WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Jul 3, 2025 – 03:02 am BST

PDB ID	:	6SPB / pdb_00006spb
EMDB ID	:	EMD-10280
Title	:	Pseudomonas aeruginosa 50s ribosome from a clinical isolate with a mutation in uL6
Authors	:	Halfon, Y.; Jimenez-Fernande, A.; La Ros, R.; Espinos, R.; Krogh Johansen, H.; Matzov, D.; Eyal, Z.; Bashan, A.; Zimmerman, E.; Belousoff, M.; Molin, S.; Yonath, A.
Deposited on	:	2019-09-01
Resolution	:	2.82 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

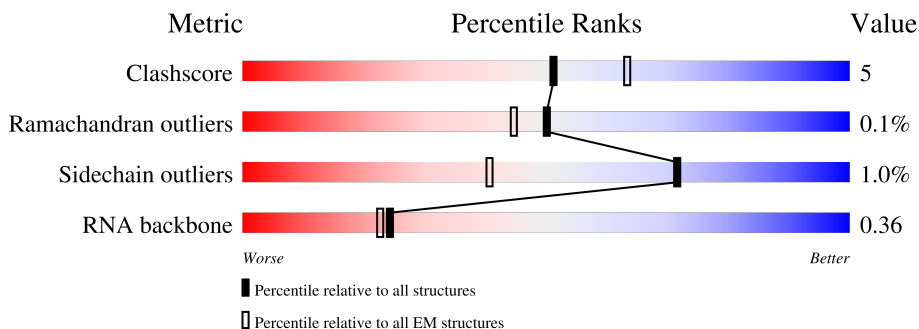|		
EMDB validation analysis	:	0.0.1.dev118
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.82 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		5
Ramachandran outliers		0.1%
Sidechain outliers		1.0%
RNA backbone		0.36

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	2888	· 60% 33% 7%
2	B	117	69% 19% 10% ·
3	C	271	81% 18% ·
4	D	207	85% 13% ·
5	E	199	82% 18%
6	F	174	21% / 71% 28% ·
7	G	169	12% / 79% 21%

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Mol	Chain	Length	Quality of chain
8	H	78	
9	I	140	
10	J	141	
11	K	120	
12	L	144	
13	M	136	
14	N	120	
15	O	115	
16	P	115	
17	Q	117	
18	R	102	
19	S	110	
20	T	94	
21	U	103	
22	V	188	
23	W	76	
24	X	77	
25	Y	60	
26	Z	57	
27	1	31	
28	2	53	
29	3	50	
30	4	44	
31	5	63	
32	6	38	

2 Entry composition ⓘ

There are 32 unique types of molecules in this entry. The entry contains 90362 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	2885	Total	C	N	O	P	0	0
			61899	27618	11351	20046	2884		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	361	A	G	conflict	GB 470469287
A	2872	G	U	conflict	GB 470469287

- Molecule 2 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	117	Total	C	N	O	P	0	0
			2495	1114	448	816	117		

- Molecule 3 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	271	Total	C	N	O	S	0	0
			2048	1258	422	362	6		

- Molecule 4 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	207	Total	C	N	O	S	0	0
			1549	960	297	287	5		

- Molecule 5 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	199	Total	C	N	O	S	0	0
			1509	948	281	278	2		

- Molecule 6 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	174	Total 1278	C 806	N 225	O 244	S 3	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	7	LEU	ILE	conflict	UNP A0A072ZMU2
F	80	ALA	ARG	conflict	UNP A0A072ZMU2
F	81	ALA	GLU	conflict	UNP A0A072ZMU2

- Molecule 7 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	169	Total 1264	C 795	N 233	O 234	S 2	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	?	-	GLY	deletion	UNP A0A2V3F3S9
G	?	-	TYR	deletion	UNP A0A2V3F3S9
G	?	-	LYS	deletion	UNP A0A2V3F3S9
G	?	-	ALA	deletion	UNP A0A2V3F3S9

- Molecule 8 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	H	78	Total 577	C 363	N 104	O 110	0	0

- Molecule 9 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	140	Total 1026	C 642	N 183	O 198	S 3	0	0

- Molecule 10 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	141	Total 1122	C 713	N 205	O 201	S 3	0	0

- Molecule 11 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	120	Total 922	C 576	N 178	O 162	S 6	0	0

- Molecule 12 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	143	Total 1055	C 648	N 213	O 192	S 2	0	0

- Molecule 13 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	135	Total 1069	C 679	N 209	O 178	S 3	0	0

- Molecule 14 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	118	Total 945	C 590	N 190	O 160	S 5	0	0

- Molecule 15 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	115	Total 881	C 544	N 174	O 161	S 2	0	0

- Molecule 16 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	113	Total 891	C 563	N 168	O 159	S 1	0	0

- Molecule 17 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	Q	117	Total 936	C 592	N 196	O 148	0	0

- Molecule 18 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	102	Total 801	C 509	N 154	O 136	S 2	0	0

- Molecule 19 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	109	Total 825	C 510	N 160	O 152	S 3	0	0

- Molecule 20 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	T	92	Total 701	C 449	N 124	O 128	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
T	2	ALA	ASN	conflict	UNP E2RXT1
T	3	ALA	GLN	conflict	UNP E2RXT1

- Molecule 21 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	103	Total 801	C 503	N 152	O 144	S 2	0	0

- Molecule 22 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	188	Total 1397	C 888	N 254	O 253	S 2	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	6	VAL	LEU	conflict	UNP A0A072ZBM5
V	71	VAL	ALA	conflict	UNP A0A072ZBM5

- Molecule 23 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	W	76	Total	C	N	O	0	0
			574	365	110	99		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	40	LEU	GLN	conflict	UNP A0A071LFT4

- Molecule 24 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	77	Total	C	N	O	S	0	0
			626	389	134	101	2		

- Molecule 25 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	60	Total	C	N	O	S	0	0
			468	286	96	85	1		

There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Y	8	GLU	-	insertion	UNP W6V2V8
Y	11	GLY	ALA	conflict	UNP W6V2V8
Y	12	PRO	GLN	conflict	UNP W6V2V8
Y	13	VAL	GLN	conflict	UNP W6V2V8
Y	14	THR	LEU	conflict	UNP W6V2V8
Y	15	GLY	ASN	conflict	UNP W6V2V8
Y	16	ASN	GLU	conflict	UNP W6V2V8
Y	17	ASN	GLN	conflict	UNP W6V2V8
Y	18	ILE	LEU	conflict	UNP W6V2V8
Y	19	SER	LEU	conflict	UNP W6V2V8
Y	20	HIS	GLY	conflict	UNP W6V2V8

- Molecule 26 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Z	57	Total	C	N	O	S	0	0
			445	277	87	79	2		

- Molecule 27 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	1	31	Total	C	N	O	S	0	0
			232	144	40	45	3		

- Molecule 28 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	2	53	Total	C	N	O	S	0	0
			423	254	90	78	1		

- Molecule 29 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	3	50	Total	C	N	O	0	0
			418	267	77	74		

- Molecule 30 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	4	44	Total	C	N	O	S	1	0
			376	228	91	55	2		

- Molecule 31 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	5	63	Total	C	N	O	S	0	0
			506	314	108	81	3		

- Molecule 32 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	6	38	Total	C	N	O	S	0	0
			303	184	69	46	4		

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: 23S ribosomal RNA

• Molecule 2: 5S rRNA

Chain B:
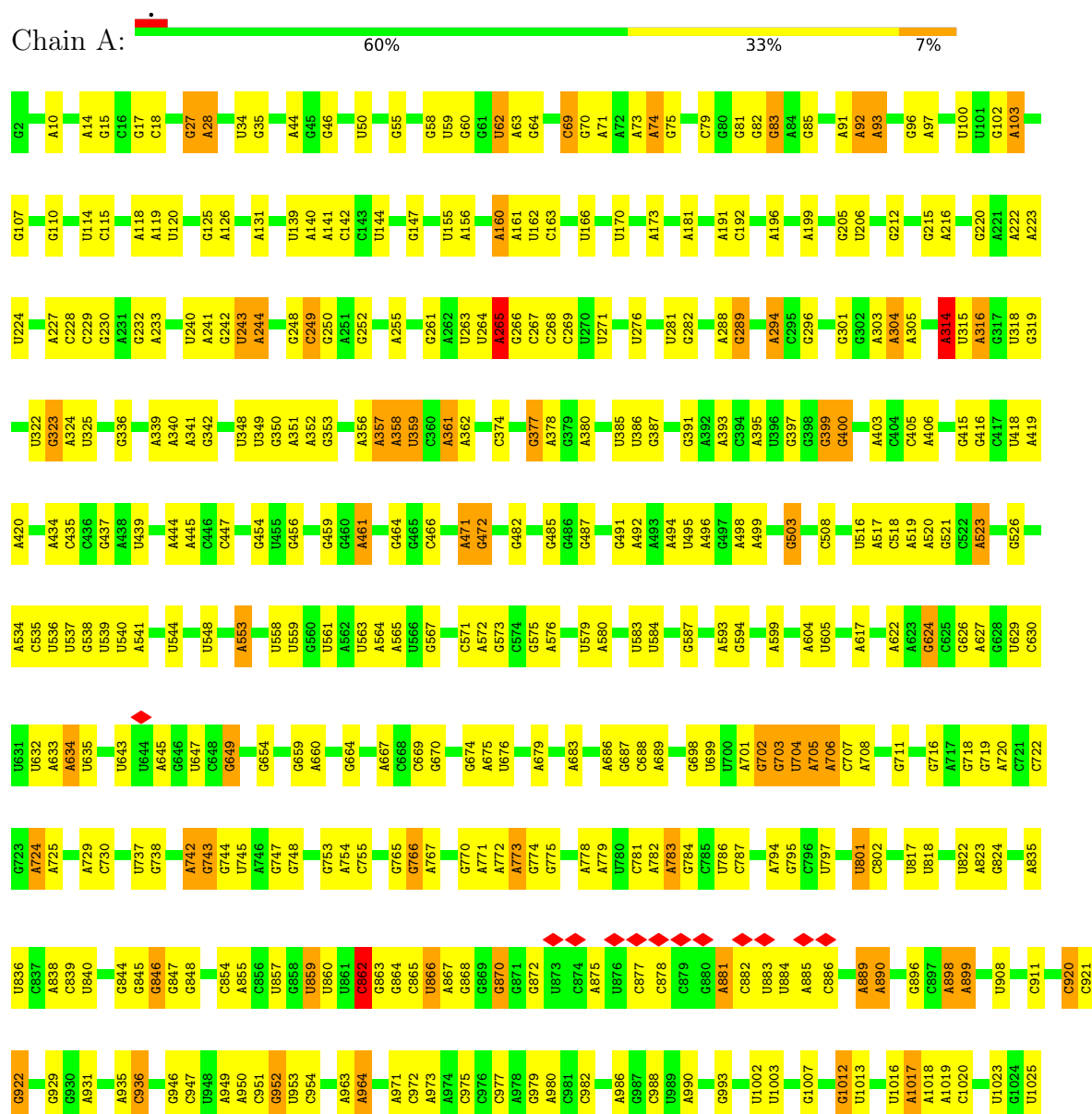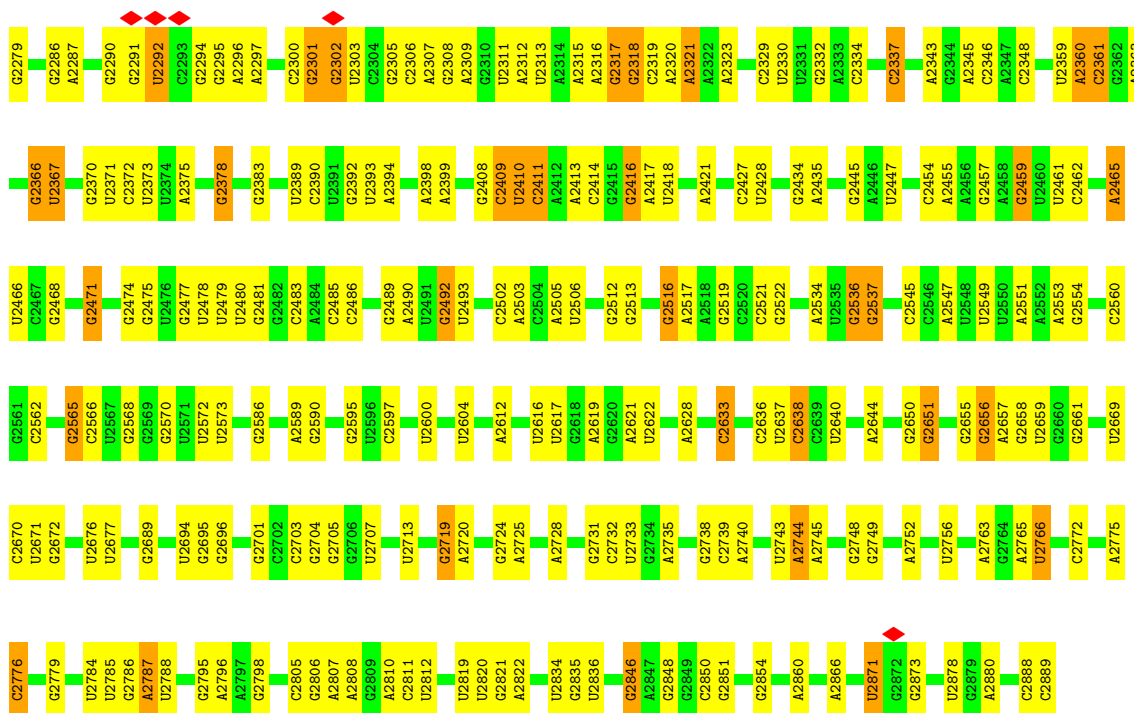
• Molecule 3: 50S ribosomal protein L2
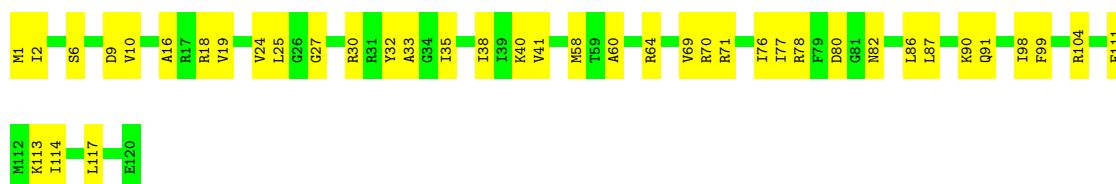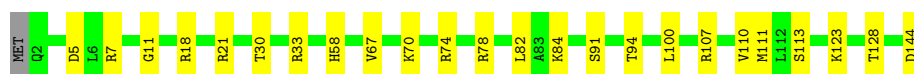
Chain C:
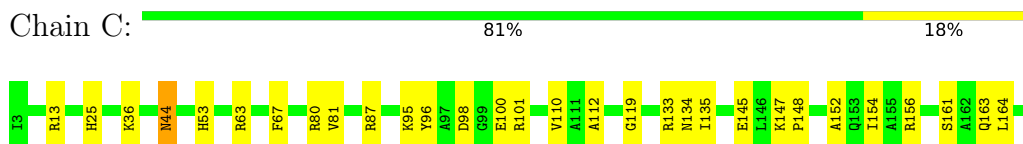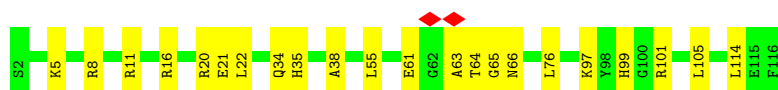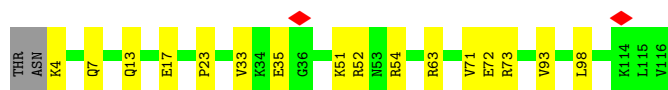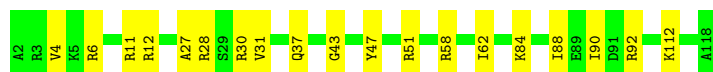

• Molecule 4: 50S ribosomal protein L3
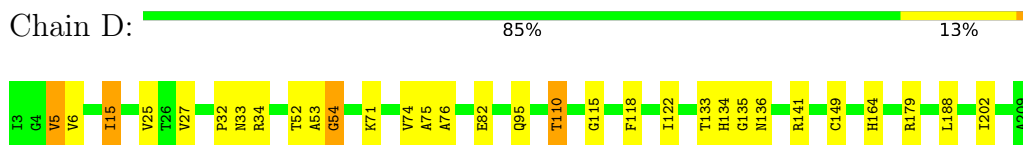
Chain D:

• Molecule 5: 50S ribosomal protein L4

Chain E:

Q2 L3 N4 V5 N6 G7 I11 E12 V13 T17 G20 R39 Q61 R68 R73 S74 W77 K94 R105 L111 V112 R113 L114 D115 R116 L117 V118 V119 V120 I147 V148 L158 N162 Q172 D175 K184 V185 L186 V187 T188 V189 L198

L199 G200
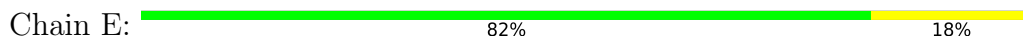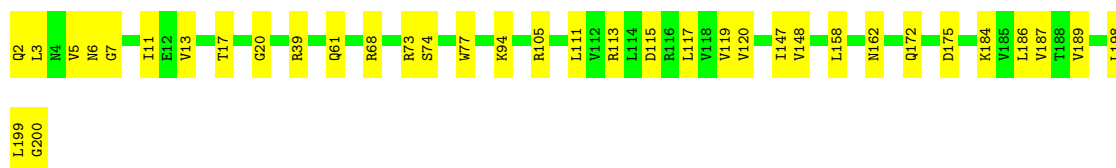
• Molecule 6: 50S ribosomal protein L5

Chain F:

R3 L4 K5 E6 L7 Y8 R9 K10 E11 I12 K15 L16 L20 Q21 L22 V25 M26 E27 T32 K33 I34 T35 L36 N37 V44 G45 D46 K47 K48 I60 T61 G62 Q63 K64 V67 G82 K88 V89 T90 L91 R92 S93 D94 R95 M96 Y97 E98 F99 L100 D101 R102

L103 L104 S105 I106 R112 D113 F114 R115 N118 A119 K120 S121 F122 D123 G124 R125 E126 N127 G131 V132 K133 E134 Q135 I136 D142 Y143 D144 D147 A148 L149 R150 G151 L152 T155 L156 T157 T158 E165 G166 L169 F173 K174 F175 P176

• Molecule 7: 50S ribosomal protein L6

Chain G:

S2 R3 V4 A5 K10 L11 P12 A13 G14 V15 E16 I17 K18 G21 S25 L33 K36 P39 S47 G48 E49 L50 R51 F52 D58 T61 M64 T67 L71 V72 N73 N74 M75 V76 V77 G82 F83 L89 V90 G91 V92 Q93 A94 S102

