



Full wwPDB EM Validation Report ⓘ

Mar 19, 2026 – 11:04 PM UTC

PDB ID : 8PHJ / pdb_00008phj
EMDB ID : EMD-17667
Title : cA4-bound Cami1 in complex with 70S ribosome
Authors : Tamulaitiene, G.; Mogila, I.; Sasnauskas, G.; Tamulaitis, G.
Deposited on : 2023-06-20
Resolution : 3.67 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.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : **FAILED**
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

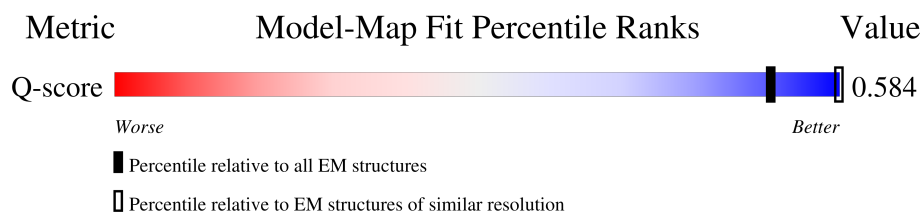
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.67 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	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Q-score	25397	11424 (3.17 - 4.17)

MolProbity failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition

There are 61 unique types of molecules in this entry. The entry contains 152518 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 Large ribosomal subunit protein bL33.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	0	51	Total	C	N	O	0	0
			417	269	76	72		

- Molecule 2 is a protein called Large ribosomal subunit protein bL34.

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

- Molecule 3 is a protein called Large ribosomal subunit protein bL35.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 4 is a protein called Large ribosomal subunit protein bL36A.

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

- Molecule 5 is a protein called Large ribosomal subunit protein bL31A.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	4	60	Total	C	N	O	S	0	0
			480	299	90	85	6		

- Molecule 6 is a protein called Large ribosomal subunit protein uL10.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	5	121	Total	C	N	O	S	0	0
			907	577	161	166	3		

- Molecule 7 is a protein called Large ribosomal subunit protein uL11.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	134	Total	C	N	O	S	0	0
			968	613	167	182	6		

- Molecule 8 is a RNA chain called fMet-tRNA(fMet).

Mol	Chain	Residues	Atoms						AltConf	Trace
8	7	76	Total	C	N	O	P	S	0	0
			1625	726	294	528	76	1		
8	8	77	Total	C	N	O	P	S	0	0
			1642	735	297	533	76	1		

- Molecule 9 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	9	3	Total	C	N	O	P	0	0
			65	29	12	21	3		

- Molecule 10 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	A	1503	Total	C	N	O	P	0	0
			32276	14402	5932	10439	1503		

- Molecule 11 is a protein called Small ribosomal subunit protein uS2.

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

- Molecule 12 is a protein called Small ribosomal subunit protein uS3.

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

- Molecule 13 is a protein called Small ribosomal subunit protein uS4.

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

- Molecule 14 is a protein called Small ribosomal subunit protein uS5.

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

- Molecule 15 is a protein called Small ribosomal subunit protein bS6, fully modified isoform.

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

- Molecule 16 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	G	152	Total	C	N	O	S	0	0
			1185	738	227	216	4		

- Molecule 17 is a protein called Small ribosomal subunit protein uS8.

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

- Molecule 18 is a protein called Small ribosomal subunit protein uS9.

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

- Molecule 19 is a protein called Small ribosomal subunit protein uS10.

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

- Molecule 20 is a protein called Small ribosomal subunit protein uS11.

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

There is a discrepancy between the modelled and reference sequences:

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

- Molecule 21 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	L	123	Total	C	N	O	S	0	0
			949	585	195	165	4		

- Molecule 22 is a protein called Small ribosomal subunit protein uS13.

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

- Molecule 23 is a protein called Small ribosomal subunit protein uS14.

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

- Molecule 24 is a protein called Small ribosomal subunit protein uS15.

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

- Molecule 25 is a protein called Small ribosomal subunit protein bS16.

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

- Molecule 26 is a protein called Small ribosomal subunit protein uS17.

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

- Molecule 27 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	R	65	Total	C	N	O	S	0	0
			535	339	100	95	1		

- Molecule 28 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	S	83	Total	C	N	O	S	0	0
			663	424	126	111	2		

- Molecule 29 is a protein called Small ribosomal subunit protein bS20.

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

- Molecule 30 is a protein called Small ribosomal subunit protein bS21.

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

- Molecule 31 is a protein called Large ribosomal subunit protein bL12.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	W	61	Total	C	N	O	0	0
			402	251	71	80		

- Molecule 32 is a protein called CRISPR-associated protein, APE2256 family.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	X	384	Total	C	N	O	S	0	0
			2984	1905	531	538	10		
32	Y	375	Total	C	N	O	S	0	0
			2912	1852	517	533	10		

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	2	ALA	PRO	engineered mutation	UNP D3RW14
X	11	ALA	SER	engineered mutation	UNP D3RW14
X	343	ALA	HIS	engineered mutation	UNP D3RW14
X	382	GLY	-	expression tag	UNP D3RW14

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Chain	Residue	Modelled	Actual	Comment	Reference
X	383	GLU	-	expression tag	UNP D3RW14
X	384	GLY	-	expression tag	UNP D3RW14
X	385	TRP	-	expression tag	UNP D3RW14
X	386	SER	-	expression tag	UNP D3RW14
X	387	HIS	-	expression tag	UNP D3RW14
X	388	PRO	-	expression tag	UNP D3RW14
X	389	GLN	-	expression tag	UNP D3RW14
X	390	PHE	-	expression tag	UNP D3RW14
X	391	GLU	-	expression tag	UNP D3RW14
X	392	LYS	-	expression tag	UNP D3RW14
X	393	GLY	-	expression tag	UNP D3RW14
X	394	VAL	-	expression tag	UNP D3RW14
X	395	GLU	-	expression tag	UNP D3RW14
X	396	GLY	-	expression tag	UNP D3RW14
X	397	HIS	-	expression tag	UNP D3RW14
X	398	HIS	-	expression tag	UNP D3RW14
X	399	HIS	-	expression tag	UNP D3RW14
X	400	HIS	-	expression tag	UNP D3RW14
X	401	HIS	-	expression tag	UNP D3RW14
X	402	HIS	-	expression tag	UNP D3RW14
X	403	HIS	-	expression tag	UNP D3RW14
X	404	HIS	-	expression tag	UNP D3RW14
X	405	HIS	-	expression tag	UNP D3RW14
X	406	HIS	-	expression tag	UNP D3RW14
Y	2	ALA	PRO	engineered mutation	UNP D3RW14
Y	11	ALA	SER	engineered mutation	UNP D3RW14
Y	343	ALA	HIS	engineered mutation	UNP D3RW14
Y	382	GLY	-	expression tag	UNP D3RW14
Y	383	GLU	-	expression tag	UNP D3RW14
Y	384	GLY	-	expression tag	UNP D3RW14
Y	385	TRP	-	expression tag	UNP D3RW14
Y	386	SER	-	expression tag	UNP D3RW14
Y	387	HIS	-	expression tag	UNP D3RW14
Y	388	PRO	-	expression tag	UNP D3RW14
Y	389	GLN	-	expression tag	UNP D3RW14
Y	390	PHE	-	expression tag	UNP D3RW14
Y	391	GLU	-	expression tag	UNP D3RW14
Y	392	LYS	-	expression tag	UNP D3RW14
Y	393	GLY	-	expression tag	UNP D3RW14
Y	394	VAL	-	expression tag	UNP D3RW14
Y	395	GLU	-	expression tag	UNP D3RW14
Y	396	GLY	-	expression tag	UNP D3RW14

