



Full wwPDB EM Validation Report ⓘ

Oct 29, 2025 – 12:45 AM JST

PDB ID : 8JRI / pdb_00008jri
EMDB ID : EMD-36598
Title : Cryo-EM structure of human 26S proteasomal RP subcomplex (Ea state) without any bound substrate.
Authors : Hsu, S.T.D.; Draczkowski, P.; Wang, Y.S.
Deposited on : 2023-06-16
Resolution : 3.40 Å(reported)
Based on initial model : 6MSB

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:

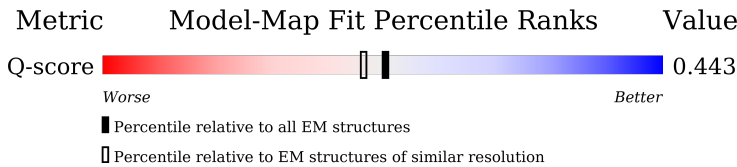
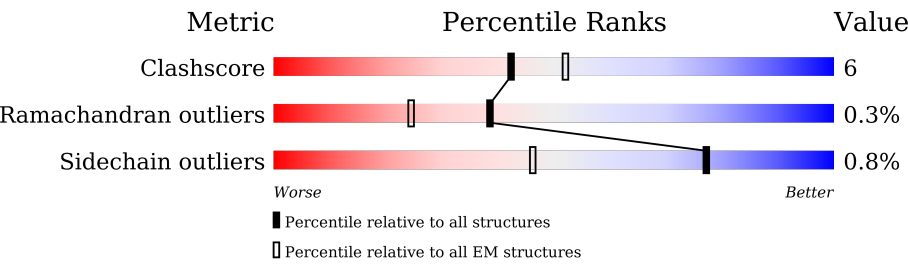
EMDB validation analysis : 0.0.1.dev129
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.46

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.40 Å.

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



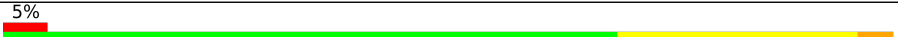
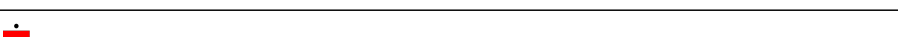
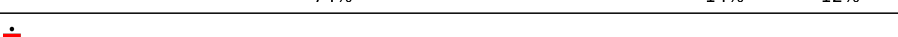
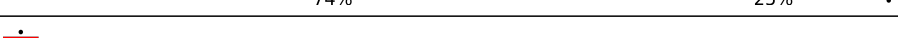
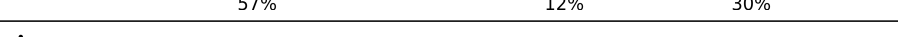
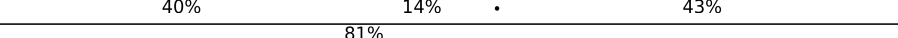
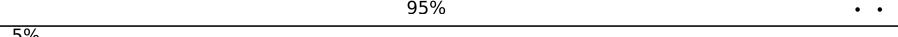
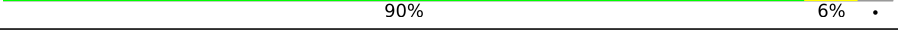
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	14717 (2.90 - 3.90)

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	A	433	7% 78% 13% 9%
2	B	440	7% 75% 13% 13%
3	C	406	5% 83% 10% 7%
4	D	418	72% 18% 9%

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Mol	Chain	Length	Quality of chain
5	G	246	
6	H	234	
7	I	261	
8	J	248	
9	K	241	
10	L	263	
11	M	255	
12	U	953	
13	c	310	
14	V	534	
15	W	456	
16	X	422	
17	Y	389	
18	Z	324	
19	a	376	
20	b	377	
21	d	350	
22	e	70	
23	f	908	
24	E	389	
25	F	439	

2 Entry composition

There are 28 unique types of molecules in this entry. The entry contains 62679 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 protease regulatory subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	394	Total	C	N	O	S	0	0
			2996	1886	531	561	18		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	384	Total	C	N	O	S	0	0
			2851	1786	493	560	12		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	379	Total	C	N	O	S	0	0
			2938	1850	531	541	16		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	380	Total	C	N	O	S	0	0
			3039	1923	524	579	13		

- Molecule 5 is a protein called Proteasome subunit alpha type-6.

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

- Molecule 6 is a protein called Proteasome subunit alpha type-2.

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

- Molecule 7 is a protein called Proteasome subunit alpha type-4.

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

- Molecule 8 is a protein called Proteasome subunit alpha type-7.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	J	239	Total	C	N	O	S	0	0
			1715	1064	311	335	5		

- Molecule 9 is a protein called Proteasome subunit alpha type-5.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	K	234	Total	C	N	O	S	0	0
			1759	1102	290	356	11		

- Molecule 10 is a protein called Proteasome subunit alpha type-1.

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

- Molecule 11 is a protein called Proteasome subunit alpha type-3.

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

- Molecule 12 is a protein called 26S proteasome non-ATPase regulatory subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	U	804	Total	C	N	O	S	0	0
			4492	2721	874	883	14		

- Molecule 13 is a protein called 26S proteasome non-ATPase regulatory subunit 14.

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

- Molecule 14 is a protein called 26S proteasome non-ATPase regulatory subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	V	508	Total	C	N	O	S	0	0
			3121	1926	596	592	7		

- Molecule 15 is a protein called 26S proteasome non-ATPase regulatory subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	W	456	Total	C	N	O	S	0	0
			3511	2216	609	665	21		

- Molecule 16 is a protein called 26S proteasome non-ATPase regulatory subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	X	380	Total	C	N	O	S	0	0
			2932	1860	503	557	12		

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

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

- Molecule 18 is a protein called 26S proteasome non-ATPase regulatory subunit 7.

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

- Molecule 19 is a protein called 26S proteasome non-ATPase regulatory subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	a	373	Total	C	N	O	S	0	0
			2901	1843	497	546	15		

- Molecule 20 is a protein called 26S proteasome non-ATPase regulatory subunit 4.

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

- Molecule 21 is a protein called 26S proteasome non-ATPase regulatory subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	d	244	Total	C	N	O	S	0	0
			1692	1076	294	317	5		

- Molecule 22 is a protein called 26S proteasome complex subunit DSS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	e	40	Total	C	N	O	S	0	0
			248	148	47	52	1		

- Molecule 23 is a protein called 26S proteasome non-ATPase regulatory subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	f	878	Total	C	N	O	S	0	0
			4328	2572	878	878			

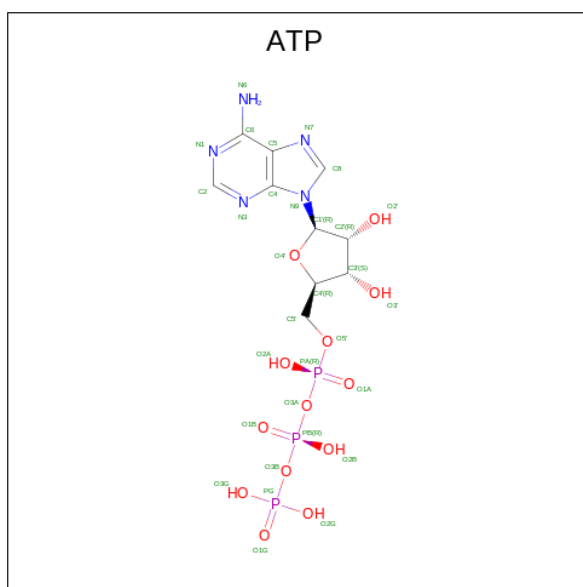
- Molecule 24 is a protein called 26S protease regulatory subunit 10B.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	E	375	Total	C	N	O	S	0	0
			2877	1806	514	541	16		

- Molecule 25 is a protein called 26S protease regulatory subunit 6A.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	F	377	Total	C	N	O	S	0	0
			2830	1783	491	541	15		

- Molecule 26 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: C₁₀H₁₆N₅O₁₃P₃) (labeled as "Ligand of Interest" by depositor).

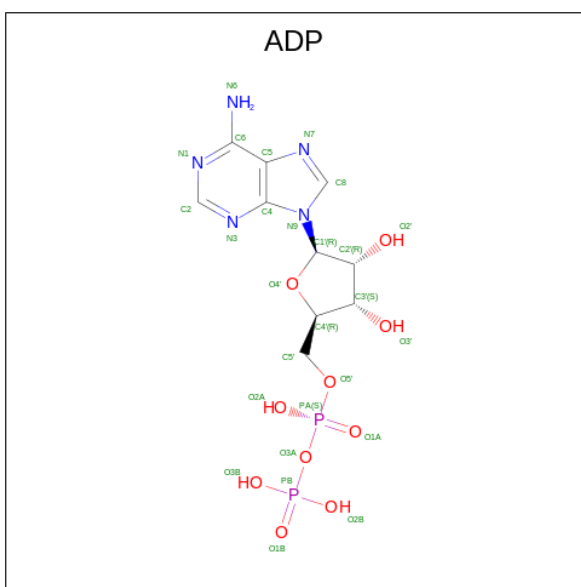


Mol	Chain	Residues	Atoms					AltConf
26	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
26	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
26	D	1	Total	C	N	O	P	0
			31	10	5	13	3	
26	E	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 27 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
27	A	1	Total	Mg	0
			1	1	
27	B	1	Total	Mg	0
			1	1	
27	D	1	Total	Mg	0
			1	1	
27	E	1	Total	Mg	0
			1	1	
27	F	1	Total	Mg	0
			1	1	

- Molecule 28 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: C₁₀H₁₅N₅O₁₀P₂) (labeled as "Ligand of Interest" by depositor).

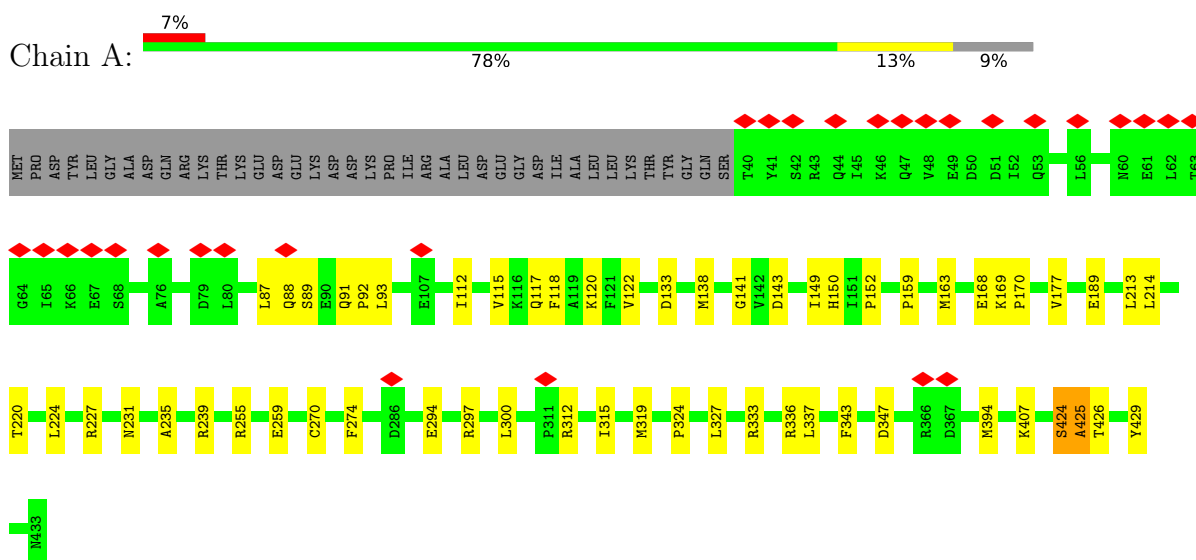


Mol	Chain	Residues	Atoms					AltConf
28	C	1	Total 27	C 10	N 5	O 10	P 2	0
28	F	1	Total 27	C 10	N 5	O 10	P 2	0

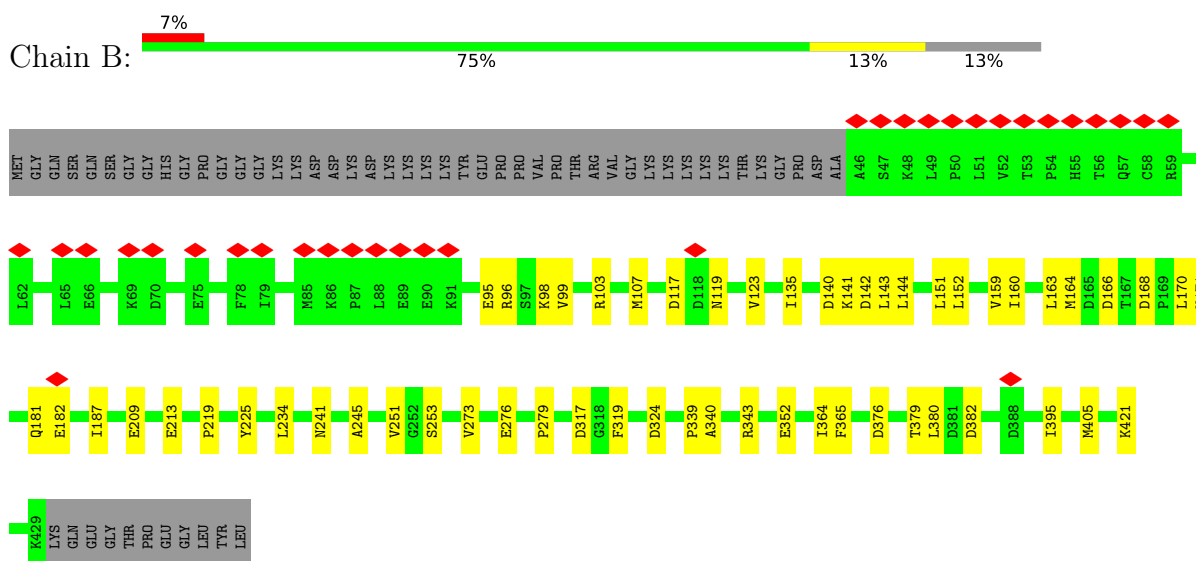
3 Residue-property plots

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

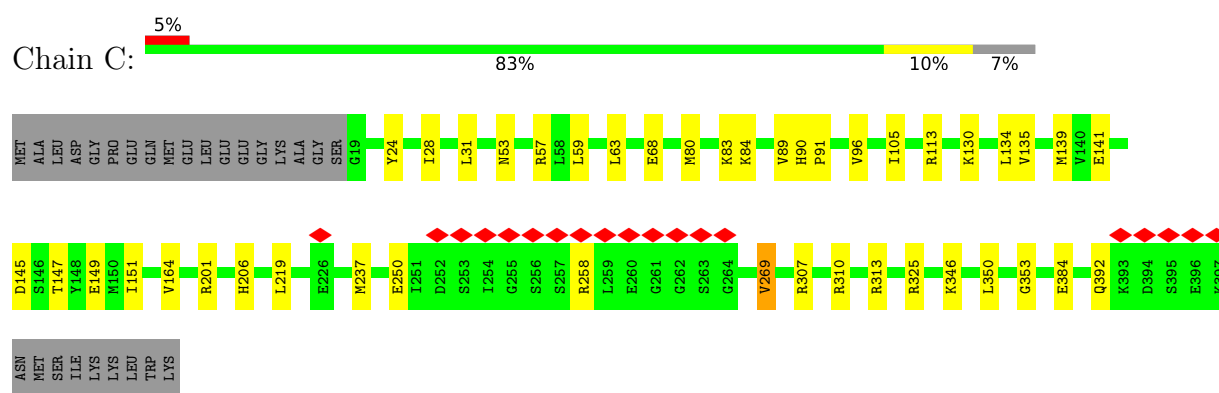
• Molecule 1: 26S protease regulatory subunit 7



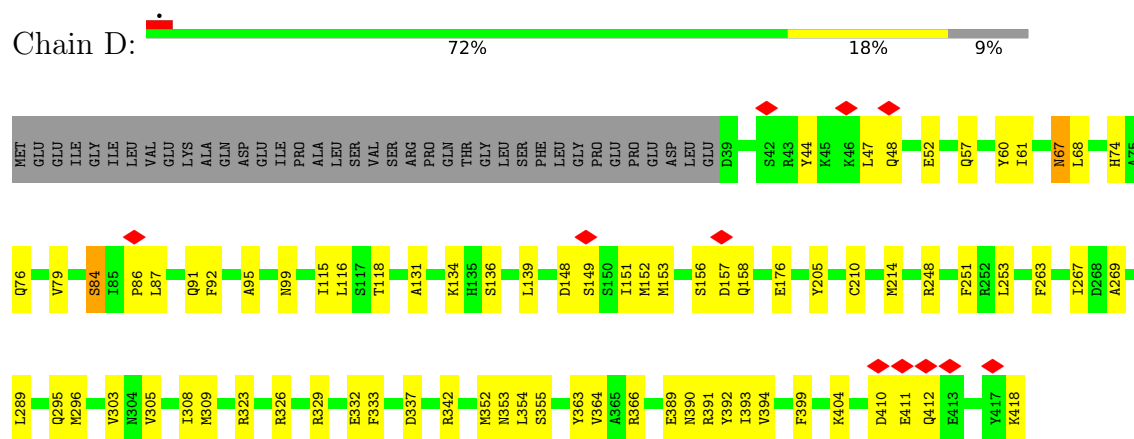
• Molecule 2: 26S protease regulatory subunit 4



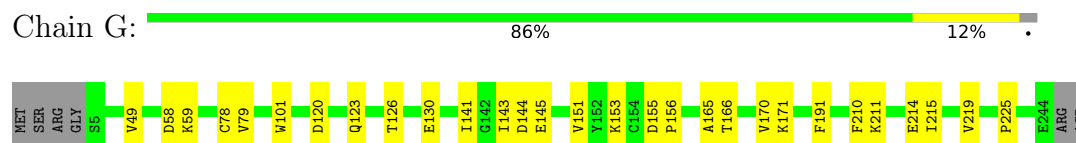
• Molecule 3: 26S protease regulatory subunit 8



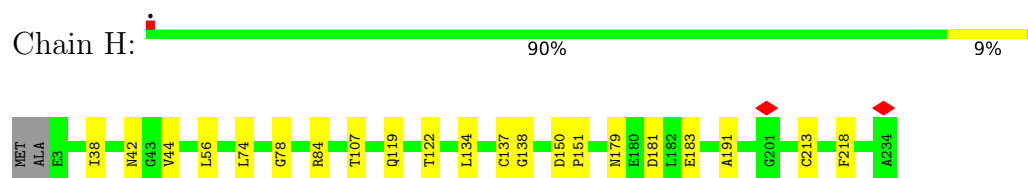
• Molecule 4: 26S protease regulatory subunit 6B



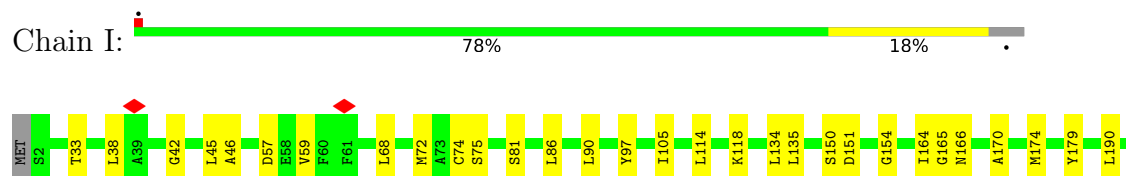
• Molecule 5: Proteasome subunit alpha type-6



• Molecule 6: Proteasome subunit alpha type-2



• Molecule 7: Proteasome subunit alpha type-4

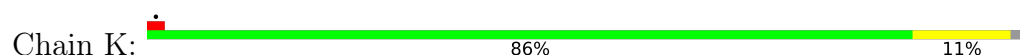




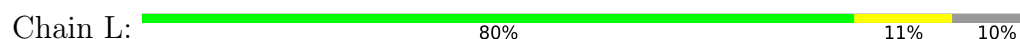
- Molecule 8: Proteasome subunit alpha type-7



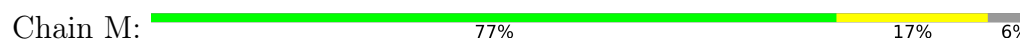
- Molecule 9: Proteasome subunit alpha type-5



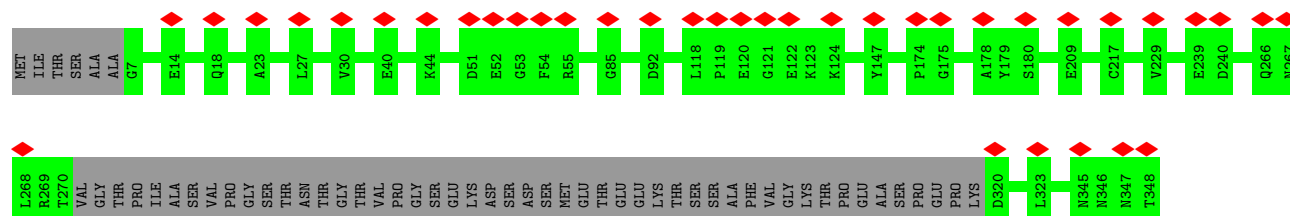
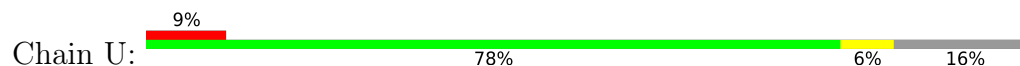
- Molecule 10: Proteasome subunit alpha type-1