P108 Y111 I117 T125 K134 V140 E143 K154 G155 K156 A161 D162 E163 V164 V165 R166 R167 K168 E169 A170
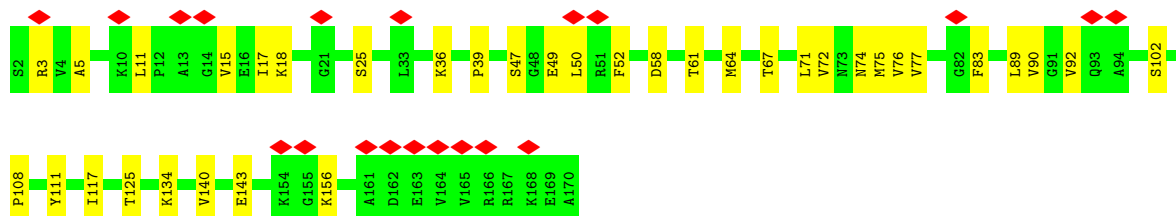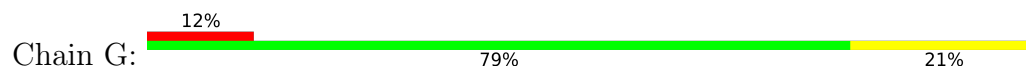
• Molecule 8: 50S ribosomal protein L9

Chain H:

E2 K8 V9 A10 N11 L15 V19 G23 R27 L31 V38 A41 E42 N43 V44 A45 A46 F47 E48 A49 R50 R51 A52 E53 L54 E55 A58 A59 E60 K61 K62 A63 A64 A65 E66 A67 R68 A69 A70 Q71 L72 S73 E74 L75 V76 V77 T78 L79
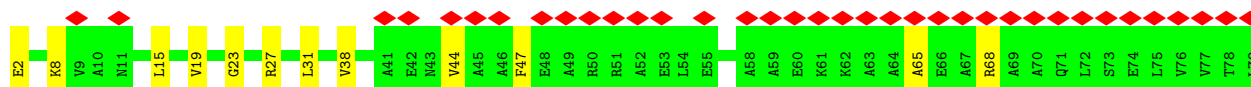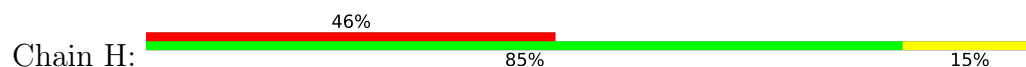
• Molecule 9: 50S ribosomal protein L11

Chain I:

K3 K4 I5 Q6 A7 Y8 I9 K10 L11 Q12 V13 K14 A15 G16 Q17 A18 N19 P20 S21 P22 P23 V24 G25 P26 A27 L28 V33 N34 I35 M36 E37 F38 C39 K40 A41 F42 N43 A44 K45 T46 Q47 Q48 Q49 E50 P51 G52 L53 P54 T55 T60 V61 Y62 S63 D64 R65

S66 F67 T68 F69 E70 T71 K72 S73 A76 A77 V78 L79 L80 K81 K82 A83 A84 G85 I86 T87 S88 S89 S90 A91 R92 P93 N94 S95 Q96 K97 V98 G99 V100 V101 T102 R103 A104 Q105 L106 E107 E108 I109 A110 K111 T112 K113 Q114 A115 D116 L117 T118 A119 A120 D121 L122 D123 A124 A125 V126

R127 T128 I129 A130 G131 S132 A133 R134 S135 M136 G137 L138 N139 V140 E141 G142

• Molecule 10: 50S ribosomal protein L13

Chain J:

84% 16%

K2 F16 V17 V18 L28 L36 T45 V48 D49 V56 K68 S78 L92 E98 R99 V100 I101 M108 L109 P110 K111 N112 L122 K123 V124 P137 L140 K141 I142

• Molecule 11: 50S ribosomal protein L14

Chain K:

67% 33%

M1 I2 S6 D9 V10 A16 R17 R18 V19 V24 L25 G26 G27 R30 R31 Y32 A33 G34 I35 I38 I39 K40 V41 M58 T59 A60 R64 V69 R70 R71 I76 I77 R78 F79 D80 G81 N82 L86 L87 K90 Q91 I98 F99 R104 F111

M112 K113 I114 L117 E120

• Molecule 12: 50S ribosomal protein L15

Chain L:

83% 17%

MET Q2 D5 L6 R7 G11 R18 R21 T30 R33 H58 V67 K70 R74 R78 L82 A83 K84 S91 T94 L100 R107 V110 M111 L112 S113 K123 T128 D144

• Molecule 13: 50S ribosomal protein L16

Chain M:

79% 20%

M1 Q12 M13 R23 G24 L34 R39 L42 E48 R51 T55 R56 H57 W65 I66 R67 T75 P78 V81 R82 M83 G84 K87 V94 P99 E105 E116 A117 F118 K124 L125 T135 VAL

• Molecule 14: 50S ribosomal protein L17

Chain N:

80% 17%

M1 R2 K5 R8 H9 L10 M24 L33 T37 L38 P39 L44 L51 A66 F67 D68 R69 T70 R71 L79 L83 G101 D106 N107 E114 R118 PRO VAL

• Molecule 15: 50S ribosomal protein L18

Chain O:

81% 19%

S2 K5 R8 R11 R16 R20 E21 L22 Q34 H35 A38 L55 E61 G62 A63 T64 G65 N66 L76 K97 Y98 H99 G100 R101 L105 L114 E115 F116

• Molecule 16: 50S ribosomal protein L19

Chain P:

84% 14%

THR ASN K4 Q7 Q13 E17 P23 V33 K34 E35 G36 K51 R52 N53 R54 R63 V71 E72 R73 V93 L98 K114 L115 V116

• Molecule 17: 50S ribosomal protein L20

Chain Q:

84%   16%

A2 R3 V4 K5 R6 R11 R12 A27 R28 S29 R30 V31 Q37 G43 Y47 R51 R58 I62 K84 I88 E89 I90 D91 R92 K112 A118
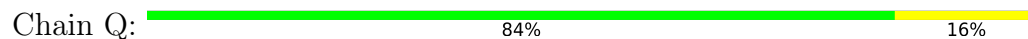
• Molecule 18: 50S ribosomal protein L21

Chain R:

83%   17%

M1 I5 V6 T7 G8 V14 V38 I49 G50 L51 A57 R68 H69 D70 K71 I75 R79 M84 H89 R90 I98 Q102
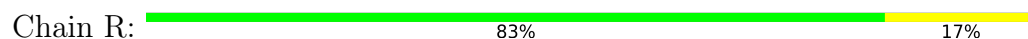
• Molecule 19: 50S ribosomal protein L22

Chain S:

94%   5%

MET E2 R18 S40 V71 R80 S81 I82 K83 R84 K110
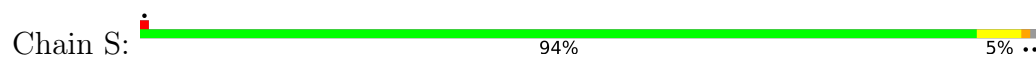
• Molecule 20: 50S ribosomal protein L23

Chain T:

88%   9%

MET A2 R5 D36 A37 T38 T66 T69 A70 L73 Y83 G89 D93 PHE
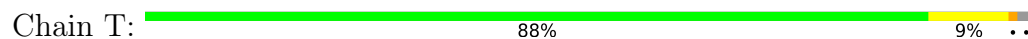
• Molecule 21: 50S ribosomal protein L24

Chain U:

5%
79%   21%

M1 Q2 K3 I4 R5 R6 D7 D8 I11 D17 K20 R21 D30 D31 R32 N39 L40 I41 K42 R43 P49 M50 L51 Q54 E59 A62 P63 I71 A79 D80 R81 V82 K91 Q103
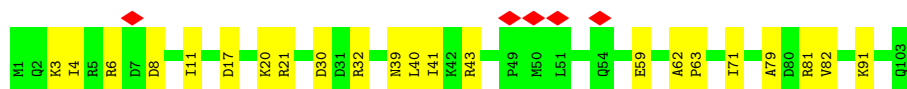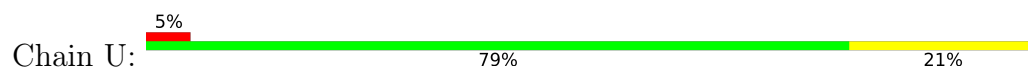
• Molecule 22: 50S ribosomal protein L25

Chain V:

87%   11%

F4 R11 R23 V33 G36 S42 H62 V63 T74 I77 K78 H83 K86 V89 M90 H91 F94 L95 R96 H110 F111 S128 S137 D142 V149 L165 E172 N186 R191
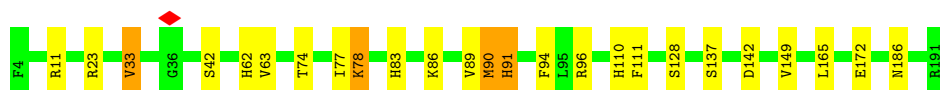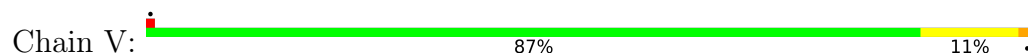
• Molecule 23: 50S ribosomal protein L27

Chain W:

79%　　18%

T10 R11 N12 G13 R14 Q29 K32 N35 I36 R39 L40 R41 G42 T43 K44 V51 G52 D56 H57 T58 K62 A85

• Molecule 24: 50S ribosomal protein L28

Chain X:

92%　　8%

S2 R3 I18 K24 R37 R57 F78

• Molecule 25: 50S ribosomal protein L29

Chain Y:

90%　　8%

K1 E8 L21 K32 Q39 L43 D49 R52 Q60
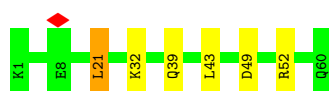
• Molecule 26: 50S ribosomal protein L30

Chain Z:

88%　　12%

A2 T3 V4 L16 H19 R29 R30 K49 G58
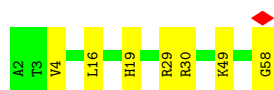
• Molecule 27: 50S ribosomal protein L31

Chain 1:

42%

48%　　39%　　13%

K2 A3 D4 I5 H6 P7 T8 Y9 E10 A11 I12 E13 A14 T15 C16 S17 C18 G19 N20 K23 T24 R25 S26 T27 L28 C29 K30 P31 I32
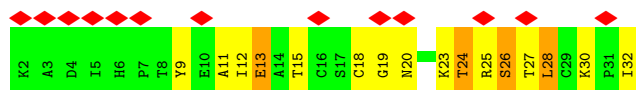
• Molecule 28: 50S ribosomal protein L32

Chain 2:

87%　　13%

A2 R16 R17 N25 E35 H41 V42 S43 F47 Y48 R49 V54

• Molecule 29: 50S ribosomal protein L33

Chain 3:

84%　　16%

R2 E3 L4 I5 R6 L7 V8 Y17 D20 K34 E47 A48 K49 I50 K51

• Molecule 30: 50S ribosomal protein L34

Chain 4:

73% 25% •

M1 K2 R3 Q6 R19 M22 A23 T24 G27 R28 R34 R39 K40 R41 L42 T43 V44

• Molecule 31: 50S ribosomal protein L35

Chain 5:

83% 17%

P2 K3 M4 K12 R13 K28 M35 R39 K40 R41 R44 N50 E58 R64
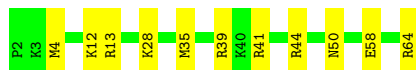
• Molecule 32: 50S ribosomal protein L36

Chain 6:

84% 13% •

M1 R4 I17 I26 Q35 R36 Q37 G38

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	319022	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	1.0	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.381	Depositor
Minimum map value	-0.221	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.0166	Depositor
Map size (Å)	440.0, 440.0, 440.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1, 1.1, 1.1	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	0.76	8/69320 (0.0%)	0.60	20/108135 (0.0%)
2	B	0.42	0/2789	0.53	3/4345 (0.1%)
3	C	0.60	0/2084	0.74	1/2800 (0.0%)
4	D	0.64	0/1572	0.85	1/2118 (0.0%)
5	E	0.54	0/1529	0.70	0/2060
6	F	0.38	0/1294	0.90	2/1754 (0.1%)
7	G	0.27	0/1280	0.62	0/1726
8	H	0.24	0/580	0.47	0/781
9	I	3.25	1/1041 (0.1%)	1.11	6/1408 (0.4%)
10	J	0.60	0/1148	0.72	0/1549
11	K	0.61	0/931	0.77	0/1247
12	L	0.54	0/1067	0.78	0/1422
13	M	0.39	0/1089	0.59	0/1456
14	N	0.70	0/960	0.84	0/1282
15	O	0.40	0/888	0.72	0/1183
16	P	0.55	0/900	0.67	0/1203
17	Q	0.66	0/946	0.80	0/1257
18	R	0.54	0/814	0.76	0/1091
19	S	0.59	0/829	0.73	3/1104 (0.3%)
20	T	0.55	0/710	0.73	0/953
21	U	0.42	0/809	0.72	2/1079 (0.2%)
22	V	0.36	0/1420	0.66	2/1927 (0.1%)
23	W	0.59	0/582	0.87	1/773 (0.1%)
24	X	0.59	0/637	0.73	0/849
25	Y	0.50	0/471	0.76	1/630 (0.2%)
26	Z	0.55	0/449	0.71	0/602
27	1	0.50	0/235	1.19	0/318
28	2	0.65	0/429	0.80	0/572
29	3	0.35	0/425	0.72	0/566
30	4	0.74	0/379	0.99	1/496 (0.2%)
31	5	0.50	0/511	0.76	0/668
32	6	0.37	0/304	0.61	0/399
All	All	0.78	9/98422 (0.0%)	0.65	43/147753 (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
3	C	0	1
4	D	0	2
6	F	0	3
9	I	0	5
11	K	0	1
14	N	0	2
16	P	0	1
18	R	0	2
20	T	0	1
22	V	0	5
23	W	0	2
27	1	0	7
32	6	0	1
All	All	0	33

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	I	8	TYR	CA-CB	104.33	2.95	1.53
1	A	1092	C	N1-C2	52.72	2.45	1.40
1	A	1092	C	C2-N3	49.60	2.35	1.35
1	A	1092	C	N3-C4	49.23	2.32	1.33
1	A	1092	C	N1-C6	49.13	2.35	1.37
1	A	1092	C	C4-C5	46.11	2.35	1.43
1	A	1092	C	C5-C6	45.12	2.24	1.34
1	A	1908	G	O3'-P	17.07	1.86	1.61
1	A	1896	C	O3'-P	-11.45	1.44	1.61

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1908	G	OP1-P-O3'	-28.34	22.97	108.00
1	A	1908	G	P-O3'-C3'	-23.43	85.05	120.20
1	A	1896	C	O3'-P-O5'	23.13	138.69	104.00
9	I	8	TYR	N-CA-C	-16.57	90.31	111.02
9	I	8	TYR	CA-CB-CG	15.35	141.53	113.90
1	A	1896	C	P-O3'-C3'	13.46	140.38	120.20
9	I	8	TYR	CB-CA-C	12.97	136.18	112.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1908	G	OP2-P-O3'	11.51	142.52	108.00
1	A	1896	C	OP2-P-O3'	-9.82	78.54	108.00
4	D	54	GLY	N-CA-C	9.42	124.88	112.25
9	I	7	ALA	CA-C-N	7.63	134.37	122.78
9	I	7	ALA	C-N-CA	7.63	134.37	122.78
2	B	43	C	O4'-C1'-N1	7.38	119.28	108.20
9	I	8	TYR	N-CA-CB	7.37	124.30	111.40
1	A	862	C	O3'-P-O5'	6.85	114.27	104.00
1	A	1378	U	C4'-C3'-O3'	6.60	119.30	109.40
6	F	32	THR	N-CA-C	6.53	121.07	111.34
1	A	1627	A	C2'-C3'-O3'	6.27	123.11	113.70
19	S	84	ARG	CB-CG-CD	5.98	125.04	111.30
1	A	265	A	O4'-C1'-N9	5.93	117.39	108.50
2	B	25	A	P-O3'-C3'	5.88	129.02	120.20
25	Y	21	LEU	CA-CB-CG	5.80	136.60	116.30
30	4	42	LEU	CA-CB-CG	5.79	136.58	116.30
6	F	36	LEU	CA-CB-CG	5.71	136.29	116.30
19	S	84	ARG	CG-CD-NE	-5.70	99.46	112.00
3	C	233	GLY	N-CA-C	5.67	121.54	111.73
1	A	1908	G	O3'-P-O5'	-5.67	95.50	104.00
1	A	686	A	N9-C1'-C2'	-5.56	105.66	114.00
21	U	30	ASP	CA-C-N	5.47	132.00	121.54
21	U	30	ASP	C-N-CA	5.47	132.00	121.54
1	A	862	C	P-O3'-C3'	-5.42	112.06	120.20
22	V	78	LYS	CA-C-N	5.41	131.88	121.54
22	V	78	LYS	C-N-CA	5.41	131.88	121.54
1	A	1166	G	P-O3'-C3'	5.40	128.30	120.20
1	A	1672	G	C2'-C3'-O3'	5.27	121.61	113.70
1	A	2536	G	C2'-C3'-O3'	5.25	121.57	113.70
1	A	243	U	C2'-C3'-O3'	5.23	121.55	113.70
1	A	503	G	O4'-C1'-N9	5.15	116.23	108.50
1	A	314	A	C2'-C3'-O3'	5.14	121.41	113.70
1	A	920	C	P-O3'-C3'	5.12	127.88	120.20
23	W	52	GLY	N-CA-C	5.11	125.30	113.18
2	B	25	A	C2'-C3'-O3'	5.10	117.16	109.50
19	S	84	ARG	CA-CB-CG	-5.08	103.95	114.10

There are no chirality outliers.

All (33) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
27	1	13	GLU	Peptide

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Mol	Chain	Res	Type	Group
27	1	15	THR	Peptide
27	1	20	ASN	Peptide
27	1	24	THR	Peptide
27	1	25	ARG	Peptide
27	1	26	SER	Peptide
27	1	28	LEU	Peptide
32	6	35	GLN	Peptide
3	C	232	HIS	Peptide
4	D	53	ALA	Peptide
4	D	75	ALA	Peptide
6	F	25	VAL	Peptide
6	F	34	ILE	Peptide
6	F	4	LEU	Peptide
9	I	22	PRO	Peptide
9	I	56	PRO	Peptide
9	I	58	ILE	Peptide
9	I	66	SER	Peptide
9	I	86	ILE	Peptide
11	K	90	LYS	Peptide
14	N	106	ASP	Peptide
14	N	70	THR	Peptide
16	P	17	GLU	Peptide
18	R	51	LEU	Peptide
18	R	69	HIS	Peptide
20	T	89	GLY	Peptide
22	V	110	HIS	Peptide
22	V	111	PHE	Peptide
22	V	78	LYS	Peptide
22	V	89	VAL	Peptide
22	V	90	MET	Peptide
23	W	11	ARG	Peptide
23	W	13	GLY	Peptide

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	61899	0	31128	445	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	2495	0	1263	17	0
3	C	2048	0	2097	36	0
4	D	1549	0	1560	20	0
5	E	1509	0	1563	22	0
6	F	1278	0	1245	40	0
7	G	1264	0	1314	20	0
8	H	577	0	606	6	0
9	I	1026	0	1063	70	0
10	J	1122	0	1148	15	0
11	K	922	0	992	29	0
12	L	1055	0	1096	17	0
13	M	1069	0	1139	21	0
14	N	945	0	989	17	0
15	O	881	0	920	15	0
16	P	891	0	950	13	0
17	Q	936	0	1025	16	0
18	R	801	0	830	10	0
19	S	825	0	885	6	0
20	T	701	0	741	6	0
21	U	801	0	864	13	0
22	V	1397	0	1417	15	0
23	W	574	0	601	11	0
24	X	626	0	649	5	0
25	Y	468	0	489	3	0
26	Z	445	0	472	4	0
27	1	232	0	238	17	0
28	2	423	0	420	7	0
29	3	418	0	445	4	0
30	4	376	0	421	9	0
31	5	506	0	569	11	0
32	6	303	0	341	3	0
All	All	90362	0	59480	738	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 5.

