



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 08:44 PM UTC

PDB ID : 9AW6 / pdb_00009aw6
Title : Yeast 20S proteasome soaked with MA9 fraction EF2
Authors : Meneghello, R.; Rustiguel, J.K.; Fernandes, A.Z.N.; Trivella, D.B.B.
Deposited on : 2024-03-05
Resolution : 3.44 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : 4-5-2 with Phenix2.0
Mogul : **NOT EXECUTED**
Xtrriage (Phenix) : 2.0
EDS : **NOT EXECUTED**
Buster-report : **NOT EXECUTED**
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

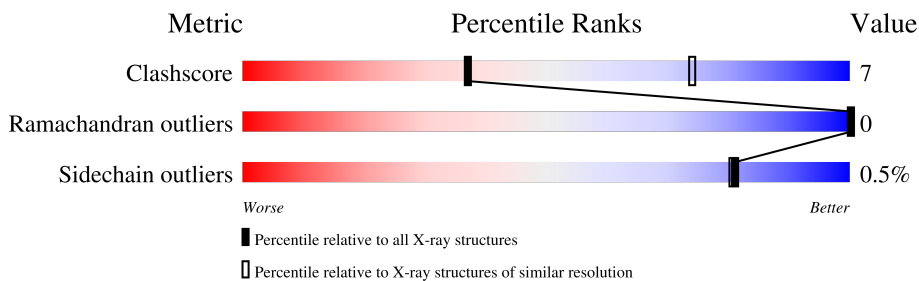
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.44 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)	Similar resolution (#Entries, resolution range(Å))
Clashscore	190562	1808 (3.50-3.38)
Ramachandran outliers	187476	1776 (3.50-3.38)
Sidechain outliers	187428	1777 (3.50-3.38)











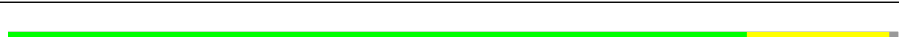


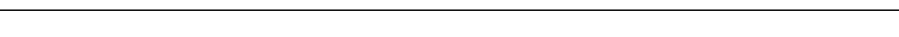
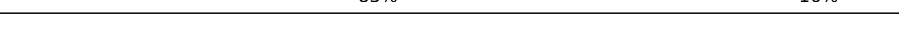
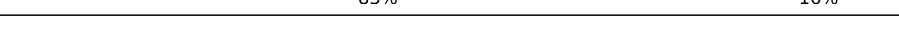

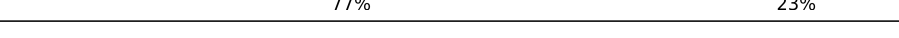

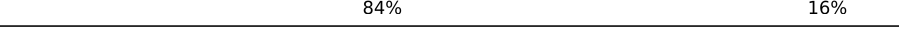
The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. 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 $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	250	
1	O	250	
2	B	258	
2	P	258	
3	C	254	
3	Q	254	
4	D	260	
4	R	260	

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Mol	Chain	Length	Quality of chain
5	E	234	 77% 22%
5	S	234	 78% 21%
6	F	287	 69% 15% 15%
6	T	287	 70% 15% 15%
7	G	252	 77% 19%
7	U	252	 76% 20%
8	H	232	 80% 16%
8	V	232	 75% 21%
9	I	205	 81% 18%
9	W	205	 77% 23%
10	J	198	 83% 16%
10	X	198	 81% 17%
11	K	212	 82% 18%
11	Y	212	 83% 16%
12	L	222	 83% 16%
12	Z	222	 82% 18%
13	M	233	 77% 23%
13	a	233	 79% 21%
14	N	196	 84% 16%
14	b	196	 82% 18%

2 Entry composition

There are 18 unique types of molecules in this entry. The entry contains 50447 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Proteasome subunit alpha type-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	249	1907	1214	314	376	3	0	0	0
1	O	249	1907	1214	314	376	3	0	0	0

- Molecule 2 is a protein called Proteasome subunit alpha type-3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	243	1905	1204	321	377	3	0	0	0
2	P	244	1909	1206	322	378	3	0	0	0

- Molecule 3 is a protein called Proteasome subunit alpha type-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	246	1934	1206	339	385	4	0	0	0
3	Q	241	1890	1181	331	374	4	0	0	0

- Molecule 4 is a protein called Proteasome subunit alpha type-5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	239	1854	1161	311	375	7	0	0	0
4	R	246	1898	1186	318	387	7	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	232	Total	C	N	O	S	0	0	0
			1784	1120	311	349	4			
5	S	232	Total	C	N	O	S	0	0	0
			1784	1120	311	349	4			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	244	Total	C	N	O	S	0	0	0
			1896	1205	330	357	4			
6	T	245	Total	C	N	O	S	0	0	0
			1904	1211	331	358	4			

- Molecule 7 is a protein called Proteasome subunit alpha type-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	242	Total	C	N	O	S	0	0	0
			1916	1218	321	369	8			
7	U	242	Total	C	N	O	S	0	0	0
			1916	1218	321	369	8			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	222	Total	C	N	O	S	0	0	0
			1684	1061	293	323	7			
8	V	222	Total	C	N	O	S	0	0	0
			1684	1061	293	323	7			

- Molecule 9 is a protein called Proteasome subunit beta type-3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
9	I	204	Total	C	N	O	S	0	0	0
			1581	1010	258	305	8			
9	W	204	Total	C	N	O	S	0	0	0
			1581	1010	258	305	8			

- Molecule 10 is a protein called Proteasome subunit beta type-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	196	Total	C	N	O	S	0	0	0
			1570	997	266	301	6			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	X	195	1561	992	264	299	6	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	212	1644	1045	280	312	7	0	0	0
11	Y	212	1644	1045	280	312	7	0	0	0

- Molecule 12 is a protein called Proteasome subunit beta type-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	222	1757	1115	303	335	4	0	0	0
12	Z	222	1757	1115	303	335	4	0	0	0

- Molecule 13 is a protein called Proteasome subunit beta type-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	M	233	1824	1154	312	351	7	0	0	0
13	a	233	1824	1154	312	351	7	0	0	0

- Molecule 14 is a protein called Proteasome subunit beta type-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	N	196	1512	955	250	300	7	0	0	0
14	b	196	1512	955	250	300	7	0	0	0

- Molecule 15 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
15	B	1	Total	O	S	0	0
			5	4	1		
15	C	1	Total	O	S	0	0
			5	4	1		
15	D	1	Total	O	S	0	0
			5	4	1		
15	E	1	Total	O	S	0	0
			5	4	1		
15	E	1	Total	O	S	0	0
			5	4	1		
15	F	1	Total	O	S	0	0
			5	4	1		
15	F	1	Total	O	S	0	0
			5	4	1		
15	G	1	Total	O	S	0	0
			5	4	1		
15	G	1	Total	O	S	0	0
			5	4	1		
15	P	1	Total	O	S	0	0
			5	4	1		
15	Q	1	Total	O	S	0	0
			5	4	1		
15	S	1	Total	O	S	0	0
			5	4	1		
15	S	1	Total	O	S	0	0
			5	4	1		
15	S	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
15	T	1	5	4	1	0	0
15	T	1	5	4	1	0	0
15	T	1	5	4	1	0	0
15	U	1	5	4	1	0	0
15	U	1	5	4	1	0	0
15	H	1	5	4	1	0	0
15	H	1	5	4	1	0	0
15	H	1	5	4	1	0	0
15	I	1	5	4	1	0	0
15	I	1	5	4	1	0	0
15	J	1	5	4	1	0	0
15	J	1	5	4	1	0	0
15	K	1	5	4	1	0	0
15	K	1	5	4	1	0	0
15	K	1	5	4	1	0	0
15	K	1	5	4	1	0	0
15	L	1	5	4	1	0	0
15	M	1	5	4	1	0	0
15	M	1	5	4	1	0	0
15	M	1	5	4	1	0	0
15	M	1	5	4	1	0	0

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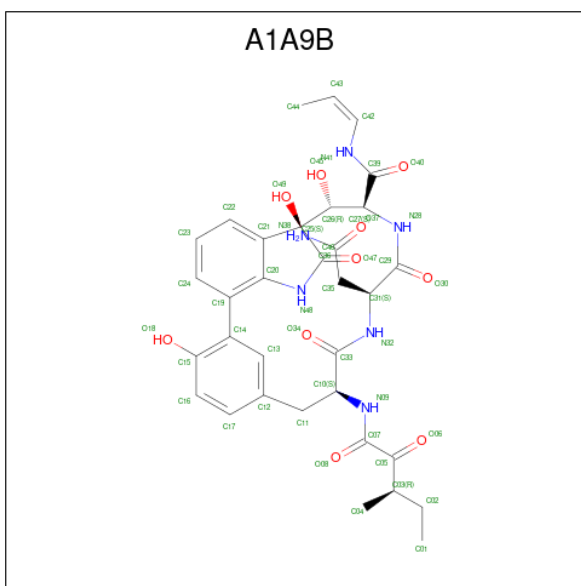
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
15	M	1	5	4	1	0	0
15	M	1	5	4	1	0	0
15	M	1	5	4	1	0	0
15	M	1	5	4	1	0	0
15	N	1	5	4	1	0	0
15	V	1	5	4	1	0	0
15	V	1	5	4	1	0	0
15	W	1	5	4	1	0	0
15	X	1	5	4	1	0	0
15	Y	1	5	4	1	0	0
15	Y	1	5	4	1	0	0
15	Y	1	5	4	1	0	0
15	Y	1	5	4	1	0	0
15	Z	1	5	4	1	0	0
15	Z	1	5	4	1	0	0
15	a	1	5	4	1	0	0
15	a	1	5	4	1	0	0
15	a	1	5	4	1	0	0
15	a	1	5	4	1	0	0
15	a	1	5	4	1	0	0
15	b	1	5	4	1	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
15	b	1	Total	O	S	0	0
			5	4	1		
15	b	1	Total	O	S	0	0
			5	4	1		

