Full wwPDB EM Validation Report ⓘ

Nov 10, 2024 – 03:39 am GMT

PDB ID	:	7QYB
EMDB ID	:	EMD-14211
Title	:	Proteasome-ZFAND5 Complex Z-C state
Authors	:	Zhu, Y.; Lu, Y.
Deposited on	:	2022-01-27
Resolution	:	4.10 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:

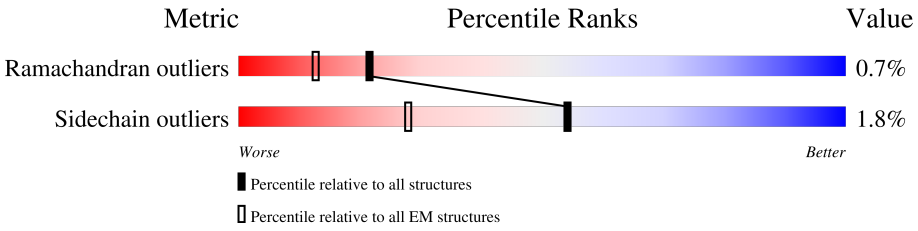
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.10 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	U	953	34% 89% · 8%
2	V	533	48% 89% · 10%
3	W	456	41% 97% ·
4	X	422	25% 88% · 10%
5	Y	389	14% 93% · ·
6	Z	324	23% 85% · · 12%
7	a	376	38% 97% · · ·
8	b	377	28% 50% 49%
9	c	309	20% 87% 6% 7%

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Mol	Chain	Length	Quality of chain
10	d	349	42% 72% 26%
11	e	70	19% 53% 43%
12	f	908	33% 92% 5%
13	A	433	13% 94% 5%
14	B	440	12% 90% 7%
15	C	398	8% 95%
16	D	418	9% 88% 9%
17	E	403	43% 90% 6%
18	F	439	19% 85% 10%
19	G	245	96%
19	g	245	98%
20	H	233	96%
20	h	233	99%
21	I	260	6% 92% 5%
21	i	260	10% 96%
22	J	247	96%
22	j	247	15% 96%
23	K	240	92% 5%
23	k	240	8% 95% 5%
24	L	268	89% 11%
24	l	268	89% 11%
25	M	254	93% 6%
25	m	254	93% 6%
26	N	238	80% 20%
26	n	238	80% 20%

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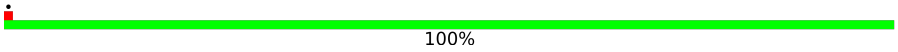
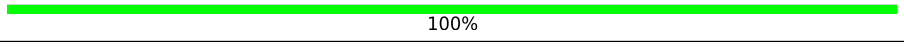
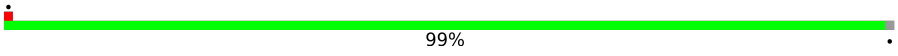
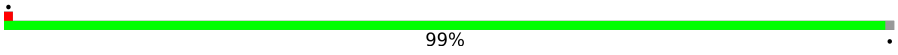
Mol	Chain	Length	Quality of chain
27	O	276	
27	o	276	
28	P	204	
28	p	204	
29	Q	201	
29	q	201	
30	R	262	
30	r	262	
31	S	240	
31	s	240	
32	T	263	
32	t	263	

2 Entry composition

There are 36 unique types of molecules in this entry. The entry contains 105037 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 26S proteasome non-ATPase regulatory subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	U	872	6828	4328	1157	1298	45	0	0

- Molecule 2 is a protein called 26S proteasome non-ATPase regulatory subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	V	480	3852	2444	684	710	14	0	0

- Molecule 3 is a protein called 26S proteasome non-ATPase regulatory subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	W	456	3703	2339	635	704	25	0	0

- Molecule 4 is a protein called 26S proteasome non-ATPase regulatory subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	X	380	3009	1918	509	570	12	0	0

- Molecule 5 is a protein called 26S proteasome non-ATPase regulatory subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	Y	378	3115	1987	533	578	17	0	0

- Molecule 6 is a protein called 26S proteasome non-ATPase regulatory subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	Z	286	2276	1454	390	427	5	0	0

- Molecule 7 is a protein called 26S proteasome non-ATPase regulatory subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	a	373	Total	C	N	O	S	0	0
			2995	1911	510	559	15		

- Molecule 8 is a protein called 26S proteasome non-ATPase regulatory subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	b	191	Total	C	N	O	S	0	0
			1458	910	261	279	8		

- Molecule 9 is a protein called 26S proteasome non-ATPase regulatory subunit 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	c	287	Total	C	N	O	S	0	0
			2260	1430	389	422	19		

- Molecule 10 is a protein called 26S proteasome non-ATPase regulatory subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	d	257	Total	C	N	O	S	0	0
			2116	1371	346	390	9		

- Molecule 11 is a protein called 26S proteasome complex subunit SEM1.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	e	40	Total	C	N	O	S	0	0
			334	200	55	77	2		

- Molecule 12 is a protein called 26S proteasome non-ATPase regulatory subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	f	889	Total	C	N	O	S	0	0
			6866	4315	1174	1331	46		

- Molecule 13 is a protein called 26S protease regulatory subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	A	413	Total	C	N	O	S	0	0
			3229	2034	566	611	18		

- Molecule 14 is a protein called 26S protease regulatory subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	B	411	Total	C	N	O	S	0	0
			3207	2022	548	622	15		

- Molecule 15 is a protein called Isoform 2 of 26S proteasome regulatory subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	C	396	Total	C	N	O	S	0	0
			3105	1954	558	576	17		

- Molecule 16 is a protein called 26S protease regulatory subunit 6B.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	D	380	Total	C	N	O	S	0	0
			3040	1923	524	580	13		

- Molecule 17 is a protein called 26S proteasome regulatory subunit 10B.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	E	389	Total	C	N	O	S	0	0
			3097	1947	552	581	17		

- Molecule 18 is a protein called 26S protease regulatory subunit 6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	F	395	Total	C	N	O	S	0	0
			3098	1951	533	596	18		

- Molecule 19 is a protein called Proteasome subunit alpha type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	G	239	Total	C	N	O	S	0	0
			1820	1157	304	346	13		
19	g	240	Total	C	N	O	S	0	0
			1826	1160	305	348	13		

- Molecule 20 is a protein called Proteasome subunit alpha type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	H	230	Total	C	N	O	S	0	0
			1692	1073	285	329	5		
20	h	232	Total	C	N	O	S	0	0
			1708	1081	289	333	5		

- Molecule 21 is a protein called Proteasome subunit alpha type-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	I	248	Total	C	N	O	S	0	0
			1895	1195	324	368	8		
21	i	250	Total	C	N	O	S	0	0
			1912	1204	329	371	8		

- Molecule 22 is a protein called Proteasome subunit alpha type-7.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	J	239	Total	C	N	O	S	0	0
			1704	1056	308	335	5		
22	j	239	Total	C	N	O	S	0	0
			1704	1056	308	335	5		

- Molecule 23 is a protein called Proteasome subunit alpha type-5.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	K	228	Total	C	N	O	S	0	0
			1729	1086	284	349	10		
23	k	228	Total	C	N	O	S	0	0
			1722	1080	284	348	10		

- Molecule 24 is a protein called Isoform Long of Proteasome subunit alpha type-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	L	238	Total	C	N	O	S	0	0
			1850	1159	334	346	11		
24	l	238	Total	C	N	O	S	0	0
			1850	1159	334	346	11		

- Molecule 25 is a protein called Proteasome subunit alpha type-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	M	240	Total	C	N	O	S	0	0
			1856	1178	314	353	11		
25	m	240	Total	C	N	O	S	0	0
			1856	1178	314	353	11		

- Molecule 26 is a protein called Proteasome subunit beta type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	N	191	Total	C	N	O	S	0	0
			1430	893	245	280	12		
26	n	191	Total	C	N	O	S	0	0
			1430	893	245	280	12		

- Molecule 27 is a protein called Proteasome subunit beta type-7.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	O	220	Total	C	N	O	S	0	0
			1643	1033	280	318	12		
27	o	220	Total	C	N	O	S	0	0
			1643	1033	280	318	12		

- Molecule 28 is a protein called Proteasome subunit beta type-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	P	204	Total	C	N	O	S	0	0
			1585	1010	262	294	19		
28	p	204	Total	C	N	O	S	0	0
			1585	1010	262	294	19		

- Molecule 29 is a protein called Proteasome subunit beta type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Q	199	Total	C	N	O	S	0	0
			1570	1006	265	290	9		
29	q	199	Total	C	N	O	S	0	0
			1570	1006	265	290	9		

- Molecule 30 is a protein called Proteasome subunit beta type-5.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	R	201	Total	C	N	O	S	0	0
			1548	974	273	292	9		
30	r	201	Total	C	N	O	S	0	0
			1548	974	273	292	9		

- Molecule 31 is a protein called Proteasome subunit beta type-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	S	213	Total	C	N	O	S	0	0
			1641	1036	282	313	10		

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Mol	Chain	Residues	Atoms					AltConf	Trace
31	s	213	Total	C	N	O	S	0	0
			1641	1036	282	313	10		

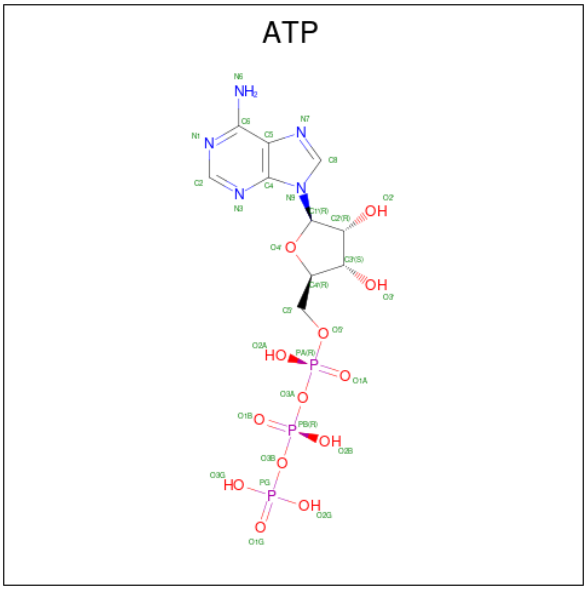
- Molecule 32 is a protein called Proteasome subunit beta type-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	T	215	Total	C	N	O	S	0	0
			1667	1052	285	318	12		
32	t	215	Total	C	N	O	S	0	0
			1667	1052	285	318	12		

- Molecule 33 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
33	c	1	Total	Zn	0
			1	1	

- Molecule 34 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
34	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
34	B	1	Total	C	N	O	P	0
			31	10	5	13	3	

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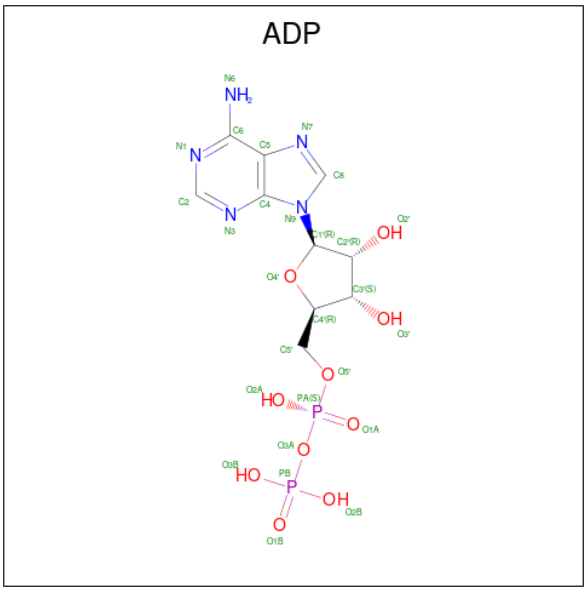
Mol	Chain	Residues	Atoms					AltConf
34	C	1	Total	C	N	O	P	0
			31	10	5	13	3	
34	F	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 35 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
35	A	1	Total	Mg	0
			1	1	
35	B	1	Total	Mg	0
			1	1	
35	C	1	Total	Mg	0
			1	1	
35	D	1	Total	Mg	0
			1	1	
35	F	1	Total	Mg	0
			1	1	

- Molecule 36 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



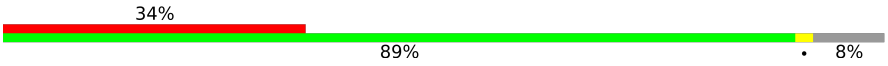
Mol	Chain	Residues	Atoms					AltConf
36	D	1	Total	C	N	O	P	0
			27	10	5	10	2	

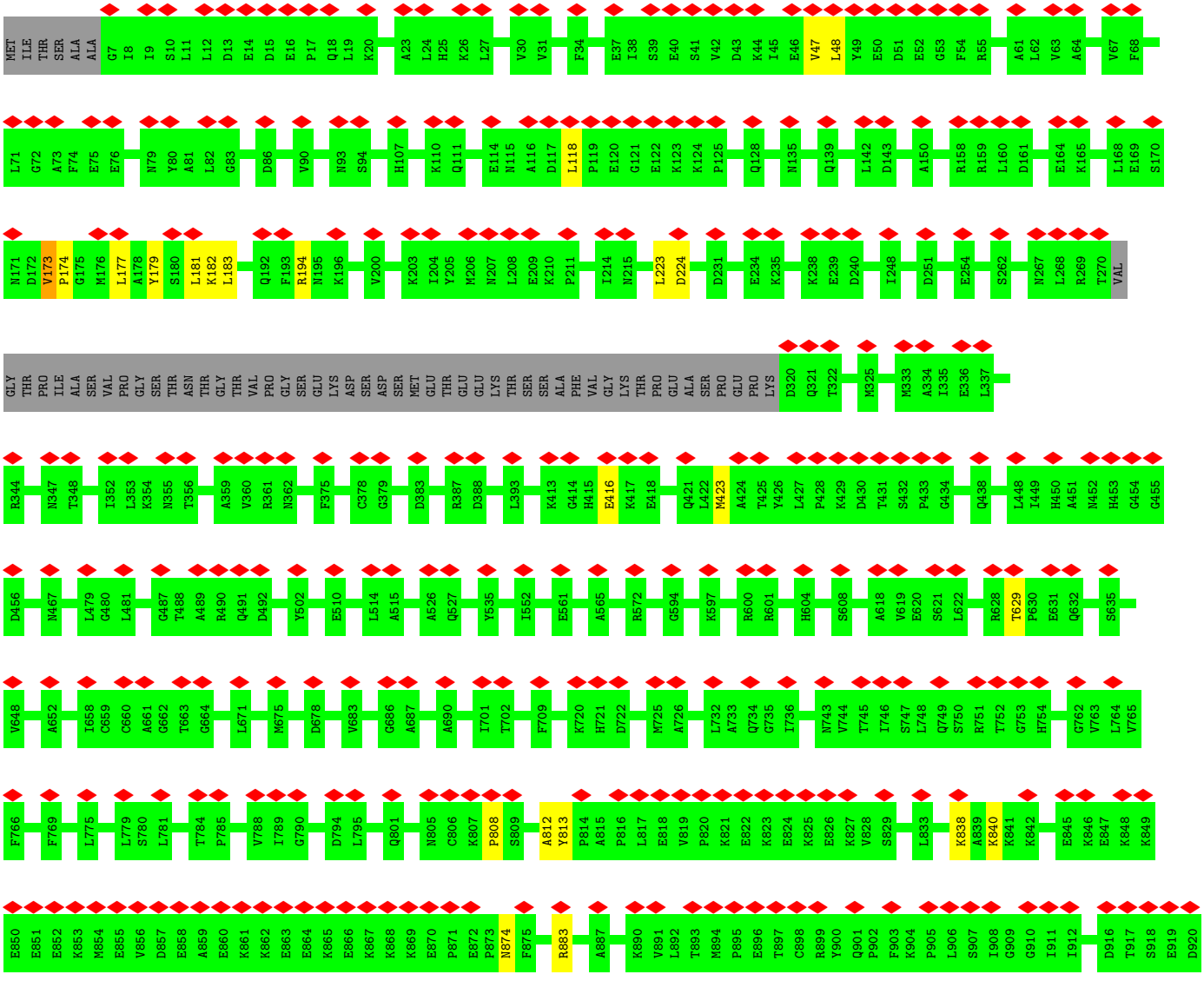
3 Residue-property plots (i)

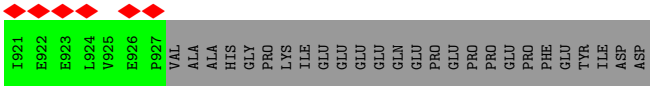
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 26S proteasome non-ATPase regulatory subunit 1

Chain U:

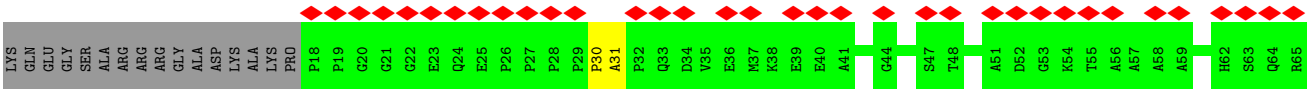


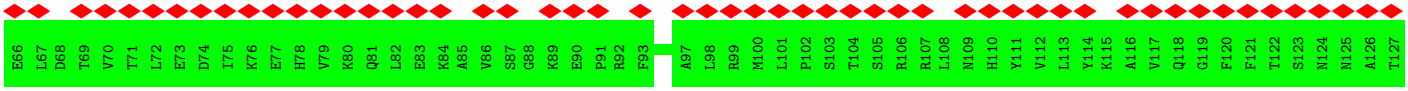


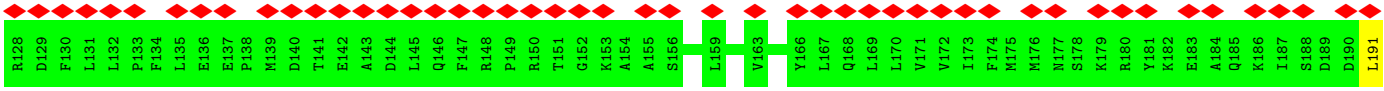


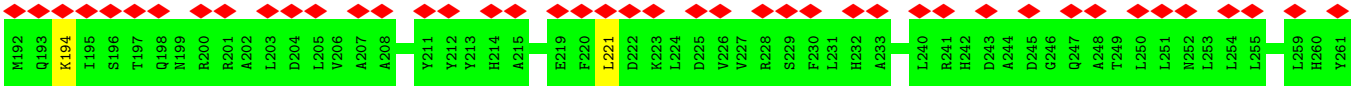
• Molecule 2: 26S proteasome non-ATPase regulatory subunit 3

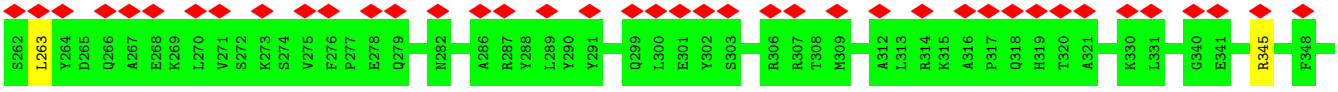
Chain V:

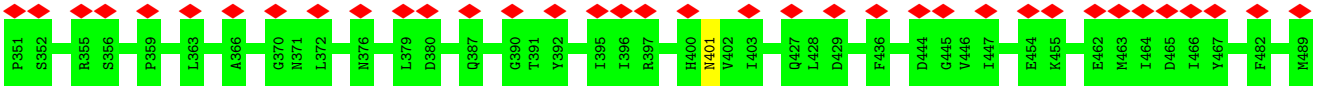


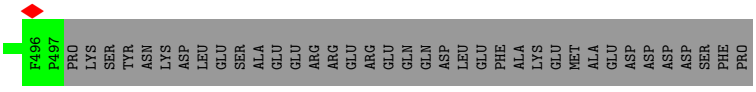






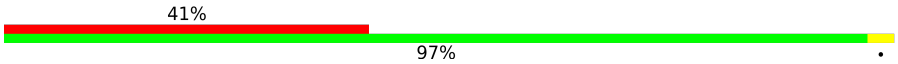


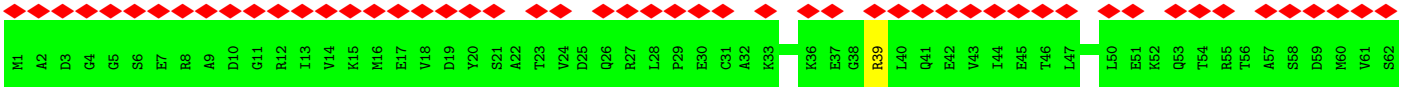


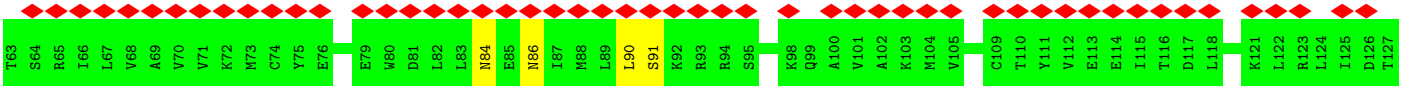


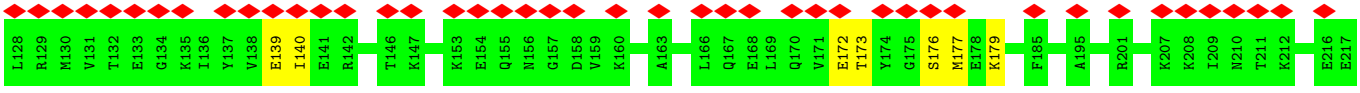
• Molecule 3: 26S proteasome non-ATPase regulatory subunit 12

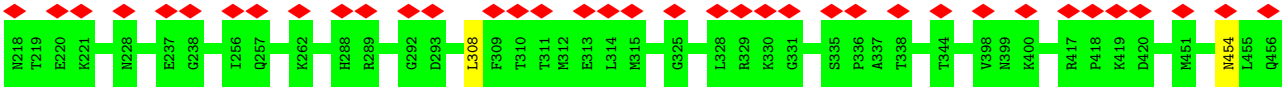
Chain W:





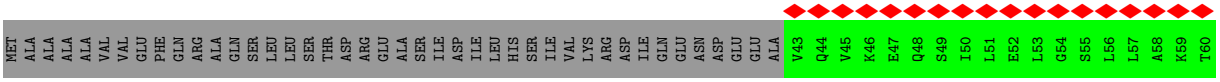


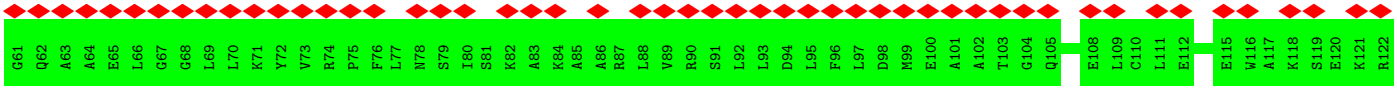


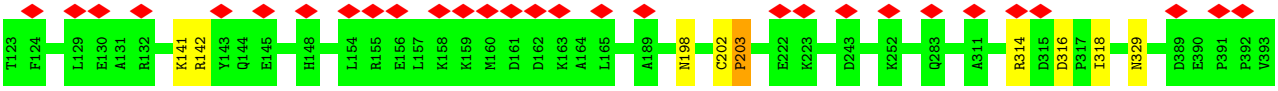


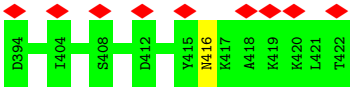
• Molecule 4: 26S proteasome non-ATPase regulatory subunit 11

Chain X:



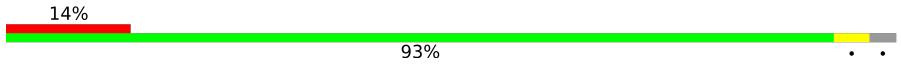


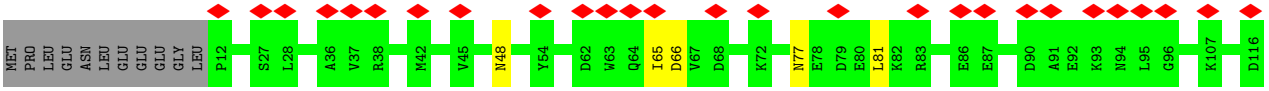


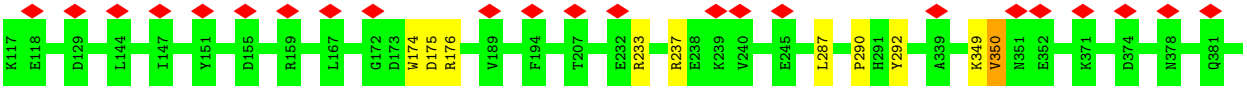


• Molecule 5: 26S proteasome non-ATPase regulatory subunit 6

Chain Y:

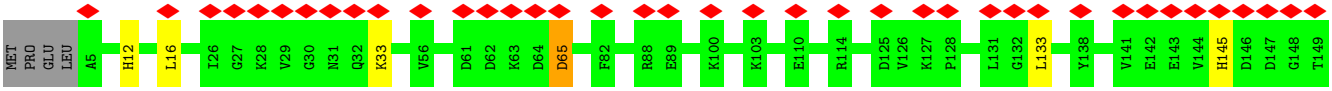


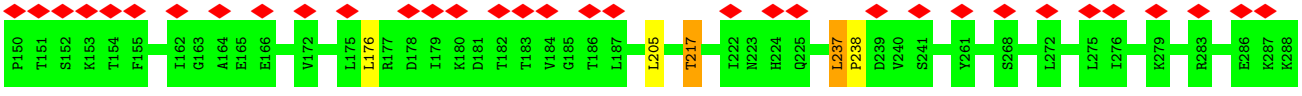


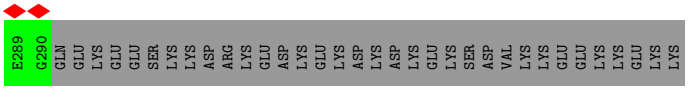


• Molecule 6: 26S proteasome non-ATPase regulatory subunit 7

Chain Z:

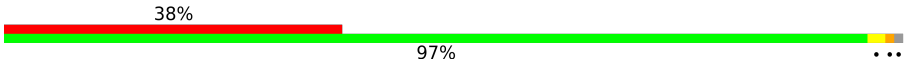


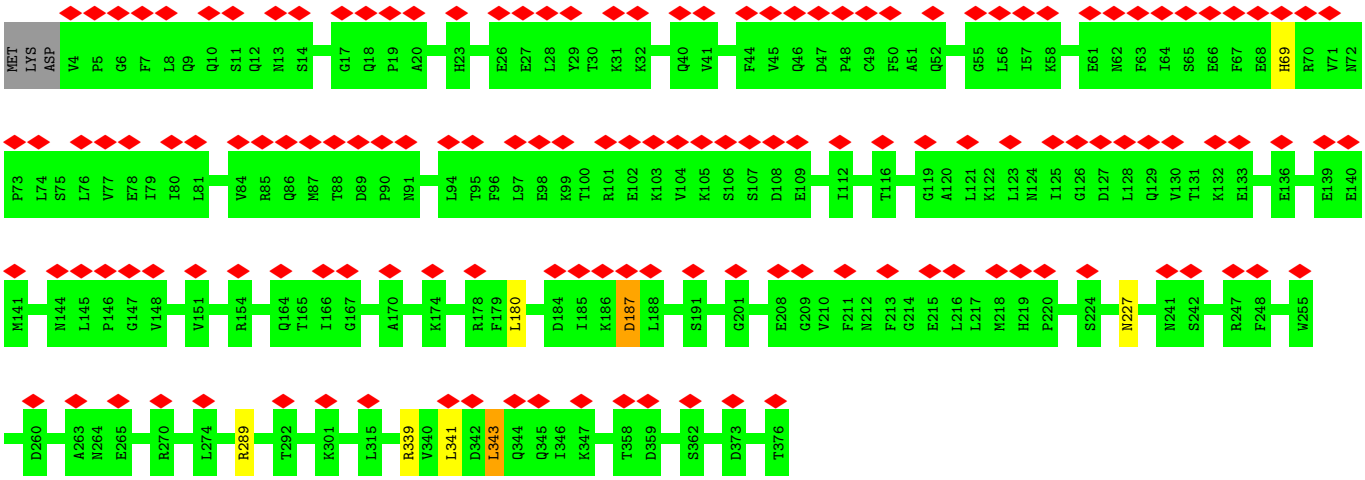




• Molecule 7: 26S proteasome non-ATPase regulatory subunit 13

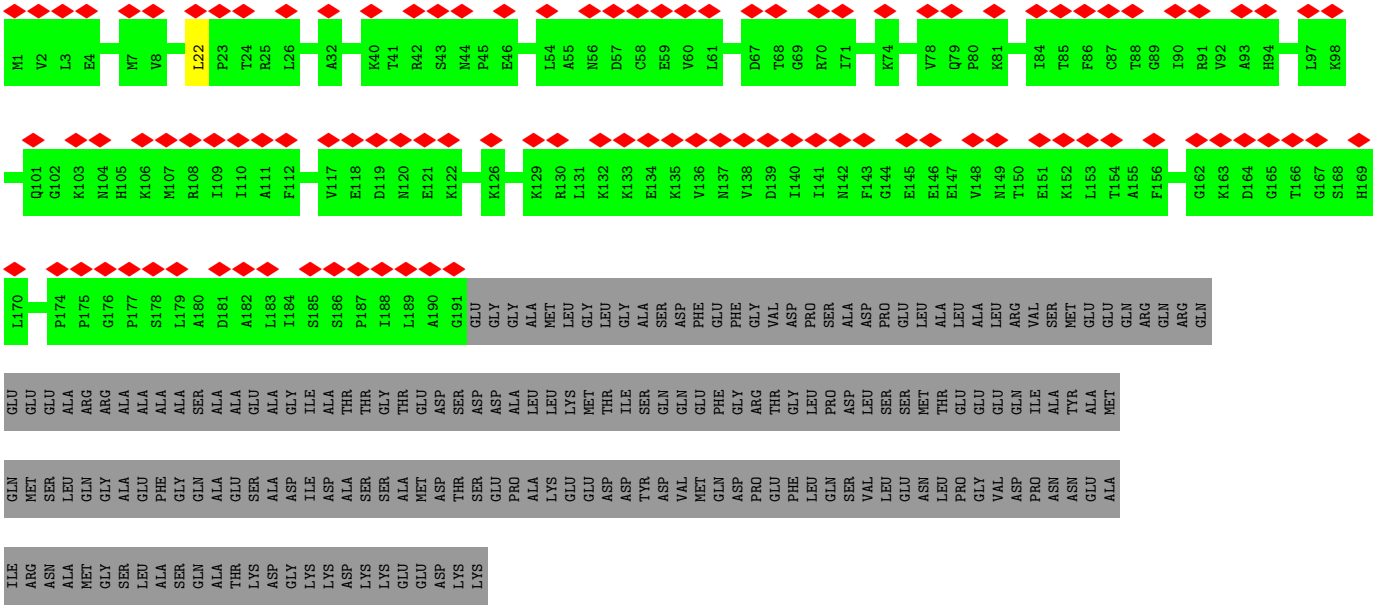
Chain a:





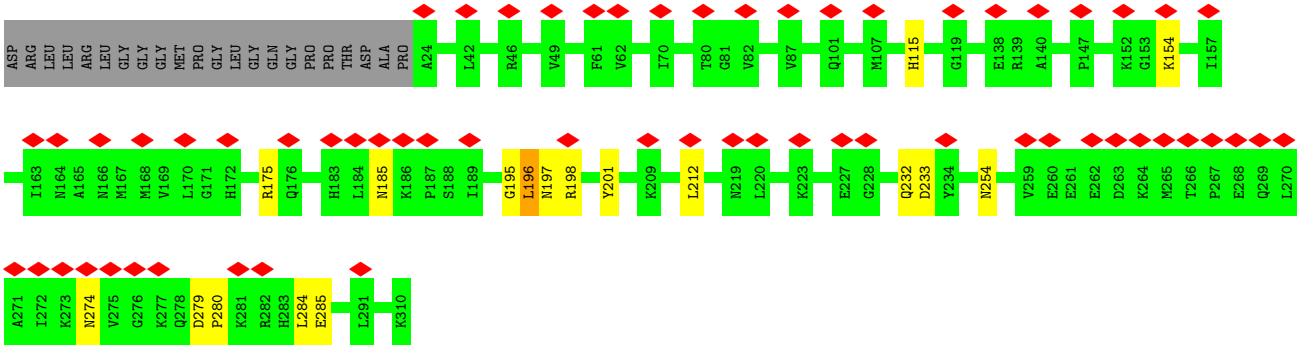
• Molecule 8: 26S proteasome non-ATPase regulatory subunit 4

Chain b:



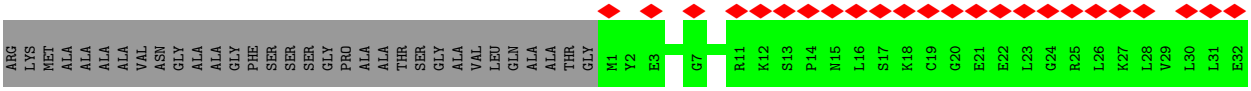
• Molecule 9: 26S proteasome non-ATPase regulatory subunit 14

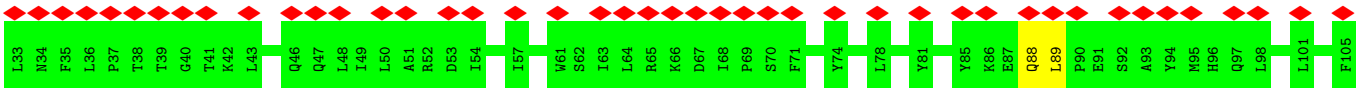
Chain c:

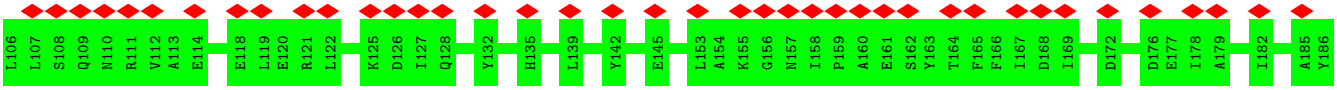


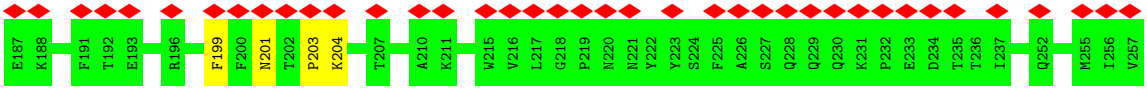
• Molecule 10: 26S proteasome non-ATPase regulatory subunit 8