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Chain	Residue	Modelled	Actual	Comment	Reference
Y	397	HIS	-	expression tag	UNP D3RW14
Y	398	HIS	-	expression tag	UNP D3RW14
Y	399	HIS	-	expression tag	UNP D3RW14
Y	400	HIS	-	expression tag	UNP D3RW14
Y	401	HIS	-	expression tag	UNP D3RW14
Y	402	HIS	-	expression tag	UNP D3RW14
Y	403	HIS	-	expression tag	UNP D3RW14
Y	404	HIS	-	expression tag	UNP D3RW14
Y	405	HIS	-	expression tag	UNP D3RW14
Y	406	HIS	-	expression tag	UNP D3RW14

- Molecule 33 is a RNA chain called 23S rRNA (2862-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
33	a	2862	Total	C	N	O	P	0	0
			61456	27423	11310	19861	2862		

- Molecule 34 is a RNA chain called 5S rRNA.

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

- Molecule 35 is a protein called Large ribosomal subunit protein uL2.

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

- Molecule 36 is a protein called Large ribosomal subunit protein uL3.

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

- Molecule 37 is a protein called Large ribosomal subunit protein uL4.

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

- Molecule 38 is a protein called Large ribosomal subunit protein uL5.

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

- Molecule 39 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	g	174	Total	C	N	O	S	0	0
			1301	819	239	241	2		

- Molecule 40 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	h	145	Total	C	N	O	S	0	0
			1079	682	192	204	1		

- Molecule 41 is a protein called Large ribosomal subunit protein uL13.

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

- Molecule 42 is a protein called Large ribosomal subunit protein uL14.

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

- Molecule 43 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	k	143	Total	C	N	O	S	0	0
			1043	649	206	186	2		

- Molecule 44 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	l	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 45 is a protein called Large ribosomal subunit protein bL17.

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

- Molecule 46 is a protein called Large ribosomal subunit protein uL18.

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

- Molecule 47 is a protein called Large ribosomal subunit protein bL19.

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

- Molecule 48 is a protein called Large ribosomal subunit protein bL20.

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

- Molecule 49 is a protein called Large ribosomal subunit protein bL21.

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

- Molecule 50 is a protein called Large ribosomal subunit protein uL22.

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

- Molecule 51 is a protein called Large ribosomal subunit protein uL23.

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

- Molecule 52 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
52	t	97	Total	C	N	O	0	0
			742	469	139	134		

- Molecule 53 is a protein called Large ribosomal subunit protein bL25.

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

- Molecule 54 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	v	77	Total	C	N	O	S	0	0
			582	360	115	106	1		

- Molecule 55 is a protein called Large ribosomal subunit protein bL28.

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

- Molecule 56 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	x	60	Total	C	N	O	S	0	0
			491	303	96	91	1		

- Molecule 57 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	y	57	Total	C	N	O	S	0	0
			440	275	85	78	2		

- Molecule 58 is a protein called Large ribosomal subunit protein bL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	z	55	Total	C	N	O	S	0	0
			434	263	92	78	1		

- Molecule 59 is a RNA chain called Cyclic tetraadenosine monophosphate (cA4).

Mol	Chain	Residues	Atoms					AltConf	Trace
59	Z	4	Total	C	N	O	P	0	0
			88	40	20	24	4		

- Molecule 60 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
60	3	1	Total	Zn	0
			1	1	
60	4	1	Total	Zn	0
			1	1	

- Molecule 61 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
61	A	79	Total	Mg	0
			79	79	
61	a	156	Total	Mg	0
			156	156	
61	b	4	Total	Mg	0
			4	4	
61	c	1	Total	Mg	0
			1	1	
61	z	1	Total	Mg	0
			1	1	

MolProbity failed to run properly - this section is therefore empty.

3 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	158387	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	30	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	33.264	Depositor
Minimum map value	-14.170	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2	Depositor
Map size (\AA)	448.0, 448.0, 448.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.12, 1.12, 1.12	Depositor

4 Model quality [i](#)

4.1 Standard geometry [i](#)

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4.2 Too-close contacts [i](#)

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4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

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4.3.2 Protein sidechains [i](#)

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4.3.3 RNA [i](#)