- Molecule 16 is (10S,11R,12S,15S,18S)-15-(2-amino-2-oxoethyl)-10,11,23-trihydroxy-18-{{(3R)-3-methyl-2-oxopentanoyl}amino}-9,14,17-trioxo-N-[(1Z)-prop-1-en-1-yl]-8,13,16-triazatetracyclo[18.3.1.0(2,7).0(6,10)]tetracos-1(24),2,4,6,20,22-hexaene-12-carboxamide (CCD ID: A1A9B) (formula: C₃₃H₃₈N₆O₁₀) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
16	H	1	Total	C	N	O	0	0
			49	33	6	10		
16	K	1	Total	C	N	O	0	0
			49	33	6	10		
16	N	1	Total	C	N	O	0	0
			49	33	6	10		
16	V	1	Total	C	N	O	0	0
			49	33	6	10		
16	Y	1	Total	C	N	O	0	0
			49	33	6	10		
16	b	1	Total	C	N	O	0	0
			49	33	6	10		

- Molecule 17 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
17	I	1	Total Mg 1 1	0	0
17	L	1	Total Mg 1 1	0	0
17	W	1	Total Mg 1 1	0	0
17	Y	1	Total Mg 1 1	0	0
17	Z	1	Total Mg 1 1	0	0

- Molecule 18 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
18	A	20	Total O 20 20	0	0
18	B	17	Total O 17 17	0	0
18	C	6	Total O 6 6	0	0
18	D	4	Total O 4 4	0	0
18	E	4	Total O 4 4	0	0
18	F	5	Total O 5 5	0	0
18	G	8	Total O 8 8	0	0
18	O	6	Total O 6 6	0	0
18	P	12	Total O 12 12	0	0
18	Q	10	Total O 10 10	0	0
18	R	4	Total O 4 4	0	0
18	S	3	Total O 3 3	0	0
18	T	11	Total O 11 11	0	0
18	U	9	Total O 9 9	0	0
18	H	13	Total O 13 13	0	0

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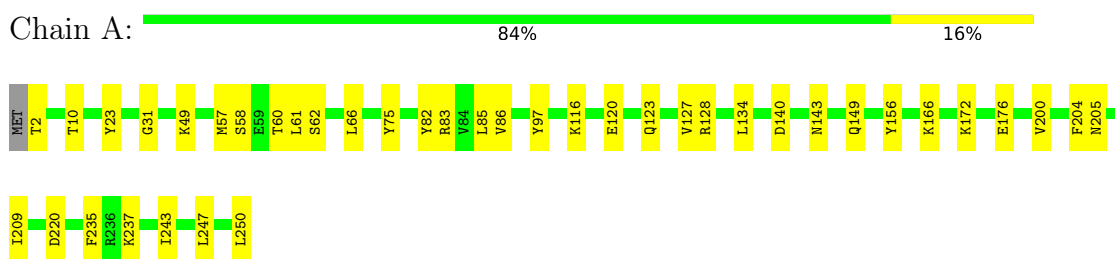
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
18	I	8	Total O 8 8	0	0
18	J	15	Total O 15 15	0	0
18	K	16	Total O 16 16	0	0
18	L	25	Total O 25 25	0	0
18	M	12	Total O 12 12	0	0
18	N	13	Total O 13 13	0	0
18	V	19	Total O 19 19	0	0
18	W	6	Total O 6 6	0	0
18	X	18	Total O 18 18	0	0
18	Y	8	Total O 8 8	0	0
18	Z	22	Total O 22 22	0	0
18	a	15	Total O 15 15	0	0
18	b	10	Total O 10 10	0	0

3 Residue-property plots [i](#)

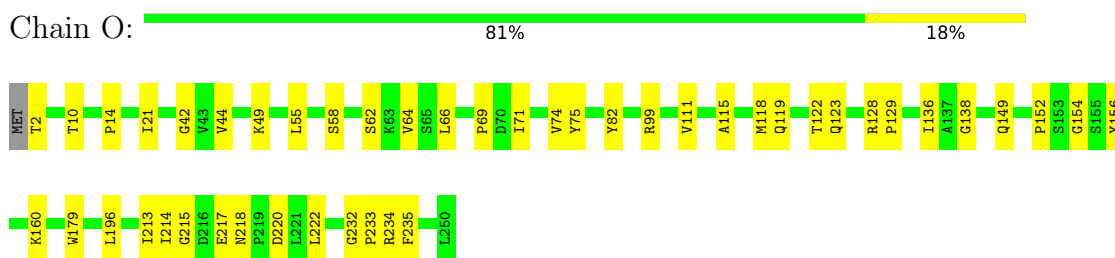
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS was not executed.

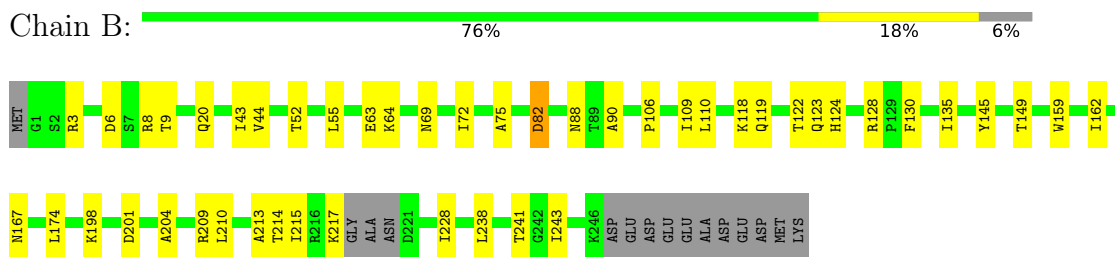
- Molecule 1: Proteasome subunit alpha type-2



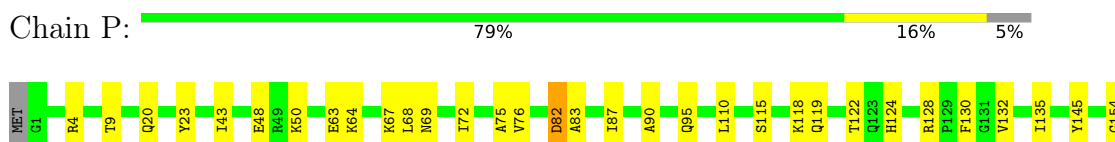
- Molecule 1: Proteasome subunit alpha type-2



- Molecule 2: Proteasome subunit alpha type-3



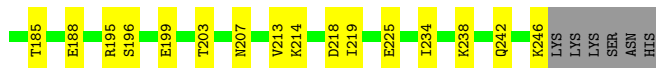
- Molecule 2: Proteasome subunit alpha type-3





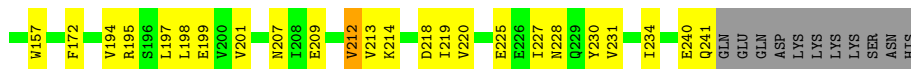
- Molecule 3: Proteasome subunit alpha type-4

Chain C: 79% 18%



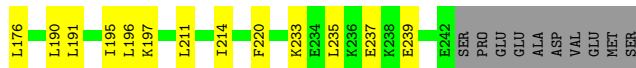
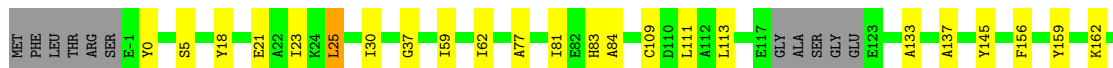
- Molecule 3: Proteasome subunit alpha type-4

Chain Q: 73% 21% 5%



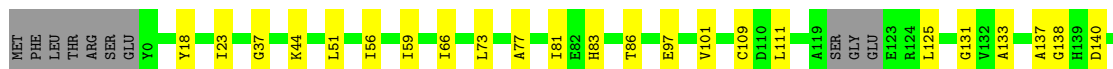
- Molecule 4: Proteasome subunit alpha type-5

