



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 03:00 AM UTC

PDB ID : 1UVM / pdb_00001uvm
Title : The structural basis for RNA specificity and Ca²⁺ inhibition of an RNA-dependent RNA polymerase phi6p2 with 5NT RNA conformation A
Authors : Salgado, P.S.; Makeyev, E.V.; Butcher, S.; Bamford, D.; Stuart, D.I.; Grimes, J.M.
Deposited on : 2004-01-21
Resolution : 2.00 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	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

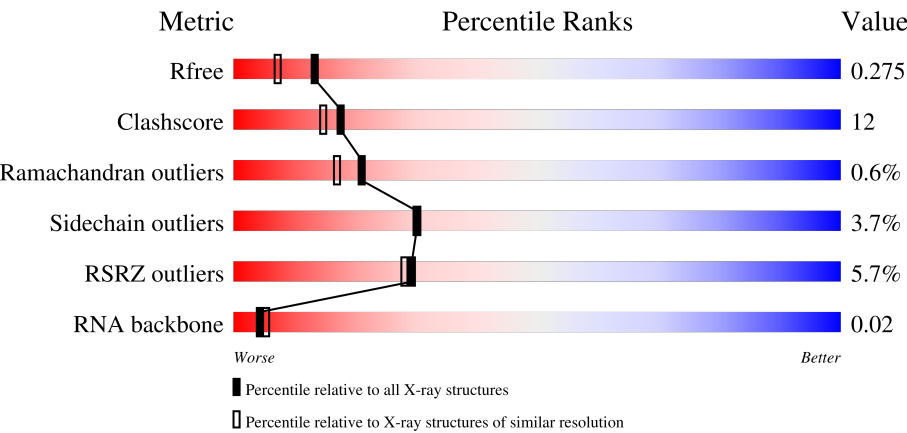
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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}	180053	10052 (2.00-2.00)
Clashscore	190562	11152 (2.00-2.00)
Ramachandran outliers	187476	11031 (2.00-2.00)
Sidechain outliers	187428	11029 (2.00-2.00)
RSRZ outliers	180081	10067 (2.00-2.00)
RNA backbone	3983	1000 (2.36-1.64)

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	664	
1	B	664	
1	C	664	
2	D	5	

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Mol	Chain	Length	Quality of chain
2	E	5	
2	F	5	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 16529 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-directed RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	664	Total	C	N	O	S	0	0	0
			5265	3342	914	977	32			
1	B	664	Total	C	N	O	S	0	0	0
			5265	3342	914	977	32			
1	C	664	Total	C	N	O	S	0	0	0
			5265	3342	914	977	32			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	456	MET	ILE	conflict	UNP P11124
B	456	MET	ILE	conflict	UNP P11124
C	456	MET	ILE	conflict	UNP P11124

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	5	Total	C	N	O	P	0	0	0
			97	45	12	36	4			
2	E	5	Total	C	N	O	P	0	0	0
			97	45	12	36	4			
2	F	5	Total	C	N	O	P	0	0	0
			97	45	12	36	4			

- Molecule 3 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn).

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

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	1	Total 1	Mn 1	0	0

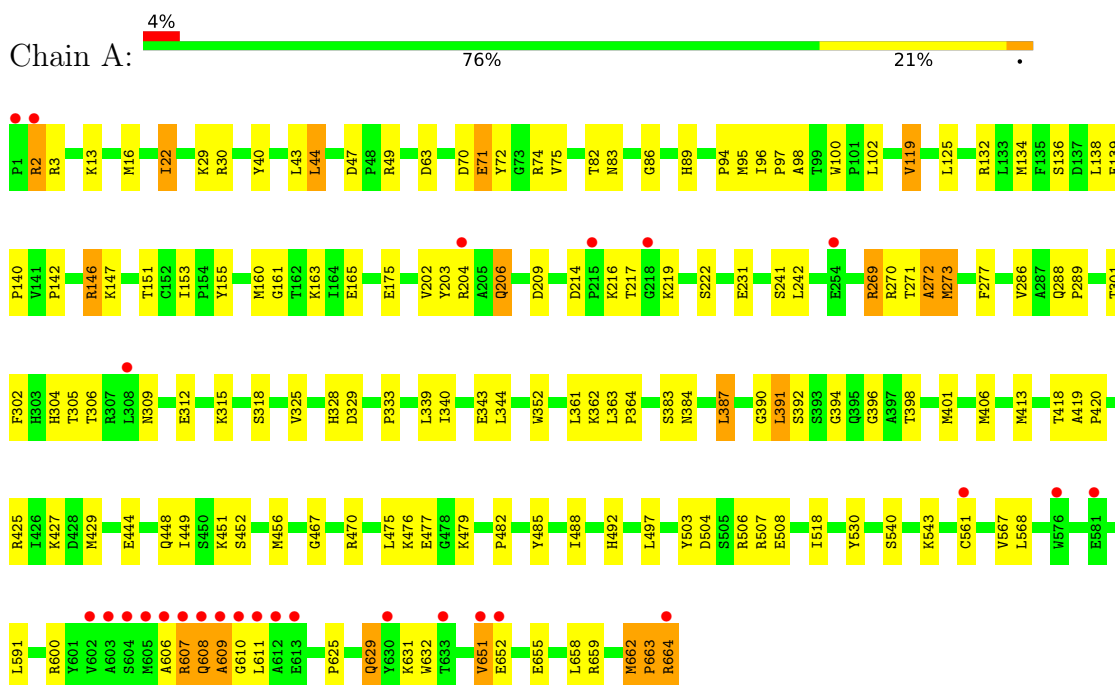
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	158	Total 158	O 158	0	0
4	B	181	Total 181	O 181	0	0
4	C	99	Total 99	O 99	0	0
4	D	1	Total 1	O 1	0	0
4	F	1	Total 1	O 1	0	0

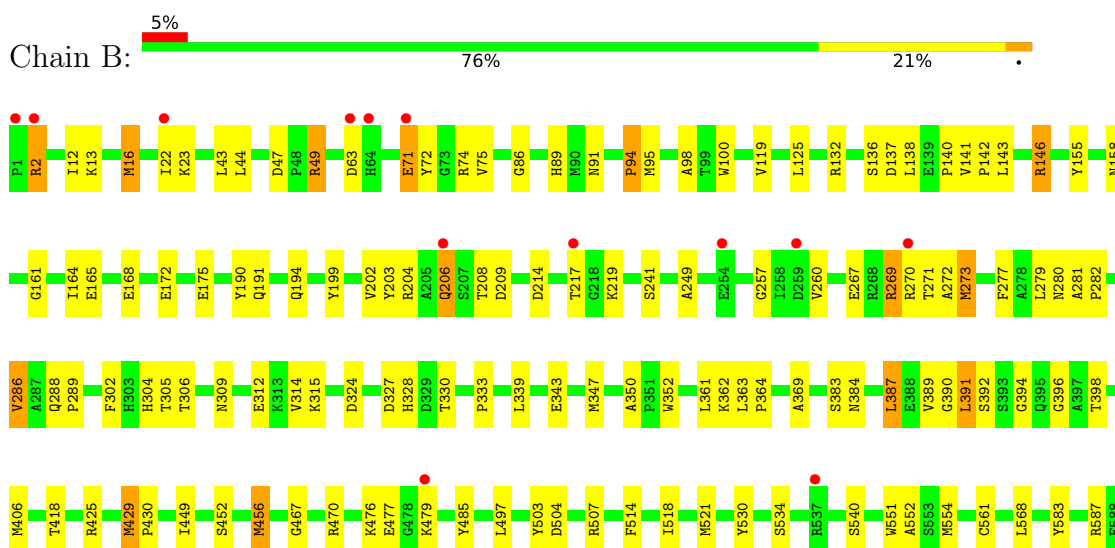
3 Residue-property plots

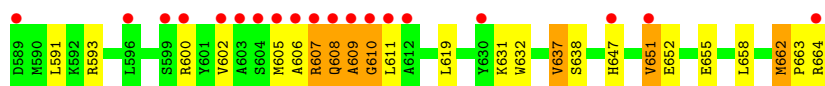
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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-directed RNA polymerase