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
10	5MC	A	1407	10	19,22,23	0.87	1 (5%)	26,32,35	0.77	0
33	5MU	a	747	33	19,22,23	0.33	0	27,32,35	0.45	0
10	PSU	A	516	10	18,21,22	0.64	0	21,30,33	0.98	1 (4%)
8	4OC	8	33	8	20,23,24	0.32	0	25,32,35	0.65	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	PSU	7	56	8	18,21,22	0.60	0	21,30,33	1.00	1 (4%)
8	5MU	7	55	8	19,22,23	0.32	0	27,32,35	0.51	0
8	H2U	7	21	8	18,21,22	0.56	0	19,30,33	0.82	1 (5%)
10	G7M	A	527	10	23,26,27	0.39	0	34,39,42	0.68	0
33	6MZ	a	1618	33	22,25,26	0.35	0	29,36,39	0.57	0
33	PSU	a	1911	33	18,21,22	0.62	0	21,30,33	1.00	1 (4%)
33	1MG	a	745	33	23,26,27	0.66	0	33,39,42	0.73	1 (3%)
8	PSU	8	56	8	18,21,22	0.60	0	21,30,33	1.01	1 (4%)
10	5MC	A	967	10	19,22,23	0.87	1 (5%)	26,32,35	0.70	0
10	2MG	A	1516	10	23,26,27	1.31	4 (17%)	33,38,41	2.40	11 (33%)
33	PSU	a	955	33	18,21,22	0.67	0	21,30,33	1.08	1 (4%)
33	PSU	a	2605	33	18,21,22	0.67	0	21,30,33	1.08	1 (4%)
8	5MU	8	55	8	19,22,23	0.32	0	27,32,35	0.51	0
33	2MA	a	2503	61,33	22,25,26	1.33	3 (13%)	32,37,40	1.01	1 (3%)
10	UR3	A	1498	10	19,22,23	0.35	0	26,32,35	0.67	0
33	6MZ	a	2030	33	22,25,26	0.36	0	29,36,39	0.56	0
10	4OC	A	1402	10	20,23,24	0.31	0	25,32,35	0.56	0
33	PSU	a	2504	33	18,21,22	0.64	0	21,30,33	1.04	1 (4%)
33	2MG	a	2445	33	23,26,27	0.45	0	33,38,41	0.48	0
33	5MU	a	1939	33	19,22,23	0.36	0	27,32,35	0.55	0
8	H2U	8	21	8	18,21,22	0.57	0	19,30,33	0.81	1 (5%)
33	5MC	a	1962	33	19,22,23	0.99	1 (5%)	26,32,35	0.74	0
10	2MG	A	1207	10	23,26,27	0.45	0	33,38,41	0.51	0
33	PSU	a	2580	33	18,21,22	0.71	1 (5%)	21,30,33	0.98	1 (4%)
10	2MG	A	966	10	23,26,27	0.44	0	33,38,41	0.50	0
8	4SU	7	8	8	18,21,22	0.33	0	25,30,33	1.19	2 (8%)
33	PSU	a	746	61,33	18,21,22	0.75	0	21,30,33	0.86	1 (4%)
33	OMG	a	2251	8,33	23,26,27	0.58	0	32,38,41	0.44	0
20	IAS	K	119	20	6,7,8	1.02	0	3,8,10	1.53	1 (33%)
33	2MG	a	1835	33	23,26,27	0.41	0	33,38,41	0.49	0
33	H2U	a	2449	33	18,21,22	0.38	0	19,30,33	0.56	0
33	PSU	a	2604	33	18,21,22	0.66	0	21,30,33	1.12	1 (4%)
33	OMU	a	2552	33	19,22,23	0.34	0	25,31,34	0.47	0
8	4SU	8	8	8	18,21,22	0.33	0	25,30,33	1.16	2 (8%)
33	OMC	a	2498	61,33	19,22,23	0.63	0	25,31,34	0.83	1 (4%)
10	MA6	A	1519	10	23,26,27	0.35	0	33,38,41	0.81	1 (3%)
33	3TD	a	1915	33	19,22,23	1.02	1 (5%)	23,32,35	0.92	0
33	PSU	a	2457	33	18,21,22	0.68	0	21,30,33	1.04	1 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
33	PSU	a	1917	33	18,21,22	0.64	0	21,30,33	1.00	1 (4%)
8	4OC	7	33	8	20,23,24	0.30	0	25,32,35	0.52	0
10	MA6	A	1518	10	23,26,27	0.34	0	33,38,41	0.78	1 (3%)
36	MEQ	d	150	36	8,9,10	0.84	0	5,10,12	0.39	0
33	G7M	a	2069	33	23,26,27	0.40	0	34,39,42	0.62	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	5MC	A	1407	10	-	0/7/25/26	0/2/2/2
33	5MU	a	747	33	-	0/7/25/26	0/2/2/2
10	PSU	A	516	10	-	0/7/25/26	0/2/2/2
8	4OC	8	33	8	-	0/9/29/30	0/2/2/2
8	PSU	7	56	8	-	1/7/25/26	0/2/2/2
8	5MU	7	55	8	-	0/7/25/26	0/2/2/2
8	H2U	7	21	8	-	5/7/38/39	0/2/2/2
10	G7M	A	527	10	-	0/7/25/26	0/3/3/3
33	6MZ	a	1618	33	-	0/9/27/28	0/3/3/3
33	PSU	a	1911	33	-	0/7/25/26	0/2/2/2
33	1MG	a	745	33	-	0/7/25/26	0/3/3/3
8	PSU	8	56	8	-	1/7/25/26	0/2/2/2
10	5MC	A	967	10	-	0/7/25/26	0/2/2/2
10	2MG	A	1516	10	-	0/9/27/28	0/3/3/3
33	PSU	a	955	33	-	0/7/25/26	0/2/2/2
33	PSU	a	2605	33	-	0/7/25/26	0/2/2/2
8	5MU	8	55	8	-	0/7/25/26	0/2/2/2
33	2MA	a	2503	61,33	-	1/7/25/26	0/3/3/3
10	UR3	A	1498	10	-	0/7/25/26	0/2/2/2
33	6MZ	a	2030	33	-	2/9/27/28	0/3/3/3
10	4OC	A	1402	10	-	0/9/29/30	0/2/2/2
33	PSU	a	2504	33	-	2/7/25/26	0/2/2/2
33	2MG	a	2445	33	-	0/9/27/28	0/3/3/3
33	5MU	a	1939	33	-	0/7/25/26	0/2/2/2
8	H2U	8	21	8	-	5/7/38/39	0/2/2/2
33	5MC	a	1962	33	-	4/7/25/26	0/2/2/2
10	2MG	A	1207	10	-	0/9/27/28	0/3/3/3
33	PSU	a	2580	33	-	0/7/25/26	0/2/2/2
10	2MG	A	966	10	-	2/9/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	4SU	7	8	8	-	0/7/25/26	0/2/2/2
33	PSU	a	746	61,33	-	4/7/25/26	0/2/2/2
33	OMG	a	2251	8,33	-	1/9/27/28	0/3/3/3
20	IAS	K	119	20	-	1/7/7/8	-
33	2MG	a	1835	33	-	0/9/27/28	0/3/3/3
33	H2U	a	2449	33	-	0/7/38/39	0/2/2/2
33	PSU	a	2604	33	-	0/7/25/26	0/2/2/2
33	OMU	a	2552	33	-	0/9/27/28	0/2/2/2
8	4SU	8	8	8	-	0/7/25/26	0/2/2/2
33	OMC	a	2498	61,33	-	2/9/27/28	0/2/2/2
10	MA6	A	1519	10	-	0/11/29/30	0/3/3/3
33	3TD	a	1915	33	-	0/7/25/26	0/2/2/2
33	PSU	a	2457	33	-	0/7/25/26	0/2/2/2
33	PSU	a	1917	33	-	0/7/25/26	0/2/2/2
8	4OC	7	33	8	-	0/9/29/30	0/2/2/2
10	MA6	A	1518	10	-	0/11/29/30	0/3/3/3
36	MEQ	d	150	36	-	3/8/9/11	-
33	G7M	a	2069	33	-	1/7/25/26	0/3/3/3

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
33	a	1962	5MC	C5-C4	-4.10	1.41	1.44
33	a	2503	2MA	C2-N1	3.82	1.40	1.34
33	a	1915	3TD	C4-C5	-3.71	1.39	1.47
10	A	967	5MC	C5-C4	-3.55	1.41	1.44
10	A	1407	5MC	C5-C4	-3.53	1.41	1.44
33	a	2503	2MA	C6-N1	3.41	1.39	1.35
10	A	1516	2MG	C6-N1	-2.94	1.33	1.38
33	a	2503	2MA	C6-N6	-2.65	1.27	1.34
10	A	1516	2MG	C5-C4	2.54	1.45	1.38
10	A	1516	2MG	C4-N9	-2.36	1.32	1.38
10	A	1516	2MG	C5-N7	-2.31	1.34	1.39
33	a	2580	PSU	O4'-C1'	-2.00	1.41	1.43