Chain D: 78% 13% 8%



- Molecule 4: Proteasome subunit alpha type-5

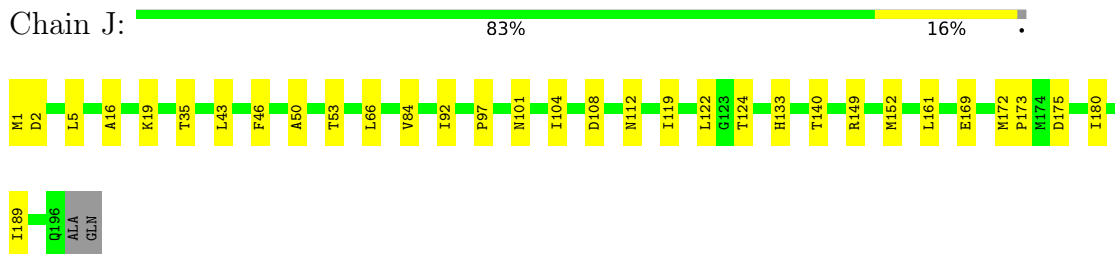
Chain R: 80% 15% 5%



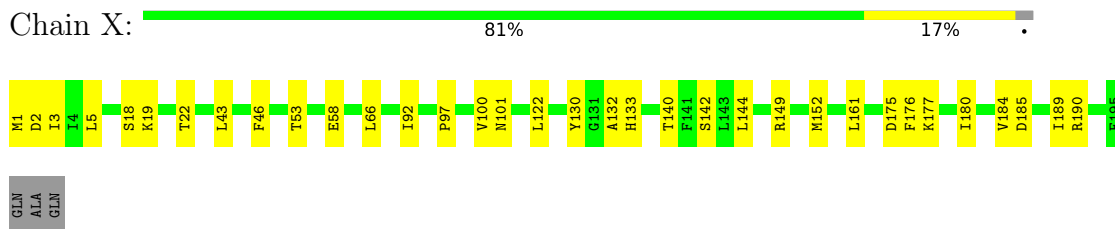
- Molecule 5: Proteasome subunit alpha type-6

Chain E: 77% 22%

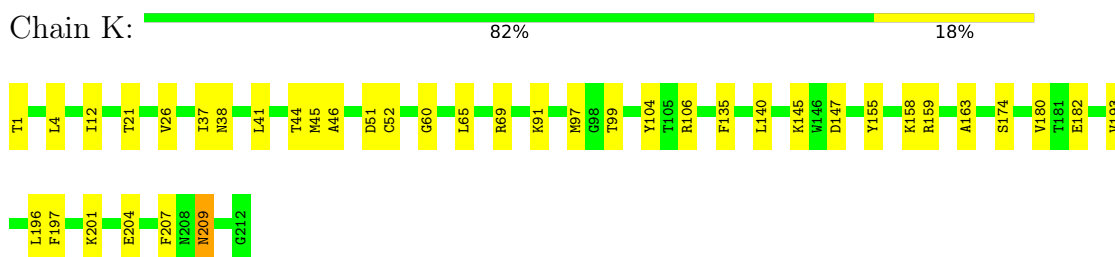




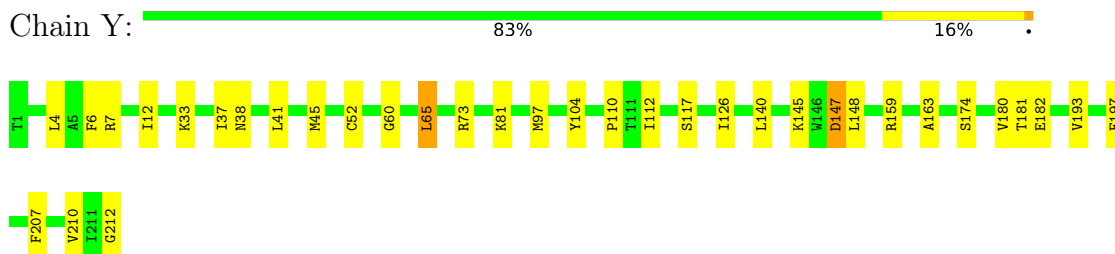
- Molecule 10: Proteasome subunit beta type-4



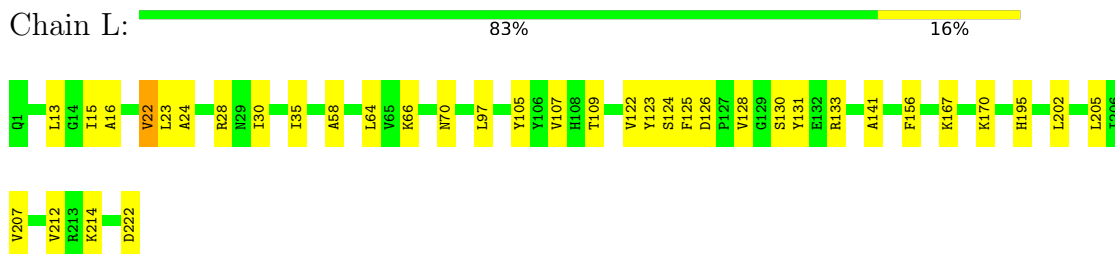
- Molecule 11: Proteasome subunit beta type-5



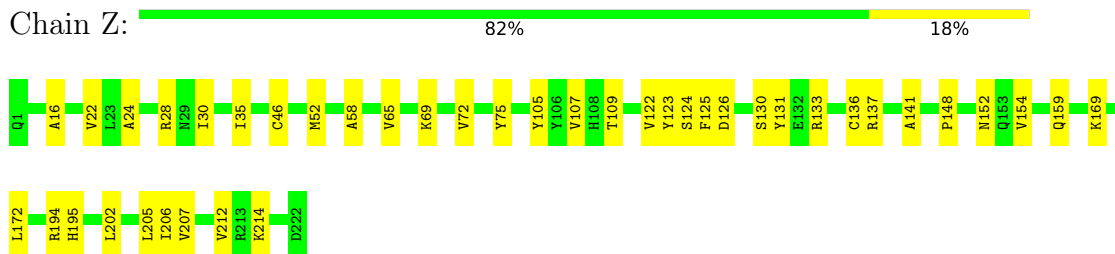
- Molecule 11: Proteasome subunit beta type-5



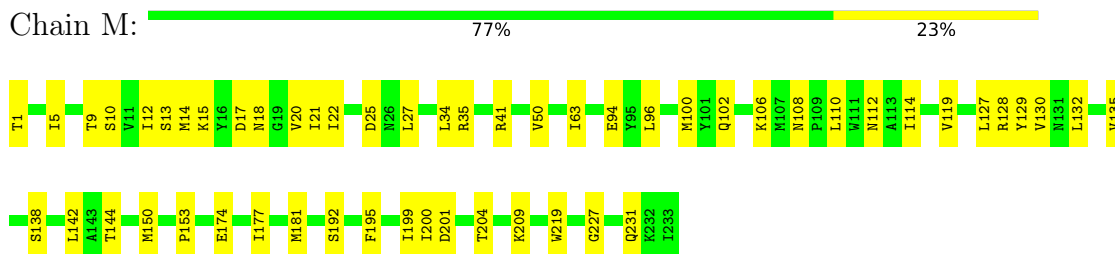
- Molecule 12: Proteasome subunit beta type-6



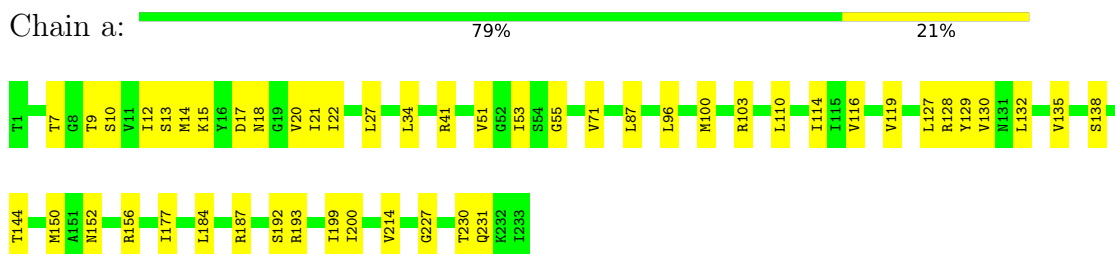
- Molecule 12: Proteasome subunit beta type-6



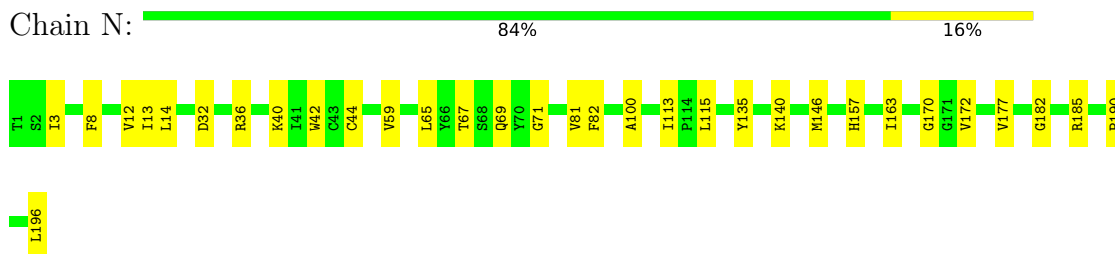
- Molecule 13: Proteasome subunit beta type-7



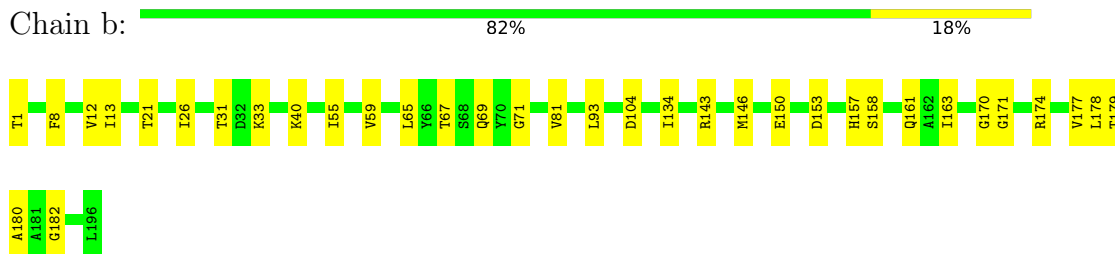
- Molecule 13: Proteasome subunit beta type-7



