WORLDWIDE
wwPDB
PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Dec 15, 2025 – 07:58 pm GMT

PDB ID	:	8PVA / pdb_00008pva
EMDB ID	:	EMD-17959
Title	:	Structure of bacterial ribosome determined by cryoEM at 100 keV
Authors	:	McMullan, G.; Naydenova, K.; Mihaylov, D.; Peet, M.J.; Wilson, H.; Yamashita, K.; Dickerson, J.L.; Chen, S.; Cannone, G.; Lee, Y.; Hutchings, K.A.; Gittins, O.; Sobhy, M.; Wells, T.; El-Gomati, M.M.; Dalby, J.; Meffert, M.; Schulze-Briese, C.; Henderson, R.; Russo, C.J.
Deposited on	:	2023-07-17
Resolution	:	4.50 Å(reported)
Based on initial model	:	7k00

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 ⓘ 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:

EMDB validation analysis	:	0.0.1.dev129
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

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 4.50 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		2
Ramachandran outliers		0.2%
Sidechain outliers		3.6%
RNA backbone		0.56

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.287

Worse   *Better*

▮ Percentile relative to all EM structures

▯ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	2937 (4.00 - 5.00)

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	1542	77% 20%
2	B	241	30% 82% 10% 7%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
3	C	233	38% / 84% 5% 12%
4	D	206	54% / 88% 11%
5	E	167	26% / 88% 5% 7%
6	F	135	16% / 72% 24%
7	G	179	30% / 75% 8% 15%
8	H	130	25% / 90% 9%
9	I	130	28% / 95%
10	J	103	39% / 87% 8% 5%
11	K	129	13% / 81% 10% 9%
12	L	124	27% / 90% 7%
13	M	118	35% / 89% 8%
14	N	101	32% / 93% 5%
15	O	89	11% / 89% 10%
16	P	82	33% / 93% 5%
17	Q	84	24% / 85% 10% 6%
18	R	75	16% / 88% 12%
19	S	92	29% / 85% 7% 9%
20	T	87	26% / 87% 11%
21	U	71	34% / 89% 10%
22	a	2904	75% 18% 5%
23	b	120	82% 16%
24	c	273	7% / 93% 6%
25	d	209	9% / 95% 5%
26	e	201	12% / 90% 9%
27	f	179	14% / 92% 7%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
28	g	177	31% / 85% / 12%
29	h	149	6% / 22% / 5% / 72%
30	i	142	6% / 98%
31	j	123	14% / 96%
32	k	144	9% / 92% / 8%
33	l	136	5% / 95% / 5%
34	m	127	5% / 90% / 7%
35	n	117	9% / 97%
36	o	115	15% / 93% / 6%
37	p	118	· / 96%
38	q	103	12% / 90% / 9%
39	r	110	5% / 99%
40	s	100	8% / 93% / 7%
41	t	104	21% / 87% / 11%
42	u	94	10% / 94% / 5%
43	v	85	7% / 87% / 5% / 8%
44	w	78	9% / 90% / 8%
45	x	63	10% / 90% / 8%
46	y	59	10% / 93%
47	z	57	12% / 96%
48	0	55	13% / 87% / 7%
49	1	46	· / 96%
50	2	65	8% / 94%
51	3	38	8% / 95% / 5%
52	4	70	33% / 77% / 9% / 14%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
53	X	28	7% / 32% / 11% / 57%
54	Y	76	26% / 45% / 39% / 13% / •
55	Z	76	11% / 53% / 39% / 8%
56	5	2	100%

2 Entity composition ⓘ

There are 57 unique types of molecules in this entry. The entry contains 141565 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 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1519	Total	C	N	O	P	0	0
			32612	14552	5986	10555	1519		

- Molecule 2 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	224	Total	C	N	O	S	0	0
			1753	1109	315	321	8		

- Molecule 3 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	206	Total	C	N	O	S	0	0
			1624	1028	305	288	3		

- Molecule 4 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	205	Total	C	N	O	S	0	0
			1643	1026	315	298	4		

- Molecule 5 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	156	Total	C	N	O	S	0	0
			1152	717	217	212	6		

- Molecule 6 is a protein called Small ribosomal subunit protein bS6, fully modified isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	103	Total	C	N	O	S	0	0
			839	530	151	151	7		

- Molecule 7 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	153	Total	C	N	O	S	0	0
			1203	750	231	218	4		

- Molecule 8 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 9 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 10 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	98	Total	C	N	O	S	0	0
			786	493	150	142	1		

- Molecule 11 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	117	Total	C	N	O	S	0	0
			877	540	173	161	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	119	IAS	ASN	conflict	UNP P0A7R9

- Molecule 12 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	123	Total	C	N	O	S	0	0
			957	591	196	165	5		

- Molecule 13 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	115	Total 891	C 552	N 179	O 157	S 3	0	0

- Molecule 14 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	100	Total 805	C 499	N 164	O 139	S 3	0	0

- Molecule 15 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	88	Total 714	C 439	N 144	O 130	S 1	0	0

- Molecule 16 is a protein called Small ribosomal subunit protein bS16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	81	Total 643	C 403	N 127	O 112	S 1	0	0

- Molecule 17 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	79	Total 641	C 406	N 120	O 112	S 3	0	0

- Molecule 18 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	66	Total 544	C 345	N 102	O 96	S 1	0	0

- Molecule 19 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	84	Total 668	C 427	N 127	O 112	S 2	0	0

- Molecule 20 is a protein called Small ribosomal subunit protein bS20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	86	Total	C	N	O	S	0	0
			670	414	138	115	3		

- Molecule 21 is a protein called Small ribosomal subunit protein bS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	70	Total	C	N	O	S	0	0
			589	366	125	97	1		

- Molecule 22 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	a	2753	Total	C	N	O	P	0	0
			59130	26384	10897	19096	2753		

- Molecule 23 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	b	119	Total	C	N	O	P	0	0
			2549	1135	466	829	119		

- Molecule 24 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	c	271	Total	C	N	O	S	0	0
			2082	1288	423	364	7		

- Molecule 25 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	d	209	Total	C	N	O	S	0	0
			1566	980	288	294	4		

- Molecule 26 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	e	201	Total	C	N	O	S	0	0
			1552	974	283	290	5		

- Molecule 27 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	f	177	Total 1410	C 899	N 249	O 256	S 6	0	0

- Molecule 28 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	g	176	Total 1323	C 832	N 243	O 246	S 2	0	0

- Molecule 29 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	h	41	Total 303	C 194	N 54	O 54	S 1	0	0

- Molecule 30 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	i	142	Total 1129	C 714	N 212	O 199	S 4	0	0

- Molecule 31 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	j	123	Total 946	C 593	N 181	O 166	S 6	0	0

- Molecule 32 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	k	144	Total 1053	C 654	N 207	O 190	S 2	0	0

- Molecule 33 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	l	136	Total 1075	C 686	N 205	O 177	S 7	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
l	82	MS6	MET	conflict	UNP P0ADY7

- Molecule 34 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	m	118	Total 945	C 585	N 194	O 161	S 5	0	0

- Molecule 35 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	n	116	Total 892	C 552	N 178	O 162	0	0

- Molecule 36 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	o	114	Total 917	C 574	N 179	O 163	S 1	0	0

- Molecule 37 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	p	117	Total 947	C 604	N 192	O 151	0	0

- Molecule 38 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	q	103	Total 816	C 516	N 153	O 145	S 2	0	0

- Molecule 39 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	r	110	Total 857	C 532	N 166	O 156	S 3	0	0

- Molecule 40 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	s	93	Total 738	C 466	N 139	O 131	S 2	0	0

- Molecule 41 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	t	102	Total 779	C 492	N 146	O 141	0	0

- Molecule 42 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	u	94	Total 753	C 479	N 137	O 134	S 3	0	0

- Molecule 43 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	v	78	Total 586	C 362	N 116	O 107	S 1	0	0

- Molecule 44 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	w	77	Total 625	C 388	N 129	O 106	S 2	0	0

- Molecule 45 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	x	62	Total 501	C 308	N 98	O 94	S 1	0	0

- Molecule 46 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	y	58	Total 449	C 281	N 87	O 79	S 2	0	0

- Molecule 47 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	z	56	Total 444	C 269	N 94	O 80	S 1	0	0

- Molecule 48 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	0	51	Total 417	C 269	N 76	O 72	0	0

- Molecule 49 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	1	46	Total 377	C 228	N 90	O 57	S 2	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
50	2	64	Total 504	C 323	N 105	O 74	S 2	0	0

- Molecule 51 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	3	38	Total 302	C 185	N 65	O 48	S 4	0	0

- Molecule 52 is a protein called Large ribosomal subunit protein bL31A.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	4	60	Total 480	C 299	N 90	O 85	S 6	0	0

- Molecule 53 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	X	12	Total 260	C 117	N 51	O 80	P 12	0	0

- Molecule 54 is a RNA chain called A-site tRNA-val.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	Y	74	Total 1579	C 705	N 287	O 514	P 73	0	0

- Molecule 55 is a RNA chain called P-site tRNA-fMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	Z	76	Total 1623	C 723	N 294	O 530	P 76	0	0

- Molecule 56 is a RNA chain called E-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	5	2	Total 42	C 19	N 8	O 13	P 2	0	0

- Molecule 57 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
57	3	1	Total 1	Zn 1	0
57	4	1	Total 1	Zn 1	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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: 16S rRNA

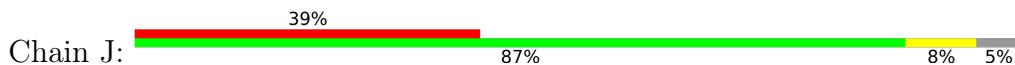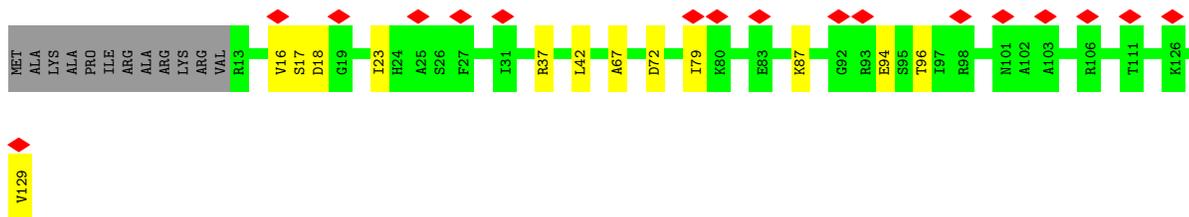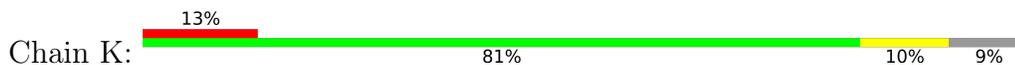U1498 A1503 G1504 G1505 U1506 A1513 G1516 G1517 A1518 A1519 G1526 G1529 G1530 C1533 A1534 C C U C C U A

• Molecule 2: Small ribosomal subunit protein uS2

Chain B:

30%

82% 10% • 7%

MET ALA THR V4 S5 M6 R7 D8 M9 A12 G13 V14 H15 F16 G17 K28 I31 A34 R35 N42 L43 E44 M49 F50 N58 A61 S62 R63 K64 G65 K66 I67 L68 F69 V70 G71 R74 A75 A76 V80 K81 D82 D88 Q89 F90 F91 V92 N93 H94

M100 L101 T102 N103 W104 K105 T106 V107 R108 Q109 S110 I111 K115 D116 L117 E118 T119 Q120 S121 Q122 D123 G124 T125 F126 D127 T130 K131 K132 E133 A134 L135 M136 R137 T138 R139 K143 N146 G149 K152 D153 M154 G155 G156 L157 P158 D159 D165 H168 E169 K174

F184 A185 I186 V187 D188 T189 N190 S191 D192 P193 D194 G195 V196 D197 F198 N203 D204 D205 A209 V217 E223 G224 R225 S226 Q227 ASP LEU ALA SER GLN ALA GLU GLU SER PHE VAL GLU ALA GLU

• Molecule 3: Small ribosomal subunit protein uS3

Chain C:

38%

84% 5% 12%

MET G2 N8 G9 I10 I14 F23 A24 N25 T26 K27 E28 F29 A30 D31 N32 L33 D34 S35 D36 F37 R40 L43 T44 K45 E46 L47 A48 K49 A50 S51 V52 S53 R54 R59 P60 A61 K62 S63 I64 R65 I68 H69 T70 A71 R72 P73 G74 I75 V76 I77 G78 K79

K80 G81 E82 D83 V84 L87 R88 A92 D93 I94 A95 P98 A99 Q100 I101 N102 I103 A104 E105 V106 R107 K108 P109 E110 L111 D112 A113 A117 I120 Q123 L124 E125 R126 R131 R132 A133 M134 K135 R136 A137 V138 A141 M142 R143 L144 G145 A146 K147 G148 I149 L157

A160 E161 I162 R169 E170 L178 D181 S187 E188 G197 V198 K199 K204 G205 E206 I207 LEU GLY GLY MET ALA ALA VAL GLU GLN PRO GLU LYS PRO ALA ALA GLN PRO LYS GLN GLN ARG LYS GLY ARG LYS

• Molecule 4: Small ribosomal subunit protein uS4

Chain D:

54%

88% 11% •

MET A2 R3 Y4 L5 G6 P7 K8 L11 S12 G16 T17 D18 L19 F20 L21 K22 S23 G24 V25 R26 A27 I28 D29 T30 K31 C32 K33 I34 E35 Q36 A37 P38 G39 Q40 H41 G42 A43 R44 K45 P46 R47 L48 S49 D50 E57 K58 R62 R63 I64 R73 Y76 K83

G84 N85 L90 L94 E95 G96 R97 L98 D99 N100 V101 R104 M105 G106 F107 G108 A109 T110 R111 A112 E113 A114 K121 V125 N126 G127 R128 N131 S134 N140 V143 S144 I145 R146 E147 K148 A149 K150 K151 Q152 S153 R154 V155 K156 A157 A158 L159 E160 L161 A162 E163

Q164 R165 E166 K167 P168 T169 W170 L171 E172 V173 D174 A175 G176 K177 M178 E179 G180 T181 F182 K183 R184 K185 P186 E187 R188 S189 D190 L191 S192 A193 D194 I195 N196 E202 S205 K206

• Molecule 5: Small ribosomal subunit protein uS5

Chain E:

• Molecule 6: Small ribosomal subunit protein bS6, fully modified isoform
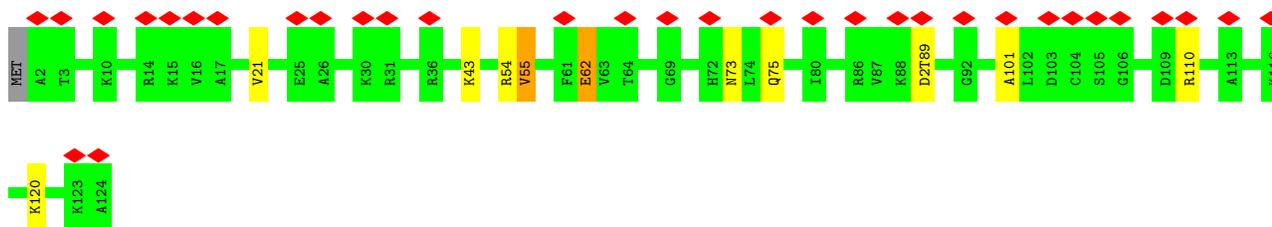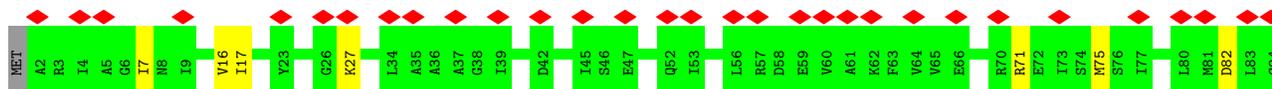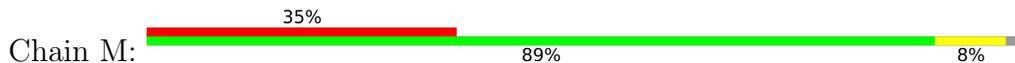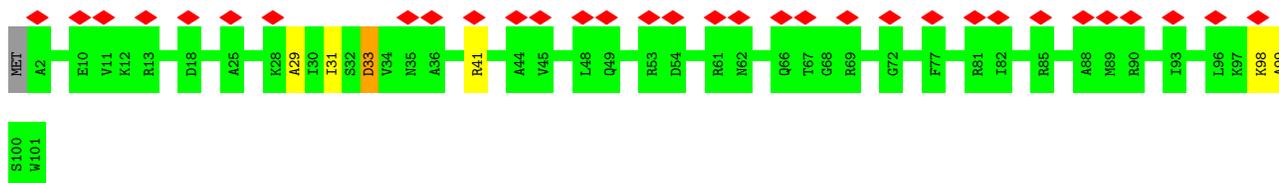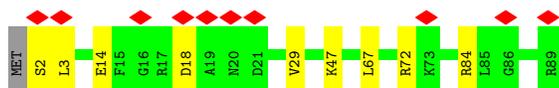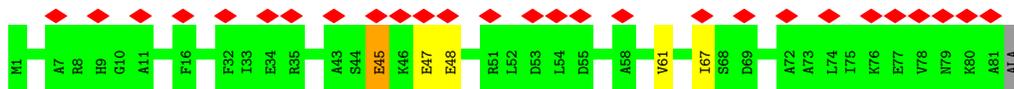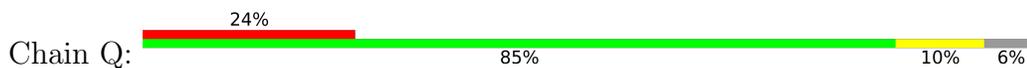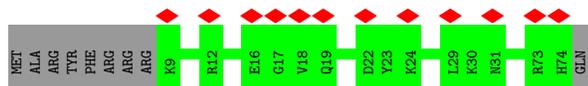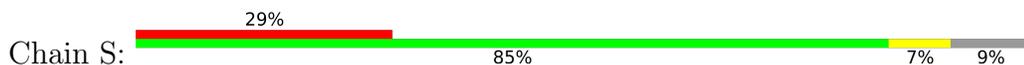
Chain F:

• Molecule 7: Small ribosomal subunit protein uS7
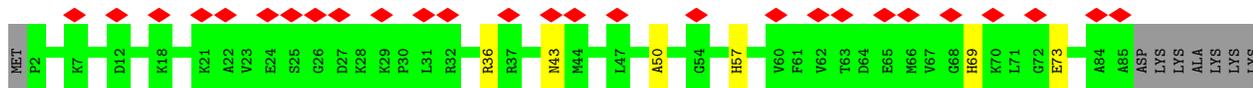
Chain G:

• Molecule 8: Small ribosomal subunit protein uS8

Chain H:

• Molecule 9: Small ribosomal subunit protein uS9

Chain I:

MET ALA GLU N4 S15 V19 N25 G26 K27 I28 N31 Q32 R33 S34 L35 F39 G40 R41 A44 R45 M46 V47 V48 R49 Q50 P51 L52 E53 D56 E59 K60 L63 K68 G69 G70 G74 G77 R85 E89 Y90 D91 E92 R95 R99

D107 E112 R113 F127 R130

• Molecule 10: Small ribosomal subunit protein uS10

Chain J:

39%
87% 8% 5%

MET GLN ASN GLN R5 L10 D14 H15 R16 D19 Q20 A23 E24 I25 V26 E27 T28 A29 K30 R31 A34 Q35 V36 P39 R45 K46 V51 L52 I53 V57 D63 Q64 Y65 E66 I67 R68 T69 H70 D75 I76 V77 E78 P79 T80 E81 K82 T83 V84 D85

A86 L87 M88 R89 L90 D91 L92 A93 A94 G95 V96 D97 I100 S101 L102 GLY

• Molecule 11: Small ribosomal subunit protein uS11

Chain K:

13%
81% 10% 9%

MET ALA LYS ALA PRO ILE ARG ALA ARG LYS ARG VAL R13 V16 S17 D18 G19 I23 H24 A25 S26 F27 I31 R37 L42 A67 D72 I79 K80 E83 K87 G92 R93 E94 S95 T96 I97 R98 N101 A102 A103 R106 T111 K126

V129

• Molecule 12: Small ribosomal subunit protein uS12

Chain L:

27%
90% 7%

MET A2 T3 K10 R14 K15 V16 A17 V21 E25 A26 K30 R31 R36 K43 R54 V55 F61 E62 V63 T64 G69 H72 N73 L74 Q75 I80 R86 V87 K88 D2T89 G92 A101 L102 D103 C104 S105 G106 D109 R110 A113 K116