All (738) 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:A:1092:C:C5	1:A:1092:C:C6	2.24	1.26
1:A:1092:C:C5	1:A:1092:C:C4	2.35	1.13

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1461:G:H21	1:A:1504:A:H62	0.98	0.97
1:A:1092:C:C4	1:A:1092:C:N3	2.32	0.97
1:A:1092:C:C4	9:I:8:TYR:HA	2.00	0.96
1:A:1092:C:N3	1:A:1092:C:C2	2.34	0.95
1:A:1461:G:N2	1:A:1504:A:H62	1.64	0.95
1:A:1092:C:C6	1:A:1092:C:N1	2.35	0.94
1:A:2493:U:H3	1:A:2570:G:H1	1.16	0.93
1:A:2087:G:H1	1:A:2176:U:H3	1.17	0.93
1:A:2084:U:H3	1:A:2179:G:H1	1.15	0.92
1:A:1092:C:N3	9:I:8:TYR:HA	1.85	0.90
1:A:1092:C:C2	1:A:1092:C:N1	2.45	0.84
1:A:1461:G:H21	1:A:1504:A:N6	1.75	0.83
1:A:2644:A:H62	1:A:2651:G:H21	1.28	0.80
1:A:1239:G:H1	17:Q:37:GLN:HE21	1.29	0.78
1:A:1092:C:C2	9:I:8:TYR:CB	2.67	0.77
1:A:766:G:H1	1:A:783:A:HO2'	1.31	0.76
1:A:1029:A:H61	1:A:1106:G:H1	1.33	0.76
1:A:1092:C:N1	9:I:8:TYR:HB3	2.00	0.75
1:A:575:G:N7	17:Q:6:ARG:NH1	2.35	0.75
1:A:1128:G:H21	10:J:108:MET:HE3	1.51	0.74
1:A:1288:A:H2	1:A:1616:G:H21	1.35	0.73
4:D:34:ARG:HH22	4:D:54:GLY:HA2	1.54	0.71
1:A:244:A:H5"	12:L:67:VAL:HG21	1.72	0.71
1:A:1092:C:H3'	9:I:7:ALA:H	1.55	0.69
1:A:1092:C:C2	9:I:8:TYR:HB2	2.28	0.68
1:A:2670:C:O2	11:K:70:ARG:NH2	2.27	0.68
1:A:1092:C:C4	9:I:8:TYR:CB	2.78	0.67
1:A:362:A:H62	1:A:393:A:H2	1.43	0.67
14:N:2:ARG:HA	14:N:5:LYS:HD3	1.78	0.66
1:A:1081:G:N3	9:I:8:TYR:OH	2.27	0.66
1:A:27:G:N2	1:A:503:G:O2'	2.25	0.66
1:A:1519:G:H1	1:A:1529:U:H3	1.43	0.66
1:A:1047:A:N1	9:I:72:LYS:NZ	2.44	0.66
30:4:24:THR:HG23	30:4:27:GLY:H	1.61	0.65
1:A:1092:C:N1	9:I:8:TYR:CB	2.60	0.65
1:A:1092:C:C4	9:I:8:TYR:CA	2.80	0.65
1:A:1092:C:C2	9:I:8:TYR:CA	2.80	0.65
1:A:2131:G:N2	1:A:2135:G:N7	2.44	0.65
5:E:5:VAL:HG12	5:E:7:GLY:H	1.61	0.65
1:A:862:C:O2'	13:M:65:TRP:NE1	2.30	0.64
1:A:1052:G:H1	9:I:76:ALA:HA	1.61	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2462:C:H42	1:A:2516:G:H22	1.44	0.64
1:A:1092:C:N3	9:I:8:TYR:HB2	2.13	0.64
1:A:2346:C:H5"	31:5:50:ASN:HD21	1.63	0.64
6:F:4:LEU:O	6:F:9:ARG:NH1	2.30	0.64
6:F:90:THR:OG1	27:1:30:LYS:N	2.28	0.64
1:A:2122:A:OP2	1:A:2140:C:N4	2.30	0.64
4:D:118:PHE:HA	4:D:164:HIS:H	1.62	0.64
1:A:1116:A:H4'	1:A:1117:A:H5"	1.79	0.64
1:A:870:G:N7	1:A:881:A:N6	2.46	0.63
1:A:1284:C:O2'	1:A:1289:A:N6	2.31	0.63
1:A:265:A:N6	1:A:418:U:O2'	2.30	0.63
2:B:43:C:O2'	6:F:92:ARG:NH1	2.32	0.63
1:A:1092:C:C6	9:I:8:TYR:CB	2.81	0.63
1:A:1092:C:N3	9:I:8:TYR:CB	2.62	0.63
9:I:81:LYS:NZ	9:I:136:MET:SD	2.71	0.63
14:N:24:MET:HE2	14:N:44:LEU:HD22	1.81	0.63
1:A:1237:G:N7	12:L:18:ARG:NH2	2.45	0.62
1:A:2707:U:OP1	16:P:54:ARG:NH1	2.33	0.62
1:A:2226:G:OP1	3:C:243:ARG:NH2	2.30	0.62
7:G:74:ASN:HA	7:G:77:VAL:HG12	1.81	0.62
1:A:553:A:OP2	18:R:79:ARG:NH2	2.31	0.62
6:F:92:ARG:NH1	27:1:32:ILE:O	2.33	0.62
1:A:2266:G:N7	23:W:14:ARG:NH2	2.47	0.62
6:F:20:LEU:HD13	6:F:165:GLU:HG2	1.82	0.62
1:A:357:A:H2	1:A:415:G:H21	1.44	0.62
3:C:81:VAL:HG21	3:C:110:VAL:HB	1.82	0.61
10:J:17:VAL:HG23	10:J:137:PRO:HB2	1.81	0.61
3:C:152:ALA:O	3:C:156:ARG:NH1	2.33	0.61
9:I:107:GLU:HA	9:I:110:ALA:HB3	1.81	0.61
1:A:1313:U:HO2'	1:A:1997:G:HO2'	1.47	0.61
1:A:1253:G:OP1	28:2:16:ARG:NH2	2.33	0.61
1:A:1309:A:O3'	19:S:84:ARG:NH2	2.33	0.61
1:A:2245:C:O2'	1:A:2414:C:OP2	2.19	0.60
1:A:2644:A:H62	1:A:2651:G:N2	1.97	0.60
1:A:303:A:N3	1:A:323:G:O2'	2.33	0.60
21:U:11:ILE:HD11	21:U:79:ALA:HB2	1.83	0.60
1:A:314:A:N3	5:E:162:ASN:ND2	2.50	0.60
1:A:1058:G:H5"	9:I:86:ILE:HB	1.84	0.60
1:A:1199:G:O2'	1:A:1224:A:N6	2.35	0.60
4:D:110:THR:HG23	4:D:202:ILE:HB	1.83	0.60
12:L:5:ASP:O	12:L:7:ARG:NH1	2.35	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:175:ASP:OD1	5:E:175:ASP:N	2.33	0.60
9:I:131:GLY:HA2	9:I:134:ARG:HD3	1.84	0.60
1:A:2392:G:O2'	1:A:2398:A:N6	2.35	0.60
1:A:2292:U:H3	6:F:133:LYS:HE2	1.67	0.60
21:U:3:LYS:HD2	21:U:82:VAL:HG23	1.84	0.60
1:A:971:A:H8	1:A:2014:G:H21	1.48	0.59
13:M:12:GLN:O	13:M:87:LYS:NZ	2.34	0.59
20:T:5:ARG:NH2	20:T:36:ASP:O	2.35	0.59
21:U:11:ILE:HG22	21:U:21:ARG:HG2	1.84	0.59
1:A:1594:C:O2'	1:A:1600:A:N6	2.35	0.59
1:A:1643:G:H3'	14:N:2:ARG:HG2	1.85	0.59
1:A:2513:G:O2'	32:6:1:MET:N	2.35	0.59
6:F:134:GLU:HG2	6:F:136:ILE:H	1.66	0.59
21:U:40:LEU:HD12	21:U:59:GLU:HG2	1.83	0.59
1:A:1251:G:OP1	28:2:16:ARG:NH1	2.25	0.59
1:A:1070:C:N4	9:I:114:GLN:OE1	2.36	0.59
1:A:1327:U:OP1	20:T:83:TYR:OH	2.18	0.59
1:A:2670:C:OP1	16:P:52:ARG:NH2	2.34	0.59
11:K:78:ARG:NH2	16:P:72:GLU:OE1	2.35	0.59
13:M:39:ARG:HB3	13:M:99:PRO:HD3	1.84	0.59
6:F:157:THR:HA	27:1:19:GLY:HA2	1.85	0.58
1:A:1030:A:H61	1:A:1105:G:H1	1.51	0.58
4:D:52:THR:HG21	4:D:76:ALA:HB1	1.85	0.58
1:A:626:G:H5"	12:L:128:THR:HB	1.85	0.58
1:A:1853:A:N6	1:A:1862:G:O2'	2.36	0.58
2:B:30:C:H1'	2:B:57:A:H61	1.68	0.58
22:V:11:ARG:HD3	22:V:42:SER:HB3	1.86	0.58
1:A:1856:G:O2'	1:A:1859:A:N6	2.36	0.58
9:I:81:LYS:HE2	9:I:89:GLY:HA2	1.86	0.58
1:A:1253:G:OP2	28:2:17:ARG:NH2	2.37	0.58
1:A:1660:C:O2	4:D:134:HIS:NE2	2.36	0.58
1:A:1063:A:N6	9:I:99:GLY:O	2.36	0.58
1:A:748:G:H21	1:A:1968:A:H62	1.50	0.58
1:A:964:A:H8	1:A:980:A:H62	1.52	0.57
1:A:1426:A:H62	1:A:1542:G:H8	1.51	0.57
1:A:2302:G:HO2'	27:1:24:THR:HG1	1.47	0.57
1:A:2330:U:HO2'	1:A:2360:A:HO2'	1.45	0.57
12:L:84:LYS:HD2	12:L:100:LEU:HD21	1.86	0.57
17:Q:112:LYS:HD2	18:R:49:ILE:HD11	1.85	0.57
1:A:301:G:N1	1:A:304:A:OP2	2.33	0.57
1:A:929:G:OP1	31:5:64:ARG:NH1	2.38	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2102:G:N1	1:A:2106:A:OP2	2.36	0.57
3:C:119:GLY:O	3:C:134:ASN:ND2	2.37	0.57
12:L:58:HIS:O	31:5:13:ARG:NH1	2.37	0.57
1:A:374:C:N4	1:A:377:G:OP2	2.32	0.57
1:A:2337:C:OP2	31:5:44:ARG:NH1	2.38	0.57
1:A:2671:U:OP2	16:P:52:ARG:NH1	2.37	0.57
15:O:61:GLU:HG3	15:O:63:ALA:H	1.69	0.57
21:U:17:ASP:HB3	21:U:20:LYS:HD3	1.85	0.57
2:B:41:C:N4	6:F:67:VAL:O	2.36	0.57
14:N:101:GLY:H	28:2:41:HIS:HD2	1.52	0.57
1:A:1034:U:O3'	1:A:1101:A:N6	2.37	0.56
1:A:91:A:H4'	1:A:92:A:H5'	1.86	0.56
1:A:2392:G:O2'	1:A:2399:A:N6	2.39	0.56
2:B:9:G:OP1	15:O:20:ARG:NH1	2.37	0.56
5:E:115:ASP:O	5:E:184:LYS:NZ	2.38	0.56
1:A:2459:G:N2	1:A:2465:A:H62	2.04	0.56
1:A:889:A:OP2	1:A:890:A:N6	2.38	0.56
1:A:1017:A:O2'	1:A:1116:A:N6	2.34	0.56
1:A:1098:U:O2	9:I:4:LYS:NZ	2.38	0.56
3:C:161:SER:HB3	3:C:194:GLU:HG2	1.87	0.56
6:F:35:THR:HG22	6:F:37:ASN:H	1.70	0.56
13:M:67:ARG:NH1	13:M:105:GLU:OE2	2.38	0.56
1:A:1092:C:C5	9:I:8:TYR:CB	2.88	0.56
11:K:1:MET:HG3	11:K:82:ASN:HB3	1.88	0.56
24:X:18:ILE:HG13	24:X:24:LYS:HG2	1.88	0.56
23:W:11:ARG:O	23:W:14:ARG:NH1	2.39	0.56
22:V:33:VAL:HG22	22:V:94:PHE:HE2	1.72	0.55
7:G:15:VAL:HG21	7:G:76:VAL:HG13	1.89	0.55
1:A:1263:U:OP2	1:A:1635:G:O2'	2.24	0.55
16:P:4:LYS:N	16:P:7:GLN:OE1	2.40	0.55
1:A:459:G:N7	30:4:39:ARG:NH2	2.54	0.55
1:A:1089:G:H5'	9:I:24:VAL:HG12	1.88	0.55
1:A:1784:C:HO2'	3:C:258:THR:HG1	1.54	0.55
1:A:2644:A:N6	1:A:2651:G:H21	2.02	0.55
7:G:89:LEU:O	7:G:125:THR:OG1	2.23	0.55
1:A:1092:C:N3	9:I:8:TYR:CA	2.67	0.55
1:A:2237:G:O2'	1:A:2483:C:OP1	2.25	0.55
1:A:2808:A:OP2	4:D:115:GLY:N	2.39	0.55
6:F:11:GLU:HG2	6:F:15:LYS:HE3	1.89	0.55
10:J:98:GLU:HB2	10:J:124:VAL:HG23	1.89	0.55
11:K:35:ILE:HD12	11:K:69:VAL:HB	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:654:G:N2	31:5:64:ARG:O	2.39	0.55
1:A:1028:G:H1	1:A:1107:C:H5	1.55	0.55
11:K:104:ARG:HH11	16:P:35:GLU:HB2	1.71	0.55
1:A:2519:G:N2	1:A:2650:G:O2'	2.40	0.55
3:C:261:ASN:ND2	3:C:264:THR:OG1	2.39	0.55
27:1:27:THR:HG22	27:1:28:LEU:HG	1.89	0.55
12:L:70:LYS:O	12:L:107:ARG:NH2	2.40	0.55
2:B:40:U:O2'	2:B:42:C:O2	2.25	0.55
5:E:148:VAL:HB	5:E:187:VAL:HG12	1.87	0.55
1:A:294:A:OP2	21:U:81:ARG:NH2	2.40	0.54
11:K:98:ILE:HD13	11:K:114:ILE:HG23	1.88	0.54
1:A:1067:A:N6	1:A:1080:A:OP2	2.41	0.54
5:E:172:GLN:HE22	5:E:198:LEU:HD21	1.72	0.54
1:A:859:U:H3	1:A:896:G:H1	1.54	0.54
7:G:117:ILE:HG12	7:G:140:VAL:HG21	1.90	0.54
22:V:83:HIS:HD2	22:V:86:LYS:H	1.54	0.54
1:A:83:G:H21	1:A:103:A:H2	1.55	0.54
1:A:96:G:H4'	25:Y:39:GLN:HA	1.89	0.54
1:A:508:C:O2'	19:S:18:ARG:NH2	2.41	0.54
2:B:24:G:H4'	2:B:25:A:H8	1.72	0.54
1:A:664:G:O2'	5:E:61:GLN:NE2	2.40	0.54
1:A:1352:A:OP2	24:X:2:SER:OG	2.26	0.54
2:B:76:G:OP1	22:V:11:ARG:NH1	2.41	0.54
11:K:80:ASP:OD2	16:P:63:ARG:NH2	2.40	0.54
1:A:2835:G:O2'	1:A:2854:G:N2	2.35	0.54
3:C:163:GLN:OE1	3:C:175:ARG:NH1	2.40	0.54
22:V:128:SER:HB3	22:V:186:ASN:HB3	1.90	0.54
1:A:883:U:O2'	1:A:885:A:N1	2.41	0.54
1:A:1067:A:OP1	9:I:127:ARG:NH2	2.41	0.54
1:A:1894:G:N2	1:A:1910:U:O2	2.35	0.54
2:B:52:A:N6	15:O:34:GLN:OE1	2.40	0.54
1:A:1845:A:N6	1:A:1871:G:O2'	2.41	0.53
1:A:1852:U:H6	1:A:1863:A:H62	1.55	0.53
13:M:78:PRO:HG2	13:M:81:VAL:HG21	1.90	0.53
1:A:405:C:H2'	1:A:406:A:C8	2.44	0.53
2:B:8:C:H5"	15:O:16:ARG:HH22	1.73	0.53
27:1:12:ILE:HG23	27:1:13:GLU:HG3	1.91	0.53
3:C:164:LEU:HD12	3:C:174:LEU:HB3	1.91	0.53
1:A:2638:C:H42	1:A:2656:G:H1	1.55	0.53
5:E:17:THR:OG1	5:E:200:GLY:O	2.27	0.53
6:F:44:VAL:HG22	6:F:82:GLY:HA3	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:134:ARG:HA	9:I:138:LEU:HD12	1.90	0.53
1:A:1049:G:H5"	9:I:51:PRO:HD3	1.90	0.53
1:A:2378:G:O2'	1:A:2411:C:N4	2.41	0.53
14:N:79:LEU:HD23	14:N:83:LEU:HB2	1.90	0.53
16:P:52:ARG:HH21	16:P:54:ARG:HG2	1.73	0.53
18:R:68:ARG:O	18:R:90:ARG:NH2	2.42	0.53
1:A:567:G:O2'	1:A:1241:A:OP1	2.27	0.53
5:E:105:ARG:NH1	5:E:199:LEU:O	2.39	0.53
12:L:78:ARG:HB3	12:L:111:MET:HE3	1.91	0.53
1:A:617:A:N7	12:L:113:SER:OG	2.42	0.53
1:A:2074:U:H2'	1:A:2075:G:H8	1.73	0.53
1:A:2238:G:OP1	13:M:82:ARG:NH1	2.42	0.53
1:A:356:A:OP1	1:A:416:G:O2'	2.25	0.52
1:A:1018:A:H61	1:A:1115:G:H2'	1.74	0.52
1:A:1785:U:OP2	3:C:272:ARG:NH2	2.42	0.52
11:K:10:VAL:HG21	11:K:16:ALA:HB3	1.90	0.52
1:A:461:A:OP1	5:E:73:ARG:NH1	2.41	0.52
1:A:896:G:OP1	13:M:24:GLY:N	2.43	0.52
1:A:1080:A:H61	9:I:8:TYR:HB2	1.74	0.52
1:A:1841:A:H62	1:A:1875:G:H8	1.58	0.52
6:F:8:TYR:HA	6:F:12:ILE:HB	1.89	0.52
1:A:1233:A:H4'	5:E:39:ARG:HH22	1.74	0.52
1:A:107:G:H21	1:A:340:A:H62	1.56	0.52
1:A:718:G:H4'	3:C:13:ARG:HD3	1.91	0.52
1:A:269:C:H42	1:A:361:A:H61	1.56	0.52
22:V:63:VAL:HG13	22:V:74:THR:HG23	1.92	0.52
1:A:83:G:OP1	21:U:91:LYS:NZ	2.36	0.52
6:F:92:ARG:O	6:F:96:MET:N	2.43	0.52
1:A:92:A:O2'	1:A:93:A:O5'	2.28	0.52
1:A:1341:A:OP1	3:C:36:LYS:NZ	2.42	0.52
1:A:1477:A:O2'	3:C:98:ASP:OD2	2.24	0.52
1:A:2733:U:H5"	7:G:134:LYS:HG2	1.91	0.52
6:F:127:ASN:HA	27:1:18:CYS:HA	1.92	0.52
7:G:58:ASP:HB2	7:G:61:THR:HG22	1.91	0.52
1:A:27:G:H22	1:A:503:G:HO2'	1.54	0.52
1:A:1621:G:N1	1:A:1624:A:OP2	2.35	0.52
1:A:1642:A:OP1	14:N:8:ARG:NH1	2.43	0.52
15:O:65:GLY:HA2	15:O:101:ARG:HH12	1.74	0.52
1:A:899:A:C8	13:M:13:MET:HG2	2.45	0.52
