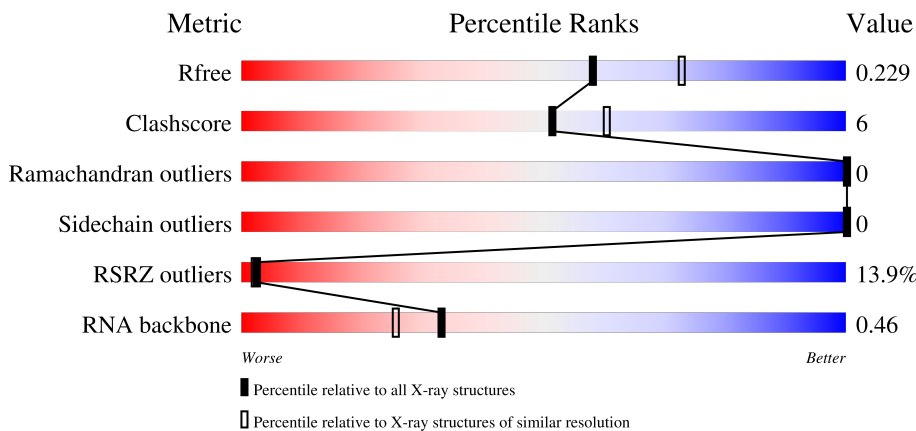
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.20 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.



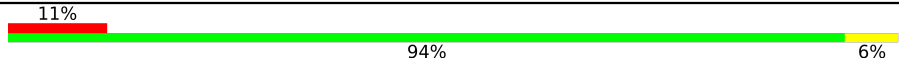
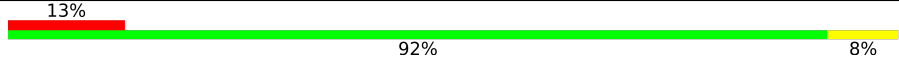
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)
RNA backbone	3102	1032 (2.60-1.80)

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  $\geq 3$ , 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	C	85	
1	R	85	
2	A	233	
2	H	233	

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Mol	Chain	Length	Quality of chain
3	B	215	 11% 94% 6%
3	L	215	 13% 92% 8%

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 10512 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 RNA chain called RNA (85-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	R	85	1801	805	313	598	85	0	0	0
1	C	85	1801	805	313	598	85	0	0	0

- Molecule 2 is a protein called Heavy Chain of Fab BL3-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	A	225	1678	1055	287	330	6	0	0	0
2	H	225	1678	1055	287	330	6	0	0	0

- Molecule 3 is a protein called Light Chain of Fab BL3-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	B	215	1643	1025	275	337	6	0	0	0
3	L	215	1643	1025	275	337	6	0	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	R	29	Total 29	O 29	0	0
4	C	12	Total 12	O 12	0	0
4	A	81	Total 81	O 81	0	0
4	B	62	Total 62	O 62	0	0

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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
4	H	59	Total	O	0	0
			59	59		
4	L	25	Total	O	0	0
			25	25		

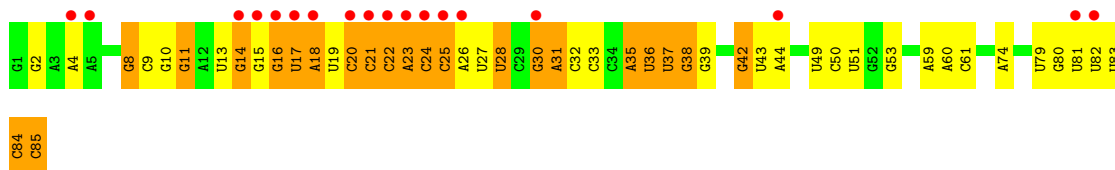
### 3 Residue-property plots [i](#)

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.

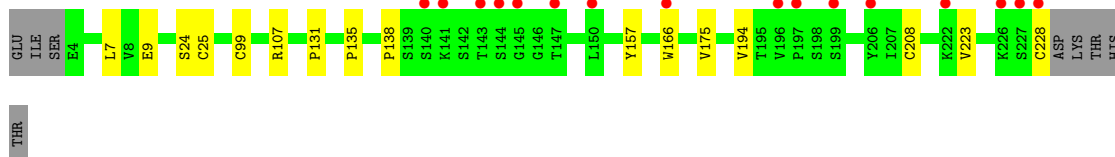
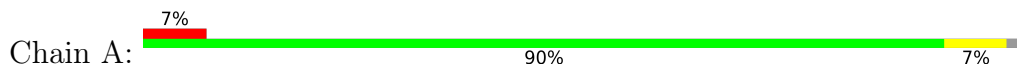
- Molecule 1: RNA (85-MER)