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	A	1516	2MG	C2-N3-C4	7.38	121.23	112.00
10	A	1516	2MG	C5-C4-N3	-5.87	119.05	128.39
10	A	1516	2MG	N9-C4-N3	4.09	134.13	125.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	A	1516	2MG	C2'-C1'-N9	-4.01	102.08	113.25
10	A	1516	2MG	C6-C5-N7	3.76	137.13	130.29
8	7	8	4SU	C4-N3-C2	-3.74	123.73	127.31
8	8	8	4SU	C4-N3-C2	-3.70	123.77	127.31
10	A	1519	MA6	C2-N1-C6	3.31	119.92	111.83
10	A	1518	MA6	C2-N1-C6	3.30	119.89	111.83
10	A	1516	2MG	C4-C5-N7	-2.70	106.38	110.67
33	a	2503	2MA	C5-C4-N3	-2.70	124.34	127.18
10	A	1516	2MG	N1-C2-N2	2.68	119.29	116.56
33	a	955	PSU	C6-C5-C4	2.67	119.98	118.17
33	a	2604	PSU	C6-C5-C4	2.67	119.97	118.17
33	a	745	1MG	N2-C2-N1	-2.58	116.71	118.79
33	a	2457	PSU	C6-C5-C4	2.58	119.92	118.17
10	A	516	PSU	C6-C5-C4	2.58	119.92	118.17
33	a	2605	PSU	C6-C5-C4	2.56	119.90	118.17
8	7	56	PSU	C6-C5-C4	2.56	119.90	118.17
33	a	746	PSU	C6-C5-C4	2.55	119.90	118.17
20	K	119	IAS	OD1-CG-CB	-2.55	117.96	125.38
33	a	1917	PSU	C6-C5-C4	2.55	119.89	118.17
33	a	2580	PSU	C6-C5-C4	2.54	119.89	118.17
8	8	56	PSU	C6-C5-C4	2.52	119.88	118.17
33	a	1911	PSU	C6-C5-C4	2.51	119.87	118.17
8	7	8	4SU	C5-C4-N3	2.45	117.03	114.75
33	a	2504	PSU	C6-C5-C4	2.43	119.82	118.17
8	8	8	4SU	C5-C4-N3	2.35	116.94	114.75
10	A	1516	2MG	C2-N1-C6	-2.35	121.70	124.55
10	A	1516	2MG	O6-C6-C5	-2.30	120.45	126.53
33	a	2498	OMC	C1'-N1-C2	2.23	123.37	118.44
8	7	21	H2U	O4'-C1'-N1	2.19	112.28	109.30
10	A	1516	2MG	C5-C6-N1	2.17	118.77	113.25
8	8	21	H2U	O4'-C1'-N1	2.12	112.19	109.30
10	A	1516	2MG	N2-C2-N3	-2.01	117.95	120.51

There are no chirality outliers.

All (35) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	7	21	H2U	O4'-C1'-N1-C2
8	7	21	H2U	O4'-C1'-N1-C6
8	8	21	H2U	O4'-C1'-N1-C2
8	8	21	H2U	O4'-C1'-N1-C6
36	d	150	MEQ	N-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
33	a	746	PSU	C2'-C1'-C5-C4
33	a	746	PSU	C2'-C1'-C5-C6
33	a	2251	OMG	C1'-C2'-O2'-CM2
8	7	21	H2U	O4'-C4'-C5'-O5'
33	a	2498	OMC	O4'-C4'-C5'-O5'
8	8	56	PSU	C4'-C5'-O5'-P
8	7	56	PSU	C4'-C5'-O5'-P
8	8	21	H2U	O4'-C4'-C5'-O5'
33	a	2030	6MZ	O4'-C4'-C5'-O5'
10	A	966	2MG	C3'-C4'-C5'-O5'
33	a	2030	6MZ	C3'-C4'-C5'-O5'
8	7	21	H2U	C3'-C4'-C5'-O5'
33	a	2504	PSU	O4'-C4'-C5'-O5'
33	a	1962	5MC	C2'-C1'-N1-C6
36	d	150	MEQ	OE1-CD-CG-CB
20	K	119	IAS	CA-CB-CG-OD1
8	7	21	H2U	C4'-C5'-O5'-P
8	8	21	H2U	C4'-C5'-O5'-P
33	a	1962	5MC	O4'-C1'-N1-C6
33	a	746	PSU	O4'-C1'-C5-C4
36	d	150	MEQ	NE2-CD-CG-CB
33	a	2498	OMC	C3'-C4'-C5'-O5'
10	A	966	2MG	O4'-C4'-C5'-O5'
8	8	21	H2U	C3'-C4'-C5'-O5'
33	a	746	PSU	O4'-C1'-C5-C6
33	a	1962	5MC	O4'-C1'-N1-C2
33	a	2503	2MA	C4'-C5'-O5'-P
33	a	2504	PSU	C3'-C4'-C5'-O5'
33	a	1962	5MC	C2'-C1'-N1-C2
33	a	2069	G7M	C4'-C5'-O5'-P

There are no ring outliers.

No monomer is involved in short contacts.

4.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

4.6 Ligand geometry [i](#)

Of 243 ligands modelled in this entry, 243 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.

4.7 Other polymers [i](#)

There are no such residues in this entry.

4.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

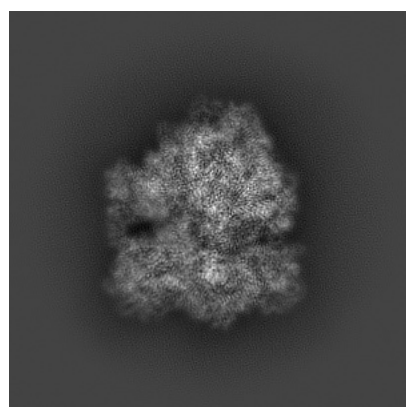
5 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-17667. These allow visual inspection of the internal detail of the map and identification of artifacts.

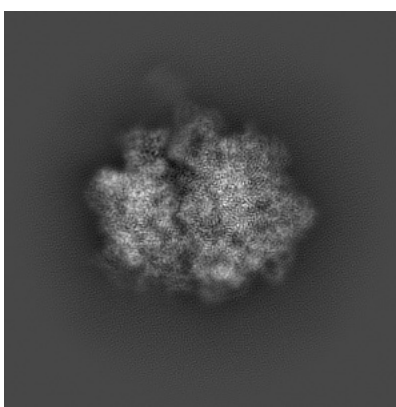
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

5.1 Orthogonal projections [i](#)

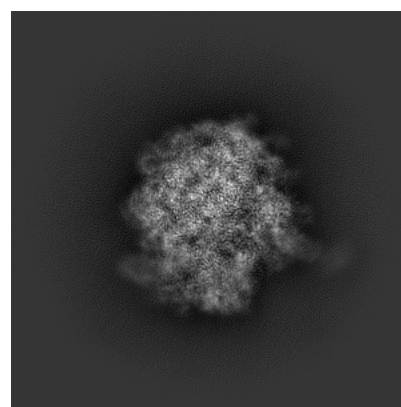
5.1.1 Primary map



X



Y

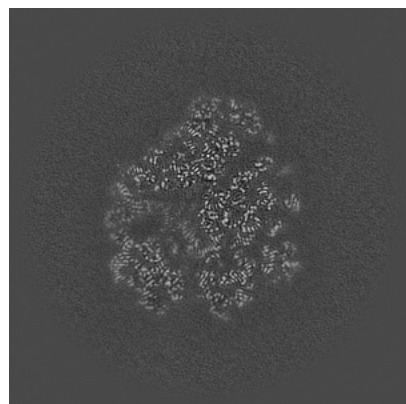


Z

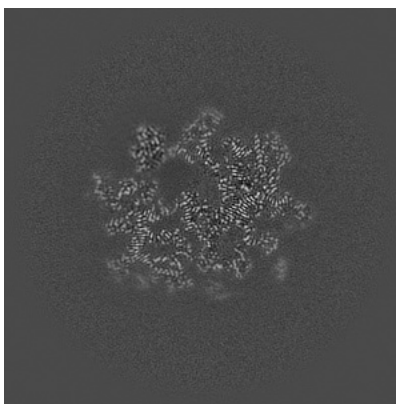
The images above show the map projected in three orthogonal directions.

