



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 6, 2024 – 06:48 PM EST

PDB ID : 2GIC
Title : Crystal Structure of a vesicular stomatitis virus nucleocapsid-RNA complex
Authors : Green, T.J.; Zhang, X.; Wertz, G.W.; Luo, M.
Deposited on : 2006-03-28
Resolution : 2.92 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
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

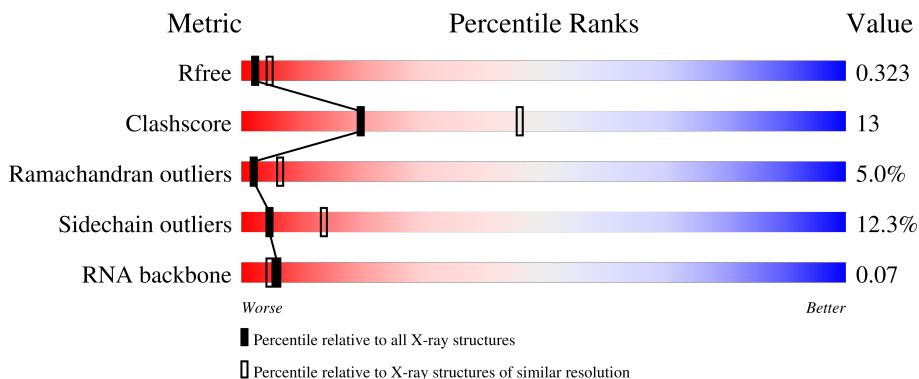
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.92 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	2307 (2.94-2.90)
Clashscore	141614	2531 (2.94-2.90)
Ramachandran outliers	138981	2462 (2.94-2.90)
Sidechain outliers	138945	2464 (2.94-2.90)
RNA backbone	3102	1001 (3.18-2.66)

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	R	45	9% 29% 51% 11%
2	A	422	70% 24% 5%
2	B	422	67% 25% 7% .
2	C	422	68% 23% 6% ..
2	D	422	70% 24% 5% .
2	E	422	68% 26% 5%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 17432 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.

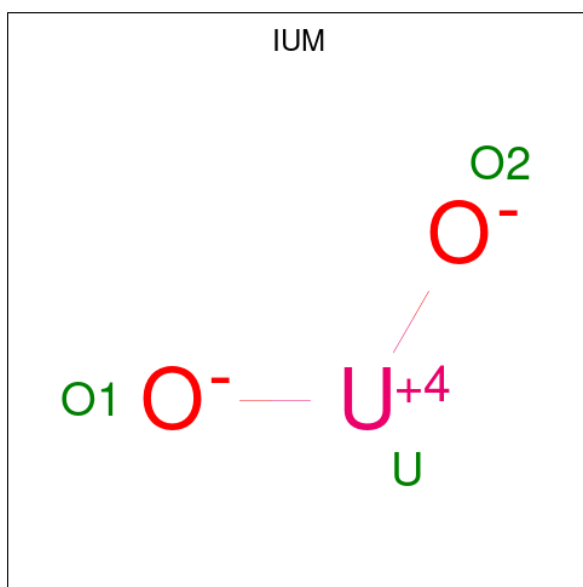
- Molecule 1 is a RNA chain called 45-MER.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	R	45	900	405	90	360	45	0	0	0

- Molecule 2 is a protein called Nucleocapsid protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	A	421	3327	2118	558	633	18	0	0	0
2	B	415	3290	2097	552	623	18	0	0	0
2	C	413	3275	2089	550	618	18	0	0	0
2	D	416	3298	2103	553	624	18	0	0	0
2	E	421	3327	2118	558	633	18	0	0	0

- Molecule 3 is URANYL (VI) ION (three-letter code: IUM) (formula: O₂U).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total U 1 1	0	0
3	A	1	Total U 1 1	0	0
3	A	1	Total U 1 1	0	0
3	A	1	Total U 1 1	0	0
3	B	1	Total U 1 1	0	0
3	B	1	Total U 1 1	0	0
3	B	1	Total U 1 1	0	0
3	C	1	Total U 1 1	0	0
3	C	1	Total U 1 1	0	0
3	C	1	Total U 1 1	0	0
3	D	1	Total U 1 1	0	0
3	D	1	Total U 1 1	0	0
3	E	1	Total U 1 1	0	0
3	E	1	Total U 1 1	0	0

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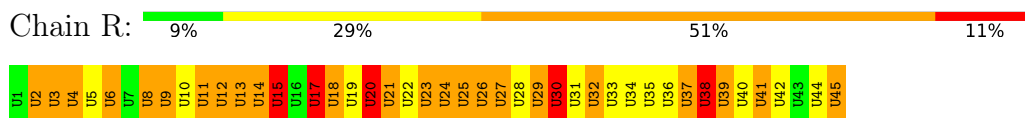
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	E	1	Total	U	0	0
			1	1		

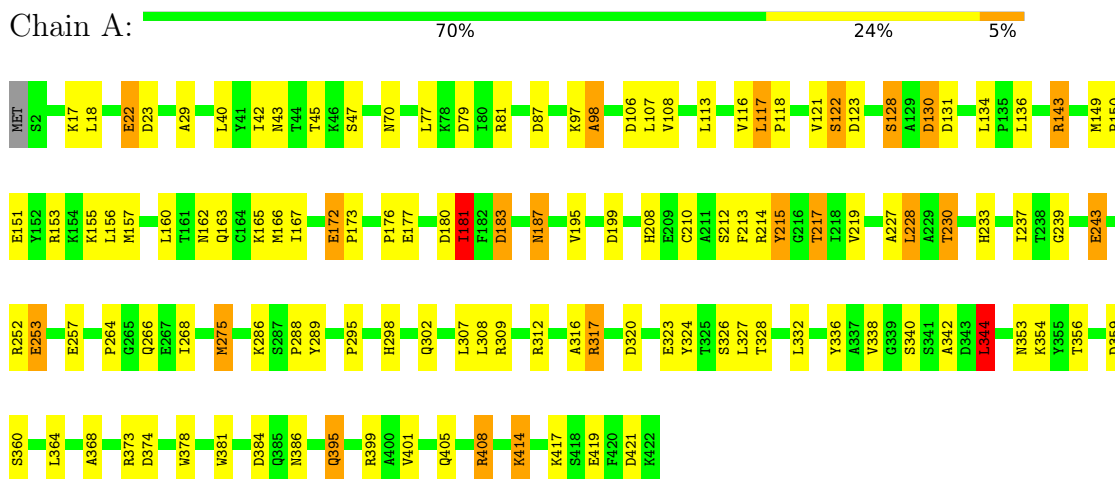
3 Residue-property plots

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. 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. 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.

