



Full wwPDB EM Validation Report ⓘ

Mar 26, 2026 – 07:59 AM UTC

PDB ID : 6MSG / pdb_00006msg
EMDB ID : EMD-9219
Title : Cryo-EM structures and dynamics of substrate-engaged human 26S proteasome
Authors : Mao, Y.D.
Deposited on : 2018-10-16
Resolution : 3.50 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 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

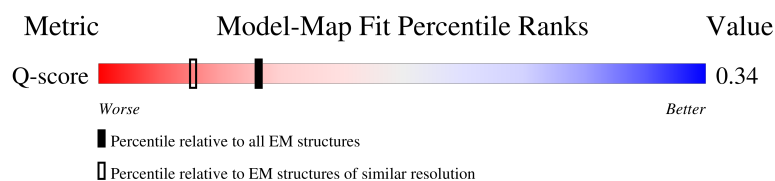
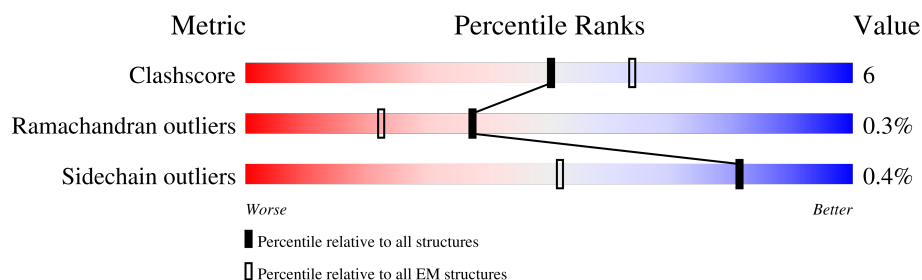
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 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.






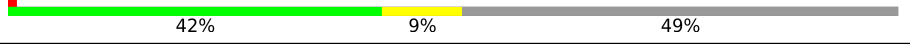


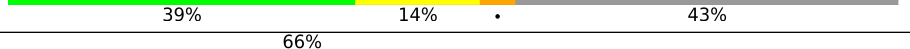
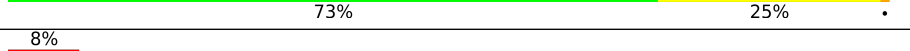
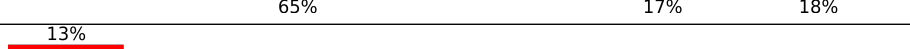
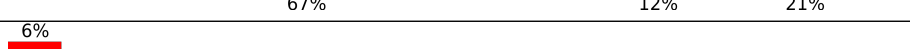
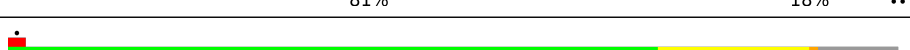

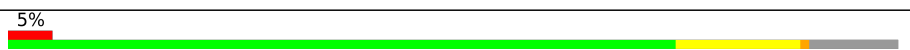







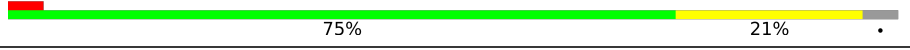
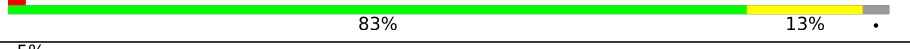



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	13950 (3.00 - 4.00)

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

Mol	Chain	Length	Quality of chain
1	U	953	
2	V	533	
3	W	456	
4	X	422	




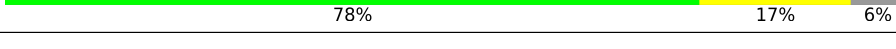
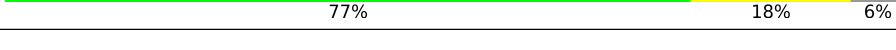
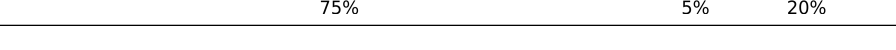
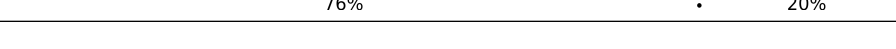
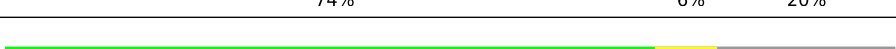

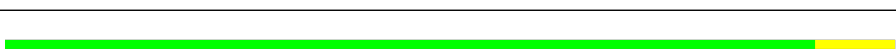

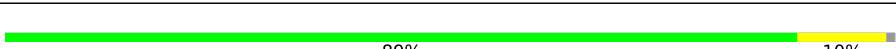







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Mol	Chain	Length	Quality of chain
5	Y	389	
6	Z	324	
7	a	376	
8	b	377	
9	c	309	
10	d	349	
11	e	70	
12	f	892	
13	A	433	
14	B	440	
15	C	398	
16	D	418	
17	E	403	
18	F	439	
19	u	76	
20	v	24	
21	G	245	
21	g	245	
22	H	233	
22	h	233	
23	I	260	
23	i	260	
24	J	247	
24	j	247	
25	K	240	

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Mol	Chain	Length	Quality of chain
25	k	240	
26	L	268	
26	l	268	
27	M	254	
27	m	254	
28	N	238	
28	n	238	
29	O	276	
29	o	276	
30	P	204	
30	p	204	
31	Q	201	
31	q	201	
32	R	262	
32	r	262	
33	S	240	
33	s	240	
34	T	263	
34	t	263	

2 Entry composition

There are 38 unique types of molecules in this entry. The entry contains 104399 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

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

Mol	Chain	Residues	Atoms					AltConf	Trace
1	U	822	Total	C	N	O	S	0	0
			6414	4072	1088	1210	44		

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
13	A	356	Total	C	N	O	S	0	0
			2767	1741	488	521	17		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	B	347	Total	C	N	O	S	0	0
			2691	1694	455	530	12		

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

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

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

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

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

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

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

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

- Molecule 19 is a protein called Ubiquitin.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	u	76	Total	C	N	O	S	0	0
			603	378	107	117	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
u	63	ARG	LYS	conflict	UNP P0CG47

- Molecule 20 is a protein called substrate.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	v	24	Total	C	N	O	0	0
			120	72	24	24		

- Molecule 21 is a protein called Proteasome subunit alpha type-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	G	240	Total	C	N	O	S	0	0
			1826	1160	305	348	13		
21	g	240	Total	C	N	O	S	0	0
			1826	1160	305	348	13		

- Molecule 22 is a protein called Proteasome subunit alpha type-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	H	232	Total	C	N	O	S	0	0
			1708	1081	289	333	5		
22	h	232	Total	C	N	O	S	0	0
			1708	1081	289	333	5		

- Molecule 23 is a protein called Proteasome subunit alpha type-4.

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

- Molecule 24 is a protein called Proteasome subunit alpha type-7.

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

- Molecule 25 is a protein called Proteasome subunit alpha type-5.

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

- Molecule 26 is a protein called Proteasome subunit alpha type-1.

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

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

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

- Molecule 28 is a protein called Proteasome subunit beta type-6.

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

- Molecule 29 is a protein called Proteasome subunit beta type-7.

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

- Molecule 30 is a protein called Proteasome subunit beta type-3.

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

- Molecule 31 is a protein called Proteasome subunit beta type-2.

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

- Molecule 32 is a protein called Proteasome subunit beta type-5.

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

- Molecule 33 is a protein called Proteasome subunit beta type-1.

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

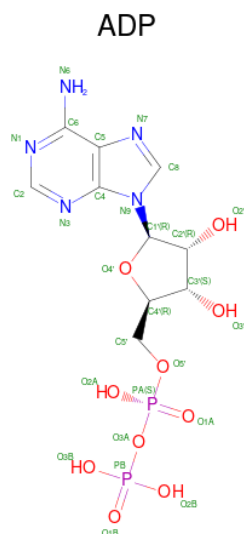
- Molecule 34 is a protein called Proteasome subunit beta type-4.

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

- Molecule 35 is ZINC ION (CCD ID: ZN) (formula: Zn).

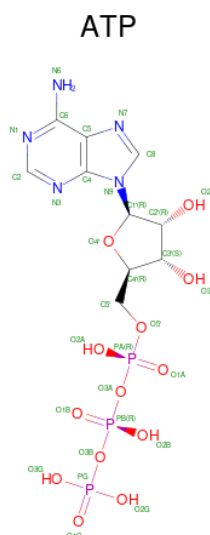
Mol	Chain	Residues	Atoms		AltConf
35	c	1	Total	Zn	0
			1	1	

- Molecule 36 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: C₁₀H₁₅N₅O₁₀P₂).



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

- Molecule 37 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $\text{C}_{10}\text{H}_{16}\text{N}_5\text{O}_{13}\text{P}_3$).



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

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

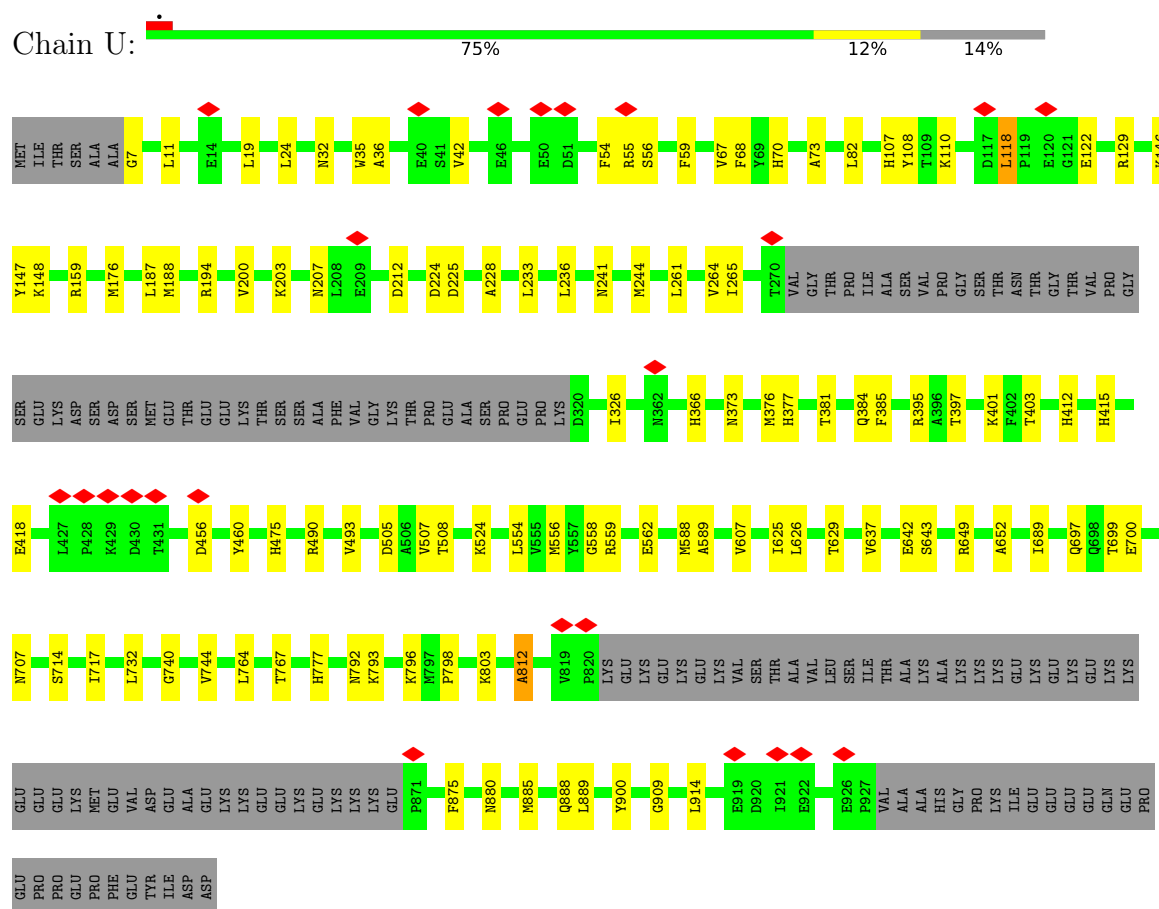
- Molecule 38 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
38	C	1	Total	Mg	0
			1	1	
38	D	1	Total	Mg	0
			1	1	
38	E	1	Total	Mg	0
			1	1	

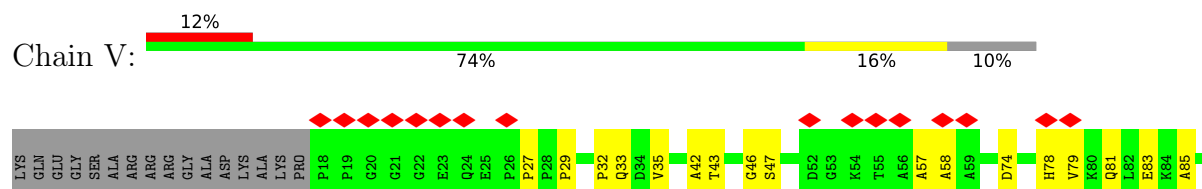
3 Residue-property plots

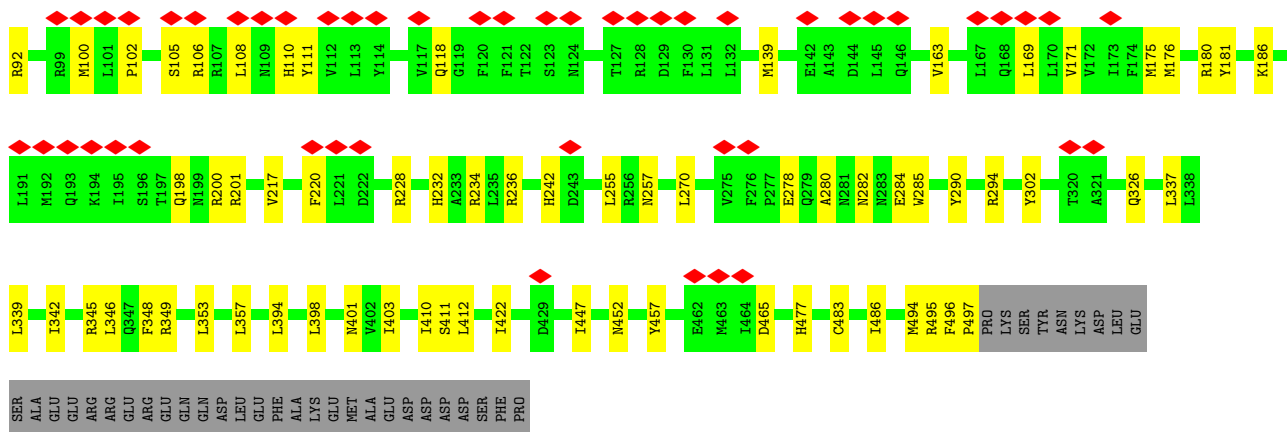
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

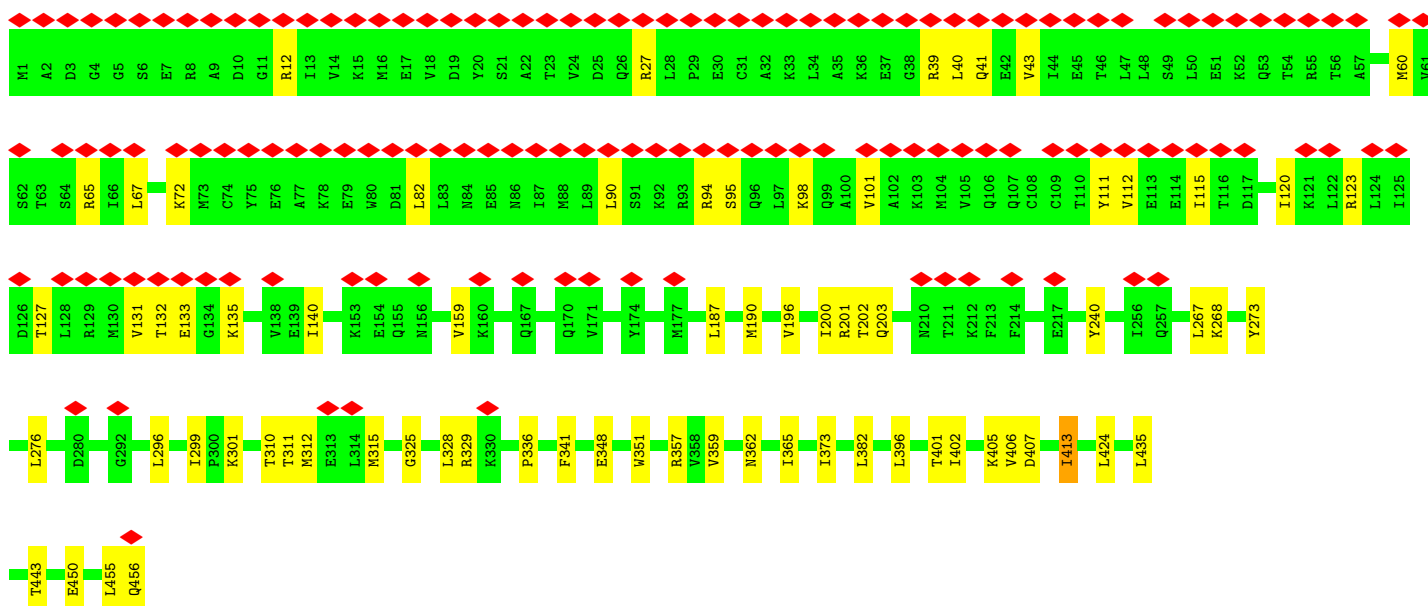
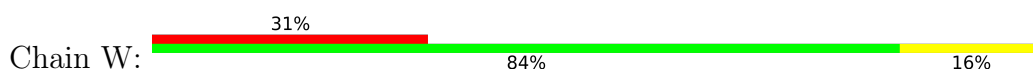


- Molecule 2: 26S proteasome non-ATPase regulatory subunit 3

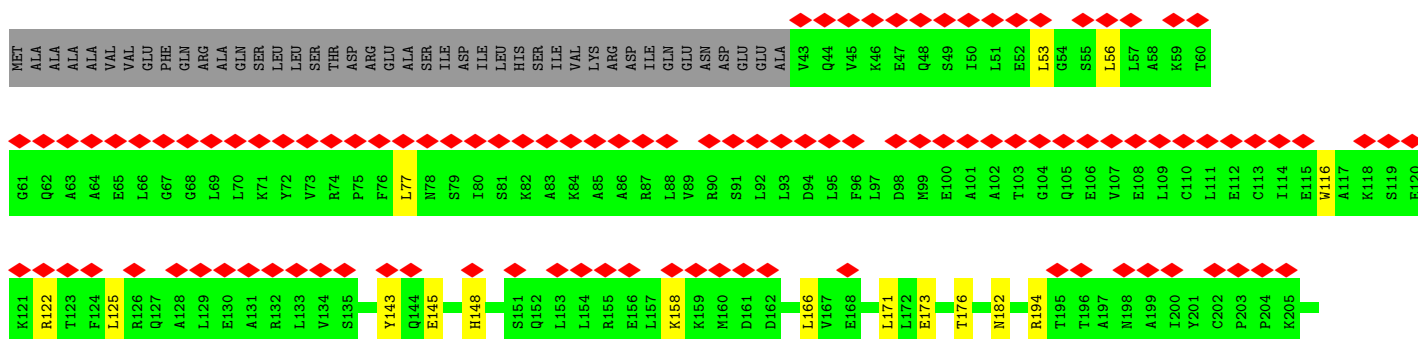
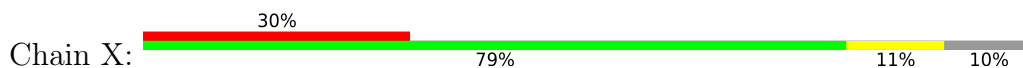


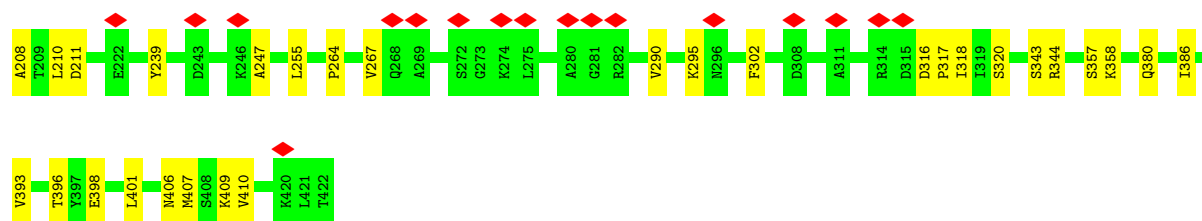


• Molecule 3: 26S proteasome non-ATPase regulatory subunit 12



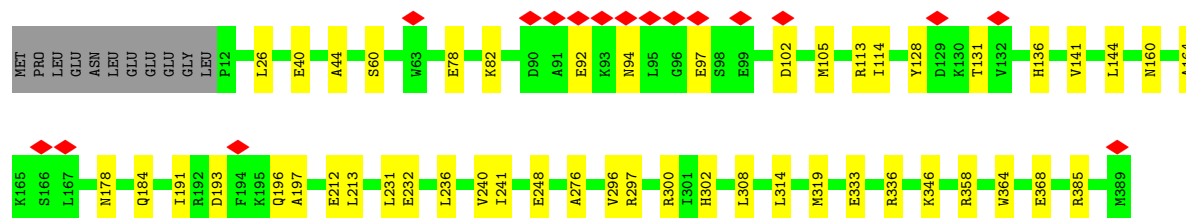
• Molecule 4: 26S proteasome non-ATPase regulatory subunit 11





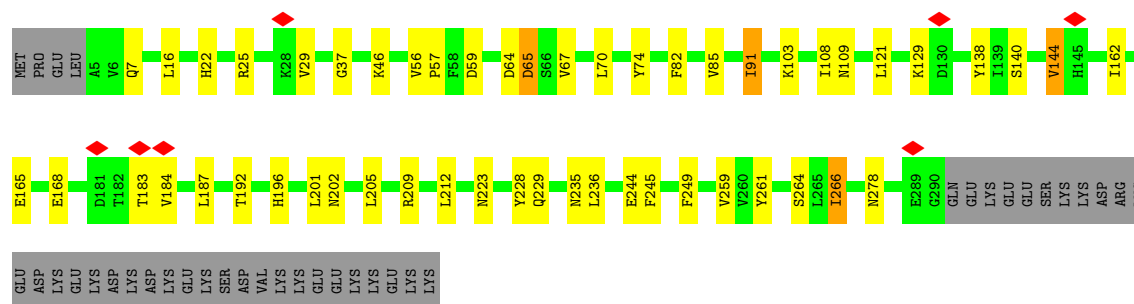
- Molecule 5: 26S proteasome non-ATPase regulatory subunit 6

Chain Y: 85% 13% .



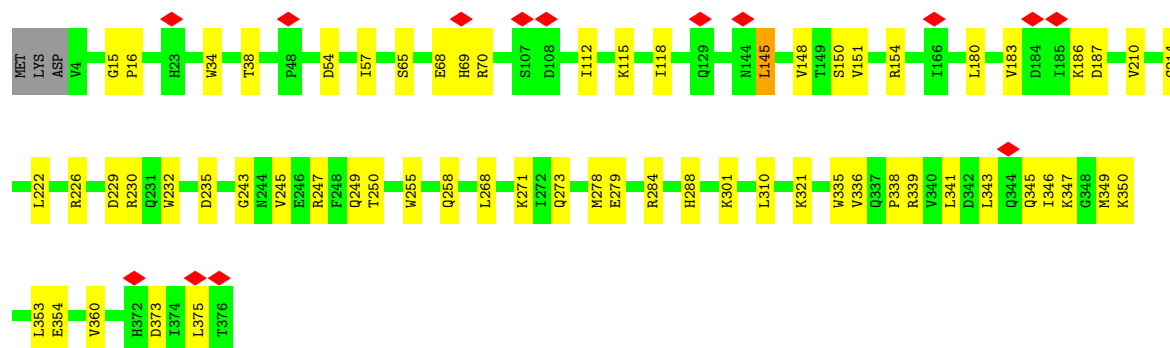
- Molecule 6: 26S proteasome non-ATPase regulatory subunit 7

Chain Z: 72% 15% 12% .



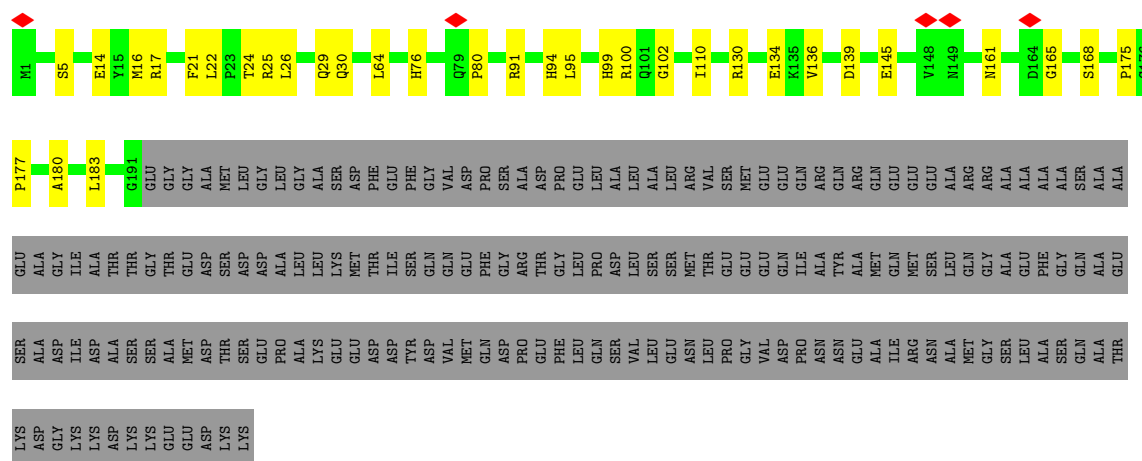
- Molecule 7: 26S proteasome non-ATPase regulatory subunit 13

Chain a: 82% 16% .



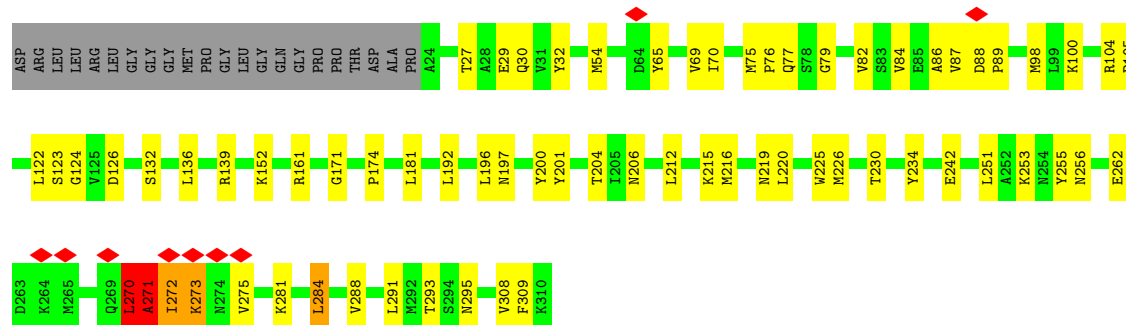
- Molecule 8: 26S proteasome non-ATPase regulatory subunit 4

Chain b: 42% 9% 49% .