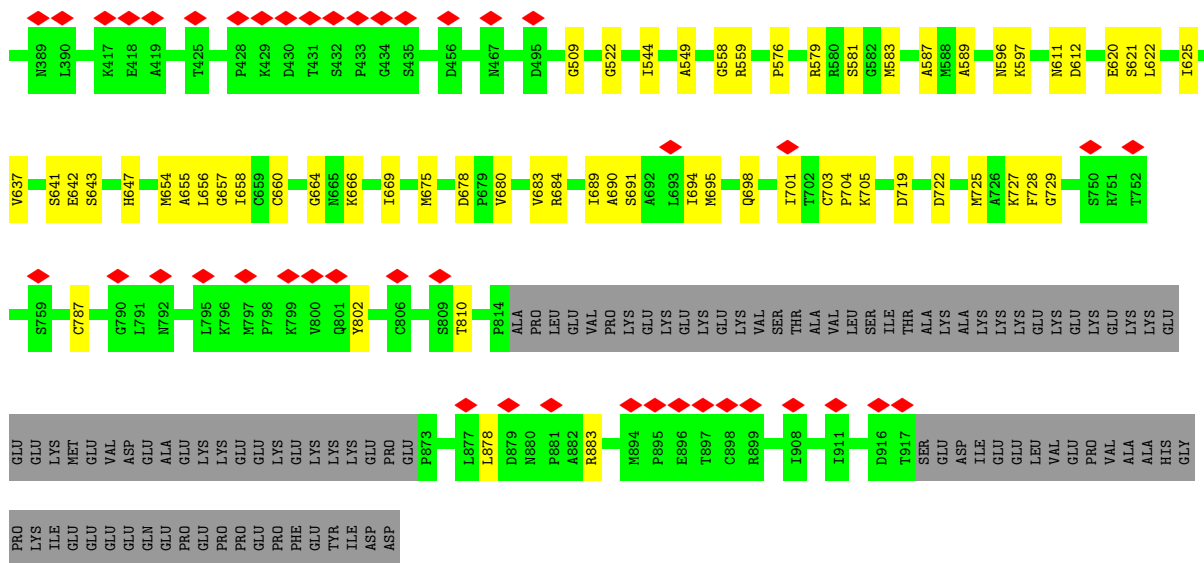


- Molecule 11: Proteasome subunit alpha type-3

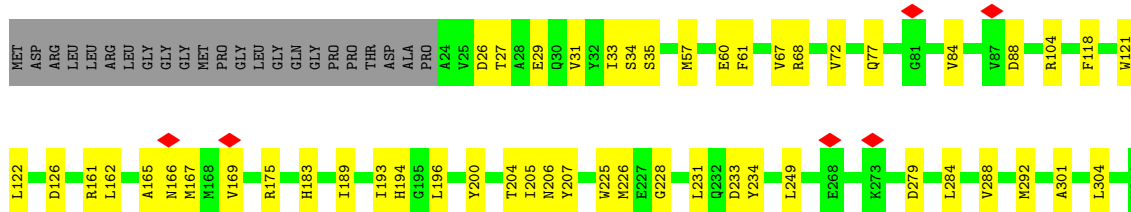
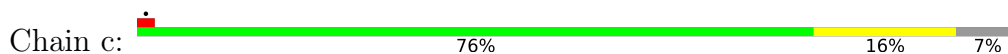


- Molecule 12: 26S proteasome non-ATPase regulatory subunit 1

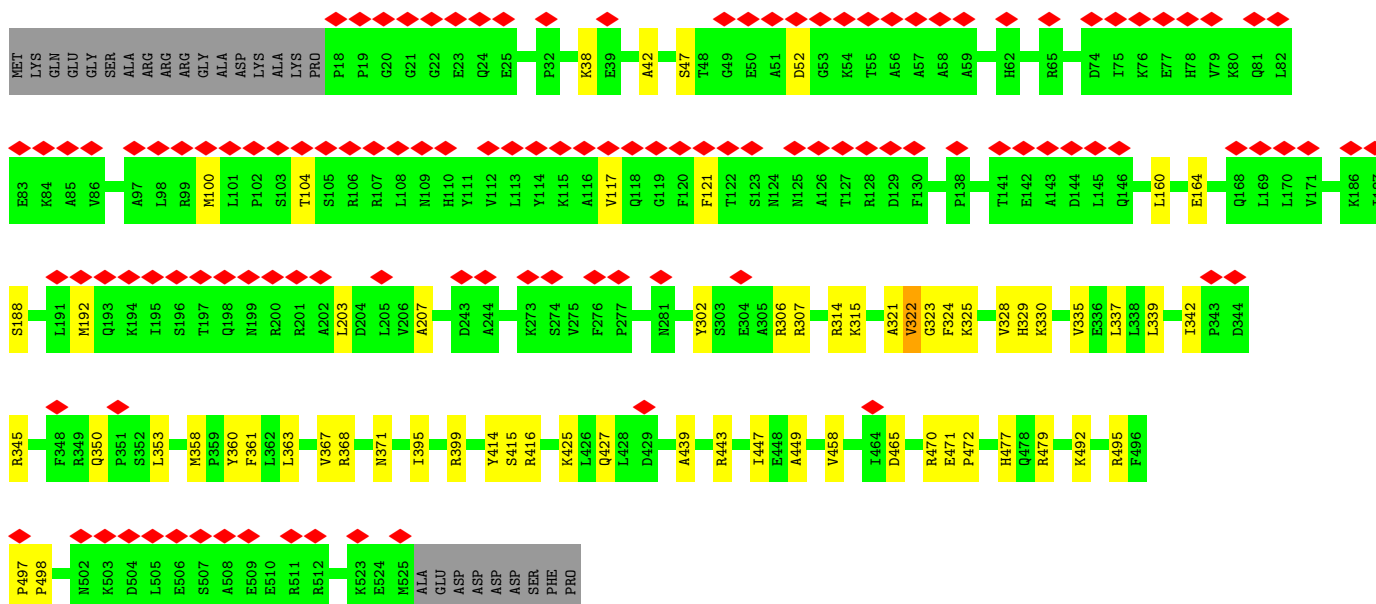
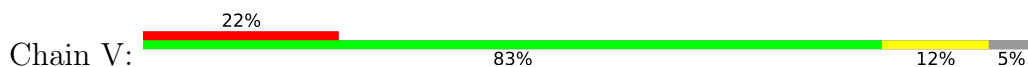




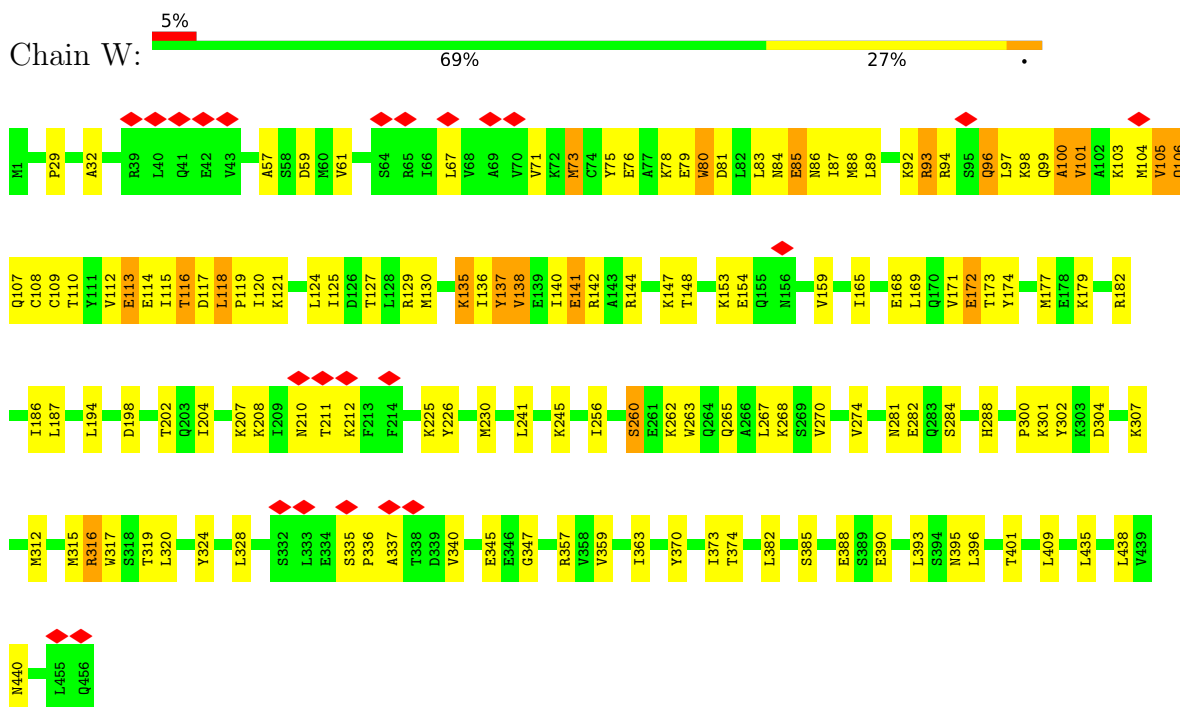
- Molecule 13: 26S proteasome non-ATPase regulatory subunit 14



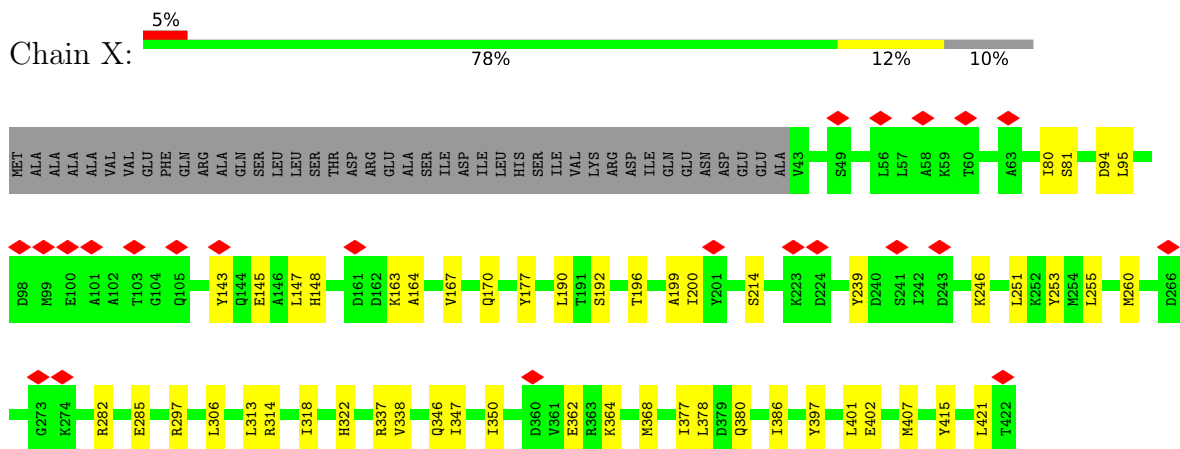
- Molecule 14: 26S proteasome non-ATPase regulatory subunit 3



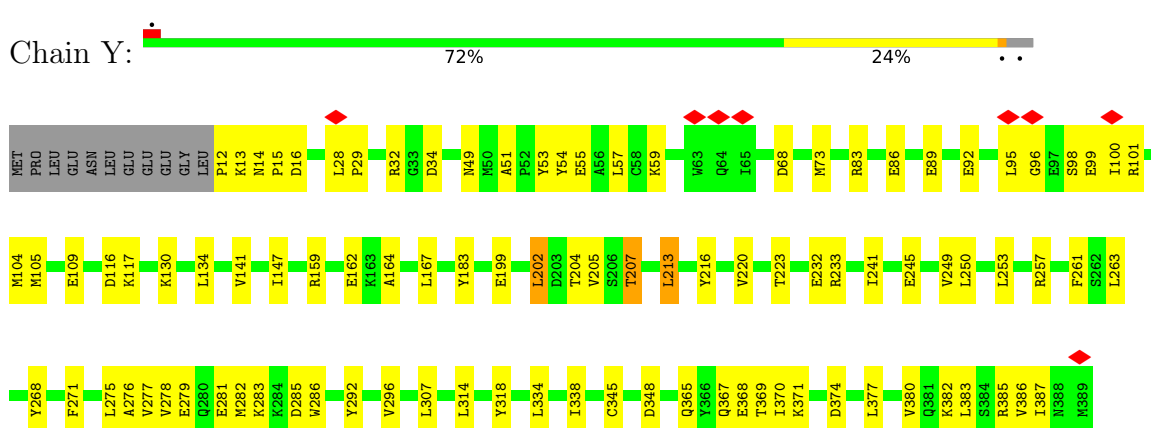
• Molecule 15: 26S proteasome non-ATPase regulatory subunit 12



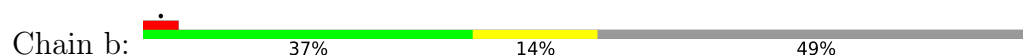
• Molecule 16: 26S proteasome non-ATPase regulatory subunit 11

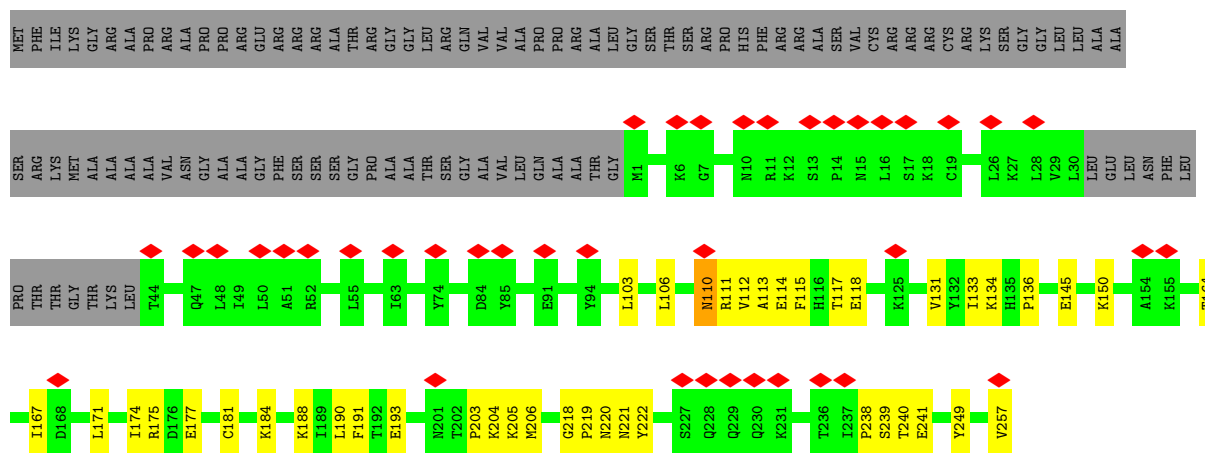


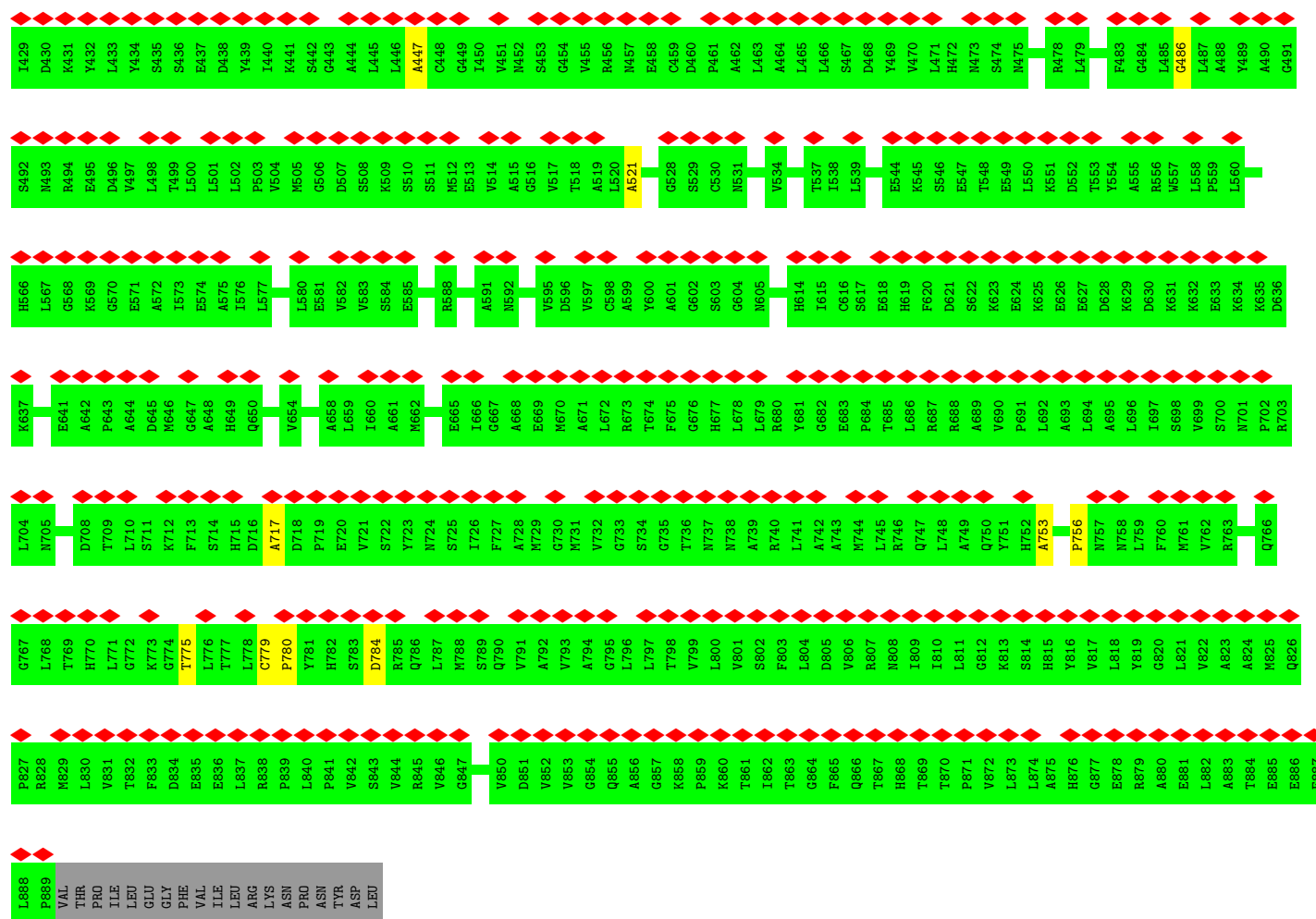
• Molecule 17: 26S proteasome non-ATPase regulatory subunit 6



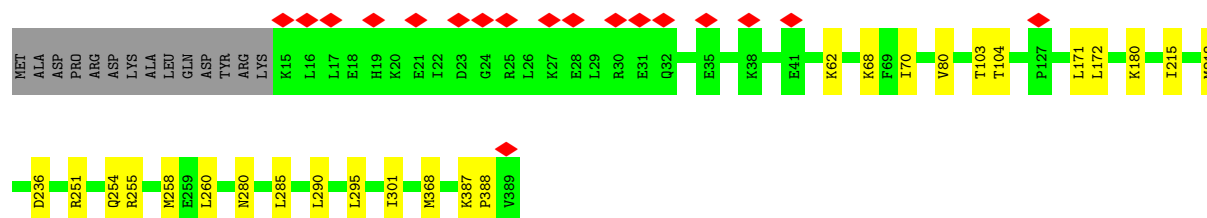
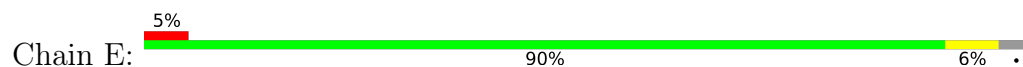
Chain Z: 74% 14% 12%



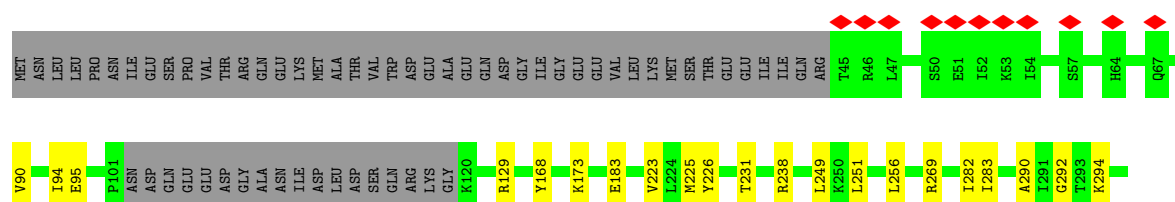




• Molecule 24: 26S protease regulatory subunit 10B



• Molecule 25: 26S protease regulatory subunit 6A



K300	E305	V306	Q307	R308	T309	E312	D318	K327	D336	T337	L338	L343	R344	R350	E353	F354	R362	M366	M373	C387	T388	D389	D390	R409	L415	T416	H417	M421	M434	L435	A439
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4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	153646	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	49	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	70000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.931	Depositor
Minimum map value	-1.690	Depositor
Average map value	-0.003	Depositor
Map value standard deviation	0.087	Depositor
Recommended contour level	0.5	Depositor
Map size (Å)	560.0, 560.0, 560.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.4, 1.4, 1.4	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.13	0/3047	0.35	0/4123
2	B	0.12	0/2888	0.33	0/3912
3	C	0.14	0/2977	0.32	0/4008
4	D	0.15	0/3089	0.40	0/4168
5	G	0.12	0/1859	0.31	0/2523
6	H	0.12	0/1743	0.29	0/2372
7	I	0.12	0/1942	0.31	0/2628
8	J	0.12	0/1739	0.30	0/2372
9	K	0.14	0/1786	0.37	0/2419
10	L	0.13	0/1885	0.34	0/2552
11	M	0.12	0/1891	0.29	0/2552
12	U	0.09	0/4510	0.26	0/6215
13	c	0.12	0/2302	0.31	0/3110
14	V	0.12	0/3149	0.38	0/4317
15	W	0.17	0/3557	0.54	2/4799 (0.0%)
16	X	0.11	0/2975	0.31	0/4016
17	Y	0.14	0/3173	0.36	0/4273
18	Z	0.13	0/2324	0.31	0/3150
19	a	0.13	0/2951	0.36	0/3998
20	b	0.12	0/1478	0.36	0/2001
21	d	0.12	0/1717	0.35	0/2339
22	e	0.13	0/248	0.61	0/333
23	f	0.08	0/4326	0.30	0/6016
24	E	0.11	0/2921	0.29	0/3945
25	F	0.11	0/2869	0.26	0/3884
All	All	0.12	0/63346	0.34	2/86025 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	W	88	MET	N-CA-C	-5.64	98.78	110.80
15	W	100	ALA	CB-CA-C	-5.23	109.54	117.07