Chain d:



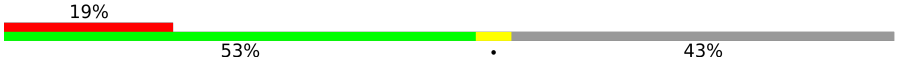


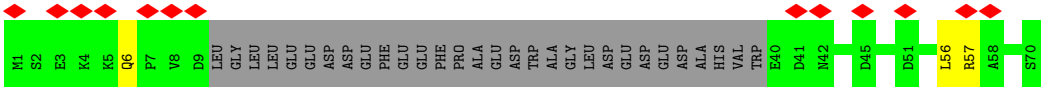




• Molecule 11: 26S proteasome complex subunit SEM1

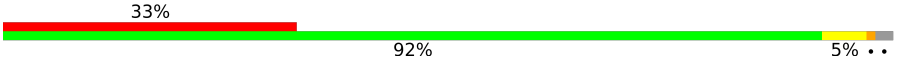
Chain e:

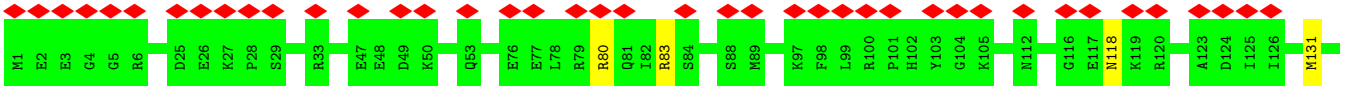


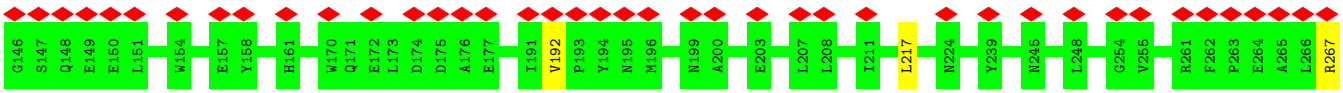


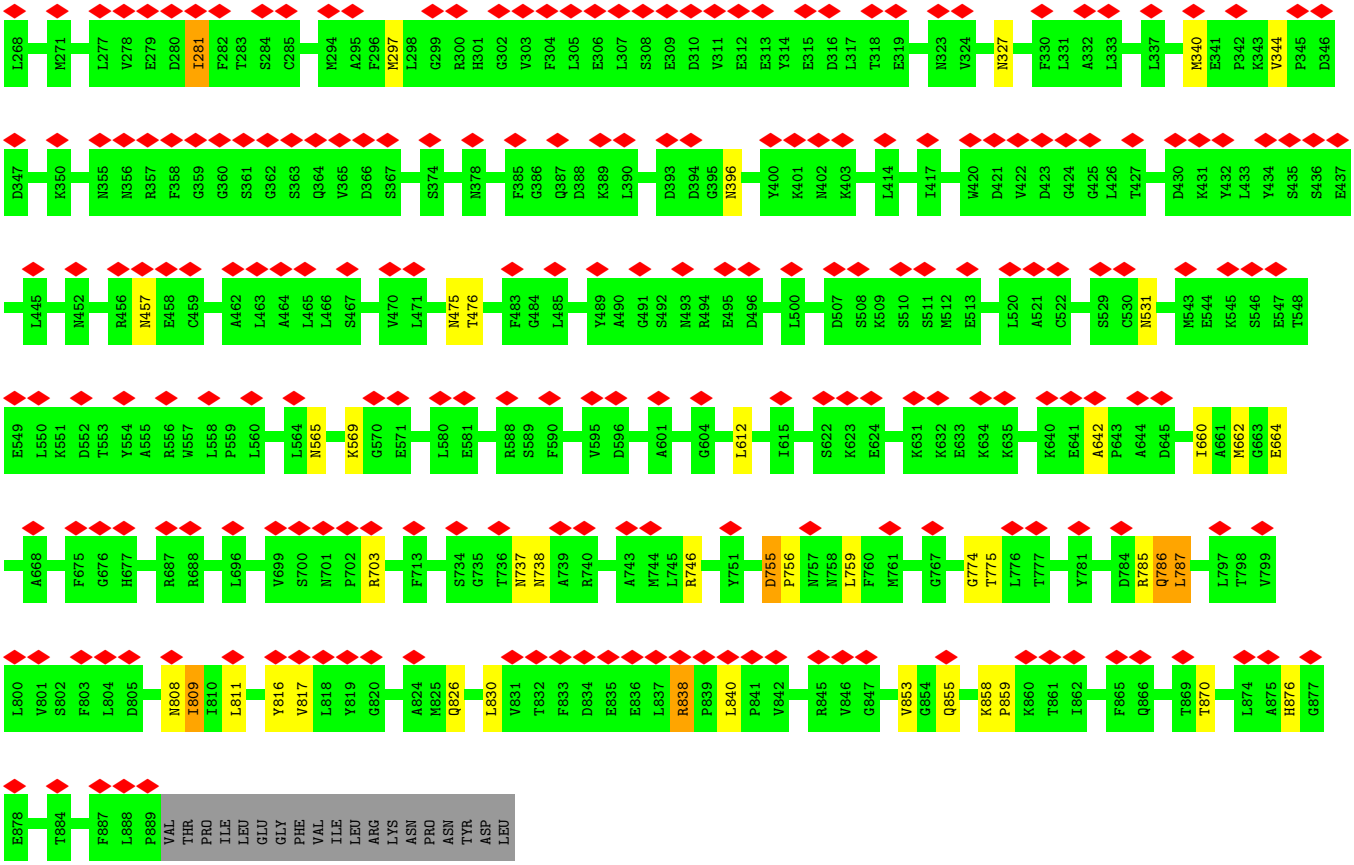
• Molecule 12: 26S proteasome non-ATPase regulatory subunit 2

Chain f:

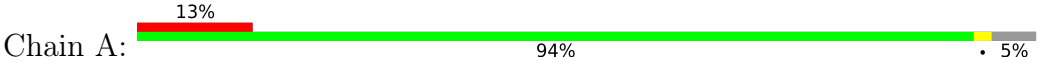


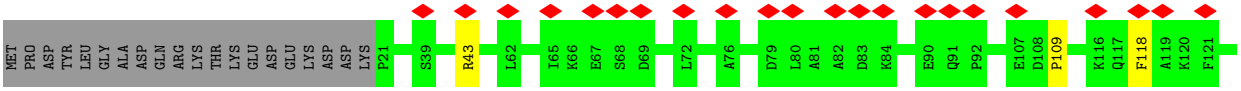




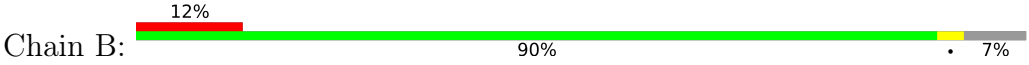


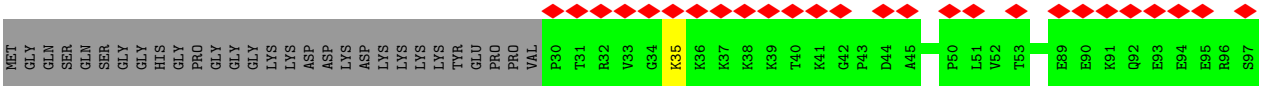
• Molecule 13: 26S protease regulatory subunit 7

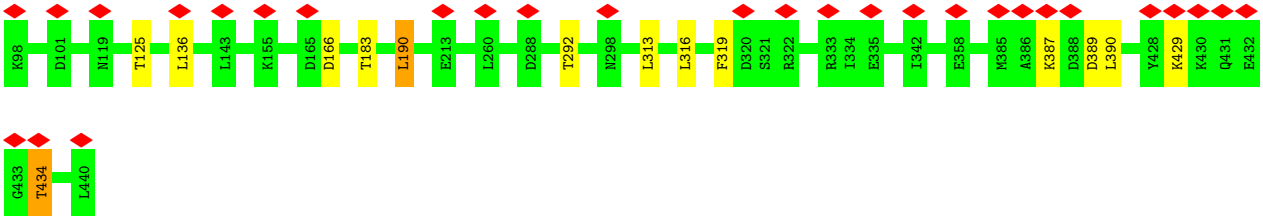




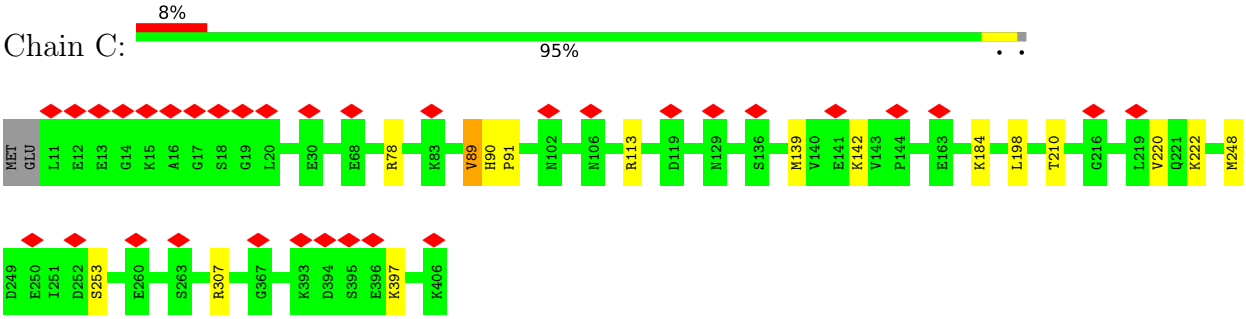
• Molecule 14: 26S protease regulatory subunit 4



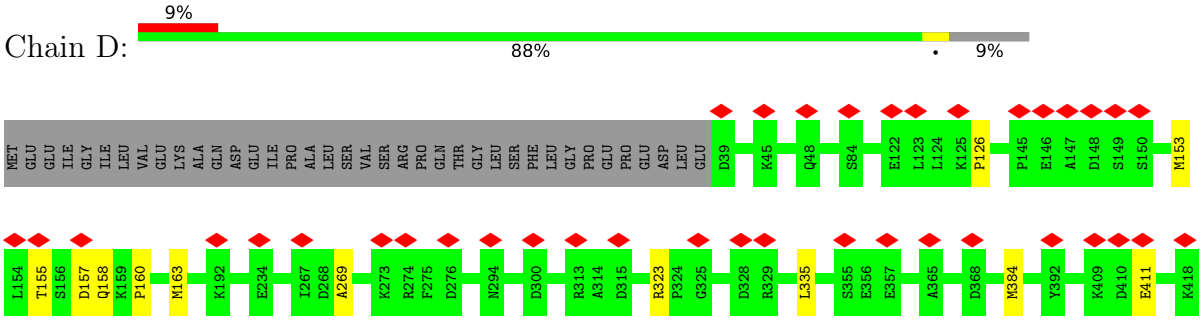




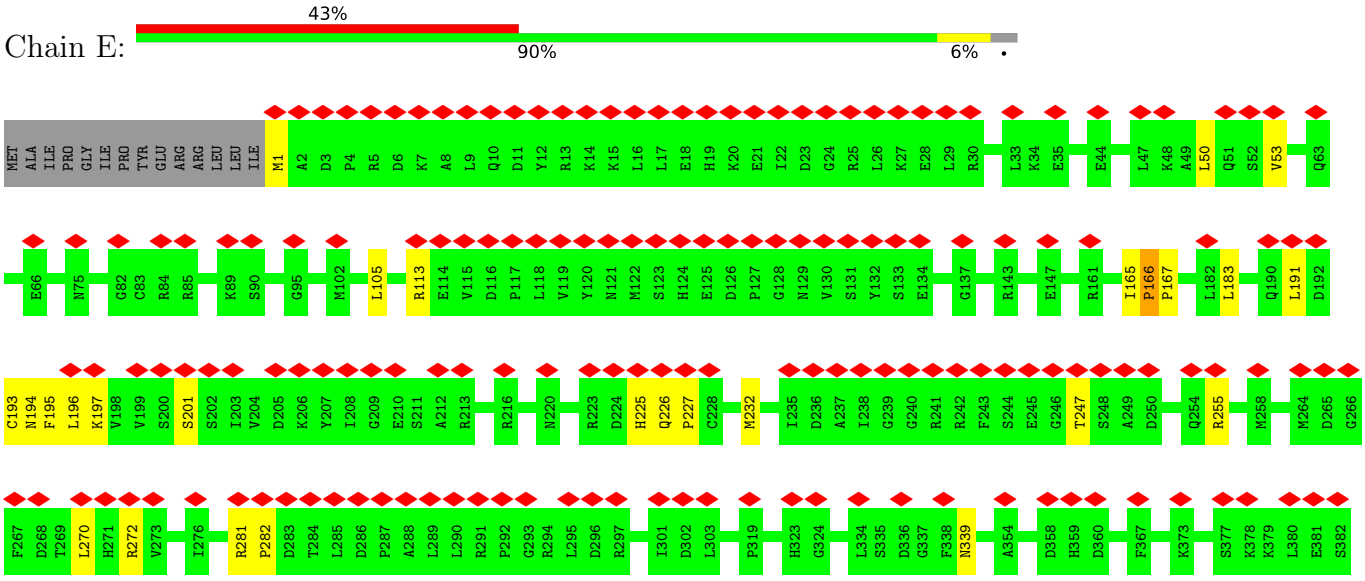
• Molecule 15: Isoform 2 of 26S proteasome regulatory subunit 8

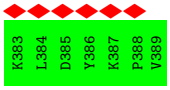


• Molecule 16: 26S protease regulatory subunit 6B



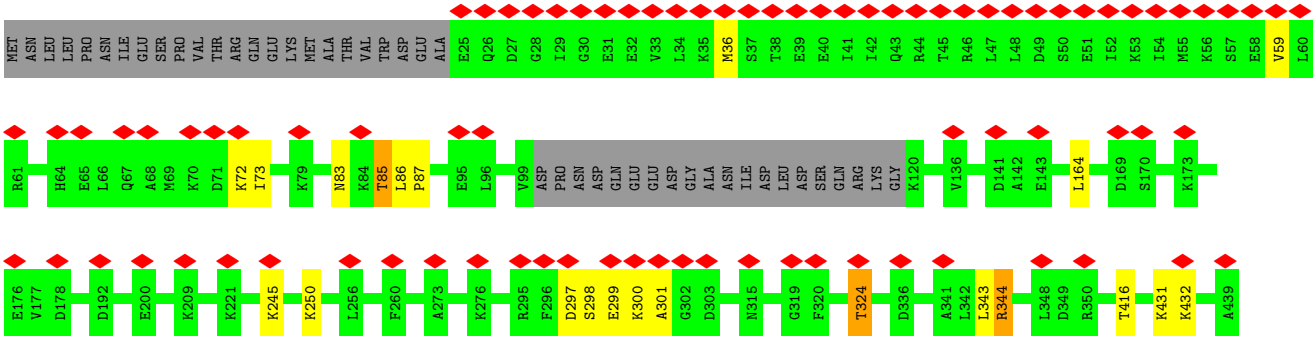
• Molecule 17: 26S proteasome regulatory subunit 10B





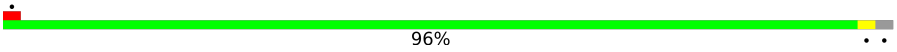
• Molecule 18: 26S protease regulatory subunit 6A

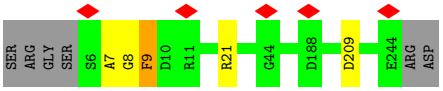
Chain F:



• Molecule 19: Proteasome subunit alpha type-6

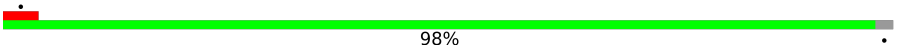
Chain G:

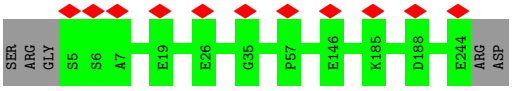




• Molecule 19: Proteasome subunit alpha type-6

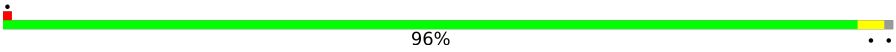
Chain g:

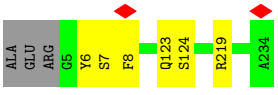




• Molecule 20: Proteasome subunit alpha type-2

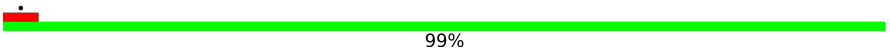
Chain H:





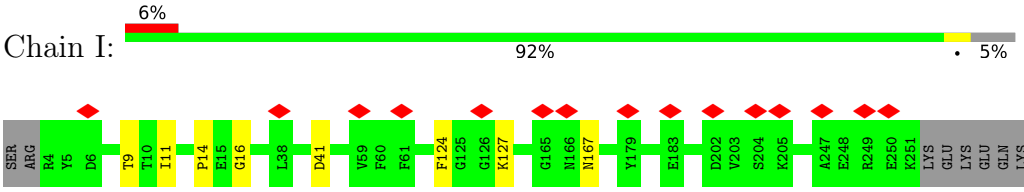
• Molecule 20: Proteasome subunit alpha type-2

Chain h:



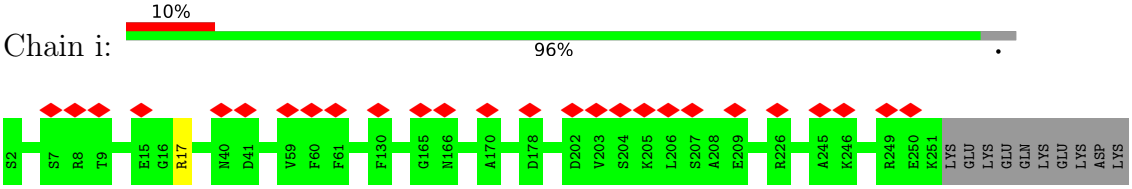
• Molecule 21: Proteasome subunit alpha type-4

Chain I:



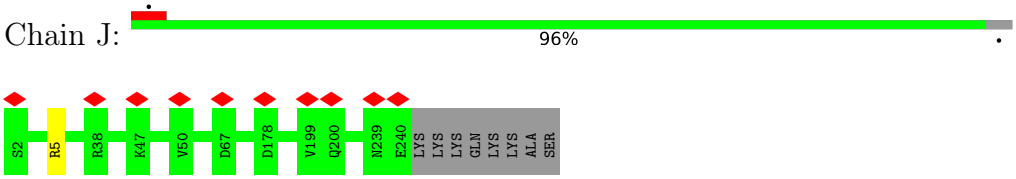
• Molecule 21: Proteasome subunit alpha type-4

Chain i:



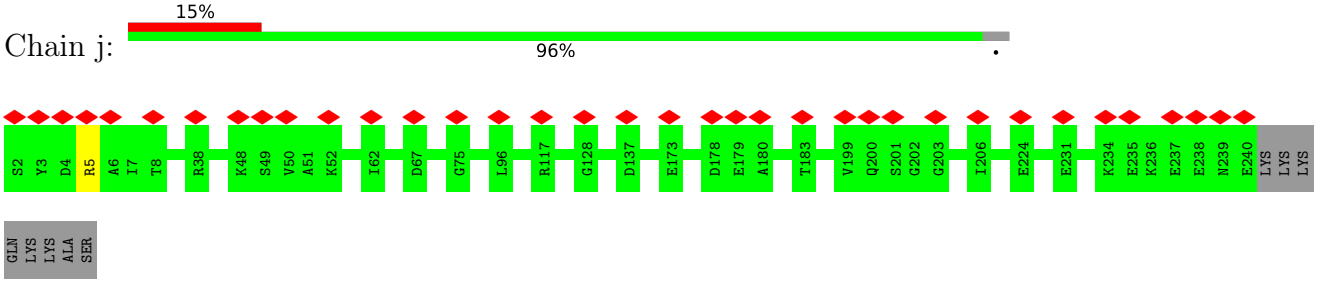
• Molecule 22: Proteasome subunit alpha type-7

Chain J:



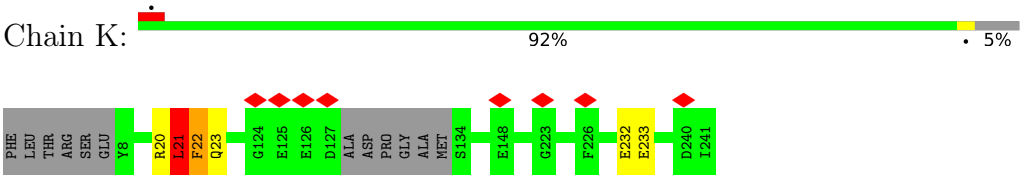
• Molecule 22: Proteasome subunit alpha type-7

Chain j:



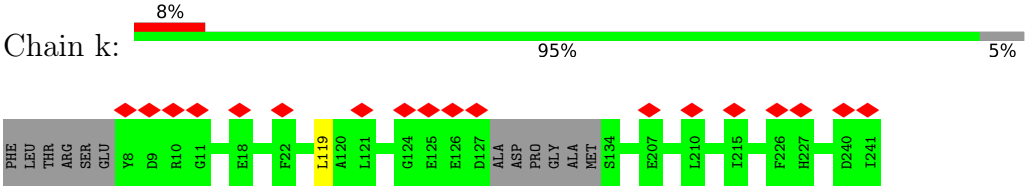
• Molecule 23: Proteasome subunit alpha type-5

Chain K:



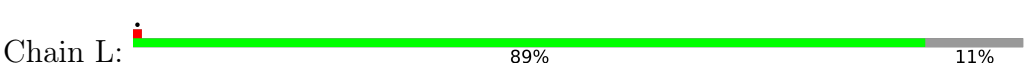
• Molecule 23: Proteasome subunit alpha type-5

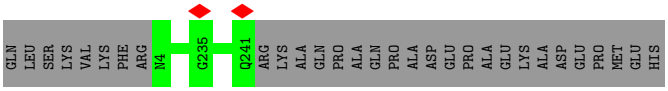
Chain k:



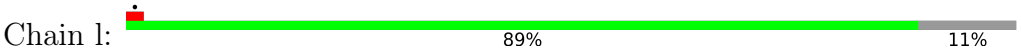
• Molecule 24: Isoform Long of Proteasome subunit alpha type-1

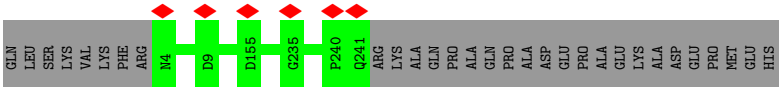
Chain L:



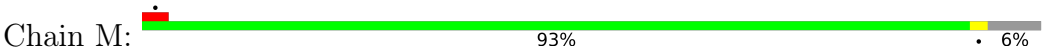


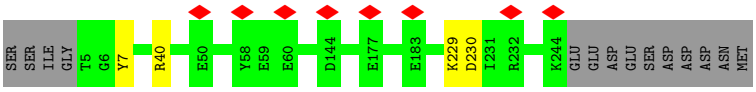
• Molecule 24: Isoform Long of Proteasome subunit alpha type-1



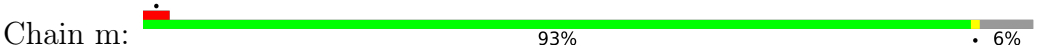


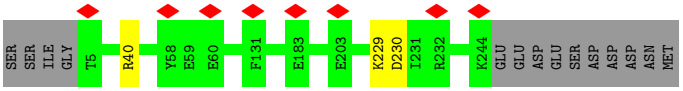
• Molecule 25: Proteasome subunit alpha type-3



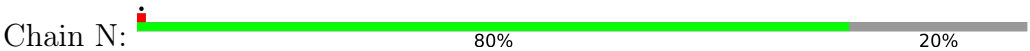


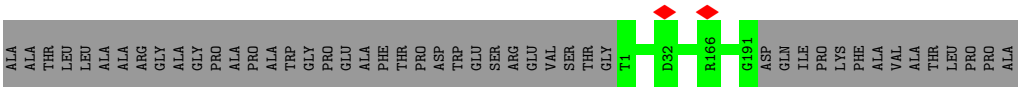
• Molecule 25: Proteasome subunit alpha type-3



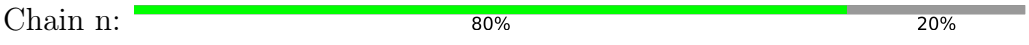


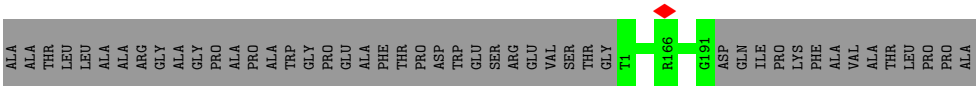
• Molecule 26: Proteasome subunit beta type-6



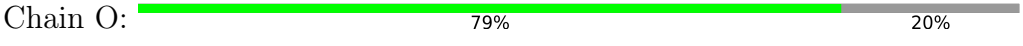


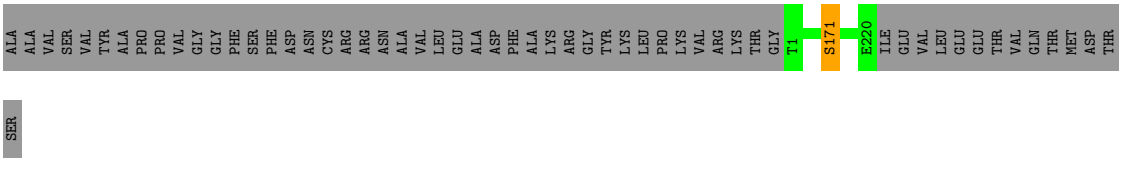
• Molecule 26: Proteasome subunit beta type-6





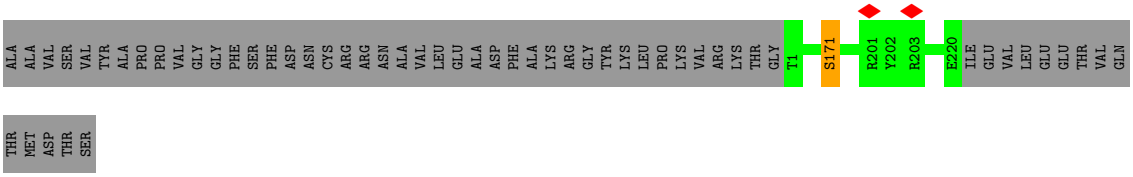
• Molecule 27: Proteasome subunit beta type-7





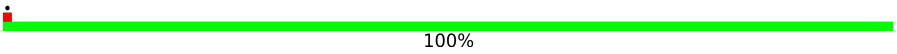
• Molecule 27: Proteasome subunit beta type-7

Chain o:



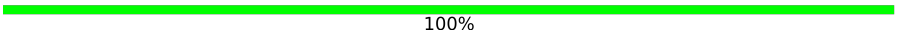
• Molecule 28: Proteasome subunit beta type-3

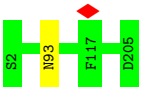
Chain P:



• Molecule 28: Proteasome subunit beta type-3

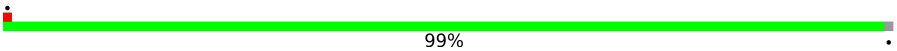
Chain p:

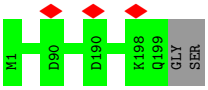




• Molecule 29: Proteasome subunit beta type-2

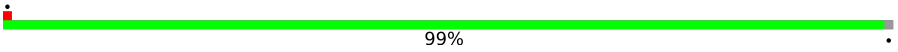
Chain Q:

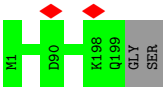




• Molecule 29: Proteasome subunit beta type-2

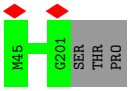
Chain q:





• Molecule 30: Proteasome subunit beta type-5

Chain R:

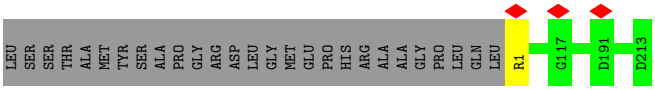


• Molecule 30: Proteasome subunit beta type-5

Chain r:

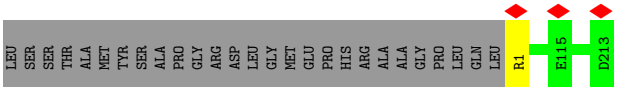
• Molecule 31: Proteasome subunit beta type-1

Chain S:



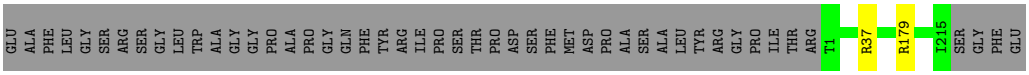
• Molecule 31: Proteasome subunit beta type-1

Chain s:



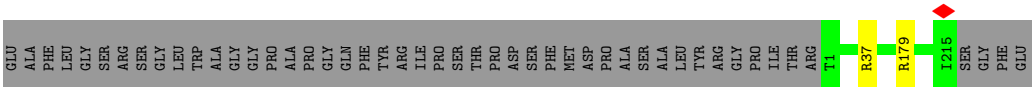
• Molecule 32: Proteasome subunit beta type-4

Chain T:



• Molecule 32: Proteasome subunit beta type-4

Chain t:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	59461	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 ($e^-/Å^2$)	46.6	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.117	Depositor
Minimum map value	-0.045	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.0337	Depositor
Map size (Å)	438.4, 438.4, 438.4	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.37, 1.37, 1.37	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, ATP, ADP, ZN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	U	0.29	0/6945	0.61	2/9382 (0.0%)
2	V	0.30	0/3929	0.64	2/5309 (0.0%)
3	W	0.28	0/3751	0.61	0/5042
4	X	0.27	0/3053	0.56	1/4115 (0.0%)
5	Y	0.30	0/3173	0.62	1/4273 (0.0%)
6	Z	0.28	0/2318	0.67	5/3142 (0.2%)
7	a	0.28	0/3053	0.62	3/4133 (0.1%)
8	b	0.27	0/1478	0.61	0/2001
9	c	0.31	0/2302	0.69	1/3110 (0.0%)
10	d	0.29	0/2162	0.57	0/2919
11	e	0.29	0/338	0.61	1/450 (0.2%)
12	f	0.32	1/6980 (0.0%)	0.72	8/9433 (0.1%)
13	A	0.29	0/3283	0.57	0/4433
14	B	0.30	0/3254	0.63	2/4388 (0.0%)
15	C	0.30	0/3146	0.60	3/4226 (0.1%)
16	D	0.31	0/3090	0.61	0/4168
17	E	0.28	0/3145	0.67	7/4233 (0.2%)
18	F	0.28	0/3137	0.58	2/4223 (0.0%)
19	G	0.30	0/1853	0.58	0/2515
19	g	0.27	0/1859	0.55	0/2523
20	H	0.31	0/1727	0.55	0/2350
20	h	0.29	0/1743	0.51	0/2372
21	I	0.29	0/1925	0.60	1/2606 (0.0%)
21	i	0.26	0/1942	0.58	0/2628
22	J	0.27	0/1728	0.54	0/2358
22	j	0.28	0/1728	0.54	0/2358
23	K	0.29	0/1755	0.59	2/2375 (0.1%)
23	k	0.27	0/1747	0.53	0/2364
24	L	0.30	0/1885	0.56	0/2552
24	l	0.30	0/1885	0.56	0/2552
25	M	0.29	0/1891	0.53	0/2552
25	m	0.29	0/1891	0.53	0/2552

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
26	N	0.26	0/1454	0.51	0/1967
26	n	0.27	0/1454	0.51	0/1967
27	O	0.28	0/1670	0.52	1/2265 (0.0%)
27	o	0.28	0/1670	0.52	1/2265 (0.0%)
28	P	0.27	0/1614	0.48	0/2177
28	p	0.27	0/1614	0.48	0/2177
29	Q	0.27	0/1603	0.54	0/2174
29	q	0.27	0/1603	0.54	0/2174
30	R	0.27	0/1579	0.46	0/2134
30	r	0.27	0/1579	0.46	0/2134
31	S	0.27	0/1671	0.49	0/2253
31	s	0.27	0/1671	0.49	0/2253
32	T	0.27	0/1700	0.49	0/2305
32	t	0.27	0/1700	0.49	0/2305
All	All	0.29	1/106678 (0.0%)	0.59	43/144187 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	f	192	VAL	C-N	5.90	1.45	1.34

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
12	f	830	LEU	CA-CB-CG	7.98	133.65	115.30
17	E	165	ILE	C-N-CD	-7.69	103.69	120.60
6	Z	176	LEU	CA-CB-CG	7.48	132.51	115.30
14	B	313	LEU	CA-CB-CG	7.37	132.24	115.30
11	e	56	LEU	CA-CB-CG	6.94	131.26	115.30
12	f	759	LEU	CA-CB-CG	6.75	130.82	115.30
12	f	612	LEU	CA-CB-CG	6.70	130.72	115.30
4	X	203	PRO	N-CA-C	-6.45	95.34	112.10
12	f	755	ASP	C-N-CD	-6.42	106.48	120.60
18	F	164	LEU	CA-CB-CG	6.38	129.97	115.30
17	E	105	LEU	CA-CB-CG	6.37	129.94	115.30
12	f	774	GLY	N-CA-C	-6.20	97.61	113.10
6	Z	133	LEU	CA-CB-CG	6.17	129.50	115.30
12	f	811	LEU	CA-CB-CG	6.11	129.36	115.30
7	a	343	LEU	CA-CB-CG	6.05	129.22	115.30
7	a	187	ASP	CB-CG-OD1	6.05	123.74	118.30
21	I	41	ASP	CB-CG-OD1	6.04	123.73	118.30
6	Z	205	LEU	CA-CB-CG	6.03	129.16	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
14	B	190	LEU	CA-CB-CG	5.84	128.73	115.30
17	E	165	ILE	C-N-CA	5.84	146.53	122.00
17	E	270	LEU	CA-CB-CG	5.83	128.71	115.30
17	E	166	PRO	N-CA-C	5.76	127.07	112.10
18	F	344	ARG	N-CA-C	5.70	126.39	111.00
7	a	180	LEU	CA-CB-CG	5.67	128.34	115.30
2	V	221	LEU	CA-CB-CG	5.66	128.31	115.30
27	o	171	SER	N-CA-C	5.50	125.86	111.00
27	O	171	SER	N-CA-C	5.47	125.77	111.00
12	f	217	LEU	CA-CB-CG	5.44	127.82	115.30
15	C	397	LYS	C-N-CA	5.44	135.29	121.70
17	E	183	LEU	CA-CB-CG	5.36	127.62	115.30
1	U	223	LEU	CA-CB-CG	5.35	127.60	115.30
5	Y	287	LEU	CA-CB-CG	5.35	127.60	115.30
17	E	225	HIS	C-N-CA	5.32	135.00	121.70
6	Z	65	ASP	CB-CG-OD1	5.30	123.08	118.30
15	C	139	MET	CA-CB-CG	5.21	122.16	113.30
6	Z	217	THR	N-CA-C	-5.18	97.02	111.00
12	f	858	LYS	C-N-CD	5.14	139.19	128.40
23	K	21	LEU	C-N-CA	5.10	134.46	121.70
9	c	212	LEU	CA-CB-CG	5.08	126.98	115.30
15	C	198	LEU	CA-CB-CG	5.06	126.95	115.30
23	K	22	PHE	N-CA-CB	5.06	119.71	110.60
2	V	263	LEU	CA-CB-CG	5.01	126.83	115.30
1	U	224	ASP	CB-CG-OD1	5.01	122.81	118.30

There are no chirality outliers.

