



wwPDB EM Validation Summary Report ⓘ

Sep 28, 2024 – 02:10 PM EDT

PDB ID : 9BLN
EMDB ID : EMD-44671
Title : The structure of human Pdc4 bound to the 40S-eIF4A-eIF3-eIF1 complex
Authors : Brito Querido, J.; Sokabe, M.; Diaz-Lopez, I.; Gordiyenko, Y.; Zuber, P.; Yifei, D.; Albacete-Albacete, L.; Ramakrishnan, V.; S Fraser, C.
Deposited on : 2024-04-30
Resolution : 3.90 Å(reported)

This is a wwPDB EM Validation Summary 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:

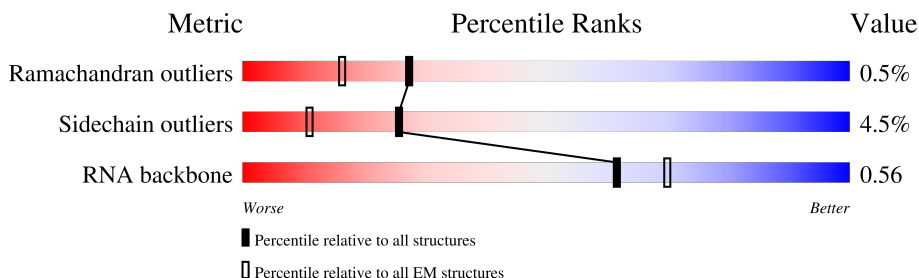
EMDB validation analysis : 0.0.1.dev113
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

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 3.90 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.





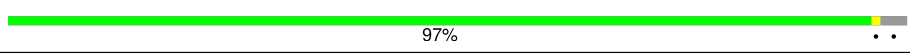
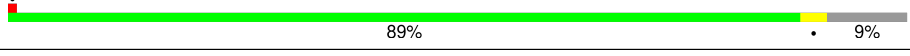
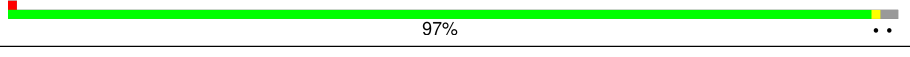


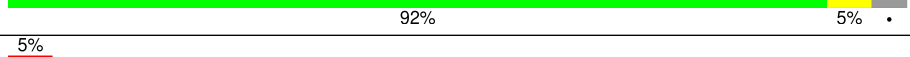
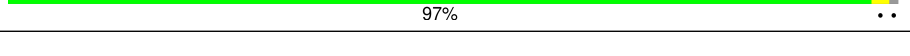
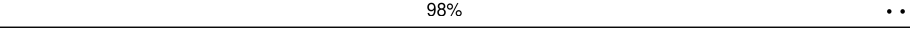
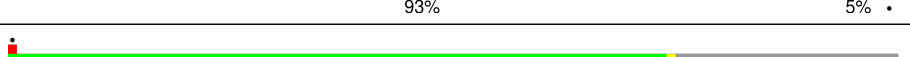
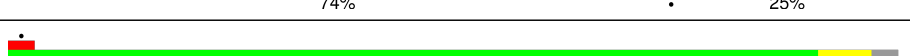
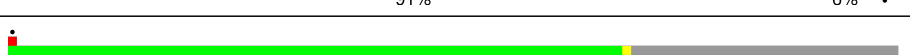
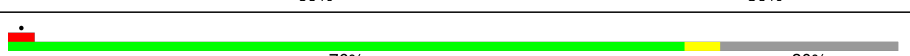
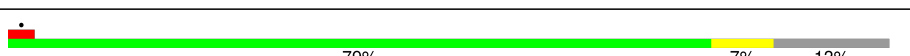
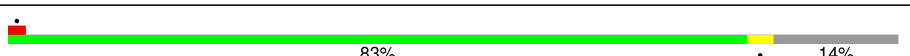
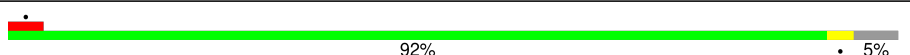




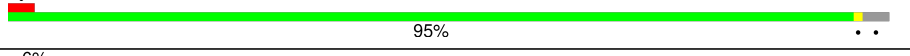
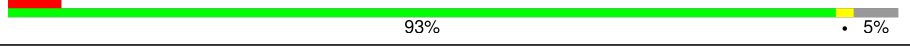
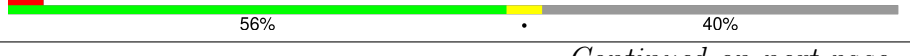

Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	X	325	<p>100% 99%</p>
2	U	661	<p>85% 83% 15%</p>
3	3	218	<p>98% 98%</p>
4	4	357	<p>68% 72% 28%</p>
5	5	564	<p>56% 57% 43%</p>
6	6	374	<p>92% 93% 6%</p>
7	8	352	<p>85% 90% 10%</p>
8	9	25	<p>88% 8%</p>

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Mol	Chain	Length	Quality of chain
9	A	1719	 74% 22%
10	B	158	 86% 9%
11	C	263	 97%
12	D	194	 89% 9%
13	E	143	 97%
14	F	59	 78% 12% 8%
15	G	194	 10% 82% 7% 11%
16	H	84	 92% 5%
17	I	151	 5% 97%
18	J	130	 98%
19	K	83	 93% 5%
20	L	293	 74% 25%
21	M	135	 91% 6%
22	N	295	 69% 30%
23	O	264	 76% 20%
24	P	151	 79% 7% 13%
25	Q	115	 83% 14%
26	R	208	 92% 5%
27	S	249	 7% 86% 6% 8%
28	T	133	 89% 5% 7%
29	V	204	 85% 5% 10%
30	W	113	 67% 71% 26%
31	Y	146	 95%
32	Z	243	 6% 93% 5%
33	a	165	 56% 40%

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Mol	Chain	Length	Quality of chain
34	b	145	
35	c	317	
36	d	145	
37	e	125	
38	f	152	
39	h	119	
40	i	56	
41	k	156	
42	l	388	
43	m	132	
44	n	69	
45	o	320	
46	p	469	
47	u	1382	
48	v	445	
49	x	548	
50	y	913	

2 Entry composition [i](#)

There are 55 unique types of molecules in this entry. The entry contains 104352 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 I.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	X	325	Total	C	N	O	0	0
			1598	947	325	326		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	U	560	Total	C	N	O	0	0
			2770	1650	560	560		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	3	213	Total	C	N	O	0	0
			1057	631	213	213		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	4	257	Total	C	N	O	0	0
			1272	757	257	258		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	5	319	Total	C	N	O	0	0
			1581	943	319	319		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	6	350	Total	C	N	O	S	0	0
			1917	1159	376	380	2		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	8	317	1571	936	317	318	0	0

- Molecule 8 is a protein called Small ribosomal subunit protein eS32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	9	24	230	139	62	26	3	0	0

- Molecule 9 is a RNA chain called rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
9	A	1672	35720	15962	6403	11683	1672	0	0

- Molecule 10 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	B	143	1177	749	222	200	6	0	0

- Molecule 11 is a protein called Small ribosomal subunit protein eS4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	C	256	2035	1302	378	347	8	0	0

- Molecule 12 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	D	177	1477	941	295	239	2	0	0

- Molecule 13 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	E	140	1087	687	215	182	3	0	0

- Molecule 14 is a protein called Small ribosomal subunit protein eS30.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	F	54	Total	C	N	O	S	0	0
			424	262	92	69	1		

- Molecule 15 is a protein called Small ribosomal subunit protein eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	G	173	Total	C	N	O	S	0	0
			1399	895	255	248	1		

- Molecule 16 is a protein called Small ribosomal subunit protein eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	H	81	Total	C	N	O	S	0	0
			631	397	116	111	7		

- Molecule 17 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	I	150	Total	C	N	O	S	0	0
			1208	773	229	205	1		

- Molecule 18 is a protein called Small ribosomal subunit protein uS8.

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

- Molecule 19 is a protein called Small ribosomal subunit protein eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	K	81	Total	C	N	O	S	0	0
			617	380	114	118	5		

- Molecule 20 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	L	220	Total	C	N	O	S	0	0
			1707	1104	292	301	10		

- Molecule 21 is a protein called Small ribosomal subunit protein eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	M	131	Total	C	N	O	S	0	0
			1064	668	198	194	4		

- Molecule 22 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	N	207	Total	C	N	O	S	0	0
			1633	1040	288	297	8		

- Molecule 23 is a protein called Small ribosomal subunit protein eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	O	211	Total	C	N	O	S	0	0
			1715	1088	307	306	14		

- Molecule 24 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	P	131	Total	C	N	O	S	0	0
			981	600	193	182	6		

- Molecule 25 is a protein called Small ribosomal subunit protein eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Q	99	Total	C	N	O	S	0	0
			792	492	165	130	5		

- Molecule 26 is a protein called Small ribosomal subunit protein eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	R	198	Total	C	N	O	S	0	0
			1627	1021	322	279	5		

- Molecule 27 is a protein called Small ribosomal subunit protein eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	S	230	Total	C	N	O	S	0	0
			1862	1164	371	320	7		

- Molecule 28 is a protein called Small ribosomal subunit protein eS24.

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

- Molecule 29 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	V	184	1461	914	276	264	7	0	0

- Molecule 30 is a protein called Eukaryotic translation initiation factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	W	84	683	434	124	123	2	0	0

- Molecule 31 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	Y	141	1124	715	212	194	3	0	0

- Molecule 32 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	Z	231	1783	1135	321	319	8	0	0

- Molecule 33 is a protein called Small ribosomal subunit protein eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	a	99	834	544	149	135	6	0	0

- Molecule 34 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	b	118	972	617	182	166	7	0	0

- Molecule 35 is a protein called Receptor of activated protein C kinase 1.

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

- Molecule 36 is a protein called Small ribosomal subunit protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	d	142	1105	692	213	197	3	0	0

- Molecule 37 is a protein called Small ribosomal subunit protein eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	e	69	551	356	100	94	1	0	0

- Molecule 38 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	f	142	1176	737	239	199	1	0	0

- Molecule 39 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	h	103	817	511	155	147	4	0	0

- Molecule 40 is a protein called Small ribosomal subunit protein uS14.

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

- Molecule 41 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	k	52	429	271	82	69	7	0	0

- Molecule 42 is a protein called Eukaryotic initiation factor 4A-I.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
42	l	345	1706	1016	345	345	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
l	19	MET	-	initiating methionine	UNP P60842

- Molecule 43 is a protein called Small ribosomal subunit protein eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	m	122	950	596	168	177	9	0	0

- Molecule 44 is a protein called Small ribosomal subunit protein eS28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	n	63	498	302	101	93	2	0	0

- Molecule 45 is a protein called Eukaryotic translation initiation factor 3 subunit G.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
45	o	85	420	249	85	86	0	0

- Molecule 46 is a protein called Programmed cell death protein 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
46	p	346	1839	1100	367	372	0	0

- Molecule 47 is a protein called Eukaryotic translation initiation factor 3 subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	u	572	4708	2975	847	863	23	1	0

- Molecule 48 is a protein called Eukaryotic translation initiation factor 3 subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	v	384	2635	1657	477	489	12	0	0

- Molecule 49 is a protein called Eukaryotic translation initiation factor 3 subunit D.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
49	x	428	2121	1265	428	428	0	0

- Molecule 50 is a protein called Eukaryotic translation initiation factor 3 subunit C.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	y	535	4325	2723	768	801	33	0	0

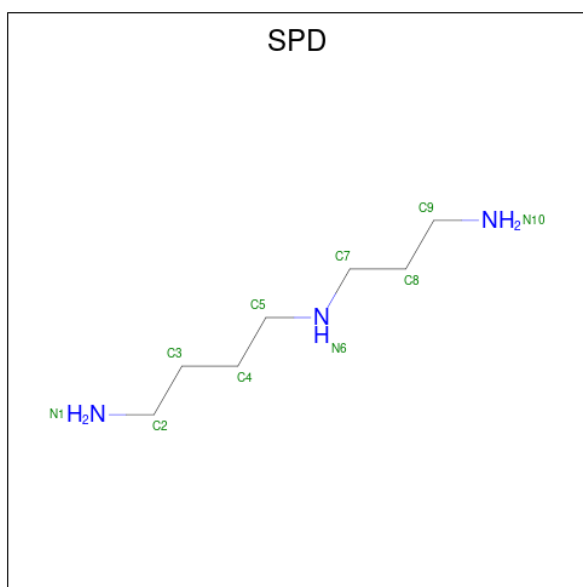
- Molecule 51 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
51	A	87	Total	Mg	0
			87	87	
51	f	1	Total	Mg	0
			1	1	

- Molecule 52 is POTASSIUM ION (three-letter code: K) (formula: K) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
52	A	18	Total	K	0
			18	18	
52	i	1	Total	K	0
			1	1	

- Molecule 53 is SPERMIDINE (three-letter code: SPD) (formula: C₇H₁₉N₃) (labeled as "Ligand of Interest" by depositor).

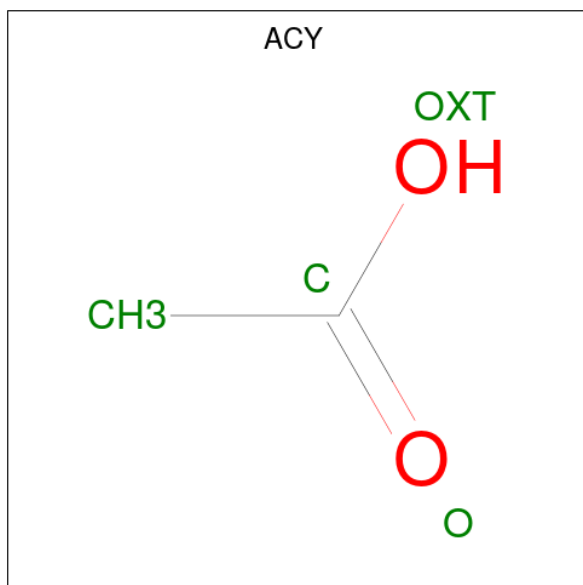


Mol	Chain	Residues	Atoms			AltConf
53	A	1	Total	C	N	0
			10	7	3	

- Molecule 54 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
54	Q	1	Total	Zn	0
			1	1	
54	i	1	Total	Zn	0
			1	1	
54	k	1	Total	Zn	0
			1	1	

- Molecule 55 is ACETIC ACID (three-letter code: ACY) (formula: C₂H₄O₂) (labeled as "Ligand of Interest" by depositor).