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2996	0	2939	43	0
2	B	2851	0	2747	42	0
3	C	2938	0	3007	32	0
4	D	3039	0	3075	57	0
5	G	1826	0	1796	17	0
6	H	1708	0	1594	14	0
7	I	1912	0	1851	29	0
8	J	1715	0	1544	10	0
9	K	1759	0	1707	15	0
10	L	1850	0	1822	17	0
11	M	1856	0	1814	28	0
12	U	4492	0	2892	37	0
13	c	2260	0	2276	35	0
14	V	3121	0	2342	47	0
15	W	3511	0	3419	98	0
16	X	2932	0	2939	35	0
17	Y	3115	0	3120	63	0
18	Z	2281	0	2312	38	0
19	a	2901	0	2837	69	0
20	b	1458	0	1505	40	0
21	d	1692	0	1450	26	0
22	e	248	0	160	8	0
23	f	4328	0	2022	8	0
24	E	2877	0	2857	17	0
25	F	2830	0	2777	33	0
26	A	31	0	12	0	0
26	B	31	0	12	0	0
26	D	31	0	12	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	E	31	0	12	2	0
27	A	1	0	0	0	0
27	B	1	0	0	0	0
27	D	1	0	0	0	0
27	E	1	0	0	0	0
27	F	1	0	0	0	0
28	C	27	0	12	0	0
28	F	27	0	12	0	0
All	All	62679	0	56876	777	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 (777) 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)
7:I:42:GLY:HA2	7:I:216:LEU:O	1.78	0.83
19:a:324:ILE:HG22	19:a:331:VAL:HG13	1.61	0.81
14:V:315:LYS:HG2	17:Y:385:ARG:HH22	1.48	0.79
4:D:153:MET:HG2	4:D:158:GLN:HB3	1.63	0.79
15:W:101:VAL:O	15:W:106:GLN:NE2	2.17	0.77
17:Y:92:GLU:HG3	17:Y:100:ILE:HG21	1.67	0.77
15:W:260:SER:HA	15:W:263:TRP:HB3	1.68	0.76
1:A:294:GLU:HA	1:A:297:ARG:HE	1.51	0.75
13:c:225:TRP:HB2	18:Z:197:GLY:HA2	1.68	0.75
19:a:190:VAL:HG23	19:a:225:LEU:HD11	1.69	0.74
6:H:119:GLN:HG3	7:I:81:SER:HB2	1.70	0.73
14:V:479:ARG:NH1	17:Y:374:ASP:OD1	2.22	0.73
15:W:85:GLU:HG3	15:W:130:MET:HB3	1.70	0.73
16:X:421:LEU:HD21	18:Z:280:ILE:HD12	1.71	0.73
3:C:89:VAL:HG12	3:C:91:PRO:HD2	1.71	0.73
2:B:317:ASP:OD2	2:B:343:ARG:NH2	2.23	0.72
17:Y:53:TYR:OH	17:Y:73:MET:SD	2.48	0.72
1:A:297:ARG:HH12	25:F:306:VAL:HG21	1.56	0.71
13:c:226:MET:SD	15:W:440:ASN:ND2	2.62	0.70
11:M:66:LEU:HD21	11:M:214:SER:HB2	1.73	0.70
21:d:171:LEU:HD21	21:d:175:ARG:HH21	1.56	0.70
15:W:315:MET:HE2	15:W:320:LEU:H	1.56	0.70
18:Z:208:ILE:HD11	18:Z:230:LEU:HD21	1.74	0.69
4:D:44:TYR:O	4:D:48:GLN:NE2	2.26	0.69
15:W:268:LYS:HZ1	15:W:337:ALA:H	1.41	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:M:201:HIS:O	11:M:201:HIS:ND1	2.26	0.69
14:V:345:ARG:HH22	14:V:361:PHE:HB2	1.58	0.68
20:b:125:VAL:HG23	20:b:159:THR:HG21	1.75	0.68
16:X:421:LEU:HD13	18:Z:283:ARG:HH21	1.59	0.68
2:B:163:LEU:HD11	3:C:80:MET:HE1	1.74	0.67
19:a:101:ARG:HH21	19:a:115:LYS:HE2	1.59	0.67
19:a:54:ASP:HA	19:a:57:ILE:HB	1.76	0.67
3:C:63:LEU:HB2	4:D:79:VAL:HG12	1.74	0.67
25:F:94:ILE:HG22	25:F:95:GLU:HG3	1.76	0.67
15:W:92:LYS:HD2	15:W:96:GLN:HE21	1.60	0.67
4:D:87:LEU:HD12	4:D:131:ALA:HB1	1.77	0.67
5:G:49:VAL:HG12	5:G:219:VAL:HG23	1.76	0.67
1:A:213:LEU:HB2	1:A:337:LEU:HD12	1.78	0.66
24:E:215:ILE:HD11	24:E:260:LEU:HD13	1.78	0.66
7:I:33:THR:HA	7:I:165:GLY:HA3	1.77	0.66
11:M:93:GLU:OE2	11:M:97:ASN:ND2	2.28	0.66
1:A:394:MET:HE3	2:B:219:PRO:HD3	1.78	0.66
2:B:103:ARG:NH2	2:B:160:ILE:O	2.29	0.66
19:a:38:THR:HG21	19:a:71:VAL:HG11	1.77	0.65
19:a:221:VAL:HG23	19:a:222:LEU:HG	1.78	0.65
4:D:151:ILE:HG13	4:D:152:MET:H	1.62	0.65
7:I:68:LEU:HD22	7:I:90:LEU:HD11	1.78	0.65
2:B:168:ASP:OD2	2:B:170:LEU:HG	1.96	0.65
15:W:328:LEU:HB3	15:W:337:ALA:HB1	1.79	0.65
7:I:218:ARG:NH1	7:I:223:THR:OG1	2.29	0.65
17:Y:241:ILE:HD11	17:Y:261:PHE:HE1	1.62	0.64
4:D:67:ASN:C	4:D:67:ASN:HD22	2.04	0.64
6:H:213:CYS:HB2	6:H:218:PHE:HD1	1.61	0.64
25:F:434:ASN:OD1	25:F:435:LEU:N	2.28	0.64
22:e:62:LYS:O	22:e:66:LYS:HB2	1.98	0.64
19:a:70:ARG:HB3	20:b:17:ARG:HH21	1.61	0.64
6:H:44:VAL:HG21	6:H:137:CYS:HB2	1.80	0.64
14:V:497:PRO:HG2	14:V:498:PRO:HD3	1.79	0.64
20:b:97:LEU:O	20:b:100:ARG:NH1	2.31	0.64
3:C:164:VAL:HG21	3:C:313:ARG:HD2	1.79	0.64
4:D:57:GLN:HA	4:D:60:TYR:CE2	2.32	0.64
15:W:187:LEU:HD22	15:W:225:LYS:HE3	1.77	0.64
21:d:110:ASN:O	21:d:110:ASN:ND2	2.30	0.64
19:a:325:ASP:OD1	19:a:326:GLU:N	2.32	0.63
16:X:255:LEU:HD22	16:X:267:VAL:HG23	1.80	0.63
19:a:101:ARG:NH1	19:a:102:GLU:OE2	2.30	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:W:73:MET:HE2	15:W:78:LYS:HG3	1.80	0.63
15:W:186:ILE:HD11	15:W:208:LYS:HE2	1.81	0.63
9:K:69:GLU:O	9:K:93:ARG:NH1	2.32	0.63
7:I:118:LYS:NZ	7:I:150:SER:OG	2.32	0.62
2:B:141:LYS:HA	2:B:144:LEU:HD23	1.81	0.62
10:L:48:ALA:HB1	10:L:62:LYS:HD3	1.81	0.62
16:X:306:LEU:HA	16:X:313:LEU:HD12	1.81	0.62
21:d:203:PRO:HG2	21:d:205:LYS:HB2	1.82	0.62
9:K:189:MET:HE2	9:K:194:ALA:HA	1.82	0.62
25:F:231:THR:HG21	25:F:354:PHE:HB3	1.82	0.62
11:M:213:LEU:HD12	11:M:232:ARG:HG3	1.82	0.62
4:D:353:ASN:ND2	4:D:392:TYR:O	2.33	0.61
25:F:168:TYR:HB2	25:F:173:LYS:HE2	1.80	0.61
14:V:345:ARG:HH12	14:V:361:PHE:HA	1.63	0.61
3:C:83:LYS:HA	3:C:105:ILE:HD11	1.82	0.61
12:U:669:ILE:HG21	12:U:705:LYS:HG3	1.82	0.61
15:W:136:ILE:O	15:W:138:VAL:HG12	2.00	0.61
22:e:42:ASN:O	22:e:44:ASP:N	2.32	0.61
6:H:74:LEU:HD21	6:H:134:LEU:HD22	1.83	0.61
7:I:198:ASN:HA	7:I:206:LEU:HD21	1.83	0.61
9:K:84:ASP:OD2	9:K:135:ARG:NH2	2.33	0.61
14:V:302:TYR:O	14:V:306:ARG:NH1	2.34	0.61
17:Y:55:GLU:OE2	17:Y:59:LYS:NZ	2.32	0.61
7:I:86:LEU:HD12	7:I:114:LEU:HD11	1.83	0.61
3:C:113:ARG:HD3	3:C:130:LYS:HE2	1.81	0.60
14:V:477:HIS:ND1	21:d:249:TYR:OH	2.33	0.60
18:Z:73:ASP:O	18:Z:77:ASN:ND2	2.34	0.60
22:e:62:LYS:O	22:e:66:LYS:CB	2.49	0.60
12:U:701:ILE:HG21	12:U:810:THR:HA	1.83	0.60
14:V:38:LYS:HA	14:V:42:ALA:HB3	1.81	0.60
14:V:117:VAL:O	14:V:121:PHE:N	2.34	0.60
15:W:106:GLN:O	15:W:110:THR:HG23	2.01	0.60
15:W:315:MET:SD	15:W:316:ARG:N	2.74	0.60
3:C:57:ARG:NH2	12:U:643:SER:O	2.32	0.60
11:M:47:PHE:HB2	11:M:214:SER:HB3	1.84	0.60
19:a:190:VAL:HA	19:a:193:GLN:HG2	1.84	0.60
15:W:98:LYS:O	15:W:103:LYS:HB2	2.02	0.60
16:X:167:VAL:HG12	16:X:196:THR:HG23	1.83	0.60
18:Z:9:VAL:HG12	18:Z:48:LEU:HB3	1.84	0.60
17:Y:275:LEU:HD21	17:Y:296:VAL:HG13	1.84	0.59
15:W:114:GLU:HB3	15:W:116:THR:HG23	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:Z:65:ASP:O	18:Z:104:ASN:ND2	2.32	0.59
14:V:325:LYS:HA	14:V:328:VAL:HG12	1.84	0.59
18:Z:209:ARG:HH12	19:a:354:GLU:HG3	1.67	0.59
16:X:415:TYR:HE1	17:Y:383:LEU:HB2	1.68	0.59
19:a:75:SER:O	19:a:79:ILE:HG12	2.03	0.59
15:W:114:GLU:C	15:W:116:THR:H	2.10	0.59
19:a:180:LEU:HG	19:a:222:LEU:HD11	1.83	0.59
19:a:317:VAL:HG23	19:a:319:LEU:HG	1.85	0.59
18:Z:12:HIS:ND1	18:Z:50:VAL:O	2.35	0.58
3:C:145:ASP:HA	3:C:201:ARG:HG2	1.86	0.58
4:D:86:PRO:HB3	4:D:134:LYS:HB2	1.84	0.58
13:c:122:LEU:HD12	13:c:126:ASP:HB3	1.84	0.58
18:Z:177:ARG:NH1	18:Z:177:ARG:HA	2.18	0.58
19:a:91:ASN:O	19:a:95:THR:HG23	2.02	0.58
23:f:717:ALA:HA	23:f:753:ALA:HA	1.83	0.58
1:A:429:TYR:HE2	2:B:340:ALA:HB2	1.69	0.58
13:c:60:GLU:OE2	13:c:68:ARG:NH2	2.31	0.58
24:E:172:LEU:HD23	24:E:301:ILE:HD11	1.85	0.58
12:U:678:ASP:O	12:U:684:ARG:NH1	2.29	0.58
15:W:81:ASP:O	15:W:86:ASN:HB2	2.04	0.58
2:B:364:ILE:HG22	2:B:395:ILE:HG21	1.86	0.58
14:V:371:ASN:OD1	14:V:427:GLN:NE2	2.37	0.58
19:a:57:ILE:O	19:a:60:TYR:HB3	2.04	0.58
25:F:223:VAL:HG12	25:F:350:ARG:HB2	1.85	0.58
12:U:660:CYS:HB3	12:U:694:ILE:HD11	1.86	0.58
3:C:135:VAL:HG12	3:C:139:MET:HE2	1.84	0.58
16:X:297:ARG:HB2	16:X:337:ARG:HD2	1.85	0.58
2:B:181:GLN:O	2:B:241:ASN:ND2	2.37	0.57
5:G:170:VAL:HG13	5:G:171:LYS:HG2	1.84	0.57
14:V:160:LEU:O	14:V:164:GLU:N	2.36	0.57
11:M:173:LYS:HA	11:M:176:ILE:HD12	1.86	0.57
12:U:587:ALA:HB2	12:U:621:SER:HB2	1.87	0.57
15:W:118:LEU:HB3	15:W:119:PRO:HD3	1.86	0.57
3:C:346:LYS:NZ	3:C:384:GLU:OE2	2.37	0.57
14:V:443:ARG:NE	21:d:181:CYS:O	2.36	0.57
16:X:338:VAL:HG13	16:X:350:ILE:HD11	1.87	0.57
14:V:414:TYR:OH	14:V:425:LYS:NZ	2.37	0.57
7:I:135:LEU:HG	7:I:164:ILE:HD13	1.87	0.57
17:Y:14:ASN:HB2	17:Y:15:PRO:HD3	1.85	0.57
1:A:143:ASP:OD1	1:A:150:HIS:NE2	2.36	0.57
15:W:118:LEU:CB	15:W:119:PRO:HD3	2.34	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:F:305:GLU:OE1	25:F:308:ARG:NH2	2.34	0.57
3:C:63:LEU:HD13	4:D:79:VAL:HA	1.87	0.56
9:K:50:VAL:HG11	9:K:66:LYS:HB2	1.88	0.56
12:U:576:PRO:HB3	12:U:611:ASN:HD22	1.70	0.56
4:D:389:GLU:OE1	4:D:391:ARG:NH2	2.38	0.56
7:I:219:GLU:HG3	7:I:220:ASN:H	1.71	0.56
11:M:40:ARG:NH2	11:M:146:ALA:O	2.38	0.56
15:W:268:LYS:HZ1	15:W:337:ALA:N	2.02	0.56
16:X:260:MET:HE1	16:X:322:HIS:HB3	1.88	0.56
19:a:306:GLU:N	19:a:306:GLU:OE1	2.38	0.56
24:E:387:LYS:HG2	24:E:388:PRO:HD2	1.88	0.56
14:V:350:GLN:HB2	14:V:353:LEU:HB2	1.86	0.56
19:a:138:VAL:HG12	19:a:142:LEU:HD23	1.87	0.56
18:Z:262:LEU:O	18:Z:266:ILE:HG12	2.06	0.56
19:a:61:GLU:O	19:a:65:SER:N	2.38	0.56
3:C:53:ASN:ND2	12:U:642:GLU:O	2.39	0.56
2:B:103:ARG:HG3	2:B:160:ILE:HD12	1.86	0.56
6:H:42:ASN:ND2	6:H:183:GLU:OE1	2.40	0.56
14:V:342:ILE:H	14:V:368:ARG:HH12	1.53	0.56
15:W:29:PRO:HA	15:W:32:ALA:HB3	1.87	0.56
17:Y:51:ALA:HA	17:Y:54:TYR:CE2	2.41	0.56
4:D:176:GLU:OE1	4:D:329:ARG:NH2	2.39	0.55
15:W:93:ARG:O	15:W:96:GLN:HG2	2.06	0.55
18:Z:187:LEU:HD11	19:a:374:ILE:HG12	1.88	0.55
1:A:274:PHE:HB2	1:A:319:MET:HG2	1.87	0.55
17:Y:183:TYR:HE1	17:Y:213:LEU:HD21	1.72	0.55
26:E:401:ATP:O1G	25:F:344:ARG:NH1	2.39	0.55
14:V:315:LYS:HG2	17:Y:385:ARG:NH2	2.21	0.55
15:W:208:LYS:O	15:W:212:LYS:NZ	2.29	0.55
17:Y:387:ILE:HG21	18:Z:276:ILE:HD11	1.89	0.55
17:Y:141:VAL:HG11	17:Y:164:ALA:HB2	1.87	0.55
15:W:281:ASN:OD1	15:W:282:GLU:N	2.40	0.55
16:X:163:LYS:HB3	16:X:200:ILE:HD11	1.89	0.55
19:a:47:ASP:OD1	19:a:48:PRO:HD3	2.06	0.55
7:I:170:ALA:O	7:I:174:MET:HG3	2.06	0.55
24:E:171:LEU:HD22	24:E:295:LEU:HD13	1.88	0.55
13:c:193:ILE:HG22	13:c:194:HIS:HD2	1.71	0.55
15:W:363:ILE:HD11	15:W:382:LEU:HD11	1.88	0.55
19:a:35:HIS:ND1	20:b:14:GLU:O	2.40	0.55
4:D:251:PHE:HD2	4:D:295:GLN:HB3	1.72	0.54
13:c:27:THR:HG22	13:c:175:ARG:HB3	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:c:29:GLU:OE1	13:c:161:ARG:NH1	2.40	0.54
2:B:151:LEU:HD11	3:C:96:VAL:HG11	1.89	0.54
14:V:321:ALA:HB3	14:V:325:LYS:HE2	1.88	0.54
14:V:439:ALA:O	14:V:443:ARG:HG2	2.07	0.54
15:W:67:LEU:HA	15:W:71:VAL:CB	2.38	0.54
15:W:114:GLU:HB2	15:W:120:ILE:HD13	1.89	0.54
1:A:407:LYS:H	1:A:407:LYS:HD2	1.72	0.54
23:f:486:GLY:HA3	23:f:521:ALA:HB1	1.90	0.54
24:E:103:THR:HG23	24:E:104:THR:HG23	1.90	0.54
3:C:31:LEU:HB2	4:D:47:LEU:HD13	1.90	0.54
5:G:120:ASP:OD1	6:H:84:ARG:NH1	2.41	0.54
20:b:11:ASP:OD1	20:b:12:ASN:N	2.40	0.54
2:B:365:PHE:CE1	2:B:395:ILE:HD12	2.42	0.53
17:Y:12:PRO:HD3	17:Y:109:GLU:HB3	1.89	0.53
17:Y:278:VAL:O	17:Y:282:MET:HG2	2.08	0.53
17:Y:101:ARG:HA	17:Y:104:MET:HE2	1.90	0.53
24:E:215:ILE:HA	24:E:218:MET:HG2	1.90	0.53
15:W:141:GLU:OE1	15:W:142:ARG:N	2.37	0.53
3:C:28:ILE:HG23	4:D:47:LEU:HD11	1.91	0.53
15:W:204:ILE:HD13	15:W:207:LYS:HZ1	1.72	0.53
25:F:338:LEU:HD23	25:F:343:LEU:HD21	1.91	0.53
15:W:304:ASP:OD2	15:W:324:TYR:OH	2.24	0.53
24:E:62:LYS:HG2	24:E:70:ILE:HD11	1.91	0.53
24:E:285:LEU:HD12	24:E:290:LEU:HD21	1.91	0.53
20:b:143:PHE:HA	20:b:173:VAL:HG23	1.89	0.53
3:C:141:GLU:O	4:D:323:ARG:NH1	2.42	0.53
19:a:174:LYS:O	19:a:178:ARG:HG3	2.09	0.53
15:W:59:ASP:O	15:W:61:VAL:N	2.38	0.53
20:b:140:ILE:HG23	20:b:170:LEU:HD13	1.91	0.53
1:A:138:MET:HE1	1:A:152:PRO:HB3	1.90	0.53
1:A:235:ALA:HB1	1:A:270:CYS:HB3	1.90	0.53
4:D:151:ILE:HG13	4:D:152:MET:N	2.24	0.53
22:e:57:ARG:HH21	22:e:62:LYS:HG2	1.73	0.53
4:D:116:LEU:HD23	4:D:118:THR:H	1.73	0.52
4:D:352:MET:HG3	4:D:354:LEU:HD13	1.90	0.52
12:U:664:GLY:HA3	12:U:698:GLN:HG3	1.92	0.52
13:c:279:ASP:OD1	13:c:279:ASP:N	2.42	0.52
11:M:187:ARG:HH21	11:M:219:LEU:HD11	1.75	0.52
12:U:558:GLY:H	12:U:589:ALA:HA	1.74	0.52
23:f:775:THR:O	23:f:779:CYS:N	2.42	0.52
3:C:250:GLU:HA	3:C:269:VAL:HG21	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:L:200:PRO:O	10:L:239:ARG:NH1	2.40	0.52
19:a:123:LEU:HB2	19:a:131:THR:HG21	1.90	0.52
13:c:33:ILE:HD12	13:c:205:ILE:HD11	1.91	0.52
16:X:147:LEU:HD21	16:X:177:TYR:HE1	1.75	0.52
1:A:424:SER:O	1:A:426:THR:N	2.42	0.52
13:c:77:GLN:HB2	13:c:84:VAL:HG21	1.92	0.52
2:B:376:ASP:N	2:B:376:ASP:OD1	2.41	0.52
5:G:144:ASP:OD1	5:G:145:GLU:N	2.43	0.52
14:V:443:ARG:NH2	21:d:184:LYS:O	2.43	0.52
17:Y:13:LYS:HD2	17:Y:16:ASP:OD2	2.10	0.52
14:V:399:ARG:NH2	21:d:145:GLU:OE2	2.43	0.52
19:a:70:ARG:HE	20:b:17:ARG:NH2	2.08	0.52
21:d:106:LEU:HA	21:d:111:ARG:HH21	1.75	0.52
25:F:225:MET:HB3	25:F:354:PHE:HE1	1.74	0.52
2:B:95:GLU:HA	2:B:98:LYS:NZ	2.25	0.52
23:f:228:LYS:O	23:f:232:TYR:N	2.31	0.52
15:W:335:SER:OG	15:W:336:PRO:HD3	2.10	0.51
12:U:657:GLY:HA3	12:U:690:ALA:HB1	1.92	0.51
18:Z:130:ASP:OD1	18:Z:130:ASP:N	2.43	0.51
1:A:312:ARG:HG3	1:A:315:ILE:HB	1.93	0.51
3:C:68:GLU:O	4:D:136:SER:OG	2.24	0.51
9:K:129:ASP:OD1	9:K:130:PRO:HD3	2.10	0.51
15:W:57:ALA:O	15:W:61:VAL:CB	2.58	0.51
15:W:144:ARG:HG2	15:W:168:GLU:HG2	1.91	0.51
15:W:226:TYR:CZ	15:W:230:MET:HE1	2.46	0.51
1:A:227:ARG:HG3	2:B:319:PHE:HB2	1.92	0.51
3:C:307:ARG:HH21	3:C:310:ARG:HE	1.58	0.51
11:M:214:SER:OG	11:M:224:HIS:NE2	2.35	0.51
13:c:292:MET:HE3	18:Z:260:VAL:HG13	1.92	0.51
24:E:180:LYS:HG2	24:E:301:ILE:HD12	1.92	0.51
15:W:125:ILE:O	15:W:129:ARG:HG2	2.10	0.51
15:W:174:TYR:HD2	15:W:177:MET:HE2	1.76	0.51
15:W:268:LYS:HD2	15:W:302:TYR:CZ	2.46	0.51
16:X:362:GLU:OE2	16:X:380:GLN:NE2	2.29	0.51
17:Y:285:ASP:OD1	17:Y:286:TRP:N	2.43	0.51
15:W:300:PRO:HG2	15:W:301:LYS:HD3	1.91	0.51
16:X:80:ILE:HG22	16:X:81:SER:H	1.76	0.51
12:U:725:MET:HE1	13:c:183:HIS:HB2	1.93	0.51
15:W:100:ALA:O	15:W:105:VAL:HG23	2.11	0.51
15:W:117:ASP:O	15:W:120:ILE:N	2.42	0.51
17:Y:29:PRO:HB2	17:Y:32:ARG:HB2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:392:GLN:HG3	16:X:199:ALA:HA	1.92	0.51
15:W:80:TRP:HE1	15:W:127:THR:HA	1.75	0.51
20:b:100:ARG:HG2	20:b:102:GLY:H	1.75	0.51
20:b:132:LYS:HG3	20:b:160:LEU:HD12	1.93	0.51
21:d:204:LYS:H	21:d:206:MET:HE1	1.75	0.51
23:f:243:PRO:HA	23:f:247:ALA:HB3	1.92	0.51
3:C:59:LEU:HD21	4:D:76:GLN:HA	1.92	0.50
9:K:127:ASP:OD1	9:K:128:ALA:N	2.43	0.50
12:U:522:GLY:HA2	12:U:559:ARG:HH22	1.76	0.50
15:W:172:GLU:H	15:W:172:GLU:CD	2.19	0.50
15:W:315:MET:CE	15:W:320:LEU:H	2.22	0.50
20:b:22:LEU:HB2	20:b:23:PRO:HD3	1.92	0.50
20:b:31:ASP:HA	20:b:34:ASN:HD22	1.75	0.50
2:B:107:MET:HB3	2:B:151:LEU:HD21	1.94	0.50
17:Y:28:LEU:HB3	17:Y:29:PRO:HD3	1.93	0.50
17:Y:68:ASP:OD1	17:Y:68:ASP:N	2.44	0.50
20:b:186:SER:OG	20:b:187:PRO:HD3	2.12	0.50
11:M:8:ASP:O	11:M:22:GLN:NE2	2.43	0.50
8:J:56:GLU:OE1	8:J:56:GLU:N	2.44	0.50
17:Y:89:GLU:HA	17:Y:92:GLU:OE1	2.11	0.50
7:I:190:LEU:HB3	7:I:236:LEU:HD21	1.93	0.50
20:b:137:ASN:O	20:b:137:ASN:ND2	2.44	0.50
7:I:229:LYS:N	7:I:232:GLU:OE2	2.44	0.50
10:L:220:GLU:CD	10:L:220:GLU:H	2.19	0.50
12:U:802:TYR:O	12:U:878:LEU:N	2.41	0.50
16:X:306:LEU:HD21	16:X:314:ARG:HH12	1.76	0.50
17:Y:232:GLU:HG3	17:Y:233:ARG:H	1.76	0.50
18:Z:282:ASN:O	18:Z:282:ASN:ND2	2.44	0.50
21:d:190:LEU:HB2	21:d:193:GLU:HG2	1.93	0.50
7:I:150:SER:OG	7:I:151:ASP:N	2.45	0.50
14:V:307:ARG:HG2	14:V:307:ARG:HH11	1.76	0.50
16:X:94:ASP:OD1	16:X:95:LEU:N	2.44	0.50
20:b:95:LEU:HD23	20:b:98:LYS:HZ1	1.76	0.50
25:F:318:ASP:OD2	25:F:344:ARG:NH2	2.45	0.50
16:X:253:TYR:CE1	16:X:318:ILE:HD11	2.47	0.49
18:Z:209:ARG:NH1	19:a:354:GLU:HG3	2.26	0.49
8:J:156:TRP:CD1	8:J:159:ASN:HD21	2.30	0.49
21:d:103:LEU:HD21	21:d:115:PHE:HE1	1.77	0.49
25:F:249:LEU:HB2	25:F:283:ILE:HG22	1.94	0.49
12:U:695:MET:HE3	12:U:703:CYS:SG	2.52	0.49
12:U:725:MET:HA	12:U:728:PHE:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:W:73:MET:HB2	15:W:78:LYS:HG2	1.93	0.49
15:W:174:TYR:CD2	15:W:177:MET:HE2	2.47	0.49
20:b:13:SER:OG	20:b:14:GLU:N	2.46	0.49
22:e:67:MET:O	22:e:69:THR:N	2.42	0.49
23:f:412:ALA:HA	23:f:447:ALA:HB2	1.95	0.49
3:C:90:HIS:CG	3:C:91:PRO:HD3	2.48	0.49
9:K:20:ARG:HH11	9:K:25:GLU:HG3	1.77	0.49
18:Z:253:THR:O	18:Z:257:MET:HG2	2.12	0.49
23:f:403:LYS:O	23:f:407:MET:N	2.42	0.49
4:D:391:ARG:HG2	4:D:393:ILE:H	1.78	0.49
15:W:268:LYS:HZ3	15:W:336:PRO:HD2	1.78	0.49
17:Y:250:LEU:HG	17:Y:257:ARG:HB2	1.93	0.49
19:a:192:GLU:O	19:a:196:ARG:HG2	2.12	0.49
20:b:44:ASN:HB3	20:b:47:ASN:ND2	2.27	0.49
2:B:168:ASP:OD2	2:B:171:VAL:HG23	2.12	0.49
7:I:57:ASP:HB3	7:I:59:VAL:HG23	1.94	0.49
14:V:47:SER:O	14:V:52:ASP:N	2.31	0.49
1:A:300:LEU:HD13	25:F:290:ALA:HB2	1.94	0.49
7:I:46:ALA:HB1	7:I:197:LEU:HD11	1.94	0.49
11:M:136:MET:HG3	11:M:150:MET:HG2	1.95	0.49
15:W:256:ILE:HG23	15:W:262:LYS:NZ	2.28	0.49
16:X:401:LEU:HD11	17:Y:369:THR:HG22	1.95	0.49
6:H:119:GLN:O	6:H:122:THR:HG22	2.13	0.49
7:I:38:LEU:O	7:I:179:TYR:OH	2.31	0.49
12:U:549:ALA:HB1	12:U:581:SER:HB2	1.94	0.49
14:V:100:MET:O	14:V:104:THR:N	2.33	0.49
14:V:345:ARG:HH12	14:V:361:PHE:CA	2.26	0.49
19:a:47:ASP:OD1	19:a:47:ASP:N	2.46	0.49
4:D:91:GLN:OE1	4:D:248:ARG:NH1	2.45	0.49
21:d:164:THR:HA	21:d:167:ILE:HG12	1.93	0.49
25:F:362:ARG:O	25:F:366:MET:HG3	2.13	0.49
4:D:205:TYR:CZ	4:D:332:GLU:HB3	2.48	0.48
17:Y:96:GLY:H	17:Y:99:GLU:HG2	1.78	0.48
19:a:250:THR:C	19:a:252:LYS:H	2.21	0.48
20:b:35:ILE:HD13	20:b:181:ASP:HB2	1.93	0.48
2:B:379:THR:OG1	2:B:382:ASP:OD2	2.31	0.48
10:L:166:GLN:HG3	25:F:387:CYS:HB3	1.94	0.48
16:X:251:LEU:O	16:X:255:LEU:HG	2.13	0.48
19:a:64:ILE:O	19:a:68:GLU:N	2.46	0.48
19:a:278:MET:HE3	19:a:319:LEU:HD13	1.95	0.48
13:c:233:ASP:OD1	13:c:234:TYR:N	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:a:16:PRO:C	19:a:18:GLN:H	2.20	0.48
15:W:92:LYS:HD2	15:W:96:GLN:NE2	2.28	0.48
4:D:74:HIS:CD2	18:Z:177:ARG:HH22	2.32	0.48
9:K:197:SER:O	9:K:201:ILE:HG12	2.14	0.48
15:W:179:LYS:HA	15:W:182:ARG:HG2	1.96	0.48
20:b:38:HIS:HB3	20:b:42:ARG:NH1	2.29	0.48
25:F:373:MET:HE2	25:F:415:LEU:HD11	1.95	0.48
4:D:267:ILE:HD11	4:D:309:MET:HB2	1.95	0.48
11:M:33:SER:OG	11:M:79:GLY:N	2.46	0.48
15:W:435:LEU:HD21	18:Z:236:LEU:HB3	1.95	0.48
19:a:39:LEU:HA	19:a:42:LEU:HG	1.95	0.48
19:a:101:ARG:HB3	19:a:114:CYS:SG	2.54	0.48
1:A:239:ARG:HD2	2:B:319:PHE:CZ	2.48	0.48
3:C:24:TYR:O	3:C:28:ILE:HG12	2.14	0.48
10:L:9:ASP:N	10:L:9:ASP:OD1	2.46	0.48
19:a:228:THR:OG1	19:a:229:ASP:N	2.42	0.48
1:A:168:GLU:HG3	1:A:169:LYS:H	1.79	0.48
12:U:620:GLU:OE1	12:U:654:MET:HB3	2.13	0.48
19:a:186:LYS:O	19:a:186:LYS:HD3	2.14	0.48
24:E:70:ILE:HG22	24:E:80:VAL:HG22	1.96	0.48
1:A:141:GLY:O	1:A:149:ILE:HA	2.14	0.47
2:B:135:ILE:HA	2:B:159:VAL:HB	1.95	0.47
3:C:147:THR:OG1	3:C:206:HIS:NE2	2.37	0.47
4:D:156:SER:OG	4:D:157:ASP:N	2.45	0.47
16:X:143:TYR:O	16:X:147:LEU:HD13	2.14	0.47
4:D:267:ILE:HD11	4:D:309:MET:CB	2.44	0.47
5:G:130:GLU:OE1	5:G:130:GLU:N	2.47	0.47
9:K:235:GLU:OE1	9:K:235:GLU:N	2.40	0.47
13:c:166:ASN:OD1	13:c:167:MET:N	2.46	0.47
14:V:345:ARG:HH22	14:V:361:PHE:CB	2.23	0.47
19:a:197:ALA:HB2	19:a:222:LEU:HB3	1.96	0.47
19:a:265:GLU:HA	19:a:268:LEU:HB2	1.96	0.47
20:b:38:HIS:HB3	20:b:42:ARG:NH2	2.30	0.47
2:B:181:GLN:NE2	2:B:182:GLU:O	2.47	0.47
4:D:296:MET:HE3	4:D:326:ARG:HB3	1.95	0.47
7:I:68:LEU:HD11	7:I:74:CYS:HB3	1.96	0.47
7:I:235:GLN:O	7:I:238:LYS:HG3	2.14	0.47
19:a:80:ILE:HD13	19:a:100:THR:HG21	1.95	0.47
19:a:341:LEU:HD12	19:a:345:GLN:HB3	1.96	0.47
15:W:144:ARG:HH11	15:W:147:LYS:HE2	1.79	0.47
15:W:148:THR:HG21	15:W:165:ILE:HD12	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:418:LYS:HA	6:H:78:GLY:O	2.15	0.47
8:J:116:GLN:O	8:J:119:THR:HG22	2.14	0.47
17:Y:277:VAL:O	17:Y:281:GLU:HG2	2.15	0.47
1:A:120:LYS:HB2	25:F:90:VAL:HG11	1.96	0.47
1:A:133:ASP:OD1	1:A:133:ASP:N	2.45	0.47
5:G:191:PHE:CE2	5:G:219:VAL:HG21	2.49	0.47
6:H:213:CYS:HB2	6:H:218:PHE:CD1	2.47	0.47
7:I:75:SER:O	7:I:134:LEU:HB2	2.15	0.47
12:U:612:ASP:HB3	12:U:647:HIS:ND1	2.30	0.47
12:U:641:SER:HB2	12:U:675:MET:HE3	1.97	0.47
13:c:162:LEU:HD23	13:c:200:TYR:HB3	1.97	0.47
15:W:340:VAL:O	15:W:347:GLY:HA2	2.15	0.47
17:Y:334:LEU:O	17:Y:338:ILE:HG12	2.14	0.47
19:a:70:ARG:O	20:b:17:ARG:NE	2.47	0.47
20:b:3:LEU:O	20:b:106:LYS:N	2.44	0.47
20:b:12:ASN:O	20:b:81:LYS:N	2.48	0.47
15:W:113:GLU:HB3	15:W:114:GLU:H	1.39	0.47
1:A:88:GLN:HA	1:A:92:PRO:HG2	1.96	0.47
9:K:91:LYS:NZ	9:K:95:GLU:OE2	2.47	0.47
15:W:284:SER:O	15:W:288:HIS:ND1	2.48	0.47
17:Y:368:GLU:HA	17:Y:371:LYS:HG2	1.97	0.47
18:Z:209:ARG:NH1	19:a:354:GLU:HA	2.29	0.47
25:F:269:ARG:NH2	25:F:312:GLU:OE2	2.48	0.47
11:M:34:SER:O	11:M:35:THR:OG1	2.28	0.47
17:Y:134:LEU:HD11	17:Y:167:LEU:HG	1.97	0.47
24:E:254:GLN:O	24:E:258:MET:HE2	2.15	0.47
4:D:354:LEU:HD11	4:D:399:PHE:HZ	1.80	0.46
15:W:136:ILE:O	15:W:138:VAL:N	2.49	0.46
17:Y:245:GLU:H	17:Y:245:GLU:CD	2.22	0.46
4:D:337:ASP:OD1	4:D:337:ASP:N	2.46	0.46
5:G:165:ALA:HB3	6:H:56:LEU:HD22	1.97	0.46
15:W:171:VAL:HG12	15:W:177:MET:HE1	1.98	0.46
15:W:270:VAL:O	15:W:274:VAL:HG23	2.15	0.46
22:e:59:GLU:HA	22:e:63:HIS:HB2	1.97	0.46
4:D:68:LEU:HD23	4:D:68:LEU:HA	1.77	0.46
15:W:210:ASN:OD1	15:W:211:THR:N	2.48	0.46
17:Y:101:ARG:HB2	17:Y:130:LYS:HG3	1.97	0.46
17:Y:377:LEU:HA	17:Y:380:VAL:HG12	1.97	0.46
25:F:336:ASP:OD1	25:F:336:ASP:N	2.47	0.46
1:A:214:LEU:HD23	1:A:343:PHE:HE1	1.81	0.46
8:J:201:SER:HA	8:J:205:ASN:HB2	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:219:LEU:HD21	4:D:289:LEU:HD23	1.97	0.46
11:M:200:VAL:HG12	11:M:201:HIS:N	2.30	0.46
2:B:324:ASP:OD1	2:B:324:ASP:N	2.47	0.46
6:H:107:THR:HG21	6:H:138:GLY:HA3	1.98	0.46
15:W:125:ILE:HG23	15:W:129:ARG:HH11	1.80	0.46
7:I:234:GLU:OE1	7:I:234:GLU:N	2.35	0.46
1:A:89:SER:HA	1:A:93:LEU:HD23	1.97	0.46
1:A:425:ALA:HA	2:B:339:PRO:HB2	1.98	0.46
5:G:153:LYS:HD2	5:G:166:THR:HG21	1.96	0.46
10:L:206:THR:O	10:L:208:LYS:N	2.49	0.46
15:W:108:CYS:O	15:W:112:VAL:HG22	2.16	0.46
1:A:115:VAL:HG21	1:A:118:PHE:HB2	1.97	0.46
10:L:67:ASP:OD1	10:L:68:ASN:N	2.48	0.46
14:V:337:LEU:HD22	14:V:367:VAL:HG11	1.97	0.46
1:A:87:LEU:HD12	1:A:88:GLN:HG2	1.98	0.45
1:A:189:GLU:CD	25:F:409:ARG:HE	2.24	0.45
10:L:103:LEU:HD23	10:L:104:PRO:O	2.16	0.45
15:W:307:LYS:HD2	15:W:307:LYS:HA	1.70	0.45
15:W:438:LEU:HD22	18:Z:233:VAL:HG23	1.97	0.45
17:Y:199:GLU:O	17:Y:202:LEU:HG	2.16	0.45
4:D:99:ASN:HA	4:D:115:ILE:HB	1.98	0.45
4:D:410:ASP:OD1	4:D:410:ASP:N	2.49	0.45
9:K:85:ALA:HB2	9:K:139:VAL:HG11	1.99	0.45
10:L:50:LYS:HE3	10:L:211:SER:HB3	1.98	0.45
16:X:282:ARG:O	16:X:285:GLU:HG3	2.16	0.45
17:Y:105:MET:HE3	17:Y:109:GLU:OE2	2.16	0.45
5:G:78:CYS:SG	5:G:79:VAL:N	2.89	0.45
12:U:689:ILE:HD11	12:U:729:GLY:HA2	1.97	0.45
1:A:239:ARG:HD2	2:B:319:PHE:HZ	1.82	0.45
4:D:151:ILE:O	4:D:152:MET:HE2	2.16	0.45
19:a:75:SER:HA	19:a:78:GLU:OE2	2.16	0.45
19:a:139:GLU:HG3	19:a:155:PHE:HZ	1.82	0.45
25:F:183:GLU:OE1	25:F:238:ARG:HD2	2.16	0.45
11:M:34:SER:OG	11:M:65:ARG:NH1	2.48	0.45
14:V:495:ARG:O	14:V:498:PRO:HD2	2.17	0.45
14:V:495:ARG:C	14:V:498:PRO:HD2	2.42	0.45
4:D:115:ILE:HG12	4:D:139:LEU:HD23	1.99	0.45
11:M:201:HIS:O	11:M:201:HIS:CG	2.69	0.45
13:c:26:ASP:OD1	13:c:26:ASP:N	2.49	0.45
14:V:322:VAL:HG23	14:V:323:GLY:H	1.82	0.45
1:A:170:PRO:O	1:A:231:ASN:ND2	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:V:415:SER:OG	17:Y:348:ASP:OD1	2.30	0.45
16:X:347:ILE:HD11	16:X:378:LEU:HD11	1.97	0.45
25:F:300:LYS:HA	25:F:300:LYS:HD3	1.68	0.45
4:D:86:PRO:C	4:D:87:LEU:HD22	2.41	0.45
14:V:314:ARG:HD2	17:Y:385:ARG:NH1	2.32	0.45
2:B:96:ARG:HA	2:B:99:VAL:HG12	1.99	0.45
16:X:80:ILE:HG22	16:X:81:SER:N	2.32	0.45
18:Z:220:LEU:N	18:Z:221:PRO:HD3	2.31	0.45
25:F:417:HIS:O	25:F:421:MET:HG2	2.17	0.45
1:A:214:LEU:HD23	1:A:343:PHE:CE1	2.52	0.45
3:C:325:ARG:HD3	3:C:353:GLY:HA2	1.98	0.45
4:D:269:ALA:HB1	24:E:255:ARG:HG3	1.98	0.45
7:I:238:LYS:HA	7:I:241:GLU:HG3	1.99	0.45
19:a:156:TYR:OH	19:a:178:ARG:NH2	2.48	0.45
20:b:181:ASP:HA	20:b:184:ILE:HG12	1.98	0.45
1:A:91:GLN:HG2	1:A:92:PRO:HD3	1.97	0.44
2:B:405:MET:HE1	2:B:421:LYS:HD2	1.98	0.44
4:D:411:GLU:HG2	4:D:412:GLN:H	1.82	0.44
5:G:101:TRP:CD1	5:G:101:TRP:C	2.95	0.44
13:c:228:GLY:HA3	18:Z:193:ASN:O	2.18	0.44
14:V:497:PRO:CG	14:V:498:PRO:HD3	2.47	0.44
17:Y:283:LYS:HG3	17:Y:292:TYR:CZ	2.51	0.44
18:Z:201:LEU:HD22	19:a:360:VAL:HG21	1.99	0.44
21:d:174:ILE:HA	21:d:177:GLU:HG2	1.98	0.44
24:E:236:ASP:OD1	24:E:236:ASP:N	2.49	0.44
25:F:389:ASP:OD1	25:F:390:ASP:N	2.50	0.44
5:G:155:ASP:HB2	5:G:156:PRO:HD2	1.99	0.44
10:L:32:GLY:HA2	25:F:439:ALA:HB2	1.98	0.44
19:a:87:MET:SD	19:a:92:VAL:HG13	2.57	0.44
19:a:205:LEU:HG	19:a:240:PHE:HE2	1.83	0.44
20:b:14:GLU:HA	20:b:17:ARG:HG2	1.99	0.44
20:b:108:ARG:HA	20:b:137:ASN:HD21	1.83	0.44
5:G:123:GLN:O	5:G:126:THR:HG22	2.18	0.44
7:I:239:LYS:O	7:I:242:GLU:HG3	2.17	0.44
12:U:666:LYS:HA	12:U:666:LYS:HD2	1.81	0.44
14:V:306:ARG:HD2	14:V:339:LEU:HD12	2.00	0.44
14:V:314:ARG:HD2	17:Y:385:ARG:CZ	2.48	0.44
14:V:470:ARG:NH1	21:d:241:GLU:OE2	2.50	0.44
15:W:345:GLU:OE1	15:W:345:GLU:N	2.42	0.44
17:Y:314:LEU:HD11	17:Y:318:TYR:HD2	1.82	0.44
19:a:98:GLU:HA	19:a:101:ARG:HG2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:424:SER:C	1:A:426:THR:H	2.25	0.44
14:V:203:LEU:O	14:V:207:ALA:N	2.43	0.44
16:X:239:TYR:CE2	16:X:246:LYS:HB2	2.53	0.44
21:d:150:LYS:HA	21:d:150:LYS:HD3	1.89	0.44
2:B:143:LEU:H	2:B:143:LEU:HD23	1.81	0.44
2:B:365:PHE:CD2	2:B:380:LEU:HB3	2.53	0.44
5:G:58:ASP:OD1	5:G:59:LYS:N	2.50	0.44
17:Y:53:TYR:HB2	17:Y:57:LEU:HG	1.98	0.44
19:a:187:ASP:OD1	19:a:187:ASP:N	2.50	0.44
25:F:292:GLY:O	25:F:338:LEU:HD12	2.17	0.44
11:M:43:ASP:OD1	11:M:43:ASP:N	2.49	0.44
13:c:57:MET:HG2	13:c:72:VAL:HG12	2.00	0.44
17:Y:268:TYR:CE2	17:Y:307:LEU:HD12	2.52	0.44
11:M:70:ASP:OD1	11:M:71:ARG:N	2.43	0.44
13:c:118:PHE:HB3	13:c:121:TRP:CH2	2.53	0.44
17:Y:276:ALA:O	17:Y:279:GLU:HG3	2.17	0.44
13:c:231:LEU:HD23	13:c:231:LEU:H	1.83	0.44
15:W:93:ARG:HA	15:W:97:LEU:HB2	2.00	0.44
4:D:404:LYS:HB3	4:D:404:LYS:HE2	1.88	0.44
13:c:104:ARG:HE	18:Z:25:ARG:HH11	1.65	0.44
14:V:330:LYS:HD3	14:V:360:TYR:CZ	2.53	0.44
15:W:312:MET:HA	15:W:312:MET:HE2	1.99	0.44
17:Y:95:LEU:HB2	17:Y:98:SER:HA	1.99	0.44
18:Z:26:ILE:HG21	18:Z:35:VAL:HG11	1.99	0.44
20:b:35:ILE:HG13	20:b:36:VAL:N	2.33	0.44
2:B:209:GLU:O	2:B:213:GLU:HG2	2.18	0.43
6:H:179:ASN:ND2	6:H:181:ASP:OD1	2.51	0.43
12:U:509:GLY:HA3	12:U:544:ILE:HD12	2.00	0.43
8:J:156:TRP:CG	8:J:159:ASN:HD21	2.36	0.43
14:V:306:ARG:NH2	14:V:335:VAL:HG11	2.33	0.43
19:a:128:LEU:HD23	19:a:128:LEU:H	1.83	0.43
20:b:110:ILE:HD11	20:b:141:ILE:HG12	1.99	0.43
5:G:141:ILE:HG22	5:G:151:VAL:HG12	1.99	0.43
10:L:49:LEU:HD12	10:L:209:ASN:O	2.17	0.43
11:M:193:VAL:O	11:M:196:ILE:HG22	2.19	0.43
12:U:576:PRO:HA	12:U:579:ARG:HD2	1.99	0.43
16:X:377:ILE:HG22	16:X:386:ILE:HB	1.99	0.43
17:Y:83:ARG:O	17:Y:86:GLU:HG2	2.18	0.43
17:Y:253:LEU:HD23	17:Y:253:LEU:HA	1.89	0.43
17:Y:367:GLN:O	17:Y:370:ILE:HG22	2.19	0.43
19:a:100:THR:O	19:a:104:VAL:HG12	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:a:105:LYS:HA	19:a:105:LYS:HD3	1.75	0.43
21:d:131:VAL:HA	21:d:134:LYS:HB2	1.99	0.43
21:d:218:GLY:O	21:d:221:ASN:N	2.46	0.43
1:A:333:ARG:HH11	1:A:336:ARG:NH1	2.17	0.43
2:B:245:ALA:HB1	2:B:279:PRO:O	2.18	0.43
7:I:154:GLY:O	8:J:81:ARG:NH2	2.52	0.43
8:J:145:TYR:CE2	8:J:155:ALA:HB2	2.53	0.43
11:M:139:SER:OG	11:M:140:TYR:N	2.51	0.43
15:W:241:LEU:O	15:W:245:LYS:HG2	2.19	0.43
19:a:312:MET:HE2	19:a:312:MET:HB2	1.94	0.43
20:b:88:THR:O	20:b:92:VAL:HG22	2.19	0.43
3:C:90:HIS:ND1	3:C:91:PRO:HD3	2.33	0.43
12:U:655:ALA:HA	12:U:658:ILE:HG22	2.00	0.43
13:c:189:ILE:HD12	13:c:189:ILE:HA	1.89	0.43
15:W:114:GLU:O	15:W:116:THR:HG22	2.19	0.43
22:e:57:ARG:NH2	22:e:62:LYS:HG2	2.34	0.43
1:A:220:THR:HG21	1:A:343:PHE:HB3	2.00	0.43
1:A:347:ASP:OD1	1:A:347:ASP:N	2.41	0.43
4:D:57:GLN:O	4:D:61:ILE:HG12	2.18	0.43
4:D:342:ARG:HG3	4:D:364:VAL:HG11	2.00	0.43
6:H:150:ASP:OD1	6:H:151:PRO:HD2	2.19	0.43
15:W:144:ARG:HG2	15:W:168:GLU:CG	2.49	0.43
21:d:221:ASN:OD1	21:d:222:TYR:N	2.50	0.43
4:D:210:CYS:N	26:D:501:ATP:O2B	2.52	0.43
7:I:33:THR:OG1	7:I:166:ASN:OD1	2.36	0.43
14:V:471:GLU:N	14:V:472:PRO:HD2	2.33	0.43
15:W:357:ARG:HA	15:W:357:ARG:HD3	1.83	0.43
16:X:145:GLU:HA	16:X:148:HIS:CE1	2.54	0.43
18:Z:195:VAL:O	18:Z:199:LYS:HG2	2.19	0.43
20:b:121:GLU:O	20:b:124:LEU:HG	2.19	0.43
24:E:280:ASN:ND2	26:E:401:ATP:O3G	2.51	0.43
1:A:294:GLU:H	1:A:294:GLU:CD	2.27	0.43
4:D:84:SER:O	24:E:68:LYS:NZ	2.48	0.43
7:I:72:MET:HE3	7:I:72:MET:HB3	1.82	0.43
12:U:719:ASP:HB3	12:U:722:ASP:OD2	2.18	0.43
14:V:447:ILE:HD12	14:V:449:ALA:HB3	2.00	0.43
19:a:78:GLU:O	19:a:82:HIS:ND1	2.45	0.43
19:a:255:TRP:HE3	19:a:255:TRP:H	1.66	0.43
21:d:114:GLU:O	21:d:118:GLU:HG2	2.18	0.43
25:F:305:GLU:O	25:F:309:THR:HG23	2.19	0.43
4:D:92:PHE:HZ	4:D:95:ALA:HB2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:W:204:ILE:HA	15:W:207:LYS:HZ1	1.84	0.43
15:W:268:LYS:HD2	15:W:302:TYR:OH	2.19	0.43
17:Y:263:LEU:HB2	17:Y:271:PHE:CE1	2.54	0.43
18:Z:6:VAL:HG22	18:Z:43:TRP:HH2	1.84	0.43
9:K:99:HIS:CE1	9:K:107:MET:HB3	2.53	0.43
15:W:263:TRP:CD1	15:W:267:LEU:HD13	2.53	0.43
15:W:265:GLN:HB2	15:W:336:PRO:HD3	2.01	0.43
15:W:396:LEU:O	15:W:401:THR:HG22	2.18	0.43
20:b:33:VAL:HA	20:b:36:VAL:HG22	2.00	0.43
15:W:198:ASP:O	15:W:202:THR:HG23	2.19	0.42
16:X:170:GLN:OE1	16:X:192:SER:OG	2.31	0.42
17:Y:338:ILE:HD11	17:Y:345:CYS:SG	2.59	0.42
19:a:343:LEU:HD23	19:a:343:LEU:H	1.84	0.42
8:J:82:ILE:HG13	8:J:83:VAL:N	2.32	0.42
13:c:34:SER:OG	13:c:35:SER:N	2.52	0.42
15:W:78:LYS:HA	15:W:78:LYS:HD3	1.85	0.42
22:e:57:ARG:HG3	22:e:58:ALA:N	2.32	0.42
25:F:226:TYR:CZ	25:F:353:GLU:HB3	2.54	0.42
4:D:148:ASP:CG	4:D:149:SER:H	2.27	0.42
8:J:91:CYS:SG	8:J:102:VAL:HG11	2.60	0.42
11:M:180:GLN:HE22	11:M:183:GLU:HG2	1.85	0.42
17:Y:220:VAL:O	17:Y:223:THR:HG22	2.19	0.42
1:A:324:PRO:HA	1:A:327:LEU:HD13	2.01	0.42
4:D:263:PHE:HA	4:D:308:ILE:O	2.19	0.42
17:Y:49:ASN:O	17:Y:53:TYR:OH	2.36	0.42
19:a:121:LEU:O	19:a:125:ILE:HG23	2.19	0.42
1:A:177:VAL:HG22	1:A:224:LEU:HD21	2.02	0.42
7:I:118:LYS:HZ2	7:I:150:SER:HG	1.64	0.42
10:L:155:ASP:HB3	11:M:62:SER:HB2	2.01	0.42
10:L:204:ASP:C	10:L:205:LEU:HD22	2.44	0.42
12:U:579:ARG:O	12:U:583:MET:HG2	2.19	0.42
12:U:596:ASN:OD1	12:U:597:LYS:N	2.51	0.42
13:c:206:ASN:OD1	13:c:207:TYR:N	2.51	0.42
18:Z:19:VAL:HG22	18:Z:95:TYR:CE1	2.54	0.42
19:a:52:GLN:C	19:a:54:ASP:H	2.27	0.42
21:d:113:ALA:O	21:d:117:THR:HG23	2.20	0.42
25:F:294:LYS:HE3	25:F:294:LYS:HB2	1.84	0.42
25:F:435:LEU:HD23	25:F:435:LEU:HA	1.92	0.42
4:D:303:VAL:HG12	4:D:305:VAL:HG23	2.01	0.42
4:D:363:TYR:HA	4:D:366:ARG:HD3	2.01	0.42
12:U:703:CYS:HA	12:U:704:PRO:HD3	1.89	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:W:395:ASN:OD1	15:W:396:LEU:N	2.53	0.42
17:Y:382:LYS:O	17:Y:386:VAL:HG23	2.18	0.42
19:a:108:ASP:OD1	19:a:108:ASP:N	2.50	0.42
11:M:191:LYS:HB3	11:M:238:TYR:CD2	2.54	0.42
15:W:80:TRP:HE1	15:W:127:THR:CA	2.32	0.42
23:f:780:PRO:O	23:f:784:ASP:N	2.53	0.42
25:F:282:ILE:HG22	25:F:327:LYS:HB2	2.02	0.42
3:C:80:MET:HB2	3:C:84:LYS:HB2	2.01	0.42
14:V:188:SER:O	14:V:192:MET:N	2.46	0.42
14:V:363:LEU:HD22	14:V:395:ILE:HD11	2.02	0.42
5:G:210:PHE:CE1	5:G:215:ILE:HD13	2.54	0.42
10:L:121:GLN:HG3	11:M:129:ARG:HG2	2.01	0.42
12:U:691:SER:O	12:U:694:ILE:HG22	2.20	0.42
13:c:301:ALA:O	13:c:304:LEU:HD23	2.20	0.42
16:X:364:LYS:O	16:X:368:MET:HG3	2.19	0.42
19:a:100:THR:O	19:a:103:LYS:HG2	2.20	0.42
20:b:124:LEU:HB2	20:b:156:PHE:CE1	2.55	0.42
21:d:191:PHE:HB2	21:d:220:ASN:HA	2.02	0.42
2:B:95:GLU:HA	2:B:98:LYS:HZ2	1.85	0.42
3:C:134:LEU:HG	3:C:237:MET:HE3	2.01	0.42
6:H:38:ILE:HD12	6:H:191:ALA:HB2	2.02	0.42
9:K:99:HIS:ND1	9:K:107:MET:HB3	2.34	0.42
17:Y:183:TYR:CE1	17:Y:213:LEU:HD21	2.53	0.42
18:Z:178:ASP:OD1	18:Z:179:ILE:N	2.53	0.42
18:Z:191:ILE:HG21	19:a:375:LEU:HD21	2.02	0.42
21:d:112:VAL:HA	21:d:115:PHE:HB3	2.02	0.42
1:A:407:LYS:HD2	1:A:407:LYS:N	2.33	0.41
2:B:273:VAL:O	2:B:276:GLU:HG3	2.20	0.41
5:G:143:ILE:HG21	5:G:225:PRO:HB3	2.02	0.41
8:J:4:ASP:N	8:J:4:ASP:OD1	2.53	0.41
9:K:160:GLY:O	10:L:82:ARG:NH2	2.53	0.41
13:c:88:ASP:OD1	13:c:88:ASP:N	2.52	0.41
15:W:390:GLU:HA	15:W:393:LEU:HG	2.01	0.41
20:b:184:ILE:C	20:b:187:PRO:HD2	2.45	0.41
21:d:238:PRO:O	21:d:240:THR:N	2.53	0.41
4:D:152:MET:HE1	4:D:253:LEU:HD21	2.01	0.41
13:c:196:LEU:HD12	13:c:196:LEU:HA	1.93	0.41
18:Z:226:ILE:HD12	18:Z:226:ILE:H	1.85	0.41
2:B:365:PHE:HD2	2:B:380:LEU:HB3	1.85	0.41
3:C:151:ILE:HD13	3:C:151:ILE:HA	1.91	0.41
4:D:52:GLU:CD	12:U:596:ASN:HB3	2.45	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:390:ASN:OD1	15:W:135:LYS:HG2	2.20	0.41
7:I:97:TYR:CD1	7:I:105:ILE:HB	2.55	0.41
15:W:114:GLU:C	15:W:116:THR:N	2.75	0.41
15:W:370:TYR:OH	19:a:308:GLU:OE1	2.38	0.41
20:b:132:LYS:HD2	20:b:160:LEU:HA	2.02	0.41
12:U:612:ASP:HB3	12:U:647:HIS:CE1	2.56	0.41
12:U:727:LYS:HE2	12:U:727:LYS:HB3	1.93	0.41
14:V:416:ARG:HA	14:V:458:VAL:O	2.20	0.41
1:A:177:VAL:HG12	1:A:177:VAL:O	2.20	0.41
2:B:123:VAL:HG21	2:B:152:LEU:HD11	2.03	0.41
12:U:680:VAL:HG12	12:U:683:VAL:H	1.85	0.41
17:Y:13:LYS:HE2	17:Y:147:ILE:HD11	2.01	0.41
20:b:38:HIS:HB3	20:b:42:ARG:HH12	1.84	0.41
20:b:130:ARG:HA	20:b:133:LYS:HE2	2.00	0.41
11:M:214:SER:OG	11:M:215:TRP:N	2.54	0.41
13:c:61:PHE:HD1	13:c:67:VAL:HG22	1.85	0.41
14:V:329:HIS:NE2	14:V:345:ARG:O	2.54	0.41
15:W:370:TYR:CD2	15:W:373:ILE:HD12	2.55	0.41
15:W:409:LEU:HD13	16:X:346:GLN:HE21	1.85	0.41
16:X:407:MET:HE2	16:X:407:MET:HA	2.02	0.41
17:Y:216:TYR:HE2	17:Y:249:VAL:HG21	1.84	0.41
17:Y:314:LEU:HD11	17:Y:318:TYR:CD2	2.55	0.41
19:a:373:ASP:OD1	19:a:373:ASP:N	2.53	0.41
1:A:159:PRO:O	1:A:163:MET:HG3	2.21	0.41
2:B:251:VAL:HG12	2:B:253:SER:H	1.86	0.41
4:D:210:CYS:O	4:D:333:PHE:HD2	2.04	0.41
5:G:211:LYS:N	5:G:214:GLU:OE2	2.46	0.41
11:M:28:LYS:HE3	11:M:28:LYS:HB2	1.79	0.41
13:c:165:ALA:O	13:c:169:VAL:HG23	2.20	0.41
17:Y:101:ARG:NE	17:Y:130:LYS:HB2	2.36	0.41
19:a:77:VAL:O	19:a:81:LEU:HD23	2.21	0.41
25:F:251:LEU:HD21	25:F:256:LEU:HD21	2.01	0.41
3:C:147:THR:HG23	3:C:149:GLU:HG2	2.02	0.41
9:K:89:ILE:O	9:K:93:ARG:HG3	2.21	0.41
10:L:95:SER:HB2	10:L:103:LEU:HD12	2.03	0.41
13:c:31:VAL:HG12	13:c:204:THR:O	2.21	0.41
15:W:373:ILE:HG12	15:W:374:THR:O	2.20	0.41
17:Y:159:ARG:O	17:Y:162:GLU:HG3	2.21	0.41
19:a:59:LEU:HD13	19:a:62:ASN:HD22	1.85	0.41
1:A:112:ILE:CD1	1:A:122:VAL:HG12	2.50	0.41
2:B:107:MET:SD	2:B:151:LEU:HD21	2.61	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:117:ASP:OD1	2:B:117:ASP:N	2.52	0.41
2:B:140:ASP:O	2:B:142:ASP:N	2.54	0.41
2:B:141:LYS:H	2:B:141:LYS:HG2	1.72	0.41
2:B:187:ILE:HG12	2:B:234:LEU:CD2	2.51	0.41
11:M:114:ARG:HA	11:M:114:ARG:HD2	1.78	0.41
14:V:358:MET:O	14:V:361:PHE:HB3	2.21	0.41
14:V:492:LYS:NZ	21:d:257:VAL:HB	2.36	0.41
15:W:315:MET:HE1	15:W:317:TRP:C	2.46	0.41
16:X:397:TYR:HB2	17:Y:365:GLN:NE2	2.35	0.41
17:Y:59:LYS:HA	17:Y:59:LYS:HD3	1.85	0.41
20:b:38:HIS:HB3	20:b:42:ARG:HH22	1.85	0.41
21:d:188:LYS:HE2	21:d:221:ASN:ND2	2.36	0.41
2:B:119:ASN:ND2	2:B:141:LYS:HE3	2.36	0.41
11:M:135:PHE:CE2	11:M:151:ILE:HD12	2.56	0.41
12:U:637:VAL:HG21	12:U:656:LEU:HG	2.03	0.41
13:c:121:TRP:CD1	13:c:194:HIS:HD1	2.39	0.41
13:c:288:VAL:HG11	18:Z:267:ARG:HG3	2.03	0.41
18:Z:276:ILE:O	18:Z:280:ILE:HG12	2.21	0.41
2:B:225:TYR:CE2	2:B:352:GLU:HG3	2.56	0.40
3:C:350:LEU:HD23	3:C:350:LEU:HA	1.91	0.40
15:W:153:LYS:HB3	15:W:153:LYS:HE2	1.76	0.40
15:W:194:LEU:HD22	15:W:202:THR:HG21	2.01	0.40
16:X:164:ALA:O	16:X:167:VAL:HG22	2.21	0.40
18:Z:21:ASP:OD1	18:Z:22:HIS:N	2.54	0.40
18:Z:177:ARG:HA	18:Z:177:ARG:CZ	2.52	0.40
19:a:255:TRP:CZ2	19:a:258:GLN:HG3	2.56	0.40
20:b:74:LYS:HD2	20:b:74:LYS:HA	1.84	0.40
20:b:176:GLY:HA2	20:b:177:PRO:HD3	1.95	0.40
1:A:255:ARG:O	1:A:259:GLU:HG2	2.22	0.40
7:I:45:LEU:HD23	7:I:75:SER:HB2	2.02	0.40
12:U:787:CYS:HA	12:U:883:ARG:HA	2.04	0.40
13:c:249:LEU:HD11	16:X:402:GLU:OE2	2.21	0.40
16:X:190:LEU:HD11	16:X:214:SER:HA	2.03	0.40
19:a:80:ILE:HA	19:a:83:VAL:HG22	2.03	0.40
20:b:16:MET:HE1	20:b:26:LEU:HD23	2.02	0.40
4:D:354:LEU:HD12	4:D:394:VAL:HG11	2.03	0.40
13:c:284:LEU:HD21	18:Z:266:ILE:HG21	2.02	0.40
15:W:315:MET:HG3	15:W:319:THR:OG1	2.21	0.40
15:W:359:VAL:HG23	15:W:382:LEU:HD22	2.02	0.40
17:Y:34:ASP:OD1	17:Y:34:ASP:N	2.54	0.40
17:Y:116:ASP:CG	17:Y:117:LYS:H	2.29	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:d:133:ILE:C	21:d:136:PRO:HD2	2.47	0.40
4:D:411:GLU:HG2	4:D:412:GLN:N	2.36	0.40
10:L:41:LYS:HB2	10:L:180:MET:O	2.22	0.40
13:c:249:LEU:HD11	16:X:402:GLU:CD	2.46	0.40
15:W:385:SER:HB3	15:W:388:GLU:OE1	2.20	0.40
19:a:58:LYS:HA	19:a:61:GLU:CD	2.46	0.40
1:A:117:GLN:O	25:F:129:ARG:NH2	2.53	0.40
12:U:622:LEU:HD13	12:U:625:ILE:HD11	2.03	0.40
15:W:109:CYS:O	15:W:113:GLU:HB2	2.22	0.40
15:W:121:LYS:HB2	15:W:121:LYS:HE2	1.92	0.40
15:W:121:LYS:O	15:W:125:ILE:HG12	2.21	0.40
15:W:141:GLU:OE1	15:W:142:ARG:HG3	2.21	0.40
24:E:251:ARG:HA	24:E:254:GLN:HG3	2.02	0.40
24:E:368:MET:HE2	24:E:368:MET:HB2	1.93	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	392/433 (90%)	340 (87%)	50 (13%)	2 (0%)	25	54
2	B	382/440 (87%)	348 (91%)	34 (9%)	0	100	100
3	C	377/406 (93%)	344 (91%)	31 (8%)	2 (0%)	25	54
4	D	378/418 (90%)	334 (88%)	42 (11%)	2 (0%)	25	54
5	G	238/246 (97%)	223 (94%)	15 (6%)	0	100	100
6	H	230/234 (98%)	221 (96%)	9 (4%)	0	100	100
7	I	248/261 (95%)	233 (94%)	15 (6%)	0	100	100
8	J	237/248 (96%)	223 (94%)	14 (6%)	0	100	100
9	K	232/241 (96%)	216 (93%)	13 (6%)	3 (1%)	10	33