- Molecule 14: Proteasome subunit beta type-1



- Molecule 14: Proteasome subunit beta type-1



4 Data and refinement statistics

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	135.37Å 299.67Å 144.66Å 90.00° 112.89° 90.00°	Depositor
Resolution (Å)	48.90 – 3.44	Depositor
% Data completeness (in resolution range)	99.1 (48.90-3.44)	Depositor
R_{merge}	0.31	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.81 (at 3.40Å)	Xtrriage
Refinement program	PHENIX 1.21_5207	Depositor
R, R_{free}	0.182 , 0.235	Depositor
Wilson B-factor (Å ²)	67.4	Xtrriage
Anisotropy	0.892	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	50447	wwPDB-VP
Average B, all atoms (Å ²)	85.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.50% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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, A1A9B, SO4

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	0.10	0/1944	0.29	0/2632
1	O	0.09	0/1944	0.27	0/2632
2	B	0.11	0/1934	0.28	0/2614
2	P	0.10	0/1938	0.26	0/2619
3	C	0.10	0/1963	0.29	0/2656
3	Q	0.11	0/1919	0.31	0/2598
4	D	0.09	0/1879	0.28	0/2531
4	R	0.10	0/1924	0.27	0/2593
5	E	0.10	0/1811	0.29	0/2447
5	S	0.11	0/1811	0.29	0/2447
6	F	0.10	0/1936	0.27	0/2614
6	T	0.10	0/1944	0.28	0/2625
7	G	0.11	0/1954	0.28	0/2645
7	U	0.10	0/1954	0.28	0/2645
8	H	0.10	0/1715	0.28	0/2326
8	V	0.10	0/1715	0.31	0/2326
9	I	0.10	0/1611	0.28	0/2174
9	W	0.10	0/1611	0.30	0/2174
10	J	0.11	0/1598	0.28	0/2154
10	X	0.11	0/1589	0.29	0/2142
11	K	0.10	0/1681	0.28	0/2274
11	Y	0.09	0/1681	0.28	0/2274
12	L	0.10	0/1795	0.29	0/2420
12	Z	0.10	0/1795	0.30	0/2420
13	M	0.10	0/1855	0.28	0/2514
13	a	0.10	0/1855	0.29	0/2514
14	N	0.10	0/1541	0.27	0/2087
14	b	0.10	0/1541	0.27	0/2087
All	All	0.10	0/50438	0.28	0/68184

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1907	0	1917	27	0
1	O	1907	0	1917	31	0
2	B	1905	0	1915	32	0
2	P	1909	0	1918	29	0
3	C	1934	0	1942	31	0
3	Q	1890	0	1903	42	0
4	D	1854	0	1831	24	0
4	R	1898	0	1866	23	0
5	E	1784	0	1788	33	0
5	S	1784	0	1788	30	0
6	F	1896	0	1889	28	0
6	T	1904	0	1900	29	0
7	G	1916	0	1905	33	0
7	U	1916	0	1905	33	0
8	H	1684	0	1688	20	0
8	V	1684	0	1688	30	0
9	I	1581	0	1574	25	0
9	W	1581	0	1574	31	0
10	J	1570	0	1577	21	0
10	X	1561	0	1569	24	0
11	K	1644	0	1595	25	0
11	Y	1644	0	1595	22	0
12	L	1757	0	1711	21	0
12	Z	1757	0	1711	26	0
13	M	1824	0	1832	37	0
13	a	1824	0	1832	30	0
14	N	1512	0	1481	22	0
14	b	1512	0	1481	21	0
15	B	5	0	0	0	0
15	C	5	0	0	0	0
15	D	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
15	E	10	0	0	1	0
15	F	10	0	0	0	0
15	G	10	0	0	0	0
15	H	15	0	0	0	0
15	I	10	0	0	0	0
15	J	10	0	0	0	0
15	K	20	0	0	0	0
15	L	5	0	0	0	0
15	M	40	0	0	0	0
15	N	5	0	0	0	0
15	P	5	0	0	0	0
15	Q	5	0	0	0	0
15	S	15	0	0	0	0
15	T	15	0	0	0	0
15	U	10	0	0	0	0
15	V	10	0	0	0	0
15	W	5	0	0	0	0
15	X	5	0	0	0	0
15	Y	20	0	0	0	0
15	Z	10	0	0	0	0
15	a	25	0	0	0	0
15	b	15	0	0	0	0
16	H	49	0	0	0	0
16	K	49	0	0	1	0
16	N	49	0	0	1	0
16	V	49	0	0	1	0
16	Y	49	0	0	0	0
16	b	49	0	0	0	0
17	I	1	0	0	0	0
17	L	1	0	0	0	0
17	W	1	0	0	0	0
17	Y	1	0	0	0	0
17	Z	1	0	0	0	0
18	A	20	0	0	0	0
18	B	17	0	0	0	0
18	C	6	0	0	0	0
18	D	4	0	0	0	0
18	E	4	0	0	0	0
18	F	5	0	0	0	0
18	G	8	0	0	0	0
18	H	13	0	0	0	0
18	I	8	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
18	J	15	0	0	0	0
18	K	16	0	0	0	0
18	L	25	0	0	0	0
18	M	12	0	0	0	0
18	N	13	0	0	0	0
18	O	6	0	0	0	0
18	P	12	0	0	0	0
18	Q	10	0	0	0	0
18	R	4	0	0	0	0
18	S	3	0	0	0	0
18	T	11	0	0	0	0
18	U	9	0	0	2	0
18	V	19	0	0	0	0
18	W	6	0	0	0	0
18	X	18	0	0	0	0
18	Y	8	0	0	0	0
18	Z	22	0	0	0	0
18	a	15	0	0	0	0
18	b	10	0	0	0	0
All	All	50447	0	49292	706	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 7.