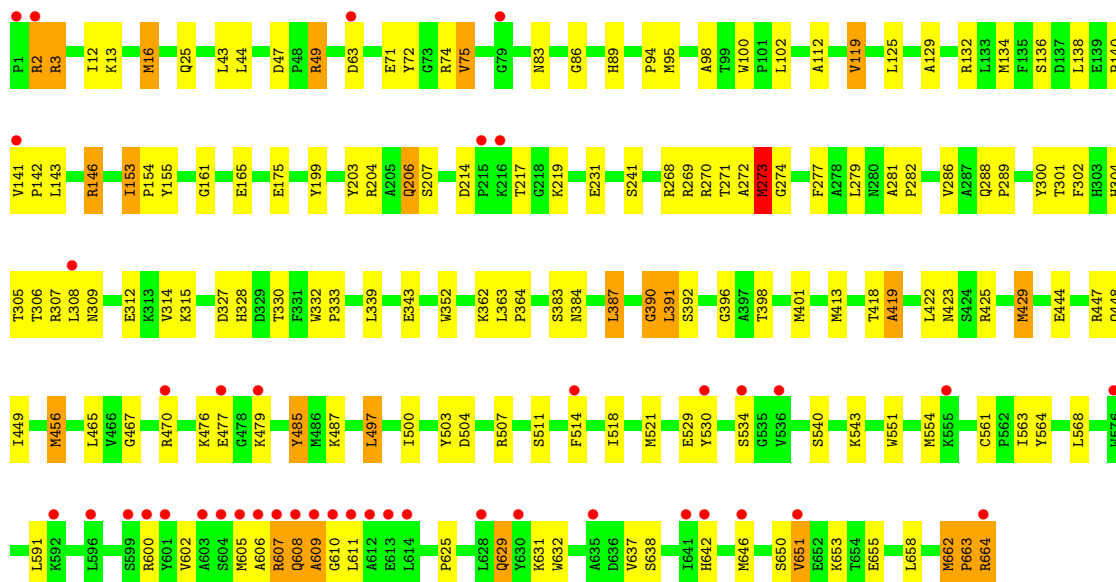
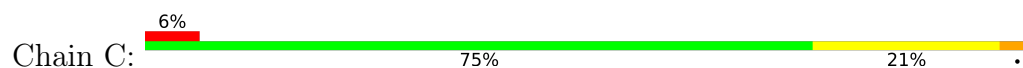


• Molecule 1: RNA-directed RNA polymerase

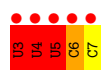




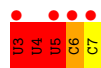
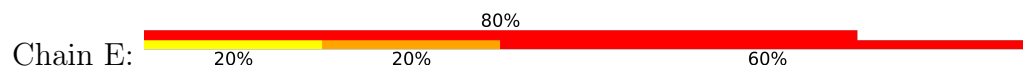
• Molecule 1: RNA-directed RNA polymerase



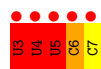
• Molecule 2: 5'-R(*UP*UP*UP*CP*CP)-3'



• Molecule 2: 5'-R(*UP*UP*UP*CP*CP)-3'



• Molecule 2: 5'-R(*UP*UP*UP*CP*CP)-3'



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	105.95Å 91.88Å 140.76Å 90.00° 101.56° 90.00°	Depositor
Resolution (Å)	19.82 – 2.00 19.82 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.0 (19.82-2.00) 99.0 (19.82-2.00)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.99 (at 2.01Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.241 , 0.276 0.240 , 0.275	Depositor DCC
R_{free} test set	8877 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å ²)	33.3	Xtriage
Anisotropy	0.675	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 37.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	16529	wwPDB-VP
Average B, all atoms (Å ²)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.87% 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: MN

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	0.81	4/5396 (0.1%)	1.09	30/7297 (0.4%)
1	B	0.82	2/5396 (0.0%)	1.12	36/7297 (0.5%)
1	C	0.78	5/5396 (0.1%)	1.12	32/7297 (0.4%)
2	D	0.65	0/106	1.57	5/162 (3.1%)
2	E	0.59	0/106	1.50	5/162 (3.1%)
2	F	0.62	0/106	1.52	6/162 (3.7%)
All	All	0.80	11/16506 (0.1%)	1.12	114/22377 (0.5%)

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
2	D	1	1
2	E	1	1
2	F	1	1
All	All	3	3

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	456	MET	SD-CE	-16.48	1.38	1.79
1	A	456	MET	SD-CE	-10.80	1.52	1.79
1	C	456	MET	SD-CE	-10.29	1.53	1.79
1	C	134	MET	SD-CE	-7.79	1.60	1.79
1	B	429	MET	SD-CE	-7.43	1.60	1.79
1	A	134	MET	SD-CE	-6.20	1.64	1.79
1	C	429	MET	SD-CE	-6.07	1.64	1.79
1	A	16	MET	SD-CE	-5.92	1.64	1.79
1	C	273	MET	SD-CE	-5.58	1.65	1.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	413	MET	SD-CE	-5.53	1.65	1.79
1	C	413	MET	SD-CE	-5.29	1.66	1.79