5.2 Central slices [i](#)

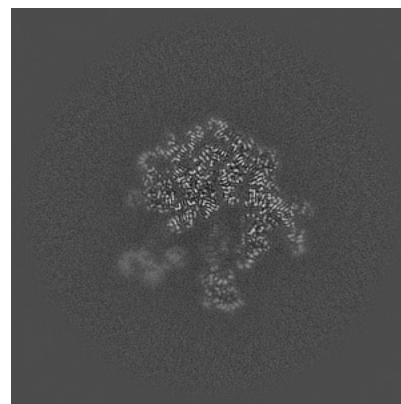
5.2.1 Primary map



X Index: 200



Y Index: 200

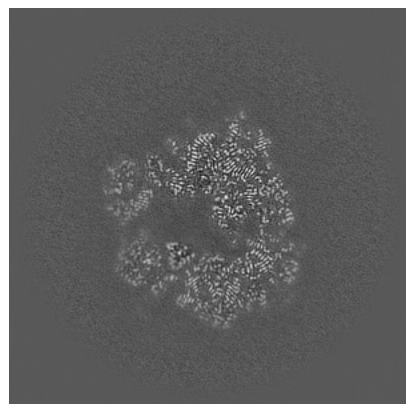


Z Index: 200

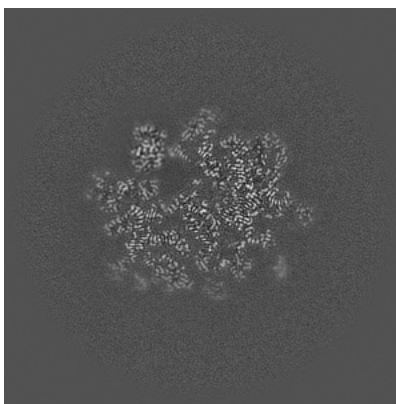
The images above show central slices of the map in three orthogonal directions.

5.3 Largest variance slices [i](#)

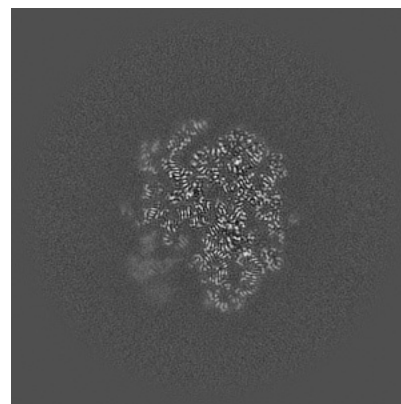
5.3.1 Primary map



X Index: 218



Y Index: 202

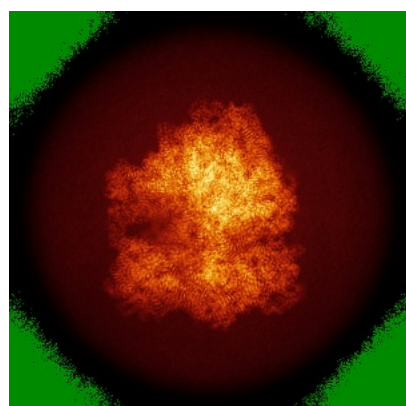


Z Index: 222

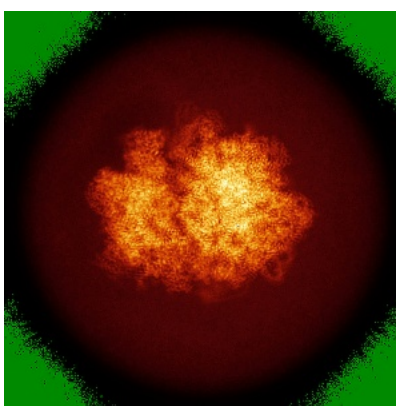
The images above show the largest variance slices of the map in three orthogonal directions.

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

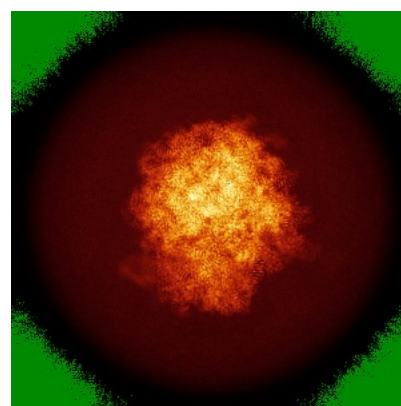
5.4.1 Primary map



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.

5.5 Orthogonal surface views

This section was not generated.