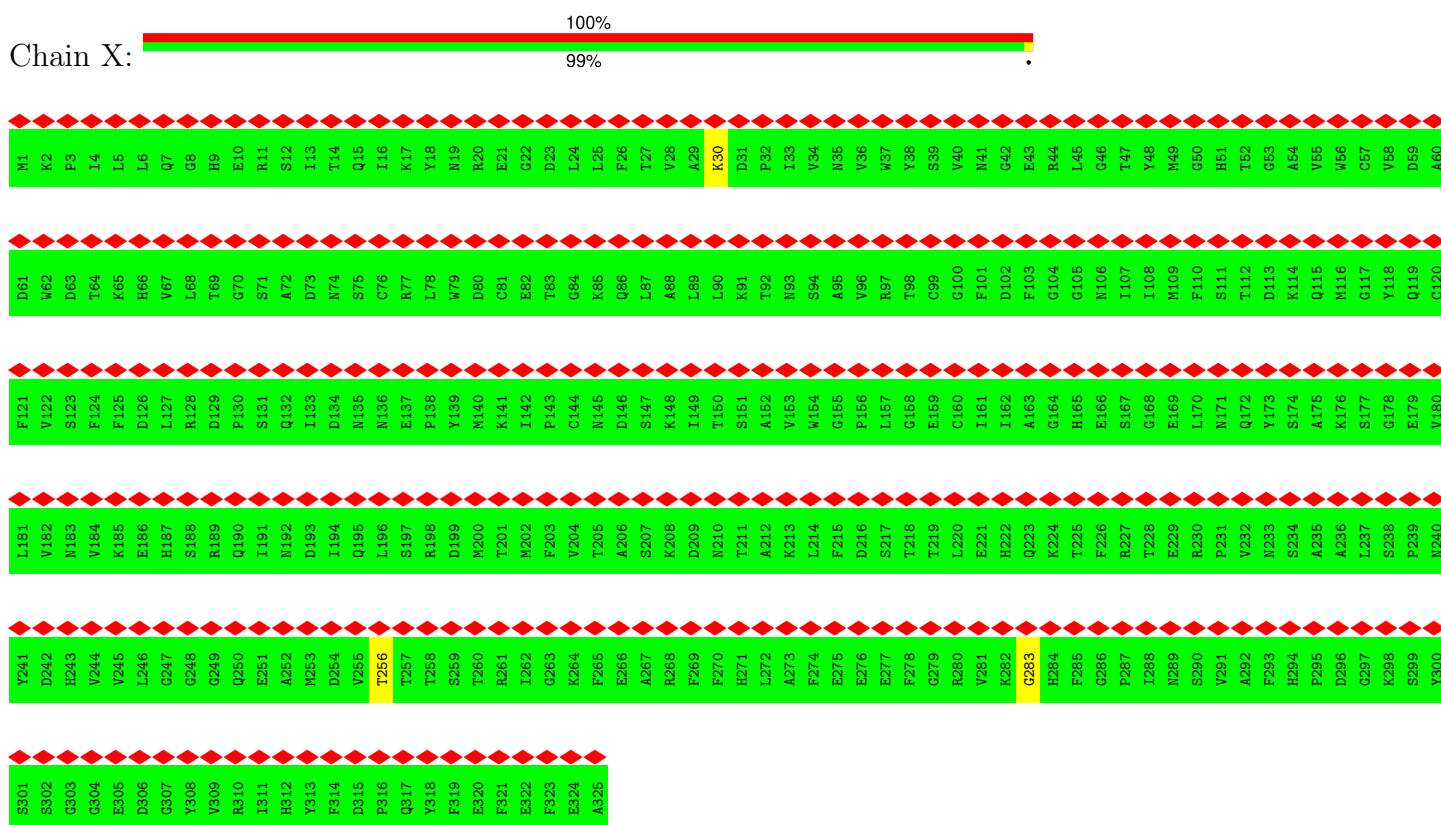


Mol	Chain	Residues	Atoms			AltConf
55	1	1	Total	C	O	0
			3	1	2	

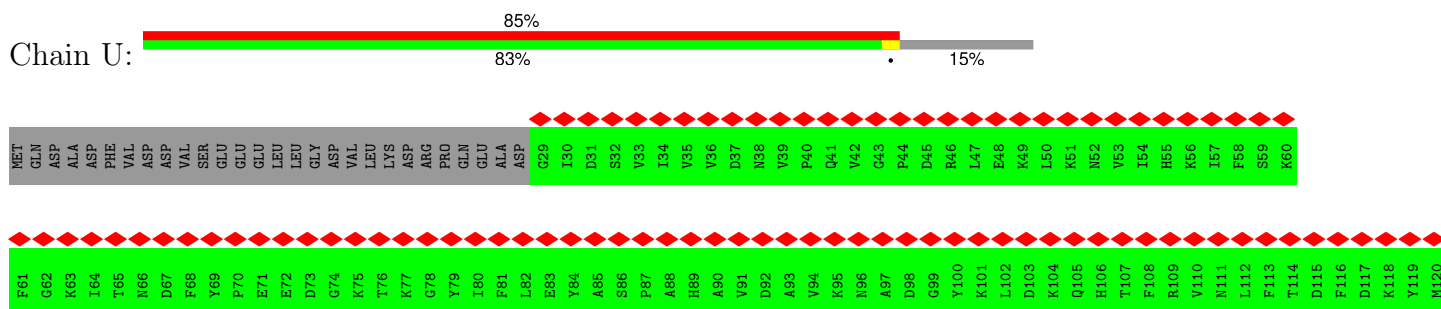
3 Residue-property plots

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: Eukaryotic translation initiation factor 3 subunit I



- Molecule 2: Eukaryotic translation initiation factor 3 subunit B



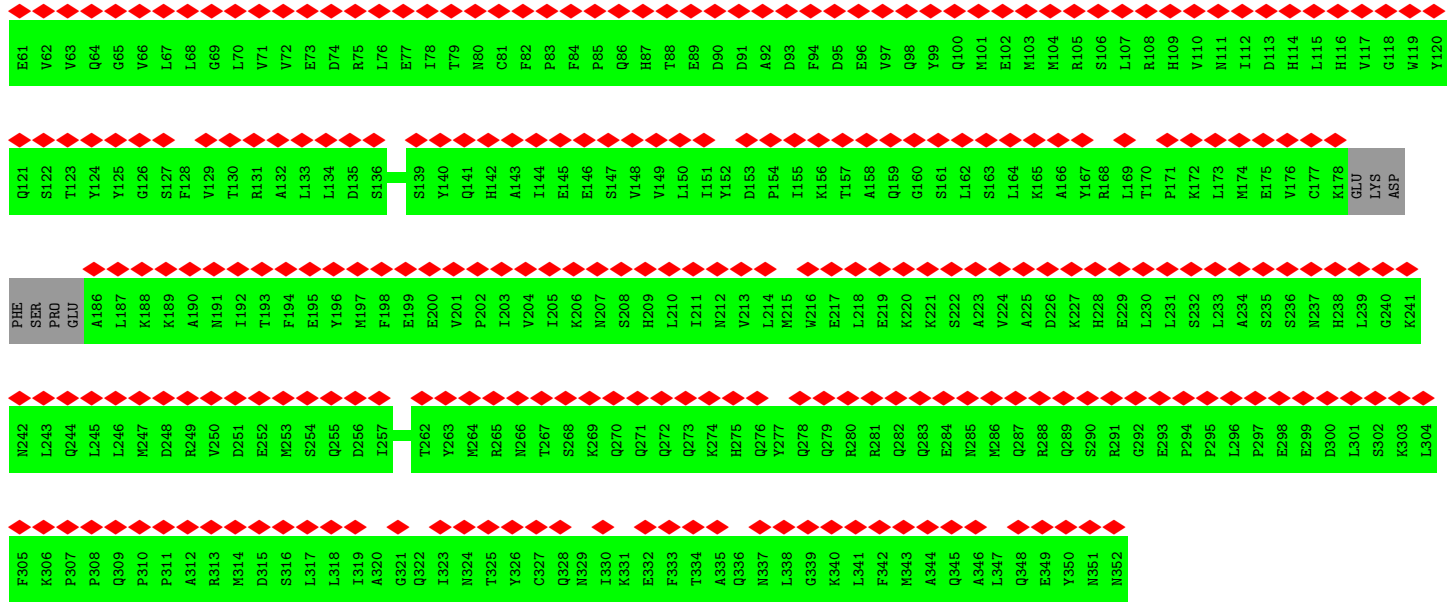
T121	R181	L241	M501	D361	G421	A481	M541	MET
I122	W182	M242	G302	C362	S422	L482	N542	GLU
S123	T183	D243	L303	K363	K423	A483	K543	ASP
D124	E184	T244	L304	L364	F424	F484	D544	PHE
E125	T185	Q245	D305	H365	A425	V485	R545	ARG
W126	Y186	D246	K306	V366	V426	D486	F546	TYR
D127	V187	Q247	K307	Q367	L427	T487	C547	ARG
I128	R188	P248	S308	K368	H428	S488	Q548	LYS
P129	W189	Q249	L309	N369	G429	D489	L549	MET
E130	S190	A250	K310	G370	E430	C490	L550	ALA
K131	P191	I251	I311	D371	A431	T491	M551	GLU
Q132	K192	I252	S312	Y372	P432	V492	R552	LEU
P133	G193	I253	G313	L373	R433	M493	P553	TYR
F134	T194	W254	I314	C374	I434	N494	R554	GLU
K135	Y195	D255	K315	V375	S435	I495	P555	GLN
D136	L196	I256	D316	K376	V436	A496	P556	ASN
L137	A197	L257	F317	V377	S437	E497	T557	GLU
G138	T198	T258	S318	D378	F438	H498	L558	ARG
N139	F199	G259	W319	R379	Y439	Y499	L559	LEU
L140	H200	H260	S320	T380	H440	M500	S560	LEU
R141	Q201	K261	P221	F381	V441	A501	Q561	ARG
Y142	R202	K262	G322	LYS	K442	S502	E562	GLY
W143	G203	R263	G323	GLY	M443	D503	Q563	VAL
L144	I204	G264	N324	THR	N444	V504	I564	ASP
E145	A205	F265	I326	GLN	G445	E505	K565	THR
E146	L206	H266	I326	G386	K446	M506	Q566	ASP
A147	W207	C267	A227	V387	I447	D507	L567	LEU
E148	G208	E268	F328	V388	E448	P508	K568	SER
C149	G209	S269	W329	T389	L449	T509	K569	ASN
R150	E210	S270	V330	N390	I450	G510	D570	VAL
D151	K211	A271	P331	F391	K451	R511	L571	ASP
Q152	F212	H272	E332	E392	M452	Y512	K572	TRP
Y153	K213	W273	D333	I393	F453	V513	G573	GLU
S154	Q214	P274	K334	F394	D454	V514	K574	GLU
V155	I215	L275	D335	R395	K455	T515	S575	GLU
I156	Q216	F276	D336	M396	K456	S516	K576	THR
F157	R217	K277	I336	R397	Q456	V517	L577	ILE
E158	F218	W278	I337	E398	Q457	S518	F578	PHE
S159	S219	S279	A338	K399	M458	S519	E579	VAL
G160	H220	H280	R339	Q400	M459	M519	E580	THR
D161	Q221	D281	V340	V401	I460	M520	Q580	THR
T163	G222	G282	T341	P402	I461	S521	K581	GLU
S164	V223	K283	M343	V403	F463	H523	D582	GLU
I165	Q224	F284	Q344	D404	M463	K523	R583	ILE
F166	L225	F285	Q345	V405	S464	V524	L584	PRO
W167	L226	A286	L346	V406	P465	D525	S585	LEU
D169	D227	R287	P346	E407	Q466	N526	Q586	GLY
Q170	F228	M288	T347	M408	G467	A527	S587	ASN
K171	S229	T289	Q349	K409	Q468	Y528	K588	GLN
D172	P230	L290	E350	E410	F469	M529	A589	GLN
P173	C231	D291	I351	T411	V470	L530	S590	GLU
D174	E232	T292	R352	I412	V471	M531	K591	GLU
V175	R233	L293	V353	I413	L472	T532	E592	LEU
S175	Y234	S294	R354	A414	A473	F533	VAL	VAL
I176	L235	I295	K355	F415	G474	Q534	GLU	GLU
E177	V236	Y296	N356	A416	L475	G535	ARG	ARG
E178	T237	E297	L356	W417	R476	R536	ARG	ARG
R179	F238	T298	F357	E418	S477	L537	THR	THR
A180	S239	P299	V359	M420	M478	L538	MET	MET
		S300	V360		G480	Q539		
						K540		

GLU

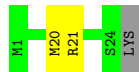
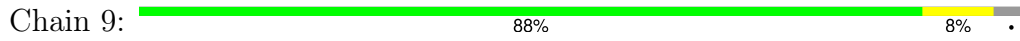
• Molecule 3: Eukaryotic translation initiation factor 3 subunit K



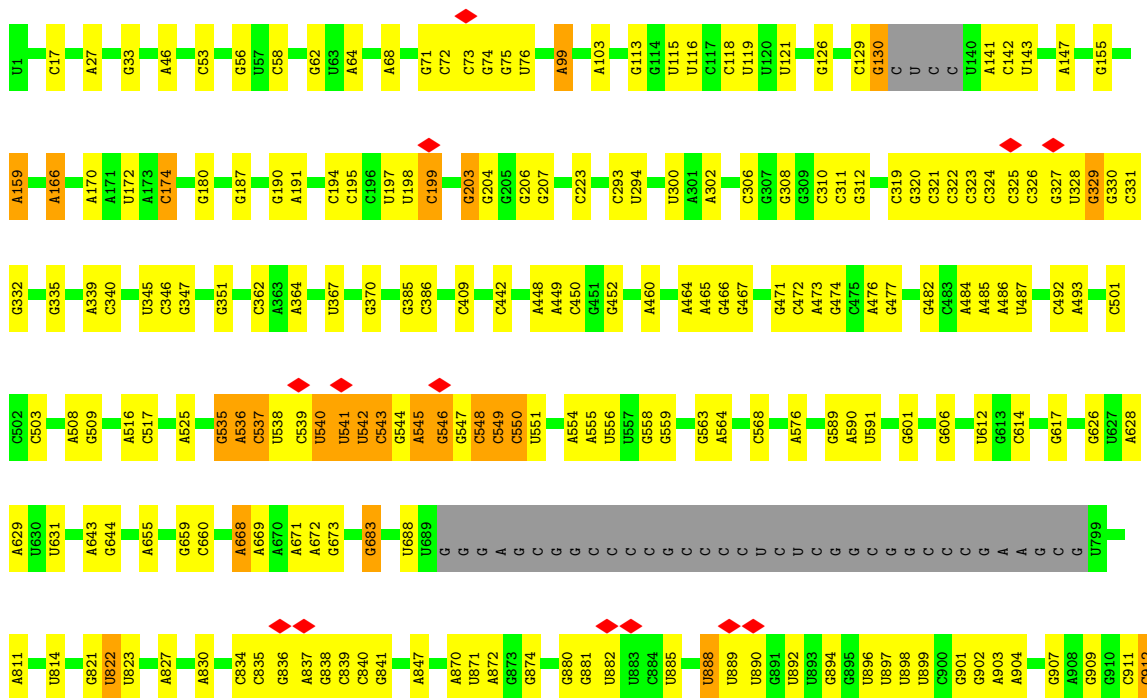
MET	F61	L121	F61
A2	Q62	D122	Q62
N3	T63	E123	T63
F4	T64	N124	T64
E5	V65	M125	V65
D6	T66	D126	T66
M7	A67	L127	A67
R8	Q68	L128	Q68
A9	I69	E129	I69
M10	L70	G130	L70
V11	L71	I131	V11
G12	K72	T132	G12
K13	A73	G133	K13
L14	L74	F134	L14
L15	T75	E135	L15
K16	W76	D136	K16
G17	L77	S137	G17
I18	P78	V138	I18
D19	H79	R139	D19
R20	T80	K140	R20
D21	D81	F141	D21
N22	F82	I142	N22
P23	T83	C143	P23
E24	L84	H144	E24
N25	C85	V145	N25
L26	K86	W146	L26
A27	C87	G147	A27
T28	H88	I148	T28
L29	R89	L149	L29
E30	D90	Y150	E30
R31	Q91	Q151	R31
Y32	A92	H152	Y32
V33	H93	I153	V33
E34	Q94	D154	E34
T35	E95	R155	T35
Q36	E96	W156	Q36
A37	R97	L157	A37
K38	P98	L158	K38
E39	I99	A159	E39
N40	R100	E160	N40
A41	Q101	M161	A41
Y42	I102	L162	Y42
D43	L103	G163	D43
L44	Y104	D164	L44
E45	L105	L165	E45
A46	G106	S166	A46
N47	D107	D167	N47
L48	L108	S168	L48
A49	L109	Q169	A49
V50	E110	L170	V50
L51	T111	K171	L51
C112	K52	V172	C112
H113	F114	M173	H113
Y54	M174	W174	Y54
Q55	Q115	S175	Q55
F56	A116	K176	F56
N57	F117	Y177	N57
A59	W118	G178	A59
F60	Q119	W179	F60
	S180		