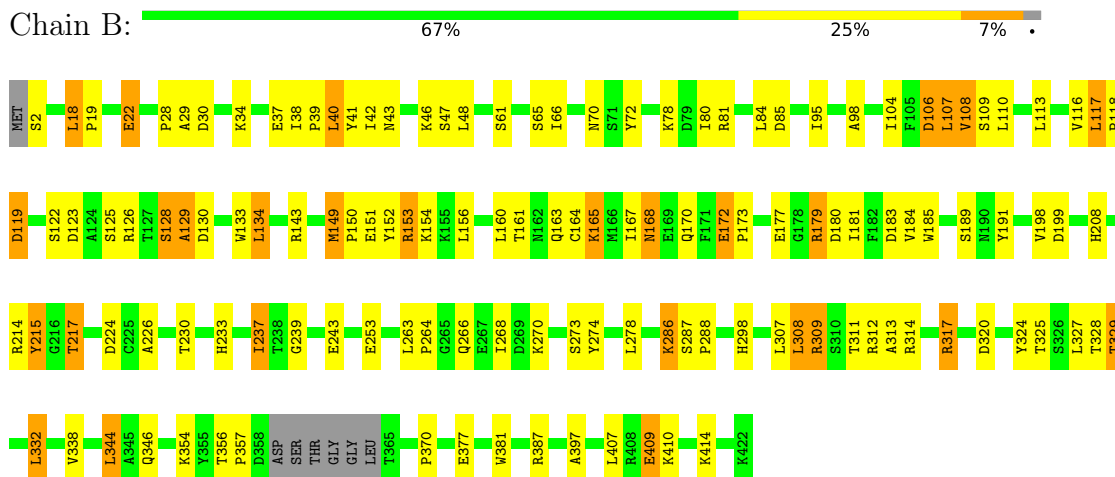
- Molecule 1: 45-MER



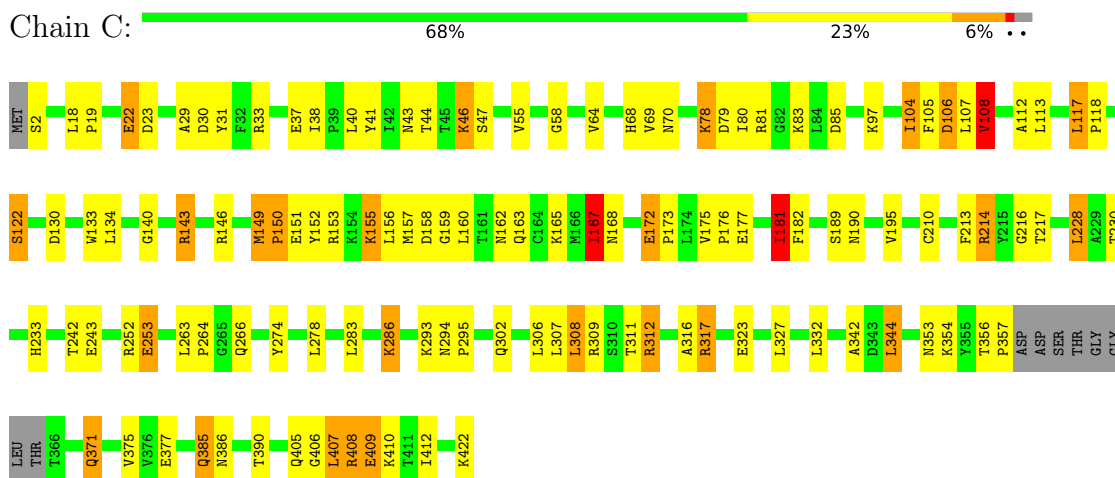
- Molecule 2: Nucleocapsid protein



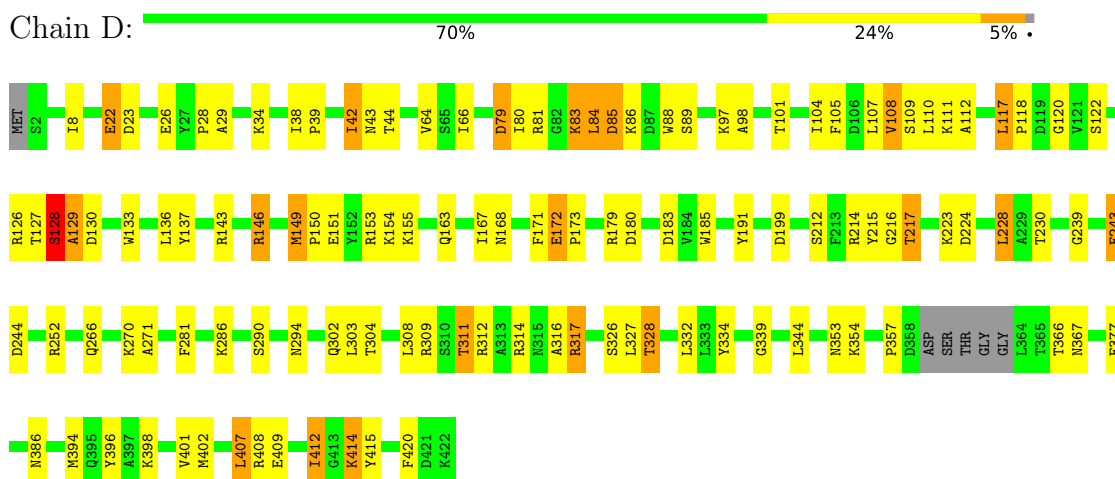
- Molecule 2: Nucleocapsid protein



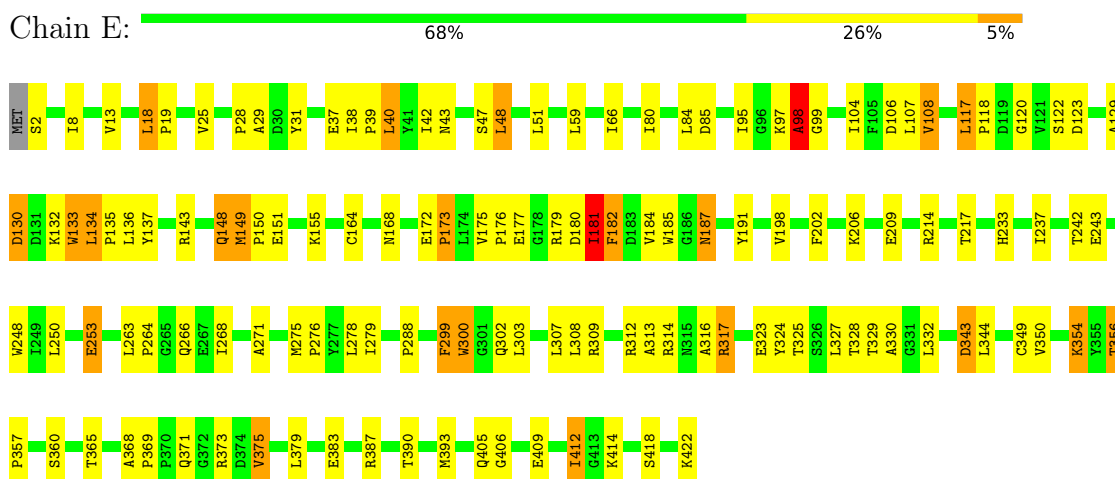
• Molecule 2: Nucleocapsid protein



• Molecule 2: Nucleocapsid protein



• Molecule 2: Nucleocapsid protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	166.16Å 236.32Å 75.65Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.86 – 2.92 44.84 – 2.92	Depositor EDS
% Data completeness (in resolution range)	91.9 (44.86-2.92) 90.5 (44.84-2.92)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.95 (at 2.90Å)	Xtrriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.255 , 0.306 0.270 , 0.323	Depositor DCC
R_{free} test set	3262 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	73.1	Xtrriage
Anisotropy	0.676	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 33.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.87	EDS
Total number of atoms	17432	wwPDB-VP
Average B, all atoms (Å ²)	28.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.35% 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

5.1 Standard geometry

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

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	R	0.93	0/989	1.56	10/1526 (0.7%)
2	A	0.39	0/3403	0.54	0/4607
2	B	0.40	0/3365	0.55	0/4554
2	C	0.39	0/3350	0.56	0/4533
2	D	0.39	0/3373	0.56	0/4565
2	E	0.40	0/3403	0.54	0/4607
All	All	0.44	0/17883	0.66	10/24392 (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
2	B	0	1
2	E	0	1
All	All	0	2

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	R	20	U	P-O3'-C3'	8.96	130.45	119.70
1	R	9	U	O4'-C1'-N1	6.62	113.50	108.20
1	R	9	U	O4'-C4'-C3'	-6.12	97.88	104.00
1	R	34	U	O4'-C1'-N1	5.87	112.90	108.20
1	R	15	U	C2-N1-C1'	5.75	124.61	117.70
1	R	17	U	P-O3'-C3'	5.33	126.10	119.70
1	R	32	U	C3'-C2'-C1'	5.22	105.68	101.50
1	R	37	U	O4'-C1'-N1	5.11	112.29	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	R	38	U	P-O3'-C3'	5.09	125.81	119.70
1	R	30	U	C4'-C3'-C2'	-5.07	97.53	102.60

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	106	ASP	Peptide
2	E	98	ALA	Peptide

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	R	900	0	451	62	0
2	A	3327	0	3287	87	0
2	B	3290	0	3253	105	0
2	C	3275	0	3242	81	0
2	D	3298	0	3264	75	0
2	E	3327	0	3287	92	0
3	A	4	0	0	0	0
3	B	3	0	0	0	0
3	C	3	0	0	0	0
3	D	2	0	0	0	0
3	E	3	0	0	0	0
All	All	17432	0	16784	435	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 13.