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	L	236/263 (90%)	221 (94%)	13 (6%)	2 (1%)	16	44
11	M	238/255 (93%)	224 (94%)	14 (6%)	0	100	100
12	U	798/953 (84%)	778 (98%)	20 (2%)	0	100	100
13	c	285/310 (92%)	274 (96%)	11 (4%)	0	100	100
14	V	506/534 (95%)	472 (93%)	31 (6%)	3 (1%)	22	50
15	W	454/456 (100%)	400 (88%)	47 (10%)	7 (2%)	8	30
16	X	378/422 (90%)	350 (93%)	28 (7%)	0	100	100
17	Y	376/389 (97%)	348 (93%)	27 (7%)	1 (0%)	37	66
18	Z	284/324 (88%)	269 (95%)	15 (5%)	0	100	100
19	a	371/376 (99%)	354 (95%)	17 (5%)	0	100	100
20	b	189/377 (50%)	174 (92%)	15 (8%)	0	100	100
21	d	240/350 (69%)	217 (90%)	21 (9%)	2 (1%)	16	44
22	e	36/70 (51%)	25 (69%)	9 (25%)	2 (6%)	1	10
23	f	874/908 (96%)	766 (88%)	107 (12%)	1 (0%)	48	78
24	E	373/389 (96%)	359 (96%)	14 (4%)	0	100	100
25	F	373/439 (85%)	360 (96%)	13 (4%)	0	100	100
All	All	8725/9742 (90%)	8073 (92%)	625 (7%)	27 (0%)	38	66