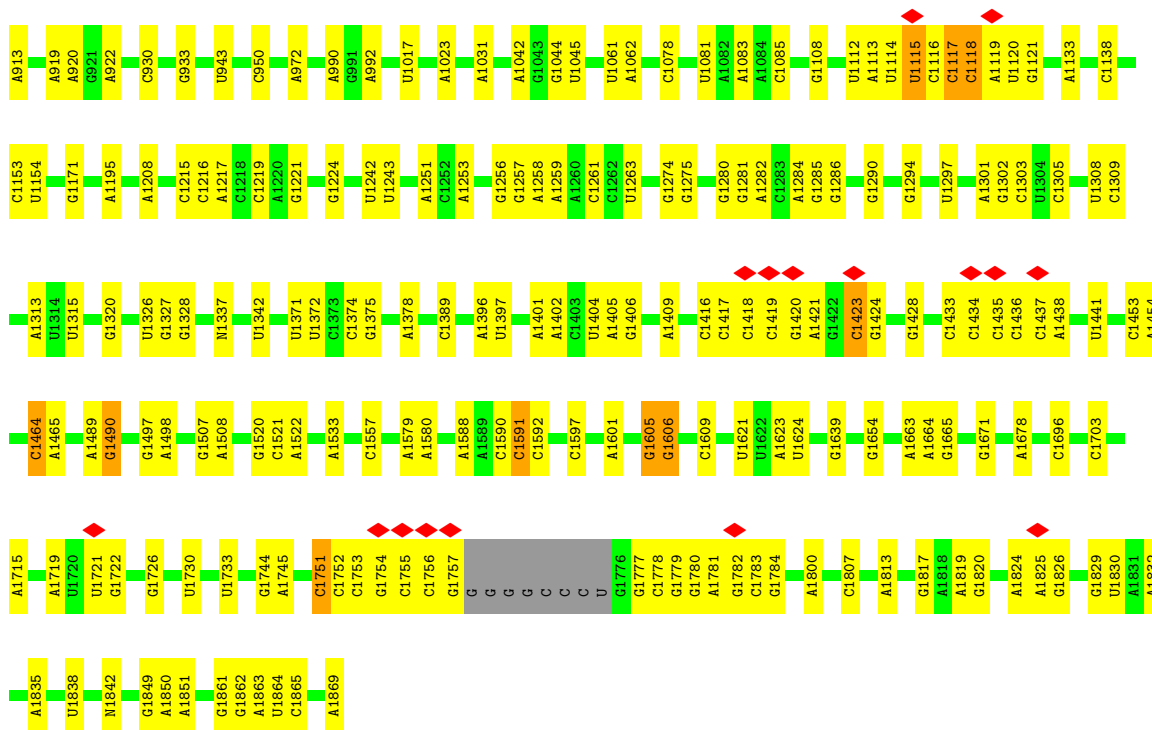


• Molecule 8: Small ribosomal subunit protein eS32

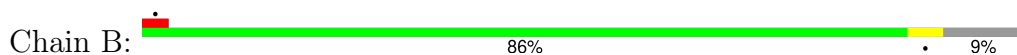


• Molecule 9: rRNA

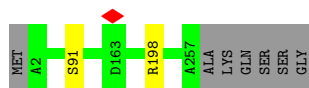




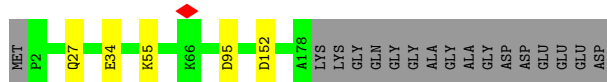
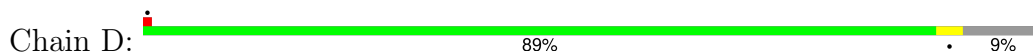
- Molecule 10: Small ribosomal subunit protein uS17



- Molecule 11: Small ribosomal subunit protein eS4, X isoform

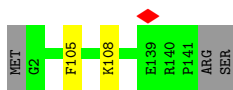


- Molecule 12: Small ribosomal subunit protein uS4

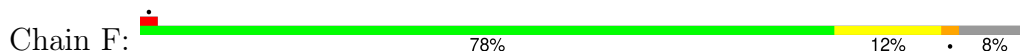


- Molecule 13: Small ribosomal subunit protein uS12

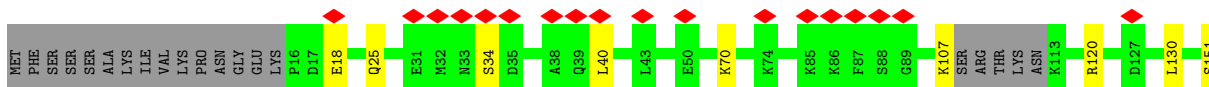
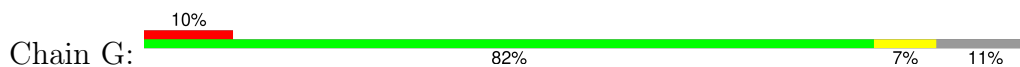




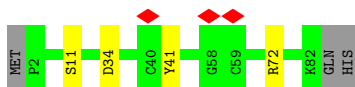
- Molecule 14: Small ribosomal subunit protein eS30



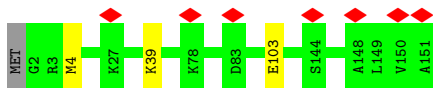
- Molecule 15: Small ribosomal subunit protein eS7



- Molecule 16: Small ribosomal subunit protein eS27



- Molecule 17: Small ribosomal subunit protein uS15



- Molecule 18: Small ribosomal subunit protein uS8

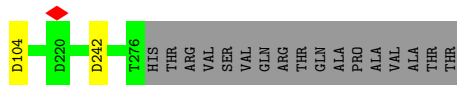
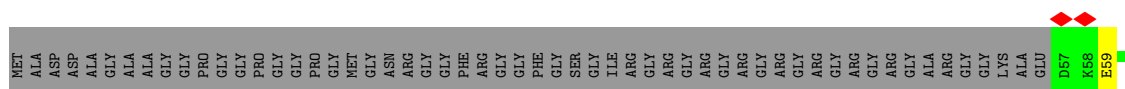


- Molecule 19: Small ribosomal subunit protein eS21

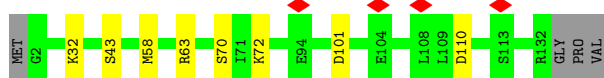




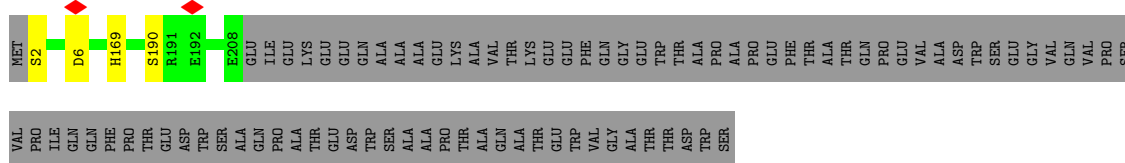
- Molecule 20: Small ribosomal subunit protein uS5



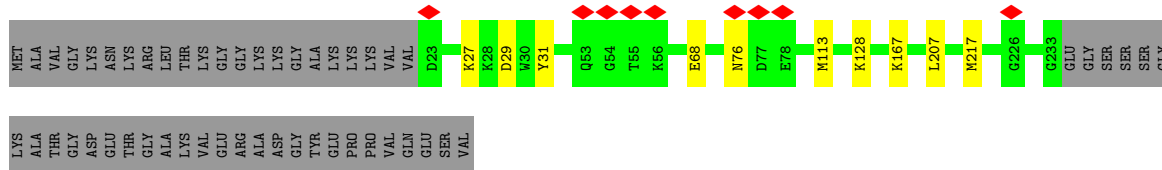
- Molecule 21: Small ribosomal subunit protein eS17



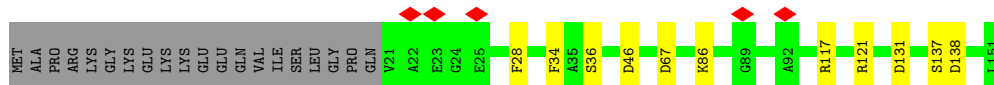
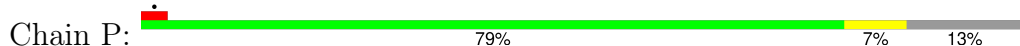
- Molecule 22: Small ribosomal subunit protein uS2



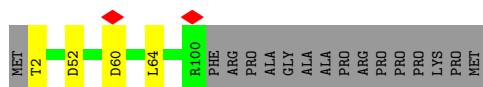
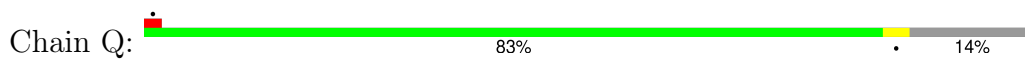
- Molecule 23: Small ribosomal subunit protein eS1



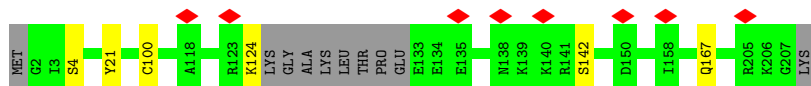
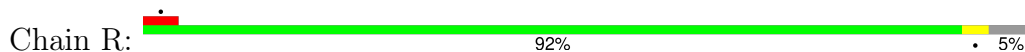
- Molecule 24: 40S ribosomal protein S14



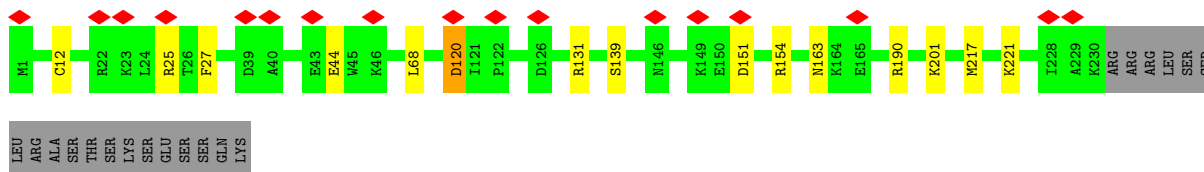
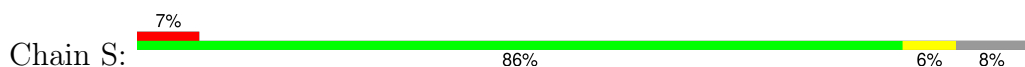
- Molecule 25: Small ribosomal subunit protein eS26



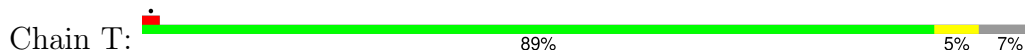
• Molecule 26: Small ribosomal subunit protein eS8



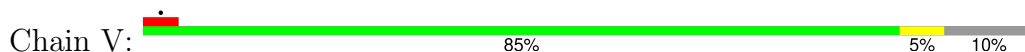
• Molecule 27: Small ribosomal subunit protein eS6



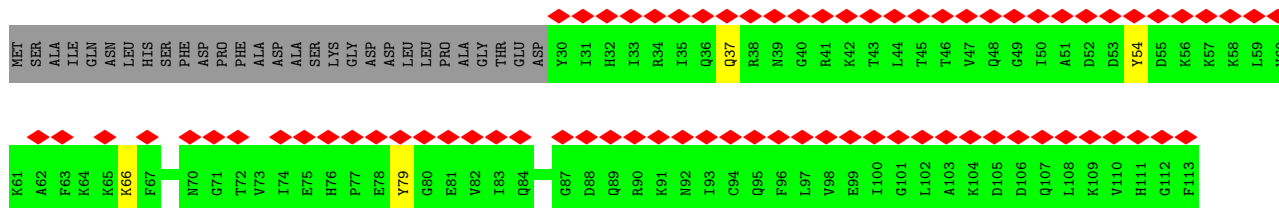
• Molecule 28: Small ribosomal subunit protein eS24



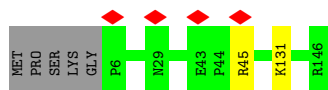
• Molecule 29: Small ribosomal subunit protein uS7



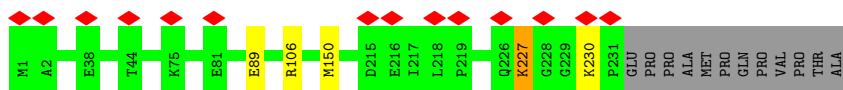
• Molecule 30: Eukaryotic translation initiation factor 1



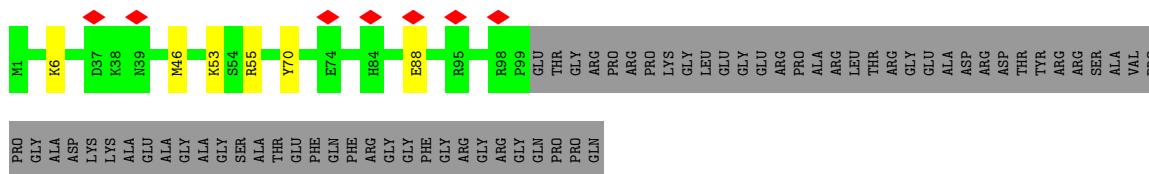
• Molecule 31: Small ribosomal subunit protein uS9



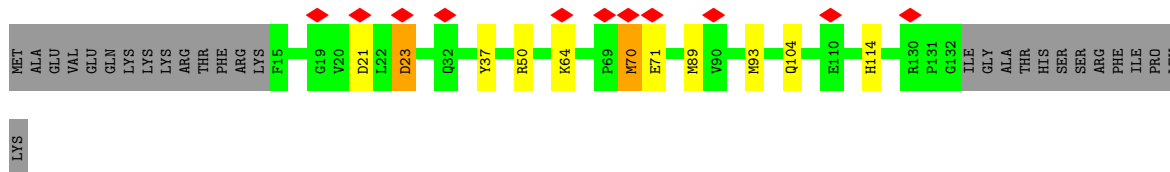
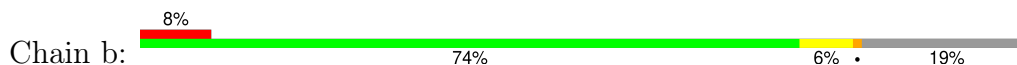
- Molecule 32: Small ribosomal subunit protein uS3



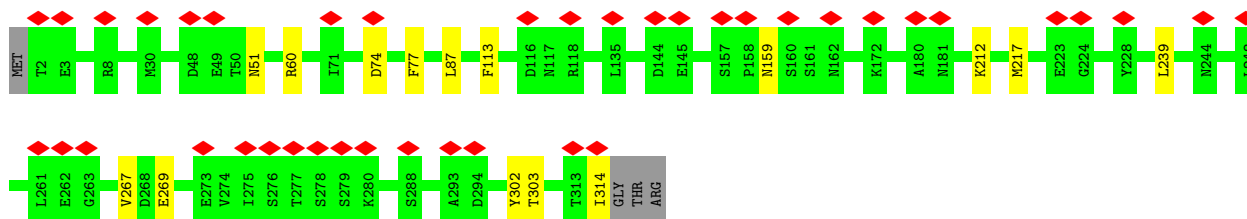
- Molecule 33: Small ribosomal subunit protein eS10



- Molecule 34: Small ribosomal subunit protein uS19

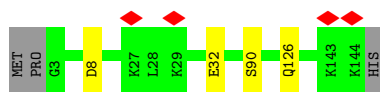


- Molecule 35: Receptor of activated protein C kinase 1

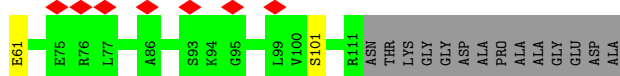
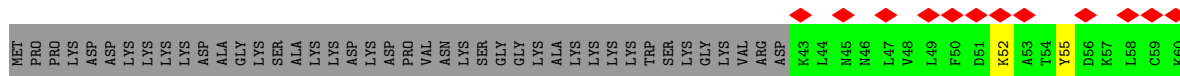


- Molecule 36: Small ribosomal subunit protein eS19

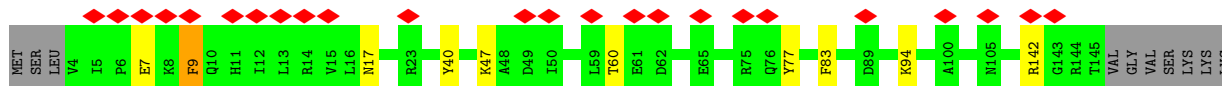
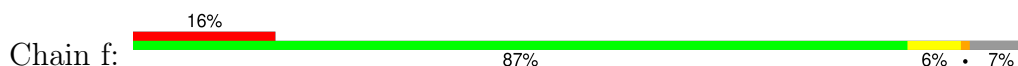




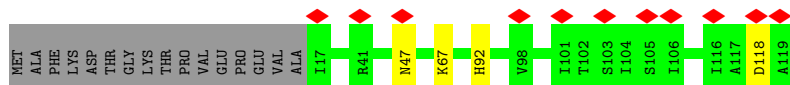
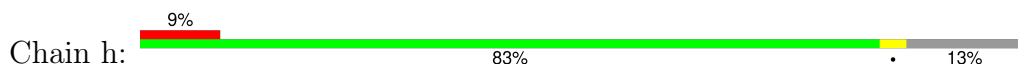
• Molecule 37: Small ribosomal subunit protein eS25



