wwPDB EM Validation Summary Report

Mar 16, 2026 – 06:43 PM JST

PDB ID	:	9MBQ / pdb_00009mbq
EMDB ID	:	EMD-63777
Title	:	Substrate-engaged human 26S proteasome bound to midnolin with RPT5 at top of spiral staircase
Authors	:	Zhu, C.; Qin, L.; Liang, L.
Deposited on	:	2025-03-17
Resolution	:	3.08 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:

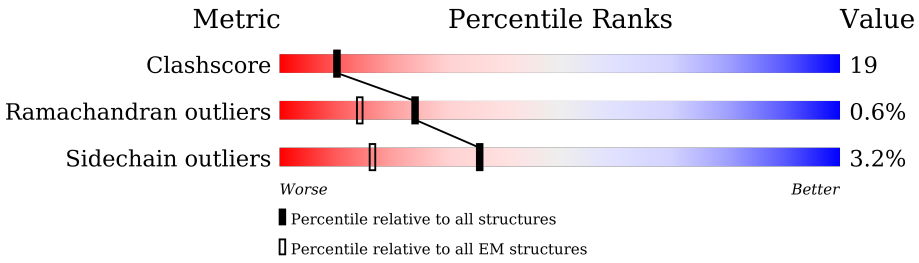
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48.1

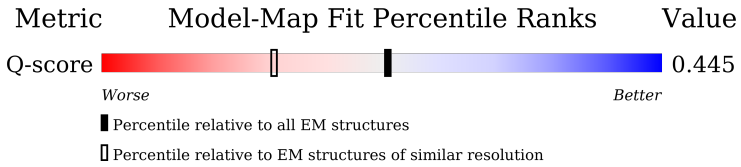
1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.08 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	14000 (2.58 - 3.58)

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	921	48% 55% 39% • 5%
2	V	480	60% 44% 54% •
3	W	456	15% 39% 57% • •
4	X	422	9% 52% 36% • 10%

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Mol	Chain	Length	Quality of chain
5	Y	389	7% 44% 49%
6	Z	324	22% 40% 44% 12%
7	a	376	61% 47% 49%
8	b	377	32% 26% 24% 49%
9	c	310	11% 37% 51% 5% 7%
10	d	350	59% 37% 35% 27%
11	e	70	14% 23% 33% 43%
12	A	433	64% 30% 5%
13	B	440	59% 31% 8%
14	C	406	64% 31%
15	D	418	55% 34% 9%
16	E	389	24% 40% 54%
17	F	439	10% 60% 29% 10%
18	G	245	81% 14%
18	g	245	75% 22%
19	H	233	78% 19%
19	h	233	78% 20%
20	I	260	78% 15% 5%
20	i	260	80% 16%
21	J	247	78% 21%
21	j	247	72% 24%
22	K	240	83% 12%
22	k	240	72% 23% 5%
23	L	268	78% 11% 11%
23	l	268	68% 20% 11%

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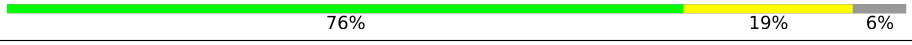
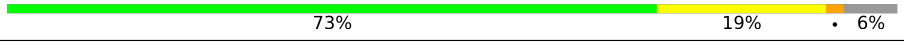
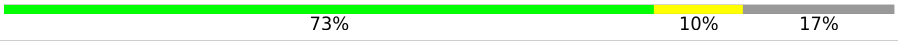
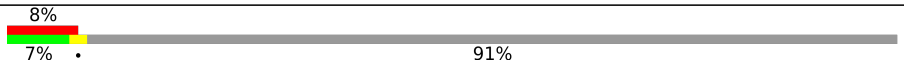
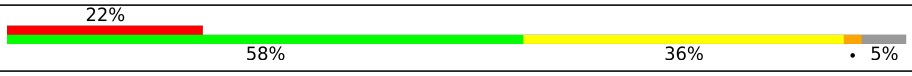
Mol	Chain	Length	Quality of chain
24	M	254	
24	m	254	
25	N	238	
25	n	238	
26	O	276	
26	o	276	
27	P	204	
27	p	204	
28	Q	201	
28	q	201	
29	R	262	
29	r	262	
30	S	240	
30	s	240	
31	T	263	
31	t	263	
32	f	468	
33	x	908	
34	v	14	

2 Entry composition (i)

There are 39 unique types of molecules in this entry. The entry contains 105726 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
1	U	872	Total	C	N	O	S	0	0
			6828	4328	1157	1298	45		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	W	453	Total	C	N	O	S	0	0
			3679	2323	632	699	25		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
5	Y	378	Total	C	N	O	S	0	0
			3109	1984	530	578	17		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
6	Z	286	Total	C	N	O	S	0	0
			2281	1457	392	427	5		

- 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 regulatory subunit 7.

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

- Molecule 13 is a protein called 26S proteasome regulatory subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	B	405	Total	C	N	O	S	0	0
			3162	1994	538	615	15		

- Molecule 14 is a protein called 26S proteasome regulatory subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	C	396	Total	C	N	O	S	0	0
			3107	1955	558	576	18		

- Molecule 15 is a protein called 26S proteasome regulatory subunit 6B.

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

- Molecule 16 is a protein called 26S proteasome regulatory subunit 10B.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	E	381	Total	C	N	O	S	0	0
			3031	1903	542	569	17		

- Molecule 17 is a protein called 26S proteasome regulatory subunit 6A.

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

- Molecule 18 is a protein called Proteasome subunit alpha type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	G	237	Total	C	N	O	S	0	0
			1809	1151	302	343	13		
18	g	240	Total	C	N	O	S	0	0
			1830	1163	306	348	13		

- Molecule 19 is a protein called Proteasome subunit alpha type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	H	231	Total	C	N	O	S	0	0
			1714	1088	290	331	5		
19	h	229	Total	C	N	O	S	0	0
			1703	1083	286	329	5		

- Molecule 20 is a protein called Proteasome subunit alpha type-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	I	248	Total	C	N	O	S	0	0
			1895	1195	324	368	8		

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Mol	Chain	Residues	Atoms					AltConf	Trace
20	i	250	Total	C	N	O	S	0	0
			1912	1204	329	371	8		

- Molecule 21 is a protein called Proteasome subunit alpha type-7.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	J	247	Total	C	N	O	S	0	0
			1844	1148	331	360	5		
21	j	239	Total	C	N	O	S	0	0
			1704	1056	308	335	5		

- Molecule 22 is a protein called Proteasome subunit alpha type-5.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	K	230	Total	C	N	O	S	0	0
			1746	1096	286	353	11		
22	k	228	Total	C	N	O	S	0	0
			1722	1080	284	348	10		

- Molecule 23 is a protein called Isoform Long of Proteasome subunit alpha type-1.

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

- Molecule 24 is a protein called Proteasome subunit alpha type-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	M	240	Total	C	N	O	S	0	0
			1856	1178	314	353	11		
24	m	240	Total	C	N	O	S	0	0
			1862	1181	317	353	11		

- Molecule 25 is a protein called Proteasome subunit beta type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	N	197	Total	C	N	O	S	0	0
			1482	928	253	289	12		
25	n	197	Total	C	N	O	S	0	0
			1482	928	253	289	12		

- Molecule 26 is a protein called Proteasome subunit beta type-7.

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

- Molecule 27 is a protein called Proteasome subunit beta type-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	P	204	Total	C	N	O	S	0	0
			1591	1013	265	294	19		
27	p	204	Total	C	N	O	S	0	0
			1591	1013	265	294	19		

- Molecule 28 is a protein called Proteasome subunit beta type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Q	199	Total	C	N	O	S	0	0
			1570	1006	265	290	9		
28	q	199	Total	C	N	O	S	0	0
			1574	1009	266	290	9		

- Molecule 29 is a protein called Proteasome subunit beta type-5.

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

- Molecule 30 is a protein called Proteasome subunit beta type-1.

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

- Molecule 31 is a protein called Proteasome subunit beta type-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	T	215	Total	C	N	O	S	0	0
			1667	1052	285	318	12		
31	t	215	Total	C	N	O	S	0	0
			1673	1055	288	318	12		

- Molecule 32 is a protein called Midnolin.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	f	42	Total	C	N	O	S	0	0
			367	222	86	58	1		

- Molecule 33 is a protein called 26S proteasome non-ATPase regulatory subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	x	867	Total	C	N	O	S	0	0
			6723	4243	1141	1294	45		

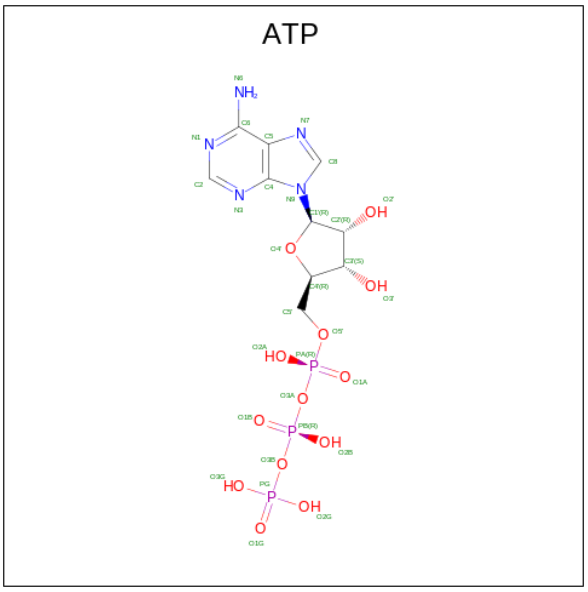
- Molecule 34 is a protein called substrate peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
34	v	14	Total	C	N	O	0	0
			70	42	14	14		

- Molecule 35 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

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

- Molecule 36 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).

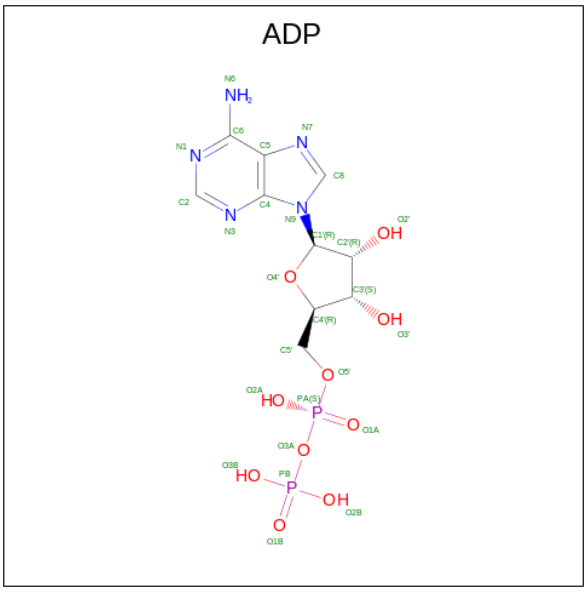


Mol	Chain	Residues	Atoms					AltConf
36	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
36	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
36	C	1	Total	C	N	O	P	0
			31	10	5	13	3	
36	F	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 37 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

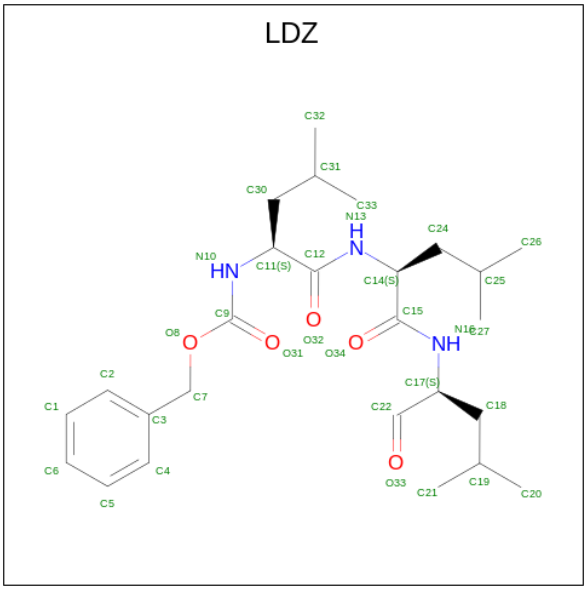
Mol	Chain	Residues	Atoms		AltConf
37	A	1	Total	Mg	0
			1	1	
37	B	1	Total	Mg	0
			1	1	
37	C	1	Total	Mg	0
			1	1	
37	F	1	Total	Mg	0
			1	1	

- Molecule 38 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 39 is N-[(benzyloxy)carbonyl]-L-leucyl-N-[(2S)-4-methyl-1-oxopentan-2-yl]-L-leucinamide (CCD ID: LDZ) (formula: $C_{26}H_{41}N_3O_5$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
39	N	1	Total	C	N	O	0
			34	26	3	5	

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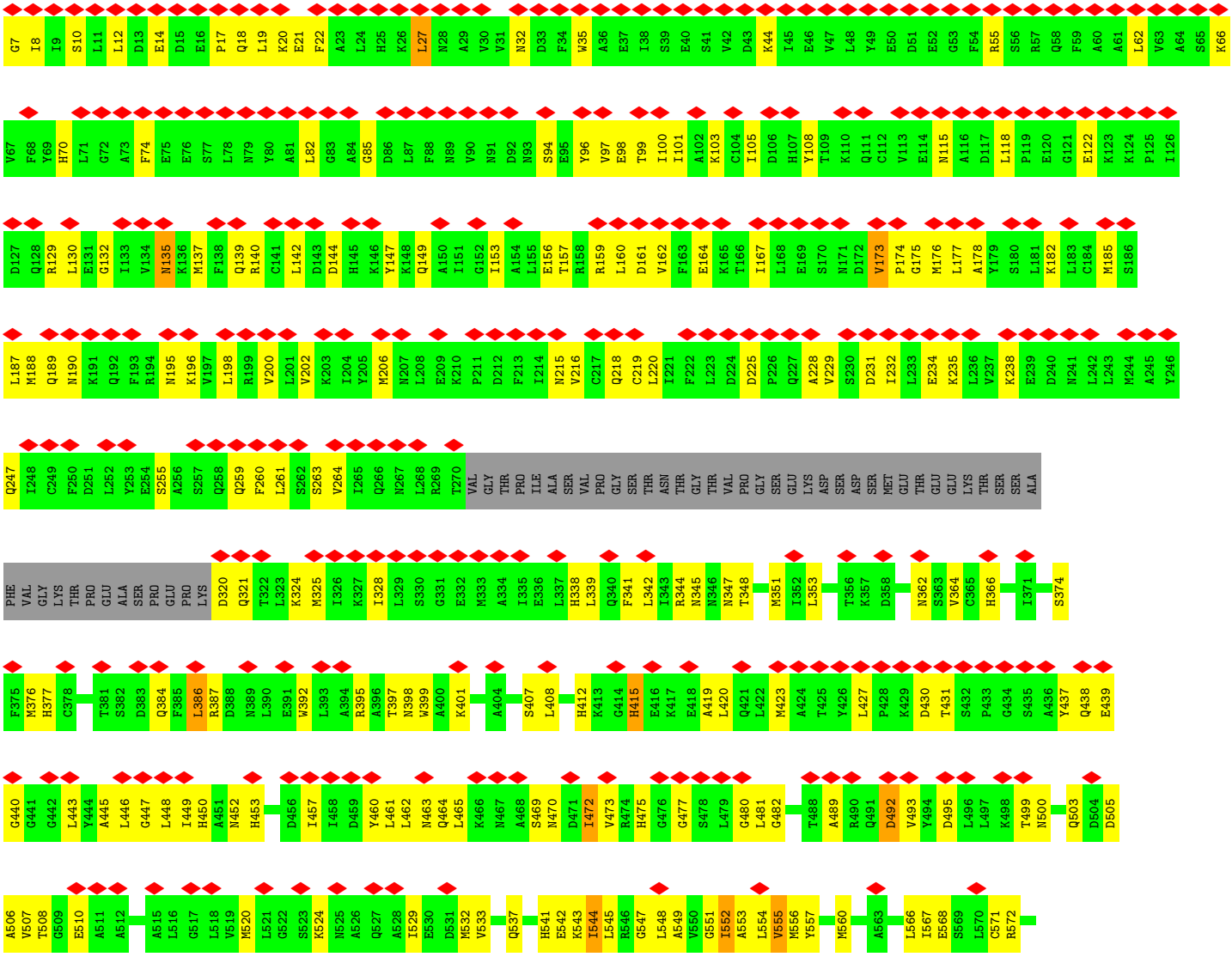
Mol	Chain	Residues	Atoms				AltConf
39	O	1	Total	C	N	O	0
			34	26	3	5	
39	R	1	Total	C	N	O	0
			34	26	3	5	
39	n	1	Total	C	N	O	0
			34	26	3	5	
39	o	1	Total	C	N	O	0
			34	26	3	5	
39	r	1	Total	C	N	O	0
			34	26	3	5	

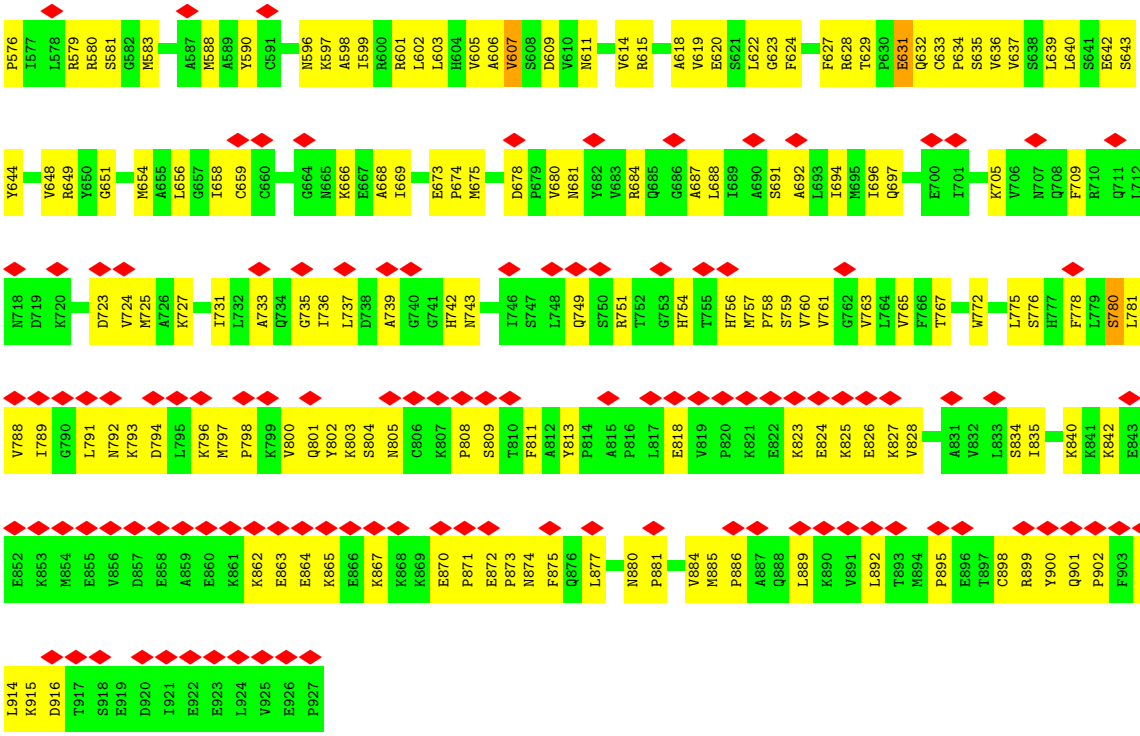
3 Residue-property plots (i)

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

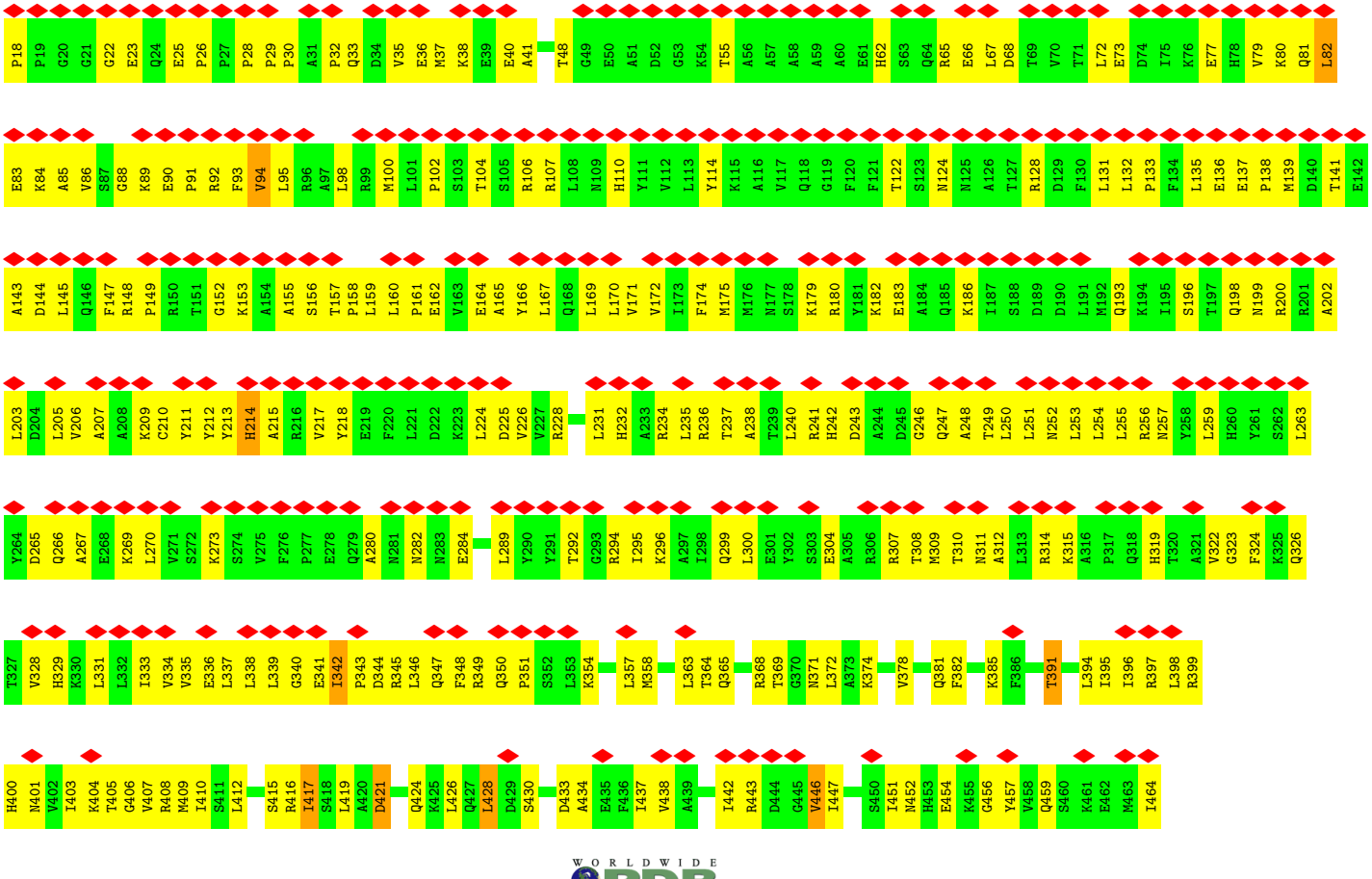
Chain U:

