Full wwPDB EM Validation Report (i)

Apr 20, 2026 – 03:33 PM JST

PDB ID	:	9K54 / pdb_00009k54
EMDB ID	:	EMD-62080
Title	:	Structure of substrate-engaged human 26S proteasome RP-CP subcomplex in state ED2.2
Authors	:	Wu, Z.; Chen, E.; Mao, Y.
Deposited on	:	2024-10-21
Resolution	:	3.70 Å(reported)

The following versions of software and data (see references (i)) were used in the production of this report:

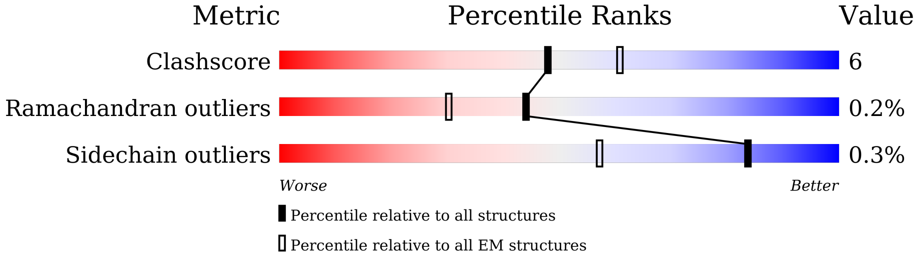
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

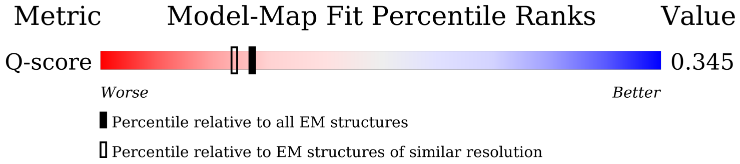
1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.70 Å.

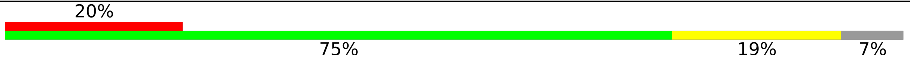
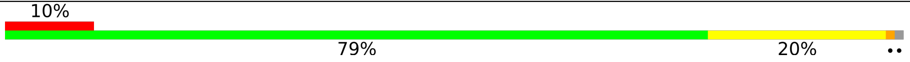
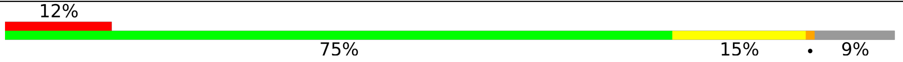
Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.





Metric	**Whole archive (#Entries)**	**EM structures (#Entries)**	**Similar EM resolution (#Entries, resolution range(Å))**
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	11569 (3.20 - 4.20)

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	A	433	
2	B	440	
3	C	398	
4	D	418	

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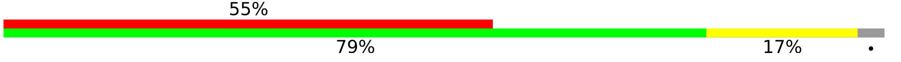
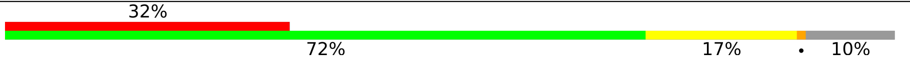
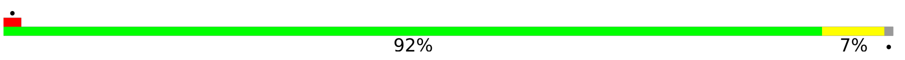
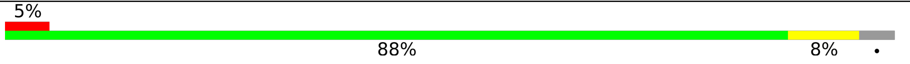
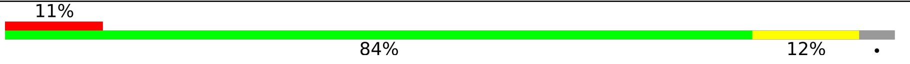
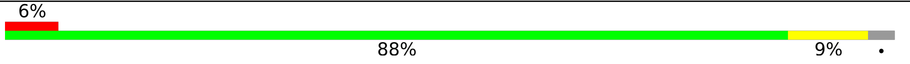
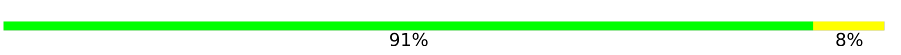
Mol	Chain	Length	Quality of chain
5	E	403	 55% 79% 17% •
6	F	439	 32% 72% 17% • 10%
7	G	246	 • 85% 11% • •
7	g	246	 • 92% 7% •
8	H	234	 • 89% 10% •
8	h	234	 • 89% 10% •
9	I	261	 • 83% 12% 5%
9	i	261	 5% 88% 8% •
10	J	248	 • 85% 11% •
10	j	248	 11% 84% 12% •
11	K	241	 • 87% 12% •
11	k	241	 6% 88% 9% •
12	L	263	 • 80% 11% 9%
12	l	263	 • 81% 8% • 10%
13	M	255	 87% 7% 5%
13	m	255	 • 80% 14% 6%
14	N	239	 • 79% 6% 15%
14	n	239	 • 79% 5% 15%
15	O	277	 74% 6% 21%
15	o	277	 69% 10% 21%
16	P	205	 91% 8%
16	p	205	 85% 14%
17	Q	201	 • 89% 10% •
17	q	201	 • 85% 14% •
18	R	263	 67% 10% 24%

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Mol	Chain	Length	Quality of chain
18	r	263	70% 7% 24%
19	S	241	78% 10% 12%
19	s	241	• 76% 12% 12%
20	T	264	70% 11% 18%
20	t	264	70% 12% 18%
21	U	953	28% 78% 15% 8%
22	V	534	21% 69% 15% 17%
23	W	456	41% 81% 16% •
24	X	422	34% 84% 15% •
25	Y	389	7% 85% 15%
26	Z	324	24% 65% 23% 12%
27	a	376	31% 78% 19% ••
28	b	377	24% 40% 11% 49%
29	c	310	28% 73% 17% •• 7%
30	d	350	42% 60% 13% 27%
31	e	70	24% 57% 14% 29%
32	f	908	50% 80% 13% 7%
33	v	36	81% 100%
34	w	76	100% 80% 20%
34	x	76	100% 89% 11%
34	y	76	100% 74% 25% •
34	z	76	80% 76% 20% •

2 Entry composition (i)

There are 38 unique types of molecules in this entry. The entry contains 108712 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 regulatory subunit 7.

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

- Molecule 2 is a protein called 26S proteasome regulatory subunit 4.

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

- Molecule 3 is a protein called 26S proteasome regulatory subunit 8.

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

- Molecule 4 is a protein called 26S proteasome regulatory subunit 6B.

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

- Molecule 5 is a protein called Proteasome 26S subunit, ATPase 6.

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

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

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

- Molecule 7 is a protein called Proteasome subunit alpha type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	240	Total 1867	C 1187	N 312	O 355	S 13	0	0
7	g	244	Total 1879	C 1193	N 318	O 355	S 13	0	0

- Molecule 8 is a protein called Proteasome subunit alpha type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	232	Total 1801	C 1149	N 304	O 342	S 6	0	0
8	h	232	Total 1805	C 1154	N 307	O 338	S 6	0	0

- Molecule 9 is a protein called Proteasome subunit alpha type-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	248	Total 1933	C 1222	N 330	O 371	S 10	0	0
9	i	250	Total 1955	C 1234	N 336	O 375	S 10	0	0

- Molecule 10 is a protein called Proteasome subunit alpha type-7.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	239	Total 1861	C 1166	N 327	O 363	S 5	0	0
10	j	239	Total 1861	C 1168	N 332	O 356	S 5	0	0

- Molecule 11 is a protein called Proteasome subunit alpha type-5.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	238	Total 1813	C 1139	N 302	O 361	S 11	0	0
11	k	234	Total 1782	C 1119	N 295	O 357	S 11	0	0

- Molecule 12 is a protein called Proteasome subunit alpha type-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	240	Total 1876	C 1175	N 338	O 352	S 11	0	0
12	l	238	Total 1861	C 1165	N 335	O 350	S 11	0	0

- Molecule 13 is a protein called Proteasome subunit alpha type-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	242	Total 1893	C 1202	N 323	O 356	S 12	1	0
13	m	240	Total 1881	C 1193	N 321	O 356	S 11	0	0

- Molecule 14 is a protein called Proteasome subunit beta type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	203	Total 1521	C 954	N 259	O 296	S 12	0	0
14	n	202	Total 1510	C 947	N 258	O 293	S 12	0	0

- Molecule 15 is a protein called Proteasome subunit beta type-7.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	220	Total 1645	C 1035	N 278	O 320	S 12	0	0
15	o	220	Total 1659	C 1044	N 283	O 320	S 12	0	0

- Molecule 16 is a protein called Proteasome subunit beta type-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	204	Total 1587	C 1010	N 264	O 294	S 19	0	0
16	p	204	Total 1591	C 1013	N 265	O 294	S 19	0	0

- Molecule 17 is a protein called Proteasome subunit beta type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	199	Total 1591	C 1019	N 270	O 292	S 10	1	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
17	q	199	Total 1578	C 1012	N 267	O 290	S 9	0	0

- Molecule 18 is a protein called Proteasome subunit beta type-5.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	201	Total 1559	C 982	N 274	O 294	S 9	0	0
18	r	201	Total 1549	C 977	N 270	O 293	S 9	0	0

- Molecule 19 is a protein called Proteasome subunit beta type-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	213	Total 1641	C 1041	N 281	O 309	S 10	0	0
19	s	213	Total 1650	C 1044	N 283	O 313	S 10	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	216	Total 1683	C 1062	N 291	O 318	S 12	0	0
20	t	216	Total 1687	C 1064	N 291	O 320	S 12	0	0

- Molecule 21 is a protein called 26S proteasome non-ATPase regulatory subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	878	Total 6867	C 4352	N 1163	O 1306	S 46	0	0

- Molecule 22 is a protein called 26S proteasome non-ATPase regulatory subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	444	Total 3612	C 2301	N 645	O 653	S 13	0	0

- Molecule 23 is a protein called 26S proteasome non-ATPase regulatory subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	441	Total 3596	C 2277	N 613	O 682	S 24	0	0

- Molecule 24 is a protein called 26S proteasome non-ATPase regulatory subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	X	422	Total 3335	C 2116	N 567	O 639	S 13	0	0

- Molecule 25 is a protein called 26S proteasome non-ATPase regulatory subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	389	Total 3202	C 2041	N 545	O 598	S 18	0	0

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

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

- Molecule 27 is a protein called 26S proteasome non-ATPase regulatory subunit 13.

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

- Molecule 28 is a protein called 26S proteasome non-ATPase regulatory subunit 4.

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

- Molecule 29 is a protein called 26S proteasome non-ATPase regulatory subunit 14.

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

- Molecule 30 is a protein called 26S proteasome non-ATPase regulatory subunit 8.

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

- Molecule 31 is a protein called 26S proteasome complex subunit SEM1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
31	e	50	425	260	65	100	0	0

- Molecule 32 is a protein called 26S proteasome non-ATPase regulatory subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	f	844	6529	4126	1108	1250	45	0	0

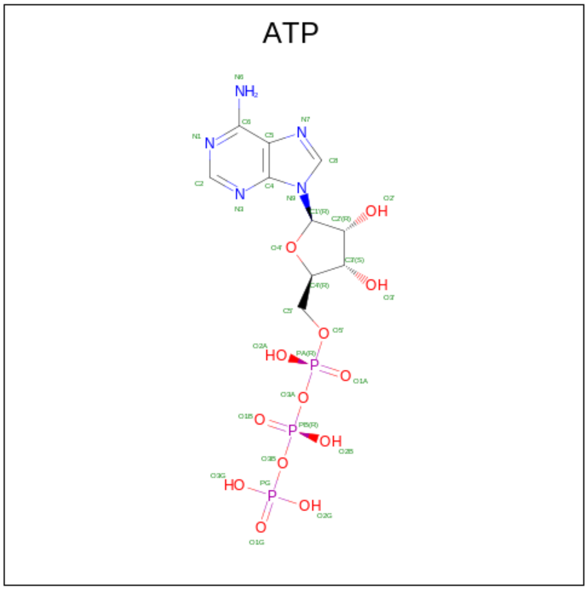
- Molecule 33 is a protein called Substrate.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
33	v	36	180	108	36	36	0	0

- Molecule 34 is a protein called Ubiquitin.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	w	76	601	378	105	117	1	0	0
34	x	76	601	378	105	117	1	0	0
34	y	76	601	378	105	117	1	0	0
34	z	76	601	378	105	117	1	0	0

- Molecule 35 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).

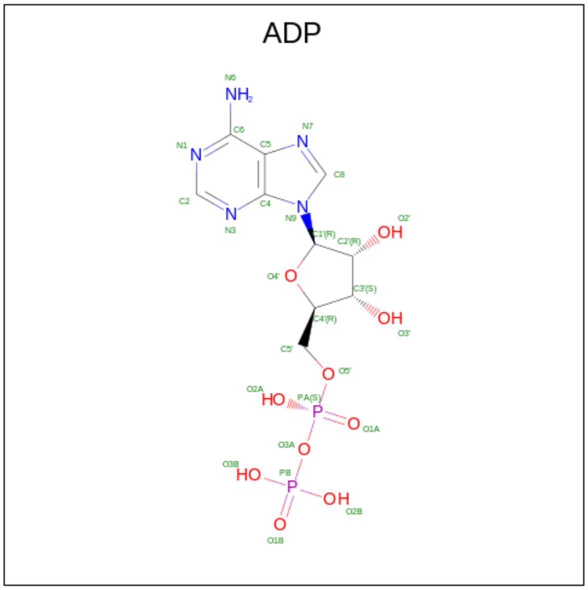


Mol	Chain	Residues	Atoms					AltConf
35	A	1	Total 31	C 10	N 5	O 13	P 3	0
35	B	1	Total 31	C 10	N 5	O 13	P 3	0
35	C	1	Total 31	C 10	N 5	O 13	P 3	0
35	F	1	Total 31	C 10	N 5	O 13	P 3	0

- Molecule 36 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

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

- Molecule 37 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
			Total	C	N	O	P	
37	D	1	27	10	5	10	2	0

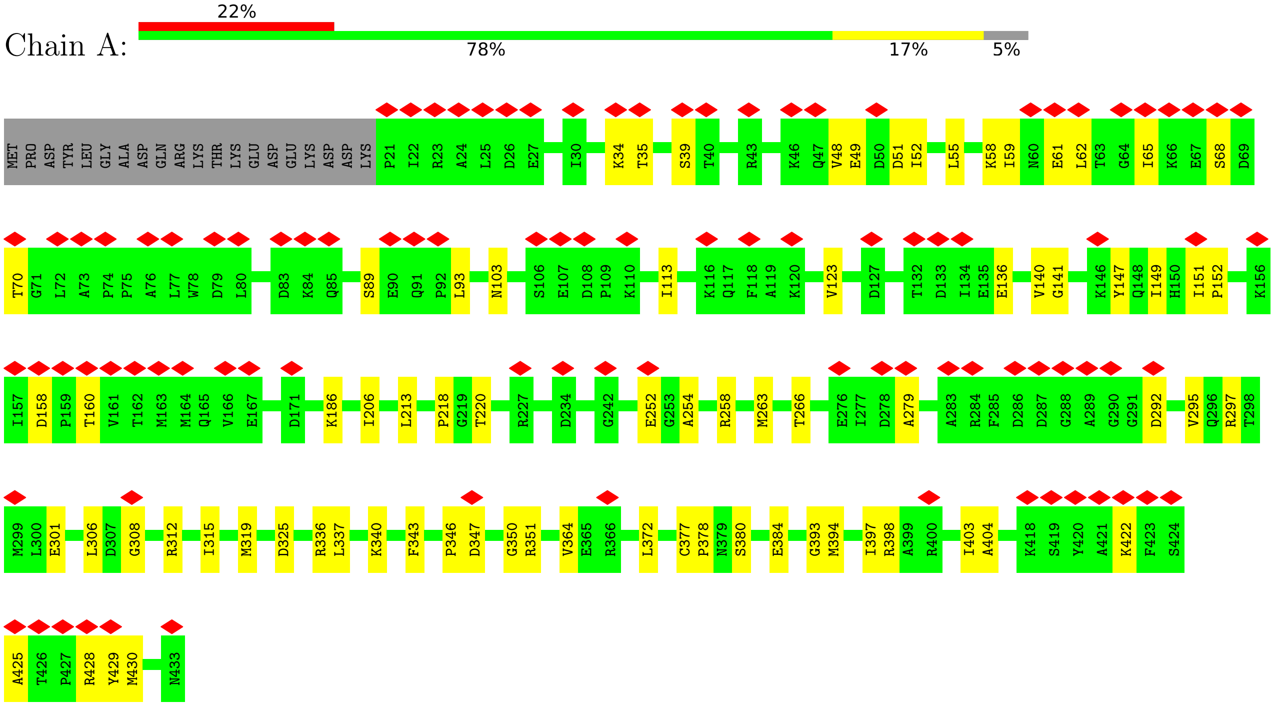
- Molecule 38 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

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

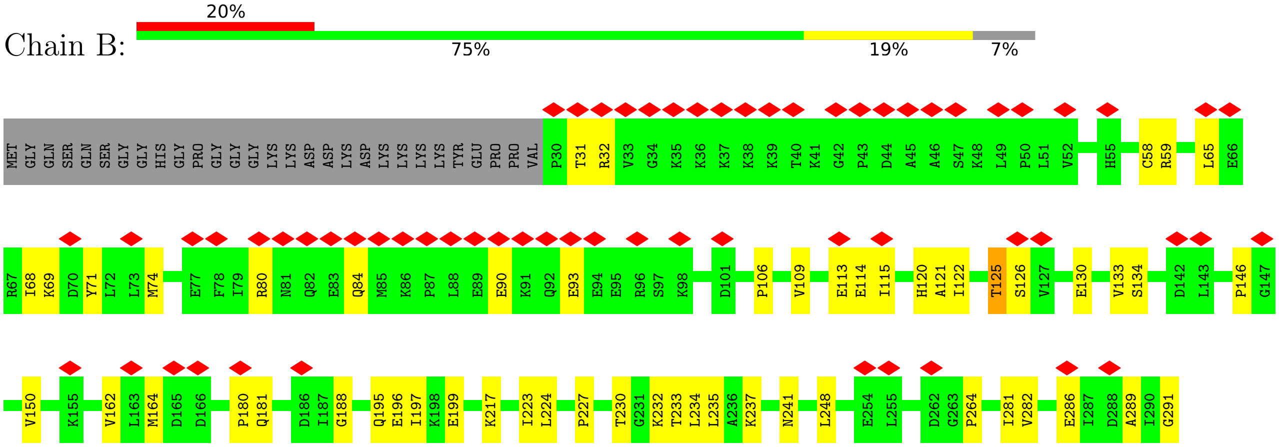
3 Residue-property plots ⓘ

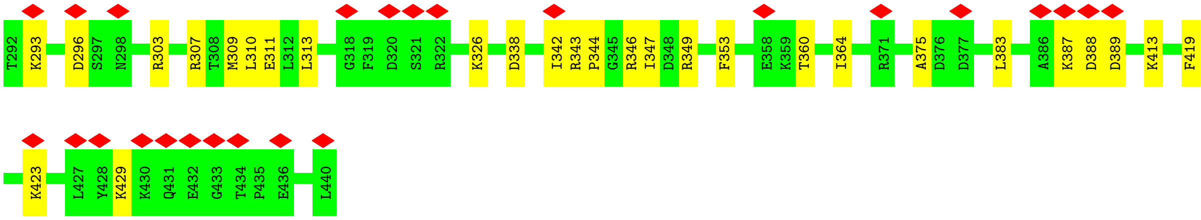
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: 26S proteasome regulatory subunit 7

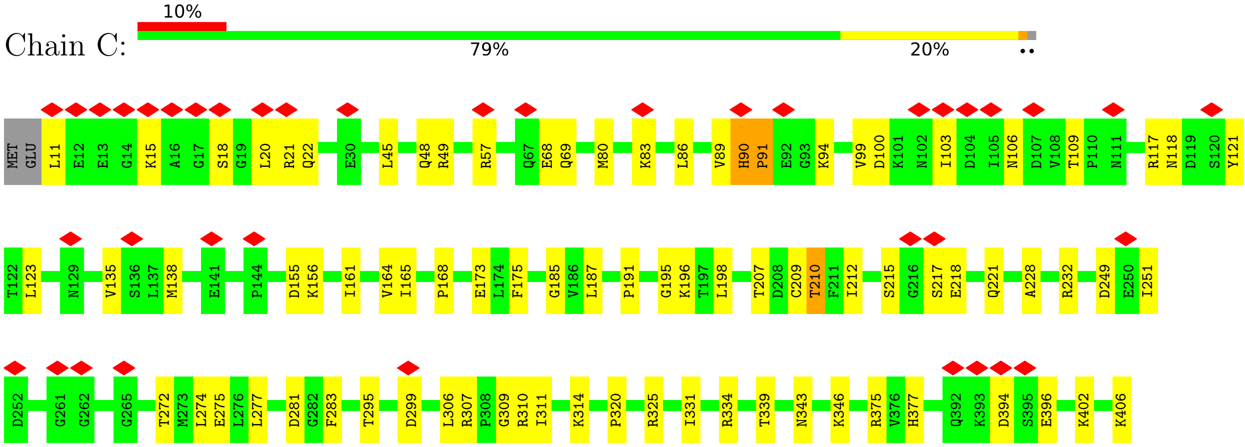


- Molecule 2: 26S proteasome regulatory subunit 4

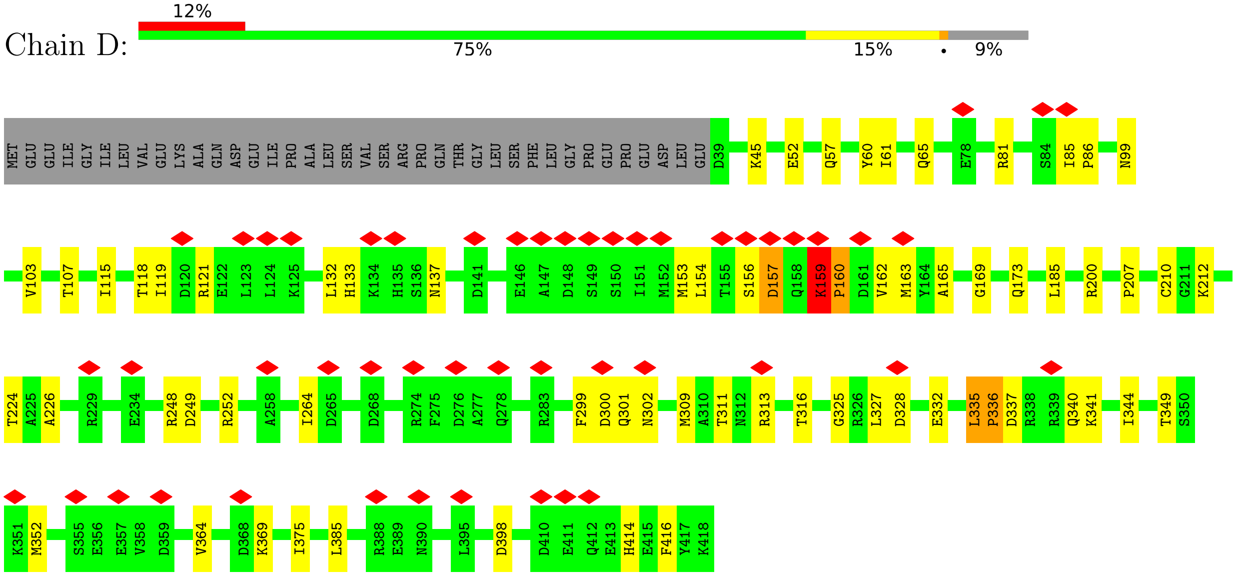




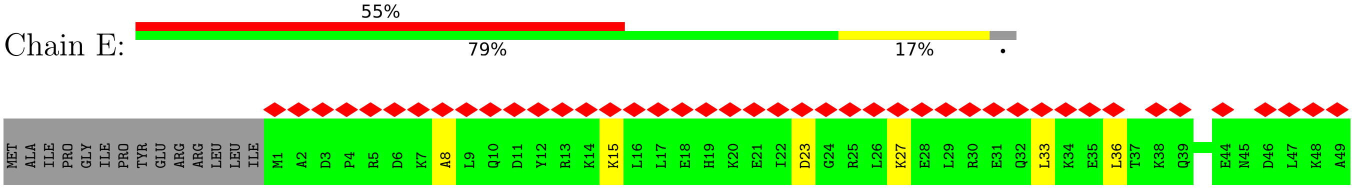
- Molecule 3: 26S proteasome regulatory subunit 8

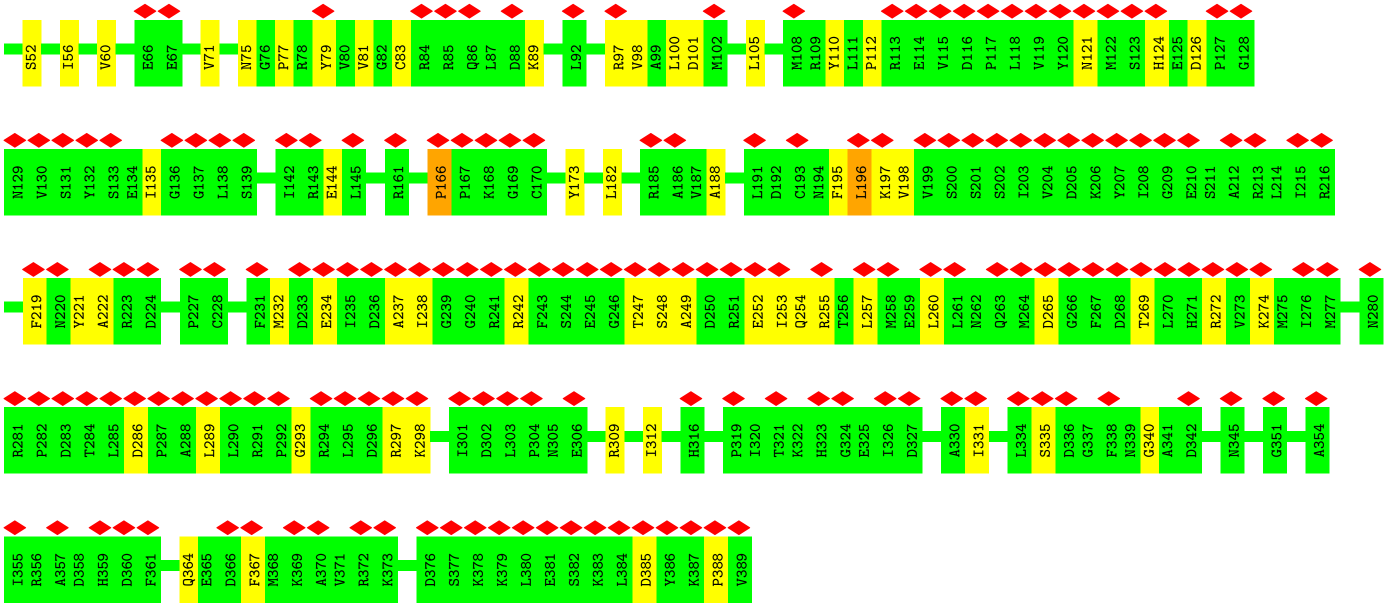


- Molecule 4: 26S proteasome regulatory subunit 6B



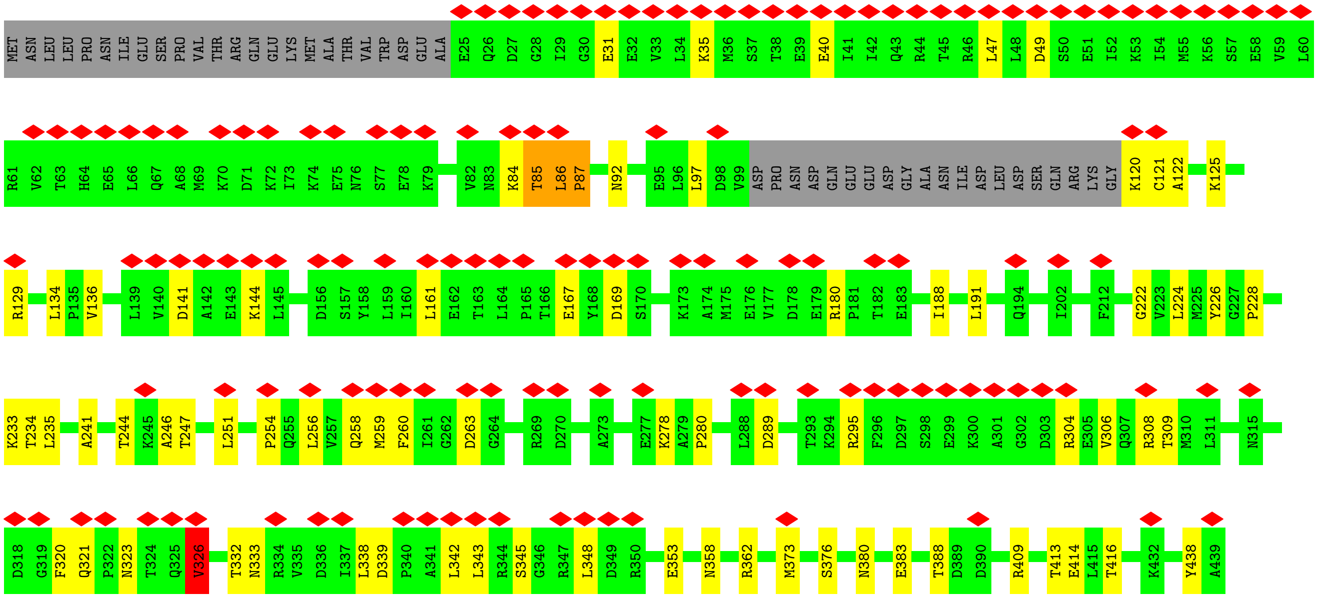
- Molecule 5: Proteasome 26S subunit, ATPase 6





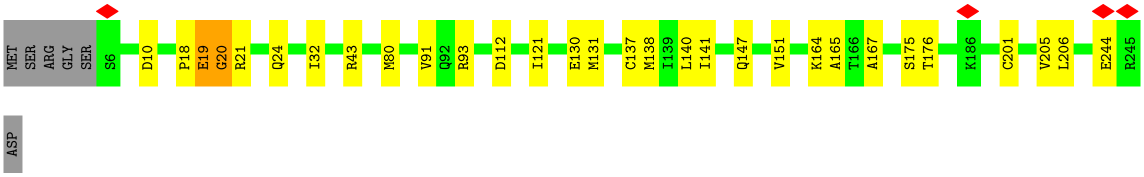
- Molecule 6: 26S proteasome regulatory subunit 6A

Chain F:



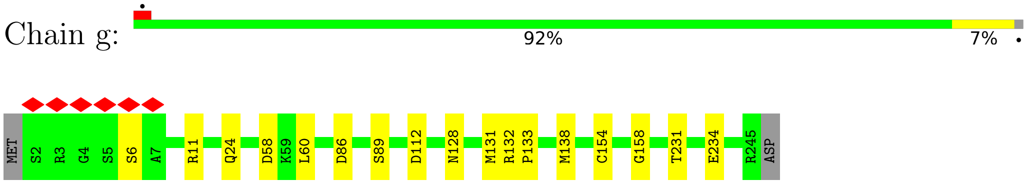
- Molecule 7: Proteasome subunit alpha type-6

Chain G:



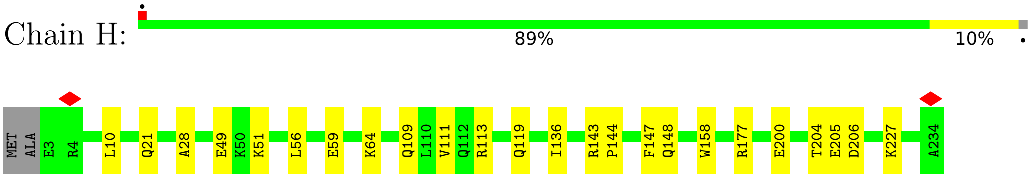
- Molecule 7: Proteasome subunit alpha type-6

Chain g:



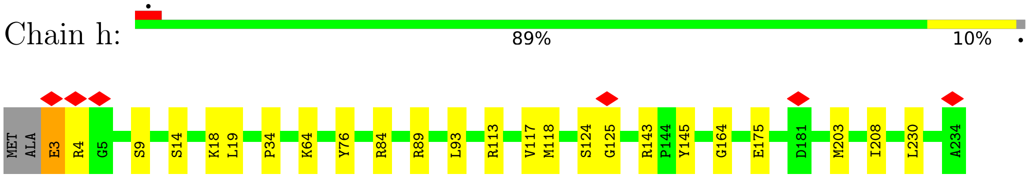
- Molecule 8: Proteasome subunit alpha type-2

Chain H:



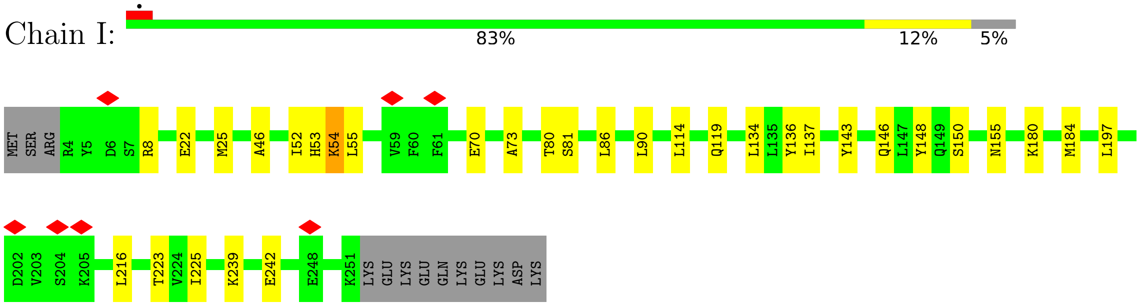
- Molecule 8: Proteasome subunit alpha type-2

Chain h:



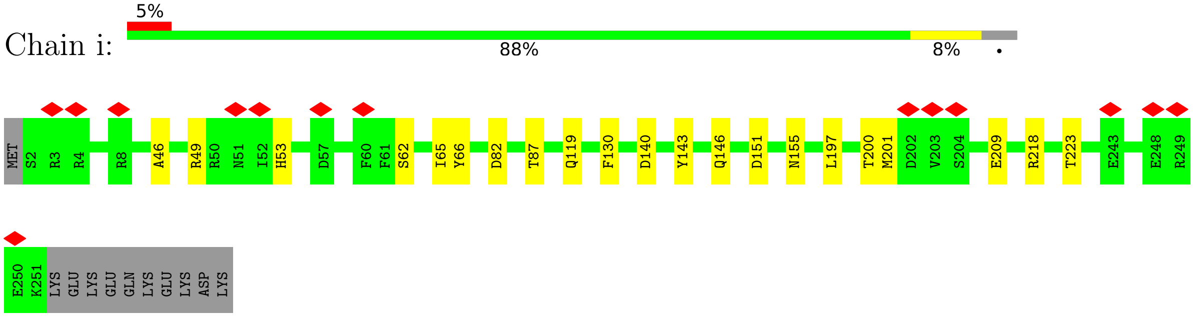
- Molecule 9: Proteasome subunit alpha type-4

Chain I:



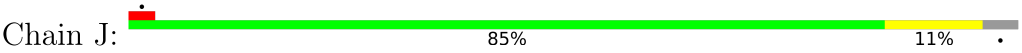
- Molecule 9: Proteasome subunit alpha type-4

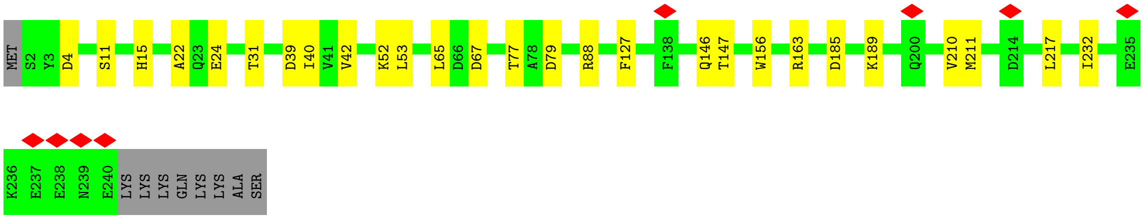
Chain i:



- Molecule 10: Proteasome subunit alpha type-7

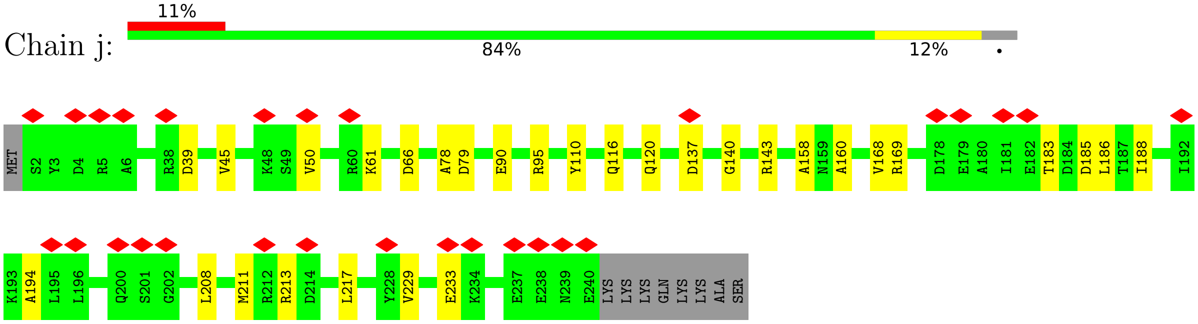
Chain J:





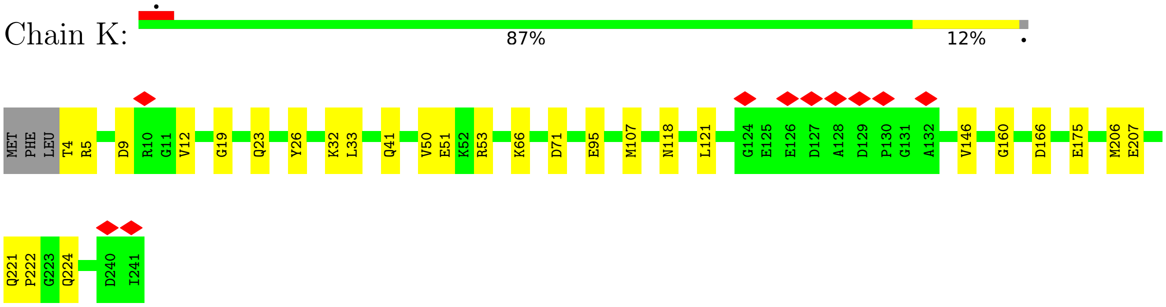
- Molecule 10: Proteasome subunit alpha type-7

Chain j:



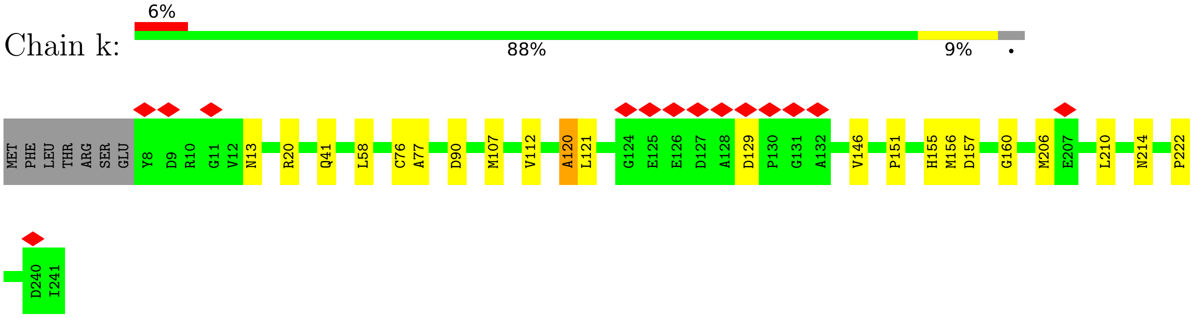
- Molecule 11: Proteasome subunit alpha type-5

Chain K:



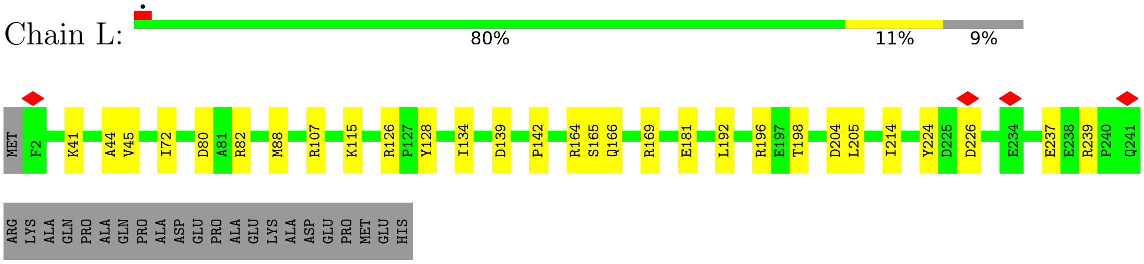
- Molecule 11: Proteasome subunit alpha type-5

Chain k:

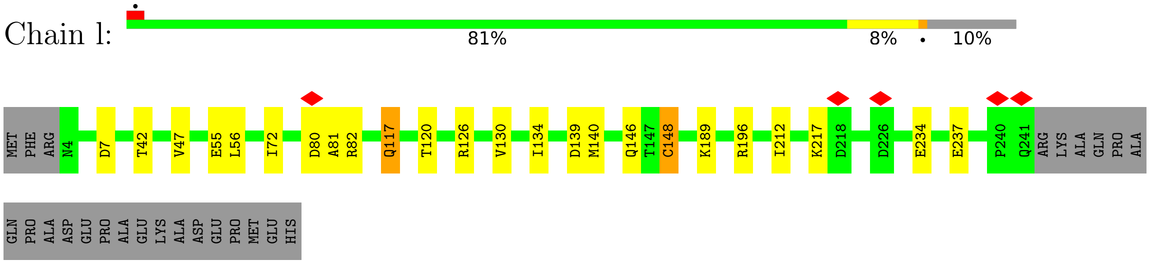


- Molecule 12: Proteasome subunit alpha type-1

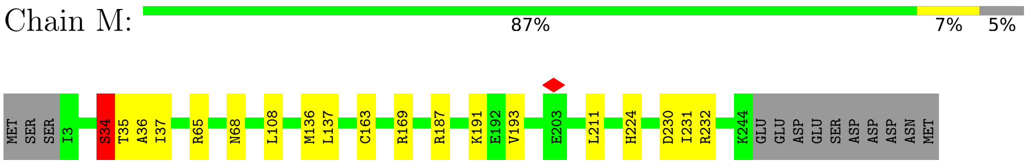
Chain L:



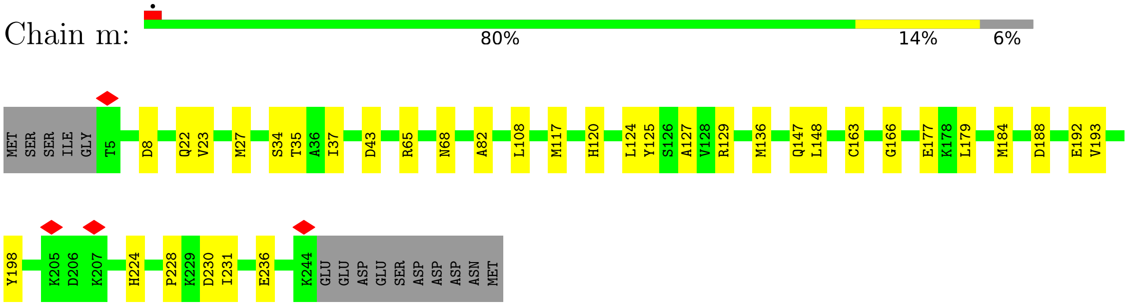
- Molecule 12: Proteasome subunit alpha type-1



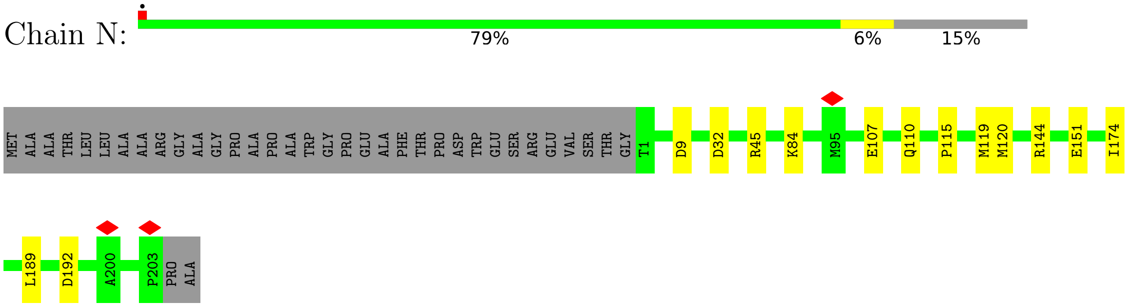
- Molecule 13: Proteasome subunit alpha type-3



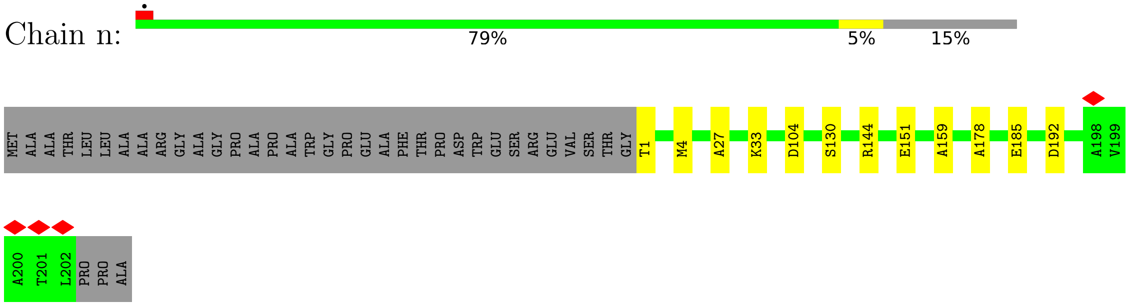
- Molecule 13: Proteasome subunit alpha type-3



- Molecule 14: Proteasome subunit beta type-6

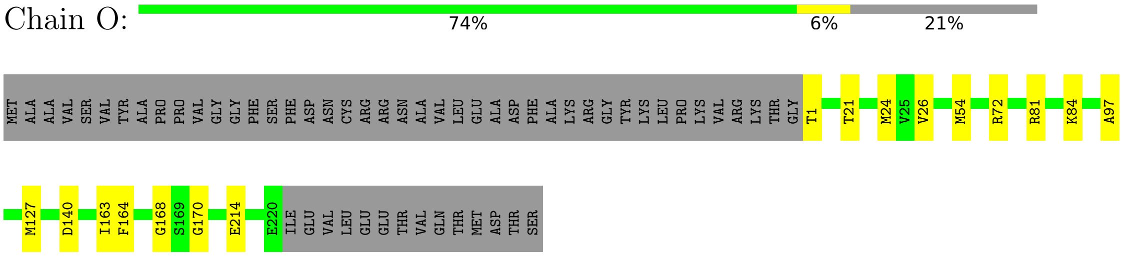


- Molecule 14: Proteasome subunit beta type-6



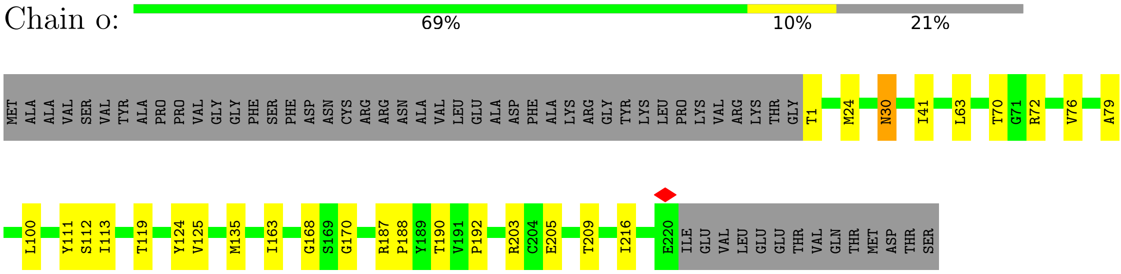
- Molecule 15: Proteasome subunit beta type-7

Chain O:



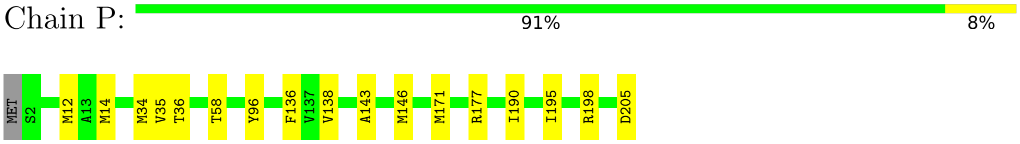
- Molecule 15: Proteasome subunit beta type-7

Chain o:



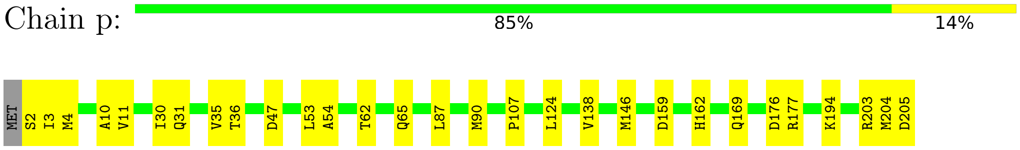
- Molecule 16: Proteasome subunit beta type-3

Chain P:



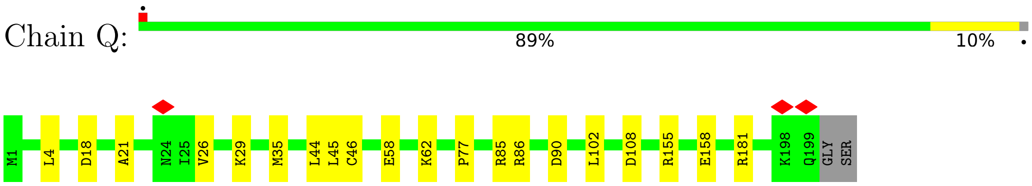
- Molecule 16: Proteasome subunit beta type-3

Chain p:



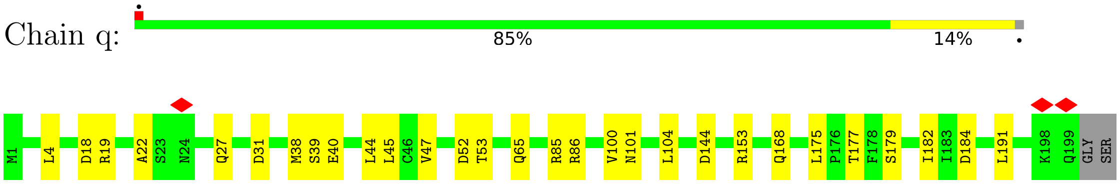
- Molecule 17: Proteasome subunit beta type-2

Chain Q:

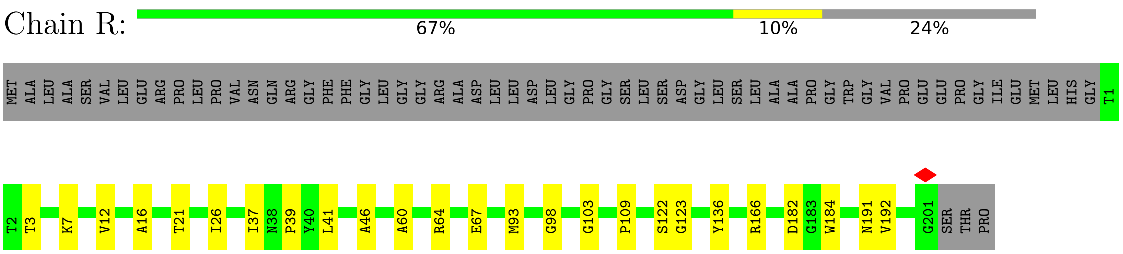


- Molecule 17: Proteasome subunit beta type-2

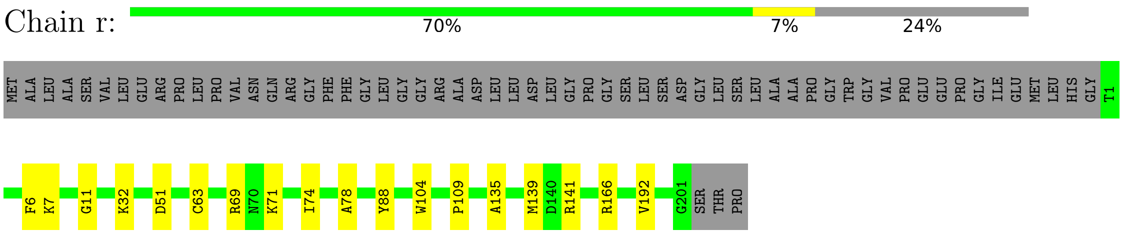
Chain q:



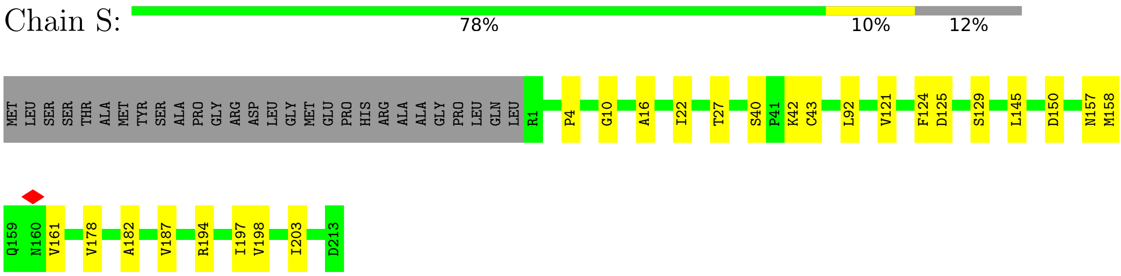
- Molecule 18: Proteasome subunit beta type-5



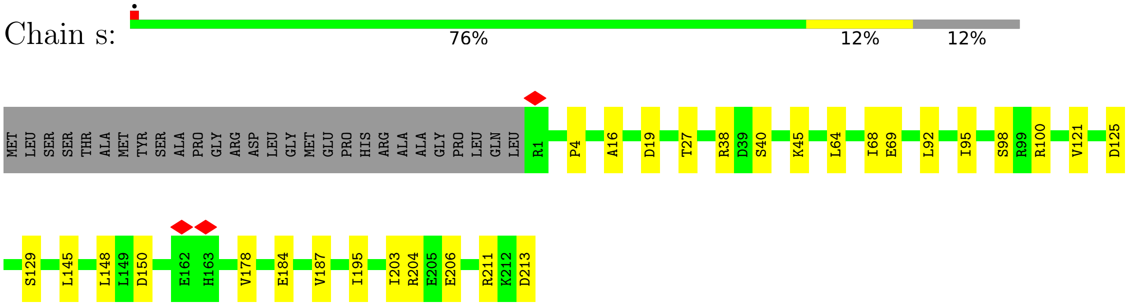
- Molecule 18: Proteasome subunit beta type-5



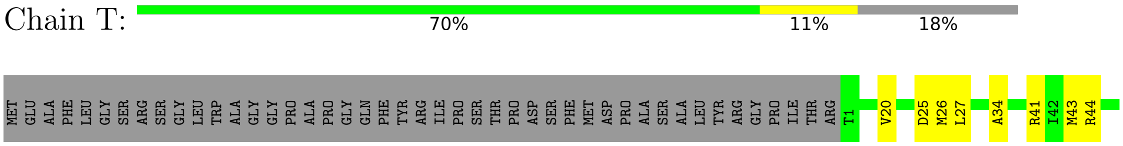
- Molecule 19: Proteasome subunit beta type-1

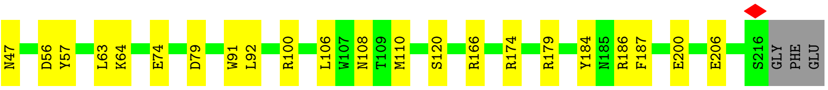


- Molecule 19: Proteasome subunit beta type-1



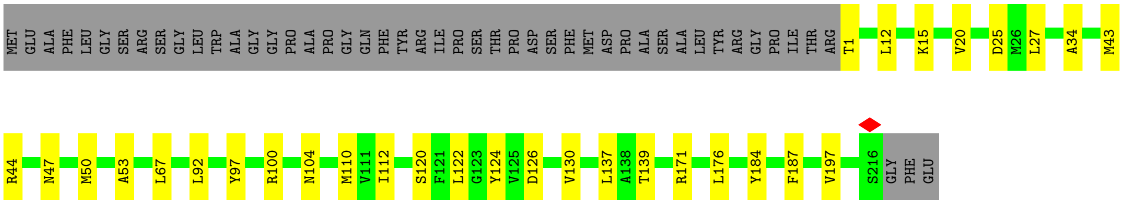
- Molecule 20: Proteasome subunit beta type-4





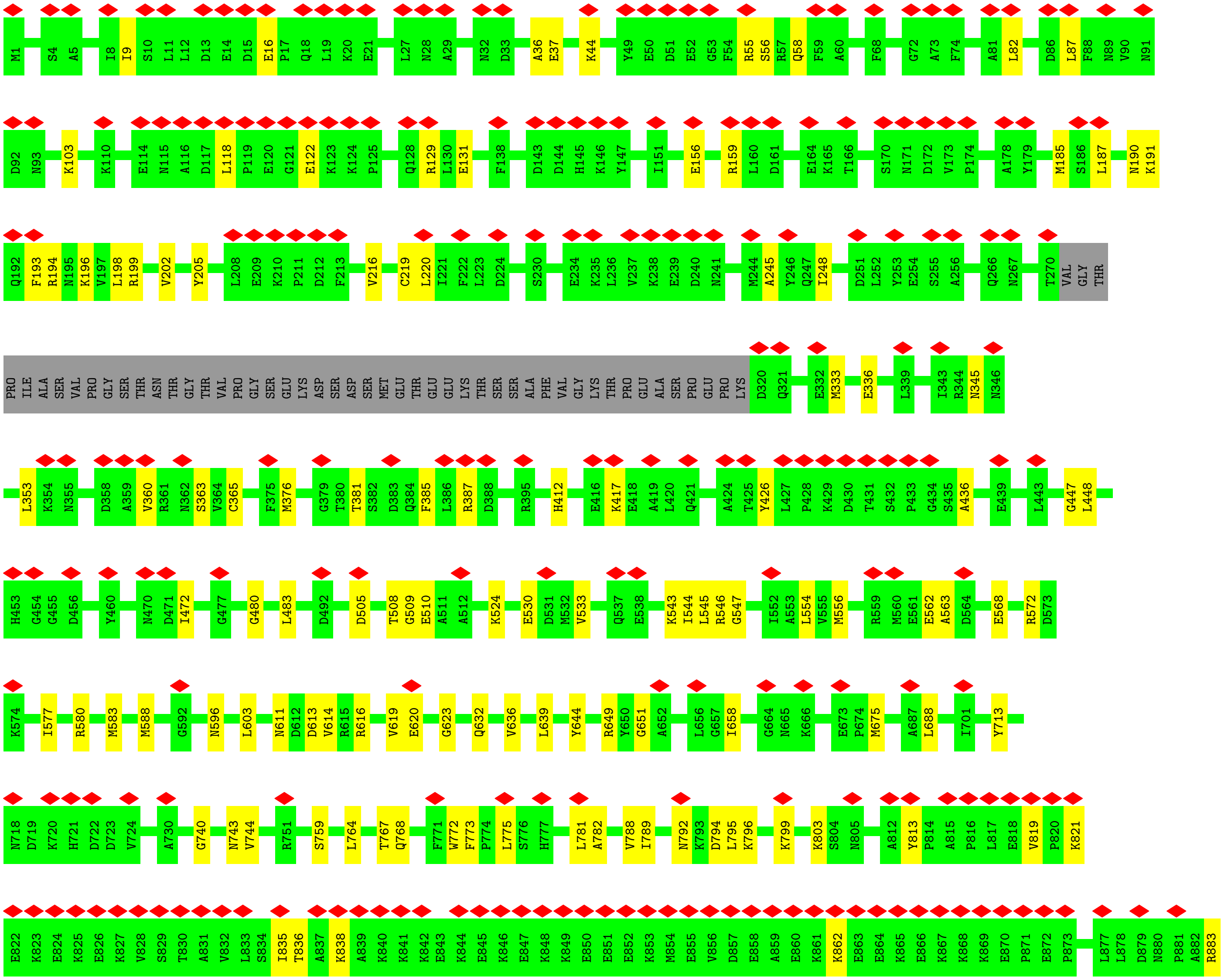
- Molecule 20: Proteasome subunit beta type-4

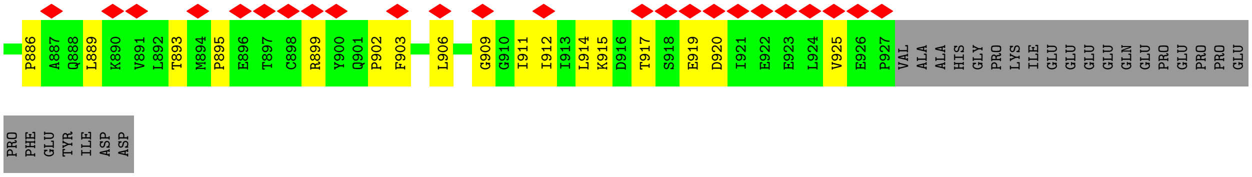
Chain t:



- Molecule 21: 26S proteasome non-ATPase regulatory subunit 1

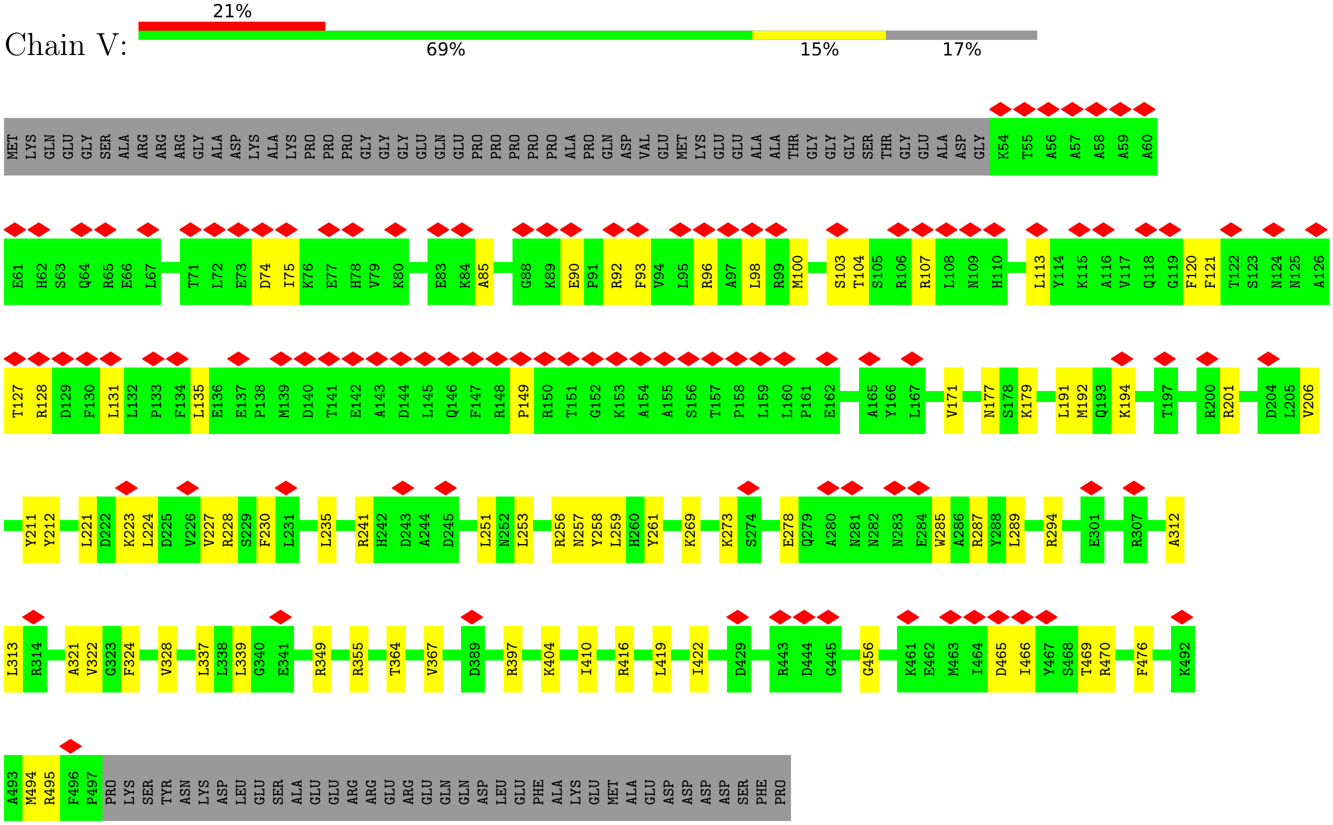
Chain U:





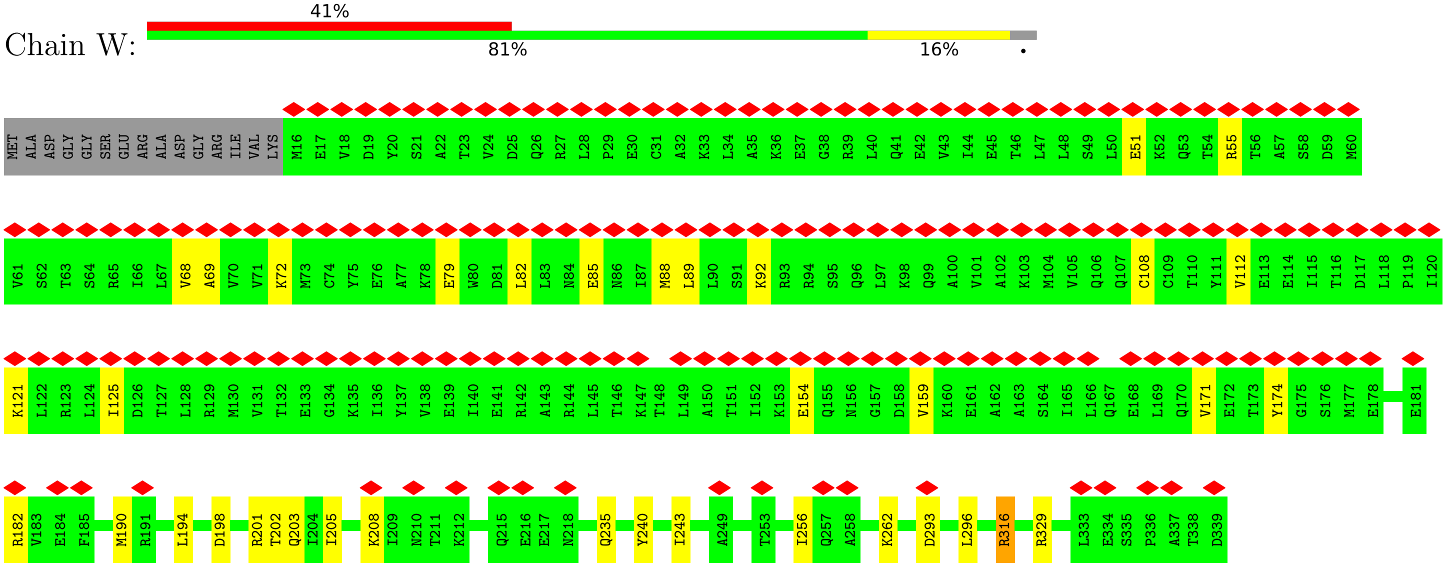
- Molecule 22: 26S proteasome non-ATPase regulatory subunit 3

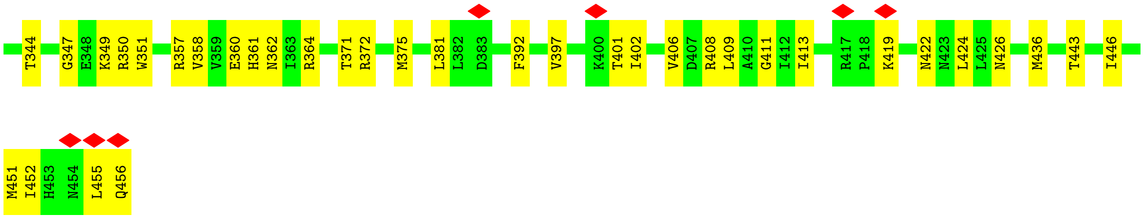
Chain V:



- Molecule 23: 26S proteasome non-ATPase regulatory subunit 12

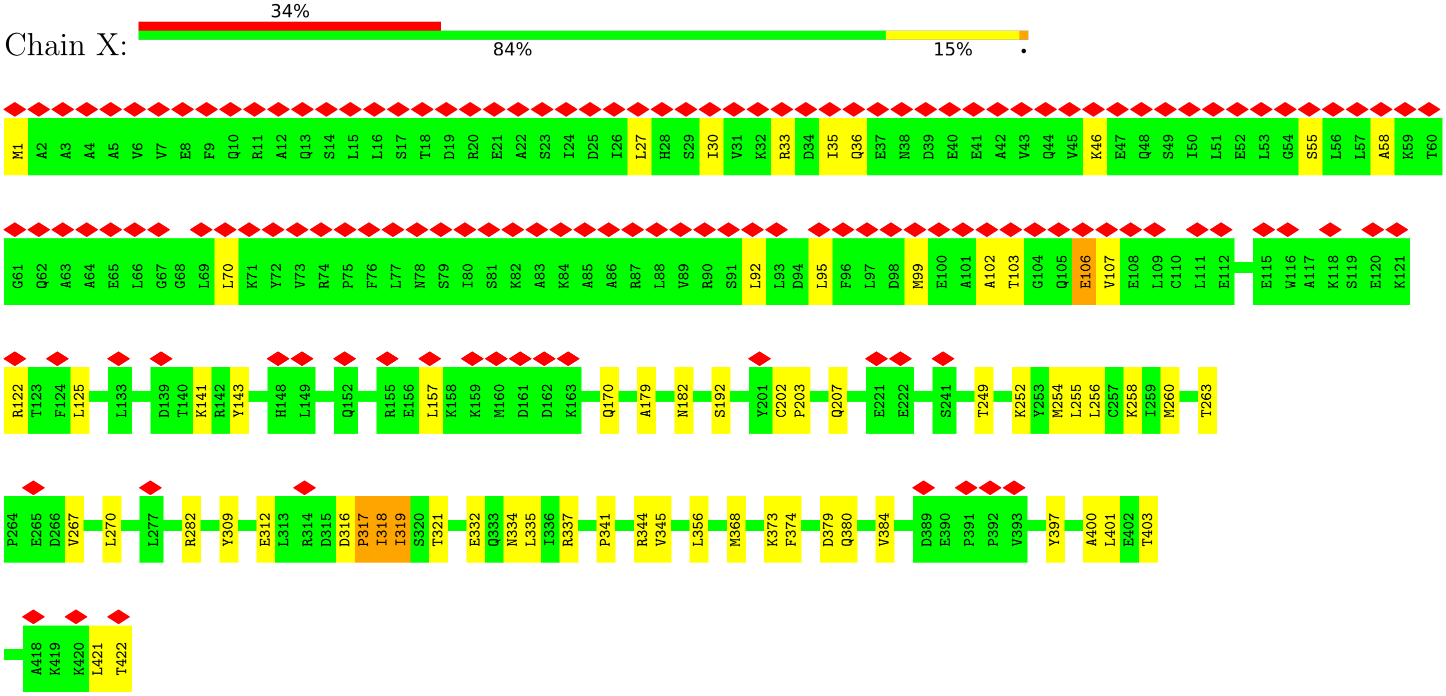
Chain W:





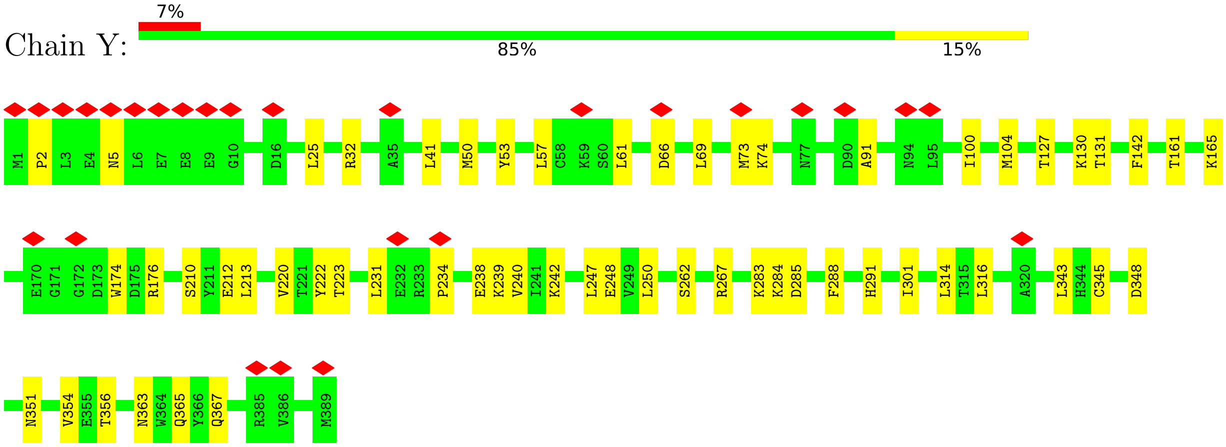
- Molecule 24: 26S proteasome non-ATPase regulatory subunit 11

Chain X:



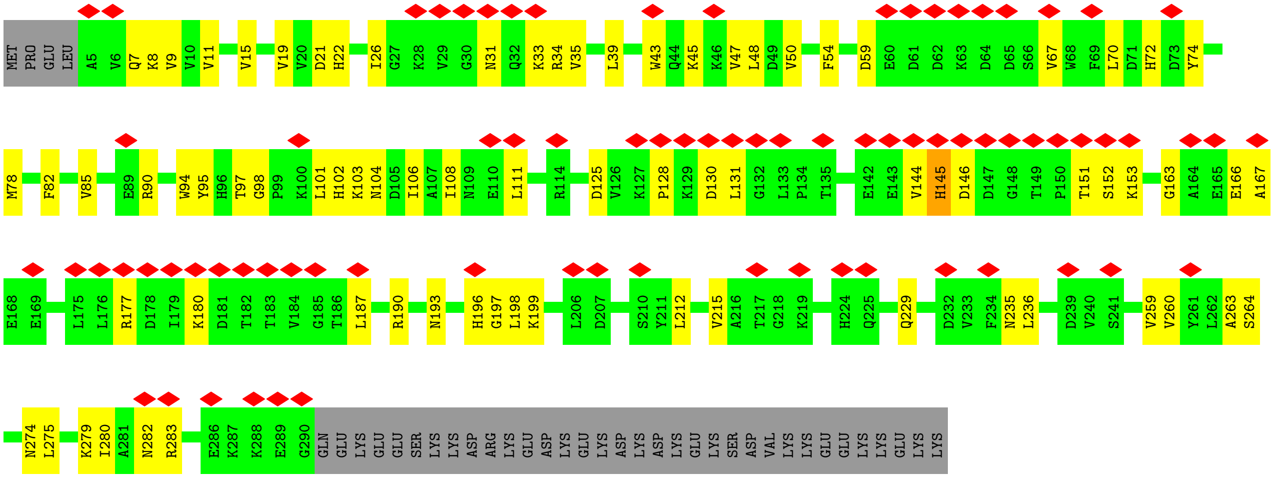
- Molecule 25: 26S proteasome non-ATPase regulatory subunit 6

Chain Y:



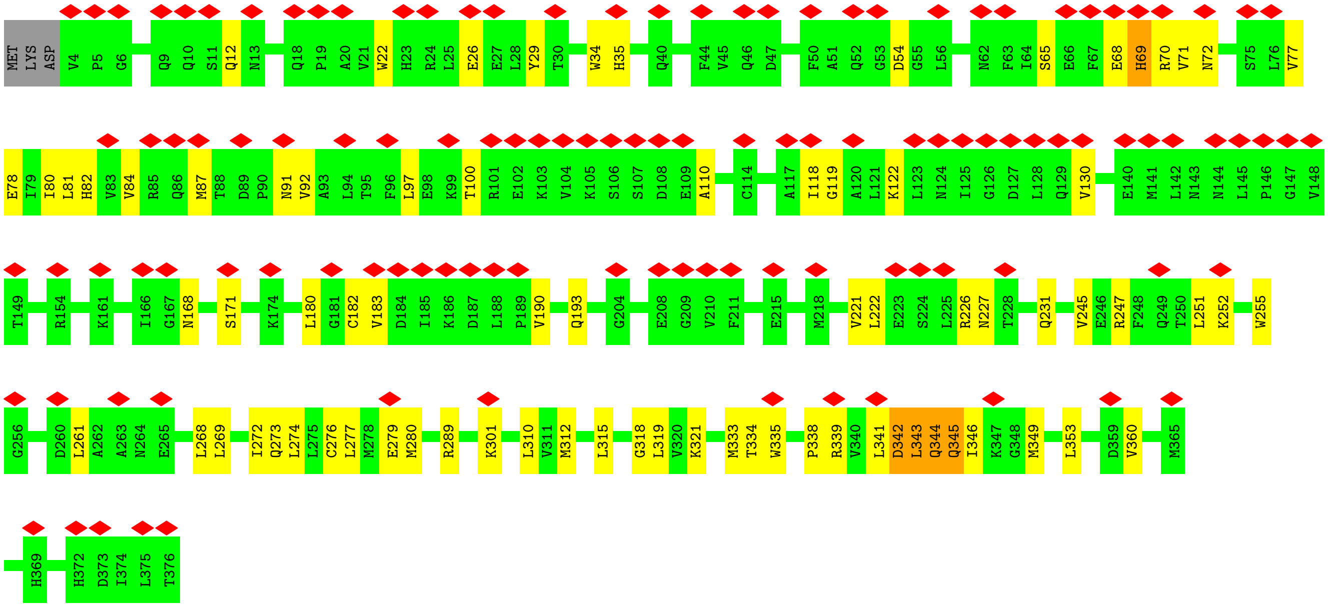
- Molecule 26: 26S proteasome non-ATPase regulatory subunit 7

Chain Z:



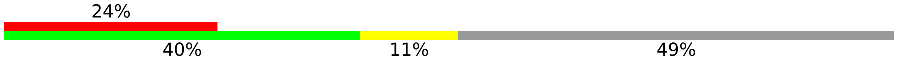
- Molecule 27: 26S proteasome non-ATPase regulatory subunit 13

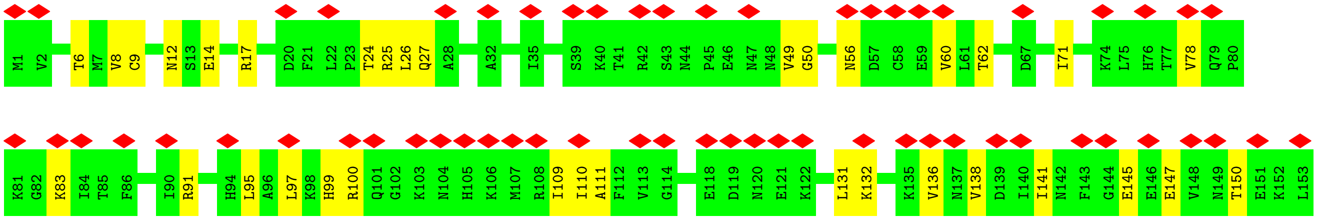
Chain a:

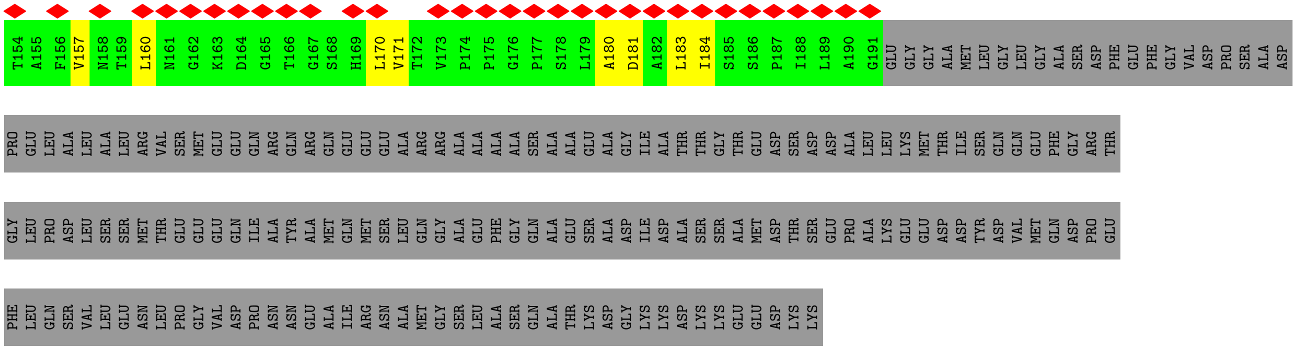


- Molecule 28: 26S proteasome non-ATPase regulatory subunit 4

Chain b:

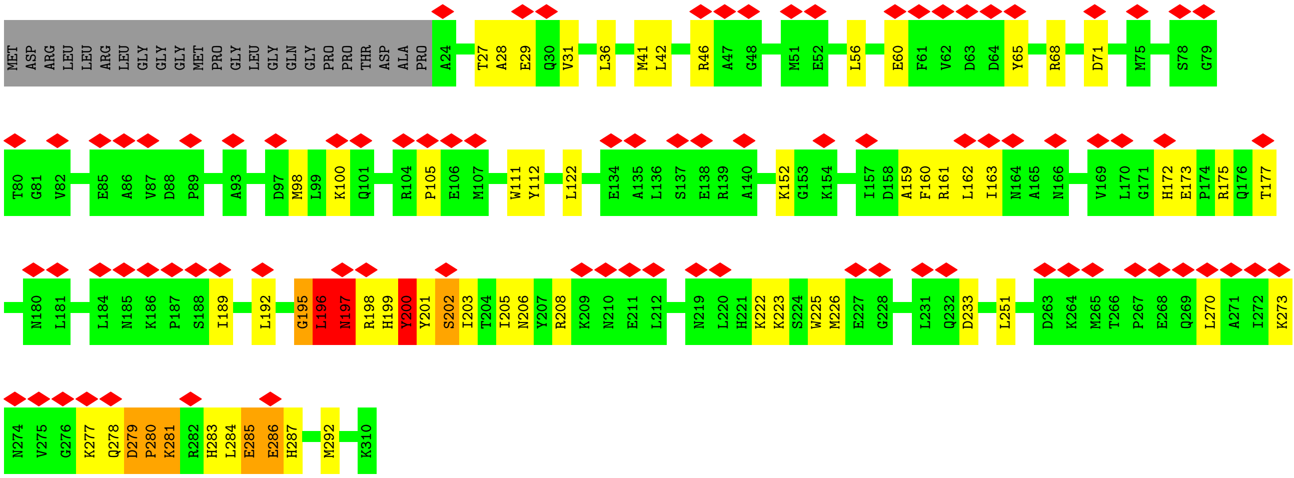






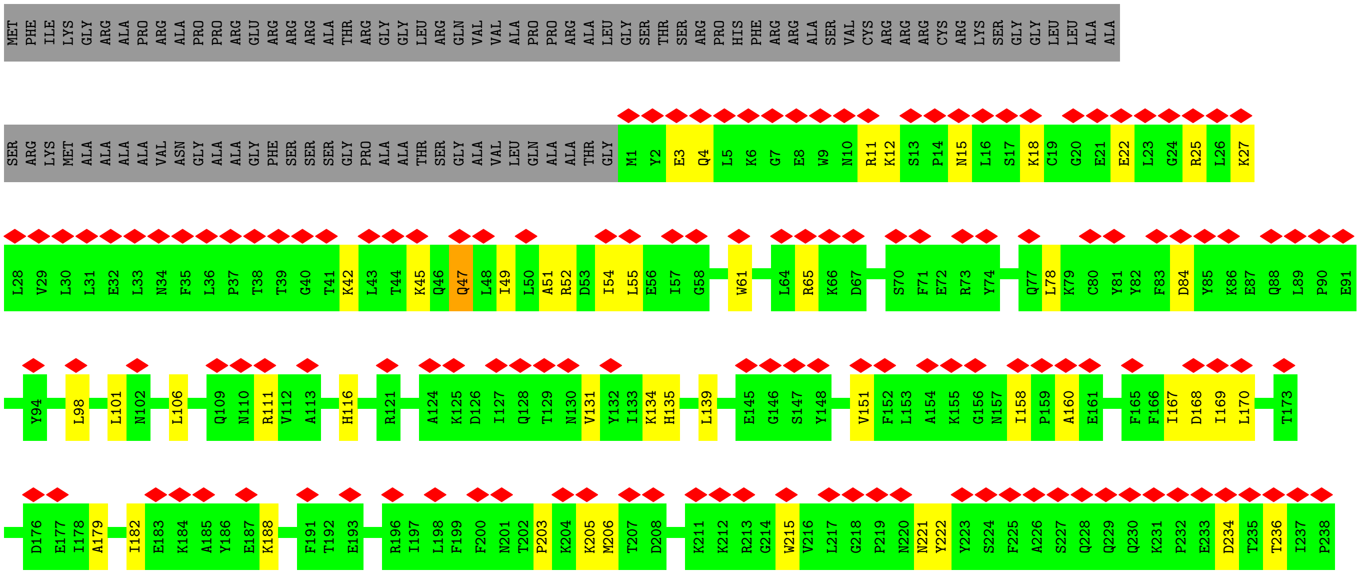
- Molecule 29: 26S proteasome non-ATPase regulatory subunit 14

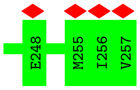
Chain c:



- Molecule 30: 26S proteasome non-ATPase regulatory subunit 8

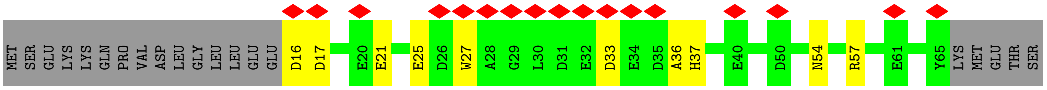
Chain d:





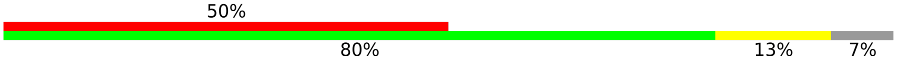
- Molecule 31: 26S proteasome complex subunit SEM1

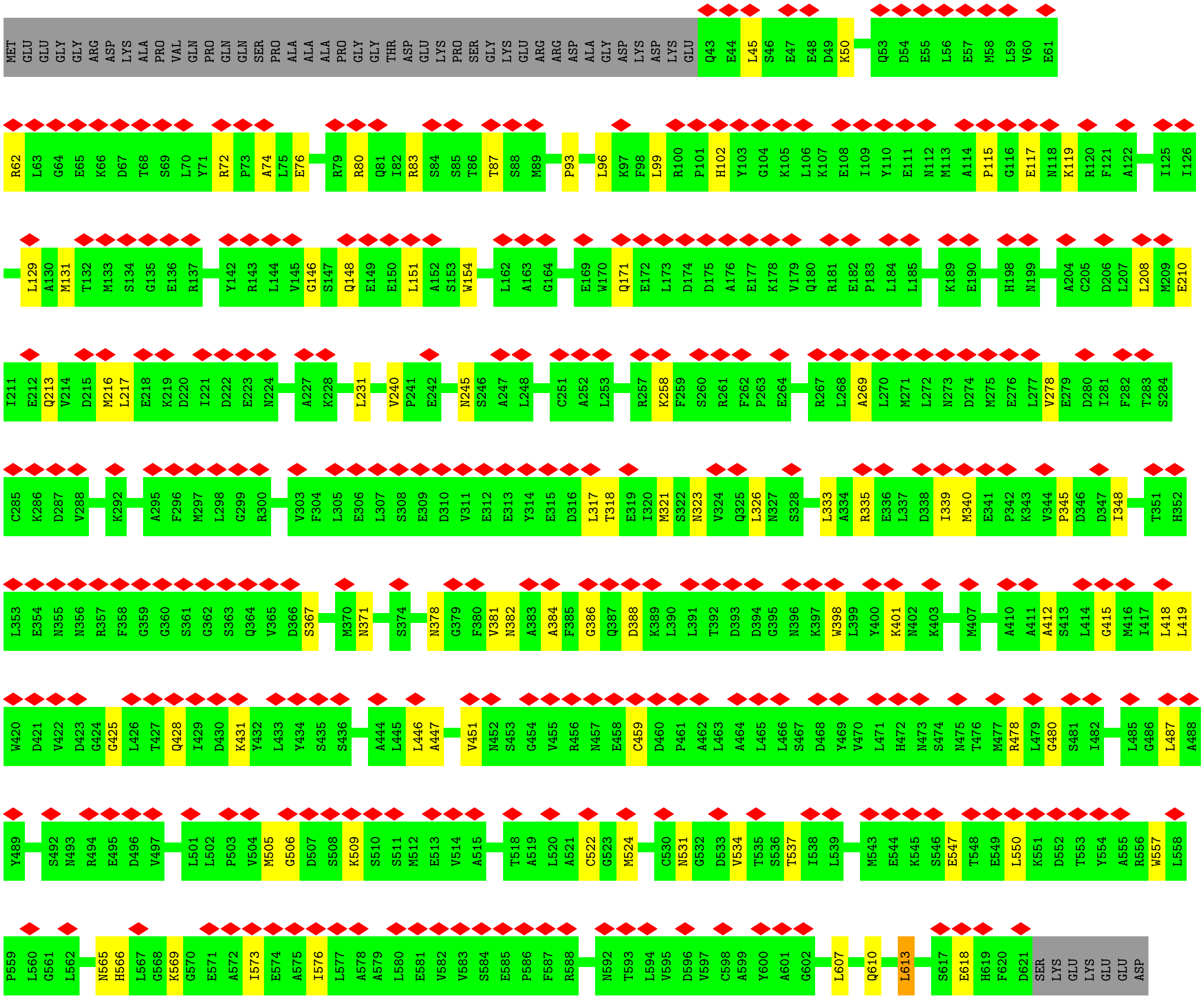
Chain e:

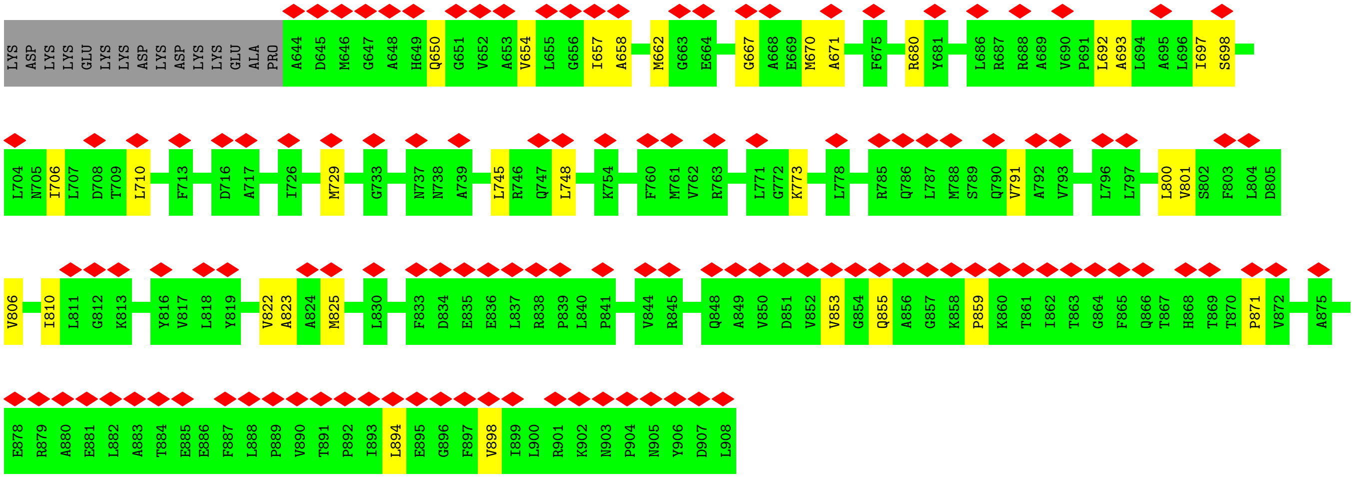


- Molecule 32: 26S proteasome non-ATPase regulatory subunit 2

Chain f:

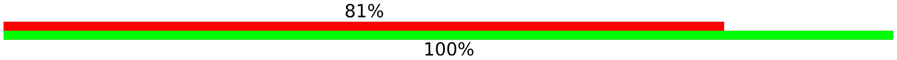


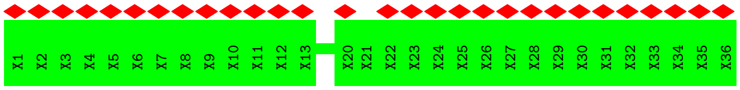




- Molecule 33: Substrate

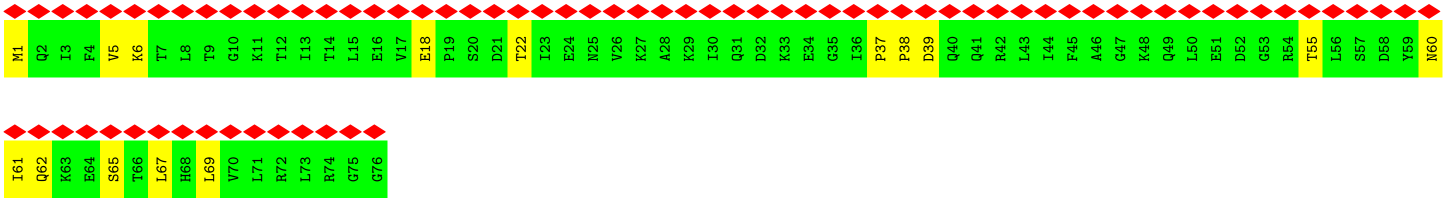
Chain v:





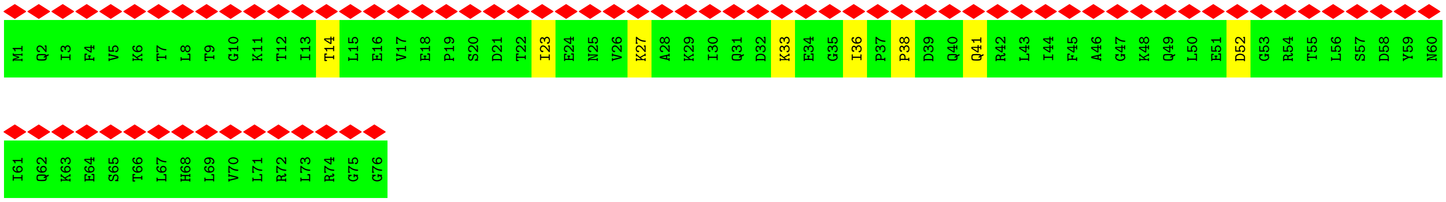
- Molecule 34: Ubiquitin

Chain w:



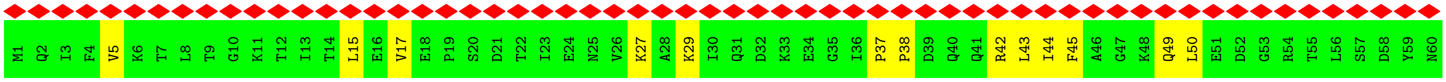
- Molecule 34: Ubiquitin

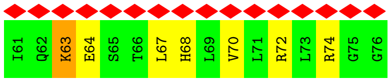
Chain x:



- Molecule 34: Ubiquitin

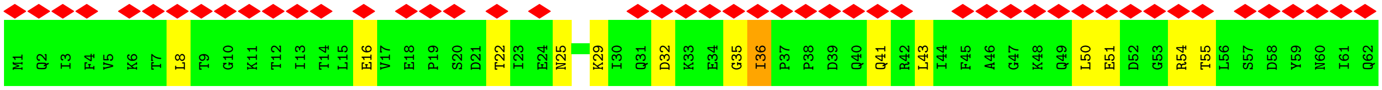
Chain y:

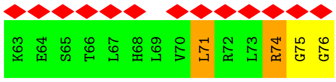




- Molecule 34: Ubiquitin

Chain z:





4 Experimental information ⓘ

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	24674	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	44	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.023	Depositor
Minimum map value	-0.005	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.00617	Depositor
Map size (Å)	411.0, 411.0, 411.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.685, 0.685, 0.685	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, MG, ADP, ATP

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	A	0.18	0/3283	0.48	0/4433
2	B	0.21	0/3254	0.51	0/4388
3	C	0.19	0/3146	0.50	0/4226
4	D	0.23	0/3090	0.56	0/4168
5	E	0.22	0/3145	0.54	1/4233 (0.0%)
6	F	0.20	0/3137	0.51	0/4223
7	G	0.19	0/1901	0.42	0/2572
7	g	0.14	0/1913	0.40	0/2589
8	H	0.17	0/1840	0.43	0/2495
8	h	0.16	0/1844	0.40	0/2497
9	I	0.21	0/1963	0.42	0/2650
9	i	0.16	0/1985	0.41	0/2677
10	J	0.15	0/1887	0.44	2/2553 (0.1%)
10	j	0.17	0/1887	0.43	0/2549
11	K	0.15	0/1841	0.35	0/2486
11	k	0.14	0/1809	0.42	2/2444 (0.1%)
12	L	0.15	0/1911	0.37	0/2584
12	l	0.16	0/1896	0.37	0/2565
13	M	0.18	0/1931	0.42	0/2600
13	m	0.14	0/1916	0.38	0/2580
14	N	0.11	0/1548	0.30	0/2097
14	n	0.13	0/1536	0.30	0/2080
15	O	0.15	0/1672	0.40	0/2267
15	o	0.14	0/1686	0.35	0/2282
16	P	0.14	0/1616	0.39	0/2180
16	p	0.15	0/1620	0.38	0/2184
17	Q	0.14	0/1627	0.37	0/2202
17	q	0.14	0/1611	0.35	0/2182
18	R	0.13	0/1590	0.31	0/2147
18	r	0.15	0/1580	0.37	0/2135
19	S	0.15	0/1671	0.39	0/2252
19	s	0.17	0/1680	0.44	1/2264 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
20	T	0.14	0/1716	0.38	0/2323
20	t	0.14	0/1720	0.38	0/2328
21	U	0.17	0/6984	0.46	0/9435
22	V	0.17	0/3681	0.41	0/4969
23	W	0.17	0/3644	0.47	0/4901
24	X	0.16	0/3381	0.42	1/4558 (0.0%)
25	Y	0.15	0/3261	0.46	2/4393 (0.0%)
26	Z	0.21	0/2324	0.57	1/3150 (0.0%)
27	a	0.22	0/3053	0.53	0/4133
28	b	0.19	0/1478	0.51	0/2001
29	c	0.32	0/2302	0.68	3/3110 (0.1%)
30	d	0.20	0/2162	0.50	0/2919
31	e	0.15	0/437	0.47	0/595
32	f	0.22	0/6640	0.52	2/8988 (0.0%)
34	w	0.13	0/607	0.36	0/816
34	x	0.11	0/607	0.28	0/816
34	y	0.30	0/607	0.58	0/816
34	z	0.44	0/607	0.76	0/816
All	All	0.18	0/110227	0.45	15/148851 (0.0%)

There are no bond length outliers.

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
24	X	317	PRO	N-CA-C	-7.93	103.18	113.57
29	c	279	ASP	CA-C-N	7.05	128.65	119.84
29	c	279	ASP	C-N-CA	7.05	128.65	119.84
11	k	120	ALA	CA-C-N	6.88	134.68	121.54
11	k	120	ALA	C-N-CA	6.88	134.68	121.54
5	E	166	PRO	N-CA-C	6.48	118.60	110.70
10	J	22	ALA	CA-C-N	-6.14	112.00	122.56
10	J	22	ALA	C-N-CA	-6.14	112.00	122.56
26	Z	19	VAL	N-CA-C	-5.91	107.05	112.96
29	c	195	GLY	N-CA-C	5.65	120.79	113.27
32	f	613	LEU	CA-CB-CG	-5.47	97.16	116.30
19	s	69	GLU	N-CA-CB	5.33	118.55	110.28
32	f	339	ILE	N-CA-C	-5.15	107.70	112.43
25	Y	291	HIS	CA-C-N	5.05	131.19	121.54
25	Y	291	HIS	C-N-CA	5.05	131.19	121.54

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3229	0	3261	55	0
2	B	3207	0	3278	60	0
3	C	3105	0	3219	64	0
4	D	3040	0	3076	57	0
5	E	3097	0	3174	52	0
6	F	3098	0	3187	55	0
7	G	1867	0	1867	19	0
7	g	1879	0	1872	13	0
8	H	1801	0	1773	15	0
8	h	1805	0	1798	16	0
9	I	1933	0	1923	22	0
9	i	1955	0	1955	14	0
10	J	1861	0	1846	18	0
10	j	1861	0	1865	17	0
11	K	1813	0	1796	19	0
11	k	1782	0	1766	15	0
12	L	1876	0	1856	20	0
12	l	1861	0	1839	16	0
13	M	1893	0	1885	10	0
13	m	1881	0	1868	23	0
14	N	1521	0	1494	10	0
14	n	1510	0	1483	8	0
15	O	1645	0	1648	11	0
15	o	1659	0	1681	17	0
16	P	1587	0	1598	12	0
16	p	1591	0	1609	22	0
17	Q	1591	0	1589	12	0
17	q	1578	0	1569	18	0
18	R	1559	0	1523	16	0
18	r	1549	0	1506	15	0
19	S	1641	0	1639	15	0
19	s	1650	0	1645	19	0
20	T	1683	0	1662	19	0
20	t	1687	0	1666	19	0
21	U	6867	0	6929	85	0
22	V	3612	0	3682	55	0
23	W	3596	0	3713	54	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	X	3335	0	3435	49	0
25	Y	3202	0	3204	36	0
26	Z	2281	0	2312	63	0
27	a	2995	0	3012	58	0
28	b	1458	0	1505	29	0
29	c	2260	0	2276	77	0
30	d	2116	0	2146	29	0
31	e	425	0	328	9	0
32	f	6529	0	6541	72	0
33	v	180	0	45	0	0
34	w	601	0	629	9	0
34	x	601	0	629	5	0
34	y	601	0	626	14	0
34	z	601	0	629	21	0
35	A	31	0	12	0	0
35	B	31	0	12	2	0
35	C	31	0	12	1	0
35	F	31	0	12	2	0
36	A	1	0	0	0	0
36	B	1	0	0	0	0
36	C	1	0	0	0	0
36	D	1	0	0	0	0
36	F	1	0	0	0	0
37	D	27	0	12	0	0
38	c	1	0	0	0	0
All	All	108712	0	109117	1292	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 6.