All (706) 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)
8:H:213:LEU:HD13	11:Y:212:GLY:HA2	1.64	0.79
2:P:4:ARG:HH12	6:T:7:SER:HB2	1.50	0.77
2:B:90:ALA:HB1	2:B:110:LEU:HD21	1.66	0.76
13:M:201:ASP:HB3	13:M:204:THR:HG22	1.67	0.76
3:C:64:LYS:HE3	3:C:219:ILE:HD12	1.68	0.74
4:R:242:GLU:HG3	4:R:244:PRO:HD3	1.71	0.73
9:I:9:GLY:HA3	9:I:41:LYS:HE2	1.71	0.72
3:Q:212:VAL:HG13	3:Q:220:VAL:HG13	1.72	0.72
2:P:82:ASP:HB3	2:P:130:PHE:HD1	1.56	0.70
3:Q:71:LEU:HD11	3:Q:131:THR:HB	1.73	0.70
2:B:124:HIS:HB3	3:C:124:VAL:HG12	1.75	0.69
8:H:38:SER:HB3	8:H:41:ILE:HB	1.73	0.69
7:G:195:GLU:OE2	7:G:235:ARG:NH1	2.26	0.69
14:b:146:MET:HB3	14:b:150:GLU:HG3	1.75	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:S:87:LEU:HD11	5:S:107:ALA:HB1	1.74	0.68
3:C:79:ASP:HB3	3:C:127:PHE:HD1	1.59	0.68
8:V:113:ILE:HG12	8:V:119:THR:HG22	1.74	0.68
8:H:163:ILE:HG23	8:H:170:GLY:HA2	1.77	0.67
3:Q:79:ASP:HB3	3:Q:127:PHE:HD1	1.59	0.67
8:V:163:ILE:HG23	8:V:170:GLY:HA2	1.77	0.66
2:B:135:ILE:HG12	2:B:149:THR:HG22	1.77	0.66
10:J:5:LEU:HD21	10:J:140:THR:HG21	1.78	0.66
2:B:119:GLN:NE2	2:B:123:GLN:OE1	2.29	0.66
5:E:32:SER:HB3	5:E:50:ARG:HG3	1.78	0.66
6:F:14:ASP:OD1	6:F:14:ASP:N	2.28	0.66
12:Z:24:ALA:HB1	12:Z:202:LEU:HD11	1.77	0.65
3:Q:198:LEU:HD11	3:Q:231:VAL:HG12	1.78	0.65
11:K:4:LEU:HD13	11:K:140:LEU:HD11	1.79	0.65
12:L:16:ALA:HB2	12:L:122:VAL:HG23	1.79	0.65
13:M:13:SER:HB3	13:M:22:ILE:HG13	1.78	0.65
5:E:62:ILE:HG21	5:E:213:ALA:HB2	1.79	0.65
8:V:38:SER:HB3	8:V:41:ILE:HB	1.78	0.65
9:W:9:GLY:HA3	9:W:41:LYS:HE2	1.77	0.64
2:B:63:GLU:HG3	2:B:64:LYS:HG2	1.79	0.64
5:E:87:LEU:HD11	5:E:107:ALA:HB1	1.77	0.64
5:S:116:GLN:NE2	5:S:120:GLN:OE1	2.30	0.64
7:U:125:MET:O	18:U:401:HOH:O	2.15	0.64
13:M:21:ILE:HG12	13:M:199:ILE:HG23	1.80	0.64
10:J:16:ALA:HB2	10:J:161:LEU:HD21	1.80	0.64
7:U:31:ILE:HG23	7:U:47:GLN:HB2	1.80	0.63
9:I:14:MET:HE3	9:I:153:TYR:HD1	1.62	0.63
2:P:90:ALA:HB1	2:P:110:LEU:HD21	1.79	0.63
2:B:44:VAL:HG22	2:B:214:THR:HG22	1.80	0.63
4:D:176:LEU:HD12	5:E:55:LEU:HG	1.81	0.63
10:J:173:PRO:HB3	10:X:22:THR:HG21	1.81	0.63
6:T:175:LEU:HD23	6:T:183:LEU:HD11	1.81	0.62
12:L:207:VAL:HG22	12:L:212:VAL:HG22	1.81	0.62
12:Z:207:VAL:HG22	12:Z:212:VAL:HG22	1.81	0.62
13:a:27:LEU:HD21	13:a:34:LEU:HD22	1.82	0.62
3:Q:214:LYS:HB2	3:Q:218:ASP:HB3	1.81	0.62
1:O:118:MET:O	1:O:122:THR:HG23	2.00	0.62
9:W:14:MET:HE3	9:W:153:TYR:HD1	1.64	0.62
12:Z:30:ILE:HG22	12:Z:35:ILE:HA	1.80	0.62
13:a:9:THR:OG1	13:a:10:SER:N	2.30	0.62
1:O:128:ARG:HH21	7:U:120:THR:HG22	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:35:LYS:HE3	3:C:145:LEU:HB3	1.82	0.61
13:M:9:THR:OG1	13:M:10:SER:N	2.34	0.61
9:W:52:ILE:HB	9:W:59:VAL:HG13	1.81	0.61
3:C:35:LYS:HD2	3:C:158:SER:HA	1.82	0.61
5:E:119:THR:HG22	5:E:126:PRO:HB3	1.82	0.61
10:J:92:ILE:HG21	10:J:122:LEU:HA	1.83	0.61
10:X:18:SER:HB2	10:X:176:PHE:HB2	1.83	0.61
2:P:63:GLU:HG3	2:P:64:LYS:HG2	1.82	0.61
2:P:145:TYR:O	3:Q:56:ARG:NH2	2.34	0.61
13:M:129:TYR:HE2	13:M:144:THR:HG22	1.64	0.61
2:B:204:ALA:O	2:B:209:ARG:NH2	2.35	0.60
1:O:222:LEU:HG	1:O:232:GLY:HA2	1.83	0.60
11:Y:147:ASP:OD1	11:Y:147:ASP:N	2.33	0.60
7:U:122:ARG:O	18:U:401:HOH:O	2.16	0.60
9:I:189:ILE:HG23	9:I:194:VAL:HG22	1.83	0.60
13:M:27:LEU:HD21	13:M:34:LEU:HD22	1.83	0.60
9:W:189:ILE:HG23	9:W:194:VAL:HG22	1.83	0.60
4:R:66:ILE:HD13	4:R:138:GLY:HA3	1.84	0.59
7:U:148:THR:HG22	7:U:154:TYR:HB2	1.84	0.59
7:G:135:VAL:HG12	7:G:145:ILE:HG12	1.85	0.59
7:G:148:THR:HG22	7:G:154:TYR:HB2	1.85	0.59
13:a:21:ILE:HG12	13:a:199:ILE:HG23	1.84	0.59
11:Y:145:LYS:HG2	11:Y:148:LEU:HG	1.84	0.59
13:a:129:TYR:HE2	13:a:144:THR:HG22	1.67	0.59
13:a:114:ILE:HB	13:a:130:VAL:HG12	1.84	0.59
3:C:87:ALA:HB1	3:C:107:LEU:HD21	1.84	0.59
4:R:23:ILE:HD13	4:R:133:ALA:HB2	1.84	0.59
8:V:134:ALA:HB1	8:V:158:ALA:HB1	1.85	0.59
11:Y:33:LYS:HA	11:Y:45:MET:HE2	1.83	0.59
9:W:27:ARG:HB2	9:W:182:TRP:HB2	1.84	0.59
1:A:128:ARG:HH21	7:G:120:THR:HG22	1.68	0.58
9:I:10:ILE:HG21	9:I:141:ALA:HB3	1.85	0.58
7:G:138:ASP:OD2	8:H:72:ARG:NH2	2.36	0.58
11:Y:52:CYS:HA	11:Y:97:MET:HE3	1.85	0.58
8:V:18:THR:HB	8:V:30:ASN:HA	1.84	0.58
1:O:119:GLN:NE2	1:O:123:GLN:OE1	2.34	0.58
11:K:21:THR:HG22	11:K:26:VAL:HG12	1.85	0.58
11:K:209:ASN:O	9:W:38:LYS:NZ	2.32	0.58
12:L:24:ALA:HB1	12:L:202:LEU:HD11	1.86	0.58
2:P:160:LYS:NZ	3:Q:53:GLN:O	2.36	0.58
11:K:45:MET:HB3	11:K:52:CYS:HB3	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:214:LYS:HB2	3:C:218:ASP:HB3	1.85	0.58
3:Q:56:ARG:HG3	3:Q:57:ILE:HG23	1.85	0.58
13:M:1:THR:N	13:M:108:ASN:OD1	2.36	0.58
1:O:111:VAL:HG22	1:O:136:ILE:HD12	1.86	0.57
3:Q:46:ARG:HB3	3:Q:207:ASN:HA	1.85	0.57
9:I:52:ILE:HB	9:I:59:VAL:HG13	1.84	0.57
5:S:9:THR:HG21	5:S:126:PRO:HD3	1.85	0.57
4:R:190:LEU:HD22	4:R:235:LEU:HB2	1.85	0.57
5:S:5:TYR:OH	6:T:5:ASP:OD2	2.20	0.57
13:M:174:GLU:OE2	13:M:209:LYS:NZ	2.37	0.57
8:H:13:VAL:HG22	8:H:177:VAL:HG13	1.86	0.57
7:U:135:VAL:HG12	7:U:145:ILE:HG12	1.87	0.57
13:a:13:SER:HB3	13:a:22:ILE:HG13	1.87	0.57
14:b:21:THR:HG22	14:b:26:ILE:HA	1.87	0.56
11:K:37:ILE:HG23	11:K:60:GLY:HA2	1.86	0.56
6:F:33:SER:HG	6:F:75:SER:HG	1.52	0.56
6:T:185:ALA:HB3	6:T:219:GLU:HG3	1.88	0.56
8:H:18:THR:HB	8:H:30:ASN:HA	1.85	0.56