All (435) 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:143:ARG:HD2	2:A:155:LYS:CE	1.44	1.45
2:A:143:ARG:CD	2:A:155:LYS:HE2	1.52	1.36

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:109:SER:O	2:B:110:LEU:HD23	1.31	1.22
2:D:107:LEU:O	2:D:108:VAL:HG22	1.42	1.18
2:B:107:LEU:N	2:B:107:LEU:HD23	1.56	1.16
2:B:37:GLU:HB2	2:B:108:VAL:CG2	1.76	1.14
2:B:117:LEU:HB2	2:B:118:PRO:HD3	1.30	1.11
2:C:143:ARG:HH11	2:C:155:LYS:HD3	1.17	1.08
1:R:22:U:H2'	2:B:317:ARG:HE	1.21	1.06
2:B:37:GLU:HB2	2:B:108:VAL:HG21	1.34	1.05
2:C:214:ARG:HA	2:C:217:THR:HG22	1.36	1.03
2:B:106:ASP:C	2:B:107:LEU:HD23	1.79	1.01
2:A:143:ARG:HD2	2:A:155:LYS:HE3	1.41	0.98
2:D:143:ARG:HE	2:D:155:LYS:HE3	1.27	0.96
2:A:117:LEU:HB3	2:A:118:PRO:HD3	1.46	0.94
2:E:133:TRP:CD1	2:E:134:LEU:N	2.36	0.94
2:D:117:LEU:HB2	2:D:118:PRO:HD3	1.48	0.93
2:B:172:GLU:HB3	2:B:173:PRO:HD3	1.49	0.93
2:B:107:LEU:N	2:B:107:LEU:CD2	2.31	0.92
2:E:129:ALA:HB1	2:E:133:TRP:HE1	1.33	0.91
2:A:143:ARG:HD2	2:A:155:LYS:HE2	0.92	0.90
2:B:37:GLU:HB2	2:B:108:VAL:HG22	1.56	0.88
2:D:214:ARG:HA	2:D:217:THR:HG22	1.54	0.88
2:B:320:ASP:HB3	2:C:312:ARG:NH2	1.89	0.88
2:B:109:SER:O	2:B:110:LEU:CD2	2.21	0.87
2:A:324:TYR:O	2:A:328:THR:HG23	1.76	0.86
2:C:117:LEU:HB2	2:C:118:PRO:HD3	1.59	0.85
2:D:146:ARG:HH11	2:D:223:LYS:HE2	1.40	0.85
2:B:107:LEU:HD13	2:B:274:TYR:OH	1.77	0.84
2:B:117:LEU:HB2	2:B:118:PRO:CD	2.07	0.83
2:C:2:SER:HB3	2:D:243:GLU:HG3	1.58	0.83
2:E:117:LEU:HB2	2:E:118:PRO:HD3	1.60	0.82
1:R:11:U:H3'	1:R:12:U:H5''	1.62	0.81
2:B:37:GLU:CB	2:B:108:VAL:HG21	2.09	0.81
2:A:143:ARG:CG	2:A:155:LYS:HE2	2.09	0.81
2:B:164:CYS:HA	2:B:168:ASN:H	1.46	0.81
2:D:83:LYS:HG3	2:D:101:THR:HG22	1.64	0.79
2:D:143:ARG:HE	2:D:155:LYS:CE	1.97	0.78
2:E:324:TYR:O	2:E:328:THR:HG23	1.84	0.78
2:B:106:ASP:C	2:B:107:LEU:CD2	2.53	0.77
2:A:323:GLU:OE1	2:B:239:GLY:HA3	1.84	0.77
2:C:143:ARG:NH1	2:C:155:LYS:HD3	1.97	0.77
2:D:107:LEU:O	2:D:108:VAL:CG2	2.30	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:253:GLU:CD	2:A:253:GLU:H	1.88	0.76
2:B:320:ASP:HB3	2:C:312:ARG:HH22	1.47	0.76
2:C:253:GLU:CD	2:C:253:GLU:H	1.89	0.76
2:A:215:TYR:N	2:A:215:TYR:HD2	1.83	0.75
2:D:143:ARG:NE	2:D:155:LYS:HE3	1.99	0.74
2:A:354:LYS:HD2	2:E:379:LEU:HB3	1.68	0.74
2:A:214:ARG:HA	2:A:217:THR:HG22	1.68	0.74
2:A:215:TYR:N	2:A:215:TYR:CD2	2.55	0.74
2:C:117:LEU:CB	2:C:118:PRO:HD3	2.17	0.74
2:E:133:TRP:O	2:E:136:LEU:N	2.20	0.74
2:D:107:LEU:C	2:D:108:VAL:HG22	2.06	0.74
1:R:3:U:H2'	1:R:4:U:H4'	1.70	0.73
2:D:146:ARG:HH11	2:D:223:LYS:CE	2.01	0.73
2:A:215:TYR:HD2	2:A:215:TYR:H	1.36	0.73
2:E:37:GLU:HB2	2:E:108:VAL:HG21	1.68	0.73
1:R:38:U:H3'	1:R:39:U:H5''	1.69	0.73
2:C:44:THR:OG1	2:C:46:LYS:HE3	1.90	0.71
2:C:172:GLU:H	2:C:173:PRO:HD2	1.55	0.71
2:E:129:ALA:HB1	2:E:133:TRP:NE1	2.04	0.71
2:E:133:TRP:HD1	2:E:133:TRP:H	1.35	0.71
2:A:399:ARG:HB3	2:E:422:LYS:NZ	2.06	0.70
1:R:23:U:H5'	2:B:317:ARG:HH21	1.56	0.70
2:B:214:ARG:HA	2:B:217:THR:HG22	1.74	0.70
1:R:44:U:H5''	2:E:143:ARG:NH2	2.07	0.70
1:R:15:U:C4	2:C:408:ARG:HD3	2.28	0.69
2:E:356:THR:HG23	2:E:357:PRO:HD3	1.72	0.69
2:C:214:ARG:HA	2:C:217:THR:CG2	2.20	0.68
2:C:37:GLU:HB2	2:C:108:VAL:HG21	1.76	0.68
1:R:23:U:H5'	2:B:317:ARG:NH2	2.09	0.68
2:E:253:GLU:CD	2:E:253:GLU:H	1.98	0.67
1:R:44:U:C2'	1:R:45:U:H5''	2.24	0.66
2:B:356:THR:HG23	2:B:357:PRO:HD3	1.77	0.66
2:C:172:GLU:H	2:C:173:PRO:CD	2.08	0.66
2:E:133:TRP:CG	2:E:134:LEU:N	2.64	0.66
1:R:12:U:OP2	2:C:286:LYS:NZ	2.28	0.66
2:E:354:LYS:HE3	2:E:356:THR:HA	1.76	0.66
1:R:29:U:OP1	2:A:286:LYS:NZ	2.25	0.65
2:A:399:ARG:HB3	2:E:422:LYS:HZ2	1.62	0.65
2:D:66:ILE:HD13	2:D:185:TRP:CD1	2.31	0.65
1:R:44:U:C3'	1:R:45:U:H5''	2.27	0.64
2:D:107:LEU:C	2:D:108:VAL:CG2	2.66	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:R:13:U:H3'	2:C:317:ARG:HH21	1.62	0.64
2:A:364:LEU:HB3	2:A:368:ALA:HB2	1.80	0.64
2:C:323:GLU:CD	2:D:239:GLY:HA3	2.18	0.64
2:D:28:PRO:HG2	2:D:266:GLN:HE21	1.62	0.64
2:C:233:HIS:CE1	2:C:312:ARG:HE	2.16	0.64
2:B:179:ARG:HA	2:B:183:ASP:CG	2.18	0.64
1:R:6:U:H5''	1:R:6:U:C6	2.32	0.63
2:E:40:LEU:HD22	2:E:42:ILE:HG13	1.80	0.63
2:E:379:LEU:O	2:E:383:GLU:HG2	1.99	0.63
1:R:6:U:O4'	2:D:149:MET:HG3	1.99	0.63
2:B:28:PRO:HG2	2:B:266:GLN:HE21	1.64	0.63
1:R:15:U:H5'	2:C:408:ARG:HH22	1.64	0.62
2:A:143:ARG:CD	2:A:155:LYS:CE	2.32	0.62
2:E:317:ARG:H	2:E:317:ARG:NE	1.97	0.62
2:B:325:THR:O	2:B:329:THR:HG22	2.00	0.62
1:R:15:U:H5''	2:C:408:ARG:HH12	1.64	0.62
1:R:2:U:H3'	1:R:3:U:H5''	1.79	0.62
2:C:79:ASP:C	2:C:81:ARG:H	2.03	0.62
2:A:42:ILE:HG21	2:A:70:ASN:HB3	1.80	0.62
2:A:253:GLU:O	2:A:257:GLU:HG3	2.00	0.62
1:R:44:U:H2'	1:R:45:U:H5''	1.82	0.61
2:D:29:ALA:H	2:D:266:GLN:HE22	1.47	0.61
2:E:104:ILE:HD11	2:E:198:VAL:HG22	1.81	0.61
2:E:133:TRP:HD1	2:E:134:LEU:H	1.42	0.61