1:A:2290:G:H21	27:1:11:ALA:HB2	1.74	0.52
6:F:11:GLU:O	6:F:15:LYS:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:5:41:ARG:HG3	31:5:44:ARG:HH12	1.74	0.52
1:A:664:G:H4'	5:E:68:ARG:HG2	1.92	0.51
1:A:1052:G:H1'	9:I:109:ILE:HG21	1.91	0.51
3:C:53:HIS:HA	3:C:217:ARG:HB3	1.92	0.51
14:N:2:ARG:NH2	14:N:5:LYS:O	2.43	0.51
28:2:35:GLU:OE2	28:2:43:SER:OG	2.27	0.51
4:D:74:VAL:HG12	4:D:76:ALA:HB2	1.92	0.51
11:K:25:LEU:HD12	11:K:38:ILE:HG22	1.92	0.51
11:K:87:LEU:HD13	11:K:91:GLN:HB3	1.92	0.51
1:A:1034:U:O2'	1:A:1101:A:N1	2.41	0.51
1:A:1782:C:O2	3:C:254:LYS:NZ	2.44	0.51
1:A:2278:U:H2'	1:A:2279:G:C8	2.45	0.51
23:W:52:GLY:HA2	23:W:62:LYS:HE2	1.92	0.51
13:M:48:GLU:OE2	13:M:51:ARG:NH1	2.37	0.51
21:U:32:ARG:NH2	21:U:63:PRO:O	2.44	0.51
1:A:391:G:N7	24:X:57:ARG:NH1	2.59	0.51
1:A:1373:C:H2'	1:A:1374:A:C8	2.45	0.51
1:A:1671:G:C8	1:A:1749:A:H2'	2.46	0.51
1:A:2775:A:O2'	1:A:2796:A:N3	2.39	0.51
1:A:1046:G:H21	9:I:11:LEU:HA	1.74	0.51
1:A:2776:C:H3'	1:A:2880:A:H62	1.75	0.51
1:A:1092:C:C6	9:I:8:TYR:CA	2.94	0.51
1:A:1892:C:H4'	1:A:1916:G:H8	1.74	0.51
1:A:2462:C:N4	1:A:2516:G:H22	2.08	0.51
14:N:37:THR:HG22	14:N:39:PRO:HD2	1.92	0.51
1:A:288:A:O2'	1:A:289:G:O4'	2.28	0.51
1:A:719:G:C6	3:C:207:LYS:HB2	2.45	0.51
1:A:845:G:H2'	1:A:846:G:C8	2.46	0.51
1:A:1203:G:OP1	17:Q:11:ARG:NH1	2.42	0.51
1:A:2633:C:OP2	1:A:2719:G:O2'	2.28	0.51
22:V:137:SER:HB3	22:V:172:GLU:HB3	1.93	0.51
1:A:1070:C:N3	9:I:73:SER:OG	2.40	0.51
1:A:1092:C:N1	9:I:8:TYR:CA	2.74	0.51
1:A:1804:G:OP2	3:C:156:ARG:NH2	2.44	0.51
15:O:97:LYS:HD3	15:O:99:HIS:HB2	1.93	0.51
1:A:1092:C:H5"	9:I:6:GLN:HB2	1.92	0.50
2:B:37:C:H2'	15:O:99:HIS:HE1	1.76	0.50
1:A:1063:A:C4	9:I:137:GLY:HA2	2.46	0.50
6:F:33:LYS:H	27:1:27:THR:H	1.59	0.50
1:A:263:U:O2'	1:A:420:A:N3	2.44	0.50
1:A:491:G:N1	1:A:494:A:OP2	2.40	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:89:VAL:HA	27:1:30:LYS:HG3	1.94	0.50
1:A:2562:C:H5'	4:D:149:CYS:HB2	1.93	0.50
6:F:158:THR:HG22	6:F:166:GLY:HA3	1.94	0.50
17:Q:88:ILE:HG23	17:Q:90:ILE:H	1.76	0.50
1:A:1052:G:H21	9:I:80:LEU:HB3	1.76	0.50
1:A:1053:G:H1'	9:I:106:LEU:HD23	1.93	0.50
1:A:1699:C:O2'	1:A:2846:G:N3	2.42	0.50
1:A:2128:G:O6	1:A:2137:U:O4	2.28	0.50
5:E:111:LEU:HB3	5:E:117:LEU:HB2	1.92	0.50
22:V:142:ASP:OD1	22:V:142:ASP:N	2.40	0.50
32:6:4:ARG:O	32:6:37:GLN:NE2	2.45	0.50
1:A:911:C:O2'	23:W:29:GLN:NE2	2.43	0.50
1:A:1403:G:H1	1:A:1572:C:H5	1.58	0.50
14:N:33:LEU:HD23	14:N:114:GLU:HB2	1.92	0.50
32:6:17:ILE:HD13	32:6:26:ILE:HD12	1.93	0.50
1:A:361:A:O2'	1:A:415:G:OP1	2.30	0.50
1:A:729:A:H1'	1:A:730:C:H5	1.76	0.50
1:A:1012:G:N2	1:A:1013:U:O4	2.43	0.50
20:T:66:THR:HG21	20:T:73:LEU:HD12	1.94	0.50
12:L:91:SER:H	12:L:94:THR:HB	1.77	0.49
14:N:107:ASN:HD21	19:S:40:SER:HB3	1.77	0.49
1:A:1184:G:O2'	17:Q:12:ARG:NH2	2.45	0.49
1:A:2125:G:H22	1:A:2140:C:H1'	1.77	0.49
1:A:2228:A:H2'	1:A:2229:G:C8	2.47	0.49
1:A:2286:G:H2'	1:A:2287:A:C8	2.48	0.49
1:A:2568:G:OP2	1:A:2568:G:N2	2.40	0.49
3:C:25:HIS:CG	3:C:80:ARG:HD2	2.47	0.49
7:G:3:ARG:HD3	7:G:5:ALA:H	1.77	0.49
1:A:571:C:H2'	1:A:572:A:C8	2.48	0.49
1:A:977:C:O2'	1:A:990:A:N3	2.39	0.49
1:A:1434:U:O2'	1:A:1534:A:N3	2.40	0.49
7:G:17:ILE:HD13	7:G:50:LEU:HD11	1.95	0.49
8:H:2:GLU:N	8:H:19:VAL:O	2.45	0.49
17:Q:58:ARG:HE	17:Q:62:ILE:HD11	1.78	0.49
1:A:1081:G:H21	1:A:1082:C:H5	1.60	0.49
1:A:2743:U:H4'	1:A:2744:A:H5'	1.94	0.49
4:D:122:ILE:HD12	4:D:141:ARG:HG3	1.95	0.49
1:A:1065:C:H1'	9:I:141:GLU:HG3	1.94	0.49
1:A:1329:A:O2'	1:A:1331:U:OP1	2.28	0.49
25:Y:32:LYS:HD2	25:Y:43:LEU:HD21	1.95	0.49
1:A:1657:G:O2'	1:A:1978:U:O4	2.28	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1804:G:OP1	3:C:87:ARG:NH2	2.45	0.49
13:M:51:ARG:HH21	13:M:55:THR:HG21	1.77	0.49
26:Z:4:VAL:HG23	26:Z:58:GLY:HA2	1.93	0.49
11:K:60:ALA:HB2	11:K:86:LEU:HD23	1.94	0.49
1:A:160:A:N3	1:A:2195:C:O2'	2.41	0.49
1:A:823:A:H2'	1:A:824:G:C8	2.48	0.49
1:A:2126:U:N3	1:A:2141:G:OP1	2.46	0.49
6:F:22:LEU:HD13	6:F:27:GLU:HG2	1.94	0.49
11:K:2:ILE:O	11:K:32:TYR:HA	2.13	0.49
1:A:1587:A:H5"	1:A:1588:A:H5'	1.95	0.49
18:R:38:VAL:HG21	18:R:57:ALA:HB3	1.95	0.49
28:2:43:SER:HB3	28:2:47:PHE:H	1.78	0.49
1:A:1063:A:O2'	9:I:94:ASN:ND2	2.38	0.48
1:A:1402:U:O2	1:A:1578:G:N1	2.46	0.48
18:R:71:LYS:HA	18:R:89:HIS:O	2.13	0.48
1:A:766:G:N2	1:A:783:A:HO2'	2.12	0.48
1:A:1276:C:H2'	1:A:1277:A:H8	1.78	0.48
23:W:40:LEU:HD11	23:W:44:LYS:HB2	1.94	0.48
1:A:1092:C:C5	9:I:8:TYR:CA	2.96	0.48
10:J:16:PHE:HB3	10:J:140:LEU:HD22	1.95	0.48
1:A:1253:G:O2'	1:A:1999:G:O6	2.32	0.48
1:A:2120:G:O2'	1:A:2122:A:OP1	2.29	0.48
1:A:2302:G:C2	27:1:23:LYS:HG2	2.48	0.48
1:A:952:G:H21	1:A:2237:G:H1	1.59	0.48
1:A:1967:G:H3'	1:A:1968:A:H5"	1.95	0.48
6:F:36:LEU:HD23	6:F:152:LEU:HA	1.94	0.48
22:V:77:ILE:HA	22:V:94:PHE:HB3	1.94	0.48
29:3:8:VAL:HG12	29:3:47:GLU:HB2	1.96	0.48
1:A:358:A:O2'	1:A:359:U:O2	2.27	0.48
1:A:649:G:O2'	5:E:94:LYS:O	2.31	0.48
1:A:1276:C:H2'	1:A:1277:A:C8	2.49	0.48
1:A:1455:U:O2	1:A:1511:G:O6	2.30	0.48
1:A:2462:C:H42	1:A:2516:G:N2	2.10	0.48
2:B:43:C:H1'	27:1:32:ILE:HB	1.95	0.48
4:D:15:ILE:HD13	4:D:25:VAL:HG21	1.94	0.48
6:F:16:LEU:HG	6:F:169:LEU:HD23	1.96	0.48
12:L:30:THR:HG22	12:L:33:ARG:HB2	1.96	0.48
1:A:1048:G:H2'	9:I:49:GLN:HE21	1.78	0.48
1:A:1061:G:H21	1:A:1079:A:H61	1.62	0.48
10:J:49:ASP:OD1	10:J:49:ASP:N	2.45	0.48
13:M:65:TRP:HB2	13:M:105:GLU:HB2	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:R:75:ILE:HG23	18:R:84:MET:HE1	1.96	0.48
1:A:847:G:N2	1:A:2256:G:OP2	2.45	0.48
1:A:69:C:O2	1:A:73:A:O2'	2.30	0.48
1:A:2038:U:H3'	1:A:2565:G:H5"	1.96	0.48
14:N:51:LEU:HD21	14:N:69:ARG:HG3	1.95	0.48
22:V:33:VAL:HG12	22:V:96:ARG:HD2	1.96	0.48
1:A:1018:A:H2'	1:A:1019:A:C8	2.48	0.47
1:A:1044:A:H3'	9:I:28:LEU:HD12	1.95	0.47
1:A:1514:G:N1	1:A:1534:A:OP2	2.41	0.47
1:A:1778:A:N6	1:A:1815:G:O2'	2.42	0.47
27:1:30:LYS:HB2	27:1:32:ILE:HG12	1.96	0.47
1:A:1787:C:H5	1:A:1804:G:H22	1.62	0.47
3:C:145:GLU:HB2	3:C:188:CYS:HB2	1.96	0.47
10:J:18:VAL:HB	10:J:56:VAL:HG22	1.96	0.47
1:A:683:A:O2'	1:A:1340:A:N3	2.44	0.47
1:A:1502:A:H3'	1:A:1503:G:H8	1.79	0.47
1:A:2490:A:O2'	1:A:2492:G:OP2	2.27	0.47
2:B:51:G:OP2	15:O:66:ASN:ND2	2.43	0.47
1:A:1035:U:H6	1:A:1037:G:H21	1.62	0.47
1:A:1776:A:OP2	3:C:221:ARG:NH1	2.47	0.47
1:A:2094:C:O2'	1:A:2095:U:O4'	2.32	0.47
6:F:46:ASP:OD1	6:F:46:ASP:N	2.43	0.47
18:R:5:ILE:HG22	18:R:38:VAL:HG12	1.97	0.47
1:A:988:C:OP1	17:Q:84:LYS:NZ	2.42	0.47
11:K:64:ARG:NH2	11:K:99:PHE:O	2.46	0.47
6:F:3:ARG:N	6:F:97:TYR:O	2.48	0.47
1:A:743:G:H2'	1:A:744:G:H8	1.80	0.47
1:A:889:A:H3'	1:A:890:A:C8	2.50	0.47
1:A:896:G:H5'	13:M:23:ARG:HB3	1.97	0.47
1:A:1020:C:H5	1:A:1114:G:H1	1.63	0.47
1:A:1048:G:H4'	9:I:46:THR:HA	1.96	0.47
1:A:1092:C:C2	9:I:8:TYR:N	2.82	0.47
1:A:1313:U:O2'	1:A:1997:G:O2'	2.27	0.47
1:A:2566:C:O2'	4:D:136:ASN:OD1	2.33	0.47
15:O:38:ALA:HB2	15:O:105:LEU:HD21	1.95	0.47
1:A:471:A:OP2	21:U:43:ARG:NH1	2.48	0.47
1:A:822:U:H2'	1:A:823:A:C8	2.50	0.47
1:A:1070:C:H6	9:I:116:ASP:HB3	1.79	0.47
1:A:1270:G:H22	1:A:1273:A:H5"	1.79	0.47
1:A:2628:A:H5"	10:J:78:SER:HB2	1.97	0.47
10:J:92:LEU:HD11	10:J:99:ARG:HD2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:5:58:GLU:HG3	31:5:64:ARG:HG2	1.96	0.47
1:A:705:A:N7	1:A:706:A:N6	2.63	0.47
5:E:6:ASN:HD22	5:E:120:VAL:HG12	1.80	0.47
6:F:33:LYS:N	27:1:27:THR:H	2.13	0.47
22:V:23:ARG:HH11	22:V:90:MET:HB2	1.79	0.47
1:A:1047:A:H5"	9:I:38:PHE:HZ	1.79	0.47
1:A:2278:U:O2'	1:A:2361:C:O2	2.33	0.47
2:B:42:C:O2'	6:F:64:LYS:O	2.24	0.47
22:V:62:HIS:ND1	22:V:63:VAL:O	2.38	0.47
1:A:797:U:O2'	1:A:2047:A:N1	2.47	0.46
1:A:1328:U:OP2	1:A:1381:U:O2'	2.25	0.46
9:I:103:ARG:HB2	9:I:140:VAL:HG22	1.97	0.46
1:A:822:U:H2'	1:A:823:A:H8	1.81	0.46
1:A:1065:C:H2'	9:I:139:ASN:HB3	1.97	0.46
1:A:2459:G:H21	1:A:2465:A:H62	1.64	0.46
1:A:1059:A:H61	9:I:98:VAL:HG13	1.80	0.46
1:A:1144:C:OP1	17:Q:92:ARG:NH2	2.38	0.46
1:A:1350:U:O2'	1:A:1796:A:N3	2.41	0.46
1:A:2409:C:O2'	1:A:2410:U:O2	2.30	0.46
7:G:71:LEU:O	7:G:75:MET:HB2	2.15	0.46
8:H:8:LYS:HB3	8:H:15:LEU:HD23	1.97	0.46
1:A:1352:A:OP1	24:X:3:ARG:NH2	2.39	0.46
1:A:1641:G:H5'	14:N:39:PRO:HG2	1.97	0.46
1:A:2262:C:O2'	13:M:84:GLY:O	2.33	0.46
1:A:2301:G:N2	6:F:155:THR:OG1	2.48	0.46
1:A:2315:A:H2'	1:A:2316:A:C8	2.51	0.46
11:K:27:GLY:H	11:K:30:ARG:HG3	1.80	0.46
14:N:8:ARG:HG3	14:N:10:LEU:HG	1.98	0.46
1:A:2017:A:N3	1:A:2486:C:H5"	2.30	0.46
6:F:60:ILE:HG13	6:F:61:THR:HG23	1.98	0.46
7:G:52:PHE:CE2	7:G:72:VAL:HG21	2.51	0.46
9:I:21:SER:O	9:I:25:GLY:N	2.41	0.46
23:W:32:LYS:H	23:W:35:ASN:ND2	2.13	0.46
1:A:950:A:H61	13:M:83:MET:HE1	1.81	0.46
1:A:2115:G:H5"	1:A:2116:C:H5	1.80	0.46
5:E:2:GLN:HB3	5:E:13:VAL:HG22	1.98	0.46
8:H:31:LEU:HD21	8:H:38:VAL:HG23	1.98	0.46
1:A:2026:U:H2'	1:A:2027:G:H8	1.80	0.45
1:A:786:U:H2'	1:A:787:C:C6	2.52	0.45
1:A:1012:G:O6	10:J:68:LYS:NZ	2.49	0.45
1:A:2493:U:O2	1:A:2570:G:N2	2.44	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:76:ILE:HD12	11:K:78:ARG:HD3	1.98	0.45
1:A:59:U:O2'	1:A:74:A:OP2	2.27	0.45
1:A:472:G:O2'	1:A:498:A:N1	2.46	0.45
1:A:2101:A:O2'	1:A:2154:U:O2'	2.30	0.45
1:A:2644:A:O2'	7:G:156:LYS:NZ	2.45	0.45
1:A:1091:U:OP2	9:I:10:LYS:NZ	2.38	0.45
1:A:1478:G:O2'	3:C:100:GLU:OE1	2.34	0.45
1:A:92:A:O2'	1:A:93:A:O4'	2.33	0.45
1:A:314:A:O2'	1:A:316:A:OP2	2.32	0.45
1:A:854:C:H42	1:A:898:A:H2	1.64	0.45
1:A:982:C:OP1	17:Q:47:TYR:OH	2.23	0.45
1:A:1469:G:H2'	1:A:1470:A:C8	2.51	0.45
1:A:2445:G:O2'	1:A:2447:U:O4	2.30	0.45
2:B:25:A:O2'	2:B:26:A:O5'	2.32	0.45
11:K:24:VAL:HG13	11:K:33:ALA:HB2	1.99	0.45
1:A:2317:G:H21	23:W:42:GLY:HA3	1.82	0.45
8:H:44:VAL:HA	8:H:47:PHE:HD2	1.81	0.45
9:I:8:TYR:CB	9:I:8:TYR:CA	2.95	0.45
3:C:67:PHE:HB3	3:C:152:ALA:H	1.82	0.45
10:J:56:VAL:HB	10:J:124:VAL:HG12	1.98	0.45
1:A:1018:A:N6	1:A:1115:G:H2'	2.31	0.45
1:A:2254:A:H62	1:A:2259:U:H5	1.64	0.45
1:A:2301:G:OP1	6:F:35:THR:OG1	2.31	0.44
1:A:579:U:H2'	1:A:580:A:C8	2.52	0.44
1:A:2806:G:H2'	1:A:2808:A:N7	2.32	0.44
6:F:35:THR:HG23	6:F:88:LYS:HG3	1.98	0.44
10:J:45:THR:HB	10:J:48:VAL:HG12	1.98	0.44
13:M:34:LEU:HD13	13:M:118:PHE:HB3	2.00	0.44
20:T:36:ASP:OD1	20:T:36:ASP:N	2.49	0.44
1:A:559:U:H5'	1:A:936:C:H1'	1.99	0.44
1:A:1070:C:C4	9:I:117:LEU:HD12	2.53	0.44
1:A:1799:U:H2'	1:A:1800:G:H8	1.82	0.44
1:A:2455:A:O2'	1:A:2468:G:N2	2.50	0.44
6:F:4:LEU:H	6:F:97:TYR:HD1	1.66	0.44
1:A:2026:U:H2'	1:A:2027:G:C8	2.52	0.44
7:G:18:LYS:HB3	7:G:25:SER:HB3	1.99	0.44
1:A:518:C:N4	1:A:2766:U:OP2	2.49	0.44
1:A:1783:U:H2'	1:A:1784:C:C6	2.52	0.44
1:A:1939:A:N3	1:A:2547:A:O2'	2.40	0.44
1:A:2321:A:N6	15:O:21:GLU:OE1	2.48	0.44