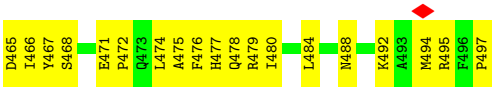




• Molecule 2: 26S proteasome non-ATPase regulatory subunit 3

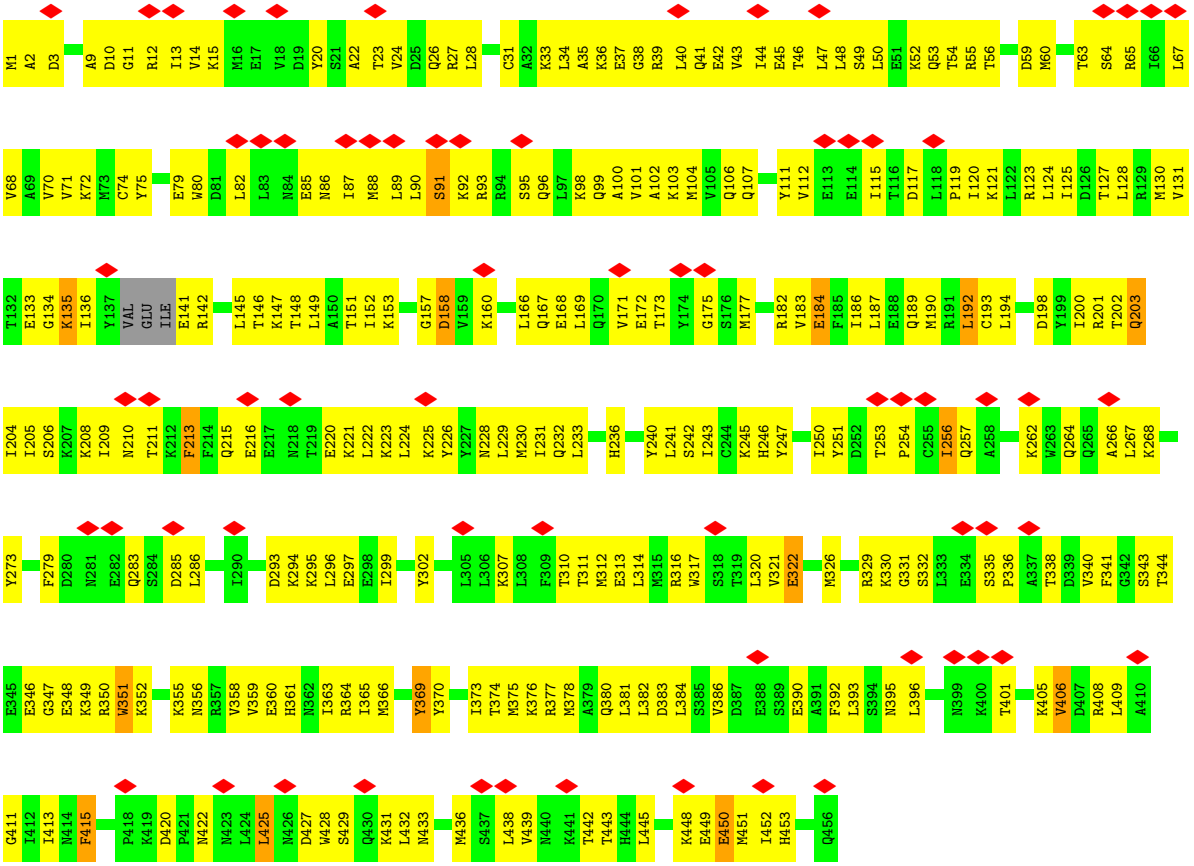
Chain V:





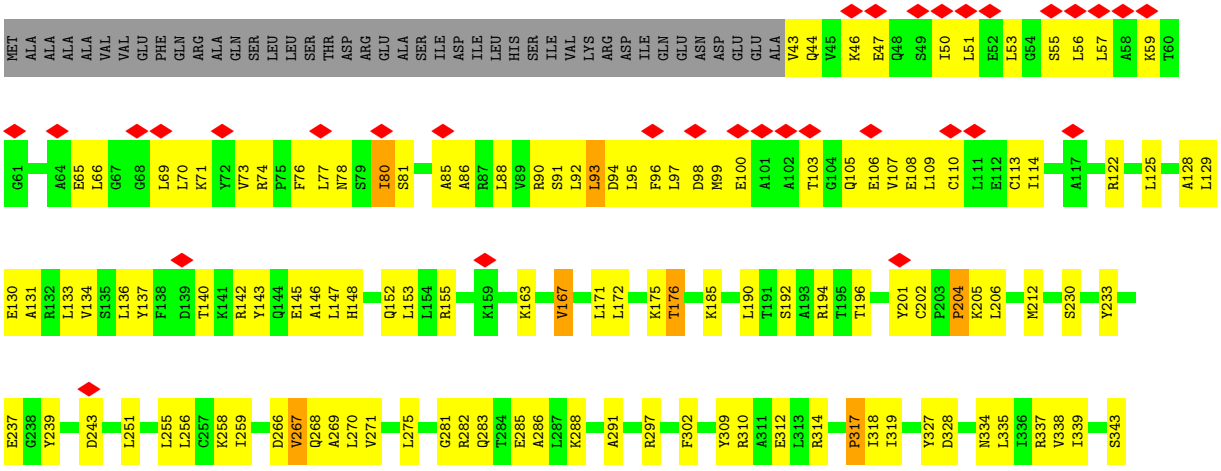
• Molecule 3: 26S proteasome non-ATPase regulatory subunit 12

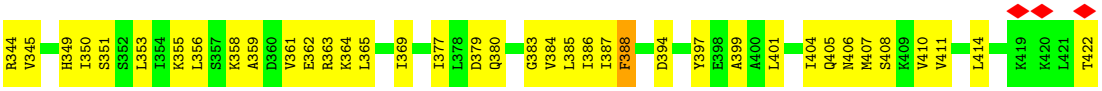
Chain W:



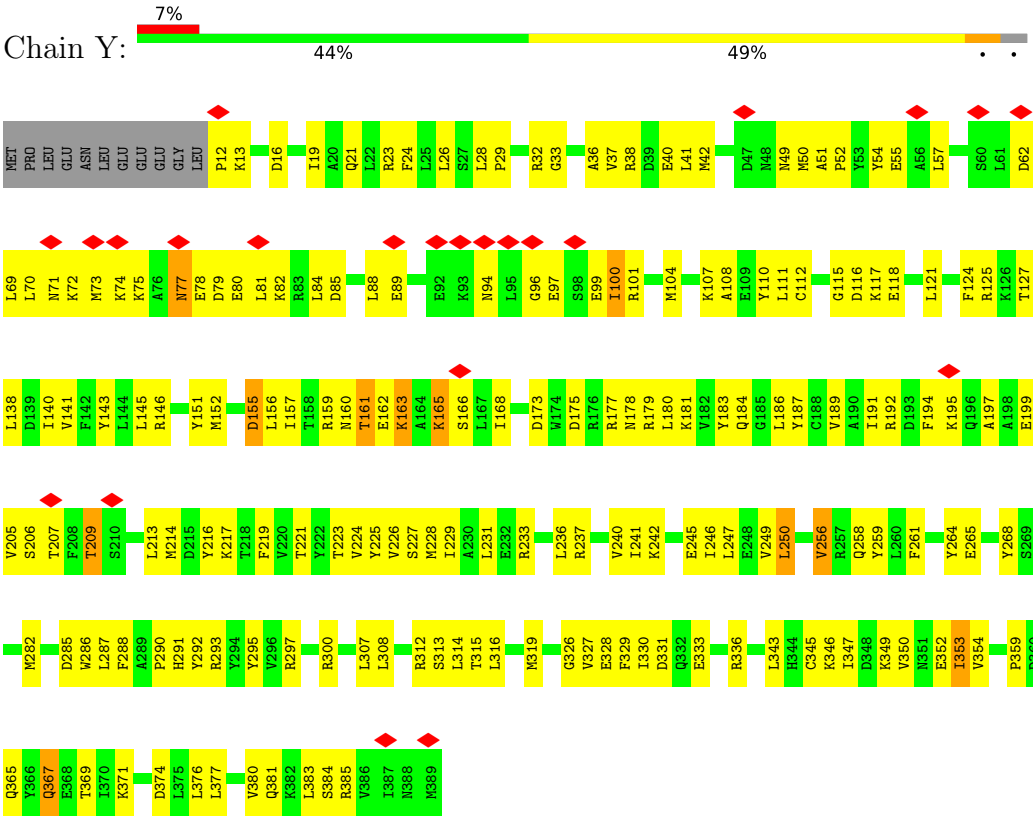
• Molecule 4: 26S proteasome non-ATPase regulatory subunit 11

Chain X:

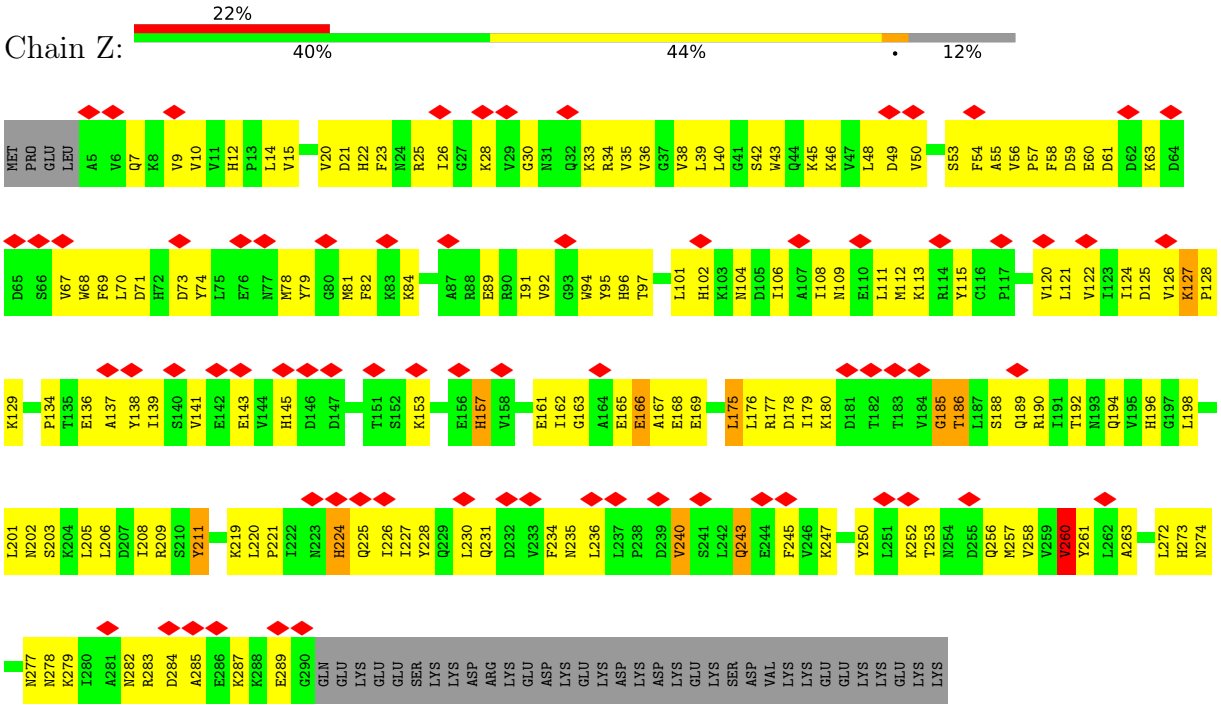




• Molecule 5: 26S proteasome non-ATPase regulatory subunit 6

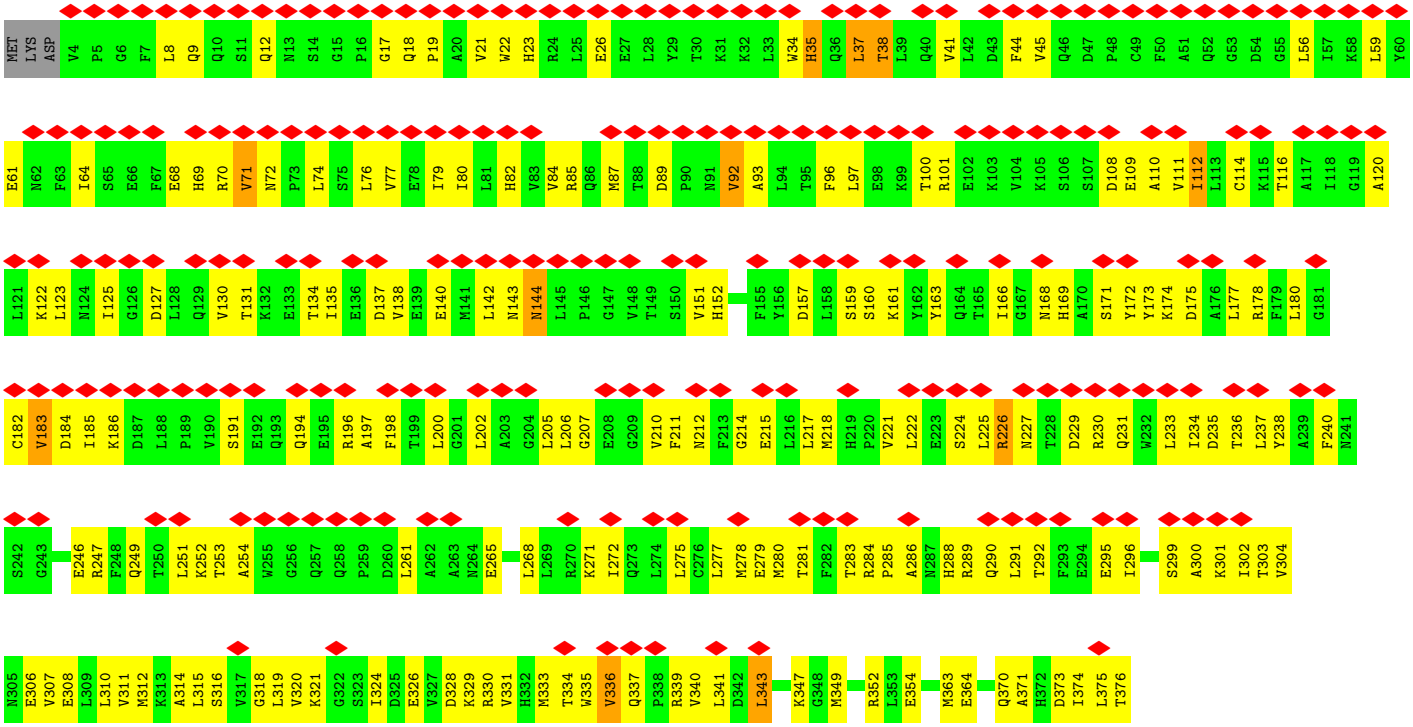


• Molecule 6: 26S proteasome non-ATPase regulatory subunit 7



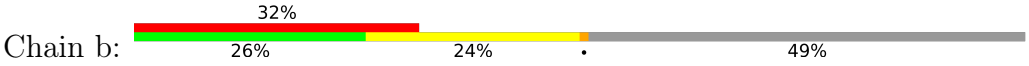
• Molecule 7: 26S proteasome non-ATPase regulatory subunit 13

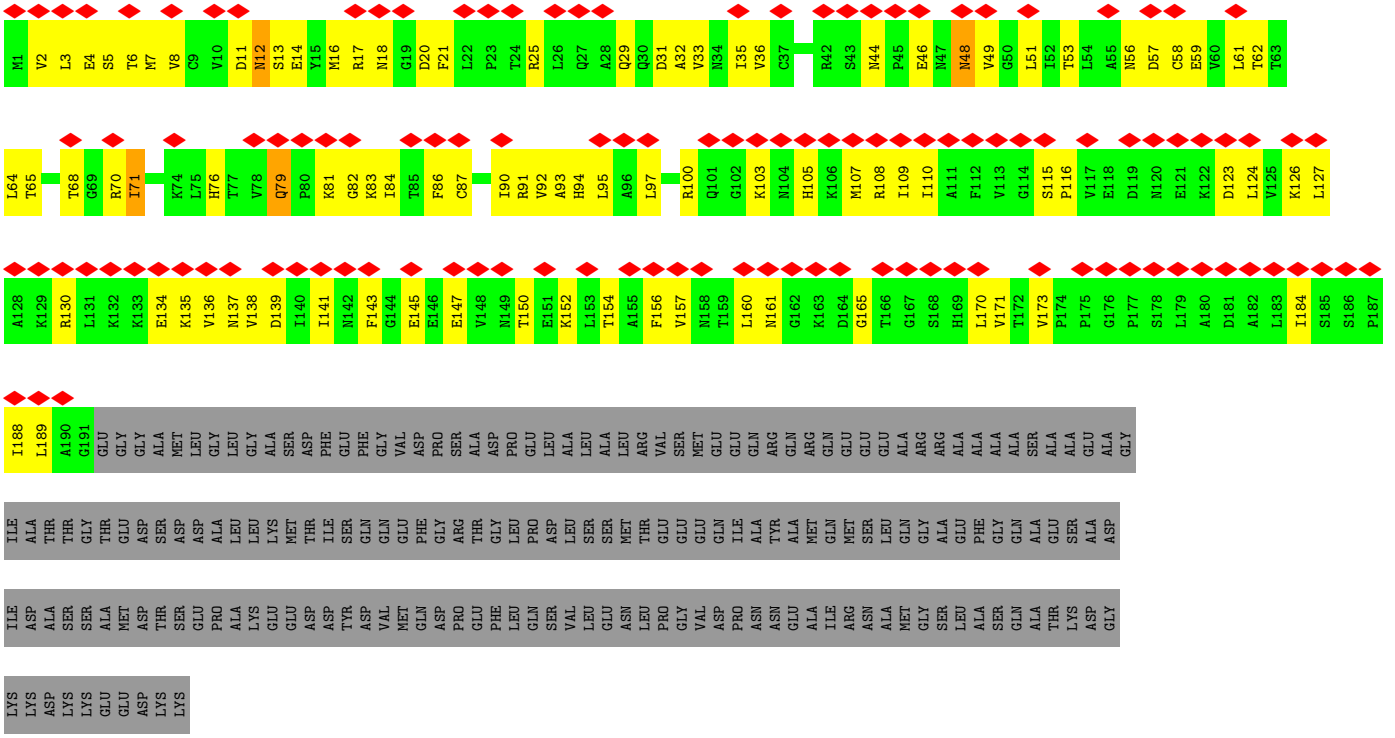
Chain a:



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

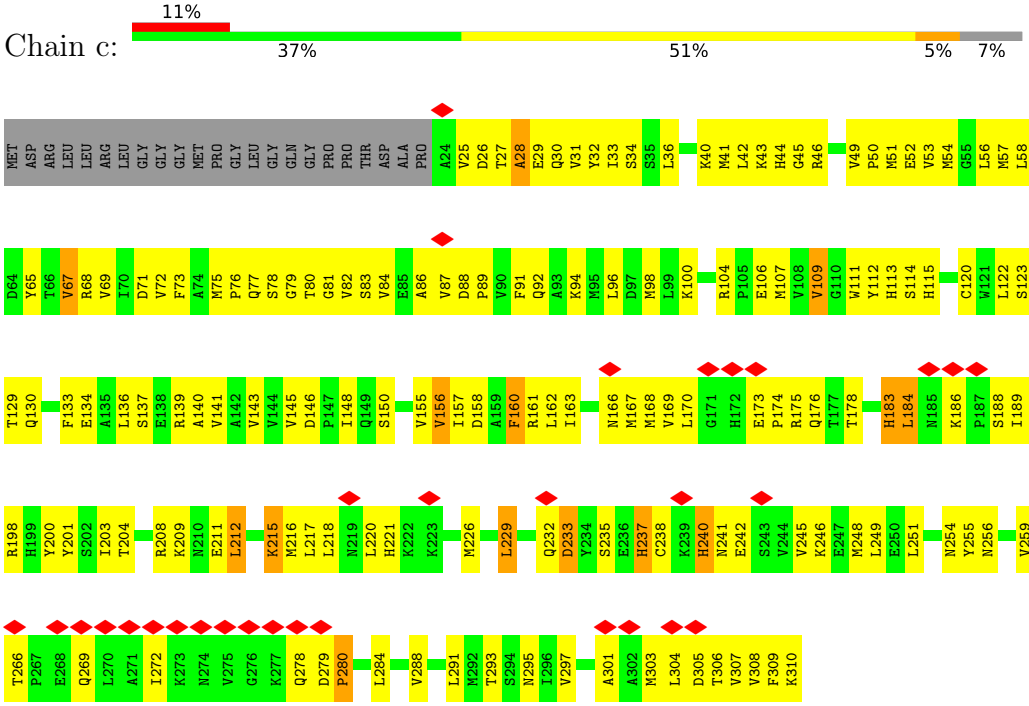
Chain b:





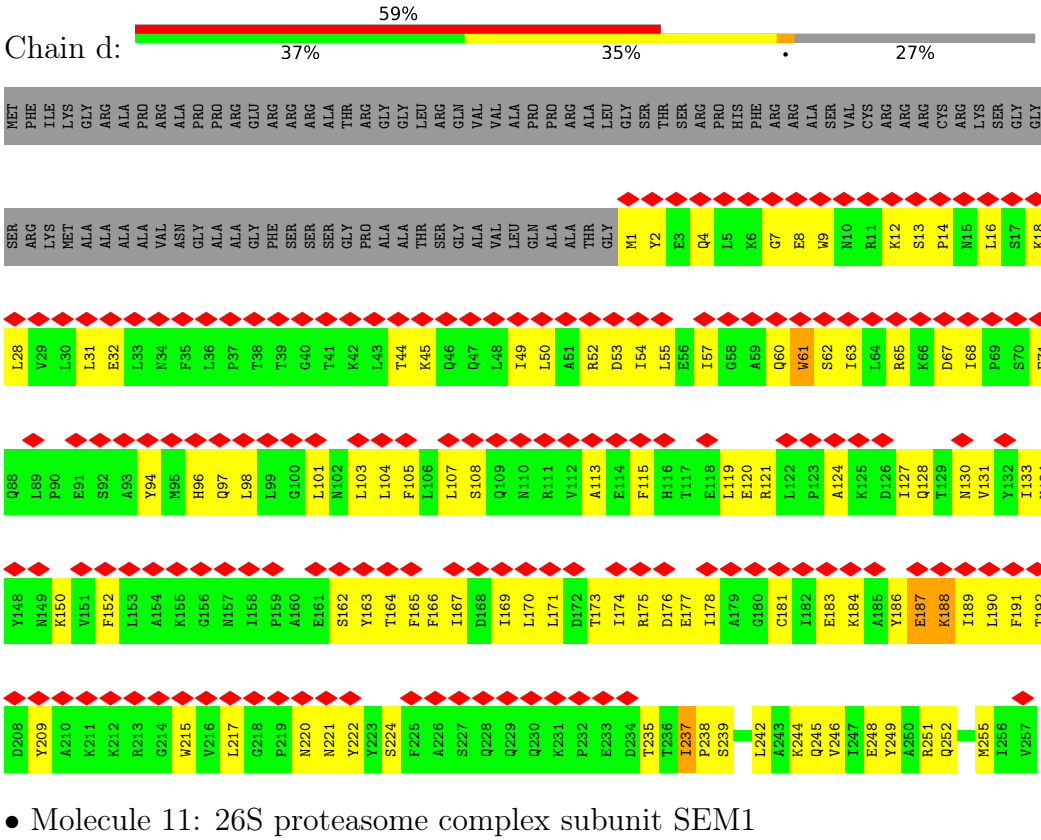
• Molecule 9: 26S proteasome non-ATPase regulatory subunit 14

Chain c:



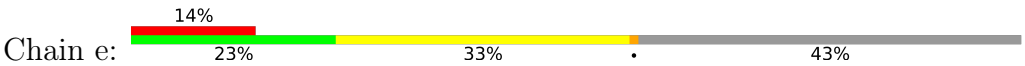
• Molecule 10: 26S proteasome non-ATPase regulatory subunit 8