All (114) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	100	TRP	N-CA-C	-9.13	98.56	110.07
1	C	100	TRP	N-CA-C	-8.66	99.16	110.07
1	C	141	VAL	CA-C-N	-8.30	111.34	120.14
1	C	141	VAL	C-N-CA	-8.30	111.34	120.14
1	C	302	PHE	N-CA-C	8.18	124.44	113.97
1	B	136	SER	N-CA-C	8.10	123.71	112.04
1	A	100	TRP	N-CA-C	-8.04	99.68	109.72
1	B	302	PHE	N-CA-C	8.03	124.25	113.97
1	C	153	ILE	N-CA-C	7.99	117.67	108.96
1	B	206	GLN	N-CA-C	-7.85	92.16	107.62
2	E	5	U	N1-C1'-C2'	7.83	125.74	114.00
1	C	206	GLN	N-CA-C	-7.76	92.33	107.62
2	D	3	U	C2'-C3'-O3'	7.69	121.03	109.50
1	A	302	PHE	N-CA-C	7.62	123.62	113.72
1	A	136	SER	N-CA-C	7.61	123.00	112.04
1	A	333	PRO	N-CA-C	7.59	122.92	110.55
1	B	396	GLY	N-CA-C	7.53	122.76	114.40
1	C	363	LEU	N-CA-C	7.47	119.13	109.64
1	B	333	PRO	N-CA-C	7.46	122.72	110.55
1	A	206	GLN	N-CA-C	-7.43	92.99	107.62
1	C	333	PRO	N-CA-C	7.38	122.31	110.21
2	D	5	U	N1-C1'-C2'	7.34	125.01	114.00
1	A	396	GLY	N-CA-C	7.22	122.42	114.40
2	F	5	U	N1-C1'-C2'	7.14	124.71	114.00
1	C	390	GLY	N-CA-C	-7.13	102.68	111.45
1	C	98	ALA	N-CA-C	-7.07	101.41	110.53
1	A	98	ALA	N-CA-C	-7.06	101.42	110.53
1	C	609	ALA	N-CA-C	-7.05	100.55	110.50
1	B	390	GLY	N-CA-C	-6.97	102.87	111.45
1	B	485	TYR	N-CA-C	6.87	121.71	113.12
1	A	390	GLY	N-CA-C	-6.86	103.01	111.45
1	B	328	HIS	N-CA-C	6.85	119.33	111.11
1	A	449	ILE	N-CA-C	-6.84	98.27	108.12
1	C	328	HIS	N-CA-C	6.84	119.32	111.11
1	C	136	SER	N-CA-C	6.77	121.92	111.56
1	A	609	ALA	N-CA-C	-6.67	101.10	110.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	95	MET	N-CA-C	-6.63	101.78	110.53
1	C	95	MET	N-CA-C	-6.60	101.19	110.50
1	B	141	VAL	CA-C-N	-6.55	113.23	119.85
1	B	141	VAL	C-N-CA	-6.55	113.23	119.85
1	C	611	LEU	N-CA-C	-6.53	104.62	112.59
1	B	98	ALA	N-CA-C	-6.48	102.17	110.53
1	C	396	GLY	N-CA-C	6.46	122.25	113.99
1	B	286	VAL	N-CA-C	-6.43	106.28	111.81
1	B	611	LEU	N-CA-C	-6.42	104.76	112.59
1	B	241	SER	N-CA-C	6.41	118.91	109.24
2	D	4	U	N1-C1'-C2'	6.27	121.41	112.00
1	B	209	ASP	N-CA-C	-6.26	99.64	108.96
1	A	153	ILE	N-CA-C	6.25	115.77	108.96
1	A	22	ILE	N-CA-C	6.16	116.83	110.36
1	A	363	LEU	N-CA-C	6.08	118.48	110.08
1	A	328	HIS	N-CA-C	6.08	118.41	111.11
1	A	485	TYR	N-CA-C	6.01	120.74	113.41
1	B	609	ALA	N-CA-C	-5.99	101.41	110.28
2	E	3	U	C2'-C3'-O3'	5.94	118.42	109.50
1	A	136	SER	CA-C-N	-5.91	110.26	121.54
1	A	136	SER	C-N-CA	-5.91	110.26	121.54
2	F	3	U	C2'-C3'-O3'	5.90	118.35	109.50
1	C	449	ILE	N-CA-C	-5.84	99.72	108.12
2	F	4	U	N1-C1'-C2'	5.82	120.73	112.00
1	B	277	PHE	N-CA-C	5.82	118.37	111.33
1	B	314	VAL	N-CA-C	5.73	118.25	111.09
1	A	155	TYR	N-CA-C	5.71	119.43	112.23
1	C	277	PHE	N-CA-C	5.71	118.24	111.33
1	B	363	LEU	N-CA-C	5.69	117.06	109.83
1	C	199	TYR	N-CA-C	-5.68	101.28	110.32
1	B	637	VAL	N-CA-C	5.67	116.11	108.17
1	B	22	ILE	N-CA-C	5.64	116.28	110.36
1	C	3	ARG	N-CA-C	-5.64	102.13	110.48
1	C	129	ALA	N-CA-C	-5.64	105.21	111.36
2	E	4	U	N1-C1'-C2'	5.62	120.44	112.00
1	B	94	PRO	N-CA-C	5.61	120.09	111.57
1	B	647	HIS	CA-C-N	-5.57	117.51	122.47
1	B	647	HIS	C-N-CA	-5.57	117.51	122.47
1	C	419	ALA	N-CA-C	5.53	119.30	110.73
1	C	521	MET	N-CA-C	-5.50	105.18	111.07
1	B	199	TYR	N-CA-C	-5.50	101.57	110.32
1	C	155	TYR	N-CA-C	5.49	119.14	112.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	485	TYR	N-CA-C	5.49	120.08	112.45
1	C	207	SER	N-CA-C	5.48	119.06	112.38
2	D	5	U	C5'-C4'-C3'	5.46	123.39	115.20
2	F	5	U	C5'-C4'-C3'	5.45	123.37	115.20
2	E	5	U	C5'-C4'-C3'	5.40	123.30	115.20
1	B	449	ILE	N-CA-C	-5.39	99.79	107.77
1	A	277	PHE	N-CA-C	5.35	117.80	111.33
2	F	5	U	C1'-O4'-C4'	-5.33	104.37	109.70
1	C	314	VAL	N-CA-C	5.30	117.71	111.09
1	B	136	SER	CA-C-N	-5.28	111.46	121.54
1	B	136	SER	C-N-CA	-5.28	111.46	121.54
1	A	662	MET	CA-C-N	5.26	126.41	119.84
1	A	662	MET	C-N-CA	5.26	126.41	119.84
1	C	465	LEU	N-CA-C	5.24	117.67	111.33
1	A	272	ALA	N-CA-C	-5.23	101.41	109.52
1	B	155	TYR	N-CA-C	5.22	118.81	112.23
1	B	95	MET	N-CA-C	-5.21	103.26	110.35
1	A	40	TYR	N-CA-C	-5.21	101.15	109.07
1	C	662	MET	CA-C-N	5.21	126.35	119.84
1	C	662	MET	C-N-CA	5.21	126.35	119.84
1	A	611	LEU	N-CA-C	-5.19	106.26	112.59
1	A	242	LEU	N-CA-C	-5.18	100.08	108.52
2	D	5	U	C1'-O4'-C4'	-5.16	104.54	109.70
1	B	406	MET	N-CA-C	5.15	116.98	111.36
1	C	241	SER	N-CA-C	5.15	116.89	109.07
1	B	369	ALA	CA-C-N	5.14	124.75	119.56
1	B	369	ALA	C-N-CA	5.14	124.75	119.56
2	E	5	U	C1'-O4'-C4'	-5.13	104.57	109.70
1	B	521	MET	N-CA-C	-5.12	105.61	111.14
1	A	209	ASP	N-CA-C	-5.07	101.37	109.07
2	F	5	U	C2'-C3'-O3'	5.06	117.09	109.50
1	B	662	MET	N-CA-C	5.06	117.48	110.20
1	C	272	ALA	N-CA-C	-5.03	101.44	109.23
1	A	241	SER	N-CA-C	5.01	116.81	109.24
1	A	318	SER	N-CA-C	-5.01	106.34	112.90
1	A	329	ASP	N-CA-C	5.00	116.73	111.28

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	D	4	U	C1'
2	E	4	U	C1'

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Mol	Chain	Res	Type	Atom
2	F	4	U	C1'

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	D	5	U	Sidechain
2	E	5	U	Sidechain
2	F	5	U	Sidechain

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	A	5265	0	5165	121	0
1	B	5265	0	5165	115	0
1	C	5265	0	5165	136	0
2	D	97	0	54	17	0
2	E	97	0	54	13	0
2	F	97	0	54	15	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
4	A	158	0	0	6	1
4	B	181	0	0	9	1
4	C	99	0	0	9	0
4	D	1	0	0	0	0
4	F	1	0	0	1	0
All	All	16529	0	15657	393	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 12.

All (393) 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)
1:B:561:CYS:HB2	4:B:2166:HOH:O	1.52	1.07