2:C:143:ARG:HH11	2:C:155:LYS:CD	2.05	0.61
2:E:302:GLN:HG2	2:E:316:ALA:CB	2.31	0.61
1:R:44:U:OP2	2:E:155:LYS:NZ	2.33	0.61
1:R:41:U:O5'	2:E:317:ARG:NH2	2.34	0.60
1:R:17:U:H5''	2:C:143:ARG:HH12	1.65	0.60
2:B:149:MET:O	2:B:151:GLU:N	2.33	0.60
2:B:29:ALA:H	2:B:266:GLN:HE22	1.47	0.60
2:A:395:GLN:HE21	2:A:395:GLN:HA	1.65	0.60
2:C:149:MET:HB2	2:C:150:PRO:HD2	1.84	0.60
2:D:143:ARG:HD2	2:D:216:GLY:HA2	1.83	0.60
2:B:298:HIS:NE2	2:B:317:ARG:NH1	2.50	0.59
2:D:146:ARG:NH1	2:D:223:LYS:NZ	2.51	0.59
2:E:350:VAL:HG12	2:E:350:VAL:O	2.03	0.59
2:E:97:LYS:O	2:E:98:ALA:C	2.40	0.58
2:E:151:GLU:CD	2:E:155:LYS:HD2	2.22	0.58
2:A:136:LEU:HD22	2:A:163:GLN:HE21	1.68	0.58
2:D:89:SER:O	2:D:270:LYS:NZ	2.35	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:128:SER:OG	2:D:129:ALA:N	2.36	0.58
1:R:17:U:H3'	2:C:143:ARG:HH22	1.68	0.58
2:A:253:GLU:CD	2:A:253:GLU:N	2.56	0.58
2:A:317:ARG:CZ	2:A:317:ARG:H	2.16	0.58
2:B:230:THR:HG21	2:B:298:HIS:CE1	2.38	0.58
2:C:385:GLN:HG2	2:C:390:THR:HG22	1.84	0.58
1:R:3:U:H4'	2:D:224:ASP:HB3	1.86	0.58
2:B:233:HIS:CE1	2:B:312:ARG:HD2	2.39	0.58
1:R:17:U:H2'	1:R:18:U:H5''	1.85	0.58
2:D:303:LEU:HA	2:D:412:ILE:HD13	1.86	0.58
2:B:172:GLU:HB3	2:B:173:PRO:CD	2.29	0.58
2:B:106:ASP:O	2:B:107:LEU:HD22	2.05	0.57
2:D:38:ILE:O	2:D:38:ILE:HG13	2.04	0.57
2:A:165:LYS:HA	2:E:184:VAL:HG22	1.86	0.57
2:D:407:LEU:HD13	2:D:414:LYS:HA	1.86	0.57
2:C:155:LYS:HA	2:C:155:LYS:HE3	1.87	0.57
2:E:390:THR:OG1	2:E:393:MET:HG2	2.04	0.57
2:B:317:ARG:CZ	2:B:317:ARG:H	2.18	0.57
2:C:55:VAL:HG12	2:C:69:VAL:HG12	1.87	0.57
1:R:20:U:OP1	2:B:286:LYS:NZ	2.30	0.56
2:D:143:ARG:CD	2:D:216:GLY:HA2	2.35	0.56
2:B:104:ILE:HD11	2:B:198:VAL:HG22	1.87	0.56
2:C:143:ARG:HG2	2:C:216:GLY:HA2	1.87	0.56
1:R:24:U:H6	1:R:24:U:H5'	1.70	0.56
2:C:302:GLN:HG2	2:C:316:ALA:CB	2.35	0.56
2:E:278:LEU:HD12	2:E:279:ILE:HG12	1.87	0.56
2:A:17:LYS:HG3	2:B:268:ILE:HD11	1.87	0.56
2:A:187:ASN:N	2:A:187:ASN:HD22	2.02	0.56
2:C:155:LYS:O	2:C:155:LYS:HG3	2.05	0.56
2:A:342:ALA:N	2:E:387:ARG:HH12	2.04	0.56
2:B:38:ILE:HD11	2:B:107:LEU:HD12	1.87	0.56
2:C:157:MET:HG3	2:C:158:ASP:H	1.71	0.56
2:B:37:GLU:OE2	2:B:108:VAL:HG11	2.06	0.56
2:B:226:ALA:O	2:B:230:THR:HG23	2.06	0.56
2:B:253:GLU:H	2:B:253:GLU:CD	2.09	0.56
2:C:41:TYR:HB2	2:C:190:ASN:HD21	1.69	0.56
2:D:212:SER:O	2:D:215:TYR:HD1	1.90	0.55
1:R:3:U:C2'	1:R:4:U:H4'	2.36	0.55
2:A:336:TYR:O	2:A:340:SER:HB2	2.07	0.55
2:C:149:MET:O	2:C:151:GLU:N	2.38	0.55
2:C:253:GLU:CD	2:C:253:GLU:N	2.60	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:133:TRP:CD1	2:E:133:TRP:N	2.67	0.55
2:A:130:ASP:CG	2:A:131:ASP:H	2.09	0.55
2:A:233:HIS:CE1	2:A:312:ARG:HD2	2.42	0.55
1:R:22:U:H2'	2:B:317:ARG:NE	2.06	0.55
2:E:202:PHE:HB2	2:E:214:ARG:HD3	1.89	0.55
2:B:106:ASP:O	2:B:107:LEU:CD2	2.54	0.55
2:D:136:LEU:HD22	2:D:163:GLN:HG3	1.89	0.54
2:D:328:THR:HG21	2:D:415:TYR:HE1	1.71	0.54
2:B:356:THR:CG2	2:B:357:PRO:HD3	2.37	0.54
2:C:146:ARG:O	2:C:146:ARG:HD3	2.08	0.54
2:E:130:ASP:C	2:E:132:LYS:H	2.10	0.54
1:R:18:U:H4'	1:R:18:U:OP1	2.08	0.54
2:A:257:GLU:OE1	2:A:295:PRO:HD2	2.08	0.54
2:B:118:PRO:O	2:B:119:ASP:HB2	2.08	0.53
2:B:324:TYR:O	2:B:328:THR:HG22	2.07	0.53
2:E:268:ILE:HG22	2:E:275:MET:HG3	1.89	0.53
2:A:117:LEU:HB3	2:A:118:PRO:CD	2.29	0.53
1:R:6:U:H5''	1:R:6:U:H6	1.72	0.53
2:A:149:MET:O	2:A:151:GLU:N	2.41	0.53
2:B:317:ARG:NH1	2:B:317:ARG:H	2.06	0.53
2:E:97:LYS:O	2:E:99:GLY:N	2.42	0.53
2:D:179:ARG:HA	2:D:183:ASP:CG	2.29	0.53
1:R:30:U:H2'	1:R:31:U:O4'	2.09	0.53
2:A:302:GLN:HG2	2:A:316:ALA:CB	2.39	0.53
2:C:29:ALA:H	2:C:266:GLN:HE22	1.57	0.53
2:C:38:ILE:HG13	2:C:38:ILE:O	2.08	0.53
2:E:149:MET:O	2:E:151:GLU:N	2.38	0.53
2:C:210:CYS:HB3	2:C:213:PHE:CE1	2.44	0.52
2:E:133:TRP:O	2:E:134:LEU:C	2.48	0.52
1:R:41:U:C4	2:E:312:ARG:HG3	2.44	0.52
2:E:129:ALA:O	2:E:133:TRP:CD1	2.62	0.52
2:A:23:ASP:HB2	2:A:286:LYS:NZ	2.24	0.52
2:A:149:MET:C	2:A:151:GLU:H	2.13	0.52
2:B:66:ILE:HD13	2:B:185:TRP:CD1	2.44	0.52
2:D:304:THR:HG21	2:D:334:TYR:CD2	2.45	0.52
1:R:14:U:H5''	2:C:317:ARG:HH22	1.74	0.52
2:E:151:GLU:OE2	2:E:155:LYS:HD2	2.09	0.52
2:B:320:ASP:CB	2:C:312:ARG:HH22	2.22	0.52
2:D:43:ASN:HB2	2:D:112:ALA:N	2.25	0.52
1:R:4:U:OP2	2:D:290:SER:HB2	2.10	0.52
2:D:107:LEU:HD11	2:D:281:PHE:CZ	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:317:ARG:H	2:D:317:ARG:NE	2.08	0.52
2:A:298:HIS:NE2	2:A:317:ARG:NH1	2.58	0.51
1:R:4:U:C6	2:D:317:ARG:HG3	2.44	0.51
2:A:29:ALA:H	2:A:266:GLN:HE22	1.57	0.51
2:E:233:HIS:O	2:E:237:ILE:HG12	2.11	0.51
1:R:8:U:P	2:D:155:LYS:NZ	2.83	0.51
2:D:105:PHE:C	2:D:107:LEU:H	2.14	0.51
1:R:26:U:H5'	2:B:143:ARG:HH21	1.76	0.51
2:B:66:ILE:HD13	2:B:185:TRP:CG	2.46	0.51
2:B:104:ILE:HD11	2:B:198:VAL:HA	1.92	0.51
2:D:149:MET:O	2:D:151:GLU:N	2.44	0.51