All (27) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
14	V	322	VAL
14	V	324	PHE
14	V	465	ASP
15	W	137	TYR
21	d	219	PRO
22	e	43	TRP
23	f	756	PRO
15	W	115	ILE
15	W	118	LEU
21	d	239	SER
1	A	425	ALA
15	W	84	ASN
22	e	56	LEU
4	D	84	SER
9	K	21	LEU

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Mol	Chain	Res	Type
10	L	226	ASP
15	W	260	SER
15	W	316	ARG
17	Y	207	THR
1	A	424	SER
4	D	355	SER
10	L	207	THR
3	C	258	ARG
9	K	133	MET
9	K	130	PRO
3	C	269	VAL
15	W	138	VAL

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	307/372 (82%)	307 (100%)	0	100	100
2	B	292/385 (76%)	290 (99%)	2 (1%)	81	88
3	C	314/352 (89%)	314 (100%)	0	100	100
4	D	333/366 (91%)	331 (99%)	2 (1%)	84	90
5	G	193/210 (92%)	193 (100%)	0	100	100
6	H	164/191 (86%)	164 (100%)	0	100	100
7	I	193/221 (87%)	193 (100%)	0	100	100
8	J	155/211 (74%)	155 (100%)	0	100	100
9	K	189/203 (93%)	189 (100%)	0	100	100
10	L	198/224 (88%)	198 (100%)	0	100	100
11	M	192/212 (91%)	192 (100%)	0	100	100
12	U	159/816 (20%)	159 (100%)	0	100	100
13	c	252/268 (94%)	252 (100%)	0	100	100
14	V	172/460 (37%)	172 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	W	355/416 (85%)	325 (92%)	30 (8%)	8	29
16	X	303/362 (84%)	303 (100%)	0	100	100
17	Y	334/344 (97%)	329 (98%)	5 (2%)	60	76
18	Z	257/295 (87%)	257 (100%)	0	100	100
19	a	307/336 (91%)	306 (100%)	1 (0%)	91	95
20	b	167/312 (54%)	165 (99%)	2 (1%)	67	80
21	d	133/294 (45%)	132 (99%)	1 (1%)	79	87
22	e	12/63 (19%)	10 (83%)	2 (17%)	2	7
24	E	303/341 (89%)	303 (100%)	0	100	100
25	F	286/379 (76%)	286 (100%)	0	100	100
All	All	5570/7633 (73%)	5525 (99%)	45 (1%)	77	87