K120 K123 A124

• Molecule 13: Small ribosomal subunit protein uS13

Chain M:

35%
89% 8%

MET A2 R3 I4 A5 G6 I7 N8 I9 V16 I17 Y23 G26 K27 L34 A35 A36 A37 G38 I39 D42 I45 S46 E47 Q52 I53 L56 R57 D58 E59 V60 A61 K62 F63 V64 V65 E66 R70 R71 E72 I73 S74 M75 S76 I77 L80 M81 D82 L83 G84
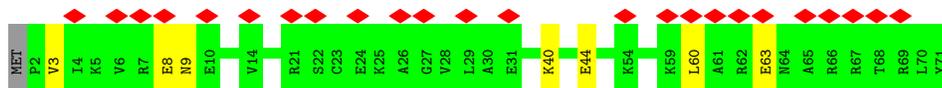
L89 R90 R93 P96 V97 R98 G99 K103 G111 P112 R113 K114 P115 I116 LYS LYS

• Molecule 14: Small ribosomal subunit protein uS14

Chain N:

32%

93%　　　5% ••

MET A2 E10 V11 K12 R13 D18 A25 K28 A29 I30 I31 S32 D33 V34 N35 A36 R41 A44 V45 L48 Q49 R53 D54 R61 N62 Q66 T67 G68 R69 G72 F77 R81 I82 R85 A88 M89 R90 I93 L96 K97 K98 A99

S100 W101

• Molecule 15: Small ribosomal subunit protein uS15

Chain O:

11%

89%　　　10% •

MET S2 L3 E14 F15 G16 R17 D18 A19 N20 D21 V29 K47 L67 R72 K73 R84 L85 G86 R89

• Molecule 16: Small ribosomal subunit protein bS16

Chain P:

33%

93%　　　5% ••

M1 A7 R8 H9 G10 A11 F16 F32 I33 E34 R35 A43 S44 E45 K46 E47 E48 R51 L52 D53 L54 D55 A58 V61 I67 S68 D69 A72 A73 L74 I75 K76 E77 V78 N79 K80 A81 ALA

• Molecule 17: Small ribosomal subunit protein uS17

Chain Q:

24%

85%　　　10% 6%

MET THR ASP K4 I5 R6 Q9 D15 K16 I25 E26 H31 Y34 G35 K36 F37 T41 T42 K43 L44 E49 N50 C53 G54 V58 V59 E60 I61 R62 P66 V76 R77 V78 V79 E80 K81 A82 VAL LEU

• Molecule 18: Small ribosomal subunit protein bS18

Chain R:

16%

88%　　　12%

MET ALA ARG TYR PHE ARG ARG ARG K9 R12 E16 G17 V18 Q19 D22 Y23 K24 L29 K30 N31 R73 H74 GLN
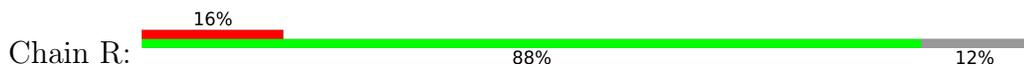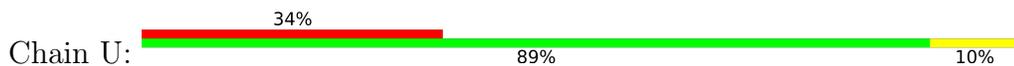
• Molecule 19: Small ribosomal subunit protein uS19
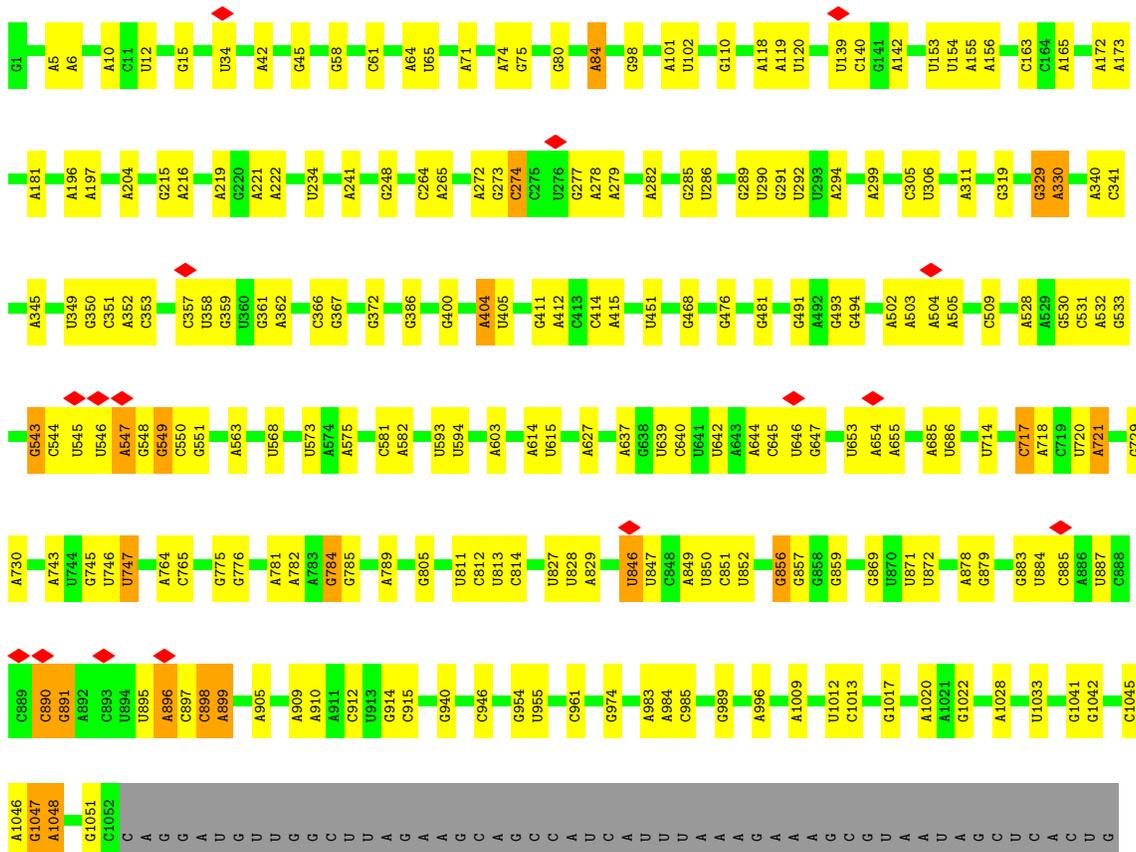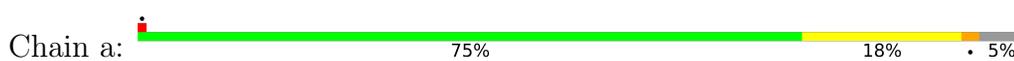
Chain S:

29%

85%　　　7% 9%

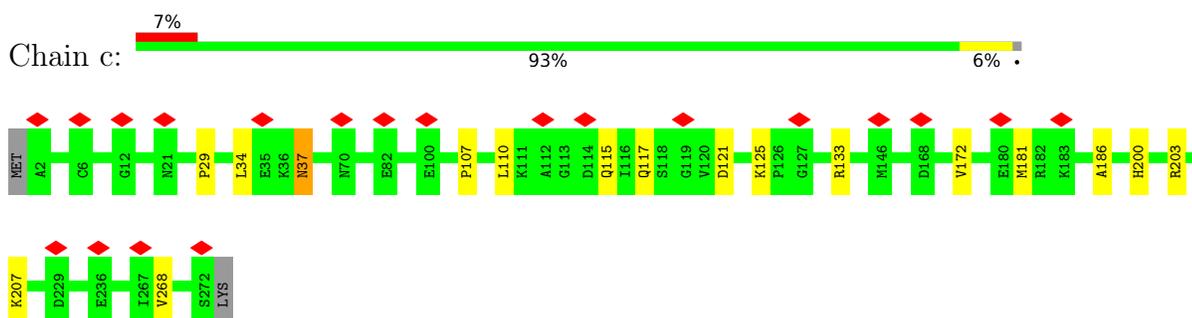• Molecule 20: Small ribosomal subunit protein bS20

Chain T:
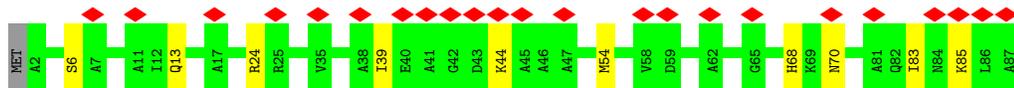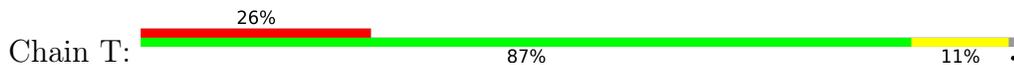
• Molecule 21: Small ribosomal subunit protein bS21
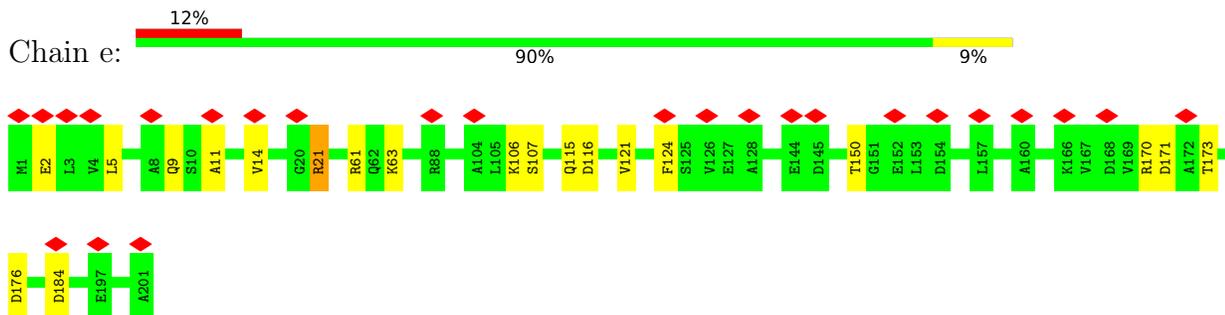
Chain U:

• Molecule 22: 23S rRNA

Chain a:

• Molecule 23: 5S rRNA

Chain b:

• Molecule 24: Large ribosomal subunit protein uL2

Chain c:

7%

93%

6%

MET A2 C6 G12 N21 P29 L34 E35 K36 N37 N70 E82 E100 P107 L110 K111 A112 G113 D114 Q115 I116 Q117 S118 G119 V120 D121 K125 P126 G127 R133 M146 D168 V172 E180 M181 R182 K183 A186 H200 R203

K207 D229 E236 I267 V268 S272 LYS

• Molecule 25: Large ribosomal subunit protein uL3

Chain d:

9%

95%

5%

M1 T12 R13 I14 E17 D18 G19 E28 N32 E86 G87 E88 E89 F90 T91 V92 F101 A102 K105 T110 D131 Q148 N149 Q150 G153 M165 D176 E183 R184 N185 D200 L201 I202 P205 A209
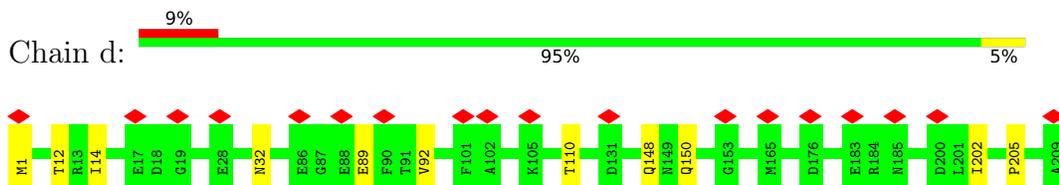
• Molecule 26: Large ribosomal subunit protein uL4

Chain e:

12%

90%

9%

M1 E2 L3 V4 L5 A8 Q9 S10 A11 V14 G20 R21 R61 Q62 K63 R88 A104 L105 K106 S107 Q115 D116 V121 F124 S125 V126 E127 A128 E144 D145 T150 G151 E152 L153 D154 L157 A160 K166 V167 D168 V169 R170 D171 A172 T173

D176 D184 E197 A201

• Molecule 27: Large ribosomal subunit protein uL5

Chain f:

14%

92%

7%

MET A2 S24 Q27 R30 N37 E42 A45 L49 D56 I60 R71 I104 T105 R110 I111 R112 D113 F114 R115 G116 L117 K120 R133 I136 I137 F138 P139 E140 I141 D142 Y143 D144 K145 V146 D147 R150 D153 A160 D174 F175

P176 F177 R178 LYS
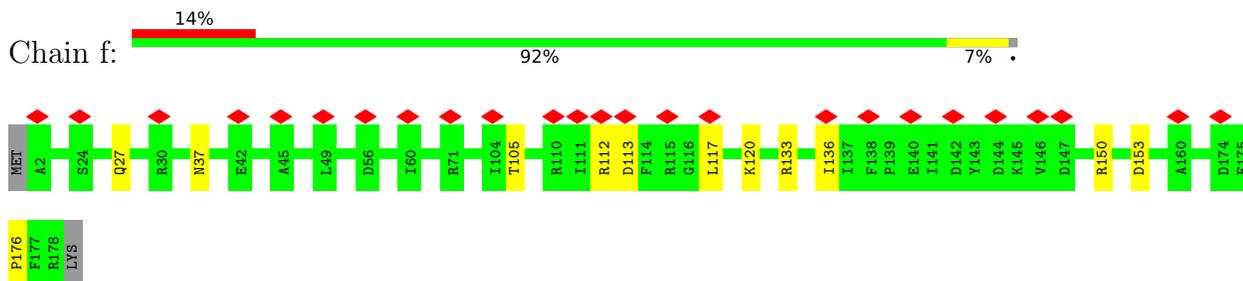
• Molecule 28: Large ribosomal subunit protein uL6

Chain g:

31%

85%

12%

MET S2 R3 V4 A5 K6 A7 P8 V9 P12 A13 G14 V15 D16 V17 K18 I19 N20 I24 T25 I26 K29 N30 G31 E32 L33 T34 R35 T36 V43 K44 H45 A46 D47 N48 T49 L50 T51 F52 D56 G57 Y58 A59 L71 L72 M75 V79 T80 E81 T84

V90 G91 V92 R95 K99 I103 S110 D114 A119 G120 I121 T122 A123 E124 C125 P126 T127 Q128 T129 E130 A136 D137 V140 V144 R149 R153 P154 E155 G161 E167 R170 T171 K172 E173 A174 K175 K176 K177

• Molecule 29: Large ribosomal subunit protein bL9

Chain h:

• Molecule 30: Large ribosomal subunit protein uL13

Chain i:

• Molecule 31: 50S ribosomal protein L14

Chain j:

• Molecule 32: 50S ribosomal protein L15

Chain k:

• Molecule 33: Large ribosomal subunit protein uL16

Chain l:

• Molecule 34: 50S ribosomal protein L17

Chain m:

• Molecule 35: 50S ribosomal protein L18

Chain n:
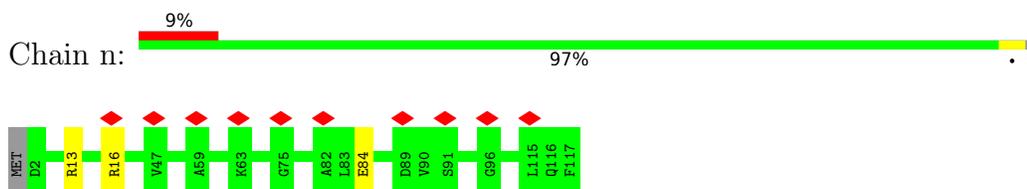
• Molecule 36: 50S ribosomal protein L19

Chain o:
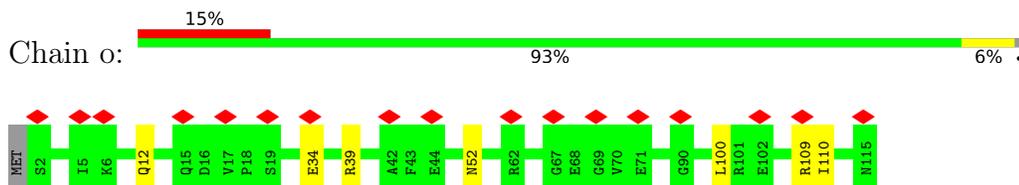
• Molecule 37: 50S ribosomal protein L20

Chain p:
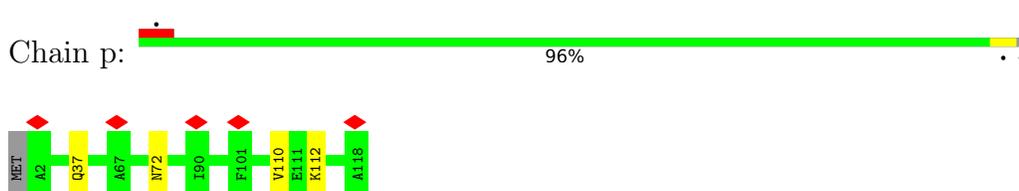
• Molecule 38: 50S ribosomal protein L21

Chain q:
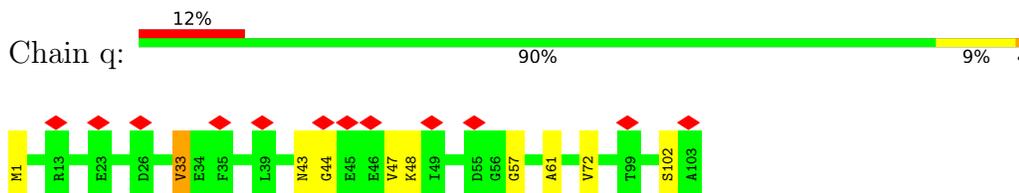
• Molecule 39: 50S ribosomal protein L22

Chain r:
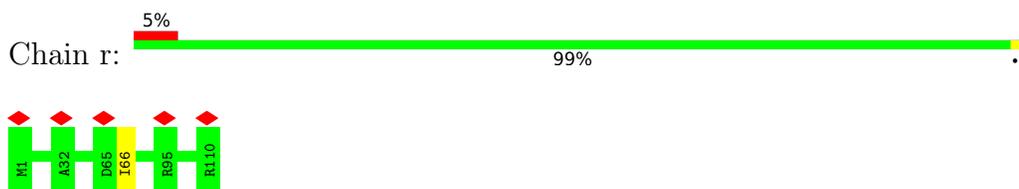
• Molecule 40: 50S ribosomal protein L23

Chain s:
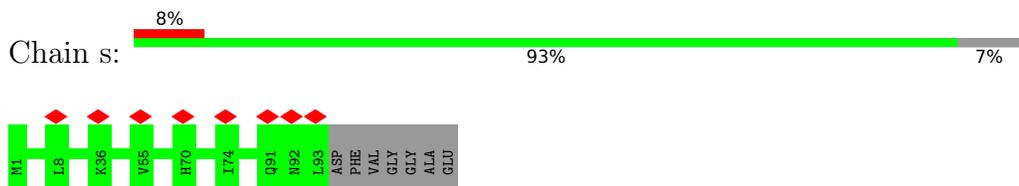
• Molecule 41: 50S ribosomal protein L24

Chain t:
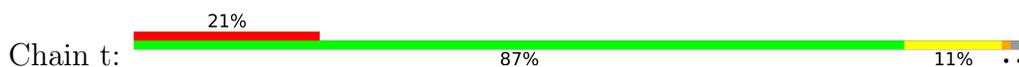
- Molecule 42: 50S ribosomal protein L25

Chain u:
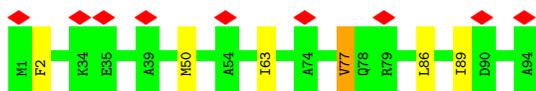
- Molecule 43: 50S ribosomal protein L27

Chain v:

- Molecule 44: 50S ribosomal protein L28

Chain w:
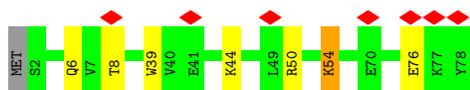
- Molecule 45: 50S ribosomal protein L29

Chain x:
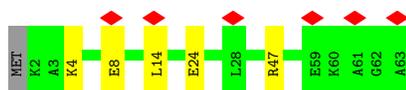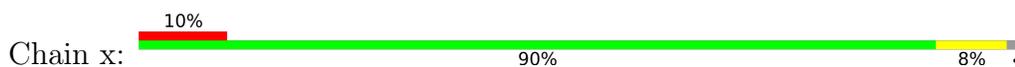
- Molecule 46: 50S ribosomal protein L30
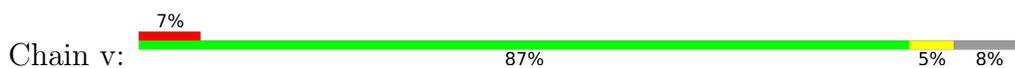