There are no planarity outliers.

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	U	868/953 (91%)	782 (90%)	78 (9%)	8 (1%)	14	50
2	V	478/533 (90%)	413 (86%)	63 (13%)	2 (0%)	30	67
3	W	454/456 (100%)	409 (90%)	41 (9%)	4 (1%)	14	50
4	X	378/422 (90%)	355 (94%)	21 (6%)	2 (0%)	25	62
5	Y	376/389 (97%)	332 (88%)	41 (11%)	3 (1%)	16	53
6	Z	284/324 (88%)	243 (86%)	37 (13%)	4 (1%)	9	40
7	a	371/376 (99%)	334 (90%)	34 (9%)	3 (1%)	16	53
8	b	189/377 (50%)	164 (87%)	24 (13%)	1 (0%)	25	62
9	c	285/309 (92%)	246 (86%)	32 (11%)	7 (2%)	4	30
10	d	255/349 (73%)	214 (84%)	38 (15%)	3 (1%)	11	44
11	e	36/70 (51%)	29 (81%)	7 (19%)	0	100	100
12	f	887/908 (98%)	707 (80%)	164 (18%)	16 (2%)	7	36
13	A	411/433 (95%)	364 (89%)	46 (11%)	1 (0%)	44	77
14	B	409/440 (93%)	349 (85%)	57 (14%)	3 (1%)	19	56
15	C	394/398 (99%)	353 (90%)	36 (9%)	5 (1%)	10	42
16	D	378/418 (90%)	321 (85%)	53 (14%)	4 (1%)	12	46
17	E	387/403 (96%)	323 (84%)	54 (14%)	10 (3%)	4	29
18	F	391/439 (89%)	336 (86%)	47 (12%)	8 (2%)	6	34
19	G	237/245 (97%)	209 (88%)	25 (10%)	3 (1%)	10	42
19	g	238/245 (97%)	222 (93%)	16 (7%)	0	100	100
20	H	228/233 (98%)	215 (94%)	10 (4%)	3 (1%)	10	42
20	h	230/233 (99%)	222 (96%)	8 (4%)	0	100	100
21	I	246/260 (95%)	217 (88%)	26 (11%)	3 (1%)	11	44
21	i	248/260 (95%)	223 (90%)	25 (10%)	0	100	100
22	J	237/247 (96%)	216 (91%)	20 (8%)	1 (0%)	30	67
22	j	237/247 (96%)	216 (91%)	20 (8%)	1 (0%)	30	67
23	K	224/240 (93%)	208 (93%)	14 (6%)	2 (1%)	14	50
23	k	224/240 (93%)	210 (94%)	14 (6%)	0	100	100
24	L	236/268 (88%)	226 (96%)	10 (4%)	0	100	100
24	l	236/268 (88%)	226 (96%)	10 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
25	M	238/254 (94%)	220 (92%)	18 (8%)	0	100	100
25	m	238/254 (94%)	219 (92%)	19 (8%)	0	100	100
26	N	189/238 (79%)	180 (95%)	9 (5%)	0	100	100
26	n	189/238 (79%)	180 (95%)	9 (5%)	0	100	100
27	O	218/276 (79%)	207 (95%)	10 (5%)	1 (0%)	25	62
27	o	218/276 (79%)	207 (95%)	10 (5%)	1 (0%)	25	62
28	P	202/204 (99%)	194 (96%)	8 (4%)	0	100	100
28	p	202/204 (99%)	194 (96%)	8 (4%)	0	100	100
29	Q	197/201 (98%)	186 (94%)	11 (6%)	0	100	100
29	q	197/201 (98%)	186 (94%)	11 (6%)	0	100	100
30	R	199/262 (76%)	193 (97%)	6 (3%)	0	100	100
30	r	199/262 (76%)	193 (97%)	6 (3%)	0	100	100
31	S	211/240 (88%)	205 (97%)	6 (3%)	0	100	100
31	s	211/240 (88%)	205 (97%)	6 (3%)	0	100	100
32	T	213/263 (81%)	202 (95%)	11 (5%)	0	100	100
32	t	213/263 (81%)	202 (95%)	11 (5%)	0	100	100
All	All	13386/14859 (90%)	12057 (90%)	1230 (9%)	99 (1%)	21	56

All (99) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	U	48	LEU
3	W	91	SER
3	W	176	SER
3	W	179	LYS
4	X	203	PRO
6	Z	238	PRO
8	b	22	LEU
9	c	196	LEU
9	c	279	ASP
9	c	280	PRO
9	c	285	GLU
12	f	281	ILE
12	f	756	PRO
12	f	838	ARG
12	f	853	VAL

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Mol	Chain	Res	Type
14	B	434	THR
15	C	91	PRO
16	D	335	LEU
17	E	53	VAL
17	E	194	ASN
17	E	282	PRO
18	F	73	ILE
18	F	85	THR
18	F	344	ARG
19	G	7	ALA
19	G	8	GLY
20	H	7	SER
22	J	5	ARG
23	K	22	PHE
22	j	5	ARG
1	U	47	VAL
1	U	183	LEU
1	U	808	PRO
4	X	318	ILE
5	Y	350	VAL
6	Z	145	HIS
6	Z	237	LEU
7	a	69	HIS
7	a	187	ASP
9	c	195	GLY
10	d	203	PRO
10	d	204	LYS
12	f	786	GLN
14	B	390	LEU
15	C	89	VAL
18	F	86	LEU
19	G	9	PHE
20	H	8	PHE
20	H	124	SER
21	I	16	GLY
21	I	124	PHE
23	K	21	LEU
10	d	199	PHE
12	f	118	ASN
12	f	476	THR
12	f	664	GLU
12	f	738	ASN

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Mol	Chain	Res	Type
12	f	816	TYR
12	f	859	PRO
14	B	166	ASP
15	C	90	HIS
16	D	160	PRO
17	E	166	PRO
17	E	191	LEU
17	E	197	LYS
18	F	72	LYS
1	U	812	ALA
5	Y	66	ASP
6	Z	65	ASP
9	c	201	TYR
15	C	222	LYS
16	D	269	ALA
17	E	193	CYS
18	F	87	PRO
18	F	301	ALA
1	U	173	VAL
1	U	813	TYR
3	W	139	GLU
7	a	343	LEU
9	c	284	LEU
12	f	475	ASN
12	f	787	LEU
18	F	324	THR
27	O	171	SER
27	o	171	SER
5	Y	290	PRO
13	A	109	PRO
15	C	253	SER
17	E	227	PRO
21	I	14	PRO
1	U	174	PRO
12	f	642	ALA
12	f	809	ILE
12	f	817	VAL
2	V	30	PRO
2	V	31	ALA
17	E	167	PRO
16	D	126	PRO
17	E	226	GLN

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
1	U	748/816 (92%)	734 (98%)	14 (2%)	52 69
2	V	414/459 (90%)	410 (99%)	4 (1%)	73 81
3	W	416/416 (100%)	406 (98%)	10 (2%)	44 63
4	X	327/362 (90%)	319 (98%)	8 (2%)	44 63
5	Y	334/344 (97%)	322 (96%)	12 (4%)	30 53
6	Z	256/295 (87%)	251 (98%)	5 (2%)	50 68
7	a	333/336 (99%)	329 (99%)	4 (1%)	67 79
8	b	167/312 (54%)	167 (100%)	0	100 100
9	c	252/267 (94%)	241 (96%)	11 (4%)	24 47
10	d	231/293 (79%)	228 (99%)	3 (1%)	65 77
11	e	38/63 (60%)	36 (95%)	2 (5%)	19 43
12	f	745/763 (98%)	713 (96%)	32 (4%)	25 48
13	A	348/372 (94%)	341 (98%)	7 (2%)	50 68
14	B	357/385 (93%)	345 (97%)	12 (3%)	32 54
15	C	340/346 (98%)	331 (97%)	9 (3%)	41 61
16	D	333/366 (91%)	325 (98%)	8 (2%)	44 63
17	E	341/353 (97%)	329 (96%)	12 (4%)	31 53
18	F	340/379 (90%)	325 (96%)	15 (4%)	24 47
19	G	192/209 (92%)	189 (98%)	3 (2%)	58 74
19	g	193/209 (92%)	193 (100%)	0	100 100
20	H	163/190 (86%)	160 (98%)	3 (2%)	54 71
20	h	164/190 (86%)	163 (99%)	1 (1%)	84 88
21	I	191/220 (87%)	187 (98%)	4 (2%)	48 66
21	i	193/220 (88%)	192 (100%)	1 (0%)	86 90
22	J	152/210 (72%)	152 (100%)	0	100 100
22	j	152/210 (72%)	152 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
23	K	187/202 (93%)	182 (97%)	5 (3%)	40 61
23	k	186/202 (92%)	185 (100%)	1 (0%)	86 90
24	L	198/229 (86%)	198 (100%)	0	100 100
24	l	198/229 (86%)	198 (100%)	0	100 100
25	M	192/211 (91%)	188 (98%)	4 (2%)	48 66
25	m	192/211 (91%)	189 (98%)	3 (2%)	58 74
26	N	148/180 (82%)	148 (100%)	0	100 100
26	n	148/180 (82%)	148 (100%)	0	100 100
27	O	177/227 (78%)	177 (100%)	0	100 100
27	o	177/227 (78%)	177 (100%)	0	100 100
28	P	172/173 (99%)	171 (99%)	1 (1%)	84 88
28	p	172/173 (99%)	171 (99%)	1 (1%)	84 88
29	Q	164/171 (96%)	164 (100%)	0	100 100
29	q	164/171 (96%)	164 (100%)	0	100 100
30	R	153/201 (76%)	153 (100%)	0	100 100
30	r	153/201 (76%)	153 (100%)	0	100 100
31	S	174/198 (88%)	173 (99%)	1 (1%)	84 88
31	s	174/198 (88%)	173 (99%)	1 (1%)	84 88
32	T	175/214 (82%)	173 (99%)	2 (1%)	70 80
32	t	175/214 (82%)	173 (99%)	2 (1%)	70 80
All	All	11199/12597 (89%)	10998 (98%)	201 (2%)	54 71

All (201) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	U	118	LEU
1	U	173	VAL
1	U	177	LEU
1	U	179	TYR
1	U	181	LEU
1	U	182	LYS
1	U	194	ARG
1	U	416	GLU
1	U	423	MET
1	U	629	THR

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Mol	Chain	Res	Type
1	U	838	LYS
1	U	840	LYS
1	U	874	ASN
1	U	883	ARG
2	V	191	LEU
2	V	194	LYS
2	V	345	ARG
2	V	401	ASN
3	W	39	ARG
3	W	84	ASN
3	W	86	ASN
3	W	90	LEU
3	W	140	ILE
3	W	172	GLU
3	W	173	THR
3	W	177	MET
3	W	308	LEU
3	W	454	ASN
4	X	141	LYS
4	X	142	ARG
4	X	198	ASN
4	X	202	CYS
4	X	314	ARG
4	X	316	ASP
4	X	329	ASN
4	X	416	ASN
5	Y	48	ASN
5	Y	65	ILE
5	Y	77	ASN
5	Y	81	LEU
5	Y	174	TRP
5	Y	175	ASP
5	Y	176	ARG
5	Y	233	ARG
5	Y	237	ARG
5	Y	292	TYR
5	Y	349	LYS
5	Y	350	VAL
6	Z	12	HIS
6	Z	16	LEU
6	Z	33	LYS
6	Z	217	THR

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Mol	Chain	Res	Type
6	Z	237	LEU
7	a	227	ASN
7	a	289	ARG
7	a	339	ARG
7	a	341	LEU
9	c	115	HIS
9	c	154	LYS
9	c	175	ARG
9	c	185	ASN
9	c	196	LEU
9	c	197	ASN
9	c	198	ARG
9	c	232	GLN
9	c	233	ASP
9	c	254	ASN
9	c	274	ASN
10	d	88	GLN
10	d	89	LEU
10	d	201	ASN
11	e	6	GLN
11	e	57	ARG
12	f	80	ARG
12	f	83	ARG
12	f	131	MET
12	f	267	ARG
12	f	281	ILE
12	f	297	MET
12	f	327	ASN
12	f	340	MET
12	f	344	VAL
12	f	396	ASN
12	f	457	ASN
12	f	531	ASN
12	f	565	ASN
12	f	569	LYS
12	f	660	ILE
12	f	662	MET
12	f	703	ARG
12	f	737	ASN
12	f	746	ARG
12	f	755	ASP
12	f	775	THR

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Mol	Chain	Res	Type
12	f	785	ARG
12	f	786	GLN
12	f	787	LEU
12	f	808	ASN
12	f	809	ILE
12	f	826	GLN
12	f	838	ARG
12	f	840	LEU
12	f	855	GLN
12	f	870	THR
12	f	876	HIS
13	A	43	ARG
13	A	118	PHE
13	A	304	ASN
13	A	312	ARG
13	A	360	ARG
13	A	369	ARG
13	A	403	ILE
14	B	35	LYS
14	B	125	THR
14	B	136	LEU
14	B	183	THR
14	B	190	LEU
14	B	292	THR
14	B	316	LEU
14	B	319	PHE
14	B	387	LYS
14	B	389	ASP
14	B	429	LYS
14	B	434	THR
15	C	78	ARG
15	C	89	VAL
15	C	113	ARG
15	C	142	LYS
15	C	184	LYS
15	C	210	THR
15	C	220	VAL
15	C	248	MET
15	C	307	ARG
16	D	153	MET
16	D	155	THR
16	D	157	ASP

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Mol	Chain	Res	Type
16	D	158	GLN
16	D	163	MET
16	D	323	ARG
16	D	384	MET
16	D	411	GLU
17	E	1	MET
17	E	50	LEU
17	E	113	ARG
17	E	195	PHE
17	E	196	LEU
17	E	201	SER
17	E	232	MET
17	E	247	THR
17	E	255	ARG
17	E	272	ARG
17	E	281	ARG
17	E	339	ASN
18	F	36	MET
18	F	59	VAL
18	F	83	ASN
18	F	85	THR
18	F	245	LYS
18	F	250	LYS
18	F	297	ASP
18	F	298	SER
18	F	299	GLU
18	F	300	LYS
18	F	324	THR
18	F	343	LEU
18	F	416	THR
18	F	431	LYS
18	F	432	LYS
19	G	9	PHE
19	G	21	ARG
19	G	209	ASP
20	H	6	TYR
20	H	123	GLN
20	H	219	ARG
21	I	9	THR
21	I	11	ILE
21	I	127	LYS
21	I	167	ASN

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Mol	Chain	Res	Type
23	K	20	ARG
23	K	21	LEU
23	K	23	GLN
23	K	232	GLU
23	K	233	GLU
25	M	7	TYR
25	M	40	ARG
25	M	229	LYS
25	M	230	ASP
28	P	93	ASN
31	S	1	ARG
32	T	37	ARG
32	T	179	ARG
20	h	128	ARG
21	i	17	ARG
23	k	119	LEU
25	m	40	ARG
25	m	229	LYS
25	m	230	ASP
28	p	93	ASN
31	s	1	ARG
32	t	37	ARG
32	t	179	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (112) such sidechains are listed below:

Mol	Chain	Res	Type
1	U	89	ASN
1	U	189	GLN
1	U	218	GLN
1	U	338	HIS
1	U	366	HIS
1	U	377	HIS
1	U	421	GLN
1	U	595	ASN
1	U	596	ASN
1	U	768	GLN
1	U	888	GLN
2	V	62	HIS
2	V	198	GLN
2	V	252	ASN
2	V	257	ASN

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Mol	Chain	Res	Type
2	V	319	HIS
2	V	401	ASN
2	V	487	HIS
3	W	362	ASN
3	W	454	ASN
4	X	170	GLN
4	X	198	ASN
4	X	329	ASN
4	X	349	HIS
4	X	416	ASN
5	Y	48	ASN
5	Y	49	ASN
5	Y	77	ASN
5	Y	136	HIS
5	Y	178	ASN
5	Y	344	HIS
6	Z	109	ASN
6	Z	193	ASN
6	Z	243	GLN
7	a	9	GLN
7	a	86	GLN
7	a	124	ASN
7	a	227	ASN
7	a	249	GLN
8	b	30	GLN
8	b	161	ASN
9	c	92	GLN
9	c	115	HIS
9	c	130	GLN
9	c	185	ASN
9	c	237	HIS
9	c	254	ASN
9	c	274	ASN
10	d	15	ASN
10	d	46	GLN
10	d	88	GLN
10	d	96	HIS
11	e	6	GLN
12	f	43	GLN
12	f	112	ASN
12	f	118	ASN
12	f	291	GLN

