



Full wwPDB EM Validation Report ⓘ

Jul 15, 2024 – 01:04 am BST

PDB ID : 7ZUW
EMDB ID : EMD-14978
Title : Structure of RQT (C1) bound to the stalled ribosome in a disome unit from *S. cerevisiae*
Authors : Best, K.M.; Ikeuchi, K.; Kater, L.; Best, D.M.; Musial, J.; Matsuo, Y.; Berninghausen, O.; Becker, T.; Inada, T.; Beckmann, R.
Deposited on : 2022-05-13
Resolution : 4.30 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ 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:

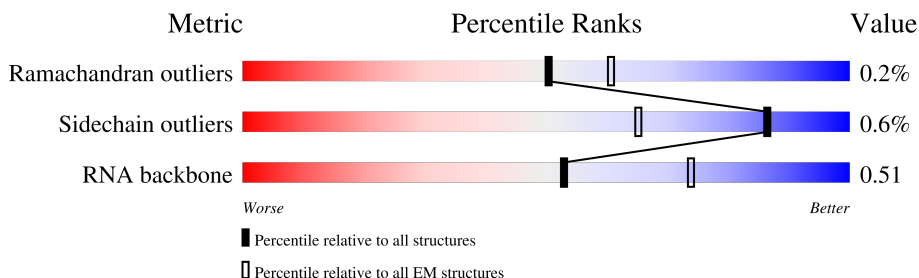
EMDB validation analysis : 0.0.1.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

1 Overall quality at a glance

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

The reported resolution of this entry is 4.30 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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 $\leq 5\%$. 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	2	1800	
2	3	158	
3	4	121	
4	5	3396	
5	6	76	
6	AA	206	
7	AB	255	
8	AC	216	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	AD	222	5% 100%
10	AE	258	98%
11	AF	206	100%
12	AG	228	98%
13	AH	184	99%
14	AI	200	92% 6%
15	AJ	184	99%
16	AK	92	100%
17	AL	144	99%
18	AM	121	10% 97%
19	AN	150	100%
20	AO	127	100%
21	AP	117	99%
22	AQ	141	99%
23	AR	136	89% 11%
24	AS	145	99%
25	AT	143	99%
26	AU	100	98%
27	AV	87	97%
28	AW	129	100%
29	AX	144	99%
30	AY	134	99%
31	AZ	82	16% 100%
32	Aa	97	98%
33	Ab	81	100%

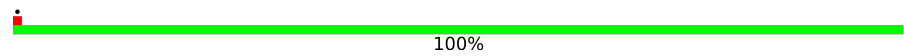
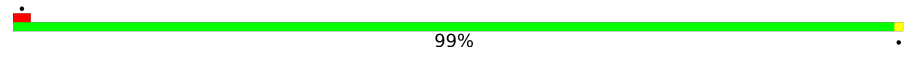
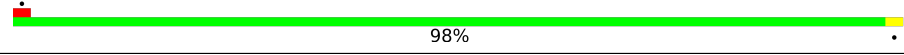
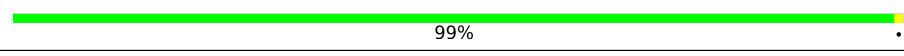
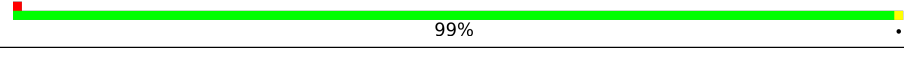
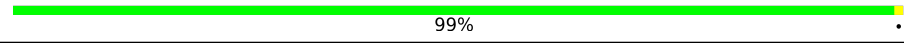
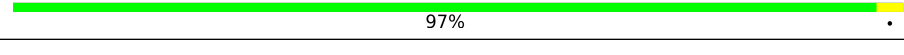
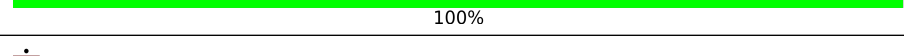
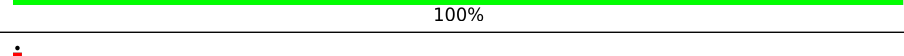
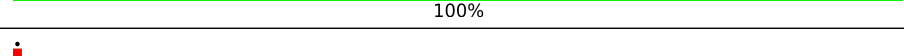
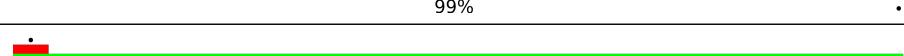
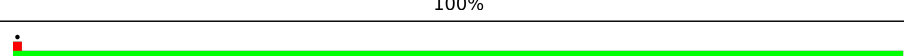
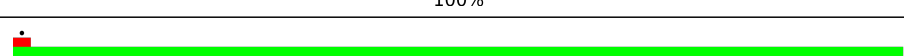
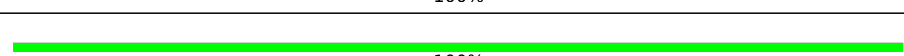
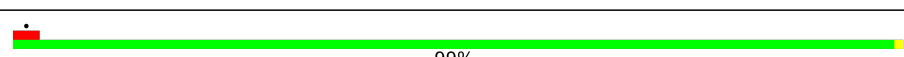
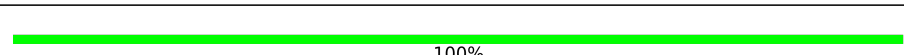


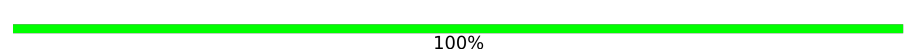
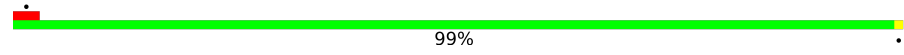
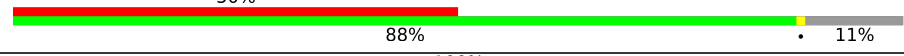
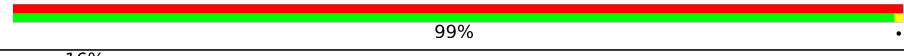


Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
34	Ac	63	5% 98%
35	Ad	53	98%
36	Ae	60	5% 98%
37	Af	73	11% 99%
38	Ag	312	96% 99%
39	BA	251	100%
40	BB	386	99%
41	BC	361	99%
42	BD	294	100%
43	BE	176	94% 5%
44	BF	222	100%
45	BG	233	99%
46	BH	191	100%
47	BI	218	100%
48	BJ	169	100%
49	BK	193	97%
50	BL	136	100%
51	BM	203	100%
52	BN	197	98%
53	BO	183	100%
54	BP	185	99%
55	BQ	188	99%
56	BR	171	100%
57	BS	159	100%
58	BT	100	99%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
59	BU	136	 100%
60	BV	126	 99%
61	BW	121	 98%
62	BX	125	 99%
63	BY	135	 99%
64	BZ	148	 99%
65	Ba	58	 97%
66	Bb	96	 100%
67	Bc	109	 100%
68	Bd	127	 100%
69	Be	106	 99%
70	Bf	112	 100%
71	Bg	119	 100%
72	Bh	99	 100%
73	Bi	85	 100%
74	Bj	77	 99%
75	Bk	50	 100%
76	Bl	52	 100%
77	Bm	25	 100%
78	Bn	103	 100%
79	Bo	91	 99%
80	CA	1967	 50% 88% 11%
81	CB	297	 99%
82	CC	530	 16% 22% 78%

2 Entry composition [i](#)

There are 84 unique types of molecules in this entry. The entry contains 218071 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 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	2	1771	37739	16872	6683	12413	1771	0	0

- Molecule 2 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	3	158	3353	1500	586	1109	158	0	0

- Molecule 3 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	4	121	2579	1152	461	845	121	0	0

- Molecule 4 is a RNA chain called 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	5	3163	67650	30218	12191	22078	3163	0	0

- Molecule 5 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	6	76	1619	722	288	533	76	0	0

- Molecule 6 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	AA	206	1603	1030	284	287	2	0	0

- Molecule 7 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	AB	226	1798	1139	330	325	4	0	0

- Molecule 8 is a protein called RPS2 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	AC	216	1626	1042	287	295	2	0	0

- Molecule 9 is a protein called RPS3 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	AD	222	1729	1098	312	313	6	0	0

- Molecule 10 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	AE	258	2056	1308	387	358	3	0	0

- Molecule 11 is a protein called Rps5p.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	AF	206	1605	1005	299	298	3	0	0

- Molecule 12 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	AG	228	1815	1138	351	323	3	0	0

- Molecule 13 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	AH	184	1473	946	263	264	0	0

- Molecule 14 is a protein called 40S ribosomal protein S8-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	AI	187	1476	916	295	263	2	0	0

- Molecule 15 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	AJ	184	1479	935	285	258	1	0	0

- Molecule 16 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	AK	92	752	487	122	141	2	0	0

- Molecule 17 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	AL	144	1159	742	219	195	3	0	0

- Molecule 18 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	AM	121	875	551	153	169	2	0	0

- Molecule 19 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	AN	150	1192	759	224	207	2	0	0

- Molecule 20 is a protein called 40S ribosomal protein S14-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	AO	127	926	569	185	169	3	0	0

- Molecule 21 is a protein called RPS15 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	AP	117	916	583	171	155	7	0	0

- Molecule 22 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	AQ	141	1105	708	203	194		0	0

- Molecule 23 is a protein called 40S ribosomal protein S17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	AR	121	948	596	179	171	2	0	0

- Molecule 24 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	AS	145	1192	743	237	210	2	0	0

- Molecule 25 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	AT	143	1112	694	208	208	2	0	0

- Molecule 26 is a protein called RPS20 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	AU	100	797	506	144	146	1	0	0

- Molecule 27 is a protein called 40S ribosomal protein S21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	AV	87	673	415	125	131	2	0	0

- Molecule 28 is a protein called RPS22A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	AW	129	Total	C	N	O	S	0	0
			1021	650	188	180	3		

- Molecule 29 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	AX	144	Total	C	N	O	S	0	0
			1121	708	220	191	2		

- Molecule 30 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
30	AY	134	Total	C	N	O	0	0
			1073	676	208	189		

- Molecule 31 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	AZ	82	Total	C	N	O	0	0
			651	416	123	112		

- Molecule 32 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Aa	97	Total	C	N	O	S	0	0
			769	475	160	129	5		

- Molecule 33 is a protein called 40S ribosomal protein S27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Ab	81	Total	C	N	O	S	0	0
			610	382	110	113	5		

- Molecule 34 is a protein called RPS28A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Ac	63	Total	C	N	O	S	0	0
			491	303	96	91	1		

- Molecule 35 is a protein called RPS29A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Ad	53	Total	C	N	O	S	0	0
			442	274	92	72	4		

- Molecule 36 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Ae	60	Total	C	N	O	S	0	0
			472	298	97	76	1		

- Molecule 37 is a protein called RPS31 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Af	73	Total	C	N	O	S	0	0
			556	352	105	95	4		

- Molecule 38 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Ag	312	Total	C	N	O	S	0	0
			2383	1514	409	452	8		

- Molecule 39 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	BA	251	Total	C	N	O	S	0	0
			1899	1182	385	331	1		

- Molecule 40 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	BB	386	Total	C	N	O	S	0	0
			3075	1950	584	533	8		

- Molecule 41 is a protein called RPL4A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	BC	361	Total	C	N	O	S	0	0
			2748	1729	522	494	3		

- Molecule 42 is a protein called RPL5 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	BD	294	Total	C	N	O	S	0	0
			2351	1484	410	455	2		

- Molecule 43 is a protein called 60S ribosomal protein L6-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	BE	167	Total	C	N	O	S	0	0
			1305	841	234	229	1		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BE	146	ILE	LEU	conflict	UNP P05739
BE	173	MET	LEU	conflict	UNP P05739

- Molecule 44 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	BF	222	Total	C	N	O	S	0	0
			1784	1151	324	308	1		

- Molecule 45 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	BG	233	Total	C	N	O	S	0	0
			1804	1151	323	327	3		

- Molecule 46 is a protein called RPL9A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	BH	191	Total	C	N	O	S	0	0
			1508	957	274	273	4		

- Molecule 47 is a protein called RPL10 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	BI	218	Total	C	N	O	S	0	0
			1764	1117	334	306	7		

- Molecule 48 is a protein called RPL11B isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	BJ	169	1350	846	253	247	4	0	0

- Molecule 49 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	BK	193	1543	962	315	266		0	0

- Molecule 50 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	BL	136	1053	675	199	177	2	0	0

- Molecule 51 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	BM	203	1720	1077	361	281	1	0	0

- Molecule 52 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	BN	197	1555	1003	289	262	1	197	0

- Molecule 53 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	BO	183	1416	879	284	253		0	0

- Molecule 54 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	BP	185	1441	908	290	241	2	0	0

- Molecule 55 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
55	BQ	188	1515	932	323	260	0	0

- Molecule 56 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	BR	171	1437	925	266	243	3	0	0

- Molecule 57 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	BS	159	1276	805	246	221	4	0	0

- Molecule 58 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
58	BT	100	796	516	131	149	0	0

- Molecule 59 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	BU	136	1003	628	189	179	7	0	0

- Molecule 60 is a protein called RPL24A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	BV	126	836	525	165	145	1	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BV	104	GLN	ASN	conflict	UNP A0A6A5PY83
BV	109	GLN	LEU	conflict	UNP A0A6A5PY83
BV	112	ASP	ASN	conflict	UNP A0A6A5PY83
BV	119	ALA	GLU	conflict	UNP A0A6A5PY83

- Molecule 61 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	BW	121	Total	C	N	O	S	0	0
			964	620	169	173	2		

- Molecule 62 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	BX	125	Total	C	N	O	S	0	0
			984	620	191	173			

- Molecule 63 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	BY	135	Total	C	N	O	S	0	0
			1092	710	202	180			

- Molecule 64 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	BZ	148	Total	C	N	O	S	0	0
			1173	749	231	190	3		

- Molecule 65 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	Ba	58	Total	C	N	O	S	0	0
			462	289	100	73			

- Molecule 66 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	Bb	96	Total	C	N	O	S	0	0
			737	476	123	137	1		

- Molecule 67 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	Bc	109	Total	C	N	O	S	0	0
			876	556	167	152	1		

- Molecule 68 is a protein called RPL32 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	Bd	127	1017	644	205	167	1	0	0

- Molecule 69 is a protein called 60S ribosomal protein L33-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	Be	106	850	540	165	144	1	0	0

- Molecule 70 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	Bf	112	880	545	179	152	4	0	0

- Molecule 71 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	Bg	119	969	615	186	167	1	0	0

- Molecule 72 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	Bh	99	766	478	154	132	2	0	0

- Molecule 73 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	Bi	85	670	408	146	111	5	0	0

- Molecule 74 is a protein called RPL38 isoform 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
74	Bj	77	612	391	115	106	0	0

- Molecule 75 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	Bk	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 76 is a protein called 60S ribosomal protein L40-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	Bl	52	Total	C	N	O	S	0	0
			417	259	86	67	5		

- Molecule 77 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	Bm	25	Total	C	N	O	S	0	0
			229	139	62	27	1		

- Molecule 78 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	Bn	103	Total	C	N	O	S	0	0
			824	517	167	135	5		

- Molecule 79 is a protein called 60S ribosomal protein L43-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	Bo	91	Total	C	N	O	S	0	0
			694	429	138	121	6		

- Molecule 80 is a protein called RQC trigger complex helicase SLH1.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	CA	1742	Total	C	N	O	S	0	0
			14008	8959	2378	2596	75		

- Molecule 81 is a protein called CUE3 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	CB	297	Total	C	N	O	S	0	0
			2415	1568	414	427	6		

- Molecule 82 is a protein called RQC trigger complex subunit RQT4.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	CC	114	Total	C	N	O	S	0	0
			886	539	167	172	8		

- Molecule 83 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
83	2	84	Total	Mg	0
			84	84	
83	AC	1	Total	Mg	0
			1	1	
83	AQ	1	Total	Mg	0
			1	1	

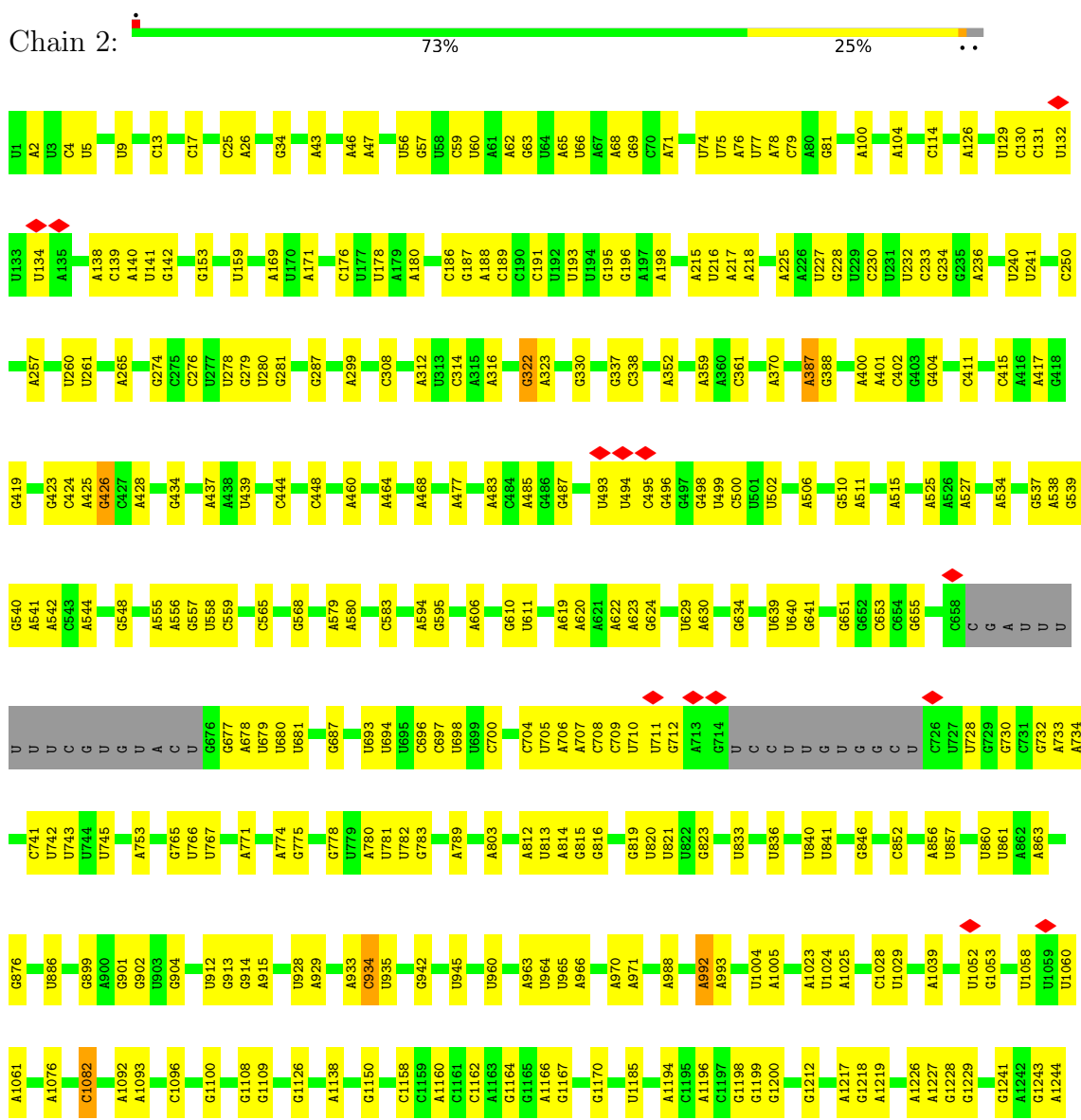
- Molecule 84 is ZINC ION (three-letter code: ZN) (formula: Zn).