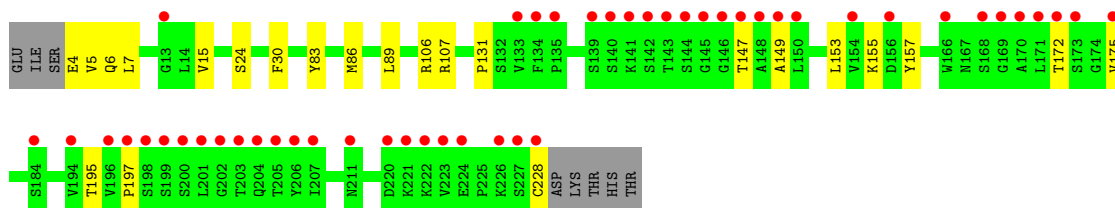
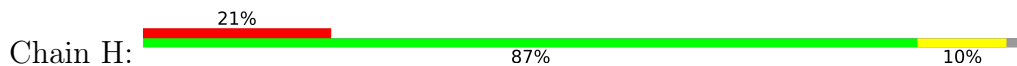
- Molecule 1: RNA (85-MER)



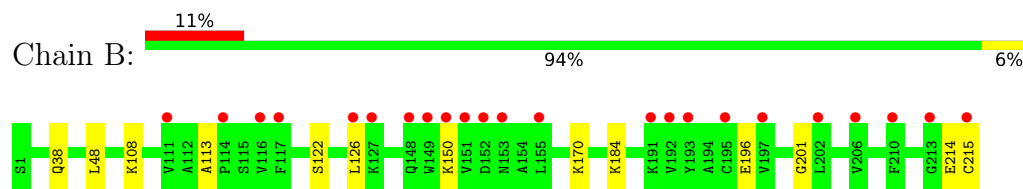
- Molecule 2: Heavy Chain of Fab BL3-6



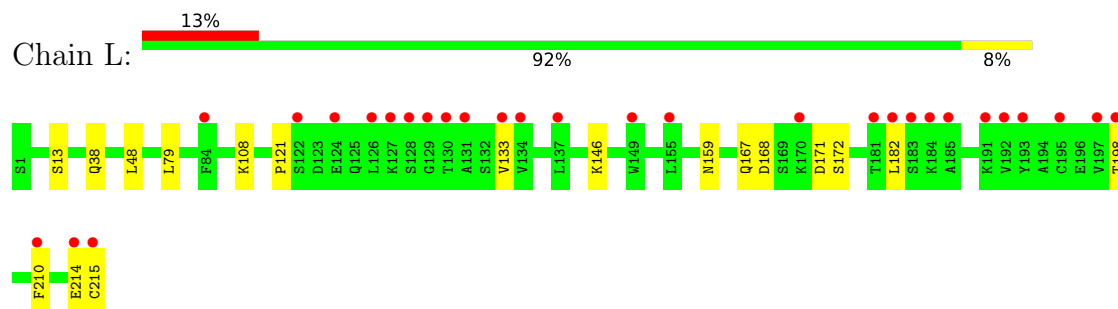
- Molecule 2: Heavy Chain of Fab BL3-6



## ● Molecule 3: Light Chain of Fab BL3-6



## ● Molecule 3: Light Chain of Fab BL3-6



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	70.92Å 79.21Å 141.32Å 90.00° 98.87° 90.00°	Depositor
Resolution (Å)	69.82 – 2.20 139.63 – 2.20	Depositor EDS
% Data completeness (in resolution range)	98.0 (69.82-2.20) 88.6 (139.63-2.20)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.31 (at 2.20Å)	Xtrriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, $R_{free}$	0.200 , 0.229 0.200 , 0.229	Depositor DCC
$R_{free}$ test set	2000 reflections (2.58%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	45.0	Xtrriage
Anisotropy	0.515	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.29 , 56.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	10512	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	116.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.72% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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

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	0.45	1/2010 (0.0%)	0.96	7/3128 (0.2%)
1	R	0.59	0/2010	1.05	5/3128 (0.2%)
2	A	0.66	1/1719 (0.1%)	0.74	0/2339
2	H	0.58	0/1719	0.71	0/2339
3	B	0.56	0/1678	0.68	0/2277
3	L	0.49	0/1678	0.64	0/2277
All	All	0.56	2/10814 (0.0%)	0.84	12/15488 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	99	CYS	CB-SG	-6.57	1.71	1.82
1	C	60	A	N7-C5	-5.71	1.35	1.39