6:F:33:LYS:O	27:1:26:SER:N	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:Q:43:GLY:HA3	18:R:75:ILE:HD13	1.98	0.44
18:R:14:VAL:HG13	18:R:98:ILE:HG13	2.00	0.44
1:A:1766:U:H5	1:A:1771:A:N7	2.16	0.44
11:K:9:ASP:OD1	11:K:18:ARG:NH1	2.45	0.44
1:A:1245:U:H2'	1:A:1246:G:C8	2.53	0.44
6:F:12:ILE:HA	6:F:15:LYS:HZ1	1.82	0.44
21:U:41:ILE:HD13	21:U:41:ILE:HA	1.89	0.44
1:A:899:A:N3	1:A:2251:C:O2'	2.44	0.44
1:A:2152:C:N4	1:A:2159:U:O4	2.50	0.44
3:C:96:TYR:HB2	3:C:100:GLU:HB3	2.00	0.44
7:G:111:TYR:OH	7:G:143:GLU:OE1	2.29	0.44
13:M:57:HIS:HE1	13:M:116:GLU:HG3	1.83	0.44
16:P:23:PRO:HD3	16:P:51:LYS:HD3	2.00	0.44
17:Q:27:ALA:HB1	17:Q:31:VAL:HG22	1.99	0.44
18:R:7:THR:OG1	18:R:8:GLY:N	2.50	0.44
1:A:1781:A:H2'	1:A:1782:C:H6	1.83	0.44
6:F:91:LEU:HA	6:F:95:ARG:HE	1.82	0.44
10:J:36:LEU:HD11	10:J:122:LEU:HB2	1.99	0.44
13:M:42:LEU:HD22	13:M:125:LEU:HD22	2.00	0.44
1:A:1058:G:H4'	9:I:88:SER:HB2	2.00	0.43
1:A:2117:U:N3	1:A:2120:G:OP1	2.51	0.43
1:A:2414:C:H5'	1:A:2416:G:H5'	2.00	0.43
6:F:99:PHE:HD1	6:F:102:ARG:HH11	1.66	0.43
7:G:64:MET:HA	7:G:67:THR:HG22	2.00	0.43
7:G:102:SER:HB2	7:G:108:PRO:HB3	2.00	0.43
1:A:664:G:H2'	1:A:794:A:H61	1.82	0.43
1:A:742:A:OP1	30:4:3:ARG:NH1	2.46	0.43
1:A:1017:A:C2	1:A:2475:G:H5'	2.53	0.43
1:A:1035:U:H5	1:A:1101:A:H5''	1.83	0.43
1:A:2622:U:O2'	4:D:82:GLU:OE1	2.34	0.43
1:A:351:A:H2'	1:A:352:A:C8	2.52	0.43
1:A:702:G:H3'	1:A:703:G:H8	1.81	0.43
1:A:1046:G:H2'	9:I:13:VAL:HG12	1.99	0.43
1:A:2125:G:H1	1:A:2140:C:H1'	1.82	0.43
21:U:4:ILE:HG12	21:U:71:ILE:HD11	1.99	0.43
22:V:90:MET:HE2	22:V:90:MET:HB3	1.93	0.43
1:A:523:A:H5'	17:Q:28:ARG:HH12	1.84	0.43
1:A:1020:C:H5	1:A:1114:G:H22	1.65	0.43
1:A:1488:G:OP1	3:C:101:ARG:NH2	2.52	0.43
1:A:1796:A:H2'	1:A:1797:A:C8	2.53	0.43
4:D:6:VAL:H	4:D:33:ASN:ND2	2.16	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:357:A:H2'	1:A:358:A:H4'	2.00	0.43
1:A:399:G:O2'	1:A:400:G:H8	2.01	0.43
1:A:1421:A:H62	1:A:1548:A:H61	1.66	0.43
1:A:1469:G:H2'	1:A:1470:A:H8	1.84	0.43
1:A:1781:A:H2'	1:A:1782:C:C6	2.53	0.43
1:A:2278:U:OP1	1:A:2367:U:O2'	2.33	0.43
3:C:133:ARG:O	3:C:167:ARG:NH2	2.51	0.43
4:D:5:VAL:HG22	4:D:33:ASN:HD22	1.83	0.43
1:A:1470:A:H2'	1:A:1471:A:C8	2.52	0.43
1:A:1471:A:H2'	1:A:1472:A:H8	1.81	0.43
3:C:44:ASN:HD22	3:C:44:ASN:HA	1.55	0.43
6:F:125:ARG:HB3	27:1:19:GLY:HA3	2.00	0.43
7:G:39:PRO:HG3	7:G:64:MET:HE2	1.99	0.43
1:A:28:A:N6	1:A:503:G:H1'	2.33	0.43
1:A:126:A:H5'	30:4:19:ARG:HG3	2.01	0.43
1:A:1083:G:N2	1:A:1090:C:N3	2.66	0.43
1:A:1431:A:H2'	1:A:1432:G:H8	1.84	0.43
1:A:2493:U:O4	1:A:2570:G:O6	2.37	0.43
7:G:47:SER:OG	7:G:49:GLU:O	2.26	0.43
26:Z:29:ARG:HB2	26:Z:30:ARG:HH11	1.82	0.43
1:A:1078:A:N7	9:I:132:SER:OG	2.52	0.43
1:A:1143:C:H2'	1:A:1144:C:H6	1.83	0.43
1:A:1529:U:H2'	1:A:1530:G:C8	2.53	0.43
1:A:2186:A:OP1	24:X:37:ARG:NH1	2.51	0.43
1:A:2260:A:H2'	1:A:2261:A:C8	2.54	0.43
1:A:629:U:H2'	1:A:630:C:C6	2.53	0.43
29:3:4:LEU:HA	29:3:20:ASP:HA	2.00	0.43
30:4:3:ARG:HA	30:4:3:ARG:HD3	1.84	0.43
1:A:548:U:OP1	10:J:112:ASN:HB3	2.19	0.43
1:A:1060:A:C2	9:I:81:LYS:HG2	2.53	0.43
1:A:1147:A:C8	17:Q:51:ARG:HG2	2.54	0.43
1:A:1406:A:H61	1:A:1481:A:H62	1.66	0.43
1:A:2172:U:H2'	1:A:2173:G:C4	2.54	0.43
1:A:1766:U:OP2	1:A:1771:A:N6	2.46	0.42
1:A:2366:G:H4'	15:O:22:LEU:HD11	1.99	0.42
3:C:53:HIS:CE1	3:C:219:THR:HG23	2.54	0.42
5:E:147:ILE:HG23	5:E:186:LEU:HD22	2.00	0.42
9:I:115:ALA:HA	9:I:118:THR:HG22	2.00	0.42
10:J:109:LEU:O	10:J:111:LYS:NZ	2.50	0.42
1:A:1075:A:C4	9:I:59:ILE:HD11	2.53	0.42
1:A:1783:U:H2'	1:A:1784:C:H6	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1786:G:C2	3:C:154:ILE:HG23	2.55	0.42
1:A:2113:A:H4'	1:A:2114:G:H4'	2.01	0.42
1:A:2128:G:N2	1:A:2137:U:O2	2.52	0.42
5:E:158:LEU:HD23	5:E:158:LEU:HA	1.88	0.42
7:G:36:LYS:HB2	7:G:75:MET:HE1	2.01	0.42
14:N:66:ALA:O	14:N:70:THR:HG22	2.18	0.42
21:U:39:ASN:HB3	21:U:62:ALA:HB3	2.01	0.42
29:3:6:ARG:HB2	29:3:50:ILE:HG22	2.00	0.42
1:A:669:C:H2'	1:A:670:G:H8	1.84	0.42
1:A:1059:A:H5'	9:I:81:LYS:HE3	2.00	0.42
1:A:1558:G:OP1	3:C:63:ARG:NH1	2.35	0.42
1:A:1648:C:H2'	1:A:1649:G:C8	2.54	0.42
1:A:1786:G:OP1	3:C:259:ARG:NH1	2.43	0.42
30:4:3:ARG:O	30:4:6:GLN:NE2	2.44	0.42
1:A:264:U:H4'	1:A:419:A:H2	1.84	0.42
1:A:456:G:H5'	30:4:44:VAL:HB	2.01	0.42
1:A:2001:A:H2'	1:A:2002:A:C8	2.54	0.42
15:O:5:LYS:HA	15:O:8:ARG:HG2	2.00	0.42
20:T:69:THR:OG1	20:T:70:ALA:N	2.53	0.42
1:A:688:C:O2'	1:A:724:A:N6	2.53	0.42
1:A:704:U:N3	1:A:707:C:OP2	2.50	0.42
1:A:950:A:H2'	1:A:952:G:H5'	2.01	0.42
1:A:1063:A:H3'	9:I:139:ASN:HD21	1.85	0.42
1:A:1781:A:H1'	1:A:1887:A:C8	2.54	0.42
1:A:1790:A:H8	1:A:1809:G:H21	1.66	0.42
4:D:15:ILE:HG13	16:P:13:GLN:HE22	1.85	0.42
4:D:34:ARG:HH21	4:D:76:ALA:HA	1.85	0.42
6:F:5:LYS:O	6:F:8:TYR:N	2.52	0.42
10:J:28:LEU:HD23	10:J:101:ILE:HD11	2.00	0.42
11:K:77:ILE:HG13	16:P:73:ARG:HD3	2.01	0.42
12:L:144:ASP:OD1	12:L:144:ASP:N	2.51	0.42
1:A:1057:A:H5'	1:A:1058:G:N7	2.34	0.42
1:A:2724:G:H2'	1:A:2725:A:C8	2.55	0.42
4:D:179:ARG:HB3	4:D:188:LEU:HB2	2.01	0.42
5:E:3:LEU:HD23	5:E:119:VAL:HG21	2.02	0.42
6:F:151:GLY:HA3	27:1:9:TYR:CZ	2.55	0.42
11:K:113:LYS:HE3	11:K:117:LEU:HD11	2.01	0.42
13:M:75:THR:HG21	13:M:87:LYS:HE2	2.02	0.42
1:A:1795:A:H3'	1:A:1796:A:C8	2.54	0.42
1:A:1242:U:H5"	1:A:1243:G:H5"	2.01	0.42
1:A:1471:A:H2'	1:A:1472:A:C8	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1958:U:C6	3:C:240:SER:HB3	2.53	0.42
1:A:2104:A:N1	1:A:2159:U:N3	2.67	0.42
1:A:2787:A:H2'	1:A:2788:U:C6	2.55	0.42
3:C:147:LYS:HA	3:C:148:PRO:HD3	1.92	0.42
1:A:1084:U:H5	1:A:1087:U:H5"	1.84	0.42
1:A:2286:G:H2'	1:A:2287:A:H8	1.84	0.42
2:B:75:G:H21	22:V:91:HIS:CE1	2.38	0.42
4:D:133:THR:O	4:D:135:GLY:N	2.53	0.42
7:G:11:LEU:HD12	7:G:15:VAL:HB	2.01	0.42
14:N:107:ASN:ND2	19:S:40:SER:HB3	2.35	0.42
1:A:2155:G:N1	1:A:2158:A:OP2	2.52	0.42
1:A:2695:G:H5'	14:N:68:ASP:HB2	2.01	0.42
2:B:45:A:H62	6:F:90:THR:HG21	1.85	0.42
8:H:65:ALA:HA	8:H:68:ARG:HB3	2.02	0.42
11:K:1:MET:HE3	11:K:1:MET:HB3	1.90	0.42
1:A:249:C:O2	31:5:12:LYS:NZ	2.43	0.41
1:A:866:U:H2'	1:A:867:A:H8	1.85	0.41
1:A:1725:A:H2'	1:A:1726:A:H8	1.85	0.41
1:A:2233:G:H2'	1:A:2234:A:C8	2.55	0.41
2:B:34:A:N6	2:B:44:G:O2'	2.53	0.41
3:C:235:GLY:HA3	3:C:239:THR:HG21	2.01	0.41
9:I:130:ALA:HA	9:I:140:VAL:HG21	2.02	0.41
11:K:19:VAL:HB	11:K:41:VAL:HB	2.01	0.41
15:O:35:HIS:CE1	15:O:55:LEU:HD23	2.55	0.41
23:W:36:ILE:HG21	23:W:39:ARG:HE	1.85	0.41
1:A:583:U:O2'	31:5:64:ARG:OXT	2.35	0.41
1:A:840:U:H5"	26:Z:49:LYS:HG3	2.01	0.41
1:A:2330:U:O2'	1:A:2360:A:O2'	2.21	0.41
11:K:38:ILE:HD11	11:K:111:PHE:HZ	1.84	0.41
25:Y:49:ASP:OD1	25:Y:52:ARG:NH1	2.44	0.41
1:A:946:G:H2'	1:A:947:C:H2'	2.02	0.41
1:A:1045:G:H3'	1:A:1046:G:C8	2.54	0.41
1:A:1092:C:C5	9:I:8:TYR:CG	3.08	0.41
4:D:32:PRO:HB2	4:D:95:GLN:HE21	1.85	0.41
1:A:155:U:H2'	1:A:156:A:H8	1.85	0.41
1:A:583:U:H2'	1:A:584:U:C6	2.55	0.41
1:A:2128:G:N1	1:A:2137:U:N3	2.52	0.41
1:A:2140:C:OP1	1:A:2143:G:N2	2.54	0.41
1:A:2176:U:H2'	1:A:2177:G:H8	1.85	0.41
1:A:2502:C:H2'	1:A:2503:A:H8	1.86	0.41
11:K:40:LYS:HE2	11:K:40:LYS:HB2	1.90	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:U:6:ARG:O	21:U:8:ASP:N	2.54	0.41
1:A:1303:U:H2'	1:A:1304:G:H8	1.85	0.41
1:A:1589:C:H5'	20:T:38:THR:HG22	2.02	0.41
1:A:2871:U:O4'	28:2:49:ARG:NH2	2.53	0.41
1:A:1656:G:HO2'	11:K:6:SER:HG	1.66	0.41
1:A:2087:G:H2'	1:A:2088:A:C8	2.55	0.41
9:I:134:ARG:HD2	9:I:140:VAL:HG23	2.02	0.41
15:O:35:HIS:HB3	15:O:64:THR:HG22	2.03	0.41
23:W:56:ASP:OD1	23:W:58:THR:OG1	2.33	0.41
1:A:801:U:H2'	12:L:21:ARG:HA	2.03	0.41
1:A:835:A:N1	1:A:922:G:N1	2.58	0.41
1:A:1892:C:H2'	1:A:1917:G:C8	2.55	0.41
1:A:2115:G:HO2'	1:A:2160:A:HO2'	1.64	0.41
5:E:11:ILE:HD12	5:E:189:VAL:HG22	2.02	0.41
9:I:3:LYS:HB3	9:I:4:LYS:H	1.65	0.41
30:4:22:MET:HG3	30:4:28:ARG:HG2	2.02	0.41
1:A:1048:G:N3	9:I:49:GLN:NE2	2.69	0.41
1:A:1053:G:O2'	9:I:105:GLN:O	2.37	0.41
1:A:1673:C:H2'	1:A:1674:A:C8	2.56	0.41
11:K:70:ARG:HH11	11:K:76:ILE:HG23	1.86	0.41
14:N:1:MET:HB2	14:N:1:MET:HE3	1.80	0.41
1:A:161:A:OP2	1:A:162:U:O2'	2.34	0.41
1:A:523:A:H5''	17:Q:28:ARG:HH22	1.86	0.41
1:A:766:G:N1	1:A:783:A:O2'	2.37	0.41
1:A:1373:C:H2'	1:A:1374:A:H8	1.86	0.41
1:A:1502:A:HO2'	1:A:1546:C:HO2'	1.60	0.41
1:A:1712:G:H2'	1:A:1713:G:C8	2.55	0.41
1:A:2084:U:O4	1:A:2179:G:O6	2.38	0.41
4:D:71:LYS:HE2	4:D:71:LYS:HB3	1.90	0.41
11:K:58:MET:HB3	11:K:58:MET:HE2	1.87	0.41
11:K:71:ARG:NE	11:K:77:ILE:HD11	2.35	0.41
12:L:82:LEU:HD11	12:L:110:VAL:HG11	2.02	0.41
13:M:57:HIS:CE1	13:M:116:GLU:HG3	2.55	0.41
13:M:83:MET:HE2	13:M:83:MET:HB3	1.83	0.41
29:3:17:TYR:HD2	29:3:34:LYS:HD3	1.86	0.41
30:4:34:ARG:HE	30:4:42:LEU:HA	1.86	0.41
1:A:632:U:O2'	1:A:634:A:N7	2.42	0.41
1:A:2126:U:N3	1:A:2139:G:C6	2.89	0.41
7:G:83:PHE:CE1	7:G:134:LYS:HD3	2.56	0.41
15:O:8:ARG:HA	15:O:11:ARG:HE	1.86	0.41
1:A:62:U:H3	1:A:93:A:H61	1.68	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:517:A:O2'	1:A:2030:U:O2	2.38	0.40
1:A:587:G:O2'	12:L:11:GLY:O	2.38	0.40
1:A:770:G:H21	1:A:773:A:H62	1.68	0.40
1:A:857:U:H3	1:A:898:A:H62	1.69	0.40
1:A:2694:U:H2'	1:A:2695:G:C8	2.56	0.40
5:E:74:SER:HB3	5:E:77:TRP:CD1	2.56	0.40
8:H:23:GLY:O	8:H:27:ARG:HB2	2.21	0.40
19:S:82:LEU:HD23	19:S:84:ARG:NH2	2.36	0.40
31:5:28:LYS:HE2	31:5:28:LYS:HB3	1.77	0.40
31:5:35:MET:HG2	31:5:39:ARG:NH2	2.37	0.40
1:A:191:A:H2'	1:A:192:C:C6	2.57	0.40
1:A:1143:C:H2'	1:A:1144:C:C6	2.56	0.40
1:A:1515:A:C5	1:A:1516:G:H1'	2.57	0.40
1:A:1777:C:H2'	1:A:1778:A:C5	2.56	0.40
1:A:2074:U:H2'	1:A:2075:G:C8	2.55	0.40
1:A:2318:G:O2'	23:W:42:GLY:O	2.40	0.40
22:V:149:VAL:HG22	22:V:165:LEU:HD13	2.02	0.40
1:A:155:U:H2'	1:A:156:A:C8	2.57	0.40
1:A:952:G:N2	1:A:2237:G:H1	2.18	0.40
1:A:1020:C:H41	1:A:1114:G:H1	1.69	0.40
1:A:1405:G:H1'	1:A:1570:A:H61	1.86	0.40
1:A:1659:A:H5"	1:A:2537:G:OP1	2.21	0.40
26:Z:16:LEU:HB2	26:Z:19:HIS:HD2	1.86	0.40
1:A:18:C:OP1	17:Q:30:ARG:NH2	2.54	0.40
1:A:624:G:N7	12:L:74:ARG:NH1	2.69	0.40
1:A:2082:A:H2'	1:A:2083:C:C6	2.57	0.40
1:A:2661:G:H4'	11:K:30:ARG:HG2	2.04	0.40
3:C:135:ILE:HD11	3:C:164:LEU:HD22	2.04	0.40
11:K:104:ARG:HH22	16:P:33:VAL:HB	1.85	0.40
12:L:123:LYS:HE2	12:L:123:LYS:HB2	1.90	0.40
16:P:93:VAL:HB	16:P:98:LEU:HD21	2.04	0.40
19:S:80:ARG:HH11	19:S:80:ARG:HD2	1.74	0.40
1:A:1392:U:H2'	1:A:1393:U:C6	2.56	0.40
1:A:1488:G:H5"	3:C:95:LYS:HD2	2.04	0.40
1:A:2373:U:H4'	23:W:56:ASP:HA	2.04	0.40
1:A:2471:G:O2'	13:M:124:LYS:O	2.37	0.40
1:A:2834:U:H2'	1:A:2835:G:O4'	2.21	0.40
5:E:20:GLY:O	5:E:113:ARG:NH2	2.39	0.40
6:F:121:SER:O	6:F:127:ASN:ND2	2.55	0.40