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Mol	Chain	Res	Type
12	f	327	ASN
12	f	378	ASN
12	f	382	ASN
12	f	396	ASN
12	f	457	ASN
12	f	531	ASN
12	f	565	ASN
12	f	619	HIS
12	f	738	ASN
12	f	815	HIS
13	A	38	GLN
13	A	60	ASN
13	A	85	GLN
13	A	94	GLN
13	A	304	ASN
13	A	353	HIS
14	B	154	HIS
14	B	195	GLN
15	C	36	ASN
15	C	69	GLN
15	C	205	HIS
15	C	279	GLN
16	D	301	GLN
16	D	414	HIS
17	E	121	ASN
17	E	194	ASN
17	E	300	HIS
17	E	339	ASN
18	F	64	HIS
18	F	83	ASN
18	F	243	GLN
18	F	323	ASN
18	F	325	GLN
20	H	102	GLN
21	I	119	GLN
21	I	167	ASN
22	J	116	GLN
23	K	23	GLN
23	K	155	HIS
23	K	214	ASN
27	O	172	ASN
30	R	38	ASN

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Mol	Chain	Res	Type
19	g	123	GLN
20	h	102	GLN
21	i	119	GLN
21	i	167	ASN
22	j	116	GLN
23	k	23	GLN
23	k	99	HIS
23	k	152	GLN
23	k	164	GLN
23	k	214	ASN
24	l	152	ASN
27	o	172	ASN
30	r	38	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 11 ligands modelled in this entry, 6 are monoatomic - leaving 5 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	$\#\|Z\| > 2$
36	ADP	D	501	35	24,29,29	0.92	1 (4%)	29,45,45	1.61	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
34	ATP	C	501	35	26,33,33	0.95	1 (3%)	31,52,52	1.74	5 (16%)
34	ATP	F	501	35	26,33,33	0.92	1 (3%)	31,52,52	1.58	5 (16%)
34	ATP	B	501	35	26,33,33	0.92	1 (3%)	31,52,52	1.58	5 (16%)
34	ATP	A	501	35	26,33,33	0.91	1 (3%)	31,52,52	1.58	5 (16%)

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
36	ADP	D	501	35	-	1/12/32/32	0/3/3/3
34	ATP	C	501	35	-	5/18/38/38	0/3/3/3
34	ATP	F	501	35	-	4/18/38/38	0/3/3/3
34	ATP	B	501	35	-	3/18/38/38	0/3/3/3
34	ATP	A	501	35	-	3/18/38/38	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	B	501	ATP	C5-C4	2.44	1.47	1.40
34	C	501	ATP	C5-C4	2.43	1.47	1.40
34	F	501	ATP	C5-C4	2.41	1.47	1.40
34	A	501	ATP	C5-C4	2.35	1.47	1.40
36	D	501	ADP	C5-C4	2.35	1.47	1.40

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	C	501	ATP	PB-O3B-PG	-4.66	116.82	132.83
34	C	501	ATP	PA-O3A-PB	-4.53	117.27	132.83
36	D	501	ADP	PA-O3A-PB	-4.40	117.72	132.83
34	B	501	ATP	C3'-C2'-C1'	3.96	106.94	100.98
34	F	501	ATP	PB-O3B-PG	-3.95	119.28	132.83
36	D	501	ADP	C3'-C2'-C1'	3.87	106.81	100.98
34	F	501	ATP	C3'-C2'-C1'	3.68	106.52	100.98
34	A	501	ATP	PB-O3B-PG	-3.55	120.66	132.83
34	A	501	ATP	PA-O3A-PB	-3.54	120.69	132.83
34	A	501	ATP	C3'-C2'-C1'	3.43	106.15	100.98
34	C	501	ATP	N3-C2-N1	-3.40	123.37	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	B	501	ATP	N3-C2-N1	-3.32	123.48	128.68
36	D	501	ADP	N3-C2-N1	-3.28	123.56	128.68
34	A	501	ATP	N3-C2-N1	-3.22	123.65	128.68
34	F	501	ATP	N3-C2-N1	-3.21	123.67	128.68
34	B	501	ATP	PA-O3A-PB	-2.95	122.69	132.83
34	B	501	ATP	PB-O3B-PG	-2.79	123.24	132.83
34	A	501	ATP	C4-C5-N7	-2.68	106.61	109.40
34	F	501	ATP	PA-O3A-PB	-2.46	124.39	132.83
36	D	501	ADP	C4-C5-N7	-2.44	106.86	109.40
34	C	501	ATP	C4-C5-N7	-2.43	106.87	109.40
34	F	501	ATP	C4-C5-N7	-2.38	106.92	109.40
34	B	501	ATP	C4-C5-N7	-2.25	107.06	109.40
34	C	501	ATP	C3'-C2'-C1'	2.17	104.24	100.98

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
34	A	501	ATP	C5'-O5'-PA-O1A
34	A	501	ATP	C5'-O5'-PA-O2A
34	B	501	ATP	C5'-O5'-PA-O2A
34	B	501	ATP	C5'-O5'-PA-O3A
34	C	501	ATP	C5'-O5'-PA-O2A
34	C	501	ATP	C5'-O5'-PA-O3A
34	F	501	ATP	C3'-C4'-C5'-O5'
34	F	501	ATP	O4'-C4'-C5'-O5'
34	C	501	ATP	PB-O3A-PA-O1A
34	F	501	ATP	PB-O3A-PA-O1A
34	C	501	ATP	C5'-O5'-PA-O1A
34	C	501	ATP	PB-O3A-PA-O2A
34	F	501	ATP	PB-O3A-PA-O2A
36	D	501	ADP	O4'-C4'-C5'-O5'
34	A	501	ATP	C5'-O5'-PA-O3A
34	B	501	ATP	PA-O3A-PB-O2B

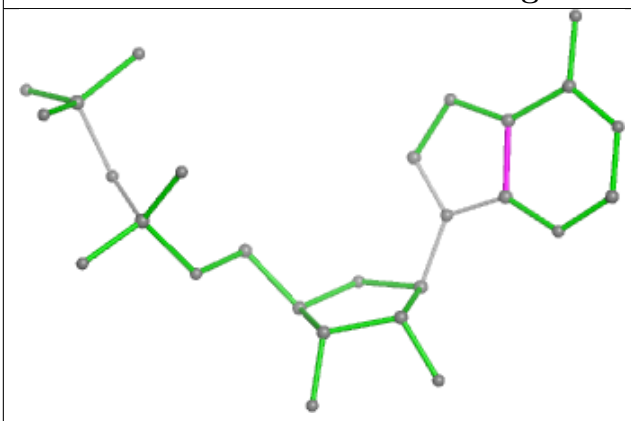
There are no ring outliers.

No monomer is involved in short contacts.

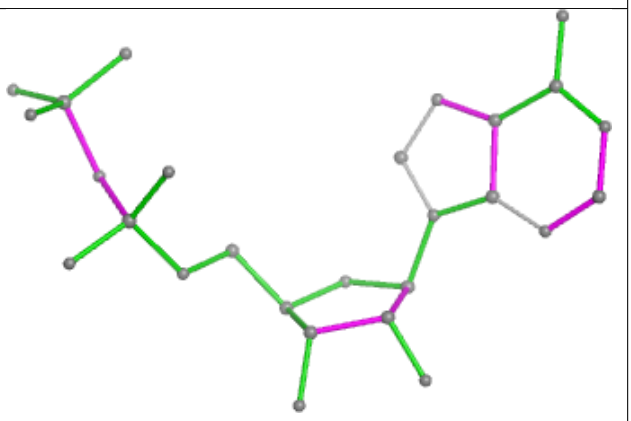
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 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.