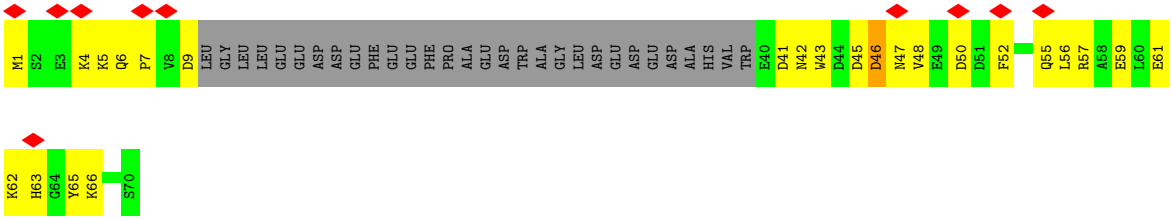
Chain d:



• Molecule 11: 26S proteasome complex subunit SEM1

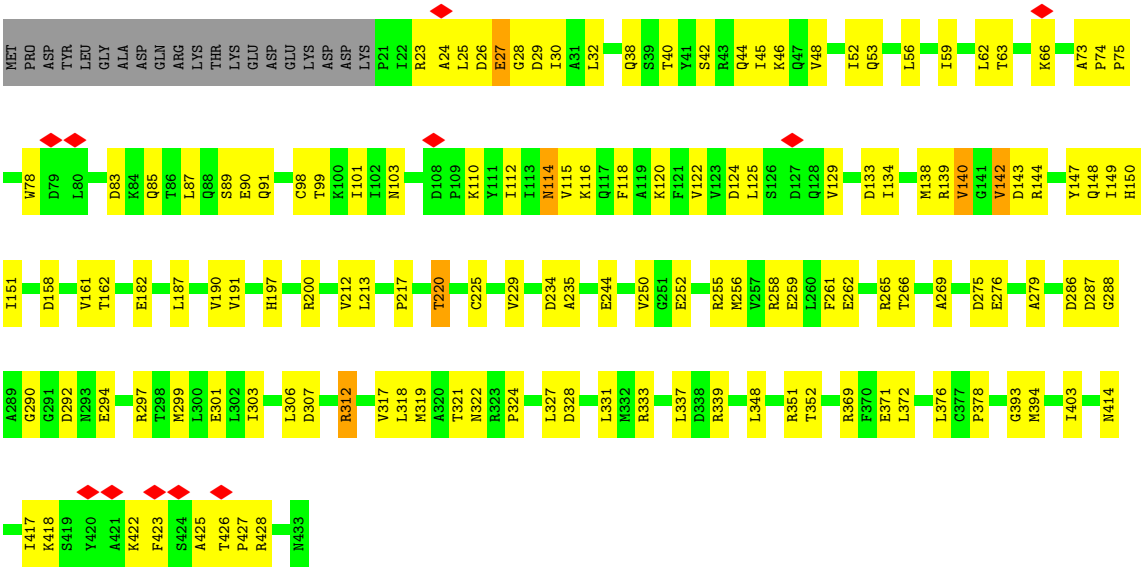
Chain e:





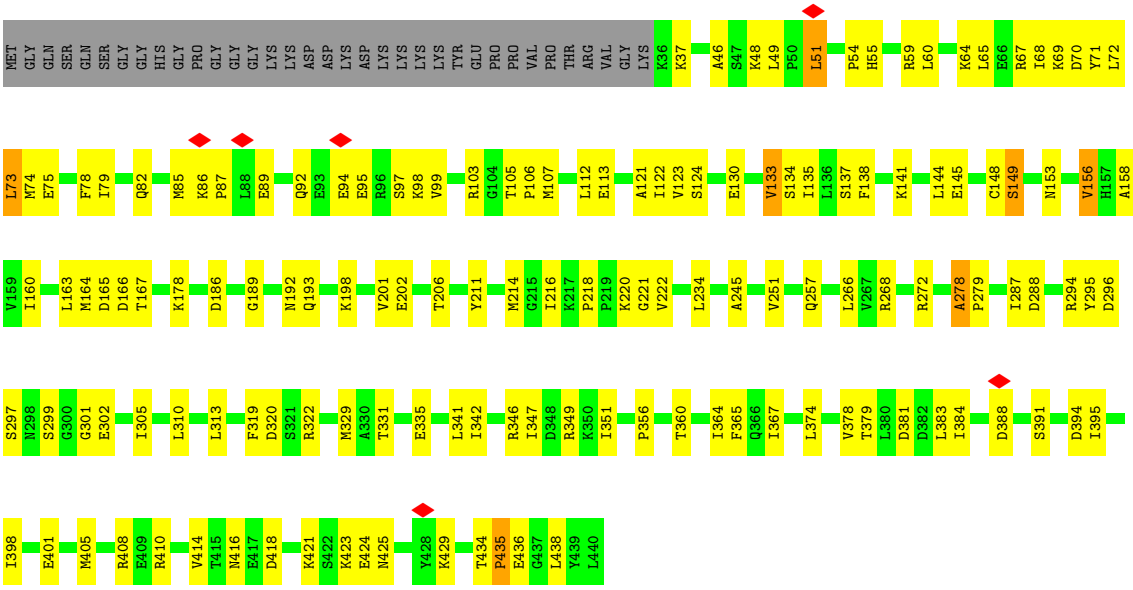
• Molecule 12: 26S proteasome regulatory subunit 7

Chain A:



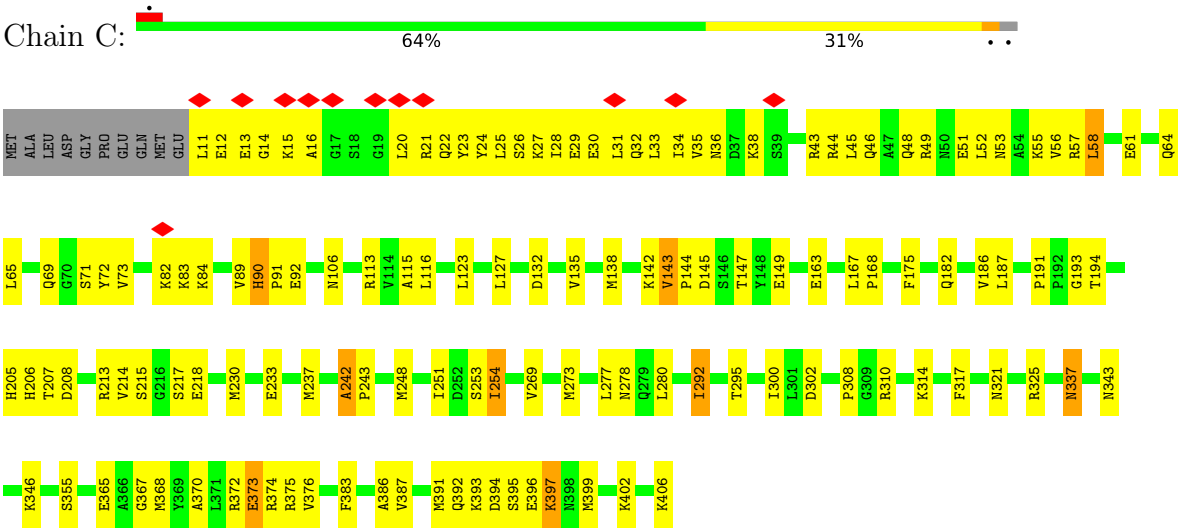
• Molecule 13: 26S proteasome regulatory subunit 4

Chain B:



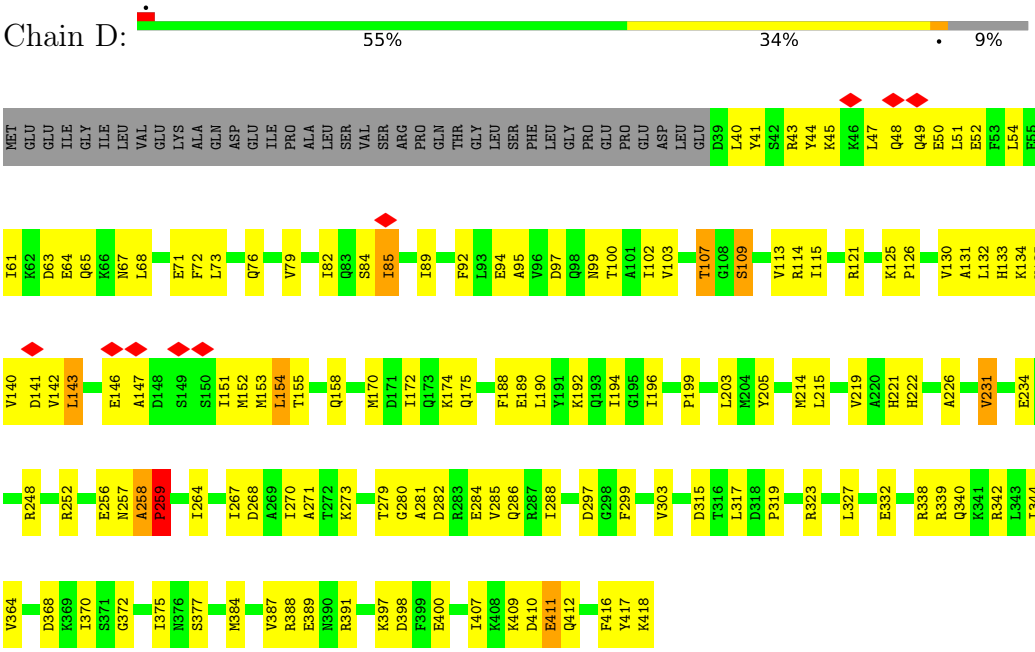
• Molecule 14: 26S proteasome regulatory subunit 8

Chain C:



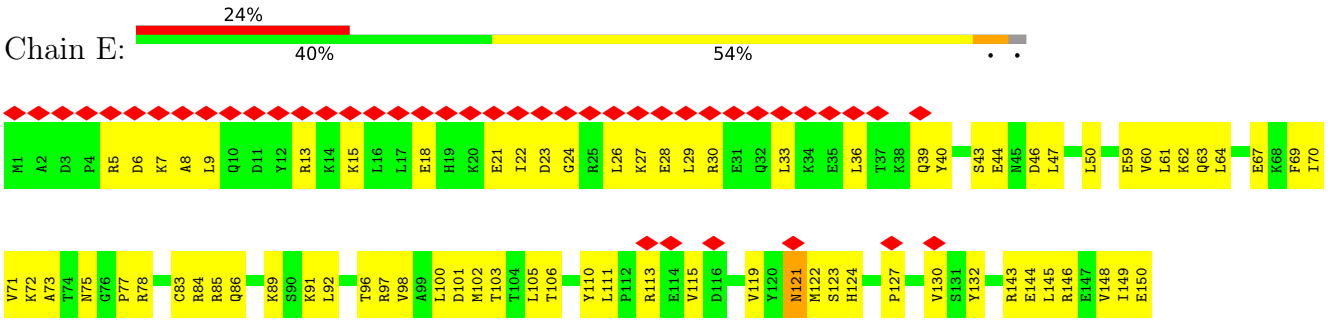
• Molecule 15: 26S proteasome regulatory subunit 6B

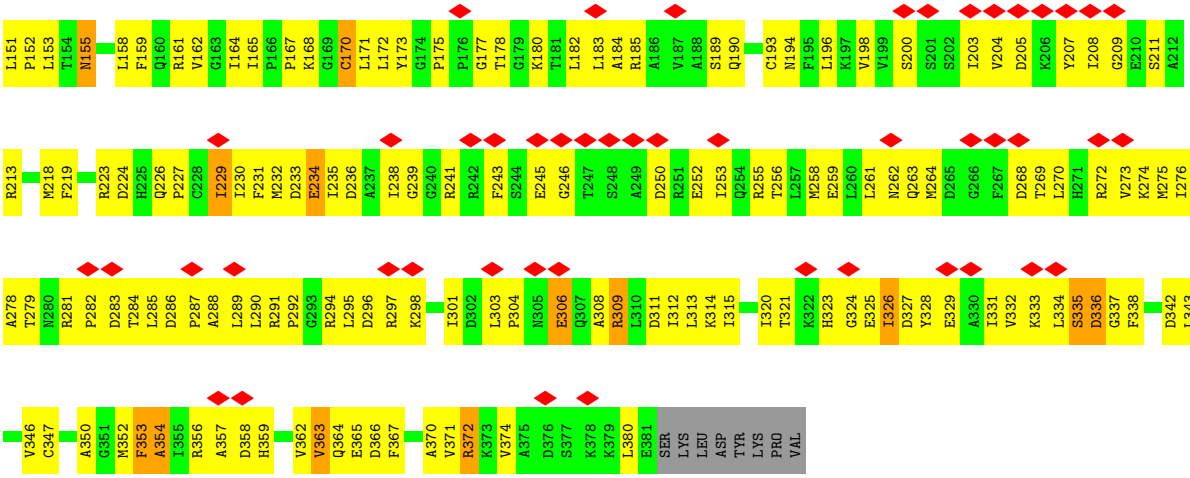
Chain D:



• Molecule 16: 26S proteasome regulatory subunit 10B

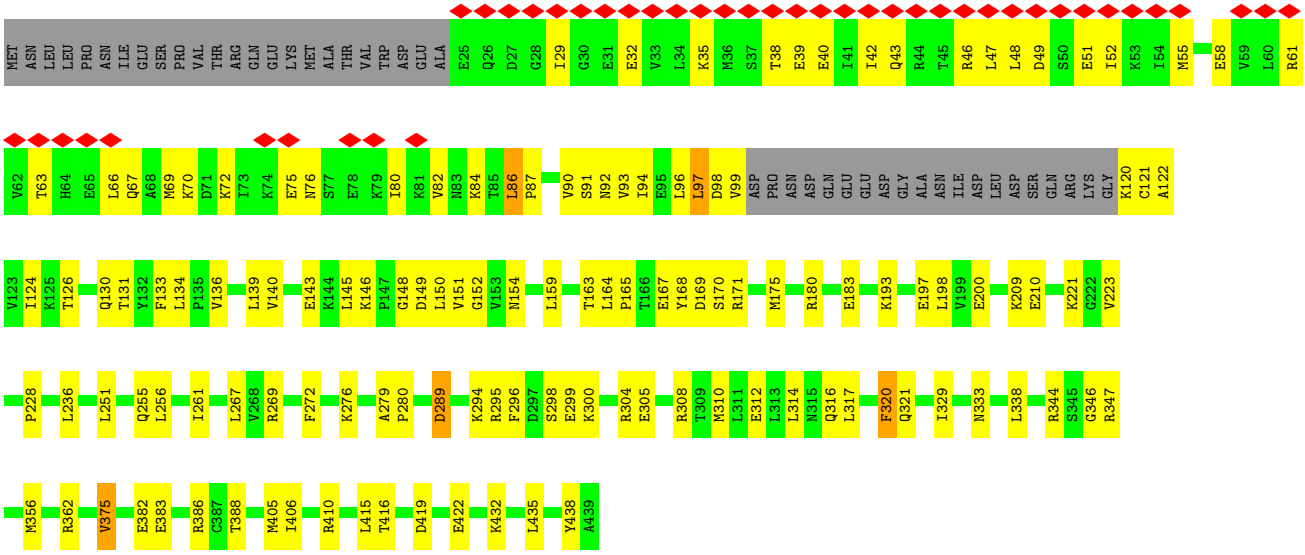
Chain E:





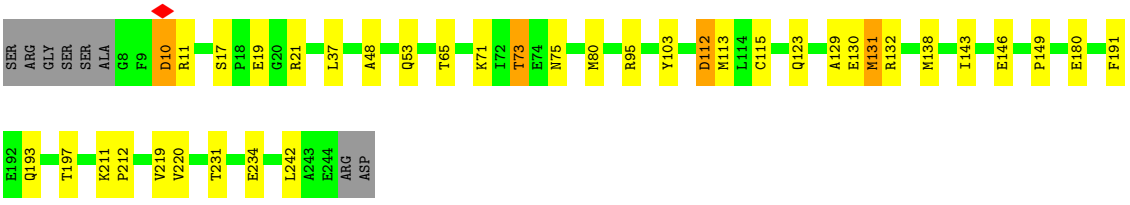
• Molecule 17: 26S proteasome regulatory subunit 6A

Chain F:



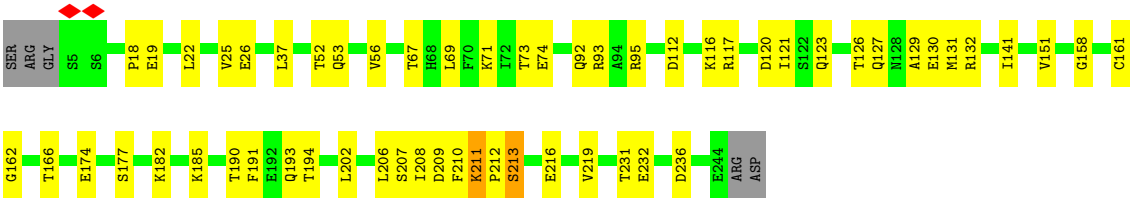
• Molecule 18: Proteasome subunit alpha type-6

Chain G:

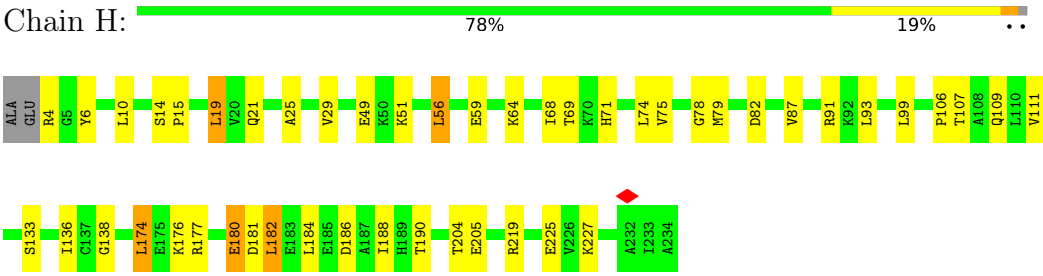


• Molecule 18: Proteasome subunit alpha type-6

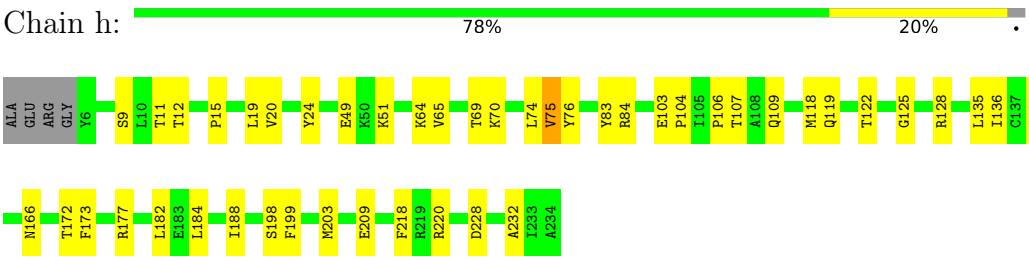
Chain g:



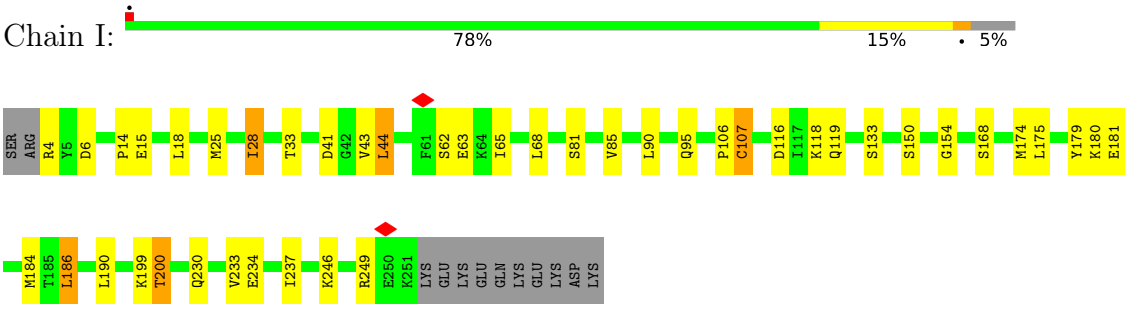
• Molecule 19: Proteasome subunit alpha type-2



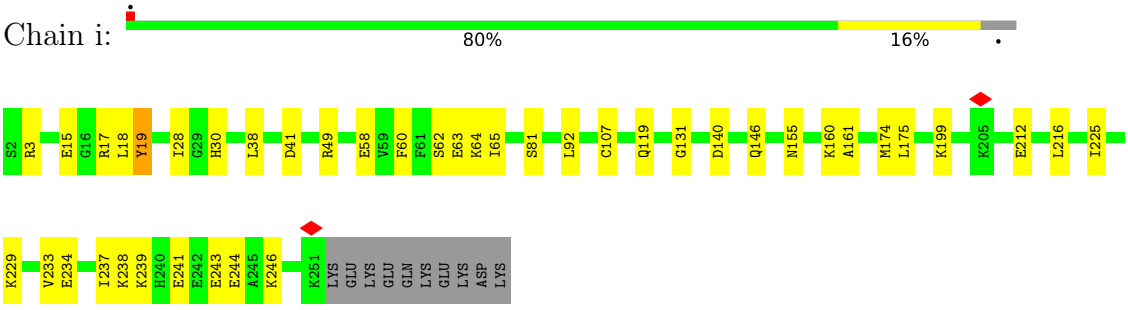
• Molecule 19: Proteasome subunit alpha type-2



• Molecule 20: Proteasome subunit alpha type-4

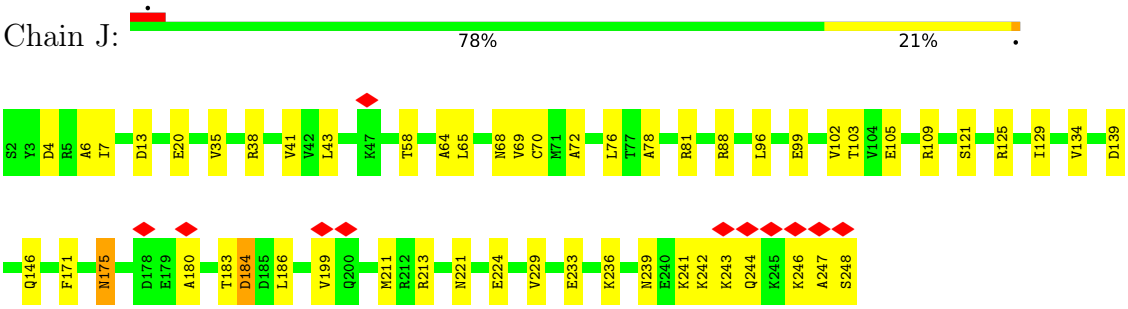


• Molecule 20: Proteasome subunit alpha type-4



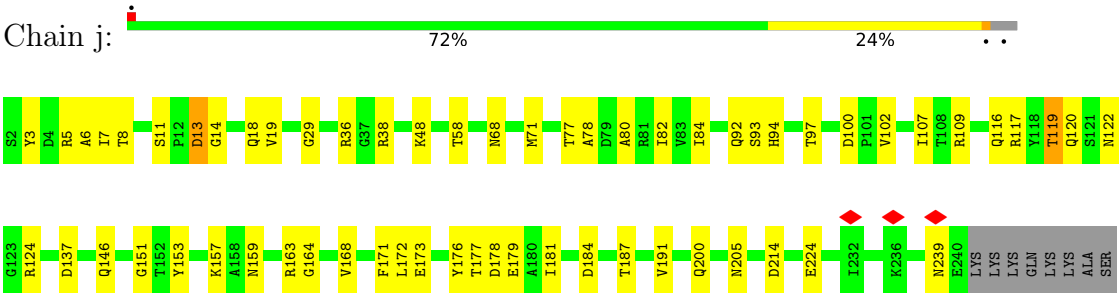
• Molecule 21: Proteasome subunit alpha type-7