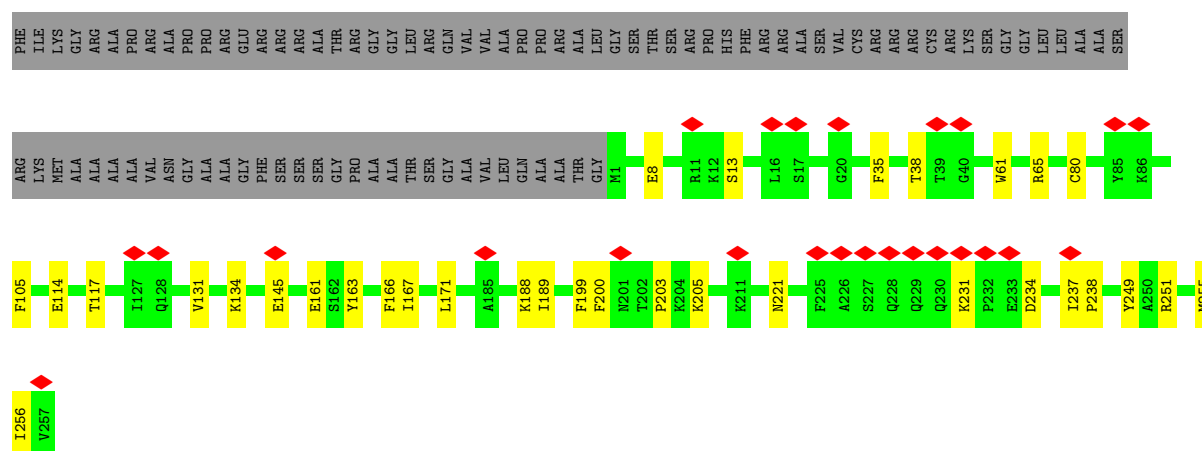
- Molecule 9: 26S proteasome non-ATPase regulatory subunit 14

Chain c: 71% 21% 7%



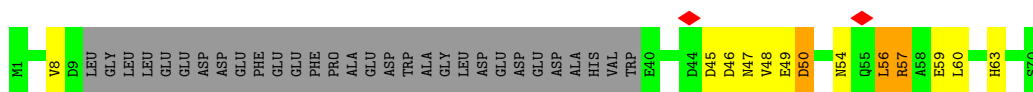
- Molecule 10: 26S proteasome non-ATPase regulatory subunit 8

Chain d: 7% 64% 9% 26%

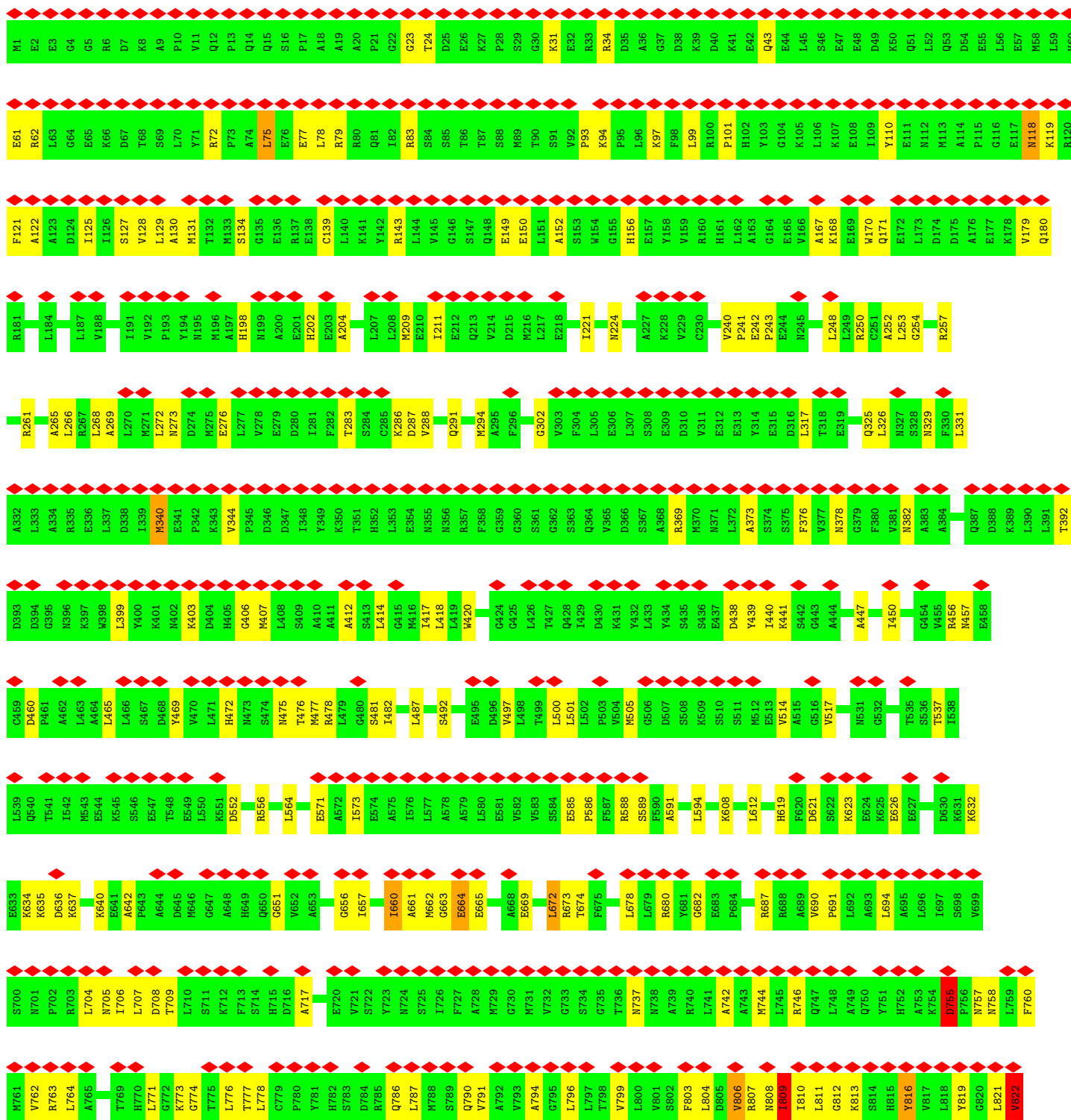
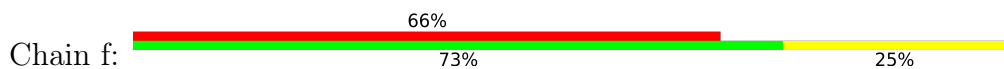


- Molecule 11: 26S proteasome complex subunit SEM1

Chain e: 39% 14% 43%

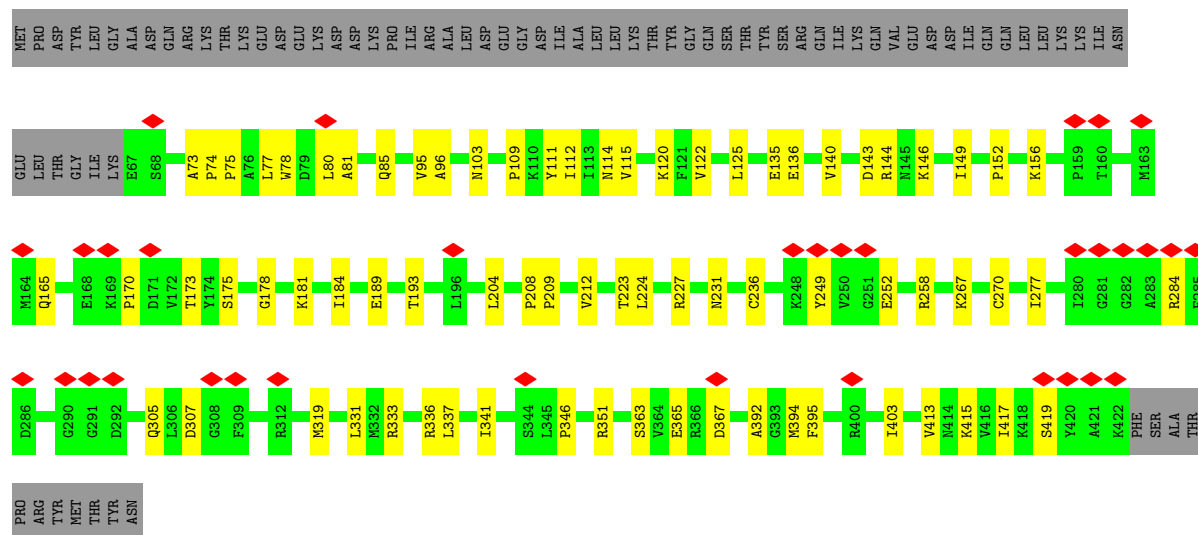


• Molecule 12: 26S proteasome non-ATPase regulatory subunit 2

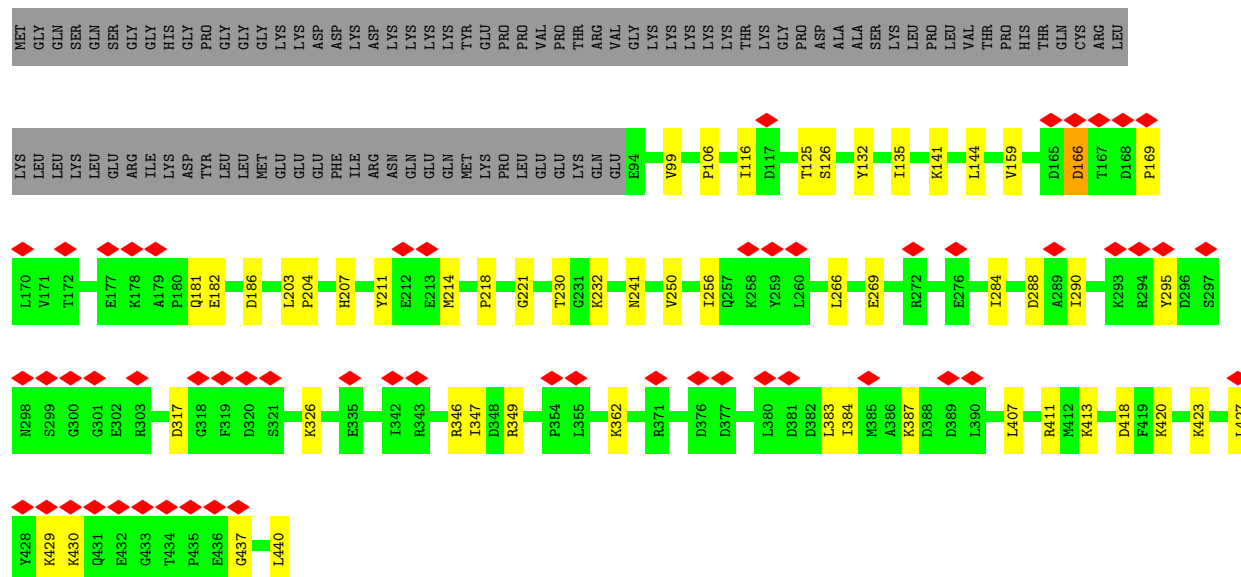




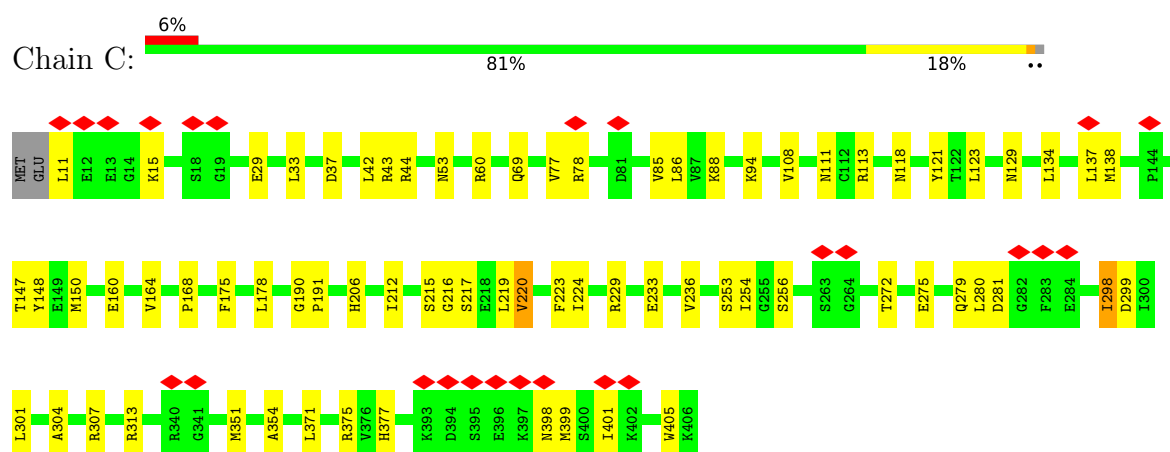
• Molecule 13: 26S proteasome regulatory subunit 7



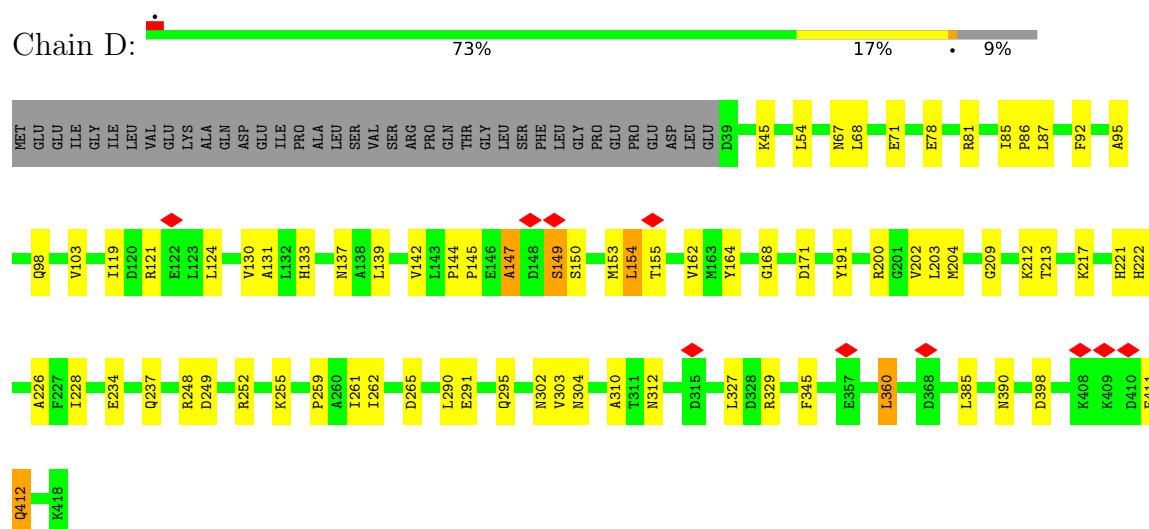
• Molecule 14: 26S proteasome regulatory subunit 4



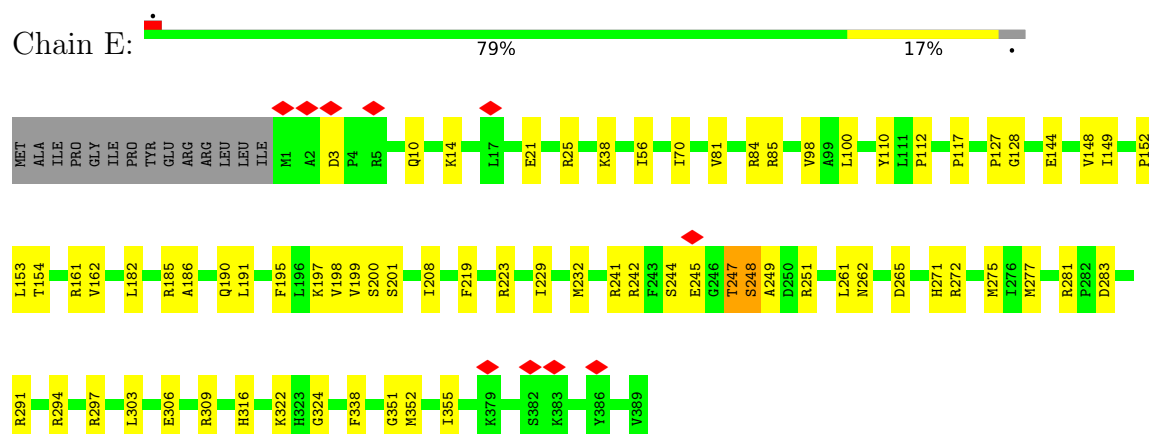
• Molecule 15: 26S proteasome regulatory subunit 8



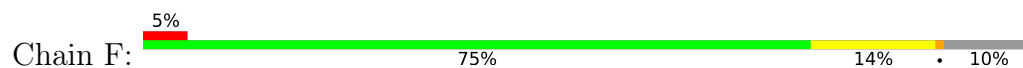
• Molecule 16: 26S proteasome regulatory subunit 6B

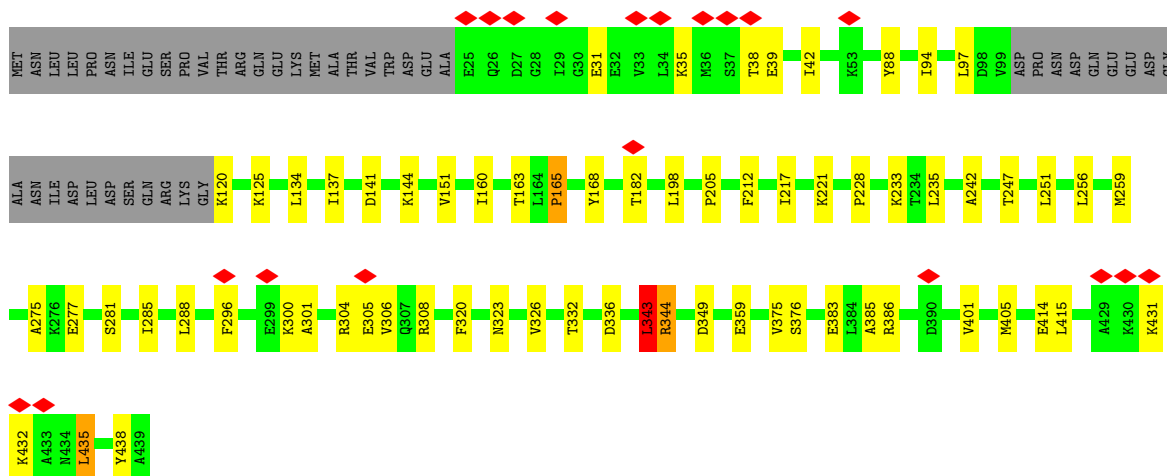


• Molecule 17: 26S proteasome regulatory subunit 10B

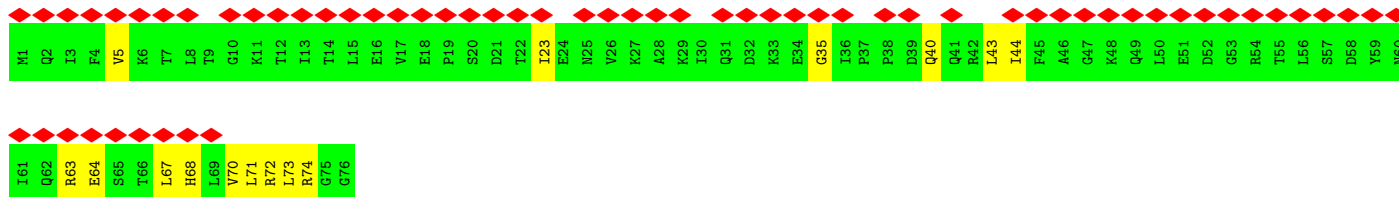
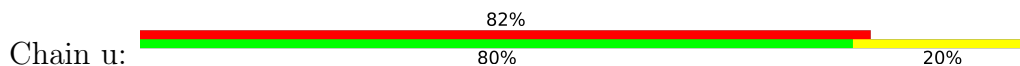


• Molecule 18: 26S proteasome regulatory subunit 6A

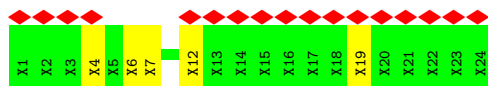
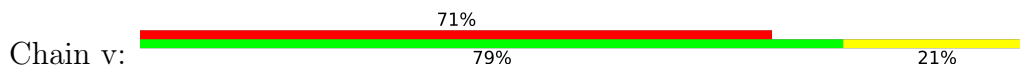




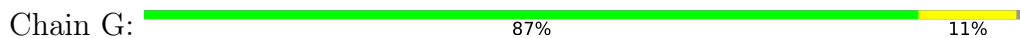
- Molecule 19: Ubiquitin



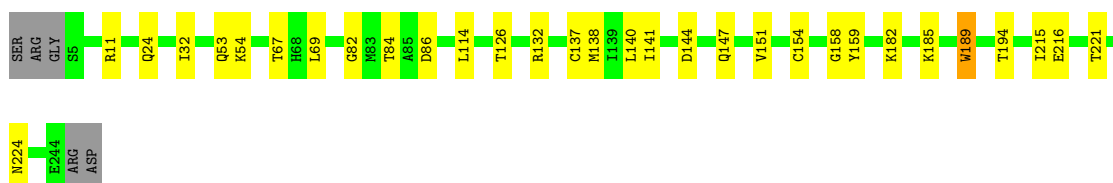
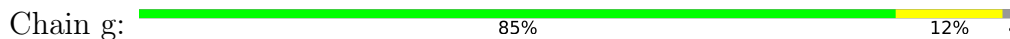
- Molecule 20: substrate




- Molecule 21: Proteasome subunit alpha type-6



- Molecule 21: Proteasome subunit alpha type-6




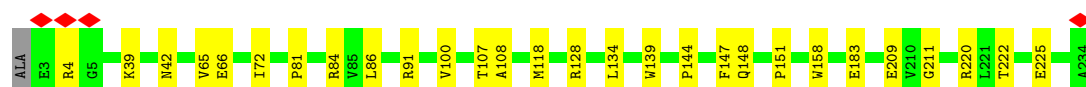
- Molecule 22: Proteasome subunit alpha type-2

Chain H:  88% 11%



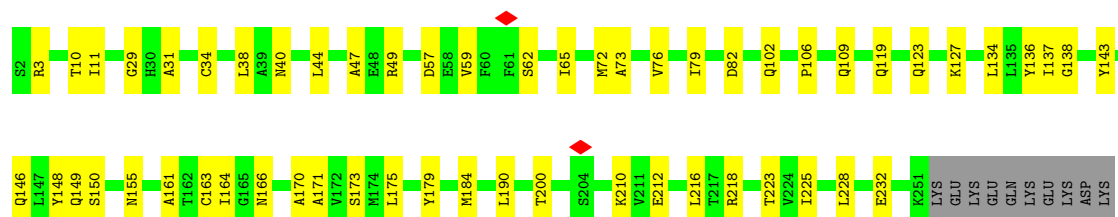
- Molecule 22: Proteasome subunit alpha type-2

Chain h:  88% 12%



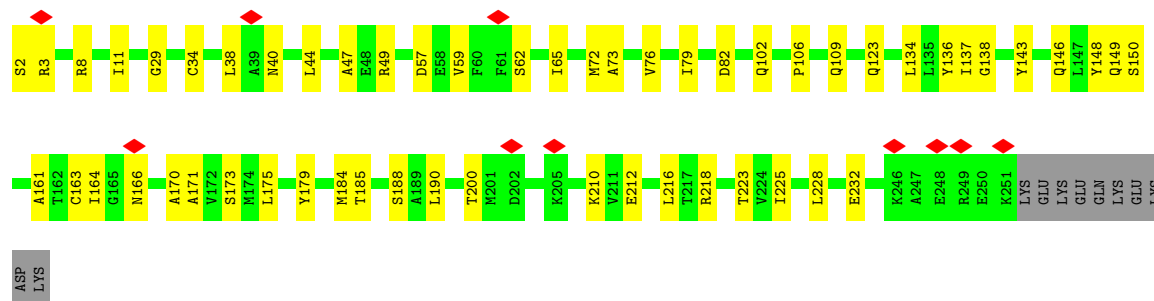
- Molecule 23: Proteasome subunit alpha type-4

Chain I:  75% 22%




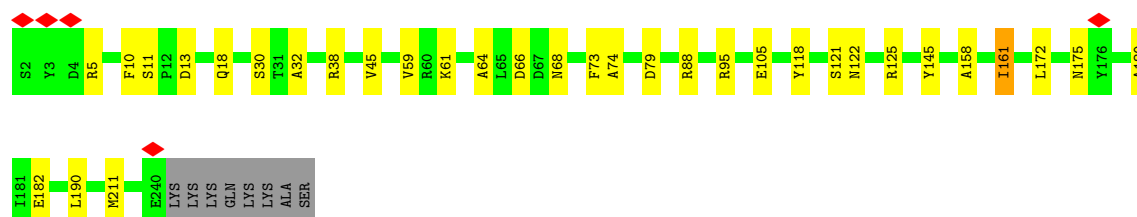
- Molecule 23: Proteasome subunit alpha type-4

Chain i:  75% 21%

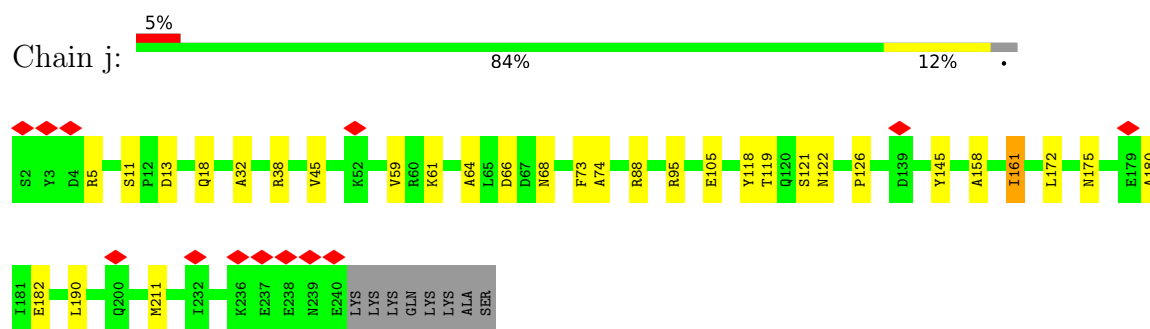


- Molecule 24: Proteasome subunit alpha type-7

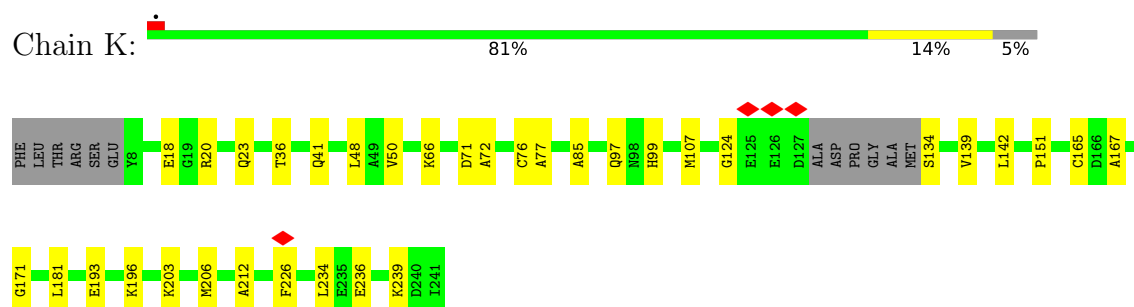
Chain J:  83% 13%



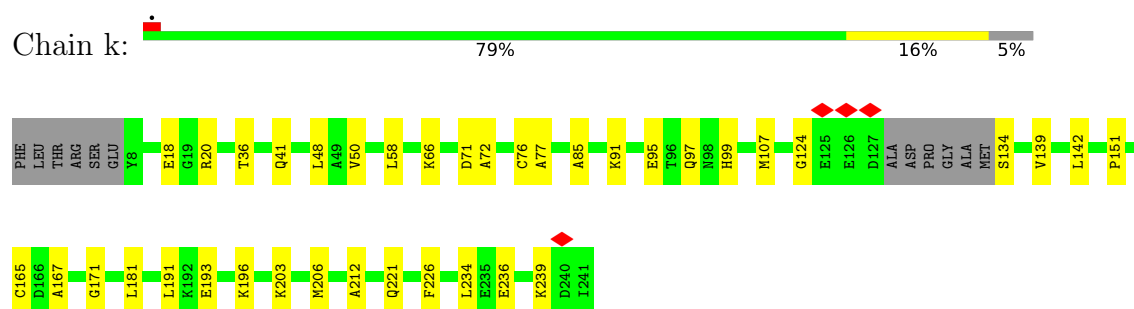
- Molecule 24: Proteasome subunit alpha type-7



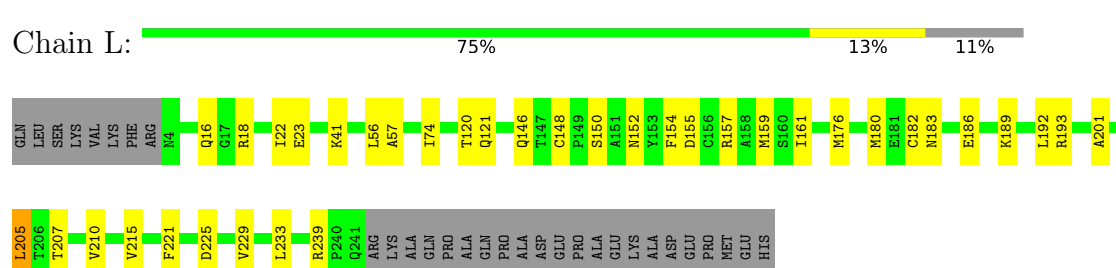
- Molecule 25: Proteasome subunit alpha type-5



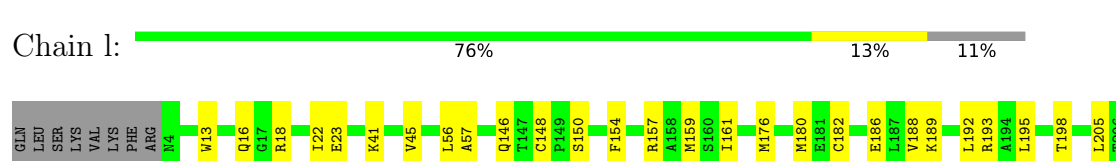
- Molecule 25: Proteasome subunit alpha type-5

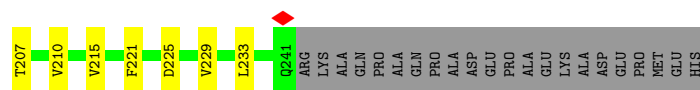


- Molecule 26: Proteasome subunit alpha type-1

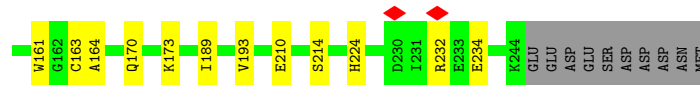
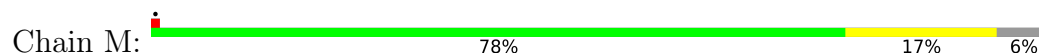


- Molecule 26: Proteasome subunit alpha type-1

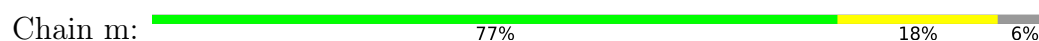




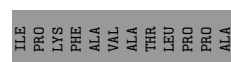
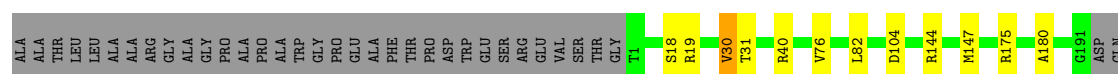
- Molecule 27: Proteasome subunit alpha type-3



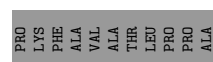
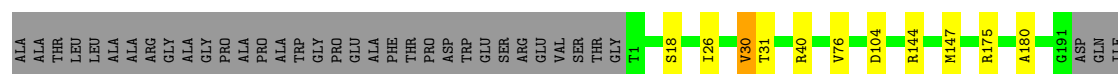
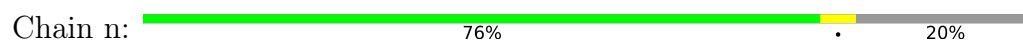
- Molecule 27: Proteasome subunit alpha type-3



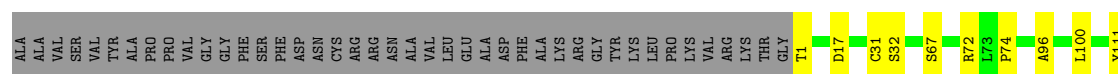
- Molecule 28: Proteasome subunit beta type-6

