WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Mar 9, 2026 – 01:08 PM EDT

PDB ID	:	8SUP / pdb_00008sup
EMDB ID	:	EMD-40774
Title	:	Structure of the 48S translation initiation complex assembled on the encephalomyocarditis virus IRES
Authors	:	Bhattacharjee, S.; Abaeva, I.S.; Brown, Z.P.; Arhab, Y.; Fallah, H.; Jeevan, J.C.; Hellen, C.U.T.; Frank, J.; Pestova, T.V.
Deposited on	:	2023-05-12
Resolution	:	3.10 Å(reported)

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.10 Å.

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

Metric	Percentile Ranks	Value
Clashscore		7
Ramachandran outliers		0.4%
Sidechain outliers		1.1%
RNA backbone		0.38

Worse   *Better*

▊ Percentile relative to all structures

◻ Percentile relative to all EM structures

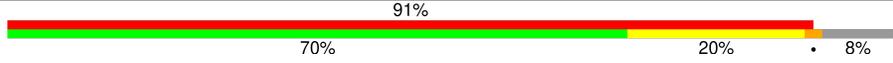| Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.302

Worse   *Better*

▊ Percentile relative to all EM structures

◻ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	14724 (2.60 - 3.60)

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

Mol	Chain	Length	Quality of chain
1	o	1362	41% / 33% 10% · 56%
2	p	843	56% / 49% 16% · 34%
3	q	445	92% / 68% 24% · 6%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	r	364	74% / 56% / 18% / 25%
5	s	352	91% / 70% / 20% / 8%
6	t	218	99% / 78% / 19%
7	u	564	66% / 49% / 16% / 34%
8	v	374	97% / 72% / 25%
9	2	1870	19% / 53% / 33% / 5% / 9%
10	3	89	55% / 39% / 6%
11	A	144	69% / 62% / 7% / 31%
12	B	295	25% / 60% / 14% / 26%
13	C	264	34% / 62% / 18% / 19%
14	D	221	35% / 85% / 14%
15	E	281	28% / 67% / 14% / 19%
16	F	263	26% / 74% / 25%
17	G	204	20% / 75% / 19% / 6%
18	H	249	51% / 73% / 22% / 5%
19	I	432	35% / 37% / 6% / 57%
20	J	208	39% / 87% / 12%
21	K	194	35% / 77% / 18% / 5%
22	L	149	28% / 52% / 12% / 36%
23	M	158	30% / 70% / 25%
24	N	132	86% / 76% / 13% / 11%
25	O	151	40% / 85% / 14%
26	P	168	36% / 64% / 17% / 19%
27	Q	145	27% / 62% / 21% / 17%
28	R	172	16% / 66% / 16% / 17%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
29	S	135	54% / 81% / 17%
30	T	152	26% / 76% / 19% / 5%
31	U	145	9% / 82% / 14%
32	V	119	44% / 62% / 21% / 16%
33	W	83	43% / 84% / 16%
34	X	130	14% / 79% / 19%
35	Y	143	24% / 84% / 15%
36	Z	131	28% / 72% / 23% / 5%
37	a	124	22% / 48% / 14% / 38%
38	b	101	38% / 79% / 21%
39	c	84	44% / 87% / 11%
40	d	69	30% / 77% / 20%
41	e	56	23% / 77% / 21%
42	f	133	23% / 34% / 9% / 57%
43	g	188	36% / 33% / 64%
44	h	317	41% / 75% / 24%
45	i	75	7% / 61% / 33% / 5%
46	j	315	58% / 52% / 5% / 42%
47	n	25	52% / 72% / 28%

2 Entry composition ⓘ

There are 48 unique types of molecules in this entry. The entry contains 106317 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 protein called Eukaryotic translation initiation factor 3 subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	o	600	Total 4935	C 3107	N 893	O 914	S 21	0	1

- Molecule 2 is a protein called Eukaryotic translation initiation factor 3 subunit C.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	p	558	Total 4529	C 2842	N 805	O 849	S 33	0	1

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
p	577	TYR	ALA	conflict	UNP A0A5F9CMJ3

- Molecule 3 is a protein called Eukaryotic translation initiation factor 3 subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	q	420	Total 3466	C 2220	N 587	O 639	S 20	0	1

- Molecule 4 is a protein called Eukaryotic translation initiation factor 3 subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	r	272	Total 2111	C 1330	N 359	O 410	S 12	0	0

- Molecule 5 is a protein called Eukaryotic translation initiation factor 3 subunit H.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	s	324	Total 2624	C 1654	N 452	O 503	S 15	0	0

- Molecule 6 is a protein called Eukaryotic translation initiation factor 3 subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	t	216	Total 1738	C 1109	N 286	O 330	S 13	0	1

- Molecule 7 is a protein called Eukaryotic translation initiation factor 3 subunit L.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	u	373	Total 3110	C 2010	N 520	O 563	S 17	0	1

- Molecule 8 is a protein called Eukaryotic translation initiation factor 3 subunit M.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	v	366	Total 2919	C 1850	N 494	O 558	S 17	0	1

- Molecule 9 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	2	1697	Total 36227	C 16170	N 6504	O 11857	P 1696	0	0

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	197	U	C	conflict	GB 2488159015
2	1095	C	U	conflict	GB 2488159015
2	1203	U	-	insertion	GB 2488159015
2	1205	G	A	conflict	GB 2488159015
2	?	-	G	deletion	GB 2488159015

- Molecule 10 is a RNA chain called EMCV mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	3	89	Total 1897	C 848	N 347	O 613	P 89	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	831	A	-	expression tag	GB 485965777
3	832	A	-	expression tag	GB 485965777
3	833	U	-	expression tag	GB 485965777

Continued on next page...

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
3	834	A	-	expression tag	GB 485965777
3	835	U	-	expression tag	GB 485965777
3	836	G	-	expression tag	GB 485965777

- Molecule 11 is a protein called Eukaryotic translation initiation factor 1A, X-chromosomal.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	A	99	798	503	143	148	4	0	0

- Molecule 12 is a protein called uS2 (SA).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	B	217	1710	1086	300	316	8	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	114	THR	ALA	conflict	UNP G1TLT8

- Molecule 13 is a protein called eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	C	213	1729	1098	309	308	14	0	0

- Molecule 14 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	D	221	1716	1111	295	301	9	0	0

- Molecule 15 is a protein called uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	E	228	1768	1126	318	316	8	0	0

- Molecule 16 is a protein called eS4 (S4 X isoform).

Mol	Chain	Residues	Atoms					AltConf	Trace
16	F	262	Total	C	N	O	S	0	0
			2076	1324	386	358	8		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	25	GLY	SER	conflict	UNP G1TK17
F	51	ARG	LYS	conflict	UNP G1TK17
F	78	THR	ALA	conflict	UNP G1TK17
F	156	VAL	MET	conflict	UNP G1TK17

- Molecule 17 is a protein called uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	G	191	Total	C	N	O	S	0	0
			1509	943	286	273	7		

- Molecule 18 is a protein called eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	H	237	Total	C	N	O	S	0	0
			1923	1200	387	329	7		

- Molecule 19 is a protein called eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	I	185	Total	C	N	O	S	0	0
			1488	952	271	264	1		

- Molecule 20 is a protein called eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	J	206	Total	C	N	O	S	1	0
			1691	1061	333	292	5		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	47	ARG	GLY	conflict	UNP G1TJW1

- Molecule 21 is a protein called uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	K	185	Total	C	N	O	S	0	0
			1525	969	306	248	2		

- Molecule 22 is a protein called eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	L	96	Total	C	N	O	S	0	0
			810	530	143	131	6		

- Molecule 23 is a protein called uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	M	151	Total	C	N	O	S	0	0
			1233	785	231	211	6		

- Molecule 24 is a protein called eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	N	117	Total	C	N	O	S	0	0
			908	570	161	169	8		

- Molecule 25 is a protein called uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	O	149	Total	C	N	O	S	0	0
			1202	770	228	203	1		

- Molecule 26 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	P	136	Total	C	N	O	S	0	0
			1016	621	199	190	6		

- Molecule 27 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Q	120	Total	C	N	O	S	0	0
			997	635	187	168	7		

- Molecule 28 is a protein called uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	R	142	Total 1128	C 717	N 213	O 195	S 3	0	0

- Molecule 29 is a protein called eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	S	132	Total 1068	C 670	N 199	O 195	S 4	0	0

- Molecule 30 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	T	144	Total 1190	C 746	N 241	O 202	S 1	0	0

- Molecule 31 is a protein called eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	U	141	Total 1097	C 688	N 211	O 195	S 3	0	0

- Molecule 32 is a protein called uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	V	100	Total 795	C 498	N 152	O 141	S 4	0	0

- Molecule 33 is a protein called eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	W	83	Total 636	C 393	N 117	O 121	S 5	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	3	ASN	SER	conflict	UNP G1TM82
W	4	ASP	ASN	conflict	UNP G1TM82
W	33	GLN	PRO	conflict	UNP G1TM82
W	50	PHE	SER	conflict	UNP G1TM82
W	75	ALA	SER	conflict	UNP G1TM82
W	76	ASP	HIS	conflict	UNP G1TM82

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
W	81	LYS	GLN	conflict	UNP G1TM82

- Molecule 34 is a protein called uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	X	129	Total	C	N	O	S	0	0
			1034	659	193	176	6		

- Molecule 35 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Y	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 36 is a protein called eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Z	124	Total	C	N	O	S	0	0
			1011	640	198	168	5		

- Molecule 37 is a protein called eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	a	77	Total	C	N	O	S	0	0
			614	393	114	106	1		

- Molecule 38 is a protein called eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	b	101	Total	C	N	O	S	0	0
			814	507	170	132	5		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	28	ARG	CYS	conflict	UNP G1TFE8
b	56	ALA	VAL	conflict	UNP G1TFE8

- Molecule 39 is a protein called eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	c	83	Total 651	C 408	N 121	O 115	S 7	0	0

- Molecule 40 is a protein called eS28.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	d	67	Total 530	C 321	N 108	O 99	S 2	0	0

- Molecule 41 is a protein called uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	e	55	Total 459	C 286	N 94	O 74	S 5	0	0

- Molecule 42 is a protein called eS30.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	f	57	Total 457	C 282	N 101	O 73	S 1	0	0

- Molecule 43 is a protein called eS31.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	g	68	Total 555	C 351	N 103	O 94	S 7	0	0

- Molecule 44 is a protein called Receptor for Activated C Kinase 1 (RACK1).