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	60	A	C5-C6-N1	-8.49	113.45	117.70
1	C	59	A	O4'-C1'-N9	-7.62	102.10	108.20
1	C	60	A	C8-N9-C4	-7.35	102.86	105.80
1	R	61	C	C6-N1-C2	-7.16	117.44	120.30
1	C	60	A	C4-C5-C6	7.08	120.54	117.00
1	R	61	C	C5-C4-N4	6.29	124.61	120.20
1	C	60	A	C6-C5-N7	-6.13	128.01	132.30
1	C	61	C	C6-N1-C2	-5.83	117.97	120.30
1	R	61	C	N3-C2-O2	-5.73	117.89	121.90
1	R	58	A	OP2-P-O3'	5.46	117.20	105.20
1	R	68	C	O5'-P-OP2	-5.34	100.89	105.70
1	C	59	A	N7-C8-N9	-5.09	111.25	113.80

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts [i](#)

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	1801	0	914	30	0
1	R	1801	0	914	29	0
2	A	1678	0	1638	12	0
2	H	1678	0	1638	16	0
3	B	1643	0	1595	11	0
3	L	1643	0	1595	10	0
4	A	81	0	0	0	0
4	B	62	0	0	1	0
4	C	12	0	0	0	0
4	H	59	0	0	0	0
4	L	25	0	0	0	0
4	R	29	0	0	1	0
All	All	10512	0	8294	100	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 6.