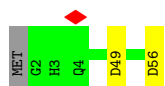
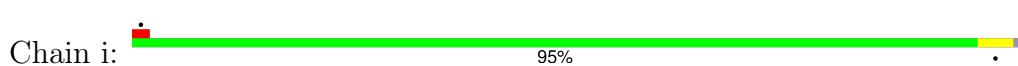
• Molecule 38: Small ribosomal subunit protein uS13



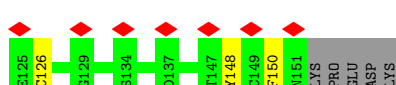
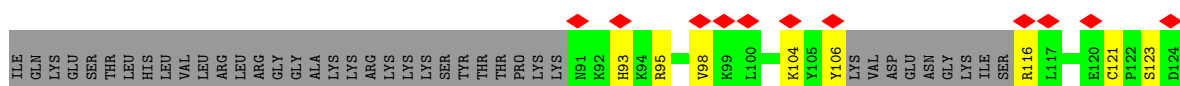
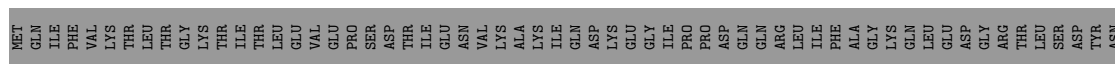
• Molecule 39: Small ribosomal subunit protein uS10



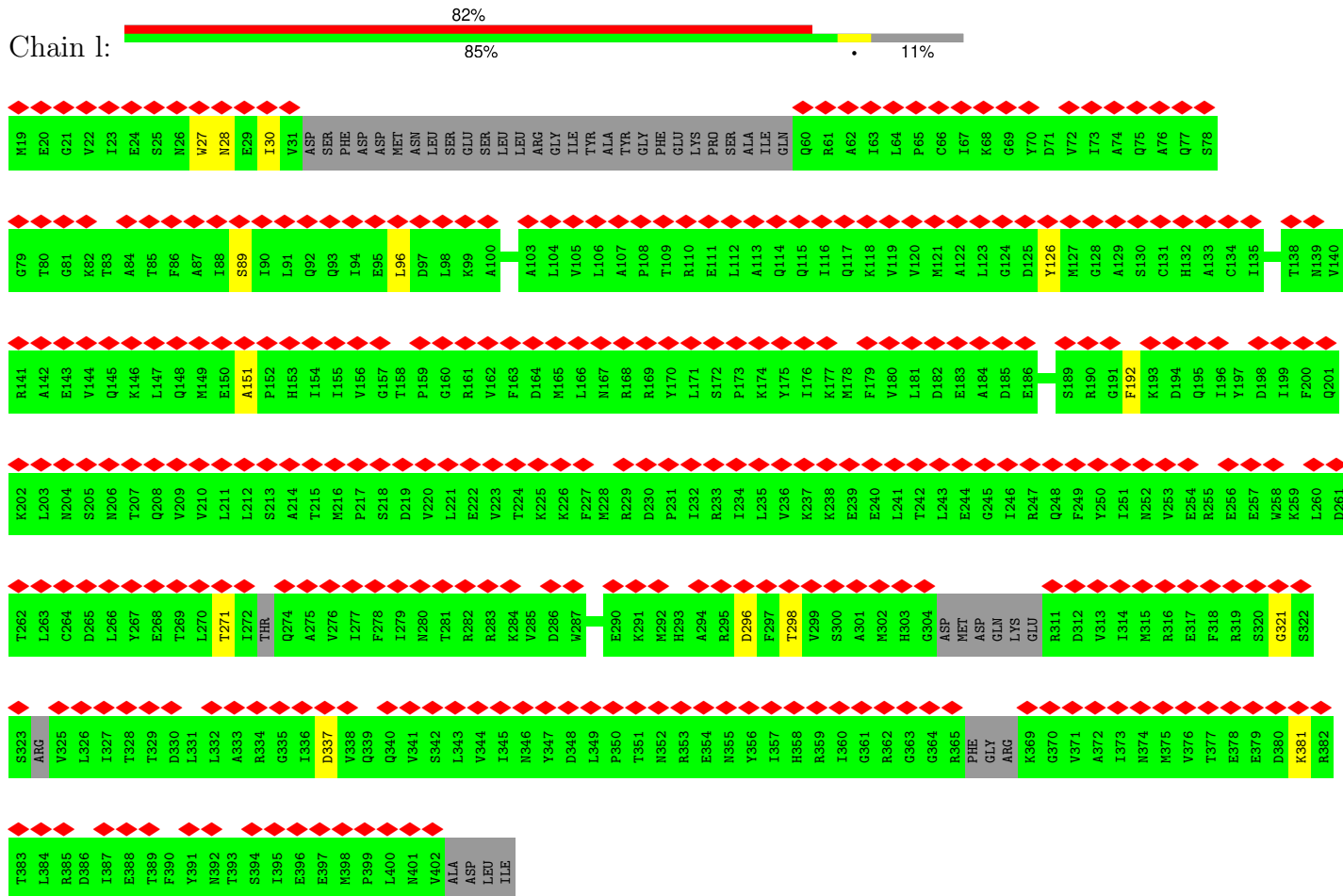
• Molecule 40: Small ribosomal subunit protein uS14



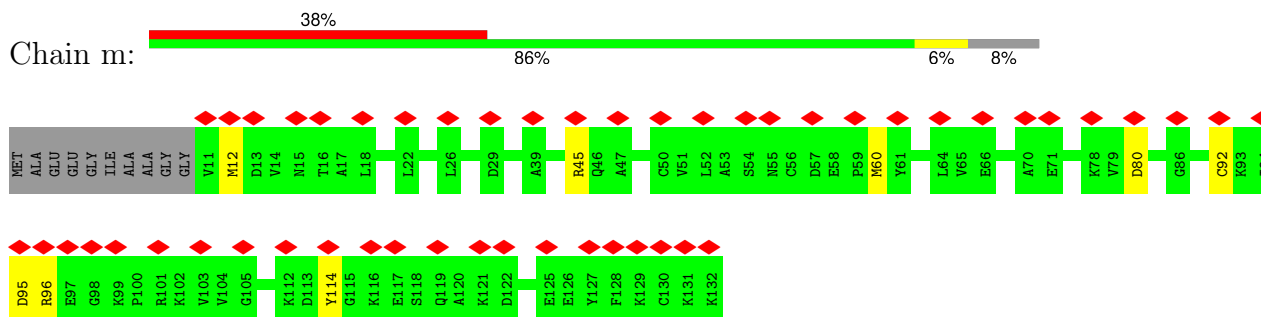
• Molecule 41: Ubiquitin-40S ribosomal protein S27a



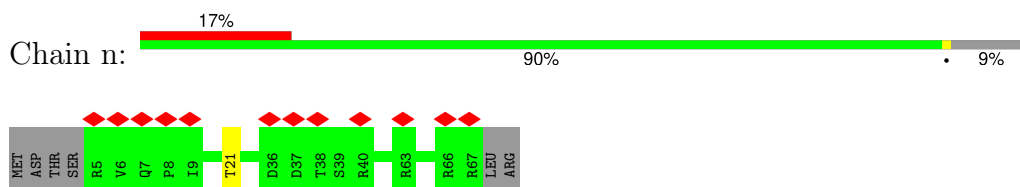
- Molecule 42: Eukaryotic initiation factor 4A-I



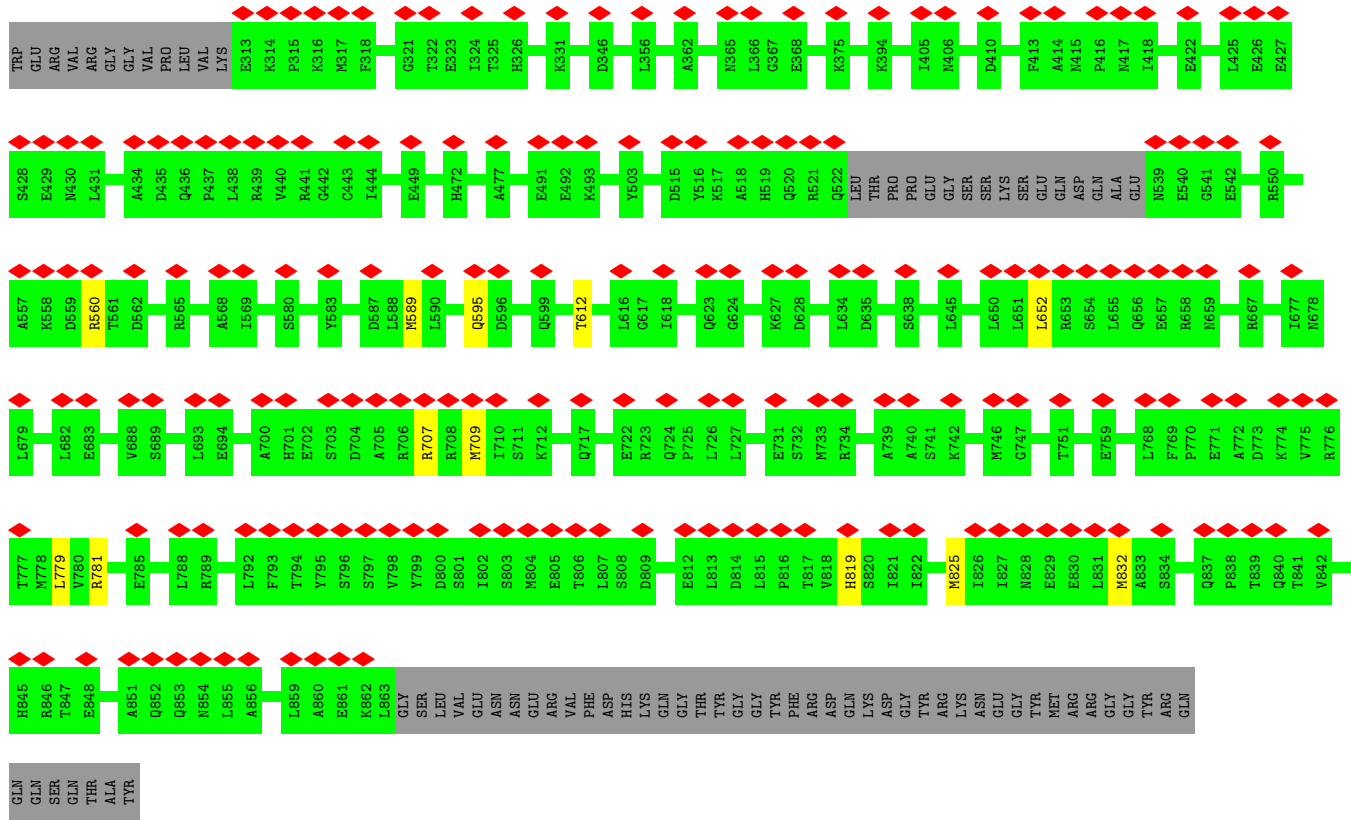
- Molecule 43: Small ribosomal subunit protein eS12



- Molecule 44: Small ribosomal subunit protein eS28



- Molecule 45: Eukaryotic translation initiation factor 3 subunit G



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	8515	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 ($e^-/\text{\AA}^2$)	25	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	0.074	Depositor
Minimum map value	-0.022	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.015	Depositor
Map size (Å)	410.0, 410.0, 410.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.025, 1.025, 1.025	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: 6MZ, ZN, MA6, UR3, OMU, MG, K, OMC, 4AC, JMH, 5MC, SPD, PSU, OMG, A2M, 5MU, ACY

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	X	0.37	0/1597	0.76	0/2216
2	U	0.39	0/2768	0.71	0/3854
3	3	0.23	0/1055	0.39	0/1469
4	4	0.24	0/1269	0.45	0/1762
5	5	0.23	0/1575	0.38	0/2187
6	6	0.26	0/1926	0.51	0/2669
7	8	0.24	0/1569	0.43	0/2183
8	9	0.36	0/231	1.14	2/294 (0.7%)
9	A	0.53	0/39097	0.91	55/60929 (0.1%)
10	B	0.36	0/1197	0.67	0/1599
11	C	0.34	0/2077	0.66	0/2796
12	D	0.36	0/1502	0.78	1/2008 (0.0%)
13	E	0.32	0/1105	0.65	0/1476
14	F	0.42	0/429	0.76	0/566
15	G	0.33	0/1420	0.72	1/1901 (0.1%)
16	H	0.36	0/644	0.64	0/864
17	I	0.32	0/1232	0.65	0/1656
18	J	0.31	0/1051	0.63	0/1406
19	K	0.35	0/623	0.73	1/833 (0.1%)
20	L	0.36	0/1743	0.68	2/2354 (0.1%)
21	M	0.33	0/1078	0.76	2/1447 (0.1%)
22	N	0.31	0/1670	0.63	0/2271
23	O	0.34	0/1742	0.68	0/2330
24	P	0.36	0/993	0.80	1/1330 (0.1%)
25	Q	0.32	0/805	0.73	0/1079
26	R	0.33	0/1654	0.68	0/2203
27	S	0.32	0/1885	0.75	2/2510 (0.1%)
28	T	0.34	0/1028	0.74	0/1366
29	V	0.34	0/1481	0.72	1/1988 (0.1%)
30	W	0.33	0/693	0.69	0/925
31	Y	0.32	0/1142	0.70	0/1528

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	Z	0.33	0/1811	0.66	0/2438
33	a	0.43	0/859	0.80	0/1159
34	b	0.39	0/991	0.86	3/1325 (0.2%)
35	c	0.32	0/2493	0.68	0/3394
36	d	0.31	0/1123	0.66	0/1504
37	e	0.38	0/557	0.83	0/748
38	f	0.33	0/1194	0.76	0/1599
39	h	0.31	0/827	0.74	0/1110
40	i	0.37	0/470	0.80	1/623 (0.2%)
41	k	0.38	0/438	0.70	0/580
42	l	0.64	0/1700	0.77	1/2359 (0.0%)
43	m	0.34	0/960	0.81	1/1286 (0.1%)
44	n	0.34	0/500	0.84	0/669
45	o	0.38	0/419	0.71	0/580
46	p	0.59	0/1834	0.70	0/2517
47	u	0.33	0/4800	0.70	3/6488 (0.0%)
48	v	0.32	0/2672	0.64	0/3647
49	x	0.25	0/2118	0.53	0/2949
50	y	0.32	0/4400	0.70	3/5939 (0.1%)
All	All	0.42	0/108447	0.78	80/154913 (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
16	H	0	1
24	P	0	1
46	p	0	2
All	All	0	4

There are no bond length outliers.