2:D:107:LEU:CD1	2:D:281:PHE:CZ	2.93	0.51
2:A:143:ARG:HG3	2:A:155:LYS:HE2	1.92	0.51
1:R:23:U:C5'	2:B:317:ARG:NH2	2.74	0.50
2:C:133:TRP:HB3	2:C:167:ILE:HD12	1.92	0.50
1:R:44:U:H5'	2:E:143:ARG:HH22	1.76	0.50
2:B:270:LYS:HE3	2:B:273:SER:HB2	1.93	0.50
2:B:160:LEU:HD12	2:B:161:THR:HG23	1.94	0.50
2:D:146:ARG:NH1	2:D:223:LYS:CE	2.74	0.50
2:E:343:ASP:OD2	2:E:373:ARG:NH2	2.45	0.50
2:A:166:MET:C	2:A:167:ILE:HG13	2.32	0.50
1:R:13:U:H3'	2:C:317:ARG:NH2	2.25	0.50
2:A:143:ARG:HD3	2:A:219:VAL:HG11	1.94	0.50
2:D:117:LEU:HB2	2:D:118:PRO:CD	2.32	0.50
2:A:324:TYR:HD1	2:B:237:ILE:HD11	1.76	0.50
2:B:65:SER:HB2	2:B:117:LEU:HD11	1.94	0.50
2:D:133:TRP:HB3	2:D:167:ILE:HD13	1.94	0.50
2:A:214:ARG:HA	2:A:217:THR:CG2	2.38	0.49
2:A:106:ASP:C	2:A:107:LEU:HD12	2.33	0.49
2:C:149:MET:C	2:C:151:GLU:H	2.14	0.49
2:E:253:GLU:CD	2:E:253:GLU:N	2.65	0.49
2:C:106:ASP:C	2:C:107:LEU:HD12	2.33	0.49
2:A:143:ARG:HH11	2:A:155:LYS:HE3	1.77	0.49
2:D:328:THR:HG21	2:D:415:TYR:CE1	2.46	0.49
2:E:66:ILE:HD13	2:E:185:TRP:CD1	2.47	0.49
2:A:77:LEU:C	2:A:79:ASP:H	2.16	0.49
2:A:136:LEU:HD21	2:A:162:ASN:HD22	1.77	0.49
2:B:38:ILE:HG13	2:B:38:ILE:O	2.13	0.48
2:A:320:ASP:HA	2:A:324:TYR:OH	2.14	0.48
2:A:338:VAL:HG13	2:A:373:ARG:NH1	2.28	0.48
2:B:109:SER:C	2:B:110:LEU:HD23	2.24	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:107:LEU:CD1	2:B:274:TYR:HE2	2.26	0.48
2:B:107:LEU:HD23	2:B:107:LEU:H	1.66	0.48
2:D:172:GLU:HB3	2:D:173:PRO:HD3	1.96	0.48
1:R:6:U:H3'	2:D:408:ARG:HH22	1.79	0.48
2:D:109:SER:O	2:D:110:LEU:HD23	2.14	0.47
2:A:210:CYS:HB3	2:A:213:PHE:CE1	2.49	0.47
2:C:117:LEU:CB	2:C:118:PRO:CD	2.90	0.47
2:E:29:ALA:H	2:E:266:GLN:HE22	1.62	0.47
1:R:4:U:H3'	2:D:317:ARG:NE	2.28	0.47
2:C:43:ASN:CG	2:C:112:ALA:HB3	2.35	0.47
2:C:342:ALA:HB1	2:C:344:LEU:HD23	1.96	0.47
1:R:27:U:O2'	1:R:29:U:OP2	2.32	0.47
2:D:149:MET:C	2:D:151:GLU:H	2.18	0.47
2:A:166:MET:H	2:E:184:VAL:HG13	1.80	0.47
2:B:149:MET:C	2:B:151:GLU:H	2.18	0.47
1:R:2:U:OP1	2:D:286:LYS:NZ	2.34	0.47
2:A:414:LYS:HE3	2:A:414:LYS:HA	1.95	0.47
2:A:81:ARG:HD2	2:A:208:HIS:HE2	1.80	0.47
2:B:107:LEU:CD1	2:B:274:TYR:CE2	2.98	0.47
2:B:172:GLU:CB	2:B:173:PRO:HD3	2.33	0.47
2:B:66:ILE:O	2:B:70:ASN:ND2	2.48	0.47
2:B:184:VAL:HG13	2:C:165:LYS:HA	1.96	0.47
2:C:19:PRO:HD3	2:D:228:LEU:HD22	1.97	0.47
2:A:42:ILE:CG2	2:A:70:ASN:HB3	2.45	0.46
2:B:107:LEU:HD13	2:B:274:TYR:CZ	2.50	0.46
2:E:117:LEU:CB	2:E:118:PRO:HD3	2.36	0.46
2:E:250:LEU:HD22	2:E:379:LEU:HD21	1.98	0.46
2:E:368:ALA:HB1	2:E:369:PRO:HD2	1.96	0.46
2:B:41:TYR:HA	2:B:110:LEU:O	2.15	0.46
2:B:332:LEU:HD21	2:B:397:ALA:HB2	1.98	0.46
2:E:325:THR:O	2:E:329:THR:HG22	2.15	0.46
2:A:268:ILE:HG22	2:A:275:MET:SD	2.56	0.46
2:D:66:ILE:HD11	2:D:191:TYR:HB2	1.97	0.46
2:D:84:LEU:HD11	2:D:88:TRP:HB2	1.96	0.46
2:A:419:GLU:OE1	2:B:309:ARG:NH1	2.48	0.46
1:R:23:U:C5'	2:B:317:ARG:HH21	2.26	0.46
2:B:409:GLU:N	2:B:409:GLU:OE2	2.48	0.46
2:D:339:GLY:HA3	2:D:396:TYR:OH	2.16	0.46
1:R:8:U:OP1	2:D:154:LYS:NZ	2.46	0.46
2:B:152:TYR:HD1	2:B:153:ARG:H	1.63	0.46
2:B:199:ASP:OD1	2:B:214:ARG:HD2	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:293:LYS:C	2:C:295:PRO:HD3	2.36	0.46
2:D:199:ASP:OD1	2:D:217:THR:HG23	2.16	0.46
2:E:130:ASP:O	2:E:132:LYS:N	2.49	0.46
2:B:72:TYR:CE1	2:B:134:LEU:HD12	2.51	0.46
2:B:317:ARG:O	2:B:317:ARG:HG2	2.16	0.46
2:C:79:ASP:C	2:C:81:ARG:N	2.68	0.46
2:A:43:ASN:ND2	2:A:45:THR:OG1	2.48	0.45
2:B:81:ARG:HD3	2:B:208:HIS:HE2	1.82	0.45
2:B:133:TRP:HB3	2:B:167:ILE:HG21	1.99	0.45
2:D:317:ARG:H	2:D:317:ARG:CD	2.28	0.45
2:E:175:VAL:HB	2:E:176:PRO:HD2	1.98	0.45
2:C:172:GLU:N	2:C:173:PRO:HD2	2.27	0.45
2:A:374:ASP:O	2:A:378:TRP:HD1	1.98	0.45
2:E:263:LEU:HA	2:E:264:PRO:HD3	1.83	0.45
1:R:11:U:H3'	1:R:12:U:C5'	2.42	0.45
2:B:18:LEU:HD21	2:C:242:THR:HG22	1.97	0.45
2:C:31:TYR:CD2	2:C:283:LEU:HA	2.51	0.45
2:E:129:ALA:O	2:E:133:TRP:HD1	1.99	0.45
2:B:37:GLU:CG	2:B:108:VAL:HG21	2.46	0.45
2:E:233:HIS:HB2	2:E:312:ARG:CZ	2.47	0.45
1:R:31:U:H3'	2:A:317:ARG:NE	2.30	0.45
2:A:354:LYS:HE3	2:A:356:THR:HA	1.99	0.45
2:B:81:ARG:HD3	2:B:208:HIS:CE1	2.52	0.45
2:B:128:SER:O	2:B:130:ASP:N	2.49	0.45
2:C:41:TYR:HB2	2:C:190:ASN:ND2	2.31	0.45
2:B:253:GLU:CD	2:B:253:GLU:N	2.70	0.45
2:C:140:GLY:HA2	2:C:216:GLY:HA3	1.97	0.45
2:E:299:PHE:HE1	2:E:328:THR:HG22	1.82	0.45
2:A:228:LEU:HD12	2:E:19:PRO:HD3	1.98	0.45
2:C:104:ILE:HD12	2:C:104:ILE:N	2.32	0.45
2:B:152:TYR:HD1	2:B:153:ARG:N	2.14	0.45
2:B:287:SER:HA	2:B:288:PRO:HD3	1.88	0.45
2:D:146:ARG:NH1	2:D:223:LYS:HE2	2.20	0.45
2:B:66:ILE:HD11	2:B:191:TYR:HB2	1.99	0.44
2:C:68:HIS:HE1	2:C:117:LEU:H	1.66	0.44
1:R:14:U:C5'	2:C:317:ARG:HH22	2.30	0.44
2:B:308:LEU:O	2:B:309:ARG:HB2	2.16	0.44
2:C:405:GLN:O	2:C:407:LEU:HG	2.16	0.44
2:A:417:LYS:HE2	2:A:421:ASP:OD2	2.18	0.44