Chain J:



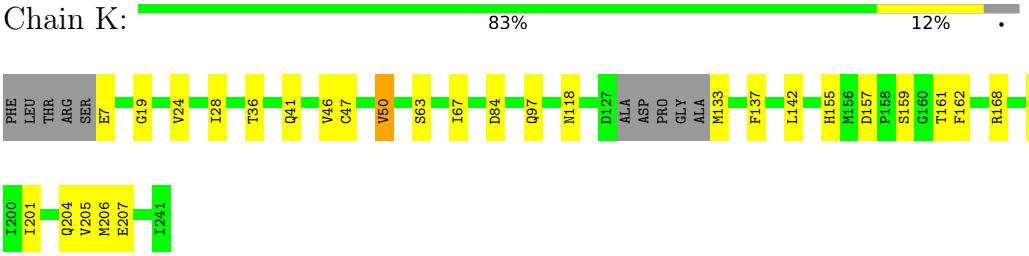
• Molecule 21: Proteasome subunit alpha type-7

Chain j:



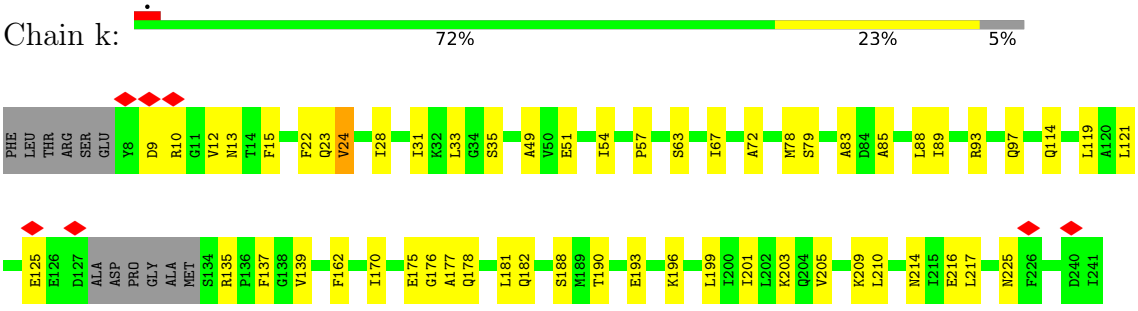
• Molecule 22: Proteasome subunit alpha type-5

Chain K:



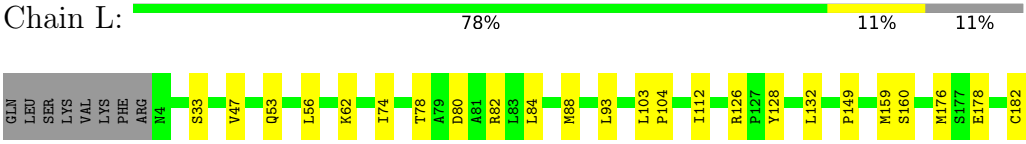
• Molecule 22: Proteasome subunit alpha type-5

Chain k:

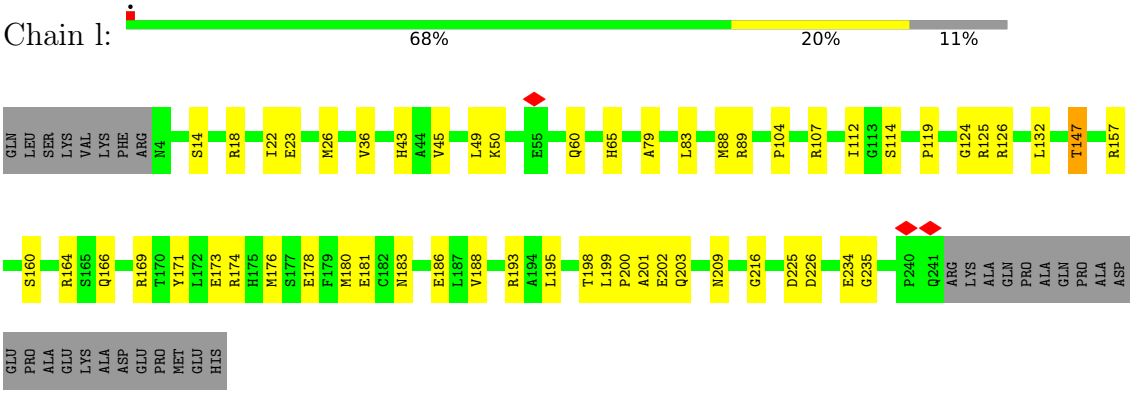


• Molecule 23: Isoform Long of Proteasome subunit alpha type-1

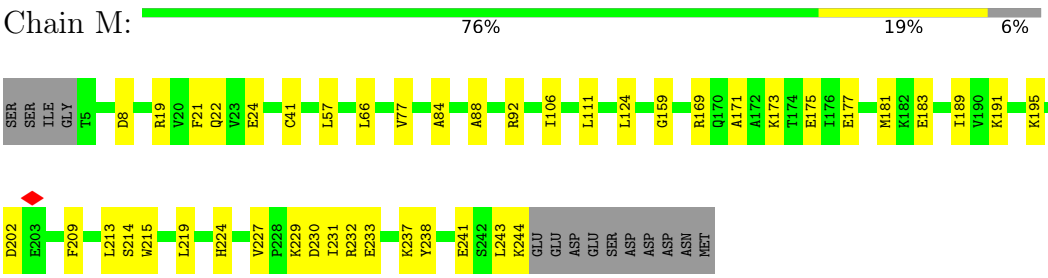
Chain L:



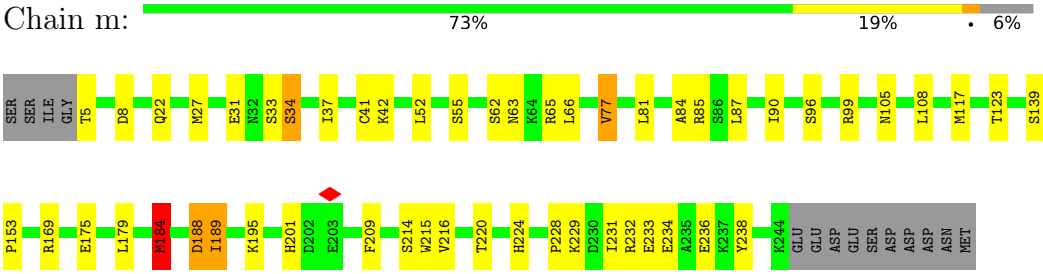
• Molecule 23: Isoform Long of Proteasome subunit alpha type-1



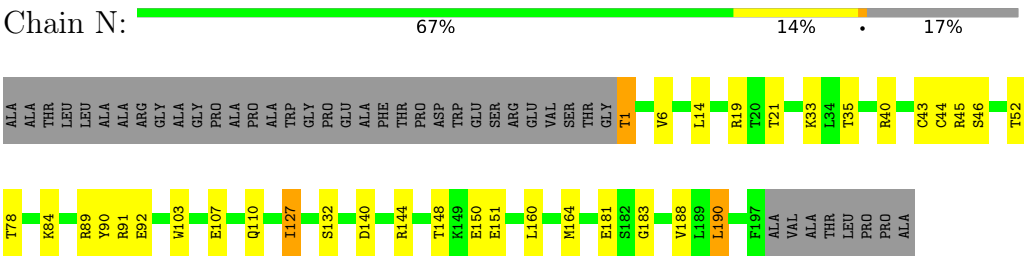
• Molecule 24: Proteasome subunit alpha type-3



• Molecule 24: Proteasome subunit alpha type-3

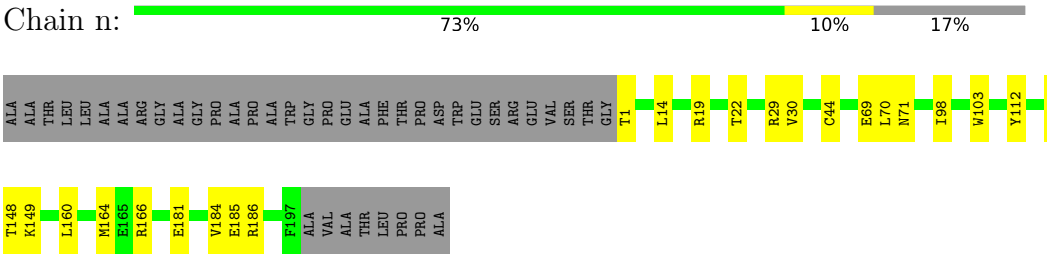


• Molecule 25: Proteasome subunit beta type-6



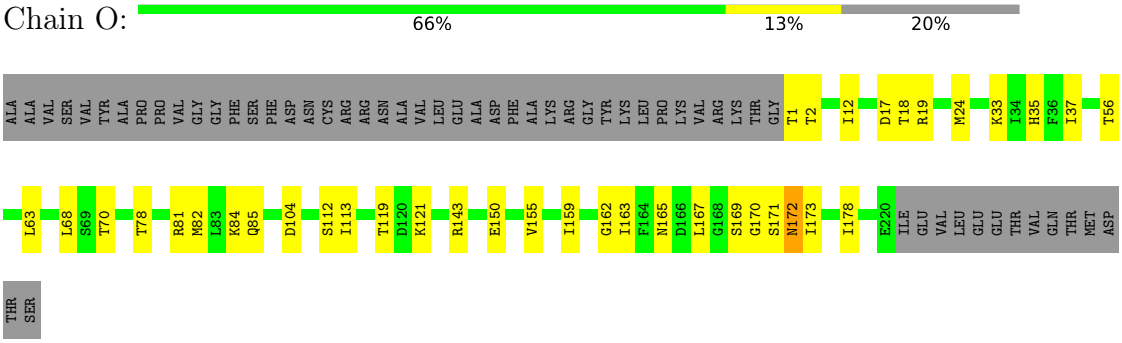
• Molecule 25: Proteasome subunit beta type-6

Chain n:



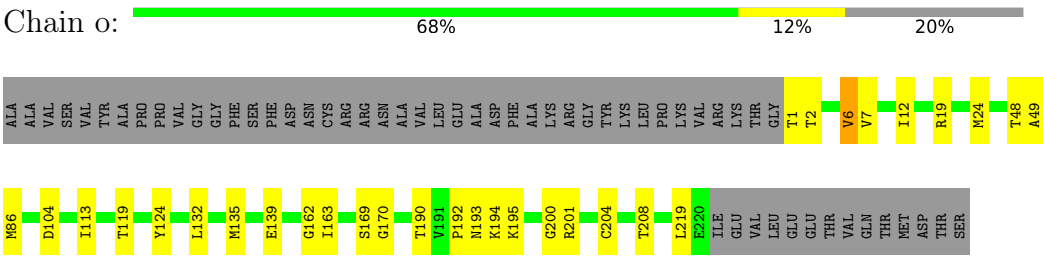
• Molecule 26: Proteasome subunit beta type-7

Chain O:



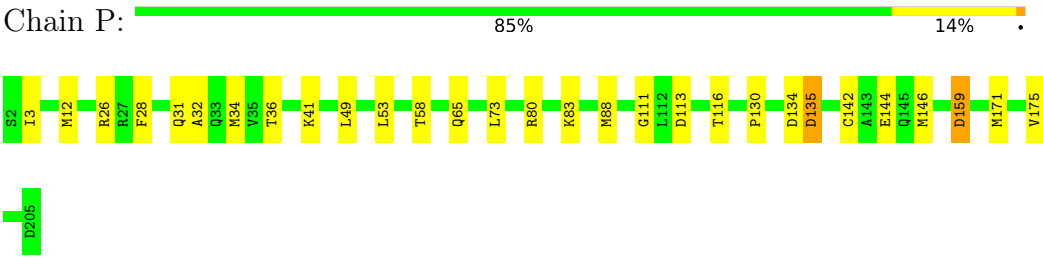
• Molecule 26: Proteasome subunit beta type-7

Chain o:



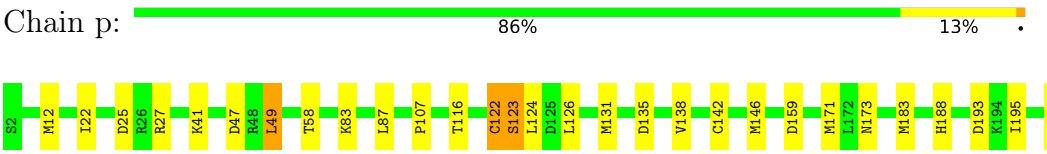
• Molecule 27: Proteasome subunit beta type-3

Chain P:



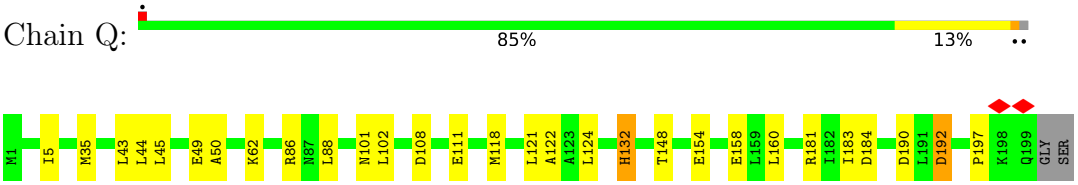
• Molecule 27: Proteasome subunit beta type-3

Chain p:



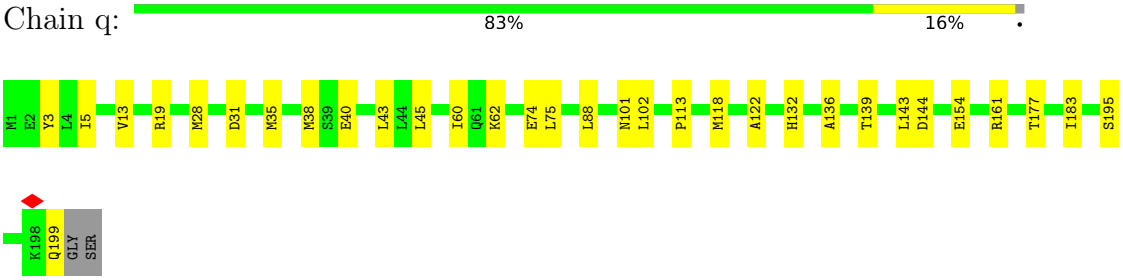
• Molecule 28: Proteasome subunit beta type-2

Chain Q:



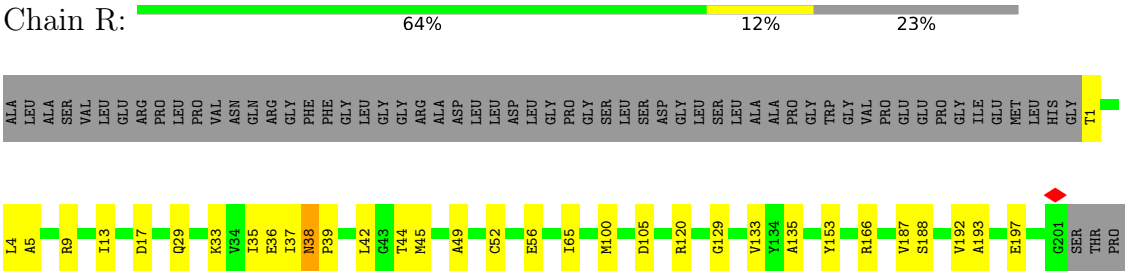
• Molecule 28: Proteasome subunit beta type-2

Chain q:



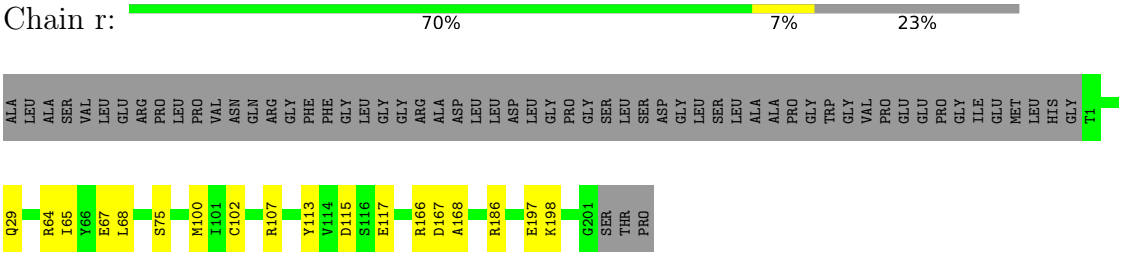
• Molecule 29: Proteasome subunit beta type-5

Chain R:



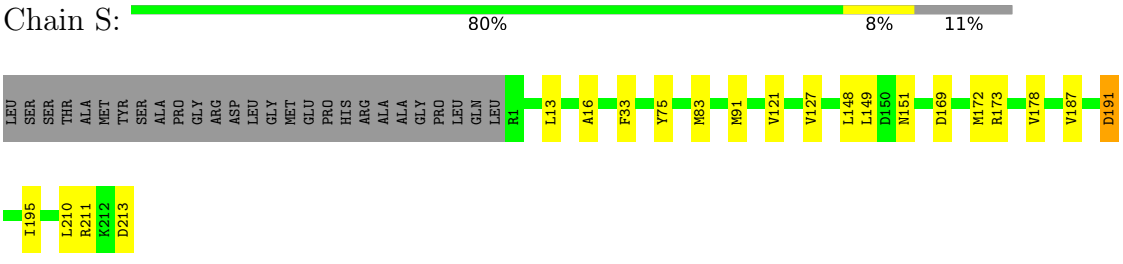
• Molecule 29: Proteasome subunit beta type-5

Chain r:



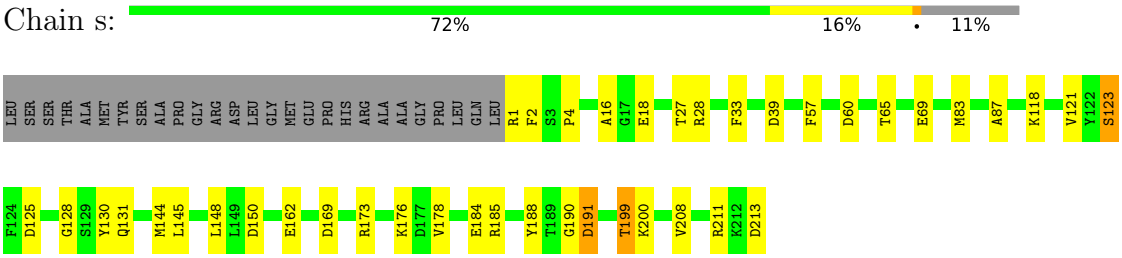
• Molecule 30: Proteasome subunit beta type-1

Chain S:



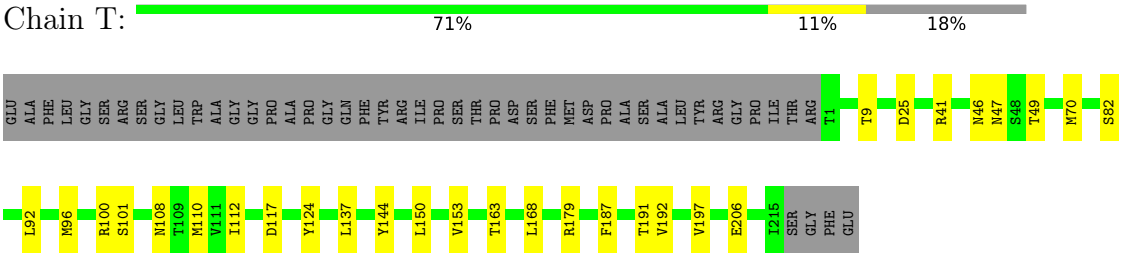
• Molecule 30: Proteasome subunit beta type-1

Chain s:



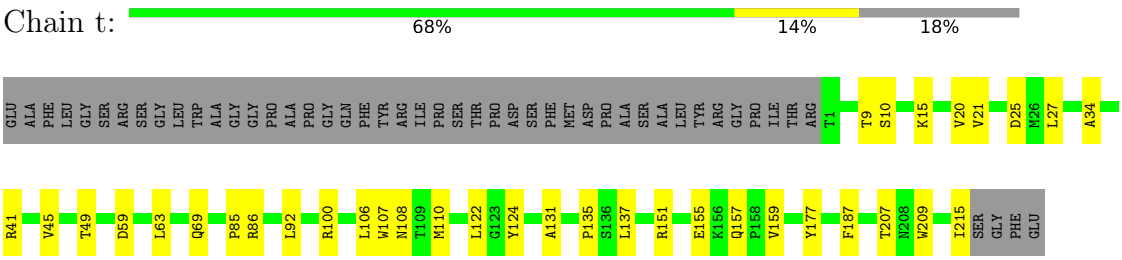
• Molecule 31: Proteasome subunit beta type-4

Chain T:



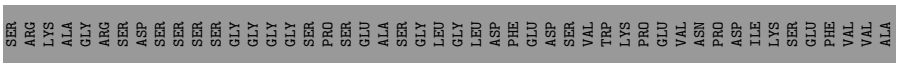
• Molecule 31: Proteasome subunit beta type-4

Chain t:



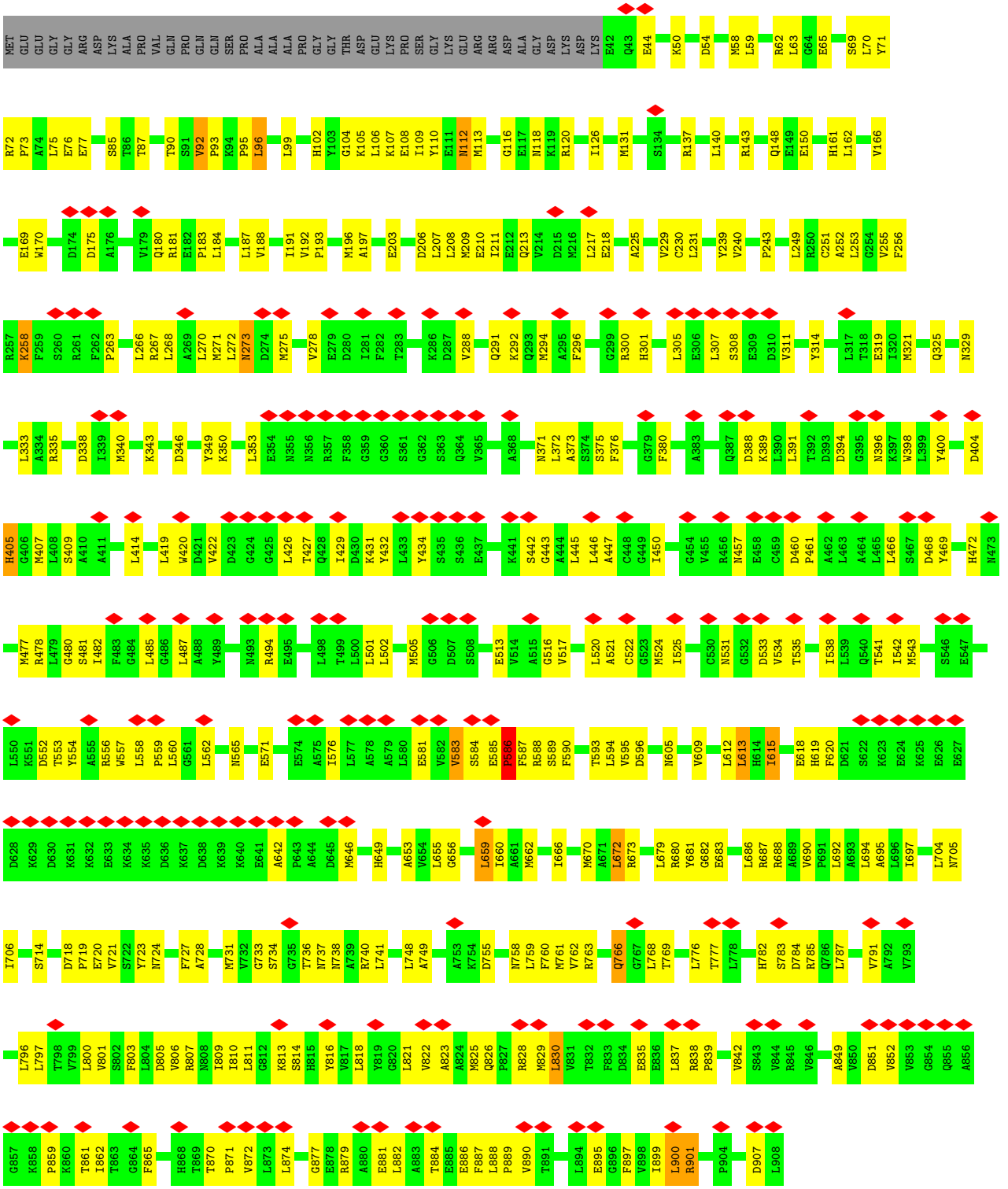
• Molecule 32: Midnolin

Chain f:



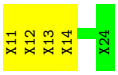
• Molecule 33: 26S proteasome non-ATPase regulatory subunit 2

Chain x:



• Molecule 34: substrate peptide

Chain v:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	23186	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.757	Depositor
Minimum map value	-1.033	Depositor
Average map value	0.022	Depositor
Map value standard deviation	0.105	Depositor
Recommended contour level	0.42	Depositor
Map size (Å)	510.0, 510.0, 510.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.85, 0.85, 0.85	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.21	0/6945	0.47	0/9382
2	V	0.21	0/3929	0.53	0/5309
3	W	0.25	0/3726	0.63	1/5006 (0.0%)
4	X	0.22	0/3053	0.54	2/4115 (0.0%)
5	Y	0.29	0/3167	0.66	0/4266
6	Z	0.28	0/2324	0.64	1/3150 (0.0%)
7	a	0.26	1/3053 (0.0%)	0.57	0/4133
8	b	0.19	0/1478	0.48	1/2001 (0.0%)
9	c	0.28	0/2302	0.68	1/3110 (0.0%)
10	d	0.30	0/2162	0.62	2/2919 (0.1%)
11	e	0.32	0/338	0.65	0/450
12	A	0.22	0/3283	0.53	2/4433 (0.0%)
13	B	0.22	0/3208	0.55	1/4327 (0.0%)
14	C	0.21	0/3148	0.50	0/4228
15	D	0.27	0/3090	0.56	0/4168
16	E	0.28	0/3077	0.70	3/4141 (0.1%)
17	F	0.20	0/3137	0.49	0/4223
18	G	0.28	0/1842	0.51	0/2500
18	g	0.15	0/1863	0.38	0/2527
19	H	0.23	0/1750	0.47	0/2379
19	h	0.25	0/1740	0.44	1/2368 (0.0%)
20	I	0.31	0/1925	0.51	0/2606
20	i	0.19	0/1942	0.46	0/2628
21	J	0.18	0/1869	0.43	0/2531
21	j	0.24	0/1728	0.54	0/2358
22	K	0.16	0/1772	0.37	0/2397
22	k	0.16	0/1747	0.38	0/2364
23	L	0.16	0/1885	0.39	1/2552 (0.0%)
23	l	0.17	0/1885	0.41	0/2552
24	M	0.23	0/1891	0.48	0/2552
24	m	0.23	0/1897	0.49	0/2559
25	N	0.19	0/1508	0.41	0/2040

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
25	n	0.19	0/1508	0.39	0/2040
26	O	0.17	0/1670	0.39	0/2265
26	o	0.18	0/1670	0.44	0/2265
27	P	0.16	0/1620	0.38	0/2184
27	p	0.17	0/1620	0.39	0/2184
28	Q	0.16	0/1603	0.39	0/2174
28	q	0.16	0/1607	0.37	0/2178
29	R	0.34	0/1579	0.54	0/2134
29	r	0.17	0/1579	0.36	0/2134
30	S	0.16	0/1671	0.36	0/2253
30	s	0.16	0/1671	0.36	0/2253
31	T	0.19	0/1700	0.41	0/2305
31	t	0.16	0/1706	0.36	0/2312
32	f	0.17	0/371	0.33	0/492
33	x	0.21	0/6836	0.45	0/9244
All	All	0.22	1/107075 (0.0%)	0.50	16/144691 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
18	G	0	1
33	x	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	a	226	ARG	CG-CD	-5.09	1.37	1.52

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	c	169	VAL	N-CA-C	-7.68	106.00	113.53
10	d	204	LYS	N-CA-C	-7.63	103.22	112.54
16	E	353	PHE	N-CA-C	-7.19	104.64	113.19
10	d	16	LEU	N-CA-C	-6.55	105.92	114.04
16	E	354	ALA	N-CA-C	-6.17	104.46	111.07

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
18	G	132	ARG	Sidechain
33	x	901	ARG	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	U	6828	0	6886	330	0
2	V	3852	0	3893	302	0
3	W	3679	0	3795	334	0
4	X	3009	0	3113	156	0
5	Y	3109	0	3109	227	0
6	Z	2281	0	2312	207	0
7	a	2995	0	3012	204	0
8	b	1458	0	1505	89	0
9	c	2260	0	2276	197	0
10	d	2116	0	2146	145	0
11	e	334	0	294	30	0
12	A	3229	0	3262	119	0
13	B	3162	0	3224	155	0
14	C	3107	0	3224	121	0
15	D	3040	0	3076	166	0
16	E	3031	0	3103	273	0
17	F	3098	0	3187	126	0
18	G	1809	0	1781	24	0
18	g	1830	0	1807	42	0
19	H	1714	0	1617	42	0
19	h	1703	0	1597	41	0
20	I	1895	0	1833	29	0
20	i	1912	0	1851	26	0
21	J	1844	0	1747	31	0
21	j	1704	0	1517	47	0
22	K	1746	0	1695	18	0
22	k	1722	0	1673	40	0
23	L	1850	0	1822	20	0
23	l	1850	0	1822	48	0
24	M	1856	0	1816	28	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	m	1862	0	1827	35	0
25	N	1482	0	1450	20	0
25	n	1482	0	1450	18	0
26	O	1643	0	1644	30	0
26	o	1643	0	1644	29	0
27	P	1591	0	1609	22	0
27	p	1591	0	1609	19	0
28	Q	1570	0	1547	17	0
28	q	1574	0	1558	23	0
29	R	1548	0	1499	25	0
29	r	1548	0	1499	15	0
30	S	1641	0	1618	14	0
30	s	1641	0	1618	29	0
31	T	1667	0	1628	21	0
31	t	1673	0	1639	25	0
32	f	367	0	387	15	0
33	x	6723	0	6741	390	0
34	v	70	0	23	5	0
35	c	1	0	0	0	0
36	A	31	0	12	1	0
36	B	31	0	12	1	0
36	C	31	0	12	0	0
36	F	31	0	12	0	0
37	A	1	0	0	0	0
37	B	1	0	0	0	0
37	C	1	0	0	0	0
37	F	1	0	0	0	0
38	D	27	0	12	2	0
38	E	27	0	12	3	0
39	N	34	0	41	3	0
39	O	34	0	41	4	0
39	R	34	0	41	3	0
39	n	34	0	41	3	0
39	o	34	0	41	7	0
39	r	34	0	41	0	0
All	All	105726	0	105303	3975	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 19.

The worst 5 of 3975 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
33:x:482:ILE:CD1	33:x:517:VAL:HG12	1.58	1.34
13:B:85:MET:HE1	33:x:618:GLU:C	1.57	1.28
13:B:85:MET:HE3	33:x:619:HIS:CB	1.67	1.24
6:Z:257:MET:O	6:Z:257:MET:SD	1.96	1.23
3:W:363:ILE:HD12	3:W:392:PHE:CE1	1.73	1.23

There are no symmetry-related clashes.

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	868/921 (94%)	783 (90%)	83 (10%)	2 (0%)	44 72
2	V	478/480 (100%)	417 (87%)	61 (13%)	0	100 100
3	W	449/456 (98%)	382 (85%)	61 (14%)	6 (1%)	10 34
4	X	378/422 (90%)	347 (92%)	26 (7%)	5 (1%)	10 34
5	Y	376/389 (97%)	327 (87%)	44 (12%)	5 (1%)	10 34
6	Z	284/324 (88%)	244 (86%)	36 (13%)	4 (1%)	9 32
7	a	371/376 (99%)	325 (88%)	43 (12%)	3 (1%)	16 45
8	b	189/377 (50%)	168 (89%)	21 (11%)	0	100 100
9	c	285/310 (92%)	233 (82%)	46 (16%)	6 (2%)	5 23
10	d	255/350 (73%)	212 (83%)	41 (16%)	2 (1%)	16 45
11	e	36/70 (51%)	25 (69%)	10 (28%)	1 (3%)	4 18
12	A	411/433 (95%)	372 (90%)	37 (9%)	2 (0%)	25 55
13	B	403/440 (92%)	361 (90%)	41 (10%)	1 (0%)	44 72
14	C	394/406 (97%)	362 (92%)	28 (7%)	4 (1%)	13 40
15	D	378/418 (90%)	341 (90%)	32 (8%)	5 (1%)	10 34
16	E	379/389 (97%)	296 (78%)	76 (20%)	7 (2%)	7 27

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
17	F	391/439 (89%)	351 (90%)	37 (10%)	3 (1%)	16 45
18	G	235/245 (96%)	222 (94%)	10 (4%)	3 (1%)	10 34
18	g	238/245 (97%)	228 (96%)	10 (4%)	0	100 100
19	H	229/233 (98%)	217 (95%)	12 (5%)	0	100 100
19	h	227/233 (97%)	219 (96%)	7 (3%)	1 (0%)	30 60
20	I	246/260 (95%)	234 (95%)	11 (4%)	1 (0%)	30 60
20	i	248/260 (95%)	231 (93%)	15 (6%)	2 (1%)	16 45
21	J	245/247 (99%)	226 (92%)	15 (6%)	4 (2%)	8 29
21	j	237/247 (96%)	207 (87%)	29 (12%)	1 (0%)	30 60
22	K	226/240 (94%)	219 (97%)	7 (3%)	0	100 100
22	k	224/240 (93%)	212 (95%)	12 (5%)	0	100 100
23	L	236/268 (88%)	228 (97%)	8 (3%)	0	100 100
23	l	236/268 (88%)	226 (96%)	10 (4%)	0	100 100
24	M	238/254 (94%)	229 (96%)	8 (3%)	1 (0%)	30 60
24	m	238/254 (94%)	221 (93%)	15 (6%)	2 (1%)	16 45
25	N	195/238 (82%)	184 (94%)	10 (5%)	1 (0%)	25 55
25	n	195/238 (82%)	189 (97%)	6 (3%)	0	100 100
26	O	218/276 (79%)	207 (95%)	10 (5%)	1 (0%)	25 55
26	o	218/276 (79%)	201 (92%)	17 (8%)	0	100 100
27	P	202/204 (99%)	196 (97%)	6 (3%)	0	100 100
27	p	202/204 (99%)	188 (93%)	14 (7%)	0	100 100
28	Q	197/201 (98%)	184 (93%)	13 (7%)	0	100 100
28	q	197/201 (98%)	189 (96%)	8 (4%)	0	100 100
29	R	199/262 (76%)	191 (96%)	7 (4%)	1 (0%)	25 55
29	r	199/262 (76%)	193 (97%)	6 (3%)	0	100 100
30	S	211/240 (88%)	205 (97%)	5 (2%)	1 (0%)	25 55
30	s	211/240 (88%)	205 (97%)	5 (2%)	1 (0%)	25 55
31	T	213/263 (81%)	205 (96%)	8 (4%)	0	100 100
31	t	213/263 (81%)	204 (96%)	9 (4%)	0	100 100
32	f	40/468 (8%)	39 (98%)	1 (2%)	0	100 100
33	x	865/908 (95%)	817 (94%)	47 (5%)	1 (0%)	48 77

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	13403/15238 (88%)	12262 (92%)	1064 (8%)	77 (1%)	24 51

5 of 77 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	W	41	GLN
3	W	329	ARG
3	W	335	SER
4	X	267	VAL
4	X	318	ILE

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	748/789 (95%)	721 (96%)	27 (4%)	30 58
2	V	414/414 (100%)	400 (97%)	14 (3%)	32 59
3	W	413/416 (99%)	394 (95%)	19 (5%)	23 50
4	X	327/362 (90%)	318 (97%)	9 (3%)	38 63
5	Y	333/344 (97%)	320 (96%)	13 (4%)	27 56
6	Z	257/295 (87%)	245 (95%)	12 (5%)	22 50
7	a	333/336 (99%)	317 (95%)	16 (5%)	21 49
8	b	167/312 (54%)	164 (98%)	3 (2%)	54 74
9	c	252/268 (94%)	238 (94%)	14 (6%)	17 44
10	d	231/294 (79%)	218 (94%)	13 (6%)	17 44
11	e	38/63 (60%)	38 (100%)	0	100 100
12	A	348/372 (94%)	335 (96%)	13 (4%)	29 57
13	B	352/385 (91%)	343 (97%)	9 (3%)	41 65
14	C	341/352 (97%)	332 (97%)	9 (3%)	41 65
15	D	333/366 (91%)	321 (96%)	12 (4%)	30 58
16	E	333/341 (98%)	322 (97%)	11 (3%)	33 60

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
17	F	340/379 (90%)	328 (96%)	12 (4%)	31	58
18	G	191/209 (91%)	187 (98%)	4 (2%)	48	69
18	g	194/209 (93%)	187 (96%)	7 (4%)	30	58
19	H	166/190 (87%)	159 (96%)	7 (4%)	25	53
19	h	165/190 (87%)	162 (98%)	3 (2%)	54	74
20	I	191/220 (87%)	184 (96%)	7 (4%)	29	57
20	i	193/220 (88%)	190 (98%)	3 (2%)	58	76
21	J	179/210 (85%)	169 (94%)	10 (6%)	17	44
21	j	152/210 (72%)	147 (97%)	5 (3%)	33	60
22	K	189/202 (94%)	183 (97%)	6 (3%)	34	60
22	k	186/202 (92%)	179 (96%)	7 (4%)	28	56
23	L	198/229 (86%)	191 (96%)	7 (4%)	31	58
23	l	198/229 (86%)	195 (98%)	3 (2%)	60	78
24	M	192/211 (91%)	189 (98%)	3 (2%)	58	76
24	m	193/211 (92%)	182 (94%)	11 (6%)	17	43
25	N	154/180 (86%)	147 (96%)	7 (4%)	23	51
25	n	154/180 (86%)	153 (99%)	1 (1%)	84	90
26	O	177/227 (78%)	176 (99%)	1 (1%)	84	90
26	o	177/227 (78%)	176 (99%)	1 (1%)	84	90
27	P	173/173 (100%)	168 (97%)	5 (3%)	37	62
27	p	173/173 (100%)	167 (96%)	6 (4%)	31	58
28	Q	164/171 (96%)	159 (97%)	5 (3%)	36	62
28	q	165/171 (96%)	164 (99%)	1 (1%)	84	90
29	R	153/201 (76%)	150 (98%)	3 (2%)	50	71
29	r	153/201 (76%)	150 (98%)	3 (2%)	50	71
30	S	174/198 (88%)	173 (99%)	1 (1%)	84	90
30	s	174/198 (88%)	171 (98%)	3 (2%)	56	75
31	T	175/214 (82%)	170 (97%)	5 (3%)	37	62
31	t	176/214 (82%)	174 (99%)	2 (1%)	70	83
32	f	37/377 (10%)	36 (97%)	1 (3%)	40	64
33	x	733/763 (96%)	710 (97%)	23 (3%)	35	61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	11259/12898 (87%)	10902 (97%)	357 (3%)	36 60

5 of 357 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
21	J	146	GLN
19	h	172	THR
22	K	63	SER
27	P	135	ASP
22	k	188	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 119 such sidechains are listed below:

Mol	Chain	Res	Type
17	F	76	ASN
31	t	89	HIS
23	L	152	ASN
30	s	157	ASN
33	x	738	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 17 ligands modelled in this entry, 5 are monoatomic - leaving 12 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	ATP	F	501	37	26,33,33	0.64	0	31,52,52	0.76	1 (3%)
39	LDZ	N	301	-	33,34,34	0.42	0	42,44,44	0.64	0
36	ATP	C	501	37	26,33,33	0.62	0	31,52,52	0.76	2 (6%)
38	ADP	D	501	-	24,29,29	0.96	1 (4%)	29,45,45	1.55	4 (13%)
36	ATP	A	501	37	26,33,33	0.63	0	31,52,52	0.73	2 (6%)
36	ATP	B	501	37	26,33,33	0.61	0	31,52,52	0.79	2 (6%)
38	ADP	E	401	-	24,29,29	0.96	1 (4%)	29,45,45	1.36	3 (10%)
39	LDZ	o	301	-	33,34,34	0.17	0	42,44,44	0.47	1 (2%)
39	LDZ	n	301	-	33,34,34	0.48	0	42,44,44	1.69	5 (11%)
39	LDZ	r	301	-	33,34,34	0.48	0	42,44,44	0.71	1 (2%)
39	LDZ	O	301	-	33,34,34	0.40	0	42,44,44	1.54	5 (11%)
39	LDZ	R	301	-	33,34,34	0.49	1 (3%)	42,44,44	0.82	2 (4%)

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	ATP	F	501	37	-	5/18/38/38	0/3/3/3
39	LDZ	N	301	-	-	10/38/39/39	0/1/1/1
36	ATP	C	501	37	-	5/18/38/38	0/3/3/3
38	ADP	D	501	-	-	1/12/32/32	0/3/3/3
36	ATP	A	501	37	-	3/18/38/38	0/3/3/3
36	ATP	B	501	37	-	7/18/38/38	0/3/3/3
38	ADP	E	401	-	-	5/12/32/32	0/3/3/3
39	LDZ	o	301	-	-	22/38/39/39	0/1/1/1
39	LDZ	n	301	-	-	26/38/39/39	0/1/1/1
39	LDZ	r	301	-	-	10/38/39/39	0/1/1/1
39	LDZ	O	301	-	-	20/38/39/39	0/1/1/1
39	LDZ	R	301	-	-	9/38/39/39	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
38	D	501	ADP	C5-C4	2.54	1.47	1.40
38	E	401	ADP	C5-C4	2.47	1.47	1.40
39	R	301	LDZ	C17-N16	-2.05	1.43	1.46

The worst 5 of 28 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
39	n	301	LDZ	C14-N13-C12	7.70	138.18	121.67
39	O	301	LDZ	C17-N16-C15	7.63	137.23	123.15
39	n	301	LDZ	C24-C14-N13	4.52	120.99	110.58
38	D	501	ADP	PA-O3A-PB	-4.01	119.05	132.83
38	D	501	ADP	C3'-C2'-C1'	3.86	106.79	100.98

There are no chirality outliers.

5 of 123 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
36	A	501	ATP	C5'-O5'-PA-O1A
36	B	501	ATP	C5'-O5'-PA-O1A
36	B	501	ATP	C5'-O5'-PA-O2A
36	B	501	ATP	C5'-O5'-PA-O3A
36	B	501	ATP	O4'-C4'-C5'-O5'

There are no ring outliers.

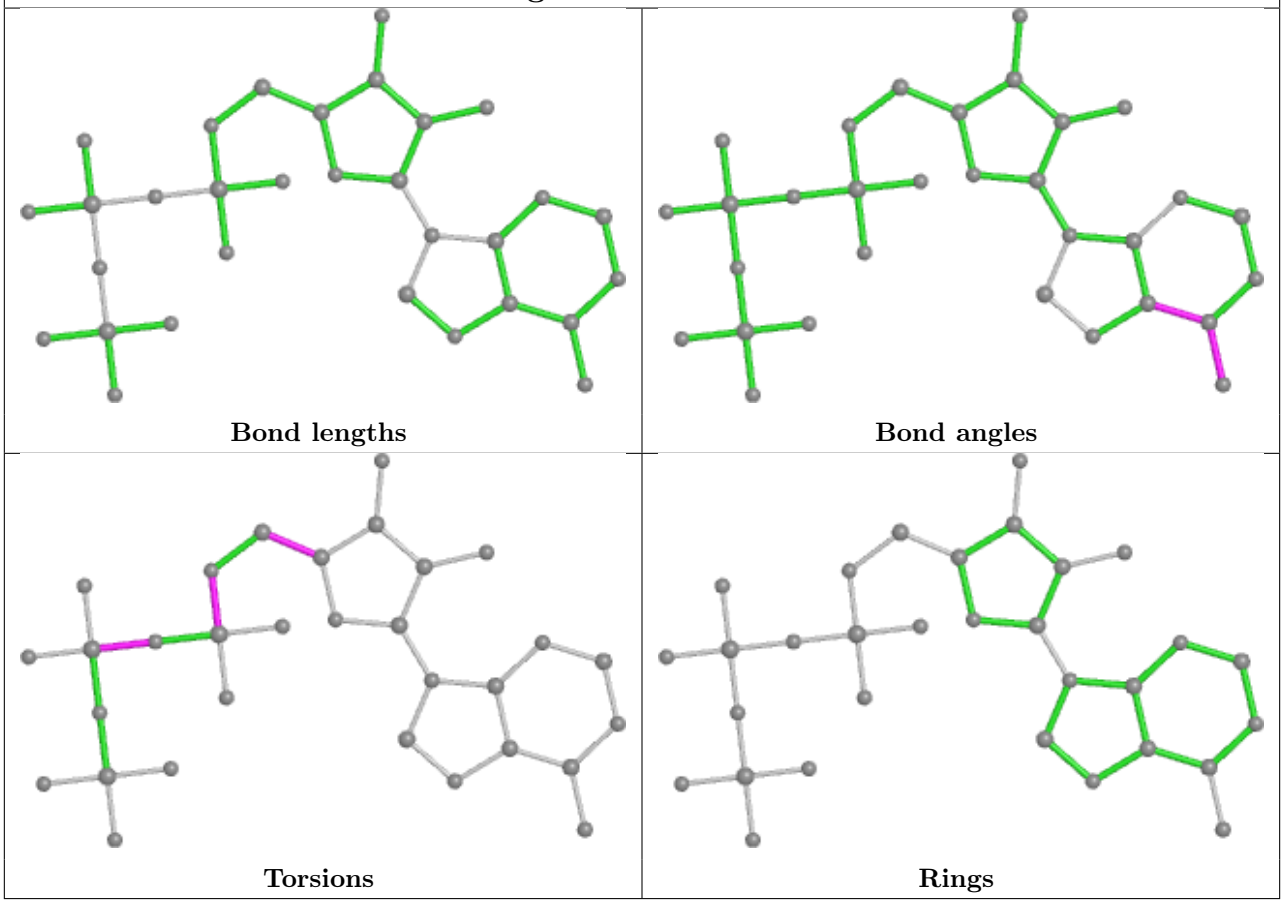
9 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
39	N	301	LDZ	3	0
38	D	501	ADP	2	0
36	A	501	ATP	1	0
36	B	501	ATP	1	0
38	E	401	ADP	3	0
39	o	301	LDZ	7	0
39	n	301	LDZ	3	0
39	O	301	LDZ	4	0
39	R	301	LDZ	3	0