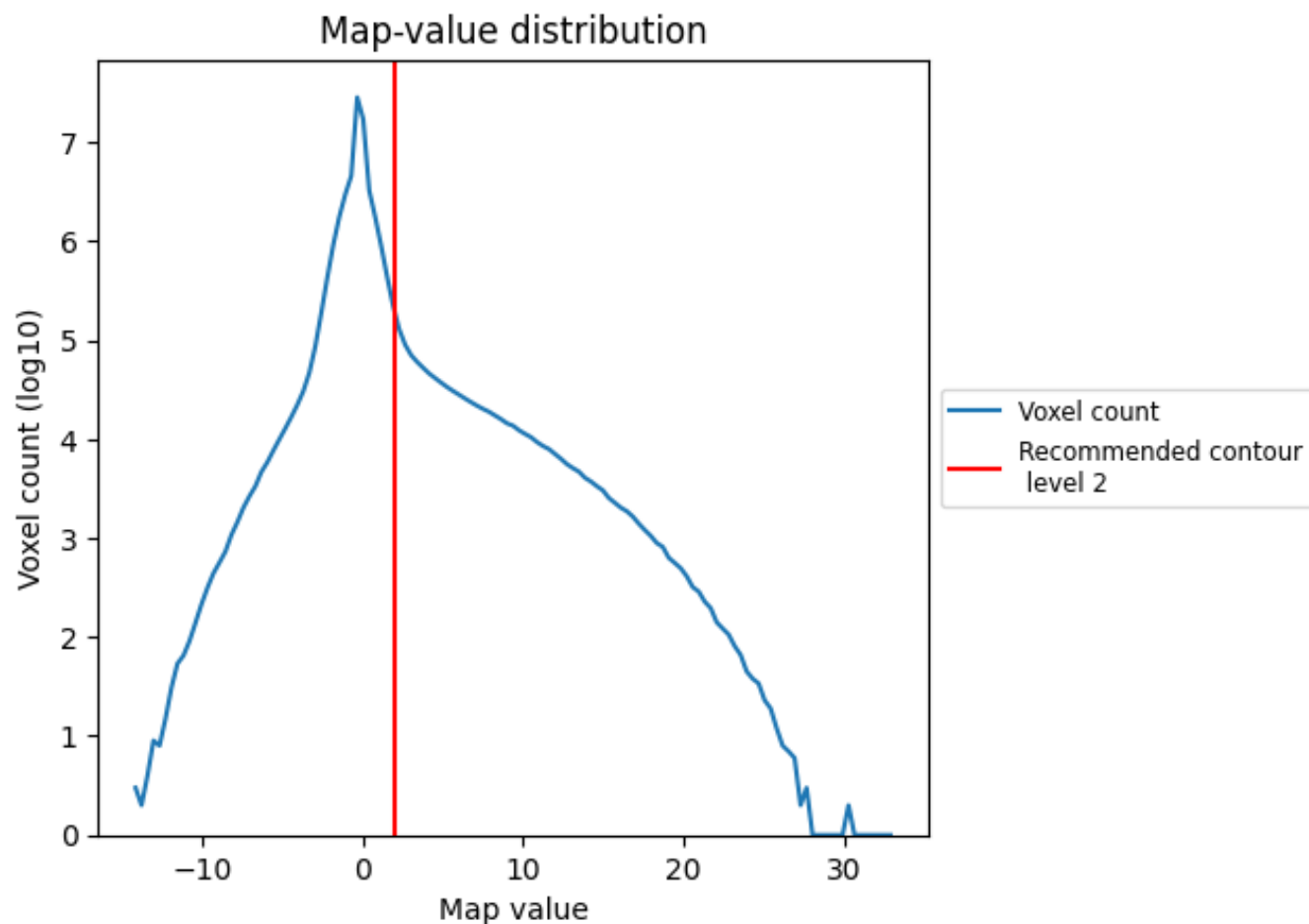
5.6 Mask visualisation

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

6 Map analysis [i](#)

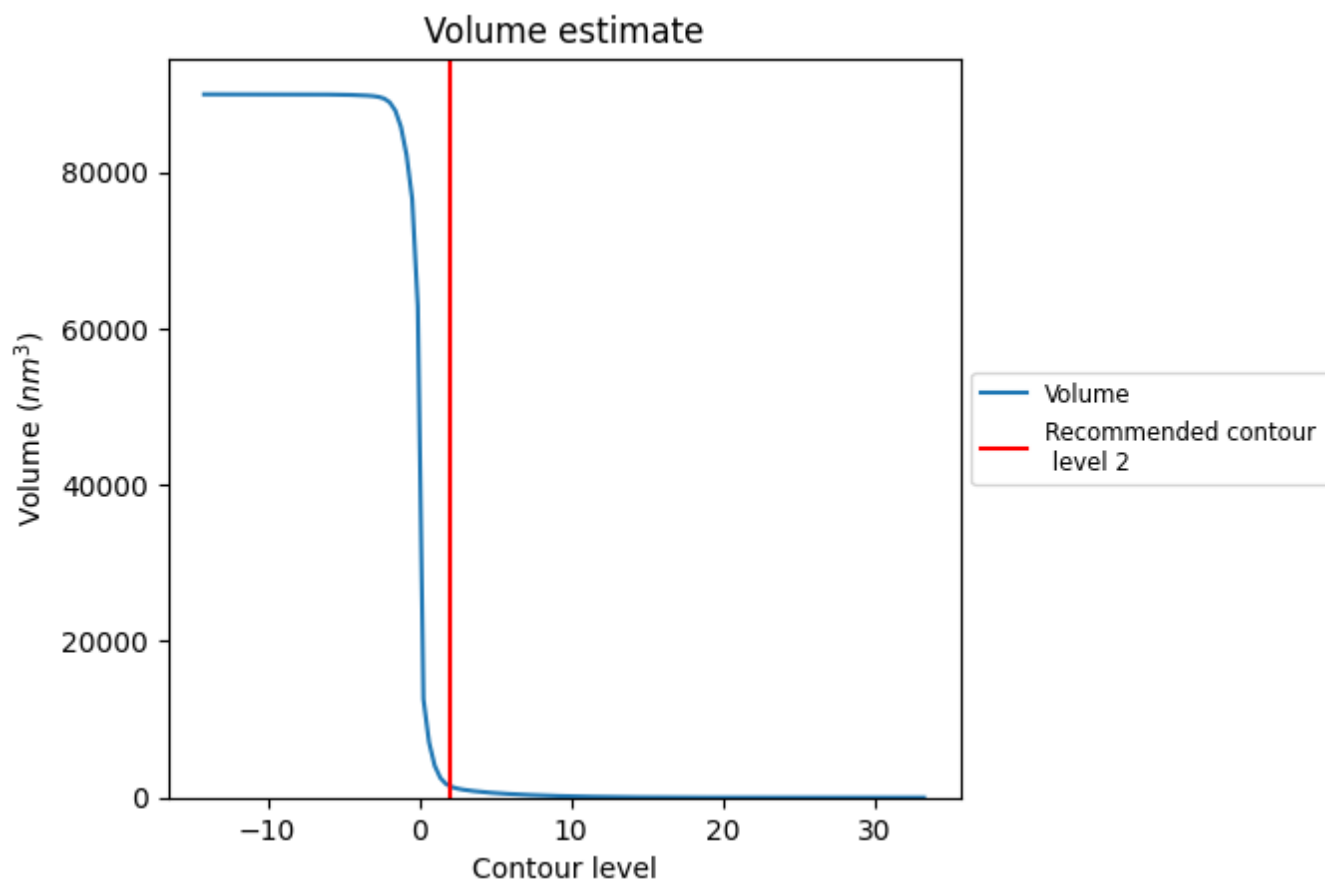
This section contains the results of statistical analysis of the map.

6.1 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.