All (45) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	164	MET
2	B	166	ASP
4	D	67	ASN
4	D	214	MET
15	W	73	MET
15	W	75	TYR
15	W	76	GLU
15	W	79	GLU
15	W	80	TRP
15	W	83	LEU
15	W	85	GLU
15	W	87	ILE
15	W	89	LEU
15	W	93	ARG
15	W	94	ARG
15	W	96	GLN
15	W	99	GLN
15	W	101	VAL
15	W	104	MET
15	W	105	VAL
15	W	106	GLN
15	W	107	GLN
15	W	113	GLU

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Mol	Chain	Res	Type
15	W	116	THR
15	W	124	LEU
15	W	135	LYS
15	W	137	TYR
15	W	140	ILE
15	W	141	GLU
15	W	154	GLU
15	W	159	VAL
15	W	169	LEU
15	W	172	GLU
15	W	173	THR
17	Y	202	LEU
17	Y	204	THR
17	Y	205	VAL
17	Y	207	THR
17	Y	213	LEU
19	a	231	GLN
20	b	137	ASN
20	b	179	LEU
21	d	110	ASN
22	e	57	ARG
22	e	66	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (46) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	119	ASN
3	C	64	GLN
3	C	69	GLN
3	C	221	GLN
3	C	279	GLN
4	D	135	HIS
4	D	237	GLN
4	D	340	GLN
4	D	380	GLN
5	G	127	GLN
7	I	20	GLN
7	I	146	GLN
7	I	198	ASN
7	I	240	HIS
9	K	23	GLN
9	K	152	GLN

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Mol	Chain	Res	Type
10	L	16	GLN
10	L	43	HIS
10	L	175	HIS
12	U	685	GLN
12	U	697	GLN
12	U	707	ASN
13	c	44	HIS
13	c	183	HIS
13	c	269	GLN
15	W	96	GLN
15	W	106	GLN
15	W	155	GLN
15	W	156	ASN
15	W	218	ASN
15	W	361	HIS
15	W	362	ASN
16	X	198	ASN
16	X	292	GLN
17	Y	49	ASN
17	Y	365	GLN
18	Z	194	GLN
18	Z	231	GLN
19	a	62	ASN
19	a	305	ASN
20	b	34	ASN
20	b	137	ASN
21	d	135	HIS
24	E	190	GLN
25	F	316	GLN
25	F	358	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 11 ligands modelled in this entry, 5 are monoatomic - leaving 6 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
26	ATP	E	401	27	26,33,33	0.63	0	31,52,52	0.83	3 (9%)
28	ADP	C	501	-	24,29,29	0.94	1 (4%)	29,45,45	1.48	4 (13%)
26	ATP	D	501	27	26,33,33	0.63	0	31,52,52	0.75	1 (3%)
26	ATP	A	501	27	26,33,33	0.62	0	31,52,52	0.83	2 (6%)
26	ATP	B	501	27	26,33,33	0.62	0	31,52,52	0.78	2 (6%)
28	ADP	F	501	27	24,29,29	1.00	1 (4%)	29,45,45	1.43	3 (10%)

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
26	ATP	E	401	27	-	10/18/38/38	0/3/3/3
28	ADP	C	501	-	-	4/12/32/32	0/3/3/3
26	ATP	D	501	27	-	9/18/38/38	0/3/3/3
26	ATP	A	501	27	-	5/18/38/38	0/3/3/3
26	ATP	B	501	27	-	6/18/38/38	0/3/3/3
28	ADP	F	501	27	-	5/12/32/32	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	F	501	ADP	C5-C4	2.53	1.47	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	C	501	ADP	C5-C4	2.41	1.47	1.40

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
28	F	501	ADP	PA-O3A-PB	-4.48	117.45	132.83
28	C	501	ADP	PA-O3A-PB	-3.98	119.18	132.83
28	C	501	ADP	N3-C2-N1	-3.06	123.90	128.68
28	C	501	ADP	C3'-C2'-C1'	2.80	105.20	100.98
28	C	501	ADP	C4-C5-N7	-2.75	106.53	109.40
28	F	501	ADP	N3-C2-N1	-2.69	124.48	128.68
28	F	501	ADP	C4-C5-N7	-2.65	106.64	109.40
26	B	501	ATP	C5-C6-N6	2.32	123.88	120.35
26	A	501	ATP	C5-C6-N6	2.29	123.83	120.35
26	E	401	ATP	C5-C6-N6	2.27	123.80	120.35
26	D	501	ATP	C5-C6-N6	2.27	123.80	120.35
26	E	401	ATP	C3'-C2'-C1'	2.03	104.04	100.98
26	E	401	ATP	PB-O3B-PG	2.03	139.78	132.83
26	A	501	ATP	PB-O3B-PG	2.01	139.72	132.83
26	B	501	ATP	PB-O3B-PG	2.01	139.72	132.83

There are no chirality outliers.

All (39) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
26	A	501	ATP	C5'-O5'-PA-O1A
26	A	501	ATP	C5'-O5'-PA-O2A
26	B	501	ATP	C5'-O5'-PA-O1A
26	B	501	ATP	C5'-O5'-PA-O2A
26	D	501	ATP	PB-O3B-PG-O2G
26	D	501	ATP	C5'-O5'-PA-O1A
26	E	401	ATP	PB-O3B-PG-O2G
26	E	401	ATP	C5'-O5'-PA-O1A
26	E	401	ATP	C5'-O5'-PA-O2A
26	E	401	ATP	O4'-C4'-C5'-O5'
26	E	401	ATP	C3'-C4'-C5'-O5'
28	C	501	ADP	C5'-O5'-PA-O2A
28	C	501	ADP	C5'-O5'-PA-O3A
28	F	501	ADP	C5'-O5'-PA-O1A
28	F	501	ADP	C5'-O5'-PA-O3A
26	A	501	ATP	O4'-C4'-C5'-O5'
26	A	501	ATP	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
26	D	501	ATP	O4'-C4'-C5'-O5'
26	D	501	ATP	C3'-C4'-C5'-O5'
28	F	501	ADP	O4'-C4'-C5'-O5'
28	F	501	ADP	C3'-C4'-C5'-O5'
26	D	501	ATP	PB-O3A-PA-O1A
26	B	501	ATP	PA-O3A-PB-O2B
28	C	501	ADP	C3'-C4'-C5'-O5'
26	B	501	ATP	PG-O3B-PB-O2B
28	F	501	ADP	C4'-C5'-O5'-PA
26	E	401	ATP	PG-O3B-PB-O1B
28	C	501	ADP	O4'-C4'-C5'-O5'
26	D	501	ATP	PB-O3B-PG-O3G
26	E	401	ATP	PB-O3B-PG-O3G
26	A	501	ATP	C5'-O5'-PA-O3A
26	B	501	ATP	C5'-O5'-PA-O3A
26	D	501	ATP	C5'-O5'-PA-O3A
26	E	401	ATP	C5'-O5'-PA-O3A
26	B	501	ATP	PA-O3A-PB-O1B
26	D	501	ATP	PB-O3A-PA-O2A
26	E	401	ATP	PG-O3B-PB-O2B
26	D	501	ATP	PB-O3B-PG-O1G
26	E	401	ATP	PB-O3B-PG-O1G

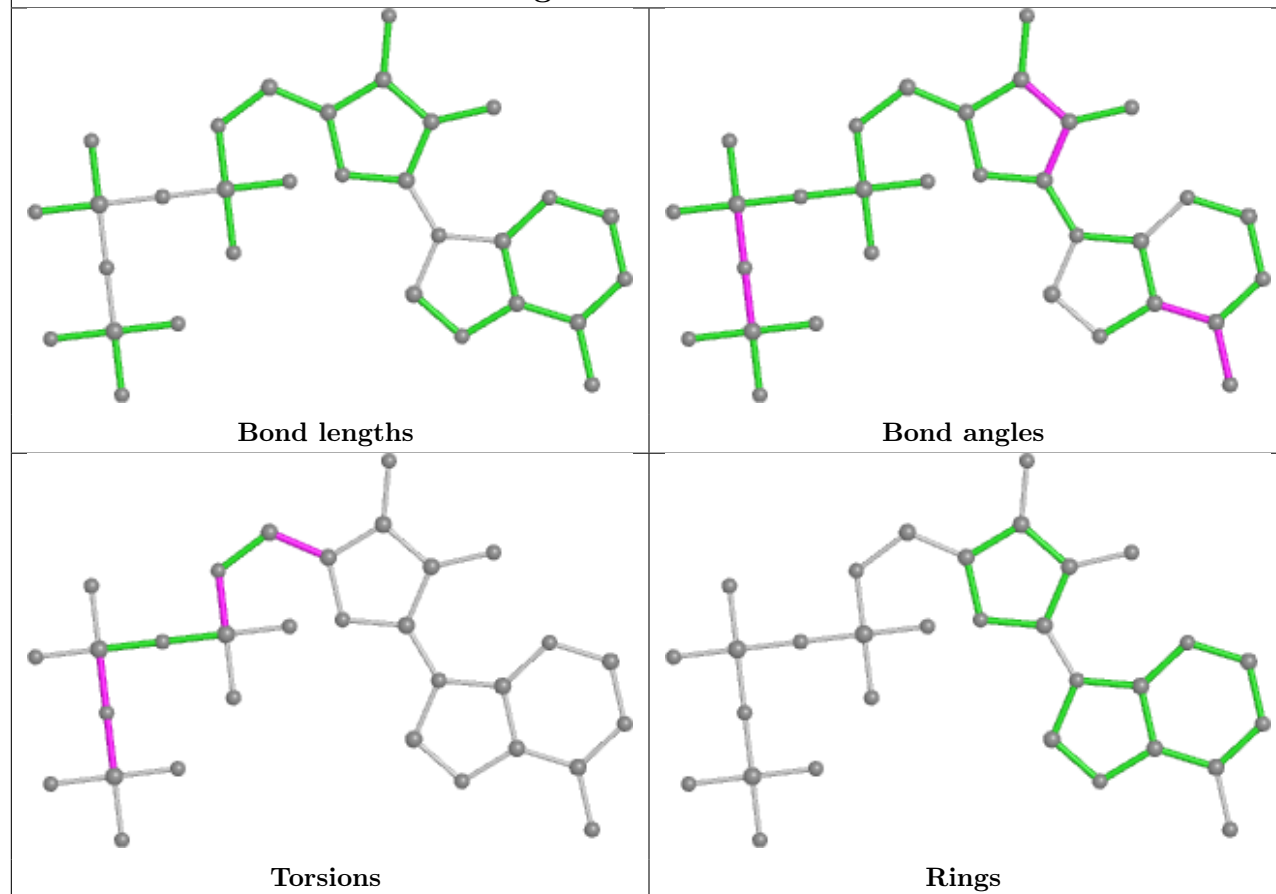
There are no ring outliers.

2 monomers are involved in 3 short contacts:

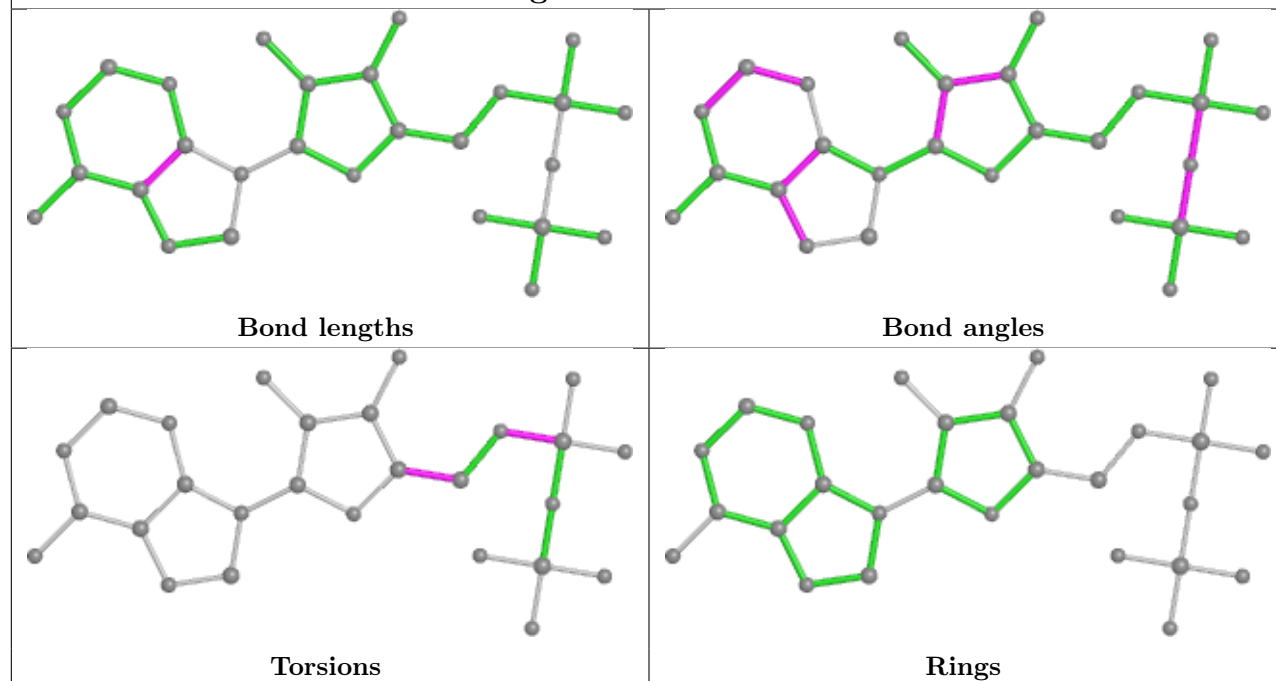
Mol	Chain	Res	Type	Clashes	Symm-Clashes
26	E	401	ATP	2	0
26	D	501	ATP	1	0

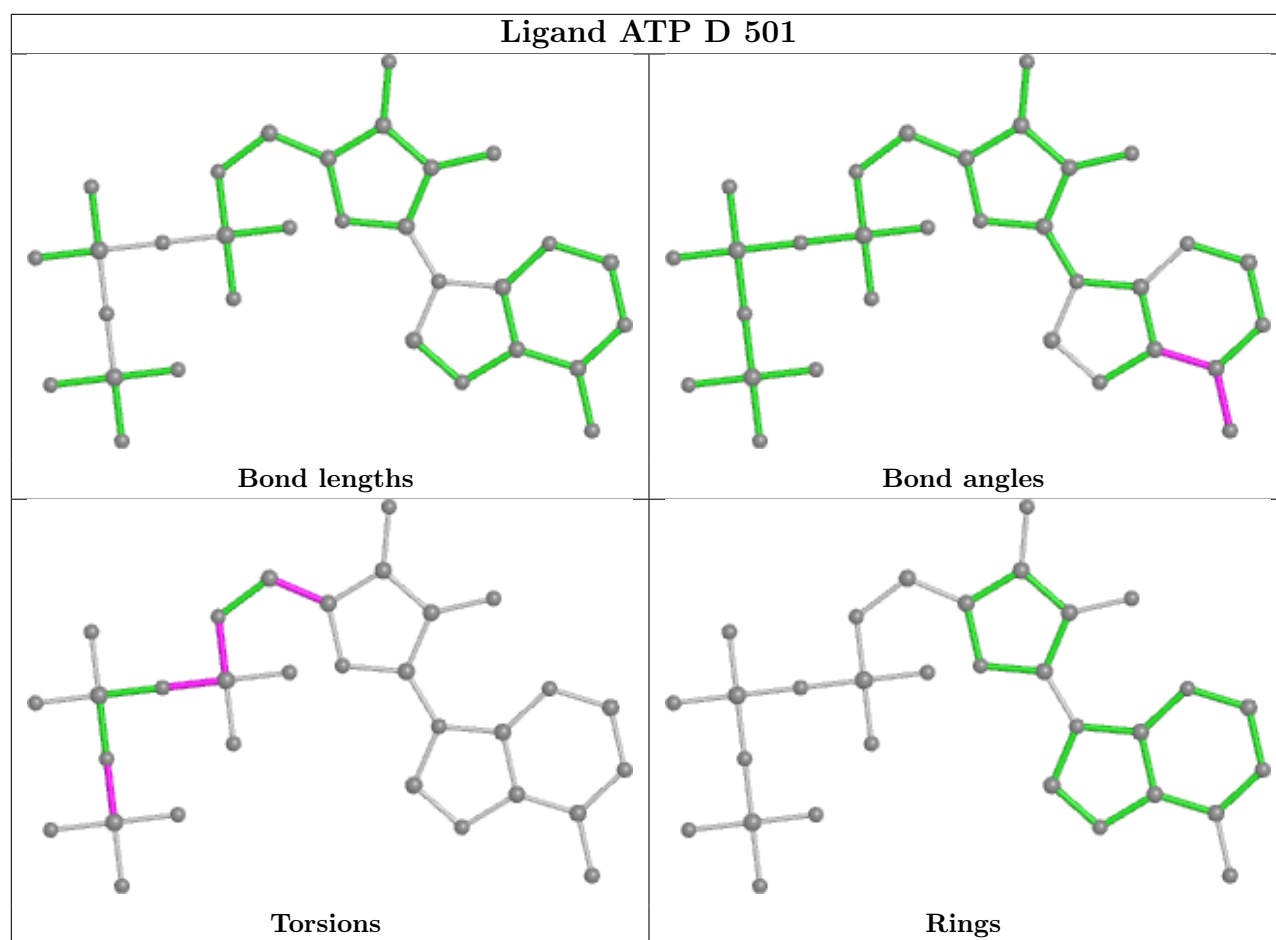
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