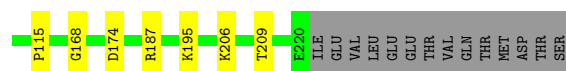


- Molecule 28: Proteasome subunit beta type-6

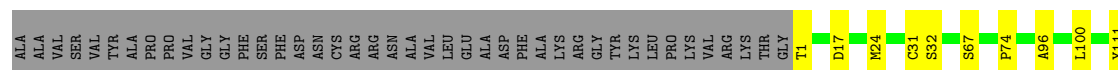


- Molecule 29: Proteasome subunit beta type-7





• Molecule 29: Proteasome subunit beta type-7



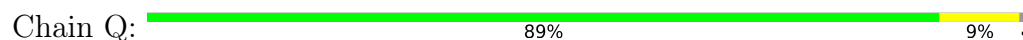
• Molecule 30: Proteasome subunit beta type-3



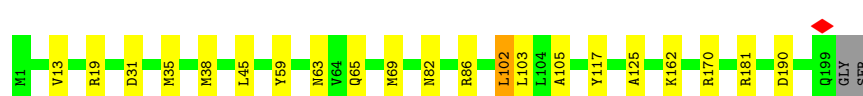
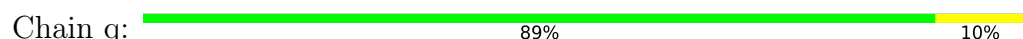
• Molecule 30: Proteasome subunit beta type-3



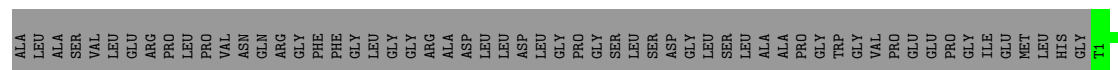
• Molecule 31: Proteasome subunit beta type-2



• Molecule 31: Proteasome subunit beta type-2

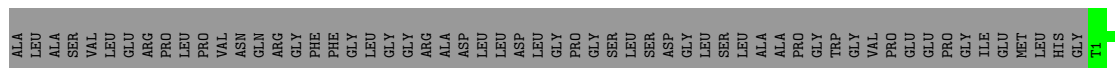


• Molecule 32: Proteasome subunit beta type-5

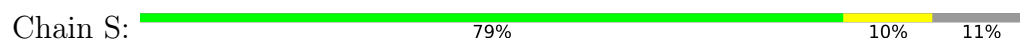




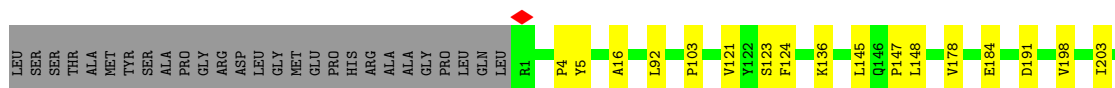
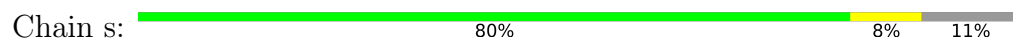
• Molecule 32: Proteasome subunit beta type-5



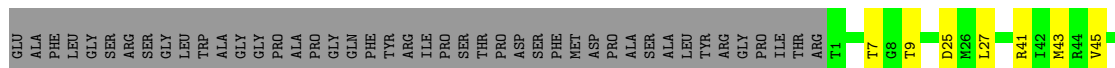
• Molecule 33: Proteasome subunit beta type-1



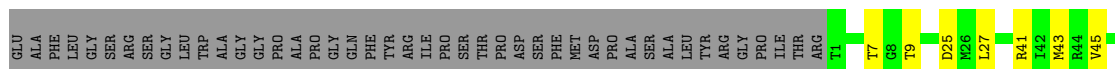
• Molecule 33: Proteasome subunit beta type-1



• Molecule 34: Proteasome subunit beta type-4



• Molecule 34: Proteasome subunit beta type-4



T49	
D73	
P85	
L92	
R99	
R100	
L106	
I112	
A181	
R182	
S183	
Y184	
F187	
V192	
V197	
A212	
I215	
SER	
GLY	
PHE	
GLU	

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	112776	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	44	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.014	Depositor
Minimum map value	-0.004	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0035	Depositor
Map size (\AA)	411.0, 411.0, 411.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	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: MG, ATP, ADP, ZN

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	U	0.22	0/6530	0.53	4/8840 (0.0%)
2	V	0.28	0/3929	0.64	1/5309 (0.0%)
3	W	0.23	0/3751	0.58	1/5042 (0.0%)
4	X	0.21	0/3053	0.52	0/4115
5	Y	0.24	0/3173	0.57	0/4273
6	Z	0.25	0/2324	0.61	3/3150 (0.1%)
7	a	0.22	0/3053	0.58	4/4133 (0.1%)
8	b	0.21	0/1478	0.51	0/2001
9	c	0.34	1/2302 (0.0%)	0.68	4/3110 (0.1%)
10	d	0.24	0/2162	0.63	0/2919
11	e	0.28	0/338	0.97	2/450 (0.4%)
12	f	0.30	0/6980	0.80	11/9433 (0.1%)
13	A	0.22	0/2814	0.54	1/3801 (0.0%)
14	B	0.21	0/2730	0.51	2/3688 (0.1%)
15	C	0.23	0/3146	0.52	0/4226
16	D	0.26	0/3090	0.66	3/4168 (0.1%)
17	E	0.26	0/3145	0.60	0/4233
18	F	0.24	0/3137	0.62	5/4223 (0.1%)
19	u	0.10	0/609	0.26	0/819
21	G	0.25	0/1859	0.51	2/2523 (0.1%)
21	g	0.26	0/1859	0.51	2/2523 (0.1%)
22	H	0.28	0/1743	0.48	0/2372
22	h	0.28	0/1743	0.48	0/2372
23	I	0.25	0/1942	0.47	0/2628
23	i	0.25	0/1942	0.47	0/2628
24	J	0.24	0/1728	0.48	1/2358 (0.0%)
24	j	0.23	0/1728	0.48	1/2358 (0.0%)
25	K	0.24	0/1747	0.47	0/2364
25	k	0.24	0/1747	0.46	0/2364
26	L	0.25	0/1885	0.51	0/2552
26	l	0.25	0/1885	0.51	0/2552
27	M	0.27	0/1891	0.53	0/2552

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
27	m	0.27	0/1891	0.53	0/2552
28	N	0.25	0/1454	0.42	0/1967
28	n	0.25	0/1454	0.42	0/1967
29	O	0.24	0/1670	0.42	0/2265
29	o	0.24	0/1670	0.42	0/2265
30	P	0.26	0/1614	0.43	0/2177
30	p	0.26	0/1614	0.43	0/2177
31	Q	0.28	0/1603	0.54	2/2174 (0.1%)
31	q	0.28	0/1603	0.54	2/2174 (0.1%)
32	R	0.26	0/1579	0.37	0/2134
32	r	0.26	0/1579	0.37	0/2134
33	S	0.25	0/1671	0.42	0/2253
33	s	0.25	0/1671	0.43	0/2253
34	T	0.26	0/1700	0.45	0/2305
34	t	0.26	0/1700	0.45	0/2305
All	All	0.25	1/105916 (0.0%)	0.55	51/143181 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
2	V	0	1
4	X	0	1
6	Z	0	2
7	a	0	1
9	c	0	2
10	d	0	2
11	e	0	2
12	f	0	12
13	A	0	1
15	C	0	1
16	D	0	4
18	F	0	1
All	All	0	30

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	c	273	LYS	CA-C	9.55	1.65	1.52

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	c	270	LEU	CA-C-N	8.06	136.94	121.54
9	c	270	LEU	C-N-CA	8.06	136.94	121.54
18	F	343	LEU	CA-C-N	6.95	134.81	121.54
18	F	343	LEU	C-N-CA	6.95	134.81	121.54
18	F	344	ARG	N-CA-C	6.56	124.78	110.80
31	Q	102	LEU	CA-C-N	6.39	131.83	121.74
31	Q	102	LEU	C-N-CA	6.39	131.83	121.74
31	q	102	LEU	CA-C-N	6.35	131.77	121.74
31	q	102	LEU	C-N-CA	6.35	131.77	121.74
13	A	115	VAL	N-CA-C	-6.17	106.79	112.96
12	f	875	ALA	CA-C-N	6.02	133.03	121.54
12	f	875	ALA	C-N-CA	6.02	133.03	121.54
14	B	166	ASP	CA-C-N	6.00	133.00	121.54
14	B	166	ASP	C-N-CA	6.00	133.00	121.54
12	f	868	HIS	CA-C-N	5.67	132.37	121.54
12	f	868	HIS	C-N-CA	5.67	132.37	121.54
1	U	207	ASN	CA-C-N	-5.55	115.83	122.44
1	U	207	ASN	C-N-CA	-5.55	115.83	122.44
7	a	229	ASP	CA-C-N	5.55	132.14	121.54
7	a	229	ASP	C-N-CA	5.55	132.14	121.54
21	G	189	TRP	CA-C-N	-5.50	115.89	122.44
21	G	189	TRP	C-N-CA	-5.50	115.89	122.44
21	g	189	TRP	CA-C-N	-5.50	115.90	122.44
21	g	189	TRP	C-N-CA	-5.50	115.90	122.44
3	W	159	VAL	N-CA-C	-5.48	107.46	111.90
12	f	822	VAL	CA-C-N	5.37	131.80	121.54
12	f	822	VAL	C-N-CA	5.37	131.80	121.54
6	Z	64	ASP	CA-C-N	5.28	131.62	121.54
6	Z	64	ASP	C-N-CA	5.28	131.62	121.54
12	f	619	HIS	CA-C-N	5.21	131.50	121.54
12	f	619	HIS	C-N-CA	5.21	131.50	121.54
11	e	56	LEU	CA-C-N	5.21	131.49	121.54
11	e	56	LEU	C-N-CA	5.21	131.49	121.54
24	J	59	VAL	N-CA-C	-5.21	107.23	112.17
16	D	412	GLN	N-CA-C	5.19	121.86	110.80
12	f	254	GLY	N-CA-C	5.19	118.52	112.50
24	j	59	VAL	N-CA-C	-5.18	107.25	112.17
16	D	154	LEU	CA-C-N	5.15	131.38	121.54
16	D	154	LEU	C-N-CA	5.15	131.38	121.54
9	c	309	PHE	CA-C-N	5.14	130.95	121.70
9	c	309	PHE	C-N-CA	5.14	130.95	121.70
2	V	27	PRO	N-CA-C	5.14	116.97	110.70

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Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	Z	29	VAL	N-CA-C	-5.14	108.83	113.71
12	f	858	LYS	CA-C-N	-5.11	113.45	119.84
12	f	858	LYS	C-N-CA	-5.11	113.45	119.84
1	U	812	ALA	CA-C-N	5.08	134.19	121.80
1	U	812	ALA	C-N-CA	5.08	134.19	121.80
7	a	186	LYS	CA-C-N	5.06	131.20	121.54
7	a	186	LYS	C-N-CA	5.06	131.20	121.54
18	F	435	LEU	CA-C-N	5.04	129.49	122.08
18	F	435	LEU	C-N-CA	5.04	129.49	122.08

There are no chirality outliers.

All (30) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
13	A	284	ARG	Peptide
15	C	220	VAL	Peptide
16	D	147	ALA	Peptide
16	D	149	SER	Peptide
16	D	150	SER	Peptide
16	D	411	GLU	Peptide
18	F	343	LEU	Peptide
2	V	29	PRO	Peptide
4	X	393	VAL	Peptide
6	Z	144	VAL	Peptide
6	Z	183	THR	Peptide
7	a	214	GLY	Peptide
9	c	270	LEU	Peptide
9	c	271	ALA	Peptide
10	d	199	PHE	Peptide
10	d	255	MET	Peptide
11	e	45	ASP	Peptide
11	e	56	LEU	Peptide
12	f	340	MET	Peptide
12	f	642	ALA	Peptide
12	f	737	ASN	Peptide
12	f	755	ASP	Peptide
12	f	807	ARG	Peptide
12	f	809	ILE	Peptide
12	f	816	TYR	Peptide
12	f	822	VAL	Peptide
12	f	823	ALA	Peptide
12	f	854	GLY	Peptide

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Mol	Chain	Res	Type	Group
12	f	870	THR	Peptide
12	f	875	ALA	Peptide