All (100) 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:107:ARG:HH21	2:H:107:ARG:HH21	1.22	0.88
1:C:20:C:H4'	1:C:21:C:H5'	1.68	0.73
2:A:107:ARG:NH2	2:H:107:ARG:HH21	1.92	0.67
1:R:14:G:H2'	1:R:15:G:C8	2.30	0.67
1:C:30:G:H5'	1:C:31:A:OP2	1.97	0.65
2:H:131:PRO:HB3	2:H:157:TYR:HB3	1.78	0.64
1:C:19:U:H3'	1:C:20:C:H5''	1.81	0.62
2:A:138:PRO:HD3	2:A:223:VAL:HG12	1.82	0.62
1:C:9:C:H5'	1:C:42:G:H5'	1.82	0.61
3:B:150:LYS:NZ	3:B:196:GLU:OE1	2.28	0.61
1:C:33:C:H42	1:C:39:G:H1	1.50	0.60
1:C:22:C:H2'	1:C:23:A:H4'	1.84	0.59
2:A:175:VAL:HG22	2:A:194:VAL:HG12	1.83	0.58
1:R:44:A:H4'	1:R:45:G:H5''	1.85	0.58
1:R:45:G:H2'	1:R:46:U:C6	2.39	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:25:C:H2'	1:C:26:A:O4'	2.04	0.57
1:R:45:G:OP2	3:B:170:LYS:HE3	2.04	0.57
1:R:13:U:H2'	1:R:14:G:O4'	2.06	0.56
2:A:107:ARG:HH21	2:H:107:ARG:NH2	1.99	0.56
1:R:14:G:H2'	1:R:15:G:H8	1.70	0.54
2:H:4:GLU:OE1	2:H:4:GLU:HA	2.07	0.54
1:R:25:C:H2'	1:R:26:A:C8	2.42	0.54
1:C:82:U:H2'	1:C:83:U:C6	2.43	0.54
3:B:38:GLN:HB2	3:B:48:LEU:HD11	1.90	0.54
2:A:7:LEU:HD22	2:A:25:CYS:SG	2.49	0.53
1:R:45:G:H2'	1:R:46:U:H6	1.73	0.53
2:A:228:CYS:HB2	3:B:215:CYS:HA	1.90	0.53
1:R:19:U:H4'	1:R:20:C:O5'	2.09	0.52
1:C:19:U:C5	1:C:20:C:H2'	2.44	0.52
3:L:38:GLN:HB2	3:L:48:LEU:HD11	1.91	0.52
1:C:20:C:C4'	1:C:21:C:H5'	2.38	0.52
2:H:6:GLN:C	2:H:7:LEU:HD12	2.30	0.52
1:C:18:A:H4'	1:C:19:U:H5'	1.90	0.52
3:B:214:GLU:HG3	3:B:215:CYS:H	1.75	0.52
3:L:146:LYS:HB3	3:L:198:THR:HB	1.92	0.51
1:R:16:G:N2	1:R:24:C:O2	2.43	0.51
1:R:11:G:H3'	1:R:12:A:H8	1.77	0.50
1:R:20:C:H2'	1:R:21:C:O4'	2.12	0.50
1:R:26:A:H2'	1:R:27:U:C6	2.48	0.49
3:L:210:PHE:HB2	3:L:214:GLU:OE2	2.11	0.49
1:C:14:G:O6	1:C:24:C:N4	2.45	0.49
3:B:126:LEU:O	3:B:184:LYS:HD3	2.11	0.49
2:H:172:THR:O	2:H:175:VAL:HG12	2.12	0.49
1:C:37:U:H3'	1:C:38:G:O4'	2.12	0.49
2:H:153:LEU:HD21	2:H:155:LYS:HD2	1.94	0.49
1:C:35:A:N1	1:C:50:C:O2'	2.43	0.48
2:H:15:VAL:HG11	2:H:89:LEU:HD13	1.94	0.48
2:A:166:TRP:CH2	2:A:208:CYS:HB3	2.49	0.48
1:C:24:C:H3'	1:C:25:C:H5	1.79	0.47
1:C:24:C:O2'	1:C:25:C:OP1	2.32	0.47
2:H:147:THR:HG22	2:H:197:PRO:HA	1.96	0.47
3:B:108:LYS:NZ	4:B:305:HOH:O	2.47	0.47
1:C:11:G:H1	1:C:28:U:H3	1.62	0.47
2:A:135:PRO:HD2	3:B:122:SER:HB3	1.97	0.46
1:R:28:U:H2'	1:R:29:C:O4'	2.15	0.46
1:R:81:U:H2'	1:R:82:U:C6	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:131:PRO:HB3	2:A:157:TYR:HB3	1.98	0.46
1:R:17:U:H2'	1:R:18:A:O4'	2.15	0.46
4:R:118:HOH:O	2:H:106:ARG:HG2	2.16	0.46
1:R:18:A:C5	1:R:19:U:H1'	2.50	0.46
1:R:11:G:N2	1:R:29:C:H1'	2.31	0.45
1:R:15:G:C6	1:R:16:G:C6	3.04	0.45
1:C:14:G:H1	1:C:25:C:H42	1.64	0.45
1:R:83:U:H2'	1:R:84:C:O4'	2.17	0.45
3:L:168:ASP:HB3	3:L:171:ASP:OD1	2.17	0.44
1:R:17:U:H2'	1:R:18:A:C8	2.52	0.44
1:C:13:U:H2'	1:C:14:G:C8	2.53	0.44
1:C:14:G:C2	1:C:15:G:C4	3.06	0.44
3:L:159:ASN:HD22	3:L:182:LEU:HD21	1.82	0.44
1:R:39:G:H2'	1:R:40:G:C8	2.53	0.44
1:R:2:G:H1	1:R:84:C:H42	1.65	0.44
2:A:135:PRO:HD2	3:B:122:SER:CB	2.48	0.44
2:H:228:CYS:HB2	3:L:215:CYS:HB3	1.98	0.44
3:L:13:SER:O	3:L:108:LYS:HE3	2.17	0.44
1:C:14:G:H1	1:C:25:C:N4	2.16	0.43
2:H:86:MET:HB3	2:H:89:LEU:HD21	2.00	0.43
1:R:3:A:H61	1:R:83:U:H3	1.67	0.43
1:R:71:U:H2'	1:R:72:G:O4'	2.18	0.43
3:L:167:GLN:HG2	3:L:172:SER:HA	2.00	0.43
1:C:14:G:H2'	1:C:15:G:C8	2.53	0.43
1:C:36:U:H1'	1:C:38:G:C6	2.54	0.43
2:A:9:GLU:HA	2:A:24:SER:O	2.19	0.43
3:B:214:GLU:HG3	3:B:215:CYS:N	2.34	0.43
1:C:8:G:OP2	1:C:8:G:H8	2.02	0.42
1:R:16:G:H3'	1:R:17:U:C5	2.55	0.42
2:H:24:SER:HB3	2:H:83:TYR:CD1	2.55	0.42
1:C:19:U:H2'	1:C:20:C:C6	2.55	0.42
1:C:84:C:H2'	1:C:85:C:H5'	2.01	0.42
1:R:25:C:H2'	1:R:26:A:H8	1.83	0.41
3:B:113:ALA:HB2	3:B:201:GLY:O	2.20	0.41
1:R:16:G:N2	1:R:24:C:C2	2.88	0.41
3:L:79:LEU:HA	3:L:79:LEU:HD12	1.81	0.41
2:H:149:ALA:HB2	2:H:195:THR:HG22	2.03	0.41
1:R:12:A:O2'	1:R:13:U:H5'	2.21	0.41
1:C:17:U:O2	1:C:19:U:H1'	2.21	0.41
1:C:42:G:C6	1:C:43:U:C4	3.08	0.41
3:L:121:PRO:HD3	3:L:133:VAL:HG22	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:14:G:C2	1:C:26:A:C2	3.08	0.40
1:C:16:G:H1	1:C:23:A:H61	1.70	0.40
2:H:5:VAL:HG13	2:H:30:PHE:CD1	2.56	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	223/233 (96%)	214 (96%)	9 (4%)	0	100	100
2	H	223/233 (96%)	217 (97%)	6 (3%)	0	100	100
3	B	213/215 (99%)	205 (96%)	8 (4%)	0	100	100
3	L	213/215 (99%)	207 (97%)	6 (3%)	0	100	100
All	All	872/896 (97%)	843 (97%)	29 (3%)	0	100	100