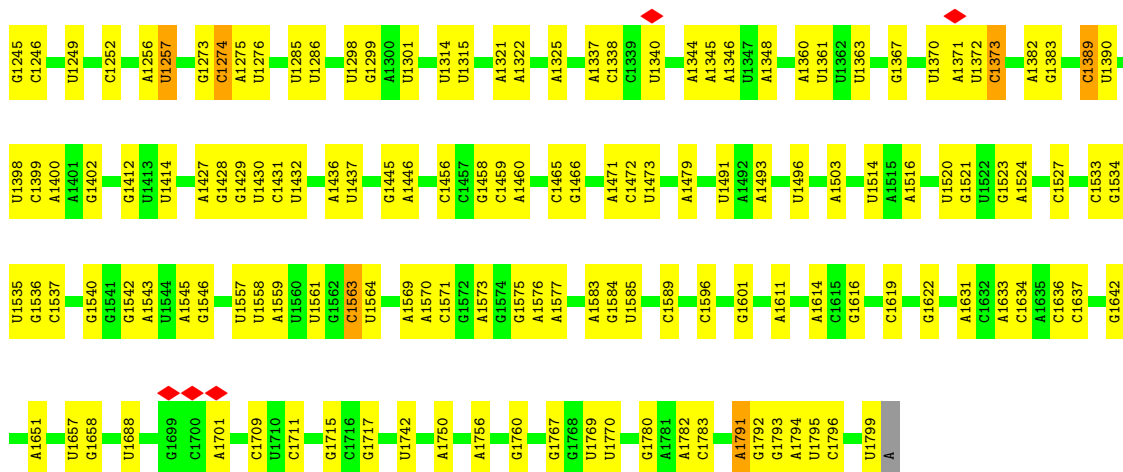
Mol	Chain	Residues	Atoms		AltConf
84	Ad	1	Total	Zn	0
			1	1	
84	Af	1	Total	Zn	0
			1	1	
84	Bf	1	Total	Zn	0
			1	1	
84	Bi	1	Total	Zn	0
			1	1	
84	Bl	1	Total	Zn	0
			1	1	
84	Bn	1	Total	Zn	0
			1	1	
84	Bo	1	Total	Zn	0
			1	1	
84	CC	2	Total	Zn	0
			2	2	

3 Residue-property plots

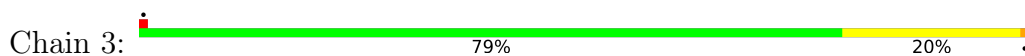
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 18S ribosomal RNA

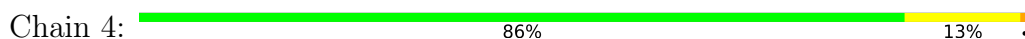




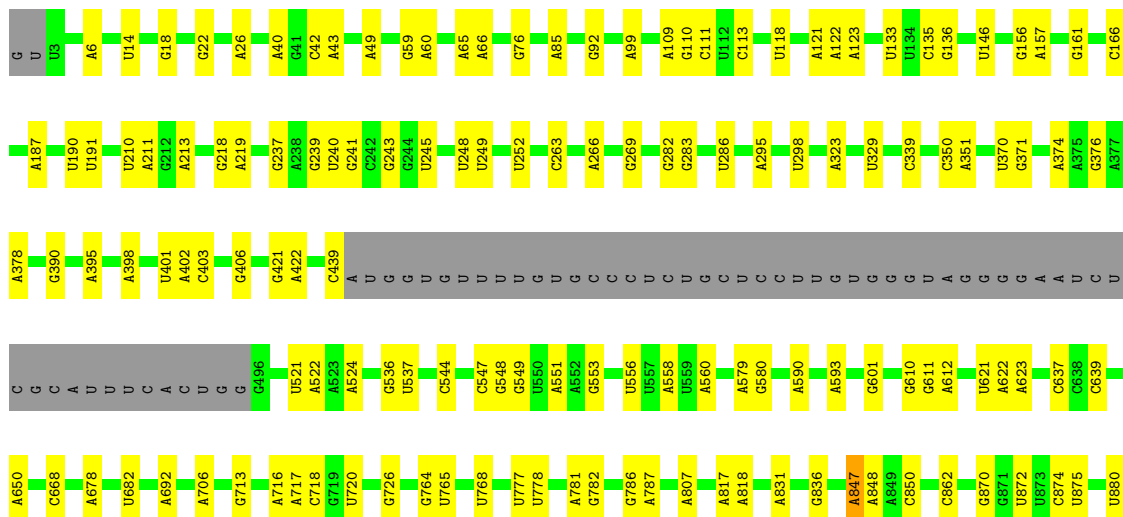
• Molecule 2: 5.8S ribosomal RNA



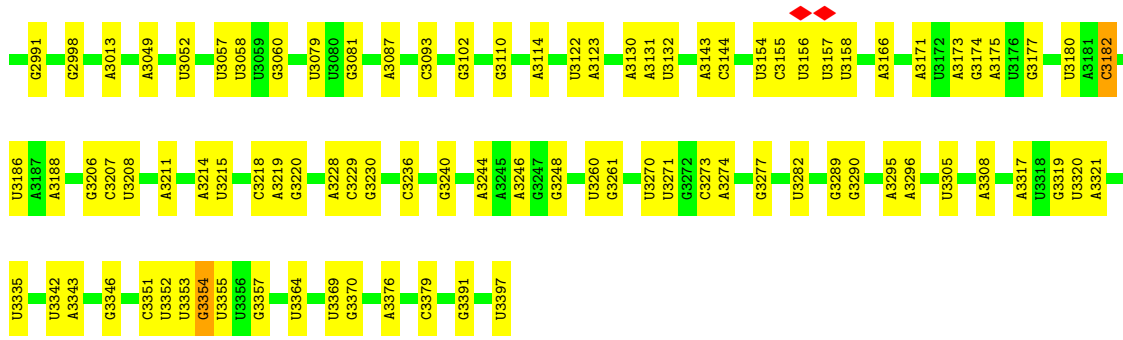
• Molecule 3: 5S ribosomal RNA



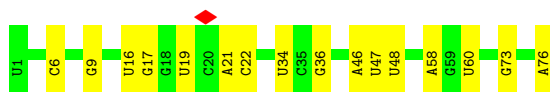
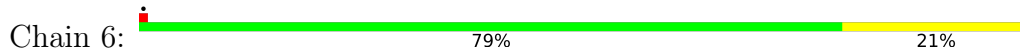
• Molecule 4: 25S ribosomal RNA



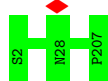
A2804	U2618	C2408	U2226	C	G	A1798	C1664	G1346	A1218	A1065	A1066	A889
C2811	A2627	U2412	C2238	U	G	A1815	U1568	U1349	A1218	A1066	A1066	A896
G2815	U2630	G2419	A2245	C	C	U1816	U1569	G1350	G1223	G1073	G1073	A897
G2816	A2495	A2420	C2246	A	U	A1817	U1570	A1351	A1226	U1082	U1082	G908
G2817	A2637	A	G2247	A	U	A1818	U1573	U1352	G1227	A1094	A1094	G909
A2818	G2640	G2436	G2250	U	U	U1819	G1574	U1353	C1228	U1095	U1095	A915
C2822	U2499	A2440	A2253	A	G	U1820	C1575	U1354	G1231	U1096	U1096	A916
C2837	U2500	G2443	A2257	G	C	U1821	G1576	U1355	U1231	U1097	U1097	G917
U2843	U2502	A2444	C2258	C	A	U1822	A1577	U1356	C1233	G1098	G1098	A918
U2844	U2503	U2103	G2273	G	C	A1840	A1581	U1357	G1237	A1099	A1099	C919
C2845	A2675	U2113	G2274	C	A	A1843	A1584	U1358	A1241	A1104	A1104	A922
A2846	G2678	A2114	C2274	U	U	C1847	A1588	G1392	U1242	G1105	G1105	U923
U2847	U2682	C2115	U2282	U	C	A1851	A1589	A1400	G1243	G1116	G1116	C924
G2848	A2689	G2122	U2283	G	G	A1865	A1590	G1401	A1246	G1117	G1117	G925
C2849	U2690	G2123	U2284	U	U	A1866	A1594	U1419	G1247	G1118	G1118	A926
U2850	G2691	A2127	C2288	U	C	C1867	A1595	A1420	U1254	G1127	G1127	G938
G2857	A2692	G2127	G2289	G	G	A1868	U1596	A1435	C1255	A1130	A1130	C939
U2861	A2697	A2132	G2308	A	A	U1872	C1597	G1438	C1256	A1131	A1131	U940
G2872	G2700	U2141	U2311	U	U	G1879	G1605	C1438	U1259	G1132	G1132	C945
U2873	U2705	U2142	G2314	C	C	A1880	A1606	A1447	G1263	A1133	A1133	C960
G2875	A2704	A2143	U2315	G	G	U1881	U1621	G1448	A1264	A1134	A1134	U961
U2876	A2705	A2144	G2316	C	C	A1894	U1630	U1449	G1265	A1144	A1144	G975
U2887	G2715	A2145	U2336	U	U	U1895	U1646	G1451	U1266	U1145	U1145	U980
A2888	U2720	A2146	U2337	U	U	A1896	C1640	G1467	G1267	A1154	A1154	G995
U2889	C2727	A2149	G2339	G	G	G1907	A1643	U1495	U1270	A1155	A1155	U996
C2890	A2729	U2171	U2340	U	U	G1908	A1644	A1482	A1271	C1156	C1156	A1003
G2899	G2730	C2172	C2351	U	U	A1909	C1645	A1483	A1272	A1160	A1160	G1011
A2912	U2738	A2183	A2357	U	U	U1926	U1718	G1496	A1273	G1176	G1176	U1016
U2924	C2738	G2186	C2367	C	C	U1931	U1725	C1497	C1281	A1180	A1180	C1017
C2929	U2753	U2187	A2368	U	U	U1932	C1726	C1509	G1286	A1181	A1181	G1025
U2936	G2755	C2188	A2373	U	U	A1933	A1742	U1524	A1287	A1191	A1191	A1026
A2937	U2756	A2189	C2374	C	C	G1936	A1751	U1534	A1288	U1192	U1192	U1029
G2938	U2769	A2194	A2375	U	U	C1952	G1752	G1537	A1288	C1193	C1193	G1030
U2939	G2778	C2193	C2376	U	U	G1953	U1765	A1540	G1296	A1194	A1194	C1033
C2943	G2779	G2205	U2389	C	C	U1954	U1766	A1540	U1306	C1197	C1197	A1037
G2951	U2797	U2206	C2390	U	U	G1955	G1767	A1540	U1310	A1200	A1200	U1042
U2952	C2797	G2207	G2394	C	C	A	A	A	G1314	C1202	C1202	A1048
A2972	U2800	A2209	A2398	C	C	U	U	U	A1331	A1203	A1203	A1049
G2973	G2801	U2210	A2403	C	C	U	U	U	U1332	G1207	G1207	C1050
C2984	A2802	G2211	U2404	U	U	G	G	G				
G2985	U2803	A2224	A2405	U	U	G	G	G				
		A2225		C	C							



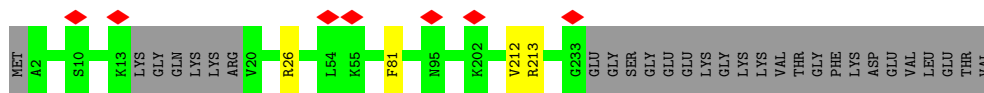
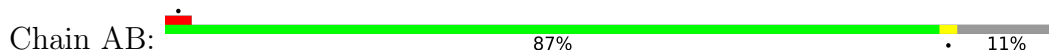
• Molecule 5: tRNA



• Molecule 6: 40S ribosomal protein S0-A



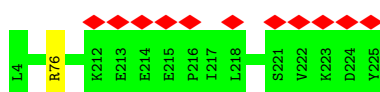
• Molecule 7: 40S ribosomal protein S1-A



• Molecule 8: RPS2 isoform 1



• Molecule 9: RPS3 isoform 1



• Molecule 10: 40S ribosomal protein S4-A

Chain AE:  98%



- Molecule 11: Rps5p

Chain AF:  100%



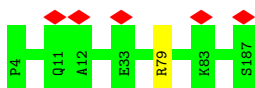
- Molecule 12: 40S ribosomal protein S6-A

Chain AG:  98%



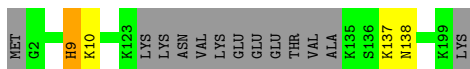
- Molecule 13: 40S ribosomal protein S7-A

Chain AH:  99%



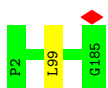
- Molecule 14: 40S ribosomal protein S8-B

Chain AI:  92% 6%



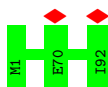
- Molecule 15: 40S ribosomal protein S9-A

Chain AJ:  99%

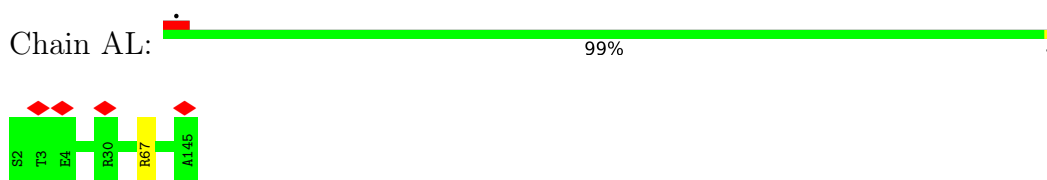


- Molecule 16: 40S ribosomal protein S10-A

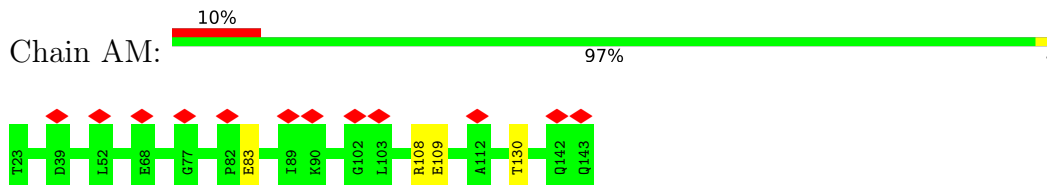
Chain AK:  100%



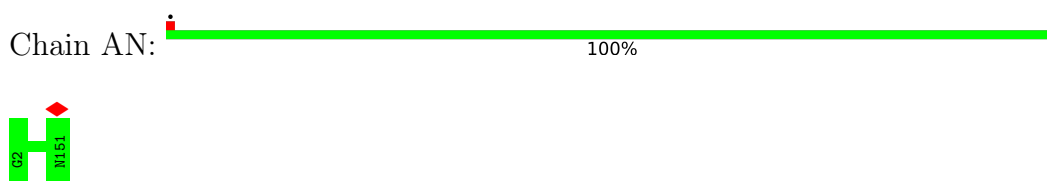
- Molecule 17: 40S ribosomal protein S11-A



- Molecule 18: 40S ribosomal protein S12



- Molecule 19: 40S ribosomal protein S13

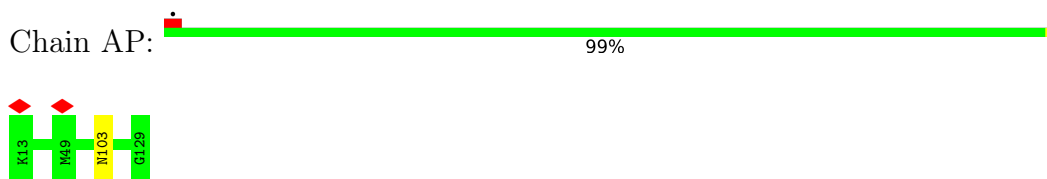


- Molecule 20: 40S ribosomal protein S14-B

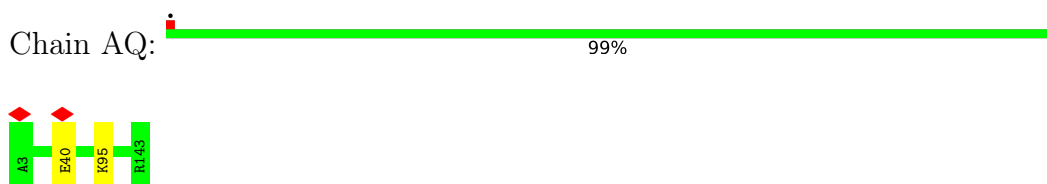


There are no outlier residues recorded for this chain.

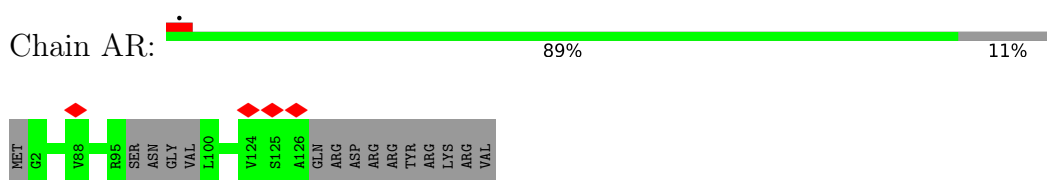
- Molecule 21: RPS15 isoform 1



- Molecule 22: 40S ribosomal protein S16-A

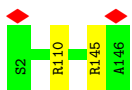


- Molecule 23: 40S ribosomal protein S17-A



- Molecule 24: 40S ribosomal protein S18-A

Chain AS:  99%



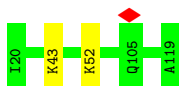
- Molecule 25: 40S ribosomal protein S19-A

Chain AT:  99%



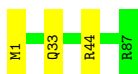
- Molecule 26: RPS20 isoform 1

Chain AU:  98%



- Molecule 27: 40S ribosomal protein S21-A

Chain AV:  97%



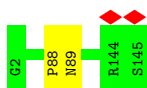
- Molecule 28: RPS22A isoform 1

Chain AW:  100%

There are no outlier residues recorded for this chain.