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	U	6414	0	6435	66	0
2	V	3852	0	3893	56	0
3	W	3703	0	3822	45	0
4	X	3009	0	3113	28	0
5	Y	3115	0	3120	32	0
6	Z	2281	0	2312	38	0
7	a	2995	0	3012	35	0
8	b	1458	0	1505	22	0
9	c	2260	0	2276	53	0
10	d	2116	0	2146	17	0
11	e	334	0	294	10	0
12	f	6866	0	6866	143	0
13	A	2767	0	2787	45	0
14	B	2691	0	2725	36	0
15	C	3105	0	3219	51	0
16	D	3040	0	3076	50	0
17	E	3097	0	3173	50	0
18	F	3098	0	3187	38	0
19	u	603	0	629	17	0
20	v	120	0	33	9	0
21	G	1826	0	1796	17	0
21	g	1826	0	1796	19	0
22	H	1708	0	1594	17	0
22	h	1708	0	1594	18	0
23	I	1912	0	1851	34	0
23	i	1912	0	1851	32	0
24	J	1704	0	1517	24	0
24	j	1704	0	1517	21	0
25	K	1722	0	1673	21	0
25	k	1722	0	1673	23	0
26	L	1850	0	1822	26	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	l	1850	0	1822	21	0
27	M	1856	0	1814	29	0
27	m	1856	0	1814	28	0
28	N	1430	0	1398	8	0
28	n	1430	0	1398	7	0
29	O	1643	0	1644	12	0
29	o	1643	0	1644	13	0
30	P	1585	0	1598	16	0
30	p	1585	0	1598	16	0
31	Q	1570	0	1547	12	0
31	q	1570	0	1547	13	0
32	R	1548	0	1499	8	0
32	r	1548	0	1499	7	0
33	S	1641	0	1616	17	0
33	s	1641	0	1616	12	0
34	T	1667	0	1628	17	0
34	t	1667	0	1628	14	0
35	c	1	0	0	0	0
36	A	27	0	12	2	0
36	F	27	0	12	1	0
37	C	31	0	12	0	0
37	D	31	0	12	5	0
37	E	31	0	12	2	0
38	C	1	0	0	0	0
38	D	1	0	0	0	0
38	E	1	0	0	0	0
All	All	104399	0	103677	1166	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 (1166) 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)
12:f:657:ILE:O	12:f:661:ALA:HB3	1.44	1.18
9:c:82:VAL:HG21	20:v:19:UNK:O	1.63	0.98
30:p:56:LEU:HG	30:p:58:THR:HG22	1.67	0.77
8:b:14:GLU:HB2	8:b:17:ARG:HH21	1.51	0.74
12:f:657:ILE:O	12:f:661:ALA:CB	2.29	0.73
9:c:89:PRO:HB3	19:u:70:VAL:HG11	1.71	0.73
12:f:828:ARG:CZ	12:f:843:SER:OG	2.37	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:U:792:ASN:HB3	1:U:914:LEU:H	1.53	0.72
3:W:435:LEU:HD23	6:Z:236:LEU:HB3	1.70	0.72
15:C:223:PHE:HB2	20:v:12:UNK:HA	1.71	0.72
10:d:188:LYS:HD2	10:d:221:ASN:HD21	1.56	0.69
16:D:200:ARG:HH12	16:D:303:VAL:HA	1.57	0.69
5:Y:300:ARG:NH1	11:e:59:GLU:OE1	2.25	0.69
9:c:89:PRO:CB	19:u:70:VAL:HG11	2.23	0.68
18:F:163:THR:HG22	18:F:165:PRO:HD3	1.75	0.68
30:p:58:THR:HG23	30:p:59:ASP:N	2.09	0.68
12:f:828:ARG:NE	12:f:843:SER:OG	2.26	0.67
18:F:376:SER:HB3	18:F:414:GLU:HB2	1.77	0.67
13:A:73:ALA:O	13:A:78:TRP:NE1	2.25	0.67
25:K:48:LEU:HD21	25:K:77:ALA:HB2	1.77	0.66
24:J:38:ARG:HH12	24:J:182:GLU:HA	1.61	0.66
17:E:248:SER:HA	17:E:251:ARG:HD3	1.78	0.66
25:k:48:LEU:HD21	25:k:77:ALA:HB2	1.78	0.66
24:j:38:ARG:HH12	24:j:182:GLU:HA	1.61	0.66
1:U:188:MET:HG2	1:U:194:ARG:HD3	1.79	0.65
12:f:61:GLU:OE2	12:f:62:ARG:NH1	2.30	0.65
3:W:190:MET:HB2	3:W:202:THR:HG23	1.78	0.65
13:A:114:ASN:HB3	13:A:120:LYS:HG2	1.78	0.65
2:V:477:HIS:HD1	10:d:249:TYR:HH	1.43	0.65
5:Y:212:GLU:HG3	5:Y:213:LEU:HG	1.79	0.64
12:f:660:ILE:HG13	12:f:660:ILE:O	1.95	0.64
9:c:192:LEU:HA	9:c:196:LEU:HB2	1.79	0.64
2:V:79:VAL:HG13	2:V:81:GLN:H	1.61	0.64
12:f:125:ILE:HD13	12:f:129:LEU:HB2	1.80	0.64
30:p:65:GLN:OE1	31:q:86:ARG:NH2	2.31	0.64
23:i:143:TYR:HB2	23:i:146:GLN:HE21	1.63	0.64
1:U:699:THR:HG21	1:U:812:ALA:H	1.62	0.64
12:f:673:ARG:HH22	12:f:709:THR:HA	1.63	0.64
17:E:201:SER:O	18:F:308:ARG:NH2	2.31	0.64
17:E:208:ILE:CG2	20:v:6:UNK:CB	2.76	0.64
23:I:143:TYR:HB2	23:I:146:GLN:HE21	1.63	0.63
2:V:186:LYS:HE3	2:V:234:ARG:HH21	1.63	0.63
3:W:276:LEU:HA	3:W:357:ARG:HG3	1.80	0.63
16:D:248:ARG:HG3	16:D:295:GLN:HE22	1.63	0.63
17:E:153:LEU:HD12	17:E:154:THR:HG23	1.81	0.63
6:Z:212:LEU:HD11	7:a:349:MET:HE3	1.80	0.63
18:F:359:GLU:HB3	18:F:385:ALA:HB1	1.80	0.63
24:j:74:ALA:HB2	24:j:161:ILE:HD13	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:a:222:LEU:HB2	7:a:226:ARG:HH11	1.64	0.62
7:a:347:LYS:HA	7:a:350:LYS:HZ2	1.64	0.62
8:b:161:ASN:HB2	8:b:165:GLY:HA3	1.81	0.62
2:V:282:ASN:ND2	5:Y:385:ARG:O	2.33	0.62
24:J:74:ALA:HB2	24:J:161:ILE:HD13	1.80	0.62
27:M:214:SER:OG	27:M:224:HIS:NE2	2.33	0.62
34:T:27:LEU:HD22	34:T:184:TYR:HB2	1.81	0.62
9:c:82:VAL:CG2	20:v:19:UNK:O	2.43	0.62
12:f:125:ILE:HD11	12:f:128:VAL:HB	1.81	0.62
34:T:192:VAL:HG12	34:T:197:VAL:HG22	1.82	0.62
1:U:108:TYR:OH	1:U:159:ARG:NH1	2.33	0.61
34:t:27:LEU:HD22	34:t:184:TYR:HB2	1.81	0.61
1:U:187:LEU:HD13	16:D:45:LYS:HG2	1.82	0.61
25:K:167:ALA:H	26:L:56:LEU:HD13	1.66	0.61
12:f:127:SER:HA	12:f:131:MET:HB2	1.82	0.61
12:f:586:PRO:HA	12:f:589:SER:HB2	1.83	0.61
12:f:672:LEU:HD21	12:f:690:VAL:HG22	1.83	0.61
25:k:167:ALA:H	26:l:56:LEU:HD13	1.65	0.61
14:B:182:GLU:HB2	14:B:186:ASP:HB2	1.82	0.61
2:V:394:LEU:HB2	2:V:398:LEU:HD13	1.83	0.61
4:X:406:ASN:HD21	9:c:253:LYS:HD3	1.66	0.61
16:D:153:MET:SD	16:D:153:MET:N	2.69	0.61
34:t:192:VAL:HG12	34:t:197:VAL:HG22	1.82	0.61
12:f:704:LEU:HA	12:f:707:LEU:HB2	1.83	0.60
27:m:214:SER:OG	27:m:224:HIS:NE2	2.33	0.60
14:B:221:GLY:HA3	14:B:347:ILE:HG12	1.82	0.60
29:O:96:ALA:H	29:O:115:PRO:HB3	1.66	0.60
27:m:55:SER:H	27:m:57:LEU:HD23	1.65	0.60
4:X:255:LEU:HD22	4:X:267:VAL:HG13	1.83	0.60
14:B:429:LYS:HG2	14:B:430:LYS:HG3	1.83	0.60
37:D:501:ATP:O3G	17:E:294:ARG:NH2	2.35	0.60
17:E:144:GLU:O	17:E:297:ARG:NH2	2.34	0.60
13:A:165:GLN:NE2	13:A:236:CYS:SG	2.75	0.60
19:u:5:VAL:HG22	19:u:67:LEU:HD12	1.82	0.60
3:W:299:ILE:HG22	3:W:301:LYS:H	1.65	0.60
13:A:307:ASP:OD2	13:A:333:ARG:NH2	2.34	0.60
23:i:8:ARG:HE	24:j:5:ARG:HH21	1.49	0.60
2:V:452:ASN:HB3	2:V:457:TYR:HB2	1.83	0.60
12:f:99:LEU:HG	12:f:101:PRO:HD2	1.83	0.60
16:D:153:MET:HE2	16:D:228:ILE:HG12	1.82	0.60
37:D:501:ATP:O2G	17:E:291:ARG:NH2	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:u:44:ILE:HB	19:u:68:HIS:HB2	1.84	0.60
9:c:152:LYS:HE2	16:D:85:ILE:HG21	1.83	0.60
12:f:811:LEU:HD11	12:f:862:ILE:HB	1.84	0.60
15:C:375:ARG:HG2	15:C:377:HIS:H	1.65	0.60
27:M:55:SER:H	27:M:57:LEU:HD23	1.65	0.60
34:T:212:ALA:HA	28:n:30:VAL:HG21	1.84	0.60
21:g:158:GLY:O	22:h:84:ARG:NH2	2.34	0.60
34:T:99:ARG:HG2	34:T:106:LEU:HG	1.84	0.59
12:f:872:VAL:HG21	12:f:881:GLU:H	1.67	0.59
13:A:363:SER:HB2	14:B:214:MET:HG2	1.83	0.59
1:U:7:GLY:N	10:d:80:CYS:HG	2.00	0.59
1:U:42:VAL:HG21	1:U:67:VAL:HG11	1.84	0.59
3:W:268:LYS:HE2	3:W:299:ILE:HG21	1.84	0.59
9:c:216:MET:HA	9:c:219:ASN:HB2	1.82	0.59
18:F:182:THR:HA	18:F:242:ALA:HB1	1.83	0.59
3:W:131:VAL:HA	3:W:135:LYS:HB2	1.82	0.59
18:F:228:PRO:O	18:F:233:LYS:NZ	2.34	0.59
9:c:54:MET:HE3	19:u:73:LEU:HD11	1.84	0.59
14:B:411:ARG:NH2	14:B:418:ASP:OD2	2.35	0.59
17:E:241:ARG:NH1	17:E:283:ASP:O	2.36	0.59
34:t:99:ARG:HG2	34:t:106:LEU:HG	1.84	0.59
1:U:798:PRO:O	1:U:880:ASN:ND2	2.36	0.59
12:f:198:HIS:O	12:f:202:HIS:N	2.36	0.59
29:o:96:ALA:H	29:o:115:PRO:HB3	1.66	0.59
17:E:161:ARG:HG3	17:E:162:VAL:HG23	1.85	0.59
9:c:132:SER:HB3	19:u:71:LEU:HD13	1.83	0.58
16:D:133:HIS:HB3	16:D:137:ASN:H	1.68	0.58
30:P:189:ILE:HG23	30:P:196:THR:HB	1.85	0.58
14:B:362:LYS:HG2	14:B:384:ILE:HD13	1.86	0.58
17:E:186:ALA:O	17:E:190:GLN:NE2	2.36	0.58
6:Z:187:LEU:HG	9:c:293:THR:HG22	1.85	0.58
13:A:365:GLU:HG2	13:A:367:ASP:H	1.68	0.58
18:F:137:ILE:HG23	18:F:160:ILE:HD12	1.85	0.58
4:X:122:ARG:HD2	4:X:125:LEU:HB2	1.85	0.58
6:Z:7:GLN:OE1	6:Z:46:LYS:NZ	2.37	0.58
15:C:304:ALA:O	15:C:307:ARG:NH1	2.36	0.58
4:X:398:GLU:HA	4:X:401:LEU:HD23	1.86	0.58
16:D:265:ASP:OD2	17:E:262:ASN:ND2	2.36	0.58
19:u:63:ARG:HG2	19:u:64:GLU:HG3	1.85	0.58
5:Y:296:VAL:HG11	11:e:59:GLU:HG3	1.85	0.58
15:C:138:MET:SD	15:C:138:MET:N	2.77	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:U:559:ARG:HB3	1:U:562:GLU:HB2	1.85	0.58
12:f:302:GLY:HA2	12:f:317:LEU:HD11	1.84	0.58
21:G:138:MET:HB3	21:G:154:CYS:HB3	1.85	0.58
34:t:9:THR:O	34:t:41:ARG:NH2	2.37	0.58
12:f:150:GLU:O	12:f:156:HIS:ND1	2.37	0.57
2:V:228:ARG:O	2:V:232:HIS:ND1	2.37	0.57
18:F:31:GLU:OE1	18:F:35:LYS:NZ	2.37	0.57
30:p:189:ILE:HG23	30:p:196:THR:HB	1.85	0.57
13:A:125:LEU:HA	13:A:149:ILE:HB	1.86	0.57
16:D:259:PRO:HB3	16:D:304:ASN:HB3	1.85	0.57
34:T:9:THR:O	34:T:41:ARG:NH2	2.37	0.57
21:g:138:MET:HB3	21:g:154:CYS:HB3	1.85	0.57
2:V:100:MET:HG2	2:V:102:PRO:HD2	1.87	0.57
4:X:316:ASP:OD1	4:X:320:SER:N	2.37	0.57
14:B:317:ASP:OD2	14:B:346:ARG:NH1	2.37	0.57
33:S:38:ARG:NH2	29:o:164:PHE:O	2.38	0.57
27:m:34:SER:OG	27:m:65:ARG:NH2	2.36	0.57
3:W:82:LEU:HB3	3:W:90:LEU:HD11	1.86	0.57
3:W:405:LYS:HD3	4:X:343:SER:HB3	1.87	0.57
29:O:32:SER:OG	29:O:187:ARG:NH2	2.38	0.57
12:f:790:GLN:HG2	12:f:794:ALA:HB3	1.87	0.56
9:c:79:GLY:HA3	9:c:84:VAL:HA	1.87	0.56
27:M:34:SER:OG	27:M:65:ARG:NH2	2.36	0.56
5:Y:240:VAL:HG23	5:Y:241:ILE:HG13	1.86	0.56
10:d:61:TRP:HB3	10:d:65:ARG:HH11	1.70	0.56
12:f:77:GLU:OE1	12:f:79:ARG:NH1	2.39	0.56
12:f:556:ARG:HD3	12:f:786:GLN:HB2	1.86	0.56
33:S:38:ARG:HH12	34:T:151:ARG:HD3	1.70	0.56
22:h:222:THR:OG1	22:h:225:GLU:OE1	2.23	0.56
29:o:32:SER:OG	29:o:187:ARG:NH2	2.38	0.56
14:B:295:TYR:OH	18:F:259:MET:SD	2.64	0.56
16:D:234:GLU:O	16:D:237:GLN:NE2	2.39	0.56
26:L:186:GLU:HA	26:L:189:LYS:HG2	1.86	0.56
26:l:186:GLU:HA	26:l:189:LYS:HG2	1.86	0.56
1:U:700:GLU:OE1	1:U:707:ASN:ND2	2.38	0.56
9:c:29:GLU:HG3	9:c:65:TYR:HB2	1.87	0.56
12:f:378:ASN:HD21	12:f:392:THR:HG22	1.70	0.56
12:f:691:PRO:HA	12:f:694:LEU:HB2	1.87	0.56
14:B:423:LYS:HG2	14:B:427:LEU:HD12	1.86	0.56
17:E:98:VAL:HA	17:E:110:TYR:HA	1.87	0.56
17:E:275:MET:HB3	17:E:277:MET:HE2	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:q:181:ARG:NH1	31:q:190:ASP:OD1	2.39	0.56
3:W:72:LYS:HD3	3:W:123:ARG:HA	1.87	0.56
9:c:136:LEU:HD22	19:u:71:LEU:HG	1.85	0.56
1:U:373:ASN:HD22	1:U:385:PHE:HD2	1.54	0.56
4:X:173:GLU:HA	4:X:176:THR:HG22	1.86	0.56
6:Z:259:VAL:HB	9:c:291:LEU:HD21	1.88	0.56
7:a:243:GLY:HA3	7:a:279:GLU:HG3	1.86	0.56
12:f:591:ALA:HA	12:f:594:LEU:HD23	1.87	0.56
14:B:230:THR:HG22	14:B:232:LYS:HZ3	1.70	0.56
1:U:637:VAL:HG13	1:U:652:ALA:HB1	1.86	0.56
14:B:440:LEU:HG	24:J:61:LYS:HG3	1.87	0.56
5:Y:333:GLU:OE1	5:Y:336:ARG:NH2	2.39	0.56
6:Z:67:VAL:HG21	8:b:91:ARG:HD2	1.88	0.56
16:D:249:ASP:OD1	16:D:252:ARG:NH2	2.39	0.56
21:g:137:CYS:SG	21:g:138:MET:N	2.79	0.56
2:V:33:GLN:NE2	2:V:83:GLU:O	2.37	0.55
25:K:71:ASP:OD1	25:K:97:GLN:NE2	2.39	0.55
15:C:137:LEU:HD21	15:C:215:SER:H	1.71	0.55
16:D:162:VAL:O	16:D:221:HIS:ND1	2.38	0.55
22:H:222:THR:OG1	22:H:225:GLU:OE1	2.23	0.55
23:I:123:GLN:NE2	24:J:79:ASP:OD1	2.39	0.55
1:U:625:ILE:HG13	1:U:626:LEU:HG	1.86	0.55
9:c:272:ILE:HA	9:c:275:VAL:HG12	1.87	0.55
12:f:441:LYS:HB2	12:f:477:MET:HE1	1.88	0.55
12:f:663:GLY:O	12:f:664:GLU:HG3	2.06	0.55
12:f:828:ARG:CD	12:f:843:SER:OG	2.54	0.55
13:A:189:GLU:O	13:A:193:THR:OG1	2.24	0.55
25:k:71:ASP:OD1	25:k:97:GLN:NE2	2.39	0.55
17:E:316:HIS:HE2	37:E:401:ATP:HO2'	1.54	0.55
25:K:41:GLN:NE2	25:K:151:PRO:O	2.40	0.55
27:M:40:ARG:NH1	27:M:146:ALA:O	2.40	0.55
31:Q:38:MET:O	31:Q:65:GLN:NE2	2.40	0.55
11:e:59:GLU:O	11:e:63:HIS:ND1	2.39	0.55
12:f:552:ASP:HB3	12:f:556:ARG:HG3	1.88	0.55
23:i:57:ASP:HB3	23:i:59:VAL:HG13	1.88	0.55
5:Y:231:LEU:HG	5:Y:236:LEU:HD12	1.88	0.55
31:Q:181:ARG:NH1	31:Q:190:ASP:OD1	2.39	0.55
22:h:42:ASN:ND2	22:h:183:GLU:OE1	2.40	0.55
3:W:273:TYR:HB2	3:W:276:LEU:HB2	1.87	0.55
3:W:407:ASP:OD2	4:X:344:ARG:NH2	2.39	0.55
12:f:594:LEU:O	12:f:635:LYS:NZ	2.40	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:E:352:MET:HA	17:E:355:ILE:HD12	1.88	0.55
27:m:40:ARG:NH1	27:m:146:ALA:O	2.40	0.55
9:c:76:PRO:HG2	9:c:87:VAL:HG21	1.87	0.55
22:h:65:VAL:HG11	22:h:211:GLY:HA3	1.88	0.55
2:V:342:ILE:HG21	2:V:345:ARG:HH21	1.72	0.55
3:W:187:LEU:HA	3:W:190:MET:HE3	1.89	0.55
7:a:150:SER:OG	7:a:154:ARG:NH1	2.40	0.55
12:f:378:ASN:O	12:f:382:ASN:ND2	2.39	0.55
22:H:148:GLN:OE1	22:H:158:TRP:NE1	2.40	0.55
23:I:57:ASP:HB3	23:I:59:VAL:HG13	1.87	0.55
1:U:32:ASN:O	1:U:35:TRP:NE1	2.40	0.54
4:X:182:ASN:ND2	5:Y:248:GLU:OE2	2.41	0.54
17:E:21:GLU:OE2	17:E:25:ARG:NH2	2.39	0.54
22:H:118:MET:HE2	22:H:151:PRO:HA	1.88	0.54
30:p:58:THR:CG2	30:p:59:ASP:N	2.70	0.54
1:U:11:LEU:HD22	1:U:19:LEU:HD11	1.90	0.54
3:W:94:ARG:HD3	3:W:95:SER:HB3	1.89	0.54
5:Y:232:GLU:HG3	5:Y:302:HIS:HE1	1.72	0.54
12:f:828:ARG:HD2	12:f:843:SER:OG	2.07	0.54
18:F:375:VAL:HG22	18:F:415:LEU:HD12	1.89	0.54
22:H:65:VAL:HG11	22:H:211:GLY:HA3	1.88	0.54
25:K:212:ALA:HA	25:K:234:LEU:HD22	1.90	0.54
28:N:18:SER:HB2	28:N:31:THR:H	1.73	0.54
26:l:16:GLN:OE1	26:l:18:ARG:NH2	2.40	0.54
1:U:889:LEU:HD13	1:U:909:GLY:H	1.72	0.54
17:E:322:LYS:HG2	17:E:324:GLY:H	1.72	0.54
22:H:42:ASN:ND2	22:H:183:GLU:OE1	2.40	0.54
25:K:124:GLY:O	25:K:134:SER:N	2.41	0.54
22:h:118:MET:HE2	22:h:151:PRO:HA	1.88	0.54
22:h:148:GLN:OE1	22:h:158:TRP:NE1	2.40	0.54
12:f:291:GLN:HE21	12:f:879:ARG:HH21	1.56	0.54
12:f:378:ASN:OD1	12:f:382:ASN:ND2	2.40	0.54
23:I:171:ALA:HB2	23:I:200:THR:HG21	1.90	0.54
5:Y:26:LEU:HD21	5:Y:60:SER:HB2	1.89	0.54
10:d:131:VAL:HA	10:d:134:LYS:HB3	1.90	0.54
12:f:465:LEU:O	12:f:481:SER:OG	2.25	0.54
12:f:680:ARG:HB2	12:f:763:ARG:HE	1.72	0.54
17:E:351:GLY:HA3	18:F:217:ILE:HG21	1.89	0.54
25:k:124:GLY:O	25:k:134:SER:N	2.41	0.54
8:b:25:ARG:NH1	8:b:145:GLU:OE1	2.41	0.54
9:c:225:TRP:HE3	9:c:226:MET:HE3	1.72	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:f:758:ASN:HB2	12:f:809:ILE:HG21	1.88	0.54
12:f:875:ALA:O	12:f:876:HIS:ND1	2.38	0.54
21:g:11:ARG:O	21:g:24:GLN:NE2	2.41	0.54
25:k:41:GLN:NE2	25:k:151:PRO:O	2.40	0.54
12:f:634:LYS:HD2	12:f:637:LYS:HD2	1.90	0.54
14:B:181:GLN:O	14:B:241:ASN:ND2	2.41	0.54
14:B:411:ARG:NH1	14:B:413:LYS:O	2.41	0.54
15:C:78:ARG:HA	15:C:108:VAL:HG13	1.90	0.54
15:C:147:THR:H	15:C:150:MET:HE3	1.72	0.54
18:F:251:LEU:HD11	18:F:256:LEU:HD21	1.89	0.54
26:L:16:GLN:OE1	26:L:18:ARG:NH2	2.40	0.54
10:d:231:LYS:HE3	10:d:234:ASP:HB2	1.90	0.54
14:B:429:LYS:HE2	14:B:430:LYS:HE2	1.90	0.54
18:F:168:TYR:OH	18:F:277:GLU:OE1	2.26	0.54
12:f:221:ILE:HA	12:f:224:ASN:HB2	1.90	0.54
14:B:250:VAL:HB	14:B:284:ILE:HA	1.88	0.54
24:j:88:ARG:HH11	31:q:69:MET:HG3	1.72	0.54
27:m:8:ASP:O	27:m:22:GLN:NE2	2.41	0.54
1:U:55:ARG:NH1	1:U:56:SER:OG	2.41	0.54
12:f:742:ALA:O	12:f:746:ARG:NE	2.40	0.54
23:i:171:ALA:HB2	23:i:200:THR:HG21	1.90	0.54
23:i:218:ARG:NH1	23:i:223:THR:OG1	2.39	0.54
1:U:265:ILE:HD11	1:U:326:ILE:HG23	1.90	0.53
12:f:673:ARG:NH1	12:f:708:ASP:OD2	2.41	0.53
9:c:30:GLN:OE1	9:c:206:ASN:ND2	2.41	0.53
12:f:585:GLU:HG3	12:f:588:ARG:HE	1.73	0.53
12:f:873:LEU:HG	12:f:875:ALA:H	1.73	0.53
4:X:143:TYR:OH	5:Y:248:GLU:O	2.26	0.53
12:f:139:CYS:O	12:f:143:ARG:NH1	2.41	0.53
34:t:43:MET:HE3	34:t:45:VAL:HG22	1.90	0.53
7:a:278:MET:HE2	7:a:339:ARG:HD3	1.89	0.53
17:E:281:ARG:HH12	18:F:296:PHE:HA	1.74	0.53
23:i:161:ALA:HB1	23:i:175:LEU:HD13	1.91	0.53
24:j:32:ALA:HB2	24:j:45:VAL:HG23	1.90	0.53
3:W:65:ARG:HG3	3:W:67:LEU:H	1.72	0.53
6:Z:129:LYS:HE3	9:c:212:LEU:HA	1.89	0.53
12:f:209:MET:HG3	12:f:211:ILE:H	1.72	0.53
12:f:447:ALA:HA	12:f:450:ILE:HD12	1.90	0.53
19:u:40:GLN:HG2	19:u:72:ARG:HD3	1.89	0.53
21:G:11:ARG:O	21:G:24:GLN:NE2	2.41	0.53
24:J:32:ALA:HB2	24:J:45:VAL:HG23	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:K:76:CYS:SG	25:K:77:ALA:N	2.82	0.53
25:k:76:CYS:SG	25:k:77:ALA:N	2.82	0.53
25:k:212:ALA:HA	25:k:234:LEU:HD22	1.90	0.53
23:i:47:ALA:HB3	23:i:212:GLU:HB3	1.91	0.53
25:k:99:HIS:HB2	25:k:107:MET:HE3	1.91	0.53
4:X:396:THR:HB	9:c:242:GLU:HG2	1.90	0.53
8:b:100:ARG:NH1	8:b:102:GLY:O	2.42	0.53
12:f:571:GLU:HG3	12:f:573:ILE:H	1.73	0.53
12:f:809:ILE:HG23	12:f:810:ILE:HG12	1.91	0.53
14:B:166:ASP:HB3	14:B:169:PRO:HG3	1.90	0.53
27:M:8:ASP:O	27:M:22:GLN:NE2	2.41	0.53
21:g:67:THR:HG22	21:g:69:LEU:H	1.74	0.53
1:U:885:MET:H	1:U:888:GLN:HE21	1.56	0.53
2:V:337:LEU:O	2:V:401:ASN:ND2	2.41	0.53
2:V:494:MET:O	6:Z:278:ASN:ND2	2.42	0.53
5:Y:178:ASN:ND2	5:Y:212:GLU:OE1	2.41	0.53
13:A:122:VAL:HB	18:F:88:TYR:HB2	1.90	0.53
14:B:256:ILE:HD11	14:B:290:ILE:HD12	1.90	0.53
21:G:67:THR:HG22	21:G:69:LEU:H	1.74	0.53
28:n:18:SER:HB2	28:n:31:THR:H	1.72	0.53
31:q:38:MET:O	31:q:65:GLN:NE2	2.40	0.53
5:Y:141:VAL:HG11	5:Y:164:ALA:HB2	1.90	0.53
18:F:97:LEU:O	18:F:120:LYS:N	2.42	0.53
18:F:401:VAL:HG12	18:F:405:MET:HE2	1.91	0.53
23:I:218:ARG:NH1	23:I:223:THR:OG1	2.39	0.53
22:h:72:ILE:HG12	22:h:107:THR:HG22	1.91	0.53
16:D:124:LEU:HD21	16:D:142:VAL:HG21	1.91	0.52
21:g:159:TYR:HB3	22:h:81:PRO:HG3	1.90	0.52
9:c:171:GLY:HA3	9:c:174:PRO:HB3	1.91	0.52
12:f:202:HIS:ND1	12:f:242:GLU:OE2	2.41	0.52
12:f:836:GLU:H	12:f:840:LEU:HD21	1.73	0.52
17:E:197:LYS:HZ3	17:E:199:VAL:HG12	1.75	0.52
23:I:40:ASN:OD1	23:I:184:MET:N	2.43	0.52
21:g:54:LYS:NZ	21:g:216:GLU:OE2	2.34	0.52
2:V:106:ARG:O	2:V:110:HIS:ND1	2.42	0.52
12:f:813:LYS:NZ	12:f:819:TYR:OH	2.34	0.52
18:F:151:VAL:HG12	18:F:163:THR:HG23	1.91	0.52
25:K:36:THR:HA	25:K:171:GLY:HA3	1.91	0.52
2:V:57:ALA:O	2:V:201:ARG:NH1	2.42	0.52
27:M:92:ARG:NH2	34:T:73:ASP:OD1	2.42	0.52
28:n:40:ARG:NH1	28:n:180:ALA:O	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:V:139:MET:HE1	2:V:181:TYR:HB3	1.91	0.52
10:d:35:PHE:O	10:d:38:THR:OG1	2.28	0.52
12:f:110:TYR:OH	12:f:118:ASN:ND2	2.43	0.52
13:A:78:TRP:HZ3	14:B:99:VAL:HG21	1.74	0.52
22:H:72:ILE:HG12	22:H:107:THR:HG22	1.91	0.52
23:I:47:ALA:HB3	23:I:212:GLU:HB3	1.91	0.52
34:T:43:MET:HE3	34:T:45:VAL:HG22	1.90	0.52
17:E:208:ILE:HG22	20:v:6:UNK:CB	2.40	0.52
23:I:161:ALA:HB1	23:I:175:LEU:HD13	1.91	0.52
26:L:146:GLN:HE22	26:L:159:MET:HE2	1.75	0.52
12:f:812:GLY:HA3	12:f:853:VAL:HA	1.92	0.52
16:D:153:MET:HG3	16:D:228:ILE:HA	1.90	0.52
18:F:305:GLU:HG3	18:F:306:VAL:HG23	1.91	0.52
21:G:144:ASP:HB3	21:G:147:GLN:HB2	1.91	0.52
6:Z:109:ASN:HD21	6:Z:140:SER:HB2	1.74	0.52
12:f:240:VAL:HG13	12:f:257:ARG:HE	1.74	0.52
12:f:705:ASN:HB3	12:f:787:LEU:HD21	1.92	0.52
28:N:40:ARG:NH1	28:N:180:ALA:O	2.43	0.52
25:k:18:GLU:OE1	25:k:20:ARG:NH2	2.42	0.52
31:q:103:LEU:HB3	31:q:117:TYR:HA	1.92	0.52
2:V:200:ARG:NH1	2:V:242:HIS:O	2.42	0.52
9:c:100:LYS:HG2	9:c:105:PRO:HB3	1.91	0.52
15:C:223:PHE:CB	20:v:12:UNK:HA	2.40	0.52
24:J:175:ASN:HD21	24:J:190:LEU:HD11	1.74	0.52
23:i:40:ASN:OD1	23:i:184:MET:N	2.43	0.52
6:Z:37:GLY:HA2	6:Z:56:VAL:HG12	1.91	0.52
6:Z:121:LEU:HD11	6:Z:138:TYR:HD2	1.75	0.52
9:c:275:VAL:O	16:D:98:GLN:NE2	2.43	0.52
13:A:173:THR:HG22	13:A:175:SER:H	1.73	0.52
25:K:99:HIS:HB2	25:K:107:MET:HE3	1.91	0.52
21:g:144:ASP:HB3	21:g:147:GLN:HB2	1.91	0.52
26:l:146:GLN:HE22	26:l:159:MET:HE2	1.75	0.52
14:B:141:LYS:HG3	14:B:144:LEU:HD12	1.91	0.51
27:M:170:GLN:HA	27:M:173:LYS:HE2	1.92	0.51
9:c:75:MET:O	9:c:77:GLN:NE2	2.43	0.51
12:f:497:VAL:HA	12:f:500:LEU:HB2	1.91	0.51
23:i:216:LEU:HD12	23:i:225:ILE:HG12	1.93	0.51
24:j:175:ASN:HD21	24:j:190:LEU:HD11	1.74	0.51
26:l:148:CYS:SG	26:l:150:SER:OG	2.66	0.51
28:n:144:ARG:H	28:n:147:MET:HE3	1.75	0.51
5:Y:191:ILE:O	5:Y:193:ASP:N	2.42	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:a:70:ARG:HH22	8:b:26:LEU:HD13	1.74	0.51
12:f:816:TYR:HB3	12:f:821:LEU:HD13	1.92	0.51
21:G:114:LEU:HD22	21:G:140:LEU:HD21	1.93	0.51
3:W:120:ILE:HA	3:W:123:ARG:HB3	1.91	0.51
6:Z:192:THR:O	6:Z:196:HIS:ND1	2.44	0.51
7:a:284:ARG:HD3	7:a:288:HIS:H	1.75	0.51
16:D:204:MET:HE3	16:D:310:ALA:HB2	1.91	0.51
29:O:174:ASP:OD2	29:O:187:ARG:NH1	2.43	0.51
25:k:36:THR:HA	25:k:171:GLY:HA3	1.91	0.51
3:W:362:ASN:HD22	3:W:365:ILE:HD11	1.75	0.51
4:X:171:LEU:HD11	4:X:210:LEU:HD12	1.93	0.51
8:b:22:LEU:HD23	8:b:177:PRO:HG3	1.93	0.51
3:W:312:MET:HG3	3:W:315:MET:HG2	1.93	0.51
3:W:443:THR:HA	6:Z:229:GLN:HE22	1.75	0.51
5:Y:102:ASP:HA	5:Y:105:MET:HG2	1.92	0.51
7:a:70:ARG:NH2	8:b:16:MET:O	2.44	0.51
7:a:273:GLN:HB3	7:a:310:LEU:HD11	1.93	0.51
12:f:94:LYS:HA	12:f:97:LYS:HB2	1.92	0.51
15:C:351:MET:HB3	15:C:354:ALA:HB2	1.92	0.51
29:O:1:THR:N	29:O:168:GLY:O	2.44	0.51
31:Q:103:LEU:HB3	31:Q:117:TYR:HA	1.92	0.51
33:s:198:VAL:HG22	33:s:203:ILE:HG12	1.93	0.51
1:U:697:GLN:NE2	1:U:744:VAL:O	2.43	0.51
1:U:885:MET:HB3	1:U:888:GLN:HG2	1.92	0.51
6:Z:165:GLU:H	6:Z:168:GLU:HB3	1.75	0.51
9:c:197:ASN:HD21	9:c:201:TYR:HB3	1.76	0.51
18:F:39:GLU:HA	18:F:42:ILE:HB	1.91	0.51
28:N:144:ARG:H	28:N:147:MET:HE3	1.75	0.51
27:m:170:GLN:HA	27:m:173:LYS:HE2	1.92	0.51
29:o:174:ASP:OD2	29:o:187:ARG:NH1	2.43	0.51
6:Z:59:ASP:HB2	8:b:95:LEU:HD11	1.93	0.51
15:C:69:GLN:HB3	15:C:118:ASN:HD21	1.76	0.51
15:C:77:VAL:HG22	15:C:111:ASN:H	1.75	0.51
6:Z:162:ILE:HG13	9:c:220:LEU:HG	1.92	0.51
13:A:81:ALA:HA	13:A:85:GLN:HE21	1.76	0.51
15:C:224:ILE:HG13	20:v:12:UNK:CB	2.41	0.51
30:P:190:ILE:HG22	30:P:195:ILE:HG23	1.93	0.51
30:p:56:LEU:CG	30:p:58:THR:HG22	2.37	0.51
2:V:412:LEU:O	5:Y:346:LYS:NZ	2.44	0.51
5:Y:92:GLU:OE2	5:Y:94:ASN:ND2	2.43	0.51
27:M:67:PHE:HB2	27:M:75:MET:HB2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:R:125:THR:OG1	31:q:170:ARG:NH2	2.45	0.51
29:o:1:THR:N	29:o:168:GLY:O	2.44	0.51
3:W:201:ARG:NH1	16:D:390:ASN:O	2.44	0.50
23:I:38:LEU:O	23:I:179:TYR:OH	2.29	0.50
2:V:346:LEU:HD12	11:e:46:ASP:HB2	1.93	0.50
3:W:359:VAL:HG23	3:W:382:LEU:HD22	1.92	0.50
12:f:852:VAL:O	12:f:854:GLY:N	2.43	0.50
18:F:383:GLU:HG2	18:F:386:ARG:HH22	1.76	0.50
22:H:66:GLU:OE2	22:H:91:ARG:NH2	2.44	0.50
21:g:32:ILE:HA	21:g:82:GLY:HA2	1.93	0.50
21:g:114:LEU:HD22	21:g:140:LEU:HD21	1.93	0.50
27:m:67:PHE:HB2	27:m:75:MET:HB2	1.93	0.50
6:Z:65:ASP:OD2	6:Z:103:LYS:NZ	2.43	0.50
6:Z:201:LEU:HD12	7:a:360:VAL:HG11	1.93	0.50
12:f:469:TYR:O	12:f:472:HIS:ND1	2.32	0.50
13:A:178:GLY:H	36:A:501:ADP:HN62	1.60	0.50
15:C:256:SER:HA	15:C:301:LEU:HA	1.94	0.50
17:E:148:VAL:HG13	17:E:149:ILE:HG13	1.93	0.50
23:I:216:LEU:HD12	23:I:225:ILE:HG12	1.93	0.50
22:h:66:GLU:OE2	22:h:91:ARG:NH2	2.44	0.50
23:i:149:GLN:NE2	23:i:163:CYS:O	2.45	0.50
26:l:41:LYS:NZ	26:l:180:MET:O	2.42	0.50
2:V:495:ARG:HG2	15:C:44:ARG:HA	1.93	0.50
6:Z:22:HIS:HB2	6:Z:25:ARG:HH21	1.75	0.50
6:Z:129:LYS:HE2	9:c:216:MET:HB3	1.93	0.50
18:F:435:LEU:HD23	18:F:438:TYR:HE2	1.76	0.50
23:i:38:LEU:O	23:i:179:TYR:OH	2.29	0.50
33:s:92:LEU:HD23	33:s:124:PHE:HE2	1.76	0.50
2:V:171:VAL:HG12	2:V:175:MET:HE3	1.92	0.50
12:f:369:ARG:NH2	12:f:791:VAL:O	2.45	0.50
14:B:383:LEU:HD21	14:B:420:LYS:HD3	1.94	0.50
21:G:32:ILE:HA	21:G:82:GLY:HA2	1.93	0.50
15:C:60:ARG:NH2	16:D:71:GLU:OE1	2.44	0.50
1:U:643:SER:O	1:U:649:ARG:NH1	2.40	0.50
2:V:198:GLN:NE2	15:C:29:GLU:OE2	2.45	0.50
3:W:450:GLU:OE2	6:Z:223:ASN:ND2	2.39	0.50
6:Z:261:TYR:O	6:Z:264:SER:OG	2.27	0.50
13:A:135:GLU:OE1	13:A:258:ARG:NH1	2.45	0.50
12:f:240:VAL:O	12:f:257:ARG:NH2	2.36	0.50
33:S:92:LEU:HD23	33:S:124:PHE:HE2	1.75	0.50
21:G:137:CYS:SG	21:G:138:MET:N	2.79	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:I:11:ILE:HG23	24:J:18:GLN:HE22	1.76	0.50
23:I:149:GLN:NE2	23:I:163:CYS:O	2.45	0.50
3:W:373:ILE:HG23	3:W:413:ILE:HG23	1.93	0.49
7:a:255:TRP:O	7:a:258:GLN:NE2	2.42	0.49
9:c:70:ILE:HG23	9:c:104:ARG:HH11	1.77	0.49
15:C:85:VAL:HG21	15:C:123:LEU:HD11	1.95	0.49
16:D:228:ILE:HD12	16:D:262:ILE:HG12	1.92	0.49
34:T:212:ALA:O	28:n:175:ARG:NH2	2.45	0.49
10:d:105:PHE:HB2	10:d:166:PHE:HE1	1.77	0.49
12:f:252:ALA:O	12:f:257:ARG:NH1	2.45	0.49
12:f:373:ALA:HB2	12:f:744:MET:HA	1.94	0.49
18:F:304:ARG:HH11	18:F:308:ARG:HD2	1.77	0.49
33:s:123:SER:HB3	33:s:136:LYS:HG3	1.94	0.49
1:U:796:LYS:HG2	1:U:798:PRO:HD3	1.94	0.49
8:b:110:ILE:HG22	8:b:139:ASP:HB2	1.93	0.49
12:f:23:GLY:HA3	12:f:34:ARG:HH22	1.78	0.49
18:F:94:ILE:HD11	18:F:125:LYS:HB2	1.94	0.49
33:S:198:VAL:HG22	33:S:203:ILE:HG12	1.93	0.49
12:f:482:ILE:HG22	12:f:501:LEU:HD22	1.95	0.49
16:D:86:PRO:HB3	17:E:81:VAL:HG12	1.95	0.49
16:D:92:PHE:HA	16:D:103:VAL:HG12	1.93	0.49
17:E:198:VAL:HB	17:E:232:MET:HG2	1.95	0.49
26:L:148:CYS:SG	26:L:150:SER:OG	2.66	0.49
25:k:50:VAL:HG11	25:k:66:LYS:HB2	1.94	0.49
12:f:257:ARG:HG2	12:f:272:LEU:HD13	1.94	0.49
12:f:682:GLY:HA3	12:f:687:ARG:HH11	1.76	0.49
21:G:54:LYS:NZ	21:G:216:GLU:OE2	2.34	0.49
21:G:158:GLY:O	22:H:84:ARG:NH2	2.46	0.49
2:V:302:TYR:HB3	2:V:339:LEU:HD11	1.94	0.49
2:V:403:ILE:HG21	10:d:145:GLU:HA	1.94	0.49
12:f:796:LEU:HA	12:f:799:VAL:HG12	1.93	0.49
16:D:168:GLY:O	37:D:501:ATP:N6	2.36	0.49
33:S:145:LEU:HD22	33:S:178:VAL:HB	1.95	0.49
23:i:29:GLY:HA3	23:i:166:ASN:HB2	1.95	0.49
30:p:190:ILE:HG22	30:p:195:ILE:HG23	1.93	0.49
2:V:42:ALA:O	2:V:46:GLY:N	2.45	0.49
5:Y:297:ARG:NH1	11:e:49:GLU:OE1	2.39	0.49
7:a:373:ASP:OD2	10:d:251:ARG:NH2	2.39	0.49
17:E:265:ASP:OD2	17:E:291:ARG:NH1	2.45	0.49
26:L:148:CYS:HG	26:L:150:SER:HG	1.52	0.49
27:M:40:ARG:HE	27:M:161:TRP:CD1	2.30	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:M:144:ASP:HB3	27:M:147:GLN:HE22	1.78	0.49
27:m:40:ARG:HE	27:m:161:TRP:CD1	2.31	0.49
33:s:145:LEU:HD22	33:s:178:VAL:HB	1.95	0.49
7:a:346:ILE:HA	7:a:349:MET:HE2	1.95	0.49
31:q:117:TYR:HB3	31:q:125:ALA:HB3	1.95	0.49
9:c:86:ALA:HB2	19:u:73:LEU:O	2.13	0.49
9:c:255:TYR:CZ	9:c:281:LYS:HD3	2.47	0.49
12:f:482:ILE:HD11	12:f:517:VAL:HG23	1.95	0.49
13:A:143:ASP:OD2	13:A:146:LYS:N	2.42	0.49
9:c:139:ARG:HD3	9:c:161:ARG:HH12	1.77	0.49
17:E:84:ARG:O	17:E:85:ARG:NE	2.45	0.49
21:G:159:TYR:HB3	22:H:81:PRO:HG3	1.94	0.49
33:S:16:ALA:HB2	33:S:121:VAL:HG23	1.95	0.49
3:W:348:GLU:HA	3:W:351:TRP:HD1	1.77	0.48
12:f:149:GLU:HG3	12:f:152:ALA:HB2	1.93	0.48
12:f:171:GLN:HG3	12:f:179:VAL:HG22	1.95	0.48
24:J:66:ASP:OD2	24:J:95:ARG:NH2	2.38	0.48
30:P:65:GLN:OE1	31:Q:86:ARG:NH2	2.45	0.48
4:X:344:ARG:HG3	4:X:386:ILE:HG12	1.95	0.48
7:a:268:LEU:HD23	7:a:271:LYS:HD3	1.95	0.48
15:C:280:LEU:HD12	15:C:281:ASP:HB2	1.95	0.48
25:K:50:VAL:HG11	25:K:66:LYS:HB2	1.94	0.48
25:K:236:GLU:HA	25:K:239:LYS:HE3	1.95	0.48
26:L:41:LYS:NZ	26:L:180:MET:O	2.42	0.48
28:N:30:VAL:HG21	34:t:212:ALA:HA	1.94	0.48
25:k:236:GLU:HA	25:k:239:LYS:HE3	1.95	0.48
2:V:43:THR:O	2:V:47:SER:N	2.42	0.48
3:W:268:LYS:HB3	3:W:336:PRO:HG2	1.94	0.48
3:W:424:LEU:HD21	6:Z:244:GLU:HA	1.95	0.48
12:f:119:LYS:HA	12:f:122:ALA:HB3	1.94	0.48
12:f:288:VAL:HA	12:f:291:GLN:HG2	1.94	0.48
32:R:38:ASN:HD22	32:R:41:LEU:HD12	1.78	0.48
1:U:366:HIS:HE1	1:U:395:ARG:HD2	1.77	0.48
2:V:483:CYS:HB2	6:Z:264:SER:HB2	1.95	0.48
12:f:612:LEU:HD21	12:f:636:ASP:HA	1.94	0.48
19:u:72:ARG:HE	19:u:74:ARG:NH2	2.12	0.48
24:j:158:ALA:HB3	25:k:58:LEU:HD22	1.96	0.48
12:f:487:LEU:HD11	12:f:804:LEU:HD12	1.95	0.48
16:D:119:ILE:O	16:D:121:ARG:NH1	2.45	0.48
18:F:251:LEU:HD23	18:F:285:ILE:HG12	1.95	0.48
23:I:34:CYS:HB2	23:I:164:ILE:HD12	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:I:123:GLN:OE1	24:J:118:TYR:OH	2.30	0.48
31:Q:117:TYR:HB3	31:Q:125:ALA:HB3	1.95	0.48
33:s:16:ALA:HB2	33:s:121:VAL:HG23	1.95	0.48
3:W:401:THR:HG23	3:W:402:ILE:HD12	1.96	0.48
18:F:141:ASP:OD2	18:F:144:LYS:NZ	2.39	0.48
23:I:106:PRO:HD2	23:I:109:GLN:HE21	1.79	0.48
28:n:76:VAL:HG23	28:n:104:ASP:HB2	1.95	0.48
1:U:764:LEU:O	1:U:767:THR:OG1	2.31	0.48
3:W:406:VAL:HG12	3:W:413:ILE:HD13	1.95	0.48
10:d:161:GLU:HG2	10:d:163:TYR:H	1.79	0.48
26:L:189:LYS:HG3	26:L:193:ARG:HH12	1.78	0.48
33:S:35:ILE:HD11	29:o:167:LEU:HD21	1.95	0.48
33:S:123:SER:HB3	33:S:136:LYS:HG3	1.94	0.48
34:T:92:LEU:HD23	34:T:112:ILE:HD11	1.95	0.48
27:m:51:LYS:NZ	27:m:62:SER:O	2.36	0.48
33:s:4:PRO:HB2	34:t:100:ARG:HH21	1.79	0.48
34:t:7:THR:OG1	34:t:182:ARG:NH2	2.45	0.48
1:U:225:ASP:HB3	1:U:228:ALA:HB3	1.94	0.48
3:W:396:LEU:HD13	3:W:402:ILE:HD13	1.95	0.48
3:W:455:LEU:HA	3:W:456:GLN:HA	1.65	0.48
10:d:256:ILE:HD11	15:C:44:ARG:HH12	1.78	0.48
34:T:7:THR:OG1	34:T:182:ARG:NH2	2.45	0.48
22:h:4:ARG:NH2	23:i:2:SER:OG	2.38	0.48
5:Y:308:LEU:O	5:Y:358:ARG:NH2	2.46	0.48
33:S:187:VAL:HG21	29:o:24:MET:HE3	1.96	0.48
23:I:228:LEU:HB2	23:I:232:GLU:HG3	1.96	0.48
26:L:120:THR:O	27:M:129:ARG:NH1	2.32	0.48
29:O:31:CYS:SG	29:O:32:SER:N	2.87	0.48
22:h:4:ARG:HH12	23:i:2:SER:HA	1.78	0.48
1:U:224:ASP:OD1	1:U:224:ASP:N	2.47	0.47
2:V:346:LEU:HD11	2:V:349:ARG:HE	1.78	0.47
12:f:243:PRO:HD2	12:f:257:ARG:HH22	1.79	0.47
12:f:640:LYS:HD3	12:f:651:GLY:HA3	1.96	0.47
14:B:106:PRO:HB3	15:C:121:TYR:HB2	1.95	0.47
15:C:216:GLY:O	15:C:253:SER:OG	2.25	0.47
17:E:182:LEU:HA	17:E:185:ARG:HB3	1.96	0.47
28:N:76:VAL:HG23	28:N:104:ASP:HB2	1.95	0.47
7:a:341:LEU:HD13	7:a:345:GLN:HB2	1.96	0.47
17:E:198:VAL:HG12	17:E:200:SER:H	1.79	0.47
24:J:11:SER:OG	24:J:13:ASP:OD1	2.30	0.47
1:U:82:LEU:O	1:U:129:ARG:NE	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:Y:78:GLU:O	5:Y:82:LYS:N	2.47	0.47
17:E:197:LYS:HE3	18:F:320:PHE:HB2	1.97	0.47
21:G:120:ASP:OD1	22:H:84:ARG:NH1	2.47	0.47
23:I:29:GLY:HA3	23:I:166:ASN:HB2	1.95	0.47
23:i:228:LEU:HB2	23:i:232:GLU:HG3	1.96	0.47
2:V:280:ALA:HB1	2:V:284:GLU:HB3	1.96	0.47
2:V:465:ASP:N	2:V:465:ASP:OD1	2.47	0.47
12:f:93:PRO:HB2	12:f:97:LYS:HG3	1.96	0.47
12:f:168:LYS:HD3	12:f:204:ALA:HB1	1.97	0.47
33:S:5:TYR:OH	33:S:103:PRO:O	2.28	0.47
23:i:106:PRO:HD2	23:i:109:GLN:HE21	1.79	0.47
34:t:92:LEU:HD23	34:t:112:ILE:HD11	1.95	0.47
10:d:203:PRO:HG2	10:d:205:LYS:HB3	1.96	0.47
12:f:253:LEU:HD11	12:f:272:LEU:HB3	1.95	0.47
12:f:612:LEU:HA	12:f:632:LYS:HD2	1.96	0.47
18:F:300:LYS:HA	18:F:301:ALA:HA	1.64	0.47
23:I:3:ARG:HB2	24:J:5:ARG:HH12	1.79	0.47
33:S:211:ARG:NH2	29:o:170:GLY:O	2.47	0.47
27:m:144:ASP:HB3	27:m:147:GLN:HE22	1.78	0.47
15:C:42:LEU:HD22	16:D:54:LEU:HG	1.96	0.47
22:H:108:ALA:HA	22:H:147:PHE:HE2	1.79	0.47
30:p:2:SER:OG	30:p:3:ILE:N	2.48	0.47
3:W:98:LYS:HA	3:W:101:VAL:HB	1.97	0.47
3:W:267:LEU:HD11	3:W:296:LEU:HD13	1.96	0.47
7:a:343:LEU:HA	7:a:346:ILE:HD12	1.97	0.47
12:f:637:LYS:HE2	12:f:673:ARG:HB2	1.96	0.47
13:A:74:PRO:HA	13:A:75:PRO:HD3	1.73	0.47
14:B:407:LEU:HD21	15:C:178:LEU:HB2	1.96	0.47
15:C:11:LEU:HD12	15:C:15:LYS:HG3	1.97	0.47
16:D:103:VAL:HG11	16:D:139:LEU:HD21	1.97	0.47
17:E:199:VAL:HG23	17:E:201:SER:H	1.79	0.47
26:L:146:GLN:HE21	26:L:154:PHE:HD2	1.62	0.47
26:L:215:VAL:HB	26:L:221:PHE:HD1	1.80	0.47
30:P:2:SER:OG	30:P:3:ILE:N	2.48	0.47
21:g:189:TRP:HE3	21:g:194:THR:HG22	1.80	0.47
22:h:108:ALA:HA	22:h:147:PHE:HE2	1.80	0.47
23:i:34:CYS:HB2	23:i:164:ILE:HD12	1.95	0.47
31:q:19:ARG:HH21	31:q:31:ASP:HB2	1.80	0.47
32:r:38:ASN:HD22	32:r:41:LEU:HD12	1.78	0.47
14:B:437:GLY:O	23:I:155:ASN:ND2	2.48	0.47
16:D:385:LEU:HD23	16:D:398:ASP:HA	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:I:102:GLN:HG2	31:Q:82:ASN:ND2	2.28	0.47
21:g:126:THR:HG22	22:h:128:ARG:HH12	1.79	0.47
25:k:193:GLU:HA	25:k:196:LYS:HE3	1.97	0.47
26:l:189:LYS:HG3	26:l:193:ARG:HH12	1.78	0.47
1:U:54:PHE:HD2	1:U:56:SER:H	1.63	0.47
9:c:54:MET:CE	19:u:73:LEU:HD11	2.45	0.47
12:f:469:TYR:OH	12:f:478:ARG:NH1	2.47	0.47
32:r:35:ILE:N	32:r:43:GLY:O	2.47	0.47
12:f:717:ALA:HB1	12:f:760:PHE:HB2	1.97	0.47
13:A:212:VAL:HG11	13:A:341:ILE:HD12	1.97	0.47
25:K:193:GLU:HA	25:K:196:LYS:HE3	1.97	0.47
32:R:35:ILE:N	32:R:43:GLY:O	2.47	0.47
26:l:146:GLN:HE21	26:l:154:PHE:HD2	1.62	0.47
7:a:247:ARG:HH21	7:a:250:THR:HG23	1.79	0.46
9:c:226:MET:O	9:c:230:THR:OG1	2.26	0.46
13:A:224:LEU:HD11	36:A:501:ADP:H2'	1.96	0.46
17:E:153:LEU:HD13	17:E:191:LEU:HD22	1.97	0.46
24:J:32:ALA:HB3	24:J:161:ILE:HD11	1.98	0.46
25:K:18:GLU:OE1	25:K:20:ARG:NH2	2.42	0.46
26:l:215:VAL:HB	26:l:221:PHE:HD1	1.80	0.46
1:U:793:LYS:HE3	1:U:796:LYS:HB2	1.96	0.46
8:b:161:ASN:HD21	8:b:168:SER:H	1.61	0.46
9:c:89:PRO:HB2	19:u:70:VAL:HG21	1.97	0.46
14:B:440:LEU:HD22	24:J:30:SER:HB2	1.98	0.46
15:C:229:ARG:NH1	15:C:233:GLU:OE1	2.44	0.46
17:E:195:PHE:HD1	17:E:229:ILE:HG23	1.79	0.46
21:G:144:ASP:OD2	29:O:72:ARG:NH2	2.44	0.46
32:r:77:ALA:O	32:r:120:ARG:NH2	2.49	0.46
9:c:27:THR:HB	9:c:181:LEU:HD22	1.97	0.46
11:e:47:ASN:N	11:e:50:ASP:OD2	2.48	0.46
12:f:24:THR:HG23	12:f:31:LYS:HG3	1.97	0.46
12:f:202:HIS:CE1	12:f:241:PRO:HB2	2.50	0.46
12:f:283:THR:O	12:f:287:ASP:N	2.46	0.46
22:H:209:GLU:OE2	22:H:220:ARG:NE	2.43	0.46
31:Q:19:ARG:HH21	31:Q:31:ASP:HB2	1.80	0.46
1:U:643:SER:HA	15:C:53:ASN:HD21	1.79	0.46
3:W:39:ARG:HE	3:W:43:VAL:HG12	1.80	0.46
15:C:399:MET:HG3	22:H:158:TRP:HH2	1.81	0.46
24:J:121:SER:OG	24:J:122:ASN:N	2.49	0.46
27:M:54:LEU:HB2	27:M:57:LEU:HG	1.97	0.46
27:m:54:LEU:HB2	27:m:57:LEU:HG	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:U:146:LYS:HE2	1:U:148:LYS:HB2	1.98	0.46
6:Z:245:PHE:O	6:Z:249:PHE:N	2.44	0.46
13:A:112:ILE:HG12	13:A:122:VAL:HG22	1.98	0.46
16:D:92:PHE:HZ	16:D:95:ALA:HB2	1.80	0.46
14:B:387:LYS:HG2	14:B:427:LEU:HD13	1.98	0.46
14:B:440:LEU:O	24:J:30:SER:N	2.49	0.46
17:E:244:SER:OG	17:E:245:GLU:N	2.45	0.46
17:E:303:LEU:HD23	17:E:338:PHE:HB3	1.97	0.46
24:j:121:SER:OG	24:j:122:ASN:N	2.48	0.46
27:m:152:ASP:OD1	27:m:156:VAL:N	2.49	0.46
30:p:107:PRO:HG2	30:p:124:LEU:HB2	1.98	0.46
12:f:827:PRO:HG2	12:f:848:GLN:HB3	1.96	0.46
12:f:828:ARG:NE	12:f:843:SER:HG	2.14	0.46
1:U:490:ARG:HB3	1:U:493:VAL:HG12	1.98	0.46
1:U:524:LYS:HG3	1:U:556:MET:HE2	1.98	0.46
17:E:247:THR:O	17:E:249:ALA:N	2.48	0.46
32:R:77:ALA:O	32:R:120:ARG:NH2	2.49	0.46
33:S:148:LEU:HD23	33:S:178:VAL:HG12	1.98	0.46
26:l:207:THR:HG22	26:l:233:LEU:HD12	1.97	0.46
3:W:310:THR:HG23	3:W:311:THR:HG23	1.97	0.46
6:Z:202:ASN:HA	6:Z:205:LEU:HB2	1.97	0.46
8:b:180:ALA:HB1	8:b:183:LEU:HB2	1.97	0.46
12:f:417:ILE:HG22	12:f:418:LEU:HD12	1.98	0.46
23:I:44:LEU:HD22	23:I:190:LEU:HD23	1.98	0.46
26:L:207:THR:HG22	26:L:233:LEU:HD12	1.97	0.46
30:P:135:ASP:OD1	30:P:135:ASP:N	2.49	0.46
1:U:397:THR:OG1	1:U:401:LYS:NZ	2.49	0.46
9:c:215:LYS:HG2	9:c:219:ASN:HD21	1.81	0.46
12:f:269:ALA:O	12:f:273:ASN:N	2.41	0.46
26:L:182:CYS:HB2	26:L:186:GLU:HG3	1.98	0.46
33:S:209:SER:OG	33:S:212:LYS:NZ	2.49	0.46
4:X:53:LEU:HD23	4:X:56:LEU:HD12	1.97	0.45
12:f:626:GLU:OE1	12:f:665:GLU:HB3	2.16	0.45
14:B:204:PRO:HG3	14:B:211:TYR:HE2	1.80	0.45
15:C:219:LEU:HD11	15:C:254:ILE:HD12	1.98	0.45
17:E:271:HIS:CD2	17:E:272:ARG:HG2	2.52	0.45
21:G:53:GLN:HA	21:G:215:ILE:HA	1.98	0.45
21:G:189:TRP:HE3	21:G:194:THR:HG22	1.80	0.45
27:M:50:GLU:O	27:M:65:ARG:NH2	2.49	0.45
27:M:232:ARG:HG2	27:M:234:GLU:HG2	1.97	0.45
23:i:136:TYR:HB2	23:i:148:TYR:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:m:50:GLU:O	27:m:65:ARG:NH2	2.49	0.45
5:Y:40:GLU:O	5:Y:44:ALA:N	2.50	0.45
7:a:34:TRP:O	7:a:38:THR:OG1	2.30	0.45
8:b:21:PHE:HE1	8:b:175:PRO:HA	1.81	0.45
11:e:54:ASN:HA	11:e:57:ARG:HD3	1.98	0.45
18:F:275:ALA:HB1	18:F:326:VAL:HG21	1.98	0.45
33:s:209:SER:OG	33:s:212:LYS:NZ	2.49	0.45
7:a:15:GLY:HA2	7:a:16:PRO:HD3	1.84	0.45
8:b:30:GLN:HE22	8:b:76:HIS:CE1	2.34	0.45
23:I:119:GLN:HE22	24:J:79:ASP:HA	1.81	0.45
27:M:163:CYS:SG	27:M:164:ALA:N	2.89	0.45
30:P:107:PRO:HG2	30:P:124:LEU:HB2	1.98	0.45
30:p:56:LEU:CD2	30:p:58:THR:HG22	2.45	0.45
3:W:328:LEU:HD11	3:W:341:PHE:HD2	1.81	0.45
9:c:251:LEU:HD22	9:c:284:LEU:HD23	1.99	0.45
15:C:148:TYR:HB2	15:C:206:HIS:CD2	2.52	0.45
23:I:10:THR:HG23	24:J:125:ARG:HB2	1.97	0.45
29:O:67:SER:HB3	29:O:74:PRO:HG3	1.98	0.45
27:m:163:CYS:SG	27:m:164:ALA:N	2.89	0.45
29:o:67:SER:HB3	29:o:74:PRO:HG3	1.98	0.45
13:A:236:CYS:HB3	13:A:270:CYS:HA	1.99	0.45
16:D:209:GLY:N	37:D:501:ATP:O2G	2.48	0.45
23:I:79:ILE:HG22	23:I:82:ASP:H	1.82	0.45
22:h:209:GLU:OE2	22:h:220:ARG:NE	2.43	0.45
23:i:134:LEU:H	23:i:150:SER:HG	1.64	0.45
27:m:76:ALA:HB3	27:m:136:MET:HB2	1.99	0.45
33:s:148:LEU:HD23	33:s:178:VAL:HG12	1.98	0.45
1:U:107:HIS:HA	1:U:110:LYS:HE3	1.97	0.45
12:f:75:LEU:HD12	12:f:78:LEU:HD13	1.99	0.45
28:N:175:ARG:NH2	34:t:212:ALA:O	2.50	0.45
30:P:62:THR:OG1	31:Q:85:ARG:NH2	2.48	0.45
30:P:126:LEU:HD12	30:P:127:ILE:HG23	1.99	0.45
29:o:31:CYS:SG	29:o:32:SER:N	2.87	0.45
2:V:348:PHE:HE2	2:V:357:LEU:HB2	1.82	0.45
9:c:197:ASN:ND2	9:c:200:TYR:O	2.49	0.45
12:f:130:ALA:O	12:f:134:SER:N	2.49	0.45
12:f:505:MET:HE3	12:f:537:THR:HG22	1.98	0.45
29:O:100:LEU:HB3	29:O:111:TYR:HB2	1.99	0.45
23:i:44:LEU:HD22	23:i:190:LEU:HD23	1.98	0.45
24:j:32:ALA:HB3	24:j:161:ILE:HD11	1.97	0.45
27:m:37:ILE:HD11	27:m:193:VAL:HG13	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:m:40:ARG:HH21	27:m:161:TRP:NE1	2.15	0.45
12:f:773:LYS:HA	12:f:774:GLY:HA3	1.79	0.45
13:A:415:LYS:O	13:A:419:SER:OG	2.30	0.45
15:C:298:ILE:H	15:C:298:ILE:HG13	1.55	0.45
23:i:170:ALA:O	23:i:173:SER:OG	2.31	0.45
26:l:182:CYS:HB2	26:l:186:GLU:HG3	1.98	0.45
12:f:403:LYS:HG3	12:f:406:GLY:H	1.82	0.45
12:f:564:LEU:HD22	12:f:776:LEU:HG	1.98	0.45
13:A:333:ARG:HE	13:A:336:ARG:HH22	1.63	0.45
13:A:346:PRO:HB2	13:A:351:ARG:HG3	1.98	0.45
32:R:44:THR:HG21	32:R:100:MET:HE3	1.98	0.45
23:i:11:ILE:HG23	24:j:18:GLN:HE22	1.82	0.45
29:o:100:LEU:HB3	29:o:111:TYR:HB2	1.99	0.45
15:C:111:ASN:HD22	15:C:236:VAL:HG21	1.82	0.45
16:D:212:LYS:N	37:D:501:ATP:O2B	2.50	0.45
24:J:158:ALA:HB1	24:J:172:LEU:HD13	1.99	0.45
30:P:149:MET:HE3	33:s:147:PRO:HB2	1.98	0.45
31:Q:13:VAL:HG11	31:Q:105:ALA:HB1	1.99	0.45
2:V:74:ASP:O	2:V:78:HIS:NE2	2.50	0.44
6:Z:266:ILE:HG21	9:c:288:VAL:HG21	1.99	0.44
15:C:168:PRO:HG3	15:C:175:PHE:HE2	1.82	0.44
18:F:431:LYS:HG3	18:F:432:LYS:H	1.82	0.44
23:I:136:TYR:HB2	23:I:148:TYR:HB2	1.98	0.44
27:M:152:ASP:OD1	27:M:156:VAL:N	2.49	0.44
34:T:171:ARG:NH2	29:o:140:ASP:OD2	2.51	0.44
1:U:381:THR:HG22	1:U:412:HIS:HA	1.99	0.44
2:V:228:ARG:HH21	2:V:257:ASN:HB2	1.82	0.44
3:W:328:LEU:HD13	3:W:328:LEU:HA	1.82	0.44
15:C:113:ARG:NH2	15:C:129:ASN:O	2.47	0.44
16:D:130:VAL:HG12	16:D:142:VAL:HG22	2.00	0.44
25:K:71:ASP:O	32:R:64:ARG:NH2	2.42	0.44
26:L:205:LEU:H	26:L:205:LEU:HG	1.59	0.44
30:P:59:ASP:OD2	30:P:104:TYR:N	2.46	0.44
33:S:191:ASP:O	33:S:210:LEU:N	2.46	0.44
2:V:58:ALA:HA	2:V:201:ARG:HH12	1.82	0.44
4:X:194:ARG:NH2	16:D:171:ASP:OD2	2.51	0.44
14:B:218:PRO:HB2	14:B:326:LYS:HZ1	1.80	0.44
17:E:3:ASP:OD1	17:E:3:ASP:N	2.49	0.44
27:M:40:ARG:HH21	27:M:161:TRP:NE1	2.15	0.44
27:M:76:ALA:HB3	27:M:136:MET:HB2	1.99	0.44
34:T:25:ASP:HA	34:T:187:PHE:HA	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:i:79:ILE:HG22	23:i:82:ASP:H	1.82	0.44
23:i:185:THR:HG1	23:i:188:SER:H	1.61	0.44
24:j:158:ALA:HB1	24:j:172:LEU:HD13	1.99	0.44
27:m:232:ARG:HG2	27:m:234:GLU:HG2	1.98	0.44
32:r:44:THR:HG21	32:r:100:MET:HE3	1.98	0.44
7:a:360:VAL:HG22	9:c:308:VAL:HG13	2.00	0.44
18:F:205:PRO:HG3	18:F:212:PHE:HE2	1.82	0.44
2:V:198:GLN:HE22	15:C:33:LEU:HD21	1.83	0.44
5:Y:128:TYR:O	5:Y:131:THR:OG1	2.34	0.44
5:Y:141:VAL:HG13	5:Y:160:ASN:HB2	1.98	0.44
20:v:6:UNK:O	20:v:7:UNK:CB	2.57	0.44
26:l:225:ASP:OD1	26:l:225:ASP:N	2.50	0.44
3:W:325:GLY:O	3:W:329:ARG:N	2.43	0.44
12:f:171:GLN:HE21	12:f:179:VAL:HA	1.83	0.44
12:f:778:LEU:HA	12:f:803:PHE:HB3	1.99	0.44
13:A:96:ALA:HB3	14:B:132:TYR:HD2	1.83	0.44
13:A:103:ASN:HA	13:A:136:GLU:HG2	1.99	0.44
13:A:277:ILE:HD13	13:A:319:MET:HB3	2.00	0.44
15:C:86:LEU:HD11	15:C:94:LYS:HD2	1.99	0.44
22:h:100:VAL:HG13	30:p:93:ASN:HD22	1.82	0.44
24:j:105:GLU:HA	24:j:145:TYR:HE2	1.83	0.44
30:p:126:LEU:HD12	30:p:127:ILE:HG23	1.99	0.44
8:b:26:LEU:HD11	8:b:80:PRO:HG3	1.99	0.44
9:c:122:LEU:HD12	9:c:126:ASP:HB3	2.00	0.44
23:I:170:ALA:O	23:I:173:SER:OG	2.31	0.44
26:L:225:ASP:N	26:L:225:ASP:OD1	2.50	0.44
22:h:139:TRP:HA	22:h:144:PRO:HA	1.99	0.44
26:l:148:CYS:HG	26:l:150:SER:HG	1.59	0.44
27:m:92:ARG:NH2	34:t:73:ASP:OD1	2.51	0.44
1:U:200:VAL:HG23	1:U:203:LYS:HD2	1.99	0.44
1:U:689:ILE:HG12	1:U:732:LEU:HD22	2.00	0.44
6:Z:74:TYR:HE1	9:c:98:MET:HB3	1.82	0.44
6:Z:228:TYR:HB2	7:a:338:PRO:HG2	1.99	0.44
12:f:456:ARG:HE	12:f:492:SER:HG	1.60	0.44
12:f:608:LYS:HB3	12:f:608:LYS:HE3	1.85	0.44
21:g:141:ILE:HG22	21:g:151:VAL:HG22	2.00	0.44
24:j:66:ASP:OD2	24:j:95:ARG:NH2	2.38	0.44
3:W:240:TYR:HD2	3:W:276:LEU:HB3	1.82	0.44
1:U:403:THR:HG23	1:U:777:HIS:HE2	1.83	0.43
9:c:271:ALA:O	9:c:273:LYS:N	2.51	0.43
12:f:399:LEU:HD11	12:f:440:ILE:HG12	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:A:80:LEU:O	13:A:85:GLN:NE2	2.51	0.43
13:A:331:LEU:HB3	13:A:337:LEU:HD12	2.00	0.43
21:G:141:ILE:HG22	21:G:151:VAL:HG22	2.00	0.43
24:J:68:ASN:HA	24:J:211:MET:HE1	2.00	0.43
21:g:132:ARG:HD3	27:m:124:LEU:HD23	1.98	0.43
24:j:180:ALA:HB1	24:j:190:LEU:HD22	2.00	0.43
1:U:554:LEU:HD12	1:U:588:MET:HE1	2.00	0.43
2:V:33:GLN:HE21	2:V:85:ALA:HB2	1.83	0.43
4:X:145:GLU:HA	4:X:148:HIS:HB2	2.00	0.43
7:a:235:ASP:OD2	7:a:249:GLN:NE2	2.51	0.43
12:f:43:GLN:HG3	12:f:121:PHE:HB2	2.00	0.43
13:A:95:VAL:HG13	13:A:144:ARG:HG3	2.00	0.43
13:A:156:LYS:HE3	14:B:116:ILE:HD11	2.00	0.43
22:H:139:TRP:HA	22:H:144:PRO:HA	1.99	0.43
23:I:62:SER:OG	23:I:65:ILE:O	2.37	0.43
23:I:134:LEU:H	23:I:150:SER:HG	1.66	0.43
21:g:53:GLN:HA	21:g:215:ILE:HA	1.98	0.43
2:V:290:TYR:OH	2:V:294:ARG:NH2	2.51	0.43
9:c:32:TYR:HE1	9:c:206:ASN:HD21	1.67	0.43
12:f:755:ASP:N	12:f:755:ASP:OD1	2.50	0.43
13:A:111:TYR:HE2	13:A:125:LEU:HD23	1.84	0.43
31:q:13:VAL:HG11	31:q:105:ALA:HB1	1.99	0.43
9:c:262:GLU:HG2	9:c:273:LYS:HD2	2.00	0.43
12:f:167:ALA:HA	12:f:170:TRP:HD1	1.82	0.43
13:A:208:PRO:HA	13:A:209:PRO:HD3	1.90	0.43
17:E:56:ILE:HB	17:E:100:LEU:HB2	1.99	0.43
22:H:86:LEU:HD13	22:H:134:LEU:HD11	2.00	0.43
24:J:105:GLU:HA	24:J:145:TYR:HE2	1.83	0.43
27:M:37:ILE:HD11	27:M:193:VAL:HG13	1.99	0.43
3:W:123:ARG:HH12	3:W:127:THR:HB	1.82	0.43
12:f:276:GLU:O	12:f:286:LYS:NZ	2.39	0.43
13:A:165:GLN:HE22	13:A:267:LYS:HD2	1.84	0.43
15:C:160:GLU:OE1	15:C:313:ARG:NH2	2.52	0.43
16:D:147:ALA:HB1	17:E:70:ILE:HD13	2.00	0.43
21:G:182:LYS:HA	21:G:185:LYS:HE2	2.00	0.43
33:S:150:ASP:OD2	30:p:177:ARG:NH2	2.39	0.43
24:j:68:ASN:HA	24:j:211:MET:HE1	2.00	0.43
33:s:5:TYR:OH	33:s:103:PRO:O	2.28	0.43
2:V:108:LEU:HA	2:V:111:TYR:HD2	1.83	0.43
12:f:438:ASP:HA	12:f:477:MET:HE2	2.00	0.43
12:f:656:GLY:O	12:f:660:ILE:CG2	2.66	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:D:312:ASN:OD1	17:E:242:ARG:NH2	2.51	0.43
25:K:77:ALA:HB3	25:K:142:LEU:HB2	2.01	0.43
34:t:25:ASP:HA	34:t:187:PHE:HA	2.00	0.43
1:U:607:VAL:O	16:D:67:ASN:ND2	2.52	0.43
12:f:253:LEU:HA	12:f:257:ARG:HD3	2.01	0.43
17:E:306:GLU:HA	17:E:309:ARG:HE	1.84	0.43
24:J:180:ALA:HB1	24:J:190:LEU:HD22	2.00	0.43
26:L:121:GLN:HG3	27:M:129:ARG:HG2	2.01	0.43
23:i:49:ARG:HB2	23:i:210:LYS:HA	2.01	0.43
33:s:191:ASP:O	33:s:210:LEU:N	2.46	0.43
1:U:376:MET:HA	1:U:740:GLY:H	1.84	0.43
9:c:88:ASP:OD1	9:c:88:ASP:N	2.52	0.43
14:B:203:LEU:HD12	14:B:207:HIS:HB3	2.01	0.43
17:E:152:PRO:O	17:E:272:ARG:NH1	2.52	0.43
33:S:35:ILE:HB	34:T:151:ARG:HH12	1.83	0.43
25:k:167:ALA:HB3	25:k:181:LEU:HD21	2.00	0.43
1:U:377:HIS:CE1	1:U:384:GLN:HE22	2.36	0.43
12:f:93:PRO:HB2	12:f:97:LYS:HE3	2.00	0.43
12:f:460:ASP:OD1	12:f:460:ASP:N	2.52	0.43
13:A:140:VAL:HA	13:A:152:PRO:HA	2.00	0.43
13:A:258:ARG:HA	13:A:305:GLN:HE22	1.84	0.43
15:C:253:SER:HB3	16:D:290:LEU:HD12	2.01	0.43
19:u:73:LEU:O	19:u:74:ARG:HG3	2.18	0.43
25:K:167:ALA:HB3	25:K:181:LEU:HD21	2.00	0.43
23:i:73:ALA:HB3	23:i:137:ILE:HD11	2.01	0.43
27:m:51:LYS:HB3	27:m:210:GLU:HB2	2.00	0.43
8:b:5:SER:HB3	8:b:64:LEU:HD21	2.01	0.43
12:f:478:ARG:HG3	12:f:514:VAL:HG11	2.01	0.43
12:f:621:ASP:O	12:f:623:LYS:N	2.51	0.43
18:F:235:LEU:HG	36:F:501:ADP:H2'	2.00	0.43
27:M:51:LYS:HB3	27:M:210:GLU:HB2	2.00	0.43
25:k:77:ALA:HB3	25:k:142:LEU:HB2	2.01	0.43
30:p:49:LEU:HD21	30:p:87:LEU:HD22	2.00	0.43
1:U:24:LEU:HD13	1:U:59:PHE:CG	2.54	0.42
1:U:118:LEU:HD13	1:U:122:GLU:HG3	2.01	0.42
1:U:475:HIS:NE2	1:U:507:VAL:O	2.51	0.42
2:V:105:SER:HA	2:V:108:LEU:HB2	2.01	0.42
5:Y:113:ARG:HB3	5:Y:114:ILE:HD12	2.01	0.42
5:Y:144:LEU:HB3	5:Y:160:ASN:HD22	1.83	0.42
5:Y:184:GLN:NE2	5:Y:196:GLN:O	2.53	0.42
5:Y:314:LEU:HD21	5:Y:319:MET:HE3	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:a:180:LEU:HA	7:a:183:VAL:HG12	2.00	0.42
9:c:196:LEU:HA	9:c:197:ASN:HA	1.60	0.42
21:g:86:ASP:OD1	27:m:120:HIS:NE2	2.36	0.42
21:g:182:LYS:HA	21:g:185:LYS:HE2	2.00	0.42
21:g:221:THR:HB	21:g:224:ASN:H	1.84	0.42
4:X:239:TYR:HB3	4:X:247:ALA:HB2	2.01	0.42
6:Z:16:LEU:HD12	9:c:216:MET:HE1	2.00	0.42
6:Z:22:HIS:HA	6:Z:25:ARG:HB2	2.00	0.42
6:Z:70:LEU:HD11	6:Z:108:ILE:HG23	2.02	0.42
7:a:145:LEU:HD12	7:a:148:VAL:HG23	1.99	0.42
16:D:164:TYR:HB2	16:D:222:HIS:CD2	2.54	0.42
18:F:288:LEU:HB3	18:F:332:THR:HG22	2.01	0.42
25:K:85:ALA:HB2	25:K:139:VAL:HG21	2.01	0.42
32:R:141:ARG:NH2	31:q:162:LYS:O	2.52	0.42
23:i:123:GLN:OE1	24:j:118:TYR:OH	2.32	0.42
24:j:11:SER:OG	24:j:13:ASP:OD1	2.30	0.42
25:k:72:ALA:HB1	25:k:226:PHE:HE1	1.84	0.42
1:U:554:LEU:HA	1:U:588:MET:HE1	2.01	0.42
1:U:803:LYS:HD2	1:U:875:PHE:HB2	2.01	0.42
9:c:123:SER:OG	9:c:124:GLY:N	2.51	0.42
18:F:38:THR:HG22	18:F:39:GLU:HG2	2.01	0.42
19:u:72:ARG:NE	19:u:74:ARG:HD2	2.34	0.42
21:G:221:THR:HB	21:G:224:ASN:H	1.84	0.42
2:V:92:ARG:NH2	2:V:118:GLN:OE1	2.53	0.42
12:f:828:ARG:HG2	12:f:845:ARG:C	2.44	0.42
13:A:394:MET:HE2	14:B:349:ARG:HH22	1.85	0.42
16:D:255:LYS:HD3	16:D:302:ASN:HB3	2.01	0.42
17:E:316:HIS:NE2	37:E:401:ATP:O2'	2.47	0.42
26:L:183:ASN:OD1	26:L:183:ASN:N	2.53	0.42
27:M:51:LYS:NZ	27:M:62:SER:O	2.37	0.42
22:h:86:LEU:HD13	22:h:134:LEU:HD11	2.00	0.42
27:m:41:CYS:HB3	27:m:189:ILE:HG13	2.02	0.42
1:U:241:ASN:HD21	1:U:244:MET:HE3	1.84	0.42
1:U:505:ASP:HB3	1:U:508:THR:HG22	2.00	0.42
1:U:558:GLY:H	1:U:589:ALA:HA	1.84	0.42
2:V:411:SER:HB2	2:V:447:ILE:HG12	2.01	0.42
4:X:77:LEU:HD22	4:X:116:TRP:HH2	1.84	0.42
4:X:316:ASP:C	4:X:318:ILE:HA	2.44	0.42
7:a:112:ILE:HD12	7:a:151:VAL:HG21	2.02	0.42
13:A:73:ALA:HB1	13:A:77:LEU:HD21	2.02	0.42
13:A:170:PRO:HG2	13:A:231:ASN:HB3	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:D:226:ALA:O	16:D:261:ILE:N	2.50	0.42
16:D:255:LYS:HD2	16:D:255:LYS:HA	1.88	0.42
29:O:209:THR:HG21	30:P:168:SER:HB3	2.02	0.42
30:P:58:THR:OG1	31:Q:121:LEU:O	2.32	0.42
26:l:195:LEU:O	26:l:198:THR:OG1	2.36	0.42
7:a:115:LYS:HD3	7:a:118:ILE:HD12	2.01	0.42
12:f:412:ALA:HA	12:f:447:ALA:HB2	2.01	0.42
18:F:259:MET:O	20:v:4:UNK:HA	2.20	0.42
22:H:100:VAL:HG13	30:P:93:ASN:HD22	1.85	0.42
25:K:72:ALA:HB1	25:K:226:PHE:HE1	1.84	0.42
26:l:13:TRP:NE1	27:m:129:ARG:HD2	2.35	0.42
2:V:217:VAL:HA	2:V:220:PHE:HD2	1.84	0.42
2:V:278:GLU:HA	2:V:285:TRP:HZ2	1.84	0.42
5:Y:97:GLU:HG2	5:Y:136:HIS:CD2	2.55	0.42
12:f:294:MET:HE1	12:f:456:ARG:HG2	2.02	0.42
12:f:325:GLN:HE21	12:f:420:TRP:HE3	1.68	0.42
14:B:288:ASP:N	14:B:288:ASP:OD1	2.53	0.42
15:C:88:LYS:HB2	15:C:94:LYS:HG2	2.02	0.42
15:C:164:VAL:HG21	15:C:313:ARG:HG3	2.00	0.42
15:C:275:GLU:O	15:C:279:GLN:N	2.53	0.42
23:I:76:VAL:HG23	23:I:134:LEU:HB3	2.01	0.42
26:L:157:ARG:HD2	26:L:176:MET:HE3	2.02	0.42
26:L:189:LYS:HA	26:L:192:LEU:HG	2.01	0.42
25:k:71:ASP:O	32:r:64:ARG:NH2	2.47	0.42
27:m:17:ASP:OD2	27:m:19:ARG:NH2	2.53	0.42
30:p:135:ASP:OD1	30:p:135:ASP:N	2.49	0.42
1:U:900:TYR:HB3	1:U:914:LEU:HD21	2.01	0.42
6:Z:209:ARG:HH12	7:a:354:GLU:HG2	1.84	0.42
10:d:8:GLU:O	10:d:13:SER:OG	2.34	0.42
12:f:180:GLN:HE22	12:f:835:GLU:HB3	1.85	0.42
12:f:764:LEU:HD12	12:f:771:LEU:HG	2.02	0.42
14:B:135:ILE:HG13	14:B:159:VAL:HB	2.02	0.42
23:I:72:MET:HG2	23:I:138:GLY:HA3	2.02	0.42
23:I:73:ALA:HB3	23:I:137:ILE:HD11	2.01	0.42
34:T:179:ARG:NH1	28:n:26:ILE:O	2.41	0.42
24:j:64:ALA:O	24:j:88:ARG:NH1	2.52	0.42
4:X:357:SER:OG	4:X:358:LYS:N	2.51	0.42
9:c:29:GLU:O	9:c:204:THR:OG1	2.38	0.42
12:f:665:GLU:HG2	12:f:669:GLU:HG3	2.01	0.42
13:A:331:LEU:HD23	13:A:336:ARG:HD3	2.00	0.42
13:A:346:PRO:O	13:A:351:ARG:NH1	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:A:413:VAL:HG13	13:A:417:ILE:HD12	2.01	0.42
24:J:10:PHE:HB2	25:K:23:GLN:HG3	2.02	0.42
24:J:61:LYS:HD2	24:J:73:PHE:HZ	1.85	0.42
24:J:64:ALA:O	24:J:88:ARG:NH1	2.53	0.42
23:i:62:SER:OG	23:i:65:ILE:O	2.37	0.42
23:i:76:VAL:HG23	23:i:134:LEU:HB3	2.02	0.42
2:V:255:LEU:HD12	2:V:270:LEU:HD23	2.01	0.42
6:Z:57:PRO:HB2	8:b:99:HIS:HD2	1.85	0.42
8:b:161:ASN:ND2	8:b:168:SER:H	2.18	0.42
12:f:762:VAL:HG13	12:f:806:VAL:HG13	2.01	0.42
13:A:392:ALA:HA	13:A:395:PHE:HD2	1.85	0.42
14:B:125:THR:OG1	14:B:126:SER:N	2.52	0.42
25:K:165:CYS:HA	26:L:57:ALA:HA	2.02	0.42
25:k:191:LEU:HD21	25:k:221:GLN:HE21	1.85	0.42
1:U:642:GLU:O	15:C:53:ASN:ND2	2.53	0.41
2:V:326:GLN:HE22	11:e:8:VAL:HG22	1.85	0.41
3:W:131:VAL:HG13	3:W:140:ILE:HG21	2.01	0.41
4:X:406:ASN:HA	4:X:409:LYS:HZ1	1.84	0.41
4:X:407:MET:HA	4:X:410:VAL:HG22	2.02	0.41
5:Y:364:TRP:NE1	5:Y:368:GLU:OE2	2.52	0.41
12:f:663:GLY:C	12:f:664:GLU:HG3	2.45	0.41
17:E:219:PHE:O	17:E:223:ARG:N	2.44	0.41
27:M:17:ASP:OD2	27:M:19:ARG:NH2	2.53	0.41
27:M:72:HIS:CE1	27:M:105:ASN:HB3	2.55	0.41
25:k:203:LYS:HA	25:k:206:MET:HG2	2.02	0.41
3:W:40:LEU:HG	3:W:41:GLN:HG3	2.02	0.41
3:W:60:MET:HB3	3:W:111:TYR:HE2	1.85	0.41
3:W:200:ILE:HD12	3:W:203:GLN:HE21	1.84	0.41
6:Z:91:ILE:H	6:Z:91:ILE:HG13	1.54	0.41
6:Z:235:ASN:HD22	7:a:335:TRP:HE3	1.67	0.41
7:a:54:ASP:HA	7:a:57:ILE:HG22	2.01	0.41
7:a:65:SER:HA	7:a:68:GLU:HB2	2.03	0.41
10:d:237:ILE:HG13	10:d:238:PRO:HD3	2.02	0.41
12:f:594:LEU:HD13	12:f:594:LEU:HA	1.93	0.41
13:A:181:LYS:HD2	13:A:184:ILE:HD12	2.02	0.41
15:C:138:MET:HG3	15:C:212:ILE:HG23	2.01	0.41
16:D:203:LEU:HB2	16:D:327:LEU:HD13	2.01	0.41
18:F:221:LYS:NZ	18:F:323:ASN:O	2.39	0.41
26:L:18:ARG:NH1	26:L:23:GLU:OE2	2.49	0.41
26:l:210:VAL:HG13	26:l:229:VAL:HG11	2.02	0.41
1:U:70:HIS:HB2	2:V:236:ARG:HH22	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:V:497:PRO:HD3	15:C:43:ARG:HE	1.84	0.41
4:X:290:VAL:HG13	4:X:302:PHE:HE1	1.85	0.41
12:f:248:LEU:HD12	12:f:250:ARG:HD3	2.03	0.41
12:f:265:ALA:HB3	12:f:268:LEU:HB2	2.01	0.41
12:f:829:MET:H	12:f:845:ARG:HB3	1.86	0.41
15:C:398:ASN:HD21	15:C:401:ILE:HG12	1.85	0.41
26:L:210:VAL:HG13	26:L:229:VAL:HG11	2.02	0.41
24:j:61:LYS:HD2	24:j:73:PHE:HZ	1.85	0.41
27:m:108:LEU:HD11	27:m:137:LEU:HB3	2.03	0.41
2:V:32:PRO:HA	2:V:35:VAL:HG22	2.02	0.41
2:V:169:LEU:H	2:V:171:VAL:HG23	1.85	0.41
6:Z:192:THR:HG22	7:a:375:LEU:HG	2.01	0.41
8:b:24:THR:HG22	8:b:26:LEU:H	1.84	0.41
8:b:26:LEU:HA	8:b:29:GLN:HG2	2.02	0.41
12:f:674:THR:O	12:f:678:LEU:N	2.51	0.41
12:f:777:THR:HG22	12:f:803:PHE:HA	2.03	0.41
18:F:247:THR:HB	18:F:281:SER:HA	2.02	0.41
29:O:206:LYS:HA	30:P:165:GLU:HG3	2.03	0.41
30:P:49:LEU:HD21	30:P:87:LEU:HD22	2.00	0.41
24:j:119:THR:HG22	24:j:126:PRO:HB3	2.03	0.41
25:k:165:CYS:HA	26:l:57:ALA:HA	2.02	0.41
27:m:72:HIS:CE1	27:m:105:ASN:HB3	2.55	0.41
13:A:249:TYR:HB2	13:A:252:GLU:HB2	2.03	0.41
15:C:217:SER:OG	16:D:291:GLU:OE1	2.28	0.41
17:E:128:GLY:HA3	17:E:185:ARG:HE	1.84	0.41
17:E:283:ASP:OD1	17:E:283:ASP:N	2.53	0.41
25:K:203:LYS:HA	25:K:206:MET:HG2	2.02	0.41
21:g:84:THR:HG21	27:m:156:VAL:HG13	2.03	0.41
26:l:189:LYS:HA	26:l:192:LEU:HG	2.01	0.41
32:r:22:ALA:N	32:r:25:TYR:O	2.53	0.41
1:U:456:ASP:O	1:U:460:TYR:N	2.50	0.41
17:E:38:LYS:HE2	17:E:38:LYS:HB3	1.94	0.41
18:F:336:ASP:OD1	18:F:336:ASP:N	2.54	0.41
25:k:85:ALA:HB2	25:k:139:VAL:HG21	2.01	0.41
26:l:45:VAL:HG11	26:l:188:VAL:HG22	2.03	0.41
30:p:58:THR:CG2	30:p:59:ASP:H	2.33	0.41
34:t:49:THR:HB	34:t:85:PRO:HG3	2.03	0.41
12:f:261:ARG:HG2	12:f:266:LEU:HD13	2.02	0.41
12:f:407:MET:HE3	12:f:439:TYR:HB2	2.03	0.41
12:f:414:LEU:HD23	12:f:417:ILE:HD12	2.03	0.41
15:C:371:LEU:HD22	16:D:191:TYR:HE1	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:E:261:LEU:HB3	17:E:294:ARG:HH12	1.86	0.41
2:V:163:VAL:HG22	2:V:175:MET:HE2	2.02	0.41
2:V:176:MET:HE3	2:V:180:ARG:HE	1.86	0.41
10:d:114:GLU:HA	10:d:117:THR:HG22	2.03	0.41
12:f:340:MET:SD	12:f:757:ASN:ND2	2.94	0.41
16:D:144:PRO:HA	16:D:145:PRO:HD3	1.92	0.41
16:D:213:THR:HG22	16:D:217:LYS:HE3	2.03	0.41
26:L:74:ILE:HD12	26:L:74:ILE:HA	1.92	0.41
33:S:92:LEU:HD12	33:S:95:ILE:HB	2.03	0.41
1:U:415:HIS:HB3	1:U:418:GLU:HB3	2.03	0.41
2:V:228:ARG:HD3	2:V:228:ARG:HA	1.89	0.41
2:V:345:ARG:HD2	11:e:48:VAL:HB	2.02	0.41
2:V:483:CYS:HA	2:V:486:ILE:HD12	2.03	0.41
2:V:495:ARG:HE	2:V:496:PHE:H	1.69	0.41
3:W:132:THR:OG1	3:W:133:GLU:OE1	2.33	0.41
4:X:264:PRO:HG2	4:X:295:LYS:HD3	2.03	0.41
4:X:380:GLN:HB2	5:Y:314:LEU:HA	2.03	0.41
9:c:136:LEU:HB2	19:u:71:LEU:HD11	2.03	0.41
23:I:49:ARG:HB2	23:I:210:LYS:HA	2.01	0.41
31:Q:35:MET:HA	31:Q:45:LEU:HD23	2.02	0.41
23:i:72:MET:HG2	23:i:138:GLY:HA3	2.02	0.41
23:i:102:GLN:HG2	31:q:82:ASN:ND2	2.36	0.41
25:k:91:LYS:HZ2	25:k:95:GLU:CD	2.29	0.41
31:q:59:TYR:O	31:q:63:ASN:ND2	2.54	0.41
32:r:9:ARG:NH2	32:r:146:ASP:OD1	2.44	0.41
1:U:148:LYS:HG3	1:U:176:MET:HE1	2.03	0.41
4:X:410:VAL:HG12	9:c:256:ASN:HA	2.02	0.41
7:a:245:VAL:HG11	7:a:301:LYS:HD3	2.03	0.41
8:b:94:HIS:CD2	8:b:136:VAL:HG21	2.56	0.41
12:f:326:LEU:HD22	12:f:329:ASN:HB2	2.02	0.41
12:f:373:ALA:HA	12:f:376:PHE:HD2	1.86	0.41
13:A:223:THR:O	13:A:227:ARG:N	2.53	0.41
15:C:219:LEU:HD13	15:C:272:THR:HG21	2.01	0.41
16:D:202:VAL:HG23	16:D:329:ARG:HB2	2.02	0.41
16:D:345:PHE:CD2	16:D:360:LEU:HD13	2.56	0.41
23:i:3:ARG:HB2	24:j:5:ARG:HH12	1.84	0.41
3:W:112:VAL:HA	3:W:115:ILE:HG22	2.02	0.40
12:f:705:ASN:OD1	12:f:706:ILE:N	2.48	0.40
12:f:764:LEU:HD11	12:f:774:GLY:HA3	2.03	0.40
15:C:33:LEU:O	15:C:37:ASP:N	2.50	0.40
15:C:190:GLY:HA2	15:C:191:PRO:HD3	1.81	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:D:87:LEU:HD13	16:D:131:ALA:HB1	2.03	0.40
16:D:171:ASP:OD1	16:D:171:ASP:N	2.54	0.40
27:M:41:CYS:HB3	27:M:189:ILE:HG13	2.02	0.40
27:M:102:PHE:HE1	28:N:82:LEU:HD21	1.86	0.40
1:U:212:ASP:OD1	1:U:212:ASP:N	2.53	0.40
1:U:233:LEU:HD23	1:U:236:LEU:HD12	2.02	0.40
2:V:81:GLN:HB3	2:V:85:ALA:HB3	2.03	0.40
3:W:12:ARG:HE	3:W:27:ARG:HD2	1.85	0.40
4:X:158:LYS:HA	4:X:166:LEU:HD21	2.03	0.40
5:Y:184:GLN:HE21	5:Y:197:ALA:HA	1.86	0.40
5:Y:276:ALA:HB1	11:e:60:LEU:HD13	2.03	0.40
8:b:130:ARG:NE	8:b:134:GLU:OE2	2.53	0.40
12:f:72:ARG:HH12	12:f:83:ARG:HA	1.87	0.40
12:f:331:LEU:HD12	12:f:813:LYS:HE2	2.03	0.40
14:B:266:LEU:HA	14:B:269:GLU:HB2	2.02	0.40
15:C:299:ASP:OD1	15:C:299:ASP:N	2.52	0.40
16:D:78:GLU:OE1	16:D:81:ARG:NH1	2.54	0.40
17:E:10:GLN:O	17:E:14:LYS:NZ	2.43	0.40
17:E:322:LYS:HD2	17:E:322:LYS:H	1.86	0.40
19:u:23:ILE:HG23	19:u:43:LEU:HD12	2.02	0.40
26:L:155:ASP:HB3	27:M:62:SER:HB2	2.04	0.40
29:O:195:LYS:HE3	33:s:184:GLU:HG3	2.04	0.40
32:R:9:ARG:NH2	32:R:146:ASP:OD1	2.44	0.40
26:l:157:ARG:HD2	26:l:176:MET:HE3	2.02	0.40
31:q:35:MET:HA	31:q:45:LEU:HD23	2.03	0.40
1:U:68:PHE:HB3	1:U:73:ALA:HB3	2.03	0.40
7:a:321:LYS:HE2	7:a:336:VAL:HG21	2.03	0.40
12:f:812:GLY:HA2	12:f:825:MET:HE1	2.04	0.40
30:P:159:ASP:N	30:P:159:ASP:OD1	2.54	0.40
31:Q:59:TYR:O	31:Q:63:ASN:ND2	2.54	0.40
26:l:18:ARG:NH1	26:l:23:GLU:OE2	2.49	0.40
1:U:147:TYR:HB2	1:U:176:MET:HE3	2.04	0.40
1:U:524:LYS:NZ	1:U:562:GLU:O	2.44	0.40
1:U:607:VAL:HG12	16:D:67:ASN:HD22	1.87	0.40
1:U:714:SER:HA	1:U:717:ILE:HG22	2.03	0.40
6:Z:82:PHE:HA	6:Z:85:VAL:HG12	2.04	0.40
7:a:230:ARG:HB3	7:a:232:TRP:CD1	2.55	0.40
10:d:167:ILE:O	10:d:171:LEU:N	2.47	0.40
26:L:152:ASN:HA	27:M:85:ARG:HH22	1.85	0.40
28:N:19:ARG:HH21	34:t:181:ALA:HA	1.86	0.40
29:O:17:ASP:OD1	29:O:17:ASP:N	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:o:17:ASP:OD1	29:o:17:ASP:N	2.51	0.40
1:U:261:LEU:HA	1:U:264:VAL:HG12	2.04	0.40
2:V:410:ILE:HD13	2:V:422:ILE:HG13	2.02	0.40
4:X:208:ALA:HA	4:X:211:ASP:HB2	2.03	0.40
12:f:826:GLN:N	12:f:863:THR:O	2.51	0.40
15:C:405:TRP:CD1	23:I:31:ALA:HB3	2.57	0.40
22:H:123:GLN:HG2	23:I:127:LYS:HD2	2.03	0.40
26:L:201:ALA:HA	26:L:239:ARG:HH11	1.86	0.40
27:M:92:ARG:HH21	34:T:73:ASP:HA	1.86	0.40
34:T:136:SER:HB2	34:T:150:LEU:HD13	2.04	0.40
22:h:39:LYS:HE2	22:h:144:PRO:HG2	2.04	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	U	816/953 (86%)	753 (92%)	62 (8%)	1 (0%)	48	79
2	V	478/533 (90%)	426 (89%)	52 (11%)	0	100	100
3	W	454/456 (100%)	408 (90%)	46 (10%)	0	100	100
4	X	378/422 (90%)	357 (94%)	20 (5%)	1 (0%)	36	67
5	Y	376/389 (97%)	345 (92%)	31 (8%)	0	100	100
6	Z	284/324 (88%)	247 (87%)	34 (12%)	3 (1%)	11	43
7	a	371/376 (99%)	341 (92%)	28 (8%)	2 (0%)	24	57
8	b	189/377 (50%)	167 (88%)	22 (12%)	0	100	100
9	c	285/309 (92%)	238 (84%)	44 (15%)	3 (1%)	11	43
10	d	255/349 (73%)	212 (83%)	42 (16%)	1 (0%)	30	62
11	e	36/70 (51%)	24 (67%)	10 (28%)	2 (6%)	1	13