12:Z:58:ALA:HB3	13:a:135:VAL:HG13	1.86	0.56
12:L:109:THR:HB	12:L:125:PHE:HB2	1.86	0.56
9:I:94:LEU:HD11	9:I:106:PRO:HG2	1.88	0.56
10:J:175:ASP:HB2	10:X:175:ASP:HB2	1.86	0.56
12:L:66:LYS:NZ	13:M:94:GLU:OE2	2.38	0.56
12:Z:109:THR:HB	12:Z:125:PHE:HB2	1.86	0.56
13:a:96:LEU:O	13:a:100:MET:HG2	2.06	0.56
5:E:116:GLN:NE2	5:E:120:GLN:OE1	2.38	0.56
13:M:12:ILE:HD11	13:M:177:ILE:HG23	1.87	0.56
4:D:233:LYS:NZ	4:D:237:GLU:OE2	2.39	0.55
3:C:70:VAL:HG13	3:C:219:ILE:HD13	1.88	0.55
11:K:12:ILE:HB	11:K:180:VAL:HB	1.88	0.55
5:E:178:PHE:HA	5:E:181:ILE:HG13	1.89	0.55
11:K:201:LYS:NZ	11:K:207:PHE:O	2.40	0.55
11:K:209:ASN:H	11:K:209:ASN:HD22	1.54	0.55
2:P:68:LEU:HD21	2:P:87:ILE:HD12	1.88	0.55
11:Y:7:ARG:NH1	11:Y:110:PRO:O	2.37	0.55
3:Q:213:VAL:HG22	3:Q:219:ILE:HD12	1.89	0.55
12:L:205:LEU:HD22	12:L:214:LYS:HG2	1.88	0.55
7:U:138:ASP:OD2	8:V:72:ARG:NH2	2.40	0.55
12:Z:22:VAL:HG12	12:Z:206:ILE:HG12	1.89	0.55
14:b:59:VAL:HG22	14:b:81:VAL:HG12	1.88	0.55
6:F:58:GLN:OE1	6:F:228:LYS:NZ	2.40	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:49:LYS:HG2	1:O:58:SER:HB2	1.89	0.55
10:J:19:LYS:HG2	10:J:180:ILE:HG13	1.88	0.55
3:Q:71:LEU:HD13	3:Q:133:ILE:HG12	1.88	0.54
11:K:51:ASP:HB3	11:K:97:MET:HE3	1.88	0.54
12:L:30:ILE:HG22	12:L:35:ILE:HA	1.89	0.54
10:X:92:ILE:HG21	10:X:122:LEU:HA	1.90	0.54
14:N:65:LEU:HG	14:N:69:GLN:HE21	1.71	0.54
3:Q:114:VAL:HG22	3:Q:117:ARG:HH12	1.72	0.54
14:N:163:ILE:HG23	14:N:170:GLY:HA2	1.89	0.54
1:O:99:ARG:NH2	8:V:62:ASN:OD1	2.40	0.54
12:Z:16:ALA:HB2	12:Z:122:VAL:HG23	1.89	0.54
2:B:82:ASP:OD1	2:B:82:ASP:N	2.41	0.54
2:P:82:ASP:OD1	2:P:82:ASP:N	2.40	0.54
13:M:96:LEU:O	13:M:100:MET:HG2	2.07	0.54
10:X:1:MET:HG2	10:X:2:ASP:H	1.73	0.54
10:X:19:LYS:HG2	10:X:180:ILE:HG13	1.90	0.54
3:C:185:THR:HG23	3:C:188:GLU:H	1.72	0.53
4:R:83:HIS:CG	4:R:111:LEU:HD11	2.43	0.53
2:P:67:LYS:HE3	2:P:228:ILE:HD13	1.90	0.53
4:R:77:ALA:O	4:R:81:ILE:HG12	2.09	0.53
8:H:77:VAL:HB	13:a:230:THR:HG22	1.90	0.53
13:a:150:MET:HE3	13:a:184:LEU:HD23	1.89	0.53
10:X:5:LEU:HD11	10:X:140:THR:HG21	1.90	0.53
1:O:44:VAL:HG22	1:O:213:ILE:HG22	1.89	0.53
4:R:66:ILE:HD11	4:R:101:VAL:HG22	1.89	0.53
5:S:31:GLY:HA2	5:S:50:ARG:HH22	1.74	0.53
2:B:241:THR:HG23	2:B:243:ILE:HG12	1.90	0.53
5:E:13:SER:HB3	5:E:17:ARG:H	1.74	0.53
9:W:10:ILE:HD11	9:W:174:ALA:HB2	1.91	0.53
5:S:80:ALA:HB2	5:S:129:VAL:HG21	1.91	0.53
9:W:23:ALA:HB1	9:W:170:LEU:HD22	1.91	0.53
2:B:174:LEU:HD11	2:B:198:LYS:HD3	1.91	0.52
6:F:48:LYS:NZ	6:F:59:LYS:O	2.39	0.52
1:A:127:VAL:HG23	7:G:121:GLN:HG2	1.91	0.52
4:D:23:ILE:HD13	4:D:133:ALA:HB2	1.90	0.52
3:Q:69:VAL:HG12	3:Q:104:VAL:HG22	1.91	0.52
7:U:219:ALA:HB2	7:U:224:PHE:HD1	1.73	0.52
8:H:113:ILE:HG12	8:H:119:THR:HG22	1.91	0.52
4:R:109:CYS:SG	4:R:156:PHE:HB3	2.50	0.52
6:F:205:GLU:HG3	6:F:206:LYS:HG2	1.91	0.52
14:N:13:ILE:HG12	14:N:177:VAL:HG13	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:W:10:ILE:HG21	9:W:141:ALA:HB3	1.91	0.52
11:Y:12:ILE:HB	11:Y:180:VAL:HB	1.90	0.52
5:E:45:LEU:HB2	5:E:213:ALA:HB3	1.92	0.52
5:S:144:LEU:HD22	5:S:152:VAL:HG12	1.90	0.52
6:T:16:ARG:HE	6:T:18:PHE:HE1	1.56	0.52
13:M:128:ARG:HH11	13:M:138:SER:HB2	1.75	0.52
11:Y:45:MET:HB3	11:Y:52:CYS:HB3	1.91	0.52
11:Y:104:TYR:CZ	11:Y:182:GLU:HG2	2.44	0.52
6:F:131:SER:HB2	6:F:161:THR:HG21	1.92	0.51
10:J:92:ILE:HA	10:J:97:PRO:HB3	1.90	0.51
13:M:12:ILE:HD13	13:M:181:MET:HE3	1.92	0.51
13:M:114:ILE:HB	13:M:130:VAL:HG12	1.91	0.51
11:Y:97:MET:N	11:Y:117:SER:OG	2.43	0.51
14:b:31:THR:O	14:b:174:ARG:NH1	2.43	0.51
10:X:3:ILE:HB	10:X:18:SER:HB3	1.92	0.51
6:T:48:LYS:NZ	6:T:59:LYS:O	2.39	0.51
13:a:227:GLY:HA3	13:a:231:GLN:HB3	1.91	0.51
2:P:216:ARG:O	2:P:224:VAL:HA	2.11	0.51
10:J:108:ASP:O	10:J:112:ASN:N	2.43	0.51
10:X:184:VAL:HG22	10:X:189:ILE:HG12	1.92	0.51
4:D:159:TYR:CG	4:D:162:LYS:HB2	2.46	0.51
6:T:9:SER:HB2	7:U:126:ARG:HD3	1.93	0.51
6:T:46:VAL:HB	6:T:73:VAL:HG21	1.92	0.51
14:N:36:ARG:HG3	14:N:42:TRP:CE2	2.45	0.51
3:Q:131:THR:HG1	3:Q:148:THR:HG1	1.45	0.51
10:J:84:VAL:HG21	10:J:104:ILE:HD11	1.93	0.51
10:X:92:ILE:HA	10:X:97:PRO:HB3	1.93	0.51
5:E:5:TYR:OH	6:F:5:ASP:OD2	2.22	0.51
6:F:154:TRP:CZ3	7:G:60:VAL:HA	2.46	0.51
7:G:191:GLU:HB3	7:G:235:ARG:NH1	2.26	0.51
13:a:12:ILE:HD11	13:a:177:ILE:HG23	1.92	0.51
14:b:65:LEU:HG	14:b:69:GLN:HE21	1.76	0.51
3:C:169:VAL:HG13	3:C:196:SER:HB3	1.93	0.50
5:E:80:ALA:HB2	5:E:129:VAL:HG21	1.91	0.50
4:R:73:LEU:HD12	4:R:131:GLY:HA3	1.94	0.50
3:C:92:GLN:HG3	10:J:66:LEU:HB2	1.92	0.50
8:V:109:HIS:HB3	8:V:111:PHE:CE2	2.46	0.50
3:C:213:VAL:HG22	3:C:219:ILE:HG23	1.93	0.50
7:G:52:ASP:HB3	7:G:55:LEU:HG	1.93	0.50
3:Q:71:LEU:HD23	3:Q:84:ILE:HG12	1.92	0.50
12:L:123:TYR:CE2	12:L:133:ARG:HB2	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:149:THR:HG1	2:B:159:TRP:CD1	2.29	0.50
4:D:5:SER:O	5:E:125:ARG:HB3	2.11	0.50
8:H:111:PHE:HD1	8:H:121:VAL:HG22	1.76	0.50
3:Q:197:LEU:O	3:Q:201:VAL:HG22	2.10	0.50
7:U:190:TRP:HZ3	7:U:227:LEU:HD11	1.77	0.50
10:X:46:PHE:HD2	10:X:53:THR:HB	1.77	0.50
1:A:200:VAL:HG21	1:A:204:PHE:CD1	2.47	0.50
5:E:34:THR:HB	5:E:61:LYS:HZ1	1.76	0.50
5:E:92:ASN:ND2	12:L:70:ASN:OD1	2.40	0.50
6:T:14:ASP:CG	6:T:16:ARG:HD3	2.37	0.50
12:Z:123:TYR:CE2	12:Z:133:ARG:HB2	2.47	0.50