Mol	Chain	Residues	Atoms					AltConf	Trace
44	h	313	Total 2436	C 1535	N 424	O 465	S 12	0	0

- Molecule 45 is a RNA chain called Met-tRNAiMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	i	75	Total 1604	C 717	N 298	O 515	P 74	0	0

- Molecule 46 is a protein called Eukaryotic translation initiation factor 2 subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	j	182	Total 1245	C 795	N 234	O 213	S 3	0	0

- Molecule 47 is a protein called eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	n	25	Total 239	C 145	N 64	O 27	S 3	0	0

- Molecule 48 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
48	b	1	Total 1	Zn 1	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Eukaryotic translation initiation factor 3 subunit A

• Molecule 2: Eukaryotic translation initiation factor 3 subunit C

Chain p:

56%

49%　　　　16%　　•　　34%

• Molecule 3: Eukaryotic translation initiation factor 3 subunit E

Chain q:

• Molecule 4: Eukaryotic translation initiation factor 3 subunit F

Chain r:

74%

56%　　　18%　•　25%

• Molecule 5: Eukaryotic translation initiation factor 3 subunit H

Chain s:

91%

70%　　　20%　•　8%

• Molecule 6: Eukaryotic translation initiation factor 3 subunit K

Chain t:

• Molecule 7: Eukaryotic translation initiation factor 3 subunit L

Chain u:

• Molecule 8: Eukaryotic translation initiation factor 3 subunit M

Chain v:

97%

72% 25%

L361 N362 K363 V364 K365 N366 S367 L368 L369 S370 L371 SER ASP THR

● Molecule 9: 18S rRNA

Chain 2:

19%

53% 33% 5% 9%

U1 A2 C3 C4 U5 G6 U9 U12 C17 G20 A25 C30 G33 U34 C35 G41 A46 C49 G56 U57 C58 G62 U63 A64 C65 G66 C67 A68 C69 G70 G71 G72 C73 G74 G75 U76 A77 C78 A79 G80 U81 G82 A83 A84 A85 C86 A92

G95 C96 U97 C98 A99 A103 A104 U105 C106 A107 G108 G113 G114 U115 U116 U120 G126 C127 U128 C129 G130 C U C U C U C U A141 C142 U143 U144 G145 G146 A149 A150 C151 G155 U160 U161 A166 G167 C168 U169 A170 A171 A175

C178 C182 G183 G184 G185 C186 G187 C188 U189 G190 A191 C192 C193 C194 C195 C196 U197 U198 C199 G200 C201 G202 G203 G204 G205 G206 G207 G208 A209 U210 G211 C212 G215 U218 C223 A224 G225 A U C A A A C C A C C C G G U C

A G C C U C C C C C G G C C C G G G G U G G G G C C C G G C U U U287 G291 A292 C293 U294 G298 A302 U305 C306 G307 G308 G309

C310 C315 G316 C319 G320 C321 G322 C323 U C C G U G329 G330 C331 G332 G333 C334 A339 C340 C341 C342 A343 U344 U345 C356 C357 U361 C362 A363 A364 U367 U368 C369 G370 A371 U372 G373 G377 U378 G379 G380 C381 C382 G383 U384 C386 C387 U388 A389 C390

C391 A392 U393 A398 C399 C400 G407 A408 C409 G413 U416 C417 A418 G419 A426 U427 C428 C429 C430 A435 C436 G437 G438 A439 G440 C441 C442 A448 A449 C450 C453 C459 A460 A465 C470 C471 C472 A473 C474 C475 A476 G482 U487 U488 C492 A493

C496 A500 C501 C502 C503 A508 G509 G513 C517 A523 C527 A528 A529 U530 C531 C532 A533 G534 G535 A536 C537 U538 C539 U540 U541 U542 C543 G544 A545 G546 G547 C548 C549 C550 U551 G552 U553 A554 A555 U556 U557 C558 G559 A560 A561 U562 G563 C568 A569 C570 A574

C579 A583 A587 G588 G589 A590 U591 C592 C593 A594 U595 U596 G600 A604 A605 G606 U607 C608 U609 G610 G611 C614 G617 C621 G626 U627 A628 A629 U630 U631 C632 C633 A634 G635 C636 U637 C638 C639 A640 A641 U642 A643 G644 C645 A650 G656 C660 U661

G662 C663 A669 A670 A671 A672 U678 A679 G680 U681 G684 A685 U688 U689 G690 G691 A692 A693 G694 C695 G696 G697 G C C G G C C G C U C C C C C C G G A G G C G A G C C A C C C C C729 C730 G731

U732 C733 C734 G735 C736 G C C C U C U743 G744 G745 C U C U749 C750 G751 G752 G753 G754 C755 C756 C C C U C G A U G C U U A G C U U A G U G G U U A G U G U C C C C G G G788 G789 C790 C791

C792 G793 A794 A795 G796 C797 G798 U799 U800 U801 A804 A808 A809 A810 G821 U822 C823 A826 C829 A830 C834 C G A C C G841 U844 G845 C846 A847 G852 C853 G859 G860 U866 G867 C868 A869 A870 U871 A872 G873 G874 A875 C876 C877 G878 C879

G880 G881 U882 U883 C884 U885 A886 U887 U888 U889 U890 U891 U892 U893 U894 G895 U896 U897 U898 U899 C900 G901 G902 A903 A904 C905 U906 G907 A908 G909 G910 C911 C912 A913 U914 G915 A916 U917 U918 A919 A920 G921 A922 C927 G928 G929 C930 G933 A938 G939 U940 C941 G942 A943 A944 U954

• Molecule 10: EMCV mRNA

Chain 3:

55%   39%   6%

• Molecule 11: Eukaryotic translation initiation factor 1A, X-chromosomal

Chain A:

69%

62%　　　　7%　　　　31%

MET PRO LYS ASN LYS GLY LYS GLY LYS ASN ARG ARG GLY LYS ASN GLU ASN GLU SER GLU LYS R24 E25 L26 V27 F28 K29 E30 D31 G32 Q33 E34 Y35 A36 Q37 V38 I39 K40 M41 L42 G43 N44 G45 R46 L47 E48 A49 M50 C51 F52 D53 G54 V55 K56 R57 L58 C59 H60

I61 R62 G63 K64 L65 R66 K67 K68 V69 W70 I71 N72 T73 S74 D75 I76 I77 L78 V79 G80 L81 R82 D83 Y84 Q85 D86 N87 K88 A89 D90 V91 I92 L93 K94 Y95 N96 A97 D98 E99 A100 R101 S102 L103 K104 A105 Y106 G107 E108 L109 P110 E111 H112 A113 K114 I115 N116 E117 T118 D119 T120

F121 G122 PRO GLY ASP ASP ASP GLU ILE GLN PHE ASP ASP ILE GLY ASP ASP ASP GLU ASP ILE ASP ILE

• Molecule 12: uS2 (SA)

Chain B:

25%

60%　　　　14%　　　　26%

MET S2 G3 A4 L5 D6 V7 L8 Q9 M10 K11 E12 E13 L16 K17 F18 L19 A20 A21 L30 D31 M34 E35 I38 Y39 K40 S43 D44 Y47 I48 K52 R53 E56 L60 R63 A67 I68 D73 I77 S78 S79 R80 R85 L88 K89

I99 R102 F103 T104 T107 F108 T109 Q113 T114 R120 L121 L122 V123 D126 P127 R128 A129 D130 H131 Q132 P133 L134 N141 L142 P143 T144 I145 N149 T150 D151 R155 Y156 V157 D158 I159 N164 N165 K166 G167 A168 H169 S170 M174 M177 R180 R184

M185 R186 G187 T188 I189 S190 R191 E192 H193 P194 W195 E196 V197 M198 P199 D200 Y204 R205 D206 P207 E208 E209 I210 E211 K212 E213 E214 Q215 A216 A217 A218 GLU LYS ALA VAL THR LYS GLU GLU PHE GLN GLY GLU TRP THR ALA PRO GLU PRO GLU PHE THR ALA THR GLN PRO GLU VAL ALA

ASP TRP SER GLU VAL GLY VAL GLN VAL PRO SER VAL PRO ILE GLN GLN PHE PRO THR GLU ASP TRP SER ALA GLN PRO ALA THR GLU ASP TRP SER ALA ALA PRO THR ALA GLN ALA THR GLU TRP VAL GLY THR THR THR GLU TRP SER

• Molecule 13: eS1

Chain C:

34%

62%　　　　18%　　　　19%

MET ALA VAL GLY LYS ASN LYS ARG LEU THR LYS GLY LYS GLY LYS ALA LYS GLY LYS LYS V21 V22 D23 P24 F25 S26 K27 K28 D29 W30 Y31 D32 V33 K34 A35 P36 A37 M38 F39 N40 I41 R42 N43 I44 G45 K46 T47 L48 V49 Q53 G54 T55 K56 I57 A58 S59 D60 G61 L62

K63 G64 R65 E68 D73 L74 Q75 N76 D77 E78 V79 A80 F81 R82 K83 F84 K85 T88 E89 D90 V91 Q92 G93 K94 N95 C96 L97 T98 M103 D104 L105 T106 R107 D108 K109 M113 I121 E122 D126 T129 T130 D131 G132 Y133 L134 L135 R136 K144 K145 R146 N147

N148 Q149 I150 R151 K152 T153 A156 Q157 H158 R162 Q163 K166 K167 M168 M169 E170 I171 M172 V176 Q177 T178 N179 D180 L181 K182 E183 V184 V185 L188 D191 E198 K199 A200 C201 Q202 L207 H208 K214 L218 K219 K220 P221 K222 F223 E224 L225 G226 K227 L228 M229

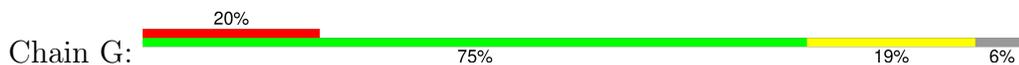E230 L231 H232 G233 GLU GLY SER SER SER GLY LYS ALA THR GLY ASP GLU THR GLY ALA LYS VAL GLU ARG ALA ASP GLY TYR GLU PRO GLU PRO VAL GLN GLU SER VAL

• Molecule 14: 40S ribosomal protein S2

Chain D:

35%

85%　　14%

K58 E59 W60 L61 P62 V63 T64 K65 L66 G67 R68 L69 V70 K71 D72 M73 K74 I75 K76 E79 E80 I81 Y82 L83 F84 S85 I88 E92 D95 F96 F97 A100 K103 D104 E105 V106 L107 K108 I109 M110 Q113 R117 A118 R121 T122 R123 F124 K125 I130 G131

D132 Y133 N134 S144 K145 E146 I151 R152 I155 A158 K159 I162 V163 P164 V165 R166 Y169 N172 K173 K176 T179 K183 R194 A198 G203 S206 A207 P208 V209 P210 K211 K212 L213 L214 M215 M216 A217 G218 I219 S225 A226 R227 A231 T232