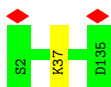
- Molecule 29: 40S ribosomal protein S23-A

Chain AX:  99%

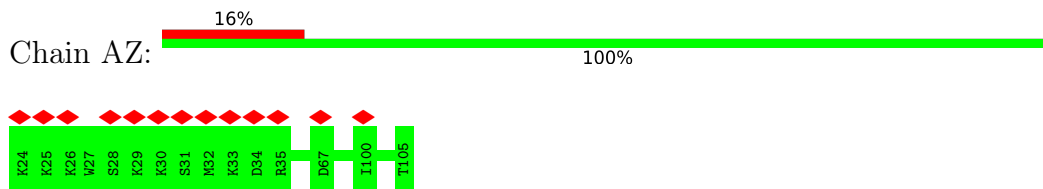


- Molecule 30: 40S ribosomal protein S24-A

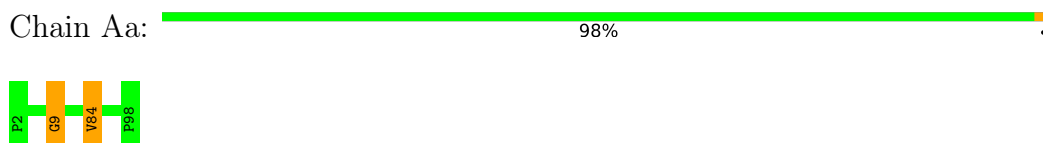
Chain AY:  99%



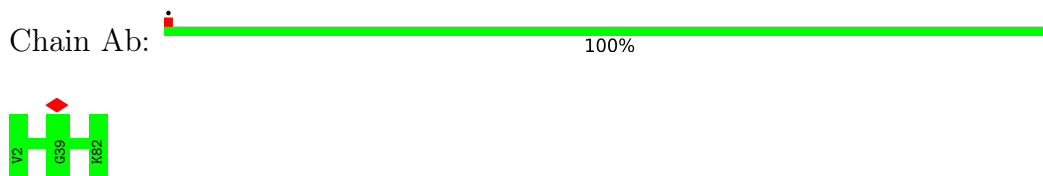
- Molecule 31: 40S ribosomal protein S25



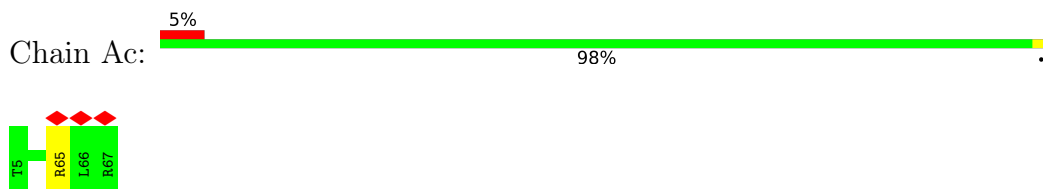
- Molecule 32: 40S ribosomal protein S26



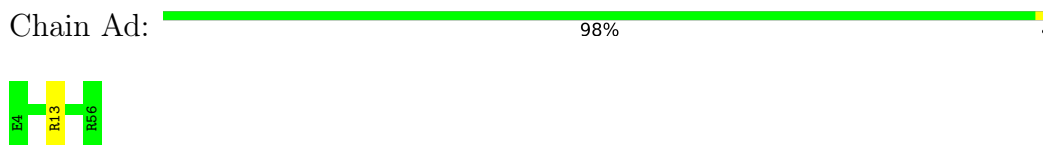
- Molecule 33: 40S ribosomal protein S27-A



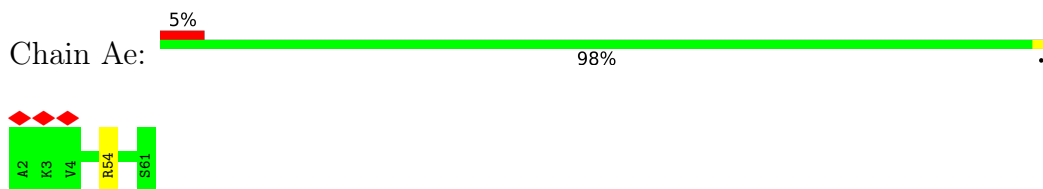
- Molecule 34: RPS28A isoform 1



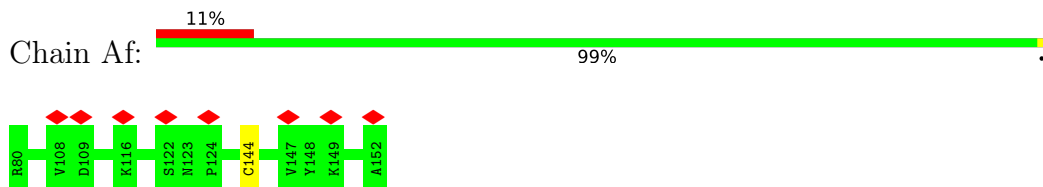
- Molecule 35: RPS29A isoform 1



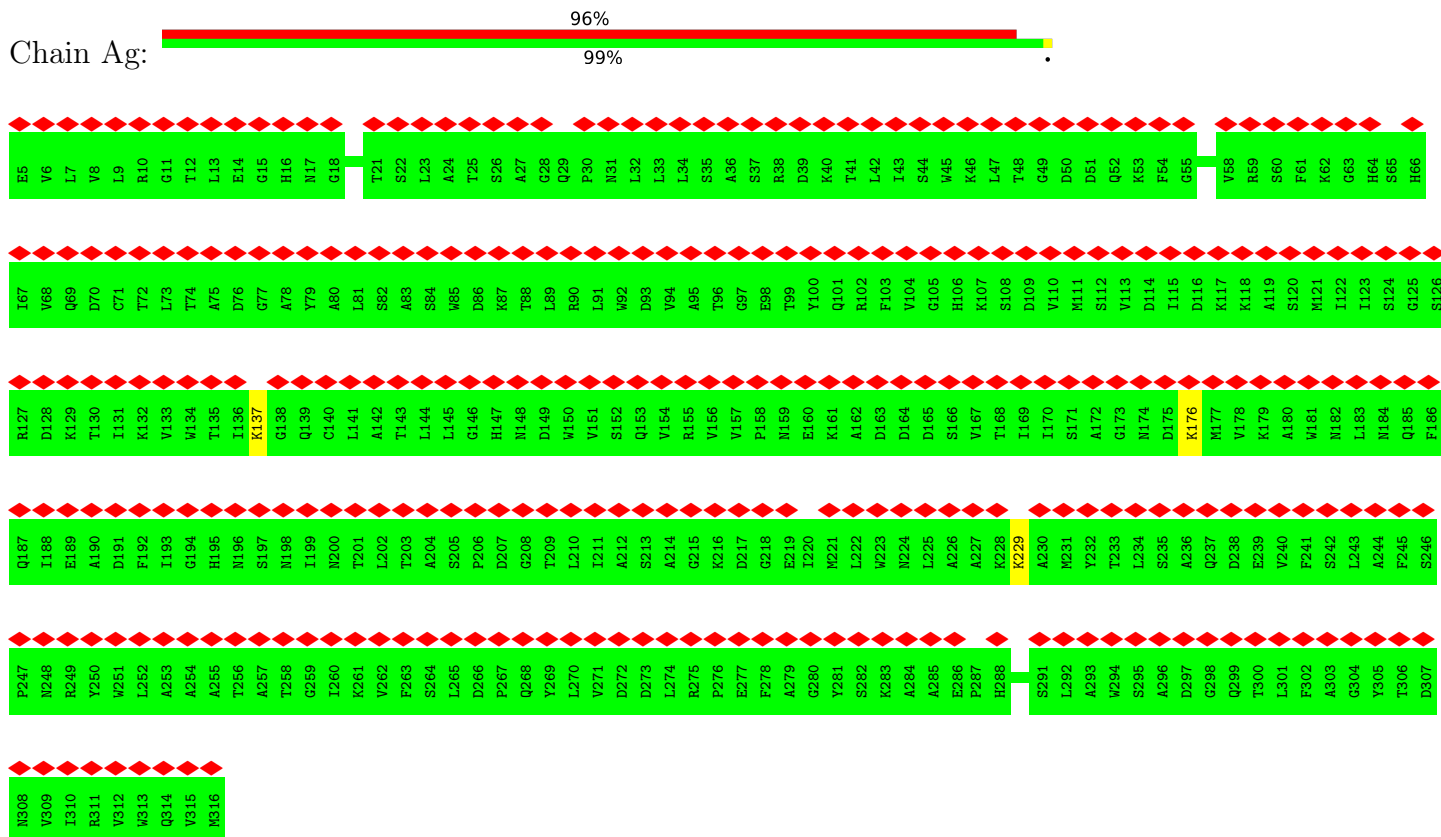
- Molecule 36: 40S ribosomal protein S30-A



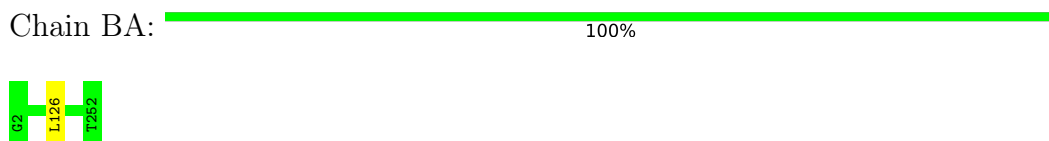
- Molecule 37: RPS31 isoform 1



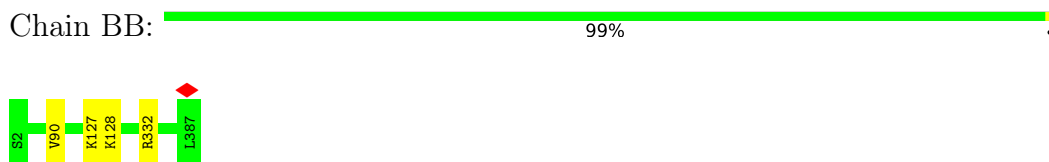
• Molecule 38: Guanine nucleotide-binding protein subunit beta-like protein



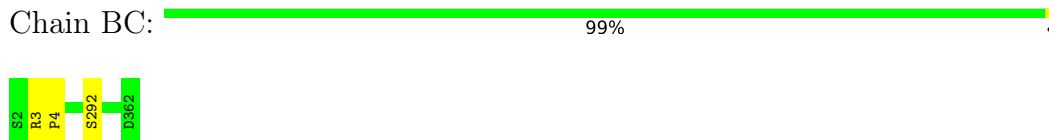
• Molecule 39: 60S ribosomal protein L2-A



• Molecule 40: 60S ribosomal protein L3



• Molecule 41: RPL4A isoform 1



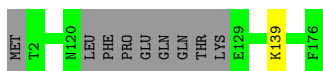
• Molecule 42: RPL5 isoform 1





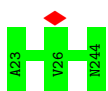
- Molecule 43: 60S ribosomal protein L6-B

Chain BE: 94% 5%



- Molecule 44: 60S ribosomal protein L7-A

Chain BF: 100%



- Molecule 45: 60S ribosomal protein L8

Chain BG: 99%



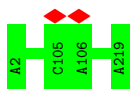
- Molecule 46: RPL9A isoform 1

Chain BH: 100%



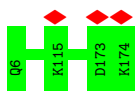
- Molecule 47: RPL10 isoform 1

Chain BI: 100%



- Molecule 48: RPL11B isoform 1

Chain BJ: 100%



- Molecule 49: 60S ribosomal protein L13-A

Chain BK:  97%



- Molecule 50: 60S ribosomal protein L14-A

Chain BL:  100%



- Molecule 51: Ribosomal protein L15

Chain BM:  100%



- Molecule 52: 60S ribosomal protein L16-A

Chain BN:  98%



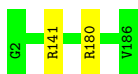
- Molecule 53: 60S ribosomal protein L17-A

Chain BO:  100%



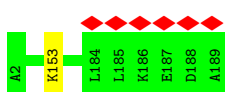
- Molecule 54: 60S ribosomal protein L18-A

Chain BP:  99%



- Molecule 55: 60S ribosomal protein L19-A

Chain BQ:  99%



- Molecule 56: 60S ribosomal protein L20-A

Chain BR:  100%

There are no outlier residues recorded for this chain.

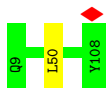
- Molecule 57: 60S ribosomal protein L21-A

Chain BS:  100%

There are no outlier residues recorded for this chain.

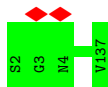
- Molecule 58: 60S ribosomal protein L22-A

Chain BT:  99%



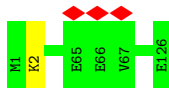
- Molecule 59: 60S ribosomal protein L23-A

Chain BU:  100%



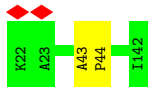
- Molecule 60: RPL24A isoform 1

Chain BV:  99%



- Molecule 61: 60S ribosomal protein L25

Chain BW:  98%



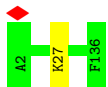
- Molecule 62: 60S ribosomal protein L26-A

Chain BX:  99%



- Molecule 63: 60S ribosomal protein L27-A

Chain BY:  99%



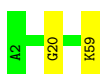
- Molecule 64: 60S ribosomal protein L28

Chain BZ: 99%



- Molecule 65: 60S ribosomal protein L29

Chain Ba: 97%



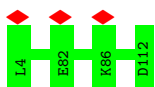
- Molecule 66: 60S ribosomal protein L30

Chain Bb: 100%

There are no outlier residues recorded for this chain.

- Molecule 67: 60S ribosomal protein L31-A

Chain Bc: 100%



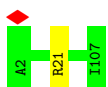
- Molecule 68: RPL32 isoform 1

Chain Bd: 100%



- Molecule 69: 60S ribosomal protein L33-A

Chain Be: 99%



- Molecule 70: 60S ribosomal protein L34-A

Chain Bf: 100%



- Molecule 71: 60S ribosomal protein L35-A



- Molecule 72: 60S ribosomal protein L36-A

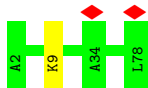


- Molecule 73: 60S ribosomal protein L37-A



There are no outlier residues recorded for this chain.

- Molecule 74: RPL38 isoform 1



- Molecule 75: 60S ribosomal protein L39



There are no outlier residues recorded for this chain.

- Molecule 76: 60S ribosomal protein L40-A



- Molecule 77: 60S ribosomal protein L41



There are no outlier residues recorded for this chain.

G708	S709	K710	D713	S720	L721	D728	E729	A730	E731	L734	M739	F740	R744	K745	T749	Y750	G751	W754	W759	Q762	L763	Y764	E765	R766	R767	R768	K769	M770	R777	L778	H779	A780	L781	F786	D787	E788	F793	F805	Y806	L807	L808	E813	C819																
R822	A823	A826	L829	M834	F838	D839	G840	I841	K842	R844	E845	E846	R849	K852	S855	D856	I863	C864	S865	D866	F888	D889	S890	R968	D959	T960	K961	E977	L1048	L1060	S1073	D1074	T1113	K1114	L1115	L1116	L1117	L1118	R1119	P1120	L1121	P1122																	
T1123	S1124	A1125	L1126	Q1127	N1128	P1129	L1130	I1131	E1132	S1133	I1134	Y1135	P1136	F1137	K1138	M1146	T1147	F1148	N1155	F1159	T1164	G1165	S1166	G1167	K1168	A1172	E1173	H1178	A1179	F1180	K1181	T1182	F1183	P1184	K1185	G1186	K1187	I1188	Y1189	V1190	I1191	A1192	P1193	L1197	D1203	D1204	W1205	R1206	K1207	I1208	I1209								
T1210	P1211	V1212	T1213	K1214	D1215	K1216	V1217	V1218	E1219	L1220	T1221	G1222	S1224	L1225	P1226	D1227	P1228	K1229	D1230	V1231	H1232	D1233	A1234	L1235	I1236	V1237	I1238	P1241	F1244	I1247	W1251	Q1252	T1253	R1254	K1255	F1256	V1257	Q1258	D1259	V1260	S1261	L1262	I1263	M1265	E1267	I1268	A1272	S1273	D1274	R1275	G1276								
M1281	R1285	T1283	K1284	Q1285	P1286	V1287	R1288	L1289	L1300	V1306	K1319	D1320	L1323	P1327	S1328	S1329	V1330	R1331	P1332	V1333	P1334	I1339	D1340	G1341	F1342	P1343	D1344	A1347	F1348	K1353	T1354	M1355	F1360	M1361	Q1365	H1366	D1369	K1370	P1371	L1373	I1374	F1375	V1376	A1377	S1378	L1457													
Q1381	T1382	T1385	L1392	M1395	E1396	D1397	N1398	P1399	R1400	F1402	L1403	N1404	I1405	D1406	D1407	E1408	E1409	E1410	L1411	Q1412	Y1413	Y1414	L1415	S1416	Q1417	V1418	F1419	T1420	D1421	L1427	I1431	L1432	H1434	H1435	A1436	L1438	V1439	K1441	D1442	R1443	I1444	F1450	Q1451	K1452	N1453	K1454	I1457												
L1458	I1459	A1460	T1461	S1462	T1463	L1464	A1465	G1466	G1467	V1468	N1469	L1470	P1471	A1472	H1473	K1478	G1479	T1480	K1481	F1482	F1483	D1484	A1485	K1486	I1487	E1488	G1489	Y1490	R1491	D1492	M1493	D1494	L1495	T1496	L1499	Q1500	M1501	M1502	G1503	R1504	A1505	A1509	T1512	T1513	G1514	I1515	A1516	S1523	K1524	K1525	Y1528	V1534							
S1540	H1543	K1544	V1545	L1546	D1547	D1548	H1549	L1550	G1551	A1552	E1553	S1556	G1557	S1558	I1559	T1560	M1561	K1562	Q1563	W1571	Y1585	D1589	D1590	T1591	S1592	T1593	A1594	E1598	H1599	D1605	L1608	E1609	M1610	L1611	R1612	E1613	S1614	G1616	L1617	L1618	L1619	H1620	G1621	D1622	D1623	A1626	T1627	P1628											
F1629	L1630	S1631	I1632	S1633	Y1636	I1637	I1638	S1639	H1640	L1641	T1642	I1643	R1644	Q1645	L1646	L1647	K1648	Q1649	I1650	H1651	D1652	H1653	F1656	Q1657	E1658	V1659	L1660	R1661	W1662	L1663	S1664	L1665	A1666	V1667	E1668	Y1669	M1670	E1671	L1672	P1673	V1674	R1675	G1676	G1677	E1678	I1679	I1680	M1681	M1682	E1683	E1684	M1685	S1686	Q1687	Q1688	Y1691			
S1692	V1693	E1694	S1695	T1696	F1697	T1698	D1699	E1700	F1701	E1702	L1703	P1704	M1705	W1706	D1707	P1708	H1709	V1710	K1711	T1712	F1713	L1714	L1715	L1716	Q1717	A1718	H1719	L1720	S1721	R1722	V1723	D1724	L1725	P1726	I1727	A1728	D1729	Y1730	I1731	Q1732	D1733	T1734	V1735	W1736	L1737	L1738	D1739	L1742	R1743	I1744	L1745	Q1746	A1747	I1748	I1749	D1750	V1751	A1752	
S1753	E1754	L1755	G1756	Y1757	F1758	H1759	T1760	V1761	L1762	T1763	M1764	I1765	K1766	M1767	M1768	Q1769	C1770	I1771	K1772	Q1773	G1774	Y1775	W1776	Y1777	E1778	D1779	L1780	P1781	V1782	S1783	Y1784	L1785	P1786	G1787	L1788	Q1789	L1790	R1791	R1792	I1793	K1794	L1795	Y1796	T1797	F1798	S1799	E1800	Q1801	G1802	I1804	E1805	M1806	T1807	P1808	Q1809	Q1810	K1811	K1812	
K1813	K1814	L1815	L1816	T1817	L1818	E1819	E1820	I1821	G1822	R1823	F1824	G1825	Y1826	K1827	K1828	L1829	L1830	M1831	V1832	F1833	G1834	Y1835	L1836	L1837	F1838	G1839	M1840	T1841	E1842	S1843	E1844	D1845	L1846	K1847	K1848	R1849	F1850	V1851	S1852	V1853	C1854	Q1855	R1856	L1857	P1858	V1859	L1860	E1861	F1862	M1863	K1864	F1865	M1866	N1867	P1868	E1869	N1871	E1872	
L1873	L1874	T1875	F1876	S1877	L1878	K1879	H1880	L1881	S1882	S1883	K1884	H1885	N1886	N1887	K1888	F1889	E1890	V1891	Y1892	C1893	D1894	K1895	F1896	R1897	K1898	I1899	Q1900	E1901	L1902	L1903	W1904	F1905	L1906	I1907	G1908	H1909	G1910	V1911	D1912	E1913	L1914	L1915	M1916	I1917	K1918	R1919	Q1920	Q1921	P1922	K1923	Q1924	M1925	N1926	K1927	E1928	V1929	I1930	I1931	I1932

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	17885	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	44	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	4.383	Depositor
Minimum map value	-1.015	Depositor
Average map value	0.020	Depositor
Map value standard deviation	0.109	Depositor
Recommended contour level	0.3	Depositor
Map size (\AA)	585.19995, 585.19995, 585.19995	wwPDB
Map dimensions	560, 560, 560	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.045, 1.045, 1.045	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: MG, ZN