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2:ARG:NH1	4:C:2002:HOH:O	1.88	1.05
1:A:204:ARG:HE	2:D:6:C:N4	1.65	0.93
1:A:364:PRO:HA	1:A:387:LEU:HD22	1.49	0.92
1:C:606:ALA:HB3	1:C:609:ALA:HB2	1.56	0.88
1:B:606:ALA:HB3	1:B:609:ALA:HB2	1.55	0.88
1:B:204:ARG:HE	2:E:6:C:N4	1.74	0.85
1:C:204:ARG:HE	2:F:6:C:N4	1.76	0.84
1:B:364:PRO:HA	1:B:387:LEU:HD22	1.58	0.84
1:A:606:ALA:HB3	1:A:609:ALA:HB2	1.59	0.83
1:B:658:LEU:HG	1:B:662:MET:HE2	1.61	0.82
1:C:364:PRO:HA	1:C:387:LEU:HD22	1.61	0.81
1:A:204:ARG:NE	2:D:6:C:N4	2.31	0.79
1:B:456:MET:HE1	1:B:514:PHE:HZ	1.51	0.76
1:A:470:ARG:HG3	1:A:470:ARG:HH11	1.49	0.75
1:C:72:TYR:CE1	1:C:476:LYS:HD3	2.22	0.75
1:C:470:ARG:HG3	1:C:470:ARG:HH11	1.53	0.74
4:A:2046:HOH:O	2:D:5:U:H5	1.71	0.74
1:A:427:LYS:HE2	1:C:12:ILE:HG21	1.68	0.74
1:B:217:THR:HG23	1:B:219:LYS:H	1.52	0.74
1:C:600:ARG:HH11	1:C:600:ARG:HB2	1.52	0.73
2:D:3:U:O2'	2:D:4:U:OP1	2.07	0.73
1:A:217:THR:HG23	1:A:219:LYS:H	1.54	0.73
1:B:281:ALA:HB3	1:B:282:PRO:HD3	1.71	0.71
2:F:6:C:O2'	4:F:2001:HOH:O	2.07	0.71
1:B:470:ARG:HH11	1:B:470:ARG:HG3	1.57	0.70
1:B:204:ARG:NE	2:E:6:C:N4	2.39	0.70
1:C:217:THR:HG23	1:C:219:LYS:H	1.57	0.70
1:B:606:ALA:C	1:B:608:GLN:H	1.98	0.70
1:A:71:GLU:CD	1:A:71:GLU:H	2.00	0.69
1:A:72:TYR:CE1	1:A:476:LYS:HD3	2.27	0.69
1:C:281:ALA:HB3	1:C:282:PRO:HD3	1.74	0.69
1:B:47:ASP:OD1	1:B:49:ARG:HD3	1.93	0.69
1:C:606:ALA:C	1:C:608:GLN:H	1.99	0.69
1:A:608:GLN:HE22	1:B:593:ARG:CZ	2.06	0.68
1:B:71:GLU:H	1:B:71:GLU:CD	2.00	0.68
1:B:137:ASP:OD2	4:B:2052:HOH:O	2.11	0.68
1:B:456:MET:HE1	1:B:514:PHE:CZ	2.29	0.68
1:C:658:LEU:HG	1:C:662:MET:HE2	1.76	0.68
1:B:204:ARG:NE	2:E:6:C:H41	1.92	0.67
1:B:606:ALA:HB3	1:B:609:ALA:CB	2.24	0.67
1:A:214:ASP:HB3	1:A:217:THR:HG22	1.75	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:3:ARG:HD3	4:C:2006:HOH:O	1.94	0.67
1:C:2:ARG:HA	4:C:2004:HOH:O	1.95	0.67
1:A:658:LEU:HG	1:A:662:MET:HE2	1.77	0.67
1:B:600:ARG:HH11	1:B:600:ARG:HB2	1.60	0.66
1:A:214:ASP:HB3	1:A:217:THR:CG2	2.26	0.66
1:C:312:GLU:HA	1:C:315:LYS:HE2	1.76	0.66
1:C:214:ASP:HB3	1:C:217:THR:HG22	1.76	0.66
1:A:606:ALA:C	1:A:608:GLN:H	2.04	0.65
1:C:606:ALA:HB3	1:C:609:ALA:CB	2.25	0.65
1:A:204:ARG:NE	2:D:6:C:H41	1.95	0.65
1:B:74:ARG:HD2	1:B:507:ARG:HD2	1.77	0.65
1:A:608:GLN:HE22	1:B:593:ARG:NH1	1.95	0.65
1:B:600:ARG:HB2	1:B:600:ARG:NH1	2.11	0.65
1:C:600:ARG:HB2	1:C:600:ARG:NH1	2.11	0.65
1:C:74:ARG:HB3	1:C:503:TYR:CD2	2.31	0.64
2:D:5:U:O2'	2:D:6:C:P	2.55	0.64
1:A:364:PRO:HA	1:A:387:LEU:CD2	2.25	0.64
1:C:204:ARG:NH1	4:C:2044:HOH:O	2.29	0.64
1:A:74:ARG:HD2	1:A:507:ARG:HD2	1.80	0.64
1:B:362:LYS:HD2	4:B:2119:HOH:O	1.97	0.64
1:B:452:SER:O	4:B:2136:HOH:O	2.15	0.64
1:B:425:ARG:HD3	4:B:2131:HOH:O	1.98	0.63
1:B:191:GLN:HG2	4:B:2067:HOH:O	1.98	0.63
1:C:664:ARG:NE	1:C:664:ARG:HA	2.14	0.63
1:A:2:ARG:HD3	1:A:2:ARG:C	2.23	0.63
1:C:529:GLU:HB3	4:C:2044:HOH:O	1.98	0.63
1:A:663:PRO:O	1:A:664:ARG:CZ	2.47	0.62
1:B:72:TYR:CE1	1:B:476:LYS:HD3	2.34	0.62
1:C:74:ARG:HD2	1:C:507:ARG:HD2	1.79	0.62
1:C:125:LEU:HD22	1:C:429:MET:HE2	1.81	0.62
1:C:2:ARG:CA	4:C:2004:HOH:O	2.48	0.62
1:C:270:ARG:HG3	1:C:270:ARG:HH11	1.62	0.62
1:A:47:ASP:OD1	1:A:49:ARG:HD3	2.00	0.62
1:A:142:PRO:HG3	1:A:651:VAL:HG22	1.81	0.61
1:C:214:ASP:HB3	1:C:217:THR:CG2	2.30	0.61
1:C:71:GLU:CD	1:C:71:GLU:H	2.08	0.61
1:B:312:GLU:HA	1:B:315:LYS:HE2	1.83	0.61
1:A:401:MET:HE2	1:A:401:MET:HA	1.83	0.61
1:C:2:ARG:CB	4:C:2004:HOH:O	2.48	0.60
1:C:447:ARG:HG2	4:C:2081:HOH:O	2.00	0.60
2:D:5:U:O2'	2:D:6:C:OP1	2.19	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2046:HOH:O	2:D:5:U:C5	2.51	0.60
1:A:391:LEU:HD13	1:A:398:THR:HG23	1.82	0.60
1:C:75:VAL:HG11	1:C:500:ILE:HG23	1.83	0.60
2:E:5:U:O2'	2:E:6:C:OP1	2.19	0.60
1:A:74:ARG:HB3	1:A:503:TYR:CD2	2.36	0.59
1:C:477:GLU:HG3	1:C:479:LYS:HE3	1.83	0.59
1:C:204:ARG:NE	2:F:6:C:N4	2.47	0.59
1:B:391:LEU:HD13	1:B:398:THR:HG23	1.84	0.59
1:B:600:ARG:HH11	1:B:600:ARG:CB	2.15	0.59
1:B:2:ARG:HD3	1:B:2:ARG:C	2.28	0.59
1:B:477:GLU:HG3	1:B:479:LYS:HE3	1.84	0.59
1:A:286:VAL:O	1:A:289:PRO:HD2	2.03	0.58
1:B:138:LEU:HB2	1:B:662:MET:SD	2.44	0.58
1:B:140:PRO:HG3	1:B:658:LEU:HD23	1.85	0.58
1:A:607:ARG:O	1:A:608:GLN:HG3	2.04	0.58