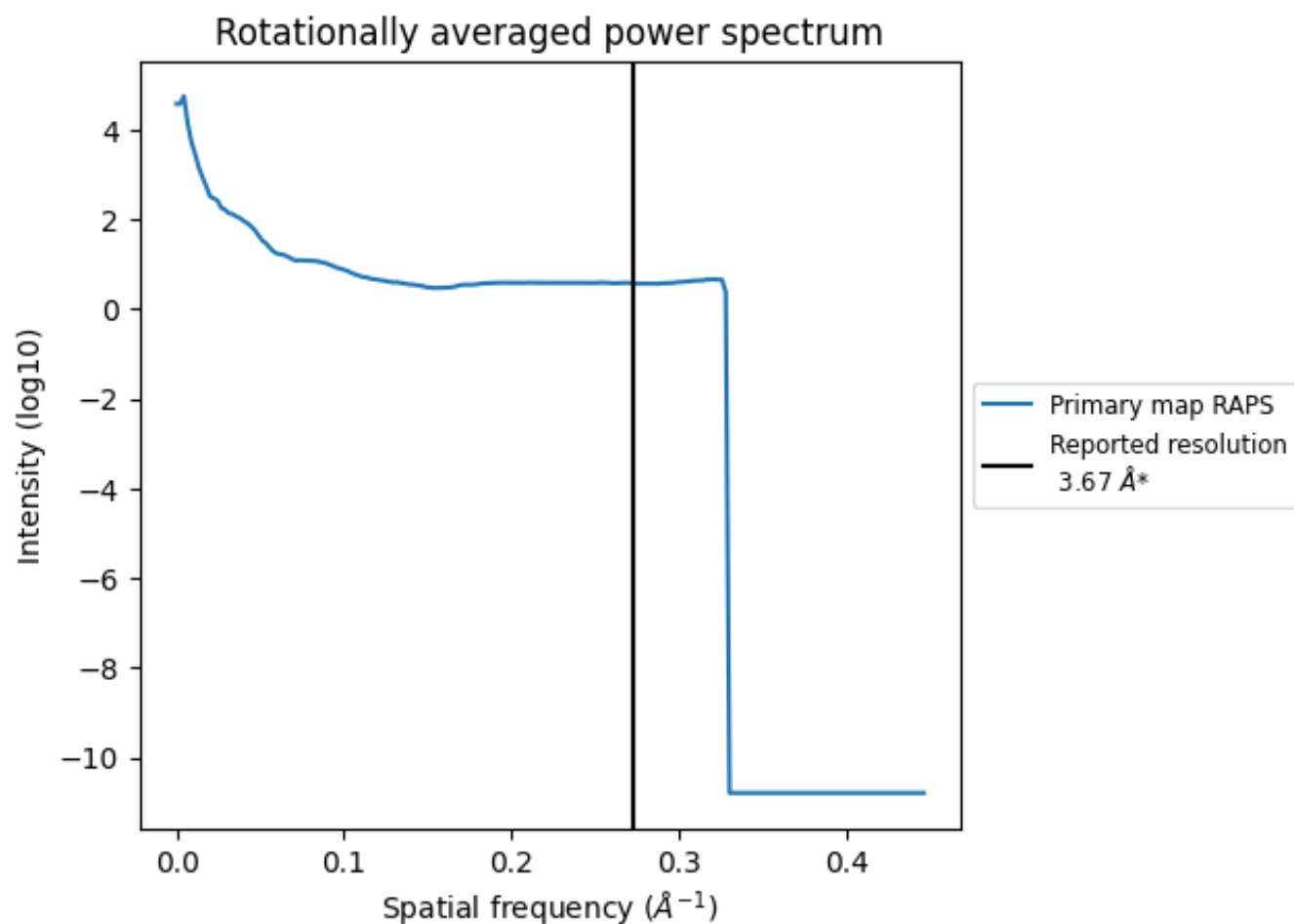
6.2 Volume estimate [i](#)



The volume at the recommended contour level is 1507 nm^3 ; this corresponds to an approximate mass of 1361 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.

6.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.272 Å⁻¹

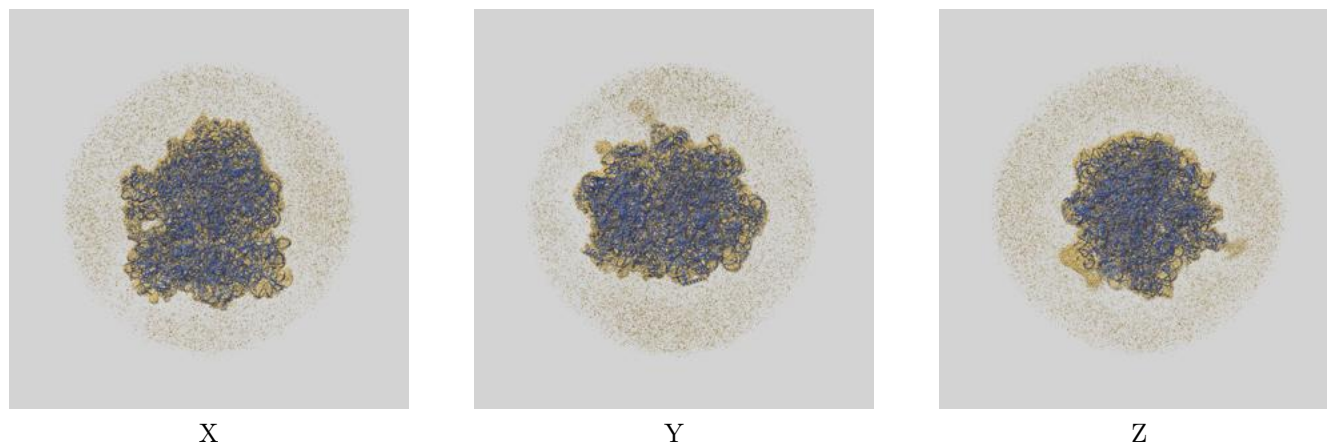
7 Fourier-Shell correlation ⓘ

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

8 Map-model fit [i](#)

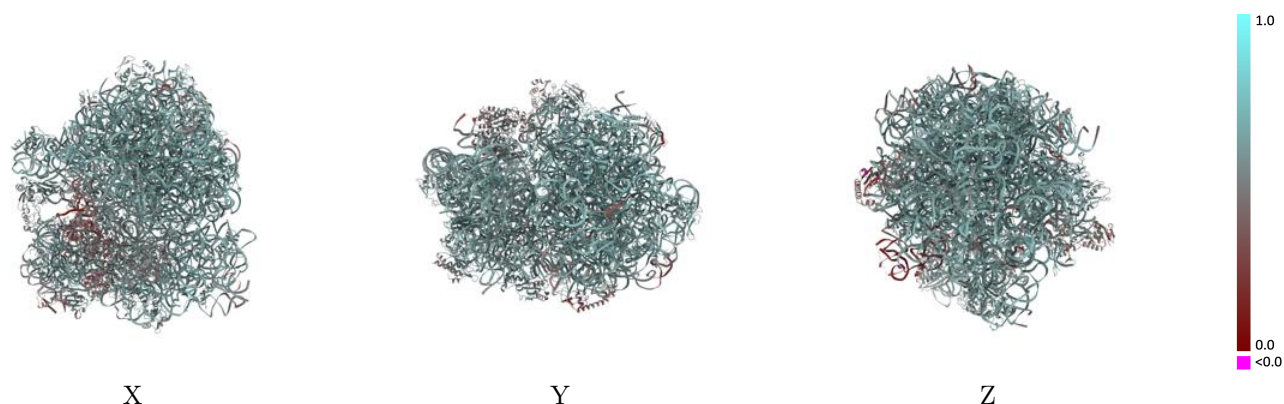
This section contains information regarding the fit between EMDB map EMD-17667 and PDB model 8PHJ. Per-residue inclusion information can be found in section ?? on page ??.