All (1292) 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)
34:z:8:LEU:HD13	34:z:74:ARG:CG	1.74	1.17
3:C:90:HIS:HB3	3:C:91:PRO:HD3	1.22	1.09
34:z:8:LEU:CD1	34:z:74:ARG:HG3	1.91	1.00
34:z:8:LEU:HD13	34:z:74:ARG:HG3	0.99	0.98
3:C:90:HIS:CB	3:C:91:PRO:HD3	1.96	0.95
29:c:278:GLN:C	29:c:280:PRO:HD2	1.93	0.93
29:c:279:ASP:N	29:c:280:PRO:HD2	1.82	0.92
4:D:159:LYS:HG3	4:D:160:PRO:HD3	1.52	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:c:192:LEU:HA	29:c:196:LEU:HB2	1.56	0.87
34:z:36:ILE:HB	34:z:41:GLN:HE21	1.44	0.83
29:c:278:GLN:HG2	29:c:280:PRO:CD	2.09	0.82
29:c:160:PHE:HB3	29:c:201:TYR:CD1	2.14	0.82
2:B:68:ILE:HG12	32:f:670:MET:HE1	1.59	0.81
29:c:162:LEU:HD12	29:c:200:TYR:HB3	1.62	0.78
29:c:278:GLN:HG2	29:c:280:PRO:HD2	1.64	0.78
3:C:90:HIS:HB3	3:C:91:PRO:CD	2.09	0.78
4:D:157:ASP:H	4:D:159:LYS:HZ2	1.32	0.77
21:U:773:PHE:HB2	29:c:177:THR:HB	1.68	0.76
29:c:160:PHE:HB3	29:c:201:TYR:CG	2.22	0.75
9:I:53:HIS:CG	9:I:54:LYS:H	2.06	0.74
24:X:102:ALA:O	24:X:106:GLU:HG2	1.87	0.74
1:A:48:VAL:HG13	2:B:69:LYS:HE2	1.70	0.73
4:D:335:LEU:HB2	4:D:336:PRO:HD3	1.68	0.73
29:c:279:ASP:HA	29:c:283:HIS:HB3	1.70	0.73
9:I:53:HIS:NE2	9:I:55:LEU:HB2	2.04	0.72
29:c:162:LEU:CD1	29:c:200:TYR:HB3	2.21	0.71
24:X:103:THR:HA	24:X:106:GLU:HB2	1.71	0.71
4:D:335:LEU:CB	4:D:336:PRO:HD3	2.22	0.70
12:L:41:LYS:HZ1	12:L:181:GLU:HA	1.58	0.69
19:s:27:THR:HB	19:s:40:SER:H	1.59	0.68
26:Z:145:HIS:NE2	26:Z:152:SER:HB3	2.08	0.68
11:k:156:MET:HE3	11:k:157:ASP:H	1.57	0.68
27:a:180:LEU:HD11	27:a:221:VAL:HG11	1.75	0.68
27:a:342:ASP:O	27:a:343:LEU:C	2.36	0.68
34:z:8:LEU:CD1	34:z:74:ARG:CG	2.62	0.68
34:z:8:LEU:CD1	34:z:74:ARG:HB2	2.24	0.67
10:J:52:LYS:HG3	10:J:53:LEU:HG	1.77	0.67
7:G:18:PRO:O	7:G:19:GLU:HB2	1.94	0.67
3:C:90:HIS:CB	3:C:91:PRO:CD	2.72	0.67
6:F:339:ASP:HB3	6:F:342:LEU:HD13	1.77	0.67
29:c:42:LEU:HB2	29:c:46:ARG:HH21	1.58	0.67
26:Z:167:ALA:HB3	29:c:46:ARG:HH12	1.60	0.67
2:B:120:HIS:HA	2:B:134:SER:HA	1.78	0.66
1:A:279:ALA:HB1	2:B:307:ARG:HG3	1.76	0.66
6:F:86:LEU:HD12	6:F:87:PRO:HD3	1.78	0.66
19:s:68:ILE:HD11	19:s:92:LEU:HD13	1.77	0.66
32:f:654:VAL:HA	32:f:657:ILE:HD12	1.78	0.66
11:k:206:MET:HE1	11:k:210:LEU:HB3	1.78	0.66
9:I:143:TYR:HB2	9:I:146:GLN:HE21	1.61	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:X:368:MET:HB2	24:X:373:LYS:HB2	1.77	0.65
27:a:343:LEU:O	27:a:346:ILE:HG13	1.96	0.65
31:e:25:GLU:HG3	31:e:27:TRP:H	1.62	0.65
24:X:102:ALA:C	24:X:106:GLU:HG2	2.22	0.65
32:f:96:LEU:HD13	32:f:129:LEU:HD13	1.79	0.65
4:D:45:LYS:HG2	21:U:187:LEU:HB2	1.78	0.65
23:W:190:MET:HB3	23:W:202:THR:HG23	1.77	0.65
5:E:8:ALA:HB1	6:F:40:GLU:HG3	1.79	0.64
10:j:211:MET:HE3	10:j:217:LEU:HB2	1.79	0.64
21:U:620:GLU:HG3	21:U:651:GLY:HA2	1.80	0.64
29:c:122:LEU:HD23	29:c:201:TYR:CZ	2.33	0.64
21:U:819:VAL:HG12	21:U:821:LYS:H	1.61	0.64
23:W:401:THR:HG23	23:W:402:ILE:HD12	1.79	0.64
34:z:43:LEU:HB3	34:z:50:LEU:HD12	1.79	0.64
19:S:27:THR:HB	19:S:40:SER:H	1.63	0.64
6:F:251:LEU:HD11	6:F:256:LEU:HD21	1.79	0.63
19:s:148:LEU:HD23	19:s:178:VAL:HG12	1.79	0.63
29:c:195:GLY:HA3	29:c:200:TYR:CE2	2.33	0.63
29:c:281:LYS:HA	29:c:281:LYS:NZ	2.13	0.63
34:z:16:GLU:O	34:z:29:LYS:NZ	2.31	0.63
22:V:397:ARG:HH21	30:d:116:HIS:HB3	1.63	0.63
32:f:573:ILE:HD12	32:f:576:ILE:HD13	1.79	0.63
2:B:286:GLU:HB3	3:C:274:LEU:HD23	1.80	0.63
21:U:772:TRP:HB3	21:U:775:LEU:HD13	1.81	0.63
21:U:799:LYS:HE2	21:U:925:VAL:HG21	1.81	0.63
19:S:145:LEU:HD22	19:S:178:VAL:HB	1.80	0.62
28:b:157:VAL:HG21	28:b:170:LEU:HB2	1.81	0.62
5:E:77:PRO:HG2	5:E:79:TYR:HE1	1.64	0.62
28:b:9:CYS:HB2	28:b:111:ALA:HA	1.80	0.62
21:U:360:VAL:HG23	21:U:365:CYS:HB2	1.81	0.62
22:V:259:LEU:HD11	22:V:294:ARG:HD3	1.81	0.62
23:W:436:MET:HE3	29:c:226:MET:HG2	1.81	0.62
21:U:619:VAL:HG23	21:U:651:GLY:HA3	1.81	0.62
27:a:273:GLN:HB3	27:a:310:LEU:HD11	1.81	0.62
3:C:396:GLU:HG3	3:C:402:LYS:HZ2	1.65	0.61
6:F:376:SER:HB3	6:F:414:GLU:HG3	1.81	0.61
34:z:8:LEU:CD1	34:z:74:ARG:CB	2.78	0.61
7:G:165:ALA:HB3	8:H:56:LEU:HD22	1.82	0.61
26:Z:145:HIS:HB2	26:Z:151:THR:HA	1.82	0.61
30:d:188:LYS:HD2	30:d:221:ASN:HD21	1.65	0.61
32:f:566:HIS:HB3	32:f:569:LYS:HD2	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:218:PRO:HB2	2:B:343:ARG:HD3	1.81	0.61
3:C:11:LEU:HB2	3:C:15:LYS:HG2	1.81	0.61
11:k:210:LEU:HA	11:k:214:ASN:HD21	1.65	0.61
30:d:78:LEU:HD13	30:d:98:LEU:HD21	1.83	0.61
1:A:213:LEU:HA	1:A:319:MET:HB3	1.83	0.61
21:U:545:LEU:HB3	21:U:577:ILE:HG21	1.82	0.60
26:Z:144:VAL:O	26:Z:145:HIS:HB2	2.01	0.60
27:a:34:TRP:HB3	27:a:71:VAL:HG22	1.83	0.60
8:h:203:MET:HE3	8:h:208:ILE:HG21	1.83	0.60
13:m:23:VAL:HG12	13:m:27:MET:HE1	1.83	0.60
19:S:4:PRO:HB2	20:T:100:ARG:HH21	1.66	0.60
22:V:349:ARG:HH12	31:e:37:HIS:HE1	1.50	0.60
23:W:198:ASP:OD1	23:W:201:ARG:HB3	2.02	0.60
24:X:256:LEU:HD22	24:X:319:ILE:HG22	1.84	0.60
25:Y:69:LEU:O	25:Y:73:MET:HB2	2.02	0.60
30:d:98:LEU:HA	30:d:101:LEU:HD12	1.84	0.60
26:Z:212:LEU:HD21	27:a:353:LEU:HD13	1.82	0.60
28:b:138:VAL:HB	28:b:160:LEU:HD11	1.84	0.60
27:a:343:LEU:O	27:a:344:GLN:C	2.45	0.60
2:B:234:LEU:HD11	35:B:501:ATP:H2’	1.83	0.59
6:F:141:ASP:H	6:F:144:LYS:HE3	1.66	0.59
9:i:143:TYR:HB2	9:i:146:GLN:HE21	1.66	0.59
25:Y:239:LYS:HG3	25:Y:240:VAL:HG13	1.84	0.59
30:d:3:GLU:O	30:d:25:ARG:NH1	2.36	0.59
12:l:42:THR:HA	12:l:217:LYS:HE3	1.84	0.59
34:z:75:GLY:O	34:z:76:GLY:C	2.45	0.59
3:C:185:GLY:HA3	3:C:311:ILE:HA	1.84	0.59
34:z:74:ARG:HA	34:z:74:ARG:NE	2.17	0.59
3:C:138:MET:HB2	3:C:212:ILE:HG23	1.84	0.59
17:Q:86:ARG:NH1	17:Q:90:ASP:OD1	2.36	0.59
25:Y:142:PHE:HE2	25:Y:176:ARG:HD2	1.67	0.59
21:U:376:MET:HA	21:U:740:GLY:H	1.68	0.59
22:V:192:MET:HE2	22:V:230:PHE:HZ	1.67	0.59
34:z:22:THR:HA	34:z:55:THR:HA	1.83	0.59
31:e:54:ASN:OD1	31:e:57:ARG:NH2	2.36	0.59
13:M:211:LEU:O	13:M:232:ARG:NH2	2.35	0.59
32:f:894:LEU:HA	32:f:898:VAL:HG21	1.83	0.59
32:f:367:SER:O	32:f:371:ASN:ND2	2.36	0.59
21:U:37:GLU:HG3	22:V:269:LYS:HE3	1.84	0.59
24:X:249:THR:HA	24:X:252:LYS:HD3	1.85	0.59
34:y:63:LYS:HD2	34:y:64:GLU:HG3	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:z:75:GLY:O	34:z:76:GLY:O	2.21	0.59
3:C:406:LYS:HB2	9:I:80:THR:HG22	1.85	0.59
24:X:141:LYS:HE2	24:X:179:ALA:HB1	1.85	0.59
23:W:198:ASP:OD1	23:W:201:ARG:CB	2.51	0.58
27:a:182:CYS:SG	27:a:183:VAL:N	2.76	0.58
10:j:45:VAL:HG21	10:j:61:LYS:HD2	1.84	0.58
16:p:65:GLN:OE1	17:q:86:ARG:NH2	2.36	0.58
3:C:198:LEU:HD11	35:C:501:ATP:H2’	1.85	0.58
25:Y:50:MET:HB3	25:Y:53:TYR:HB3	1.85	0.58
13:m:34:SER:OG	13:m:65:ARG:NH1	2.36	0.58
34:y:42:ARG:HB3	34:y:70:VAL:HB	1.85	0.58
4:D:160:PRO:O	4:D:162:VAL:HG12	2.03	0.58
6:F:228:PRO:O	6:F:233:LYS:NZ	2.37	0.58
12:l:55:GLU:HG2	12:l:56:LEU:HG	1.85	0.58
21:U:345:ASN:O	21:U:743:ASN:ND2	2.35	0.58
23:W:174:TYR:O	23:W:182:ARG:NH2	2.36	0.58
27:a:69:HIS:ND1	27:a:70:ARG:HG2	2.18	0.58
1:A:398:ARG:NH1	2:B:195:GLN:OE1	2.36	0.58
13:M:136:MET:HE1	13:M:163:CYS:HB3	1.85	0.58
22:V:355:ARG:NH1	31:e:27:TRP:O	2.36	0.58
23:W:329:ARG:HE	23:W:351:TRP:HE1	1.50	0.58
24:X:1:MET:HE1	24:X:36:GLN:HB2	1.85	0.58
21:U:505:ASP:HB3	21:U:508:THR:HG22	1.86	0.58
6:F:295:ARG:HB2	6:F:304:ARG:HH22	1.67	0.58
27:a:69:HIS:O	27:a:70:ARG:HD2	2.03	0.58
27:a:342:ASP:HB2	27:a:344:GLN:NE2	2.19	0.58
32:f:531:ASN:O	32:f:565:ASN:ND2	2.37	0.58
5:E:254:GLN:HA	5:E:257:LEU:HG	1.86	0.58
9:I:22:GLU:HA	9:I:25:MET:HG3	1.86	0.58
34:z:36:ILE:HB	34:z:41:GLN:NE2	2.15	0.58
3:C:69:GLN:HB3	3:C:118:ASN:HD21	1.68	0.58
9:I:180:LYS:HB2	9:I:184:MET:HE3	1.85	0.58
20:t:25:ASP:HA	20:t:187:PHE:HA	1.86	0.57
5:E:83:CYS:HB2	5:E:89:LYS:HE2	1.85	0.57
13:M:187:ARG:O	13:M:191:LYS:NZ	2.36	0.57
32:f:386:GLY:HA2	32:f:418:LEU:HG	1.85	0.57
15:o:70:THR:HG23	15:o:72:ARG:H	1.68	0.57
9:I:53:HIS:CG	9:I:54:LYS:N	2.72	0.57
32:f:208:LEU:HD13	32:f:217:LEU:HD12	1.85	0.57
19:s:204:ARG:NH1	19:s:206:GLU:OE1	2.37	0.57
26:Z:106:ILE:HG23	26:Z:153:LYS:HD2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:q:168:GLN:NE2	17:q:175:LEU:O	2.38	0.57
4:D:52:GLU:OE1	21:U:596:ASN:ND2	2.37	0.57
8:H:177:ARG:NH1	24:X:202:CYS:SG	2.78	0.57
10:j:116:GLN:NE2	10:j:120:GLN:OE1	2.38	0.57
17:Q:35:MET:HE1	17:Q:181:ARG:HB2	1.86	0.57
7:G:205:VAL:HG13	7:G:206:LEU:HD12	1.87	0.57
21:U:899:ARG:NH2	21:U:917:THR:OG1	2.38	0.57
32:f:662:MET:HE1	32:f:697:ILE:HG13	1.85	0.57
8:H:143:ARG:NH1	8:H:144:PRO:O	2.38	0.57
12:L:196:ARG:HG2	12:L:239:ARG:HH21	1.70	0.57
2:B:71:TYR:CD2	32:f:670:MET:HB3	2.40	0.57
16:p:35:VAL:HG12	16:p:36:THR:HG23	1.87	0.57
2:B:125:THR:OG1	2:B:126:SER:N	2.38	0.56
3:C:209:CYS:SG	3:C:210:THR:N	2.77	0.56
11:K:118:ASN:OD1	12:L:82:ARG:NH2	2.37	0.56
3:C:232:ARG:NH1	3:C:275:GLU:OE2	2.39	0.56
27:a:312:MET:HA	27:a:315:LEU:HD12	1.88	0.56
29:c:161:ARG:H	29:c:201:TYR:HB3	1.69	0.56
4:D:325:GLY:N	4:D:328:ASP:OD1	2.37	0.56
12:L:72:ILE:HD13	12:L:88:MET:HE1	1.87	0.56
20:T:174:ARG:NH1	20:T:206:GLU:O	2.38	0.56
25:Y:363:ASN:O	25:Y:367:GLN:NE2	2.38	0.56
27:a:318:GLY:O	27:a:321:LYS:NZ	2.39	0.56
29:c:28:ALA:HB2	29:c:175:ARG:HD3	1.86	0.56
4:D:159:LYS:H	4:D:160:PRO:CD	2.18	0.56
21:U:740:GLY:HA3	21:U:744:VAL:HG12	1.87	0.56
18:R:64:ARG:NH1	18:R:67:GLU:OE2	2.39	0.56
21:U:556:MET:HE2	21:U:563:ALA:HB2	1.87	0.56
23:W:357:ARG:NH1	23:W:360:GLU:OE2	2.39	0.56
29:c:284:LEU:O	29:c:285:GLU:C	2.48	0.56
32:f:388:ASP:OD2	32:f:773:LYS:NZ	2.38	0.56
22:V:235:LEU:HD11	22:V:251:LEU:HG	1.88	0.56
23:W:316:ARG:NH2	23:W:381:LEU:HA	2.21	0.56
29:c:29:GLU:HG3	29:c:65:TYR:HB2	1.86	0.56
32:f:415:GLY:HA3	32:f:447:ALA:HB1	1.87	0.56
14:N:107:GLU:OE1	14:N:110:GLN:NE2	2.37	0.56
25:Y:222:TYR:OH	25:Y:285:ASP:OD1	2.23	0.56
26:Z:263:ALA:HB3	29:c:292:MET:HE3	1.88	0.56
28:b:56:ASN:HB2	28:b:83:LYS:H	1.71	0.56
29:c:251:LEU:HD21	29:c:284:LEU:HG	1.87	0.56
30:d:61:TRP:HB3	30:d:65:ARG:HH21	1.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:f:412:ALA:HA	32:f:447:ALA:HB2	1.88	0.56
9:i:119:GLN:NE2	10:j:79:ASP:OD1	2.39	0.56
25:Y:161:THR:HG22	25:Y:165:LYS:HE2	1.86	0.56
7:G:43:ARG:HH21	7:G:164:LYS:HG2	1.71	0.56
22:V:289:LEU:HB3	22:V:312:ALA:HB2	1.87	0.56
29:c:162:LEU:HA	29:c:200:TYR:HB3	1.88	0.56
8:h:89:ARG:HG2	8:h:117:VAL:HG11	1.88	0.56
6:F:84:LYS:HG2	6:F:161:LEU:HD22	1.88	0.56
16:P:143:ALA:HA	16:P:146:MET:HE2	1.88	0.56
21:U:9:ILE:O	21:U:44:LYS:NZ	2.39	0.56
21:U:333:MET:HE1	21:U:795:LEU:HD13	1.86	0.56
22:V:104:THR:HA	22:V:107:ARG:HD3	1.88	0.56
32:f:72:ARG:HH22	32:f:117:GLU:HB3	1.72	0.56
11:k:160:GLY:O	12:l:82:ARG:NH2	2.39	0.56
1:A:422:LYS:HD3	1:A:425:ALA:HB3	1.87	0.55
3:C:217:SER:OG	4:D:248:ARG:NH2	2.38	0.55
21:U:58:GLN:HB2	21:U:87:LEU:HD12	1.88	0.55
21:U:813:TYR:HE1	21:U:883:ARG:HE	1.54	0.55
27:a:222:LEU:HB2	27:a:226:ARG:HH21	1.71	0.55
34:y:63:LYS:O	34:y:63:LYS:HG3	2.03	0.55
1:A:308:GLY:HA2	6:F:234:THR:HG21	1.87	0.55
12:L:80:ASP:OD2	12:L:126:ARG:NH1	2.39	0.55
21:U:792:ASN:HB3	21:U:914:LEU:HB3	1.87	0.55
22:V:74:ASP:OD2	22:V:107:ARG:NH2	2.39	0.55
29:c:189:ILE:HA	29:c:192:LEU:HG	1.88	0.55
15:o:1:THR:N	15:o:168:GLY:O	2.39	0.55
34:x:36:ILE:HB	34:x:41:GLN:HE21	1.72	0.55
6:F:343:LEU:HD13	6:F:348:LEU:HB3	1.87	0.55
20:T:25:ASP:OD1	20:T:41:ARG:NH2	2.39	0.55
28:b:141:ILE:HA	28:b:171:VAL:HB	1.88	0.55
32:f:855:GLN:HG3	32:f:859:PRO:HG2	1.88	0.55
20:t:27:LEU:HD11	20:t:34:ALA:HB1	1.88	0.55
6:F:31:GLU:OE1	6:F:35:LYS:NZ	2.40	0.55
23:W:293:ASP:HB2	23:W:296:LEU:HD23	1.88	0.55
23:W:406:VAL:HG23	23:W:413:ILE:HG22	1.89	0.55
24:X:401:LEU:HD22	25:Y:365:GLN:HE21	1.70	0.55
26:Z:212:LEU:HA	26:Z:215:VAL:HG12	1.88	0.55
32:f:151:LEU:HA	32:f:154:TRP:HD1	1.72	0.55
34:x:36:ILE:O	34:x:41:GLN:NE2	2.40	0.55
1:A:186:LYS:HG2	6:F:409:ARG:HH22	1.71	0.55
1:A:312:ARG:HB2	1:A:315:ILE:HD13	1.86	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:45:LEU:HB3	4:D:61:ILE:HG21	1.88	0.55
3:C:99:VAL:HG12	3:C:123:LEU:HD12	1.87	0.55
16:P:177:ARG:NH2	19:s:150:ASP:OD2	2.38	0.55
26:Z:34:ARG:NH1	26:Z:98:GLY:O	2.39	0.55
32:f:618:GLU:O	32:f:650:GLN:NE2	2.40	0.55
12:l:146:GLN:NE2	12:l:148:CYS:SG	2.80	0.55
5:E:331:ILE:HD11	5:E:364:GLN:HG2	1.88	0.55
7:G:137:CYS:SG	7:G:138:MET:N	2.79	0.55
9:I:53:HIS:CD2	9:I:54:LYS:H	2.24	0.55
22:V:228:ARG:NH2	22:V:257:ASN:O	2.40	0.55
22:V:416:ARG:NH2	25:Y:351:ASN:OD1	2.39	0.55
23:W:89:LEU:HA	23:W:92:LYS:HE3	1.89	0.55
1:A:35:THR:O	1:A:39:SER:OG	2.25	0.55
3:C:195:GLY:HA2	3:C:198:LEU:HD13	1.87	0.55
5:E:15:LYS:HD3	6:F:47:LEU:HD23	1.88	0.55
19:S:43:CYS:O	19:S:194:ARG:NH2	2.40	0.55
22:V:256:ARG:NH2	31:e:21:GLU:O	2.40	0.55
25:Y:32:ARG:NH2	25:Y:61:LEU:O	2.40	0.55
11:k:155:HIS:NE2	11:k:157:ASP:OD1	2.40	0.55
1:A:61:GLU:O	3:C:106:ASN:ND2	2.39	0.55
5:E:242:ARG:HH21	5:E:253:ILE:HG13	1.72	0.55
7:G:141:ILE:HG22	7:G:151:VAL:HG22	1.89	0.55
7:G:244:GLU:O	23:W:92:LYS:NZ	2.38	0.55
20:T:63:LEU:HD21	20:T:106:LEU:HD13	1.89	0.55
26:Z:31:ASN:HA	26:Z:33:LYS:NZ	2.21	0.55
29:c:56:LEU:HA	29:c:111:TRP:HA	1.88	0.55
3:C:215:SER:HA	3:C:249:ASP:HB2	1.88	0.54
5:E:253:ILE:HG22	5:E:257:LEU:HD23	1.87	0.54
12:L:196:ARG:NH1	12:L:237:GLU:O	2.35	0.54
22:V:269:LYS:O	22:V:273:LYS:NZ	2.40	0.54
10:j:183:THR:HG22	10:j:185:ASP:H	1.72	0.54
1:A:103:ASN:ND2	6:F:167:GLU:OE1	2.40	0.54
1:A:292:ASP:HB2	1:A:295:VAL:HB	1.89	0.54
8:H:148:GLN:OE1	8:H:158:TRP:NE1	2.40	0.54
10:J:65:LEU:HD13	10:J:88:ARG:HG3	1.89	0.54
15:O:24:MET:HE3	19:s:187:VAL:HG21	1.88	0.54
26:Z:26:ILE:HD11	26:Z:35:VAL:HG22	1.87	0.54
29:c:285:GLU:O	29:c:286:GLU:C	2.50	0.54
9:i:119:GLN:HG3	10:j:78:ALA:HB1	1.89	0.54
19:s:4:PRO:O	20:t:100:ARG:NH2	2.40	0.54
8:H:51:LYS:NZ	8:H:200:GLU:O	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:164:ARG:NH1	12:L:198:THR:O	2.40	0.54
23:W:371:THR:HG22	23:W:372:ARG:HG3	1.89	0.54
27:a:77:VAL:HA	27:a:80:ILE:HG22	1.89	0.54
20:t:92:LEU:HD12	20:t:112:ILE:HD11	1.89	0.54
21:U:336:GLU:OE2	21:U:417:LYS:NZ	2.41	0.54
1:A:89:SER:HA	1:A:93:LEU:HD23	1.89	0.54
1:A:347:ASP:O	1:A:351:ARG:NH2	2.41	0.54
3:C:320:PRO:O	3:C:325:ARG:NH1	2.41	0.54
4:D:156:SER:N	4:D:159:LYS:HG2	2.22	0.54
29:c:122:LEU:HD23	29:c:201:TYR:OH	2.08	0.54
32:f:791:VAL:HG12	32:f:823:ALA:HB1	1.89	0.54
4:D:349:THR:HA	4:D:352:MET:HB2	1.88	0.54
24:X:258:LYS:NZ	24:X:263:THR:O	2.39	0.54
18:r:7:LYS:HD2	18:r:109:PRO:HB2	1.89	0.54
18:R:7:LYS:HG2	18:R:12:VAL:HG22	1.90	0.54
29:c:285:GLU:O	29:c:287:HIS:N	2.41	0.54
2:B:296:ASP:OD1	2:B:303:ARG:NH2	2.41	0.54
19:S:125:ASP:OD1	19:S:129:SER:N	2.41	0.54
32:f:557:TRP:HZ3	32:f:801:VAL:HG12	1.73	0.54
20:t:44:ARG:NH2	20:t:47:ASN:OD1	2.41	0.54
34:z:8:LEU:HD13	34:z:74:ARG:CB	2.32	0.54
5:E:135:ILE:HG22	5:E:182:LEU:HD23	1.90	0.54
21:U:649:ARG:HD2	21:U:675:MET:HE1	1.89	0.54
27:a:261:LEU:HD11	27:a:268:LEU:HD11	1.89	0.54
8:h:208:ILE:HD11	8:h:230:LEU:HD11	1.88	0.54
5:E:247:THR:HG22	5:E:248:SER:H	1.73	0.54
8:H:205:GLU:HB3	8:H:227:LYS:HE2	1.89	0.54
23:W:316:ARG:HH21	23:W:381:LEU:HD12	1.73	0.53
8:h:93:LEU:HD13	8:h:113:ARG:HB3	1.90	0.53
4:D:60:TYR:HB2	21:U:603:LEU:HD11	1.89	0.53
11:K:121:LEU:HD23	11:K:160:GLY:HA3	1.90	0.53
32:f:745:LEU:HD23	32:f:748:LEU:HD12	1.90	0.53
4:D:341:LYS:HB2	4:D:364:VAL:HG13	1.89	0.53
12:L:45:VAL:HG12	12:L:214:ILE:HG12	1.91	0.53
22:V:321:ALA:HB1	22:V:324:PHE:HB3	1.90	0.53
24:X:256:LEU:HG	24:X:260:MET:HE1	1.90	0.53
24:X:318:ILE:O	24:X:318:ILE:HG13	2.08	0.53
27:a:342:ASP:HB2	27:a:344:GLN:HE22	1.72	0.53
2:B:281:ILE:HG22	2:B:326:LYS:HB2	1.90	0.53
4:D:119:ILE:O	4:D:121:ARG:NH1	2.39	0.53
24:X:421:LEU:HD12	26:Z:283:ARG:HH21	1.74	0.53