1:C:629:GLN:HG2	2:F:7:C:C4	2.38	0.58
1:A:477:GLU:HG3	1:A:479:LYS:HE3	1.85	0.58
2:D:4:U:H4'	2:D:5:U:OP1	2.03	0.58
2:F:5:U:O2'	2:F:6:C:P	2.62	0.58
1:B:606:ALA:CB	1:B:609:ALA:HB2	2.29	0.58
1:A:600:ARG:HH11	1:A:600:ARG:HB2	1.68	0.58
1:A:312:GLU:HA	1:A:315:LYS:HE2	1.86	0.57
1:B:142:PRO:HG3	1:B:651:VAL:HG22	1.86	0.57
1:B:286:VAL:O	1:B:289:PRO:HD2	2.04	0.57
2:E:5:U:HO2'	2:E:6:C:P	2.28	0.57
1:B:161:GLY:O	1:B:165:GLU:HG3	2.04	0.57
1:B:203:TYR:CE1	1:B:271:THR:HG22	2.40	0.57
1:B:206:GLN:OE1	1:B:270:ARG:NH1	2.38	0.57
2:E:5:U:O2'	2:E:6:C:P	2.63	0.57
1:C:418:THR:HG22	1:C:467:GLY:C	2.30	0.57
2:F:5:U:O2'	2:F:6:C:OP1	2.20	0.57
1:C:2:ARG:C	1:C:2:ARG:HD3	2.30	0.56
1:A:270:ARG:HH11	1:A:270:ARG:HG3	1.70	0.56
1:C:138:LEU:HB2	1:C:662:MET:SD	2.46	0.56
1:C:204:ARG:NE	2:F:6:C:H41	2.02	0.56
1:C:600:ARG:HH11	1:C:600:ARG:CB	2.16	0.56
1:C:651:VAL:O	1:C:655:GLU:HB2	2.05	0.56
1:C:607:ARG:O	1:C:608:GLN:HG3	2.05	0.56
1:A:214:ASP:CG	1:A:217:THR:HG22	2.30	0.56
1:C:214:ASP:CG	1:C:217:THR:HG22	2.30	0.56
1:C:642:HIS:CE1	1:C:646:MET:HG3	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:606:ALA:HB3	1:A:609:ALA:CB	2.34	0.56
1:A:606:ALA:O	1:A:608:GLN:N	2.35	0.56
1:B:602:VAL:HG12	1:B:605:MET:H	1.71	0.56
1:A:475:LEU:HD21	1:A:482:PRO:HG3	1.87	0.56
1:A:203:TYR:CE1	1:A:271:THR:HG22	2.40	0.56
2:F:5:U:HO2'	2:F:6:C:P	2.27	0.56
1:C:273:MET:HE3	1:C:392:SER:CB	2.36	0.56
1:A:202:VAL:HG11	2:D:5:U:H3'	1.88	0.55
1:A:418:THR:HG22	1:A:467:GLY:C	2.30	0.55
1:B:606:ALA:O	1:B:608:GLN:N	2.39	0.55
1:C:203:TYR:CE1	1:C:271:THR:HG22	2.41	0.55
1:B:23:LYS:HE3	2:E:4:U:O4	2.06	0.55
1:C:456:MET:HE1	1:C:514:PHE:CZ	2.42	0.55
1:B:2:ARG:HD3	1:B:2:ARG:O	2.06	0.55
1:C:175:GLU:HA	1:C:352:TRP:CE3	2.41	0.55
1:C:307:ARG:HD2	1:C:514:PHE:O	2.06	0.55
1:C:518:ILE:HB	1:C:561:CYS:SG	2.47	0.55
1:A:214:ASP:CB	1:A:217:THR:HG22	2.37	0.55
1:C:650:SER:OG	1:C:653:LYS:HD2	2.07	0.55
1:B:389:VAL:HG22	4:B:2120:HOH:O	2.07	0.55
1:B:202:VAL:CG2	1:B:272:ALA:HB3	2.37	0.54
1:C:140:PRO:HG3	1:C:658:LEU:HD23	1.89	0.54
1:C:327:ASP:CG	1:C:330:THR:OG1	2.50	0.54
1:C:606:ALA:CB	1:C:609:ALA:HB2	2.32	0.54
1:C:47:ASP:OD1	1:C:49:ARG:HD3	2.06	0.54
1:C:663:PRO:O	1:C:664:ARG:CZ	2.55	0.54
1:A:175:GLU:HA	1:A:352:TRP:CE3	2.43	0.54
1:B:143:LEU:C	1:B:143:LEU:HD23	2.33	0.54
1:B:663:PRO:O	1:B:664:ARG:CZ	2.55	0.54
1:A:470:ARG:HG3	1:A:470:ARG:NH1	2.21	0.54
1:C:606:ALA:O	1:C:608:GLN:N	2.41	0.54
1:C:456:MET:HE1	1:C:514:PHE:HZ	1.72	0.53
1:A:286:VAL:C	1:A:289:PRO:HD2	2.32	0.53
1:B:74:ARG:HB3	1:B:503:TYR:CD2	2.43	0.53
1:A:530:TYR:CD2	1:A:543:LYS:HG3	2.43	0.53
1:B:270:ARG:HG3	1:B:270:ARG:HH11	1.73	0.53
1:B:16:MET:CE	4:B:2067:HOH:O	2.56	0.53
1:B:607:ARG:O	1:B:608:GLN:HG3	2.08	0.53
1:B:12:ILE:O	1:B:16:MET:HG3	2.09	0.53
1:C:214:ASP:CB	1:C:217:THR:HG22	2.38	0.53
1:C:288:GLN:HB3	1:C:289:PRO:HD3	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:327:ASP:CG	1:B:330:THR:OG1	2.52	0.53
1:C:391:LEU:HD13	1:C:398:THR:HG23	1.91	0.53
1:C:602:VAL:HG12	1:C:605:MET:H	1.73	0.53
1:B:175:GLU:HA	1:B:352:TRP:CE3	2.44	0.52
1:C:279:LEU:O	1:C:282:PRO:HD2	2.09	0.52
1:B:429:MET:HA	1:B:429:MET:HE2	1.91	0.52
1:C:206:GLN:OE1	1:C:270:ARG:NH1	2.42	0.52
1:C:456:MET:CE	1:C:514:PHE:HZ	2.22	0.52
1:B:94:PRO:CB	1:B:269:ARG:HG3	2.40	0.51
1:A:86:GLY:O	1:A:89:HIS:HD2	1.93	0.51
1:A:492:HIS:ND1	4:A:2121:HOH:O	2.34	0.51
1:B:305:THR:H	1:B:309:ASN:ND2	2.09	0.51
1:B:606:ALA:C	1:B:608:GLN:N	2.66	0.51
1:A:631:LYS:HE3	1:A:632:TRP:CZ2	2.46	0.51
1:B:651:VAL:O	1:B:655:GLU:HB2	2.11	0.51
1:C:606:ALA:C	1:C:608:GLN:N	2.69	0.51
1:A:203:TYR:HE1	1:A:271:THR:HG22	1.75	0.51
1:A:288:GLN:HB3	1:A:289:PRO:HD3	1.92	0.51
1:A:140:PRO:HG3	1:A:658:LEU:HD23	1.93	0.51
1:A:301:THR:HG23	1:A:448:GLN:HG3	1.92	0.51
1:B:214:ASP:HB3	1:B:217:THR:HG22	1.92	0.51
1:A:175:GLU:HA	1:A:352:TRP:CD2	2.46	0.50
1:C:477:GLU:HG3	1:C:479:LYS:CD	2.41	0.50
1:A:304:HIS:HA	1:A:309:ASN:HD21	1.77	0.50
1:C:3:ARG:NH2	1:C:231:GLU:OE1	2.40	0.50
1:C:362:LYS:HD2	4:C:2074:HOH:O	2.11	0.50
2:F:4:U:O2'	2:F:5:U:P	2.70	0.50
1:B:214:ASP:HB3	1:B:217:THR:CG2	2.42	0.50
1:B:304:HIS:HA	1:B:309:ASN:HD21	1.76	0.50
1:B:286:VAL:C	1:B:289:PRO:HD2	2.37	0.50
1:B:273:MET:HE3	1:B:392:SER:CB	2.42	0.50
1:C:419:ALA:HB1	1:C:422:LEU:HD12	1.94	0.49