The worst 5 of 80 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	550	C	O3'-P-O5'	-19.93	66.12	104.00
9	A	550	C	OP1-P-O3'	12.09	131.80	105.20
9	A	549	C	P-O3'-C3'	-11.43	105.98	119.70
9	A	545	A	P-O3'-C3'	-10.28	107.36	119.70
9	A	536	A	P-O3'-C3'	-10.10	107.59	119.70

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
16	H	72	ARG	Sidechain
24	P	137	SER	Peptide
46	p	286	VAL	Peptide
46	p	316	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	
1	X	323/325 (99%)	311 (96%)	9 (3%)	3 (1%)	14	48
2	U	556/661 (84%)	519 (93%)	25 (4%)	12 (2%)	5	32
3	3	209/218 (96%)	203 (97%)	6 (3%)	0	100	100
4	4	251/357 (70%)	231 (92%)	20 (8%)	0	100	100
5	5	307/564 (54%)	294 (96%)	13 (4%)	0	100	100
6	6	348/374 (93%)	303 (87%)	45 (13%)	0	100	100
7	8	313/352 (89%)	285 (91%)	28 (9%)	0	100	100
8	9	22/25 (88%)	22 (100%)	0	0	100	100
10	B	139/158 (88%)	136 (98%)	3 (2%)	0	100	100
11	C	254/263 (97%)	250 (98%)	4 (2%)	0	100	100
12	D	175/194 (90%)	172 (98%)	3 (2%)	0	100	100
13	E	138/143 (96%)	134 (97%)	4 (3%)	0	100	100
14	F	52/59 (88%)	45 (86%)	3 (6%)	4 (8%)	1	12

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
15	G	169/194 (87%)	166 (98%)	3 (2%)	0	100	100
16	H	79/84 (94%)	75 (95%)	4 (5%)	0	100	100
17	I	148/151 (98%)	146 (99%)	2 (1%)	0	100	100
18	J	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
19	K	79/83 (95%)	78 (99%)	1 (1%)	0	100	100
20	L	218/293 (74%)	214 (98%)	4 (2%)	0	100	100
21	M	129/135 (96%)	124 (96%)	5 (4%)	0	100	100
22	N	205/295 (70%)	203 (99%)	2 (1%)	0	100	100
23	O	209/264 (79%)	205 (98%)	4 (2%)	0	100	100
24	P	129/151 (85%)	126 (98%)	3 (2%)	0	100	100
25	Q	97/115 (84%)	96 (99%)	1 (1%)	0	100	100
26	R	194/208 (93%)	191 (98%)	3 (2%)	0	100	100
27	S	228/249 (92%)	223 (98%)	5 (2%)	0	100	100
28	T	122/133 (92%)	120 (98%)	2 (2%)	0	100	100
29	V	180/204 (88%)	169 (94%)	11 (6%)	0	100	100
30	W	82/113 (73%)	78 (95%)	4 (5%)	0	100	100
31	Y	139/146 (95%)	132 (95%)	7 (5%)	0	100	100
32	Z	229/243 (94%)	218 (95%)	9 (4%)	2 (1%)	14	48
33	a	97/165 (59%)	94 (97%)	3 (3%)	0	100	100
34	b	116/145 (80%)	113 (97%)	3 (3%)	0	100	100
35	c	311/317 (98%)	288 (93%)	23 (7%)	0	100	100
36	d	140/145 (97%)	134 (96%)	6 (4%)	0	100	100
37	e	67/125 (54%)	65 (97%)	2 (3%)	0	100	100
38	f	140/152 (92%)	131 (94%)	8 (6%)	1 (1%)	19	54
39	h	101/119 (85%)	93 (92%)	8 (8%)	0	100	100
40	i	53/56 (95%)	52 (98%)	1 (2%)	0	100	100
41	k	48/156 (31%)	43 (90%)	5 (10%)	0	100	100
42	l	333/388 (86%)	288 (86%)	32 (10%)	13 (4%)	2	22
43	m	120/132 (91%)	110 (92%)	10 (8%)	0	100	100
44	n	61/69 (88%)	60 (98%)	1 (2%)	0	100	100
45	o	83/320 (26%)	80 (96%)	3 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
46	p	340/469 (72%)	258 (76%)	64 (19%)	18 (5%)	1	18
47	u	571/1382 (41%)	529 (93%)	42 (7%)	0	100	100
48	v	380/445 (85%)	338 (89%)	42 (11%)	0	100	100
49	x	422/548 (77%)	401 (95%)	21 (5%)	0	100	100
50	y	531/913 (58%)	507 (96%)	24 (4%)	0	100	100
All	All	9764/12930 (76%)	9174 (94%)	537 (6%)	53 (0%)	27	60

5 of 53 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	U	380	THR
42	l	27	TRP
46	p	155	VAL
46	p	158	PRO
2	U	395	ARG

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	6	49/335 (15%)	47 (96%)	2 (4%)	26	50
8	9	23/24 (96%)	22 (96%)	1 (4%)	25	49
10	B	130/142 (92%)	123 (95%)	7 (5%)	18	44
11	C	220/225 (98%)	218 (99%)	2 (1%)	75	83
12	D	158/168 (94%)	154 (98%)	4 (2%)	42	62
13	E	112/115 (97%)	110 (98%)	2 (2%)	54	71
14	F	42/48 (88%)	37 (88%)	5 (12%)	4	20
15	G	155/174 (89%)	142 (92%)	13 (8%)	9	32
16	H	73/76 (96%)	70 (96%)	3 (4%)	26	50
17	I	130/131 (99%)	127 (98%)	3 (2%)	45	64
18	J	112/113 (99%)	110 (98%)	2 (2%)	54	71

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
19	K	65/67 (97%)	62 (95%)	3 (5%)	23	47
20	L	186/225 (83%)	185 (100%)	1 (0%)	86	90
21	M	119/122 (98%)	113 (95%)	6 (5%)	20	45
22	N	173/243 (71%)	169 (98%)	4 (2%)	45	64
23	O	192/231 (83%)	182 (95%)	10 (5%)	19	45
24	P	102/119 (86%)	93 (91%)	9 (9%)	8	29
25	Q	86/98 (88%)	82 (95%)	4 (5%)	22	47
26	R	172/180 (96%)	166 (96%)	6 (4%)	31	54
27	S	200/218 (92%)	186 (93%)	14 (7%)	12	36
28	T	107/115 (93%)	101 (94%)	6 (6%)	17	43
29	V	156/170 (92%)	147 (94%)	9 (6%)	17	42
30	W	73/96 (76%)	69 (94%)	4 (6%)	18	44
31	Y	117/121 (97%)	115 (98%)	2 (2%)	56	72
32	Z	190/202 (94%)	186 (98%)	4 (2%)	48	67
33	a	90/136 (66%)	84 (93%)	6 (7%)	13	38
34	b	106/130 (82%)	96 (91%)	10 (9%)	7	26
35	c	272/275 (99%)	257 (94%)	15 (6%)	18	44
36	d	112/115 (97%)	108 (96%)	4 (4%)	30	54
37	e	61/103 (59%)	57 (93%)	4 (7%)	14	38
38	f	123/132 (93%)	113 (92%)	10 (8%)	9	33
39	h	94/107 (88%)	90 (96%)	4 (4%)	25	49
40	i	48/49 (98%)	47 (98%)	1 (2%)	48	67
41	k	46/140 (33%)	35 (76%)	11 (24%)	0	4
43	m	104/108 (96%)	97 (93%)	7 (7%)	13	38
44	n	56/62 (90%)	55 (98%)	1 (2%)	54	71
46	p	38/395 (10%)	29 (76%)	9 (24%)	0	4
47	u	526/1259 (42%)	509 (97%)	17 (3%)	34	56
48	v	206/406 (51%)	194 (94%)	12 (6%)	17	42
50	y	473/811 (58%)	464 (98%)	9 (2%)	52	70
All	All	5497/7986 (69%)	5251 (96%)	246 (4%)	26	48

5 of 246 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
29	V	193	LYS
47	u	377	PHE
35	c	60	ARG
47	u	351	LYS
48	v	393	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
46	p	142	ASN
48	v	241	GLN
50	y	415	ASN
44	n	7	GLN
23	O	202	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
9	A	1660/1719 (96%)	357 (21%)	19 (1%)

5 of 357 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
9	A	17	C
9	A	33	G
9	A	46	A
9	A	53	C
9	A	56	G

5 of 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
9	A	1114	U
9	A	1751	C
9	A	1781	A
9	A	1605	G
9	A	535	G

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

34 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
9	OMG	A	601	9	19,26,27	2.44	8 (42%)	21,38,41	1.62	5 (23%)
9	PSU	A	612	9,51	18,21,22	4.46	8 (44%)	21,30,33	2.04	6 (28%)
9	4AC	A	1842	9	21,24,25	3.11	10 (47%)	28,34,37	1.14	4 (14%)
9	PSU	A	1081	9	18,21,22	4.49	8 (44%)	21,30,33	2.12	5 (23%)
9	OMG	A	1328	52,9	19,26,27	2.46	8 (42%)	21,38,41	1.58	5 (23%)
9	JMH	A	1219	9,51	18,22,23	2.71	6 (33%)	23,32,35	0.95	2 (8%)
9	PSU	A	822	9	18,21,22	4.48	8 (44%)	21,30,33	2.04	6 (28%)
9	4AC	A	1337	9	21,24,25	3.15	10 (47%)	28,34,37	1.92	6 (21%)
9	OMG	A	1490	9,51	19,26,27	2.43	8 (42%)	21,38,41	1.45	4 (19%)
9	A2M	A	27	9,51	18,25,26	4.40	6 (33%)	20,36,39	2.34	6 (30%)
9	PSU	A	1243	9	18,21,22	4.44	7 (38%)	21,30,33	2.00	5 (23%)
9	5MC	A	1374	9	19,22,23	3.91	8 (42%)	26,32,35	1.02	2 (7%)
9	OMU	A	121	9	19,22,23	3.23	8 (42%)	25,31,34	1.81	5 (20%)
9	OMC	A	1703	9	19,22,23	3.06	8 (42%)	25,31,34	0.73	0
9	OMG	A	683	9	19,26,27	2.45	8 (42%)	21,38,41	1.57	4 (19%)
9	OMU	A	116	9	19,22,23	3.22	8 (42%)	25,31,34	1.74	5 (20%)
9	OMC	A	517	9	19,22,23	3.03	8 (42%)	25,31,34	0.78	0
9	OMC	A	174	9,51	19,22,23	3.10	8 (42%)	25,31,34	0.78	0
9	UR3	A	1830	9	19,22,23	3.05	8 (42%)	26,32,35	1.69	3 (11%)
9	PSU	A	119	9	18,21,22	4.53	7 (38%)	21,30,33	1.90	4 (19%)
9	6MZ	A	1832	52,9,51	17,25,26	1.49	3 (17%)	15,36,39	2.67	3 (20%)
9	A2M	A	484	9	18,25,26	4.31	7 (38%)	20,36,39	2.28	5 (25%)
9	PSU	A	823	9	18,21,22	4.46	7 (38%)	21,30,33	1.92	5 (23%)
9	A2M	A	166	9	18,25,26	4.56	7 (38%)	20,36,39	2.71	7 (35%)
9	OMG	A	509	9,51	19,26,27	2.42	8 (42%)	21,38,41	1.53	4 (19%)
9	5MU	A	814	9	19,22,23	0.51	0	27,32,35	0.82	1 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
9	A2M	A	99	9,51	18,25,26	4.42	6 (33%)	20,36,39	2.38	6 (30%)
9	A2M	A	159	9	18,25,26	4.46	7 (38%)	20,36,39	2.35	4 (20%)
9	OMG	A	644	9	19,26,27	2.41	8 (42%)	21,38,41	1.62	5 (23%)
9	A2M	A	1678	9	18,25,26	4.45	7 (38%)	20,36,39	2.40	5 (25%)
9	A2M	A	1031	9	18,25,26	4.43	7 (38%)	20,36,39	2.39	6 (30%)
9	MA6	A	1850	9	19,26,27	1.54	2 (10%)	18,38,41	4.19	4 (22%)
9	A2M	A	668	9,51	18,25,26	4.30	6 (33%)	20,36,39	2.44	7 (35%)
9	MA6	A	1851	9	19,26,27	1.62	3 (15%)	18,38,41	4.11	5 (27%)

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
9	OMG	A	601	9	-	0/5/27/28	0/3/3/3
9	PSU	A	612	9,51	-	0/7/25/26	0/2/2/2
9	4AC	A	1842	9	-	0/11/29/30	0/2/2/2
9	PSU	A	1081	9	-	1/7/25/26	0/2/2/2
9	OMG	A	1328	52,9	-	0/5/27/28	0/3/3/3
9	JMH	A	1219	9,51	-	2/7/25/26	0/2/2/2
9	PSU	A	822	9	-	2/7/25/26	0/2/2/2
9	4AC	A	1337	9	-	2/11/29/30	0/2/2/2
9	OMG	A	1490	9,51	-	1/5/27/28	0/3/3/3
9	A2M	A	27	9,51	-	0/5/27/28	0/3/3/3
9	PSU	A	1243	9	-	0/7/25/26	0/2/2/2
9	5MC	A	1374	9	-	0/7/25/26	0/2/2/2
9	OMU	A	121	9	-	0/9/27/28	0/2/2/2
9	OMC	A	1703	9	-	1/9/27/28	0/2/2/2
9	OMG	A	683	9	-	2/5/27/28	0/3/3/3
9	OMU	A	116	9	-	0/9/27/28	0/2/2/2
9	OMC	A	517	9	-	0/9/27/28	0/2/2/2
9	OMC	A	174	9,51	-	3/9/27/28	0/2/2/2
9	UR3	A	1830	9	-	0/7/25/26	0/2/2/2
9	PSU	A	119	9	-	0/7/25/26	0/2/2/2
9	6MZ	A	1832	52,9,51	-	2/5/27/28	0/3/3/3
9	A2M	A	484	9	-	0/5/27/28	0/3/3/3
9	PSU	A	823	9	-	2/7/25/26	0/2/2/2
9	A2M	A	166	9	-	2/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	OMG	A	509	9,51	-	0/5/27/28	0/3/3/3
9	5MU	A	814	9	-	0/7/25/26	0/2/2/2
9	A2M	A	99	9,51	-	2/5/27/28	0/3/3/3
9	A2M	A	159	9	-	2/5/27/28	0/3/3/3
9	OMG	A	644	9	-	1/5/27/28	0/3/3/3
9	A2M	A	1678	9	-	0/5/27/28	0/3/3/3
9	A2M	A	1031	9	-	0/5/27/28	0/3/3/3
9	MA6	A	1850	9	-	1/7/29/30	0/3/3/3
9	A2M	A	668	9,51	-	2/5/27/28	0/3/3/3
9	MA6	A	1851	9	-	3/7/29/30	0/3/3/3

The worst 5 of 236 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	A	166	A2M	O4'-C1'	16.80	1.62	1.40
9	A	159	A2M	O4'-C1'	16.29	1.62	1.40
9	A	1031	A2M	O4'-C1'	16.24	1.62	1.40
9	A	99	A2M	O4'-C1'	16.23	1.62	1.40
9	A	1678	A2M	O4'-C1'	16.19	1.62	1.40

The worst 5 of 144 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	1851	MA6	N1-C6-N6	-11.90	103.08	116.83
9	A	1850	MA6	N1-C6-N6	-11.23	103.86	116.83
9	A	1850	MA6	C1'-N9-C4	10.82	145.66	126.64
9	A	1851	MA6	C1'-N9-C4	10.08	144.35	126.64
9	A	1337	4AC	CM7-C7-N4	6.93	126.46	115.27

There are no chirality outliers.

5 of 31 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	166	A2M	O4'-C4'-C5'-O5'
9	A	683	OMG	O4'-C4'-C5'-O5'
9	A	823	PSU	O4'-C1'-C5-C4
9	A	823	PSU	O4'-C1'-C5-C6
9	A	1219	JMH	O4'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 112 ligands modelled in this entry, 110 are monoatomic - leaving 2 for Mogul analysis.