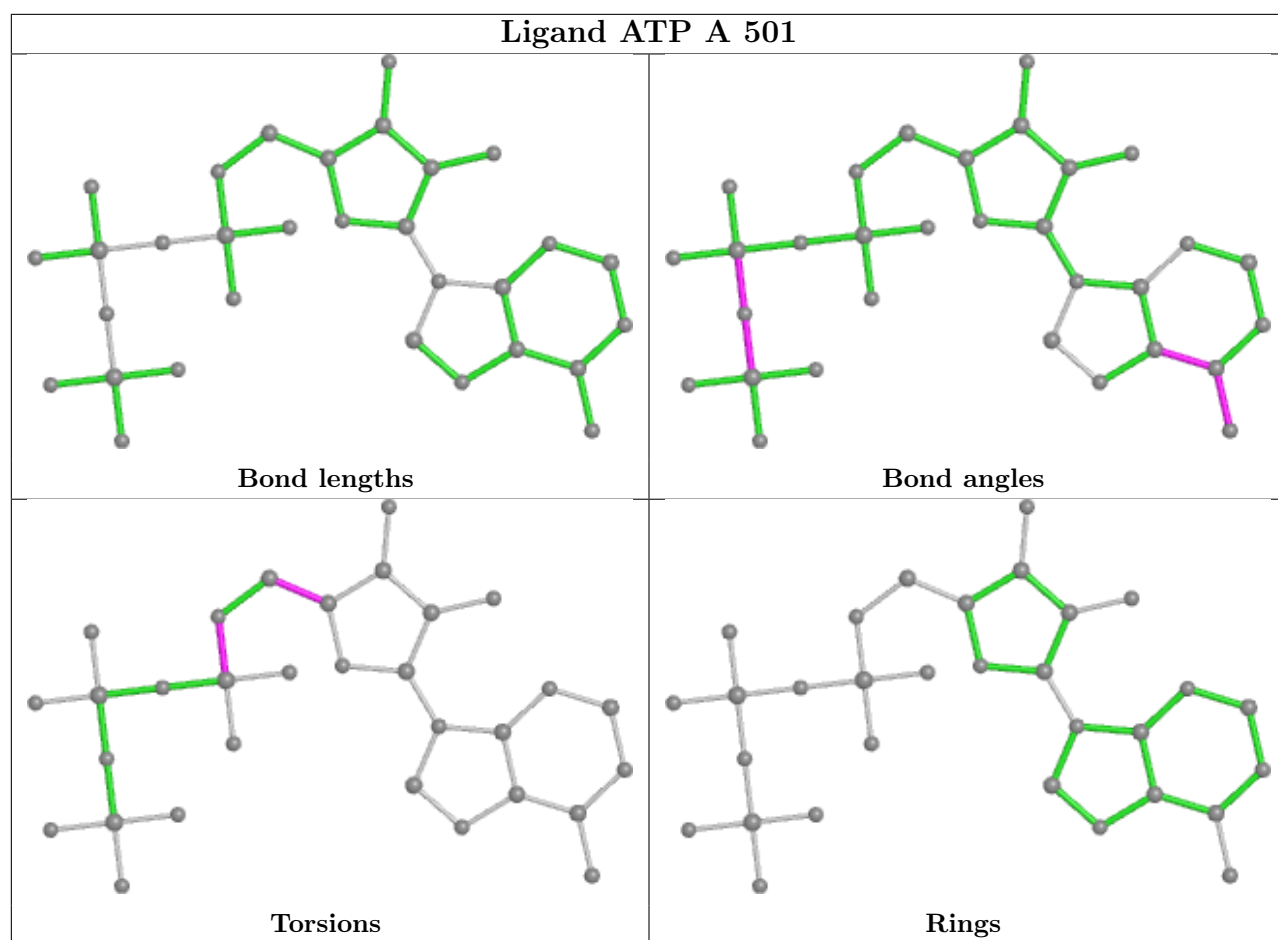
Ligand ATP E 401

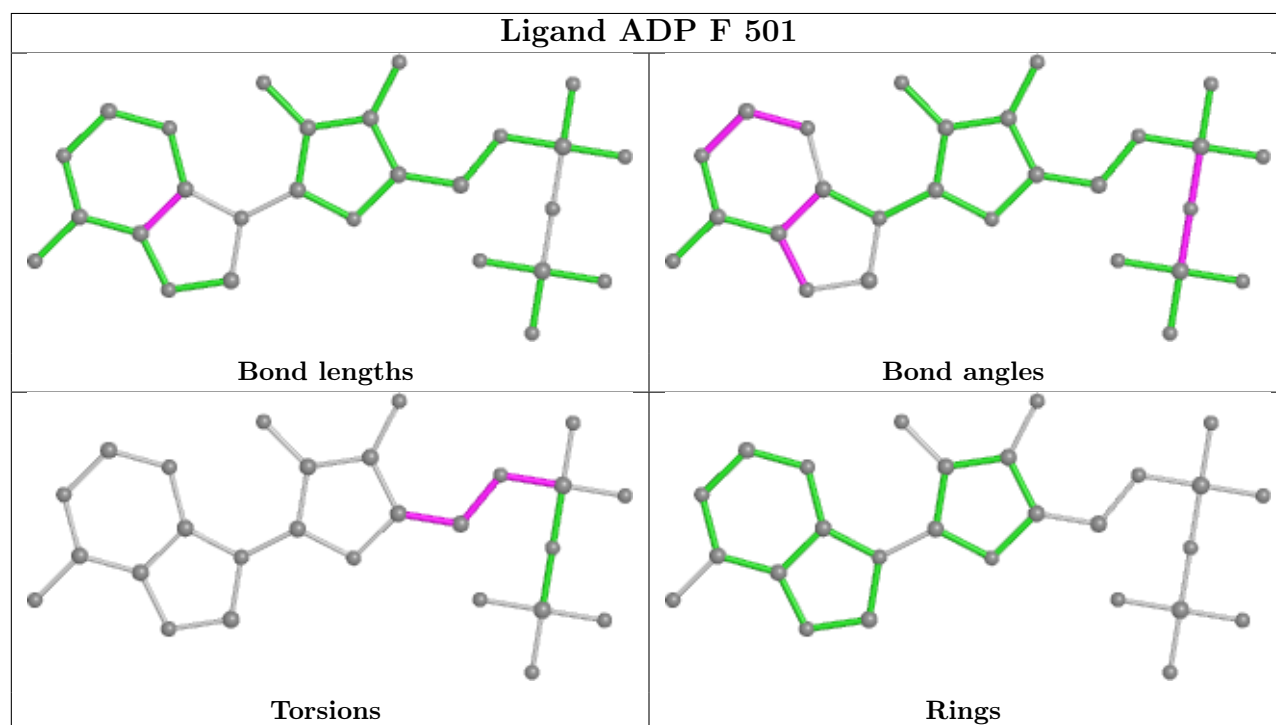
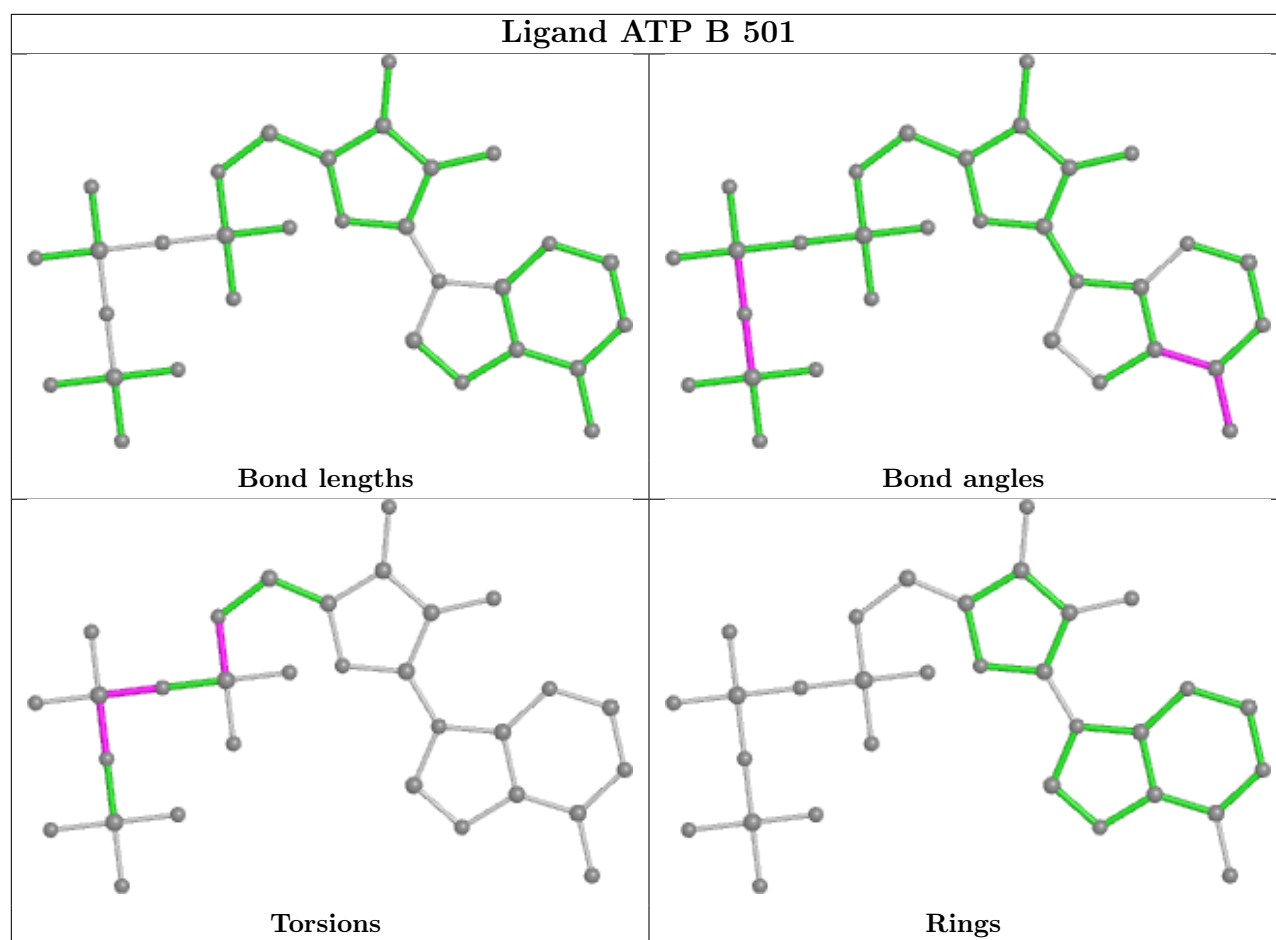


Ligand ADP C 501









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.

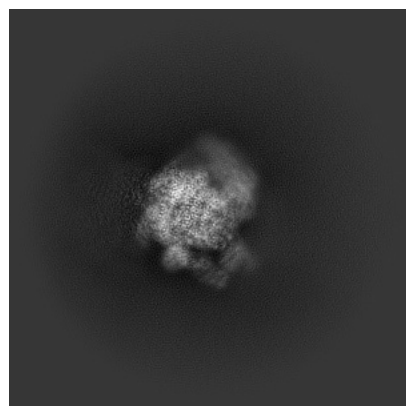
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-36598. These allow visual inspection of the internal detail of the map and identification of artifacts.

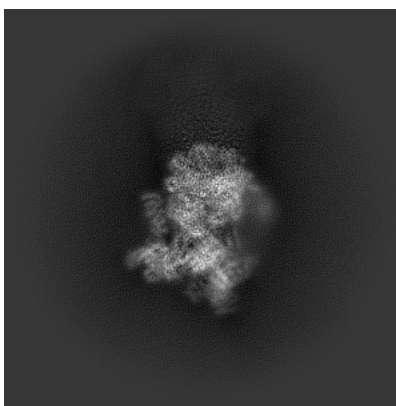
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

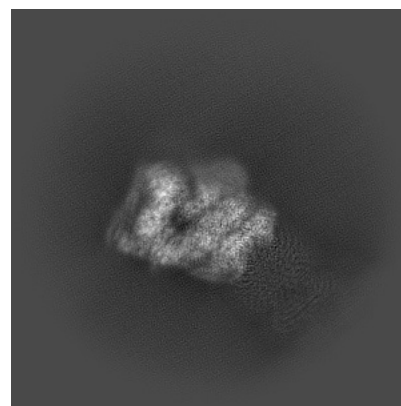
6.1.1 Primary map



X

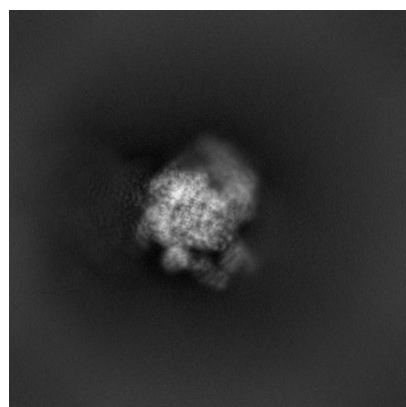


Y

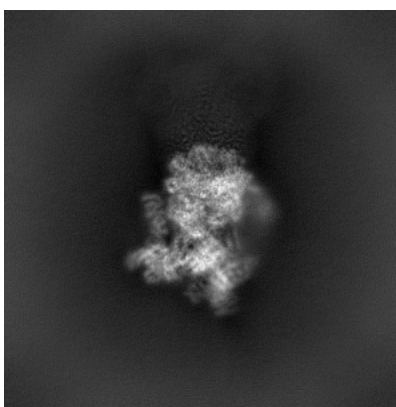


Z

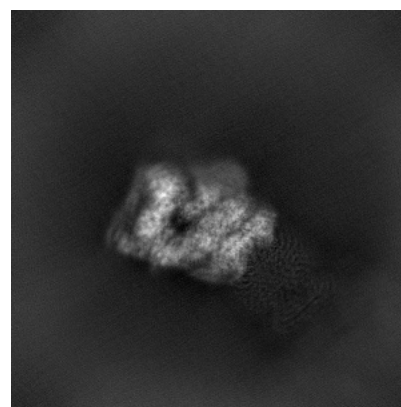
6.1.2 Raw map



X



Y



Z

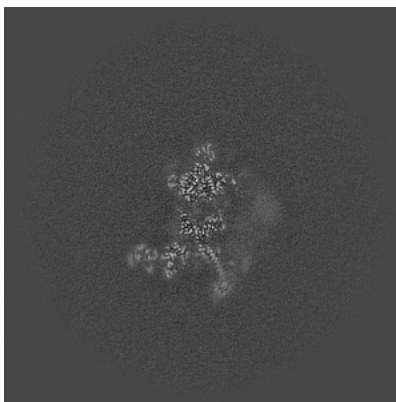
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

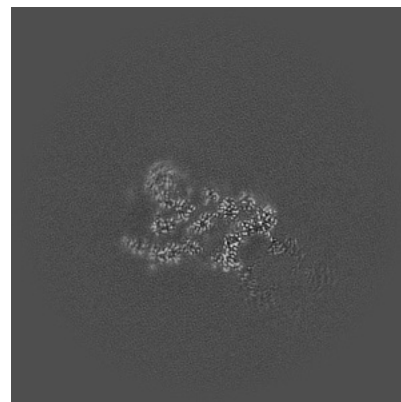
6.2.1 Primary map



X Index: 200

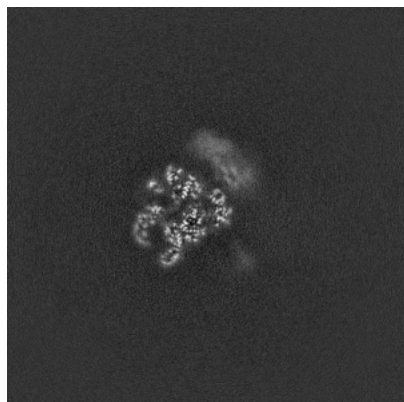


Y Index: 200

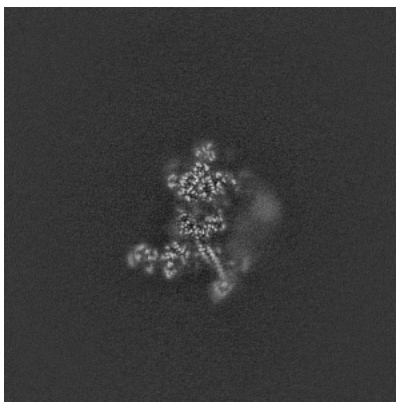


Z Index: 200

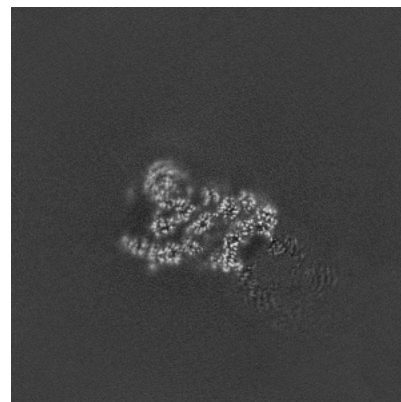
6.2.2 Raw map



X Index: 200



Y Index: 200

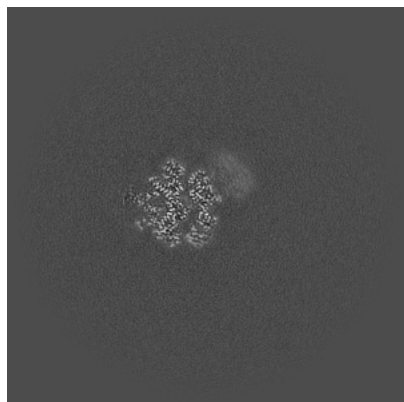


Z Index: 200

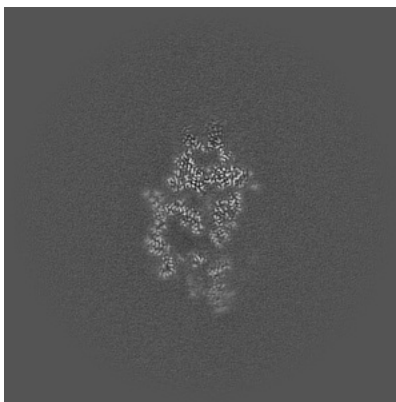
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

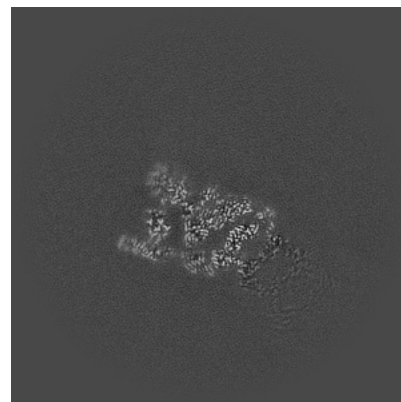
6.3.1 Primary map



X Index: 226

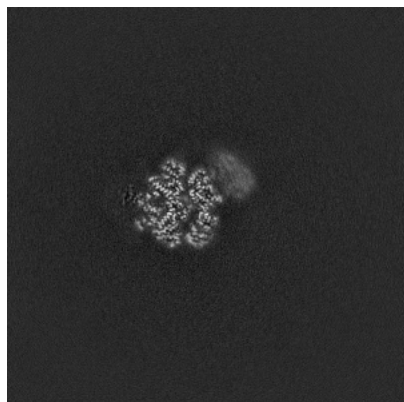


Y Index: 170

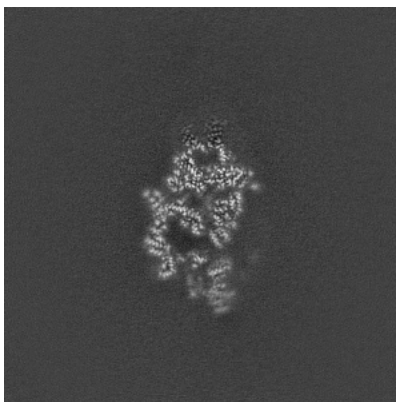


Z Index: 190

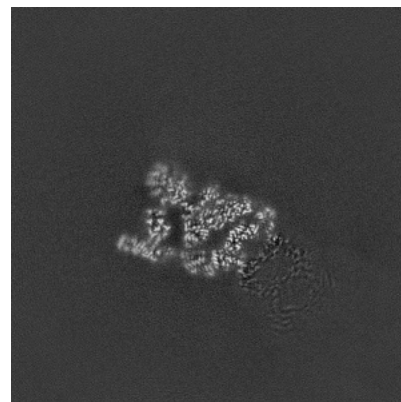
6.3.2 Raw map



X Index: 226



Y Index: 170

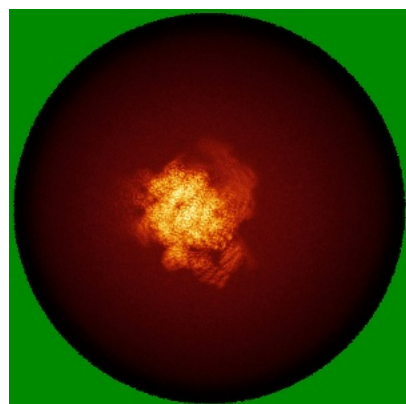


Z Index: 190

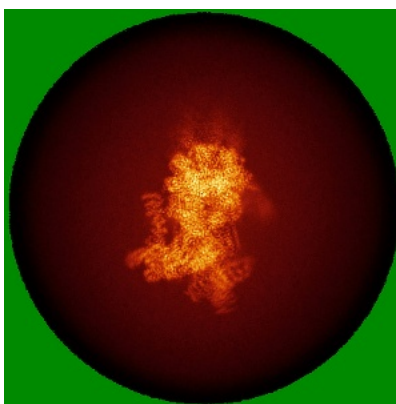
The images above show the largest variance slices of the map in three orthogonal directions.

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

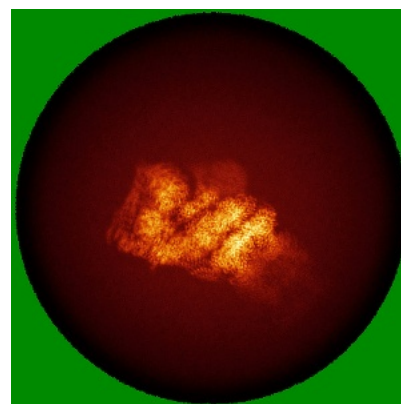
6.4.1 Primary map



X

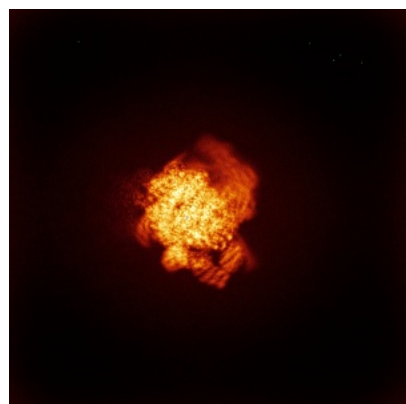


Y

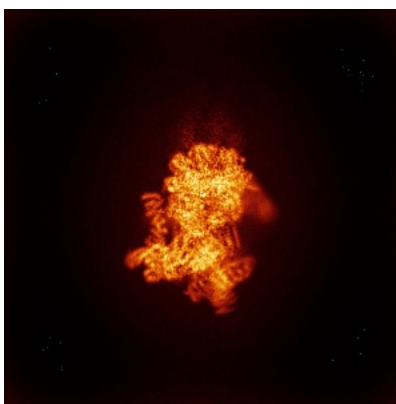


Z

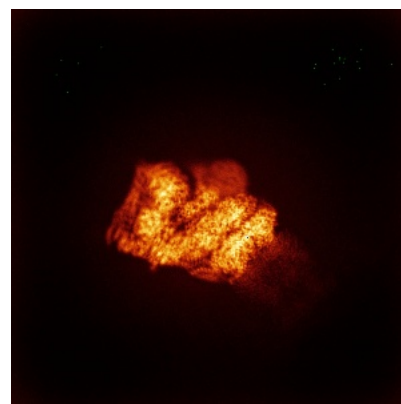
6.4.2 Raw map



X



Y



Z

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

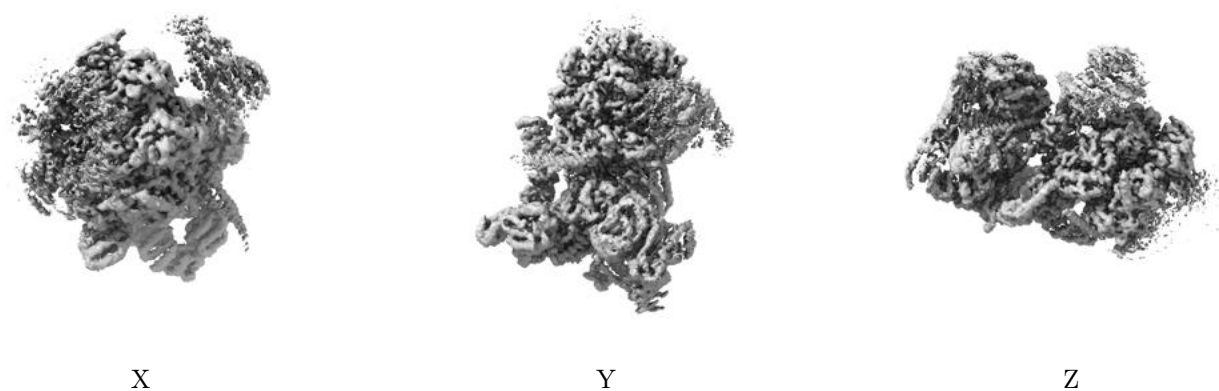
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

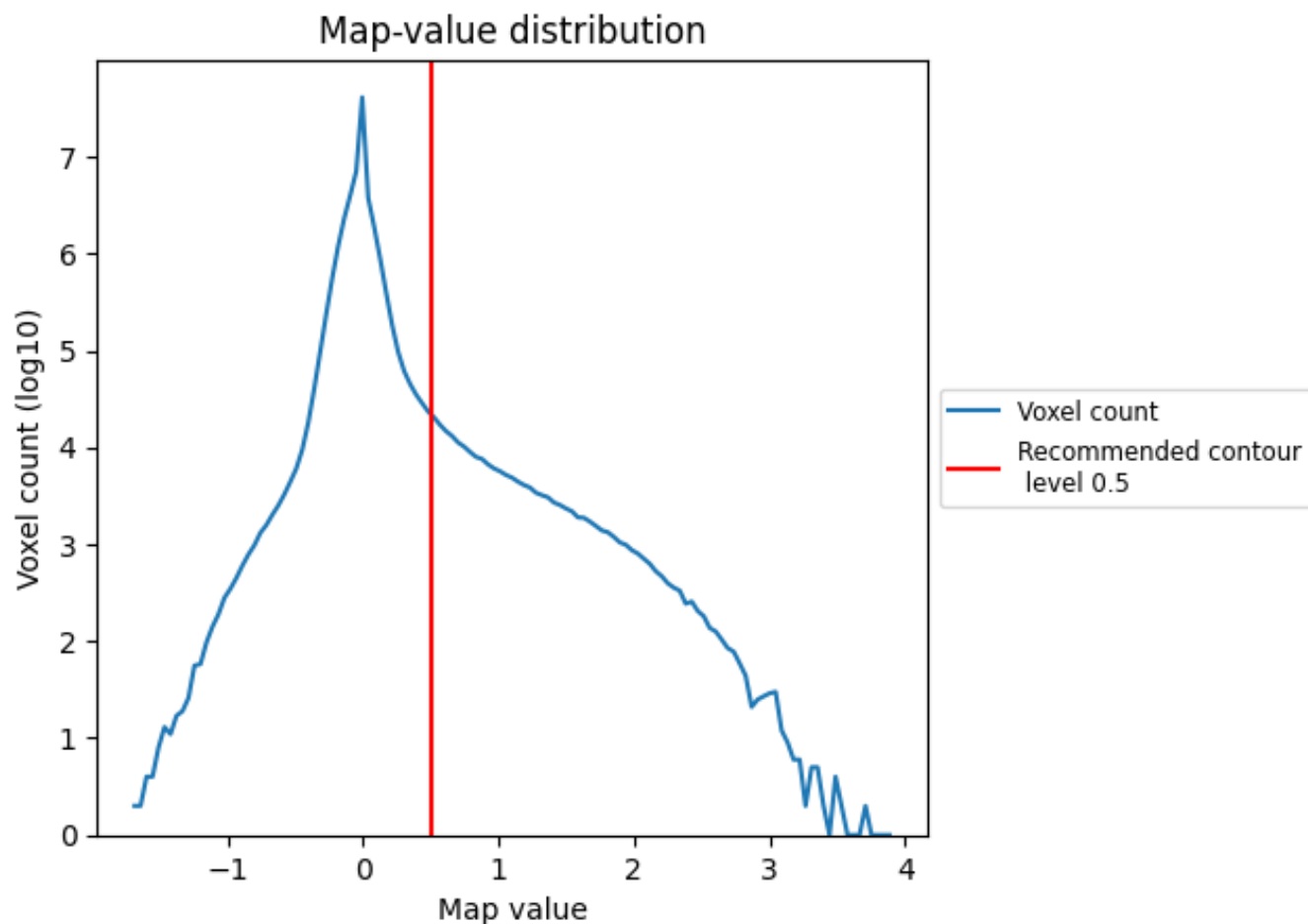
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