2:D:4:U:O2'	2:D:5:U:P	2.70	0.49
2:D:5:U:HO2'	2:D:6:C:P	2.32	0.49
1:C:3:ARG:HH22	1:C:231:GLU:CD	2.20	0.49
1:A:391:LEU:HD13	1:A:398:THR:CG2	2.41	0.49
1:A:146:ARG:NH2	1:A:540:SER:O	2.46	0.49
1:A:655:GLU:HG2	1:A:659:ARG:NH1	2.28	0.49
1:C:175:GLU:HG3	1:C:352:TRP:CD1	2.48	0.49
1:A:138:LEU:HB2	1:A:662:MET:SD	2.53	0.49
1:A:600:ARG:HB2	1:A:600:ARG:NH1	2.28	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:304:HIS:HA	1:C:309:ASN:HD21	1.78	0.49
1:A:119:VAL:O	1:C:25:GLN:HG3	2.13	0.49
1:A:125:LEU:HD22	1:A:429:MET:HE2	1.94	0.49
1:A:664:ARG:HA	1:A:664:ARG:NE	2.28	0.49
1:C:142:PRO:HG3	1:C:651:VAL:HG22	1.94	0.49
1:C:273:MET:HE3	1:C:392:SER:HB3	1.95	0.49
1:B:175:GLU:HG3	1:B:352:TRP:CD1	2.48	0.49
2:D:7:C:O5'	2:D:7:C:H6	1.96	0.49
1:B:94:PRO:HB2	1:B:269:ARG:HG3	1.95	0.48
2:E:7:C:H6	2:E:7:C:O5'	1.96	0.48
1:A:305:THR:H	1:A:309:ASN:ND2	2.11	0.48
1:C:270:ARG:HG3	1:C:270:ARG:NH1	2.27	0.48
1:C:477:GLU:HG3	1:C:479:LYS:CE	2.43	0.48
1:C:175:GLU:HA	1:C:352:TRP:CD2	2.48	0.48
1:C:12:ILE:O	1:C:16:MET:HG3	2.14	0.48
1:A:518:ILE:HG12	1:A:567:VAL:HG21	1.96	0.48
2:F:5:U:O4'	2:F:5:U:O2	2.32	0.48
1:B:175:GLU:HA	1:B:352:TRP:CD2	2.49	0.48
1:A:70:ASP:OD2	1:A:74:ARG:NH1	2.39	0.47
1:A:304:HIS:HA	1:A:309:ASN:ND2	2.29	0.47
1:A:305:THR:OG1	1:A:306:THR:N	2.47	0.47
1:C:143:LEU:HD23	1:C:143:LEU:C	2.39	0.47
1:B:339:LEU:HD23	1:B:339:LEU:C	2.40	0.47
1:C:305:THR:H	1:C:309:ASN:ND2	2.12	0.47
1:C:629:GLN:HG2	2:F:7:C:N3	2.29	0.47
1:C:551:TRP:CH2	1:C:554:MET:HE1	2.48	0.47
1:B:13:LYS:NZ	1:B:383:SER:OG	2.47	0.47
1:B:418:THR:HG22	1:B:467:GLY:C	2.40	0.47
1:C:125:LEU:CD2	1:C:429:MET:HE2	2.43	0.47
1:B:206:GLN:HG2	1:B:208:THR:O	2.15	0.47
2:E:4:U:O2'	2:E:5:U:P	2.72	0.47
2:E:3:U:O2'	2:E:4:U:P	2.73	0.47
1:C:568:LEU:HD23	1:C:568:LEU:HA	1.78	0.46
1:A:44:LEU:HD11	1:B:257:GLY:HA3	1.96	0.46
1:A:425:ARG:NH2	1:A:444:GLU:OE1	2.44	0.46
1:A:518:ILE:HB	1:A:561:CYS:SG	2.56	0.46
1:A:13:LYS:NZ	1:A:383:SER:OG	2.48	0.46
1:A:401:MET:HE2	1:A:401:MET:CA	2.45	0.46
2:F:7:C:O5'	2:F:7:C:H6	1.99	0.46
1:B:204:ARG:HD2	1:B:530:TYR:OH	2.15	0.46
2:F:3:U:O2'	2:F:4:U:P	2.73	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3:ARG:NH2	1:A:231:GLU:OE1	2.45	0.46
1:B:600:ARG:O	1:B:600:ARG:HG2	2.16	0.46
1:A:543:LYS:O	1:A:625:PRO:HD2	2.16	0.46
1:B:552:ALA:HB3	1:B:619:LEU:HD13	1.98	0.46
1:C:543:LYS:O	1:C:625:PRO:HD2	2.16	0.46
1:A:175:GLU:HG3	1:A:352:TRP:CD1	2.51	0.46
1:C:339:LEU:C	1:C:339:LEU:HD23	2.41	0.46
1:C:75:VAL:HG11	1:C:500:ILE:CG2	2.46	0.46
1:C:470:ARG:HG3	1:C:470:ARG:NH1	2.26	0.46
1:B:280:ASN:ND2	1:B:394:GLY:O	2.41	0.46
1:A:204:ARG:HD2	1:A:530:TYR:OH	2.15	0.46
1:A:2:ARG:HD3	1:A:2:ARG:O	2.15	0.45
1:A:132:ARG:NH1	1:A:343:GLU:OE2	2.42	0.45
1:A:600:ARG:NH2	4:B:2172:HOH:O	2.47	0.45
1:B:429:MET:HB2	1:B:430:PRO:HD3	1.97	0.45
1:A:629:GLN:HG2	2:D:7:C:C4	2.51	0.45
1:B:456:MET:CE	1:B:514:PHE:HZ	2.24	0.45
1:C:204:ARG:HD2	1:C:530:TYR:OH	2.16	0.45
1:A:29:LYS:O	1:A:30:ARG:C	2.59	0.45
1:B:583:TYR:CZ	1:B:587:ARG:HD3	2.51	0.45
1:C:75:VAL:CG1	1:C:500:ILE:HG23	2.46	0.45
1:A:273:MET:HE3	1:A:392:SER:CB	2.47	0.45
1:B:204:ARG:NH1	1:B:204:ARG:HB3	2.32	0.45
1:A:204:ARG:HD3	2:D:6:C:C5	2.51	0.45
1:A:629:GLN:HG2	2:D:7:C:N3	2.32	0.45
1:B:637:VAL:O	1:B:638:SER:C	2.60	0.45
1:A:147:LYS:HG2	1:A:160:MET:HE3	1.99	0.45
1:B:164:ILE:O	1:B:168:GLU:HG3	2.16	0.45
1:C:286:VAL:O	1:C:289:PRO:HD2	2.16	0.45
1:C:477:GLU:CG	1:C:479:LYS:HD2	2.47	0.45
1:A:94:PRO:CB	1:A:269:ARG:HG3	2.47	0.45
1:C:16:MET:HE2	1:C:16:MET:HB3	1.85	0.45
1:A:82:THR:HG23	1:A:83:ASN:O	2.16	0.45
1:A:202:VAL:CG2	1:A:272:ALA:HB3	2.47	0.45
1:B:214:ASP:CG	1:B:217:THR:HG22	2.42	0.45
1:C:94:PRO:CB	1:C:269:ARG:HG3	2.47	0.45
1:C:419:ALA:CB	1:C:422:LEU:HD12	2.47	0.45
1:C:631:LYS:HE3	1:C:632:TRP:CZ2	2.51	0.45
1:C:86:GLY:O	1:C:89:HIS:HD2	1.99	0.45
1:C:112:ALA:HB1	1:C:487:LYS:HE3	1.98	0.45
1:C:304:HIS:HA	1:C:309:ASN:ND2	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:506:ARG:O	1:A:508:GLU:HG3	2.18	0.44
1:A:608:GLN:NE2	1:B:593:ARG:NH1	2.65	0.44
1:B:91:ASN:HA	1:B:267:GLU:CD	2.43	0.44
1:B:304:HIS:HA	1:B:309:ASN:ND2	2.32	0.44
1:C:132:ARG:NH1	1:C:343:GLU:OE2	2.37	0.44
1:A:504:ASP:C	1:A:504:ASP:OD1	2.60	0.44
1:B:203:TYR:HE1	1:B:271:THR:HG22	1.82	0.44