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
12	f	887/892 (99%)	712 (80%)	164 (18%)	11 (1%)	10	41
13	A	354/433 (82%)	306 (86%)	47 (13%)	1 (0%)	36	67
14	B	345/440 (78%)	305 (88%)	40 (12%)	0	100	100
15	C	394/398 (99%)	344 (87%)	50 (13%)	0	100	100
16	D	378/418 (90%)	326 (86%)	49 (13%)	3 (1%)	16	49
17	E	387/403 (96%)	340 (88%)	42 (11%)	5 (1%)	9	39
18	F	391/439 (89%)	358 (92%)	29 (7%)	4 (1%)	12	44
19	u	74/76 (97%)	67 (90%)	6 (8%)	1 (1%)	9	38
21	G	238/245 (97%)	227 (95%)	11 (5%)	0	100	100
21	g	238/245 (97%)	227 (95%)	11 (5%)	0	100	100
22	H	230/233 (99%)	216 (94%)	14 (6%)	0	100	100
22	h	230/233 (99%)	217 (94%)	13 (6%)	0	100	100
23	I	248/260 (95%)	229 (92%)	19 (8%)	0	100	100
23	i	248/260 (95%)	229 (92%)	19 (8%)	0	100	100
24	J	237/247 (96%)	223 (94%)	14 (6%)	0	100	100
24	j	237/247 (96%)	223 (94%)	14 (6%)	0	100	100
25	K	224/240 (93%)	208 (93%)	16 (7%)	0	100	100
25	k	224/240 (93%)	208 (93%)	16 (7%)	0	100	100
26	L	236/268 (88%)	225 (95%)	11 (5%)	0	100	100
26	l	236/268 (88%)	225 (95%)	11 (5%)	0	100	100
27	M	238/254 (94%)	219 (92%)	19 (8%)	0	100	100
27	m	238/254 (94%)	219 (92%)	19 (8%)	0	100	100
28	N	189/238 (79%)	184 (97%)	5 (3%)	0	100	100
28	n	189/238 (79%)	184 (97%)	5 (3%)	0	100	100
29	O	218/276 (79%)	211 (97%)	7 (3%)	0	100	100
29	o	218/276 (79%)	211 (97%)	7 (3%)	0	100	100
30	P	202/204 (99%)	191 (95%)	11 (5%)	0	100	100
30	p	202/204 (99%)	191 (95%)	11 (5%)	0	100	100
31	Q	197/201 (98%)	184 (93%)	13 (7%)	0	100	100
31	q	197/201 (98%)	184 (93%)	13 (7%)	0	100	100
32	R	199/262 (76%)	194 (98%)	5 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
32	r	199/262 (76%)	194 (98%)	5 (2%)	0	100	100
33	S	211/240 (88%)	203 (96%)	8 (4%)	0	100	100
33	s	211/240 (88%)	203 (96%)	8 (4%)	0	100	100
34	T	213/263 (81%)	202 (95%)	11 (5%)	0	100	100
34	t	213/263 (81%)	202 (95%)	11 (5%)	0	100	100
All	All	13292/14919 (89%)	12109 (91%)	1145 (9%)	38 (0%)	37	67