Chain y:

- Molecule 47: 50S ribosomal protein L32

Chain z:
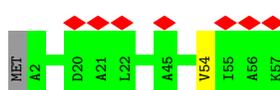
- Molecule 48: 50S ribosomal protein L33

Chain 0:

13%

87%   7%

MET ALA LYS | G4 | I5 | A15 | K25 | R28 T29 K30 P31 | E32 | K33 | L34 | I54 | LYS
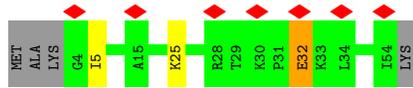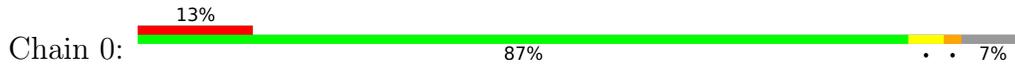
• Molecule 49: 50S ribosomal protein L34

Chain 1:

96%

M1 | S8 | R39 | K46

• Molecule 50: 50S ribosomal protein L35

Chain 2:

8%

94%

MET | P2 | K15 | K19 | A27 | H31 | G53 | D54 | A65
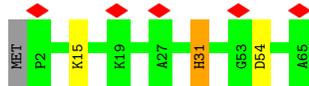
• Molecule 51: 50S ribosomal protein L36

Chain 3:

8%

95%   5%

M1 | K2 | K8 | K9 | L10 | R36 | Q37 | G38
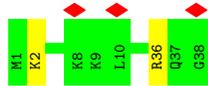
• Molecule 52: Large ribosomal subunit protein bL31A

Chain 4:

33%

77%   9%   14%

M1 | K8 | E11 | I12 T13 | S17 | C18 | G19 | N20 | V21 | M22 | K23 | I24 | R25 | V28 | D31 | L32 | N33 | L34 | D35 | S38 | K47 | Q48 | ARG ASP VAL ALA THR GLY | G55 | R56 | R59 | F60 | N61 | K62 | N65 | I66 | PRO GLY SER LYS

• Molecule 53: mRNA

Chain X:

7%

32%   11%   57%
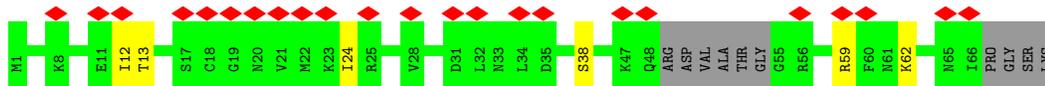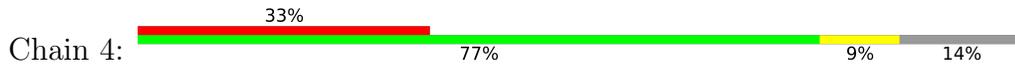
G U A U A A G G A G G U | A13 | A14 | A15 | A23 | A24 | C U A
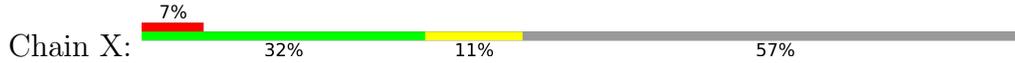
• Molecule 54: A-site tRNA-val

Chain Y:

26%

45%   39%   13%

G1 | G2 | G3 | U4 | G5 | A6 | U7 | U8 | A9 | G10 | C11 | U12 | C13 | A14 | G15 | C U | G18 | G19 | G20 | A21 | A22 | A23 | C24 | G25 | A26 | C27 | C28 | U29 | C30 | U33 | A37 | G44 | G45 | G46 | U47 | C48 | G49 | G50 | C51 | C56 | G57 | A58 | U59 | C60 | C61 | G62 | G63 | U64 | C65 | A66 | U67 | C68 | A69 | C70 | C71

C72 A73 C74 C75 A76
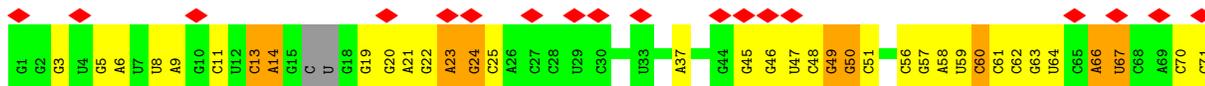
• Molecule 55: P-site tRNA-fMet

Chain Z:

11%

53%   39%   8%

G2 G6 G7 U8 G9 A14 G15 C16 C17 U17A G18 G19 U20 A21 G22 A43 A44 G45 G46 U47 C48 G49 U50 C51 G52 G53 U54 U55 C56 A57 A58 A59 C62 G63 G64 C65 C66 C67 C68 C69 G70 C71 A72 A73 A76

• Molecule 56: E-site tRNA

Chain 5:

100%

C75 A76

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	11872	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL 1400/HR + YPS FEG	Depositor
Voltage (kV)	100	Depositor
Electron dose $(e^-/\text{Å}^2)$	24	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	DECTRIS SINGLA (1k x 1k)	Depositor
Maximum map value	0.050	Depositor
Minimum map value	-0.020	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	412.4, 412.4, 412.4	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.031, 1.031, 1.031	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 4D4, H2U, 5MU, 6MZ, 3TD, D2T, 2MG, ZN, OMG, PSU, OMC, 2MA, IAS, OMU, MEQ, G7M, UR3, 5MC, 4OC, MA6, 1MG, MS6

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	0.64	1/36236 (0.0%)	0.87	9/56520 (0.0%)
2	B	0.69	0/1784	1.23	0/2403
3	C	0.68	0/1651	1.12	0/2225
4	D	0.67	0/1665	1.21	0/2227
5	E	0.67	0/1165	1.17	0/1568
6	F	0.69	0/858	1.14	0/1160
7	G	0.68	0/1219	1.25	0/1635
8	H	0.67	0/989	1.11	0/1326
9	I	0.67	0/1034	1.15	0/1375
10	J	0.67	0/796	1.14	0/1077
11	K	0.70	0/884	1.09	0/1191
12	L	0.66	0/960	1.07	0/1286
13	M	0.72	0/900	1.27	0/1204
14	N	0.67	0/817	1.16	0/1088
15	O	0.64	0/722	1.21	0/964
16	P	0.66	0/653	1.14	1/877 (0.1%)
17	Q	0.64	0/650	1.06	0/871
18	R	0.67	0/553	1.24	0/742
19	S	0.71	0/685	1.13	0/922
20	T	0.67	0/676	1.31	1/895 (0.1%)
21	U	0.64	0/597	1.24	0/792
22	a	0.62	2/65651 (0.0%)	0.90	31/102413 (0.0%)
23	b	0.65	0/2850	0.87	1/4444 (0.0%)
24	c	0.68	0/2121	1.08	1/2852 (0.0%)
25	d	0.63	0/1576	1.05	0/2119
26	e	0.63	0/1571	1.16	1/2113 (0.0%)
27	f	0.66	0/1434	1.14	0/1926
28	g	0.71	0/1343	1.20	0/1816
29	h	0.74	0/306	1.23	0/413
30	i	0.64	0/1152	1.10	0/1551
31	j	0.64	0/955	1.06	0/1279

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	k	0.66	0/1062	1.09	0/1413
33	l	0.62	0/1073	1.13	0/1433
34	m	0.63	0/958	1.14	0/1281
35	n	0.66	0/902	1.18	0/1209
36	o	0.64	0/929	1.05	0/1242
37	p	0.60	0/960	1.18	0/1278
38	q	0.65	0/829	1.04	0/1107
39	r	0.63	0/864	1.14	0/1156
40	s	0.63	0/744	1.13	0/994
41	t	0.66	0/787	1.17	0/1051
42	u	0.65	0/766	1.11	0/1025
43	v	0.62	0/593	1.04	0/785
44	w	0.63	0/635	1.14	0/848
45	x	0.65	0/502	1.31	0/667
46	y	0.66	0/453	1.21	0/605
47	z	0.65	0/450	1.14	0/599
48	0	0.65	0/424	1.14	0/565
49	1	0.60	0/380	1.14	0/498
50	2	0.65	0/513	1.18	0/676
51	3	0.65	0/303	1.04	0/397
52	4	0.66	0/488	1.08	0/649
53	X	0.67	0/292	0.91	0/453
54	Y	0.69	0/1764	1.01	0/2747
55	Z	0.68	0/1813	0.94	1/2825 (0.0%)
56	5	0.89	0/46	0.80	0/69
All	All	0.64	3/152983 (0.0%)	0.96	46/228846 (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
12	L	0	1
28	g	0	2
46	y	0	1
All	All	0	5

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	a	2069	G7M	O3'-P	5.46	1.61	1.56
1	A	527	G7M	O3'-P	5.39	1.61	1.56
22	a	2552	OMU	O3'-P	5.00	1.61	1.56

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	561	U	O3'-P-O5'	-7.36	92.97	104.00
22	a	2519	U	O3'-P-O5'	-7.26	93.10	104.00
1	A	913	A	O3'-P-O5'	-6.39	94.41	104.00
1	A	5	U	C2'-C3'-O3'	-6.38	104.13	113.70
22	a	887	U	O3'-P-O5'	-6.31	94.54	104.00
22	a	1131	G	O3'-P-O5'	-6.24	94.64	104.00
22	a	404	A	C2'-C3'-O3'	6.05	118.57	109.50
22	a	1568	G	O3'-P-O5'	-5.87	95.19	104.00
22	a	1969	A	O3'-P-O5'	-5.76	95.36	104.00
24	c	37	ASN	CB-CA-C	5.69	119.67	111.82
22	a	2050	C	O3'-P-O5'	-5.67	95.50	104.00
23	b	69	G	C1'-C2'-O2'	5.65	116.87	108.40
22	a	2501	C	O3'-P-O5'	-5.61	95.58	104.00
1	A	1108	G	C1'-C2'-O2'	5.59	116.78	108.40
22	a	330	A	O3'-P-O5'	-5.59	95.62	104.00
22	a	1905	C	C4'-C3'-O3'	-5.55	104.67	113.00
22	a	404	A	P-O3'-C3'	5.54	128.51	120.20
22	a	1701	A	C1'-C2'-O2'	5.54	116.70	108.40
22	a	204	A	O3'-P-O5'	-5.53	95.71	104.00
22	a	940	G	C1'-C2'-O2'	5.53	116.69	108.40
22	a	954	G	C1'-C2'-O2'	5.50	116.65	108.40
1	A	351	G	O3'-P-O5'	-5.48	95.78	104.00
22	a	2614	A	O3'-P-O5'	-5.48	95.78	104.00
22	a	2654	A	O3'-P-O5'	-5.44	95.84	104.00
22	a	1452	G	O3'-P-O5'	-5.43	95.86	104.00
22	a	781	A	O3'-P-O5'	-5.40	95.90	104.00
22	a	989	G	O3'-P-O5'	-5.28	96.08	104.00
1	A	5	U	C4'-C3'-O3'	5.28	120.91	113.00
22	a	846	U	N1-C1'-C2'	5.27	119.91	112.00
22	a	1929	G	O3'-P-O5'	-5.19	96.21	104.00
22	a	2490	G	O3'-P-O5'	-5.18	96.23	104.00
22	a	2061	G	O3'-P-O5'	-5.17	96.25	104.00
26	e	116	ASP	CA-CB-CG	5.16	117.76	112.60
1	A	1221	G	C1'-C2'-O2'	5.13	116.10	108.40
22	a	1359	A	O3'-P-O5'	-5.11	96.34	104.00
1	A	1035	A	P-O3'-C3'	5.09	127.84	120.20

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	220	G	C1'-C2'-O2'	5.09	116.04	108.40
55	Z	67	C	O3'-P-O5'	5.08	111.62	104.00
22	a	1667	G	O3'-P-O5'	-5.07	96.40	104.00
22	a	784	G	P-O3'-C3'	5.06	127.80	120.20
22	a	1436	G	C1'-C2'-O2'	5.05	115.98	108.40
22	a	277	G	P-O3'-C3'	5.04	127.77	120.20
22	a	241	A	O3'-P-O5'	-5.04	96.44	104.00
22	a	329	G	O3'-P-O5'	-5.03	96.45	104.00
20	T	24	ARG	CB-CG-CD	5.01	122.83	111.30
16	P	45	GLU	CB-CG-CD	5.01	121.11	112.60

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	130	THR	Peptide
12	L	101	ALA	Peptide
28	g	43	VAL	Peptide
28	g	47	ASP	Peptide
46	y	3	LYS	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	32612	0	16432	89	0
2	B	1753	0	1780	11	0
3	C	1624	0	1696	4	0
4	D	1643	0	1707	12	0
5	E	1152	0	1196	3	0
6	F	839	0	833	2	0
7	G	1203	0	1254	9	0
8	H	979	0	1031	5	0
9	I	1022	0	1070	1	0
10	J	786	0	828	4	0
11	K	877	0	884	5	0
12	L	957	0	1017	5	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	M	891	0	952	8	0
14	N	805	0	844	4	0
15	O	714	0	734	3	0
16	P	643	0	661	1	0
17	Q	641	0	682	2	0
18	R	544	0	565	0	0
19	S	668	0	693	3	0
20	T	670	0	719	3	0
21	U	589	0	629	1	0
22	a	59130	0	29769	135	0
23	b	2549	0	1291	4	0
24	c	2082	0	2154	9	0
25	d	1566	0	1618	4	0
26	e	1552	0	1619	8	0
27	f	1410	0	1444	9	0
28	g	1323	0	1371	9	0
29	h	303	0	327	3	0
30	i	1129	0	1162	1	0
31	j	946	0	1023	4	0
32	k	1053	0	1129	6	0
33	l	1075	0	1145	3	0
34	m	945	0	989	2	0
35	n	892	0	923	0	0
36	o	917	0	962	6	0
37	p	947	0	1019	2	0
38	q	816	0	839	3	0
39	r	857	0	922	0	0
40	s	738	0	807	0	0
41	t	779	0	831	3	0
42	u	753	0	780	3	0
43	v	586	0	596	3	0
44	w	625	0	652	3	0
45	x	501	0	531	1	0
46	y	449	0	488	0	0
47	z	444	0	458	0	0
48	0	417	0	451	1	0
49	1	377	0	418	1	0
50	2	504	0	572	2	0
51	3	302	0	340	1	0
52	4	480	0	478	1	0
53	X	260	0	130	1	0
54	Y	1579	0	804	17	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
55	Z	1623	0	825	8	0
56	5	42	0	23	1	0
57	3	1	0	0	0	0
57	4	1	0	0	0	0
All	All	141565	0	95097	366	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 2.