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Atom-1	**Atom-2**	**Interatomic distance (Å)**	**Clash overlap (Å)**
2:B:383:LEU:HD22	2:B:423:LYS:HD2	1.90	0.53
6:F:97:LEU:O	6:F:120:LYS:N	2.41	0.53
23:W:422:ASN:O	23:W:426:ASN:ND2	2.42	0.53
21:U:509:GLY:HA3	21:U:544:ILE:HG12	1.90	0.53
22:V:339:LEU:O	22:V:404:LYS:NZ	2.41	0.53
24:X:332:GLU:HA	24:X:335:LEU:HB2	1.90	0.53
29:c:161:ARG:O	29:c:201:TYR:HB3	2.07	0.53
2:B:196:GLU:OE1	2:B:349:ARG:NH1	2.42	0.53
32:f:333:LEU:HD11	32:f:871:PRO:HG3	1.91	0.53
7:g:11:ARG:O	7:g:24:GLN:NE2	2.40	0.53
6:F:180:ARG:NH1	6:F:241:ALA:O	2.42	0.53
21:U:568:GLU:OE2	21:U:572:ARG:NE	2.35	0.53
29:c:270:LEU:HA	29:c:273:LYS:HG2	1.90	0.53
29:c:281:LYS:HA	29:c:281:LYS:HZ2	1.73	0.53
34:w:1:MET:HE3	34:w:18:GLU:HA	1.91	0.53
9:I:136:TYR:HB2	9:I:148:TYR:HB2	1.91	0.53
24:X:203:PRO:HB2	24:X:207:GLN:HB2	1.90	0.53
29:c:60:GLU:OE2	34:y:74:ARG:NH2	2.42	0.53
10:j:90:GLU:HG3	10:j:110:TYR:CZ	2.43	0.53
2:B:90:GLU:OE1	2:B:93:GLU:N	2.42	0.52
5:E:234:GLU:HB2	5:E:237:ALA:HB3	1.91	0.52
6:F:295:ARG:HH12	6:F:342:LEU:HD21	1.74	0.52
23:W:451:MET:HE2	26:Z:101:LEU:HD23	1.90	0.52
24:X:317:PRO:HD2	24:X:319:ILE:HG13	1.90	0.52
32:f:345:PRO:HA	32:f:348:ILE:HD12	1.90	0.52
3:C:57:ARG:HH21	21:U:644:TYR:HA	1.74	0.52
20:T:44:ARG:NH2	20:T:47:ASN:OD1	2.42	0.52
27:a:247:ARG:HE	27:a:251:LEU:HB2	1.73	0.52
7:G:10:ASP:O	7:G:24:GLN:NE2	2.42	0.52
8:H:119:GLN:HG3	9:I:81:SER:HB2	1.91	0.52
13:M:68:ASN:OD1	13:M:224:HIS:ND1	2.41	0.52
17:Q:4:LEU:HD22	17:Q:45:LEU:HD23	1.90	0.52
18:r:141:ARG:O	18:r:141:ARG:NH1	2.42	0.52
7:G:93:ARG:HE	7:G:121:ILE:HD13	1.73	0.52
32:f:335:ARG:NH2	32:f:340:MET:SD	2.82	0.52
13:m:37:ILE:HD11	13:m:193:VAL:HG13	1.92	0.52
10:J:211:MET:HB2	10:J:217:LEU:HD13	1.91	0.52
15:O:140:ASP:OD2	20:t:171:ARG:NH2	2.40	0.52
21:U:55:ARG:NH1	21:U:56:SER:OG	2.43	0.52
23:W:68:VAL:HG12	23:W:72:LYS:NZ	2.25	0.52
7:g:158:GLY:O	8:h:84:ARG:NH2	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:s:195:ILE:HB	19:s:206:GLU:HB3	1.91	0.52
7:G:80:MET:HE2	7:G:91:VAL:HG23	1.91	0.52
11:K:146:VAL:HG11	11:K:222:PRO:HA	1.92	0.52
12:L:165:SER:OG	12:L:169:ARG:NH1	2.42	0.52
23:W:121:LYS:O	23:W:125:ILE:HG12	2.10	0.52
24:X:379:ASP:HB2	24:X:384:VAL:HB	1.91	0.52
25:Y:301:ILE:HD11	25:Y:343:LEU:HB2	1.92	0.52
28:b:24:THR:HG22	28:b:26:LEU:H	1.75	0.52
9:i:46:ALA:HB1	9:i:197:LEU:HD11	1.91	0.52
10:j:188:ILE:HD12	10:j:208:LEU:HD21	1.92	0.52
6:F:304:ARG:O	6:F:308:ARG:NH1	2.43	0.52
9:I:86:LEU:HD12	9:I:114:LEU:HD21	1.90	0.52
32:f:231:LEU:HB3	32:f:853:VAL:HG22	1.90	0.52
14:n:192:ASP:OD1	14:n:192:ASP:N	2.43	0.52
5:E:286:ASP:HB3	5:E:289:LEU:HG	1.92	0.52
19:S:150:ASP:OD2	16:p:177:ARG:NH2	2.43	0.52
24:X:397:TYR:O	25:Y:365:GLN:NE2	2.43	0.52
25:Y:104:MET:HE1	25:Y:130:LYS:HB2	1.92	0.52
27:a:279:GLU:OE2	27:a:339:ARG:NH1	2.39	0.52
34:w:22:THR:HA	34:w:55:THR:HA	1.91	0.52
5:E:126:ASP:HB3	5:E:195:PHE:HB2	1.92	0.52
5:E:196:LEU:HD21	5:E:221:TYR:CD2	2.45	0.52
23:W:154:GLU:HG2	23:W:159:VAL:HG12	1.92	0.52
29:c:100:LYS:HG2	29:c:105:PRO:HB3	1.92	0.52
22:V:337:LEU:HD21	22:V:364:THR:HG23	1.92	0.51
32:f:171:GLN:NE2	32:f:210:GLU:OE1	2.43	0.51
17:q:53:THR:HG22	17:q:100:VAL:HG12	1.91	0.51
19:s:125:ASP:OD1	19:s:129:SER:N	2.43	0.51
4:D:249:ASP:OD1	4:D:252:ARG:NH2	2.43	0.51
22:V:192:MET:HE1	22:V:211:TYR:HE1	1.75	0.51
22:V:469:THR:O	22:V:470:ARG:NE	2.43	0.51
30:d:203:PRO:HD2	30:d:206:MET:HG2	1.92	0.51
5:E:52:SER:HB3	6:F:136:VAL:HB	1.91	0.51
5:E:97:ARG:NH2	5:E:112:PRO:O	2.44	0.51
20:T:25:ASP:HA	20:T:187:PHE:HA	1.93	0.51
26:Z:166:GLU:O	29:c:46:ARG:NH1	2.43	0.51
29:c:279:ASP:N	29:c:280:PRO:CD	2.66	0.51
10:j:158:ALA:HB3	11:k:58:LEU:HD21	1.92	0.51
13:M:108:LEU:HD11	13:M:137:LEU:HB3	1.91	0.51
27:a:343:LEU:O	27:a:345:GLN:N	2.44	0.51
29:c:196:LEU:O	29:c:198:ARG:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:n:1:THR:N	14:n:130:SER:OG	2.43	0.51
3:C:11:LEU:HD12	3:C:15:LYS:HE3	1.92	0.51
5:E:219:PHE:HA	5:E:222:ALA:HB3	1.92	0.51
11:K:51:GLU:HB3	11:K:53:ARG:HH11	1.76	0.51
12:L:41:LYS:NZ	12:L:181:GLU:HA	2.25	0.51
21:U:198:LEU:HD13	21:U:219:CYS:HA	1.92	0.51
26:Z:125:ASP:HB3	26:Z:128:PRO:HD2	1.93	0.51
27:a:70:ARG:HH21	28:b:17:ARG:HA	1.74	0.51
32:f:384:ALA:HB2	32:f:419:LEU:HD23	1.93	0.51
8:h:175:GLU:OE2	9:i:53:HIS:NE2	2.43	0.51
34:z:36:ILE:HG21	34:z:71:LEU:HD22	1.93	0.51
1:A:70:THR:HB	2:B:164:MET:HE2	1.93	0.51
2:B:224:LEU:HD21	2:B:235:LEU:HD22	1.91	0.51
4:D:299:PHE:HB2	4:D:301:GLN:HE22	1.75	0.51
16:P:138:VAL:HG11	16:P:146:MET:HB3	1.93	0.51
23:W:256:ILE:HG23	23:W:262:LYS:HB3	1.93	0.51
25:Y:247:LEU:HD12	25:Y:250:LEU:HD11	1.92	0.51
34:z:74:ARG:NE	34:z:74:ARG:CA	2.73	0.51
4:D:157:ASP:H	4:D:159:LYS:NZ	2.07	0.51
30:d:167:ILE:HA	30:d:170:LEU:HB3	1.92	0.51
4:D:99:ASN:HA	4:D:115:ILE:HG12	1.93	0.51
32:f:76:GLU:HB3	32:f:80:ARG:HH12	1.75	0.51
13:m:184:MET:HE2	13:m:188:ASP:HB2	1.92	0.51
19:s:16:ALA:HB2	19:s:121:VAL:HG23	1.93	0.51
5:E:188:ALA:HB2	5:E:195:PHE:HZ	1.75	0.51
12:L:44:ALA:HB2	12:L:142:PRO:HB3	1.92	0.51
23:W:358:VAL:O	23:W:362:ASN:ND2	2.44	0.51
25:Y:25:LEU:HD21	25:Y:284:LYS:HZ1	1.76	0.51
29:c:162:LEU:HA	29:c:200:TYR:CB	2.41	0.51
18:r:6:PHE:HB3	18:r:139:MET:HE2	1.91	0.51
4:D:169:GLY:O	4:D:340:GLN:NE2	2.41	0.50
14:N:144:ARG:NH2	14:N:151:GLU:OE1	2.44	0.50
32:f:93:PRO:HG2	32:f:96:LEU:HB2	1.93	0.50
4:D:264:ILE:HB	4:D:309:MET:HG2	1.92	0.50
5:E:101:ASP:HB3	5:E:105:LEU:H	1.76	0.50
21:U:82:LEU:O	21:U:129:ARG:NH2	2.44	0.50
27:a:343:LEU:O	27:a:346:ILE:N	2.41	0.50
16:P:35:VAL:HG12	16:P:36:THR:HG23	1.93	0.50
23:W:455:LEU:HD13	26:Z:101:LEU:HD12	1.92	0.50
25:Y:316:LEU:HB3	25:Y:354:VAL:HG23	1.93	0.50
26:Z:236:LEU:HD21	27:a:335:TRP:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:103:VAL:HG21	4:D:132:LEU:HD21	1.93	0.50
23:W:198:ASP:CG	23:W:201:ARG:HB3	2.37	0.50
25:Y:127:THR:O	25:Y:131:THR:OG1	2.26	0.50
27:a:54:ASP:N	27:a:54:ASP:OD1	2.44	0.50
29:c:200:TYR:N	29:c:200:TYR:CD2	2.78	0.50
1:A:364:VAL:HG12	1:A:404:ALA:HB3	1.94	0.50
1:A:398:ARG:NH2	2:B:196:GLU:OE2	2.44	0.50
2:B:121:ALA:N	2:B:133:VAL:O	2.44	0.50
3:C:281:ASP:OD2	3:C:307:ARG:NH2	2.45	0.50
21:U:16:GLU:HG2	30:d:27:LYS:HE3	1.93	0.50
22:V:85:ALA:HB2	22:V:93:PHE:HB2	1.93	0.50
22:V:177:ASN:O	22:V:179:LYS:NZ	2.44	0.50
32:f:487:LEU:HA	32:f:524:MET:HE1	1.93	0.50
14:N:192:ASP:OD1	14:N:192:ASP:N	2.44	0.50
22:V:192:MET:HE2	22:V:230:PHE:CZ	2.45	0.50
29:c:162:LEU:HD13	29:c:200:TYR:HD1	1.76	0.50
14:n:1:THR:OG1	14:n:33:LYS:NZ	2.41	0.50
20:t:27:LEU:HD22	20:t:184:TYR:HB2	1.94	0.50
20:t:122:LEU:HG	20:t:137:LEU:HD12	1.94	0.50
2:B:181:GLN:O	2:B:241:ASN:ND2	2.45	0.50
3:C:299:ASP:OD1	3:C:299:ASP:N	2.45	0.50
3:C:307:ARG:HG3	3:C:309:GLY:H	1.77	0.50
4:D:210:CYS:SG	4:D:335:LEU:HG	2.52	0.50
14:N:174:ILE:HB	14:N:189:LEU:HB2	1.93	0.50
22:V:191:LEU:HA	22:V:194:LYS:HD2	1.93	0.50
24:X:58:ALA:HA	24:X:99:MET:HE3	1.93	0.50
1:A:384:GLU:HB3	2:B:344:PRO:HG3	1.94	0.50
16:P:34:MET:O	18:r:166:ARG:NH1	2.42	0.50
19:S:198:VAL:HG22	19:S:203:ILE:HG12	1.93	0.50
25:Y:220:VAL:HA	25:Y:223:THR:HG22	1.93	0.50
8:h:64:LYS:NZ	8:h:76:TYR:OH	2.42	0.50
2:B:388:ASP:N	2:B:388:ASP:OD1	2.45	0.50
5:E:98:VAL:HA	5:E:110:TYR:HA	1.94	0.50
5:E:144:GLU:O	5:E:297:ARG:NH2	2.44	0.50
9:I:155:ASN:OD1	10:J:77:THR:OG1	2.30	0.50
18:R:39:PRO:HA	18:R:184:TRP:HE1	1.77	0.50
21:U:580:ARG:HA	21:U:583:MET:HE2	1.93	0.50
23:W:68:VAL:HG12	23:W:72:LYS:HZ2	1.76	0.50
24:X:122:ARG:HD2	24:X:125:LEU:HB2	1.93	0.50
26:Z:229:GLN:HG3	27:a:338:PRO:HG2	1.93	0.50
27:a:252:LYS:HA	27:a:255:TRP:HE3	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:g:128:ASN:HB2	7:g:131:MET:HE1	1.94	0.50
13:m:68:ASN:OD1	13:m:224:HIS:ND1	2.39	0.50
16:p:107:PRO:HG2	16:p:124:LEU:HD12	1.93	0.50
21:U:889:LEU:HD13	21:U:909:GLY:H	1.77	0.49
25:Y:41:LEU:HD21	25:Y:57:LEU:HD11	1.94	0.49
26:Z:235:ASN:ND2	27:a:349:MET:SD	2.85	0.49
29:c:192:LEU:HA	29:c:196:LEU:CB	2.38	0.49
20:t:43:MET:HE1	20:t:67:LEU:HD23	1.93	0.49
3:C:218:GLU:O	3:C:221:GLN:NE2	2.46	0.49
3:C:331:ILE:HA	3:C:334:ARG:HE	1.78	0.49
5:E:196:LEU:HD21	5:E:221:TYR:HD2	1.75	0.49
27:a:227:ASN:O	27:a:231:GLN:NE2	2.37	0.49
1:A:252:GLU:HA	6:F:259:MET:HE1	1.94	0.49
12:L:166:GLN:OE1	12:L:169:ARG:NH2	2.41	0.49
13:m:8:ASP:O	13:m:22:GLN:NE2	2.38	0.49
19:s:184:GLU:OE2	19:s:211:ARG:NH1	2.46	0.49
2:B:109:VAL:HG11	3:C:94:LYS:HE2	1.94	0.49
20:T:27:LEU:HD22	20:T:184:TYR:HB2	1.94	0.49
21:U:906:LEU:HD13	21:U:912:ILE:HD13	1.95	0.49
28:b:12:ASN:HD22	28:b:78:VAL:HG22	1.77	0.49
28:b:50:GLY:HA2	28:b:71:ILE:HD11	1.93	0.49
29:c:195:GLY:O	29:c:196:LEU:C	2.55	0.49
32:f:213:GLN:HB3	32:f:216:MET:HE1	1.94	0.49
4:D:185:LEU:HD21	4:D:224:THR:HG22	1.94	0.49
11:K:53:ARG:NH1	11:K:206:MET:SD	2.86	0.49
15:O:1:THR:N	15:O:168:GLY:O	2.46	0.49
25:Y:238:GLU:HA	25:Y:242:LYS:HB2	1.93	0.49
32:f:459:CYS:O	34:w:6:LYS:NZ	2.35	0.49
11:k:129:ASP:N	11:k:129:ASP:OD1	2.46	0.49
19:s:45:LYS:HE3	19:s:203:ILE:HD12	1.95	0.49
34:y:42:ARG:HE	34:y:72:ARG:HE	1.60	0.49
5:E:188:ALA:HB2	5:E:195:PHE:CZ	2.48	0.49
18:R:3:THR:HG23	18:R:16:ALA:HB2	1.93	0.49
21:U:543:LYS:HE3	21:U:546:ARG:HH22	1.78	0.49
21:U:903:PHE:HB2	21:U:915:LYS:HB2	1.94	0.49
26:Z:34:ARG:NH1	26:Z:97:THR:O	2.40	0.49
32:f:822:VAL:HA	32:f:825:MET:HE2	1.94	0.49
2:B:74:MET:HB2	32:f:610:GLN:HE22	1.77	0.49
2:B:313:LEU:O	2:B:346:ARG:NH1	2.45	0.49
22:V:98:LEU:HD11	22:V:206:VAL:HG22	1.95	0.49
27:a:343:LEU:HG	27:a:346:ILE:HD12	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:h:124:SER:OG	8:h:125:GLY:N	2.46	0.49
3:C:20:LEU:HD12	3:C:21:ARG:HG3	1.94	0.49
6:F:169:ASP:OD1	6:F:169:ASP:N	2.45	0.49
10:J:4:ASP:OD1	10:J:4:ASP:N	2.45	0.49
12:L:107:ARG:NH2	20:T:74:GLU:OE2	2.39	0.49
12:L:226:ASP:OD1	12:L:226:ASP:N	2.46	0.49
17:Q:21:ALA:HB3	17:Q:29:LYS:HB3	1.94	0.49
26:Z:74:TYR:O	26:Z:78:MET:HG2	2.13	0.49
9:i:62:SER:OG	9:i:65:ILE:O	2.29	0.49
17:q:153:ARG:NH1	17:q:184:ASP:OD2	2.43	0.49
2:B:233:THR:OG1	35:B:501:ATP:O2B	2.30	0.49
5:E:60:VAL:HA	5:E:71:VAL:HG12	1.95	0.49
19:S:157:ASN:ND2	16:p:176:ASP:OD2	2.46	0.49
20:T:91:TRP:HE3	20:T:92:LEU:HD12	1.77	0.49
29:c:198:ARG:HG3	29:c:199:HIS:ND1	2.28	0.49
10:j:160:ALA:O	10:j:169:ARG:NH2	2.46	0.49
2:B:429:LYS:NZ	3:C:306:LEU:O	2.40	0.49
3:C:161:ILE:HA	3:C:164:VAL:HG12	1.94	0.49
32:f:83:ARG:O	32:f:87:THR:OG1	2.23	0.49
14:n:144:ARG:NH2	14:n:151:GLU:OE1	2.46	0.49
34:y:43:LEU:HB3	34:y:50:LEU:HD12	1.95	0.49
1:A:372:LEU:HD11	11:K:207:GLU:HA	1.94	0.48
2:B:342:ILE:HA	2:B:347:ILE:HD11	1.95	0.48
6:F:122:ALA:HB3	6:F:134:LEU:HD21	1.95	0.48
20:T:26:MET:HE3	20:T:186:ARG:HG2	1.94	0.48
1:A:140:VAL:HA	1:A:152:PRO:HA	1.94	0.48
6:F:180:ARG:NH1	6:F:244:THR:O	2.46	0.48
9:I:70:GLU:O	9:I:223:THR:OG1	2.29	0.48
23:W:443:THR:HA	23:W:446:ILE:HG12	1.95	0.48
5:E:309:ARG:NH1	5:E:335:SER:O	2.47	0.48
21:U:381:THR:HG22	21:U:412:HIS:HA	1.94	0.48
23:W:455:LEU:HD21	26:Z:103:LYS:HG2	1.95	0.48
24:X:106:GLU:OE1	24:X:106:GLU:HA	2.13	0.48
10:j:140:GLY:O	10:j:213:ARG:NH1	2.43	0.48
13:m:228:PRO:HD2	13:m:231:ILE:HD12	1.95	0.48
18:r:63:CYS:HA	18:r:74:ILE:HD12	1.94	0.48
6:F:362:ARG:NH2	6:F:388:THR:O	2.46	0.48
24:X:334:ASN:OD1	24:X:337:ARG:NH2	2.44	0.48
34:x:14:THR:O	34:x:33:LYS:NZ	2.46	0.48
2:B:375:ALA:HB2	2:B:413:LYS:HB3	1.94	0.48
3:C:187:LEU:HB3	3:C:314:LYS:HA	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:159:LYS:N	4:D:160:PRO:CD	2.77	0.48
5:E:238:ILE:HD13	5:E:253:ILE:HD11	1.96	0.48
34:x:23:ILE:HB	34:x:52:ASP:HA	1.95	0.48
1:A:306:LEU:O	1:A:312:ARG:NH1	2.47	0.48
2:B:383:LEU:HD11	2:B:419:PHE:HB3	1.95	0.48
21:U:886:PRO:HA	21:U:889:LEU:HG	1.96	0.48
22:V:113:LEU:HB3	22:V:135:LEU:HD13	1.96	0.48
34:w:60:ASN:OD1	34:w:62:GLN:NE2	2.42	0.48
2:B:389:ASP:OD1	2:B:389:ASP:N	2.47	0.48
4:D:173:GLN:NE2	4:D:332:GLU:O	2.47	0.48
26:Z:102:HIS:HD2	26:Z:104:ASN:HB3	1.79	0.48
9:i:140:ASP:OD1	9:i:140:ASP:N	2.47	0.48
11:k:13:ASN:HB2	12:l:126:ARG:HD3	1.96	0.48
29:c:195:GLY:HA3	29:c:200:TYR:CZ	2.48	0.48
11:K:5:ARG:NH2	11:K:26:TYR:OH	2.46	0.48
11:K:221:GLN:HB2	11:K:224:GLN:HG2	1.95	0.48
28:b:132:LYS:HD3	34:z:32:ASP:OD1	2.14	0.48
7:g:132:ARG:HB3	13:m:124:LEU:HD23	1.96	0.48
1:A:297:ARG:HH22	6:F:306:VAL:HG21	1.79	0.48
15:O:97:ALA:HB1	15:O:127:MET:HE3	1.94	0.48
20:T:56:ASP:O	20:T:108:ASN:ND2	2.45	0.48
24:X:103:THR:HA	24:X:106:GLU:HG2	1.96	0.48
24:X:309:TYR:HB3	24:X:312:GLU:HB2	1.95	0.48
4:D:153:MET:HE1	4:D:226:ALA:HB1	1.96	0.47
21:U:789:ILE:HB	21:U:911:ILE:HA	1.95	0.47
23:W:344:THR:HG23	23:W:347:GLY:H	1.78	0.47
25:Y:210:SER:HB3	25:Y:213:LEU:HD23	1.96	0.47
5:E:173:TYR:HE1	5:E:298:LYS:HB3	1.79	0.47
7:G:32:ILE:HD13	7:G:137:CYS:HB2	1.96	0.47
22:V:120:PHE:HE1	22:V:149:PRO:HG2	1.79	0.47
23:W:360:GLU:HB3	23:W:392:PHE:HZ	1.80	0.47
32:f:398:TRP:HA	32:f:401:LYS:HD3	1.95	0.47
4:D:45:LYS:NZ	21:U:156:GLU:OE2	2.39	0.47
6:F:246:ALA:HB1	6:F:280:PRO:HB2	1.96	0.47
21:U:483:LEU:HD11	21:U:781:LEU:HD11	1.97	0.47
21:U:613:ASP:OD1	21:U:616:ARG:NH2	2.44	0.47
23:W:205:ILE:HA	23:W:208:LYS:HE2	1.96	0.47
26:Z:67:VAL:HG11	28:b:91:ARG:HG2	1.96	0.47
11:k:76:CYS:SG	11:k:77:ALA:N	2.87	0.47
13:m:198:TYR:OH	13:m:236:GLU:OE1	2.32	0.47
17:q:39:SER:OG	17:q:40:GLU:N	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:84:LYS:O	6:F:85:THR:C	2.56	0.47
7:G:112:ASP:N	7:G:112:ASP:OD1	2.47	0.47
9:I:216:LEU:HD12	9:I:225:ILE:HG12	1.96	0.47
10:J:40:ILE:HD11	10:J:210:VAL:HB	1.96	0.47
27:a:65:SER:HA	27:a:68:GLU:HB2	1.95	0.47
27:a:80:ILE:HG12	27:a:100:THR:HG21	1.96	0.47
15:o:113:ILE:HG12	15:o:119:THR:HG22	1.97	0.47
19:s:95:ILE:O	19:s:98:SER:OG	2.31	0.47
2:B:80:ARG:O	2:B:84:GLN:HB2	2.14	0.47
5:E:121:ASN:HA	5:E:197:LYS:HD2	1.96	0.47
24:X:421:LEU:HD11	26:Z:280:ILE:HG12	1.96	0.47
24:X:422:THR:HB	26:Z:283:ARG:HH12	1.80	0.47
29:c:198:ARG:HG3	29:c:199:HIS:HD1	1.79	0.47
3:C:339:THR:HG23	25:Y:174:TRP:HZ3	1.80	0.47
22:V:100:MET:O	22:V:103:SER:OG	2.30	0.47
23:W:409:LEU:HD11	24:X:344:ARG:HH21	1.80	0.47
12:l:196:ARG:NH1	12:l:237:GLU:O	2.48	0.47
34:x:27:LYS:HB3	34:x:38:PRO:HB3	1.96	0.47
2:B:230:THR:HG21	2:B:353:PHE:HB3	1.97	0.47
3:C:215:SER:OG	3:C:218:GLU:OE1	2.27	0.47
6:F:188:ILE:HD11	6:F:191:LEU:HD12	1.97	0.47
8:H:109:GLN:HB3	8:H:113:ARG:HH12	1.78	0.47
12:L:139:ASP:N	12:L:139:ASP:OD1	2.46	0.47
14:N:9:ASP:N	14:N:9:ASP:OD1	2.45	0.47
19:S:92:LEU:HD23	19:S:124:PHE:HE2	1.80	0.47
32:f:446:LEU:HD12	32:f:480:GLY:HA2	1.96	0.47
32:f:613:LEU:HD23	32:f:613:LEU:HA	1.65	0.47
8:h:143:ARG:NH1	8:h:145:TYR:OH	2.48	0.47
16:p:138:VAL:HG11	16:p:146:MET:HB3	1.97	0.47
2:B:197:ILE:HG12	2:B:235:LEU:HD21	1.96	0.47
3:C:191:PRO:O	3:C:196:LYS:NZ	2.48	0.47
17:Q:35:MET:HG2	17:Q:45:LEU:HG	1.97	0.47
20:T:43:MET:HG2	20:T:64:LYS:HG3	1.97	0.47
22:V:121:PHE:HB3	22:V:128:ARG:HD2	1.96	0.47
23:W:51:GLU:CD	23:W:55:ARG:HH12	2.23	0.47
29:c:279:ASP:HA	29:c:283:HIS:CB	2.39	0.47
30:d:168:ASP:OD1	30:d:169:ILE:N	2.47	0.47
23:W:171:VAL:HG12	23:W:182:ARG:HG3	1.97	0.47
32:f:146:GLY:O	32:f:148:GLN:NE2	2.48	0.47
24:X:143:TYR:OH	25:Y:248:GLU:O	2.33	0.47
27:a:77:VAL:HG21	27:a:110:ALA:HB1	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:c:27:THR:HG22	29:c:28:ALA:H	1.79	0.47
30:d:131:VAL:HA	30:d:134:LYS:HB3	1.97	0.47
8:h:3:GLU:CD	13:m:127:ALA:HB3	2.39	0.47
20:t:12:LEU:HD21	20:t:176:LEU:HD11	1.96	0.47
3:C:228:ALA:HA	3:C:272:THR:HG23	1.97	0.46
4:D:86:PRO:HB2	5:E:105:LEU:HD22	1.98	0.46
8:H:111:VAL:HG21	8:H:147:PHE:HD2	1.79	0.46
18:R:182:ASP:OD1	18:R:182:ASP:N	2.44	0.46
27:a:35:HIS:NE2	28:b:14:GLU:O	2.48	0.46
29:c:281:LYS:HZ2	29:c:284:LEU:HD13	1.81	0.46
11:k:120:ALA:O	11:k:121:LEU:HG	2.14	0.46
12:l:189:LYS:NZ	12:l:234:GLU:O	2.43	0.46
2:B:180:PRO:HG3	3:C:283:PHE:HE2	1.80	0.46
4:D:336:PRO:HG3	4:D:369:LYS:HB3	1.97	0.46
5:E:56:ILE:O	5:E:100:LEU:N	2.42	0.46
11:K:95:GLU:HG3	11:K:107:MET:HE1	1.96	0.46
19:S:22:ILE:HG12	19:S:197:ILE:HG13	1.97	0.46
24:X:380:GLN:HB2	25:Y:314:LEU:HA	1.96	0.46
27:a:119:GLY:HA2	27:a:122:LYS:HB3	1.97	0.46
8:h:34:PRO:HA	8:h:164:GLY:HA3	1.97	0.46
13:m:136:MET:HE3	13:m:163:CYS:HB3	1.96	0.46
16:p:10:ALA:HB1	16:p:146:MET:HE1	1.97	0.46
17:q:52:ASP:OD1	18:r:88:TYR:OH	2.32	0.46
34:y:5:VAL:HG22	34:y:67:LEU:HB2	1.96	0.46
6:F:320:PHE:CE2	6:F:326:VAL:HB	2.50	0.46
14:N:84:LYS:HG3	14:N:120:MET:HB2	1.97	0.46
23:W:235:GLN:HG2	23:W:350:ARG:HH22	1.80	0.46
32:f:115:PRO:HA	32:f:119:LYS:HD3	1.98	0.46
32:f:323:ASN:HB3	32:f:326:LEU:HB2	1.97	0.46
10:j:66:ASP:OD2	10:j:95:ARG:NH2	2.41	0.46
10:j:137:ASP:OD2	10:j:143:ARG:NH1	2.43	0.46
14:n:104:ASP:OD1	14:n:104:ASP:N	2.48	0.46
17:q:31:ASP:OD1	17:q:31:ASP:N	2.48	0.46
17:q:47:VAL:HG13	17:q:101:ASN:HB2	1.97	0.46
2:B:195:GLN:NE2	2:B:199:GLU:OE2	2.46	0.46
24:X:316:ASP:OD2	24:X:321:THR:OG1	2.33	0.46
15:o:209:THR:OG1	16:p:169:GLN:NE2	2.41	0.46
19:s:211:ARG:NH2	19:s:213:ASP:OD2	2.48	0.46
20:t:97:TYR:HA	20:t:100:ARG:HG2	1.98	0.46
1:A:279:ALA:HB2	2:B:310:LEU:HD23	1.98	0.46
2:B:106:PRO:HB3	3:C:121:TYR:HB2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:85:ILE:HD11	29:c:152:LYS:HE2	1.96	0.46
4:D:156:SER:O	4:D:157:ASP:HB2	2.15	0.46
5:E:265:ASP:HA	5:E:269:THR:HA	1.97	0.46
6:F:258:GLN:HB2	6:F:263:ASP:HB2	1.97	0.46
10:J:79:ASP:HB3	10:J:127:PHE:HD1	1.81	0.46
21:U:202:VAL:HA	21:U:205:TYR:HB2	1.97	0.46
29:c:31:VAL:HB	29:c:205:ILE:HG13	1.98	0.46
29:c:197:ASN:C	29:c:199:HIS:N	2.73	0.46
32:f:534:VAL:HA	32:f:537:THR:HG22	1.97	0.46
1:A:55:LEU:HA	1:A:58:LYS:HG2	1.97	0.46
5:E:23:ASP:OD1	5:E:27:LYS:NZ	2.49	0.46
6:F:49:ASP:O	28:b:27:GLN:NE2	2.49	0.46
14:N:115:PRO:HD2	14:N:119:MET:HB3	1.97	0.46
21:U:803:LYS:O	21:U:893:THR:N	2.40	0.46
26:Z:43:TRP:HB3	26:Z:90:ARG:HH21	1.80	0.46
26:Z:193:ASN:HA	26:Z:196:HIS:CE1	2.51	0.46
28:b:181:ASP:HA	28:b:184:ILE:HG12	1.97	0.46
17:q:4:LEU:HD22	17:q:45:LEU:HD23	1.98	0.46
34:z:51:GLU:HB2	34:z:54:ARG:HD3	1.97	0.46
2:B:227:PRO:O	2:B:230:THR:OG1	2.31	0.46
20:T:20:VAL:HG23	20:T:120:SER:HB3	1.97	0.46
21:U:580:ARG:HH12	21:U:768:GLN:HE22	1.61	0.46
21:U:796:LYS:HE3	21:U:796:LYS:HB3	1.83	0.46
22:V:322:VAL:HG11	31:e:27:TRP:HZ3	1.81	0.46
23:W:108:CYS:O	23:W:112:VAL:HG23	2.16	0.46
24:X:27:LEU:HD23	24:X:30:ILE:HD12	1.98	0.46
24:X:170:GLN:OE1	24:X:192:SER:OG	2.33	0.46
25:Y:2:PRO:HD2	25:Y:5:ASN:HB2	1.97	0.46
10:j:183:THR:HB	10:j:186:LEU:HB2	1.98	0.46
11:k:107:MET:HG2	11:k:112:VAL:HG23	1.97	0.46
18:r:141:ARG:HA	18:r:141:ARG:HD2	1.71	0.46
20:t:1:THR:N	20:t:104:ASN:OD1	2.48	0.46
1:A:213:LEU:HD13	1:A:340:LYS:HE2	1.98	0.46
6:F:289:ASP:OD1	6:F:289:ASP:N	2.48	0.46
14:N:119:MET:HE2	20:T:57:TYR:HD2	1.80	0.46
18:R:166:ARG:NH2	17:q:144:ASP:OD2	2.49	0.46
21:U:353:LEU:HD22	21:U:385:PHE:HE2	1.80	0.46
27:a:276:CYS:SG	27:a:277:LEU:N	2.88	0.46
32:f:317:LEU:HG	32:f:321:MET:HE1	1.98	0.46
16:p:62:THR:OG1	17:q:85:ARG:NH2	2.48	0.46
6:F:278:LYS:HG3	6:F:280:PRO:HD2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:413:THR:OG1	6:F:414:GLU:OE1	2.32	0.46
9:I:119:GLN:NE2	10:J:79:ASP:OD1	2.41	0.46
11:K:9:ASP:OD1	11:K:9:ASP:N	2.47	0.46
15:O:54:MET:HG2	16:P:96:TYR:CZ	2.50	0.46
25:Y:345:CYS:HA	25:Y:356:THR:HA	1.98	0.46
27:a:321:LYS:O	27:a:334:THR:OG1	2.34	0.46
7:g:6:SER:HA	7:g:11:ARG:HH22	1.81	0.46
12:l:140:MET:HE3	12:l:140:MET:HB3	1.87	0.46
20:t:15:LYS:HG2	20:t:20:VAL:HG22	1.97	0.46
2:B:71:TYR:CE2	32:f:670:MET:HB3	2.50	0.46
2:B:115:ILE:HD11	2:B:146:PRO:HD3	1.97	0.46
2:B:150:VAL:HA	2:B:162:VAL:HA	1.97	0.46
4:D:61:ILE:HD12	21:U:639:LEU:HD23	1.98	0.46
4:D:200:ARG:HH12	4:D:302:ASN:HA	1.80	0.46
30:d:234:ASP:OD2	30:d:236:THR:OG1	2.30	0.46
32:f:318:THR:HA	32:f:321:MET:HE2	1.98	0.46
32:f:547:GLU:HA	32:f:550:LEU:HB2	1.97	0.46
8:h:118:MET:HE3	8:h:118:MET:HB2	1.84	0.46
12:l:80:ASP:OD2	12:l:126:ARG:NH1	2.45	0.46
16:p:53:LEU:HG	16:p:107:PRO:HB3	1.98	0.46
3:C:48:GLN:HB3	4:D:65:GLN:HE22	1.81	0.45
3:C:375:ARG:HG2	3:C:377:HIS:H	1.81	0.45
11:K:51:GLU:HB3	11:K:53:ARG:NH1	2.31	0.45
19:S:158:MET:HE2	19:S:161:VAL:HG21	1.98	0.45
21:U:103:LYS:HB2	21:U:103:LYS:HE3	1.79	0.45
21:U:118:LEU:HD13	21:U:122:GLU:HG3	1.98	0.45
21:U:245:ALA:HA	21:U:248:ILE:HG12	1.98	0.45
21:U:895:PRO:HG2	21:U:902:PRO:HD3	1.97	0.45
22:V:75:ILE:HG22	22:V:120:PHE:HE2	1.80	0.45
29:c:172:HIS:CD2	29:c:198:ARG:HA	2.51	0.45
30:d:47:GLN:H	30:d:47:GLN:HE21	1.62	0.45
30:d:84:ASP:OD1	30:d:84:ASP:N	2.47	0.45
1:A:158:ASP:OD2	1:A:160:THR:OG1	2.24	0.45
17:Q:44:LEU:HD11	17:Q:102:LEU:HD22	1.98	0.45
21:U:387:ARG:NH1	21:U:426:TYR:OH	2.49	0.45
21:U:764:LEU:O	21:U:767:THR:OG1	2.34	0.45
25:Y:74:LYS:HB3	25:Y:74:LYS:HE3	1.81	0.45
26:Z:7:GLN:NE2	26:Z:8:LYS:HG2	2.31	0.45
26:Z:130:ASP:OD1	26:Z:130:ASP:N	2.48	0.45
32:f:806:VAL:HG23	32:f:810:ILE:HB	1.99	0.45
7:g:89:SER:HA	13:m:117:MET:HE1	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:o:100:LEU:HB3	15:o:111:TYR:HB2	1.98	0.45
1:A:336:ARG:NH2	35:F:501:ATP:O3G	2.47	0.45
2:B:65:LEU:HD23	2:B:68:ILE:HD12	1.98	0.45
4:D:154:LEU:C	4:D:159:LYS:HB3	2.41	0.45
5:E:71:VAL:HG21	5:E:100:LEU:HD11	1.98	0.45
16:P:12:MET:HE3	16:P:171:MET:HG2	1.97	0.45
24:X:1:MET:O	24:X:33:ARG:NH2	2.49	0.45
27:a:168:ASN:OD1	27:a:171:SER:OG	2.33	0.45
30:d:139:LEU:HD11	30:d:151:VAL:HG13	1.96	0.45
9:i:82:ASP:HB3	9:i:130:PHE:HD1	1.80	0.45
2:B:289:ALA:HB2	3:C:274:LEU:HD22	1.97	0.45
12:L:204:ASP:N	12:L:204:ASP:OD1	2.49	0.45
22:V:92:ARG:HG2	22:V:96:ARG:HH21	1.82	0.45
29:c:278:GLN:HG2	29:c:280:PRO:CG	2.47	0.45
32:f:240:VAL:O	32:f:245:ASN:ND2	2.47	0.45
32:f:348:ILE:HD13	32:f:381:VAL:HG21	1.97	0.45
17:q:182:ILE:HD11	17:q:191:LEU:HD11	1.98	0.45
1:A:325:ASP:OD1	1:A:325:ASP:N	2.44	0.45
3:C:90:HIS:CG	3:C:91:PRO:HD3	2.51	0.45
5:E:81:VAL:HG12	5:E:105:LEU:HD23	1.98	0.45
6:F:332:THR:HG21	6:F:338:LEU:HD21	1.99	0.45
15:O:21:THR:HG22	15:O:26:VAL:HA	1.99	0.45
21:U:510:GLU:HA	21:U:547:GLY:HA3	1.98	0.45
23:W:357:ARG:HA	23:W:357:ARG:HD3	1.80	0.45
26:Z:72:HIS:CE1	28:b:60:VAL:HB	2.52	0.45
3:C:307:ARG:HG2	3:C:310:ARG:HG2	1.99	0.45
5:E:257:LEU:HA	5:E:260:LEU:HB2	1.99	0.45
6:F:306:VAL:O	6:F:309:THR:OG1	2.31	0.45
21:U:216:VAL:HA	21:U:220:LEU:HD23	1.99	0.45
29:c:200:TYR:CE2	29:c:201:TYR:CZ	3.05	0.45
29:c:201:TYR:O	29:c:202:SER:HB2	2.16	0.45
32:f:131:MET:HE2	32:f:131:MET:HB2	1.79	0.45
12:l:120:THR:O	13:m:129:ARG:NH1	2.49	0.45
6:F:97:LEU:HB2	6:F:121:CYS:HB2	1.98	0.45
15:O:81:ARG:HA	15:O:84:LYS:HG2	1.99	0.45
21:U:131:GLU:HB2	21:U:159:ARG:HH12	1.81	0.45
24:X:282:ARG:NH1	24:X:312:GLU:OE2	2.49	0.45
26:Z:131:LEU:O	29:c:223:LYS:NZ	2.36	0.45
27:a:72:ASN:HB2	28:b:17:ARG:HH22	1.82	0.45
27:a:341:LEU:O	27:a:342:ASP:C	2.59	0.45
7:g:112:ASP:OD1	7:g:112:ASP:N	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:m:108:LEU:HD13	13:m:147:GLN:HB2	1.99	0.45
5:E:257:LEU:HA	5:E:260:LEU:HD12	1.99	0.45
7:G:20:GLY:HA3	8:H:28:ALA:HA	1.99	0.45
9:I:134:LEU:N	9:I:150:SER:OG	2.46	0.45
16:P:205:ASP:HB3	18:r:192:VAL:HG11	1.98	0.45
21:U:36:ALA:HB1	22:V:269:LYS:HB3	1.99	0.45
23:W:69:ALA:HA	23:W:72:LYS:HE2	1.99	0.45
25:Y:66:ASP:HB3	25:Y:69:LEU:HB3	1.99	0.45
27:a:344:GLN:O	27:a:346:ILE:N	2.50	0.45
29:c:41:MET:HE1	29:c:112:TYR:CG	2.50	0.45
15:o:63:LEU:HD11	15:o:79:ALA:HB2	1.99	0.45
1:A:123:VAL:HG11	1:A:147:TYR:HB2	1.97	0.45
7:G:167:ALA:HB3	7:G:176:THR:HG23	1.98	0.45
8:H:204:THR:OG1	8:H:206:ASP:OD1	2.31	0.45
21:U:196:LYS:HA	21:U:199:ARG:HG2	1.98	0.45
27:a:269:LEU:HD23	27:a:272:ILE:HD11	1.99	0.45
1:A:351:ARG:NH1	1:A:378:PRO:O	2.46	0.45
20:T:166:ARG:NH2	20:T:200:GLU:OE1	2.44	0.45
21:U:376:MET:HA	21:U:740:GLY:N	2.32	0.45
22:V:278:GLU:HA	22:V:285:TRP:HZ2	1.82	0.45
26:Z:72:HIS:HE1	28:b:60:VAL:HB	1.81	0.45
34:y:44:ILE:HB	34:y:68:HIS:HB2	1.99	0.45
19:S:145:LEU:HD21	19:S:182:ALA:HB2	1.99	0.44
22:V:212:TYR:HA	22:V:253:LEU:HD11	1.98	0.44
26:Z:15:VAL:HG11	26:Z:50:VAL:HG12	1.99	0.44
26:Z:197:GLY:O	29:c:225:TRP:NE1	2.50	0.44
27:a:84:VAL:HG11	27:a:97:LEU:HD12	1.99	0.44
31:e:33:ASP:HB3	31:e:36:ALA:HB2	1.99	0.44
11:k:146:VAL:HG11	11:k:222:PRO:HA	1.98	0.44
6:F:358:ASN:O	6:F:362:ARG:NH1	2.49	0.44
19:S:187:VAL:HG21	15:o:24:MET:HE3	2.00	0.44
21:U:583:MET:HE2	21:U:583:MET:HB3	1.65	0.44
23:W:198:ASP:OD1	23:W:201:ARG:HB2	2.17	0.44
26:Z:59:ASP:OD2	28:b:99:HIS:NE2	2.50	0.44
27:a:84:VAL:HA	27:a:87:MET:HG3	1.98	0.44
29:c:159:ALA:H	29:c:205:ILE:HD11	1.83	0.44
29:c:195:GLY:HA3	29:c:200:TYR:OH	2.17	0.44
32:f:425:GLY:HA3	32:f:451:VAL:HG11	2.00	0.44
7:g:132:ARG:HA	7:g:133:PRO:HD3	1.87	0.44
12:l:7:ASP:OD1	12:l:7:ASP:N	2.49	0.44
2:B:181:GLN:HG2	2:B:237:LYS:HE2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:223:ILE:HD11	2:B:347:ILE:HG21	2.00	0.44
3:C:68:GLU:OE2	3:C:117:ARG:NH2	2.48	0.44
3:C:277:LEU:HG	3:C:310:ARG:HH22	1.81	0.44
7:G:147:GLN:HE22	15:O:72:ARG:HH21	1.66	0.44
21:U:448:LEU:HA	21:U:483:LEU:HD23	1.99	0.44
21:U:759:SER:HA	21:U:782:ALA:HA	2.00	0.44
26:Z:177:ARG:HA	26:Z:180:LYS:HD3	1.99	0.44
29:c:278:GLN:C	29:c:280:PRO:CD	2.80	0.44
30:d:15:ASN:HD22	30:d:18:LYS:HB3	1.83	0.44
32:f:522:CYS:HB3	32:f:534:VAL:HG21	1.99	0.44
32:f:692:LEU:HB3	32:f:800:LEU:HD12	2.00	0.44
13:m:136:MET:HE2	13:m:148:LEU:HD11	1.99	0.44
2:B:58:CYS:SG	2:B:59:ARG:N	2.91	0.44
3:C:277:LEU:O	3:C:310:ARG:NH1	2.50	0.44
6:F:321:GLN:HE21	6:F:323:ASN:HD21	1.66	0.44
10:J:11:SER:OG	10:J:15:HIS:N	2.50	0.44
27:a:97:LEU:HD22	27:a:118:ILE:HG13	1.99	0.44
32:f:428:GLN:HA	32:f:431:LYS:HE2	2.00	0.44
7:g:231:THR:OG1	7:g:234:GLU:OE1	2.28	0.44
14:n:4:MET:HE1	14:n:159:ALA:HB3	2.00	0.44
15:o:30:ASN:HD22	15:o:30:ASN:C	2.25	0.44
17:q:18:ASP:OD1	17:q:18:ASP:N	2.48	0.44
1:A:34:LYS:NZ	3:C:173:GLU:OE2	2.42	0.44
1:A:428:ARG:NH2	10:J:24:GLU:OE2	2.36	0.44
1:A:430:MET:HE1	10:J:156:TRP:HZ2	1.81	0.44
15:O:163:ILE:HG12	15:O:170:GLY:HA2	1.99	0.44
26:Z:21:ASP:OD1	26:Z:22:HIS:N	2.50	0.44
12:l:72:ILE:HG22	12:l:134:ILE:HG12	2.00	0.44
19:s:64:LEU:O	19:s:68:ILE:HG12	2.17	0.44
8:H:59:GLU:HG3	8:H:206:ASP:HB2	1.99	0.44
8:H:111:VAL:HG22	8:H:136:ILE:HD12	2.00	0.44
16:P:190:ILE:HG12	16:P:195:ILE:HD12	1.99	0.44
18:R:7:LYS:HD2	18:R:109:PRO:HB2	2.00	0.44
23:W:329:ARG:HE	23:W:351:TRP:NE1	2.16	0.44
26:Z:82:PHE:HA	26:Z:85:VAL:HG12	2.00	0.44
29:c:122:LEU:HD23	29:c:201:TYR:CE1	2.52	0.44
30:d:55:LEU:HD23	30:d:55:LEU:HA	1.85	0.44
34:y:37:PRO:HA	34:y:38:PRO:HD3	1.92	0.44
3:C:168:PRO:HG3	3:C:175:PHE:HE2	1.83	0.44
11:K:71:ASP:OD1	11:K:71:ASP:N	2.51	0.44
24:X:35:ILE:HD12	24:X:46:LYS:HD2	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:Z:70:LEU:HD11	26:Z:108:ILE:HG23	2.00	0.44
1:A:141:GLY:N	1:A:151:ILE:O	2.40	0.44
3:C:187:LEU:HB2	3:C:311:ILE:HG21	2.00	0.44
3:C:343:ASN:HB3	3:C:346:LYS:HD3	2.00	0.44
4:D:385:LEU:HD23	4:D:398:ASP:HB2	2.00	0.44
6:F:380:ASN:HB3	6:F:383:GLU:HB2	1.99	0.44
8:H:10:LEU:HD13	8:H:21:GLN:HB2	2.00	0.44
10:J:185:ASP:OD1	10:J:185:ASP:N	2.49	0.44
11:K:41:GLN:HE21	11:K:166:ASP:HA	1.83	0.44
21:U:190:ASN:HB3	21:U:193:PHE:HE1	1.82	0.44
24:X:255:LEU:HD22	24:X:267:VAL:HG13	2.00	0.44
26:Z:260:VAL:O	26:Z:264:SER:OG	2.30	0.44
27:a:274:LEU:HD13	27:a:319:LEU:HD21	1.99	0.44
27:a:344:GLN:C	27:a:346:ILE:N	2.76	0.44
29:c:163:ILE:HG22	29:c:200:TYR:HA	1.98	0.44
30:d:22:GLU:HA	30:d:25:ARG:HD2	1.99	0.44
17:q:38:MET:O	17:q:65:GLN:NE2	2.47	0.44
6:F:438:TYR:OH	11:K:19:GLY:O	2.34	0.44
10:J:42:VAL:HG22	10:J:210:VAL:HG12	1.99	0.44
20:T:63:LEU:HG	20:T:110:MET:HE1	1.99	0.44
9:i:66:TYR:HD2	9:i:87:THR:HG21	1.81	0.44
1:A:263:MET:O	1:A:266:THR:OG1	2.33	0.43
5:E:124:HIS:O	5:E:196:LEU:HG	2.18	0.43
7:G:18:PRO:O	7:G:19:GLU:CB	2.65	0.43
7:G:130:GLU:HG2	7:G:131:MET:HG2	2.00	0.43
10:J:39:ASP:OD1	10:J:39:ASP:N	2.50	0.43
18:R:191:ASN:HD21	16:p:203:ARG:HH12	1.65	0.43
21:U:447:GLY:HA3	21:U:480:GLY:HA2	1.99	0.43
21:U:794:ASP:OD1	21:U:794:ASP:N	2.51	0.43
22:V:416:ARG:NH2	25:Y:348:ASP:OD2	2.51	0.43
30:d:215:TRP:HE3	30:d:222:TYR:HB3	1.83	0.43
32:f:698:SER:HB2	32:f:706:ILE:HD13	1.99	0.43
1:A:347:ASP:N	1:A:347:ASP:OD1	2.45	0.43
3:C:207:THR:HG23	3:C:209:CYS:H	1.83	0.43
5:E:312:ILE:HD13	5:E:340:GLY:HA3	1.99	0.43
9:I:239:LYS:O	9:I:242:GLU:N	2.51	0.43
21:U:554:LEU:HA	21:U:588:MET:HE1	2.00	0.43
22:V:135:LEU:HD21	22:V:171:VAL:HG13	1.99	0.43
23:W:419:LYS:HE3	23:W:424:LEU:HD22	1.99	0.43
30:d:51:ALA:HA	30:d:54:ILE:HG12	1.99	0.43
12:l:117:GLN:CG	13:m:82:ALA:HB1	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:222:GLY:HA3	6:F:348:LEU:HA	2.01	0.43
6:F:333:ASN:ND2	35:F:501:ATP:O2G	2.39	0.43
9:I:73:ALA:HB3	9:I:137:ILE:HD11	2.00	0.43
17:Q:58:GLU:OE1	17:Q:62:LYS:NZ	2.50	0.43
22:V:224:LEU:HA	22:V:227:VAL:HB	2.01	0.43
23:W:375:MET:HE1	23:W:411:GLY:HA2	2.00	0.43
30:d:42:LYS:HA	30:d:45:LYS:HB2	2.00	0.43
8:h:3:GLU:N	13:m:125:TYR:HB3	2.33	0.43
2:B:291:GLY:HA3	2:B:309:MET:HG3	2.00	0.43
3:C:99:VAL:HA	3:C:123:LEU:HB2	2.01	0.43
11:K:4:THR:OG1	11:K:5:ARG:N	2.50	0.43
18:R:21:THR:HG22	18:R:26:ILE:HG12	2.01	0.43
23:W:361:HIS:HA	23:W:364:ARG:HH21	1.83	0.43
24:X:182:ASN:ND2	25:Y:248:GLU:OE2	2.51	0.43
13:m:43:ASP:OD1	13:m:43:ASP:N	2.49	0.43
1:A:65:ILE:HG21	32:f:680:ARG:NH1	2.33	0.43
3:C:83:LYS:HB3	3:C:99:VAL:HG22	2.01	0.43
5:E:75:ASN:ND2	6:F:129:ARG:O	2.51	0.43
13:M:36:ALA:HB2	13:M:65:ARG:NH2	2.33	0.43
21:U:191:LYS:HD3	21:U:194:ARG:HD3	2.01	0.43
21:U:611:ASN:HB3	21:U:614:VAL:HG12	2.00	0.43
26:Z:54:PHE:O	26:Z:95:TYR:OH	2.36	0.43
27:a:344:GLN:C	27:a:346:ILE:H	2.26	0.43
32:f:658:ALA:O	32:f:662:MET:HG2	2.17	0.43
12:l:139:ASP:OD1	12:l:139:ASP:N	2.52	0.43
20:t:50:MET:HE2	20:t:197:VAL:HG13	1.99	0.43
3:C:86:LEU:HD21	3:C:94:LYS:HD2	2.00	0.43
4:D:313:ARG:NH2	4:D:316:THR:OG1	2.52	0.43
6:F:92:ASN:N	6:F:125:LYS:O	2.49	0.43
9:I:54:LYS:C	9:I:55:LEU:HD12	2.43	0.43
22:V:90:GLU:HG2	22:V:92:ARG:H	1.84	0.43
22:V:128:ARG:HA	22:V:131:LEU:HG	1.99	0.43
23:W:316:ARG:HD3	23:W:316:ARG:HA	1.43	0.43
26:Z:190:ARG:HA	26:Z:193:ASN:HD22	1.83	0.43
30:d:158:ILE:HG22	30:d:160:ALA:H	1.83	0.43
32:f:667:GLY:O	32:f:671:ALA:HB2	2.19	0.43
32:f:710:LEU:HB3	32:f:729:MET:HG2	2.01	0.43
15:o:163:ILE:HG12	15:o:170:GLY:HA2	2.00	0.43
18:r:51:ASP:OD2	19:s:100:ARG:NH2	2.47	0.43
6:F:188:ILE:HD13	6:F:235:LEU:HD22	2.00	0.43
8:H:49:GLU:O	8:H:64:LYS:NZ	2.47	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:214:GLU:HG3	16:P:198:ARG:HG2	2.01	0.43
21:U:688:LEU:HD22	21:U:713:TYR:HE1	1.83	0.43
21:U:788:VAL:HG12	21:U:909:GLY:HA2	2.00	0.43
23:W:240:TYR:HA	23:W:243:ILE:HD12	1.99	0.43
25:Y:212:GLU:HG2	25:Y:213:LEU:HD22	2.00	0.43
26:Z:11:VAL:O	26:Z:163:GLY:N	2.49	0.43
27:a:26:GLU:HA	27:a:29:TYR:CE1	2.54	0.43
10:j:168:VAL:HG23	10:j:194:ALA:HB1	2.00	0.43
18:r:32:LYS:HA	18:r:32:LYS:HD3	1.79	0.43
2:B:387:LYS:HA	2:B:387:LYS:HD3	1.88	0.43
5:E:272:ARG:O	5:E:274:LYS:NZ	2.52	0.43
21:U:436:ALA:HB3	21:U:472:ILE:HD11	2.00	0.43
32:f:45:LEU:HB3	32:f:50:LYS:HD3	2.00	0.43
32:f:505:MET:SD	32:f:506:GLY:N	2.91	0.43
16:p:11:VAL:HG23	16:p:54:ALA:HB2	2.00	0.43
1:A:220:THR:HG21	1:A:343:PHE:HB3	2.01	0.43
3:C:164:VAL:HG13	3:C:165:ILE:HG13	2.00	0.43
3:C:251:ILE:H	3:C:295:THR:HB	1.84	0.43
5:E:166:PRO:O	5:E:293:GLY:HA2	2.19	0.43
5:E:385:ASP:OD1	5:E:385:ASP:N	2.51	0.43
6:F:129:ARG:HH22	6:F:260:PHE:HB3	1.83	0.43
18:R:41:LEU:HD23	18:R:103:GLY:HA3	2.01	0.43
22:V:253:LEU:O	22:V:257:ASN:ND2	2.52	0.43
10:j:39:ASP:OD1	10:j:39:ASP:N	2.52	0.43
12:l:47:VAL:HG22	12:l:212:ILE:HG12	1.99	0.43
34:w:39:ASP:OD1	34:w:39:ASP:N	2.51	0.43
34:w:61:ILE:HG23	34:w:65:SER:HB2	2.00	0.43
1:A:49:GLU:HA	1:A:52:ILE:HG22	2.01	0.43
4:D:207:PRO:HG2	4:D:335:LEU:HD11	2.01	0.43
21:U:524:LYS:NZ	21:U:562:GLU:O	2.39	0.43
23:W:452:ILE:O	23:W:456:GLN:N	2.52	0.43
28:b:62:THR:HG21	28:b:71:ILE:HD13	2.01	0.43
29:c:281:LYS:HA	29:c:281:LYS:HD3	1.66	0.43
8:h:19:LEU:HD23	8:h:19:LEU:HA	1.91	0.43
12:L:192:LEU:HD12	12:L:205:LEU:HD13	2.01	0.42
12:L:214:ILE:HD12	12:L:224:TYR:HE2	1.84	0.42
22:V:495:ARG:HD3	26:Z:282:ASN:HD21	1.84	0.42
28:b:147:GLU:HG2	28:b:150:THR:HG22	2.01	0.42
32:f:62:ARG:HH21	32:f:74:ALA:HA	1.84	0.42
1:A:59:ILE:HA	1:A:62:LEU:HG	2.01	0.42
2:B:188:GLY:HA3	2:B:364:ILE:HD13	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:75:ASN:OD1	5:E:75:ASN:N	2.52	0.42
10:J:67:ASP:OD1	10:J:67:ASP:N	2.49	0.42
22:V:287:ARG:NH2	31:e:17:ASP:OD2	2.52	0.42
24:X:70:LEU:HD22	24:X:92:LEU:HD13	2.01	0.42
25:Y:231:LEU:HD12	25:Y:234:PRO:HG2	2.01	0.42
28:b:97:LEU:HG	28:b:100:ARG:HH21	1.84	0.42
31:e:16:ASP:OD1	31:e:16:ASP:N	2.51	0.42
15:o:190:THR:HG22	15:o:192:PRO:HD3	2.01	0.42
17:q:44:LEU:HD13	17:q:104:LEU:HD12	2.00	0.42
2:B:113:GLU:HG2	2:B:114:GLU:HG2	2.01	0.42
2:B:360:THR:O	2:B:364:ILE:HG12	2.19	0.42
3:C:135:VAL:HA	3:C:138:MET:SD	2.59	0.42
19:S:16:ALA:HB2	19:S:121:VAL:HG23	2.00	0.42
20:T:79:ASP:OD1	20:T:79:ASP:N	2.53	0.42
21:U:185:MET:SD	21:U:194:ARG:NH2	2.92	0.42
27:a:81:LEU:HA	27:a:84:VAL:HG12	2.00	0.42
15:o:112:SER:HB3	15:o:125:VAL:HG11	2.01	0.42
1:A:213:LEU:HD12	1:A:337:LEU:HD13	2.00	0.42
5:E:237:ALA:N	5:E:242:ARG:HH22	2.17	0.42
13:M:34:SER:OG	13:M:35:THR:N	2.51	0.42
14:N:32:ASP:O	14:N:45:ARG:NH2	2.52	0.42
17:Q:77:PRO:HD2	17:Q:108:ASP:HB2	2.02	0.42
21:U:623:GLY:HA3	21:U:658:ILE:HG13	2.00	0.42
22:V:224:LEU:HD12	22:V:261:TYR:HE1	1.85	0.42
22:V:228:ARG:HH22	22:V:261:TYR:HB2	1.84	0.42
23:W:85:GLU:HA	23:W:88:MET:HG3	2.00	0.42
27:a:276:CYS:HB2	27:a:280:MET:HE2	2.00	0.42
20:t:53:ALA:HB2	20:t:110:MET:HG3	2.02	0.42
34:w:37:PRO:HA	34:w:38:PRO:HD3	1.90	0.42
5:E:33:LEU:HA	5:E:36:LEU:HG	2.01	0.42
5:E:331:ILE:HD13	5:E:367:PHE:HD2	1.85	0.42
13:M:37:ILE:HD11	13:M:193:VAL:HG13	2.01	0.42
17:Q:26:VAL:HG21	18:R:136:TYR:HE2	1.85	0.42
24:X:422:THR:OXT	26:Z:283:ARG:NH2	2.52	0.42
27:a:122:LYS:HD3	27:a:130:VAL:HG13	2.00	0.42
30:d:203:PRO:HG2	30:d:205:LYS:HB3	2.00	0.42
32:f:99:LEU:HA	32:f:102:HIS:HB2	2.01	0.42
9:i:151:ASP:OD1	9:i:155:ASN:N	2.53	0.42
34:z:74:ARG:CA	34:z:74:ARG:HE	2.33	0.42
5:E:173:TYR:HB2	5:E:388:PRO:HB2	2.01	0.42
10:J:31:THR:OG1	10:J:163:ARG:O	2.38	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:W:203:GLN:HE21	23:W:203:GLN:HB3	1.72	0.42
25:Y:32:ARG:HH12	25:Y:61:LEU:HD22	1.84	0.42
26:Z:187:LEU:HD23	26:Z:187:LEU:HA	1.94	0.42
27:a:245:VAL:HG21	27:a:301:LYS:HG2	2.00	0.42
28:b:131:LEU:HD22	28:b:136:VAL:HB	2.00	0.42
30:d:49:ILE:HD12	30:d:52:ARG:HH21	1.85	0.42
7:g:138:MET:HB2	7:g:154:CYS:HB2	2.01	0.42
9:i:197:LEU:HA	9:i:200:THR:HG22	2.02	0.42
11:k:90:ASP:OD1	18:r:69:ARG:NH2	2.45	0.42
16:p:2:SER:OG	16:p:3:ILE:N	2.52	0.42
2:B:293:LYS:HA	2:B:338:ASP:HA	2.02	0.42
4:D:200:ARG:HH22	4:D:302:ASN:HA	1.85	0.42
4:D:212:LYS:NZ	4:D:311:THR:O	2.52	0.42
4:D:300:ASP:OD1	4:D:300:ASP:N	2.51	0.42
7:G:138:MET:SD	7:G:140:LEU:HG	2.60	0.42
18:R:192:VAL:HG11	16:p:205:ASP:HB3	2.00	0.42
19:S:10:GLY:HA3	19:S:42:LYS:HE2	2.00	0.42
22:V:337:LEU:HD22	22:V:367:VAL:HG11	2.02	0.42
24:X:103:THR:HA	24:X:106:GLU:CB	2.44	0.42
26:Z:102:HIS:CD2	26:Z:104:ASN:HB3	2.55	0.42
29:c:36:LEU:HD11	29:c:71:ASP:HA	2.01	0.42
29:c:197:ASN:O	29:c:200:TYR:N	2.52	0.42
1:A:301:GLU:HB2	6:F:254:PRO:HG2	2.02	0.42
1:A:429:TYR:OH	11:K:33:LEU:O	2.38	0.42
2:B:232:LYS:HG2	2:B:353:PHE:HD2	1.84	0.42
4:D:60:TYR:HB2	21:U:603:LEU:HD21	2.01	0.42
4:D:335:LEU:CB	4:D:336:PRO:CD	2.95	0.42
14:N:120:MET:HE3	14:N:120:MET:HB3	1.93	0.42
24:X:254:MET:HE1	24:X:270:LEU:HD13	2.01	0.42
26:Z:9:VAL:HG23	26:Z:48:LEU:HD22	2.00	0.42
26:Z:275:LEU:HD22	26:Z:279:LYS:HE2	2.01	0.42
29:c:206:ASN:OD1	29:c:206:ASN:N	2.51	0.42
30:d:106:LEU:HG	30:d:111:ARG:HB2	2.01	0.42
7:g:58:ASP:OD1	7:g:58:ASP:N	2.49	0.42
7:g:86:ASP:OD1	13:m:120:HIS:NE2	2.37	0.42
13:m:230:ASP:OD1	13:m:230:ASP:N	2.52	0.42
18:r:135:ALA:O	18:r:139:MET:HB2	2.20	0.42
34:z:25:ASN:O	34:z:29:LYS:HG3	2.19	0.42
10:J:146:GLN:NE2	10:J:147:THR:O	2.52	0.42
12:L:115:LYS:NZ	12:L:128:TYR:OH	2.53	0.42
15:O:164:PHE:O	19:s:38:ARG:NH2	2.46	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:14:MET:HG2	16:P:136:PHE:HB3	2.02	0.42
17:Q:18:ASP:N	17:Q:18:ASP:OD1	2.50	0.42
20:T:27:LEU:HD11	20:T:34:ALA:HB1	2.02	0.42
22:V:410:ILE:HG21	22:V:422:ILE:HG13	2.02	0.42
22:V:494:MET:HE1	26:Z:274:ASN:HB3	2.02	0.42
26:Z:97:THR:OG1	26:Z:98:GLY:N	2.53	0.42
27:a:91:ASN:OD1	27:a:92:VAL:N	2.53	0.42
28:b:6:THR:HB	28:b:49:VAL:HG22	2.02	0.42
34:w:5:VAL:HG22	34:w:67:LEU:HB2	2.02	0.42
2:B:122:ILE:HD11	2:B:130:GLU:HB3	2.02	0.42
4:D:336:PRO:O	4:D:337:ASP:C	2.62	0.42
6:F:332:THR:HG21	6:F:338:LEU:HD11	2.02	0.42
23:W:79:GLU:HG3	23:W:82:LEU:HB2	2.01	0.42
15:o:187:ARG:HB3	15:o:188:PRO:HD3	2.02	0.42
16:p:204:MET:HE2	16:p:204:MET:HB2	1.96	0.42
18:r:74:ILE:HG23	18:r:78:ALA:HB3	2.02	0.42
19:s:145:LEU:HD22	19:s:178:VAL:HB	2.02	0.42
20:t:124:TYR:HE1	20:t:139:THR:HG22	1.85	0.42
34:y:44:ILE:HD13	34:y:49:GLN:HA	2.02	0.42
4:D:118:THR:O	29:c:277:LYS:NZ	2.53	0.41
22:V:313:LEU:HD13	22:V:328:VAL:HG11	2.02	0.41
28:b:180:ALA:HB1	28:b:183:LEU:HB2	2.02	0.41
30:d:4:GLN:HB2	30:d:25:ARG:HH22	1.85	0.41
32:f:478:ARG:HH12	32:f:509:LYS:HD2	1.85	0.41
7:g:60:LEU:HD21	13:m:177:GLU:HG3	2.02	0.41
10:j:229:VAL:O	10:j:233:GLU:HG2	2.20	0.41
11:k:41:GLN:NE2	11:k:151:PRO:O	2.53	0.41
15:o:63:LEU:HD23	15:o:63:LEU:HA	1.90	0.41
16:p:47:ASP:OD1	16:p:47:ASP:N	2.53	0.41
18:r:71:LYS:HE3	18:r:71:LYS:HA	2.02	0.41
1:A:377:CYS:HB2	1:A:380:SER:HB3	2.02	0.41
6:F:247:THR:HG21	6:F:278:LYS:HG2	2.02	0.41
7:G:175:SER:OG	7:G:201:CYS:SG	2.75	0.41
10:J:189:LYS:HA	10:J:232:ILE:HD11	2.02	0.41
22:V:476:PHE:HB3	26:Z:260:VAL:HG21	2.03	0.41
29:c:68:ARG:HE	29:c:208:ARG:HH12	1.66	0.41
32:f:258:LYS:HA	32:f:258:LYS:HD3	1.86	0.41
16:p:30:ILE:HG22	16:p:31:GLN:HG2	2.01	0.41
3:C:155:ASP:OD1	3:C:156:LYS:N	2.54	0.41
4:D:156:SER:O	4:D:157:ASP:CB	2.69	0.41
6:F:226:TYR:CZ	6:F:353:GLU:HB3	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:90:LEU:HD21	9:I:114:LEU:HD22	2.02	0.41
11:K:12:VAL:HG12	11:K:23:GLN:HG2	2.03	0.41
21:U:862:LYS:HB3	21:U:862:LYS:HE2	1.93	0.41
22:V:201:ARG:NH2	22:V:241:ARG:O	2.52	0.41
26:Z:67:VAL:HG12	28:b:95:LEU:HD22	2.03	0.41
28:b:56:ASN:N	28:b:83:LYS:O	2.54	0.41
32:f:658:ALA:HB2	32:f:693:ALA:HB1	2.03	0.41
9:i:201:MET:HE3	9:i:201:MET:HB2	1.93	0.41
20:t:92:LEU:HD23	20:t:92:LEU:HA	1.92	0.41
2:B:264:PRO:HB3	2:B:311:GLU:HG2	2.03	0.41
21:U:632:GLN:HE21	21:U:636:VAL:HG11	1.84	0.41
22:V:419:LEU:HD12	22:V:456:GLY:HA2	2.02	0.41
23:W:235:GLN:HG2	23:W:350:ARG:NH2	2.36	0.41
26:Z:45:LYS:HB3	26:Z:47:VAL:HG12	2.02	0.41
27:a:289:ARG:HB2	27:a:333:MET:HB3	2.02	0.41
28:b:109:ILE:HB	28:b:138:VAL:HG22	2.01	0.41
8:h:9:SER:HA	8:h:125:GLY:HA2	2.02	0.41
34:w:6:LYS:O	34:w:69:LEU:N	2.48	0.41
4:D:107:THR:HG22	5:E:77:PRO:HG3	2.01	0.41
23:W:397:VAL:HG11	24:X:341:PRO:HA	2.02	0.41
23:W:408:ARG:HD3	24:X:345:VAL:HG23	2.01	0.41
25:Y:262:SER:HA	25:Y:267:ARG:HB2	2.01	0.41
26:Z:196:HIS:HA	26:Z:199:LYS:HB2	2.02	0.41
30:d:47:GLN:H	30:d:47:GLN:NE2	2.18	0.41
32:f:269:ALA:HB1	32:f:278:VAL:HG22	2.03	0.41
14:n:178:ALA:HB3	14:n:185:GLU:HG2	2.01	0.41
15:o:124:TYR:HE2	15:o:135:MET:HE1	1.85	0.41
15:o:203:ARG:NH1	15:o:205:GLU:OE1	2.42	0.41
34:y:27:LYS:HB3	34:y:38:PRO:HB3	2.02	0.41
1:A:213:LEU:HB3	1:A:340:LYS:HD3	2.03	0.41
2:B:31:THR:HG23	2:B:32:ARG:HG2	2.03	0.41
4:D:57:GLN:O	4:D:61:ILE:HG12	2.20	0.41
5:E:247:THR:O	5:E:249:ALA:N	2.49	0.41
9:I:46:ALA:HB1	9:I:197:LEU:HD11	2.02	0.41
22:V:127:THR:HG22	22:V:194:LYS:HE2	2.01	0.41
11:k:20:ARG:HD3	11:k:20:ARG:HA	1.93	0.41
13:m:35:THR:HA	13:m:166:GLY:HA3	2.02	0.41
13:m:179:LEU:HD21	13:m:192:GLU:HB3	2.02	0.41
17:q:19:ARG:HD3	17:q:177:THR:HG22	2.01	0.41
1:A:206:ILE:HG22	6:F:373:MET:HE3	2.03	0.41
4:D:309:MET:HE3	4:D:327:LEU:HD11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:R:93:MET:HE2	18:R:93:MET:HB3	1.85	0.41
22:V:221:LEU:HB3	22:V:223:LYS:HE3	2.03	0.41
26:Z:259:VAL:HG13	29:c:292:MET:HE1	2.03	0.41
29:c:173:GLU:HG3	29:c:175:ARG:HB2	2.01	0.41
16:p:4:MET:HE3	16:p:4:MET:HB3	1.80	0.41
34:y:17:VAL:HG12	34:y:29:LYS:HE3	2.02	0.41
3:C:49:ARG:HD2	21:U:639:LEU:HD21	2.03	0.41
4:D:159:LYS:HZ3	4:D:160:PRO:HD3	1.86	0.41
5:E:195:PHE:O	5:E:196:LEU:O	2.39	0.41
11:K:32:LYS:NZ	11:K:175:GLU:OE1	2.54	0.41
17:Q:155:ARG:HA	17:Q:158:GLU:HG2	2.01	0.41
26:Z:74:TYR:HE1	29:c:98:MET:HB2	1.85	0.41
8:h:14:SER:HB3	8:h:18:LYS:H	1.85	0.41
12:l:81:ALA:HB2	12:l:130:VAL:HG21	2.02	0.41
17:q:22:ALA:HA	17:q:27:GLN:HA	2.03	0.41
1:A:254:ALA:O	1:A:258:ARG:HG3	2.21	0.41
4:D:163:MET:HE1	4:D:165:ALA:HB3	2.02	0.41
4:D:344:ILE:HG22	4:D:375:ILE:HG21	2.02	0.41
5:E:252:GLU:HA	5:E:255:ARG:HH21	1.85	0.41
6:F:343:LEU:O	6:F:345:SER:N	2.54	0.41
13:M:169:ARG:HE	13:M:169:ARG:HB2	1.75	0.41
13:M:230:ASP:OD1	13:M:231:ILE:N	2.54	0.41
18:R:122:SER:OG	18:R:123:GLY:N	2.54	0.41
20:T:179:ARG:NH1	14:n:27:ALA:O	2.53	0.41
25:Y:91:ALA:HB1	25:Y:100:ILE:HG22	2.03	0.41
26:Z:198:LEU:HD21	27:a:360:VAL:HG13	2.03	0.41
29:c:196:LEU:HD22	29:c:196:LEU:HA	1.73	0.41
29:c:222:LYS:HD3	29:c:222:LYS:HA	1.88	0.41
16:p:159:ASP:OD1	16:p:159:ASP:N	2.54	0.41
19:s:19:ASP:OD1	19:s:19:ASP:N	2.54	0.41
20:t:20:VAL:HG23	20:t:120:SER:HB3	2.03	0.41
20:t:126:ASP:OD1	20:t:130:VAL:N	2.53	0.41
34:y:15:LEU:HD22	34:y:29:LYS:HB3	2.01	0.41
1:A:393:GLY:O	1:A:397:ILE:HG13	2.21	0.41
1:A:394:MET:HE2	2:B:199:GLU:HB3	2.03	0.41
2:B:248:LEU:HD12	2:B:282:VAL:HG22	2.03	0.41
3:C:100:ASP:H	3:C:103:ILE:HD11	1.86	0.41
21:U:530:GLU:HA	21:U:533:VAL:HG22	2.03	0.41
26:Z:39:LEU:H	26:Z:94:TRP:HA	1.86	0.41
27:a:12:GLN:HG3	27:a:22:TRP:CD1	2.56	0.41
27:a:190:VAL:HA	27:a:193:GLN:HB2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:b:25:ARG:HH22	28:b:145:GLU:HB3	1.86	0.41
30:d:11:ARG:HG3	30:d:12:LYS:H	1.86	0.41
9:i:49:ARG:NH1	9:i:209:GLU:O	2.54	0.41
15:o:41:ILE:HG12	15:o:76:VAL:HG22	2.02	0.41
16:p:87:LEU:HA	16:p:90:MET:HG2	2.03	0.41
17:q:19:ARG:HD2	17:q:179:SER:HB3	2.03	0.41
18:r:11:GLY:HA2	18:r:104:TRP:HZ3	1.86	0.41
3:C:18:SER:HA	3:C:22:GLN:HB2	2.03	0.40
4:D:81:ARG:HH12	29:c:152:LYS:C	2.28	0.40
16:P:58:THR:O	17:Q:85:ARG:NH2	2.54	0.40
21:U:836:THR:HG22	32:f:607:LEU:HD21	2.04	0.40
21:U:919:GLU:HG3	21:U:920:ASP:H	1.86	0.40
24:X:157:LEU:HD23	24:X:157:LEU:HA	1.91	0.40
30:d:179:ALA:HA	30:d:182:ILE:HG22	2.03	0.40
1:A:68:SER:HB3	3:C:80:MET:HE1	2.03	0.40
1:A:103:ASN:HA	1:A:136:GLU:HG2	2.02	0.40
5:E:198:VAL:HB	5:E:232:MET:HA	2.03	0.40
6:F:224:LEU:HB3	6:F:348:LEU:HG	2.02	0.40
18:R:46:ALA:HB3	18:R:98:GLY:HA3	2.04	0.40
21:U:363:SER:OG	21:U:365:CYS:SG	2.70	0.40
21:U:835:ILE:HB	21:U:838:LYS:HE3	2.03	0.40
24:X:55:SER:HA	24:X:95:LEU:HD23	2.04	0.40
24:X:368:MET:HG3	24:X:374:PHE:HB3	2.03	0.40
28:b:8:VAL:HA	28:b:110:ILE:HG13	2.03	0.40
32:f:384:ALA:HA	32:f:419:LEU:HB3	2.03	0.40
1:A:346:PRO:HB3	1:A:350:GLY:HA3	2.03	0.40
4:D:414:HIS:O	4:D:416:PHE:N	2.53	0.40
9:I:8:ARG:H	9:I:8:ARG:HG3	1.69	0.40
11:K:50:VAL:HB	11:K:66:LYS:HD3	2.04	0.40
12:L:72:ILE:HG22	12:L:134:ILE:HG12	2.03	0.40
22:V:465:ASP:OD1	22:V:466:ILE:N	2.50	0.40
24:X:356:LEU:HD12	24:X:356:LEU:HA	1.89	0.40
25:Y:283:LYS:HD2	25:Y:288:PHE:CE1	2.57	0.40
26:Z:72:HIS:NE2	26:Z:111:LEU:HD21	2.37	0.40
29:c:162:LEU:HD13	29:c:200:TYR:CD1	2.55	0.40
9:i:218:ARG:NH1	9:i:223:THR:OG1	2.50	0.40
15:o:216:ILE:HD11	16:p:194:LYS:HD2	2.03	0.40
3:C:394:ASP:OD1	3:C:394:ASP:N	2.54	0.40
18:R:37:ILE:HG23	18:R:60:ALA:HB2	2.04	0.40
23:W:194:LEU:HG	23:W:202:THR:HG21	2.04	0.40
23:W:349:LYS:HE3	23:W:349:LYS:HB3	1.96	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:Z:74:TYR:CE1	29:c:98:MET:HB2	2.56	0.40
27:a:78:GLU:O	27:a:82:HIS:ND1	2.48	0.40
32:f:378:ASN:OD1	32:f:382:ASN:ND2	2.54	0.40
16:p:159:ASP:OD1	16:p:162:HIS:ND1	2.55	0.40
1:A:113:ILE:HD11	1:A:149:ILE:HD11	2.03	0.40
2:B:217:LYS:HE3	2:B:217:LYS:HB2	1.85	0.40
4:D:133:HIS:HB3	4:D:137:ASN:H	1.86	0.40
22:V:228:ARG:HH21	22:V:258:TYR:HA	1.87	0.40
23:W:361:HIS:HA	23:W:364:ARG:HE	1.87	0.40
24:X:400:ALA:O	24:X:403:THR:OG1	2.37	0.40
26:Z:31:ASN:HA	26:Z:33:LYS:HZ2	1.85	0.40
32:f:333:LEU:HD12	32:f:333:LEU:HA	1.94	0.40
34:y:45:PHE:HB3	34:y:50:LEU:HD21	2.03	0.40