All (38) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	c	271	ALA
9	c	272	ILE
10	d	200	PHE
12	f	808	ASN
12	f	853	VAL
17	E	248	SER
18	F	344	ARG
7	a	69	HIS
11	e	57	ARG
12	f	876	HIS
1	U	36	ALA
11	e	50	ASP
12	f	118	ASN
12	f	476	THR
12	f	664	GLU
12	f	823	ALA
12	f	859	PRO
16	D	412	GLN
17	E	127	PRO
18	F	343	LEU
4	X	317	PRO
6	Z	65	ASP
7	a	187	ASP
12	f	809	ILE
16	D	149	SER
16	D	155	THR
18	F	349	ASP
19	u	35	GLY
9	c	234	TYR
12	f	475	ASN

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Mol	Chain	Res	Type
17	E	247	THR
18	F	165	PRO
12	f	755	ASP
6	Z	184	VAL
17	E	112	PRO
17	E	117	PRO
6	Z	144	VAL
13	A	109	PRO

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	U	702/816 (86%)	700 (100%)	2 (0%)	86	83
2	V	414/459 (90%)	413 (100%)	1 (0%)	87	85
3	W	416/416 (100%)	414 (100%)	2 (0%)	81	80
4	X	327/362 (90%)	327 (100%)	0	100	100
5	Y	334/344 (97%)	334 (100%)	0	100	100
6	Z	257/295 (87%)	255 (99%)	2 (1%)	73	77
7	a	333/336 (99%)	330 (99%)	3 (1%)	70	76
8	b	167/312 (54%)	167 (100%)	0	100	100
9	c	252/267 (94%)	248 (98%)	4 (2%)	55	70
10	d	231/293 (79%)	230 (100%)	1 (0%)	84	81
11	e	38/63 (60%)	38 (100%)	0	100	100
12	f	745/748 (100%)	737 (99%)	8 (1%)	65	74
13	A	297/372 (80%)	295 (99%)	2 (1%)	76	78
14	B	300/385 (78%)	300 (100%)	0	100	100
15	C	340/346 (98%)	337 (99%)	3 (1%)	70	76
16	D	333/366 (91%)	330 (99%)	3 (1%)	70	76
17	E	341/353 (97%)	341 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
18	F	340/379 (90%)	337 (99%)	3 (1%)	70	76
19	u	68/68 (100%)	68 (100%)	0	100	100
21	G	193/209 (92%)	193 (100%)	0	100	100
21	g	193/209 (92%)	193 (100%)	0	100	100
22	H	164/190 (86%)	164 (100%)	0	100	100
22	h	164/190 (86%)	164 (100%)	0	100	100
23	I	193/220 (88%)	193 (100%)	0	100	100
23	i	193/220 (88%)	193 (100%)	0	100	100
24	J	152/210 (72%)	151 (99%)	1 (1%)	76	78
24	j	152/210 (72%)	151 (99%)	1 (1%)	76	78
25	K	186/202 (92%)	186 (100%)	0	100	100
25	k	186/202 (92%)	186 (100%)	0	100	100
26	L	198/229 (86%)	195 (98%)	3 (2%)	57	71
26	l	198/229 (86%)	195 (98%)	3 (2%)	57	71
27	M	192/211 (91%)	191 (100%)	1 (0%)	81	80
27	m	192/211 (91%)	191 (100%)	1 (0%)	81	80
28	N	148/180 (82%)	147 (99%)	1 (1%)	76	78
28	n	148/180 (82%)	147 (99%)	1 (1%)	76	78
29	O	177/227 (78%)	177 (100%)	0	100	100
29	o	177/227 (78%)	177 (100%)	0	100	100
30	P	172/173 (99%)	172 (100%)	0	100	100
30	p	172/173 (99%)	172 (100%)	0	100	100
31	Q	164/171 (96%)	163 (99%)	1 (1%)	78	79
31	q	164/171 (96%)	163 (99%)	1 (1%)	78	79
32	R	153/201 (76%)	153 (100%)	0	100	100
32	r	153/201 (76%)	153 (100%)	0	100	100
33	S	174/198 (88%)	174 (100%)	0	100	100
33	s	174/198 (88%)	174 (100%)	0	100	100
34	T	175/214 (82%)	175 (100%)	0	100	100
34	t	175/214 (82%)	175 (100%)	0	100	100
All	All	11117/12650 (88%)	11069 (100%)	48 (0%)	81	81