All (366) 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)
13:M:71:ARG:NH2	27:f:113:ASP:OD1	1.94	0.99
13:M:71:ARG:NH2	27:f:113:ASP:CG	2.25	0.95
13:M:71:ARG:NH2	27:f:113:ASP:OD2	2.04	0.91
22:a:1252:G:H1	37:p:37:GLN:HE21	1.32	0.77
22:a:2554:U:O2	54:Y:74:C:N4	2.17	0.77
13:M:71:ARG:HH22	27:f:113:ASP:CG	1.92	0.77
1:A:664:G:H22	1:A:741:G:H1	1.34	0.76
1:A:1073:U:O2'	2:B:103:ASN:ND2	2.20	0.75
55:Z:18:G:N1	55:Z:55:U:O2	2.18	0.74
54:Y:58:A:O2'	54:Y:60:C:OP2	2.06	0.72
54:Y:13:C:O2	54:Y:22:G:N1	2.20	0.70
2:B:119:THR:O	2:B:123:ASP:HB2	1.92	0.70
22:a:1478:G:H1	22:a:1513:U:H3	1.38	0.69
54:Y:23:A:H2'	54:Y:24:G:C8	2.28	0.68
7:G:113:ASP:OD2	7:G:122:ASN:ND2	2.28	0.66
22:a:1582:C:O2'	22:a:1585:C:N3	2.25	0.66
1:A:37:U:OP2	12:L:120:LYS:NZ	2.30	0.65
54:Y:23:A:H2'	54:Y:24:G:H8	1.62	0.65
1:A:1119:C:OP1	9:I:85:ARG:NH2	2.31	0.64
22:a:2478:A:OP2	51:3:2:LYS:NZ	2.25	0.64
22:a:1047:G:HO2'	22:a:1110:G:H1	1.44	0.64
1:A:1086:U:H3	1:A:1099:G:H22	1.45	0.64
55:Z:62:C:H2'	55:Z:63:G:C8	2.32	0.63
1:A:673:A:H2'	1:A:674:G:C8	2.34	0.62
24:c:29:PRO:HG2	24:c:34:LEU:HD11	1.81	0.62
31:j:108:ARG:HH21	36:o:34:GLU:HB3	1.64	0.62
10:J:29:ALA:HB2	10:J:87:LEU:HD21	1.81	0.62
22:a:896:A:H2'	54:Y:56:C:O2	2.00	0.61
4:D:101:VAL:HG12	4:D:105:MET:HE2	1.82	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:677:U:H3	1:A:713:G:H22	1.49	0.61
1:A:754:C:OP1	15:O:72:ARG:NH2	2.34	0.61
22:a:1434:A:H2'	22:a:1435:G:C8	2.36	0.61
1:A:933:G:O6	7:G:3:ARG:NH2	2.29	0.60
22:a:1720:U:H2'	22:a:1721:G:O4'	2.01	0.60
33:l:66:ARG:NH1	33:l:104:GLU:OE2	2.35	0.60
1:A:823:C:HO2'	8:H:2:SER:N	1.99	0.59
22:a:84:A:N1	22:a:98:G:O2'	2.30	0.59
7:G:113:ASP:OD1	7:G:113:ASP:N	2.36	0.59
22:a:1434:A:H2'	22:a:1435:G:H8	1.67	0.59
1:A:1189:U:OP1	14:N:98:LYS:NZ	2.36	0.59
22:a:878:A:N7	22:a:899:A:H2	2.01	0.59
22:a:172:A:H2'	22:a:173:A:C8	2.38	0.58
22:a:1047:G:O2'	22:a:1109:C:N4	2.36	0.58
2:B:205:ASP:OD1	2:B:205:ASP:N	2.37	0.58
1:A:946:A:H2'	1:A:947:G:C8	2.39	0.58
55:Z:62:C:H2'	55:Z:63:G:H8	1.69	0.58
28:g:2:SER:OG	28:g:3:ARG:N	2.37	0.57
22:a:568:U:H1'	22:a:2030:6MZ:H9C1	1.85	0.56
11:K:23:ILE:HG12	11:K:96:THR:HG21	1.86	0.56
22:a:5:A:H2'	22:a:6:A:C8	2.41	0.56
1:A:404:G:O6	4:D:2:ALA:N	2.39	0.55
1:A:422:C:O2	1:A:423:G:N1	2.39	0.55
3:C:35:SER:OG	3:C:59:ARG:NH2	2.40	0.55
1:A:1391:U:H2'	1:A:1392:G:C8	2.42	0.55
1:A:1356:G:H2'	1:A:1357:A:C8	2.42	0.55
22:a:1469:A:H2'	22:a:1470:A:C8	2.42	0.55
22:a:2751:G:H4'	28:g:4:VAL:HG23	1.89	0.55
3:C:77:ILE:HA	3:C:84:VAL:HG13	1.88	0.55
22:a:2748:A:H5'	28:g:4:VAL:HG21	1.88	0.55
1:A:405:U:O4	4:D:2:ALA:N	2.40	0.54
25:d:14:ILE:HA	36:o:12:GLN:HE22	1.73	0.54
38:q:1:MET:HE3	38:q:43:ASN:HD21	1.72	0.54
7:G:53:ARG:NH2	7:G:122:ASN:OD1	2.39	0.54
22:a:639:U:H2'	22:a:640:C:C6	2.43	0.54
22:a:549:G:H2'	22:a:550:C:C6	2.43	0.54
36:o:100:LEU:HD11	36:o:110:ILE:HD11	1.89	0.54
28:g:72:LEU:HA	28:g:75:MET:HB2	1.90	0.54
1:A:1004:A:H2'	1:A:1005:A:O4'	2.08	0.54
22:a:1181:U:H2'	22:a:1182:G:C8	2.42	0.54
1:A:1240:U:OP1	7:G:119:ARG:NH2	2.40	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:8:A:N6	4:D:202:GLU:O	2.41	0.53
1:A:216:U:H2'	1:A:217:C:C6	2.42	0.53
10:J:66:GLU:HB2	14:N:99:ALA:HB2	1.91	0.53
22:a:1913:A:N1	54:Y:37:A:O2'	2.40	0.53
41:t:74:ASN:HD22	41:t:76:ALA:H	1.56	0.53
29:h:12:LEU:HD13	29:h:19:VAL:HG21	1.89	0.53
54:Y:14:A:C2	54:Y:22:G:H1'	2.43	0.53
10:J:28:THR:HG23	10:J:87:LEU:HD23	1.91	0.53
24:c:200:HIS:HE1	24:c:203:ARG:HH11	1.56	0.53
1:A:553:A:H5"	12:L:21:VAL:HG21	1.91	0.53
22:a:1115:G:O2'	22:a:1116:G:O5'	2.26	0.52
1:A:662:U:H2'	1:A:663:A:C8	2.44	0.52
22:a:2505:G:N2	22:a:2506:U:O4	2.42	0.52
22:a:2547:A:H2'	22:a:2548:U:C6	2.45	0.52
1:A:493:A:H2'	1:A:494:G:C8	2.45	0.52
3:C:73:PRO:HG3	3:C:105:GLU:HG2	1.91	0.52
22:a:2432:A:H1'	56:5:75:C:O4'	2.09	0.52
1:A:545:C:OP1	4:D:58:LYS:NZ	2.43	0.52
22:a:2327:A:H2'	22:a:2328:A:C8	2.45	0.52
1:A:346:G:OP1	36:o:39:ARG:NH2	2.39	0.51
22:a:851:C:H2'	22:a:852:U:C6	2.46	0.51
22:a:2052:A:H4'	25:d:148:GLN:O	2.10	0.51
1:A:50:A:O2'	1:A:360:G:N2	2.43	0.51
1:A:1031:C:O2'	1:A:1032:G:N2	2.44	0.51
7:G:82:GLY:HA3	53:X:13:A:C8	2.45	0.51
1:A:1526:G:N7	21:U:40:LYS:NZ	2.57	0.51
22:a:2392:A:OP2	50:2:31:HIS:HE1	1.94	0.51
27:f:105:THR:HA	52:4:38:SER:HB2	1.92	0.51
1:A:337:G:H2'	1:A:338:A:C8	2.45	0.50
22:a:2273:A:H2'	22:a:2274:A:C8	2.47	0.50
55:Z:43:A:H2'	55:Z:44:A:C8	2.47	0.50
20:T:39:ILE:HD11	20:T:83:ILE:HG13	1.94	0.49
22:a:1939:5MU:OP1	22:a:2604:PSU:O2'	2.29	0.49
4:D:184:ARG:NH2	4:D:190:ASP:OD2	2.38	0.49
1:A:71:A:N1	1:A:99:C:O2'	2.45	0.49
1:A:147:G:H2'	1:A:148:G:C8	2.48	0.49
1:A:390:U:H2'	1:A:391:G:C8	2.47	0.49
12:L:73:ASN:O	12:L:75:GLN:NE2	2.45	0.49
54:Y:50:G:H2'	54:Y:51:C:O4'	2.11	0.49
1:A:1273:C:H2'	1:A:1274:A:O4'	2.12	0.49
22:a:273:G:H2'	22:a:274:C:C6	2.48	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:a:2243:U:H2'	22:a:2244:U:C6	2.47	0.49
44:w:6:GLN:HE21	44:w:50:ARG:H	1.61	0.49
22:a:1020:A:N1	22:a:1141:U:O2'	2.42	0.49
22:a:1495:A:N3	22:a:1578:U:O2'	2.43	0.49
22:a:172:A:H2'	22:a:173:A:H8	1.77	0.49
25:d:110:THR:HG23	25:d:202:ILE:HB	1.94	0.49
22:a:2291:U:H2'	22:a:2292:U:C6	2.48	0.49
22:a:1048:A:H62	22:a:1110:G:H21	1.61	0.49
1:A:131:A:H2'	1:A:132:C:C6	2.48	0.48
15:O:29:VAL:HG11	15:O:67:LEU:HD21	1.95	0.48
1:A:1218:C:H2'	1:A:1219:A:C8	2.48	0.48
31:j:38:ILE:HD11	31:j:112:PHE:HZ	1.77	0.48
54:Y:50:G:H1	54:Y:64:U:H3	1.60	0.48
1:A:171:A:H2'	1:A:172:A:C8	2.49	0.48
1:A:1320:C:O2	19:S:36:ARG:NH2	2.47	0.48
22:a:1405:U:H2'	22:a:1406:U:C6	2.47	0.48
27:f:112:ARG:HH12	27:f:133:ARG:HH22	1.60	0.48
1:A:140:U:H2'	1:A:141:G:O4'	2.13	0.48
22:a:896:A:H2'	54:Y:56:C:C2	2.49	0.48
1:A:51:A:N7	1:A:114:U:O2'	2.46	0.48
31:j:108:ARG:HH11	31:j:116:ILE:HG21	1.79	0.48
1:A:269:C:H2'	1:A:270:A:C8	2.47	0.48
1:A:472:U:H2'	1:A:473:U:C6	2.49	0.48
1:A:542:G:H5'	4:D:39:GLY:HA3	1.96	0.48
1:A:1350:A:O2'	7:G:33:ASP:OD1	2.28	0.48
22:a:2202:U:O2'	22:a:2204:G:OP1	2.28	0.48
22:a:720:U:H2'	22:a:721:A:C8	2.49	0.48
55:Z:56:C:C2	55:Z:57:A:C8	3.02	0.47
32:k:57:LEU:HD22	50:2:54:ASP:HB3	1.96	0.47
12:L:55:VAL:O	12:L:62:GLU:HA	2.14	0.47
17:Q:25:ILE:HB	17:Q:42:THR:HG23	1.97	0.47
29:h:32:PRO:HA	44:w:39:TRP:CD1	2.49	0.47
22:a:1494:A:H2'	22:a:1495:A:C8	2.50	0.47
24:c:107:PRO:HD2	24:c:110:LEU:HD22	1.97	0.47
26:e:121:VAL:HG21	26:e:124:PHE:HB2	1.96	0.47
22:a:197:A:N6	22:a:2430:A:O2'	2.48	0.47
23:b:48:U:H2'	23:b:49:C:C6	2.50	0.47
8:H:18:GLN:HG2	8:H:63:LEU:HD13	1.97	0.47
22:a:871:U:H2'	22:a:872:U:C6	2.50	0.47
22:a:219:A:N3	22:a:234:U:O2'	2.43	0.47
22:a:2537:U:H2'	22:a:2538:C:C6	2.49	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:c:200:HIS:CE1	24:c:203:ARG:HH11	2.32	0.47
2:B:188:ASP:HB2	2:B:204:ASP:OD2	2.15	0.47
11:K:67:ALA:HB2	11:K:96:THR:HG23	1.97	0.47
22:a:1182:G:H2'	22:a:1183:U:O4'	2.15	0.47
24:c:181:MET:HB3	24:c:268:VAL:HB	1.97	0.47
22:a:1509:A:HO2'	22:a:1510:G:H8	1.63	0.47
16:P:61:VAL:HG21	16:P:67:ILE:HD11	1.97	0.46
54:Y:62:C:H2'	54:Y:63:G:C8	2.50	0.46
22:a:366:C:H2'	22:a:367:G:O4'	2.15	0.46
1:A:87:C:H2'	1:A:88:U:C6	2.50	0.46
1:A:411:A:P	4:D:26:ARG:HH12	2.39	0.46
22:a:593:U:H2'	22:a:594:U:C6	2.50	0.46
22:a:1378:A:O2'	22:a:1380:G:N7	2.41	0.46
1:A:404:G:N7	4:D:2:ALA:HB3	2.30	0.46
2:B:94:HIS:ND1	2:B:146:ASN:O	2.49	0.46
22:a:305:C:H2'	22:a:306:U:C6	2.50	0.46
48:0:25:LYS:NZ	48:0:32:GLU:O	2.48	0.46
22:a:642:U:O2'	22:a:644:A:N7	2.46	0.46
54:Y:49:G:H2'	54:Y:50:G:H8	1.81	0.46
22:a:299:A:N3	22:a:319:G:O2'	2.46	0.46
22:a:1386:C:H2'	22:a:1387:A:C8	2.50	0.46
22:a:1715:G:O2'	22:a:1743:G:O6	2.31	0.46
38:q:57:GLY:HA2	38:q:102:SER:O	2.15	0.46
42:u:2:PHE:HB3	42:u:50:MET:HE3	1.98	0.46
22:a:493:G:H2'	22:a:494:G:O4'	2.15	0.46
1:A:1027:C:H2'	1:A:1028:C:C6	2.51	0.46
8:H:41:LYS:NZ	8:H:48:ASP:OD1	2.47	0.46
11:K:18:ASP:OD1	11:K:37:ARG:NH1	2.49	0.46
27:f:37:ASN:HB3	27:f:153:ASP:OD1	2.16	0.46
19:S:50:ALA:HB1	19:S:57:HIS:HB3	1.97	0.45
22:a:1028:A:N6	22:a:1125:G:H2'	2.31	0.45
1:A:56:U:H2'	1:A:57:G:C8	2.51	0.45
26:e:171:ASP:OD2	26:e:173:THR:OG1	2.34	0.45
14:N:29:ALA:O	14:N:33:ASP:HB2	2.16	0.45
23:b:36:C:N4	23:b:49:C:O2	2.49	0.45
1:A:381:C:H2'	1:A:382:A:O4'	2.16	0.45
1:A:739:C:OP2	6:F:2:ARG:NH2	2.49	0.45
19:S:69:HIS:ND1	19:S:73:GLU:OE1	2.50	0.45
22:a:352:A:H2'	22:a:353:C:O4'	2.17	0.45
22:a:811:U:H2'	32:k:21:ARG:HA	1.99	0.45
2:B:106:THR:HA	2:B:109:GLN:NE2	2.32	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:13:GLU:HG2	5:E:39:VAL:HG12	1.99	0.45
20:T:68:HIS:HD2	20:T:70:ASN:H	1.64	0.45
22:a:290:U:H2'	22:a:291:G:O4'	2.16	0.45
1:A:1309:G:N7	13:M:98:ARG:NH2	2.65	0.45
2:B:76:ALA:O	2:B:80:VAL:HG23	2.16	0.45
24:c:115:GLN:O	24:c:125:LYS:NZ	2.50	0.45
1:A:769:G:H4'	1:A:1513:A:H4'	1.98	0.45
1:A:1076:U:OP1	2:B:174:LYS:NZ	2.37	0.45
8:H:96:MET:HE2	8:H:99:LEU:HB2	1.99	0.45
10:J:24:GLU:HB2	10:J:90:LEU:HD11	1.99	0.45
22:a:851:C:H2'	22:a:852:U:H6	1.81	0.45
1:A:1302:C:C5	13:M:17:ILE:HG13	2.52	0.44
22:a:813:U:H2'	22:a:814:C:C6	2.52	0.44
22:a:1266:G:O2'	22:a:2012:G:O6	2.33	0.44
22:a:1853:A:N1	22:a:2087:G:H1'	2.32	0.44
22:a:543:G:C6	22:a:551:G:C6	3.05	0.44
22:a:2491:U:H5"	22:a:2570:G:H5"	1.99	0.44
26:e:61:ARG:NH2	26:e:63:LYS:O	2.50	0.44
28:g:30:ASN:HB3	28:g:79:VAL:HA	1.99	0.44
42:u:86:LEU:HD13	42:u:89:ILE:HD11	1.98	0.44
22:a:349:U:H2'	22:a:350:G:H8	1.82	0.44
1:A:746:A:H2'	1:A:747:A:C8	2.53	0.44
1:A:1378:C:O2	7:G:76:LYS:NZ	2.46	0.44
22:a:155:A:H2'	22:a:156:A:C8	2.53	0.44
1:A:17:U:H2'	1:A:18:C:C6	2.52	0.44
1:A:189:A:H2'	1:A:190:A:C8	2.52	0.44
1:A:714:G:H2'	1:A:715:A:C8	2.53	0.44
26:e:2:GLU:OE1	26:e:11:ALA:HB1	2.17	0.44
22:a:351:C:H2'	22:a:352:A:C8	2.53	0.44
22:a:414:C:H2'	22:a:415:A:C8	2.53	0.44
22:a:1414:C:H2'	22:a:1415:U:O4'	2.16	0.44
22:a:2687:U:H2'	22:a:2688:G:O4'	2.18	0.44
23:b:2:G:H2'	23:b:3:C:C6	2.53	0.44
22:a:340:A:H2'	22:a:341:C:O4'	2.17	0.44
22:a:1794:A:H2'	22:a:1795:C:C6	2.53	0.44
55:Z:66:C:H2'	55:Z:67:C:C6	2.52	0.44
4:D:184:ARG:HH21	4:D:186:PRO:HA	1.83	0.44
11:K:17:SER:HA	11:K:79:ILE:HA	1.99	0.44
22:a:1179:G:H2'	22:a:1180:U:C6	2.53	0.44
22:a:1485:U:H2'	22:a:1486:U:C6	2.53	0.44
22:a:2532:G:O2'	22:a:2657:A:N1	2.43	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:t:50:PRO:HA	41:t:54:GLN:HB3	1.99	0.44
1:A:190:A:O5'	1:A:190:A:H8	2.01	0.43
1:A:1412:C:H2'	1:A:1413:A:C8	2.53	0.43
1:A:1443:C:H2'	1:A:1444:U:O4'	2.18	0.43
22:a:1786:A:H1'	22:a:1938:A:N6	2.33	0.43
26:e:170:ARG:NH2	26:e:176:ASP:OD1	2.45	0.43
55:Z:72:A:H2'	55:Z:73:A:O4'	2.19	0.43
26:e:115:GLN:HE22	32:k:1:MET:HB3	1.82	0.43
22:a:1563:U:H2'	22:a:1564:C:C6	2.53	0.43
23:b:66:A:H61	23:b:107:G:H2'	1.84	0.43
1:A:1005:A:O2'	1:A:1037:C:O2'	2.36	0.43
1:A:1032:G:C6	1:A:1033:G:H1'	2.54	0.43
22:a:1180:U:H2'	22:a:1181:U:O4'	2.19	0.43
22:a:1874:C:H2'	22:a:1875:G:O4'	2.19	0.43
22:a:581:C:H2'	22:a:582:A:C8	2.54	0.43
22:a:2788:C:H2'	22:a:2789:C:C6	2.54	0.43
44:w:8:THR:HG21	44:w:54:LYS:HE3	2.01	0.43
20:T:68:HIS:CD2	20:T:70:ASN:H	2.36	0.43
22:a:2329:U:H2'	22:a:2330:G:C8	2.54	0.43
22:a:2902:C:H2'	22:a:2903:U:O4'	2.18	0.43
22:a:856:G:H2'	22:a:857:G:C8	2.54	0.43
29:h:34:GLY:O	29:h:36:ALA:N	2.46	0.43
38:q:33:VAL:HG23	38:q:61:ALA:HB3	2.00	0.43
1:A:89:U:H2'	1:A:90:C:C6	2.54	0.42
22:a:468:G:N7	49:1:39:ARG:NH2	2.57	0.42
22:a:743:A:O2'	22:a:1659:G:OP1	2.35	0.42
22:a:2845:U:H5"	36:o:52:ASN:O	2.19	0.42
25:d:1:MET:HE2	25:d:205:PRO:HG3	2.01	0.42
22:a:547:A:H4'	22:a:548:G:O4'	2.19	0.42
22:a:1904:G:O2'	22:a:1928:A:N1	2.51	0.42
22:a:2482:A:H4'	54:Y:63:G:O2'	2.19	0.42
27:f:117:LEU:HD12	27:f:176:PRO:HD2	2.01	0.42
1:A:1286:U:N3	1:A:1288:A:OP1	2.52	0.42
22:a:2196:C:H2'	22:a:2197:U:C6	2.54	0.42
22:a:890:C:H3'	22:a:891:G:O4'	2.18	0.42
24:c:133:ARG:HB3	24:c:186:ALA:HB1	2.01	0.42
1:A:264:C:O2'	17:Q:66:PRO:O	2.37	0.42
1:A:1323:G:H2'	1:A:1324:A:C8	2.55	0.42
34:m:66:ALA:O	34:m:69:ARG:O	2.38	0.42
2:B:100:MET:HA	2:B:107:VAL:HG21	2.01	0.42
7:G:79:ARG:HA	7:G:84:THR:HA	2.02	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:e:184:ASP:HA	32:k:2:ARG:HH12	1.84	0.42
1:A:1148:U:H2'	1:A:1149:C:O4'	2.19	0.42
1:A:1428:A:H2'	1:A:1429:A:O4'	2.19	0.42
4:D:170:TRP:CD1	4:D:186:PRO:HD3	2.54	0.42
22:a:1486:U:H2'	22:a:1487:U:H6	1.85	0.42
34:m:28:LEU:HD23	34:m:48:VAL:HG21	2.00	0.42
43:v:37:ILE:HD11	43:v:82:ILE:HD11	2.00	0.42
54:Y:66:A:C6	54:Y:67:U:C4	3.08	0.42
1:A:85:U:H4'	1:A:86:G:N2	2.35	0.42
1:A:1463:U:H2'	1:A:1464:U:C6	2.55	0.42
22:a:2063:C:O2	22:a:2450:A:N1	2.52	0.42
22:a:2901:C:C4	22:a:2902:C:N4	2.87	0.42
22:a:372:G:O2'	22:a:400:G:O6	2.38	0.42
22:a:476:G:H4'	22:a:502:A:N1	2.34	0.42
22:a:1486:U:H2'	22:a:1487:U:C6	2.55	0.42
28:g:19:ILE:HG12	28:g:24:ILE:HD12	2.02	0.42
43:v:37:ILE:HG21	43:v:80:ILE:HG21	2.02	0.42
1:A:945:G:C2	1:A:946:A:C8	3.08	0.41
1:A:1225:A:H2'	1:A:1226:C:C5	2.55	0.41
5:E:161:VAL:O	5:E:165:LEU:N	2.49	0.41
22:a:1009:A:N3	22:a:1153:C:O2'	2.51	0.41
22:a:1416:G:C4	22:a:1417:C:C5	3.08	0.41
22:a:1872:A:C5	22:a:1873:G:H1'	2.54	0.41
22:a:2469:A:N6	22:a:2481:G:O2'	2.53	0.41
28:g:26:ILE:HB	28:g:75:MET:HG2	2.02	0.41
54:Y:49:G:H2'	54:Y:50:G:C8	2.55	0.41
22:a:153:U:H2'	22:a:154:U:C6	2.55	0.41
22:a:1042:G:H1	22:a:1113:U:H3	1.68	0.41
22:a:1141:U:H4'	22:a:1142:A:O4'	2.19	0.41
22:a:2086:U:H2'	22:a:2087:G:C8	2.55	0.41
33:l:136:MET:HG2	42:u:77:VAL:HG12	2.02	0.41
1:A:1001:C:C2	1:A:1002:G:C8	3.08	0.41
22:a:717:C:H3'	22:a:718:A:H8	1.85	0.41
22:a:1723:G:C2	22:a:1724:G:H1'	2.55	0.41
1:A:459:A:H2'	1:A:460:A:C8	2.56	0.41
1:A:537:G:OP1	12:L:110:ARG:NH2	2.54	0.41
1:A:999:C:H2'	1:A:1000:A:C8	2.56	0.41
22:a:358:U:N3	22:a:359:G:N7	2.69	0.41
22:a:729:G:C6	24:c:207:LYS:HB2	2.55	0.41
22:a:1790:C:H2'	22:a:1791:A:C5	2.55	0.41
22:a:2698:U:H2'	22:a:2699:C:C6	2.56	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:k:110:VAL:HG11	32:k:135:ILE:HD11	2.02	0.41
1:A:109:A:C6	1:A:326:G:C6	3.09	0.41
8:H:29:SER:HB3	8:H:57:PRO:HB2	2.02	0.41
13:M:89:LEU:O	13:M:93:ARG:HD2	2.19	0.41
41:t:53:ASN:ND2	41:t:55:PRO:O	2.54	0.41
1:A:1315:U:H2'	1:A:1316:G:O4'	2.21	0.41
22:a:1482:G:H1'	22:a:1509:A:H61	1.85	0.41
22:a:1580:A:C8	22:a:1581:G:C8	3.09	0.41
22:a:1509:A:O2'	22:a:1510:G:H8	2.04	0.41
28:g:140:VAL:O	28:g:144:VAL:HG23	2.21	0.41
33:l:53:MET:HE1	33:l:103:TYR:CD2	2.55	0.41
1:A:1397:C:OP2	5:E:29:ARG:NH2	2.54	0.41
14:N:31:ILE:O	14:N:41:ARG:HD3	2.21	0.41
22:a:64:A:H2'	22:a:65:U:C6	2.56	0.41
43:v:59:LEU:HD12	43:v:80:ILE:HD12	2.02	0.41
2:B:67:ILE:H	2:B:89:GLN:HE21	1.68	0.41
2:B:71:GLY:O	2:B:93:ASN:HA	2.21	0.41
22:a:747:5MU:O2	22:a:2014:A:H1'	2.21	0.41
22:a:829:A:N7	22:a:2248:C:H5'	2.36	0.41
22:a:849:A:H2'	22:a:850:U:C6	2.55	0.41
22:a:909:A:H2'	22:a:912:C:C5	2.56	0.41
22:a:1370:C:H2'	22:a:1371:G:O4'	2.21	0.41
22:a:1432:G:H2'	22:a:1433:A:C8	2.56	0.41
22:a:2900:A:C6	22:a:2901:C:C4	3.09	0.41
31:j:25:LEU:HD12	31:j:38:ILE:HG22	2.03	0.41
55:Z:9:G:O4'	55:Z:46:G:H1'	2.21	0.41
11:K:42:LEU:HD12	11:K:79:ILE:HD11	2.02	0.41
13:M:71:ARG:HH21	27:f:113:ASP:CG	2.02	0.41
15:O:14:GLU:OE2	15:O:84:ARG:NH2	2.53	0.41
22:a:898:C:H2'	22:a:899:A:O4'	2.21	0.41
1:A:789:U:O2'	1:A:791:G:N7	2.49	0.40
1:A:977:A:O2'	1:A:979:C:OP2	2.36	0.40
1:A:1171:A:H2'	1:A:1172:C:C6	2.57	0.40
6:F:43:GLY:HA2	6:F:58:HIS:CE1	2.56	0.40
22:a:2898:U:O2'	30:i:134:ALA:O	2.34	0.40
26:e:21:ARG:HD3	26:e:106:LYS:HB3	2.03	0.40
28:g:20:ASN:OD1	28:g:20:ASN:N	2.54	0.40
37:p:72:ASN:HB3	37:p:110:VAL:HG11	2.04	0.40
3:C:36:ASP:OD1	3:C:59:ARG:NH2	2.38	0.40
22:a:12:U:O2	22:a:2626:C:H4'	2.21	0.40
22:a:61:C:OP2	45:x:47:ARG:NH2	2.42	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:5:U:H6	1:A:5:U:OP1	2.03	0.40
1:A:1000:A:H2'	1:A:1001:C:C6	2.57	0.40
22:a:1183:U:H2'	22:a:1184:U:C6	2.56	0.40
1:A:476:U:H2'	1:A:477:C:C6	2.56	0.40
1:A:1464:U:P	36:o:109:ARG:HH22	2.45	0.40
4:D:172:GLU:O	4:D:180:GLY:HA2	2.22	0.40
22:a:2585:U:O4	54:Y:76:A:O2'	2.35	0.40
24:c:117:GLN:NE2	24:c:121:ASP:OD1	2.55	0.40
32:k:108:ALA:HB3	32:k:125:LEU:HD22	2.03	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	
2	B	222/241 (92%)	208 (94%)	14 (6%)	0	100	100
3	C	204/233 (88%)	196 (96%)	8 (4%)	0	100	100
4	D	203/206 (98%)	195 (96%)	8 (4%)	0	100	100
5	E	154/167 (92%)	150 (97%)	4 (3%)	0	100	100
6	F	101/135 (75%)	96 (95%)	5 (5%)	0	100	100
7	G	151/179 (84%)	138 (91%)	10 (7%)	3 (2%)	6	32
8	H	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
9	I	125/130 (96%)	123 (98%)	2 (2%)	0	100	100
10	J	96/103 (93%)	92 (96%)	3 (3%)	1 (1%)	13	49
11	K	113/129 (88%)	108 (96%)	5 (4%)	0	100	100
12	L	120/124 (97%)	115 (96%)	5 (4%)	0	100	100
13	M	113/118 (96%)	110 (97%)	3 (3%)	0	100	100
14	N	98/101 (97%)	95 (97%)	2 (2%)	1 (1%)	13	49