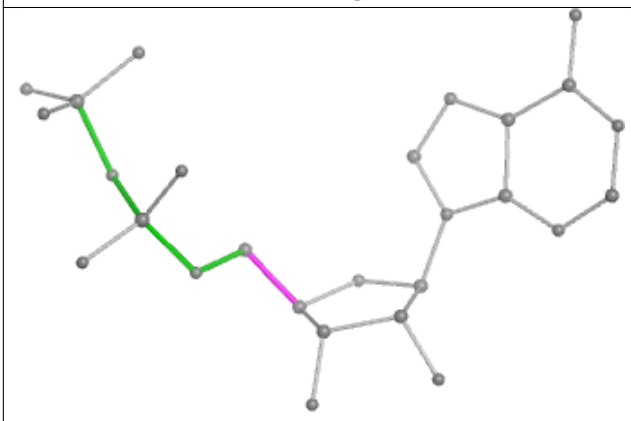
Ligand ADP D 501



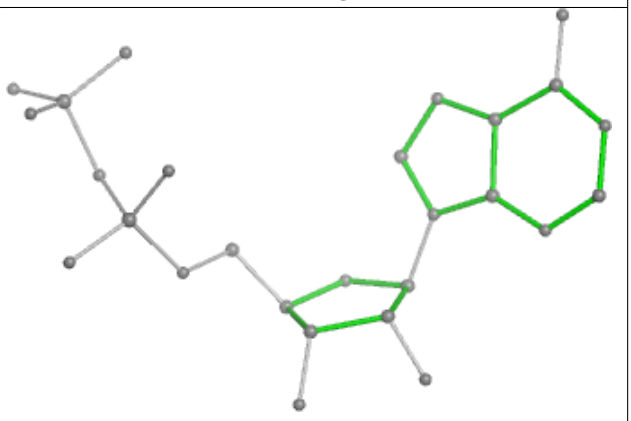
Bond lengths



Bond angles

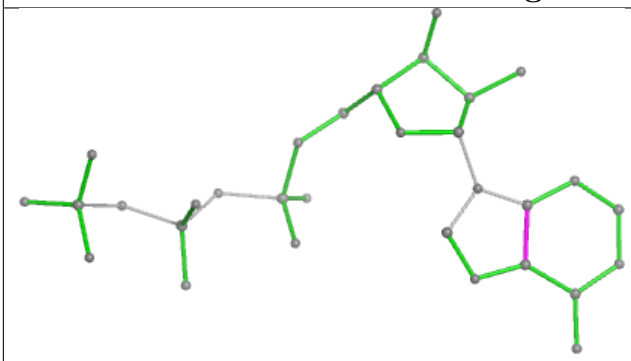


Torsions

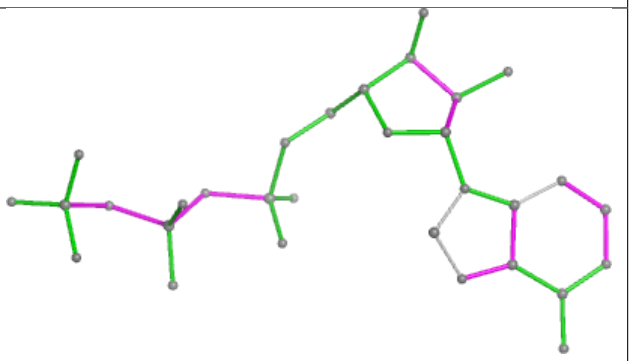


Rings

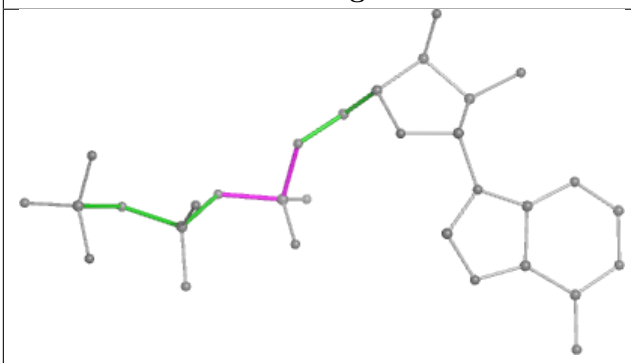
Ligand ATP C 501



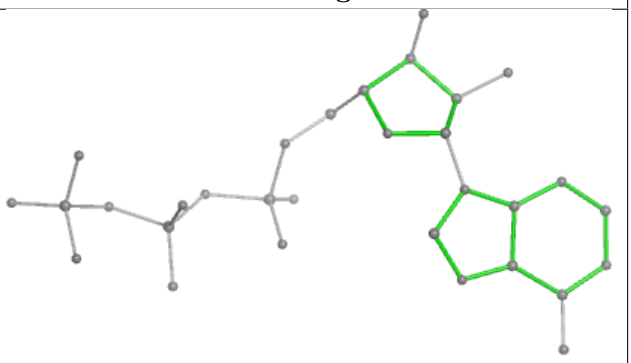
Bond lengths



Bond angles

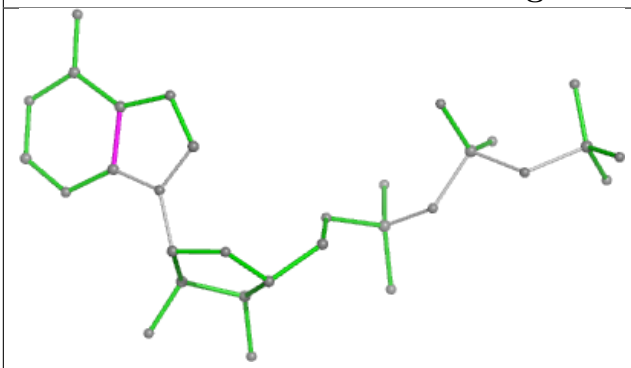


Torsions

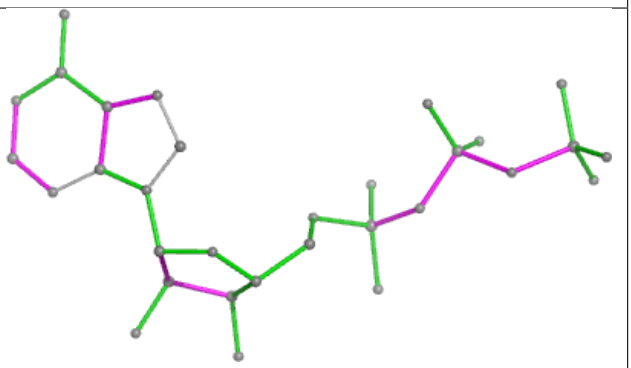


Rings

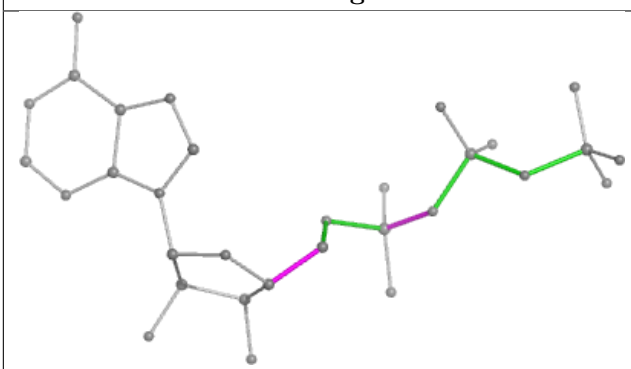
Ligand ATP F 501



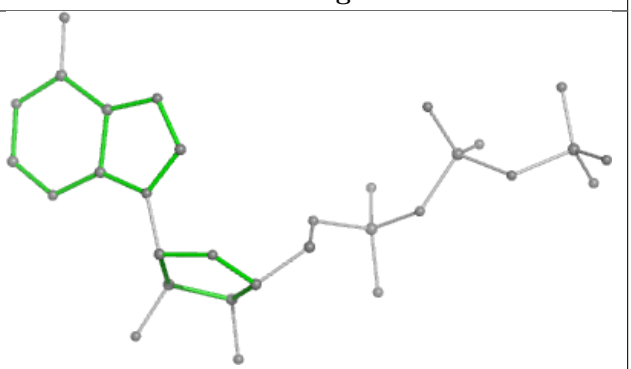
Bond lengths



Bond angles

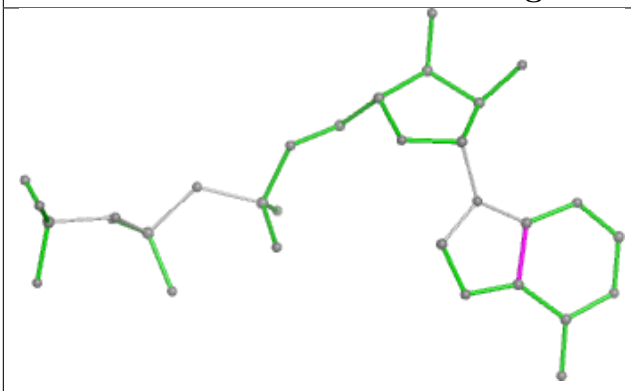


Torsions

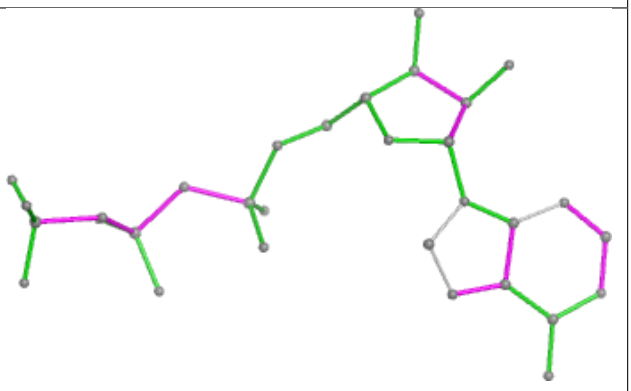


Rings

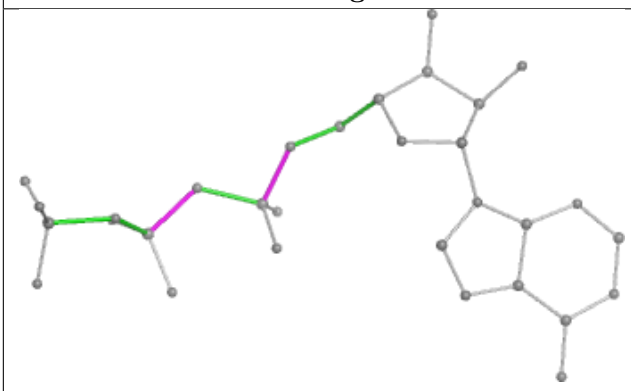
Ligand ATP B 501



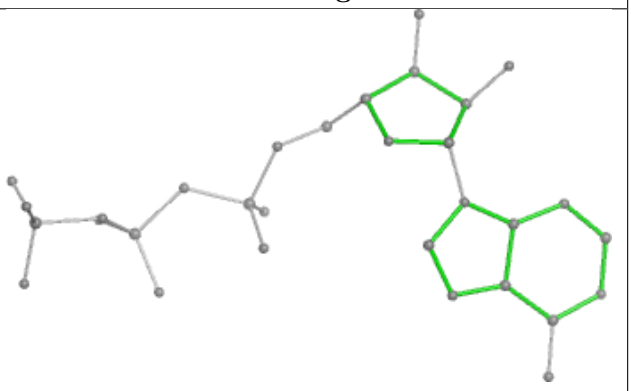
Bond lengths



Bond angles

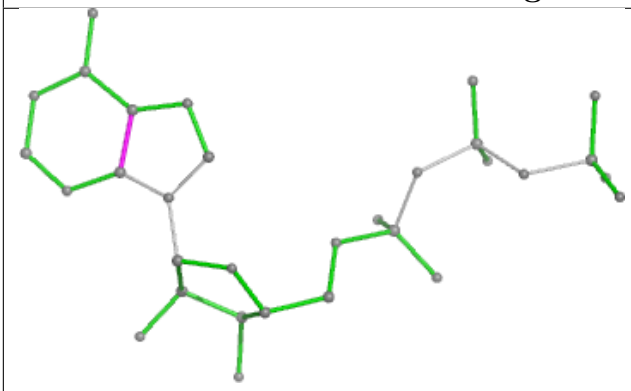


Torsions

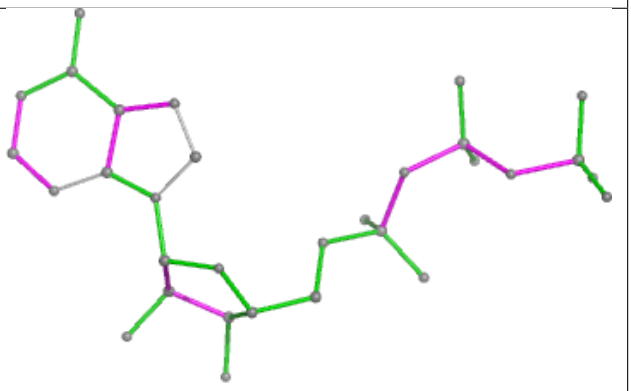


Rings

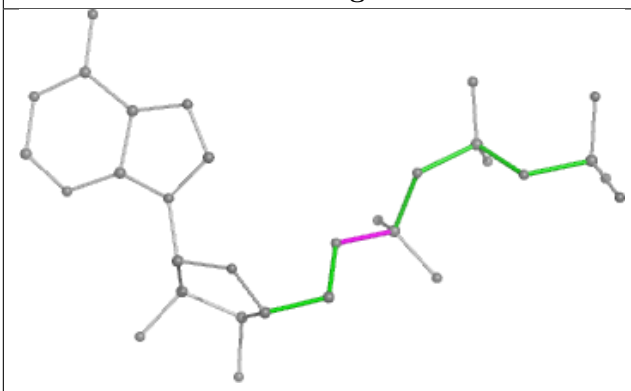
Ligand ATP A 501



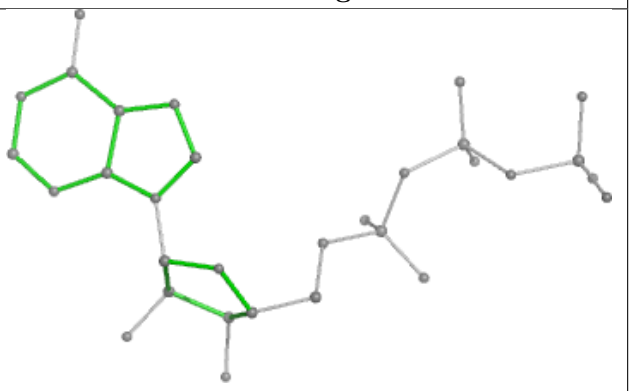
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

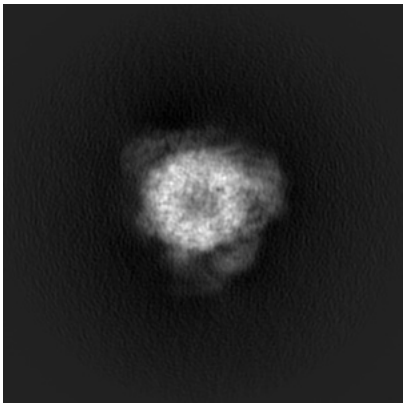
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-14211. These allow visual inspection of the internal detail of the map and identification of artifacts.

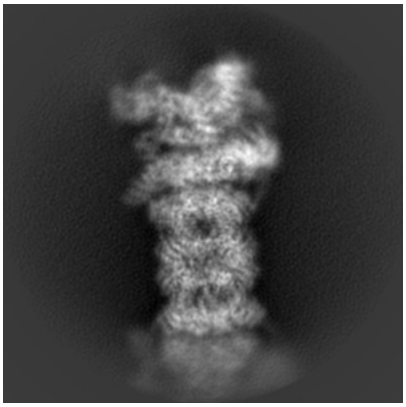
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

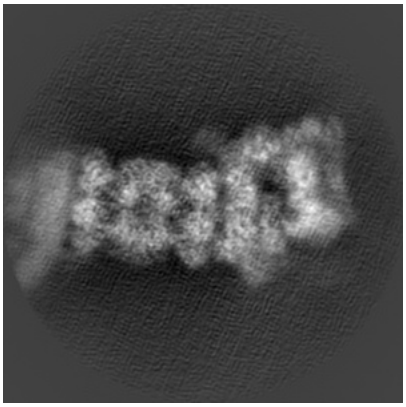
6.1.1 Primary map



X



Y

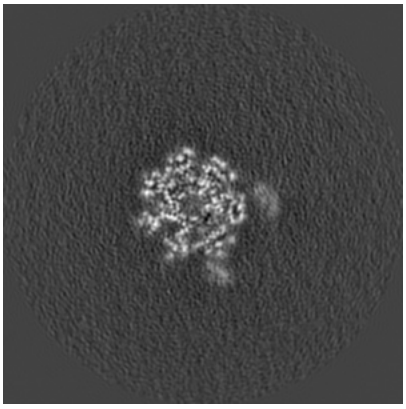


Z

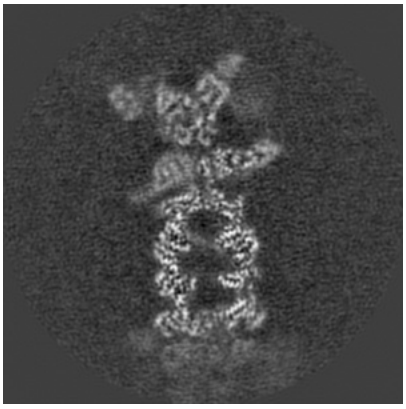
The images above show the map projected in three orthogonal directions.

6.2 Central slices

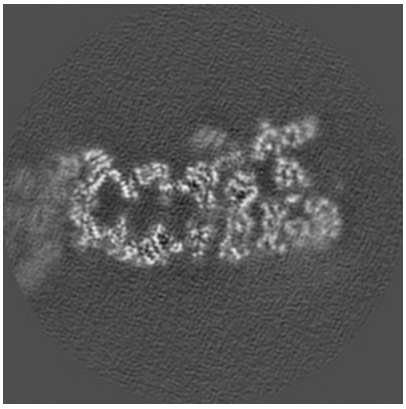
6.2.1 Primary map



X Index: 160



Y Index: 160

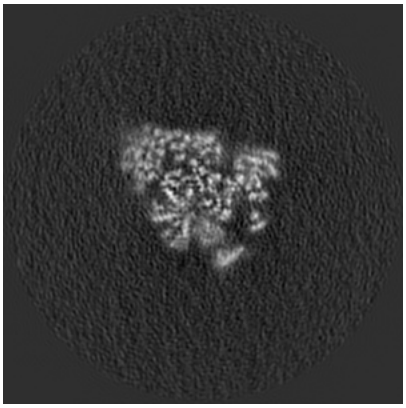


Z Index: 160

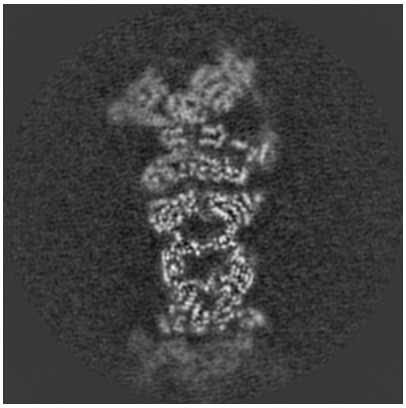
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

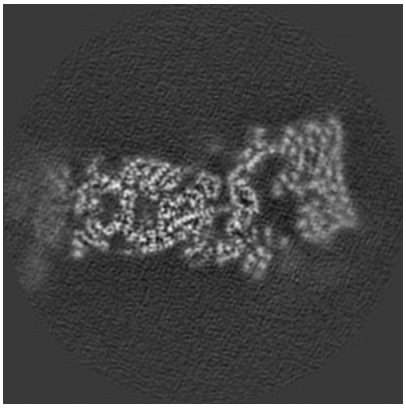
6.3.1 Primary map



X Index: 196



Y Index: 143

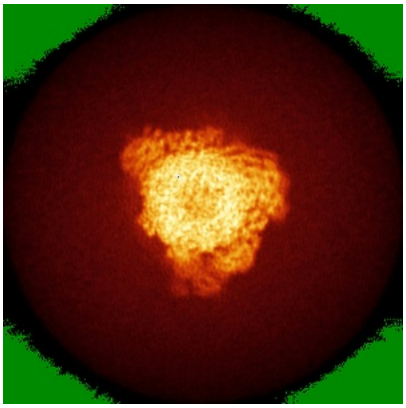


Z Index: 180

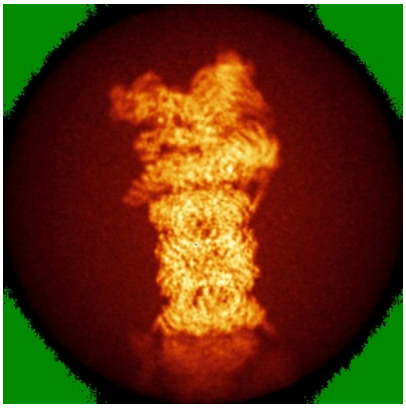
The images above show the largest variance slices of the map in three orthogonal directions.

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

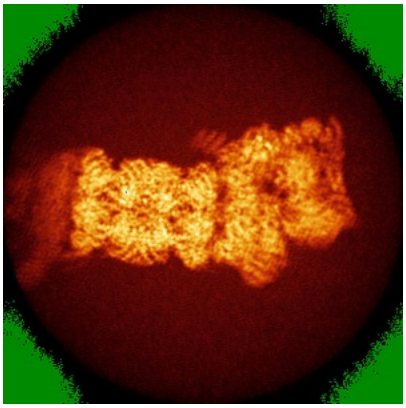
6.4.1 Primary map



X



Y

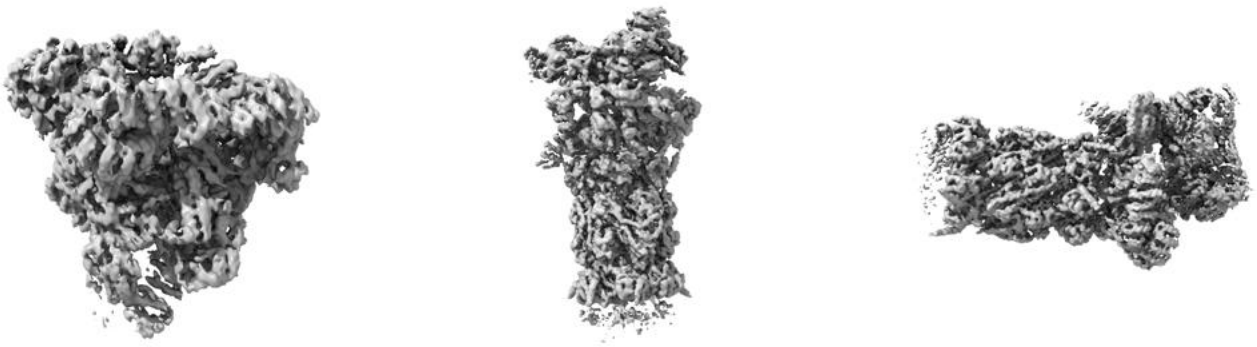


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0337. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

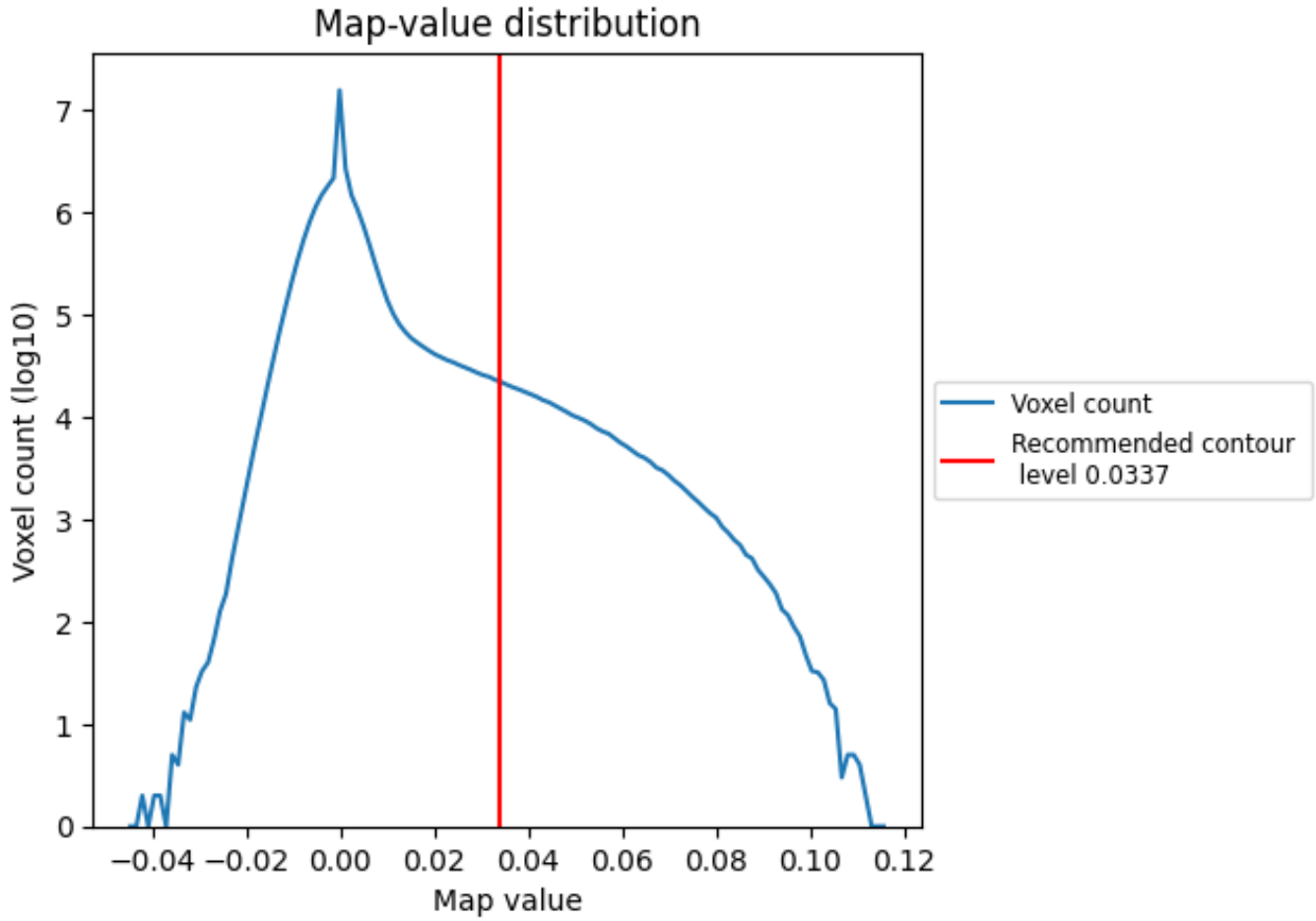
6.6 Mask visualisation (i)