8.1 Map-model overlay [i](#)



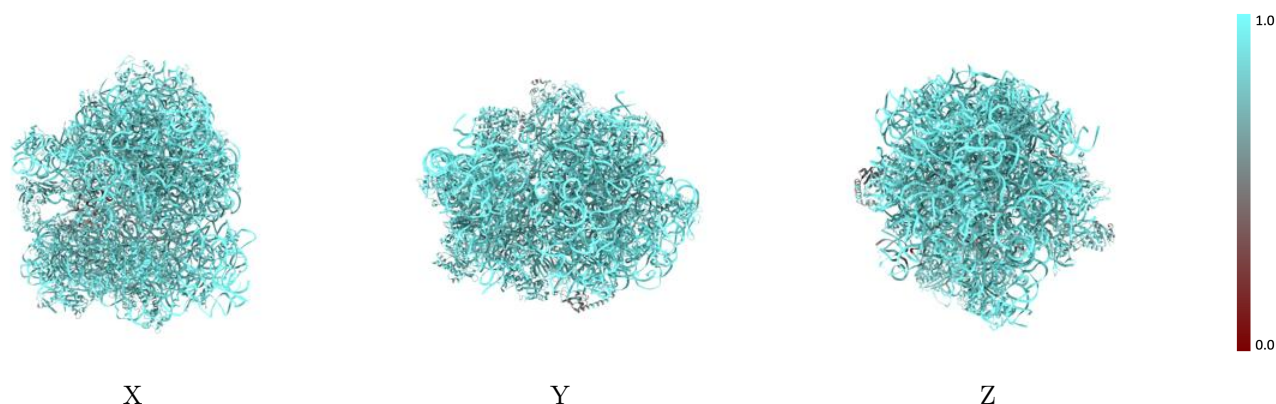
The images above show the 3D surface view of the map at the recommended contour level 2.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



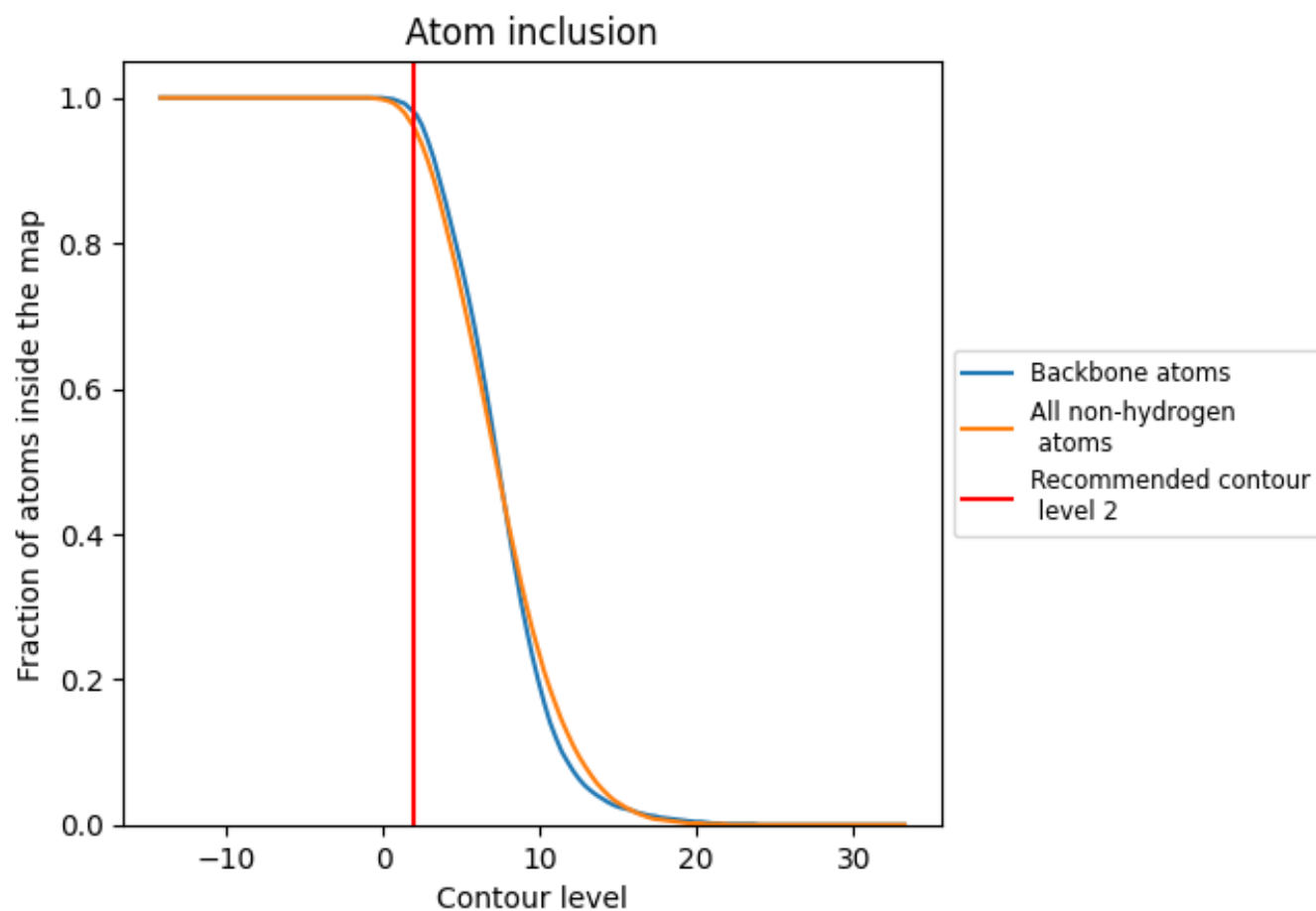
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

8.3 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 (2).







































































8.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 96% of all non-hydrogen atoms, are inside the map.

8.5 Map-model fit summary























































The table lists the average atom inclusion at the recommended contour level (2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9590	 0.5840
0	 0.9310	 0.5990
1	 0.9690	 0.6370
2	 0.9900	 0.6380
3	 0.9630	 0.6130
4	 0.8920	 0.5190
5	 0.7130	 0.3780
6	 0.7240	 0.3250
7	 0.6370	 0.4920
8	 0.7150	 0.2620
9	 0.9690	 0.6100
A	 0.9930	 0.6020
B	 0.8570	 0.5190
C	 0.9260	 0.5740
D	 0.9360	 0.5740
E	 0.9500	 0.5960
F	 0.9120	 0.5440
G	 0.8830	 0.5330
H	 0.9500	 0.5980
I	 0.9380	 0.5710
J	 0.8700	 0.5200
K	 0.9320	 0.5790
L	 0.9390	 0.6010
M	 0.9200	 0.5630
N	 0.9560	 0.5860
O	 0.9320	 0.5770
P	 0.9500	 0.5940
Q	 0.9340	 0.5770
R	 0.9320	 0.5720
S	 0.9370	 0.5720
T	 0.9470	 0.5820
U	 0.7870	 0.5150
W	 0.8450	 0.3380
X	 0.8920	 0.4820
Y	 0.9270	 0.4780



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Chain	Atom inclusion	Q-score
Z	 0.9660	 0.5170
a	 0.9880	 0.6050
b	 0.9920	 0.5990
c	 0.9700	 0.6280
d	 0.9600	 0.6160
e	 0.9470	 0.5880
f	 0.8910	 0.5390
g	 0.9230	 0.5530
h	 0.6830	 0.4230
i	 0.9660	 0.6160
j	 0.9520	 0.6170
k	 0.9670	 0.6080
l	 0.9560	 0.6220
m	 0.9810	 0.6280
n	 0.9550	 0.5820
o	 0.9390	 0.6070
p	 0.9850	 0.6330
q	 0.9510	 0.6080
r	 0.9510	 0.6130
s	 0.9280	 0.5830
t	 0.9450	 0.5810
u	 0.9400	 0.5960
v	 0.9560	 0.6200
w	 0.9670	 0.6180
x	 0.9270	 0.5570
y	 0.9440	 0.6070
z	 0.9740	 0.6220