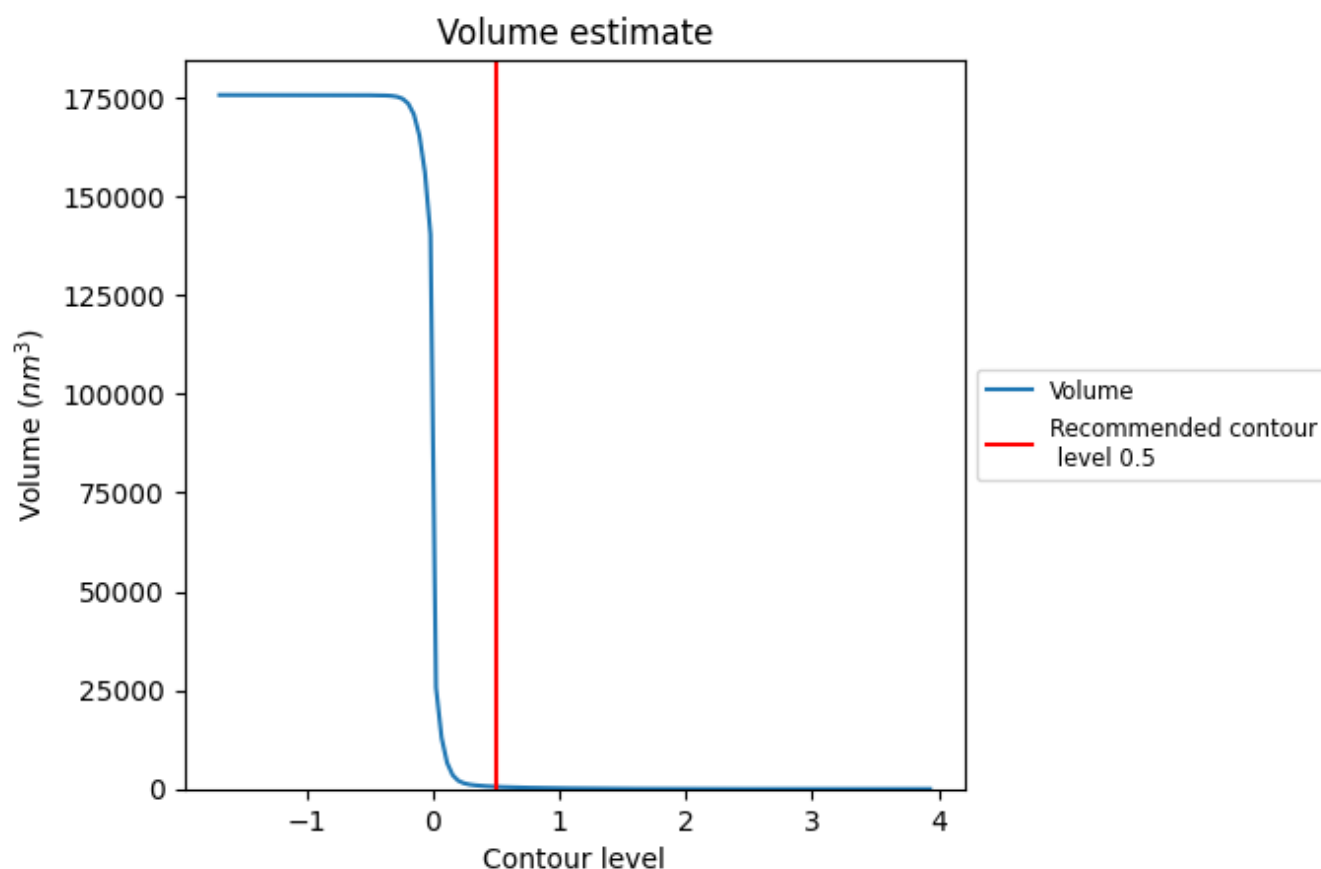
This section contains the results of statistical analysis of the map.

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.

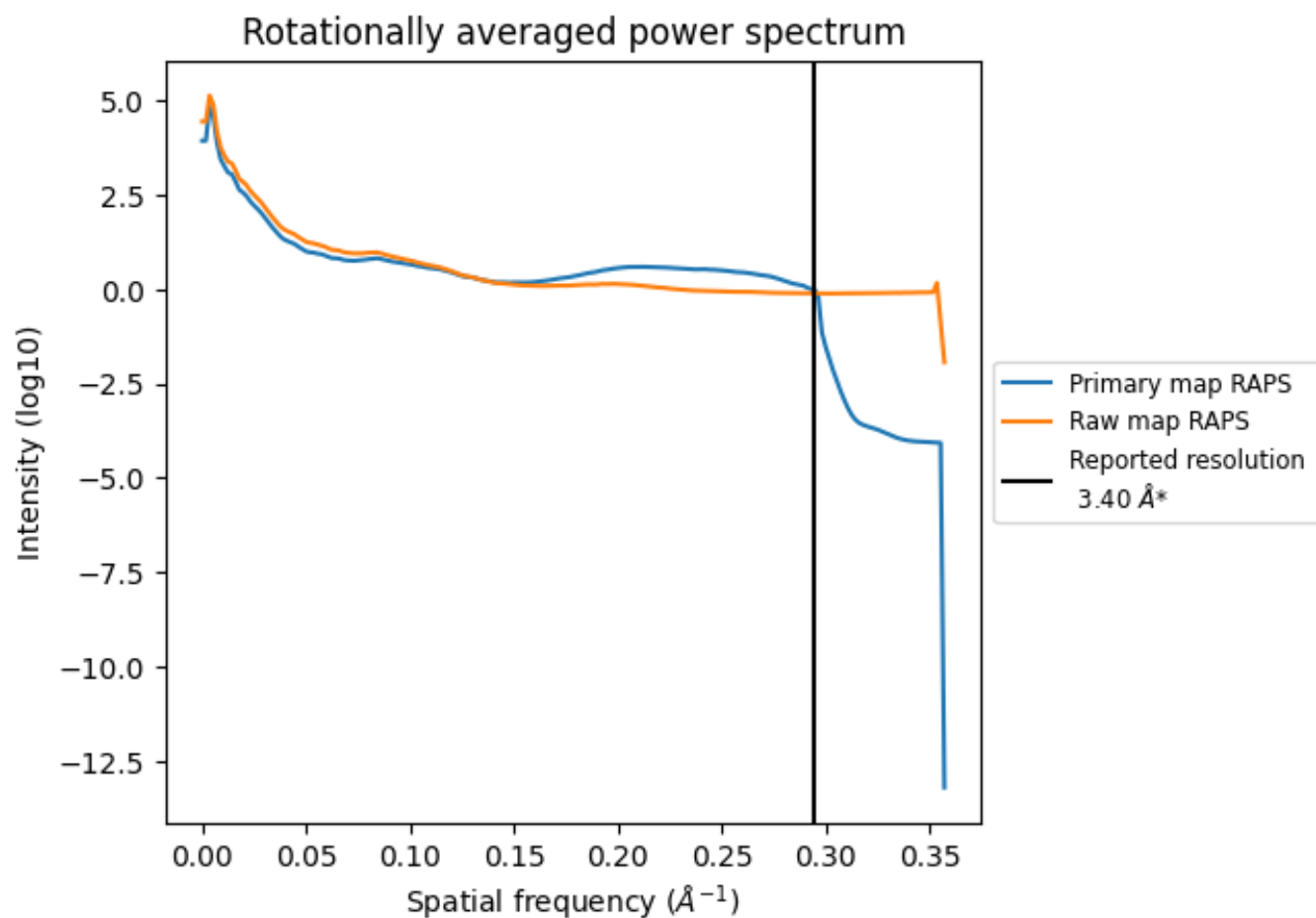
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 557 nm^3 ; this corresponds to an approximate mass of 504 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 ⓘ

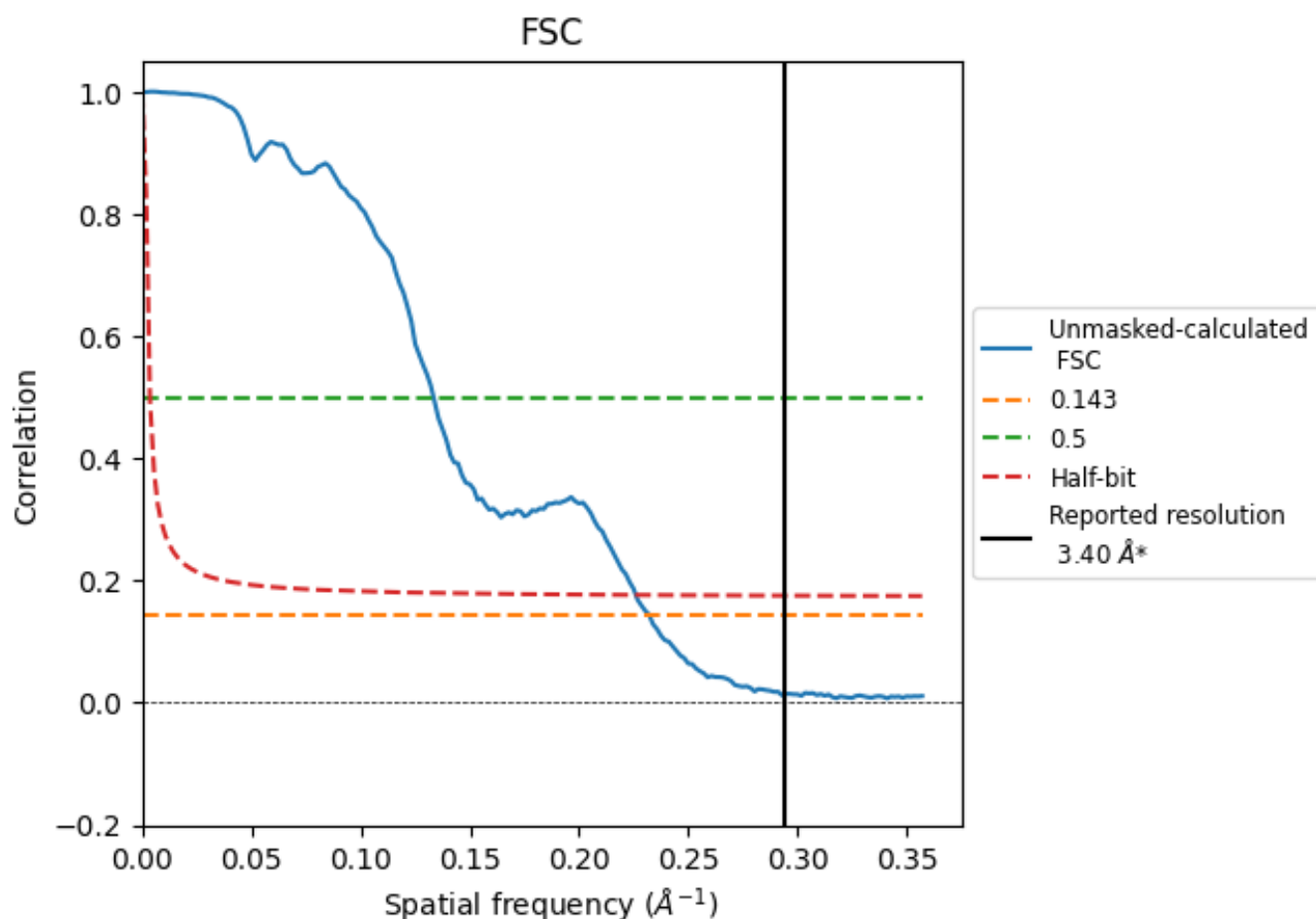


*Reported resolution corresponds to spatial frequency of 0.294 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.294 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

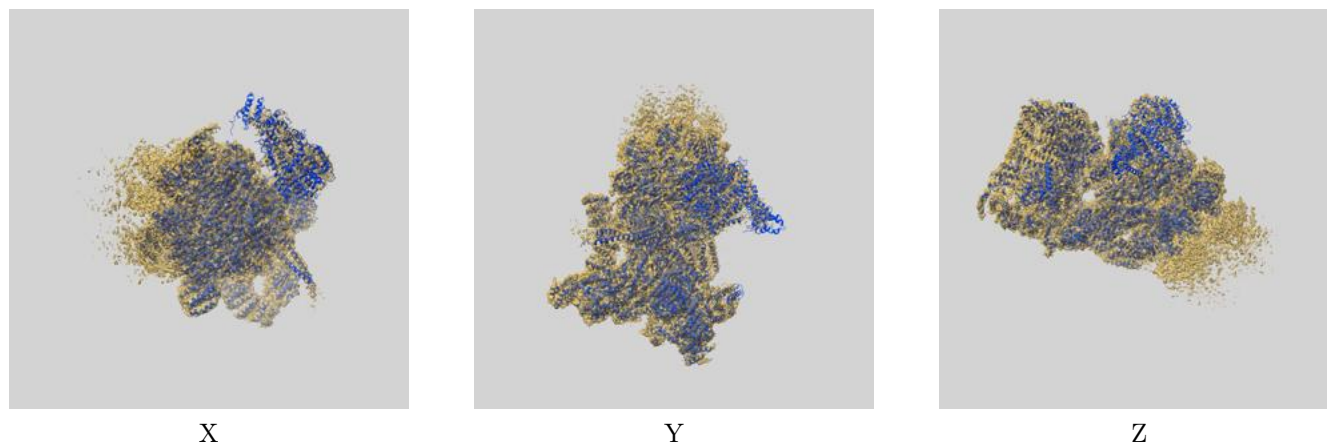
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.30	7.50	4.42

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.30 differs from the reported value 3.4 by more than 10 %

9 Map-model fit [i](#)

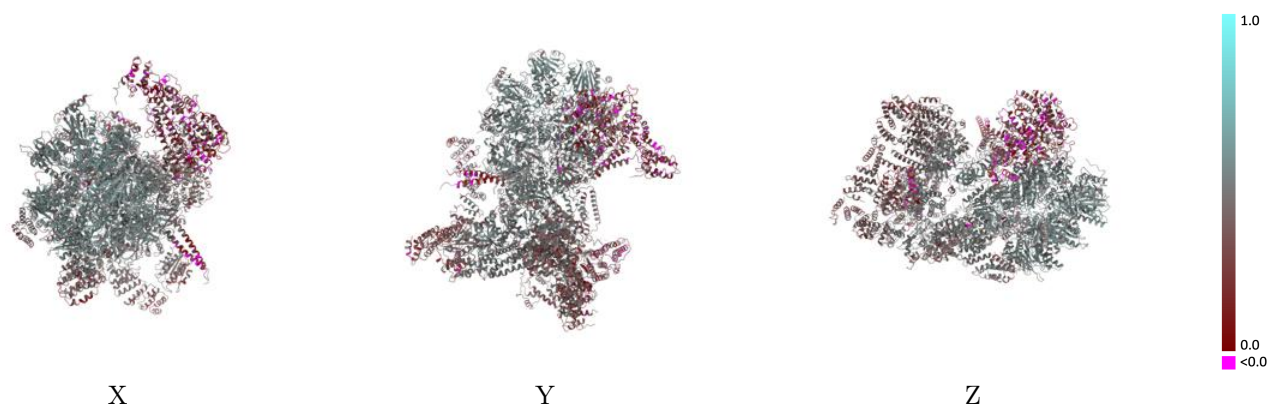
This section contains information regarding the fit between EMDB map EMD-36598 and PDB model 8JRI. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlay [i](#)



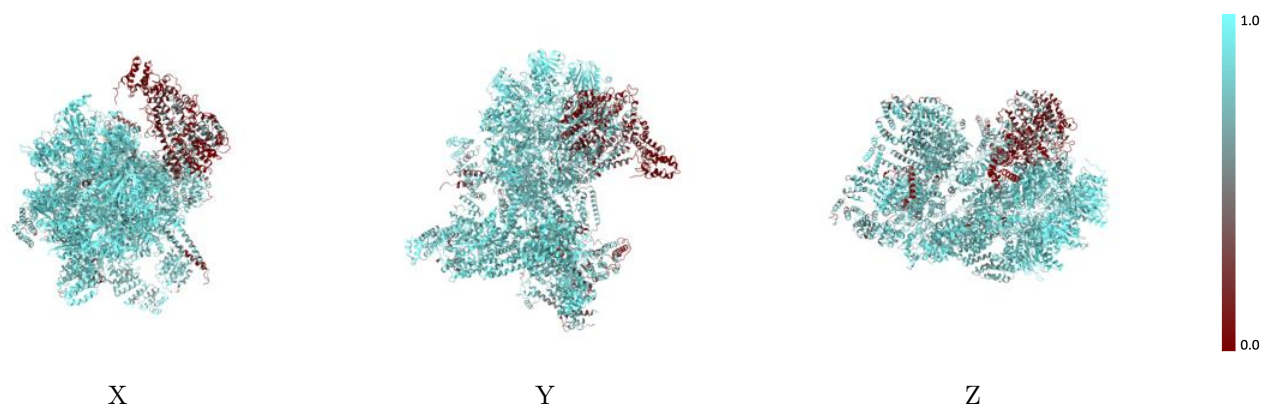
The images above show the 3D surface view of the map at the recommended contour level 0.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



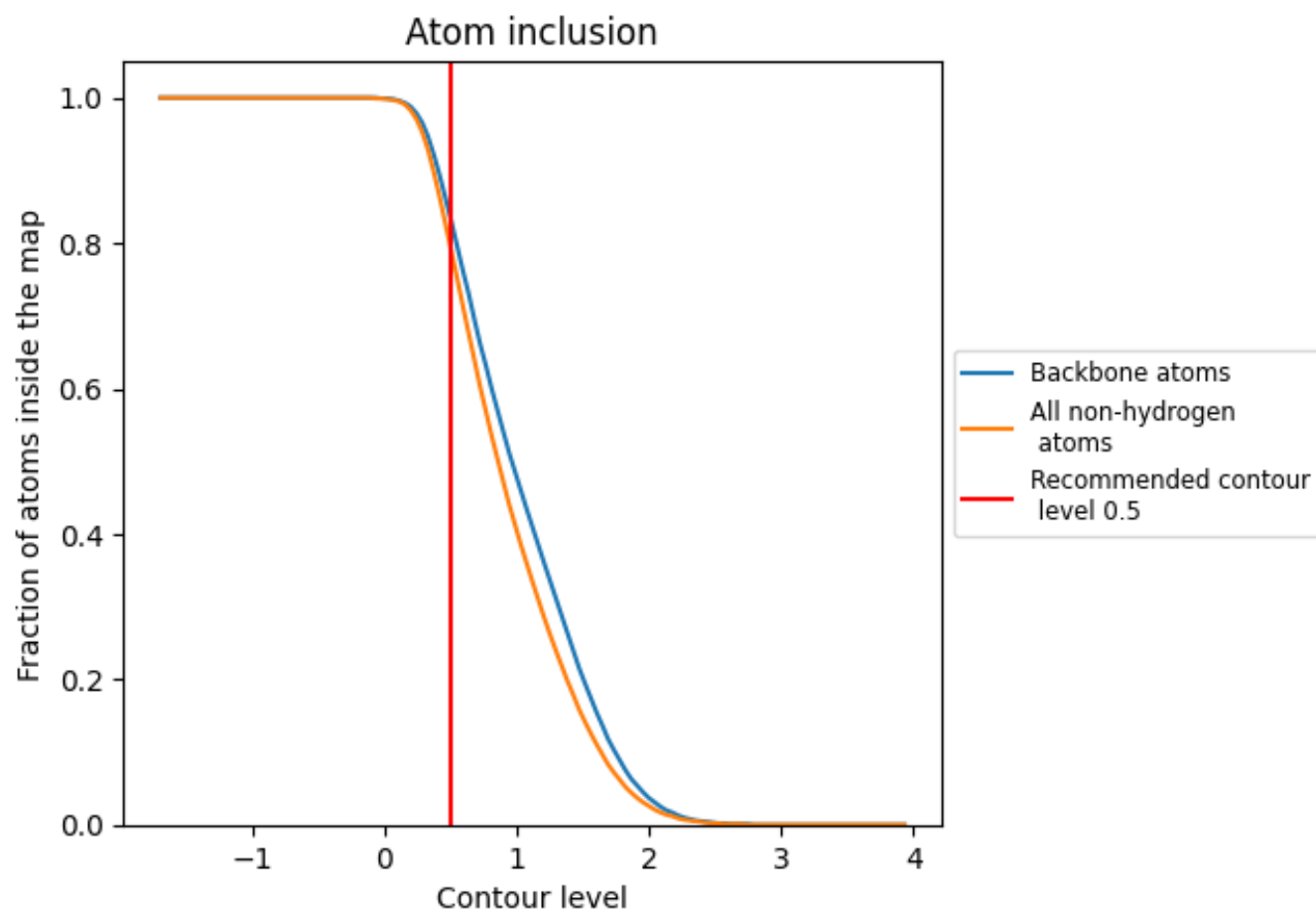
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.5).

9.4 Atom inclusion ⓘ



At the recommended contour level, 84% of all backbone atoms, 80% 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 (0.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7960	 0.4430
A	 0.8480	 0.4840
B	 0.8140	 0.4760
C	 0.8470	 0.4900
D	 0.8520	 0.4940
E	 0.8740	 0.4970
F	 0.8820	 0.5050
G	 0.9310	 0.5310
H	 0.9290	 0.5310
I	 0.8970	 0.5020
J	 0.9220	 0.5170
K	 0.9220	 0.5300
L	 0.9310	 0.5350
M	 0.9140	 0.5180
U	 0.7800	 0.3730
V	 0.7040	 0.3580
W	 0.8150	 0.4050
X	 0.7650	 0.4450
Y	 0.8510	 0.4470
Z	 0.8570	 0.4750
a	 0.8430	 0.4010
b	 0.7950	 0.3580
c	 0.8540	 0.4770
d	 0.6880	 0.3610
e	 0.7800	 0.3820
f	 0.2090	 0.2270