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
53	SPD	A	2005	-	9,9,9	0.33	0	8,8,8	0.52	0
55	ACY	1	501	-	2,2,3	0.67	0	1,1,3	0.14	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
53	SPD	A	2005	-	-	2/7/7/7	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

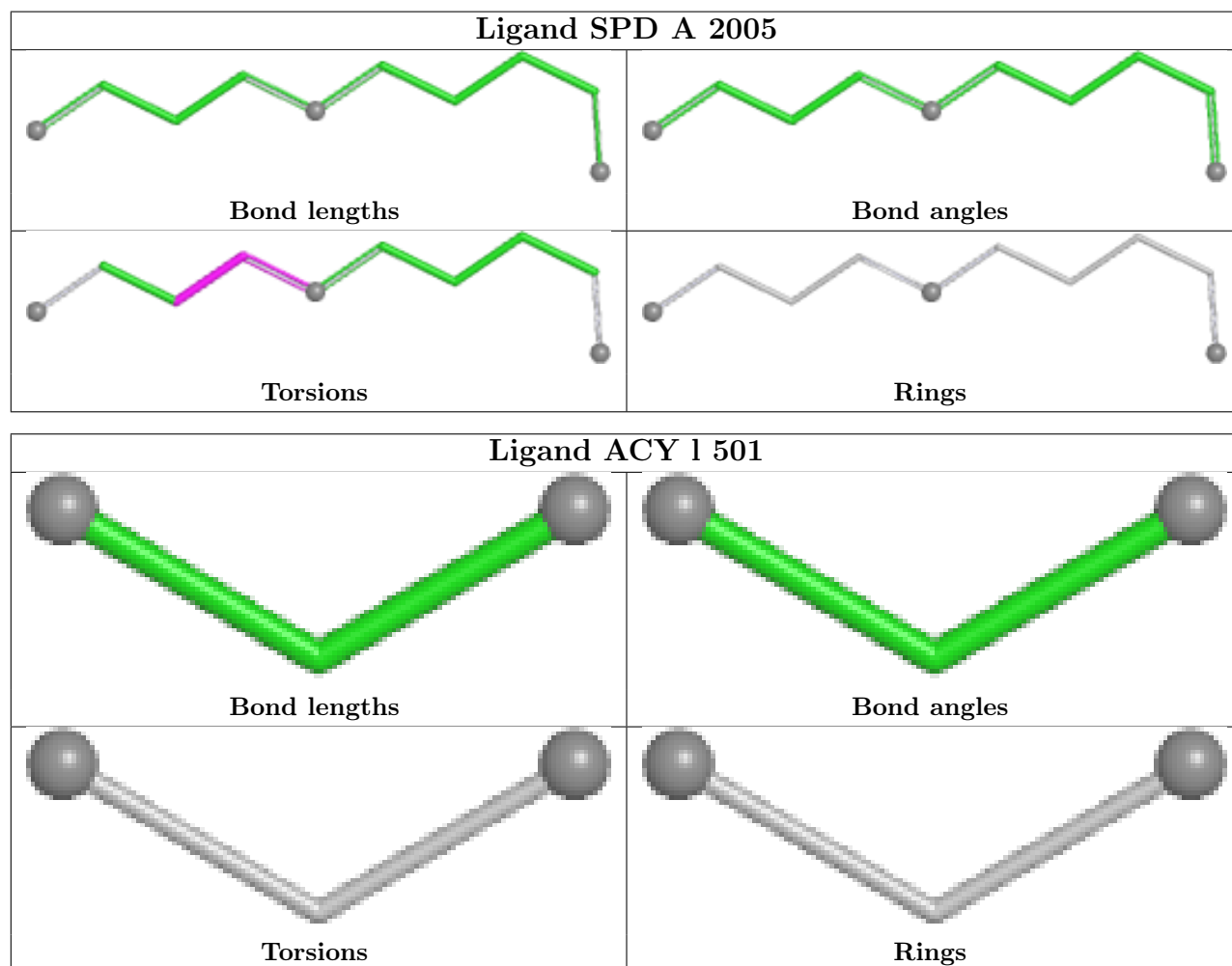
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
53	A	2005	SPD	N6-C7-C8-C9
53	A	2005	SPD	C8-C7-N6-C5

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
9	A	2
46	p	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	225:G	O3'	287:U	P	8.10
1	A	1219:JMH	O3'	1220:A	P	3.00
1	p	185:ALA	C	186:GLU	N	2.09
1	p	195:GLU	C	196:MSE	N	1.86

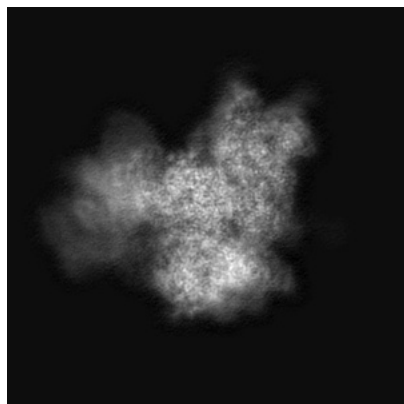
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-44671. These allow visual inspection of the internal detail of the map and identification of artifacts.

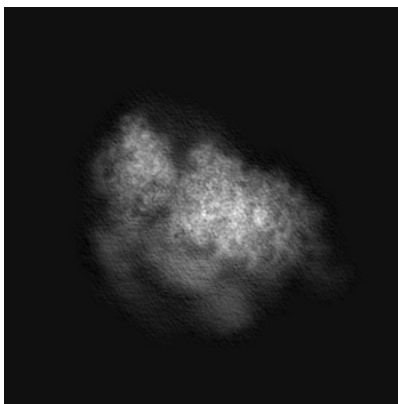
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

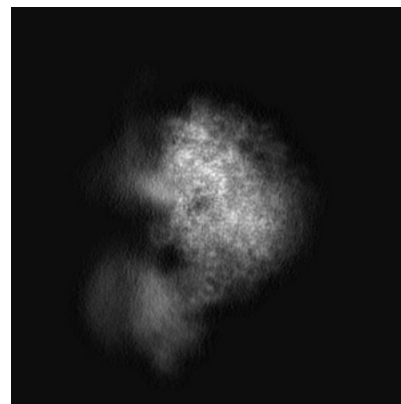
6.1.1 Primary map



X

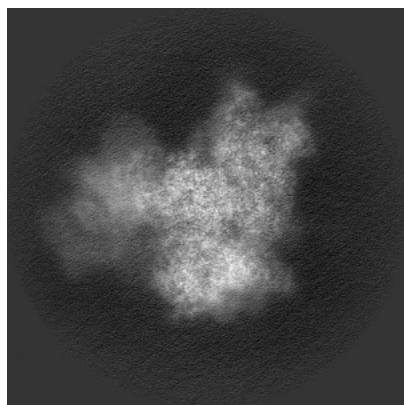


Y

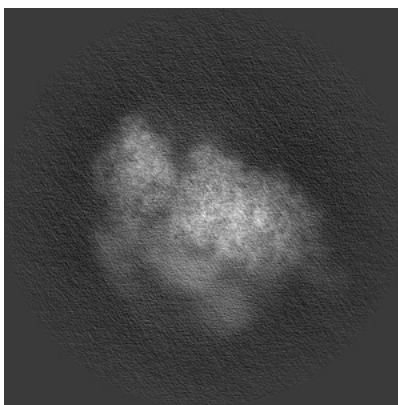


Z

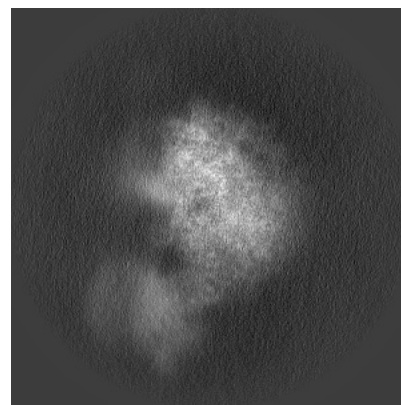
6.1.2 Raw map



X



Y

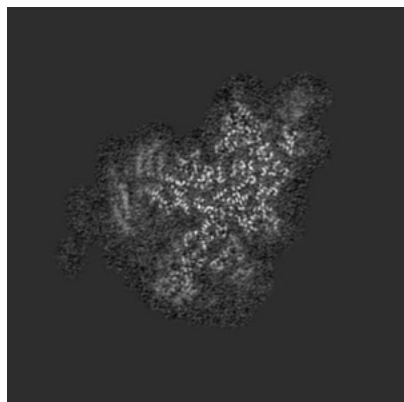


Z

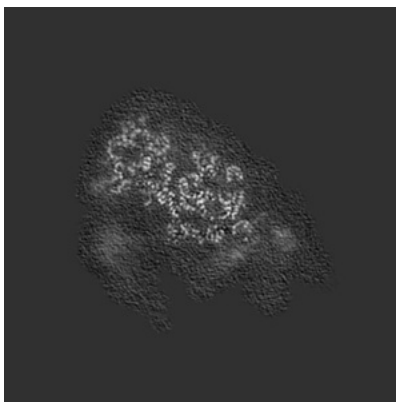
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

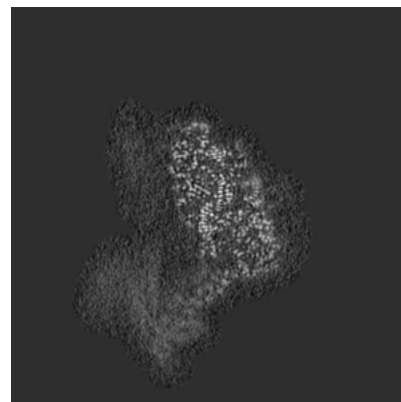
6.2.1 Primary map



X Index: 200

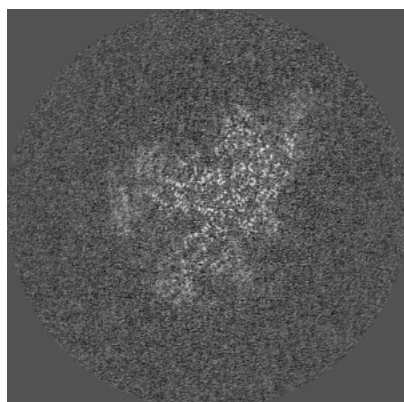


Y Index: 200

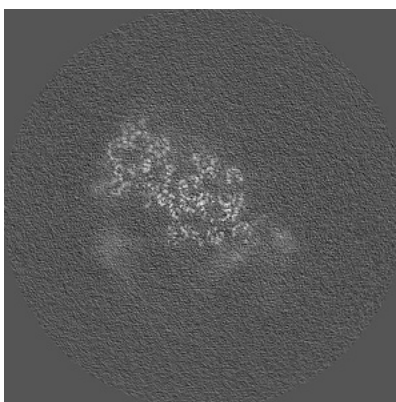


Z Index: 200

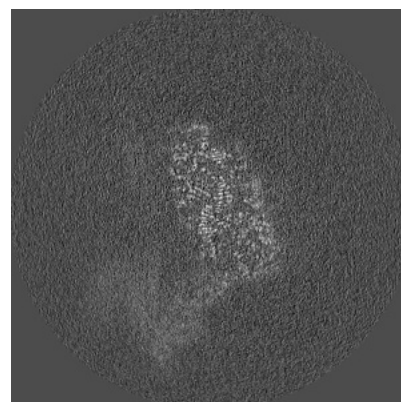
6.2.2 Raw map



X Index: 200



Y Index: 200

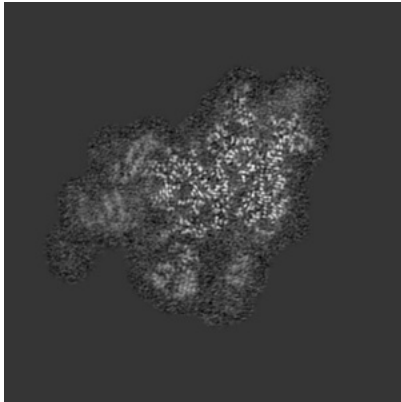


Z Index: 200

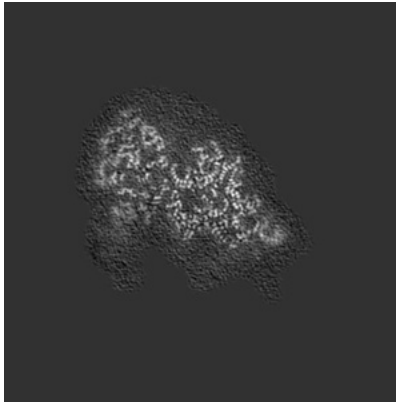
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

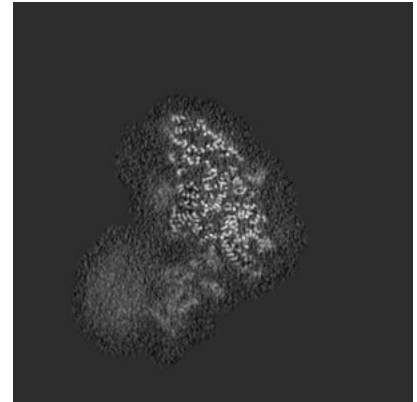
6.3.1 Primary map



X Index: 190

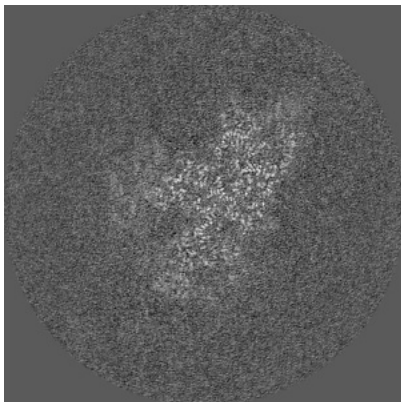


Y Index: 189

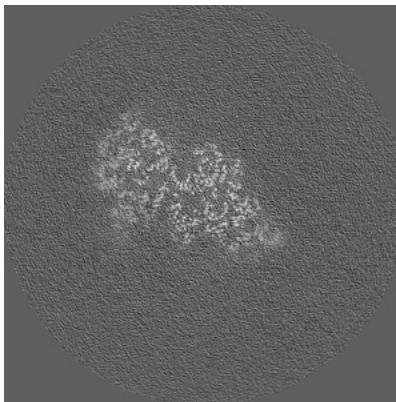


Z Index: 219

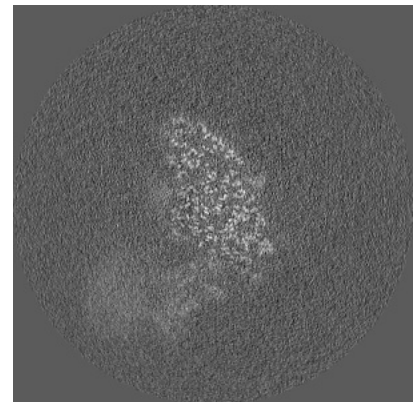
6.3.2 Raw map



X Index: 203



Y Index: 188

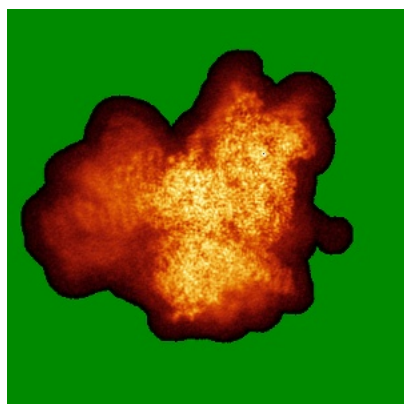


Z Index: 218

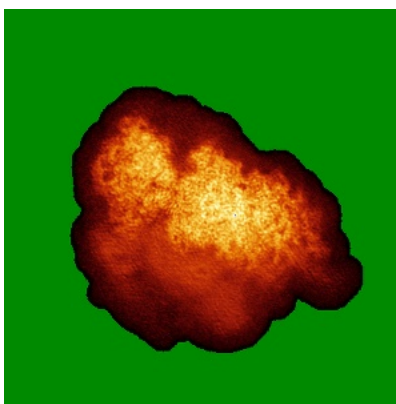
The images above show the largest variance slices of the map in three orthogonal directions.