L233 G234 A237 D242 D254 L255 W256 K257 E258 F259 V260 F261 T262 K263 S264 P265 Y266 Q267 E268 F269 T270 D271 H272 L273 V274 K275 T276 H277 T278

• Molecule 15: uS3

Chain E:

28%

67%　　14%　•　19%

MET SER ALA ARG ARG ARG ARG ARG ALA ALA PHE ARG ARG ALA GLU PRO PHE ILE PRO SER VAL ARG GLU PRO LEU PRO PHE LEU SER ALA ALA ARG GLY GLY LYS M1 A2 V3 Q4 K7 K8 R9 D14 G15 I16 F17 K18 A19 E20 L21 N22 L25 T26 R27

E28 L29 A30 E31 D32 G33 E38 V39 R40 V41 T42 P43 T44 R45 I48 L51 A52 T53 R54 T55 Q56 N57 V58 L59 G60 E61 K62 R65 I66 L69 Q74 F77 E81 G82 S83 V84 Y87 K90 V91 A92 T93 R94 G95 L96 I99 A100 Q101 A102 E103

R106 L110 L113 A114 R117 R124 F125 I126 M127 K132 G133 C134 E135 V136 V137 V138 L142 R143 G144 Q145 R146 A147 K148 K151 D154 G161 V172 V175 L176 L177 R178 Q179 L182 K185 V186 K187 I188 P191 S195 G196 K197 I198 K202

V211 E212 P213 K214 D215 E216 I217 L218 P219 T220 T221 P222 I223 S224 E225 Q226 K227 G228 GLY LYS PRO GLU PRO PRO ALA MET PRO GLN PRO VAL PRO THR ALA

• Molecule 16: eS4 (S4 X isoform)

Chain F:

26%

74%　　25%

MET A2 K10 R11 K16 H17 W18 M19 L20 D21 K22 L23 A28 P35 H36 K37 L38 R39 E40 P43 L44 I45 I46 F47 L48 R49 N50 R51 L52 K53 Y54 A55 E60 V61 K62 K63 M66 K71 I72 D73 G74 K75 V76 R77 I78 D79 I80 T81 Y82 P83 A84 G85

F86 M87 D88 V89 I90 S91 I92 D93 K94 N98 F99 R100 L101 I102 Y103 D104 T105 K106 G107 R108 F109 A110 R113 I114 T115 P116 E117 E118 K122 L123 F130 V131 G132 T133 I136 P137 D143 P150 D151 P152 L153 I154 K155 D158 Q161 I162 D163 L164 E165 T166 G167

K168 I169 T170 D171 D176 C181 M182 V183 T184 G185 N188 L189 G190 R191 I192 G193 V194 I195 T196 N197 R198 V208 H209 V210 K211 D212 A213 N214 G215 I225 K230 G231 N232 I236 S237 L238 P239 R240 G241 K242 G243 I244 I248 A249 E250 E251 R252 D253 K254 R255 L256 A257
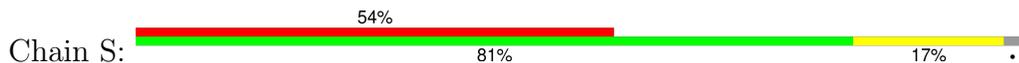
A258 K259 Q260 S261 S262 G263

• Molecule 17: uS7

Chain G:

• Molecule 18: eS6

Chain H:

• Molecule 19: eS7

Chain I:

F63 V64 P65 V66 P67 Q68 L69 K70 S71 F72 Q73 K74 I75 Q76 V77 R78 L79 V80 R81 E82 L83 E84 K85 K86 F87 S88 G89 K90 H91 V92 V93 F94 I95 A96 Q97 R98 R99 I100 L101 P102 K103 P104 T105 R106 K107 S108 ARG THR LYS ASN K113 Q114 K115 R116 P117 R118 S119 R120 T123

A124 D127 A128 I129 L130 E131 D132 L133 V134 F135 P136 S137 E138 I139 K142 R143 I144 R145 V146 K147 L148 D149 G150 S151 R152 H157 L158 D159 K160 A161 Q162 Q163 N164 N165 V166 E167 H168 K169 V170 E171 T172 F173 S174 G175 V176 Y177 K178 K179 L180 T181 I182 K183 D184 V185 N186 F187 E188

F189 P190 E191 F192 Q193 L194

• Molecule 20: eS8

Chain J:

G2 R5 D6 N7 W8 R18 Y21 H22 K23 E28 A34 N35 T36 G39 I43 H44 T45 R49 R56 R59 L60 D61 N64 F65 S66 E70 K75 T76 R77 D80 N87 N88 E89 L90 V91 R92 T93 K94 K98 D105 S106

Y113 L119 P120 L121 G122 R123 K124 K125 G126 A127 K128 L129 T130 P131 E132 E133 E134 E135 I136 L137 N138 K139 K140 R141 S142 K143 K144 I145 Q146 K147 K148 Y149 D150 E151 R152 K153 K154 N155 A156 K157 S160 E163 E164 Q165 F166 Q167 Q168 G169 S177 C182 I183 R184 A185 D186 G187

L190 E191 G192 K193 E194 L195 E196 R200 K201 I202 K203 A204 R205 K206 G207 LYS

• Molecule 21: uS4

Chain K:

P2 R5 R10 R17 R18 K22 S23 R24 L25 D26 Q27 L31 I32 G33 E34 L37 K47 L50 A51 K52 A56 A57 R58 T62 L63 D64 K65 K66 D67 P68 R69 R70 L71 L78 R79 R83 I84 G85 V86 L87 D88 E89 G90 K91 D95 Y96

I97 L100 K101 I102 E103 D104 F105 L106 E107 R108 R109 T112 Q113 V114 F115 K116 L117 A120 K121 H124 K125 A126 R127 V128 L129 Q132 I135 R136 V137 R138 K139 Q140 V141 V142 N143 I144 F147 I148 V149 D152 S153 Q154 K155 H156 I157 D158 L161 R162 S163 P164 Y165

G166 G167 G168 R169 P170 R175 K176 N177 A178 K179 K180 G181 Q182 G183 G184 A185 G186 ALA GLY ASP ASP GLU GLU ASP

• Molecule 22: eS10

Chain L:

M1 L2 M3 K6 A10 E13 F16 K17 E18 M21 V22 A23 K24 K25 D26 V27 H28 M29 P30 K31 H32 P33 E34 L35 A36 D37 K38 N39 V40 P41 H44 K47 A48 S51 L52 K53 Y57 V58 E60 R65 Y70 L71 T72 N73 E74 G75 I76 Q77

Y78 L79 R80 D81 Y82 L83 H84 L85 P86 P87 E88 I89 V90 P91 A92 T93 L94 R95 R96 SER ARG PRO GLU THR GLY ARG PRO ARG PRO LYS LEU LEU GLU GLY GLU ARG ALA ARG LEU THR ARG GLY GLU ALA ASP ARG ASP THR TYR ARG ARG SER ALA VAL PRO PRO GLY ALA ASP
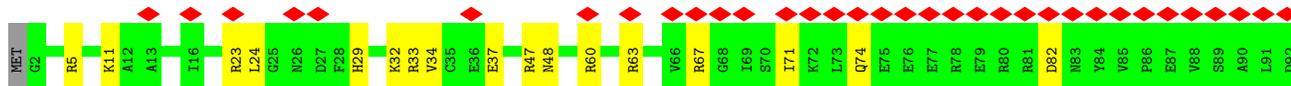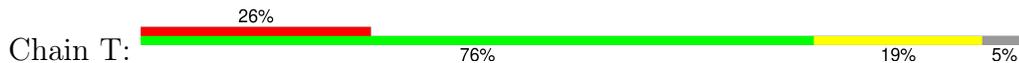
LYS LYS ALA GLU ALA GLY ALA GLY SER ALA THR GLU

• Molecule 23: uS17

Chain M:

• Molecule 24: eS12

Chain N:

• Molecule 25: uS15

Chain O:

• Molecule 26: Small ribosomal subunit protein uS11

Chain P:

R128 I129 E130 D131 V132 T133 P134 I135 P136 S137 D138 S139 R142 K143 R147 G148 R149 R150 L151

• Molecule 27: uS19

Chain Q:

27%
62%　　21%　　17%

MET ALA GLU VAL GLU GLN LYS LYS ARG THR F12 R13 K14 F15 T16 Y17 R18 G19 V20 D21 L22 D23 Q24 L25 L26 D27 Y30 E31 Q32 L33 M34 Q35 L36 R40 Q41 R42 R43 R47 G48 L49 R50 R51 K52 Q53 H54 L57 K58 R59 L60 R61 K62 A63 K64 K65 E66

A67 P68 P69 M70 E71 K72 P73 E74 V75 V76 K77 T78 H79 L80 R81 D82 M83 M89 M93 V94 G95 V96 Q104 V105 E106 E110 G113 L116 G117 S120 K127 H128 G129 R130 P131 GLY ILE GLY ALA THR HIS SER SER ARG PHE ILE PRO LEU LYS

• Molecule 28: uS9

Chain R:

16%
66%　　16%　　17%

SER ALA ARG VAL ALA PRO ARG PHE PRO PHE PRO VAL VAL ALA PRO ARG GLY GLU ASP ARG HIS SER SER ALA ALA ALA MET PRO SER LYS G5 P6 L7 Q11 V12 N29 G30 L31 I32 K33 F40 M41 I42 E43 K50 L51 L52 E53 P54 V55 L58 G59 K60 E61 R62

F63 I68 R69 K73 I84 R85 K90 V93 K98 D101 K106 E107 I108 D116 R117 A122 D123 P124 R125 E128 S129 K130 K131 G134 A137 R138 A139 R140 K143 S144 Y145 R146

• Molecule 29: eS17

Chain S:

54%
81%　　17%　　•

MET G2 R5 K11 A12 A13 I16 R23 L24 G25 N26 D27 P28 H29 K32 R33 V34 C35 E36 E37 R47 N48 R60 R63 V66 R67 G68 I69 S70 I71 K72 L73 Q74 E75 E76 E77 R78 E79 R80 R81 D82 N83 Y84 V85 P86 E87 V88 S89 A90 L91 D92

Q93 E94 I95 I96 E97 V98 D99 P100 D101 T102 K103 E104 M105 L106 K107 L108 L109 D110 F111 G112 S113 L114 S115 N116 L117 Q118 V119 T120 Q121 P122 T123 V124 G125 M126 N127 F128 K129 R132 G133 ALA VAL

• Molecule 30: uS13

Chain T:

26%
76%　　19%　　5%

MET S2 L3 E7 K8 F9 Q10 H11 I12 L13 R14 N17 T18 N19 I20 D21 G22 A32 V36 G37 R38 R39 Y40 L45 R46 K47 A48 D49 L52 R55 A56 G57 E58 L59 T60 E61 D62 E63 V64 V67 I68 P74 R75 P80 F83 L84 K91 D92

G93 K94 V98 L99 A100 N101 G102 L103 D104 N105 K106 L107 R108 E109 D110 L111 E112 R113 K116 I117 R118 L123 Q134 H135 T136 R142 G143 R144 T145 VAL GLY VAL SER LYS LYS LYS

• Molecule 31: eS19

Chain U:

9%

82%

14%

MET PRO G3 Q11 Q12 E13 K24 K29 W33 V34 D35 T36 V37 A40 K41 H42 K43 D49 E50 N51 Y54 T55 R56 T60 A61 R62 R82 R101 R102 V103 L104 Q105 A106 K111 D116 Q117 D118 W119 G120 R121 R129 A135 G136 Q137 K142

K143 LYS HIS

• Molecule 32: uS10

Chain V:

44%

62%

21%

16%

MET ALA PHE LYS ASP THR GLY LYS THR PRO VAL GLU PRO GLU VAL VAL ALA ILE H18 R19 I20 R21 I22 R27 N28 V29 K30 S31 L32 E33 K34 V35 C36 A37 D38 L39 I40 R41 G42 A43 K44 E45 K46 N47 L48 K49 V50 K51 G52 P53 V54 R55 M56 L61 R62 K67 T68 P69

C70 G71 E72 G73 S74 D78 R79 F80 Q81 M82 R83 I84 H85 K86 I89 D90 L91 H92 S93 P94 S95 E96 I97 V98 K99 Q100 I101 T102 S103 I104 S105 I106 E107 P108 G109 V110 E111 V112 E113 V114 T115 I116 A117 ASP ALA

• Molecule 33: eS21

Chain W:

43%

84%

16%

M1 Q2 N3 D4 A5 G6 E7 F8 V9 D10 L11 Y12 R15 N21 I24 G25 A26 K27 D28 M34 N35 E38 V39 D40 K41 V42 T43 G44 R45 F46 N47 G48 Q49 F50 K51 T52 R61 M62 G63 E64 S65 D66 R71 L72 A73 K74 A75 D76 G77 K81 N82 F83

• Molecule 34: uS8

Chain X:

14%

79%

19%

MET V2 R3 M4 N5 A8 L11 K12 S13 I14 N15 K19 R23 S31 V35 T39 K43 G48 E51 I52 I53 D54 D55 H56 R57 A58 V62 G67 R68 K71 V74 D80 L83 K84 D85 L86 E87 K88 W89 Q90 N91 R97

I102 V103 S107 D112 H113 R117 R118 T121 L126 F130

• Molecule 35: uS12

Chain Y:

24%

84%

15%

MET G2 K3 C4 R5 T9 A10 R11 K12 L13 R14 D19 K25 K28 K29 L32 G33 T34 A35 L36 K37 E58 A59 K60 Q61 P62 N63 S64 A65 I66 R67 K68 C69 V70 N77 G78 K79 P86 N87 D88 L91 I94 D98 E99 V100 L101 R107

H110 A111 V112 G113 D114 R119 K124 V125 L130 E139 R140 P141 R142 SER

• Molecule 36: eS24

Chain Z:

• Molecule 37: eS25

Chain a:

• Molecule 38: eS26

Chain b:

• Molecule 39: eS27

Chain c:

• Molecule 40: eS28

Chain d:

• Molecule 41: uS14

Chain e:

• Molecule 42: eS30

Chain f:

• Molecule 43: eS31

Chain g:

• Molecule 44: Receptor for Activated C Kinase 1 (RACK1)

Chain h:

P158 N159 S160 S161 N162 P163 I164 I165 C168 G169 W170 K175 V176 W177 N178 L179 A180 N181 C182 K183 L184 K185 T186 N187 H188 I189 G190 H191 T192 G193 Y194 L195 T199 V200 S201 P202 D203 G204 S205 K212 A216 D220 L221 N222 E223 H226 L227 Y228 T229 L230 D231 G232

I235 I236 L239 C240 N244 R245 Y246 W247 L248 C249 T252 I256 K257 I258 W259 D260 L261 E262 I266 V267 D268 E269 L270 K271 Q272 E273 V274 I275 S276 T277 S278 S279 K280 A281 E282 L289 A290 W291 S292 A293 D294 L298 T303 D304 N305 W310 Q311 V312 T313 I314 GLY

THR ARG

• Molecule 45: Met-tRNAiMet

Chain i:

7%

61%　　　　33%　　　5%

A1 G2 C3 A4 G5 U8 G9 G10 C16 G17 G18 A19 A20 G21 C33 A36 G45 U46 C47 G48 A49 U54 C55 G56 A57 C60 C61 A62 C65 C70 U71 A72 C73 C74 A75

• Molecule 46: Eukaryotic translation initiation factor 2 subunit 1

Chain j:

58%

52%　　　5% •　　　42%

MET PRO GLY L4 S5 C6 R7 F8 Y9 Q10 H11 K12 F13 P14 E15 V16 E17 D18 V19 V20 M21 V22 N23 V24 R25 S26 I27 A28 E29 M30 G31 A32 Y33 V34 S35 L36 L37 E38 Y39 N40 N41 I42 E43 G44 M45 I46 L47 L48 S49 E50 L51 S52 R53 R54 R55 I56 R57 S58 I59 N60

K61 L62 I63 R64 I65 G66 R67 N68 E69 C70 V71 V72 V73 I74 R75 V76 D77 K78 E79 K80 G81 Y82 I83 D84 L85 S86 K87 R88 R89 V90 S91 P92 E93 E94 A95 I96 K97 C98 E99 D100 K101 F102 T103 K104 S105 K106 T107 V108 Y109 S110 I111 I112 R113 H114 V115 A116 E117 V118 L119 E120

Y121 T122 K123 D124 E125 Q126 L127 E128 S129 L130 F131 Q132 R133 T134 A135 W136 V137 F138 D139 D140 K141 Y142 K143 R144 P145 G146 Y147 G148 A149 Y150 D151 A152 F153 K154 H155 A156 V157 S158 D159 P160 S161 I162 L163 D164 S165 L166 D167 L168 N169 E170 D171 E172 R173 E174 V175 L176 I177 N178 N179 I180

N181 R182 R183 L184 T185 PRO GLN ALA VAL LYS ILE ARG ASP ALA ILE GLU VAL ALA CYS TYR GLY TYR GLU GLY ILE ASP ALA VAL LYS GLU ALA LEU ARG ALA GLY LEU ASN CYS SER THR GLU ASN MET PRO ILE LYS ILE ASN LEU ILE ALA PRO PRO ARG TYR VAL MET THR THR THR

THR LEU GLU ARG THR GLU GLY LEU SER VAL LEU SER GLN ALA MET ALA VAL ILE LYS GLU LYS ILE GLU GLU LYS VAL THR ASP THR ASP THR GLU GLY LEU ALA ARG GLN MET GLU ARG LEU GLU ARG GLU ASN ALA GLU VAL

ASP GLY ASP ASP ALA GLU GLU MET GLU ALA LYS ALA GLU ASP

• Molecule 47: eL41

Chain n:

52%

72%　　　　28%

M1 R6 R9 M10 R11 R12 L13 K14 R15 K16 R17 R18 K19 M20 R21 Q22 R23 S24 K25

4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	262752	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	58	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.730	Depositor
Minimum map value	-0.045	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.036	Depositor
Recommended contour level	0.198	Depositor
Map size (Å)	396.8, 396.8, 396.8	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.24, 1.24, 1.24	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: 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	o	0.64	5/5021 (0.1%)	0.97	21/6781 (0.3%)
2	p	0.42	1/4608 (0.0%)	0.85	8/6219 (0.1%)
3	q	2.35	8/3539 (0.2%)	0.97	22/4788 (0.5%)
4	r	0.59	3/2149 (0.1%)	0.93	10/2920 (0.3%)
5	s	0.40	0/2675	0.82	3/3609 (0.1%)
6	t	0.35	0/1773	0.78	6/2398 (0.3%)
7	u	0.46	2/3186 (0.1%)	0.96	10/4298 (0.2%)
8	v	0.44	1/2964 (0.0%)	0.94	22/4000 (0.6%)
9	2	0.21	0/40506	0.39	1/63123 (0.0%)
10	3	0.22	0/2120	0.41	0/3299
11	A	0.14	0/809	0.36	0/1083
12	B	0.27	0/1747	0.61	1/2374 (0.0%)
13	C	0.27	0/1756	0.60	0/2350
14	D	0.26	0/1753	0.57	0/2369
15	E	0.31	0/1796	0.66	2/2417 (0.1%)
16	F	0.26	0/2118	0.57	1/2849 (0.0%)
17	G	0.30	0/1531	0.60	1/2059 (0.0%)
18	H	0.24	0/1946	0.53	0/2590
19	I	0.21	0/1510	0.50	0/2022
20	J	0.24	0/1723	0.54	0/2298
21	K	0.24	0/1550	0.55	0/2069
22	L	0.28	0/834	0.61	0/1125
23	M	0.22	0/1254	0.51	0/1677
24	N	0.21	0/918	0.51	0/1233
25	O	0.23	0/1226	0.46	0/1649
26	P	0.24	0/1029	0.51	1/1380 (0.1%)
27	Q	0.27	0/1017	0.65	1/1358 (0.1%)
28	R	0.27	0/1146	0.58	0/1534
29	S	0.23	0/1082	0.51	0/1452
30	T	0.27	0/1208	0.59	0/1618
31	U	0.25	0/1115	0.53	1/1493 (0.1%)
32	V	0.23	0/805	0.58	1/1081 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	W	0.21	0/643	0.59	1/860 (0.1%)
34	X	0.25	0/1051	0.55	0/1406
35	Y	0.21	0/1116	0.46	0/1490
36	Z	0.24	0/1028	0.54	0/1366
37	a	0.26	0/620	0.60	0/831
38	b	0.23	0/828	0.53	0/1109
39	c	0.24	0/665	0.55	1/891 (0.1%)
40	d	0.29	0/532	0.61	0/712
41	e	0.19	0/470	0.46	0/623
42	f	0.23	0/462	0.59	0/607
43	g	0.13	0/567	0.32	0/753
44	h	0.24	0/2493	0.57	0/3394
45	i	0.21	0/1795	0.39	0/2798
46	j	0.31	0/1263	0.52	2/1708 (0.1%)
47	n	0.25	0/240	0.70	0/305
All	All	0.52	20/112187 (0.0%)	0.60	116/160368 (0.1%)

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
1	o	0	1
2	p	0	6
3	q	0	3
4	r	0	5
5	s	0	3
6	t	0	1
7	u	0	5
8	v	0	1
14	D	0	1
16	F	0	1
23	M	0	1
29	S	0	1
37	a	0	1
All	All	0	30

The worst 5 of 20 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	q	189	LEU	CB-CG	83.09	3.19	1.53

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	q	217	TRP	CE3-CZ3	78.94	3.75	1.38
3	q	217	TRP	CE2-CZ2	40.20	2.24	1.39
3	q	217	TRP	CZ3-CH2	40.04	2.40	1.40
3	q	217	TRP	CZ2-CH2	32.13	1.98	1.37

The worst 5 of 116 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	u	439	PRO	CB-CG-CD	23.07	179.93	106.10
1	o	148	PRO	N-CD-CG	-21.46	71.01	103.20
3	q	217	TRP	CE3-CZ3-CH2	-16.22	100.02	121.10
4	r	107	PRO	N-CD-CG	-15.61	79.78	103.20
7	u	439	PRO	N-CD-CG	-14.80	80.99	103.20

There are no chirality outliers.