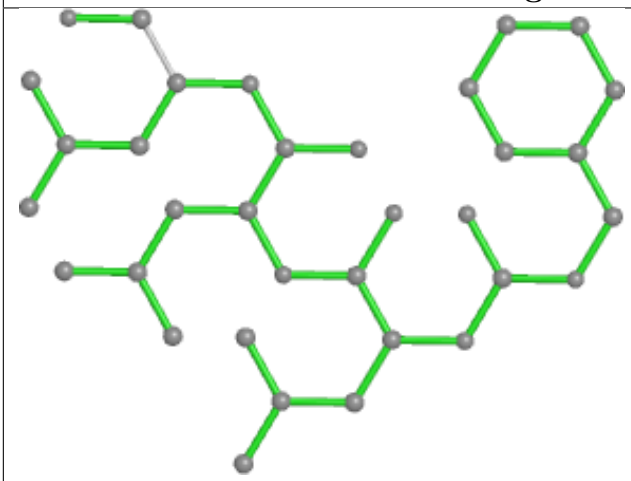
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

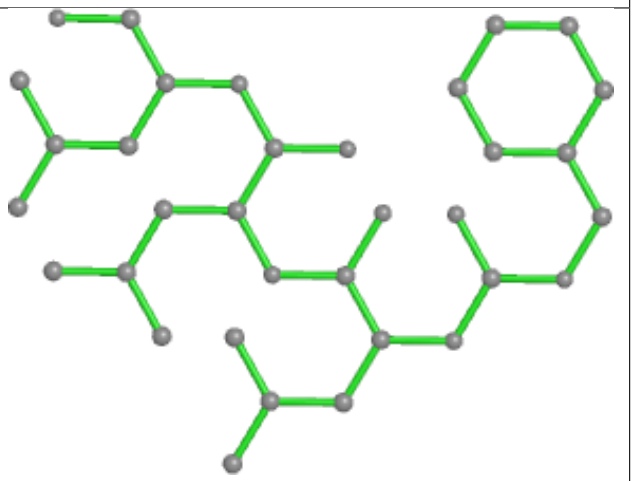
Ligand ATP F 501



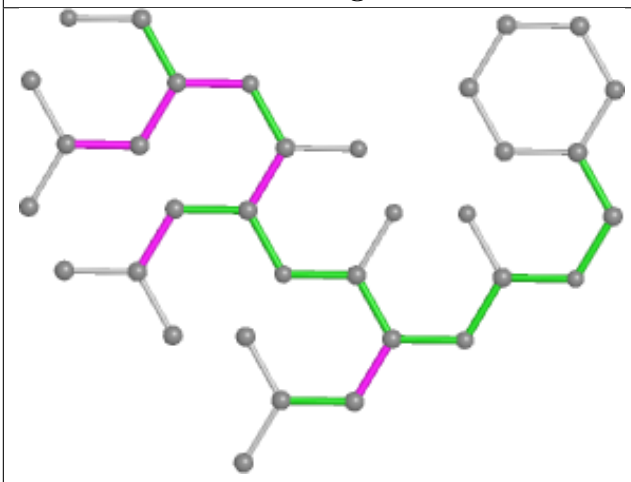
Ligand LDZ N 301



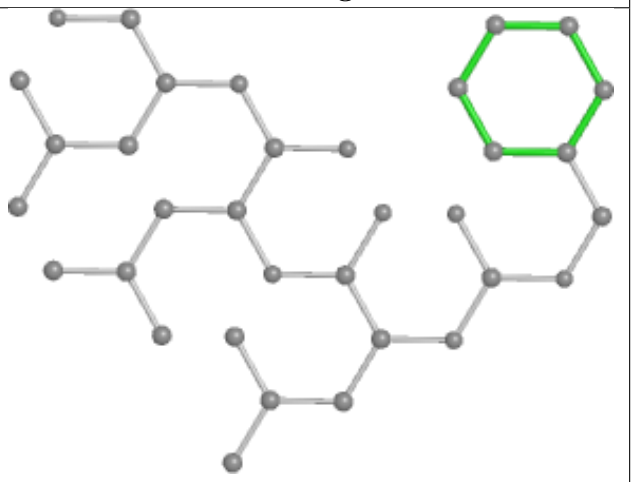
Bond lengths



Bond angles

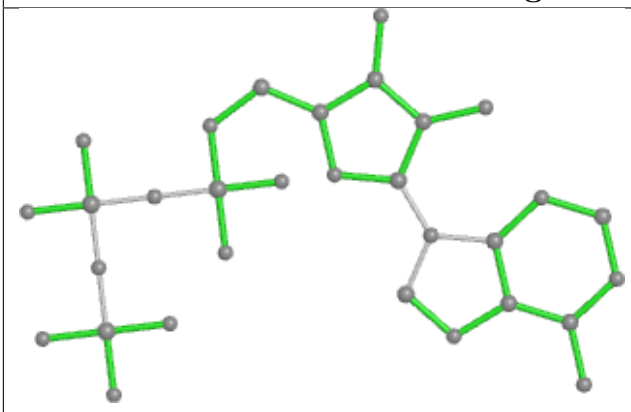


Torsions

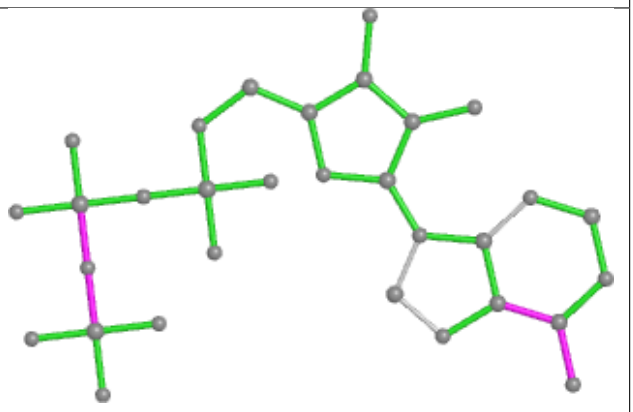


Rings

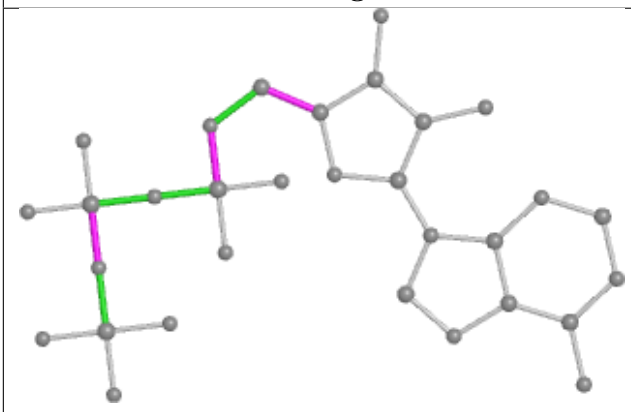
Ligand ATP C 501



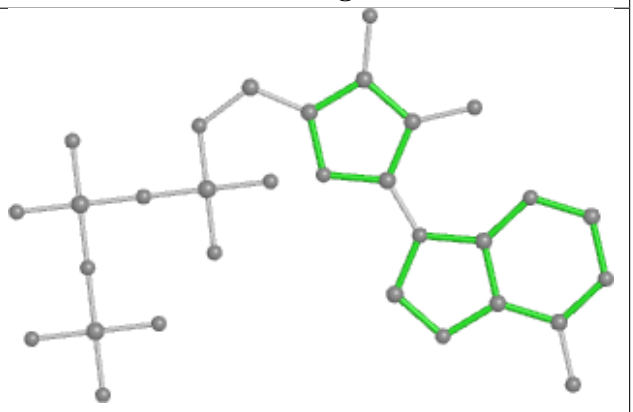
Bond lengths



Bond angles

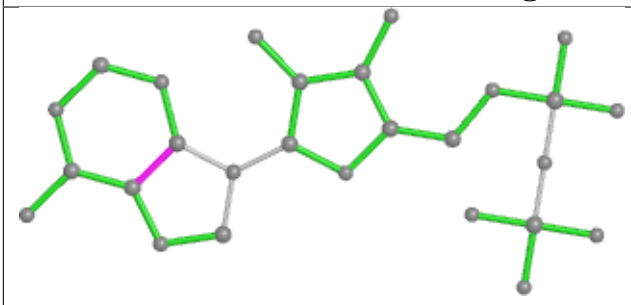


Torsions

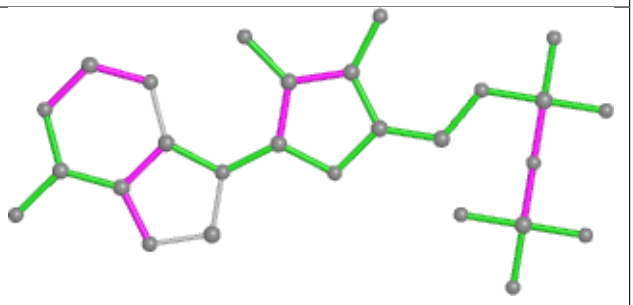


Rings

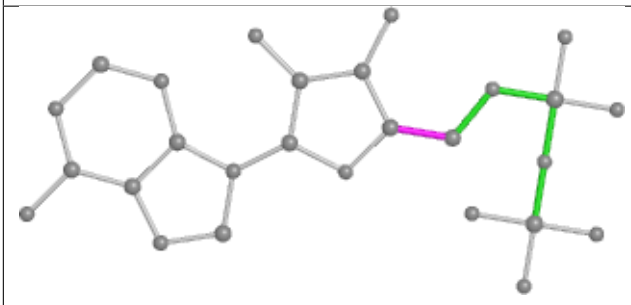
Ligand ADP D 501



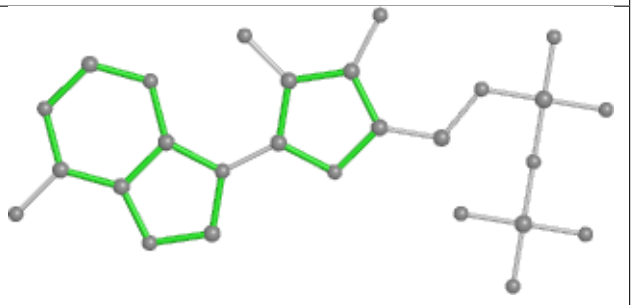
Bond lengths



Bond angles

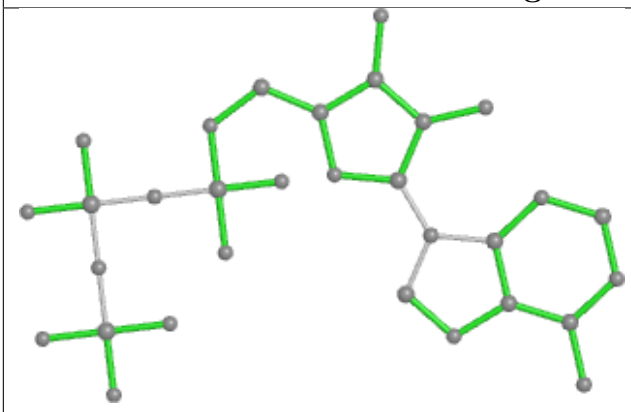


Torsions

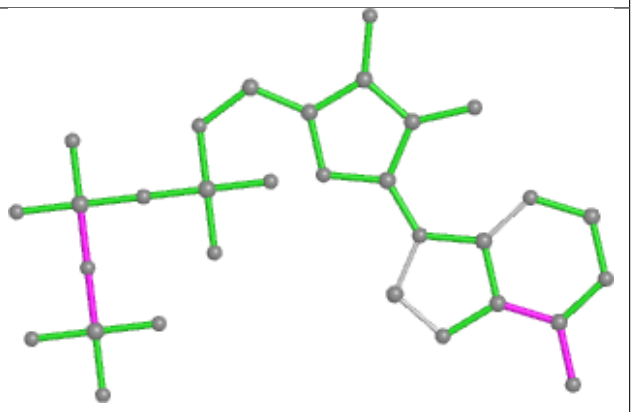


Rings

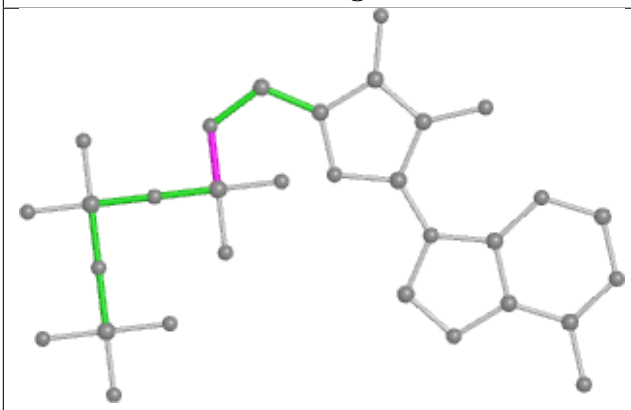
Ligand ATP A 501



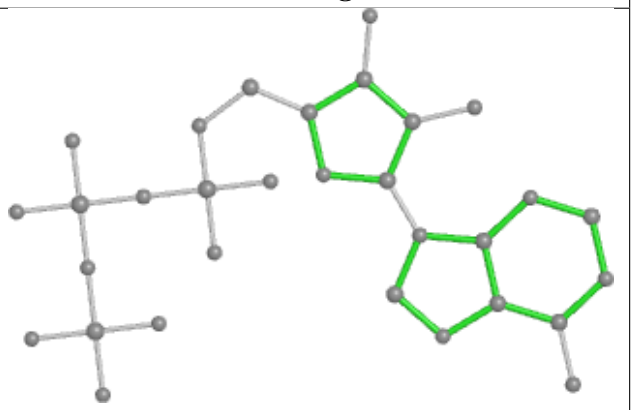
Bond lengths



Bond angles

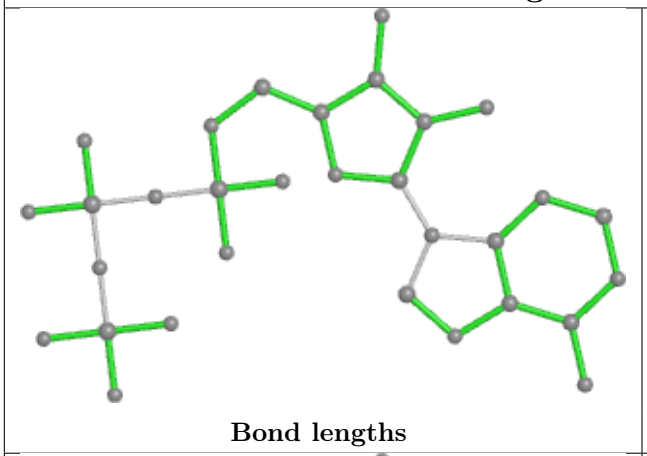


Torsions

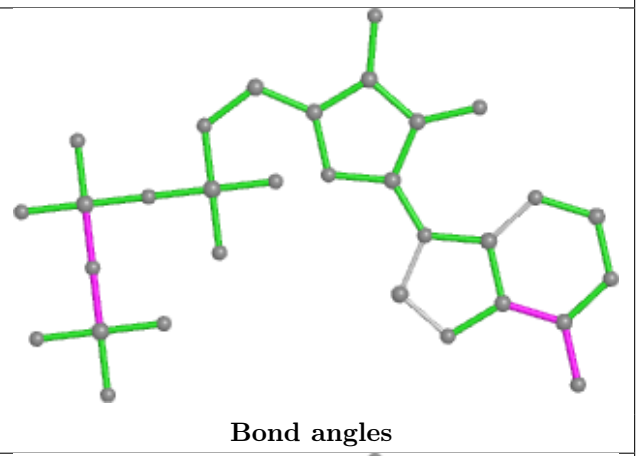


Rings

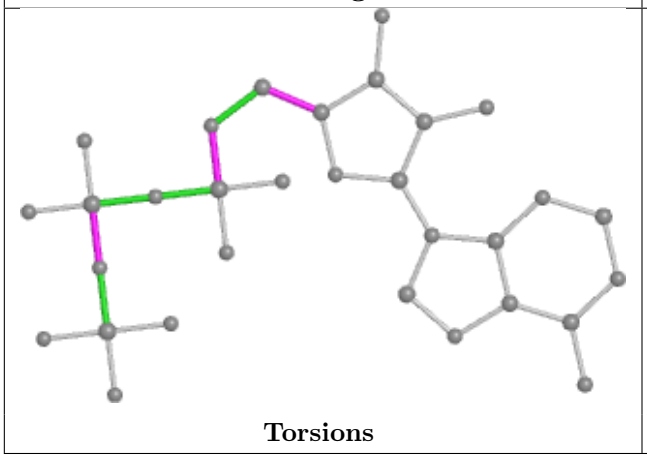
Ligand ATP B 501



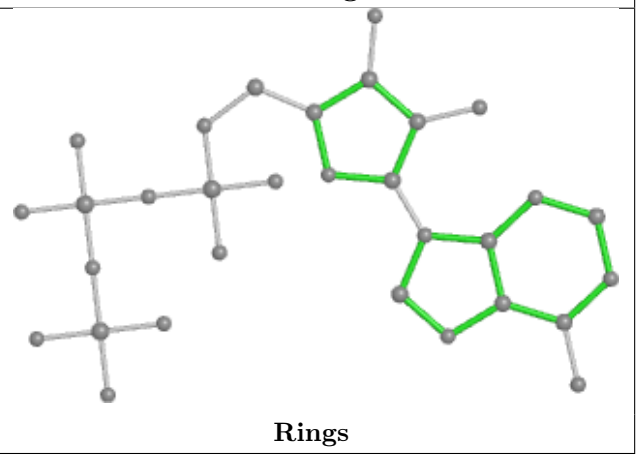
Bond lengths



Bond angles

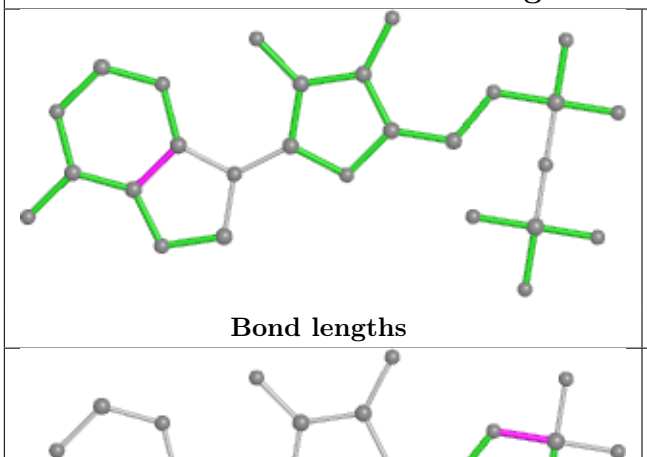


Torsions

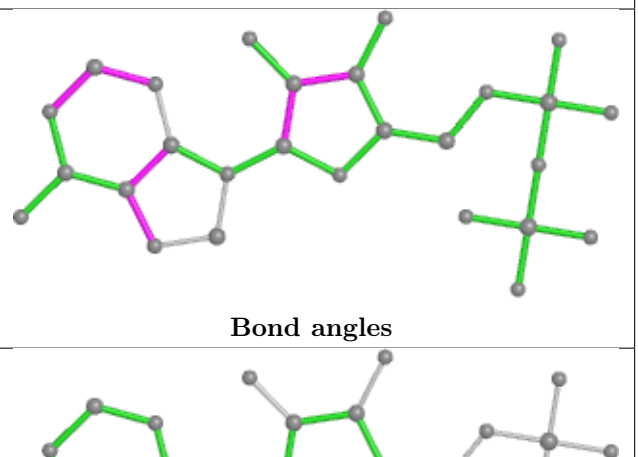


Rings

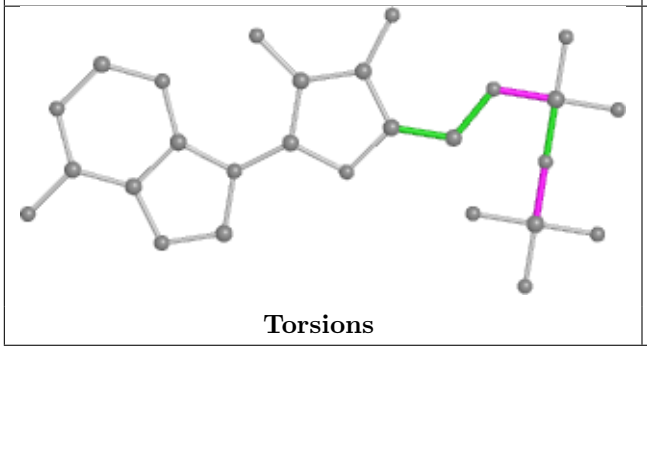
Ligand ADP E 401



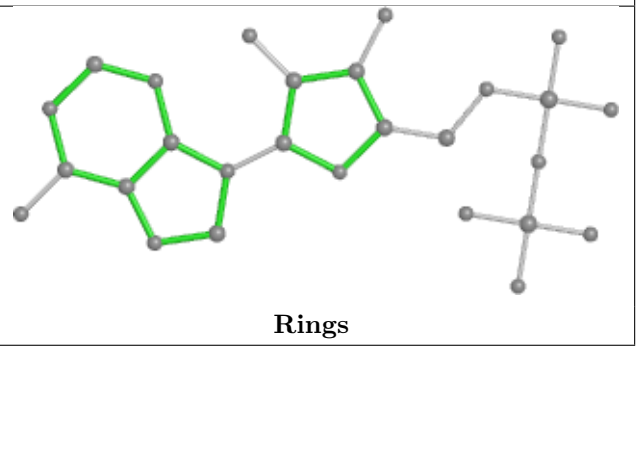
Bond lengths



Bond angles

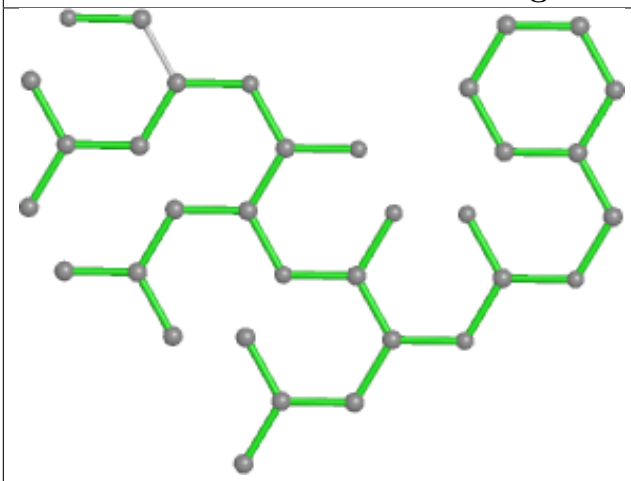


Torsions

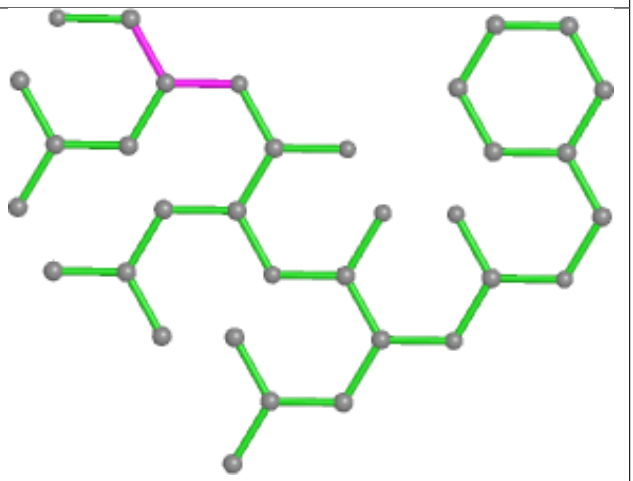


Rings

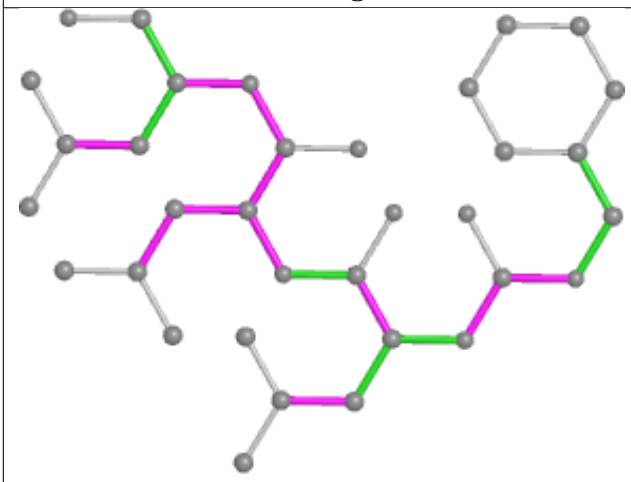
Ligand LDZ o 301



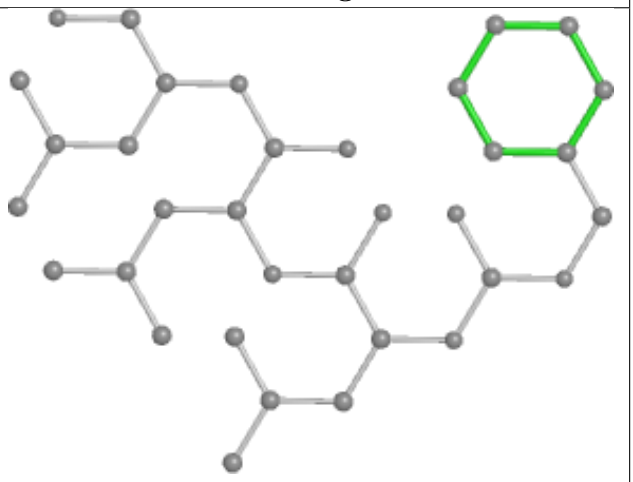
Bond lengths



Bond angles

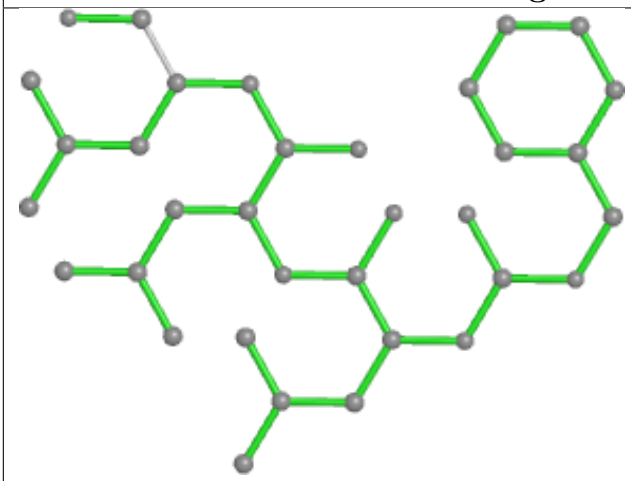


Torsions

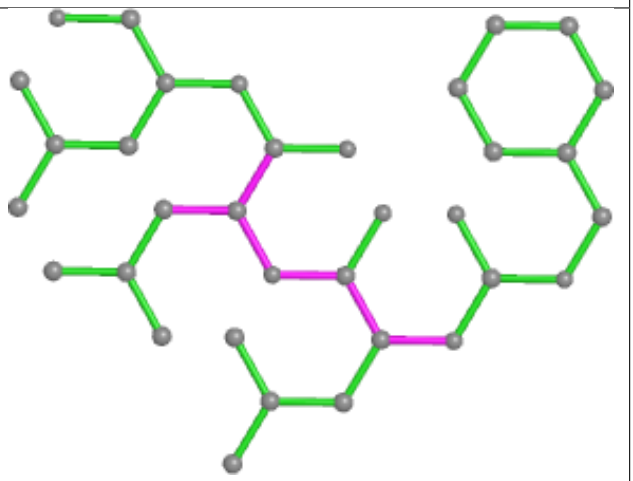