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

7 Map analysis

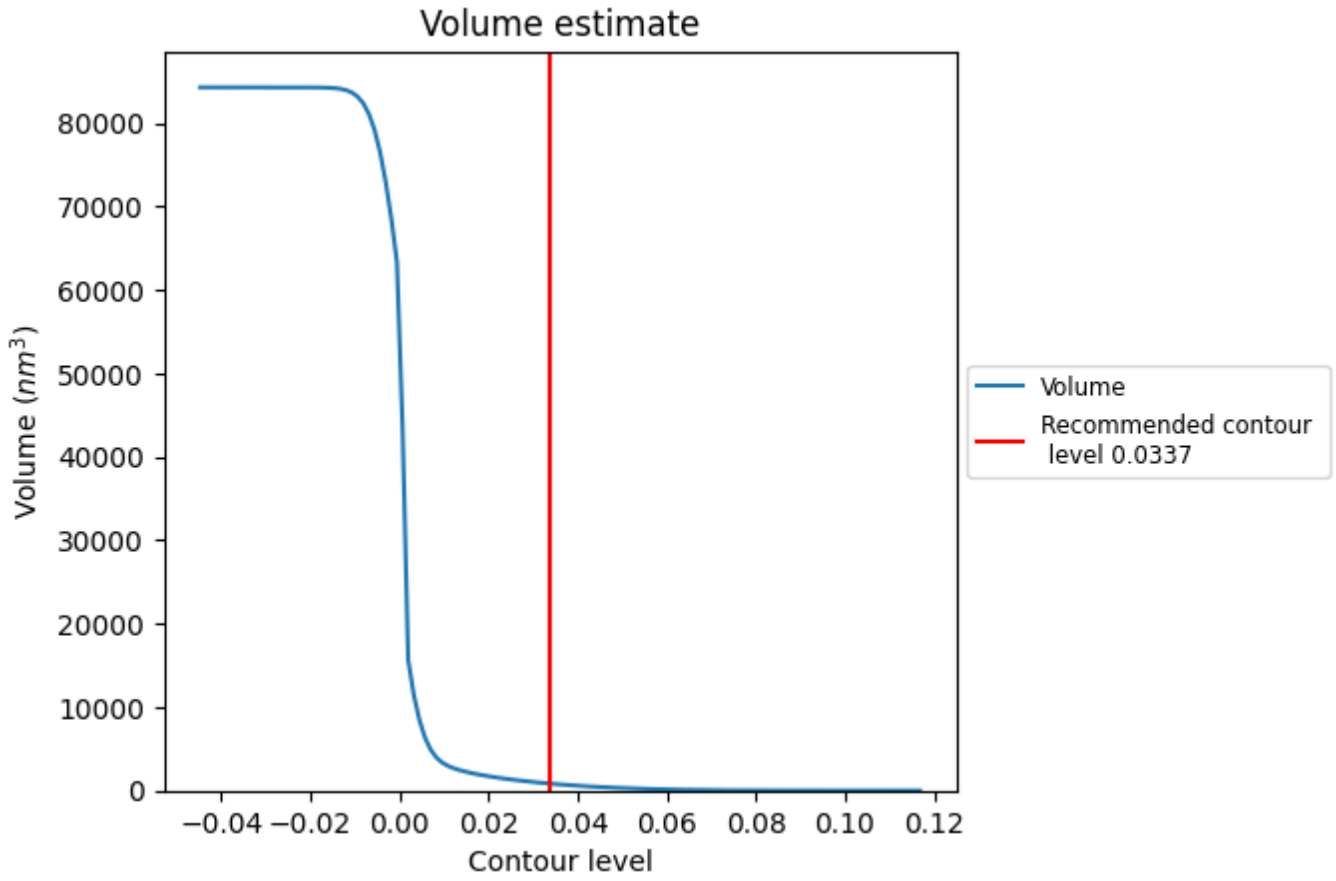
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

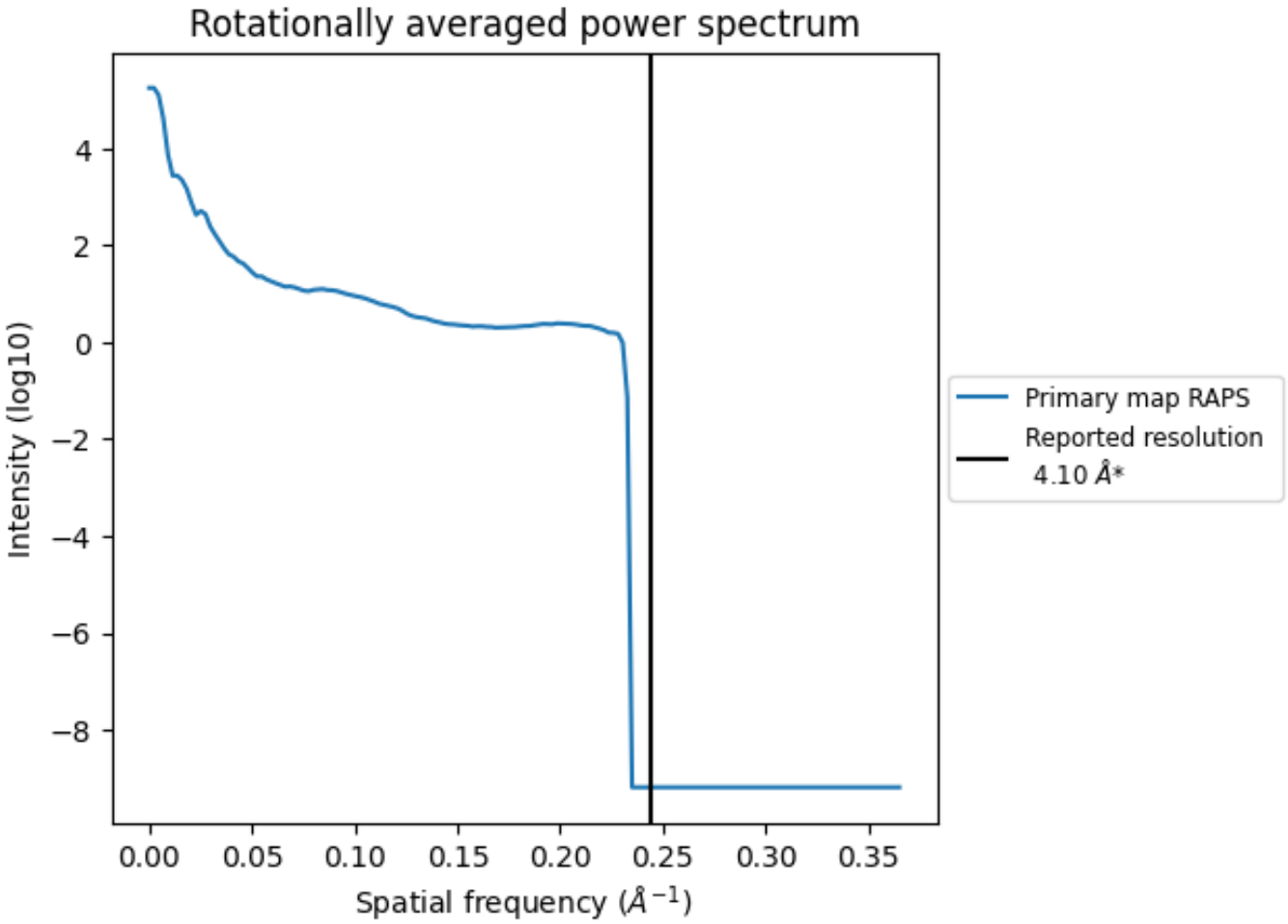
7.2 Volume estimate



The volume at the recommended contour level is 837 nm^3; this corresponds to an approximate mass of 756 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 0.244 Å^{-1}

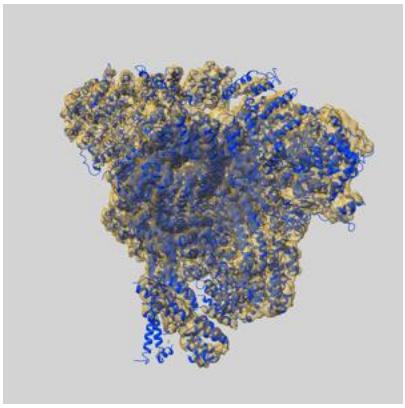
8 Fourier-Shell correlation

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

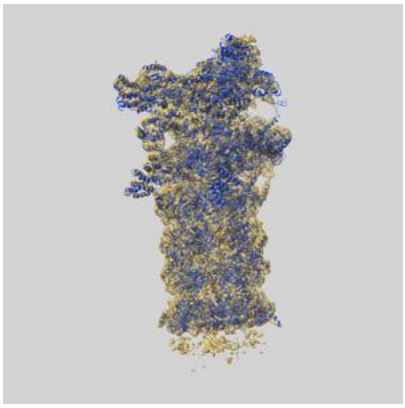
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-14211 and PDB model 7QYB. Per-residue inclusion information can be found in section 3 on page 12.

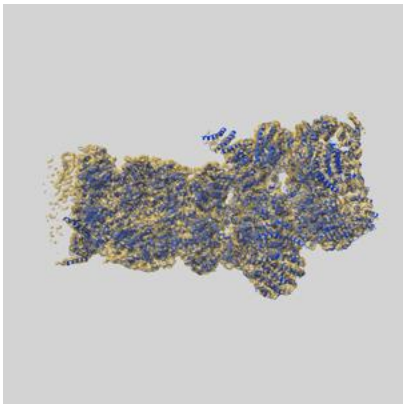
9.1 Map-model overlay



X



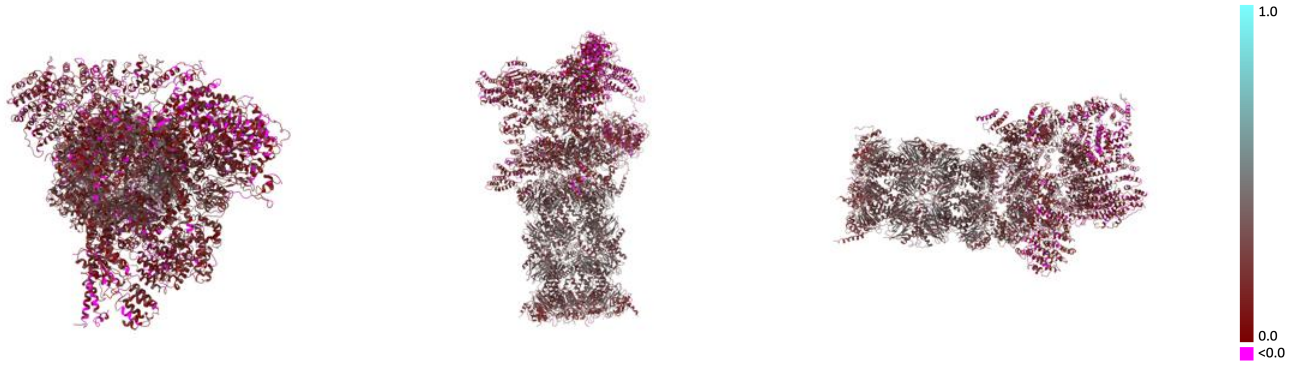
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0337 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.

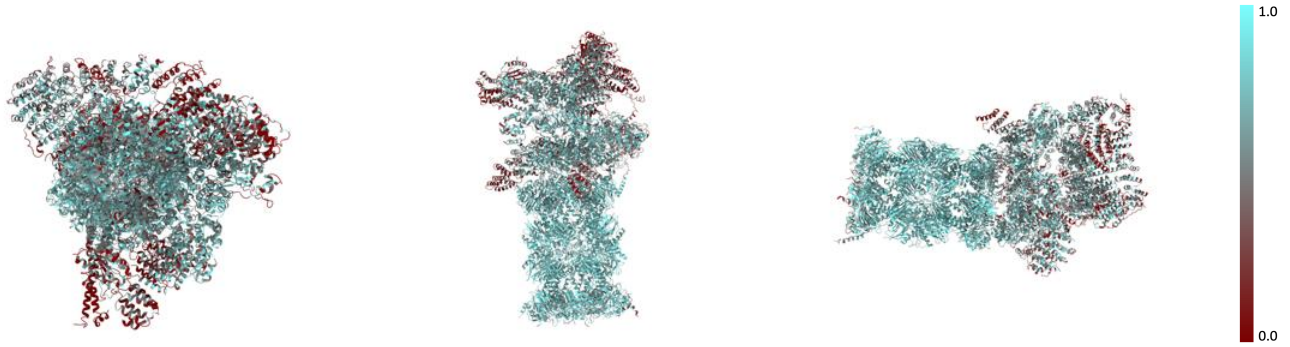
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

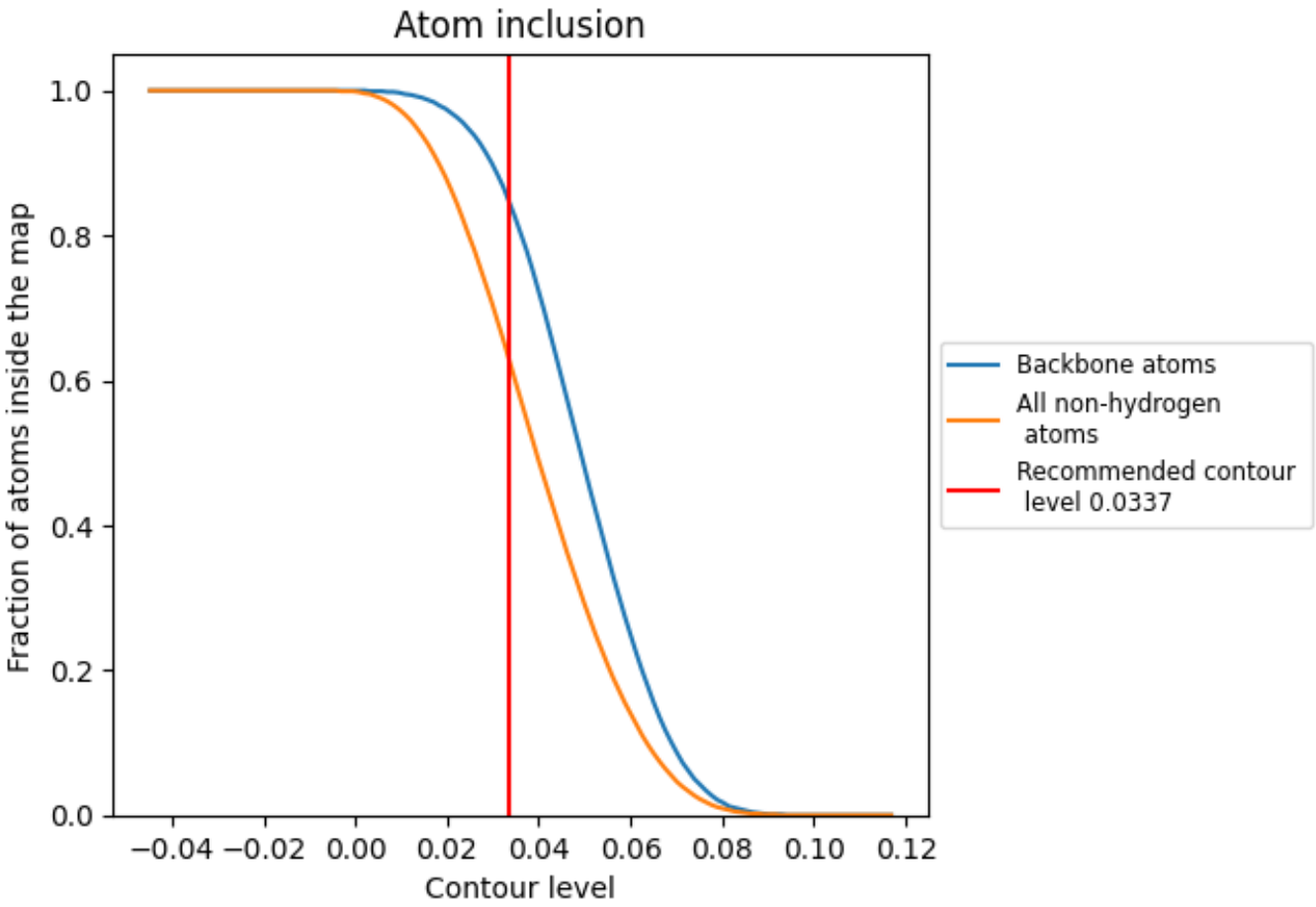
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0337).

9.4 Atom inclusion (i)



At the recommended contour level, 84% of all backbone atoms, 62% 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 (0.0337) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6250	0.2520
A	0.6340	0.2650
B	0.6170	0.2700
C	0.6530	0.2820
D	0.6330	0.2600
E	0.4120	0.1550
F	0.5660	0.2320
G	0.7440	0.3140
H	0.7590	0.3370
I	0.7170	0.3180
J	0.7540	0.3340
K	0.7340	0.3320
L	0.7760	0.3470
M	0.7380	0.3150
N	0.7930	0.3520
O	0.7890	0.3540
P	0.7890	0.3590
Q	0.7860	0.3480
R	0.8200	0.3590
S	0.7960	0.3680
T	0.7970	0.3560
U	0.4710	0.1370
V	0.3860	0.1150
W	0.4450	0.1670
X	0.5250	0.2160
Y	0.6590	0.1970
Z	0.5510	0.2010
a	0.4530	0.1600
b	0.3520	0.1510
c	0.5780	0.2070
d	0.3770	0.1210
e	0.5240	0.1550
f	0.5070	0.1490
g	0.7070	0.3090
h	0.7030	0.3050

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Chain	Atom inclusion	Q-score
i	0.6580	0.2750
j	0.6690	0.2670
k	0.6850	0.2950
l	0.7380	0.3180
m	0.7240	0.2940
n	0.7980	0.3480
o	0.7910	0.3540
p	0.7750	0.3510
q	0.7840	0.3370
r	0.8140	0.3570
s	0.7920	0.3600
t	0.7970	0.3560