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	2	0.93	1/42211 (0.0%)	0.94	40/65773 (0.1%)
2	3	1.07	0/3746	0.93	2/5832 (0.0%)
3	4	0.92	0/2883	0.95	5/4491 (0.1%)
4	5	1.16	6/75723 (0.0%)	0.97	50/118057 (0.0%)
5	6	0.66	0/1808	0.86	2/2816 (0.1%)
6	AA	0.39	0/1644	0.56	0/2249
7	AB	0.39	0/1823	0.60	0/2447
8	AC	0.47	0/1656	0.58	0/2251
9	AD	0.40	0/1754	0.58	0/2361
10	AE	0.45	0/2097	0.60	1/2823 (0.0%)
11	AF	0.37	0/1625	0.59	0/2197
12	AG	0.37	0/1839	0.60	1/2460 (0.0%)
13	AH	0.34	0/1498	0.56	0/2019
14	AI	0.49	0/1501	0.66	0/2006
15	AJ	0.44	0/1504	0.61	0/2016
16	AK	0.40	0/769	0.62	0/1039
17	AL	0.52	0/1185	0.57	0/1598
18	AM	0.28	0/883	0.59	0/1199
19	AN	0.46	0/1215	0.60	0/1638
20	AO	0.42	0/937	0.68	0/1261
21	AP	0.33	0/936	0.59	0/1259
22	AQ	0.40	0/1125	0.61	0/1510
23	AR	0.34	0/957	0.61	0/1283
24	AS	0.36	0/1211	0.61	0/1628
25	AT	0.35	0/1130	0.62	1/1517 (0.1%)
26	AU	0.39	0/807	0.56	0/1091
27	AV	0.45	0/682	0.62	0/921
28	AW	0.47	0/1038	0.63	0/1395
29	AX	0.52	0/1139	0.63	0/1518
30	AY	0.42	0/1087	0.59	0/1449
31	AZ	0.31	0/661	0.64	0/888
32	Aa	0.45	0/782	0.68	0/1047

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	Ab	0.40	0/620	0.62	0/838
34	Ac	0.39	0/493	0.73	0/663
35	Ad	0.46	0/452	0.64	0/600
36	Ae	0.37	0/480	0.62	0/639
37	Af	0.31	0/567	0.59	0/764
38	Ag	0.27	0/2436	0.55	0/3318
39	BA	0.56	0/1933	0.64	0/2598
40	BB	0.52	0/3146	0.60	0/4228
41	BC	0.52	0/2800	0.61	0/3790
42	BD	0.43	0/2400	0.55	0/3239
43	BE	0.40	0/1327	0.53	0/1790
44	BF	0.53	0/1821	0.55	0/2451
45	BG	0.39	0/1836	0.54	0/2481
46	BH	0.45	0/1529	0.58	0/2060
47	BI	0.52	0/1801	0.60	0/2416
48	BJ	0.39	0/1371	0.60	0/1838
49	BK	0.45	0/1568	0.63	0/2106
50	BL	0.39	0/1068	0.57	0/1438
51	BM	0.57	0/1757	0.63	0/2354
52	BN	0.54	0/1585	0.58	0/2128
53	BO	0.57	0/1439	0.62	0/1938
54	BP	0.52	0/1465	0.64	0/1965
55	BQ	0.47	0/1532	0.60	0/2043
56	BR	0.53	0/1473	0.61	0/1980
57	BS	0.52	0/1300	0.59	0/1743
58	BT	0.45	0/812	0.62	1/1099 (0.1%)
59	BU	0.57	0/1018	0.61	0/1369
60	BV	0.45	0/850	0.55	0/1152
61	BW	0.48	0/979	0.60	0/1321
62	BX	0.47	0/995	0.61	0/1329
63	BY	0.41	0/1118	0.55	0/1497
64	BZ	0.57	0/1204	0.62	0/1612
65	Ba	0.41	0/473	0.55	0/629
66	Bb	0.46	0/745	0.50	0/1001
67	Bc	0.52	0/890	0.63	0/1196
68	Bd	0.54	0/1038	0.61	0/1390
69	Be	0.58	0/868	0.61	0/1168
70	Bf	0.50	0/890	0.61	0/1189
71	Bg	0.42	0/978	0.57	0/1301
72	Bh	0.37	0/772	0.60	0/1026
73	Bi	0.59	0/685	0.65	0/908
74	Bj	0.37	0/618	0.58	0/826
75	Bk	0.51	0/443	0.64	0/588

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	Bl	0.48	0/423	0.64	0/562
77	Bm	0.51	0/230	0.77	0/296
78	Bn	0.49	0/836	0.60	0/1104
79	Bo	0.58	0/701	0.62	0/934
80	CA	0.27	0/14309	0.49	0/19348
81	CB	0.23	0/2463	0.46	0/3324
82	CC	0.24	0/897	0.53	0/1203
All	All	0.84	7/233290 (0.0%)	0.82	103/340819 (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
7	AB	0	1
10	AE	0	1
12	AG	0	1
14	AI	0	1
18	AM	0	3
22	AQ	0	1
29	AX	0	1
32	Aa	0	2
37	Af	0	1
38	Ag	0	1
40	BB	0	1
41	BC	0	1
45	BG	0	2
49	BK	0	1
52	BN	0	1
61	BW	0	1
64	BZ	0	1
65	Ba	0	1
All	All	0	22

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	5	2408	C	N1-C6	-6.41	1.33	1.37
4	5	1134	A	N9-C4	-6.33	1.34	1.37
4	5	2183	A	N9-C4	-6.12	1.34	1.37
4	5	889	A	N9-C4	-6.04	1.34	1.37

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	5	2186	G	C5-C4	-5.39	1.34	1.38
4	5	919	C	N1-C6	-5.26	1.33	1.37
1	2	13	C	N1-C6	-5.07	1.34	1.37

All (103) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	934	C	C2-N1-C1'	8.82	128.50	118.80
1	2	1533	C	N3-C2-O2	-7.92	116.35	121.90
4	5	3058	U	N3-C2-O2	-7.83	116.72	122.20
1	2	1527	C	C2-N1-C1'	7.82	127.40	118.80
1	2	934	C	N1-C2-O2	7.45	123.37	118.90
1	2	1257	U	C2-N1-C1'	7.42	126.61	117.70
1	2	1527	C	C6-N1-C1'	-7.34	111.99	120.80
4	5	2816	G	N1-C6-O6	-7.25	115.55	119.90
1	2	1389	C	C2-N1-C1'	7.17	126.69	118.80
4	5	2715	G	N3-C4-C5	7.09	132.15	128.60
1	2	934	C	C6-N1-C1'	-6.77	112.68	120.80
4	5	1497	C	C2-N1-C1'	6.74	126.21	118.80
4	5	3154	U	N1-C2-O2	6.67	127.47	122.80
1	2	583	C	C2-N1-C1'	6.60	126.06	118.80
4	5	42	C	C6-N1-C2	-6.47	117.71	120.30
4	5	3049	A	O4'-C1'-N9	6.39	113.32	108.20
4	5	923	U	C2-N1-C1'	6.38	125.35	117.70
4	5	406	G	O4'-C1'-N9	6.32	113.25	108.20
4	5	1605	G	C4-N9-C1'	6.26	134.64	126.50
1	2	610	G	C4-N9-C1'	6.24	134.61	126.50
58	BT	50	LEU	CA-CB-CG	6.14	129.43	115.30
4	5	1497	C	C6-N1-C2	-6.14	117.84	120.30
4	5	3154	U	C2-N1-C1'	6.07	124.99	117.70
1	2	426	G	C4-N9-C1'	6.00	134.29	126.50
1	2	1533	C	N1-C2-O2	5.99	122.49	118.90
4	5	2985	C	C6-N1-C2	-5.98	117.91	120.30
2	3	39	G	O4'-C1'-N9	5.97	112.97	108.20
1	2	1791	A	P-O3'-C3'	5.93	126.82	119.70
1	2	965	U	C2-N1-C1'	5.85	124.72	117.70
1	2	1274	C	P-O3'-C3'	5.82	126.69	119.70
4	5	3214	A	N1-C2-N3	5.82	132.21	129.30
4	5	1127	G	N9-C4-C5	-5.81	103.08	105.40
1	2	322	G	P-O3'-C3'	5.80	126.66	119.70
1	2	1642	G	C8-N9-C4	5.80	108.72	106.40
4	5	1175	G	C4-N9-C1'	5.80	134.04	126.50

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1082	C	C2-N1-C1'	5.71	125.08	118.80
4	5	847	A	C2-N3-C4	5.71	113.45	110.60
4	5	1175	G	C8-N9-C1'	-5.70	119.60	127.00
4	5	42	C	N1-C2-O2	5.66	122.30	118.90
1	2	610	G	C8-N9-C1'	-5.59	119.74	127.00
1	2	1274	C	N3-C2-O2	-5.59	117.99	121.90
4	5	3215	U	C2-N1-C1'	5.58	124.39	117.70
4	5	3058	U	N1-C2-O2	5.57	126.70	122.80
4	5	3154	U	N3-C2-O2	-5.50	118.35	122.20
1	2	1571	C	N3-C2-O2	-5.50	118.05	121.90
1	2	934	C	N3-C2-O2	-5.46	118.08	121.90
1	2	426	G	C8-N9-C1'	-5.42	119.95	127.00
4	5	2618	U	N3-C2-O2	-5.40	118.42	122.20
4	5	1605	G	C8-N9-C1'	-5.39	119.99	127.00
4	5	2730	U	N3-C2-O2	-5.38	118.43	122.20
4	5	2874	U	N3-C2-O2	-5.38	118.44	122.20
3	4	77	G	C4-N9-C1'	-5.38	119.51	126.50
4	5	2837	C	N3-C2-O2	-5.37	118.14	121.90
4	5	1127	G	N3-C4-N9	5.36	129.22	126.00
4	5	1116	G	C4-N9-C1'	5.36	133.46	126.50
1	2	1162	C	C2-N1-C1'	5.35	124.69	118.80
4	5	2238	C	N3-C2-O2	-5.34	118.17	121.90
4	5	1496	U	C5-C6-N1	-5.33	120.03	122.70
4	5	2247	G	C4-C5-N7	5.33	112.93	110.80
4	5	2727	C	C6-N1-C2	-5.32	118.17	120.30
4	5	2951	G	O4'-C1'-N9	5.32	112.45	108.20
1	2	767	U	N3-C2-O2	-5.31	118.48	122.20
12	AG	68	LEU	CA-CB-CG	5.31	127.51	115.30
1	2	1082	C	N1-C2-O2	5.28	122.07	118.90
3	4	77	G	N3-C4-N9	-5.26	122.84	126.00
4	5	2816	G	C6-C5-N7	5.23	133.54	130.40
4	5	847	A	N3-C4-C5	-5.23	123.14	126.80
1	2	992	A	N1-C2-N3	5.20	131.90	129.30
4	5	836	G	O4'-C1'-N9	5.18	112.34	108.20
4	5	1281	C	N3-C2-O2	-5.18	118.28	121.90
1	2	1596	C	C2-N1-C1'	5.17	124.49	118.80
25	AT	35	ASP	CB-CG-OD1	5.17	122.95	118.30
4	5	1231	G	N3-C4-N9	-5.16	122.90	126.00
4	5	2238	C	N1-C2-O2	5.16	121.99	118.90
4	5	1449	U	N3-C2-O2	-5.15	118.59	122.20
4	5	2367	C	C2-N1-C1'	5.15	124.47	118.80
3	4	77	G	N3-C4-C5	5.15	131.18	128.60

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	189	C	N1-C2-O2	5.14	121.98	118.90
4	5	2715	G	C2-N3-C4	-5.13	109.34	111.90
3	4	78	U	C2-N1-C1'	5.13	123.85	117.70
4	5	917	G	P-O3'-C3'	5.11	125.84	119.70
1	2	1589	C	C6-N1-C2	5.11	122.34	120.30
4	5	2715	G	N3-C4-N9	-5.10	122.94	126.00
1	2	1389	C	N1-C2-O2	5.10	121.96	118.90
1	2	1527	C	N1-C2-O2	5.10	121.96	118.90
10	AE	193	GLY	N-CA-C	5.09	125.83	113.10
1	2	1458	G	C4-N9-C1'	5.08	133.10	126.50
4	5	1200	C	C2-N1-C1'	-5.08	113.22	118.80
1	2	583	C	C6-N1-C1'	-5.06	114.72	120.80
4	5	3354	G	N3-C4-C5	5.06	131.13	128.60
2	3	100	U	C2-N1-C1'	5.06	123.77	117.70
4	5	2404	G	C6-C5-N7	-5.04	127.38	130.40
5	6	34	U	N3-C2-O2	-5.04	118.67	122.20
1	2	1389	C	C5-C6-N1	5.03	123.52	121.00
1	2	387	A	P-O3'-C3'	5.03	125.73	119.70
1	2	1389	C	C6-N1-C2	-5.03	118.29	120.30
1	2	1373	C	C2-N1-C1'	5.02	124.32	118.80
4	5	3354	G	N3-C4-N9	-5.02	122.99	126.00
1	2	426	G	C6-C5-N7	-5.02	127.39	130.40
3	4	39	C	N3-C2-O2	-5.02	118.39	121.90
4	5	3182	C	N1-C2-O2	5.01	121.91	118.90
5	6	36	G	N3-C4-C5	-5.01	126.09	128.60
1	2	1563	C	N1-C2-O2	5.00	121.90	118.90

There are no chirality outliers.

All (22) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
7	AB	81	PHE	Peptide
10	AE	42	LEU	Peptide
12	AG	68	LEU	Peptide
14	AI	9	HIS	Peptide
18	AM	108	ARG	Peptide
18	AM	130	THR	Peptide
18	AM	83	GLU	Peptide
22	AQ	40	GLU	Peptide
29	AX	88	PRO	Peptide
32	Aa	84	VAL	Peptide
32	Aa	9	GLY	Peptide

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
37	Af	144	CYS	Peptide
38	Ag	176	LYS	Peptide
40	BB	127	LYS	Peptide
41	BC	3	ARG	Peptide
45	BG	30	THR	Peptide
45	BG	76	ALA	Peptide
49	BK	75	PHE	Peptide
52	BN	110[A]	PRO	Peptide
61	BW	43	ALA	Peptide
64	BZ	115	LYS	Peptide
65	Ba	20	GLY	Peptide

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	
6	AA	204/206 (99%)	186 (91%)	18 (9%)	0	100	100
7	AB	222/255 (87%)	207 (93%)	13 (6%)	2 (1%)	17	56
8	AC	214/216 (99%)	204 (95%)	10 (5%)	0	100	100
9	AD	220/222 (99%)	215 (98%)	5 (2%)	0	100	100
10	AE	256/258 (99%)	237 (93%)	18 (7%)	1 (0%)	34	72
11	AF	204/206 (99%)	197 (97%)	7 (3%)	0	100	100
12	AG	226/228 (99%)	212 (94%)	13 (6%)	1 (0%)	34	72
13	AH	182/184 (99%)	171 (94%)	11 (6%)	0	100	100
14	AI	183/200 (92%)	167 (91%)	14 (8%)	2 (1%)	14	52
15	AJ	182/184 (99%)	171 (94%)	10 (6%)	1 (0%)	29	68

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
16	AK	90/92 (98%)	86 (96%)	4 (4%)	0	100	100
17	AL	142/144 (99%)	134 (94%)	8 (6%)	0	100	100
18	AM	119/121 (98%)	95 (80%)	23 (19%)	1 (1%)	19	60
19	AN	148/150 (99%)	141 (95%)	7 (5%)	0	100	100
20	AO	125/127 (98%)	114 (91%)	11 (9%)	0	100	100
21	AP	115/117 (98%)	112 (97%)	3 (3%)	0	100	100
22	AQ	139/141 (99%)	127 (91%)	12 (9%)	0	100	100
23	AR	117/136 (86%)	113 (97%)	4 (3%)	0	100	100
24	AS	143/145 (99%)	130 (91%)	13 (9%)	0	100	100
25	AT	141/143 (99%)	130 (92%)	11 (8%)	0	100	100
26	AU	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
27	AV	85/87 (98%)	72 (85%)	13 (15%)	0	100	100
28	AW	127/129 (98%)	121 (95%)	6 (5%)	0	100	100
29	AX	142/144 (99%)	129 (91%)	12 (8%)	1 (1%)	22	62
30	AY	132/134 (98%)	124 (94%)	7 (5%)	1 (1%)	19	60
31	AZ	80/82 (98%)	75 (94%)	5 (6%)	0	100	100
32	Aa	95/97 (98%)	77 (81%)	16 (17%)	2 (2%)	7	39
33	Ab	79/81 (98%)	72 (91%)	7 (9%)	0	100	100
34	Ac	61/63 (97%)	59 (97%)	2 (3%)	0	100	100
35	Ad	51/53 (96%)	49 (96%)	2 (4%)	0	100	100
36	Ae	58/60 (97%)	54 (93%)	4 (7%)	0	100	100
37	Af	71/73 (97%)	62 (87%)	9 (13%)	0	100	100
38	Ag	310/312 (99%)	300 (97%)	10 (3%)	0	100	100
39	BA	249/251 (99%)	236 (95%)	12 (5%)	1 (0%)	34	72
40	BB	384/386 (100%)	361 (94%)	22 (6%)	1 (0%)	41	76
41	BC	359/361 (99%)	338 (94%)	19 (5%)	2 (1%)	25	65
42	BD	292/294 (99%)	280 (96%)	11 (4%)	1 (0%)	41	76
43	BE	163/176 (93%)	158 (97%)	5 (3%)	0	100	100
44	BF	220/222 (99%)	209 (95%)	11 (5%)	0	100	100
45	BG	231/233 (99%)	217 (94%)	14 (6%)	0	100	100
46	BH	189/191 (99%)	183 (97%)	6 (3%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
47	BI	216/218 (99%)	210 (97%)	6 (3%)	0	100	100
48	BJ	167/169 (99%)	154 (92%)	13 (8%)	0	100	100
49	BK	191/193 (99%)	176 (92%)	13 (7%)	2 (1%)	15	54
50	BL	134/136 (98%)	126 (94%)	8 (6%)	0	100	100
51	BM	201/203 (99%)	189 (94%)	12 (6%)	0	100	100
52	BN	195/197 (99%)	189 (97%)	4 (2%)	2 (1%)	15	54
53	BO	181/183 (99%)	172 (95%)	9 (5%)	0	100	100
54	BP	183/185 (99%)	174 (95%)	9 (5%)	0	100	100
55	BQ	186/188 (99%)	177 (95%)	9 (5%)	0	100	100
56	BR	169/171 (99%)	165 (98%)	4 (2%)	0	100	100
57	BS	157/159 (99%)	147 (94%)	10 (6%)	0	100	100
58	BT	98/100 (98%)	93 (95%)	5 (5%)	0	100	100
59	BU	134/136 (98%)	130 (97%)	4 (3%)	0	100	100
60	BV	124/126 (98%)	122 (98%)	2 (2%)	0	100	100
61	BW	119/121 (98%)	114 (96%)	4 (3%)	1 (1%)	19	60
62	BX	123/125 (98%)	121 (98%)	2 (2%)	0	100	100
63	BY	133/135 (98%)	129 (97%)	4 (3%)	0	100	100
64	BZ	146/148 (99%)	135 (92%)	10 (7%)	1 (1%)	22	62
65	Ba	56/58 (97%)	49 (88%)	7 (12%)	0	100	100
66	Bb	94/96 (98%)	93 (99%)	1 (1%)	0	100	100
67	Bc	107/109 (98%)	99 (92%)	8 (8%)	0	100	100
68	Bd	125/127 (98%)	120 (96%)	5 (4%)	0	100	100
69	Be	104/106 (98%)	102 (98%)	2 (2%)	0	100	100
70	Bf	110/112 (98%)	107 (97%)	3 (3%)	0	100	100
71	Bg	117/119 (98%)	113 (97%)	4 (3%)	0	100	100
72	Bh	97/99 (98%)	96 (99%)	1 (1%)	0	100	100
73	Bi	83/85 (98%)	80 (96%)	3 (4%)	0	100	100
74	Bj	75/77 (97%)	74 (99%)	1 (1%)	0	100	100
75	Bk	48/50 (96%)	47 (98%)	1 (2%)	0	100	100
76	Bl	50/52 (96%)	48 (96%)	2 (4%)	0	100	100
77	Bm	23/25 (92%)	23 (100%)	0	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
78	Bn	101/103 (98%)	97 (96%)	4 (4%)	0	100	100
79	Bo	89/91 (98%)	85 (96%)	4 (4%)	0	100	100
80	CA	1738/1967 (88%)	1664 (96%)	70 (4%)	4 (0%)	47	81
81	CB	295/297 (99%)	291 (99%)	3 (1%)	1 (0%)	41	76
82	CC	110/530 (21%)	107 (97%)	3 (3%)	0	100	100
All	All	13127/14000 (94%)	12439 (95%)	660 (5%)	28 (0%)	50	81