Rings

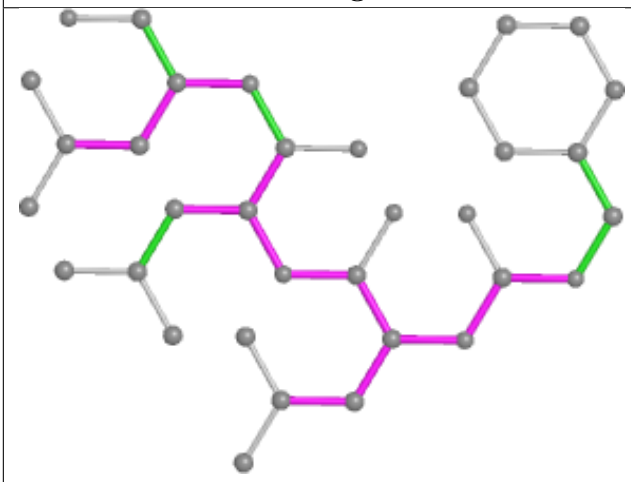
Ligand LDZ n 301



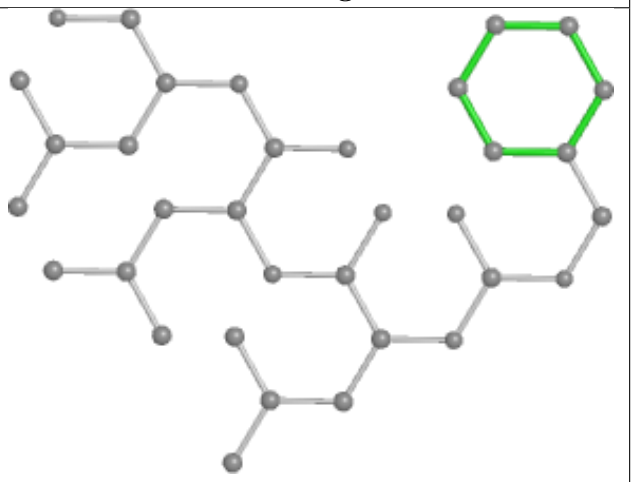
Bond lengths



Bond angles

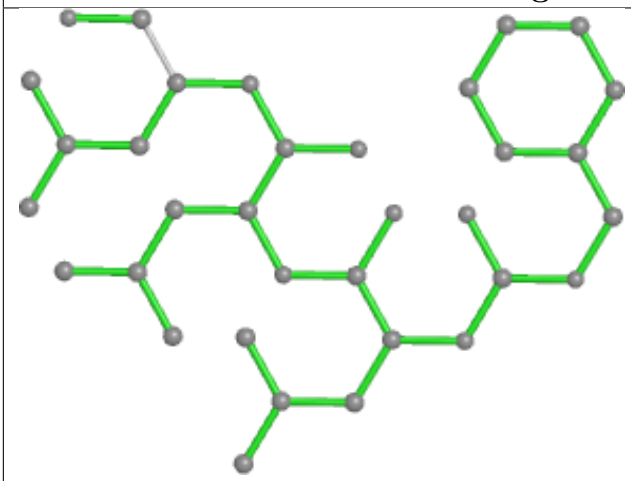


Torsions

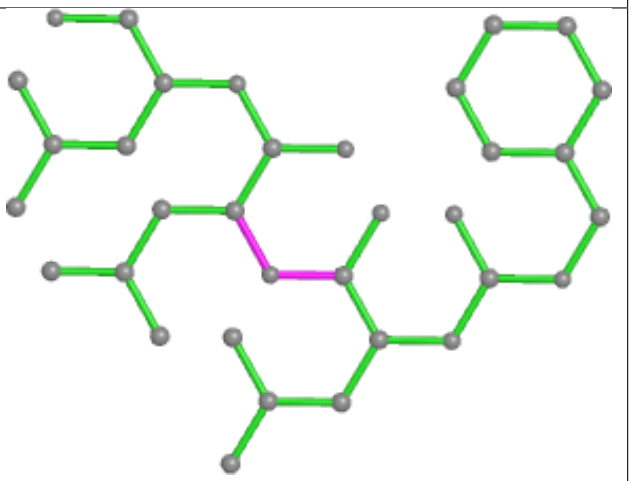


Rings

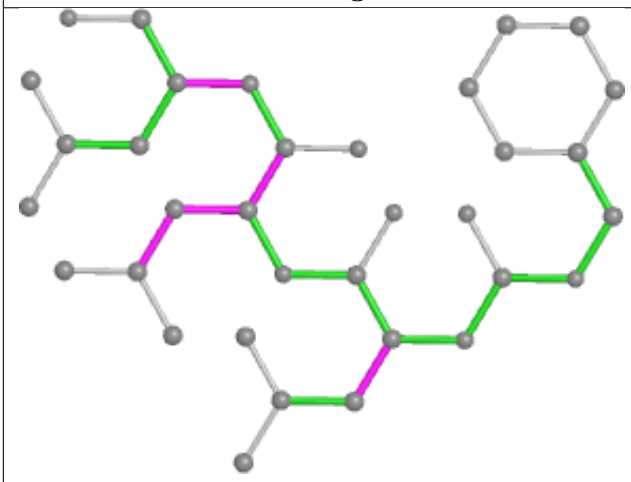
Ligand LDZ r 301



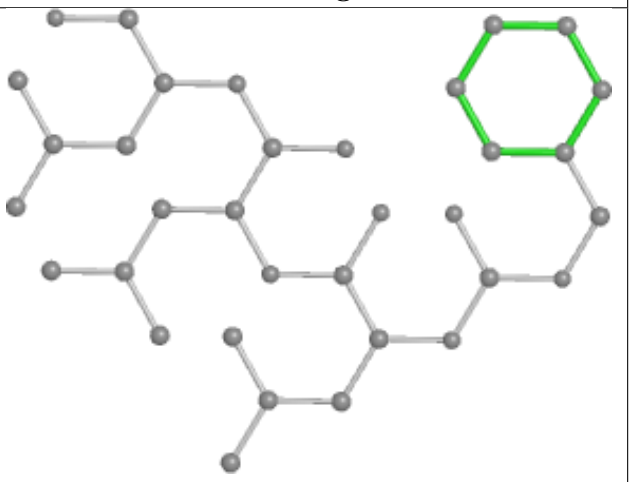
Bond lengths



Bond angles

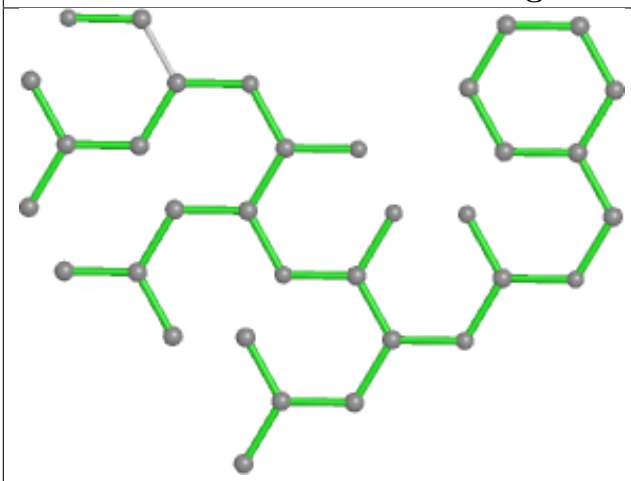


Torsions

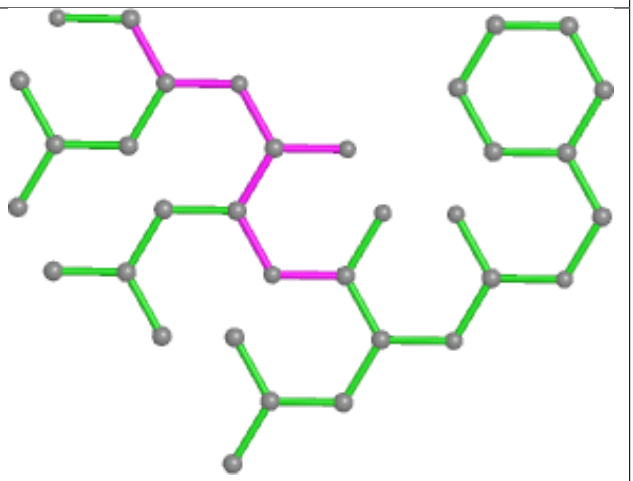


Rings

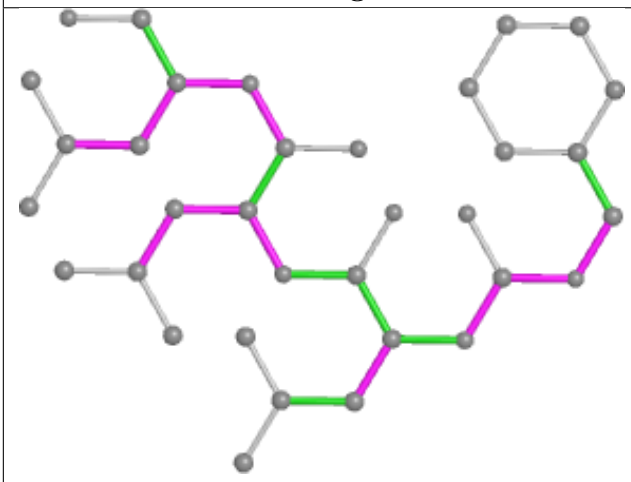
Ligand LDZ O 301



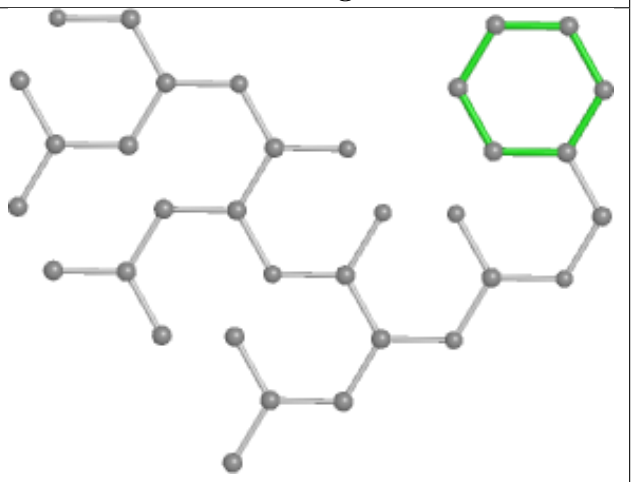
Bond lengths



Bond angles

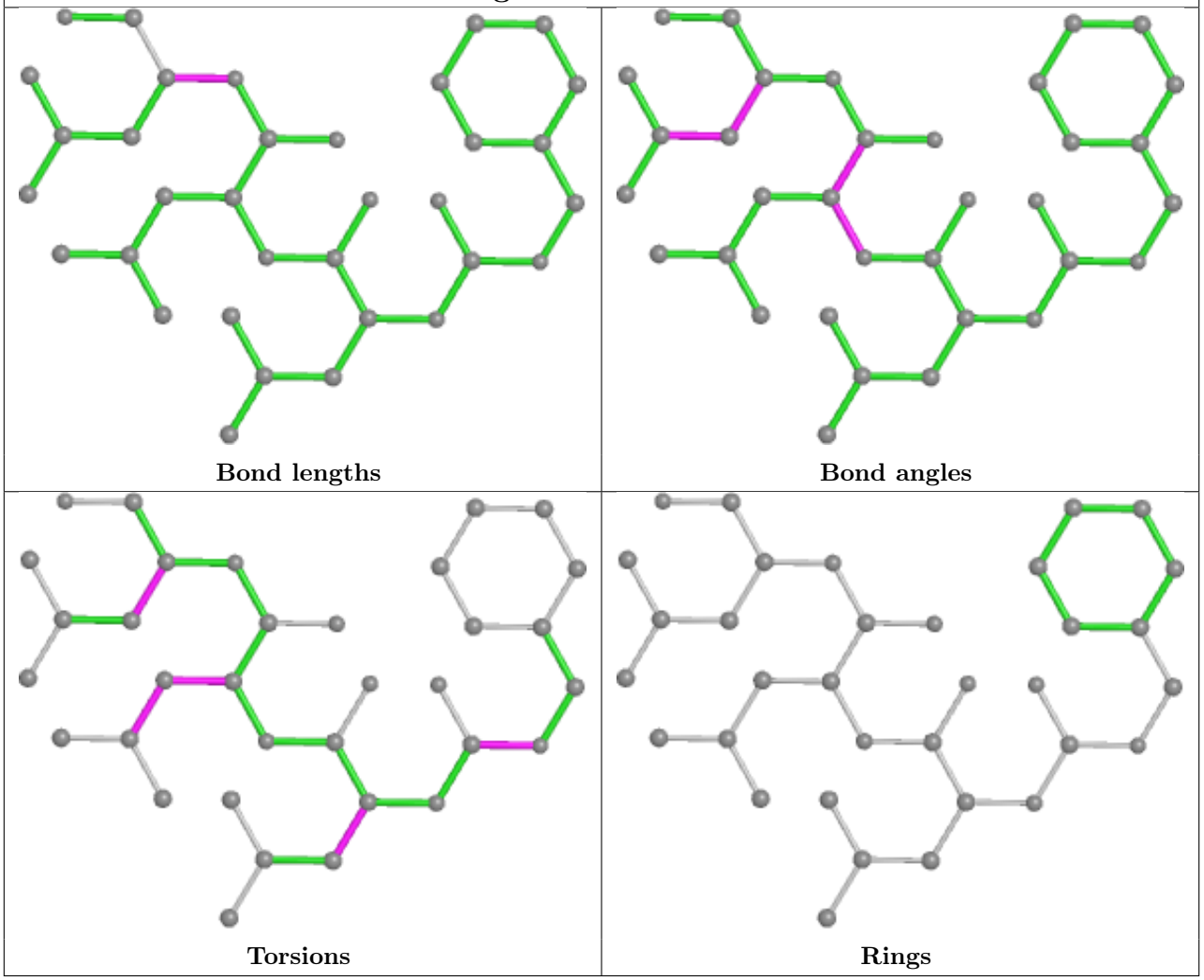


Torsions



Rings

Ligand LDZ R 301



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.

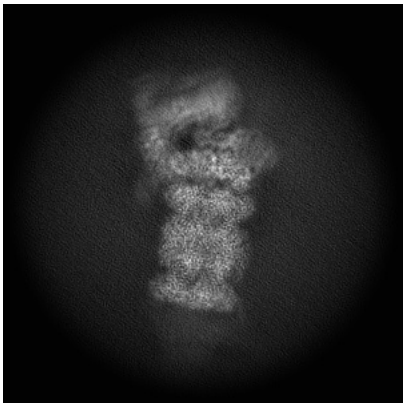
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-63777. These allow visual inspection of the internal detail of the map and identification of artifacts.

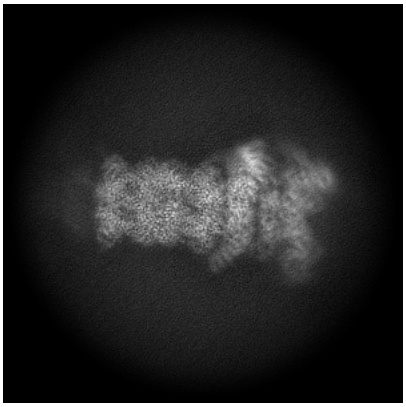
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

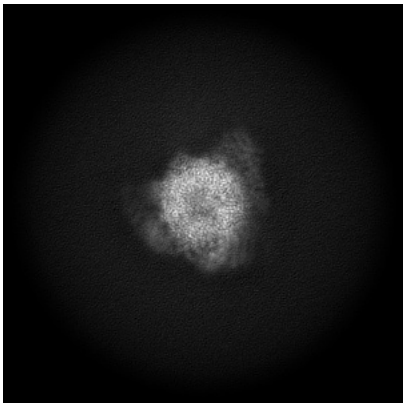
6.1.1 Primary map



X



Y

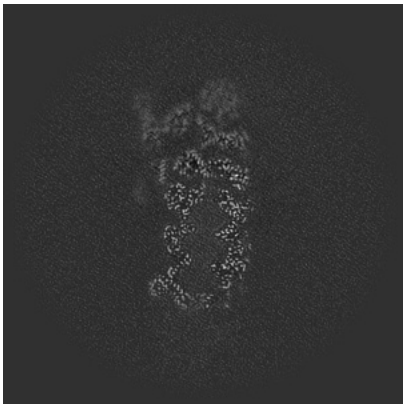


Z

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

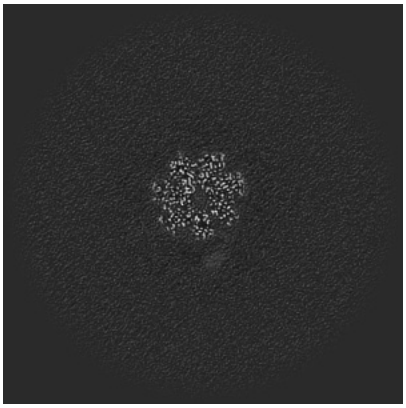
6.2 Central slices

6.2.1 Primary map



X Index: 300

Y Index: 300

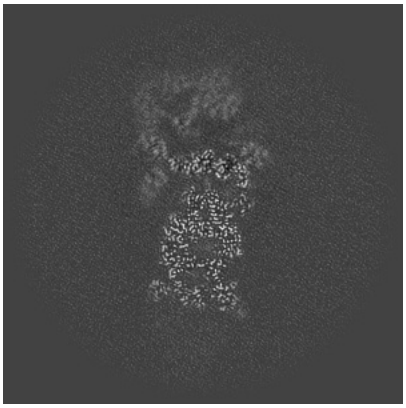


Z Index: 300

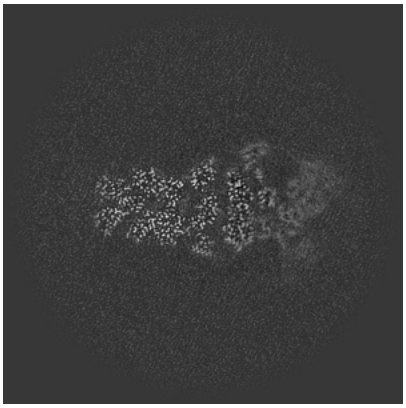
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

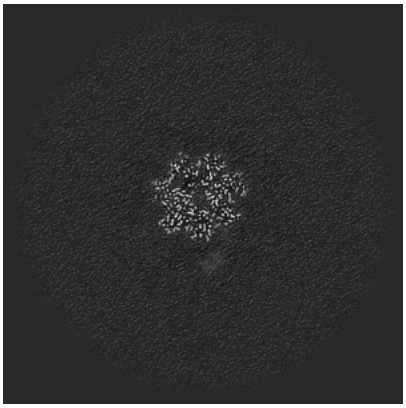
6.3.1 Primary map



X Index: 326



Y Index: 330

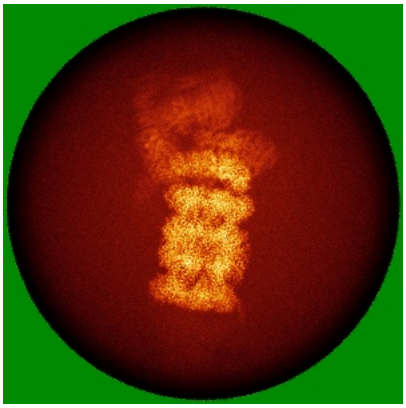


Z Index: 303

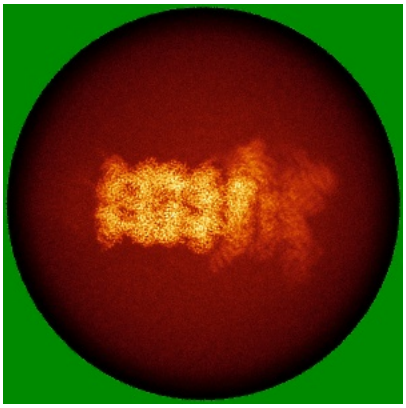
The images above show the largest variance slices of the map in three orthogonal directions.