2:B:38:ILE:H	2:B:108:VAL:HG23	1.82	0.44
2:B:123:ASP:C	2:B:125:SER:H	2.21	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:317:ARG:H	2:C:317:ARG:NH1	2.16	0.44
2:B:128:SER:O	2:B:129:ALA:C	2.56	0.44
1:R:2:U:H3'	1:R:3:U:C5'	2.46	0.44
2:D:117:LEU:CB	2:D:118:PRO:HD3	2.34	0.44
2:B:346:GLN:O	2:E:8:ILE:HD11	2.18	0.44
2:E:48:LEU:HA	2:E:51:LEU:HD12	2.00	0.44
2:C:306:LEU:HD22	2:C:412:ILE:HD12	1.99	0.44
2:A:122:SER:OG	2:A:123:ASP:N	2.50	0.43
2:B:215:TYR:CD2	2:B:215:TYR:N	2.86	0.43
2:C:308:LEU:O	2:C:309:ARG:HB2	2.17	0.43
2:E:172:GLU:H	2:E:173:PRO:CD	2.31	0.43
2:D:28:PRO:HG2	2:D:266:GLN:NE2	2.31	0.43
2:E:172:GLU:H	2:E:173:PRO:HD2	1.84	0.43
2:E:148:GLN:HG2	2:E:179:ARG:HD2	2.00	0.43
2:E:149:MET:C	2:E:151:GLU:H	2.21	0.43
2:D:214:ARG:HA	2:D:217:THR:CG2	2.37	0.43
1:R:14:U:O5'	2:C:317:ARG:NH2	2.51	0.43
2:C:263:LEU:HA	2:C:264:PRO:HD3	1.84	0.43
2:D:302:GLN:HG2	2:D:316:ALA:CB	2.48	0.43
2:A:227:ALA:HA	2:A:230:THR:HG23	2.01	0.43
2:E:28:PRO:O	2:E:31:TYR:HB3	2.19	0.43
2:E:66:ILE:HD11	2:E:191:TYR:HB2	2.00	0.43
2:E:172:GLU:N	2:E:173:PRO:CD	2.81	0.43
1:R:17:U:C5'	2:C:155:LYS:HZ3	2.32	0.43
2:E:59:LEU:HD11	2:E:137:TYR:CE2	2.53	0.43
2:E:233:HIS:HB2	2:E:312:ARG:NH1	2.34	0.43
2:A:228:LEU:HD23	2:A:289:TYR:HB3	2.00	0.43
2:E:25:VAL:HG11	2:E:288:PRO:HA	2.01	0.43
2:E:303:LEU:HA	2:E:412:ILE:HD13	2.00	0.43
2:A:288:PRO:HG2	2:A:289:TYR:CE2	2.53	0.43
2:E:181:ILE:HB	2:E:182:PHE:H	1.72	0.43
2:D:85:ASP:OD1	2:D:86:LYS:HE3	2.19	0.42
2:C:107:LEU:HD23	2:C:274:TYR:HE2	1.84	0.42
2:E:38:ILE:HA	2:E:39:PRO:HD3	1.84	0.42
2:A:408:ARG:H	2:A:408:ARG:HG2	1.65	0.42
2:A:212:SER:O	2:A:215:TYR:CD2	2.72	0.42
2:D:303:LEU:HD22	2:D:328:THR:HG22	2.01	0.42
1:R:12:U:P	2:C:286:LYS:HZ3	2.43	0.42
2:E:38:ILE:HD11	2:E:107:LEU:HB3	2.01	0.42
2:E:248:TRP:CD1	2:E:375:VAL:HG22	2.55	0.42
2:A:344:LEU:HD21	2:E:330:ALA:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:19:PRO:HD3	2:C:228:LEU:HD22	2.02	0.42
2:B:152:TYR:CD1	2:B:153:ARG:N	2.88	0.42
2:B:263:LEU:HA	2:B:264:PRO:HD3	1.82	0.42
2:D:137:TYR:OH	2:D:173:PRO:HD3	2.20	0.42
2:E:302:GLN:HG3	2:E:313:ALA:HB1	2.00	0.42
1:R:21:U:H4'	2:B:224:ASP:CG	2.40	0.42
2:A:181:ILE:N	2:A:183:ASP:OD1	2.53	0.42
2:A:199:ASP:OD1	2:A:217:THR:HG23	2.19	0.42
2:A:239:GLY:HA3	2:E:323:GLU:CD	2.40	0.42
2:B:81:ARG:HD3	2:B:208:HIS:NE2	2.34	0.42
2:C:105:PHE:C	2:C:107:LEU:H	2.22	0.42
2:E:409:GLU:HA	2:E:414:LYS:HD2	2.01	0.42
1:R:27:U:H4'	1:R:29:U:C5	2.54	0.42
2:E:172:GLU:N	2:E:173:PRO:HD2	2.34	0.42
2:C:78:LYS:HA	2:C:78:LYS:HD3	1.81	0.42
2:C:409:GLU:O	2:C:410:LYS:HB2	2.19	0.41
2:D:398:LYS:O	2:D:402:MET:HG2	2.20	0.41
1:R:23:U:H2'	1:R:25:U:H5''	2.02	0.41
2:A:172:GLU:CB	2:A:173:PRO:HD3	2.50	0.41
2:B:40:LEU:HD13	2:B:42:ILE:HD11	2.02	0.41
2:A:342:ALA:H	2:E:387:ARG:HH12	1.68	0.41
2:D:43:ASN:ND2	2:D:111:LYS:HD3	2.35	0.41
1:R:8:U:P	2:D:155:LYS:HZ1	2.42	0.41
2:A:342:ALA:HB2	2:E:329:THR:HG21	2.02	0.41
2:A:381:TRP:O	2:A:384:ASP:HB2	2.20	0.41
2:B:370:PRO:HD3	2:B:381:TRP:CG	2.56	0.41
2:D:79:ASP:HB2	2:D:81:ARG:HG3	2.02	0.41
2:D:290:SER:O	2:D:294:ASN:ND2	2.50	0.41
1:R:31:U:H2'	2:A:317:ARG:HE	1.84	0.41
2:E:187:ASN:HD22	2:E:187:ASN:HA	1.70	0.41
2:E:275:MET:HB3	2:E:276:PRO:HD3	2.01	0.41
2:A:97:LYS:O	2:A:98:ALA:C	2.59	0.41
2:C:175:VAL:O	2:C:181:ILE:HG12	2.20	0.41
2:C:293:LYS:HD2	2:C:293:LYS:HA	1.91	0.41
2:E:130:ASP:C	2:E:132:LYS:N	2.73	0.41
2:E:214:ARG:HA	2:E:217:THR:OG1	2.21	0.41
2:B:128:SER:C	2:B:130:ASP:N	2.70	0.41
2:C:294:ASN:N	2:C:295:PRO:HD3	2.36	0.41
2:E:133:TRP:O	2:E:135:PRO:N	2.54	0.41
2:A:149:MET:C	2:A:151:GLU:N	2.75	0.41
2:A:199:ASP:OD1	2:A:214:ARG:NE	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:243:GLU:HG3	2:E:2:SER:HB3	2.02	0.41
2:A:401:VAL:HG23	2:A:421:ASP:HB2	2.03	0.41
2:A:128:SER:C	2:A:130:ASP:H	2.23	0.41
2:D:311:THR:O	2:D:314:ARG:HG2	2.21	0.41
2:B:81:ARG:HB3	2:B:208:HIS:HE2	1.87	0.40
2:E:18:LEU:HB2	2:E:19:PRO:HD2	2.03	0.40
2:E:299:PHE:O	2:E:300:TRP:C	2.59	0.40
2:B:28:PRO:HG2	2:B:266:GLN:NE2	2.34	0.40
2:B:38:ILE:HA	2:B:39:PRO:HD3	1.88	0.40
2:B:313:ALA:O	2:B:314:ARG:C	2.58	0.40
2:C:181:ILE:HB	2:C:182:PHE:H	1.51	0.40
2:D:401:VAL:HG21	2:D:420:PHE:HB2	2.03	0.40
2:E:302:GLN:HG3	2:E:313:ALA:CB	2.51	0.40
1:R:13:U:H5'	1:R:14:U:OP2	2.21	0.40
1:R:35:U:OP2	2:A:155:LYS:NZ	2.41	0.40
2:A:395:GLN:HA	2:A:395:GLN:NE2	2.35	0.40
2:D:43:ASN:HD22	2:D:111:LYS:HD3	1.85	0.40
1:R:20:U:H2'	1:R:21:U:O4'	2.21	0.40
2:C:22:GLU:HB3	2:C:23:ASP:H	1.55	0.40
2:C:356:THR:N	2:C:357:PRO:HD3	2.36	0.40
2:D:38:ILE:HA	2:D:39:PRO:HD3	1.91	0.40
2:B:118:PRO:O	2:B:119:ASP:CB	2.70	0.40
2:C:58:GLY:HA3	2:C:64:VAL:HB	2.03	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	419/422 (99%)	354 (84%)	46 (11%)	19 (4%)	2 8
2	B	411/422 (97%)	344 (84%)	45 (11%)	22 (5%)	2 5