All (48) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	U	118	LEU
1	U	629	THR
2	V	353	LEU
3	W	196	VAL
3	W	413	ILE
6	Z	91	ILE
6	Z	266	ILE
7	a	145	LEU
7	a	210	VAL
7	a	353	LEU
9	c	69	VAL
9	c	270	LEU
9	c	284	LEU
9	c	295	ASN
10	d	189	ILE
12	f	75	LEU
12	f	344	VAL
12	f	457	ASN
12	f	660	ILE
12	f	662	MET
12	f	672	LEU
12	f	806	VAL
12	f	822	VAL
13	A	204	LEU
13	A	403	ILE
15	C	134	LEU
15	C	220	VAL
15	C	298	ILE
16	D	68	LEU
16	D	154	LEU
16	D	360	LEU
18	F	134	LEU
18	F	198	LEU
18	F	343	LEU
24	J	161	ILE
26	L	22	ILE
26	L	161	ILE
26	L	205	LEU
27	M	56	LYS
28	N	30	VAL
31	Q	102	LEU
24	j	161	ILE

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Mol	Chain	Res	Type
26	l	22	ILE
26	l	161	ILE
26	l	205	LEU
27	m	56	LYS
28	n	30	VAL
31	q	102	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (178) such sidechains are listed below:

Mol	Chain	Res	Type
1	U	79	ASN
1	U	111	GLN
1	U	192	GLN
1	U	218	GLN
1	U	267	ASN
1	U	366	HIS
1	U	384	GLN
1	U	412	HIS
1	U	415	HIS
1	U	438	GLN
1	U	450	HIS
1	U	647	HIS
1	U	685	GLN
1	U	721	HIS
1	U	888	GLN
2	V	198	GLN
2	V	281	ASN
2	V	319	HIS
2	V	326	GLN
2	V	473	GLN
3	W	84	ASN
3	W	107	GLN
3	W	203	GLN
3	W	236	HIS
3	W	246	HIS
3	W	265	GLN
3	W	283	GLN
3	W	362	ASN
3	W	454	ASN
4	X	178	HIS
4	X	292	GLN
4	X	296	ASN

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Mol	Chain	Res	Type
4	X	349	HIS
4	X	406	ASN
5	Y	48	ASN
5	Y	49	ASN
5	Y	71	ASN
5	Y	136	HIS
5	Y	178	ASN
5	Y	184	GLN
5	Y	251	HIS
5	Y	291	HIS
5	Y	302	HIS
6	Z	24	ASN
6	Z	77	ASN
6	Z	109	ASN
6	Z	189	GLN
6	Z	229	GLN
6	Z	256	GLN
7	a	35	HIS
7	a	62	ASN
7	a	249	GLN
7	a	264	ASN
7	a	288	HIS
7	a	332	HIS
8	b	30	GLN
8	b	137	ASN
9	c	130	GLN
9	c	197	ASN
9	c	199	HIS
9	c	221	HIS
9	c	274	ASN
9	c	295	ASN
10	d	47	GLN
10	d	97	GLN
10	d	116	HIS
10	d	130	ASN
10	d	135	HIS
10	d	221	ASN
12	f	14	GLN
12	f	43	GLN
12	f	112	ASN
12	f	118	ASN
12	f	291	GLN

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Mol	Chain	Res	Type
12	f	327	ASN
12	f	378	ASN
12	f	382	ASN
12	f	396	ASN
12	f	457	ASN
12	f	531	ASN
12	f	565	ASN
12	f	614	HIS
12	f	619	HIS
12	f	737	ASN
12	f	747	GLN
12	f	752	HIS
12	f	766	GLN
12	f	782	HIS
12	f	786	GLN
12	f	815	HIS
13	A	85	GLN
13	A	165	GLN
13	A	379	ASN
14	B	306	GLN
14	B	332	ASN
15	C	53	ASN
15	C	111	ASN
15	C	221	GLN
16	D	67	ASN
16	D	127	ASN
16	D	187	HIS
17	E	39	GLN
17	E	194	ASN
17	E	262	ASN
17	E	271	HIS
17	E	300	HIS
17	E	307	GLN
17	E	364	GLN
18	F	258	GLN
18	F	315	ASN
18	F	323	ASN
18	F	325	GLN
18	F	417	HIS
21	G	75	ASN
22	H	102	GLN
22	H	112	GLN

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Mol	Chain	Res	Type
23	I	20	GLN
23	I	30	HIS
23	I	53	HIS
23	I	102	GLN
23	I	109	GLN
23	I	119	GLN
23	I	149	GLN
24	J	18	GLN
24	J	116	GLN
24	J	175	ASN
25	K	99	HIS
25	K	155	HIS
25	K	214	ASN
26	L	90	GLN
26	L	146	GLN
26	L	152	ASN
27	M	147	GLN
28	N	158	ASN
29	O	116	HIS
30	P	18	ASN
30	P	93	ASN
31	Q	63	ASN
31	Q	71	ASN
31	Q	132	HIS
32	R	10	HIS
32	R	38	ASN
33	S	151	ASN
33	S	157	ASN
21	g	12	HIS
21	g	75	ASN
22	h	21	GLN
22	h	112	GLN
23	i	20	GLN
23	i	30	HIS
23	i	53	HIS
23	i	102	GLN
23	i	109	GLN
23	i	142	HIS
23	i	149	GLN
24	j	18	GLN
24	j	116	GLN
24	j	175	ASN

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Mol	Chain	Res	Type
25	k	99	HIS
25	k	155	HIS
25	k	214	ASN
26	l	90	GLN
26	l	146	GLN
27	m	147	GLN
28	n	158	ASN
28	n	187	GLN
29	o	116	HIS
30	p	18	ASN
30	p	93	ASN
31	q	63	ASN
31	q	71	ASN
31	q	101	ASN
31	q	132	HIS
32	r	10	HIS
32	r	38	ASN
33	s	151	ASN
33	s	159	GLN
34	t	69	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 9 ligands modelled in this entry, 4 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
37	ATP	C	501	38	32,33,33	1.41	6 (18%)	48,52,52	1.89	10 (20%)
37	ATP	D	501	38	32,33,33	1.36	4 (12%)	48,52,52	1.85	8 (16%)
36	ADP	F	501	-	28,29,29	1.40	4 (14%)	43,45,45	1.93	9 (20%)
37	ATP	E	401	38	32,33,33	1.32	4 (12%)	48,52,52	1.84	9 (18%)
36	ADP	A	501	-	28,29,29	1.42	4 (14%)	43,45,45	1.81	9 (20%)

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
37	ATP	C	501	38	-	2/22/38/38	0/3/3/3
37	ATP	D	501	38	-	2/22/38/38	0/3/3/3
36	ADP	F	501	-	-	1/16/32/32	0/3/3/3
37	ATP	E	401	38	-	2/22/38/38	0/3/3/3
36	ADP	A	501	-	-	2/16/32/32	0/3/3/3

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	A	501	ADP	C5-C4	4.78	1.47	1.39
37	C	501	ATP	C5-C4	4.69	1.47	1.39
37	E	401	ATP	C5-C4	4.62	1.47	1.39
36	F	501	ADP	C5-C4	4.61	1.47	1.39
37	D	501	ATP	C5-C4	4.58	1.47	1.39
36	A	501	ADP	C5-C6	2.68	1.48	1.41
36	F	501	ADP	C5-N7	-2.68	1.34	1.39
37	C	501	ATP	C5-C6	2.67	1.48	1.41
37	D	501	ATP	C5-C6	2.59	1.48	1.41
37	E	401	ATP	C5-C6	2.58	1.48	1.41
36	F	501	ADP	C5-C6	2.57	1.48	1.41
37	E	401	ATP	C5-N7	-2.56	1.34	1.39
37	C	501	ATP	C5-N7	-2.48	1.34	1.39
37	D	501	ATP	C5-N7	-2.45	1.34	1.39
36	A	501	ADP	C5-N7	-2.34	1.34	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	A	501	ADP	C8-N7	2.32	1.36	1.31
37	C	501	ATP	PB-O3A	2.24	1.61	1.59
36	F	501	ADP	C8-N7	2.19	1.35	1.31
37	D	501	ATP	C8-N7	2.16	1.35	1.31
37	C	501	ATP	PA-O3A	2.04	1.61	1.59
37	E	401	ATP	C8-N7	2.04	1.35	1.31
37	C	501	ATP	C8-N7	2.03	1.35	1.31

All (45) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
37	E	401	ATP	C5-C4-N3	-6.55	117.70	126.72
37	C	501	ATP	C5-C4-N3	-6.37	117.94	126.72
36	F	501	ADP	C5-C4-N3	-6.19	118.19	126.72
37	D	501	ATP	C5-C4-N3	-6.17	118.22	126.72
36	A	501	ADP	C5-C4-N3	-5.84	118.67	126.72
37	C	501	ATP	N3-C4-N9	5.35	136.27	127.17
37	E	401	ATP	N3-C4-N9	5.30	136.19	127.17
36	F	501	ADP	N3-C4-N9	5.16	135.94	127.17
37	D	501	ATP	N3-C4-N9	5.06	135.78	127.17
36	A	501	ADP	N3-C4-N9	4.66	135.09	127.17
37	C	501	ATP	C2-N3-C4	4.01	121.63	111.83
37	E	401	ATP	C2-N3-C4	4.00	121.59	111.83
37	D	501	ATP	C2-N3-C4	3.79	121.09	111.83
36	F	501	ADP	C2-N3-C4	3.76	121.01	111.83
36	A	501	ADP	C2-N3-C4	3.75	120.99	111.83
37	C	501	ATP	N3-C2-N1	-3.57	123.17	128.58
36	A	501	ADP	N3-C2-N1	-3.34	123.52	128.58
37	D	501	ATP	C4-C5-N7	-3.30	106.81	110.58
36	A	501	ADP	C4-C5-N7	-3.29	106.81	110.58
36	F	501	ADP	C4-C5-N7	-3.28	106.83	110.58
36	F	501	ADP	N3-C2-N1	-3.21	123.72	128.58
37	E	401	ATP	N3-C2-N1	-3.21	123.72	128.58
37	E	401	ATP	C4-C5-N7	-3.16	106.97	110.58
37	D	501	ATP	N3-C2-N1	-3.14	123.82	128.58
37	C	501	ATP	C4-C5-N7	-3.11	107.03	110.58
37	D	501	ATP	C3'-C2'-C1'	2.99	107.12	101.46
36	F	501	ADP	C3'-C2'-C1'	2.88	106.92	101.46
36	F	501	ADP	C4-N9-C8	2.76	108.64	105.74
37	D	501	ATP	C4-N9-C8	2.74	108.61	105.74
36	F	501	ADP	C5-N7-C8	2.62	107.56	103.45
37	C	501	ATP	C3'-C2'-C1'	2.60	106.38	101.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
37	C	501	ATP	C4-N9-C8	2.54	108.41	105.74
36	A	501	ADP	C3'-C2'-C1'	2.54	106.26	101.46
37	D	501	ATP	C5-N7-C8	2.49	107.36	103.45
37	E	401	ATP	C3'-C2'-C1'	2.45	106.10	101.46
36	A	501	ADP	C4-N9-C8	2.44	108.30	105.74
37	C	501	ATP	C5-N7-C8	2.42	107.26	103.45
36	A	501	ADP	C5-N7-C8	2.40	107.22	103.45
37	E	401	ATP	C5-N7-C8	2.27	107.02	103.45
37	E	401	ATP	C4-N9-C8	2.14	107.99	105.74
37	C	501	ATP	O2B-PB-O3A	2.08	112.90	107.27
37	C	501	ATP	C2-N1-C6	2.03	122.06	118.73
37	E	401	ATP	C1'-N9-C8	-2.02	122.61	127.09
36	A	501	ADP	C6-C5-N7	2.02	135.98	132.09
36	F	501	ADP	N9-C8-N7	-2.00	111.10	113.94

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
36	F	501	ADP	C5'-O5'-PA-O1A
37	E	401	ATP	C5'-O5'-PA-O2A
37	E	401	ATP	C5'-O5'-PA-O3A
37	D	501	ATP	PG-O3B-PB-O3A
36	A	501	ADP	C5'-O5'-PA-O3A
37	C	501	ATP	PB-O3A-PA-O1A
37	C	501	ATP	PB-O3A-PA-O2A
36	A	501	ADP	O4'-C4'-C5'-O5'
37	D	501	ATP	PG-O3B-PB-O1B

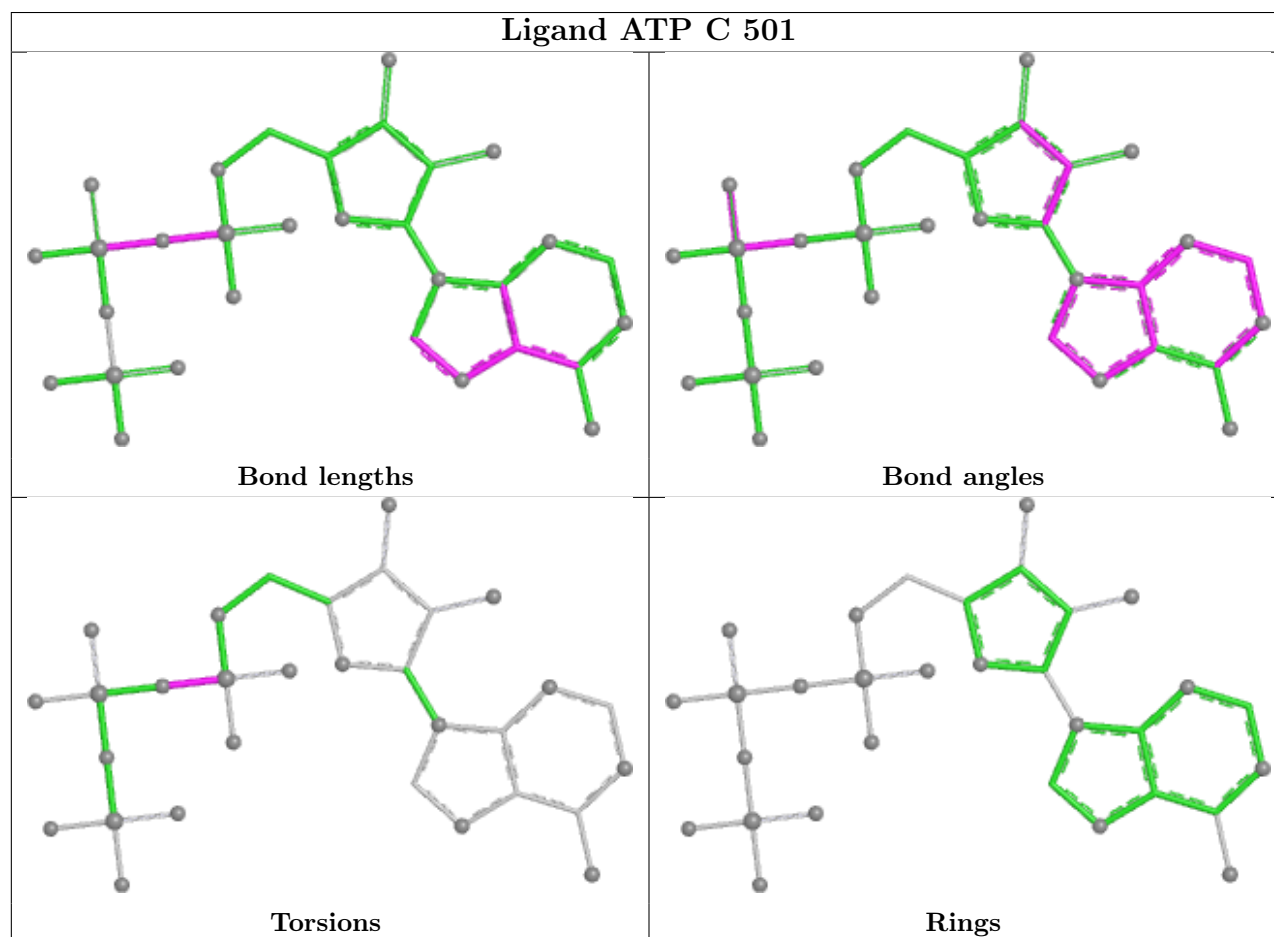
There are no ring outliers.

4 monomers are involved in 10 short contacts:

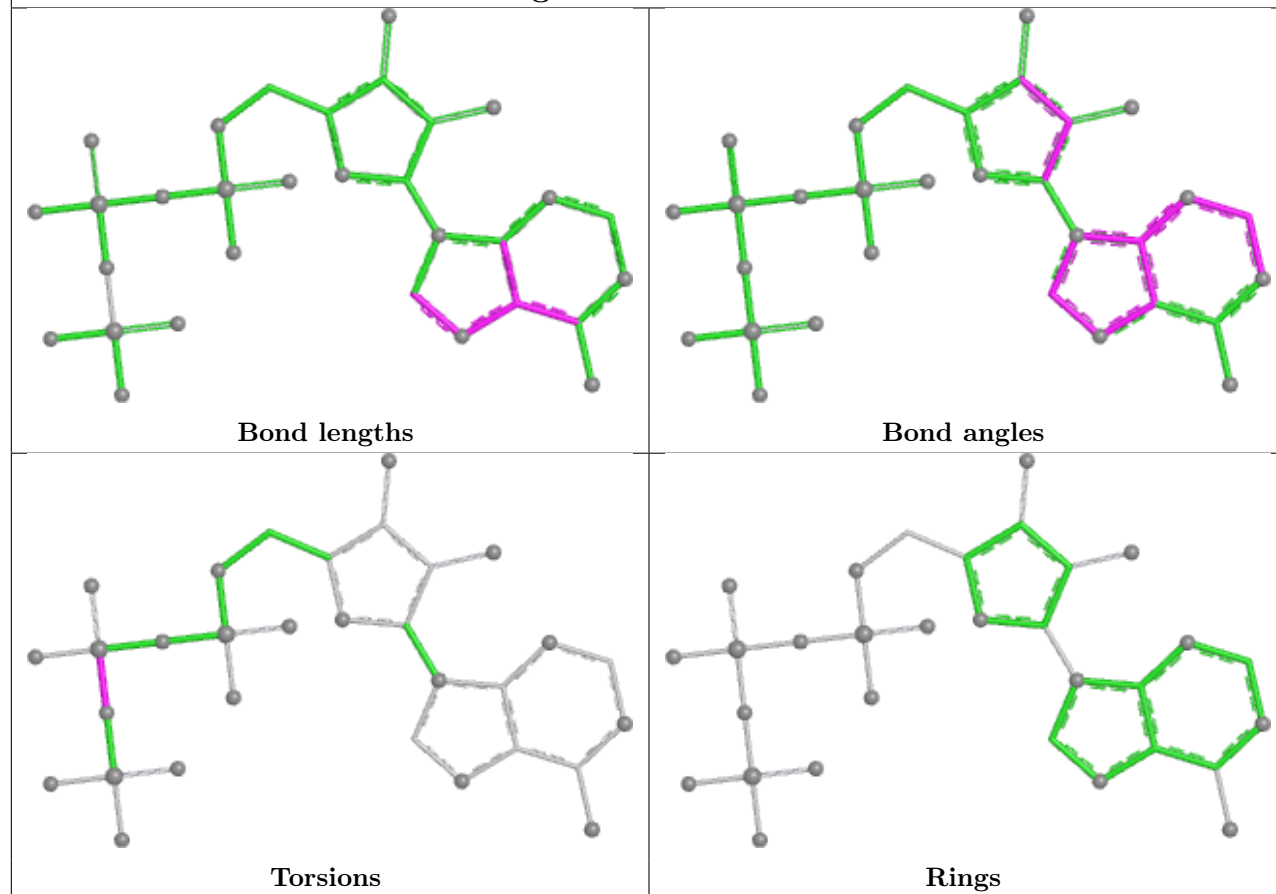
Mol	Chain	Res	Type	Clashes	Symm-Clashes
37	D	501	ATP	5	0
36	F	501	ADP	1	0
37	E	401	ATP	2	0
36	A	501	ADP	2	0

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

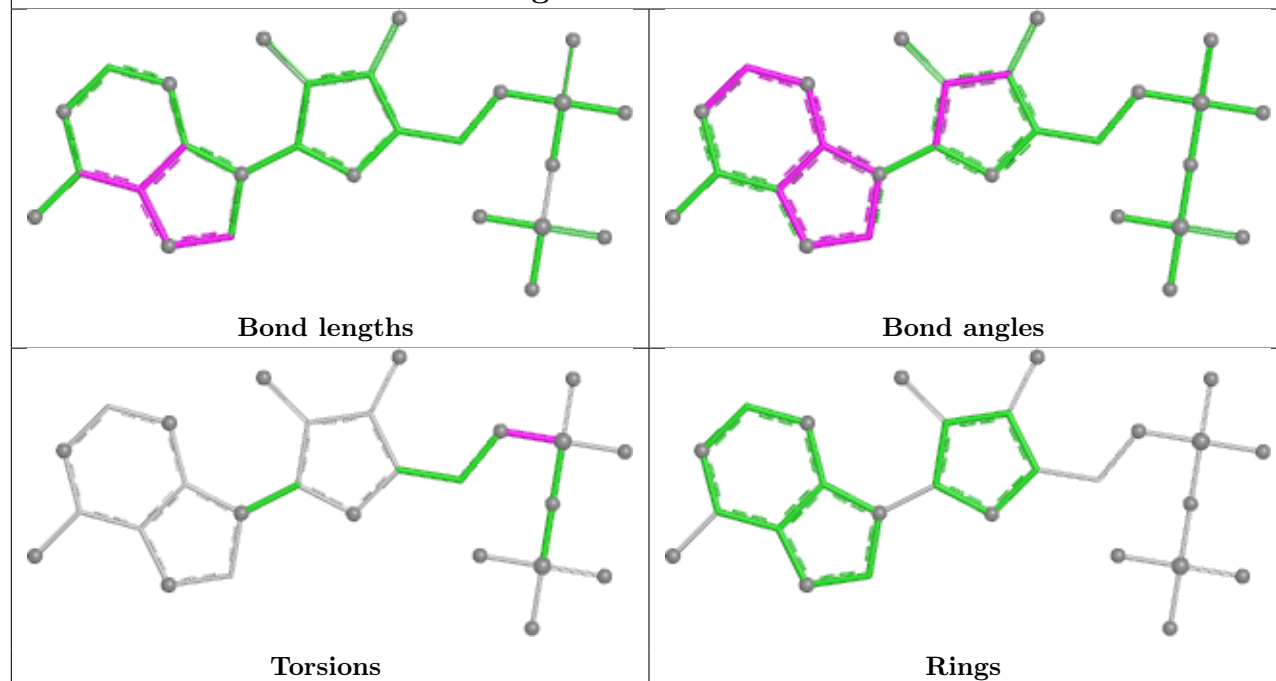
also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



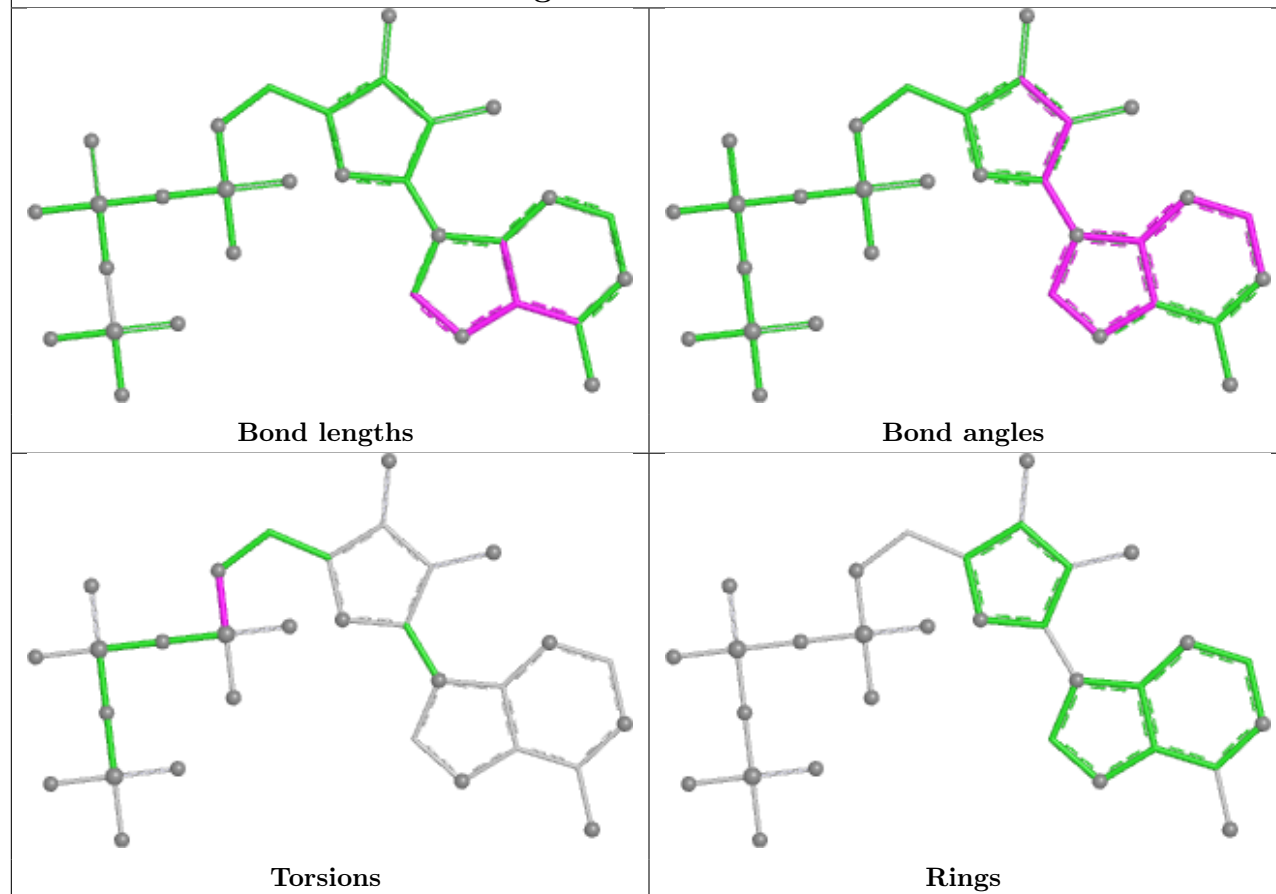
Ligand ATP D 501



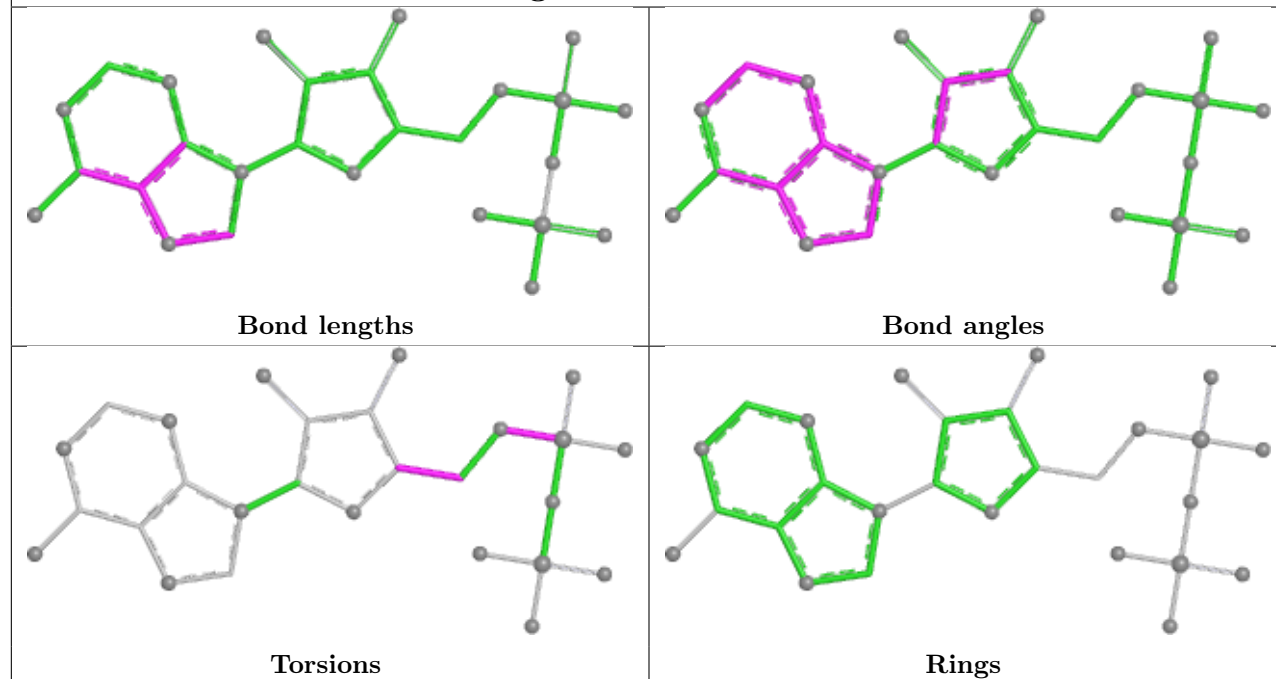
Ligand ADP F 501



Ligand ATP E 401



Ligand ADP A 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.

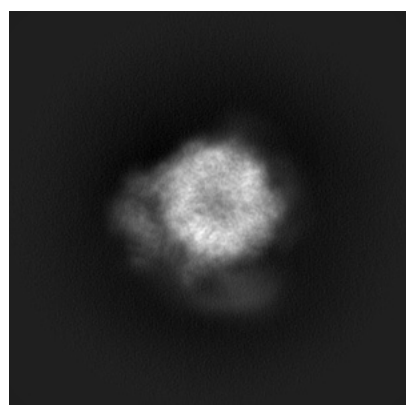
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-9219. These allow visual inspection of the internal detail of the map and identification of artifacts.