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
15	O	86/89 (97%)	85 (99%)	1 (1%)	0	100	100
16	P	79/82 (96%)	75 (95%)	4 (5%)	0	100	100
17	Q	77/84 (92%)	74 (96%)	3 (4%)	0	100	100
18	R	64/75 (85%)	59 (92%)	5 (8%)	0	100	100
19	S	82/92 (89%)	80 (98%)	2 (2%)	0	100	100
20	T	84/87 (97%)	84 (100%)	0	0	100	100
21	U	68/71 (96%)	66 (97%)	2 (3%)	0	100	100
24	c	269/273 (98%)	258 (96%)	11 (4%)	0	100	100
25	d	206/209 (99%)	199 (97%)	7 (3%)	0	100	100
26	e	199/201 (99%)	192 (96%)	7 (4%)	0	100	100
27	f	175/179 (98%)	169 (97%)	6 (3%)	0	100	100
28	g	174/177 (98%)	152 (87%)	19 (11%)	3 (2%)	7	36
29	h	39/149 (26%)	35 (90%)	4 (10%)	0	100	100
30	i	140/142 (99%)	140 (100%)	0	0	100	100
31	j	121/123 (98%)	115 (95%)	6 (5%)	0	100	100
32	k	142/144 (99%)	137 (96%)	5 (4%)	0	100	100
33	l	132/136 (97%)	130 (98%)	2 (2%)	0	100	100
34	m	116/127 (91%)	114 (98%)	2 (2%)	0	100	100
35	n	114/117 (97%)	111 (97%)	3 (3%)	0	100	100
36	o	112/115 (97%)	108 (96%)	4 (4%)	0	100	100
37	p	115/118 (98%)	115 (100%)	0	0	100	100
38	q	101/103 (98%)	99 (98%)	1 (1%)	1 (1%)	13	49
39	r	108/110 (98%)	107 (99%)	1 (1%)	0	100	100
40	s	91/100 (91%)	85 (93%)	6 (7%)	0	100	100
41	t	100/104 (96%)	90 (90%)	9 (9%)	1 (1%)	13	49
42	u	92/94 (98%)	92 (100%)	0	0	100	100
43	v	76/85 (89%)	75 (99%)	1 (1%)	0	100	100
44	w	75/78 (96%)	75 (100%)	0	0	100	100
45	x	60/63 (95%)	58 (97%)	2 (3%)	0	100	100
46	y	56/59 (95%)	54 (96%)	2 (4%)	0	100	100
47	z	54/57 (95%)	52 (96%)	2 (4%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
48	0	49/55 (89%)	48 (98%)	1 (2%)	0	100	100
49	1	44/46 (96%)	44 (100%)	0	0	100	100
50	2	62/65 (95%)	60 (97%)	2 (3%)	0	100	100
51	3	36/38 (95%)	36 (100%)	0	0	100	100
52	4	56/70 (80%)	53 (95%)	3 (5%)	0	100	100
All	All	5481/5913 (93%)	5273 (96%)	198 (4%)	10 (0%)	45	78

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
28	g	47	ASP
28	g	92	VAL
7	G	57	SER
10	J	57	VAL
14	N	33	ASP
41	t	99	ASN
28	g	48	ASN
7	G	6	VAL
7	G	5	ARG
38	q	44	GLY

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	
2	B	186/199 (94%)	177 (95%)	9 (5%)	21	43
3	C	170/190 (90%)	166 (98%)	4 (2%)	44	63
4	D	172/173 (99%)	159 (92%)	13 (8%)	11	30
5	E	119/126 (94%)	115 (97%)	4 (3%)	32	53
6	F	90/116 (78%)	86 (96%)	4 (4%)	24	46
7	G	126/147 (86%)	118 (94%)	8 (6%)	15	36
8	H	104/105 (99%)	101 (97%)	3 (3%)	37	58

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
9	I	105/107 (98%)	102 (97%)	3 (3%)	37	58
10	J	86/90 (96%)	85 (99%)	1 (1%)	67	79
11	K	89/98 (91%)	84 (94%)	5 (6%)	17	39
12	L	102/103 (99%)	98 (96%)	4 (4%)	27	49
13	M	93/96 (97%)	88 (95%)	5 (5%)	18	40
14	N	83/84 (99%)	83 (100%)	0	100	100
15	O	76/77 (99%)	72 (95%)	4 (5%)	19	41
16	P	65/65 (100%)	62 (95%)	3 (5%)	23	45
17	Q	73/78 (94%)	68 (93%)	5 (7%)	13	34
18	R	57/65 (88%)	57 (100%)	0	100	100
19	S	72/79 (91%)	71 (99%)	1 (1%)	62	75
20	T	65/66 (98%)	60 (92%)	5 (8%)	10	30
21	U	60/61 (98%)	54 (90%)	6 (10%)	6	21
24	c	216/218 (99%)	214 (99%)	2 (1%)	75	83
25	d	163/163 (100%)	159 (98%)	4 (2%)	42	62
26	e	165/165 (100%)	159 (96%)	6 (4%)	30	52
27	f	148/150 (99%)	144 (97%)	4 (3%)	40	60
28	g	137/138 (99%)	125 (91%)	12 (9%)	8	26
29	h	32/114 (28%)	29 (91%)	3 (9%)	7	23
30	i	116/116 (100%)	114 (98%)	2 (2%)	56	72
31	j	104/104 (100%)	104 (100%)	0	100	100
32	k	103/103 (100%)	100 (97%)	3 (3%)	37	58
33	l	107/107 (100%)	105 (98%)	2 (2%)	52	69
34	m	98/103 (95%)	97 (99%)	1 (1%)	73	81
35	n	86/87 (99%)	83 (96%)	3 (4%)	31	52
36	o	99/100 (99%)	99 (100%)	0	100	100
37	p	89/90 (99%)	88 (99%)	1 (1%)	70	80
38	q	84/84 (100%)	80 (95%)	4 (5%)	21	43
39	r	93/93 (100%)	92 (99%)	1 (1%)	70	80
40	s	80/84 (95%)	80 (100%)	0	100	100
41	t	83/85 (98%)	77 (93%)	6 (7%)	12	32

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
42	u	78/78 (100%)	76 (97%)	2 (3%)	41	61
43	v	58/63 (92%)	58 (100%)	0	100	100
44	w	67/68 (98%)	64 (96%)	3 (4%)	23	46
45	x	54/55 (98%)	50 (93%)	4 (7%)	11	31
46	y	48/49 (98%)	45 (94%)	3 (6%)	15	36
47	z	47/48 (98%)	46 (98%)	1 (2%)	48	67
48	0	46/49 (94%)	44 (96%)	2 (4%)	25	47
49	1	38/38 (100%)	37 (97%)	1 (3%)	41	61
50	2	51/52 (98%)	49 (96%)	2 (4%)	27	49
51	3	34/34 (100%)	33 (97%)	1 (3%)	37	58
52	4	55/62 (89%)	50 (91%)	5 (9%)	7	25
All	All	4572/4825 (95%)	4407 (96%)	165 (4%)	32	52

All (165) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	7	ARG
2	B	58	ASN
2	B	93	ASN
2	B	105	LYS
2	B	133	GLU
2	B	143	LYS
2	B	152	LYS
2	B	188	ASP
2	B	205	ASP
3	C	75	ILE
3	C	147	LYS
3	C	170	GLU
3	C	178	LEU
4	D	34	ILE
4	D	48	LEU
4	D	85	ASN
4	D	166	GLU
4	D	167	LYS
4	D	177	LYS
4	D	178	MET
4	D	181	THR
4	D	184	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	D	188	ARG
4	D	192	SER
4	D	202	GLU
4	D	206	LYS
5	E	14	LYS
5	E	22	SER
5	E	55	GLU
5	E	164	ILE
6	F	2	ARG
6	F	62	MET
6	F	102	MET
6	F	103	VAL
7	G	6	VAL
7	G	9	GLN
7	G	57	SER
7	G	72	THR
7	G	89	VAL
7	G	90	GLU
7	G	113	ASP
7	G	149	LYS
8	H	38	ASN
8	H	56	LYS
8	H	73	GLU
9	I	27	LYS
9	I	53	GLU
9	I	85	ARG
10	J	27	GLU
11	K	16	VAL
11	K	72	ASP
11	K	87	LYS
11	K	94	GLU
11	K	129	VAL
12	L	43	LYS
12	L	54	ARG
12	L	55	VAL
12	L	62	GLU
13	M	7	ILE
13	M	16	VAL
13	M	27	LYS
13	M	75	MET
13	M	82	ASP
15	O	2	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
15	O	3	LEU
15	O	18	ASP
15	O	47	LYS
16	P	45	GLU
16	P	47	GLU
16	P	48	GLU
17	Q	5	ILE
17	Q	16	LYS
17	Q	41	THR
17	Q	50	ASN
17	Q	60	GLU
19	S	43	ASN
20	T	6	SER
20	T	13	GLN
20	T	44	LYS
20	T	54	MET
20	T	85	LYS
21	U	3	VAL
21	U	8	GLU
21	U	9	ASN
21	U	44	GLU
21	U	60	LEU
21	U	63	GLU
24	c	37	ASN
24	c	172	VAL
25	d	12	THR
25	d	32	ASN
25	d	89	GLU
25	d	92	VAL
26	e	5	LEU
26	e	9	GLN
26	e	14	VAL
26	e	21	ARG
26	e	107	SER
26	e	150	THR
27	f	27	GLN
27	f	120	LYS
27	f	136	ILE
27	f	150	ARG
28	g	20	ASN
28	g	43	VAL
28	g	49	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
28	g	75	MET
28	g	90	VAL
28	g	103	ILE
28	g	122	THR
28	g	127	THR
28	g	129	THR
28	g	171	THR
28	g	173	GLU
28	g	175	LYS
29	h	6	LEU
29	h	17	ASP
29	h	21	VAL
30	i	1	MET
30	i	9	GLU
32	k	115	GLU
32	k	120	VAL
32	k	144	GLU
33	l	7	THR
33	l	51	ARG
34	m	48	VAL
35	n	13	ARG
35	n	16	ARG
35	n	84	GLU
37	p	112	LYS
38	q	33	VAL
38	q	47	VAL
38	q	48	LYS
38	q	72	VAL
39	r	66	ILE
41	t	15	THR
41	t	24	LYS
41	t	26	LYS
41	t	60	GLU
41	t	74	ASN
41	t	98	SER
42	u	63	ILE
42	u	77	VAL
44	w	44	LYS
44	w	54	LYS
44	w	76	GLU
45	x	4	LYS
45	x	8	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
45	x	14	LEU
45	x	24	GLU
46	y	3	LYS
46	y	41	THR
46	y	59	GLU
47	z	54	VAL
48	0	5	ILE
48	0	32	GLU
49	1	8	SER
50	2	15	LYS
50	2	31	HIS
51	3	36	ARG
52	4	12	ILE
52	4	13	THR
52	4	24	ILE
52	4	59	ARG
52	4	62	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (74) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	19	GLN
2	B	58	ASN
2	B	89	GLN
2	B	103	ASN
2	B	109	GLN
3	C	6	HIS
3	C	100	GLN
3	C	123	GLN
3	C	139	GLN
4	D	40	GLN
4	D	100	ASN
5	E	12	GLN
5	E	73	ASN
5	E	82	GLN
5	E	146	ASN
5	E	148	ASN
6	F	37	HIS
6	F	52	ASN
6	F	55	HIS
7	G	86	GLN
8	H	4	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
9	I	31	ASN
9	I	110	GLN
10	J	35	GLN
10	J	58	ASN
11	K	38	GLN
11	K	40	ASN
12	L	75	GLN
12	L	112	GLN
13	M	8	ASN
14	N	66	GLN
15	O	50	HIS
17	Q	51	ASN
18	R	52	GLN
19	S	52	HIS
19	S	57	HIS
19	S	83	HIS
20	T	84	ASN
21	U	56	HIS
24	c	90	ASN
24	c	117	GLN
24	c	197	ASN
26	e	94	GLN
26	e	136	GLN
28	g	38	ASN
28	g	48	ASN
28	g	101	ASN
28	g	104	ASN
28	g	115	HIS
30	i	47	HIS
30	i	86	GLN
30	i	128	ASN
31	j	5	GLN
31	j	9	ASN
33	l	13	HIS
35	n	100	HIS
36	o	12	GLN
36	o	41	GLN
37	p	37	GLN
37	p	72	ASN
38	q	6	GLN
38	q	43	ASN
39	r	31	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
39	r	40	ASN
40	s	48	GLN
41	t	74	ASN
42	u	49	ASN
44	w	6	GLN
44	w	36	HIS
45	x	15	ASN
46	y	9	GLN
47	z	6	ASN
50	2	31	HIS
52	4	20	ASN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1516/1542 (98%)	207 (13%)	6 (0%)
22	a	2749/2904 (94%)	346 (12%)	0
23	b	118/120 (98%)	13 (11%)	0
53	X	11/28 (39%)	2 (18%)	0
54	Y	72/76 (94%)	31 (43%)	6 (8%)
55	Z	75/76 (98%)	27 (36%)	1 (1%)
56	5	1/2 (50%)	1 (100%)	0
All	All	4542/4748 (95%)	627 (13%)	13 (0%)

All (627) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	4	U
1	A	5	U
1	A	6	G
1	A	22	G
1	A	32	A
1	A	39	G
1	A	47	C
1	A	48	C
1	A	50	A
1	A	51	A
1	A	71	A
1	A	74	A
1	A	75	G
1	A	80	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	83	C
1	A	84	U
1	A	85	U
1	A	86	G
1	A	87	C
1	A	88	U
1	A	89	U
1	A	94	G
1	A	95	C
1	A	96	U
1	A	121	U
1	A	122	G
1	A	131	A
1	A	141	G
1	A	144	G
1	A	146	G
1	A	166	U
1	A	177	G
1	A	182	A
1	A	183	C
1	A	189	A
1	A	197	A
1	A	204	G
1	A	226	G
1	A	240	G
1	A	245	U
1	A	247	G
1	A	251	G
1	A	266	G
1	A	267	C
1	A	271	C
1	A	280	C
1	A	289	G
1	A	321	A
1	A	328	C
1	A	345	C
1	A	352	C
1	A	354	G
1	A	367	U
1	A	372	C
1	A	373	A
1	A	384	G

Continued from previous page...