There are no symmetry-related clashes.

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 PDB entries followed by that with respect to all EM entries.

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	
3	C	269/271 (99%)	247 (92%)	21 (8%)	1 (0%)	30	59
4	D	205/207 (99%)	175 (85%)	30 (15%)	0	100	100
5	E	197/199 (99%)	190 (96%)	7 (4%)	0	100	100
6	F	172/174 (99%)	122 (71%)	50 (29%)	0	100	100
7	G	167/169 (99%)	149 (89%)	18 (11%)	0	100	100
8	H	76/78 (97%)	71 (93%)	5 (7%)	0	100	100
9	I	138/140 (99%)	86 (62%)	52 (38%)	0	100	100
10	J	139/141 (99%)	129 (93%)	10 (7%)	0	100	100
11	K	118/120 (98%)	107 (91%)	11 (9%)	0	100	100
12	L	141/144 (98%)	127 (90%)	14 (10%)	0	100	100
13	M	133/136 (98%)	126 (95%)	7 (5%)	0	100	100
14	N	116/120 (97%)	105 (90%)	10 (9%)	1 (1%)	14	39
15	O	113/115 (98%)	104 (92%)	9 (8%)	0	100	100
16	P	111/115 (96%)	96 (86%)	15 (14%)	0	100	100
17	Q	115/117 (98%)	110 (96%)	5 (4%)	0	100	100
18	R	100/102 (98%)	90 (90%)	10 (10%)	0	100	100
19	S	107/110 (97%)	104 (97%)	3 (3%)	0	100	100
20	T	90/94 (96%)	83 (92%)	7 (8%)	0	100	100
21	U	101/103 (98%)	93 (92%)	8 (8%)	0	100	100
22	V	186/188 (99%)	162 (87%)	24 (13%)	0	100	100
23	W	74/76 (97%)	56 (76%)	18 (24%)	0	100	100
24	X	75/77 (97%)	71 (95%)	4 (5%)	0	100	100
25	Y	58/60 (97%)	53 (91%)	5 (9%)	0	100	100
26	Z	55/57 (96%)	52 (94%)	3 (6%)	0	100	100
27	1	29/31 (94%)	19 (66%)	10 (34%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	2	51/53 (96%)	45 (88%)	6 (12%)	0	100	100
29	3	48/50 (96%)	43 (90%)	5 (10%)	0	100	100
30	4	43/44 (98%)	40 (93%)	3 (7%)	0	100	100
31	5	61/63 (97%)	56 (92%)	5 (8%)	0	100	100
32	6	36/38 (95%)	34 (94%)	2 (6%)	0	100	100
All	All	3324/3392 (98%)	2945 (89%)	377 (11%)	2 (0%)	50	76

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	112	ALA
14	N	71	ARG

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 PDB entries followed by that with respect to all EM entries.

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	
3	C	206/212 (97%)	204 (99%)	2 (1%)	73	91
4	D	157/159 (99%)	153 (98%)	4 (2%)	42	74
5	E	155/157 (99%)	155 (100%)	0	100	100
6	F	122/147 (83%)	121 (99%)	1 (1%)	79	93
7	G	131/135 (97%)	129 (98%)	2 (2%)	60	85
8	H	55/55 (100%)	55 (100%)	0	100	100
9	I	108/108 (100%)	106 (98%)	2 (2%)	52	81
10	J	118/118 (100%)	118 (100%)	0	100	100
11	K	100/100 (100%)	100 (100%)	0	100	100
12	L	104/106 (98%)	104 (100%)	0	100	100
13	M	108/109 (99%)	107 (99%)	1 (1%)	75	92
14	N	97/99 (98%)	96 (99%)	1 (1%)	73	91
15	O	86/86 (100%)	84 (98%)	2 (2%)	45	77

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	P	94/97 (97%)	93 (99%)	1 (1%)	70	90
17	Q	87/87 (100%)	86 (99%)	1 (1%)	70	90
18	R	82/86 (95%)	82 (100%)	0	100	100
19	S	86/87 (99%)	85 (99%)	1 (1%)	67	89
20	T	73/77 (95%)	72 (99%)	1 (1%)	62	86
21	U	88/88 (100%)	88 (100%)	0	100	100
22	V	144/153 (94%)	142 (99%)	2 (1%)	62	86
23	W	56/56 (100%)	55 (98%)	1 (2%)	54	82
24	X	65/66 (98%)	65 (100%)	0	100	100
25	Y	51/53 (96%)	50 (98%)	1 (2%)	50	80
26	Z	48/48 (100%)	48 (100%)	0	100	100
27	1	27/27 (100%)	27 (100%)	0	100	100
28	2	46/46 (100%)	46 (100%)	0	100	100
29	3	46/46 (100%)	46 (100%)	0	100	100
30	4	38/37 (103%)	36 (95%)	2 (5%)	19	47
31	5	54/54 (100%)	53 (98%)	1 (2%)	52	81
32	6	33/34 (97%)	32 (97%)	1 (3%)	36	69
All	All	2665/2733 (98%)	2638 (99%)	27 (1%)	71	91

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	44	ASN
3	C	174	LEU
4	D	5	VAL
4	D	15	ILE
4	D	27	VAL
4	D	110	THR
6	F	48	LYS
7	G	90	VAL
7	G	92	VAL
9	I	101	VAL
9	I	106	LEU
13	M	94	VAL
14	N	2	ARG
15	O	76	LEU

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Mol	Chain	Res	Type
15	O	114	LEU
16	P	71	VAL
17	Q	4	VAL
19	S	71	VAL
20	T	83	TYR
22	V	33	VAL
22	V	91	HIS
23	W	51	VAL
25	Y	21	LEU
30	4	41[A]	ARG
30	4	41[B]	ARG
31	5	4	MET
32	6	17	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (54) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	21	ASN
3	C	44	ASN
3	C	90	HIS
3	C	142	HIS
3	C	226	ASN
3	C	261	ASN
4	D	33	ASN
4	D	37	GLN
4	D	68	HIS
4	D	105	GLN
4	D	132	ASN
5	E	6	ASN
5	E	23	ASN
5	E	165	HIS
5	E	172	GLN
6	F	21	GLN
6	F	118	ASN
7	G	22	GLN
7	G	59	GLN
9	I	49	GLN
10	J	47	HIS
10	J	77	HIS
10	J	135	GLN
11	K	29	HIS
11	K	89	ASN

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Mol	Chain	Res	Type
12	L	55	GLN
12	L	58	HIS
12	L	93	GLN
13	M	57	HIS
14	N	9	HIS
15	O	35	HIS
15	O	99	HIS
16	P	76	GLN
17	Q	37	GLN
17	Q	72	ASN
17	Q	101	ASN
18	R	12	HIS
18	R	43	ASN
19	S	102	HIS
21	U	73	ASN
22	V	83	HIS
22	V	91	HIS
22	V	106	HIS
22	V	178	HIS
22	V	186	ASN
23	W	35	ASN
23	W	46	HIS
24	X	16	ASN
24	X	36	HIS
26	Z	13	ASN
26	Z	19	HIS
26	Z	33	HIS
28	2	41	HIS
31	5	50	ASN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2883/2888 (99%)	825 (28%)	42 (1%)
2	B	116/117 (99%)	29 (25%)	5 (4%)
All	All	2999/3005 (99%)	854 (28%)	47 (1%)

All (854) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	10	A

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Mol	Chain	Res	Type
1	A	14	A
1	A	15	G
1	A	17	G
1	A	27	G
1	A	28	A
1	A	34	U
1	A	35	G
1	A	44	A
1	A	46	G
1	A	50	U
1	A	55	G
1	A	58	G
1	A	60	G
1	A	62	U
1	A	63	A
1	A	64	G
1	A	69	C
1	A	70	G
1	A	71	A
1	A	74	A
1	A	75	G
1	A	79	C
1	A	82	G
1	A	83	G
1	A	85	G
1	A	92	A
1	A	93	A
1	A	97	A
1	A	100	U
1	A	102	G
1	A	103	A
1	A	110	G
1	A	114	U
1	A	115	C
1	A	118	A
1	A	119	A
1	A	120	U
1	A	125	G
1	A	131	A
1	A	139	U
1	A	140	A
1	A	141	A

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Mol	Chain	Res	Type
1	A	142	C
1	A	144	U
1	A	147	G
1	A	160	A
1	A	163	C
1	A	166	U
1	A	170	U
1	A	173	A
1	A	181	A
1	A	196	A
1	A	199	A
1	A	205	G
1	A	206	U
1	A	212	G
1	A	215	G
1	A	216	A
1	A	220	G
1	A	222	A
1	A	223	A
1	A	224	U
1	A	227	A
1	A	228	C
1	A	229	C
1	A	230	G
1	A	232	G
1	A	233	A
1	A	240	U
1	A	241	A
1	A	242	G
1	A	243	U
1	A	244	A
1	A	248	G
1	A	249	C
1	A	250	G
1	A	252	G
1	A	255	A
1	A	261	G
1	A	265	A
1	A	266	G
1	A	267	C
1	A	268	C
1	A	271	U

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Mol	Chain	Res	Type
1	A	276	U
1	A	281	U
1	A	282	G
1	A	289	G
1	A	294	A
1	A	296	G
1	A	304	A
1	A	305	A
1	A	315	U
1	A	316	A
1	A	318	U
1	A	319	G
1	A	322	U
1	A	323	G
1	A	324	A
1	A	325	U
1	A	336	G
1	A	339	A
1	A	341	A
1	A	342	G
1	A	348	U
1	A	349	U
1	A	350	G
1	A	353	G
1	A	357	A
1	A	358	A
1	A	359	U
1	A	361	A
1	A	377	G
1	A	378	A
1	A	380	A
1	A	385	U
1	A	386	U
1	A	387	G
1	A	395	A
1	A	397	G
1	A	399	G
1	A	400	G
1	A	403	A
1	A	435	C
1	A	439	U
1	A	445	A

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Mol	Chain	Res	Type
1	A	447	C
1	A	454	G
1	A	461	A
1	A	464	G
1	A	466	C
1	A	471	A
1	A	472	G
1	A	482	G
1	A	485	G
1	A	487	G
1	A	492	A
1	A	495	U
1	A	496	A
1	A	499	A
1	A	516	U
1	A	519	A
1	A	520	A
1	A	521	G
1	A	523	A
1	A	526	G
1	A	534	A
1	A	535	C
1	A	536	U
1	A	537	U
1	A	538	G
1	A	539	U
1	A	540	U
1	A	541	A
1	A	544	U
1	A	553	A
1	A	558	U
1	A	561	U
1	A	563	U
1	A	564	A
1	A	565	A
1	A	573	G
1	A	576	A
1	A	593	A
1	A	594	G
1	A	599	A
1	A	604	A
1	A	605	U

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Mol	Chain	Res	Type
1	A	622	A
1	A	624	G
1	A	627	A
1	A	633	A
1	A	634	A
1	A	635	U
1	A	643	U
1	A	645	A
1	A	647	U
1	A	649	G
1	A	659	G
1	A	660	A
1	A	667	A
1	A	674	G
1	A	675	A
1	A	676	U
1	A	679	A
1	A	687	G
1	A	689	A
1	A	698	G
1	A	699	U
1	A	701	A
1	A	702	G
1	A	703	G
1	A	704	U
1	A	705	A
1	A	706	A
1	A	708	A
1	A	711	G
1	A	716	G
1	A	720	A
1	A	722	C
1	A	724	A
1	A	725	A
1	A	737	U
1	A	738	G
1	A	742	A
1	A	743	G
1	A	745	U
1	A	747	G
1	A	753	G
1	A	754	A

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Mol	Chain	Res	Type
1	A	755	C
1	A	765	G
1	A	766	G
1	A	767	A
1	A	771	A
1	A	772	A
1	A	773	A
1	A	774	G
1	A	775	G
1	A	778	A
1	A	779	A
1	A	781	C
1	A	782	A
1	A	783	A
1	A	784	G
1	A	795	G
1	A	801	U
1	A	802	C
1	A	818	U
1	A	836	U
1	A	838	A
1	A	839	C
1	A	844	G
1	A	846	G
1	A	848	G
1	A	855	A
1	A	859	U
1	A	860	U
1	A	862	C
1	A	863	G
1	A	864	G
1	A	865	C
1	A	866	U
1	A	868	G
1	A	870	G
1	A	872	G
1	A	875	A
1	A	877	C
1	A	878	C
1	A	881	A
1	A	882	C
1	A	884	U

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Mol	Chain	Res	Type
1	A	886	C
1	A	889	A
1	A	890	A
1	A	898	A
1	A	899	A
1	A	908	U
1	A	921	C
1	A	922	G
1	A	931	A
1	A	935	A
1	A	936	C
1	A	949	A
1	A	951	C
1	A	952	G
1	A	954	C
1	A	963	A
1	A	964	A
1	A	972	C
1	A	973	A
1	A	975	C
1	A	979	G
1	A	986	A
1	A	993	G
1	A	1002	U
1	A	1003	U
1	A	1007	G
1	A	1012	G
1	A	1016	U
1	A	1017	A
1	A	1023	U
1	A	1025	U
1	A	1030	A
1	A	1033	C
1	A	1034	U
1	A	1035	U
1	A	1036	A
1	A	1037	G
1	A	1038	A
1	A	1039	C
1	A	1040	A
1	A	1041	G
1	A	1042	C

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Mol	Chain	Res	Type
1	A	1043	U
1	A	1044	A
1	A	1045	G
1	A	1047	A
1	A	1048	G
1	A	1049	G
1	A	1050	U
1	A	1051	U
1	A	1052	G
1	A	1053	G
1	A	1054	C
1	A	1055	U
1	A	1056	U
1	A	1057	A
1	A	1058	G
1	A	1059	A
1	A	1060	A
1	A	1062	C
1	A	1063	A
1	A	1064	G
1	A	1065	C
1	A	1066	C
1	A	1068	C
1	A	1069	C
1	A	1070	C
1	A	1071	U
1	A	1072	U
1	A	1073	U
1	A	1074	A
1	A	1076	A
1	A	1078	A
1	A	1079	A
1	A	1080	A
1	A	1082	C
1	A	1083	G
1	A	1084	U
1	A	1085	A
1	A	1086	A
1	A	1087	U
1	A	1088	A
1	A	1090	C
1	A	1093	A

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Mol	Chain	Res	Type
1	A	1094	C
1	A	1095	U
1	A	1096	A
1	A	1098	U
1	A	1099	C
1	A	1101	A
1	A	1102	G
1	A	1103	U
1	A	1105	G
1	A	1106	G
1	A	1112	G
1	A	1114	G
1	A	1117	A
1	A	1119	A
1	A	1120	U
1	A	1122	U
1	A	1124	A
1	A	1125	C
1	A	1129	G
1	A	1146	A
1	A	1148	G
1	A	1149	C
1	A	1156	U
1	A	1163	U
1	A	1164	A
1	A	1165	A
1	A	1166	G
1	A	1167	U
1	A	1168	G
1	A	1170	C
1	A	1171	G
1	A	1191	A
1	A	1193	G
1	A	1199	G
1	A	1211	A
1	A	1214	A
1	A	1223	G
1	A	1224	A
1	A	1225	G
1	A	1228	A
1	A	1229	U
1	A	1231	A

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Mol	Chain	Res	Type
1	A	1232	G
1	A	1234	A
1	A	1237	G
1	A	1238	C
1	A	1240	A
1	A	1242	U
1	A	1243	G
1	A	1244	C
1	A	1249	A
1	A	1250	U
1	A	1253	G
1	A	1257	C
1	A	1258	G
1	A	1259	A
1	A	1261	A
1	A	1263	U
1	A	1271	A
1	A	1273	A
1	A	1274	A
1	A	1275	A
1	A	1276	C
1	A	1282	C
1	A	1283	G
1	A	1287	A
1	A	1288	A
1	A	1289	A
1	A	1291	A
1	A	1306	G
1	A	1307	C
1	A	1316	U
1	A	1327	U
1	A	1331	U
1	A	1333	G
1	A	1337	C
1	A	1339	U
1	A	1346	A
1	A	1347	G
1	A	1349	C
1	A	1352	A
1	A	1355	A
1	A	1361	G
1	A	1362	U

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Mol	Chain	Res	Type
1	A	1365	A
1	A	1366	U
1	A	1367	G
1	A	1372	A
1	A	1373	C
1	A	1378	U
1	A	1379	A
1	A	1382	A
1	A	1397	G
1	A	1403	G
1	A	1404	C
1	A	1407	U
1	A	1408	G
1	A	1414	A
1	A	1420	A
1	A	1421	A
1	A	1422	G
1	A	1424	C
1	A	1434	U
1	A	1439	G
1	A	1440	U
1	A	1445	U
1	A	1447	U
1	A	1454	U
1	A	1459	G
1	A	1469	G
1	A	1477	A
1	A	1478	G
1	A	1480	U
1	A	1481	A
1	A	1484	U
1	A	1485	C
1	A	1496	A
1	A	1497	G
1	A	1499	C
1	A	1509	A
1	A	1511	G
1	A	1512	A
1	A	1516	G
1	A	1528	A
1	A	1542	G
1	A	1556	A