4:R:159:TYR:CE2	4:R:162:LYS:HD3	2.46	0.49
3:C:119:THR:HG22	3:C:126:PRO:HB3	1.94	0.49
5:S:178:PHE:HA	5:S:181:ILE:HG13	1.94	0.49
7:U:195:GLU:HG3	7:U:235:ARG:HD3	1.94	0.49
3:Q:131:THR:OG1	3:Q:148:THR:OG1	2.19	0.49
6:T:74:TYR:HB2	6:T:130:VAL:CG2	2.43	0.49
9:W:15:THR:HG22	9:W:20:VAL:HG12	1.94	0.49
3:C:203:THR:OG1	3:C:207:ASN:ND2	2.41	0.49
4:D:109:CYS:SG	4:D:156:PHE:HB3	2.52	0.49
9:I:62:LEU:HD12	9:I:104:VAL:HG21	1.94	0.49
11:Y:38:ASN:ND2	11:Y:41:LEU:HB2	2.28	0.49
11:Y:181:THR:OG1	11:Y:182:GLU:N	2.46	0.49
13:a:51:VAL:HG22	13:a:116:VAL:HG22	1.94	0.49
7:U:168:GLU:OE1	7:U:168:GLU:N	2.42	0.49
1:A:123:GLN:HG3	2:B:128:ARG:HG2	1.94	0.49
9:W:52:ILE:HG22	9:W:59:VAL:HG22	1.95	0.49
5:S:49:LYS:HB3	5:S:58:TYR:HB3	1.95	0.49
12:L:124:SER:O	12:L:131:TYR:HA	2.13	0.49
11:Y:4:LEU:HD13	11:Y:140:LEU:HD11	1.94	0.49
2:B:9:THR:HB	2:B:20:GLN:HG3	1.95	0.49
3:Q:87:ALA:HB1	3:Q:107:LEU:HD11	1.94	0.49
14:N:40:LYS:HE2	14:N:182:GLY:HA2	1.95	0.49
2:B:167:ASN:ND2	2:B:201:ASP:OD1	2.45	0.49
14:N:59:VAL:HG22	14:N:81:VAL:HG12	1.94	0.48
9:W:189:ILE:HG12	9:W:194:VAL:HG13	1.95	0.48
10:J:43:LEU:HB2	10:J:189:ILE:HD13	1.95	0.48
1:A:85:LEU:HD23	1:A:134:LEU:HD11	1.94	0.48
6:F:118:ALA:HA	6:F:121:LEU:HD12	1.95	0.48
6:T:5:ASP:HB3	6:T:18:PHE:HD2	1.79	0.48
6:T:171:GLU:HG2	6:T:195:ILE:HG12	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:65:LEU:HB3	11:K:69:ARG:NH1	2.28	0.48
12:L:64:LEU:HD21	12:L:97:LEU:HD21	1.94	0.48
12:L:141:ALA:HB1	12:L:195:HIS:NE2	2.28	0.48
14:N:12:VAL:HG21	14:N:100:ALA:HB1	1.95	0.48
10:X:53:THR:HG22	10:X:100:VAL:HG13	1.96	0.48
3:C:46:ARG:HB3	3:C:207:ASN:HA	1.94	0.48
4:R:159:TYR:CG	4:R:162:LYS:HB2	2.48	0.48
5:S:32:SER:HB3	5:S:50:ARG:HB2	1.95	0.48
13:M:129:TYR:HB2	13:M:142:LEU:HD13	1.96	0.48
13:M:25:ASP:HA	13:M:195:PHE:HA	1.96	0.48
13:M:119:VAL:HG23	13:M:200:ILE:HG22	1.95	0.48
14:b:40:LYS:HE2	14:b:182:GLY:HA2	1.95	0.48
6:F:185:ALA:HB3	6:F:219:GLU:HG3	1.96	0.48
1:O:62:SER:OG	1:O:64:VAL:O	2.31	0.48
3:Q:119:THR:HG22	3:Q:126:PRO:HB3	1.96	0.48
12:Z:69:LYS:O	12:Z:72:VAL:HG12	2.13	0.48
3:C:32:VAL:HG11	3:C:169:VAL:HG11	1.95	0.48
7:G:106:ASP:OD1	7:G:106:ASP:N	2.46	0.48
3:Q:228:ASN:HA	3:Q:231:VAL:HG22	1.96	0.48
13:a:128:ARG:HH11	13:a:138:SER:HB2	1.79	0.48
2:P:83:ALA:O	2:P:87:ILE:HG12	2.13	0.48
4:R:191:LEU:O	4:R:195:ILE:HG12	2.14	0.48
3:C:238:LYS:O	3:C:242:GLN:HG2	2.14	0.47
3:Q:195:ARG:O	3:Q:199:GLU:HG2	2.14	0.47
10:J:101:ASN:HB3	10:J:133:HIS:CE1	2.48	0.47
13:M:25:ASP:OD1	13:M:41:ARG:NH1	2.37	0.47
12:Z:152:ASN:O	12:Z:159:GLN:NE2	2.47	0.47
2:P:69:ASN:OD1	2:P:72:ILE:N	2.47	0.47
4:R:171:ALA:HB2	4:R:199:VAL:HG11	1.97	0.47
7:U:187:GLU:HG2	7:U:192:LYS:CB	2.44	0.47
14:b:1:THR:HG23	14:b:33:LYS:HD3	1.95	0.47
4:D:21:GLU:O	4:D:25:LEU:HD13	2.13	0.47
1:O:215:GLY:O	1:O:234:ARG:HD2	2.15	0.47
14:N:140:LYS:NZ	14:b:161:GLN:HE21	2.11	0.47
8:V:12:VAL:HG13	8:V:178:MET:HE3	1.95	0.47
2:B:118:LYS:O	2:B:122:THR:HG23	2.14	0.47
2:B:210:LEU:HD12	2:B:238:LEU:HD11	1.95	0.47
5:E:175:LEU:HD12	6:F:54:LEU:HD23	1.96	0.47
1:O:21:ILE:HD11	1:O:122:THR:HB	1.97	0.47
2:B:145:TYR:HE1	2:B:215:ILE:HG22	1.79	0.47
3:C:147:GLN:O	3:C:154:TYR:HA	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:37:GLY:HA2	4:D:145:TYR:CE1	2.50	0.47
6:F:186:ARG:O	6:F:190:LYS:HG3	2.15	0.47
12:Z:52:MET:HE3	12:Z:65:VAL:HG22	1.95	0.47
1:A:31:GLY:O	1:A:166:LYS:HG3	2.15	0.47
2:B:3:ARG:NH1	5:E:8:ASP:OD1	2.48	0.47
3:C:94:HIS:HB3	3:C:102:VAL:HG12	1.96	0.47
4:D:159:TYR:CE2	4:D:162:LYS:HD3	2.49	0.47
4:D:197:LYS:NZ	4:D:239:GLU:OE1	2.39	0.47
1:O:14:PRO:HA	2:P:23:TYR:CD1	2.50	0.47
2:P:210:LEU:HD12	2:P:238:LEU:HD11	1.96	0.47
7:U:5:ARG:HD3	7:U:17:TYR:CD2	2.49	0.47
9:I:20:VAL:HG13	9:I:118:PRO:HB3	1.97	0.47
10:J:1:MET:HG2	10:J:2:ASP:H	1.79	0.47
10:J:46:PHE:HD2	10:J:53:THR:HB	1.79	0.47
13:M:63:ILE:HD13	13:M:114:ILE:HD11	1.97	0.47
8:V:62:ASN:HB3	8:V:82:MET:HE1	1.97	0.47
8:V:104:ASP:OD1	8:V:106:THR:OG1	2.22	0.47
8:V:222:ASP:N	8:V:222:ASP:OD1	2.48	0.47
14:b:55:ILE:HD11	14:b:93:LEU:HD13	1.97	0.47
5:E:47:ALA:HB3	5:E:211:SER:OG	2.15	0.47
6:T:74:TYR:HB2	6:T:130:VAL:HG21	1.96	0.47
13:a:103:ARG:HD3	13:a:110:LEU:HG	1.95	0.47
14:b:134:ILE:HD12	14:b:158:SER:HB3	1.95	0.47
11:K:159:ARG:NH1	11:K:163:ALA:HB2	2.30	0.47
6:F:155:GLY:HA3	7:G:59:THR:HG21	1.96	0.47
9:W:84:GLU:OE1	9:W:84:GLU:N	2.39	0.47
11:Y:37:ILE:HG23	11:Y:60:GLY:HA2	1.97	0.47
13:a:193:ARG:HG3	13:a:214:VAL:HB	1.97	0.47
7:G:15:ARG:HH21	7:G:20:GLU:CD	2.23	0.46
5:S:62:ILE:HG21	5:S:213:ALA:HB2	1.97	0.46
2:B:82:ASP:HB3	2:B:130:PHE:HD1	1.79	0.46
7:G:219:ALA:HB2	7:G:224:PHE:HD1	1.80	0.46
1:O:123:GLN:HG3	2:P:128:ARG:HG2	1.96	0.46
2:P:119:GLN:OE1	3:Q:82:ILE:HG12	2.16	0.46
13:M:15:LYS:HG2	13:M:20:VAL:HG12	1.97	0.46
4:D:137:ALA:HB3	4:D:214:ILE:HD13	1.97	0.46
6:T:128:PHE:O	6:T:149:PRO:HB3	2.15	0.46
7:U:22:ALA:O	7:U:26:THR:HG23	2.15	0.46
12:Z:105:TYR:O	12:Z:107:VAL:N	2.48	0.46
4:D:176:LEU:HD11	5:E:54:GLU:HB2	1.97	0.46
1:O:75:TYR:HB3	1:O:82:TYR:CD1	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:17:ASP:OD1	13:M:18:ASN:N	2.48	0.46
16:V:301:A1A9B:N28	16:V:301:A1A9B:C46	2.78	0.46
6:F:116:VAL:HG21	6:F:147:LEU:HD21	1.96	0.46
1:O:122:THR:HG22	1:O:129:PRO:HB3	1.97	0.46