All (28) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
14	AI	10	LYS
32	Aa	84	VAL
52	BN	111[A]	PRO
80	CA	224	THR
80	CA	621	VAL
81	CB	9	ILE
49	BK	63	VAL
7	AB	212	VAL
10	AE	43	PRO
18	AM	109	GLU
40	BB	128	LYS
52	BN	110[A]	PRO
61	BW	44	PRO
80	CA	1148	PHE
12	AG	173	PRO
30	AY	37	LYS
64	BZ	78	LEU
7	AB	213	ARG
14	AI	9	HIS
15	AJ	99	LEU
29	AX	89	ASN
39	BA	126	LEU
41	BC	292	SER
32	Aa	9	GLY
41	BC	4	PRO
42	BD	20	PHE
49	BK	77	LEU
80	CA	507	LYS

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	
6	AA	170/173 (98%)	170 (100%)	0	100	100
7	AB	200/224 (89%)	199 (100%)	1 (0%)	88	93
8	AC	175/175 (100%)	175 (100%)	0	100	100
9	AD	182/182 (100%)	181 (100%)	1 (0%)	88	93
10	AE	220/220 (100%)	218 (99%)	2 (1%)	78	88
11	AF	172/173 (99%)	171 (99%)	1 (1%)	86	92
12	AG	189/195 (97%)	186 (98%)	3 (2%)	62	79
13	AH	163/165 (99%)	162 (99%)	1 (1%)	86	92
14	AI	148/161 (92%)	146 (99%)	2 (1%)	67	81
15	AJ	156/157 (99%)	156 (100%)	0	100	100
16	AK	77/85 (91%)	77 (100%)	0	100	100
17	AL	129/129 (100%)	128 (99%)	1 (1%)	81	89
18	AM	88/98 (90%)	88 (100%)	0	100	100
19	AN	127/127 (100%)	127 (100%)	0	100	100
20	AO	91/96 (95%)	91 (100%)	0	100	100
21	AP	95/98 (97%)	94 (99%)	1 (1%)	73	85
22	AQ	117/117 (100%)	116 (99%)	1 (1%)	78	88
23	AR	101/124 (82%)	101 (100%)	0	100	100
24	AS	128/128 (100%)	126 (98%)	2 (2%)	62	79
25	AT	115/115 (100%)	114 (99%)	1 (1%)	78	88
26	AU	93/93 (100%)	91 (98%)	2 (2%)	52	71
27	AV	71/74 (96%)	68 (96%)	3 (4%)	30	55
28	AW	110/110 (100%)	110 (100%)	0	100	100
29	AX	119/119 (100%)	119 (100%)	0	100	100
30	AY	112/112 (100%)	112 (100%)	0	100	100
31	AZ	67/73 (92%)	67 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	Aa	83/83 (100%)	83 (100%)	0	100	100
33	Ab	70/70 (100%)	70 (100%)	0	100	100
34	Ac	55/56 (98%)	54 (98%)	1 (2%)	59	77
35	Ad	47/47 (100%)	46 (98%)	1 (2%)	53	72
36	Ae	50/51 (98%)	49 (98%)	1 (2%)	55	73
37	Af	56/64 (88%)	56 (100%)	0	100	100
38	Ag	250/257 (97%)	248 (99%)	2 (1%)	81	89
39	BA	190/193 (98%)	190 (100%)	0	100	100
40	BB	321/322 (100%)	319 (99%)	2 (1%)	86	92
41	BC	288/288 (100%)	288 (100%)	0	100	100
42	BD	241/243 (99%)	241 (100%)	0	100	100
43	BE	138/155 (89%)	137 (99%)	1 (1%)	84	90
44	BF	186/186 (100%)	186 (100%)	0	100	100
45	BG	187/191 (98%)	186 (100%)	1 (0%)	88	93
46	BH	168/171 (98%)	168 (100%)	0	100	100
47	BI	185/185 (100%)	185 (100%)	0	100	100
48	BJ	146/147 (99%)	146 (100%)	0	100	100
49	BK	154/154 (100%)	152 (99%)	2 (1%)	69	82
50	BL	107/107 (100%)	107 (100%)	0	100	100
51	BM	175/175 (100%)	174 (99%)	1 (1%)	86	92
52	BN	160/160 (100%)	158 (99%)	2 (1%)	69	82
53	BO	138/145 (95%)	138 (100%)	0	100	100
54	BP	150/150 (100%)	148 (99%)	2 (1%)	69	82
55	BQ	152/153 (99%)	151 (99%)	1 (1%)	84	90
56	BR	155/155 (100%)	155 (100%)	0	100	100
57	BS	136/136 (100%)	136 (100%)	0	100	100
58	BT	87/87 (100%)	87 (100%)	0	100	100
59	BU	104/104 (100%)	104 (100%)	0	100	100
60	BV	56/107 (52%)	55 (98%)	1 (2%)	59	77
61	BW	104/105 (99%)	104 (100%)	0	100	100
62	BX	108/108 (100%)	107 (99%)	1 (1%)	78	88

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
63	BY	115/115 (100%)	114 (99%)	1 (1%)	78	88
64	BZ	118/118 (100%)	118 (100%)	0	100	100
65	Ba	46/46 (100%)	45 (98%)	1 (2%)	52	71
66	Bb	81/81 (100%)	81 (100%)	0	100	100
67	Bc	92/96 (96%)	92 (100%)	0	100	100
68	Bd	108/109 (99%)	108 (100%)	0	100	100
69	Be	90/90 (100%)	89 (99%)	1 (1%)	73	85
70	Bf	95/95 (100%)	95 (100%)	0	100	100
71	Bg	104/104 (100%)	104 (100%)	0	100	100
72	Bh	80/81 (99%)	80 (100%)	0	100	100
73	Bi	69/69 (100%)	69 (100%)	0	100	100
74	Bj	68/68 (100%)	67 (98%)	1 (2%)	65	80
75	Bk	45/45 (100%)	45 (100%)	0	100	100
76	Bl	47/47 (100%)	47 (100%)	0	100	100
77	Bm	22/23 (96%)	22 (100%)	0	100	100
78	Bn	87/88 (99%)	87 (100%)	0	100	100
79	Bo	71/71 (100%)	70 (99%)	1 (1%)	67	81
80	CA	1560/1770 (88%)	1545 (99%)	15 (1%)	76	86
81	CB	266/266 (100%)	264 (99%)	2 (1%)	81	89
82	CC	97/482 (20%)	97 (100%)	0	100	100
All	All	11123/11942 (93%)	11060 (99%)	63 (1%)	86	92

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	AB	26	ARG
9	AD	76	ARG
10	AE	211	LYS
10	AE	233	LYS
11	AF	45	LYS
12	AG	51	LYS
12	AG	98	ARG
12	AG	164	LYS
13	AH	79	ARG
14	AI	137	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
14	AI	138	ASN
17	AL	67	ARG
21	AP	103	ASN
22	AQ	95	LYS
24	AS	110	ARG
24	AS	145	ARG
25	AT	78	LYS
26	AU	43	LYS
26	AU	52	LYS
27	AV	1	MET
27	AV	33	GLN
27	AV	44	ARG
34	Ac	65	ARG
35	Ad	13	ARG
36	Ae	54	ARG
38	Ag	137	LYS
38	Ag	229	LYS
40	BB	90	VAL
40	BB	332	ARG
43	BE	139	LYS
45	BG	240	ASN
49	BK	6	ASN
49	BK	21	ARG
51	BM	138	GLN
52	BN	50[A]	ASN
52	BN	117[A]	ARG
54	BP	141	ARG
54	BP	180	ARG
55	BQ	153	LYS
60	BV	2	LYS
62	BX	3	LYS
63	BY	27	LYS
65	Ba	59	LYS
69	Be	21	ARG
74	Bj	9	LYS
79	Bo	4	ARG
80	CA	218	LYS
80	CA	233	LYS
80	CA	378	ARG
80	CA	384	MET
80	CA	410	LYS
80	CA	612	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
80	CA	689	ARG
80	CA	706	ARG
80	CA	849	LYS
80	CA	1146	MET
80	CA	1187	LYS
80	CA	1229	LYS
80	CA	1319	LYS
80	CA	1441	LYS
80	CA	1443	ARG
81	CB	24	LYS
81	CB	254	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

Mol	Chain	Res	Type
7	AB	149	GLN
7	AB	183	GLN
10	AE	36	HIS
10	AE	98	ASN
10	AE	201	HIS
16	AK	39	ASN
16	AK	62	GLN
24	AS	122	HIS
28	AW	42	GLN
28	AW	66	ASN
30	AY	22	GLN
33	Ab	19	HIS
41	BC	221	ASN
45	BG	240	ASN
46	BH	157	ASN
47	BI	208	ASN
49	BK	112	ASN
50	BL	105	GLN
51	BM	70	ASN
56	BR	8	GLN
56	BR	62	ASN
56	BR	138	GLN
63	BY	127	ASN
64	BZ	64	GLN
67	Bc	57	GLN
71	Bg	62	GLN
78	Bn	22	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
80	CA	258	GLN
80	CA	261	ASN
80	CA	1096	HIS
80	CA	1144	GLN
80	CA	1435	HIS
80	CA	1773	GLN
81	CB	103	GLN
82	CC	212	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1768/1800 (98%)	433 (24%)	36 (2%)
2	3	157/158 (99%)	31 (19%)	1 (0%)
3	4	120/121 (99%)	14 (11%)	1 (0%)
4	5	3159/3396 (93%)	584 (18%)	32 (1%)
5	6	75/76 (98%)	14 (18%)	0
All	All	5279/5551 (95%)	1076 (20%)	70 (1%)