1:A:3:ARG:HH22	1:A:231:GLU:CD	2.24	0.44
1:C:470:ARG:HH11	1:C:470:ARG:CG	2.25	0.44
1:A:568:LEU:HD23	1:A:568:LEU:HA	1.86	0.44
1:C:161:GLY:O	1:C:165:GLU:HG3	2.18	0.44
1:C:401:MET:HE2	1:C:401:MET:HA	1.99	0.44
1:A:206:GLN:OE1	1:A:270:ARG:NH1	2.49	0.44
1:A:477:GLU:HG3	1:A:479:LYS:CE	2.48	0.44
1:C:274:GLY:HA2	2:F:6:C:O2'	2.18	0.44
1:A:361:LEU:C	1:A:362:LYS:HG2	2.42	0.43
2:F:3:U:HO2'	2:F:4:U:P	2.39	0.43
1:C:307:ARG:NH1	1:C:308:LEU:CD1	2.81	0.43
1:A:139:GLU:HA	1:A:140:PRO:HD3	1.90	0.43
1:A:270:ARG:HG3	1:A:270:ARG:NH1	2.32	0.43
1:C:664:ARG:HA	1:C:664:ARG:HE	1.79	0.43
2:E:5:U:O2	2:E:5:U:O4'	2.35	0.43
1:C:203:TYR:HE1	1:C:271:THR:HG22	1.81	0.43
1:A:22:ILE:HG12	4:A:2016:HOH:O	2.18	0.43
1:A:387:LEU:HD12	1:A:387:LEU:HA	1.84	0.43
1:B:190:TYR:O	1:B:194:GLN:N	2.50	0.43
1:B:288:GLN:HB3	1:B:289:PRO:HD3	2.01	0.43
1:B:132:ARG:HD2	1:B:343:GLU:OE2	2.19	0.43
1:B:343:GLU:O	1:B:347:MET:HG3	2.19	0.43
1:C:327:ASP:OD2	1:C:330:THR:OG1	2.36	0.43
1:A:273:MET:O	1:A:394:GLY:HA3	2.18	0.43
1:A:339:LEU:C	1:A:339:LEU:HD23	2.44	0.43
1:A:664:ARG:HA	1:A:664:ARG:HE	1.83	0.43
1:B:158:ASN:OD1	2:E:4:U:O4	2.37	0.43
1:A:406:MET:HE1	1:A:488:ILE:HD11	2.01	0.43
1:C:146:ARG:NH2	1:C:540:SER:O	2.52	0.43
2:D:5:U:O2	2:D:5:U:O4'	2.36	0.43
1:B:86:GLY:O	1:B:89:HIS:HD2	2.02	0.42
1:B:143:LEU:C	1:B:143:LEU:CD2	2.91	0.42
2:E:3:U:O2'	2:E:4:U:OP1	2.35	0.42
1:A:419:ALA:N	1:A:420:PRO:HD3	2.33	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:202:VAL:HG23	1:B:272:ALA:HB3	2.00	0.42
1:C:281:ALA:N	1:C:282:PRO:CD	2.83	0.42
1:C:504:ASP:OD2	1:C:511:SER:HB2	2.20	0.42
1:B:518:ILE:HB	1:B:561:CYS:SG	2.59	0.42
1:B:279:LEU:O	1:B:282:PRO:HD2	2.20	0.42
1:B:568:LEU:HD23	1:B:568:LEU:HA	1.82	0.42
1:C:497:LEU:HA	1:C:497:LEU:HD12	1.69	0.42
1:A:325:VAL:CG2	1:A:406:MET:HE2	2.50	0.42
1:A:606:ALA:CB	1:A:609:ALA:HB2	2.39	0.42
1:A:607:ARG:O	1:A:608:GLN:CB	2.68	0.42
1:B:551:TRP:CH2	1:B:554:MET:HE1	2.55	0.42
1:A:340:ILE:O	1:A:344:LEU:HG	2.20	0.42
1:B:16:MET:HE2	1:B:16:MET:HB3	1.96	0.42
1:C:119:VAL:HG12	1:C:485:TYR:OH	2.20	0.42
1:A:325:VAL:HG21	1:A:406:MET:HE2	2.02	0.42
1:C:300:TYR:CD1	1:C:300:TYR:C	2.97	0.42
1:A:273:MET:HE3	1:A:392:SER:HB3	2.01	0.41
1:B:652:GLU:CD	1:B:652:GLU:H	2.28	0.41
1:C:551:TRP:CZ2	1:C:554:MET:HE1	2.55	0.41
1:A:606:ALA:C	1:A:608:GLN:N	2.71	0.41
1:B:361:LEU:C	1:B:362:LYS:HG2	2.45	0.41
1:B:387:LEU:HD12	1:B:387:LEU:HA	1.88	0.41
1:C:153:ILE:HA	1:C:154:PRO:HA	1.79	0.41
1:C:305:THR:OG1	1:C:306:THR:N	2.53	0.41
1:C:477:GLU:HG2	1:C:479:LYS:HD2	2.02	0.41
1:A:94:PRO:HB3	1:A:269:ARG:HG3	2.03	0.41
1:A:202:VAL:HG23	1:A:272:ALA:HB3	2.03	0.41
1:A:470:ARG:NH1	1:A:470:ARG:CG	2.81	0.41
1:B:249:ALA:O	1:B:260:VAL:HG21	2.20	0.41
1:B:391:LEU:HD13	1:B:398:THR:CG2	2.51	0.41
1:C:332:TRP:O	1:C:390:GLY:HA2	2.20	0.41
1:C:504:ASP:OD1	1:C:504:ASP:C	2.63	0.41
1:A:151:THR:CG2	1:A:163:LYS:HG2	2.50	0.41
1:C:425:ARG:NH2	1:C:444:GLU:OE1	2.53	0.41
1:C:637:VAL:O	1:C:638:SER:C	2.62	0.41
1:B:125:LEU:HD22	1:B:429:MET:HE2	2.03	0.41
1:C:12:ILE:O	1:C:12:ILE:HG13	2.19	0.41
1:C:13:LYS:NZ	1:C:383:SER:OG	2.53	0.41
1:A:86:GLY:O	1:A:89:HIS:CD2	2.71	0.41
1:A:451:LYS:O	1:A:452:SER:C	2.63	0.41
1:B:305:THR:OG1	1:B:306:THR:N	2.49	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:609:ALA:O	1:B:610:GLY:O	2.39	0.41
1:C:301:THR:HG23	1:C:448:GLN:HG3	2.01	0.41
1:C:563:ILE:O	1:C:564:TYR:C	2.64	0.41
1:C:605:MET:O	1:C:606:ALA:C	2.64	0.41
1:A:652:GLU:CD	1:A:652:GLU:H	2.29	0.41
1:C:83:ASN:OD1	1:C:83:ASN:C	2.63	0.41
1:C:219:LYS:HD3	1:C:219:LYS:HA	1.89	0.41
1:A:362:LYS:HD2	4:A:2105:HOH:O	2.20	0.40
1:B:350:ALA:HB1	1:B:352:TRP:NE1	2.36	0.40
1:B:477:GLU:HG3	1:B:479:LYS:CE	2.51	0.40
1:B:631:LYS:HE3	1:B:632:TRP:CZ2	2.56	0.40
1:C:423:ASN:C	1:C:425:ARG:N	2.78	0.40
1:B:146:ARG:NH2	1:B:540:SER:O	2.54	0.40
1:A:161:GLY:O	1:A:165:GLU:HG3	2.21	0.40
1:A:222:SER:HB2	4:A:2073:HOH:O	2.21	0.40
1:C:214:ASP:OD1	1:C:214:ASP:C	2.65	0.40
1:C:268:ARG:NH1	1:C:270:ARG:HH22	2.18	0.40
1:B:470:ARG:HG3	1:B:470:ARG:NH1	2.30	0.40
1:C:86:GLY:O	1:C:89:HIS:CD2	2.75	0.40
1:A:96:ILE:HA	1:A:97:PRO:HA	1.91	0.40
1:B:504:ASP:C	1:B:504:ASP:OD1	2.63	0.40
1:C:419:ALA:HB1	1:C:422:LEU:CD1	2.52	0.40
1:C:530:TYR:CD2	1:C:543:LYS:HG3	2.56	0.40