5 of 30 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	o	91	ARG	Sidechain
2	p	390	ALA	Peptide
2	p	415	ASN	Peptide
2	p	434	VAL	Peptide
2	p	490	LEU	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	o	4935	0	5017	97	0
2	p	4529	0	4533	84	0
3	q	3466	0	3446	91	0
4	r	2111	0	2105	47	0
5	s	2624	0	2592	55	0
6	t	1738	0	1706	27	0
7	u	3110	0	3084	61	0
8	v	2919	0	2950	54	0
9	2	36227	0	18299	237	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	3	1897	0	967	13	0
11	A	798	0	807	7	0
12	B	1710	0	1708	30	0
13	C	1729	0	1803	38	0
14	D	1716	0	1806	26	0
15	E	1768	0	1866	26	0
16	F	2076	0	2177	48	0
17	G	1509	0	1563	25	0
18	H	1923	0	2089	44	0
19	I	1488	0	1582	20	0
20	J	1691	0	1778	19	0
21	K	1525	0	1640	22	0
22	L	810	0	836	13	0
23	M	1233	0	1310	28	0
24	N	908	0	939	10	0
25	O	1202	0	1289	15	0
26	P	1016	0	1039	23	0
27	Q	997	0	1045	22	0
28	R	1128	0	1195	19	0
29	S	1068	0	1121	16	0
30	T	1190	0	1249	19	0
31	U	1097	0	1130	17	0
32	V	795	0	862	17	0
33	W	636	0	637	10	0
34	X	1034	0	1080	21	0
35	Y	1098	0	1167	15	0
36	Z	1011	0	1083	20	0
37	a	614	0	678	13	0
38	b	814	0	863	18	0
39	c	651	0	672	10	0
40	d	530	0	561	12	0
41	e	459	0	452	10	0
42	f	457	0	502	10	0
43	g	555	0	565	6	0
44	h	2436	0	2393	43	0
45	i	1604	0	816	5	0
46	j	1245	0	1024	9	0
47	n	239	0	289	7	0
48	b	1	0	0	0	0
All	All	106317	0	88315	1265	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

The worst 5 of 1265 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:q:217:TRP:CE3	3:q:217:TRP:CD2	1.85	1.61
3:q:217:TRP:CH2	3:q:217:TRP:CZ2	1.98	1.52
3:q:217:TRP:CD2	3:q:217:TRP:CE2	1.92	1.44
3:q:217:TRP:CZ2	3:q:217:TRP:CE2	2.24	1.25
3:q:217:TRP:CH2	3:q:217:TRP:CZ3	2.40	1.10

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	o	598/1362 (44%)	561 (94%)	35 (6%)	2 (0%)	37	68
2	p	556/843 (66%)	533 (96%)	20 (4%)	3 (0%)	25	58
3	q	418/445 (94%)	387 (93%)	26 (6%)	5 (1%)	11	38
4	r	270/364 (74%)	253 (94%)	13 (5%)	4 (2%)	8	33
5	s	322/352 (92%)	299 (93%)	19 (6%)	4 (1%)	11	38
6	t	214/218 (98%)	206 (96%)	7 (3%)	1 (0%)	25	58
7	u	371/564 (66%)	348 (94%)	18 (5%)	5 (1%)	10	36
8	v	364/374 (97%)	344 (94%)	16 (4%)	4 (1%)	12	39
11	A	97/144 (67%)	96 (99%)	1 (1%)	0	100	100
12	B	215/295 (73%)	204 (95%)	10 (5%)	1 (0%)	25	58
13	C	211/264 (80%)	202 (96%)	9 (4%)	0	100	100
14	D	219/221 (99%)	214 (98%)	5 (2%)	0	100	100
15	E	226/281 (80%)	224 (99%)	2 (1%)	0	100	100
16	F	260/263 (99%)	254 (98%)	6 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
17	G	189/204 (93%)	182 (96%)	7 (4%)	0	100	100
18	H	235/249 (94%)	231 (98%)	4 (2%)	0	100	100
19	I	181/432 (42%)	179 (99%)	2 (1%)	0	100	100
20	J	205/208 (99%)	194 (95%)	11 (5%)	0	100	100
21	K	183/194 (94%)	180 (98%)	3 (2%)	0	100	100
22	L	94/149 (63%)	86 (92%)	8 (8%)	0	100	100
23	M	149/158 (94%)	142 (95%)	7 (5%)	0	100	100
24	N	115/132 (87%)	112 (97%)	3 (3%)	0	100	100
25	O	147/151 (97%)	144 (98%)	3 (2%)	0	100	100
26	P	134/168 (80%)	126 (94%)	8 (6%)	0	100	100
27	Q	118/145 (81%)	111 (94%)	7 (6%)	0	100	100
28	R	140/172 (81%)	135 (96%)	5 (4%)	0	100	100
29	S	130/135 (96%)	130 (100%)	0	0	100	100
30	T	142/152 (93%)	138 (97%)	4 (3%)	0	100	100
31	U	139/145 (96%)	134 (96%)	4 (3%)	1 (1%)	19	51
32	V	98/119 (82%)	97 (99%)	1 (1%)	0	100	100
33	W	81/83 (98%)	80 (99%)	1 (1%)	0	100	100
34	X	127/130 (98%)	123 (97%)	4 (3%)	0	100	100
35	Y	139/143 (97%)	136 (98%)	3 (2%)	0	100	100
36	Z	122/131 (93%)	120 (98%)	2 (2%)	0	100	100
37	a	75/124 (60%)	74 (99%)	1 (1%)	0	100	100
38	b	99/101 (98%)	96 (97%)	3 (3%)	0	100	100
39	c	81/84 (96%)	78 (96%)	3 (4%)	0	100	100
40	d	65/69 (94%)	64 (98%)	1 (2%)	0	100	100
41	e	53/56 (95%)	52 (98%)	1 (2%)	0	100	100
42	f	55/133 (41%)	54 (98%)	1 (2%)	0	100	100
43	g	66/188 (35%)	66 (100%)	0	0	100	100
44	h	311/317 (98%)	298 (96%)	13 (4%)	0	100	100
46	j	180/315 (57%)	178 (99%)	1 (1%)	1 (1%)	22	53
47	n	23/25 (92%)	23 (100%)	0	0	100	100
All	All	8217/10802 (76%)	7888 (96%)	298 (4%)	31 (0%)	32	63

5 of 31 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	o	21	VAL
2	p	416	PRO
3	q	51	VAL
3	q	269	LYS
4	r	129	ARG

5.3.2   Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	o	551/1245 (44%)	543 (98%)	8 (2%)	60	80
2	p	503/750 (67%)	491 (98%)	12 (2%)	44	70
3	q	384/406 (95%)	379 (99%)	5 (1%)	65	82
4	r	239/282 (85%)	238 (100%)	1 (0%)	89	94
5	s	293/311 (94%)	291 (99%)	2 (1%)	81	90
6	t	190/193 (98%)	186 (98%)	4 (2%)	48	72
7	u	342/516 (66%)	340 (99%)	2 (1%)	84	91
8	v	327/335 (98%)	323 (99%)	4 (1%)	67	83
11	A	84/123 (68%)	84 (100%)	0	100	100
12	B	180/245 (74%)	179 (99%)	1 (1%)	84	91
13	C	194/231 (84%)	194 (100%)	0	100	100
14	D	187/187 (100%)	185 (99%)	2 (1%)	70	84
15	E	190/232 (82%)	187 (98%)	3 (2%)	58	79
16	F	224/225 (100%)	224 (100%)	0	100	100
17	G	161/170 (95%)	159 (99%)	2 (1%)	67	83
18	H	207/218 (95%)	206 (100%)	1 (0%)	86	92
19	I	165/360 (46%)	165 (100%)	0	100	100
20	J	179/180 (99%)	178 (99%)	1 (1%)	84	91
21	K	161/168 (96%)	159 (99%)	2 (1%)	67	83

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	L	87/125 (70%)	85 (98%)	2 (2%)	45	70
23	M	136/142 (96%)	134 (98%)	2 (2%)	60	80
24	N	99/108 (92%)	99 (100%)	0	100	100
25	O	130/131 (99%)	130 (100%)	0	100	100
26	P	106/130 (82%)	106 (100%)	0	100	100
27	Q	109/130 (84%)	108 (99%)	1 (1%)	75	88
28	R	117/140 (84%)	114 (97%)	3 (3%)	41	68
29	S	119/121 (98%)	118 (99%)	1 (1%)	79	89
30	T	125/132 (95%)	123 (98%)	2 (2%)	58	79
31	U	111/116 (96%)	111 (100%)	0	100	100
32	V	92/107 (86%)	92 (100%)	0	100	100
33	W	67/67 (100%)	67 (100%)	0	100	100
34	X	112/113 (99%)	111 (99%)	1 (1%)	75	88
35	Y	113/115 (98%)	113 (100%)	0	100	100
36	Z	107/113 (95%)	104 (97%)	3 (3%)	38	66
37	a	68/102 (67%)	68 (100%)	0	100	100
38	b	88/88 (100%)	88 (100%)	0	100	100
39	c	75/76 (99%)	75 (100%)	0	100	100
40	d	60/62 (97%)	60 (100%)	0	100	100
41	e	48/49 (98%)	48 (100%)	0	100	100
42	f	47/106 (44%)	47 (100%)	0	100	100
43	g	61/154 (40%)	61 (100%)	0	100	100
44	h	272/275 (99%)	268 (98%)	4 (2%)	60	80
46	j	90/280 (32%)	83 (92%)	7 (8%)	10	35
47	n	24/24 (100%)	24 (100%)	0	100	100
All	All	7224/9383 (77%)	7148 (99%)	76 (1%)	69	84

5 of 76 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
28	R	41	MET
46	j	75	ARG
30	T	45	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
44	h	45	LEU
46	j	150	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 183 such sidechains are listed below:

Mol	Chain	Res	Type
16	F	157	ASN
25	O	69	ASN
16	F	216	ASN
20	J	35	ASN
28	R	80	GLN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	3	87/89 (97%)	31 (35%)	0
45	i	74/75 (98%)	25 (33%)	0
9	2	1685/1870 (90%)	490 (29%)	6 (0%)
All	All	1846/2034 (90%)	546 (29%)	6 (0%)

5 of 546 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
9	2	2	A
9	2	4	C
9	2	9	U
9	2	17	C
9	2	20	G

5 of 6 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
9	2	874	G
9	2	1137	U
9	2	1637	A
9	2	561	A
9	2	65	C

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

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

5.5　Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6　Ligand geometry ⓘ

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7　Other polymers ⓘ

There are no such residues in this entry.