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	A	411/433 (95%)	377 (92%)	34 (8%)	0	100	100
2	B	409/440 (93%)	367 (90%)	42 (10%)	0	100	100
3	C	394/398 (99%)	357 (91%)	35 (9%)	2 (0%)	24	56
4	D	378/418 (90%)	322 (85%)	51 (14%)	5 (1%)	9	38
5	E	387/403 (96%)	329 (85%)	57 (15%)	1 (0%)	36	65
6	F	391/439 (89%)	352 (90%)	37 (10%)	2 (0%)	24	56
7	G	238/246 (97%)	222 (93%)	14 (6%)	2 (1%)	16	48
7	g	242/246 (98%)	229 (95%)	13 (5%)	0	100	100
8	H	230/234 (98%)	218 (95%)	12 (5%)	0	100	100
8	h	230/234 (98%)	219 (95%)	11 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	I	246/261 (94%)	234 (95%)	12 (5%)	0	100	100
9	i	248/261 (95%)	242 (98%)	6 (2%)	0	100	100
10	J	237/248 (96%)	227 (96%)	10 (4%)	0	100	100
10	j	237/248 (96%)	226 (95%)	10 (4%)	1 (0%)	30	60
11	K	236/241 (98%)	229 (97%)	7 (3%)	0	100	100
11	k	232/241 (96%)	224 (97%)	8 (3%)	0	100	100
12	L	238/263 (90%)	228 (96%)	10 (4%)	0	100	100
12	l	236/263 (90%)	228 (97%)	8 (3%)	0	100	100
13	M	241/255 (94%)	230 (95%)	10 (4%)	1 (0%)	30	60
13	m	238/255 (93%)	231 (97%)	7 (3%)	0	100	100
14	N	201/239 (84%)	195 (97%)	6 (3%)	0	100	100
14	n	200/239 (84%)	195 (98%)	5 (2%)	0	100	100
15	O	218/277 (79%)	211 (97%)	7 (3%)	0	100	100
15	o	218/277 (79%)	211 (97%)	7 (3%)	0	100	100
16	P	202/205 (98%)	195 (96%)	7 (4%)	0	100	100
16	p	202/205 (98%)	194 (96%)	8 (4%)	0	100	100
17	Q	198/201 (98%)	193 (98%)	5 (2%)	0	100	100
17	q	197/201 (98%)	191 (97%)	6 (3%)	0	100	100
18	R	199/263 (76%)	192 (96%)	7 (4%)	0	100	100
18	r	199/263 (76%)	193 (97%)	6 (3%)	0	100	100
19	S	211/241 (88%)	203 (96%)	8 (4%)	0	100	100
19	s	211/241 (88%)	202 (96%)	9 (4%)	0	100	100
20	T	214/264 (81%)	209 (98%)	5 (2%)	0	100	100
20	t	214/264 (81%)	207 (97%)	7 (3%)	0	100	100
21	U	874/953 (92%)	822 (94%)	52 (6%)	0	100	100
22	V	442/534 (83%)	427 (97%)	15 (3%)	0	100	100
23	W	439/456 (96%)	431 (98%)	8 (2%)	0	100	100
24	X	420/422 (100%)	403 (96%)	14 (3%)	3 (1%)	18	50
25	Y	387/389 (100%)	368 (95%)	19 (5%)	0	100	100
26	Z	284/324 (88%)	253 (89%)	29 (10%)	2 (1%)	18	50
27	a	371/376 (99%)	337 (91%)	29 (8%)	5 (1%)	9	38

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	b	189/377 (50%)	170 (90%)	19 (10%)	0	100	100
29	c	285/310 (92%)	242 (85%)	35 (12%)	8 (3%)	4	27
30	d	255/350 (73%)	217 (85%)	38 (15%)	0	100	100
31	e	48/70 (69%)	39 (81%)	9 (19%)	0	100	100
32	f	840/908 (92%)	819 (98%)	21 (2%)	0	100	100
34	w	74/76 (97%)	72 (97%)	2 (3%)	0	100	100
34	x	74/76 (97%)	73 (99%)	1 (1%)	0	100	100
34	y	74/76 (97%)	73 (99%)	1 (1%)	0	100	100
34	z	74/76 (97%)	64 (86%)	9 (12%)	1 (1%)	9	37
All	All	13713/15180 (90%)	12892 (94%)	788 (6%)	33 (0%)	44	72

All (33) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	D	159	LYS
4	D	335	LEU
5	E	196	LEU
7	G	19	GLU
24	X	318	ILE
26	Z	145	HIS
27	a	343	LEU
27	a	344	GLN
29	c	196	LEU
29	c	197	ASN
29	c	202	SER
29	c	280	PRO
29	c	286	GLU
4	D	160	PRO
6	F	326	VAL
27	a	345	GLN
10	j	50	VAL
3	C	90	HIS
4	D	157	ASP
4	D	336	PRO
27	a	69	HIS
27	a	342	ASP
29	c	200	TYR
34	z	35	GLY
13	M	34	SER

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Mol	Chain	Res	Type
26	Z	146	ASP
29	c	285	GLU
24	X	106	GLU
3	C	91	PRO
6	F	87	PRO
29	c	233	ASP
7	G	20	GLY
24	X	107	VAL