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	C	409/422 (97%)	340 (83%)	49 (12%)	20 (5%)	2	7
2	D	412/422 (98%)	343 (83%)	48 (12%)	21 (5%)	2	6
2	E	419/422 (99%)	349 (83%)	48 (12%)	22 (5%)	2	5
All	All	2070/2110 (98%)	1730 (84%)	236 (11%)	104 (5%)	2	6

All (104) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	A	47	SER
2	A	98	ALA
2	A	113	LEU
2	A	172	GLU
2	B	98	ALA
2	B	117	LEU
2	B	122	SER
2	B	128	SER
2	B	150	PRO
2	B	168	ASN
2	C	113	LEU
2	C	117	LEU
2	C	122	SER
2	C	172	GLU
2	C	181	ILE
2	D	98	ALA
2	D	122	SER
2	D	357	PRO
2	E	98	ALA
2	A	150	PRO
2	A	181	ILE
2	A	344	LEU
2	B	22	GLU
2	B	47	SER
2	B	119	ASP
2	B	129	ALA
2	B	172	GLU
2	B	177	GLU
2	B	344	LEU
2	C	130	ASP
2	C	150	PRO
2	C	344	LEU
2	C	371	GLN

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Mol	Chain	Res	Type
2	D	120	GLY
2	D	130	ASP
2	D	168	ASN
2	D	344	LEU
2	D	366	THR
2	D	386	ASN
2	E	47	SER
2	E	120	GLY
2	E	122	SER
2	E	177	GLU
2	E	343	ASP
2	E	344	LEU
2	E	360	SER
2	E	371	GLN
2	E	406	GLY
2	A	22	GLU
2	A	176	PRO
2	A	180	ASP
2	A	386	ASN
2	B	43	ASN
2	B	61	SER
2	B	113	LEU
2	B	170	GLN
2	B	180	ASP
2	D	79	ASP
2	D	127	THR
2	D	150	PRO
2	D	172	GLU
2	D	180	ASP
2	E	150	PRO
2	E	299	PHE
2	E	300	TRP
2	A	117	LEU
2	A	122	SER
2	A	130	ASP
2	B	165	LYS
2	C	22	GLU
2	C	168	ASN
2	C	176	PRO
2	C	386	ASN
2	C	406	GLY
2	D	22	GLU

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Mol	Chain	Res	Type
2	D	129	ALA
2	E	108	VAL
2	E	164	CYS
2	E	168	ASN
2	E	365	THR
2	A	128	SER
2	A	360	SER
2	C	47	SER
2	C	83	LYS
2	C	108	VAL
2	C	159	GLY
2	D	117	LEU
2	D	128	SER
2	D	271	ALA
2	E	173	PRO
2	E	271	ALA
2	B	179	ARG
2	B	309	ARG
2	C	167	ILE
2	E	80	ILE
2	E	117	LEU
2	A	121	VAL
2	A	264	PRO
2	C	80	ILE
2	E	181	ILE
2	B	80	ILE
2	D	42	ILE
2	D	80	ILE
2	A	108	VAL