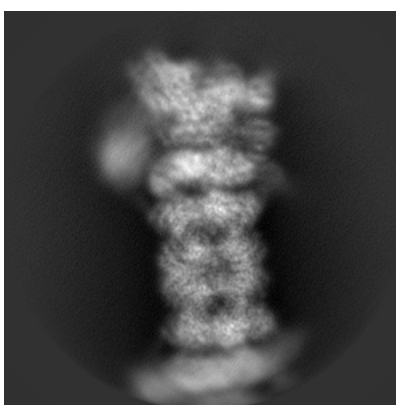
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

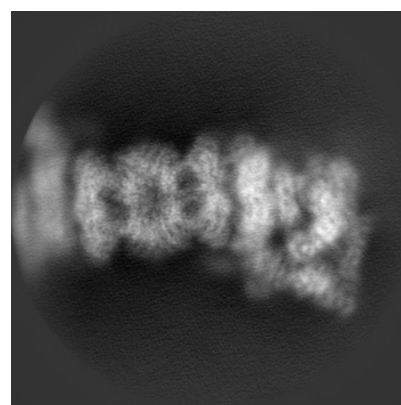
6.1.1 Primary map



X



Y

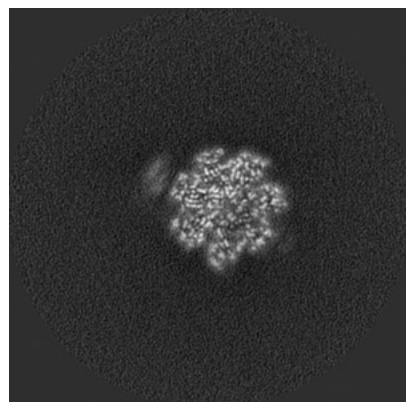


Z

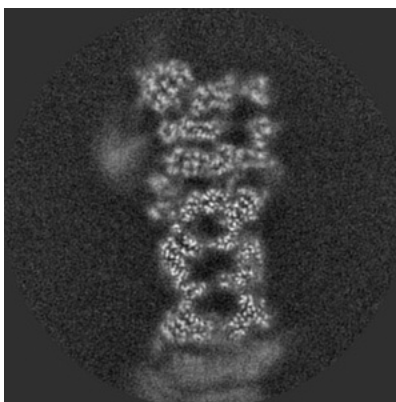
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

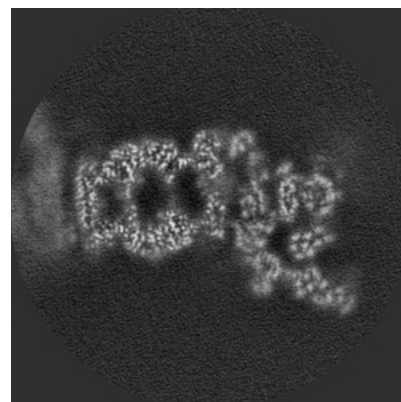
6.2.1 Primary map



X Index: 300



Y Index: 300

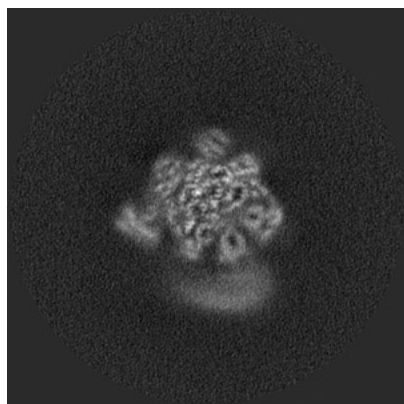


Z Index: 300

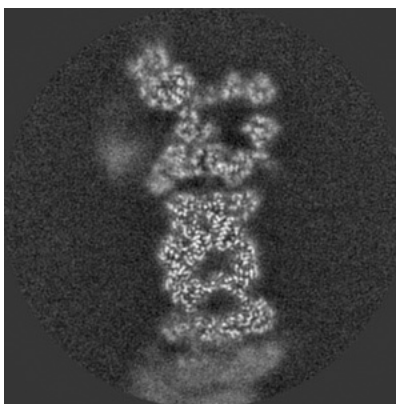
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

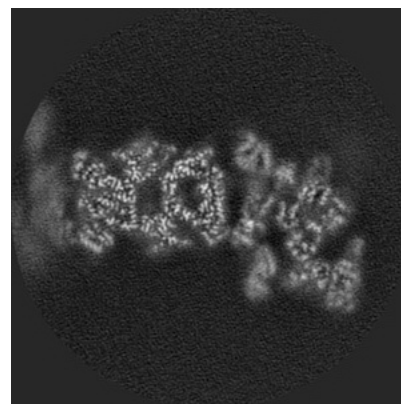
6.3.1 Primary map



X Index: 362



Y Index: 284

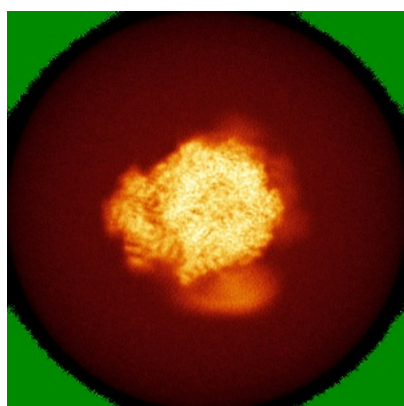


Z Index: 278

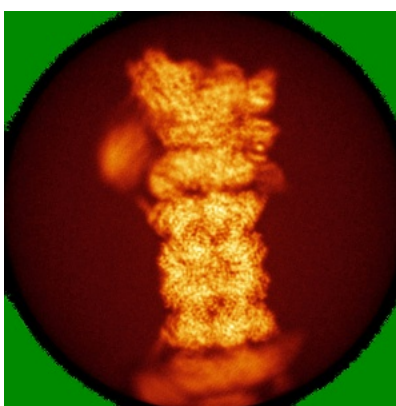
The images above show the largest variance slices of the map in three orthogonal directions.

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

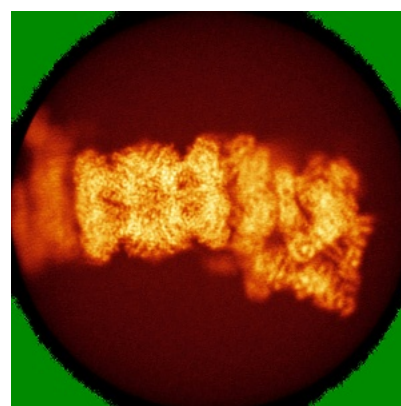
6.4.1 Primary map



X



Y

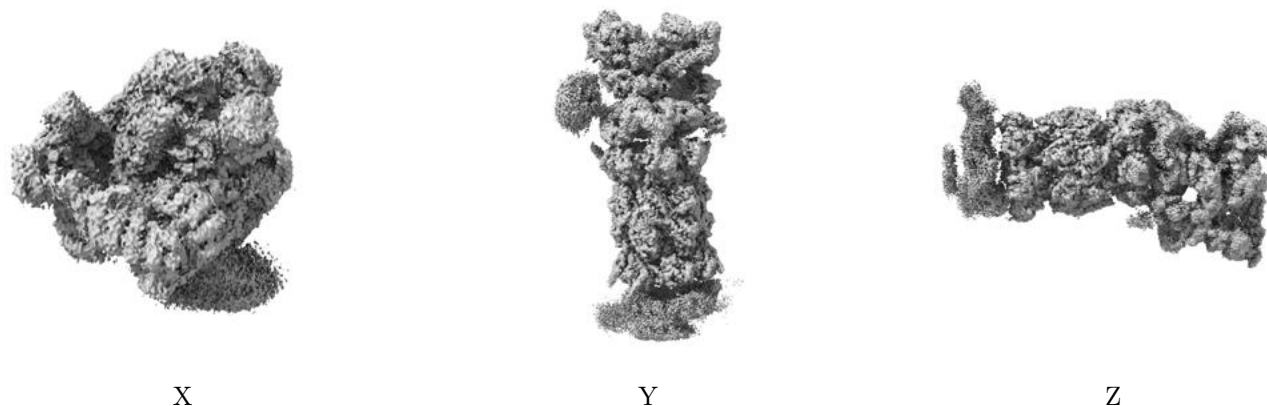


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0035. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

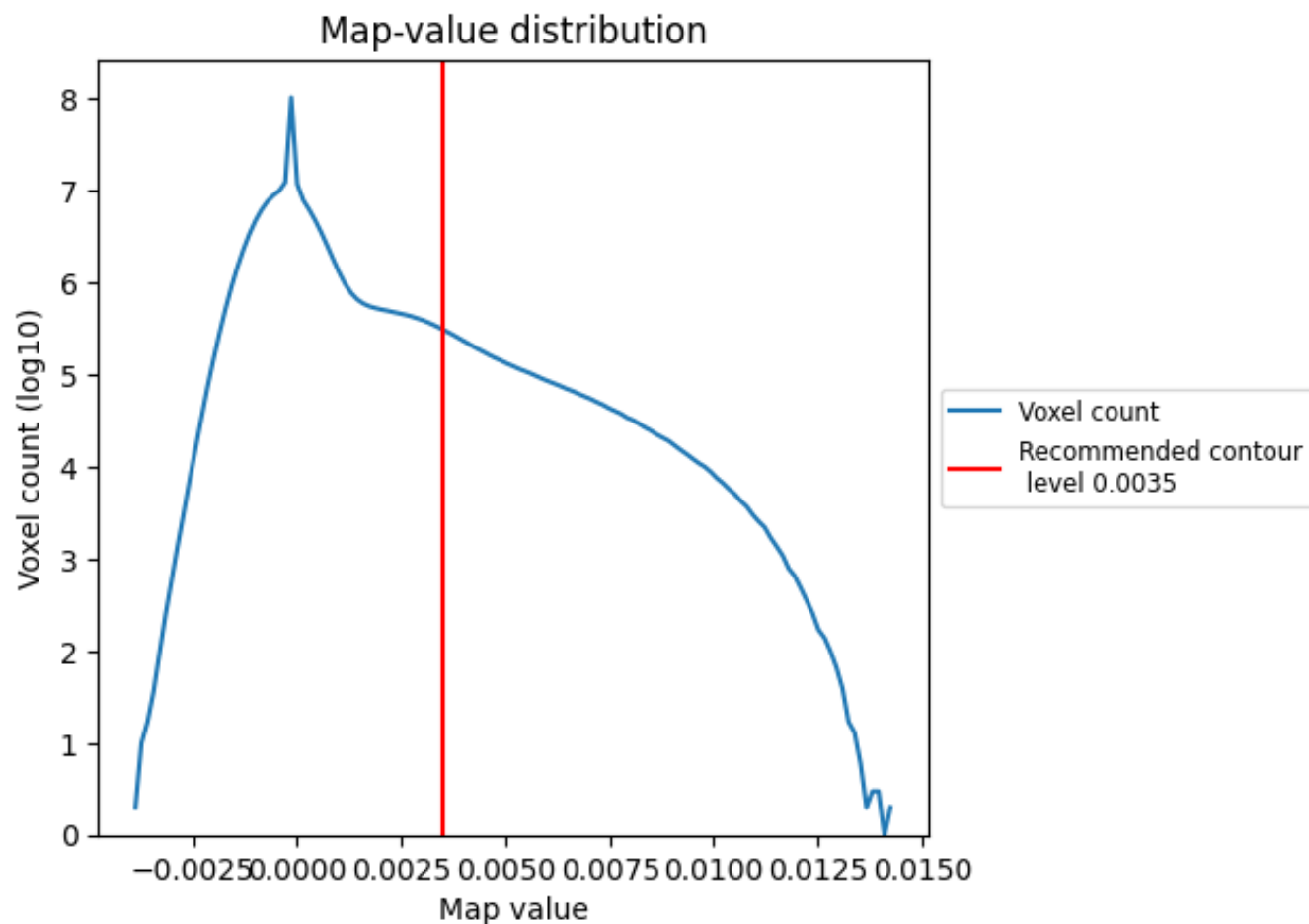
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

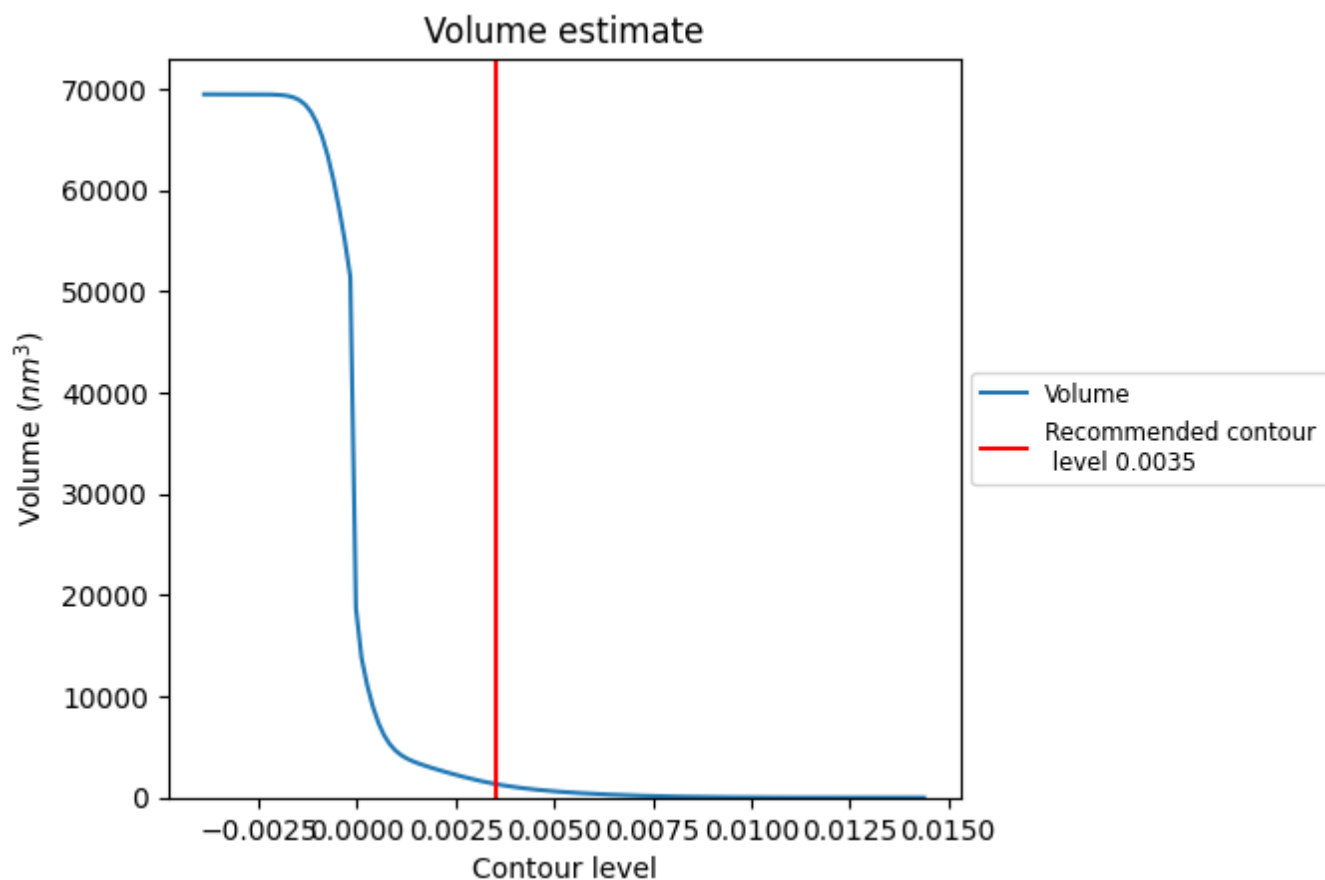
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

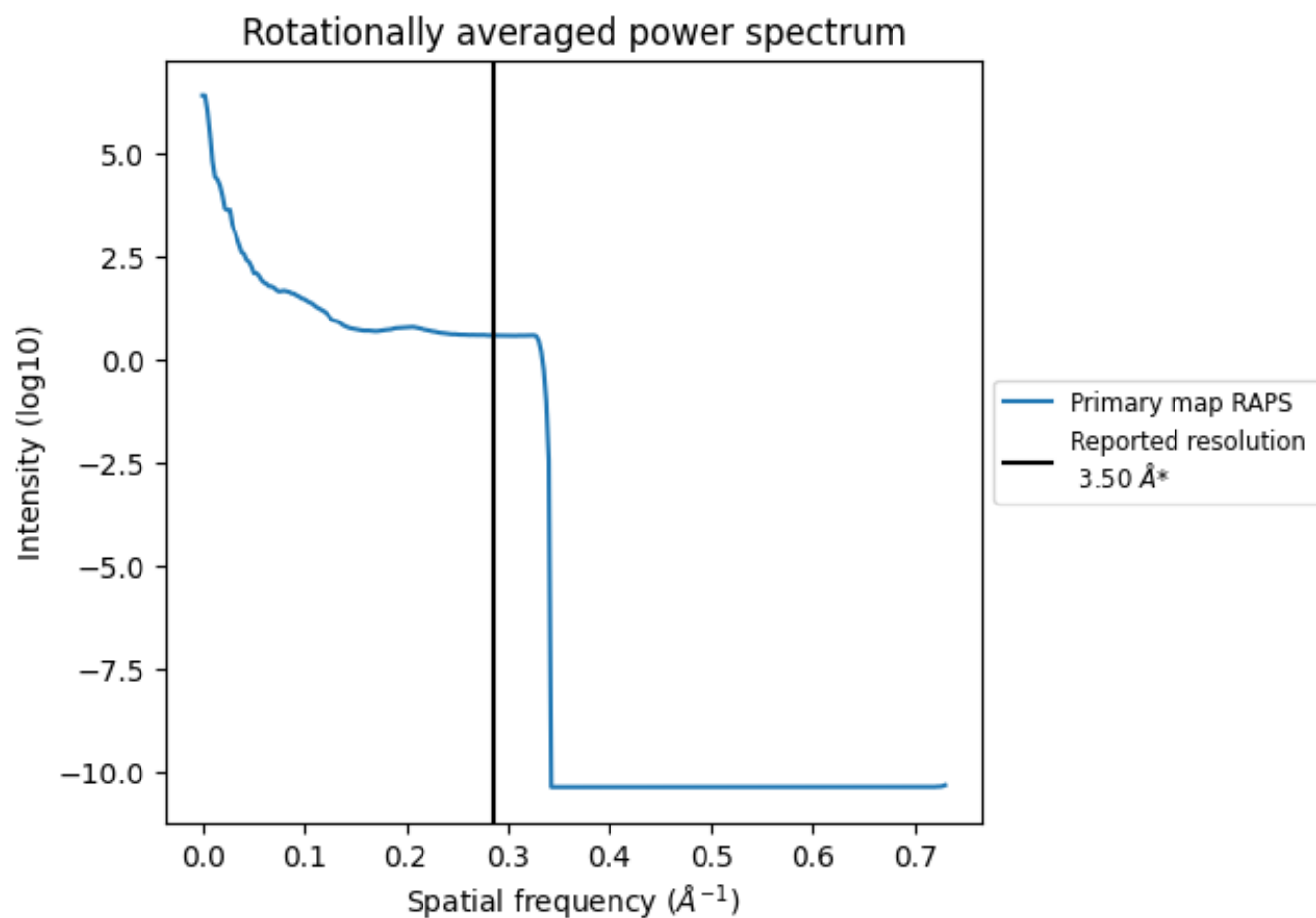
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1352 nm³; this corresponds to an approximate mass of 1222 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 0.286 \AA^{-1}

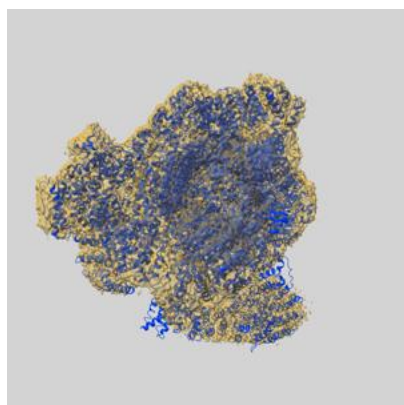
8 Fourier-Shell correlation ⓘ

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

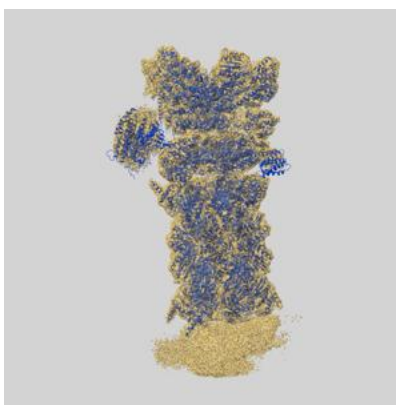
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-9219 and PDB model 6MSG. Per-residue inclusion information can be found in section [3](#) on page [13](#).

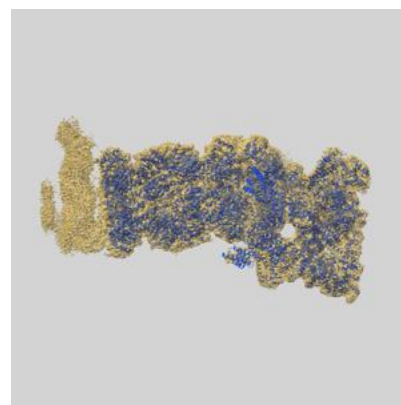
9.1 Map-model overlay [i](#)



X



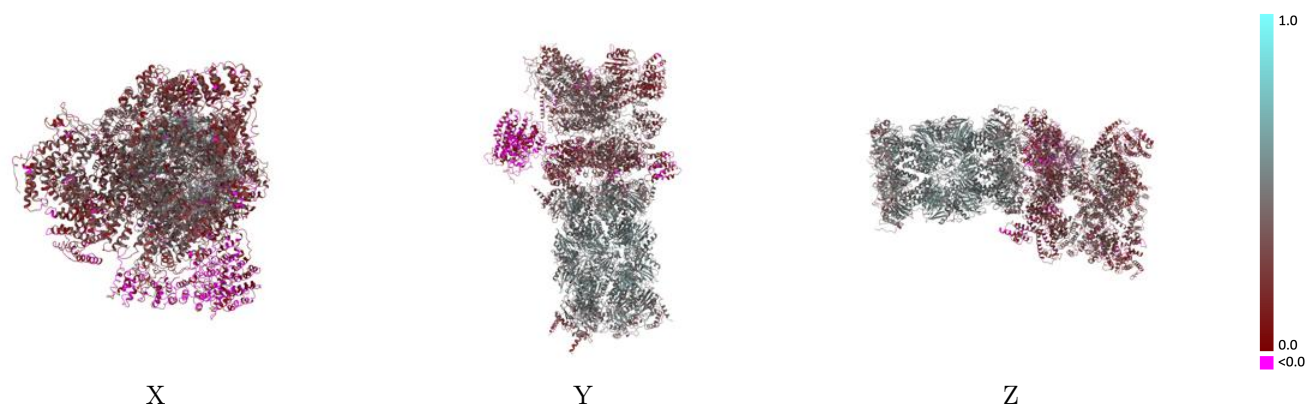
Y



Z

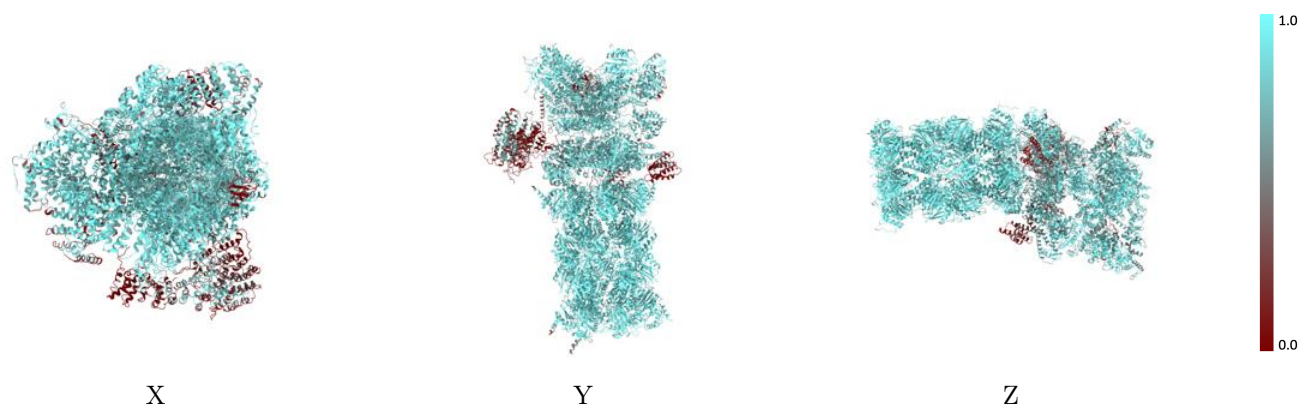
The images above show the 3D surface view of the map at the recommended contour level 0.0035 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



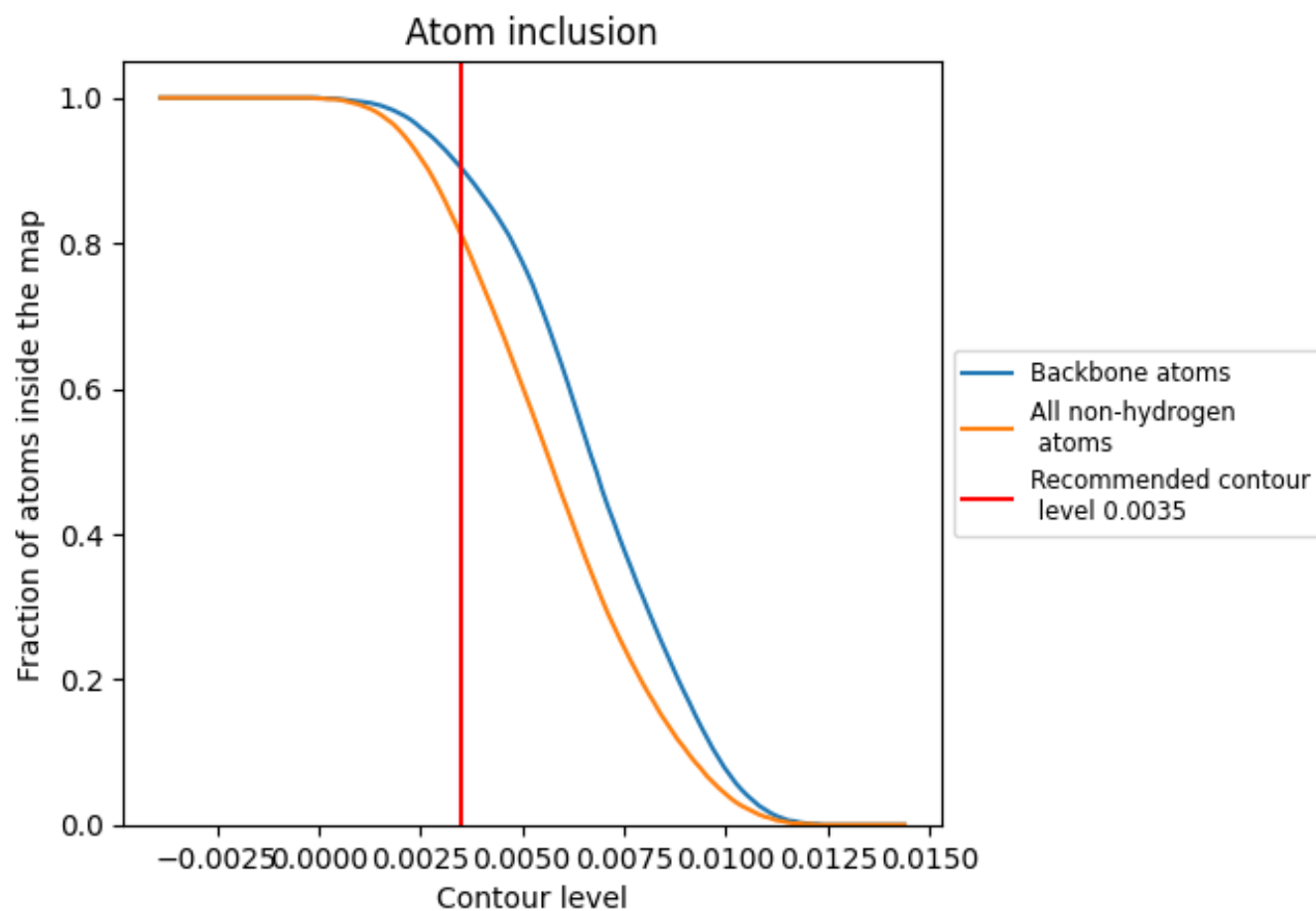
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0035).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 90% of all backbone atoms, 81% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ





























The table lists the average atom inclusion at the recommended contour level (0.0035) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8120	 0.3400
A	 0.7840	 0.2280
B	 0.7100	 0.1780
C	 0.7900	 0.2810
D	 0.8190	 0.3180
E	 0.8410	 0.3340
F	 0.8110	 0.2800
G	 0.9300	 0.4630
H	 0.9240	 0.4670
I	 0.8980	 0.4230
J	 0.9160	 0.4030
K	 0.8990	 0.4320
L	 0.9400	 0.4680
M	 0.9090	 0.4370
N	 0.9590	 0.5140
O	 0.9590	 0.4980
P	 0.9600	 0.5120
Q	 0.9390	 0.4780
R	 0.9660	 0.5100
S	 0.9470	 0.5030
T	 0.9620	 0.5140
U	 0.8540	 0.2990
V	 0.7460	 0.2340
W	 0.6100	 0.2230
X	 0.5850	 0.2290
Y	 0.8360	 0.2470
Z	 0.8460	 0.3130
a	 0.8260	 0.2290
b	 0.8490	 0.2310
c	 0.8340	 0.3370
d	 0.7460	 0.2130
e	 0.8060	 0.2130
f	 0.3010	 0.0250
g	 0.9110	 0.4520
h	 0.9050	 0.4530



Continued on next page...

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Chain	Atom inclusion	Q-score
i	 0.8610	 0.4120
j	 0.8750	 0.3810
k	 0.8830	 0.4350
l	 0.9290	 0.4660
m	 0.8920	 0.4310
n	 0.9540	 0.5100
o	 0.9520	 0.5030
p	 0.9550	 0.5070
q	 0.9400	 0.4830
r	 0.9630	 0.5200
s	 0.9500	 0.5070
t	 0.9640	 0.5150
u	 0.1860	 0.1850
v	 0.3080	 0.2510