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	348/372 (94%)	346 (99%)	2 (1%)	78	79
2	B	357/385 (93%)	356 (100%)	1 (0%)	86	83
3	C	340/346 (98%)	337 (99%)	3 (1%)	70	75
4	D	333/366 (91%)	332 (100%)	1 (0%)	86	83
5	E	341/353 (97%)	341 (100%)	0	100	100
6	F	340/379 (90%)	336 (99%)	4 (1%)	63	72
7	G	202/210 (96%)	201 (100%)	1 (0%)	81	80
7	g	201/210 (96%)	201 (100%)	0	100	100
8	H	187/191 (98%)	187 (100%)	0	100	100
8	h	188/191 (98%)	186 (99%)	2 (1%)	65	73
9	I	202/221 (91%)	200 (99%)	2 (1%)	68	74
9	i	206/221 (93%)	206 (100%)	0	100	100
10	J	197/211 (93%)	197 (100%)	0	100	100
10	j	196/211 (93%)	196 (100%)	0	100	100
11	K	197/203 (97%)	197 (100%)	0	100	100
11	k	195/203 (96%)	195 (100%)	0	100	100
12	L	202/224 (90%)	202 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	l	201/224 (90%)	199 (99%)	2 (1%)	68	74
13	M	199/212 (94%)	198 (100%)	1 (0%)	81	80
13	m	198/212 (93%)	198 (100%)	0	100	100
14	N	158/181 (87%)	158 (100%)	0	100	100
14	n	156/181 (86%)	156 (100%)	0	100	100
15	O	178/228 (78%)	178 (100%)	0	100	100
15	o	181/228 (79%)	180 (99%)	1 (1%)	78	79
16	P	172/174 (99%)	172 (100%)	0	100	100
16	p	173/174 (99%)	173 (100%)	0	100	100
17	Q	169/171 (99%)	167 (99%)	2 (1%)	63	72
17	q	166/171 (97%)	166 (100%)	0	100	100
18	R	156/202 (77%)	156 (100%)	0	100	100
18	r	154/202 (76%)	154 (100%)	0	100	100
19	S	175/199 (88%)	175 (100%)	0	100	100
19	s	177/199 (89%)	177 (100%)	0	100	100
20	T	178/215 (83%)	178 (100%)	0	100	100
20	t	179/215 (83%)	179 (100%)	0	100	100
21	U	752/816 (92%)	752 (100%)	0	100	100
22	V	390/460 (85%)	390 (100%)	0	100	100
23	W	406/416 (98%)	405 (100%)	1 (0%)	87	86
24	X	362/362 (100%)	361 (100%)	1 (0%)	86	83
25	Y	344/344 (100%)	344 (100%)	0	100	100
26	Z	257/295 (87%)	257 (100%)	0	100	100
27	a	333/336 (99%)	333 (100%)	0	100	100
28	b	167/312 (54%)	167 (100%)	0	100	100
29	c	252/268 (94%)	247 (98%)	5 (2%)	48	64
30	d	231/294 (79%)	229 (99%)	2 (1%)	70	75
31	e	44/63 (70%)	44 (100%)	0	100	100
32	f	711/763 (93%)	711 (100%)	0	100	100
34	w	68/68 (100%)	68 (100%)	0	100	100
34	x	68/68 (100%)	68 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
34	y	68/68 (100%)	67 (98%)	1 (2%)	57	68
34	z	68/68 (100%)	65 (96%)	3 (4%)	25	50
All	All	11723/12886 (91%)	11688 (100%)	35 (0%)	84	83

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	51	ASP
1	A	403	ILE
2	B	125	THR
3	C	89	VAL
3	C	109	THR
3	C	210	THR
4	D	159	LYS
6	F	85	THR
6	F	86	LEU
6	F	326	VAL
6	F	416	THR
7	G	21	ARG
9	I	52	ILE
9	I	54	LYS
13	M	34	SER
17	Q	46[A]	CYS
17	Q	46[B]	CYS
23	W	316	ARG
24	X	319	ILE
29	c	196	LEU
29	c	197	ASN
29	c	200	TYR
29	c	203	ILE
29	c	281	LYS
30	d	47	GLN
30	d	135	HIS
8	h	3	GLU
8	h	4	ARG
12	l	117	GLN
12	l	148	CYS
15	o	30	ASN
34	y	63	LYS
34	z	36	ILE
34	z	71	LEU

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Mol	Chain	Res	Type
34	z	74	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (127) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	54	GLN
1	A	94	GLN
1	A	203	ASN
1	A	247	GLN
1	A	305	GLN
2	B	81	ASN
2	B	277	HIS
3	C	50	ASN
3	C	67	GLN
3	C	90	HIS
3	C	118	ASN
4	D	65	GLN
4	D	257	ASN
4	D	301	GLN
4	D	412	GLN
5	E	271	HIS
6	F	76	ASN
6	F	243	GLN
6	F	316	GLN
6	F	358	ASN
7	G	24	GLN
7	G	68	HIS
7	G	75	ASN
7	G	92	GLN
8	H	88	HIS
8	H	95	GLN
8	H	102	GLN
9	I	53	HIS
9	I	102	GLN
9	I	123	GLN
10	J	15	HIS
10	J	92	GLN
10	J	175	ASN
10	J	239	ASN
11	K	98	ASN
12	L	31	GLN
14	N	158	ASN

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Mol	Chain	Res	Type
15	O	66	HIS
15	O	91	GLN
16	P	169	GLN
17	Q	8	GLN
17	Q	55	GLN
17	Q	168	GLN
18	R	62	GLN
21	U	149	GLN
21	U	171	ASN
21	U	525	ASN
21	U	596	ASN
21	U	718	ASN
21	U	734	GLN
21	U	768	GLN
22	V	81	GLN
22	V	487	HIS
22	V	488	ASN
23	W	107	GLN
23	W	203	GLN
23	W	362	ASN
23	W	426	ASN
23	W	454	ASN
24	X	44	GLN
24	X	207	GLN
24	X	213	GLN
24	X	292	GLN
24	X	380	GLN
24	X	405	GLN
24	X	416	ASN
25	Y	160	ASN
25	Y	365	GLN
25	Y	378	ASN
26	Z	7	GLN
26	Z	12	HIS
26	Z	109	ASN
26	Z	189	GLN
26	Z	193	ASN
26	Z	243	GLN
26	Z	278	ASN
27	a	129	GLN
27	a	249	GLN
28	b	169	HIS

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Mol	Chain	Res	Type
29	c	149	GLN
29	c	183	HIS
29	c	240	HIS
30	d	46	GLN
30	d	221	ASN
31	e	37	HIS
32	f	156	HIS
32	f	245	ASN
32	f	371	ASN
32	f	387	GLN
32	f	405	HIS
32	f	650	GLN
32	f	752	HIS
32	f	876	HIS
7	g	68	HIS
7	g	75	ASN
7	g	128	ASN
8	h	21	GLN
8	h	71	HIS
9	i	155	ASN
9	i	230	GLN
10	j	18	GLN
10	j	175	ASN
10	j	205	ASN
11	k	23	GLN
11	k	204	GLN
12	l	59	HIS
12	l	146	GLN
14	n	66	HIS
14	n	77	HIS
14	n	106	GLN
15	o	35	HIS
16	p	81	GLN
16	p	169	GLN
16	p	173	ASN
17	q	32	HIS
17	q	82	ASN
18	r	62	GLN
18	r	162	GLN
19	s	108	ASN
19	s	151	ASN
19	s	159	GLN

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Mol	Chain	Res	Type
20	t	2	GLN
34	x	41	GLN
34	y	41	GLN
34	y	60	ASN
34	z	41	GLN
34	z	60	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	$\#\|Z\| > 2$
35	ATP	C	501	36	29,33,33	0.28	0	44,52,52	0.50	1 (2%)
37	ADP	D	502	36	27,29,29	1.37	4 (14%)	42,45,45	1.98	10 (23%)
35	ATP	A	501	36	29,33,33	0.28	0	44,52,52	0.47	1 (2%)
35	ATP	B	501	36	29,33,33	0.28	0	44,52,52	0.47	1 (2%)
35	ATP	F	501	36	29,33,33	0.28	0	44,52,52	0.48	1 (2%)

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
35	ATP	C	501	36	-	6/22/38/38	0/3/3/3
37	ADP	D	502	36	-	6/16/32/32	0/3/3/3
35	ATP	A	501	36	-	5/22/38/38	0/3/3/3
35	ATP	B	501	36	-	2/22/38/38	0/3/3/3
35	ATP	F	501	36	-	4/22/38/38	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	D	502	ADP	C5-C4	4.61	1.47	1.39
37	D	502	ADP	C5-C6	2.62	1.48	1.41
37	D	502	ADP	C8-N7	2.35	1.36	1.31
37	D	502	ADP	C5-N7	-2.23	1.34	1.39

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
37	D	502	ADP	C5-C4-N3	-6.25	118.60	126.75
37	D	502	ADP	N3-C4-N9	4.95	135.24	127.08
37	D	502	ADP	C2-N3-C4	3.78	120.68	111.75
37	D	502	ADP	PA-O3A-PB	-3.49	120.87	132.83
37	D	502	ADP	C4-C5-N7	-3.21	106.71	110.62
37	D	502	ADP	N3-C2-N1	-2.96	123.97	128.60
37	D	502	ADP	C5-N7-C8	2.72	107.38	103.51
37	D	502	ADP	C3'-C2'-C1'	2.66	106.49	101.43
37	D	502	ADP	C4-N9-C8	2.57	108.52	105.73
35	C	501	ATP	PB-O3B-PG	2.03	139.79	132.83
37	D	502	ADP	C6-C5-N7	2.03	135.80	132.02
35	F	501	ATP	PB-O3B-PG	2.02	139.77	132.83
35	B	501	ATP	PB-O3B-PG	2.02	139.75	132.83
35	A	501	ATP	PB-O3B-PG	2.01	139.73	132.83

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
35	A	501	ATP	PB-O3B-PG-O3G

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Mol	Chain	Res	Type	Atoms
35	B	501	ATP	C5'-O5'-PA-O2A
35	B	501	ATP	C5'-O5'-PA-O3A
35	C	501	ATP	PB-O3B-PG-O2G
35	C	501	ATP	C5'-O5'-PA-O1A
35	C	501	ATP	C5'-O5'-PA-O2A
35	C	501	ATP	C5'-O5'-PA-O3A
35	F	501	ATP	PB-O3B-PG-O2G
37	D	502	ADP	PA-O3A-PB-O2B
37	D	502	ADP	C5'-O5'-PA-O1A
37	D	502	ADP	O4'-C4'-C5'-O5'
35	F	501	ATP	O4'-C4'-C5'-O5'
35	F	501	ATP	C3'-C4'-C5'-O5'
37	D	502	ADP	C3'-C4'-C5'-O5'
35	A	501	ATP	C3'-C4'-C5'-O5'
35	A	501	ATP	O4'-C4'-C5'-O5'
35	F	501	ATP	PB-O3B-PG-O1G
35	A	501	ATP	PB-O3B-PG-O1G
35	A	501	ATP	PB-O3B-PG-O2G
37	D	502	ADP	C5'-O5'-PA-O3A
35	C	501	ATP	PG-O3B-PB-O1B
35	C	501	ATP	PG-O3B-PB-O2B
37	D	502	ADP	C5'-O5'-PA-O2A

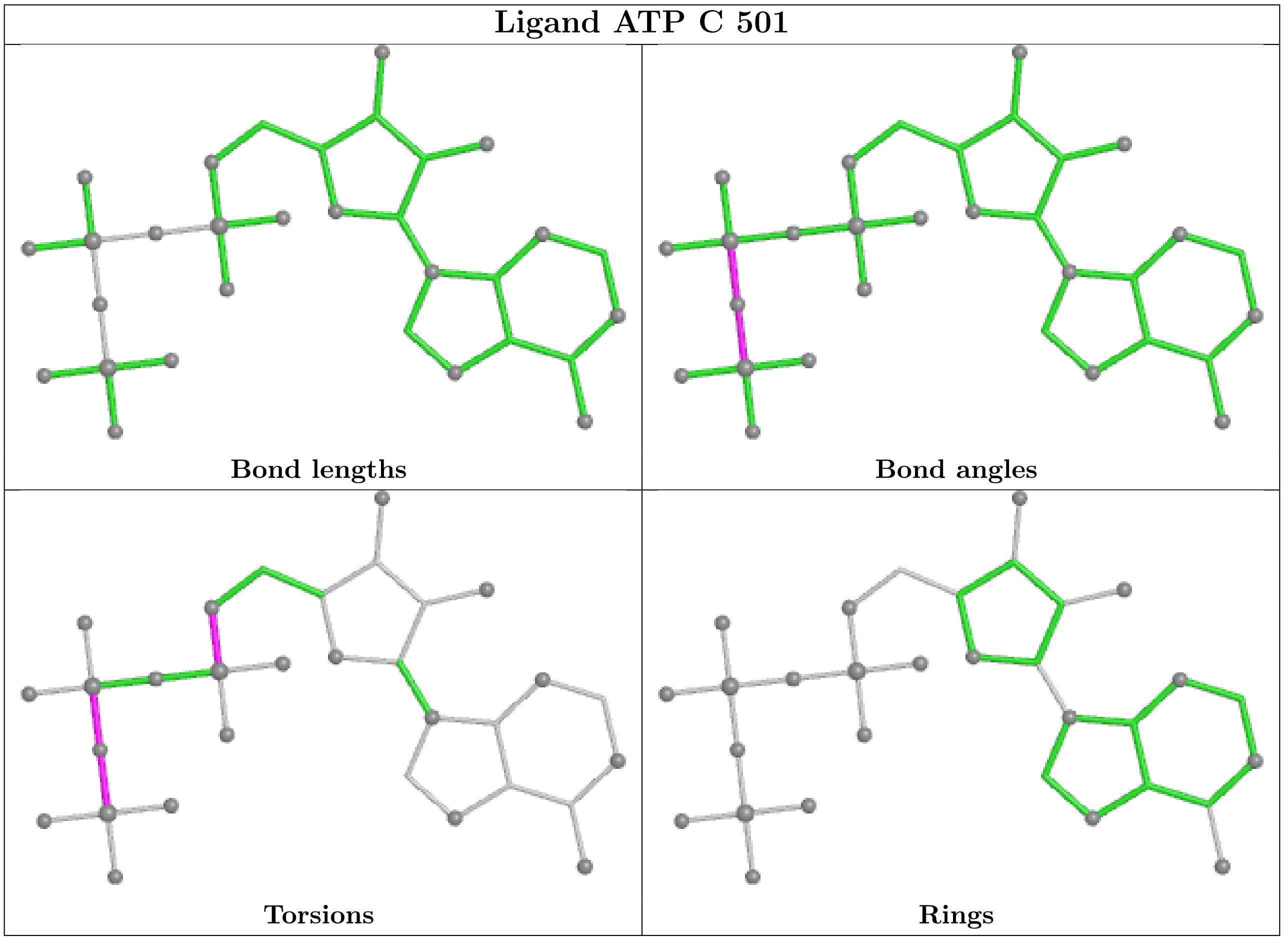
There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
35	C	501	ATP	1	0
35	B	501	ATP	2	0
35	F	501	ATP	2	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 C 501



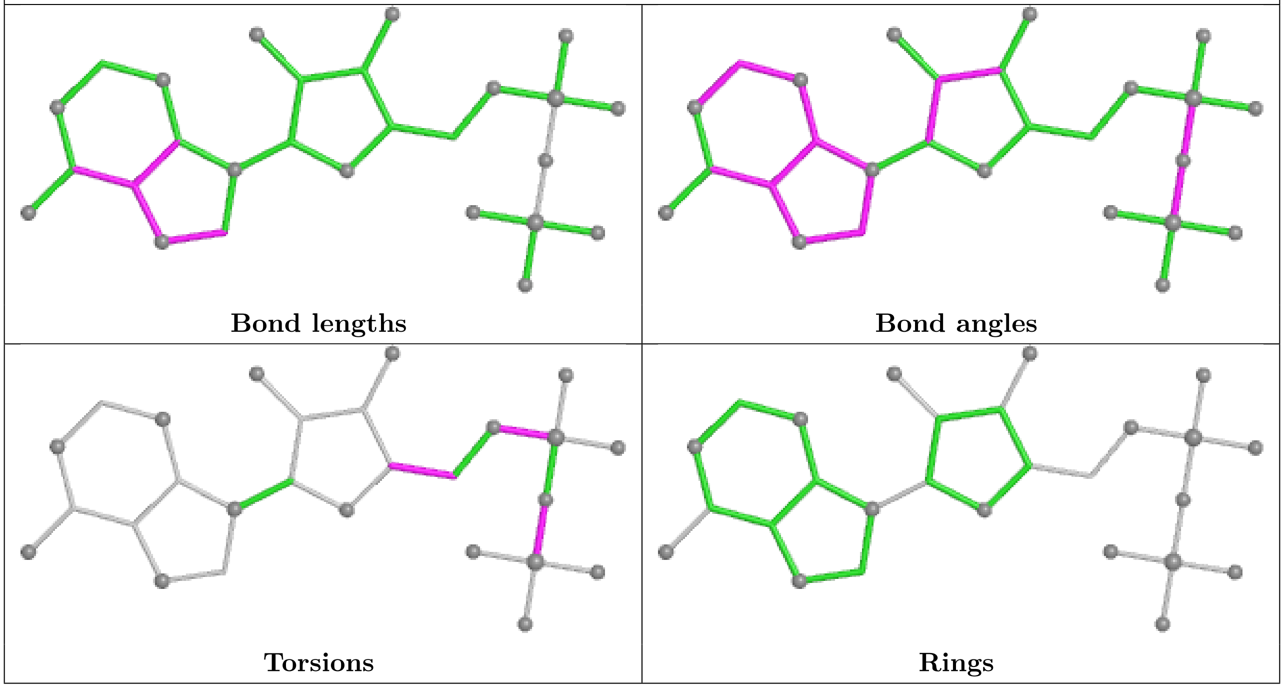
Bond lengths

Bond angles

Torsions

Rings

Ligand ADP D 502



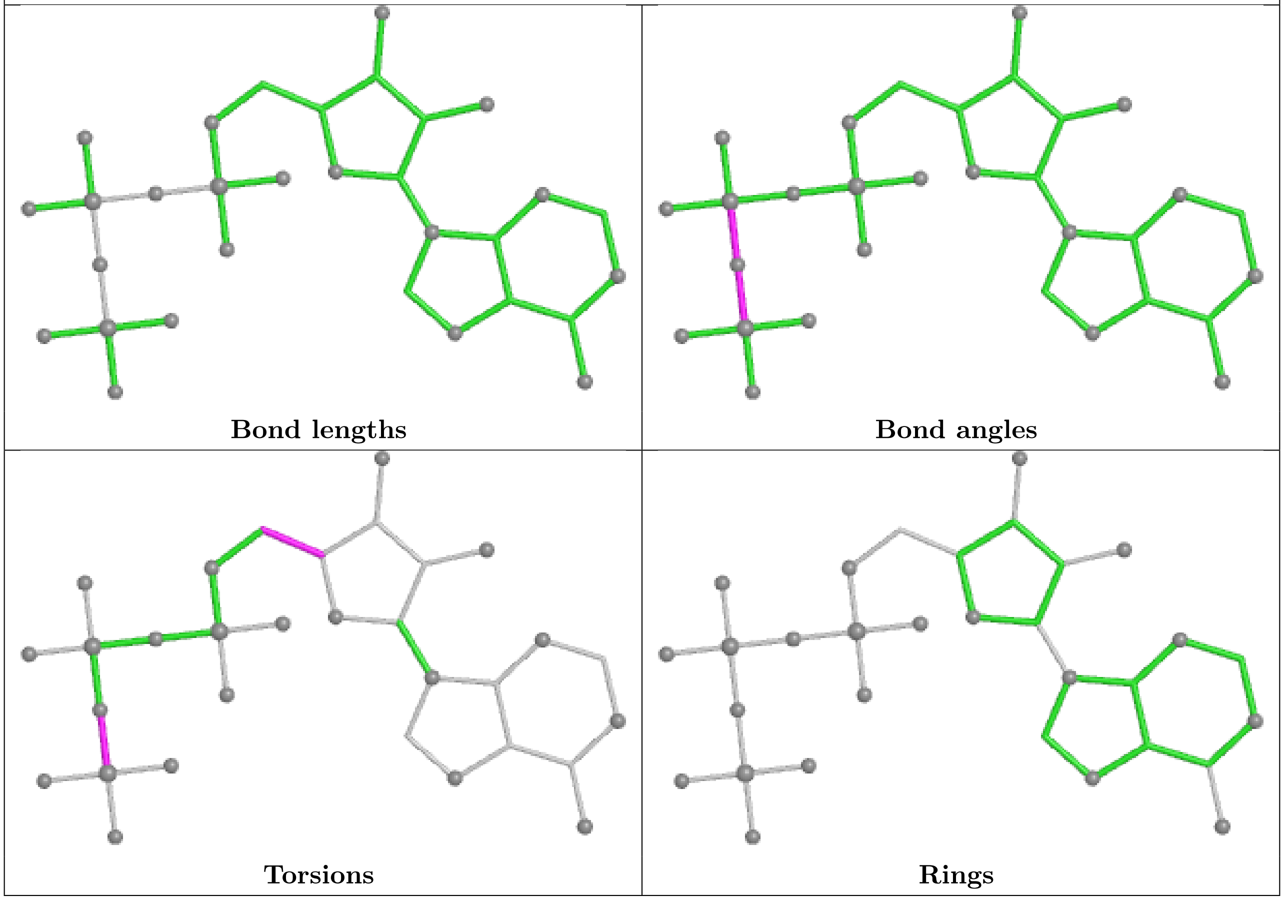
Bond lengths

Bond angles

Torsions

Rings

Ligand ATP A 501



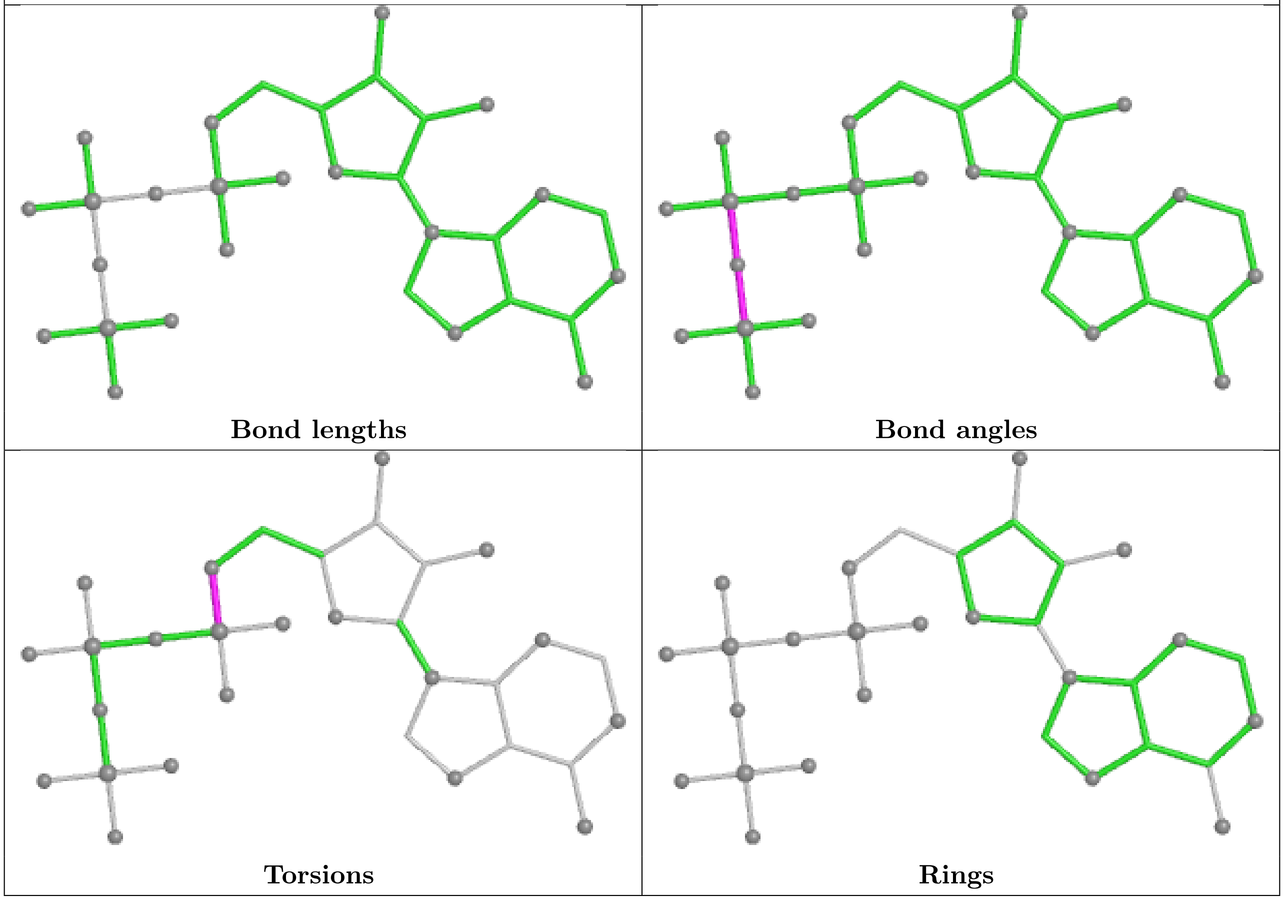
Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B 501

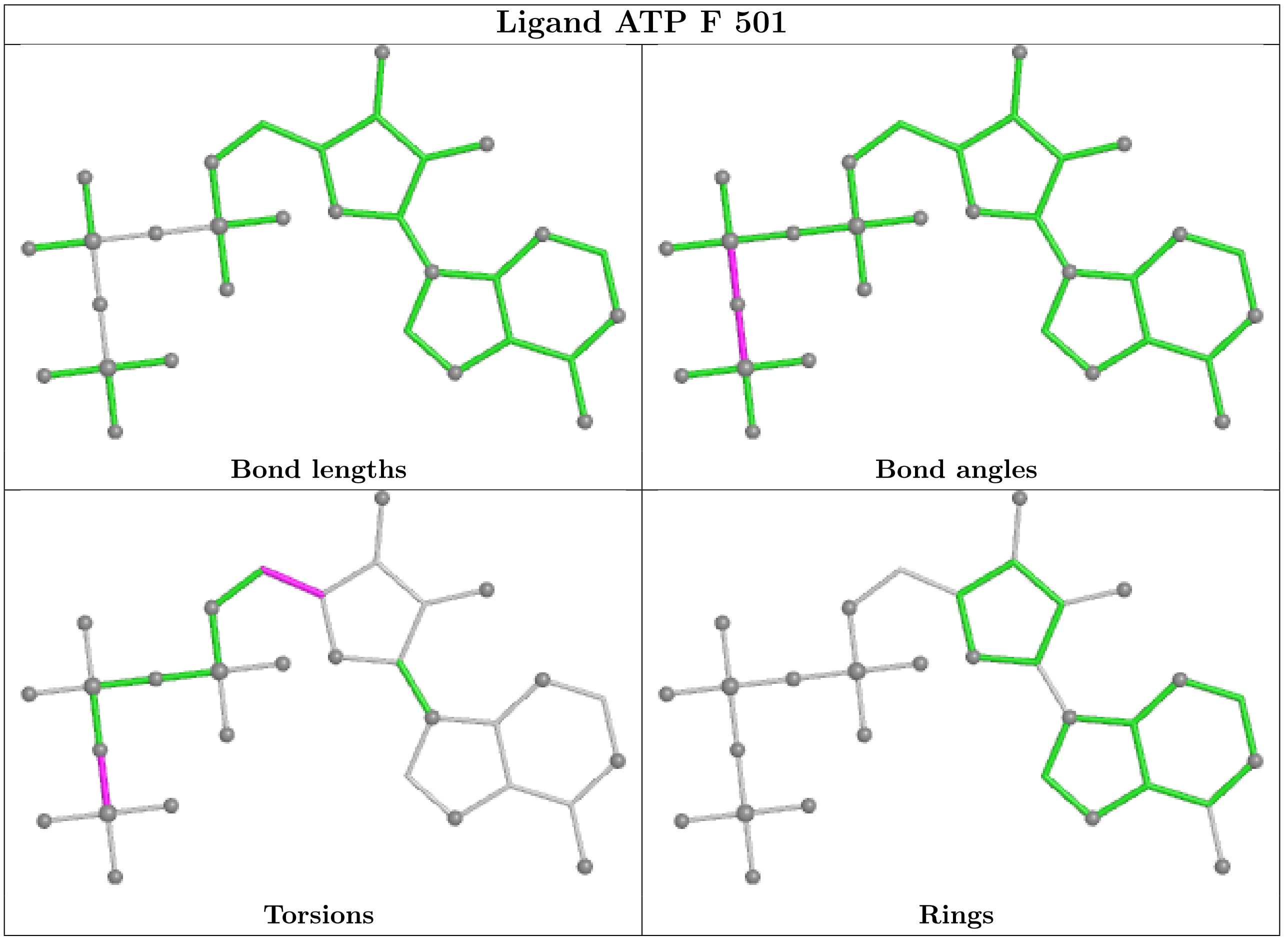


Bond lengths

Bond angles

Torsions

Rings



Ligand ATP F 501

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.

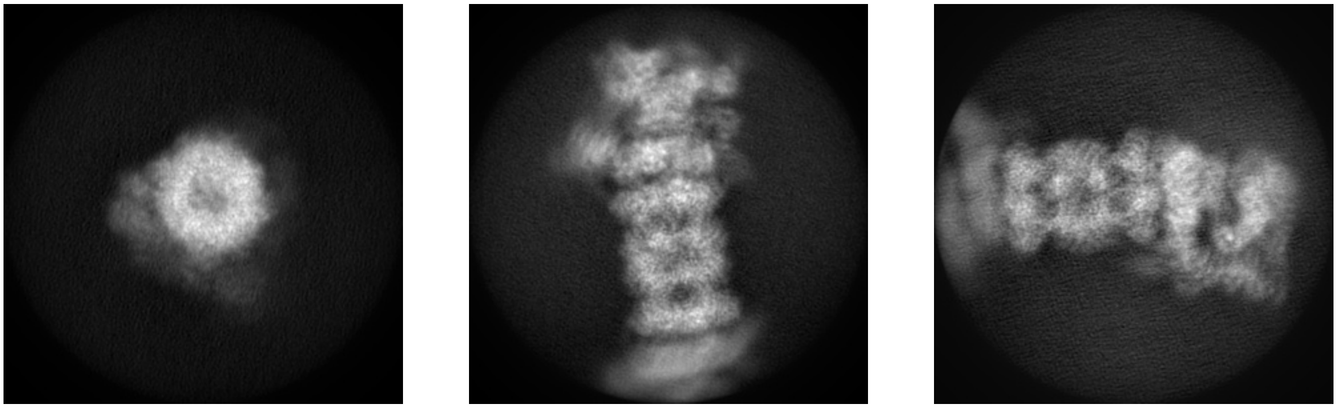
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-62080. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

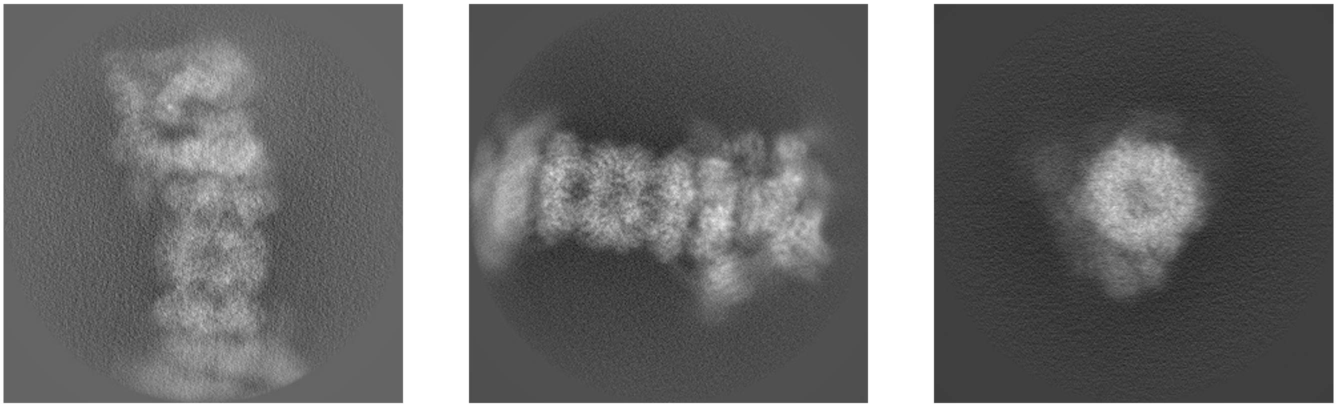
6.1 Orthogonal projections ⓘ

6.1.1 Primary map



X Y Z

6.1.2 Raw map

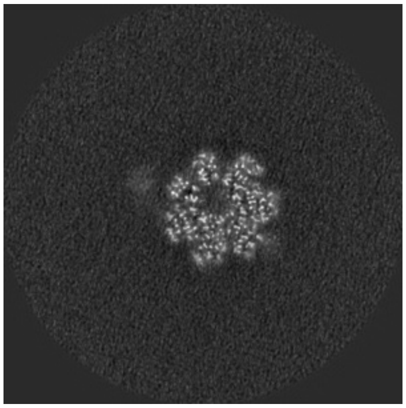


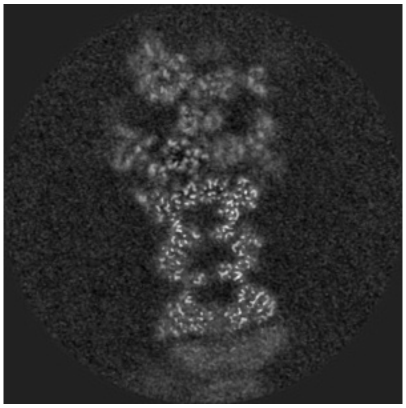
X Y Z

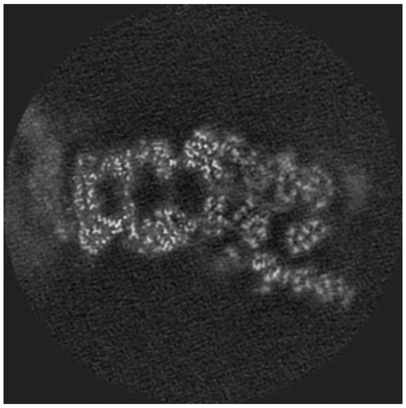
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

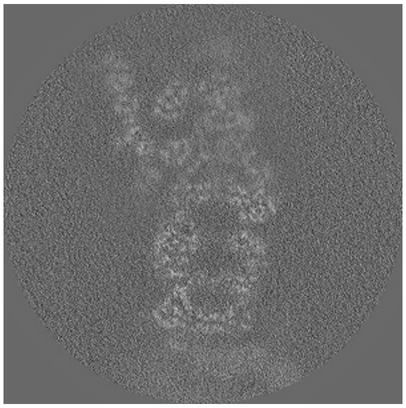
6.2.1 Primary map

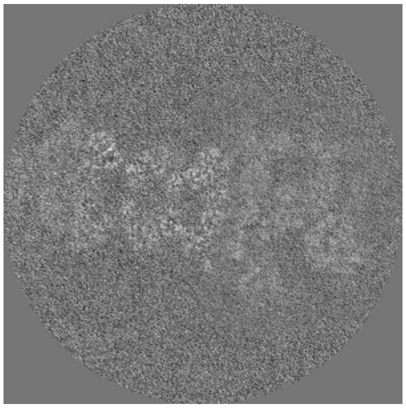

X Index: 300

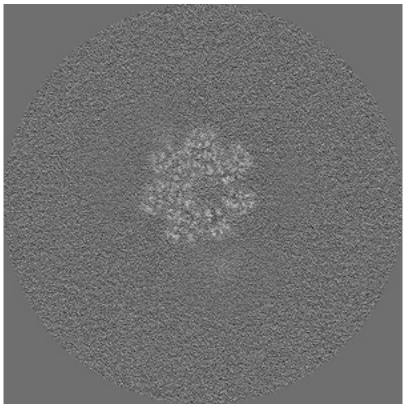

Y Index: 300


Z Index: 300

6.2.2 Raw map


X Index: 300

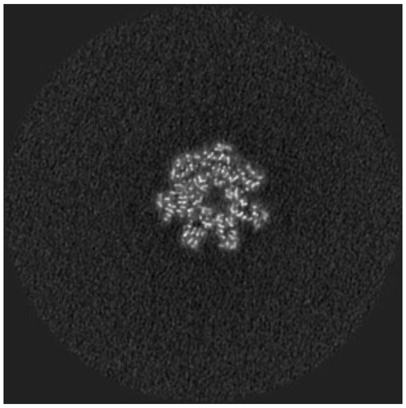

Y Index: 300

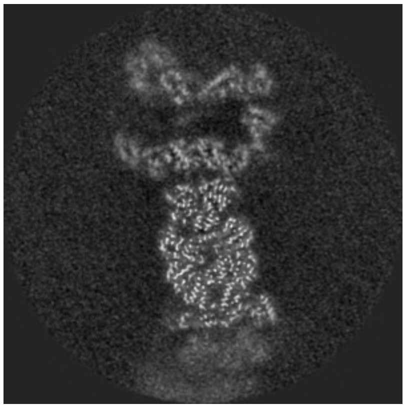

Z Index: 300

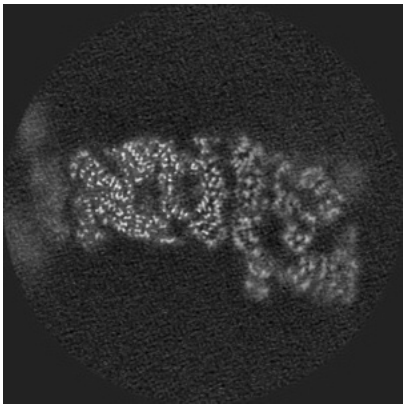
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