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	362/363 (100%)	323 (89%)	39 (11%)	6 19
2	B	358/363 (99%)	311 (87%)	47 (13%)	4 12

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C	356/363 (98%)	303 (85%)	53 (15%)	3	8
2	D	359/363 (99%)	315 (88%)	44 (12%)	4	13
2	E	362/363 (100%)	324 (90%)	38 (10%)	7	20
All	All	1797/1815 (99%)	1576 (88%)	221 (12%)	4	13

All (221) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	18	LEU
2	A	22	GLU
2	A	40	LEU
2	A	87	ASP
2	A	116	VAL
2	A	134	LEU
2	A	143	ARG
2	A	153	ARG
2	A	156	LEU
2	A	157	MET
2	A	160	LEU
2	A	177	GLU
2	A	181	ILE
2	A	183	ASP
2	A	187	ASN
2	A	195	VAL
2	A	215	TYR
2	A	217	THR
2	A	228	LEU
2	A	230	THR
2	A	237	ILE
2	A	243	GLU
2	A	252	ARG
2	A	253	GLU
2	A	275	MET
2	A	307	LEU
2	A	308	LEU
2	A	309	ARG
2	A	317	ARG
2	A	326	SER
2	A	327	LEU
2	A	332	LEU
2	A	344	LEU

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Mol	Chain	Res	Type
2	A	353	ASN
2	A	359	ASP
2	A	395	GLN
2	A	405	GLN
2	A	408	ARG
2	A	414	LYS
2	B	2	SER
2	B	18	LEU
2	B	22	GLU
2	B	30	ASP
2	B	34	LYS
2	B	40	LEU
2	B	46	LYS
2	B	48	LEU
2	B	78	LYS
2	B	84	LEU
2	B	85	ASP
2	B	95	ILE
2	B	107	LEU
2	B	108	VAL
2	B	116	VAL
2	B	126	ARG
2	B	134	LEU
2	B	149	MET
2	B	153	ARG
2	B	154	LYS
2	B	156	LEU
2	B	163	GLN
2	B	165	LYS
2	B	181	ILE
2	B	189	SER
2	B	215	TYR
2	B	217	THR
2	B	237	ILE
2	B	243	GLU
2	B	278	LEU
2	B	286	LYS
2	B	307	LEU
2	B	308	LEU
2	B	311	THR
2	B	317	ARG
2	B	327	LEU

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Mol	Chain	Res	Type
2	B	329	THR
2	B	332	LEU
2	B	338	VAL
2	B	344	LEU
2	B	354	LYS
2	B	377	GLU
2	B	387	ARG
2	B	407	LEU
2	B	409	GLU
2	B	410	LYS
2	B	414	LYS
2	C	18	LEU
2	C	30	ASP
2	C	33	ARG
2	C	40	LEU
2	C	46	LYS
2	C	70	ASN
2	C	78	LYS
2	C	85	ASP
2	C	97	LYS
2	C	104	ILE
2	C	106	ASP
2	C	108	VAL
2	C	122	SER
2	C	134	LEU
2	C	143	ARG
2	C	149	MET
2	C	152	TYR
2	C	153	ARG
2	C	155	LYS
2	C	156	LEU
2	C	160	LEU
2	C	162	ASN
2	C	163	GLN
2	C	167	ILE
2	C	177	GLU
2	C	181	ILE
2	C	189	SER
2	C	195	VAL
2	C	214	ARG
2	C	228	LEU
2	C	230	THR

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Mol	Chain	Res	Type
2	C	243	GLU
2	C	252	ARG
2	C	253	GLU
2	C	278	LEU
2	C	286	LYS
2	C	307	LEU
2	C	308	LEU
2	C	311	THR
2	C	312	ARG
2	C	317	ARG
2	C	327	LEU
2	C	332	LEU
2	C	353	ASN
2	C	354	LYS
2	C	371	GLN
2	C	375	VAL
2	C	377	GLU
2	C	385	GLN
2	C	407	LEU
2	C	408	ARG
2	C	409	GLU
2	C	422	LYS
2	D	8	ILE
2	D	22	GLU
2	D	23	ASP
2	D	26	GLU
2	D	34	LYS
2	D	42	ILE
2	D	44	THR
2	D	64	VAL
2	D	83	LYS
2	D	84	LEU
2	D	85	ASP
2	D	97	LYS
2	D	104	ILE
2	D	108	VAL
2	D	126	ARG
2	D	128	SER
2	D	146	ARG
2	D	149	MET
2	D	153	ARG
2	D	171	PHE

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Mol	Chain	Res	Type
2	D	217	THR
2	D	228	LEU
2	D	230	THR
2	D	243	GLU
2	D	244	ASP
2	D	252	ARG
2	D	308	LEU
2	D	309	ARG
2	D	311	THR
2	D	312	ARG
2	D	317	ARG
2	D	326	SER
2	D	327	LEU
2	D	328	THR
2	D	332	LEU
2	D	353	ASN
2	D	354	LYS
2	D	367	ASN
2	D	377	GLU
2	D	394	MET
2	D	407	LEU
2	D	409	GLU
2	D	412	ILE
2	D	414	LYS
2	E	13	VAL
2	E	18	LEU
2	E	40	LEU
2	E	43	ASN
2	E	48	LEU
2	E	84	LEU
2	E	85	ASP
2	E	95	ILE
2	E	106	ASP
2	E	123	ASP
2	E	130	ASP
2	E	133	TRP
2	E	134	LEU
2	E	148	GLN
2	E	149	MET
2	E	180	ASP
2	E	181	ILE
2	E	182	PHE

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Mol	Chain	Res	Type
2	E	187	ASN
2	E	206	LYS
2	E	209	GLU
2	E	242	THR
2	E	243	GLU
2	E	253	GLU
2	E	307	LEU
2	E	308	LEU
2	E	309	ARG
2	E	314	ARG
2	E	317	ARG
2	E	327	LEU
2	E	332	LEU
2	E	349	CYS
2	E	354	LYS
2	E	356	THR
2	E	375	VAL
2	E	405	GLN
2	E	412	ILE
2	E	418	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	43	ASN
2	A	68	HIS
2	A	70	ASN
2	A	162	ASN
2	A	163	GLN
2	A	187	ASN
2	A	260	GLN
2	A	266	GLN
2	A	347	GLN
2	A	395	GLN
2	B	70	ASN
2	B	163	GLN
2	B	266	GLN
2	B	347	GLN
2	B	385	GLN
2	C	63	ASN
2	C	68	HIS
2	C	70	ASN

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Mol	Chain	Res	Type
2	C	168	ASN
2	C	266	GLN
2	D	43	ASN
2	D	57	GLN
2	D	63	ASN
2	D	68	HIS
2	D	70	ASN
2	D	163	GLN
2	D	203	HIS
2	D	266	GLN
2	D	347	GLN
2	D	371	GLN
2	D	395	GLN
2	E	70	ASN
2	E	187	ASN
2	E	266	GLN
2	E	315	ASN
2	E	347	GLN
2	E	395	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	R	44/45 (97%)	35 (79%)	8 (18%)

All (35) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	R	2	U
1	R	3	U
1	R	4	U
1	R	5	U
1	R	6	U
1	R	8	U
1	R	9	U
1	R	10	U
1	R	11	U
1	R	12	U
1	R	13	U
1	R	14	U
1	R	15	U

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Mol	Chain	Res	Type
1	R	17	U
1	R	18	U
1	R	19	U
1	R	21	U
1	R	23	U
1	R	24	U
1	R	25	U
1	R	26	U
1	R	27	U
1	R	28	U
1	R	29	U
1	R	30	U
1	R	32	U
1	R	33	U
1	R	36	U
1	R	37	U
1	R	38	U
1	R	39	U
1	R	40	U
1	R	41	U
1	R	42	U
1	R	45	U

All (8) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	R	4	U
1	R	5	U
1	R	6	U
1	R	12	U
1	R	14	U
1	R	20	U
1	R	32	U
1	R	39	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 15 are modelled with single atom - 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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.