All (1076) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	2	A
1	2	4	C
1	2	5	U
1	2	9	U
1	2	17	C
1	2	25	C
1	2	26	A
1	2	34	G
1	2	43	A
1	2	46	A
1	2	47	A
1	2	56	U
1	2	57	G
1	2	60	U
1	2	62	A
1	2	63	G
1	2	65	A
1	2	66	U
1	2	68	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	69	G
1	2	71	A
1	2	74	U
1	2	75	U
1	2	76	A
1	2	78	A
1	2	79	C
1	2	81	G
1	2	100	A
1	2	104	A
1	2	114	C
1	2	126	A
1	2	129	U
1	2	130	C
1	2	131	C
1	2	132	U
1	2	134	U
1	2	138	A
1	2	140	A
1	2	141	U
1	2	142	G
1	2	153	G
1	2	159	U
1	2	169	A
1	2	171	A
1	2	176	C
1	2	178	U
1	2	180	A
1	2	186	C
1	2	187	G
1	2	188	A
1	2	191	C
1	2	193	U
1	2	195	G
1	2	196	G
1	2	198	A
1	2	215	A
1	2	216	U
1	2	217	A
1	2	218	A
1	2	225	A
1	2	227	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	228	G
1	2	230	C
1	2	232	U
1	2	233	C
1	2	234	G
1	2	236	A
1	2	240	U
1	2	241	U
1	2	250	C
1	2	257	A
1	2	260	U
1	2	261	U
1	2	265	A
1	2	274	G
1	2	276	C
1	2	278	U
1	2	279	G
1	2	280	U
1	2	281	G
1	2	287	G
1	2	299	A
1	2	308	C
1	2	312	A
1	2	314	C
1	2	316	A
1	2	322	G
1	2	323	A
1	2	330	G
1	2	337	G
1	2	338	C
1	2	352	A
1	2	359	A
1	2	361	C
1	2	370	A
1	2	388	G
1	2	400	A
1	2	401	A
1	2	402	C
1	2	404	G
1	2	411	C
1	2	415	C
1	2	417	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	419	G
1	2	423	G
1	2	424	C
1	2	425	A
1	2	426	G
1	2	428	A
1	2	434	G
1	2	437	A
1	2	439	U
1	2	444	C
1	2	448	C
1	2	460	A
1	2	464	A
1	2	468	A
1	2	477	A
1	2	483	A
1	2	485	A
1	2	487	G
1	2	493	U
1	2	494	U
1	2	495	C
1	2	496	G
1	2	498	G
1	2	499	U
1	2	500	C
1	2	502	U
1	2	506	A
1	2	510	G
1	2	511	A
1	2	515	A
1	2	525	A
1	2	527	A
1	2	534	A
1	2	537	G
1	2	538	A
1	2	540	G
1	2	541	A
1	2	542	A
1	2	544	A
1	2	548	G
1	2	555	A
1	2	556	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	557	G
1	2	558	U
1	2	559	C
1	2	565	C
1	2	568	G
1	2	579	A
1	2	580	A
1	2	594	A
1	2	595	G
1	2	606	A
1	2	611	U
1	2	619	A
1	2	620	A
1	2	622	A
1	2	623	A
1	2	624	G
1	2	629	U
1	2	630	A
1	2	634	G
1	2	639	U
1	2	640	U
1	2	641	G
1	2	651	G
1	2	653	C
1	2	655	G
1	2	677	G
1	2	678	A
1	2	679	U
1	2	680	U
1	2	681	U
1	2	687	G
1	2	693	U
1	2	694	U
1	2	696	C
1	2	697	C
1	2	698	U
1	2	700	C
1	2	704	C
1	2	705	U
1	2	706	A
1	2	707	A
1	2	708	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	709	C
1	2	710	U
1	2	711	U
1	2	712	G
1	2	728	U
1	2	730	G
1	2	732	G
1	2	733	A
1	2	734	A
1	2	741	C
1	2	742	U
1	2	743	U
1	2	745	U
1	2	753	A
1	2	765	G
1	2	766	U
1	2	771	A
1	2	774	A
1	2	775	G
1	2	778	G
1	2	780	A
1	2	781	U
1	2	782	U
1	2	783	G
1	2	789	A
1	2	803	A
1	2	812	A
1	2	813	U
1	2	814	A
1	2	815	G
1	2	816	G
1	2	820	U
1	2	821	U
1	2	823	G
1	2	833	U
1	2	836	U
1	2	840	U
1	2	841	U
1	2	846	G
1	2	852	C
1	2	856	A
1	2	857	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	860	U
1	2	861	U
1	2	863	A
1	2	876	G
1	2	886	U
1	2	899	G
1	2	901	G
1	2	902	G
1	2	904	G
1	2	912	U
1	2	913	G
1	2	914	G
1	2	915	A
1	2	929	A
1	2	933	A
1	2	934	C
1	2	935	U
1	2	942	G
1	2	945	U
1	2	960	U
1	2	964	U
1	2	966	A
1	2	970	A
1	2	971	A
1	2	988	A
1	2	992	A
1	2	993	A
1	2	1004	U
1	2	1005	A
1	2	1023	A
1	2	1024	U
1	2	1025	A
1	2	1028	C
1	2	1029	U
1	2	1039	A
1	2	1052	U
1	2	1053	G
1	2	1058	U
1	2	1060	U
1	2	1061	A
1	2	1076	A
1	2	1082	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	1092	A
1	2	1093	A
1	2	1096	C
1	2	1100	G
1	2	1108	G
1	2	1109	G
1	2	1126	G
1	2	1138	A
1	2	1150	G
1	2	1158	C
1	2	1160	A
1	2	1164	G
1	2	1166	A
1	2	1167	G
1	2	1170	G
1	2	1185	U
1	2	1194	A
1	2	1196	A
1	2	1198	G
1	2	1199	G
1	2	1200	G
1	2	1212	G
1	2	1217	A
1	2	1218	G
1	2	1219	A
1	2	1227	A
1	2	1228	G
1	2	1229	G
1	2	1241	G
1	2	1243	G
1	2	1244	A
1	2	1245	G
1	2	1246	C
1	2	1249	U
1	2	1252	C
1	2	1256	A
1	2	1257	U
1	2	1274	C
1	2	1275	A
1	2	1276	U
1	2	1285	U
1	2	1286	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	1298	U
1	2	1299	G
1	2	1301	U
1	2	1314	U
1	2	1315	U
1	2	1321	A
1	2	1322	A
1	2	1325	A
1	2	1337	A
1	2	1338	C
1	2	1340	U
1	2	1344	A
1	2	1345	A
1	2	1346	A
1	2	1348	A
1	2	1360	A
1	2	1361	U
1	2	1363	U
1	2	1367	G
1	2	1370	U
1	2	1371	A
1	2	1372	U
1	2	1373	C
1	2	1382	A
1	2	1383	G
1	2	1389	C
1	2	1390	U
1	2	1398	U
1	2	1399	C
1	2	1400	A
1	2	1402	G
1	2	1412	G
1	2	1414	U
1	2	1427	A
1	2	1428	G
1	2	1429	G
1	2	1431	C
1	2	1432	U
1	2	1436	A
1	2	1437	U
1	2	1445	G
1	2	1446	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	1456	C
1	2	1459	C
1	2	1460	A
1	2	1465	C
1	2	1466	G
1	2	1471	A
1	2	1472	C
1	2	1473	U
1	2	1479	A
1	2	1491	U
1	2	1493	A
1	2	1496	U
1	2	1503	A
1	2	1514	U
1	2	1516	A
1	2	1520	U
1	2	1521	G
1	2	1523	G
1	2	1524	A
1	2	1535	U
1	2	1536	G
1	2	1537	C
1	2	1540	G
1	2	1542	G
1	2	1543	A
1	2	1545	A
1	2	1546	G
1	2	1557	U
1	2	1558	U
1	2	1559	A
1	2	1561	U
1	2	1563	C
1	2	1564	U
1	2	1569	A
1	2	1570	A
1	2	1573	A
1	2	1575	G
1	2	1576	A
1	2	1577	A
1	2	1583	A
1	2	1584	G
1	2	1585	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	1601	G
1	2	1611	A
1	2	1614	A
1	2	1616	G
1	2	1619	C
1	2	1622	G
1	2	1631	A
1	2	1634	C
1	2	1636	C
1	2	1637	C
1	2	1651	A
1	2	1657	U
1	2	1658	G
1	2	1688	U
1	2	1701	A
1	2	1709	C
1	2	1711	C
1	2	1715	G
1	2	1717	G
1	2	1742	U
1	2	1750	A
1	2	1756	A
1	2	1760	G
1	2	1767	G
1	2	1769	U
1	2	1770	U
1	2	1780	G
1	2	1782	A
1	2	1783	C
1	2	1791	A
1	2	1792	G
1	2	1793	G
1	2	1794	A
1	2	1795	U
1	2	1796	C
1	2	1799	U
2	3	9	A
2	3	20	U
2	3	23	U
2	3	34	U
2	3	35	C
2	3	39	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	3	52	A
2	3	59	A
2	3	62	C
2	3	63	G
2	3	80	A
2	3	81	U
2	3	82	U
2	3	84	C
2	3	86	U
2	3	87	G
2	3	90	U
2	3	95	G
2	3	99	C
2	3	104	A
2	3	105	A
2	3	106	C
2	3	111	A
2	3	113	U
2	3	116	G
2	3	125	U
2	3	126	A
2	3	148	G
2	3	152	G
2	3	156	U
2	3	158	U
3	4	7	G
3	4	11	A
3	4	29	C
3	4	53	U
3	4	54	U
3	4	55	A
3	4	65	G
3	4	74	C
3	4	76	A
3	4	77	G
3	4	101	G
3	4	102	A
3	4	112	G
3	4	121	U
4	5	6	A
4	5	14	U
4	5	18	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	22	G
4	5	26	A
4	5	40	A
4	5	43	A
4	5	49	A
4	5	59	G
4	5	60	A
4	5	65	A
4	5	66	A
4	5	76	G
4	5	85	A
4	5	92	G
4	5	99	A
4	5	109	A
4	5	110	G
4	5	111	C
4	5	113	C
4	5	118	U
4	5	121	A
4	5	122	A
4	5	123	A
4	5	133	U
4	5	135	C
4	5	136	G
4	5	146	U
4	5	156	G
4	5	157	A
4	5	161	G
4	5	166	C
4	5	187	A
4	5	190	U
4	5	191	U
4	5	210	U
4	5	211	A
4	5	213	A
4	5	218	G
4	5	219	A
4	5	237	G
4	5	240	U
4	5	241	G
4	5	243	G
4	5	245	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	248	U
4	5	249	U
4	5	252	U
4	5	263	C
4	5	266	A
4	5	269	G
4	5	282	G
4	5	283	G
4	5	286	U
4	5	295	A
4	5	298	U
4	5	323	A
4	5	329	U
4	5	339	C
4	5	350	C
4	5	351	A
4	5	370	U
4	5	371	G
4	5	374	A
4	5	376	G
4	5	378	A
4	5	390	G
4	5	395	A
4	5	398	A
4	5	401	U
4	5	402	A
4	5	403	C
4	5	421	G
4	5	422	A
4	5	439	C
4	5	521	U
4	5	522	A
4	5	524	A
4	5	536	G
4	5	537	U
4	5	544	C
4	5	547	C
4	5	548	G
4	5	549	G
4	5	551	A
4	5	553	G
4	5	556	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	558	A
4	5	560	A
4	5	579	A
4	5	580	G
4	5	590	A
4	5	593	A
4	5	601	G
4	5	610	G
4	5	611	G
4	5	612	A
4	5	621	U
4	5	622	A
4	5	623	A
4	5	637	C
4	5	639	C
4	5	650	A
4	5	668	C
4	5	678	A
4	5	682	U
4	5	692	A
4	5	706	A
4	5	713	G
4	5	716	A
4	5	717	A
4	5	718	C
4	5	720	U
4	5	726	G
4	5	765	U
4	5	768	U
4	5	777	U
4	5	778	U
4	5	781	A
4	5	782	G
4	5	786	G
4	5	787	A
4	5	807	A
4	5	817	A
4	5	818	A
4	5	831	A
4	5	847	A
4	5	848	A
4	5	850	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	862	C
4	5	870	G
4	5	872	U
4	5	875	U
4	5	880	U
4	5	896	A
4	5	897	A
4	5	908	G
4	5	909	G
4	5	915	A
4	5	917	G
4	5	918	A
4	5	922	A
4	5	924	C
4	5	926	A
4	5	938	G
4	5	940	U
4	5	945	C
4	5	960	C
4	5	961	U
4	5	975	G
4	5	980	U
4	5	995	G
4	5	996	U
4	5	1003	A
4	5	1011	G
4	5	1016	U
4	5	1025	G
4	5	1026	A
4	5	1029	U
4	5	1030	G
4	5	1033	C
4	5	1037	A
4	5	1042	U
4	5	1048	A
4	5	1050	C
4	5	1065	A
4	5	1066	A
4	5	1073	G
4	5	1082	U
4	5	1094	A
4	5	1095	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	1096	U
4	5	1098	G
4	5	1099	A
4	5	1104	A
4	5	1105	G
4	5	1118	G
4	5	1130	A
4	5	1132	G
4	5	1144	A
4	5	1145	U
4	5	1154	A
4	5	1156	C
4	5	1160	A
4	5	1161	C
4	5	1180	A
4	5	1181	A
4	5	1182	U
4	5	1191	A
4	5	1193	C
4	5	1194	A
4	5	1197	C
4	5	1202	C
4	5	1203	A
4	5	1207	G
4	5	1209	U
4	5	1218	A
4	5	1223	G
4	5	1226	A
4	5	1227	G
4	5	1228	C
4	5	1232	A
4	5	1233	C
4	5	1237	G
4	5	1241	A
4	5	1243	G
4	5	1246	A
4	5	1247	G
4	5	1254	U
4	5	1255	C
4	5	1259	U
4	5	1263	G
4	5	1264	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	1265	G
4	5	1266	U
4	5	1267	G
4	5	1270	U
4	5	1271	A
4	5	1272	A
4	5	1273	C
4	5	1275	A
4	5	1279	A
4	5	1280	C
4	5	1286	G
4	5	1287	A
4	5	1288	A
4	5	1296	G
4	5	1306	U
4	5	1310	U
4	5	1314	G
4	5	1331	A
4	5	1332	U
4	5	1346	G
4	5	1349	U
4	5	1350	G
4	5	1352	U
4	5	1353	A
4	5	1355	G
4	5	1356	A
4	5	1357	U
4	5	1358	G
4	5	1387	A
4	5	1392	C
4	5	1400	A
4	5	1401	G
4	5	1419	A
4	5	1420	A
4	5	1435	G
4	5	1438	C
4	5	1447	A
4	5	1451	G
4	5	1467	G
4	5	1482	A
4	5	1483	A
4	5	1484	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	1495	U
4	5	1496	U
4	5	1509	C
4	5	1524	U
4	5	1534	U
4	5	1537	G
4	5	1540	A
4	5	1557	C
4	5	1558	A
4	5	1559	A
4	5	1561	G
4	5	1563	C
4	5	1564	C
4	5	1568	U
4	5	1569	U
4	5	1570	U
4	5	1573	U
4	5	1574	G
4	5	1576	A
4	5	1577	G
4	5	1581	A
4	5	1584	A
4	5	1588	A
4	5	1589	A
4	5	1590	A
4	5	1594	A
4	5	1595	A
4	5	1597	C
4	5	1606	A
4	5	1621	U
4	5	1630	U
4	5	1640	C
4	5	1643	A
4	5	1644	A
4	5	1646	U
4	5	1718	U
4	5	1725	U
4	5	1726	C
4	5	1742	A
4	5	1751	A
4	5	1752	G
4	5	1766	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	1767	G
4	5	1771	G
4	5	1776	G
4	5	1781	G
4	5	1797	G
4	5	1798	A
4	5	1815	A
4	5	1817	A
4	5	1818	G
4	5	1820	U
4	5	1821	U
4	5	1822	U
4	5	1840	A
4	5	1843	A
4	5	1847	C
4	5	1851	A
4	5	1865	A
4	5	1867	C
4	5	1868	A
4	5	1872	U
4	5	1879	G
4	5	1881	U
4	5	1894	A
4	5	1896	A
4	5	1907	G
4	5	1909	A
4	5	1926	U
4	5	1927	C
4	5	1931	A
4	5	1933	A
4	5	1936	G
4	5	1952	C
4	5	1953	G
4	5	1955	G
4	5	2102	C
4	5	2103	U
4	5	2114	A
4	5	2115	C
4	5	2122	G
4	5	2123	G
4	5	2127	A
4	5	2132	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	2141	U
4	5	2143	A
4	5	2145	A
4	5	2146	A
4	5	2159	A
4	5	2170	G
4	5	2172	G
4	5	2188	G
4	5	2189	A
4	5	2193	C
4	5	2194	U
4	5	2205	C
4	5	2206	U
4	5	2207	G
4	5	2208	A
4	5	2210	U
4	5	2211	G
4	5	2223	A
4	5	2224	A
4	5	2226	U
4	5	2245	A
4	5	2247	G
4	5	2250	G
4	5	2253	A
4	5	2257	A
4	5	2258	C
4	5	2273	G
4	5	2274	G
4	5	2282	A
4	5	2283	U
4	5	2284	G
4	5	2288	C
4	5	2289	G
4	5	2308	G
4	5	2311	U
4	5	2314	A
4	5	2315	U
4	5	2316	G
4	5	2335	U
4	5	2337	U
4	5	2351	C
4	5	2357	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	2368	A
4	5	2373	A
4	5	2374	A
4	5	2375	C
4	5	2376	G
4	5	2389	U
4	5	2390	C
4	5	2394	G
4	5	2398	A
4	5	2403	A
4	5	2404	G
4	5	2405	A
4	5	2412	U
4	5	2419	G
4	5	2420	A
4	5	2436	G
4	5	2440	A
4	5	2447	U
4	5	2448	A
4	5	2450	A
4	5	2453	G
4	5	2497	C
4	5	2499	U
4	5	2500	U
4	5	2502	U
4	5	2503	A
4	5	2506	U
4	5	2507	U
4	5	2508	C
4	5	2509	U
4	5	2515	U
4	5	2516	A
4	5	2523	G
4	5	2532	C
4	5	2534	G
4	5	2538	U
4	5	2539	U
4	5	2540	C
4	5	2541	A
4	5	2542	U
4	5	2543	U
4	5	2547	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	2550	G
4	5	2551	U
4	5	2553	C
4	5	2562	A
4	5	2570	A
4	5	2571	U
4	5	2572	U
4	5	2573	C
4	5	2574	G
4	5	2586	G
4	5	2588	U
4	5	2594	A
4	5	2607	G
4	5	2608	G
4	5	2615	G
4	5	2627	A
4	5	2630	U
4	5	2637	A
4	5	2640	G
4	5	2653	U
4	5	2657	A
4	5	2658	A
4	5	2675	A
4	5	2678	G
4	5	2682	U
4	5	2690	A
4	5	2691	G
4	5	2692	A
4	5	2697	A
4	5	2700	G
4	5	2704	A
4	5	2705	A
4	5	2720	U
4	5	2729	G
4	5	2730	U
4	5	2738	C
4	5	2753	U
4	5	2754	G
4	5	2756	C
4	5	2769	U
4	5	2778	G
4	5	2779	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	2797	G
4	5	2798	C
4	5	2800	A
4	5	2801	G
4	5	2802	A
4	5	2803	A
4	5	2804	A
4	5	2811	C
4	5	2815	G
4	5	2817	G
4	5	2818	A
4	5	2822	C
4	5	2843	U
4	5	2844	U
4	5	2845	C
4	5	2846	A
4	5	2847	U
4	5	2848	A
4	5	2850	C
4	5	2857	G
4	5	2861	U
4	5	2872	G
4	5	2873	A
4	5	2876	U
4	5	2887	U
4	5	2888	A
4	5	2890	C
4	5	2899	G
4	5	2912	A
4	5	2924	U
4	5	2929	C
4	5	2936	U
4	5	2937	A
4	5	2939	G
4	5	2943	C
4	5	2952	G
4	5	2972	A
4	5	2973	G
4	5	2984	C
4	5	2991	G
4	5	2998	G
4	5	3013	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	3052	U
4	5	3057	U
4	5	3060	G
4	5	3079	U
4	5	3081	G
4	5	3087	A
4	5	3093	C
4	5	3102	G
4	5	3110	G
4	5	3114	A
4	5	3123	A
4	5	3130	A
4	5	3131	A
4	5	3132	U
4	5	3143	A
4	5	3144	C
4	5	3155	C
4	5	3156	U
4	5	3157	U
4	5	3158	U
4	5	3166	A
4	5	3171	A
4	5	3173	A
4	5	3174	G
4	5	3175	A
4	5	3177	G
4	5	3180	U
4	5	3182	C
4	5	3186	U
4	5	3188	A
4	5	3206	G
4	5	3207	C
4	5	3208	U
4	5	3211	A
4	5	3218	C
4	5	3219	A
4	5	3220	G
4	5	3228	A
4	5	3230	G
4	5	3236	C
4	5	3240	G
4	5	3244	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	5	3246	A
4	5	3248	G
4	5	3260	U
4	5	3261	G
4	5	3271	U
4	5	3273	C
4	5	3274	A
4	5	3277	G
4	5	3282	U
4	5	3289	G
4	5	3290	G
4	5	3295	A
4	5	3296	A
4	5	3305	U
4	5	3308	A
4	5	3317	A
4	5	3319	G
4	5	3320	U
4	5	3321	A
4	5	3335	U
4	5	3342	U
4	5	3343	A
4	5	3346	G
4	5	3352	U
4	5	3353	U
4	5	3354	G
4	5	3355	U
4	5	3357	G
4	5	3364	U
4	5	3369	U
4	5	3370	G
4	5	3376	A
4	5	3379	C
4	5	3391	G
4	5	3397	U
5	6	6	C
5	6	9	G
5	6	16	U
5	6	17	G
5	6	19	U
5	6	21	A
5	6	22	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
5	6	46	A
5	6	47	U
5	6	48	U
5	6	58	A
5	6	60	U
5	6	73	G
5	6	76	A

All (70) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	59	C
1	2	68	A
1	2	77	U
1	2	78	A
1	2	139	C
1	2	141	U
1	2	280	U
1	2	322	G
1	2	387	A
1	2	400	A
1	2	539	G
1	2	541	A
1	2	555	A
1	2	639	U
1	2	640	U
1	2	705	U
1	2	711	U
1	2	765	G
1	2	819	G
1	2	912	U
1	2	928	U
1	2	963	A
1	2	1023	A
1	2	1226	A
1	2	1256	A
1	2	1273	G
1	2	1274	C
1	2	1344	A
1	2	1382	A
1	2	1430	U
1	2	1471	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	2	1534	G
1	2	1584	G
1	2	1633	A
1	2	1636	C
1	2	1791	A
2	3	85	G
3	4	52	G
4	5	239	G
4	5	282	G
4	5	706	A
4	5	716	A
4	5	764	G
4	5	847	A
4	5	874	C
4	5	917	G
4	5	1065	A
4	5	1098	G
4	5	1356	A
4	5	1563	C
4	5	1816	U
4	5	1817	A
4	5	1821	U
4	5	2101	A
4	5	2102	C
4	5	2113	U
4	5	2447	U
4	5	2496	C
4	5	2501	A
4	5	2538	U
4	5	2542	U
4	5	2587	G
4	5	2802	A
4	5	3122	U
4	5	3219	A
4	5	3229	C
4	5	3270	U
4	5	3320	U
4	5	3351	C
4	5	3352	U

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 95 ligands modelled in this entry, 95 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

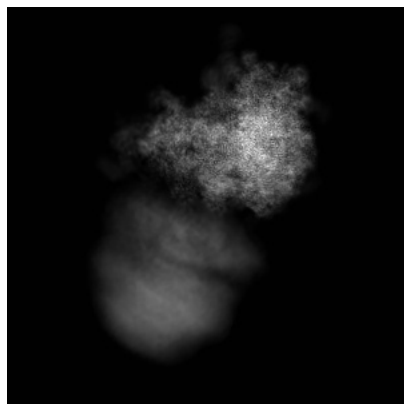
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-14978. These allow visual inspection of the internal detail of the map and identification of artifacts.

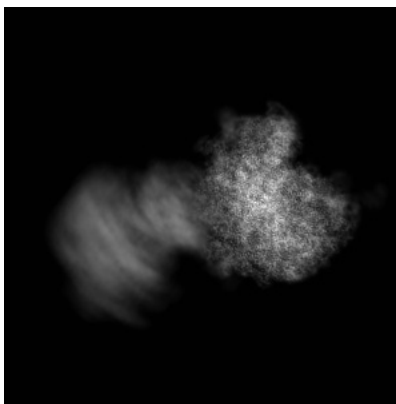
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

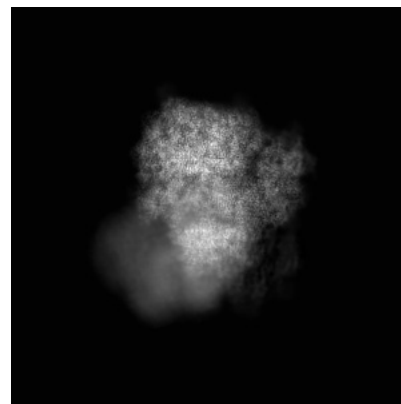
6.1.1 Primary map



X

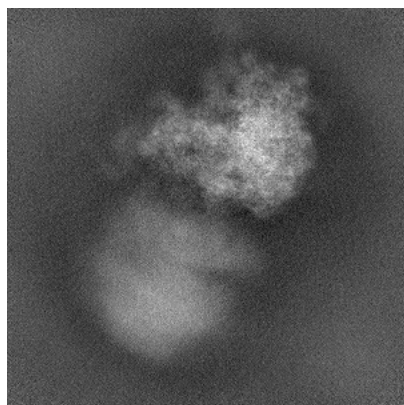


Y

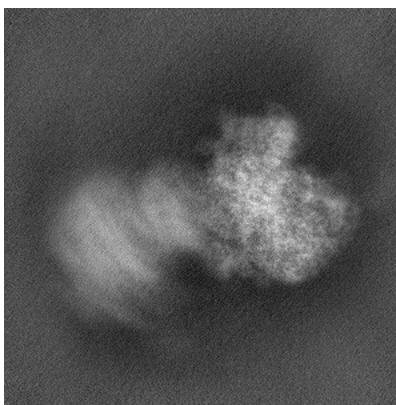


Z

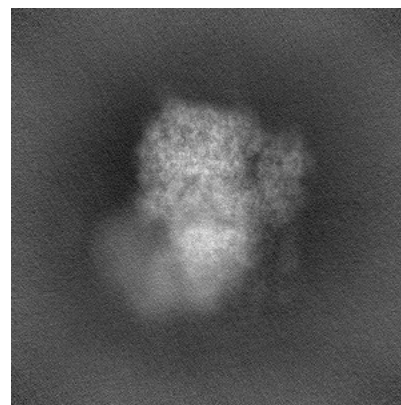
6.1.2 Raw map



X



Y

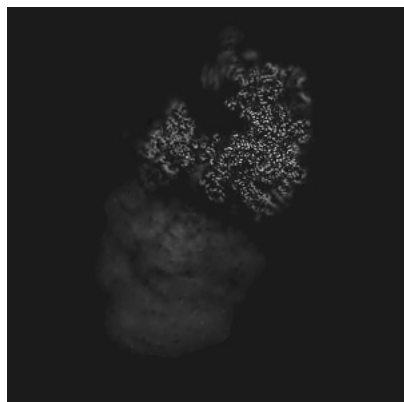


Z

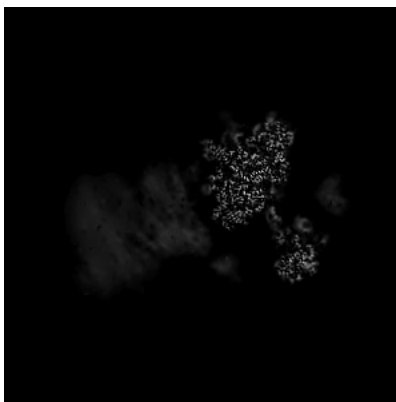
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 280

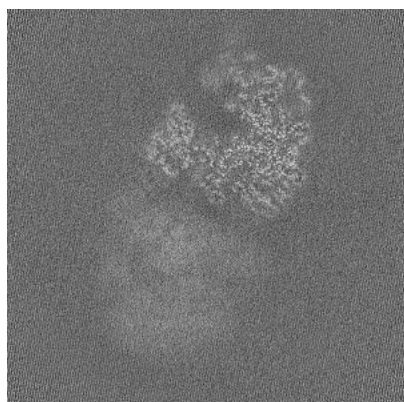


Y Index: 280

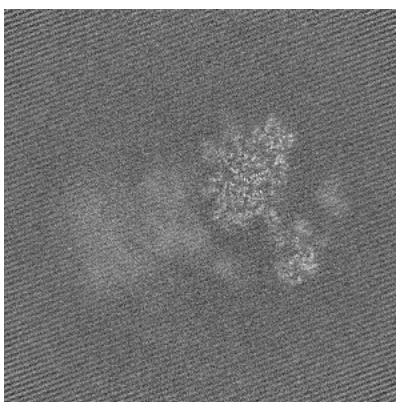


Z Index: 280

6.2.2 Raw map



X Index: 280



Y Index: 280

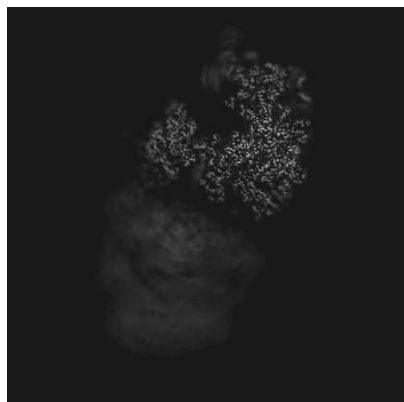


Z Index: 280

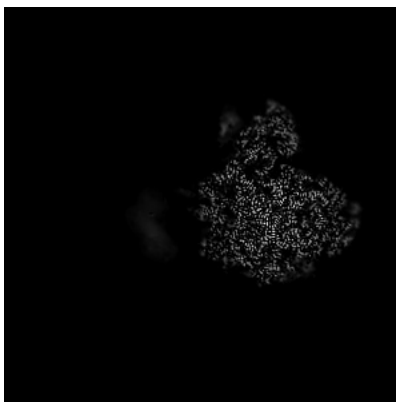
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