Mol	Chain	Res	Type
1	A	406	G
1	A	411	A
1	A	412	A
1	A	413	G
1	A	414	A
1	A	415	A
1	A	417	G
1	A	421	U
1	A	422	C
1	A	423	G
1	A	424	G
1	A	429	U
1	A	436	C
1	A	446	G
1	A	453	G
1	A	456	A
1	A	457	G
1	A	458	U
1	A	459	A
1	A	463	U
1	A	465	A
1	A	467	U
1	A	468	A
1	A	469	C
1	A	474	G
1	A	478	A
1	A	479	U
1	A	481	G
1	A	484	G
1	A	486	U
1	A	490	C
1	A	495	A
1	A	511	C
1	A	518	C
1	A	531	U
1	A	532	A
1	A	547	A
1	A	562	U
1	A	572	A
1	A	573	A
1	A	576	C
1	A	577	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	579	A
1	A	596	A
1	A	615	G
1	A	633	G
1	A	648	A
1	A	650	G
1	A	653	U
1	A	665	A
1	A	702	A
1	A	723	U
1	A	724	G
1	A	746	A
1	A	747	A
1	A	748	G
1	A	755	G
1	A	774	G
1	A	777	A
1	A	793	U
1	A	794	A
1	A	815	A
1	A	817	C
1	A	840	C
1	A	890	G
1	A	914	A
1	A	934	C
1	A	935	A
1	A	960	U
1	A	966	2MG
1	A	969	A
1	A	971	G
1	A	975	A
1	A	976	G
1	A	977	A
1	A	984	C
1	A	993	G
1	A	994	A
1	A	998	C
1	A	1004	A
1	A	1006	G
1	A	1008	U
1	A	1009	U
1	A	1024	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	1027	C
1	A	1030	U
1	A	1031	C
1	A	1032	G
1	A	1033	G
1	A	1034	G
1	A	1036	A
1	A	1044	A
1	A	1045	C
1	A	1046	A
1	A	1065	U
1	A	1085	U
1	A	1094	G
1	A	1095	U
1	A	1101	A
1	A	1137	C
1	A	1139	G
1	A	1143	G
1	A	1144	G
1	A	1159	U
1	A	1169	A
1	A	1196	A
1	A	1197	A
1	A	1213	A
1	A	1214	C
1	A	1227	A
1	A	1238	A
1	A	1256	A
1	A	1275	A
1	A	1280	A
1	A	1286	U
1	A	1287	A
1	A	1300	G
1	A	1302	C
1	A	1317	C
1	A	1320	C
1	A	1338	G
1	A	1346	A
1	A	1353	G
1	A	1363	A
1	A	1370	G
1	A	1378	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	1379	G
1	A	1381	U
1	A	1397	C
1	A	1398	A
1	A	1419	G
1	A	1432	G
1	A	1440	U
1	A	1441	A
1	A	1442	G
1	A	1444	U
1	A	1446	A
1	A	1451	U
1	A	1452	C
1	A	1453	G
1	A	1487	G
1	A	1492	A
1	A	1497	G
1	A	1503	A
1	A	1505	G
1	A	1506	U
1	A	1517	G
1	A	1529	G
1	A	1530	G
1	A	1533	C
1	A	1534	A
22	a	10	A
22	a	15	G
22	a	34	U
22	a	42	A
22	a	45	G
22	a	58	G
22	a	71	A
22	a	74	A
22	a	75	G
22	a	80	G
22	a	84	A
22	a	101	A
22	a	102	U
22	a	110	G
22	a	118	A
22	a	119	A
22	a	120	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	139	U
22	a	140	C
22	a	142	A
22	a	163	C
22	a	165	A
22	a	181	A
22	a	196	A
22	a	215	G
22	a	216	A
22	a	221	A
22	a	222	A
22	a	248	G
22	a	264	C
22	a	265	A
22	a	272	A
22	a	274	C
22	a	278	A
22	a	279	A
22	a	282	A
22	a	285	G
22	a	286	U
22	a	289	G
22	a	292	U
22	a	294	A
22	a	311	A
22	a	329	G
22	a	330	A
22	a	345	A
22	a	357	C
22	a	361	G
22	a	362	A
22	a	386	G
22	a	404	A
22	a	405	U
22	a	411	G
22	a	412	A
22	a	451	U
22	a	481	G
22	a	491	G
22	a	503	A
22	a	504	A
22	a	505	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	509	C
22	a	528	A
22	a	530	G
22	a	531	C
22	a	532	A
22	a	533	G
22	a	543	G
22	a	544	C
22	a	545	U
22	a	546	U
22	a	547	A
22	a	549	G
22	a	563	A
22	a	573	U
22	a	575	A
22	a	603	A
22	a	614	A
22	a	615	U
22	a	627	A
22	a	637	A
22	a	645	C
22	a	646	U
22	a	647	G
22	a	653	U
22	a	654	A
22	a	655	A
22	a	685	A
22	a	686	U
22	a	714	U
22	a	717	C
22	a	721	A
22	a	730	A
22	a	747	5MU
22	a	764	A
22	a	765	C
22	a	775	G
22	a	776	G
22	a	782	A
22	a	784	G
22	a	785	G
22	a	789	A
22	a	805	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	812	C
22	a	827	U
22	a	828	U
22	a	846	U
22	a	847	U
22	a	856	G
22	a	859	G
22	a	869	G
22	a	879	G
22	a	883	G
22	a	884	U
22	a	885	C
22	a	890	C
22	a	891	G
22	a	895	U
22	a	896	A
22	a	897	C
22	a	898	C
22	a	899	A
22	a	905	A
22	a	910	A
22	a	914	G
22	a	915	C
22	a	946	C
22	a	961	C
22	a	974	G
22	a	983	A
22	a	984	A
22	a	985	C
22	a	996	A
22	a	1012	U
22	a	1013	C
22	a	1017	G
22	a	1022	G
22	a	1033	U
22	a	1041	G
22	a	1045	C
22	a	1046	A
22	a	1047	G
22	a	1048	A
22	a	1051	G
22	a	1108	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	1111	A
22	a	1112	G
22	a	1115	G
22	a	1116	G
22	a	1120	G
22	a	1122	G
22	a	1132	U
22	a	1133	A
22	a	1135	C
22	a	1142	A
22	a	1171	G
22	a	1227	G
22	a	1253	A
22	a	1256	G
22	a	1271	G
22	a	1272	A
22	a	1275	A
22	a	1294	U
22	a	1300	G
22	a	1301	A
22	a	1352	U
22	a	1365	A
22	a	1379	U
22	a	1383	A
22	a	1411	U
22	a	1416	G
22	a	1417	C
22	a	1420	A
22	a	1421	G
22	a	1427	A
22	a	1428	C
22	a	1452	G
22	a	1453	A
22	a	1468	U
22	a	1476	U
22	a	1482	G
22	a	1486	U
22	a	1487	U
22	a	1493	C
22	a	1497	U
22	a	1504	A
22	a	1508	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	1509	A
22	a	1510	G
22	a	1515	A
22	a	1529	G
22	a	1534	U
22	a	1535	A
22	a	1536	C
22	a	1537	G
22	a	1554	U
22	a	1559	U
22	a	1566	A
22	a	1569	A
22	a	1578	U
22	a	1583	A
22	a	1584	U
22	a	1585	C
22	a	1586	A
22	a	1590	A
22	a	1593	A
22	a	1608	A
22	a	1609	A
22	a	1647	U
22	a	1648	U
22	a	1649	G
22	a	1674	G
22	a	1715	G
22	a	1722	A
22	a	1729	U
22	a	1730	C
22	a	1731	G
22	a	1732	C
22	a	1733	G
22	a	1736	U
22	a	1738	G
22	a	1750	G
22	a	1764	C
22	a	1773	A
22	a	1782	U
22	a	1791	A
22	a	1800	C
22	a	1801	A
22	a	1808	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	1816	C
22	a	1829	A
22	a	1847	A
22	a	1858	A
22	a	1867	G
22	a	1868	C
22	a	1870	C
22	a	1871	A
22	a	1873	G
22	a	1906	G
22	a	1907	G
22	a	1929	G
22	a	1930	G
22	a	1937	A
22	a	1938	A
22	a	1955	U
22	a	1965	C
22	a	1967	C
22	a	1970	A
22	a	1971	U
22	a	1972	G
22	a	1991	U
22	a	1993	U
22	a	2020	A
22	a	2023	C
22	a	2031	A
22	a	2033	A
22	a	2043	C
22	a	2055	C
22	a	2056	G
22	a	2060	A
22	a	2061	G
22	a	2062	A
22	a	2069	G7M
22	a	2194	U
22	a	2198	A
22	a	2203	U
22	a	2204	G
22	a	2208	C
22	a	2211	A
22	a	2223	G
22	a	2225	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	2238	G
22	a	2268	A
22	a	2279	G
22	a	2282	G
22	a	2283	C
22	a	2287	A
22	a	2305	U
22	a	2308	G
22	a	2322	A
22	a	2325	G
22	a	2333	A
22	a	2335	A
22	a	2347	C
22	a	2350	C
22	a	2377	A
22	a	2383	G
22	a	2385	C
22	a	2402	U
22	a	2403	C
22	a	2406	A
22	a	2424	C
22	a	2425	A
22	a	2429	G
22	a	2435	A
22	a	2441	U
22	a	2448	A
22	a	2470	G
22	a	2476	A
22	a	2478	A
22	a	2491	U
22	a	2502	G
22	a	2505	G
22	a	2518	A
22	a	2529	G
22	a	2535	G
22	a	2547	A
22	a	2554	U
22	a	2566	A
22	a	2567	G
22	a	2573	C
22	a	2585	U
22	a	2586	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	a	2602	A
22	a	2603	G
22	a	2609	U
22	a	2613	U
22	a	2629	U
22	a	2670	A
22	a	2689	U
22	a	2690	U
22	a	2714	G
22	a	2716	C
22	a	2726	A
22	a	2733	A
22	a	2744	G
22	a	2748	A
22	a	2751	G
22	a	2752	C
22	a	2757	A
22	a	2765	A
22	a	2778	A
22	a	2790	U
22	a	2792	A
22	a	2795	C
22	a	2798	U
22	a	2799	A
22	a	2802	G
22	a	2820	A
22	a	2821	A
22	a	2835	A
22	a	2873	A
22	a	2883	A
22	a	2884	U
22	a	2891	U
22	a	2899	A
22	a	2901	C
22	a	2902	C
23	b	9	G
23	b	13	G
23	b	34	A
23	b	35	C
23	b	36	C
23	b	45	A
23	b	56	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
23	b	57	A
23	b	67	G
23	b	89	U
23	b	90	C
23	b	99	A
23	b	109	A
53	X	15	A
53	X	24	A
54	Y	3	G
54	Y	5	G
54	Y	6	A
54	Y	8	U
54	Y	9	A
54	Y	11	C
54	Y	13	C
54	Y	14	A
54	Y	19	G
54	Y	20	G
54	Y	21	A
54	Y	23	A
54	Y	24	G
54	Y	25	C
54	Y	45	G
54	Y	46	G
54	Y	47	U
54	Y	48	C
54	Y	49	G
54	Y	50	G
54	Y	57	G
54	Y	59	U
54	Y	60	C
54	Y	61	C
54	Y	66	A
54	Y	67	U
54	Y	70	C
54	Y	71	C
54	Y	73	A
54	Y	74	C
54	Y	75	C
55	Z	6	G
55	Z	8	U
55	Z	9	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
55	Z	14	A
55	Z	16	C
55	Z	17	C
55	Z	17(A)	U
55	Z	18	G
55	Z	19	G
55	Z	20	U
55	Z	21	A
55	Z	22	G
55	Z	46	G
55	Z	47	U
55	Z	49	G
55	Z	50	U
55	Z	52	G
55	Z	54	U
55	Z	56	C
55	Z	58	A
55	Z	59	A
55	Z	65	C
55	Z	66	C
55	Z	68	C
55	Z	69	C
55	Z	71	C
55	Z	76	A
56	5	76	A

All (13) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	5	U
1	A	199	A
1	A	250	A
1	A	993	G
1	A	1026	G
1	A	1035	A
54	Y	13	C
54	Y	19	G
54	Y	45	G
54	Y	46	G
54	Y	48	C
54	Y	60	C
55	Z	58	A

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

40 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
1	2MG	A	966	1	18,26,27	1.07	2 (11%)	16,38,41	0.67	0
12	D2T	L	89	12	7,9,10	1.04	0	6,11,13	1.64	3 (50%)
22	2MG	a	2445	22	18,26,27	1.04	2 (11%)	16,38,41	0.78	0
22	PSU	a	1911	22	18,21,22	1.02	1 (5%)	22,30,33	0.74	0
1	5MC	A	967	1	18,22,23	0.44	0	26,32,35	0.77	0
22	OMG	a	2251	55,22	18,26,27	1.02	2 (11%)	19,38,41	0.74	0
22	1MG	a	745	22	18,26,27	1.07	2 (11%)	19,39,42	0.49	0
33	4D4	l	81	33	9,11,12	0.50	0	8,13,15	0.70	0
22	5MU	a	747	22	19,22,23	0.44	0	28,32,35	0.51	0
22	PSU	a	1917	22	18,21,22	1.01	1 (5%)	22,30,33	0.77	1 (4%)
1	5MC	A	1407	1	18,22,23	0.45	0	26,32,35	0.86	0
25	MEQ	d	150	25	8,9,10	0.45	0	5,10,12	1.71	2 (40%)
1	2MG	A	1516	1	18,26,27	1.03	1 (5%)	16,38,41	0.80	0
22	6MZ	a	1618	22	18,25,26	0.74	0	16,36,39	0.84	1 (6%)
22	PSU	a	2457	22	18,21,22	1.00	1 (5%)	22,30,33	0.75	0
22	PSU	a	746	22	18,21,22	1.16	1 (5%)	22,30,33	0.84	0
22	2MG	a	1835	22	18,26,27	1.02	2 (11%)	16,38,41	0.67	0
33	MS6	l	82	33	5,7,8	0.30	0	2,7,9	0.43	0
1	4OC	A	1402	1	20,23,24	0.49	0	26,32,35	0.82	1 (3%)
1	2MG	A	1207	1	18,26,27	1.02	1 (5%)	16,38,41	0.79	0
1	MA6	A	1518	1	18,26,27	0.85	1 (5%)	19,38,41	0.47	0
22	PSU	a	955	22	18,21,22	0.99	1 (5%)	22,30,33	0.75	0
11	IAS	K	119	11	6,7,8	0.94	0	6,8,10	1.02	0
1	MA6	A	1519	1	18,26,27	0.85	1 (5%)	19,38,41	0.79	0
22	PSU	a	2605	22	18,21,22	1.03	1 (5%)	22,30,33	0.89	0
22	6MZ	a	2030	22	18,25,26	0.70	0	16,36,39	0.87	1 (6%)
22	3TD	a	1915	22	19,22,23	1.03	1 (5%)	21,32,35	1.00	2 (9%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
1	G7M	A	527	1	20,26,27	1.12	2 (10%)	17,39,42	0.72	0
22	OMC	a	2498	22	19,22,23	0.42	0	26,31,34	0.74	0
22	OMU	a	2552	22	19,22,23	0.36	0	26,31,34	0.50	0
22	G7M	a	2069	22	20,26,27	1.07	2 (10%)	17,39,42	0.75	0
1	PSU	A	516	1	18,21,22	1.02	1 (5%)	22,30,33	0.73	0
22	PSU	a	2580	22	18,21,22	1.00	1 (5%)	22,30,33	0.83	1 (4%)
22	PSU	a	2604	22	18,21,22	1.03	1 (5%)	22,30,33	0.90	0
1	UR3	A	1498	1	19,22,23	0.41	0	26,32,35	0.83	2 (7%)
22	PSU	a	2504	22	18,21,22	0.98	1 (5%)	22,30,33	0.74	0
22	5MC	a	1962	22	18,22,23	0.44	0	26,32,35	0.84	1 (3%)
22	5MU	a	1939	22	19,22,23	0.42	0	28,32,35	0.50	0
22	2MA	a	2503	22	19,25,26	1.15	2 (10%)	21,37,40	2.00	5 (23%)
22	H2U	a	2449	22	18,21,22	0.86	1 (5%)	21,30,33	0.78	1 (4%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	2MG	A	966	1	-	0/5/27/28	0/3/3/3
12	D2T	L	89	12	-	2/7/12/14	-
22	2MG	a	2445	22	-	1/5/27/28	0/3/3/3
22	PSU	a	1911	22	-	0/7/25/26	0/2/2/2
1	5MC	A	967	1	-	0/7/25/26	0/2/2/2
22	OMG	a	2251	55,22	-	0/5/27/28	0/3/3/3
22	1MG	a	745	22	-	0/3/25/26	0/3/3/3
33	4D4	l	81	33	-	1/11/12/14	-
22	5MU	a	747	22	-	0/7/25/26	0/2/2/2
22	PSU	a	1917	22	-	0/7/25/26	0/2/2/2
1	5MC	A	1407	1	-	0/7/25/26	0/2/2/2
25	MEQ	d	150	25	-	2/8/9/11	-
1	2MG	A	1516	1	-	0/5/27/28	0/3/3/3
22	6MZ	a	1618	22	-	0/5/27/28	0/3/3/3
22	PSU	a	2457	22	-	0/7/25/26	0/2/2/2
22	PSU	a	746	22	-	1/7/25/26	0/2/2/2
22	2MG	a	1835	22	-	0/5/27/28	0/3/3/3
33	MS6	l	82	33	-	0/4/6/8	-
1	4OC	A	1402	1	-	0/9/29/30	0/2/2/2
1	2MG	A	1207	1	-	0/5/27/28	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	MA6	A	1518	1	-	0/7/29/30	0/3/3/3
22	PSU	a	955	22	-	0/7/25/26	0/2/2/2
11	IAS	K	119	11	-	0/7/7/8	-
1	MA6	A	1519	1	-	<mark>2/7/29/30</mark>	0/3/3/3
22	PSU	a	2605	22	-	0/7/25/26	0/2/2/2
22	6MZ	a	2030	22	-	<mark>2/5/27/28</mark>	0/3/3/3
22	3TD	a	1915	22	-	0/7/25/26	0/2/2/2
1	G7M	A	527	1	-	1/3/25/26	0/3/3/3
22	OMC	a	2498	22	-	0/9/27/28	0/2/2/2
22	OMU	a	2552	22	-	1/9/27/28	0/2/2/2
22	G7M	a	2069	22	-	<mark>2/3/25/26</mark>	0/3/3/3
1	PSU	A	516	1	-	0/7/25/26	0/2/2/2
22	PSU	a	2580	22	-	0/7/25/26	0/2/2/2
22	PSU	a	2604	22	-	0/7/25/26	0/2/2/2
1	UR3	A	1498	1	-	0/7/25/26	0/2/2/2
22	PSU	a	2504	22	-	<mark>2/7/25/26</mark>	0/2/2/2
22	5MC	a	1962	22	-	0/7/25/26	0/2/2/2
22	5MU	a	1939	22	-	0/7/25/26	0/2/2/2
22	2MA	a	2503	22	-	<mark>2/3/25/26</mark>	0/3/3/3
22	H2U	a	2449	22	-	0/7/38/39	0/2/2/2

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	a	746	PSU	C6-C5	4.46	1.40	1.35
22	a	2605	PSU	C6-C5	4.07	1.40	1.35
1	A	516	PSU	C6-C5	4.06	1.40	1.35
22	a	1911	PSU	C6-C5	4.04	1.40	1.35
22	a	2580	PSU	C6-C5	4.02	1.40	1.35
22	a	1917	PSU	C6-C5	4.00	1.40	1.35
22	a	2604	PSU	C6-C5	3.97	1.39	1.35
22	a	2457	PSU	C6-C5	3.96	1.39	1.35
22	a	1915	3TD	C6-C5	3.93	1.39	1.35
22	a	955	PSU	C6-C5	3.91	1.39	1.35
22	a	2504	PSU	C6-C5	3.91	1.39	1.35
1	A	527	G7M	C8-N9	3.62	1.39	1.33
22	a	2069	G7M	C8-N9	3.51	1.39	1.33
22	a	2503	2MA	C6-N1	2.86	1.39	1.33
22	a	745	1MG	C6-N1	2.68	1.44	1.39
22	a	2251	OMG	C5-C6	-2.57	1.42	1.47
22	a	2503	2MA	C2-N1	2.43	1.38	1.34

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1519	MA6	C6-N1	2.42	1.36	1.33
1	A	1518	MA6	C6-N1	2.40	1.36	1.33
22	a	2445	2MG	C5-C6	-2.34	1.42	1.47
1	A	966	2MG	C5-C6	-2.33	1.42	1.47
22	a	2449	H2U	C2-N1	2.31	1.38	1.35
22	a	745	1MG	C5-C4	-2.30	1.37	1.43
22	a	2069	G7M	C8-N7	2.28	1.37	1.33
1	A	527	G7M	C8-N7	2.28	1.37	1.33
22	a	1835	2MG	C5-C6	-2.27	1.42	1.47
1	A	1516	2MG	C5-C6	-2.24	1.42	1.47
22	a	2251	OMG	C8-N7	-2.17	1.31	1.35
1	A	966	2MG	C8-N7	-2.16	1.31	1.35
22	a	1835	2MG	C8-N7	-2.13	1.31	1.35
1	A	1207	2MG	C5-C6	-2.12	1.43	1.47
22	a	2445	2MG	C8-N7	-2.03	1.31	1.35

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
22	a	2503	2MA	C5-C6-N1	-6.76	116.57	121.01
22	a	2503	2MA	C5-C6-N6	3.64	125.89	120.35
22	a	2503	2MA	CM2-C2-N1	3.24	122.22	117.15
22	a	2030	6MZ	C2-N1-C6	2.49	118.72	116.59
22	a	2503	2MA	C2-N1-C6	2.36	121.76	118.08
25	d	150	MEQ	CG-CD-NE2	2.31	119.50	116.29
25	d	150	MEQ	OE1-CD-CG	-2.30	117.81	122.02
12	L	89	D2T	O-C-CA	-2.29	118.77	124.78
1	A	1498	UR3	C4-N3-C2	-2.29	122.41	124.56
12	L	89	D2T	OD2-CG-CB	2.25	118.01	113.15
1	A	1498	UR3	C6-N1-C2	-2.22	119.80	121.79
12	L	89	D2T	OD1-CG-CB	-2.16	117.91	122.44
22	a	2449	H2U	C4-N3-C2	-2.16	124.00	125.79
22	a	1915	3TD	C4-N3-C2	-2.15	122.28	124.61
22	a	2503	2MA	N3-C2-N1	-2.14	121.82	125.73
1	A	1402	4OC	O2'-C2'-C1'	2.14	113.25	109.08
22	a	1915	3TD	O2'-C2'-C3'	2.12	118.69	111.82
22	a	1618	6MZ	C2-N1-C6	2.11	118.40	116.59
22	a	1917	PSU	O2'-C2'-C3'	2.10	118.63	111.82
22	a	1962	5MC	CM5-C5-C6	-2.08	120.07	122.85
22	a	2580	PSU	C3'-C2'-C1'	2.04	104.02	101.64

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
12	L	89	D2T	CG-CB-SB-CB1
22	a	2030	6MZ	O4'-C4'-C5'-O5'
25	d	150	MEQ	NE2-CD-CG-CB
25	d	150	MEQ	OE1-CD-CG-CB
22	a	2030	6MZ	C3'-C4'-C5'-O5'
1	A	1519	MA6	O4'-C4'-C5'-O5'
22	a	2504	PSU	O4'-C4'-C5'-O5'
22	a	2069	G7M	C4'-C5'-O5'-P
12	L	89	D2T	CA-CB-SB-CB1
22	a	2503	2MA	C4'-C5'-O5'-P
22	a	2445	2MG	C3'-C4'-C5'-O5'
22	a	2504	PSU	C3'-C4'-C5'-O5'
22	a	746	PSU	O4'-C1'-C5-C6
1	A	527	G7M	C4'-C5'-O5'-P
22	a	2552	OMU	C3'-C2'-O2'-CM2
1	A	1519	MA6	C3'-C4'-C5'-O5'
22	a	2069	G7M	O4'-C4'-C5'-O5'
22	a	2503	2MA	O4'-C4'-C5'-O5'
33	l	81	4D4	O-C-CA-CB

There are no ring outliers.