5.8　Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
10	3	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	3	600:G	O3'	831:A	P	118.16

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-40774. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ

6.1.1 Primary map

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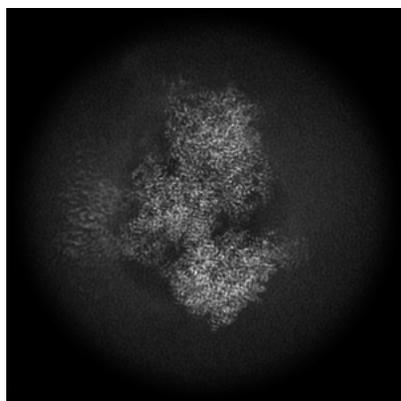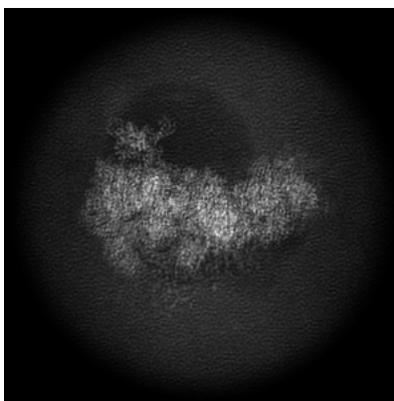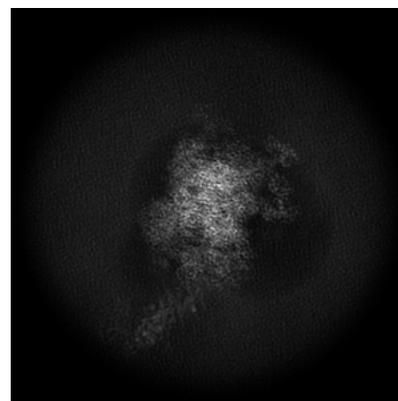
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
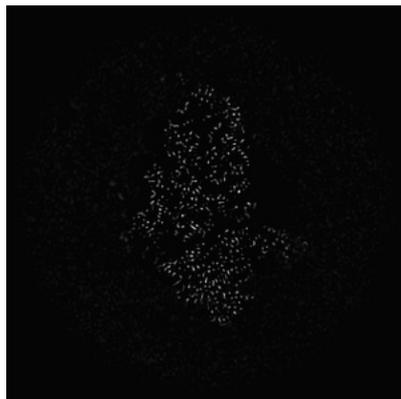
6.2.1 Primary map
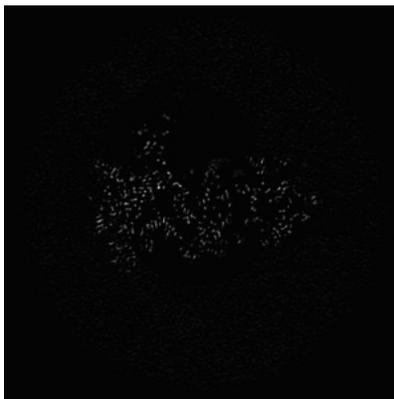
| X Index: 160 | Y Index: 160 | Z Index: 160 |
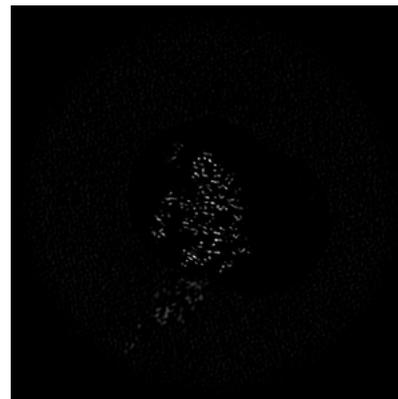
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
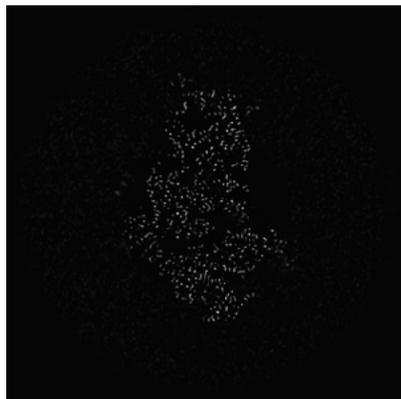
6.3.1 Primary map
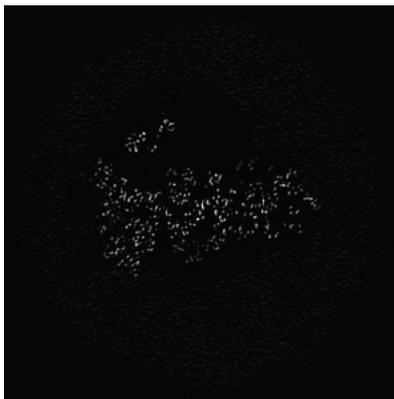
| X Index: 163 | Y Index: 152 | Z Index: 112 |
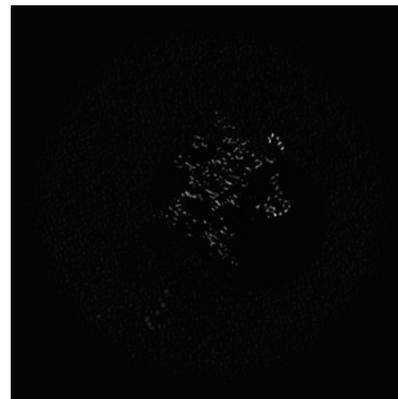
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

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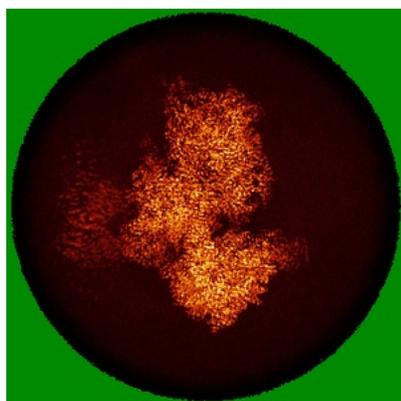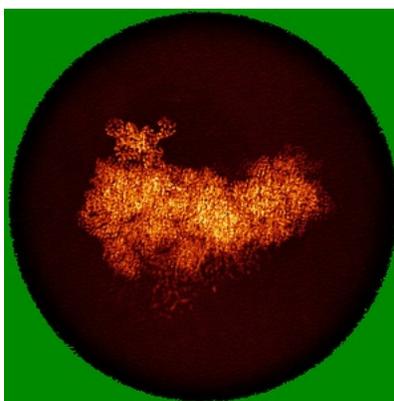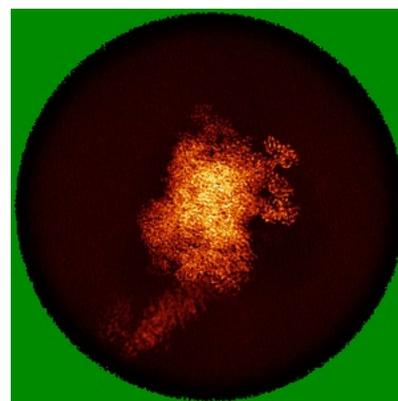
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5　Orthogonal surface views ⓘ

6.5.1　Primary map

| X | Y | Z |
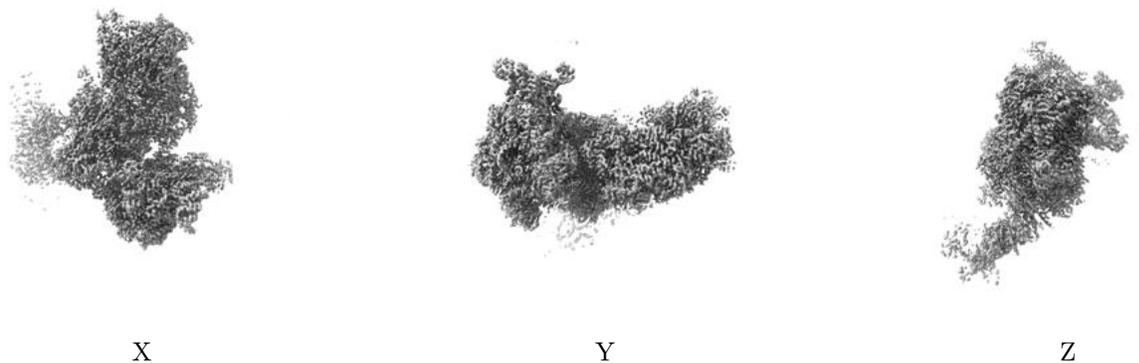
The images above show the 3D surface view of the map at the recommended contour level 0.198. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6　Mask visualisation ⓘ