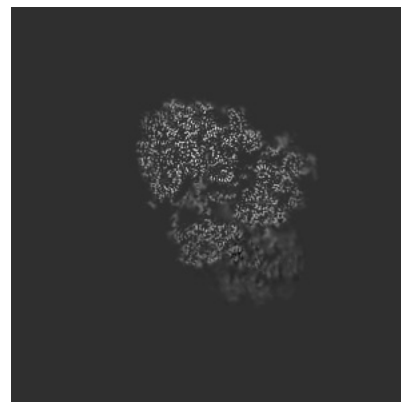
6.3.1 Primary map



X Index: 281

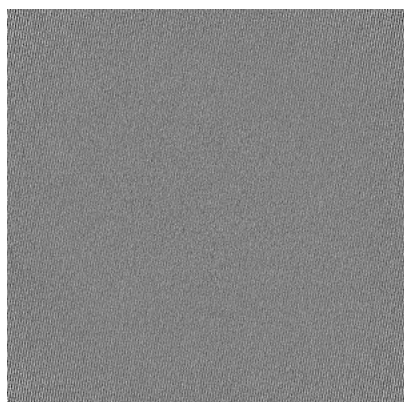


Y Index: 345

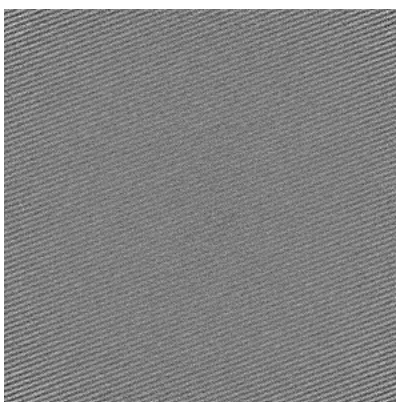


Z Index: 380

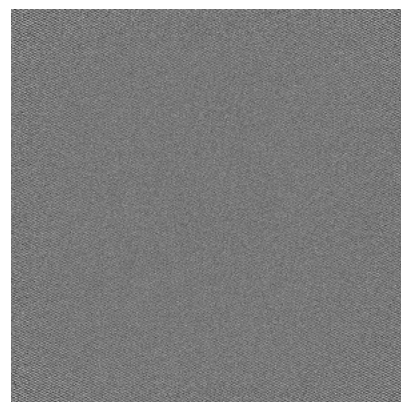
6.3.2 Raw map



X Index: 0



Y Index: 0

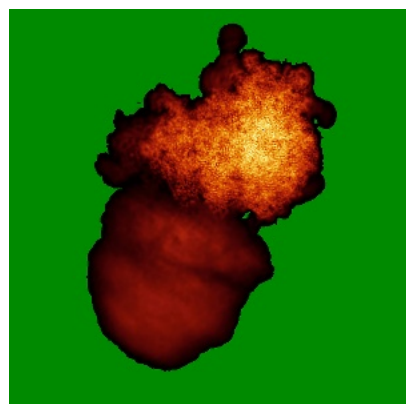


Z Index: 0

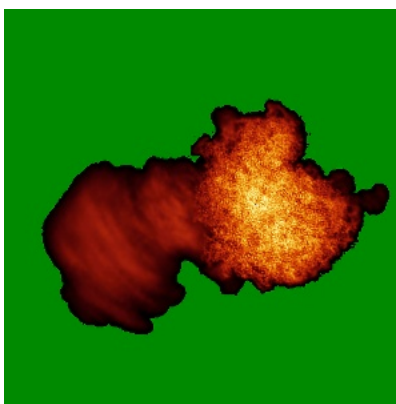
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

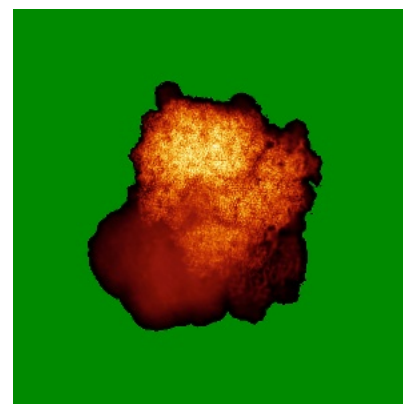
6.4.1 Primary map



X

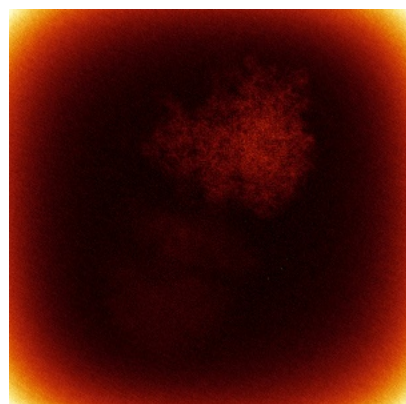


Y

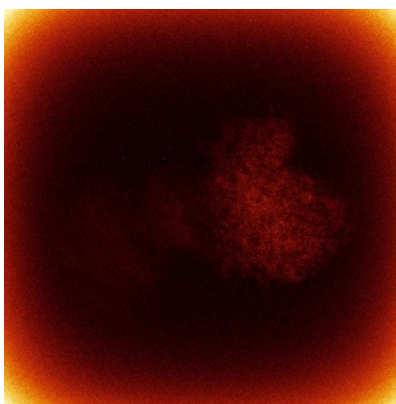


Z

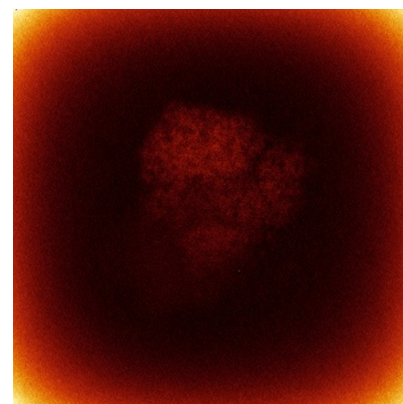
6.4.2 Raw map



X



Y



Z

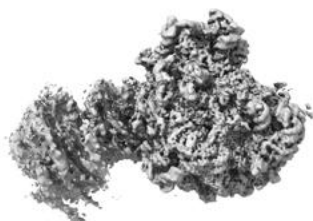
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



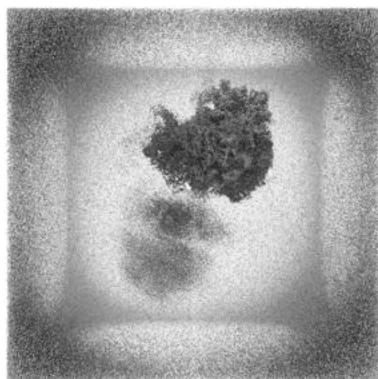
Y



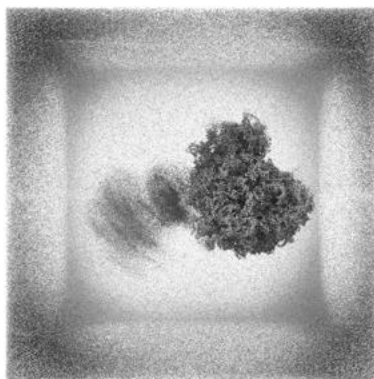
Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

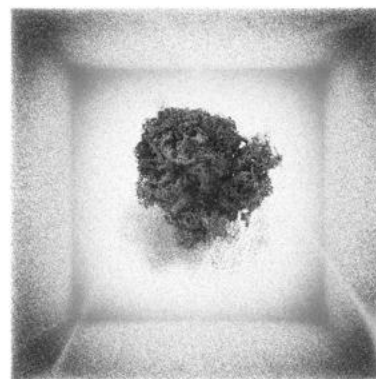
6.5.2 Raw map



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.

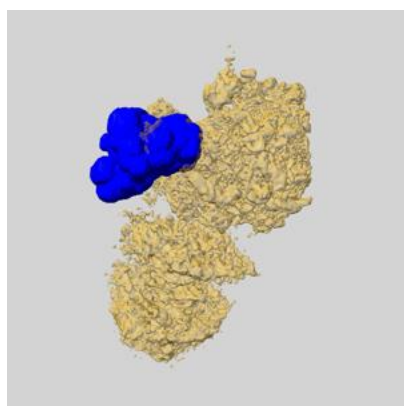
6.6 Mask visualisation [i](#)

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

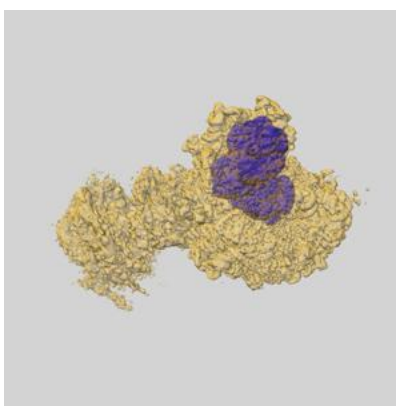
A mask typically either:

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

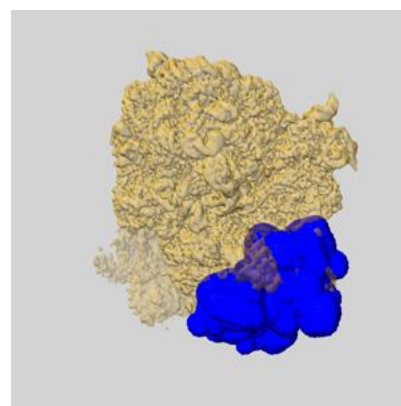
6.6.1 emd_14978_msk_1.map [i](#)



X

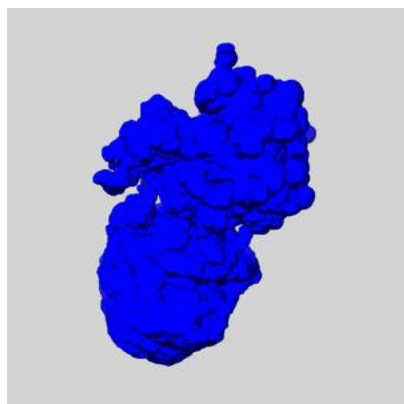


Y

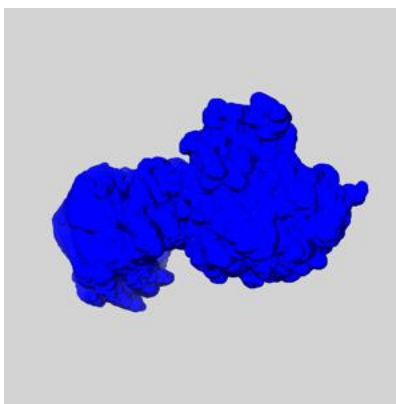


Z

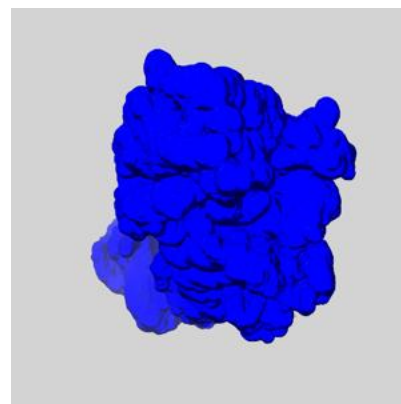
6.6.2 emd_14978_msk_2.map [i](#)



X



Y

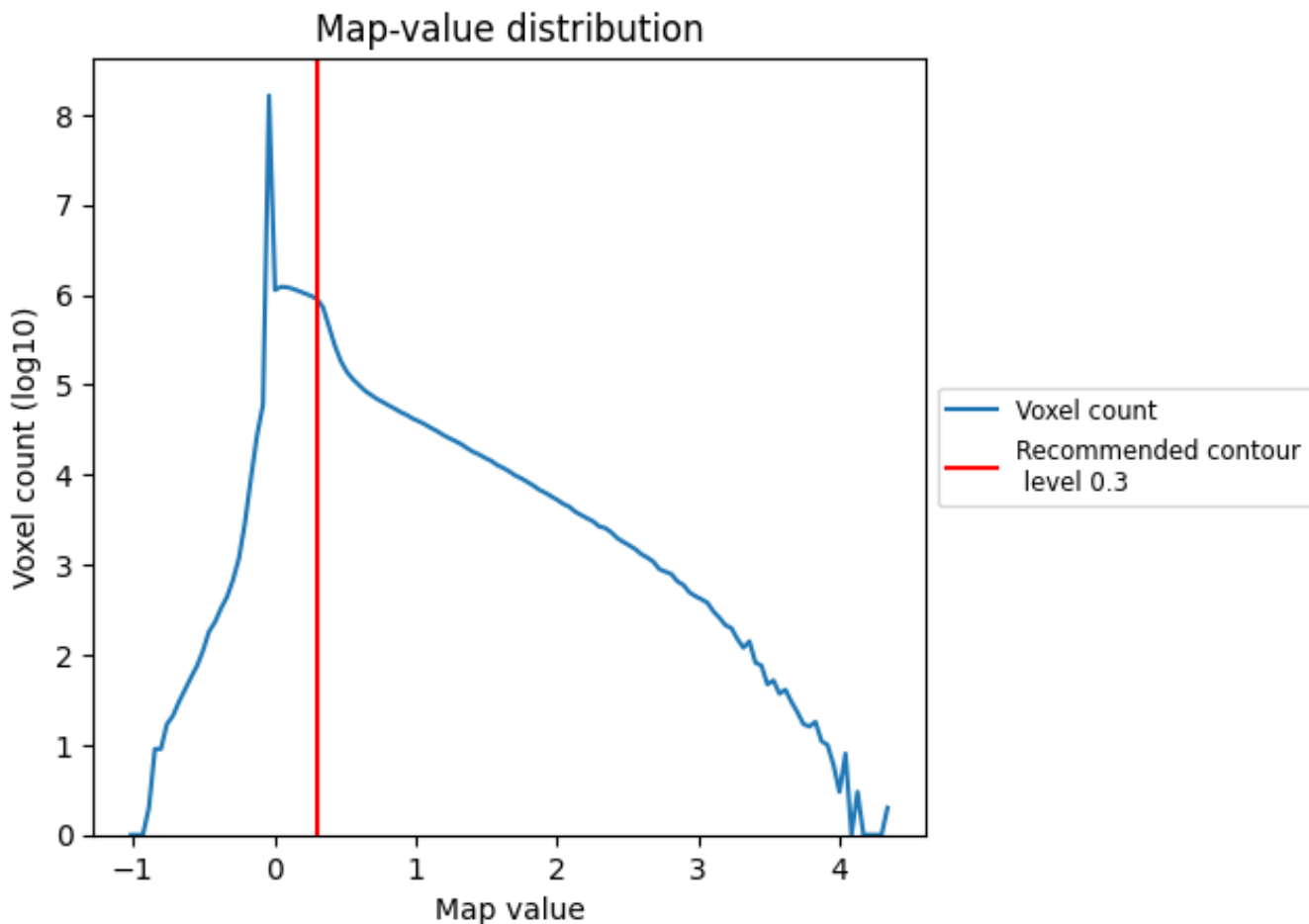


Z

7 Map analysis [i](#)

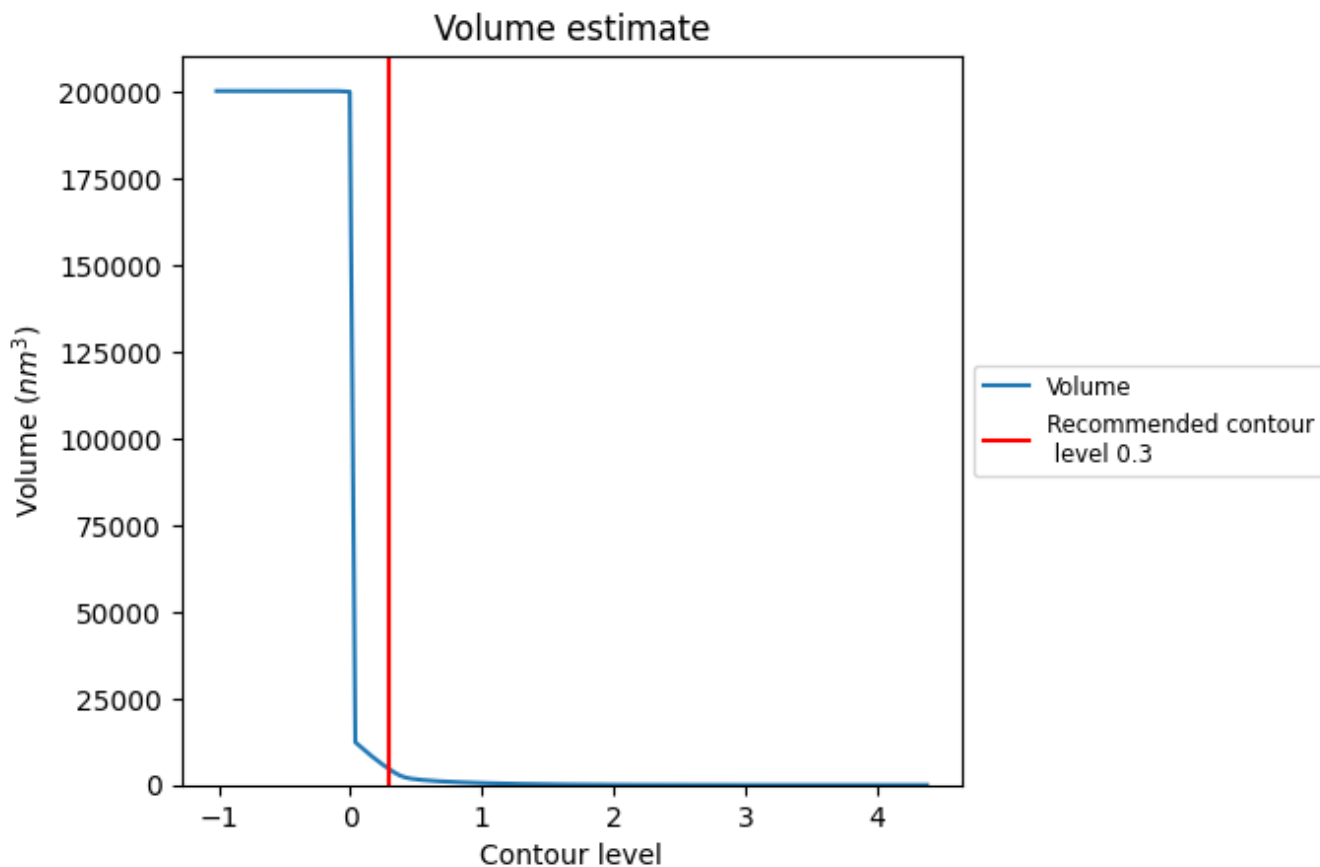
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