4 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	a	747	5MU	1	0
22	a	2030	6MZ	1	0
22	a	2604	PSU	1	0
22	a	1939	5MU	1	0

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7　Other polymers ⓘ

There are no such residues in this entry.

5.8　Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-17959. These allow visual inspection of the internal detail of the map and identification of artifacts.

Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections (i)

6.1.1 Primary map
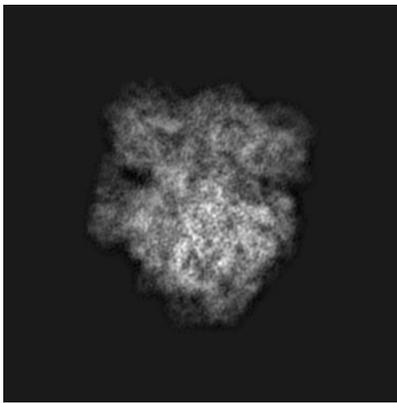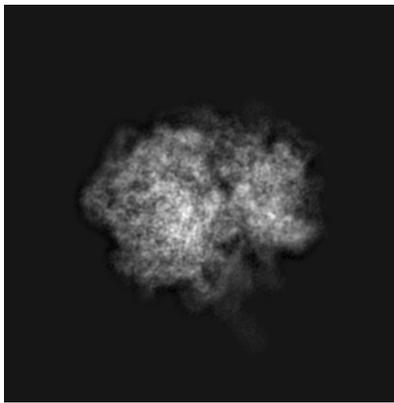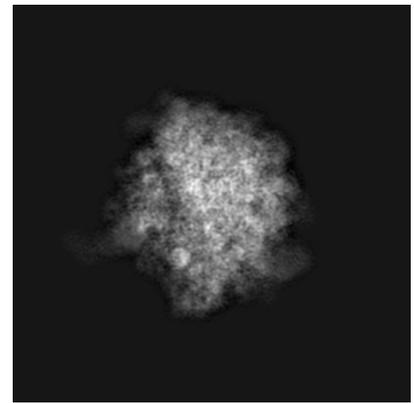
| X | Y | Z |

6.1.2 Raw map

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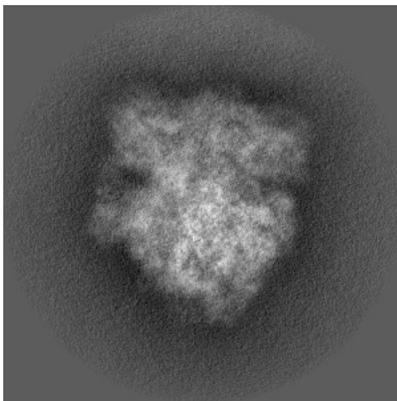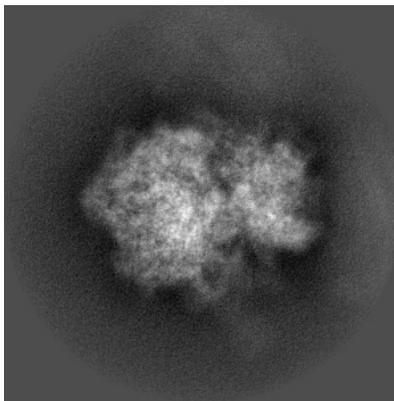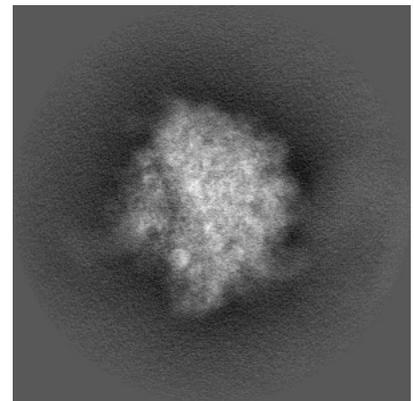
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
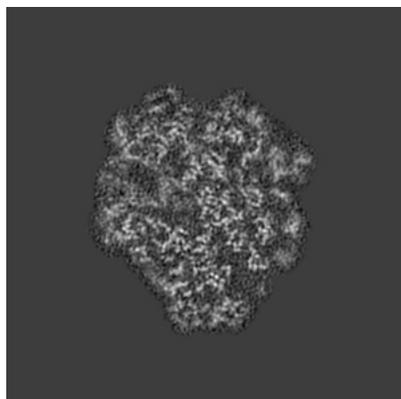
6.2.1 Primary map
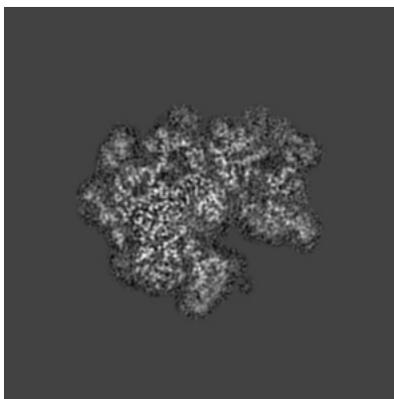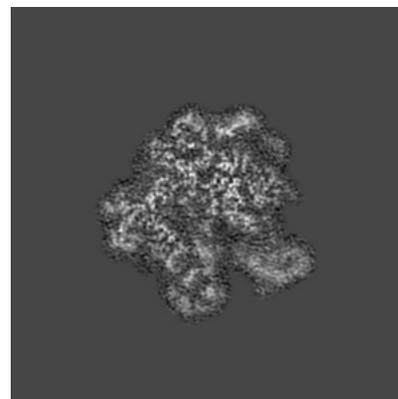
| X Index: 200 | Y Index: 200 | Z Index: 200 |

6.2.2 Raw map
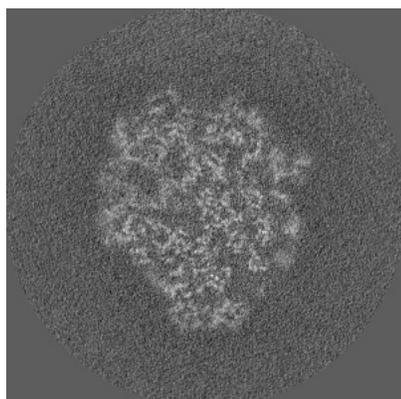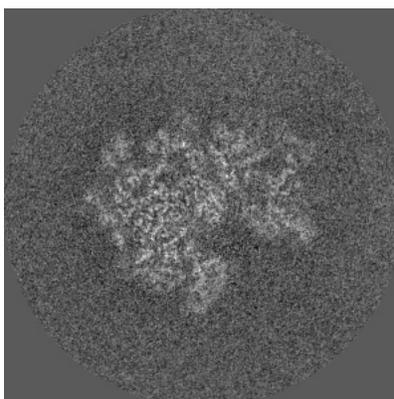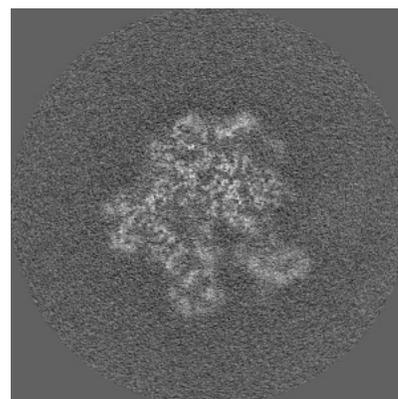
| X Index: 200 | Y Index: 200 | Z Index: 200 |

The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map
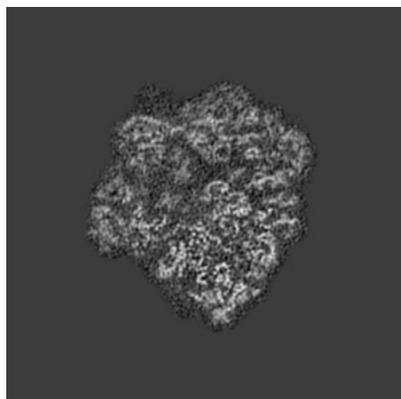
X Index: 185
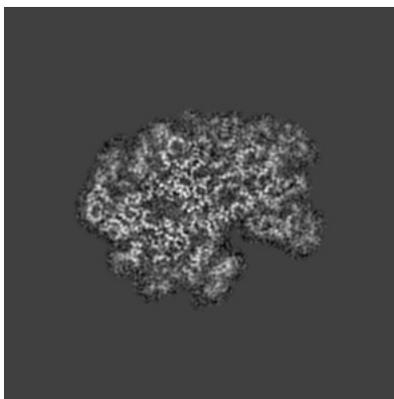
Y Index: 214
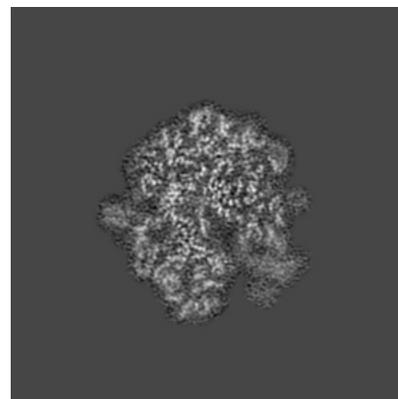
Z Index: 184

6.3.2 Raw map
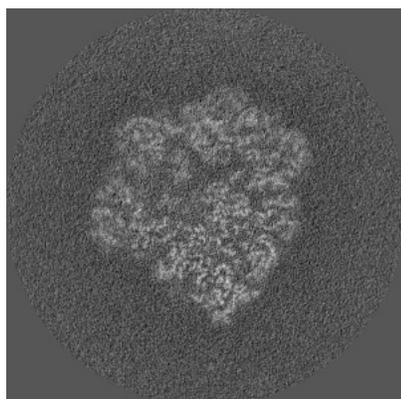
X Index: 184
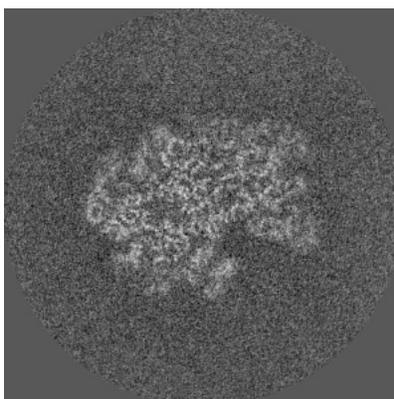
Y Index: 214
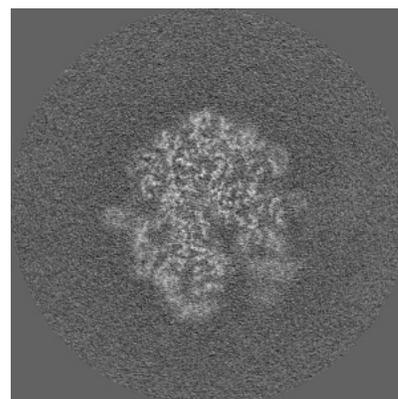
Z Index: 183

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
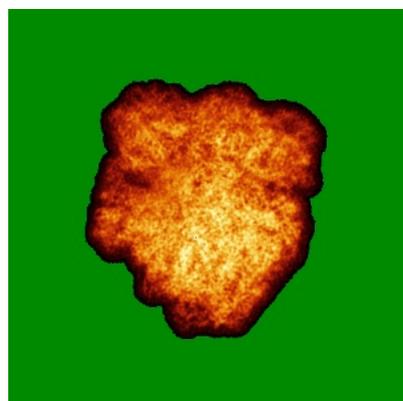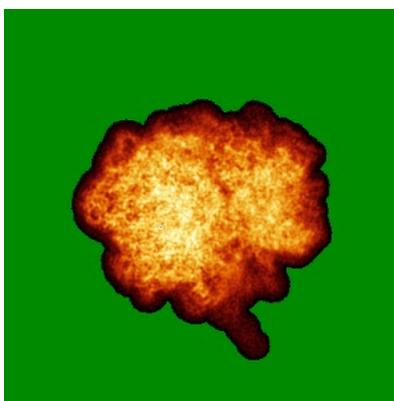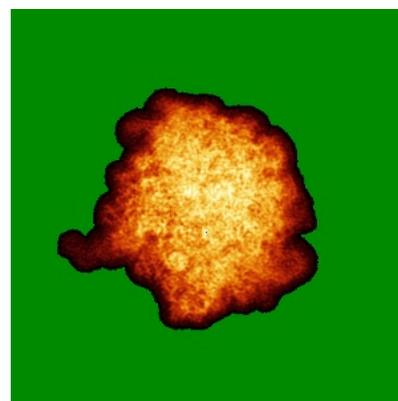
<center>X   Y   Z</center>

6.4.2 Raw map

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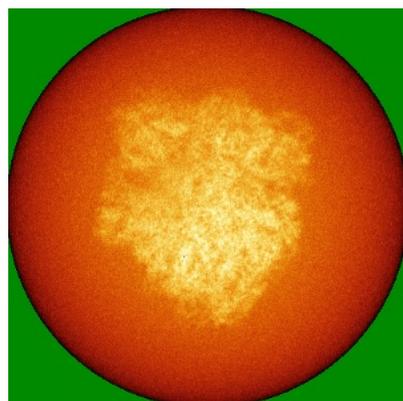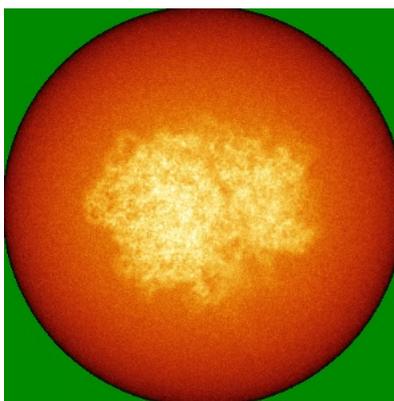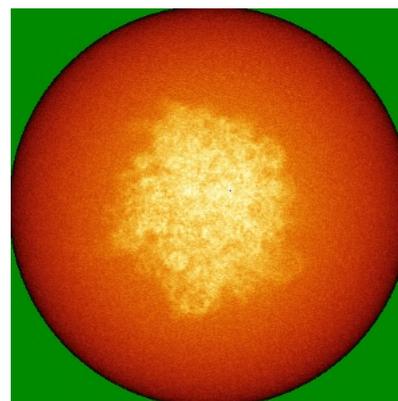
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

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 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map
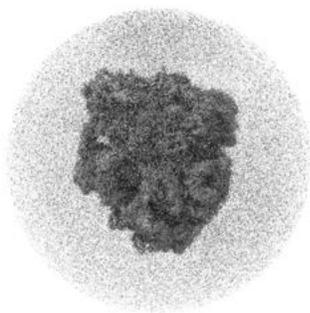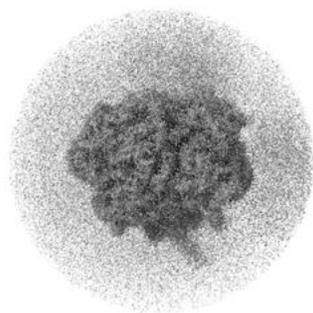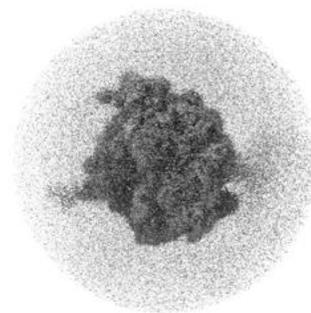
X	Y	Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

- Encompasses the whole structure

- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

6.6.1 emd_17959_msk_1.map ⓘ

X

Y

Z
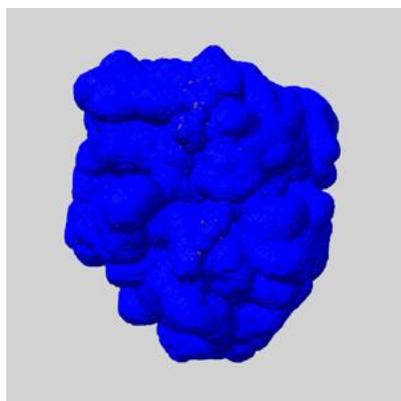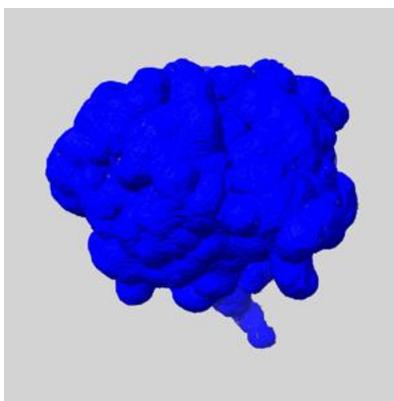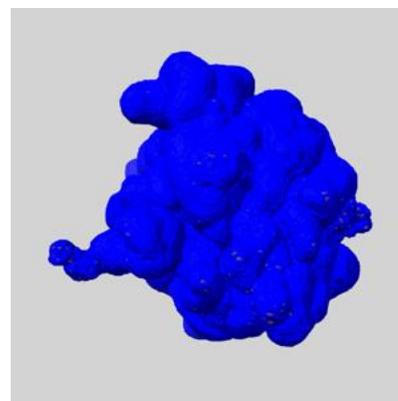
7 Map analysis ⓘ

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 ⓘ
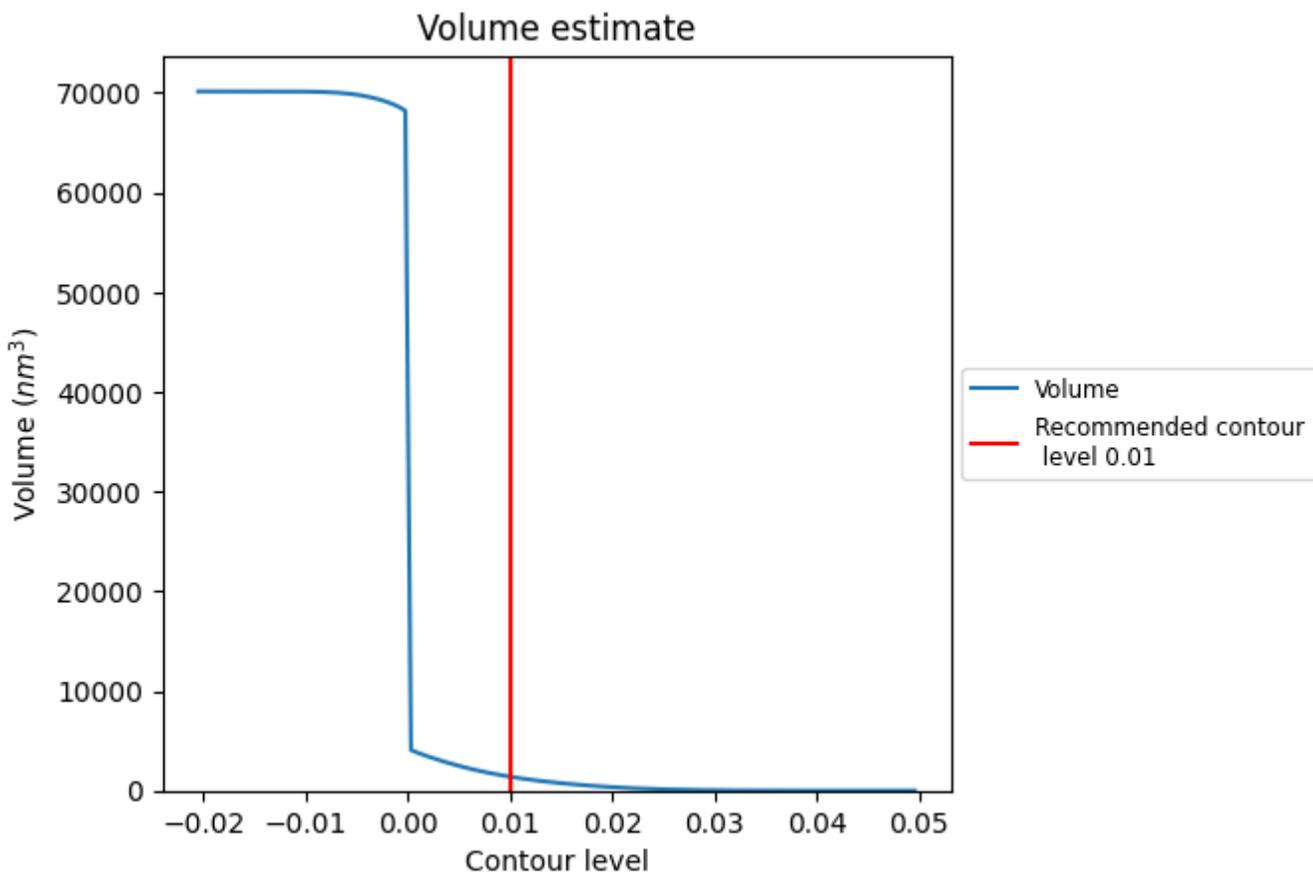
The volume at the recommended contour level is 1400 nm³; this corresponds to an approximate mass of 1264 kDa.