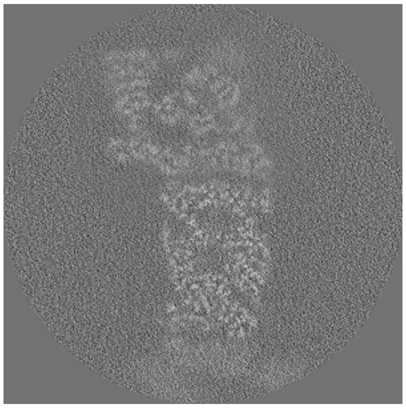
6.3.1 Primary map

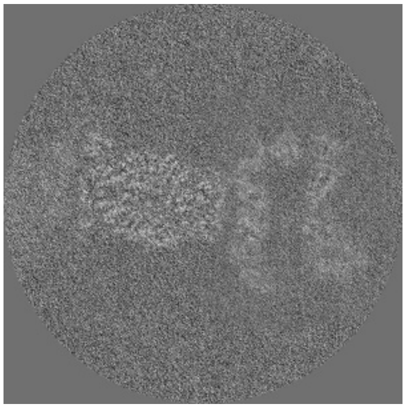

X Index: 251

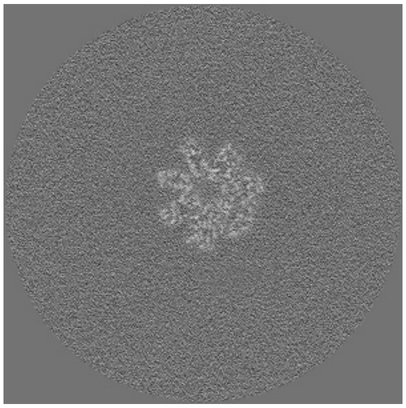

Y Index: 274


Z Index: 276

6.3.2 Raw map


X Index: 278

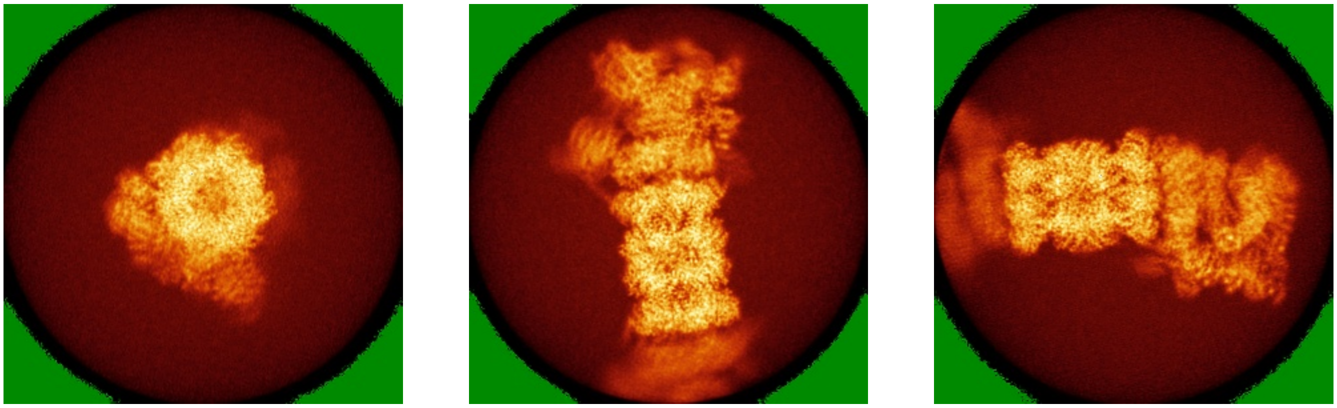

Y Index: 275


Z Index: 251

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

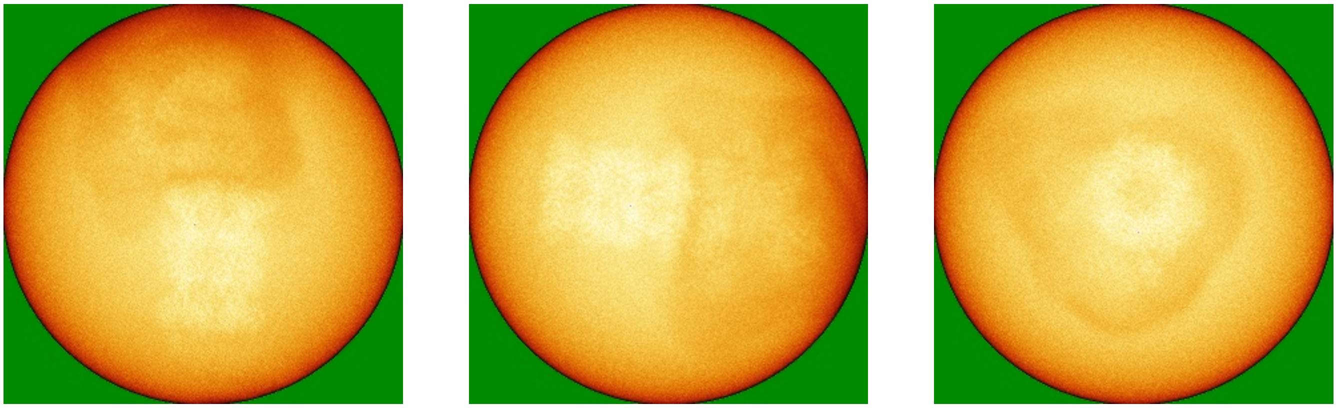
6.4 Orthogonal standard-deviation projections (False-color)

6.4.1 Primary map



X Y Z

6.4.2 Raw map

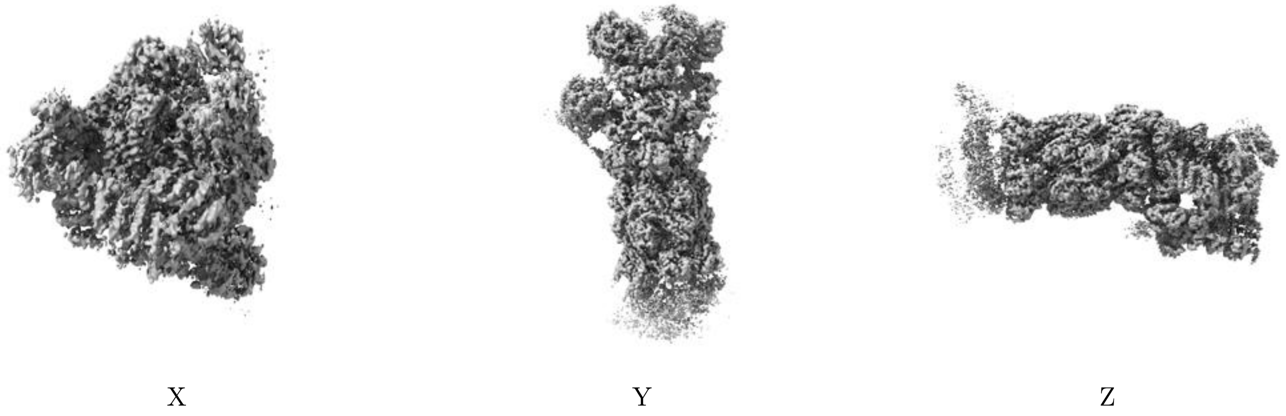


X Y Z

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

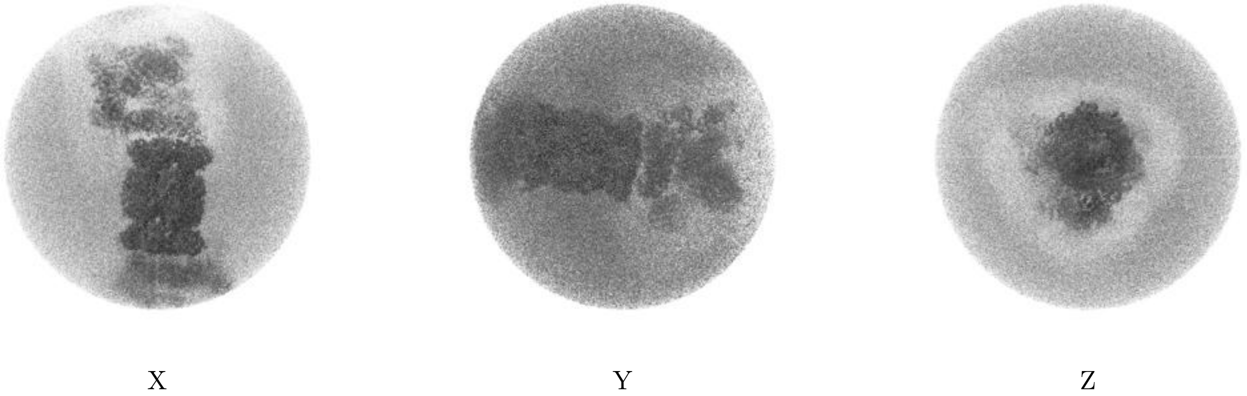
6.5 Orthogonal surface views

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.00617. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

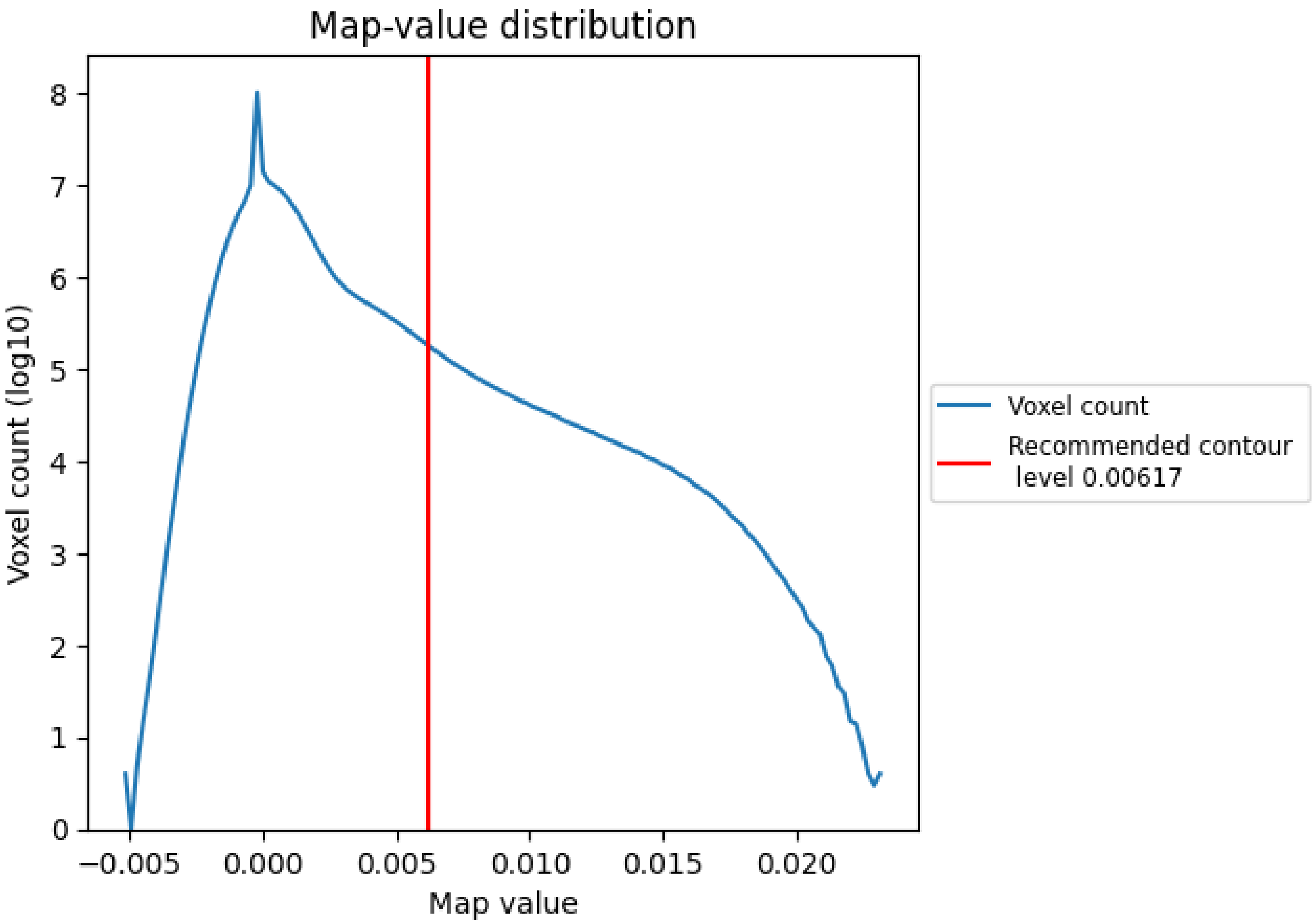
6.6 Mask visualisation

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

7 Map analysis ⓘ

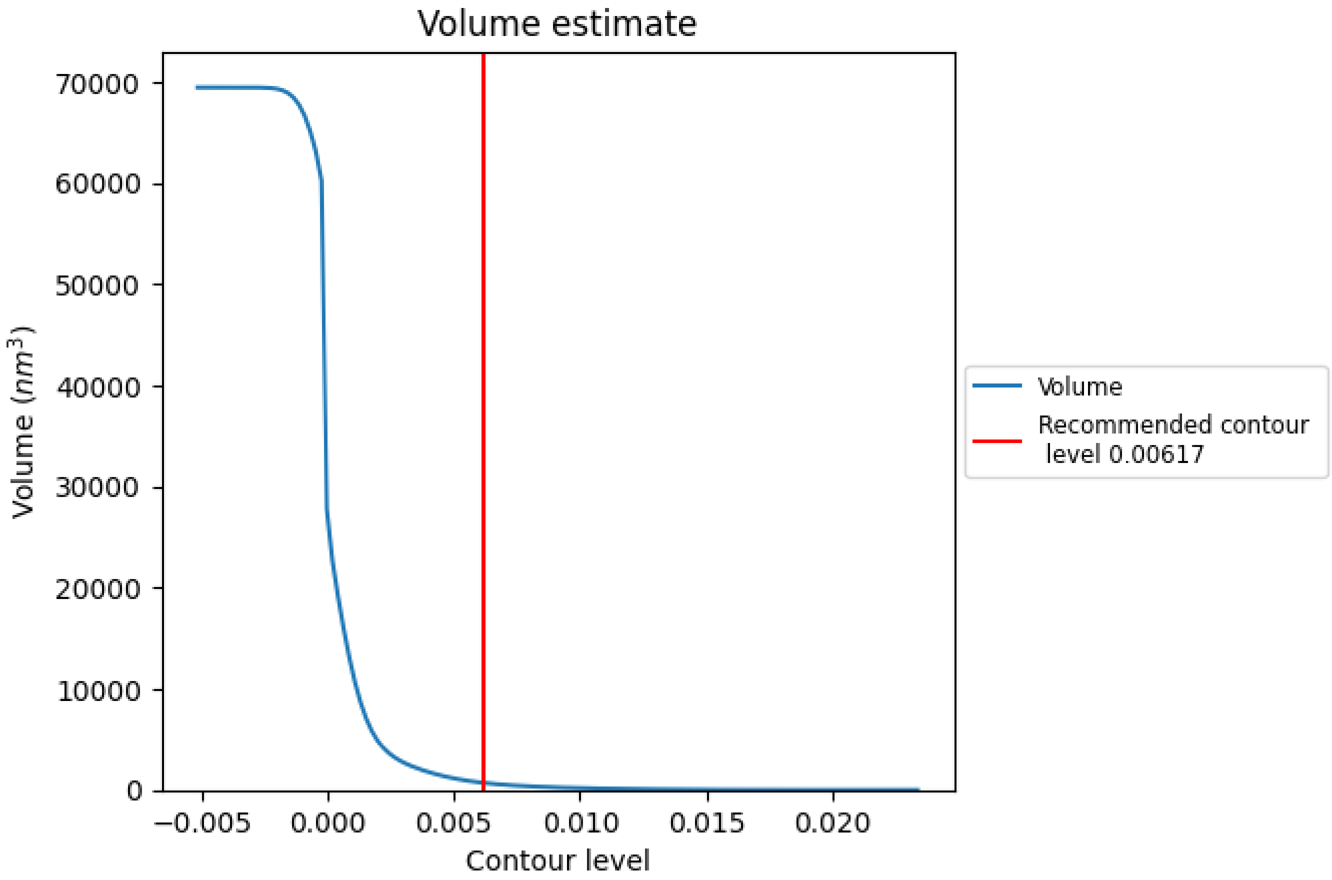
This section contains the results of statistical analysis of the map.

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.

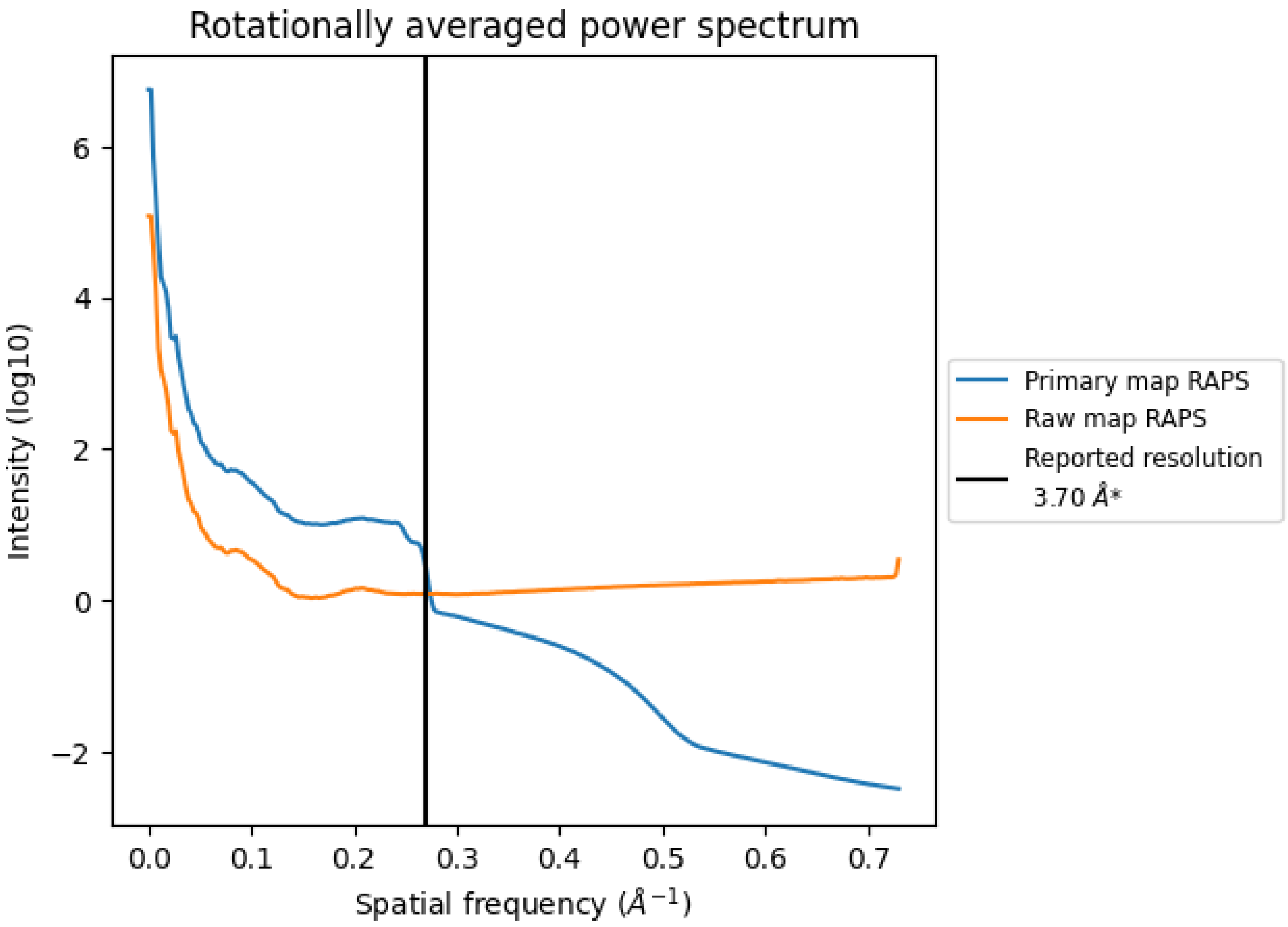
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 698 nm^3; this corresponds to an approximate mass of 631 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

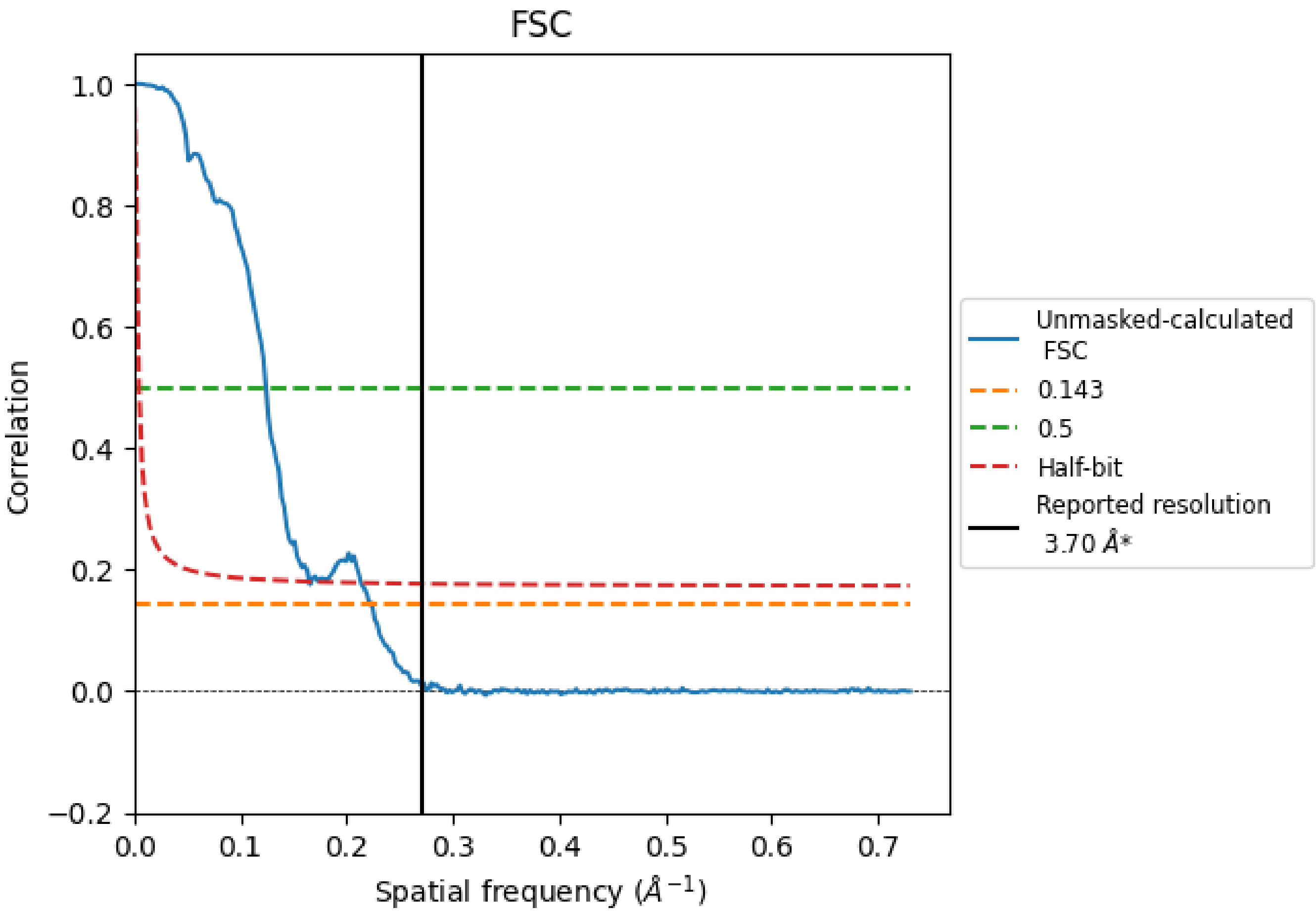


*Reported resolution corresponds to spatial frequency of 0.270 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.270 Å^{-1}

8.2 Resolution estimates ⓘ

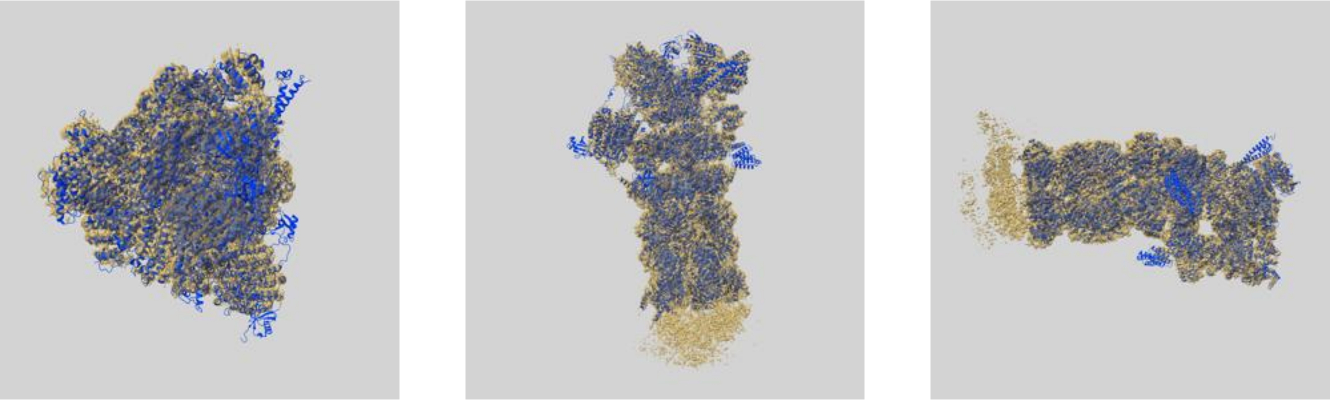
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.52	8.06	6.06

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.52 differs from the reported value 3.7 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-62080 and PDB model 9K54. Per-residue inclusion information can be found in section 3 on page 13.

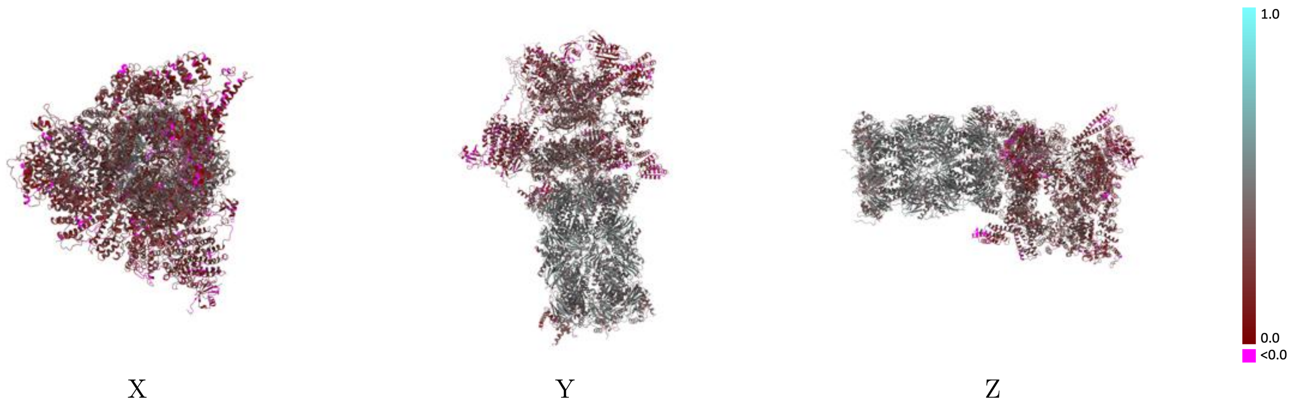
9.1 Map-model overlay ⓘ



X Y Z

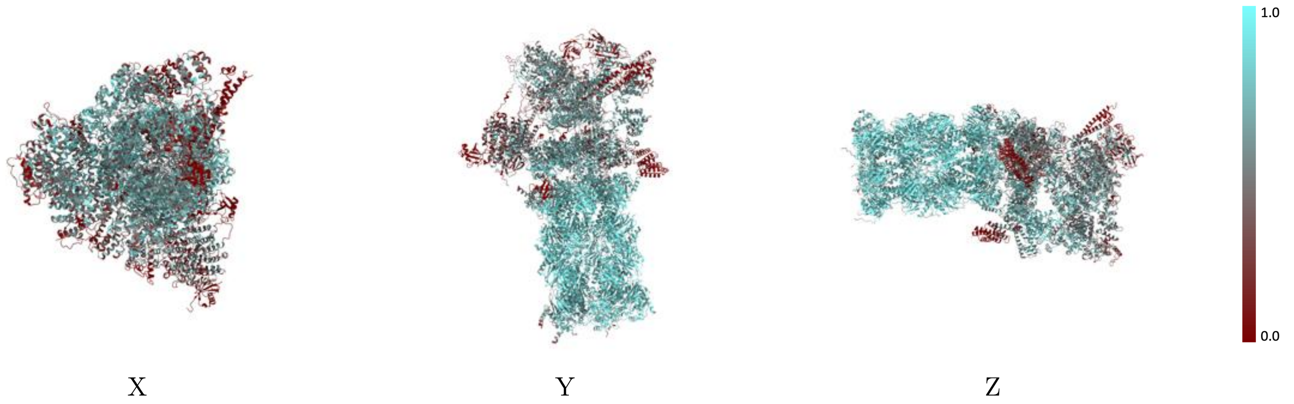
The images above show the 3D surface view of the map at the recommended contour level 0.00617 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ



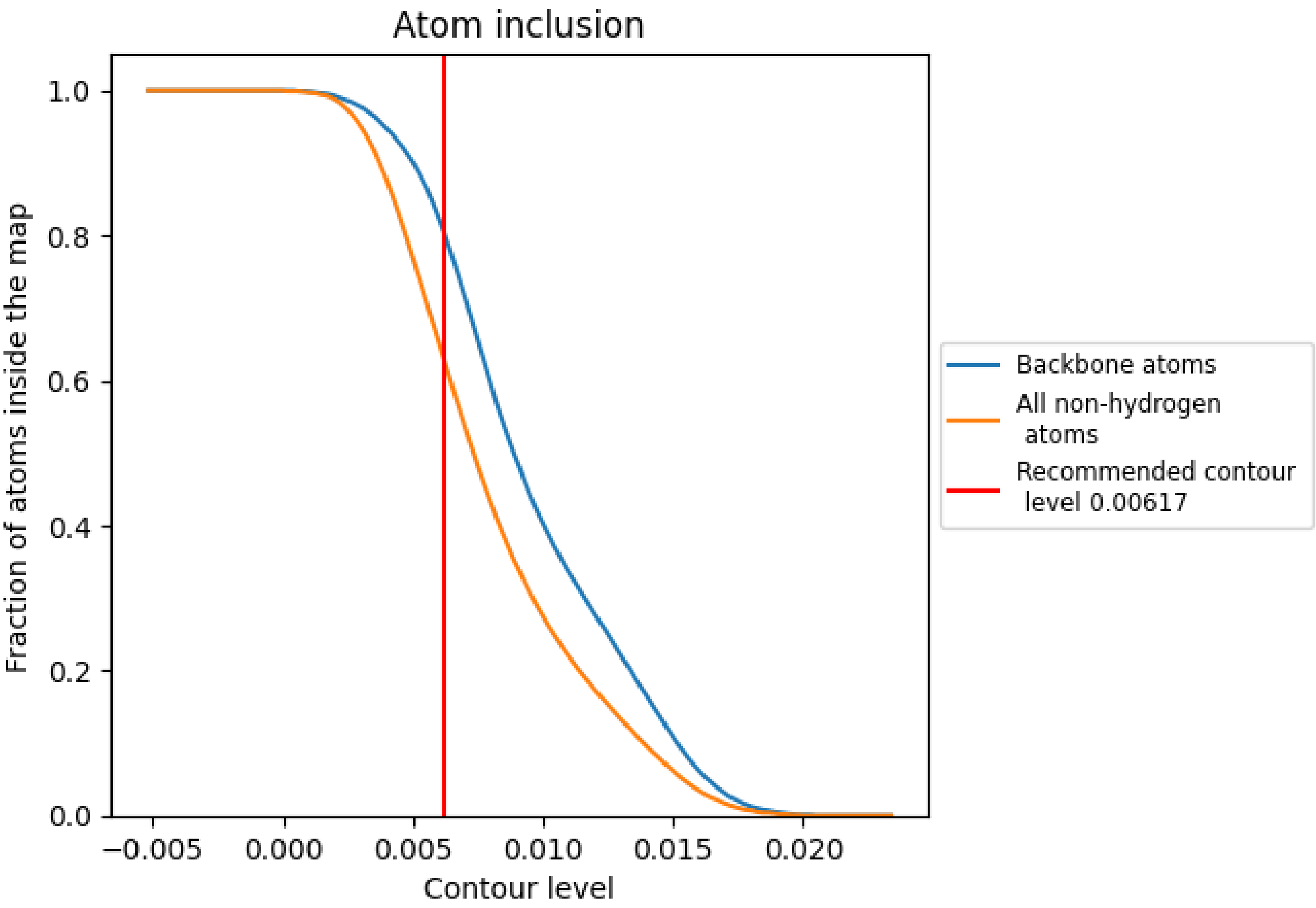
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.00617).

9.4 Atom inclusion ⓘ



At the recommended contour level, 81% of all backbone atoms, 63% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.00617) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6320	0.3450
A	0.5760	0.3210
B	0.5750	0.3290
C	0.6450	0.3490
D	0.6240	0.3300
E	0.3470	0.1810
F	0.4820	0.2760
G	0.8160	0.4540
H	0.8420	0.4630
I	0.7840	0.4480
J	0.7720	0.4300
K	0.7740	0.4510
L	0.8280	0.4630
M	0.8100	0.4490
N	0.8560	0.4790
O	0.8590	0.4720
P	0.8650	0.4790
Q	0.8470	0.4750
R	0.8690	0.4810
S	0.8410	0.4730
T	0.8620	0.4830
U	0.5050	0.2310
V	0.5470	0.2750
W	0.4140	0.2390
X	0.4890	0.2640
Y	0.6920	0.3050
Z	0.5270	0.2770
a	0.5030	0.2180
b	0.4200	0.1900
c	0.5120	0.2680
d	0.3630	0.2050
e	0.5080	0.3130
f	0.3790	0.2090
g	0.7910	0.4480
h	0.7910	0.4500

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Chain	Atom inclusion	Q-score
i	0.7320	0.4310
j	0.6700	0.3690
k	0.7370	0.4330
l	0.8110	0.4470
m	0.7900	0.4470
n	0.8500	0.4750
o	0.8450	0.4680
p	0.8610	0.4780
q	0.8460	0.4760
r	0.8710	0.4750
s	0.8420	0.4690
t	0.8620	0.4670
v	0.1610	0.2700
w	0.0100	0.0790
x	0.0050	0.1600
y	0.0080	0.0900
z	0.1940	0.1040