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

7   Map analysis (i)

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

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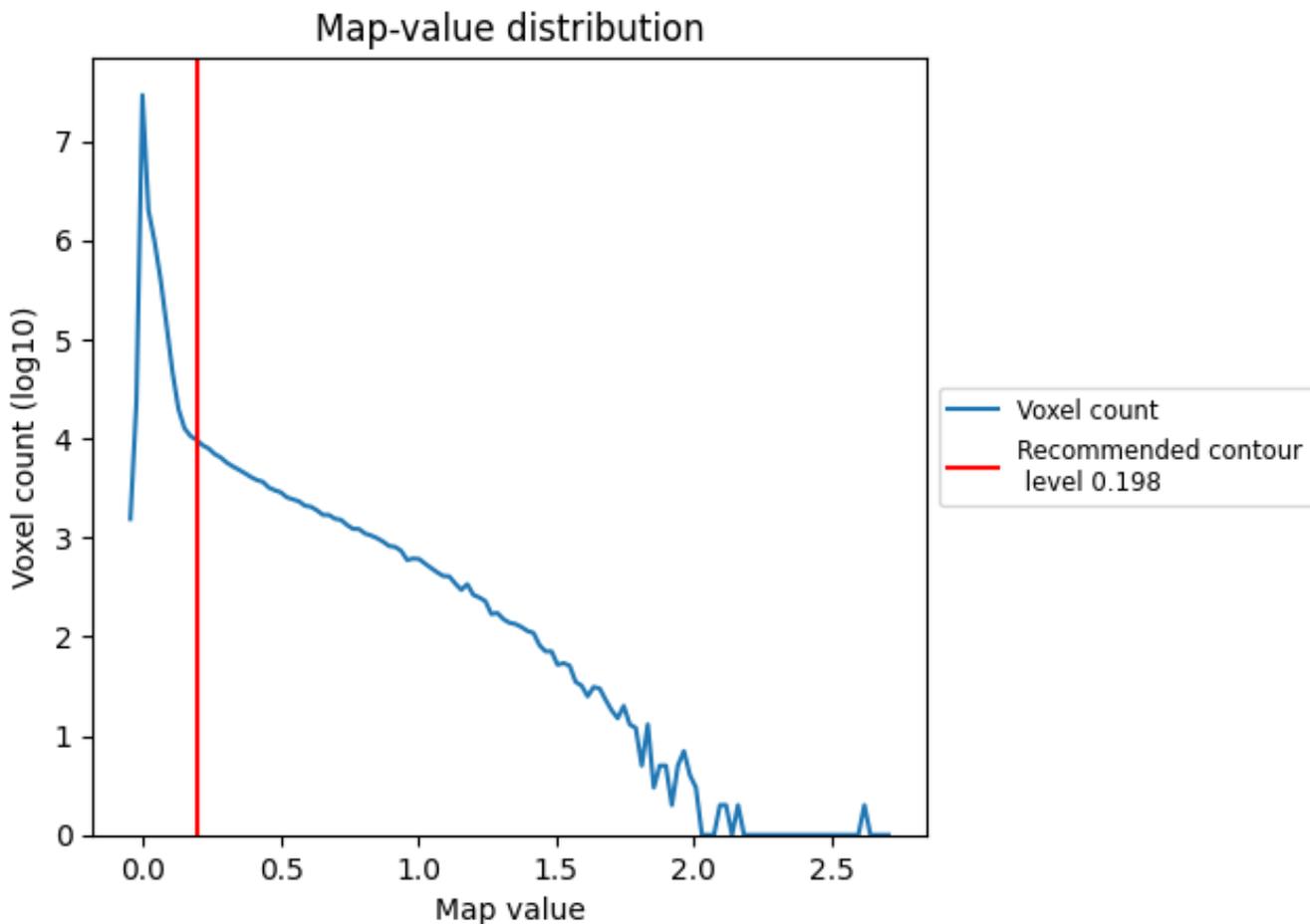
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate ⓘ
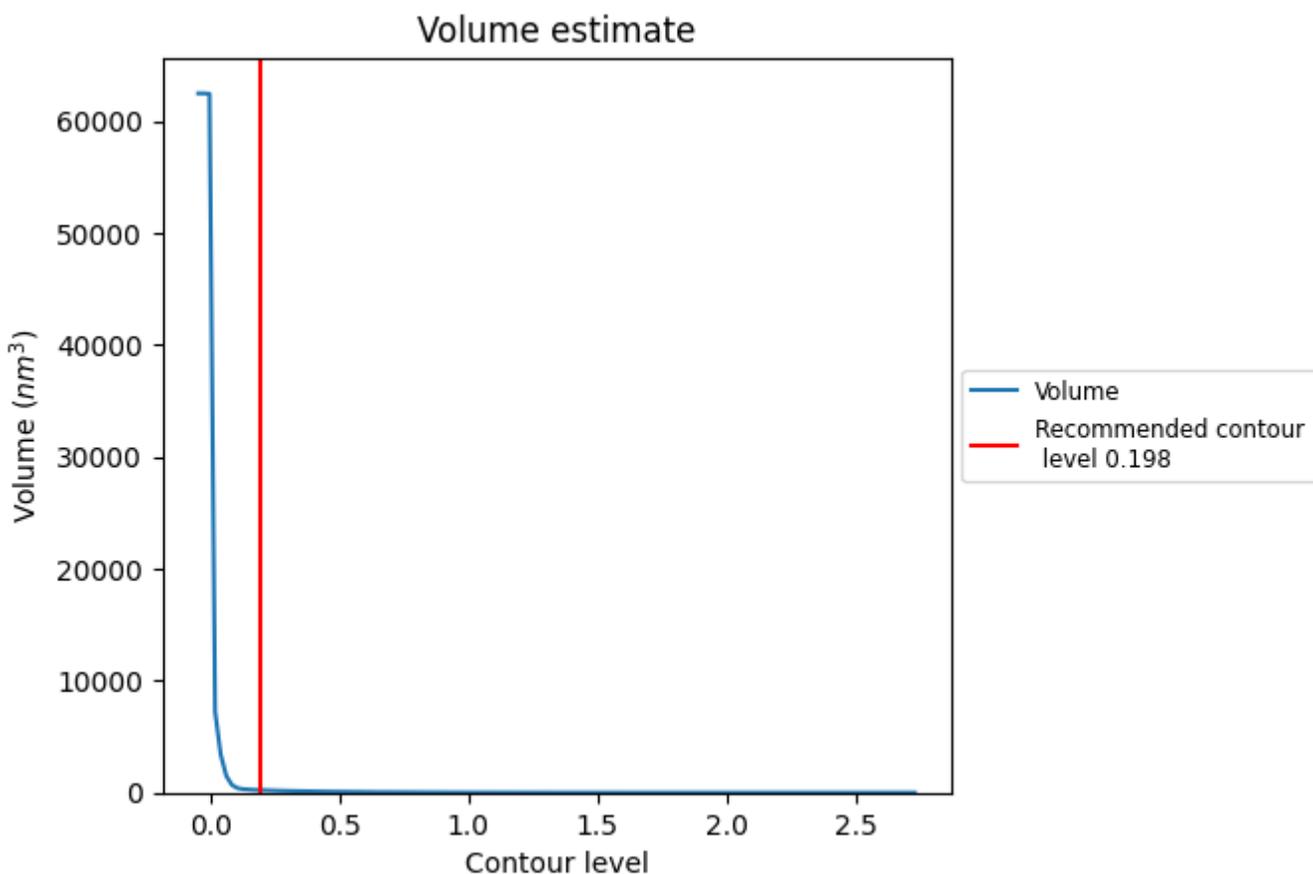
The volume at the recommended contour level is 222 nm^3; this corresponds to an approximate mass of 201 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ
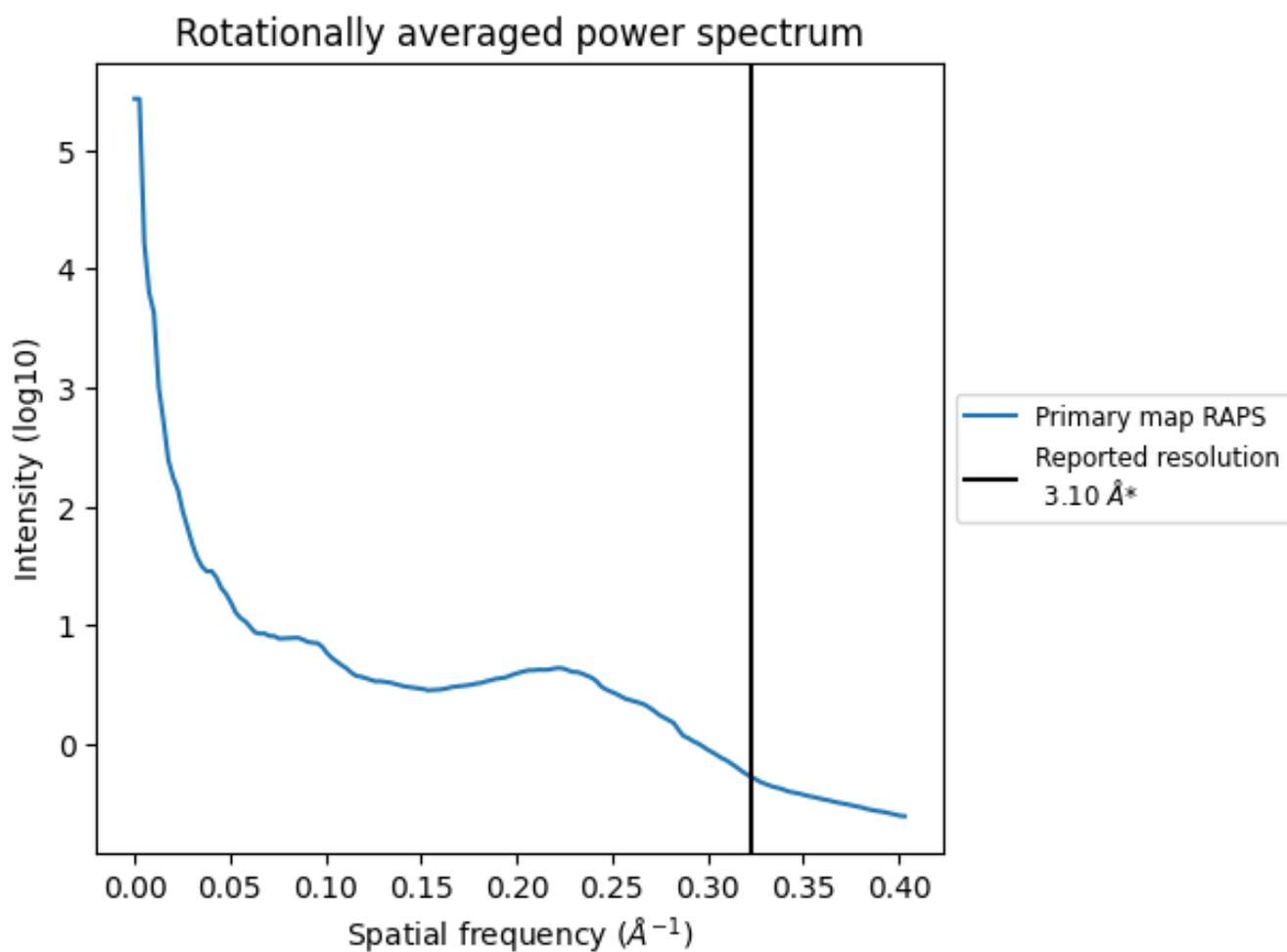
*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8 Fourier-Shell correlation ⓘ

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

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-40774 and PDB model 8SUP. Per-residue inclusion information can be found in section 3 on page 14.