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

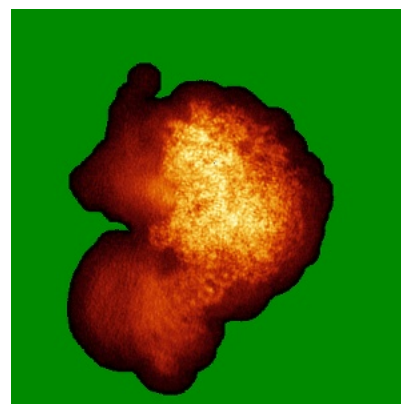
6.4.1 Primary map



X

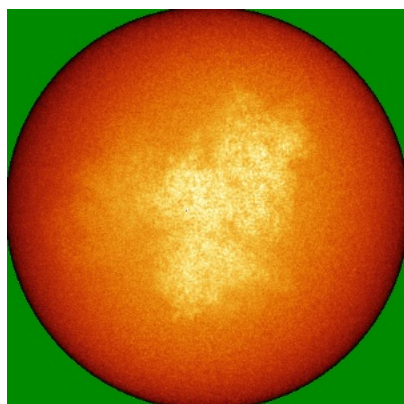


Y

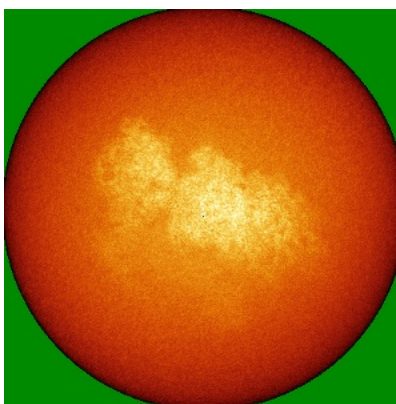


Z

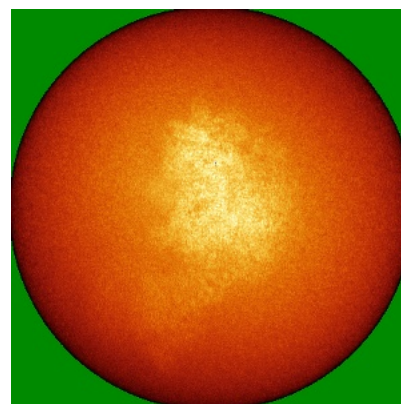
6.4.2 Raw map



X



Y

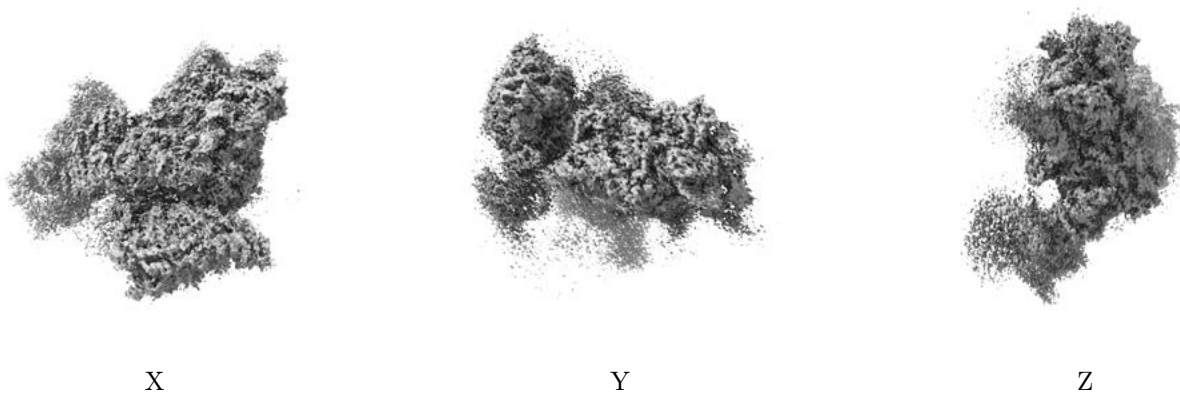


Z

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.

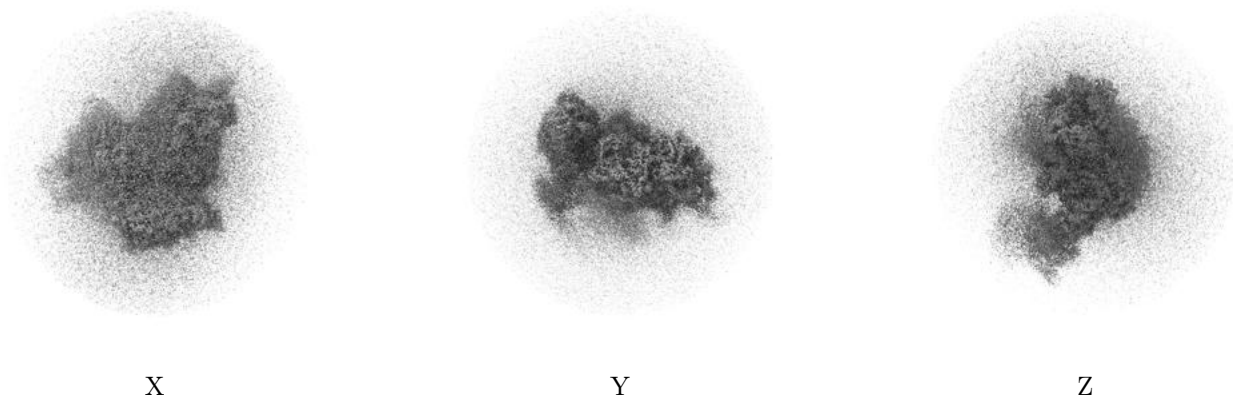
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.015. 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



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.

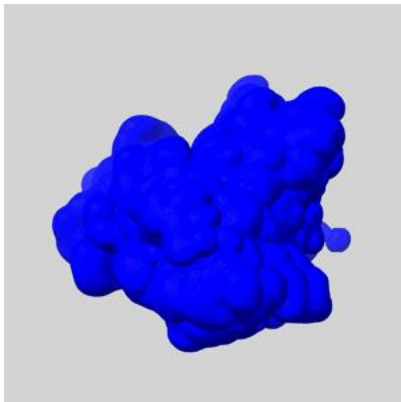
6.6 Mask visualisation [i](#)

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

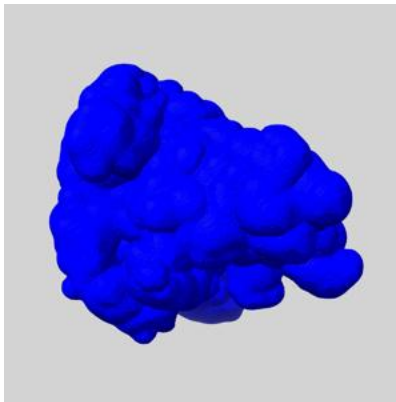
A mask typically either:

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

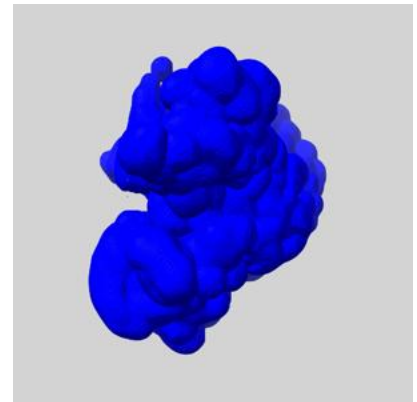
6.6.1 emd_44671_msk_1.map [i](#)



X



Y

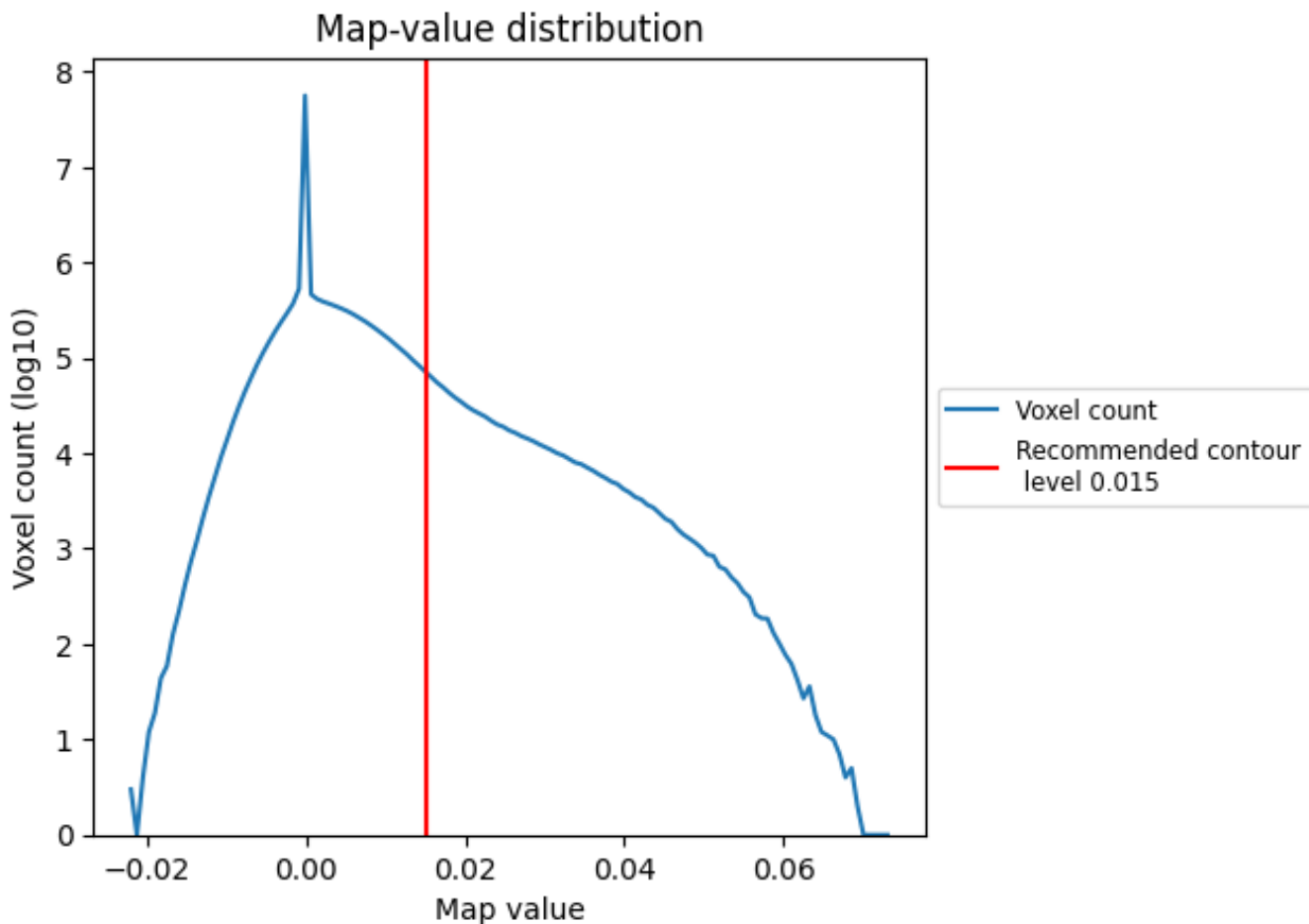


Z

7 Map analysis [i](#)

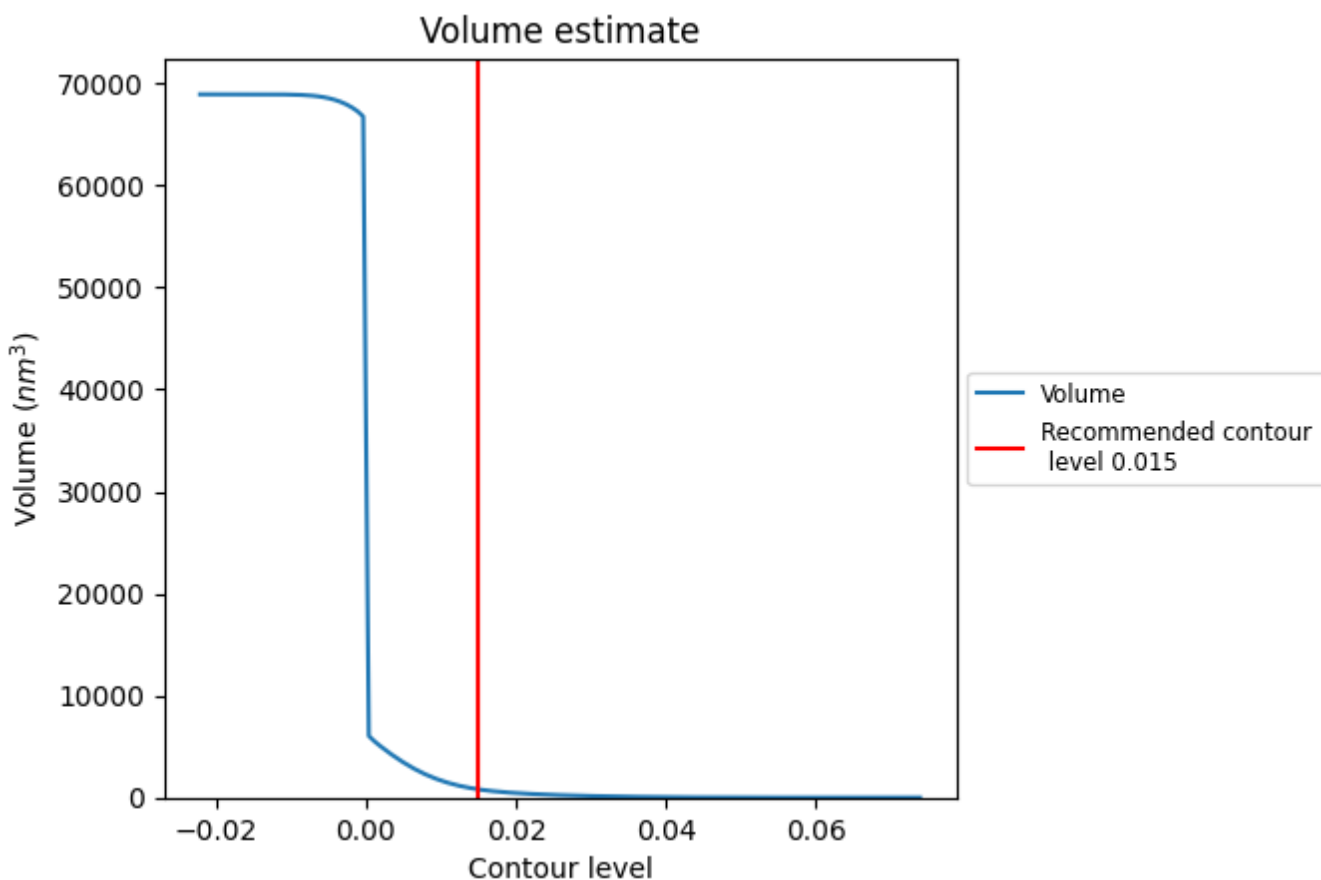
This section contains the results of statistical analysis of the map.

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.

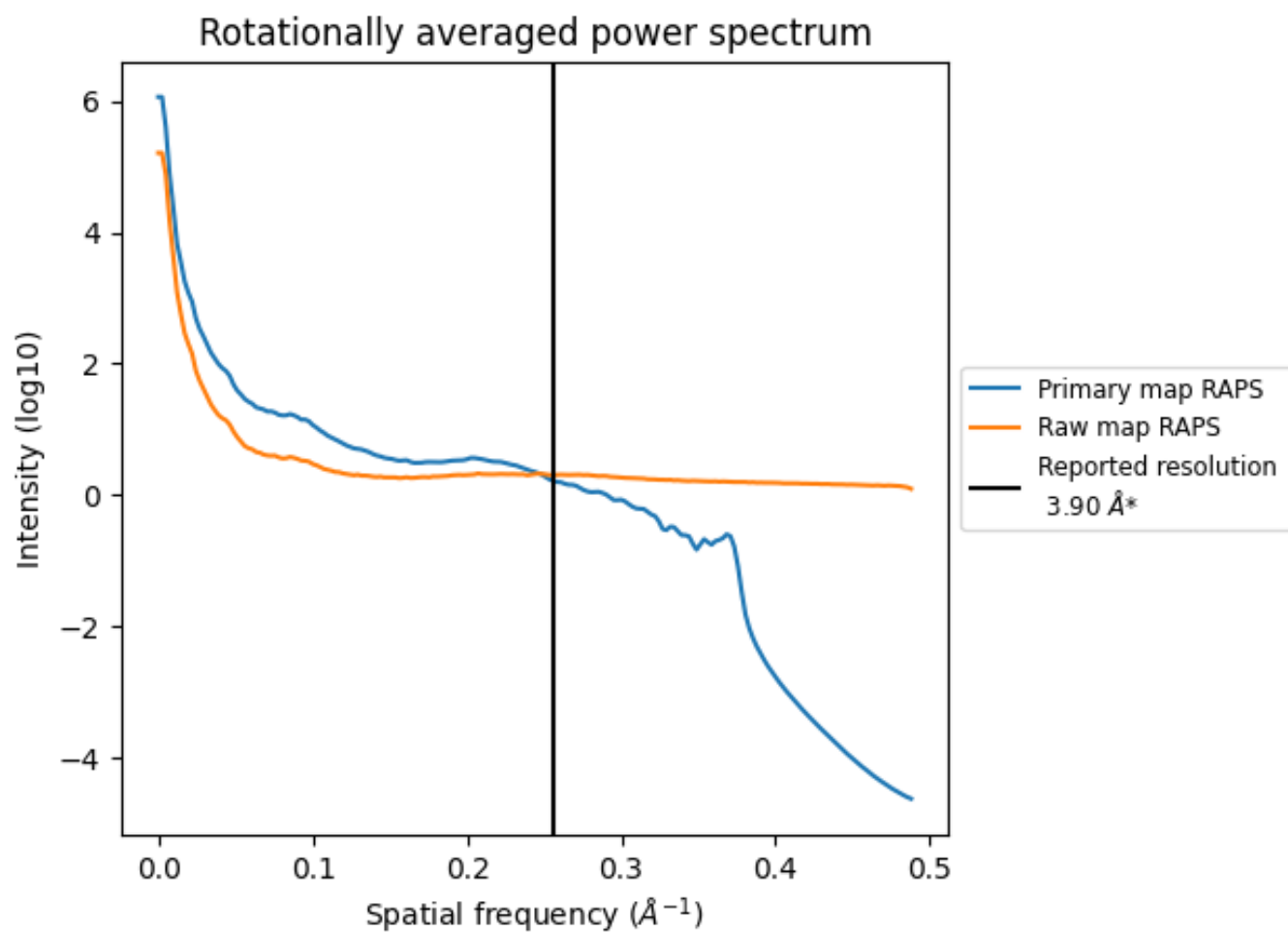
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 809 nm³; this corresponds to an approximate mass of 730 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