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)
4:A:2015:HOH:O	4:B:2128:HOH:O[2_646]	1.89	0.31

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	662/664 (100%)	635 (96%)	23 (4%)	4 (1%)	21	17
1	B	662/664 (100%)	638 (96%)	21 (3%)	3 (0%)	24	21
1	C	662/664 (100%)	636 (96%)	22 (3%)	4 (1%)	21	17
All	All	1986/1992 (100%)	1909 (96%)	66 (3%)	11 (1%)	21	17

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	608	GLN
1	B	608	GLN
1	C	608	GLN
1	A	607	ARG
1	A	610	GLY
1	B	607	ARG
1	B	610	GLY
1	C	607	ARG
1	C	610	GLY
1	A	663	PRO
1	C	663	PRO

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	557/557 (100%)	537 (96%)	20 (4%)	31	31
1	B	557/557 (100%)	536 (96%)	21 (4%)	29	29
1	C	557/557 (100%)	537 (96%)	20 (4%)	31	31
All	All	1671/1671 (100%)	1610 (96%)	61 (4%)	30	30

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	ARG
1	A	43	LEU

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Mol	Chain	Res	Type
1	A	44	LEU
1	A	63	ASP
1	A	71	GLU
1	A	75	VAL
1	A	102	LEU
1	A	119	VAL
1	A	146	ARG
1	A	216	LYS
1	A	269	ARG
1	A	273	MET
1	A	384	ASN
1	A	387	LEU
1	A	391	LEU
1	A	497	LEU
1	A	591	LEU
1	A	629	GLN
1	A	651	VAL
1	A	664	ARG
1	B	2	ARG
1	B	16	MET
1	B	43	LEU
1	B	44	LEU
1	B	49	ARG
1	B	63	ASP
1	B	71	GLU
1	B	75	VAL
1	B	119	VAL
1	B	146	ARG
1	B	172	GLU
1	B	269	ARG
1	B	273	MET
1	B	324	ASP
1	B	384	ASN
1	B	387	LEU
1	B	391	LEU
1	B	497	LEU
1	B	534	SER
1	B	591	LEU
1	B	651	VAL
1	C	2	ARG
1	C	16	MET
1	C	43	LEU

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Mol	Chain	Res	Type
1	C	44	LEU
1	C	49	ARG
1	C	63	ASP
1	C	75	VAL
1	C	102	LEU
1	C	119	VAL
1	C	146	ARG
1	C	273	MET
1	C	384	ASN
1	C	387	LEU
1	C	391	LEU
1	C	497	LEU
1	C	534	SER
1	C	591	LEU
1	C	629	GLN
1	C	651	VAL
1	C	664	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	26	GLN
1	A	89	HIS
1	A	158	ASN
1	A	183	GLN
1	A	239	GLN
1	A	309	ASN
1	A	519	ASN
1	A	608	GLN
1	A	626	ASN
1	B	26	GLN
1	B	89	HIS
1	B	183	GLN
1	B	191	GLN
1	B	239	GLN
1	B	309	ASN
1	B	519	ASN
1	B	626	ASN
1	C	15	GLN
1	C	26	GLN
1	C	89	HIS
1	C	183	GLN

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Mol	Chain	Res	Type
1	C	191	GLN
1	C	239	GLN
1	C	309	ASN
1	C	469	HIS
1	C	519	ASN
1	C	626	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	D	5/5 (100%)	3 (60%)	3 (60%)
2	E	5/5 (100%)	3 (60%)	3 (60%)
2	F	5/5 (100%)	3 (60%)	3 (60%)
All	All	15/15 (100%)	9 (60%)	9 (60%)

All (9) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	D	4	U
2	D	5	U
2	D	6	C
2	E	4	U
2	E	5	U
2	E	6	C
2	F	4	U
2	F	5	U
2	F	6	C

All (9) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	D	3	U
2	D	4	U
2	D	5	U
2	E	3	U
2	E	4	U
2	E	5	U
2	F	3	U
2	F	4	U
2	F	5	U

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 3 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

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	664/664 (100%)	0.16	27 (4%)	41	40	25, 39, 62, 114	0
1	B	664/664 (100%)	0.19	32 (4%)	35	34	25, 39, 62, 115	0
1	C	664/664 (100%)	0.45	42 (6%)	26	24	25, 42, 64, 116	0
2	D	5/5 (100%)	3.78	5 (100%)	0	0	93, 97, 125, 137	0
2	E	5/5 (100%)	2.70	4 (80%)	0	0	94, 97, 126, 138	0
2	F	5/5 (100%)	3.18	5 (100%)	0	0	93, 98, 126, 138	0
All	All	2007/2007 (100%)	0.29	115 (5%)	29	28	25, 40, 64, 138	0

All (115) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	609	ALA	9.2
1	B	609	ALA	8.5
1	A	606	ALA	8.0
1	C	606	ALA	7.4
1	C	610	GLY	6.0
1	C	576	TRP	5.5
1	C	1	PRO	5.3
1	B	607	ARG	5.2
1	B	2	ARG	5.2
1	B	603	ALA	5.1
1	C	2	ARG	4.9
1	C	603	ALA	4.6
1	A	603	ALA	4.5
2	D	3	U	4.5
1	B	217	THR	4.4
1	B	606	ALA	4.4
1	B	604	SER	4.4
1	B	651	VAL	4.3
1	C	612	ALA	4.2

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Mol	Chain	Res	Type	RSRZ
1	A	605	MET	4.0
1	A	612	ALA	3.9
1	C	611	LEU	3.9
1	C	608	GLN	3.9
1	B	537	ARG	3.9
1	A	609	ALA	3.9
1	A	2	ARG	3.9
1	C	664	ARG	3.9
1	A	610	GLY	3.8
2	D	6	C	3.8
2	F	5	U	3.8
1	A	630	TYR	3.8
1	C	607	ARG	3.7
2	D	7	C	3.7
1	A	1	PRO	3.7
2	D	5	U	3.7
1	B	599	SER	3.6
1	A	651	VAL	3.5
1	A	576	TRP	3.5
1	B	630	TYR	3.5
1	B	612	ALA	3.4
2	F	6	C	3.4
2	F	7	C	3.4
1	C	642	HIS	3.4
1	C	308	LEU	3.4
1	C	613	GLU	3.3
1	A	607	ARG	3.3
2	D	4	U	3.2
1	B	608	GLN	3.2
1	B	596	LEU	3.2
1	B	664	ARG	3.1
1	C	630	TYR	3.1
1	A	608	GLN	3.1
2	E	3	U	3.1
1	B	610	GLY	3.0
1	B	1	PRO	3.0
1	C	651	VAL	3.0
1	B	589	ASP	3.0
1	A	664	ARG	2.9
2	E	7	C	2.9
1	C	600	ARG	2.8
2	E	6	C	2.8

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Mol	Chain	Res	Type	RSRZ
2	E	5	U	2.8
1	C	605	MET	2.8
1	C	635	ALA	2.8
2	F	3	U	2.8
1	B	611	LEU	2.7
1	A	604	SER	2.7
1	B	605	MET	2.7
1	A	602	VAL	2.7
1	C	596	LEU	2.6
1	A	611	LEU	2.6
1	A	581	GLU	2.6
1	C	601	TYR	2.6
2	F	4	U	2.5
1	A	254	GLU	2.5
1	C	628	LEU	2.5
1	C	79	GLY	2.4
1	C	216	LYS	2.4
1	A	613	GLU	2.4
1	B	64	HIS	2.4
1	A	652	GLU	2.4
1	C	477	GLU	2.4
1	C	530	TYR	2.3
1	C	479	LYS	2.3
1	C	534	SER	2.3
1	C	641	ILE	2.3
1	C	599	SER	2.3
1	C	63	ASP	2.3
1	B	22	ILE	2.2
1	B	602	VAL	2.2
1	B	479	LYS	2.2
1	B	600	ARG	2.2
1	C	614	LEU	2.2
1	C	555	LYS	2.2
1	B	63	ASP	2.2
1	B	71	GLU	2.1
1	B	270	ARG	2.1
1	C	536	VAL	2.1
1	C	470	ARG	2.1
1	C	604	SER	2.1
1	A	633	THR	2.1
1	A	204	ARG	2.1
1	A	308	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	259	ASP	2.1
1	B	206	GLN	2.1
1	C	514	PHE	2.1
1	A	561	CYS	2.0
1	B	647	HIS	2.0
1	C	215	PRO	2.0
1	C	592	LYS	2.0
1	B	254	GLU	2.0
1	C	141	VAL	2.0
1	C	646	MET	2.0
1	A	215	PRO	2.0
1	A	218	GLY	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 oligosaccharides 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(Å ²)	Q<0.9
3	MN	A	1665	1/1	0.99	0.02	35,35,35,35	0
3	MN	B	1665	1/1	0.99	0.02	38,38,38,38	0
3	MN	C	1665	1/1	0.99	0.02	40,40,40,40	0

6.5 Other polymers [i](#)

There are no such residues in this entry.