There are no Ramachandran outliers to report.

#### 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	186/194 (96%)	186 (100%)	0	100	100
2	H	186/194 (96%)	186 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	B	190/190 (100%)	190 (100%)	0	100	100
3	L	190/190 (100%)	190 (100%)	0	100	100
All	All	752/768 (98%)	752 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	C	84/85 (98%)	35 (41%)	1 (1%)
1	R	84/85 (98%)	24 (28%)	2 (2%)
All	All	168/170 (98%)	59 (35%)	3 (1%)

All (59) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	R	3	A
1	R	4	A
1	R	9	C
1	R	12	A
1	R	13	U
1	R	14	G
1	R	15	G
1	R	16	G
1	R	17	U
1	R	20	C
1	R	23	A
1	R	24	C
1	R	25	C
1	R	26	A
1	R	31	A
1	R	37	U
1	R	38	G
1	R	42	G
1	R	47	A
1	R	74	A
1	R	80	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	R	81	U
1	R	84	C
1	R	85	C
1	C	2	G
1	C	4	A
1	C	8	G
1	C	10	G
1	C	11	G
1	C	14	G
1	C	16	G
1	C	17	U
1	C	18	A
1	C	20	C
1	C	21	C
1	C	22	C
1	C	23	A
1	C	24	C
1	C	25	C
1	C	27	U
1	C	28	U
1	C	30	G
1	C	31	A
1	C	32	C
1	C	35	A
1	C	36	U
1	C	37	U
1	C	38	G
1	C	42	G
1	C	44	A
1	C	49	U
1	C	51	U
1	C	53	G
1	C	74	A
1	C	79	U
1	C	80	G
1	C	81	U
1	C	84	C
1	C	85	C

All (3) RNA pucker outliers are listed below:

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Mol	Chain	Res	Type
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Mol	Chain	Res	Type
1	R	13	U
1	R	19	U
1	C	24	C

#### 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](#)

There are no ligands in this entry.

#### 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	C	85/85 (100%)	1.33	18 (21%) 0 0	51, 184, 467, 623	0
1	R	85/85 (100%)	0.41	11 (12%) 3 3	49, 129, 371, 433	0
2	A	225/233 (96%)	0.71	16 (7%) 16 14	39, 55, 145, 190	0
2	H	225/233 (96%)	1.77	49 (21%) 0 0	41, 65, 180, 229	0
3	B	215/215 (100%)	0.82	23 (10%) 6 5	40, 67, 115, 164	0
3	L	215/215 (100%)	0.91	29 (13%) 3 2	43, 88, 156, 206	0
All	All	1050/1066 (98%)	1.03	146 (13%) 2 2	39, 77, 207, 623	0