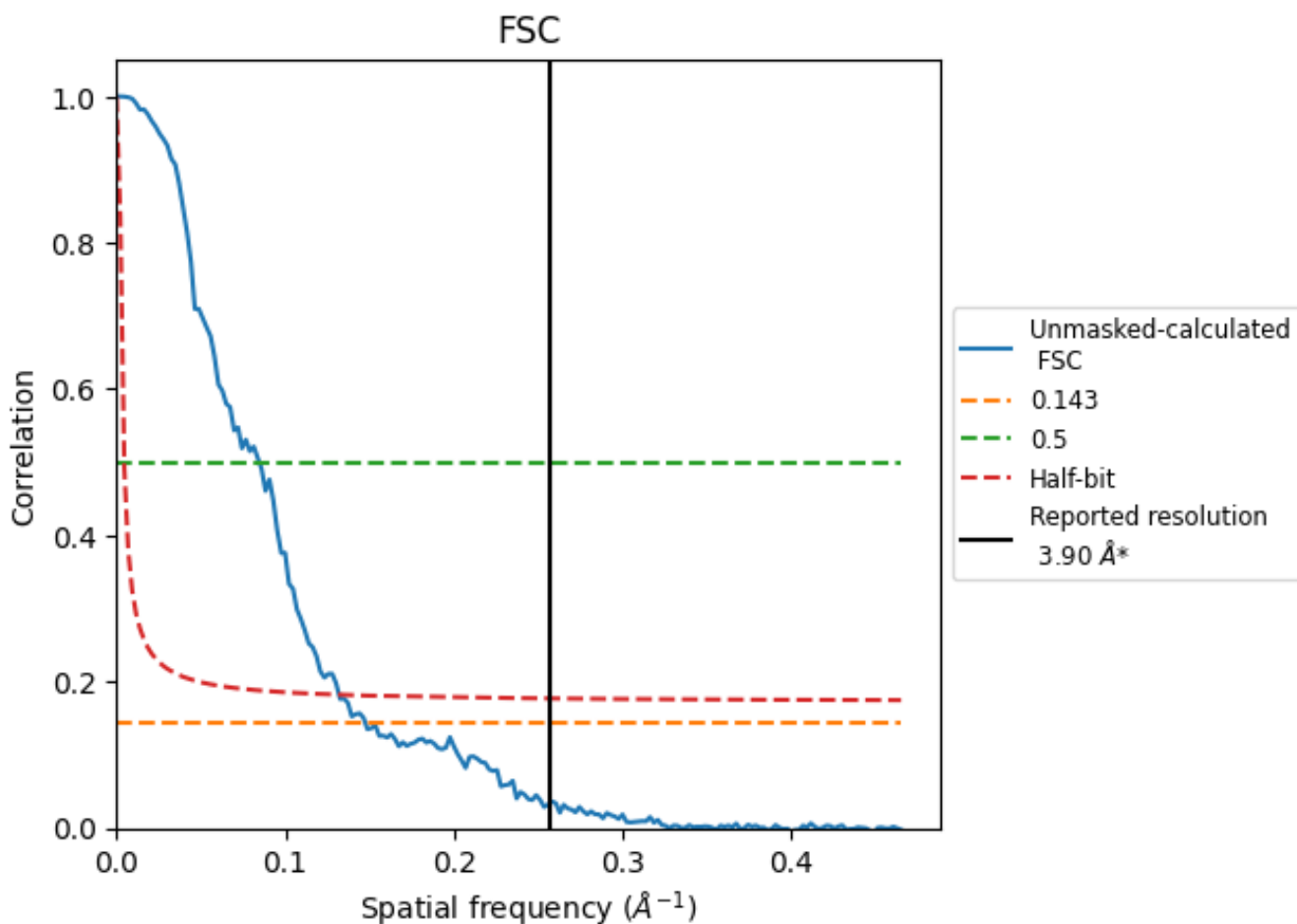


*Reported resolution corresponds to spatial frequency of 0.256 Å⁻¹

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 0.256 Å⁻¹

8.2 Resolution estimates [i](#)

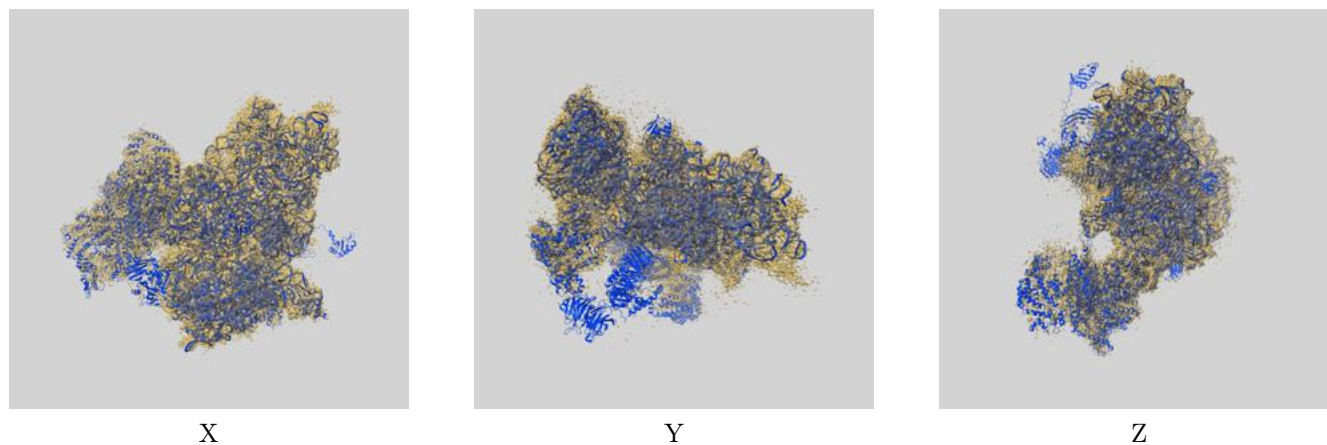
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.90	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.78	11.82	7.58

*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 6.78 differs from the reported value 3.9 by more than 10 %

9 Map-model fit [i](#)

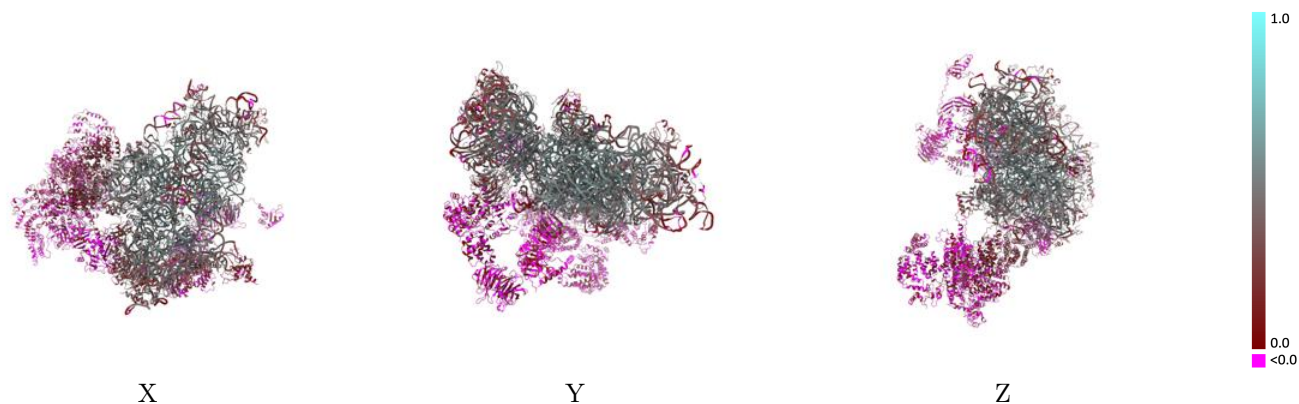
This section contains information regarding the fit between EMDB map EMD-44671 and PDB model 9BLN. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay [i](#)



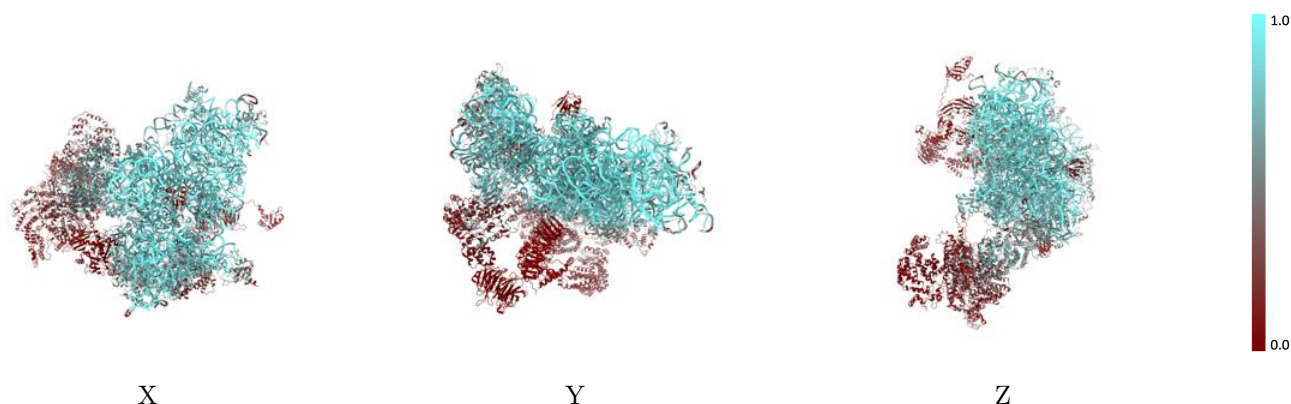
The images above show the 3D surface view of the map at the recommended contour level 0.015 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



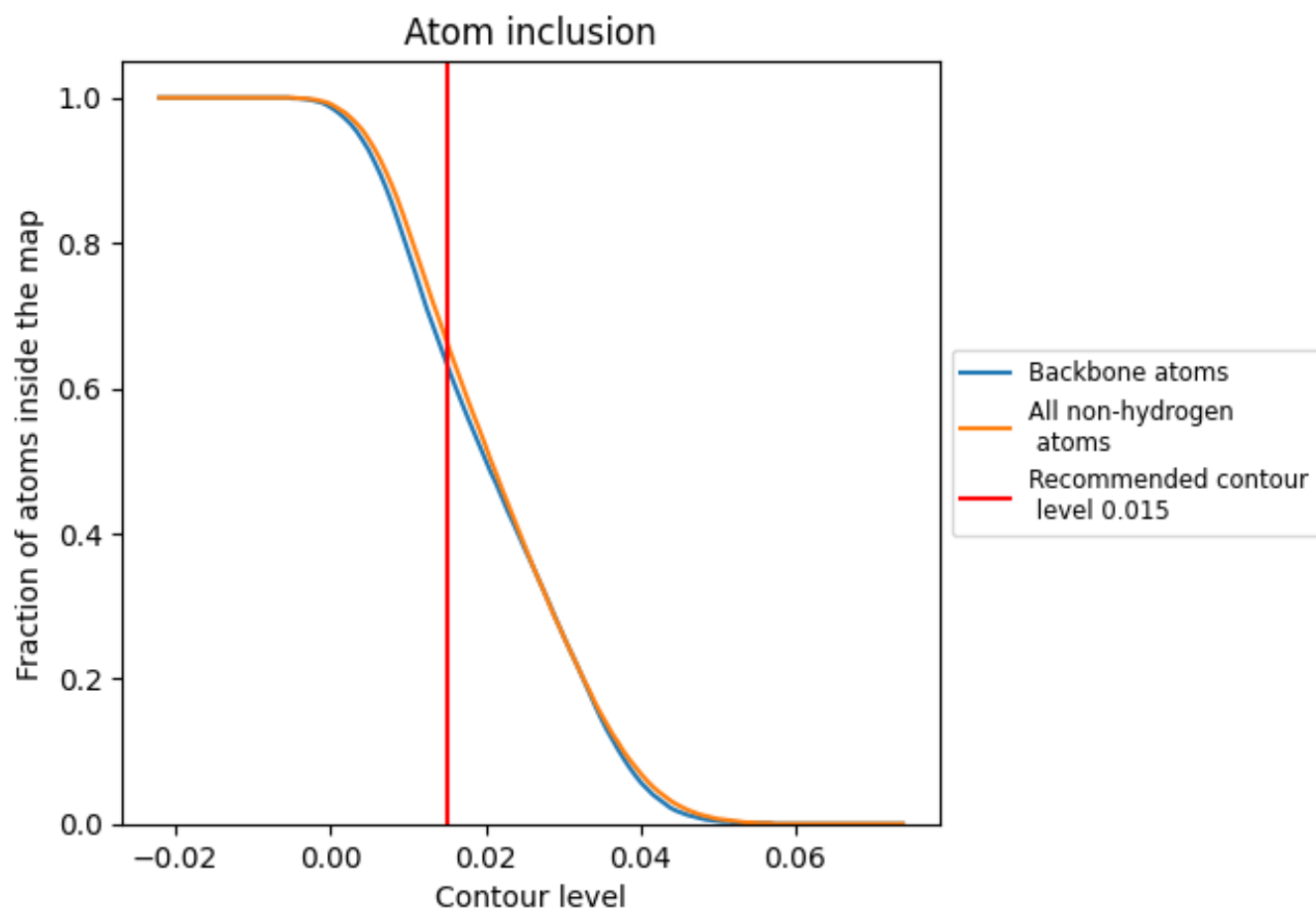
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.015).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 63% of all backbone atoms, 66% 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 (0.015) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6640	 0.3280
3	 0.0170	 0.0040
4	 0.1080	 0.0320
5	 0.0510	 0.0200
6	 0.0770	 0.0210
8	 0.1150	 0.0260
9	 0.7890	 0.4180
A	 0.9350	 0.4560
B	 0.8560	 0.4670
C	 0.8700	 0.4920
D	 0.8550	 0.4980
E	 0.8740	 0.4990
F	 0.7800	 0.4310
G	 0.6990	 0.3600
H	 0.7880	 0.4350
I	 0.8200	 0.4460
J	 0.8770	 0.5070
K	 0.8560	 0.4770
L	 0.8500	 0.4980
M	 0.7580	 0.4070
N	 0.8510	 0.4890
O	 0.7610	 0.4050
P	 0.7870	 0.4320
Q	 0.8620	 0.4760
R	 0.7950	 0.3880
S	 0.7460	 0.3510
T	 0.8400	 0.4630
U	 0.0170	 0.0290
V	 0.7400	 0.3540
W	 0.1070	 0.1470
X	 0.0020	 -0.0050
Y	 0.8060	 0.4210
Z	 0.7900	 0.4320
a	 0.7720	 0.3970
b	 0.6680	 0.3400



Continued on next page...

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Chain	Atom inclusion	Q-score
c	 0.6590	 0.2950
d	 0.7930	 0.3910
e	 0.5540	 0.2740
f	 0.6440	 0.3040
h	 0.7310	 0.3730
i	 0.8870	 0.4900
k	 0.5380	 0.2230
l	 0.1420	 0.0080
m	 0.4130	 0.1710
n	 0.6380	 0.3120
o	 0.7290	 0.2790
p	 0.3250	 0.1470
u	 0.3650	 0.1420
v	 0.1870	 0.0450
x	 0.0710	 0.0040
y	 0.4950	 0.1860