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Mol	Chain	Res	Type
1	A	1557	A
1	A	1558	G
1	A	1559	A
1	A	1560	A
1	A	1568	U
1	A	1571	G
1	A	1573	U
1	A	1574	U
1	A	1576	A
1	A	1593	A
1	A	1596	C
1	A	1597	C
1	A	1598	A
1	A	1599	A
1	A	1600	A
1	A	1609	G
1	A	1624	A
1	A	1627	A
1	A	1628	C
1	A	1629	C
1	A	1636	C
1	A	1637	U
1	A	1638	U
1	A	1639	G
1	A	1641	G
1	A	1643	G
1	A	1650	G
1	A	1657	G
1	A	1664	G
1	A	1666	A
1	A	1673	C
1	A	1683	U
1	A	1685	G
1	A	1686	G
1	A	1698	C
1	A	1699	C
1	A	1700	G
1	A	1705	G
1	A	1710	A
1	A	1711	A
1	A	1713	G
1	A	1714	A

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Mol	Chain	Res	Type
1	A	1716	U
1	A	1717	U
1	A	1718	A
1	A	1720	U
1	A	1724	U
1	A	1731	U
1	A	1736	G
1	A	1739	C
1	A	1740	G
1	A	1741	A
1	A	1743	G
1	A	1745	U
1	A	1746	A
1	A	1750	G
1	A	1751	G
1	A	1756	U
1	A	1760	A
1	A	1768	U
1	A	1771	A
1	A	1787	C
1	A	1788	A
1	A	1789	A
1	A	1795	A
1	A	1796	A
1	A	1797	A
1	A	1803	C
1	A	1807	U
1	A	1815	G
1	A	1816	A
1	A	1820	C
1	A	1834	A
1	A	1835	A
1	A	1838	U
1	A	1840	A
1	A	1841	A
1	A	1842	U
1	A	1844	G
1	A	1851	U
1	A	1853	A
1	A	1855	C
1	A	1862	G
1	A	1863	A

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Mol	Chain	Res	Type
1	A	1875	G
1	A	1890	G
1	A	1893	G
1	A	1896	C
1	A	1898	U
1	A	1900	A
1	A	1902	U
1	A	1903	A
1	A	1905	A
1	A	1916	G
1	A	1917	G
1	A	1920	G
1	A	1925	A
1	A	1942	U
1	A	1949	C
1	A	1951	G
1	A	1953	A
1	A	1954	C
1	A	1957	A
1	A	1958	U
1	A	1959	G
1	A	1962	G
1	A	1967	G
1	A	1968	A
1	A	1969	U
1	A	1972	C
1	A	1978	U
1	A	1979	G
1	A	1980	U
1	A	1984	C
1	A	1989	G
1	A	2007	A
1	A	2008	A
1	A	2009	U
1	A	2010	C
1	A	2018	A
1	A	2020	A
1	A	2022	G
1	A	2030	U
1	A	2039	A
1	A	2040	G
1	A	2042	C

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Mol	Chain	Res	Type
1	A	2043	G
1	A	2047	A
1	A	2048	G
1	A	2049	A
1	A	2055	U
1	A	2056	G
1	A	2060	C
1	A	2063	U
1	A	2064	A
1	A	2068	U
1	A	2077	A
1	A	2080	G
1	A	2082	A
1	A	2094	C
1	A	2095	U
1	A	2098	U
1	A	2099	G
1	A	2101	A
1	A	2106	A
1	A	2107	G
1	A	2108	G
1	A	2112	G
1	A	2113	A
1	A	2114	G
1	A	2116	C
1	A	2117	U
1	A	2119	U
1	A	2120	G
1	A	2121	A
1	A	2122	A
1	A	2132	C
1	A	2133	C
1	A	2135	G
1	A	2140	C
1	A	2141	G
1	A	2142	U
1	A	2143	G
1	A	2144	G
1	A	2145	A
1	A	2146	G
1	A	2147	C
1	A	2148	C

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Mol	Chain	Res	Type
1	A	2150	U
1	A	2151	C
1	A	2156	A
1	A	2157	A
1	A	2160	A
1	A	2163	A
1	A	2165	C
1	A	2169	G
1	A	2174	C
1	A	2175	U
1	A	2185	A
1	A	2191	G
1	A	2199	A
1	A	2212	A
1	A	2225	G
1	A	2226	G
1	A	2229	G
1	A	2237	G
1	A	2270	U
1	A	2274	A
1	A	2275	A
1	A	2291	G
1	A	2292	U
1	A	2294	G
1	A	2295	G
1	A	2296	A
1	A	2297	A
1	A	2300	C
1	A	2301	G
1	A	2302	G
1	A	2303	U
1	A	2305	G
1	A	2306	C
1	A	2307	A
1	A	2308	G
1	A	2309	A
1	A	2311	U
1	A	2312	A
1	A	2313	U
1	A	2318	G
1	A	2319	C
1	A	2320	A

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Mol	Chain	Res	Type
1	A	2321	A
1	A	2323	A
1	A	2329	C
1	A	2332	G
1	A	2334	C
1	A	2337	C
1	A	2343	A
1	A	2345	A
1	A	2348	C
1	A	2359	U
1	A	2360	A
1	A	2361	C
1	A	2363	A
1	A	2366	G
1	A	2367	U
1	A	2370	G
1	A	2371	U
1	A	2372	C
1	A	2375	A
1	A	2378	G
1	A	2383	G
1	A	2389	U
1	A	2390	C
1	A	2393	U
1	A	2394	A
1	A	2409	C
1	A	2410	U
1	A	2411	C
1	A	2413	A
1	A	2416	G
1	A	2417	A
1	A	2418	U
1	A	2421	A
1	A	2427	C
1	A	2428	U
1	A	2434	G
1	A	2435	A
1	A	2454	C
1	A	2457	G
1	A	2459	G
1	A	2461	U
1	A	2465	A

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Mol	Chain	Res	Type
1	A	2466	U
1	A	2471	G
1	A	2474	G
1	A	2477	G
1	A	2478	U
1	A	2479	U
1	A	2480	U
1	A	2481	G
1	A	2485	C
1	A	2489	G
1	A	2492	G
1	A	2505	A
1	A	2506	U
1	A	2512	G
1	A	2516	G
1	A	2517	A
1	A	2521	C
1	A	2522	G
1	A	2534	A
1	A	2537	G
1	A	2545	C
1	A	2549	U
1	A	2551	A
1	A	2553	A
1	A	2554	G
1	A	2560	C
1	A	2565	G
1	A	2572	U
1	A	2573	U
1	A	2586	G
1	A	2589	A
1	A	2590	G
1	A	2595	G
1	A	2597	C
1	A	2600	U
1	A	2604	U
1	A	2612	A
1	A	2616	U
1	A	2617	U
1	A	2619	A
1	A	2621	A
1	A	2633	C

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Mol	Chain	Res	Type
1	A	2637	U
1	A	2638	C
1	A	2640	U
1	A	2651	G
1	A	2655	G
1	A	2656	G
1	A	2657	A
1	A	2658	G
1	A	2659	U
1	A	2669	U
1	A	2672	G
1	A	2676	U
1	A	2677	U
1	A	2689	G
1	A	2696	G
1	A	2701	G
1	A	2703	C
1	A	2704	G
1	A	2705	G
1	A	2713	U
1	A	2719	G
1	A	2720	A
1	A	2728	A
1	A	2731	G
1	A	2732	C
1	A	2735	A
1	A	2738	G
1	A	2739	C
1	A	2740	A
1	A	2744	A
1	A	2745	A
1	A	2748	G
1	A	2749	G
1	A	2752	A
1	A	2756	U
1	A	2763	A
1	A	2765	A
1	A	2766	U
1	A	2772	C
1	A	2776	C
1	A	2779	G
1	A	2784	U

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Mol	Chain	Res	Type
1	A	2785	U
1	A	2786	G
1	A	2787	A
1	A	2795	G
1	A	2798	G
1	A	2805	C
1	A	2807	A
1	A	2810	A
1	A	2811	C
1	A	2812	U
1	A	2819	U
1	A	2820	U
1	A	2821	G
1	A	2822	A
1	A	2836	U
1	A	2846	G
1	A	2848	G
1	A	2850	C
1	A	2851	G
1	A	2860	A
1	A	2866	A
1	A	2871	U
1	A	2873	G
1	A	2878	U
1	A	2888	C
1	A	2889	C
2	B	9	G
2	B	24	G
2	B	25	A
2	B	26	A
2	B	35	U
2	B	37	C
2	B	41	C
2	B	42	C
2	B	43	C
2	B	44	G
2	B	45	A
2	B	46	A
2	B	51	G
2	B	52	A
2	B	53	A
2	B	54	G

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Mol	Chain	Res	Type
2	B	56	G
2	B	57	A
2	B	67	U
2	B	73	A
2	B	80	U
2	B	89	U
2	B	90	C
2	B	91	C
2	B	100	G
2	B	109	A
2	B	112	G
2	B	116	A
2	B	117	G

All (47) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	62	U
1	A	81	G
1	A	114	U
1	A	227	A
1	A	243	U
1	A	266	G
1	A	314	A
1	A	434	A
1	A	437	G
1	A	444	A
1	A	540	U
1	A	817	U
1	A	920	C
1	A	953	U
1	A	1016	U
1	A	1063	A
1	A	1065	C
1	A	1124	A
1	A	1166	G
1	A	1169	A
1	A	1378	U
1	A	1496	A
1	A	1627	A
1	A	1635	G
1	A	1642	A

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Mol	Chain	Res	Type
1	A	1672	G
1	A	1968	A
1	A	2063	U
1	A	2228	A
1	A	2274	A
1	A	2308	G
1	A	2311	U
1	A	2317	G
1	A	2389	U
1	A	2408	G
1	A	2417	A
1	A	2536	G
1	A	2636	C
1	A	2703	C
1	A	2731	G
1	A	2784	U
1	A	2860	A
2	B	25	A
2	B	34	A
2	B	43	C
2	B	51	G
2	B	66	A

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	1522:U	O3'	1526:A	P	15.24
1	A	1908:G	O3'	1909:G	P	1.86

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-10280. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections ⓘ

6.1.1 Primary map

| X | Y | Z |
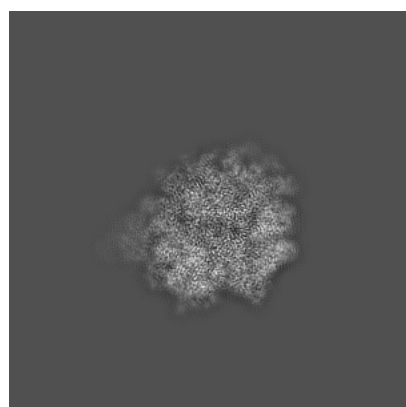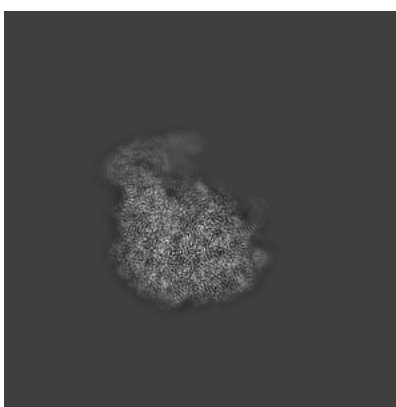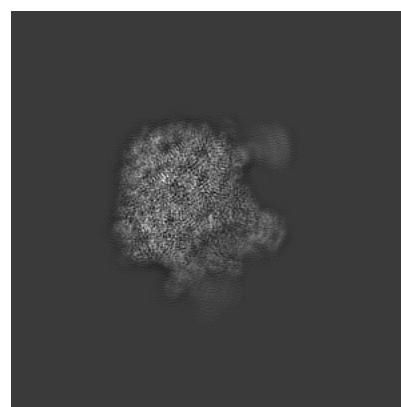
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
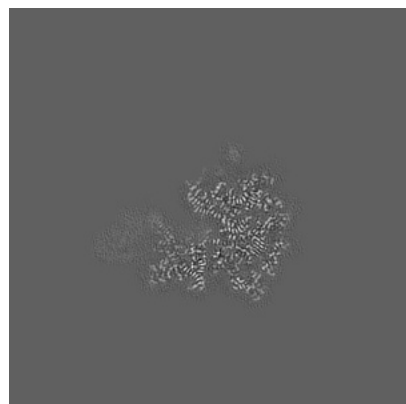
6.2.1 Primary map
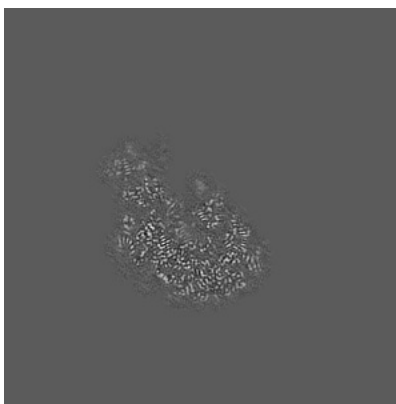
| X Index: 200 | Y Index: 200 | Z Index: 200 |
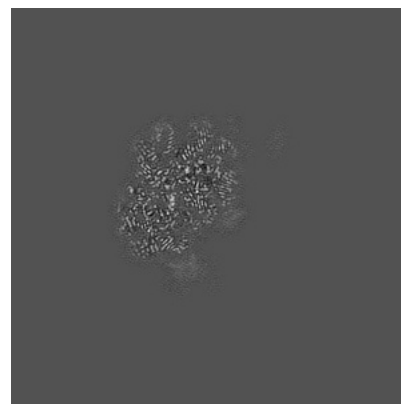
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
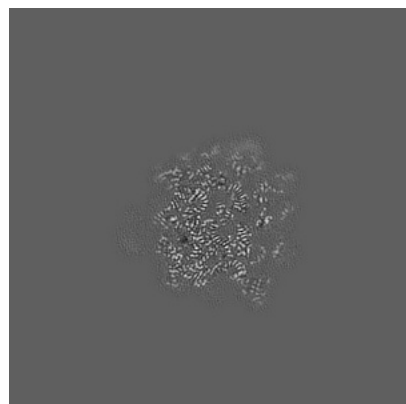
6.3.1 Primary map
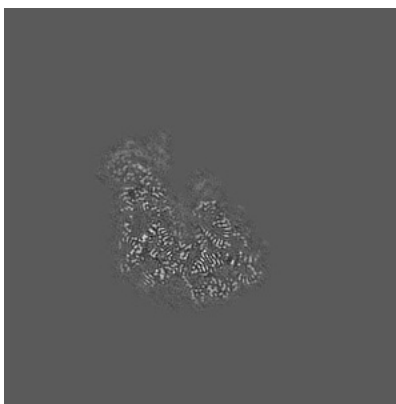
| X Index: 152 | Y Index: 194 | Z Index: 198 |
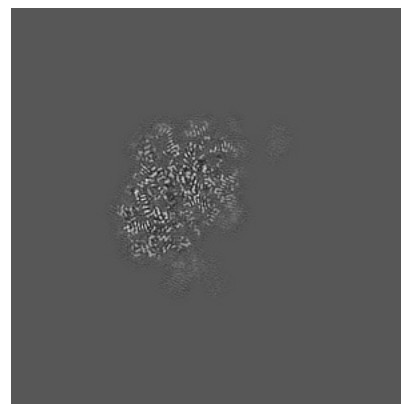
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map

| X | Y | Z |
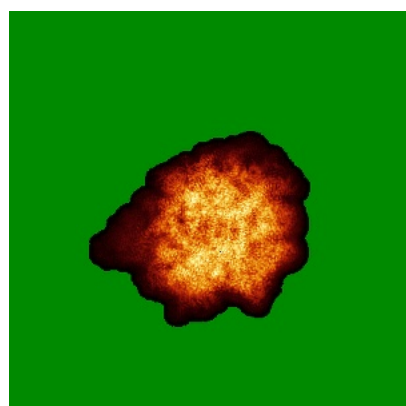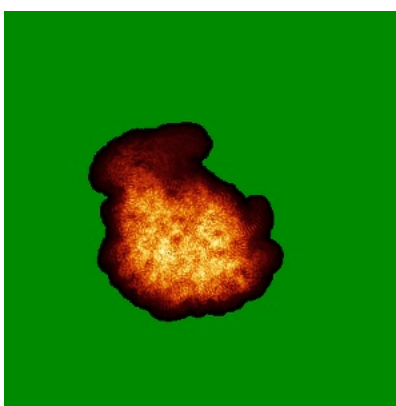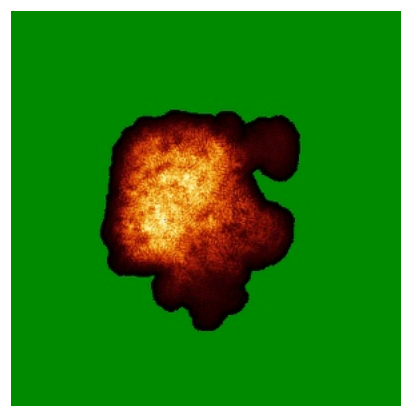
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
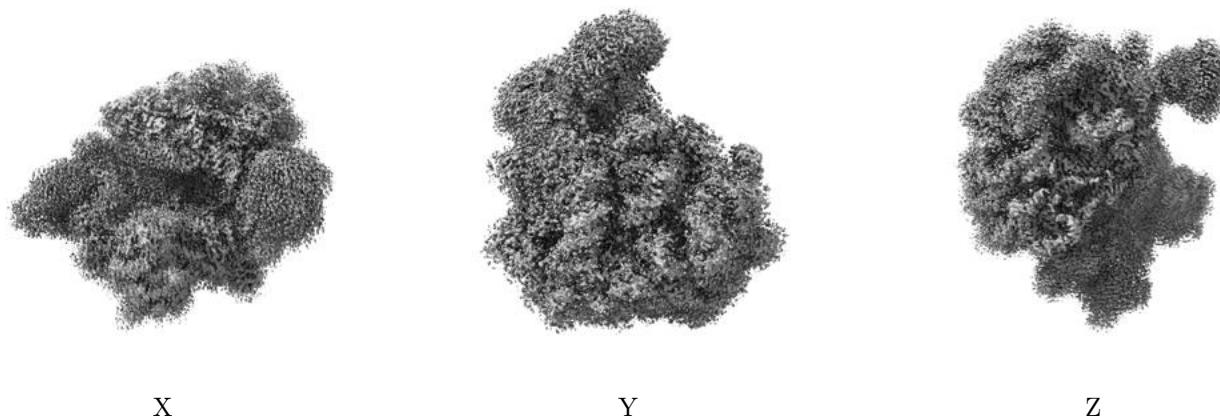
The images above show the 3D surface view of the map at the recommended contour level 0.0166. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation ⓘ

This section was not generated. No masks/segmentation were deposited.

7　Map analysis ⓘ

This section contains the results of statistical analysis of the map.