All (146) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	H	145	GLY	25.1
2	H	228	CYS	17.0
1	C	16	G	16.2
2	H	144	SER	14.6
2	A	144	SER	14.5
1	C	22	C	13.9
2	H	146	GLY	13.2
3	L	215	CYS	13.1
2	H	198	SER	13.0
2	H	196	VAL	11.8
2	H	227	SER	11.5
2	H	140	SER	10.3
2	H	223	VAL	9.7
3	B	215	CYS	9.4
1	C	15	G	9.0
2	H	166	TRP	8.8
2	H	171	LEU	8.8
2	H	147	THR	8.8
2	H	226	LYS	8.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	A	227	SER	8.3
2	H	142	SER	8.2
2	H	197	PRO	8.0
1	R	19	U	7.9
1	C	18	A	7.7
3	L	184	LYS	7.5
3	L	214	GLU	7.5
2	H	201	LEU	7.3
2	H	172	THR	6.9
2	H	202	GLY	6.7
2	A	228	CYS	6.6
3	B	151	VAL	6.5
2	H	205	THR	6.5
2	H	203	THR	6.5
1	C	17	U	6.5
1	C	25	C	6.5
2	H	206	TYR	6.4
2	H	199	SER	6.3
2	H	204	GLN	6.1
3	L	182	LEU	6.1
2	A	145	GLY	6.1
2	A	143	THR	6.1
3	L	122	SER	5.9
3	B	192	VAL	5.8
2	H	149	ALA	5.7
2	H	222	LYS	5.7
2	H	143	THR	5.7
3	L	124	GLU	5.6
1	R	20	C	5.5
1	R	18	A	5.5
2	H	148	ALA	5.3
2	H	133	VAL	5.2
3	L	131	ALA	5.0
1	R	22	C	4.6
2	H	170	ALA	4.5
3	L	185	ALA	4.5
3	L	198	THR	4.4
1	C	44	A	4.4
2	A	147	THR	4.4
3	B	152	ASP	4.2
2	A	166	TRP	4.1
2	H	207	ILE	4.1

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	26	A	4.1
2	H	168	SER	4.1
1	C	14	G	4.0
2	H	134	PHE	4.0
2	H	169	GLY	4.0
2	H	150	LEU	3.9
3	B	149	TRP	3.8
3	L	155	LEU	3.8
3	B	150	LYS	3.8
3	L	130	THR	3.8
3	L	191	LYS	3.8
2	H	220	ASP	3.7
2	H	200	SER	3.7
3	L	195	CYS	3.5
1	R	21	C	3.5
3	B	148	GLN	3.5
3	L	149	TRP	3.5
3	L	193	TYR	3.4
3	L	210	PHE	3.3
3	L	129	GLY	3.3
2	H	194	VAL	3.3
3	B	127	LYS	3.3
1	C	24	C	3.3
2	H	141	LYS	3.2
3	L	192	VAL	3.2
3	L	133	VAL	3.2
3	B	116	VAL	3.1
1	C	5	A	3.1
3	L	181	THR	3.1
2	A	140	SER	3.1
1	R	25	C	3.1
2	H	221	LYS	3.1
2	A	197	PRO	3.0
3	B	191	LYS	3.0
2	A	206	TYR	2.9
3	L	84	PHE	2.9
1	C	81	U	2.9
2	A	226	LYS	2.9
1	C	82	U	2.9
3	L	197	VAL	2.9
2	H	135	PRO	2.9
2	H	173	SER	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
3	B	213	GLY	2.8
2	A	222	LYS	2.8
2	H	211	ASN	2.8
3	B	117	PHE	2.8
3	B	210	PHE	2.8
1	R	15	G	2.8
1	C	23	A	2.8
1	R	17	U	2.7
3	L	183	SER	2.7
3	L	134	VAL	2.7
3	B	197	VAL	2.7
3	B	126	LEU	2.7
3	L	126	LEU	2.7
1	R	16	G	2.6
2	H	224	GLU	2.6
3	B	202	LEU	2.6
1	C	21	C	2.6
3	L	128	SER	2.5
3	B	111	VAL	2.5
3	L	127	LYS	2.5
3	B	155	LEU	2.5
2	A	150	LEU	2.5
3	L	137	LEU	2.5
3	B	195	CYS	2.4
2	A	196	VAL	2.4
2	H	175	VAL	2.4
2	H	154	VAL	2.3
3	B	193	TYR	2.3
3	B	206	VAL	2.3
2	H	156	ASP	2.2
2	H	184	SER	2.2
1	C	4	A	2.2
1	R	14	G	2.2
2	H	13	GLY	2.2
3	B	153	ASN	2.2
1	R	26	A	2.1
1	C	20	C	2.1
2	A	199	SER	2.1
2	H	139	SER	2.1
2	A	141	LYS	2.1
3	L	170	LYS	2.1
3	B	114	PRO	2.0

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Mol	Chain	Res	Type	RSRZ
1	C	30	G	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](#)

There are no ligands in this entry.

## 6.5 Other polymers [i](#)

There are no such residues in this entry.