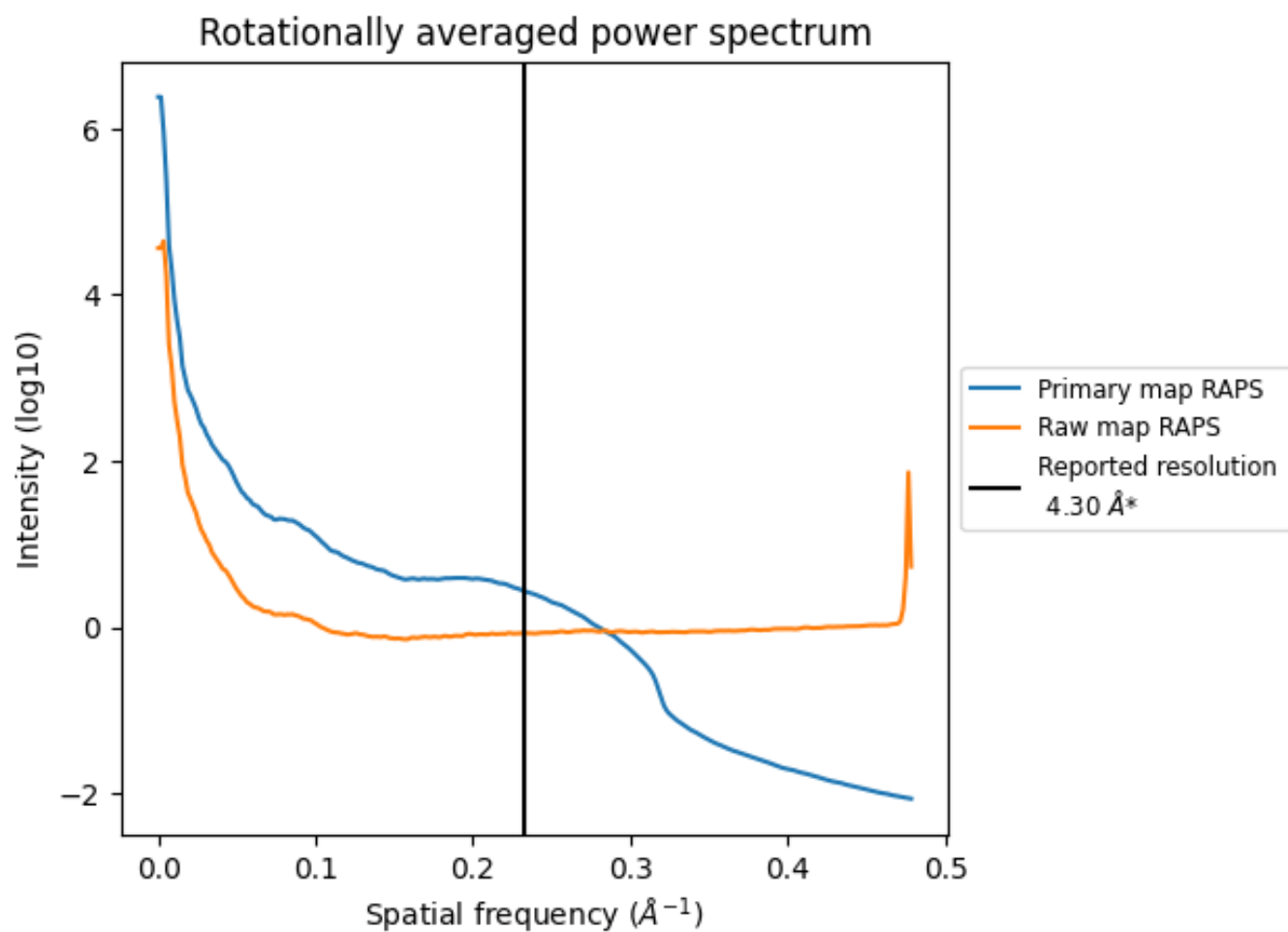
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 4493 nm³; this corresponds to an approximate mass of 4059 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 i

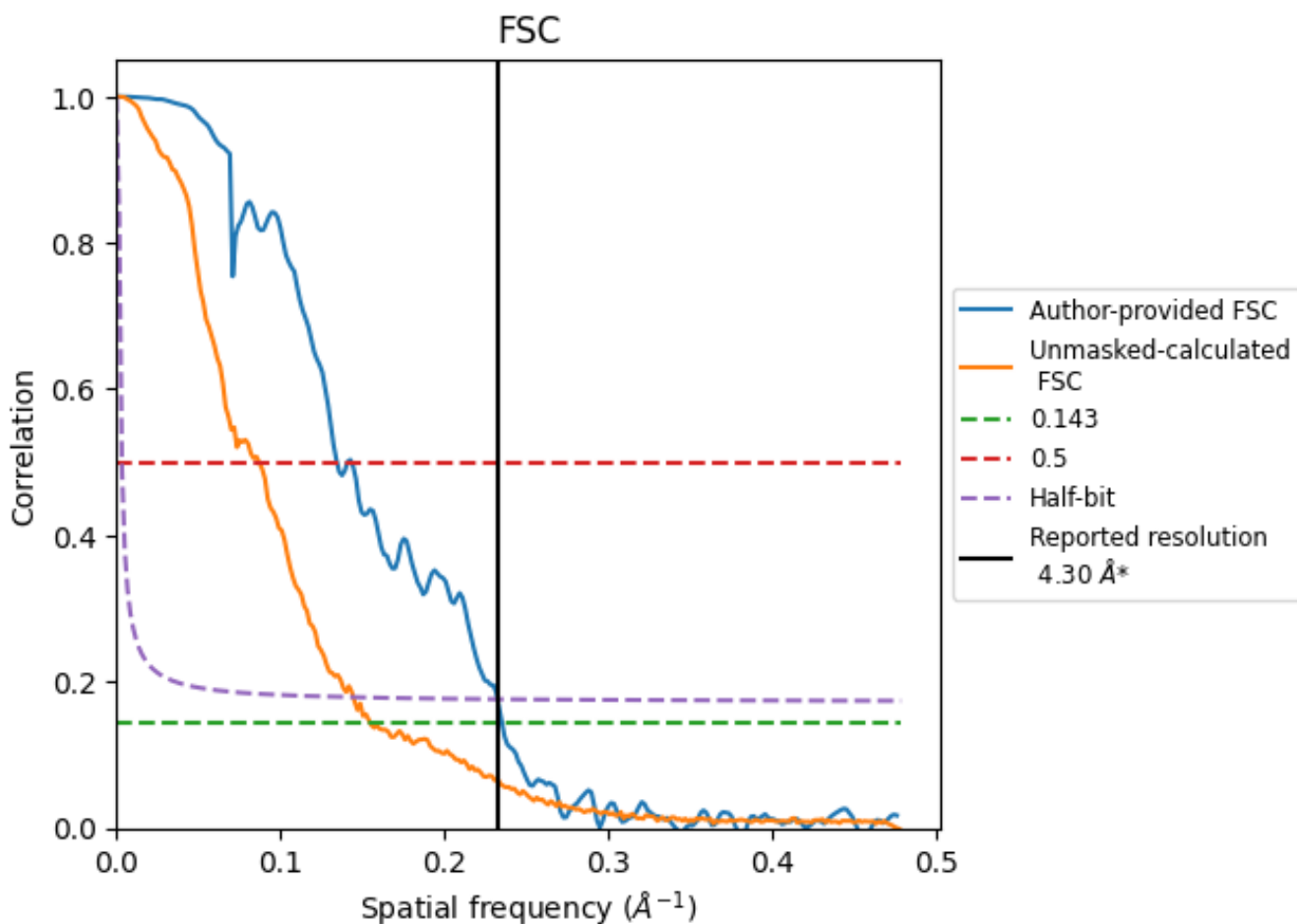


*Reported resolution corresponds to spatial frequency of 0.233 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.233 Å⁻¹

8.2 Resolution estimates [i](#)

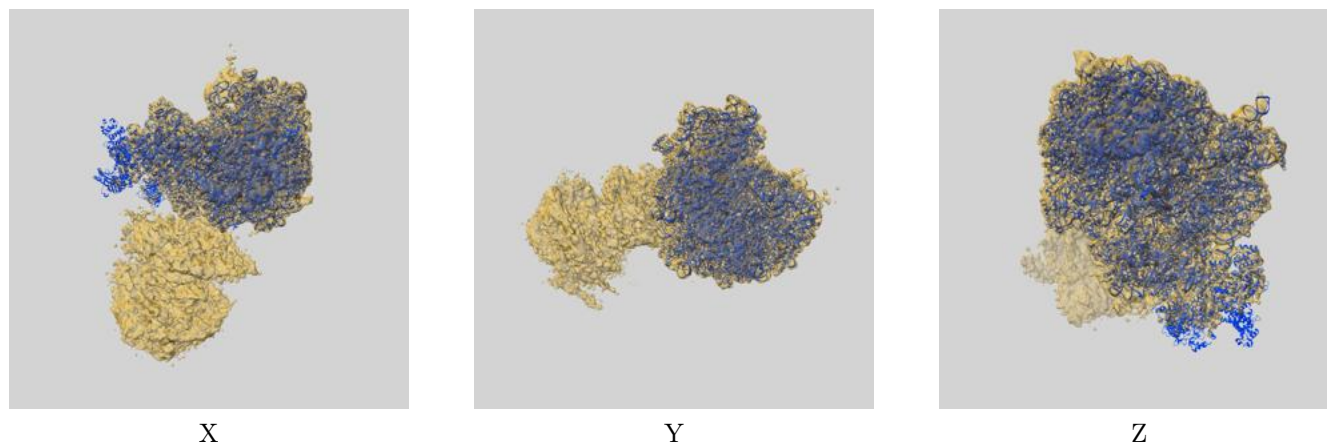
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.30	-	-
Author-provided FSC curve	4.25	7.43	4.30
Unmasked-calculated*	6.46	11.49	6.92

*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 6.46 differs from the reported value 4.3 by more than 10 %

9 Map-model fit [i](#)

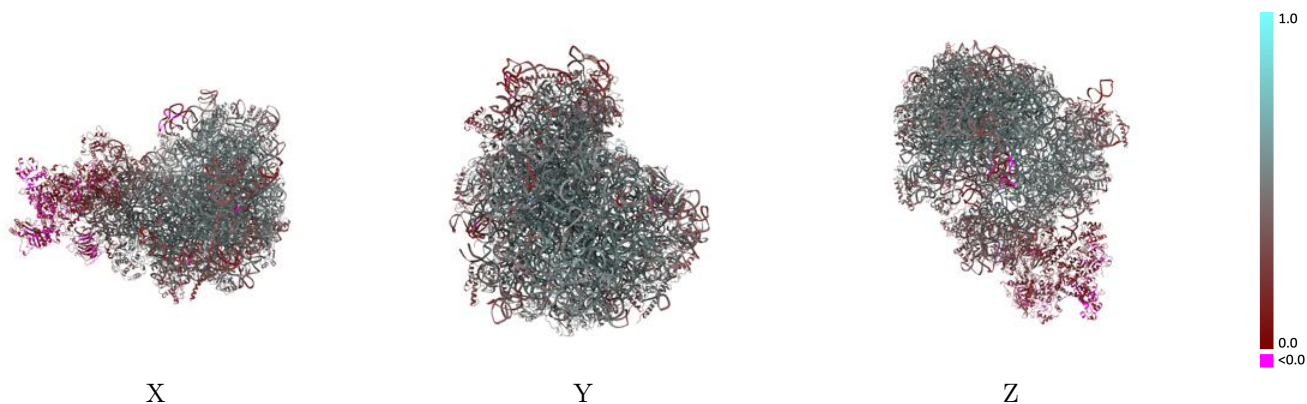
This section contains information regarding the fit between EMDB map EMD-14978 and PDB model 7ZUW. Per-residue inclusion information can be found in section [3](#) on page [19](#).

9.1 Map-model overlay [i](#)



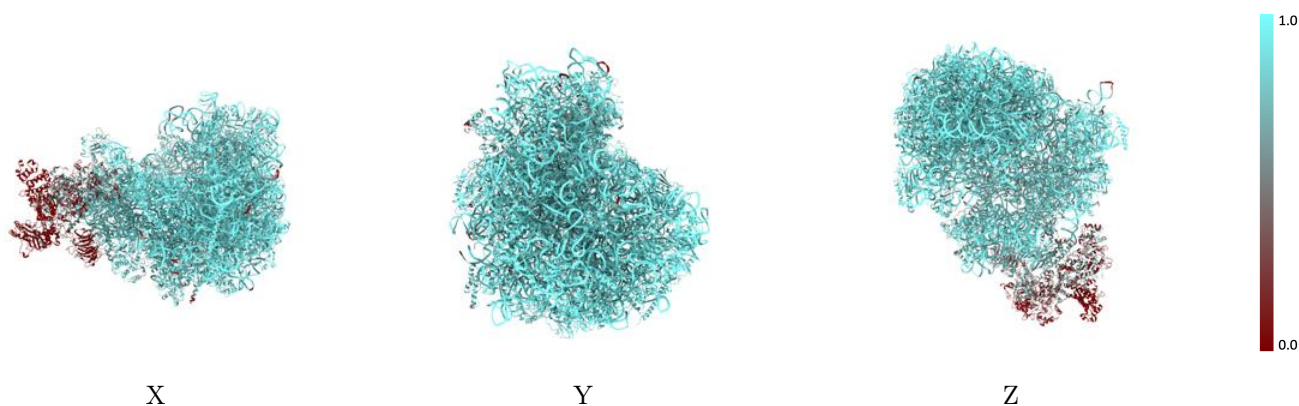
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



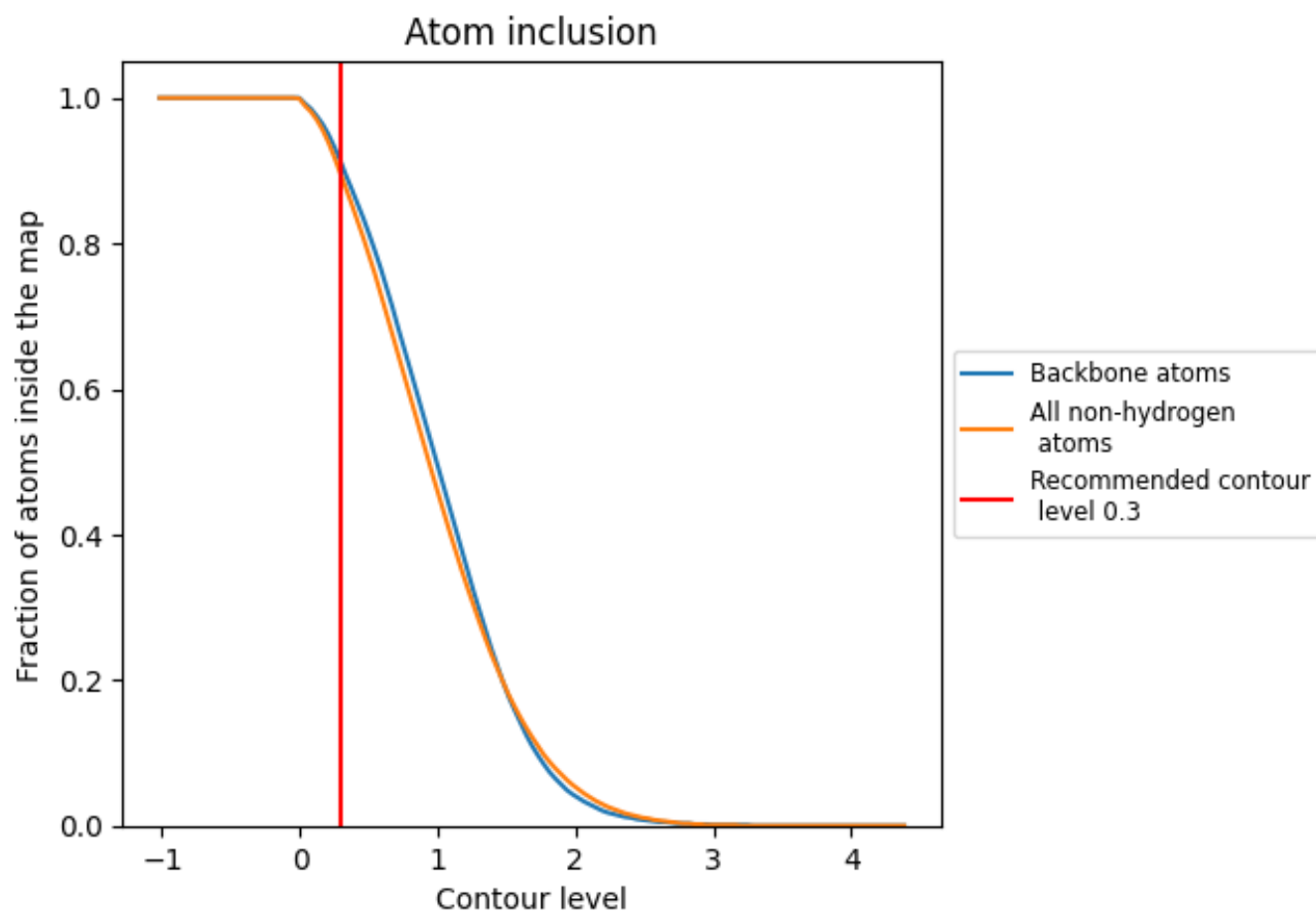
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 [i](#)



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 (0.3).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 89% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8940	 0.4470
2	 0.9700	 0.4490
3	 0.9880	 0.5060
4	 0.9930	 0.4820
5	 0.9790	 0.5100
6	 0.9660	 0.3900
AA	 0.8950	 0.4260
AB	 0.8510	 0.4360
AC	 0.9320	 0.4800
AD	 0.8650	 0.3930
AE	 0.9540	 0.4910
AF	 0.8550	 0.3850
AG	 0.9110	 0.3870
AH	 0.8330	 0.3740
AI	 0.9590	 0.4980
AJ	 0.9500	 0.4460
AK	 0.8970	 0.3180
AL	 0.9220	 0.5140
AM	 0.7540	 0.2070
AN	 0.9140	 0.4800
AO	 0.9180	 0.4910
AP	 0.9100	 0.3570
AQ	 0.8830	 0.3830
AR	 0.8230	 0.3630
AS	 0.9050	 0.3610
AT	 0.8810	 0.3400
AU	 0.8860	 0.3600
AV	 0.9080	 0.4500
AW	 0.9560	 0.5190
AX	 0.9700	 0.5350
AY	 0.9440	 0.4420
AZ	 0.7330	 0.3040
Aa	 0.9200	 0.4790
Ab	 0.8600	 0.4290
Ac	 0.8010	 0.4040















Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
Ad	 0.9690	 0.4690
Ae	 0.8840	 0.4330
Af	 0.8220	 0.2180
Ag	 0.0700	 0.1180
BA	 0.9590	 0.5570
BB	 0.9760	 0.5300
BC	 0.9670	 0.5180
BD	 0.9160	 0.4200
BE	 0.9280	 0.4320
BF	 0.9670	 0.5180
BG	 0.8670	 0.4130
BH	 0.9420	 0.4780
BI	 0.9420	 0.4950
BJ	 0.9020	 0.4000
BK	 0.9450	 0.4840
BL	 0.9510	 0.4520
BM	 0.9730	 0.5520
BN	 0.9700	 0.5230
BO	 0.9670	 0.5300
BP	 0.9770	 0.5400
BQ	 0.9200	 0.4810
BR	 0.9530	 0.5150
BS	 0.9650	 0.5140
BT	 0.9360	 0.4360
BU	 0.9560	 0.5600
BV	 0.9420	 0.4570
BW	 0.9500	 0.4830
BX	 0.9720	 0.4800
BY	 0.9170	 0.4450
BZ	 0.9530	 0.5280
Ba	 0.9490	 0.5030
Bb	 0.9350	 0.4890
Bc	 0.9540	 0.5040
Bd	 0.9740	 0.5520
Be	 0.9610	 0.5490
Bf	 0.9170	 0.5050
Bg	 0.9510	 0.4680
Bh	 0.9010	 0.4400
Bi	 0.9950	 0.5690
Bj	 0.9160	 0.4040
Bk	 0.9830	 0.5650
Bl	 0.9510	 0.5160

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
Bm	 0.9860	 0.5870
Bn	 0.9430	 0.5110
Bo	 0.9390	 0.5410
CA	 0.3620	 0.1550
CB	 0.0060	 0.0480
CC	 0.2120	 0.1450