7.1　Map-value distribution ⓘ
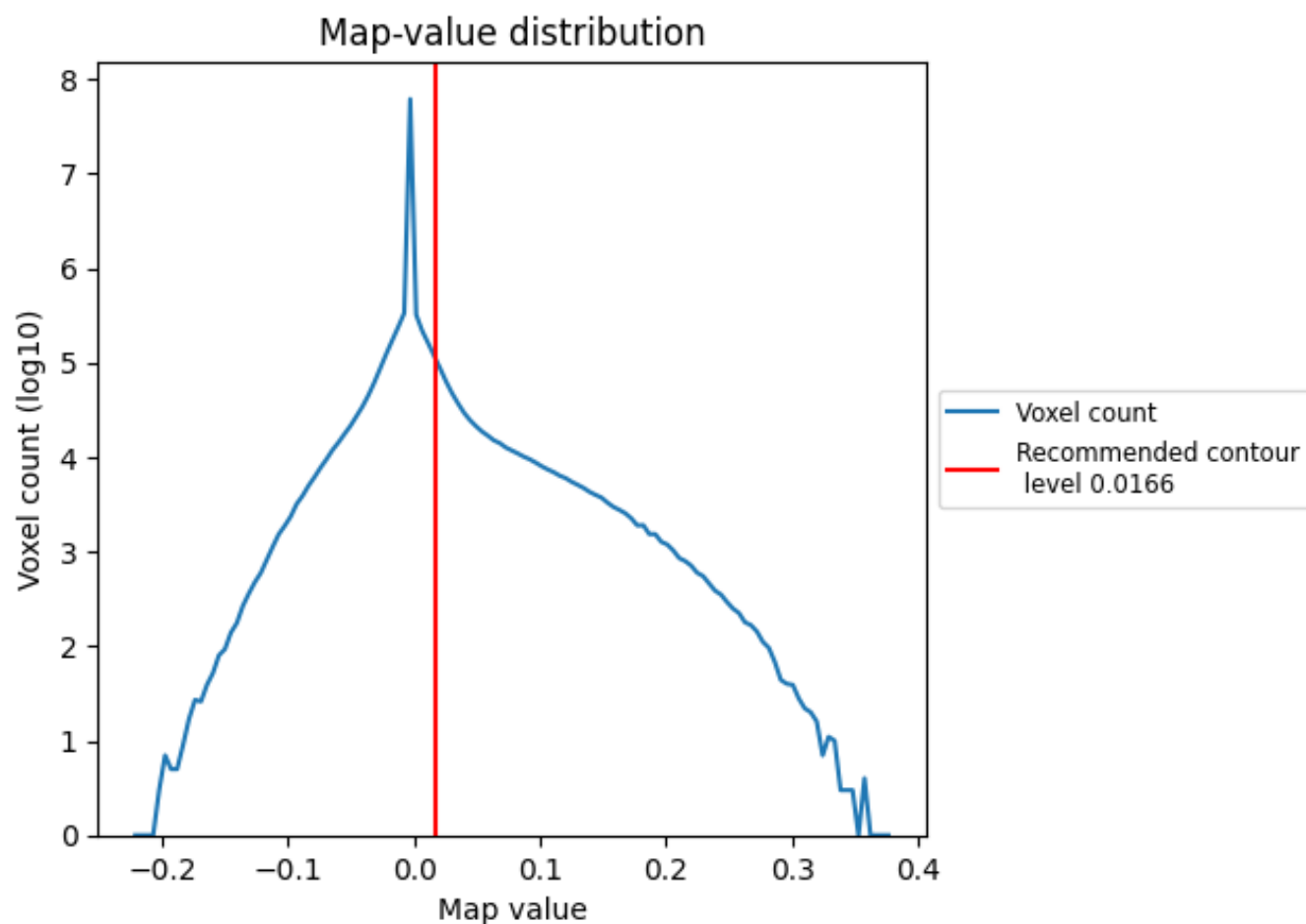
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
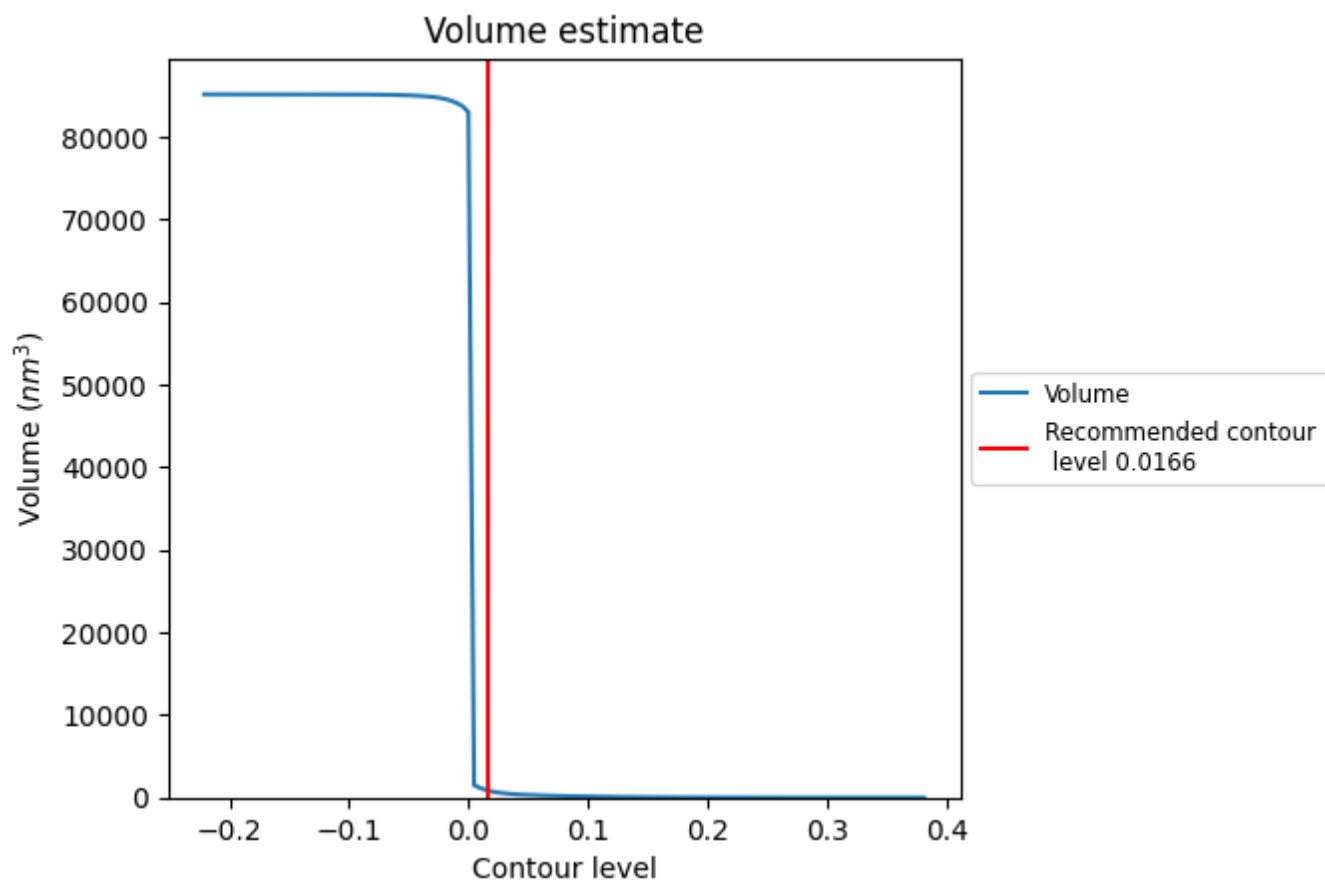
The volume at the recommended contour level is 843 nm^3; this corresponds to an approximate mass of 761 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ
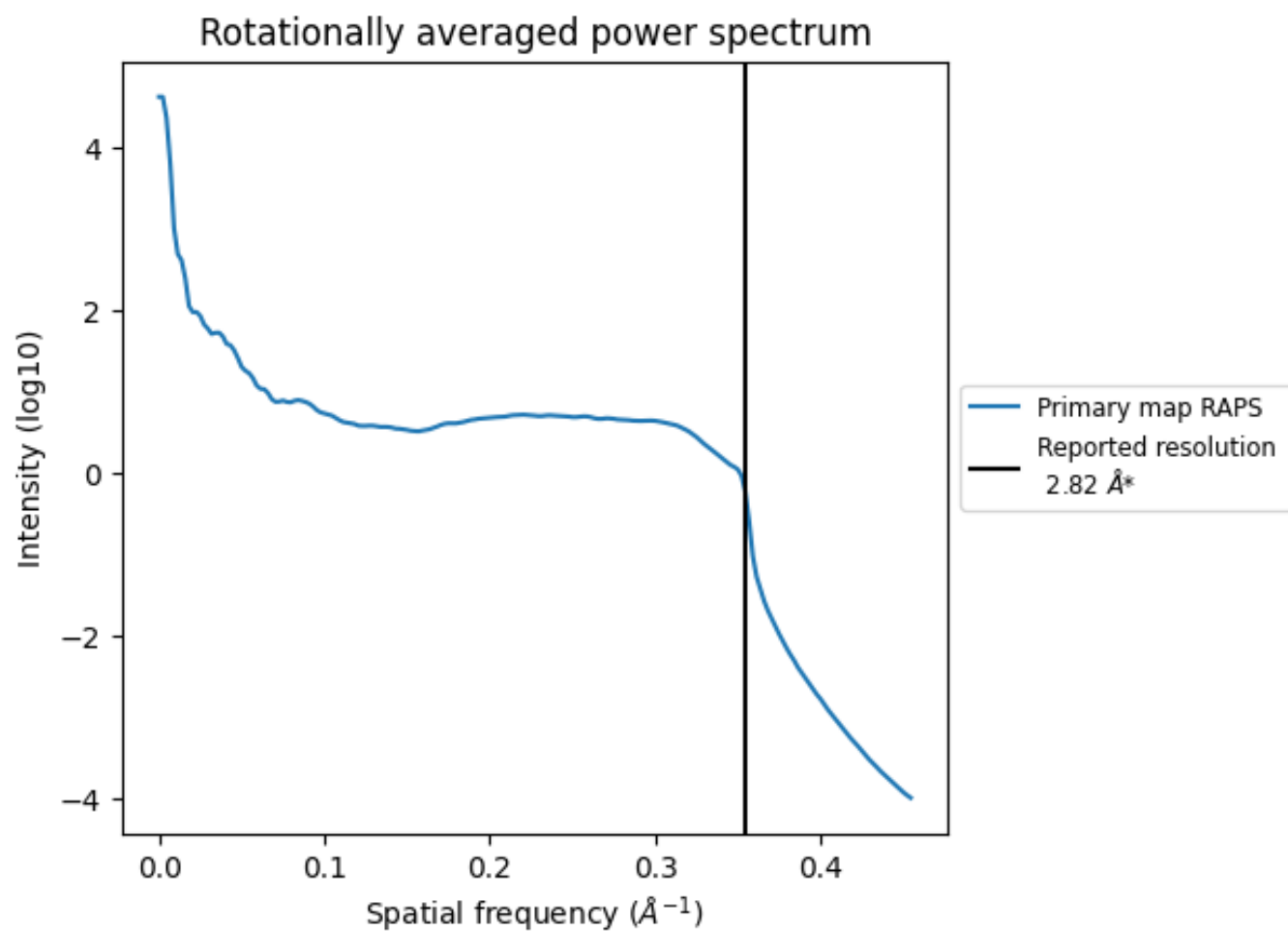
*Reported resolution corresponds to spatial frequency of 0.355 Å^{-1}

8　Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-10280 and PDB model 6SPB. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlay ⓘ
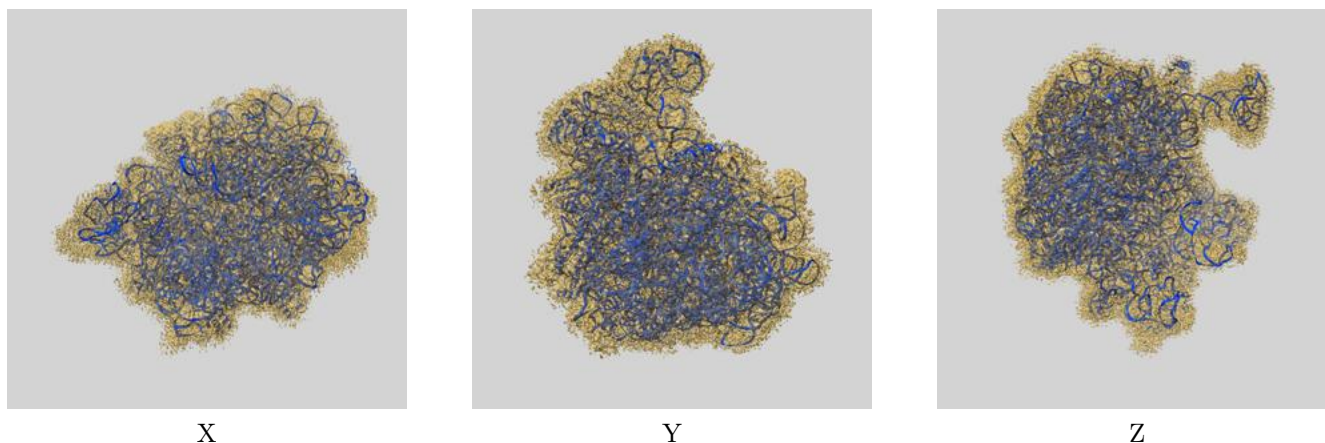
X	Y	Z

The images above show the 3D surface view of the map at the recommended contour level 0.0166 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X   Y   Z
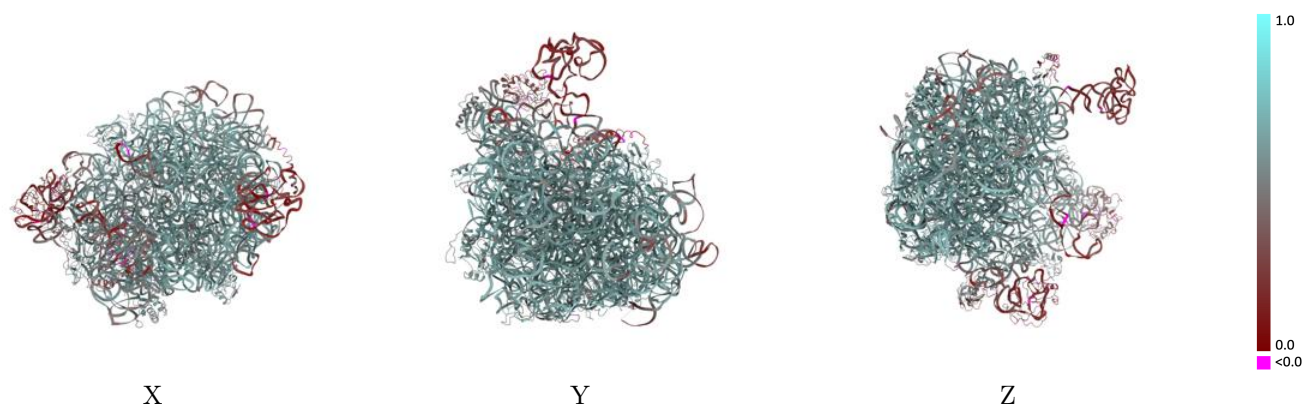
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model ⓘ

X   Y   Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0166).

9.4　Atom inclusion　ⓘ
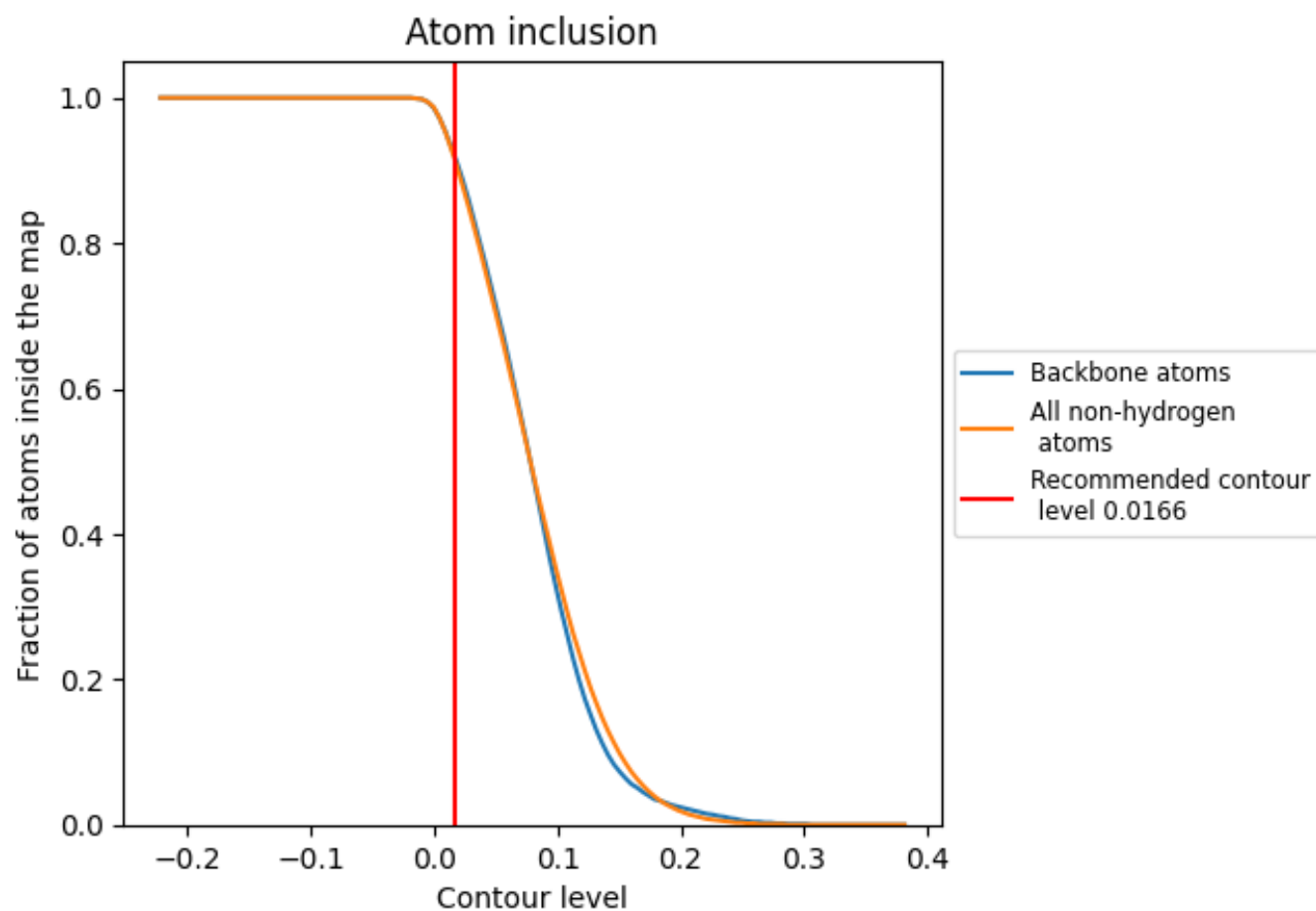
At the recommended contour level, 92% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0166) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9170	0.5730
1	0.4890	0.0980
2	0.9310	0.5970
3	0.8260	0.5310
4	0.9740	0.6440
5	0.9370	0.6070
6	0.9340	0.5720
A	0.9350	0.5850
B	0.9700	0.5510
C	0.9590	0.6190
D	0.9540	0.6140
E	0.9580	0.6030
F	0.6460	0.2850
G	0.6390	0.4190
H	0.4700	0.3360
I	0.2190	0.1930
J	0.9670	0.6210
K	0.9250	0.5930
L	0.9460	0.5950
M	0.8930	0.5860
N	0.9760	0.6300
O	0.9100	0.5240
P	0.9280	0.5800
Q	0.9740	0.6300
R	0.9620	0.6110
S	0.9550	0.6230
T	0.9570	0.5980
U	0.8930	0.5320
V	0.8710	0.5240
W	0.9500	0.6010
X	0.9520	0.6190
Y	0.9450	0.5760
Z	0.9700	0.6190

1.0

0.0
<0.0