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

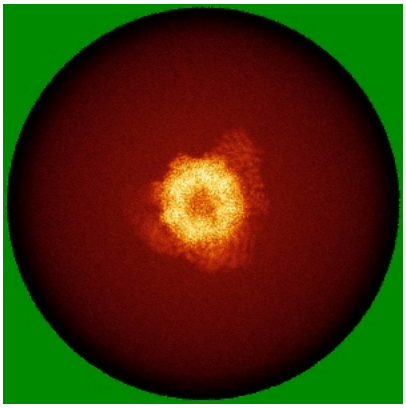
6.4.1 Primary map



X



Y

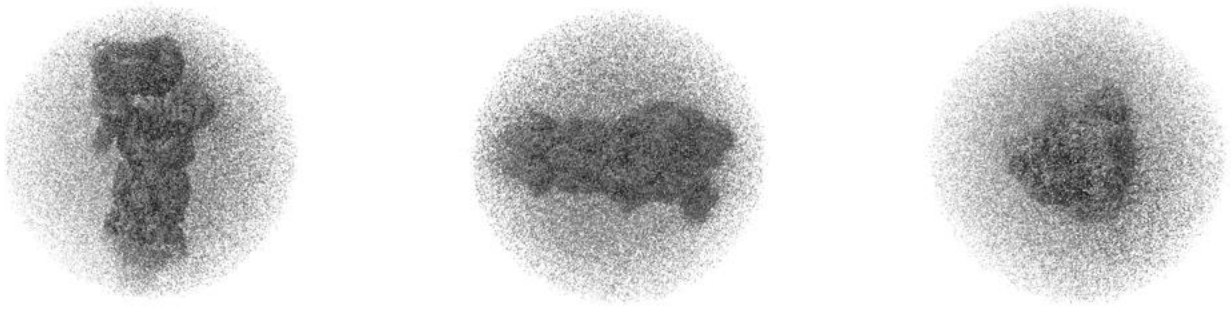


Z

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 0.42. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

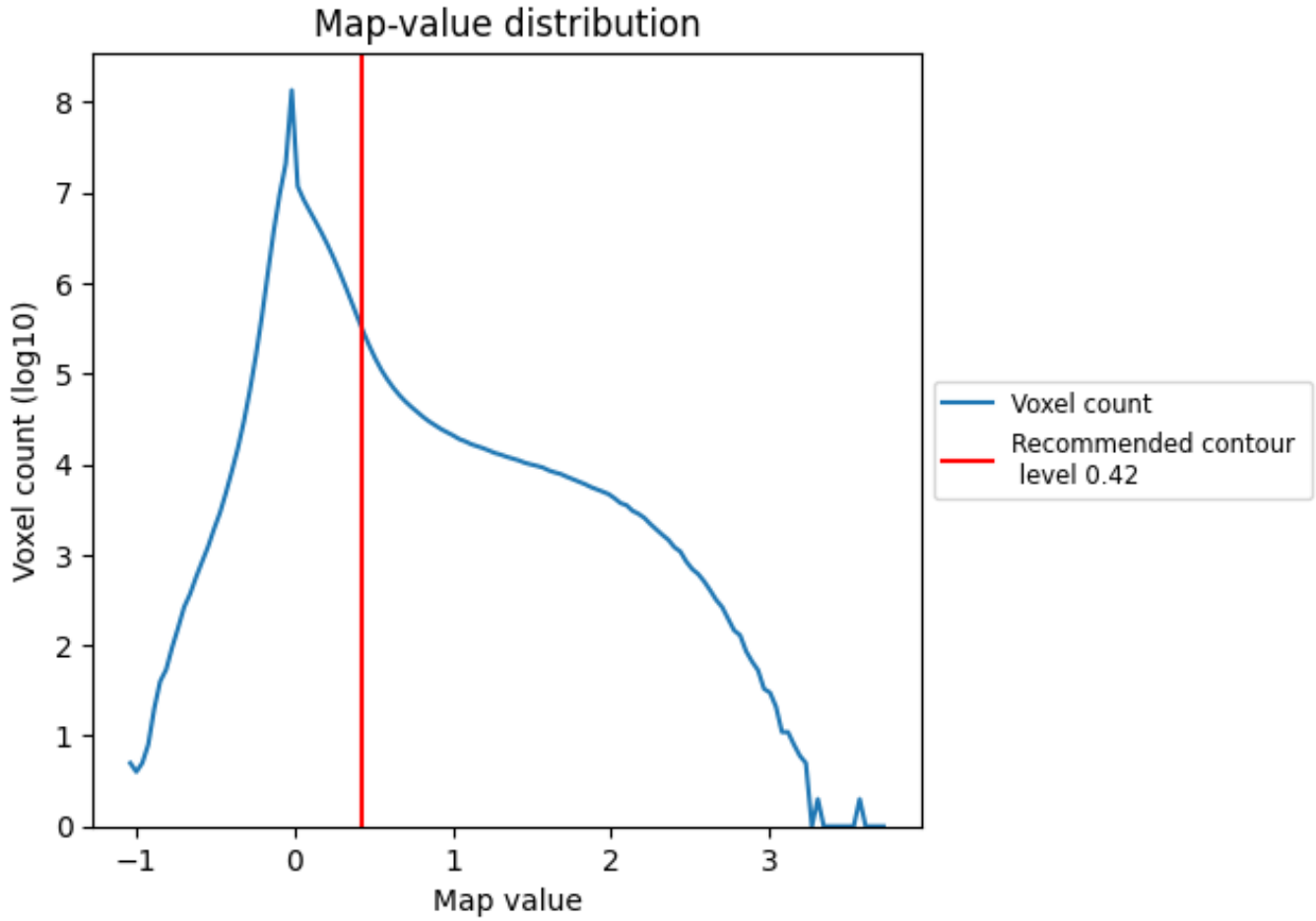
6.6 Mask visualisation (i)

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

7 Map analysis

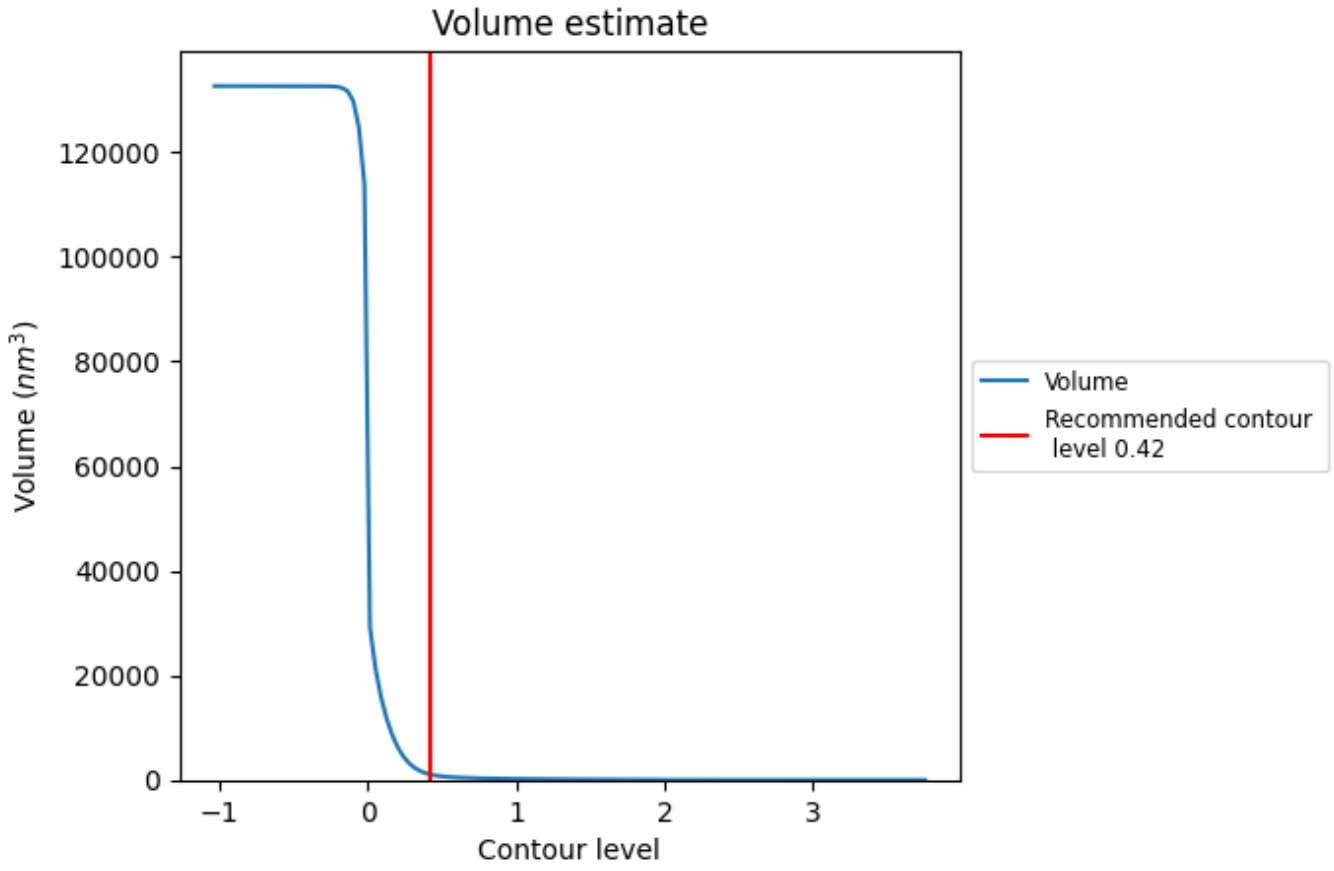
This section contains the results of statistical analysis of the map.

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.

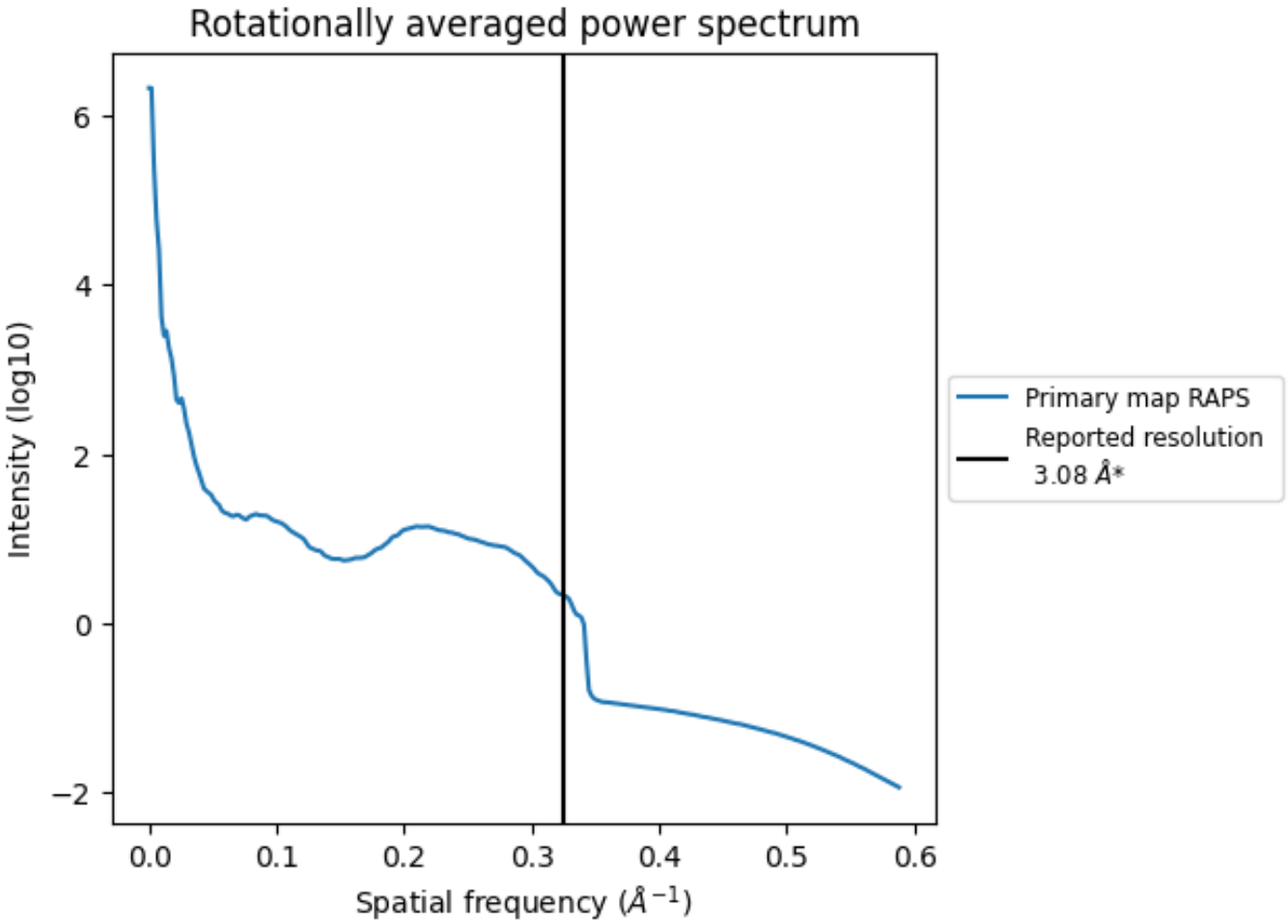
7.2 Volume estimate (i)



The volume at the recommended contour level is 1067 nm^3; this corresponds to an approximate mass of 964 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 0.325 Å^{-1}

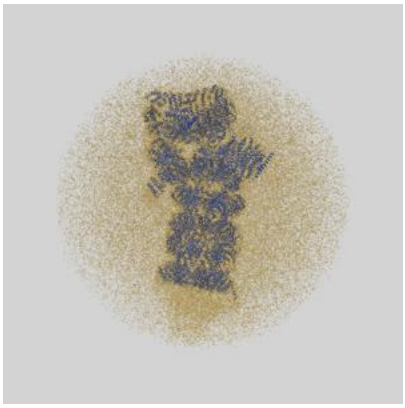
8 Fourier-Shell correlation (i)

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

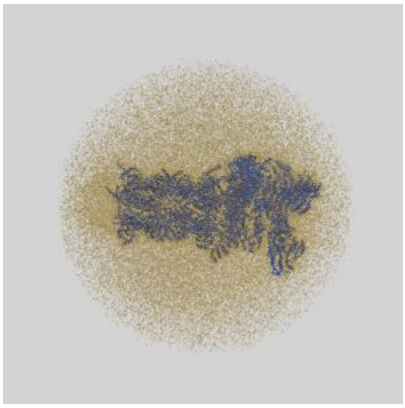
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-63777 and PDB model 9MBQ. Per-residue inclusion information can be found in section 3 on page 14.

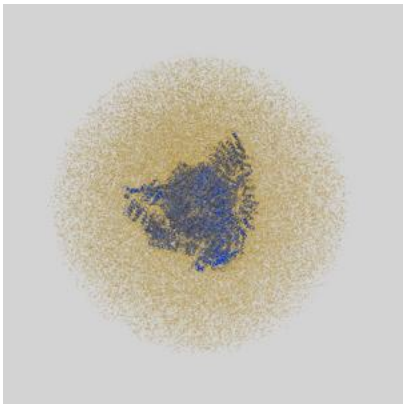
9.1 Map-model overlay



X



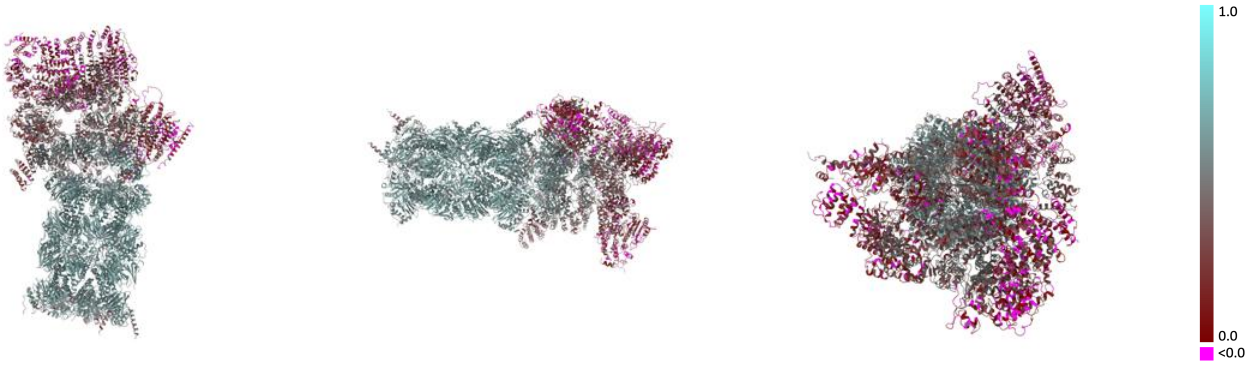
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.42 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.

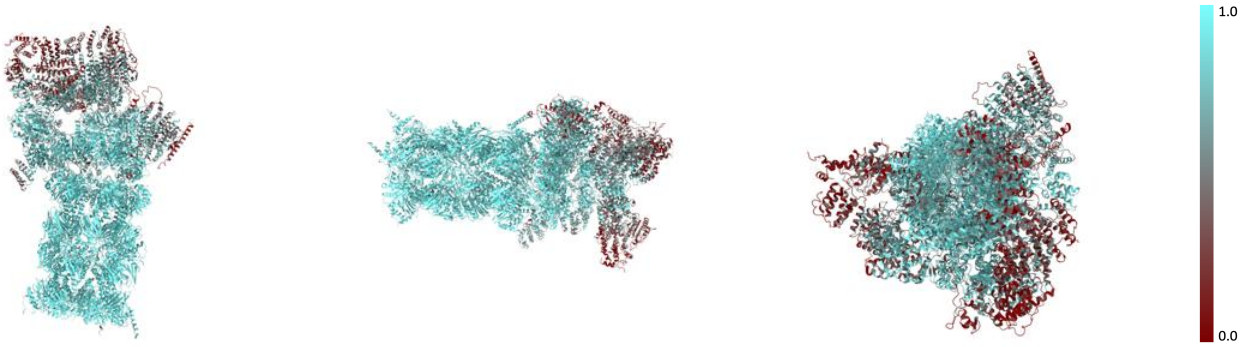
9.2 Q-score mapped to coordinate model



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.

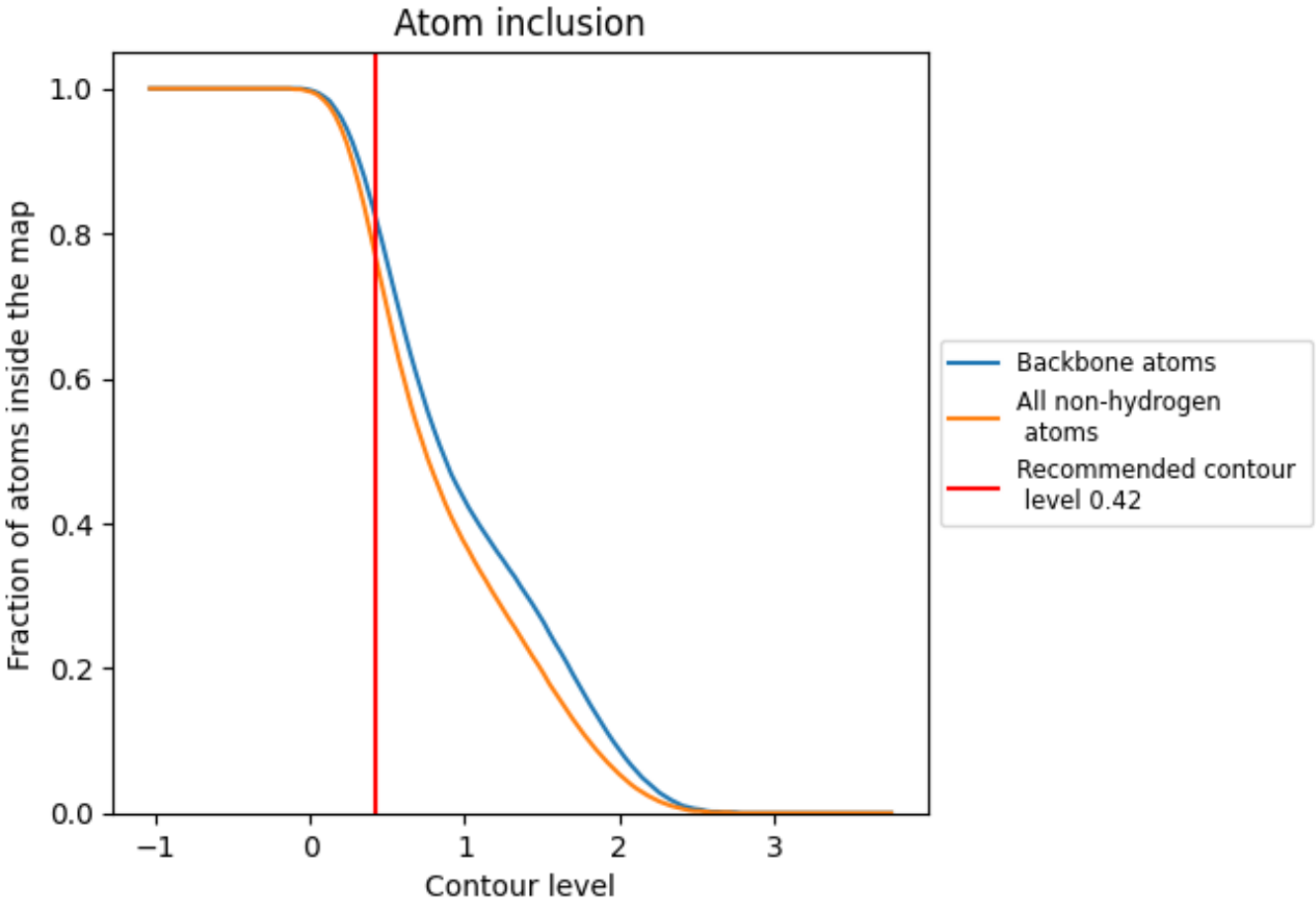
9.3 Atom inclusion mapped to coordinate model



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 (0.42).

9.4 Atom inclusion (i)



At the recommended contour level, 83% of all backbone atoms, 77% 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 (0.42) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7720	0.4450
A	0.8920	0.5200
B	0.8930	0.5210
C	0.8840	0.5140
D	0.8620	0.4950
E	0.6140	0.3340
F	0.8130	0.4810
G	0.9550	0.5960
H	0.9620	0.6010
I	0.9390	0.5830
J	0.9080	0.5590
K	0.9490	0.6010
L	0.9610	0.6060
M	0.9480	0.5920
N	0.9710	0.6180
O	0.9560	0.5970
P	0.9730	0.6120
Q	0.9680	0.6130
R	0.9690	0.6160
S	0.9650	0.6160
T	0.9700	0.6150
U	0.4140	0.1930
V	0.3610	0.1790
W	0.6520	0.3420
X	0.7200	0.3930
Y	0.7590	0.3820
Z	0.5910	0.2270
a	0.3770	0.1750
b	0.3200	0.1820
c	0.6810	0.3490
d	0.2300	0.1290
e	0.6030	0.2760
f	0.1750	0.0870
g	0.9480	0.5800
h	0.9550	0.5820

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Chain	Atom inclusion	Q-score
i	0.9080	0.5620
j	0.8930	0.5240
k	0.8870	0.5360
l	0.9300	0.5650
m	0.9290	0.5720
n	0.9700	0.6160
o	0.9620	0.6000
p	0.9710	0.6120
q	0.9640	0.6070
r	0.9600	0.6080
s	0.9700	0.6110
t	0.9640	0.6100
v	0.9710	0.5650
x	0.6300	0.2350