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 ⓘ
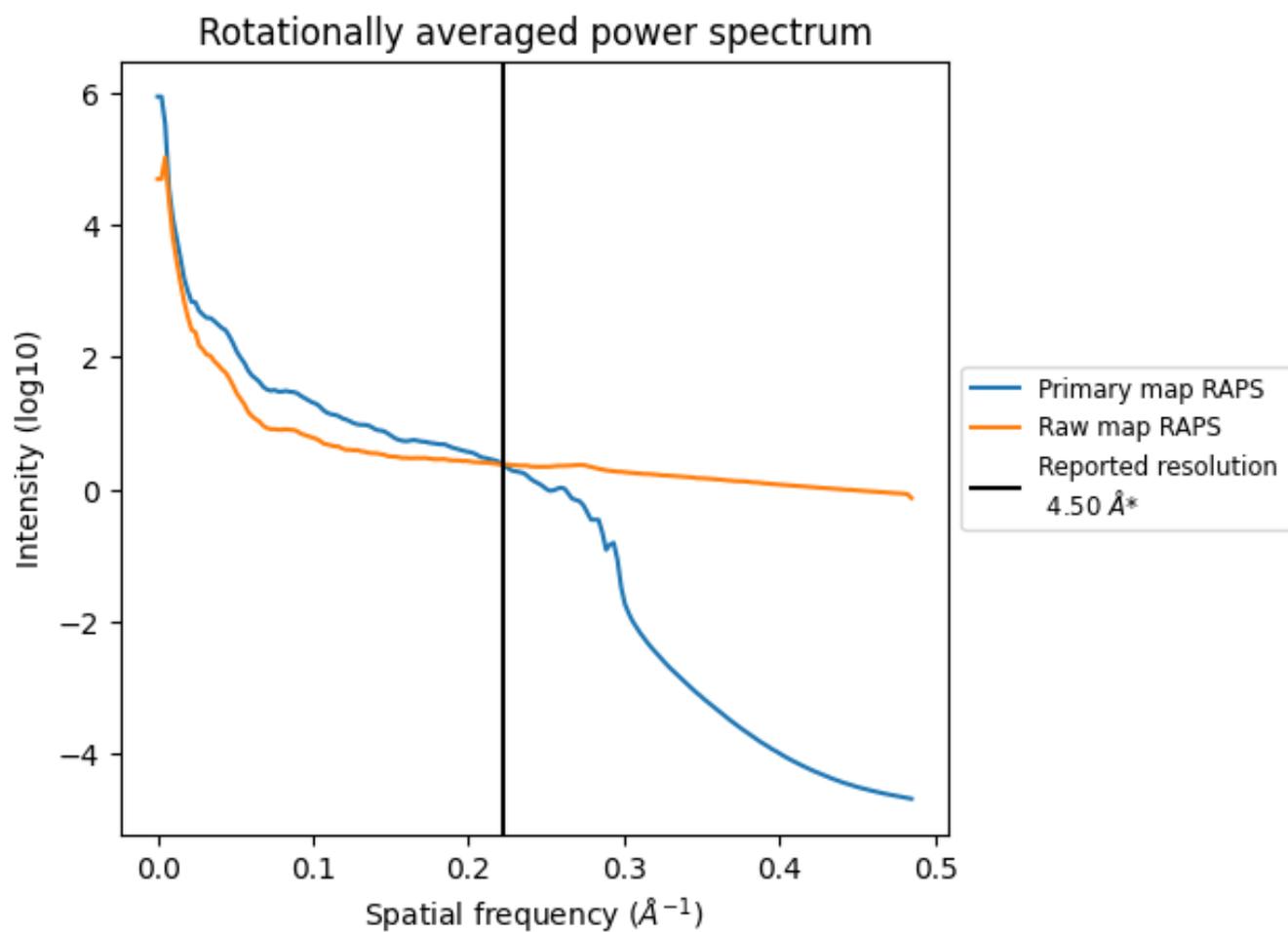
*Reported resolution corresponds to spatial frequency of 0.222 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ
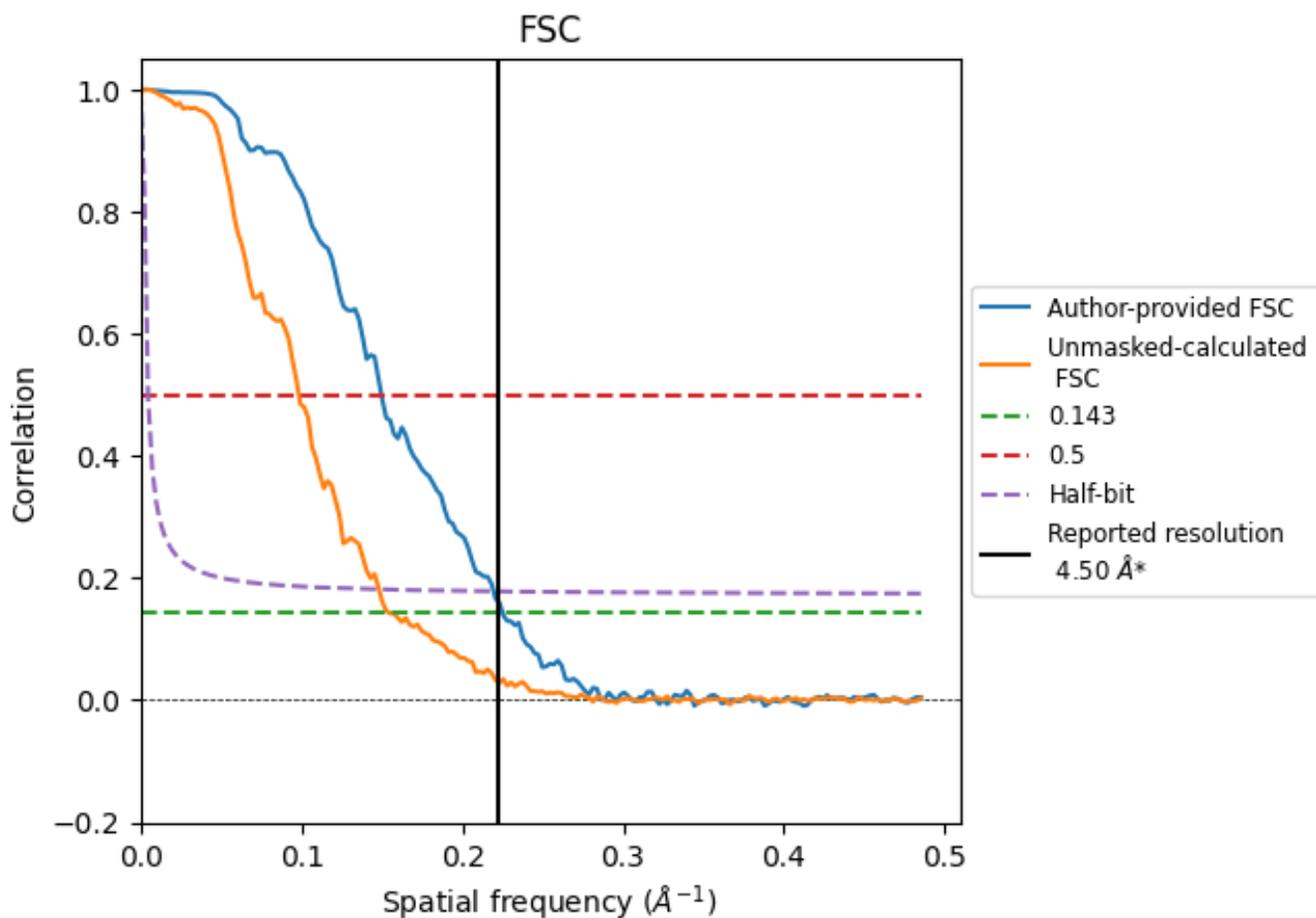
*Reported resolution corresponds to spatial frequency of 0.222 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.50	-	-
Author-provided FSC curve	4.44	6.68	4.56
Unmasked-calculated*	6.47	10.16	6.74

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.47 differs from the reported value 4.5 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-17959 and PDB model 8PVA. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay ⓘ

X   Y   Z
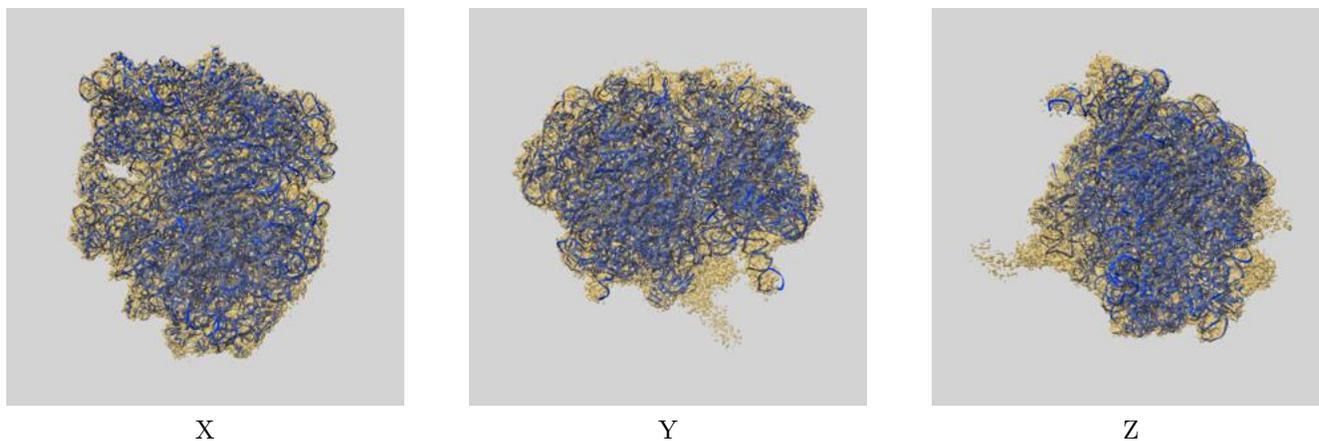
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model   ⓘ


X   Y   Z
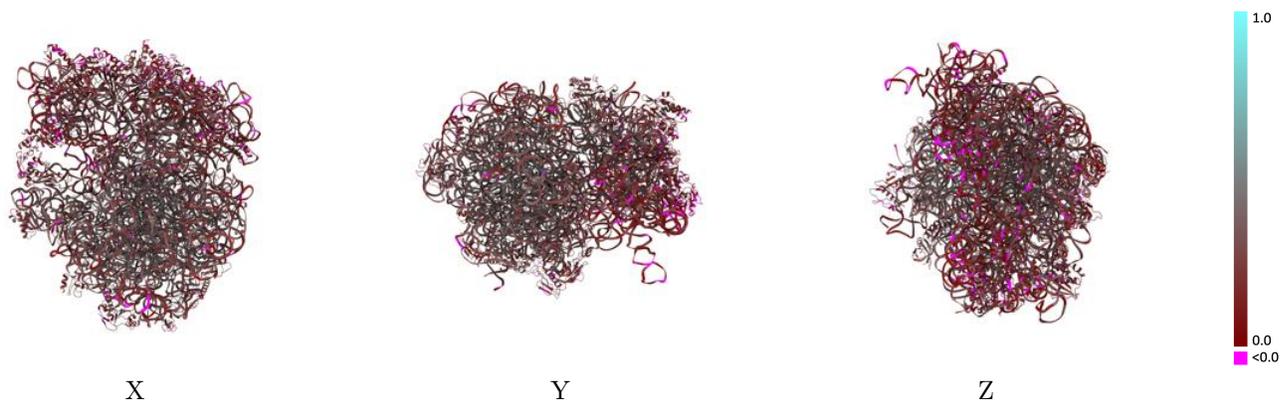
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
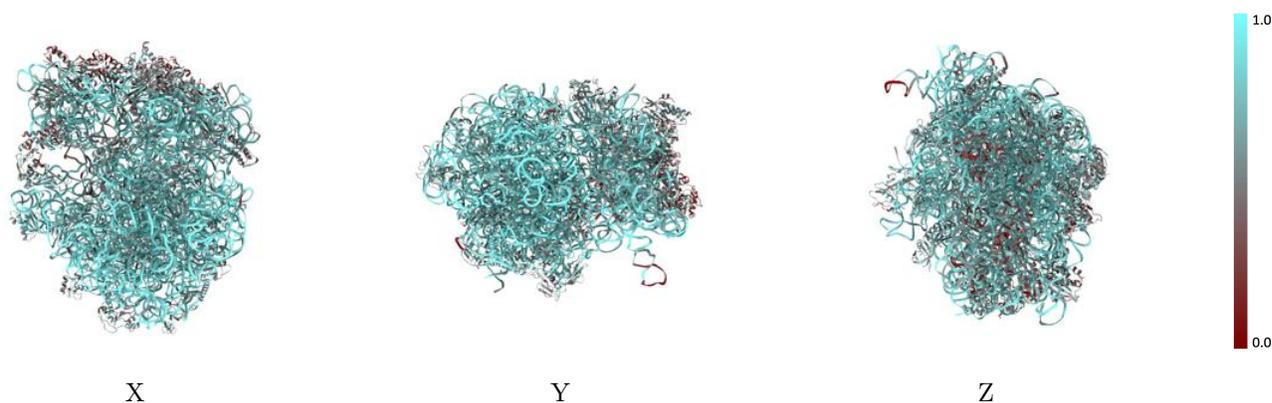
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).
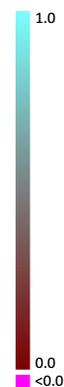
9.4　Atom inclusion ⓘ
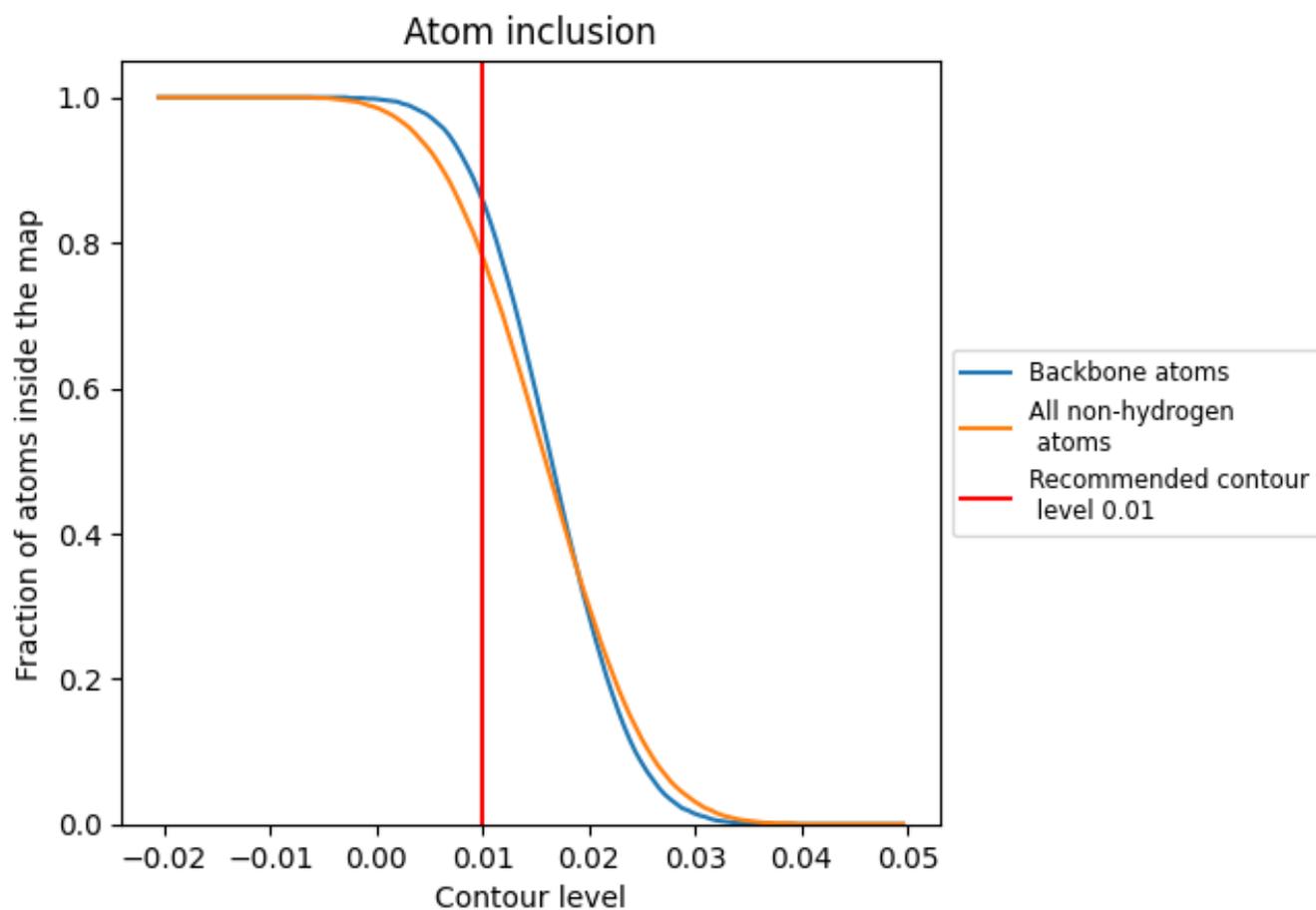
At the recommended contour level, 86% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7810	0.2870
0	0.6240	0.2300
1	0.7520	0.3560
2	0.6970	0.3600
3	0.6890	0.2800
4	0.4750	0.1650
5	0.7140	0.3100
A	0.8230	0.2540
B	0.4910	0.1880
C	0.4500	0.1830
D	0.3740	0.1230
E	0.5410	0.2140
F	0.5560	0.2540
G	0.5080	0.1960
H	0.5710	0.2020
I	0.5300	0.2130
J	0.4440	0.1720
K	0.6160	0.2990
L	0.5500	0.1700
M	0.5060	0.1700
N	0.5210	0.1640
O	0.6380	0.2370
P	0.4890	0.1670
Q	0.5440	0.1790
R	0.5990	0.2830
S	0.5260	0.1360
T	0.5510	0.1550
U	0.4870	0.2210
X	0.6310	0.2330
Y	0.5350	0.1650
Z	0.6540	0.1760
a	0.9000	0.3420
b	0.9030	0.2940
c	0.6910	0.3340
d	0.6800	0.3160

1.0

0.0
<0.0

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
e	0.6350	0.3010
f	0.5920	0.2150
g	0.5580	0.1870
h	0.5600	0.2410
i	0.6840	0.3120
j	0.6240	0.2950
k	0.6620	0.3060
l	0.6810	0.3210
m	0.7120	0.3350
n	0.6780	0.2530
o	0.6240	0.2560
p	0.7070	0.3250
q	0.6300	0.2810
r	0.6670	0.3410
s	0.6370	0.3190
t	0.5710	0.2560
u	0.6640	0.2610
v	0.7010	0.3210
w	0.6570	0.3140
x	0.6320	0.2360
y	0.6290	0.2930
z	0.6710	0.3170