9.1 Map-model overlay ⓘ

X	Y	Z
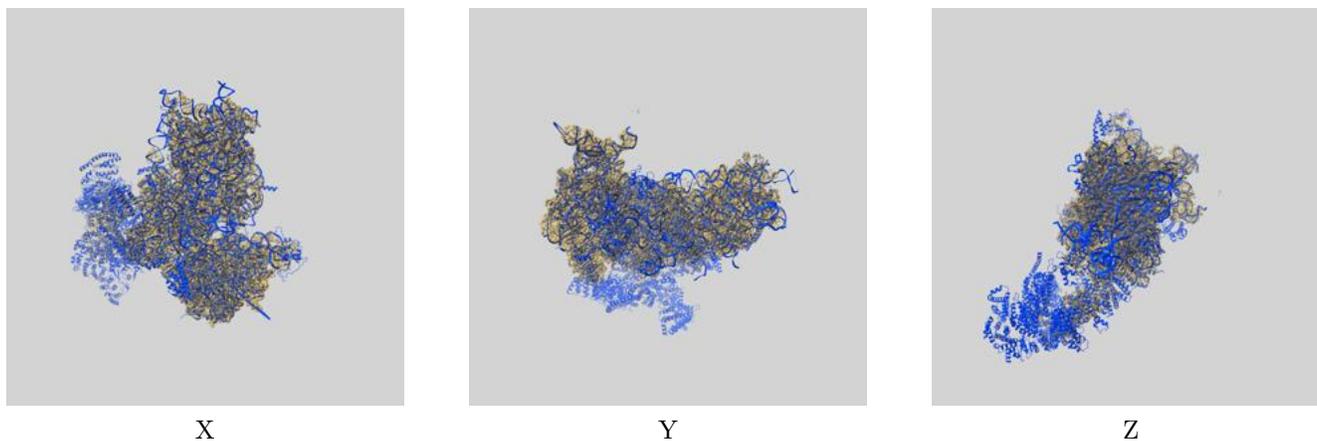
The images above show the 3D surface view of the map at the recommended contour level 0.198 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model (i)
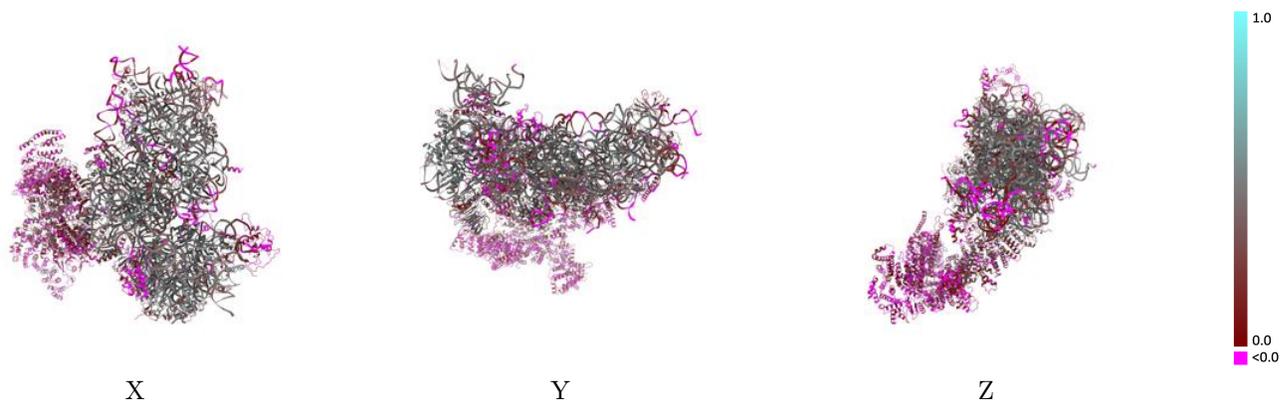
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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)
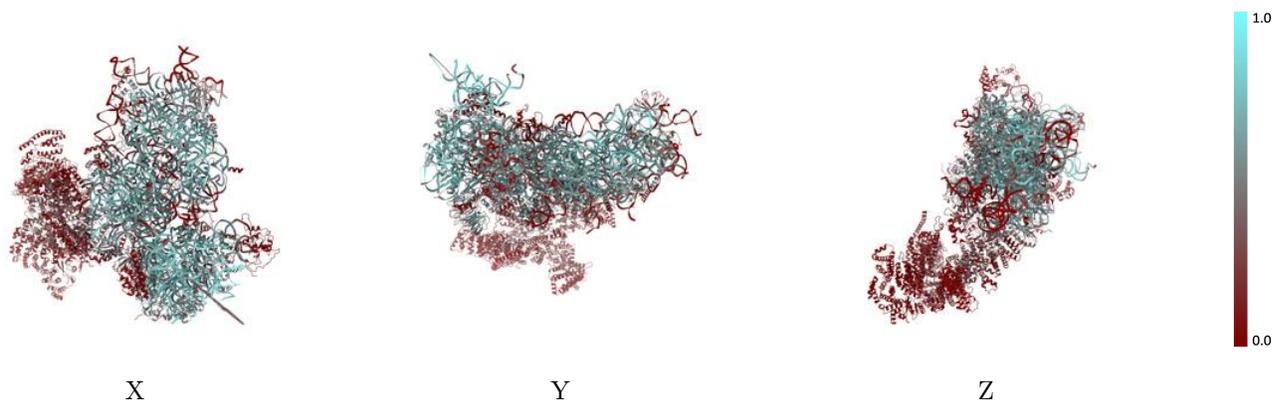
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.198).

9.4   Atom inclusion ⓘ
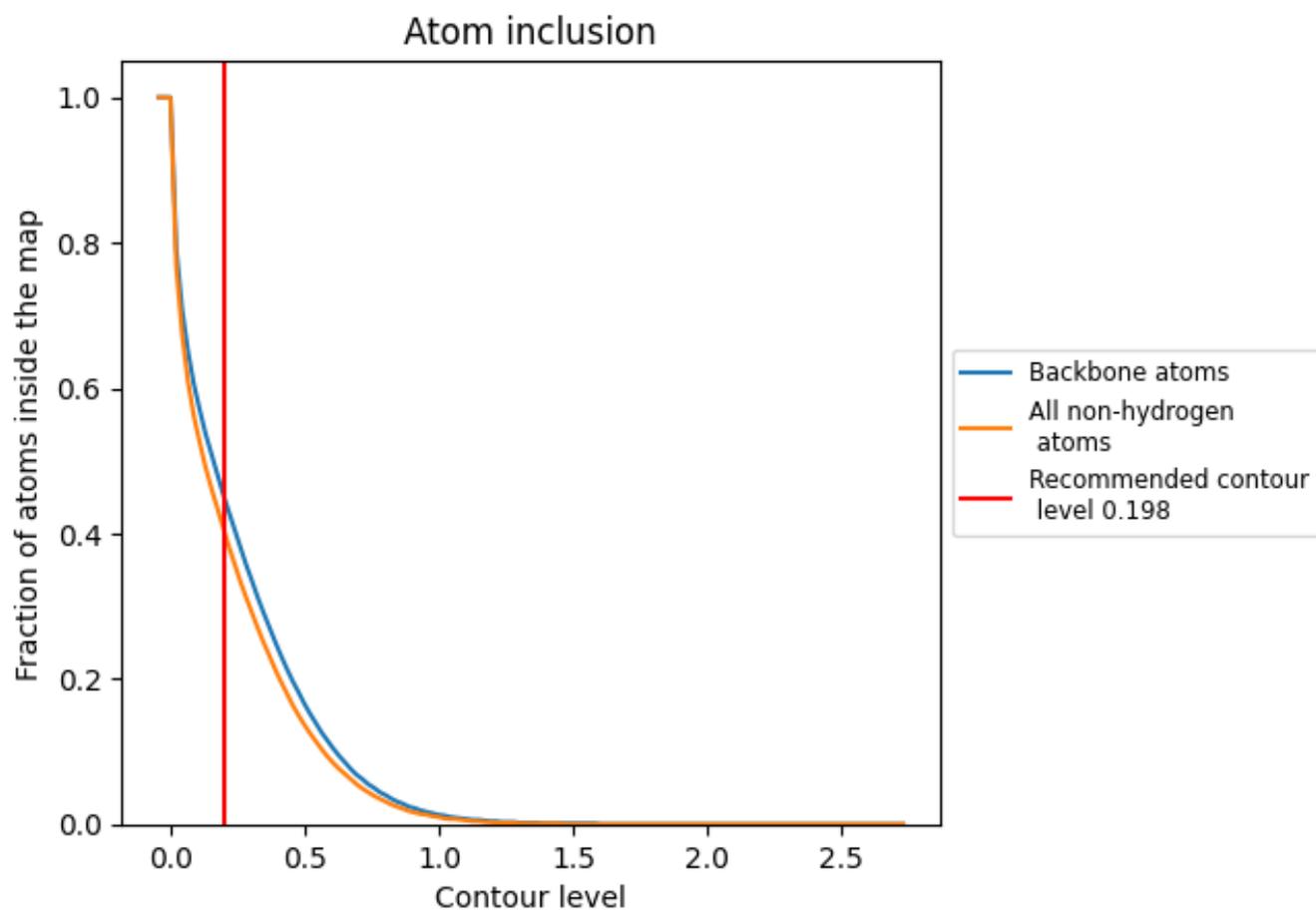
At the recommended contour level, 45% of all backbone atoms, 40% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.198) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4030	0.3020
2	0.5750	0.3870
3	0.6870	0.4240
A	0.0000	-0.0500
B	0.4750	0.3730
C	0.4440	0.3530
D	0.4830	0.4120
E	0.4760	0.3750
F	0.5270	0.4260
G	0.5740	0.4360
H	0.3560	0.2900
I	0.2150	0.2060
J	0.4550	0.3650
K	0.4880	0.3810
L	0.4410	0.2980
M	0.4870	0.3910
N	0.0430	0.0150
O	0.4720	0.3750
P	0.4190	0.3610
Q	0.5130	0.3790
R	0.6130	0.4630
S	0.3430	0.2650
T	0.5330	0.4190
U	0.6620	0.4760
V	0.3760	0.3350
W	0.4530	0.3830
X	0.5750	0.4560
Y	0.5490	0.4400
Z	0.4960	0.3920
a	0.4640	0.3600
b	0.4940	0.4240
c	0.4460	0.3490
d	0.4800	0.3740
e	0.5400	0.4080
f	0.3410	0.2910

1.0

0.0
<0.0

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
g	0.0180	-0.0310
h	0.4440	0.3470
i	0.6570	0.4160
j	0.0020	-0.0240
n	0.4220	0.3240
o	0.1290	0.1530
p	0.1910	0.2180
q	0.0510	0.0770
r	0.0130	0.0520
s	0.0140	0.0670
t	0.0010	-0.0000
u	0.0000	0.0580
v	0.0130	0.0520