6:T:154:TRP:CZ3	7:U:60:VAL:HA	2.51	0.46
14:N:172:VAL:HG12	14:N:190:PRO:HD3	1.98	0.46
12:Z:141:ALA:HB1	12:Z:195:HIS:NE2	2.31	0.46
2:B:75:ALA:HB3	2:B:135:ILE:HB	1.98	0.46
3:C:135:GLY:HA2	3:C:213:VAL:HG11	1.97	0.46
5:E:185:PRO:O	5:E:189:ILE:HG12	2.15	0.46
8:H:134:ALA:HB1	8:H:158:ALA:HB1	1.97	0.46
1:A:66:LEU:HD12	1:A:235:PHE:CD1	2.50	0.46
5:E:175:LEU:HA	5:E:178:PHE:CE2	2.51	0.46
12:Z:30:ILE:HG22	12:Z:35:ILE:HG12	1.98	0.46
13:a:27:LEU:HB2	13:a:192:SER:HB2	1.97	0.46
9:I:10:ILE:HB	9:I:145:LEU:HD11	1.98	0.46
1:A:83:ARG:O	1:A:86:VAL:HG12	2.16	0.46
1:A:149:GLN:O	1:A:156:TYR:HA	2.15	0.46
7:G:39:LYS:HB2	7:G:187:GLU:O	2.16	0.46
7:G:104:PRO:HB3	7:G:138:ASP:OD2	2.16	0.46
8:V:127:LEU:C	8:V:131:SER:HB3	2.41	0.46
12:Z:28:ARG:HG2	12:Z:30:ILE:HG23	1.98	0.46
1:O:66:LEU:HD12	1:O:235:PHE:CD1	2.51	0.45
5:S:45:LEU:HB2	5:S:213:ALA:HB3	1.98	0.45
13:a:150:MET:HE1	13:a:187:ARG:HB2	1.98	0.45
14:b:163:ILE:HG23	14:b:170:GLY:HA2	1.97	0.45
1:A:49:LYS:NZ	1:A:61:LEU:O	2.49	0.45
3:C:246:LYS:HB2	3:C:246:LYS:HE3	1.68	0.45
7:G:73:VAL:HG13	7:G:133:THR:HB	1.98	0.45
5:S:106:ARG:O	5:S:110:LEU:HG	2.16	0.45
1:A:172:LYS:O	1:A:176:GLU:HG3	2.16	0.45
5:S:49:LYS:CB	5:S:58:TYR:HB3	2.47	0.45
8:H:48:THR:HB	8:H:51:ASP:HB2	1.98	0.45
11:K:197:PHE:CE2	9:W:203:GLN:HG3	2.51	0.45
8:V:7:LYS:HD2	8:V:110:LEU:HB3	1.99	0.45
8:V:67:SER:HB2	8:V:74:PRO:HG3	1.97	0.45
14:b:8:PHE:CE1	14:b:13:ILE:HG13	2.51	0.45
4:D:113:LEU:HD23	5:E:125:ARG:HH21	1.81	0.45
6:F:47:GLU:OE2	6:F:203:ASN:ND2	2.44	0.45
7:G:66:ILE:HA	7:G:89:LYS:HG2	1.97	0.45
2:P:118:LYS:O	2:P:122:THR:HG23	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:P:180:LYS:O	2:P:183:MET:HG3	2.17	0.45
5:S:44:VAL:HG22	5:S:214:ILE:HD13	1.98	0.45
7:U:73:VAL:HG13	7:U:133:THR:HB	1.99	0.45
8:V:55:VAL:HG11	8:V:94:ILE:HG21	1.98	0.45
9:W:26:LEU:HD21	9:W:185:VAL:HG13	1.99	0.45
12:Z:205:LEU:HD22	12:Z:214:LYS:HG2	1.98	0.45
1:A:97:TYR:OH	9:I:77:GLU:OE2	2.28	0.45
2:P:76:VAL:HG23	2:P:132:VAL:HG13	1.99	0.45
5:S:45:LEU:HD13	5:S:72:SER:HB3	1.97	0.45
13:M:127:LEU:O	13:M:138:SER:OG	2.26	0.45
13:a:17:ASP:OD1	13:a:18:ASN:N	2.49	0.45
6:F:47:GLU:HG3	6:F:208:PHE:HB2	1.98	0.45
7:G:147:LYS:O	7:G:154:TYR:HA	2.16	0.45
3:Q:92:GLN:HG3	10:X:66:LEU:HB2	1.99	0.45
7:U:66:ILE:HA	7:U:89:LYS:HG2	1.97	0.45
13:a:10:SER:O	13:a:41:ARG:NH2	2.47	0.45
7:G:22:ALA:O	7:G:26:THR:HG23	2.17	0.45
1:O:149:GLN:O	1:O:156:TYR:HA	2.16	0.45
2:P:124:HIS:HB3	3:Q:124:VAL:HG23	1.99	0.45
14:N:32:ASP:CG	14:N:185:ARG:HH22	2.24	0.45
2:P:48:GLU:OE2	2:P:200:THR:OG1	2.31	0.45
4:R:97:GLU:OE2	12:Z:75:TYR:OH	2.26	0.45
11:K:1:THR:HG21	11:K:46:ALA:HA	1.98	0.45
4:R:86:THR:HA	11:Y:65:LEU:HD11	1.99	0.45
7:U:187:GLU:HG2	7:U:192:LYS:HB2	1.98	0.45
9:W:87:THR:HG23	9:W:123:PHE:CE1	2.52	0.45
6:F:189:VAL:HG13	6:F:212:ILE:HG21	1.98	0.45
7:G:23:PHE:HE2	7:G:151:ALA:HB2	1.82	0.45
11:K:145:LYS:HG2	11:K:147:ASP:H	1.81	0.45
8:V:14:ILE:HD12	8:V:34:LEU:HD22	1.99	0.45
13:a:127:LEU:O	13:a:138:SER:OG	2.27	0.45
13:a:152:ASN:HB3	13:a:156:ARG:NH1	2.31	0.45
1:A:62:SER:OG	1:A:237:LYS:NZ	2.50	0.44
5:S:31:GLY:HA2	5:S:50:ARG:NH2	2.32	0.44
6:T:189:VAL:HG13	6:T:212:ILE:HG21	1.99	0.44
9:I:29:GLY:HA2	9:I:35:VAL:HG23	1.99	0.44
13:M:27:LEU:HB2	13:M:192:SER:HB2	1.99	0.44
14:b:12:VAL:HG12	14:b:178:LEU:HB2	1.98	0.44
5:E:49:LYS:HB3	5:E:58:TYR:HB3	1.98	0.44
9:I:52:ILE:HG22	9:I:59:VAL:HG22	1.99	0.44
11:K:104:TYR:CD1	11:K:182:GLU:HA	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:V:1:THR:O	8:V:129:SER:N	2.50	0.44
7:G:61:SER:HA	7:G:215:GLU:OE2	2.17	0.44
4:R:37:GLY:HA2	4:R:145:TYR:CE1	2.53	0.44
7:U:201:MET:HE2	7:U:205:LEU:HD11	1.99	0.44
14:N:140:LYS:HZ2	14:b:161:GLN:HE21	1.64	0.44
8:V:13:VAL:HG12	8:V:177:VAL:HG13	1.98	0.44
2:B:159:TRP:HH2	3:C:50:LEU:HD12	1.81	0.44
2:P:9:THR:HB	2:P:20:GLN:HG3	1.98	0.44
3:Q:46:ARG:NH2	3:Q:209:GLU:OE2	2.51	0.44
13:M:181:MET:HE2	13:M:181:MET:HA	2.00	0.44
14:N:3:ILE:HB	14:N:44:CYS:HB3	1.99	0.44
5:E:226:GLY:O	5:E:229:VAL:HG22	2.17	0.44
3:Q:231:VAL:O	3:Q:234:ILE:HG13	2.17	0.44
5:S:226:GLY:O	5:S:229:VAL:HG22	2.17	0.44
10:X:43:LEU:HB2	10:X:189:ILE:HD13	1.99	0.44
13:a:14:MET:HG2	13:a:177:ILE:HD11	1.98	0.44
13:a:132:LEU:HD23	13:a:132:LEU:H	1.83	0.44
2:B:88:ASN:OD1	9:I:76:LYS:NZ	2.42	0.44
6:T:118:ALA:HA	6:T:121:LEU:HD12	1.99	0.44
14:N:14:LEU:HD11	14:N:100:ALA:HB3	2.00	0.44
1:A:10:THR:O	2:B:128:ARG:HD3	2.18	0.44
2:B:43:ILE:HD11	2:B:145:TYR:HB3	1.99	0.44
1:O:10:THR:O	2:P:128:ARG:HD3	2.18	0.44
3:Q:135:GLY:HA2	3:Q:213:VAL:HG11	1.99	0.44
8:H:22:GLN:HG3	8:H:27:ALA:HB2	2.00	0.44
9:I:50:LEU:HD11	9:I:106:PRO:HB3	2.00	0.44
11:K:158:LYS:HD3	11:K:196:LEU:HD11	2.00	0.44
10:X:130:TYR:HB2	10:X:144:LEU:HD13	2.00	0.44
5:S:35:VAL:HG23	5:S:159:ALA:HB2	2.00	0.44
11:K:38:ASN:ND2	11:K:41:LEU:HB2	2.33	0.44
1:A:116:LYS:NZ	1:A:120:GLU:OE2	2.41	0.43
2:B:213:ALA:HB2	2:B:228:ILE:HD13	2.00	0.43
3:C:131:THR:OG1	3:C:148:THR:OG1	2.18	0.43
7:G:147:LYS:HB3	7:G:157:TYR:HE1	1.82	0.43
1:O:220:ASP:OD1	1:O:220:ASP:N	2.51	0.43
2:P:115:SER:HB3	2:P:154:GLY:O	2.18	0.43
11:K:174:SER:HA	11:K:193:VAL:HG23	2.00	0.43
3:Q:225:GLU:N	3:Q:225:GLU:OE1	2.52	0.43
5:S:170:TYR:O	5:S:174:THR:OG1	2.34	0.43
6:T:5:ASP:HB3	6:T:18:PHE:CD2	2.53	0.43
8:H:4:VAL:HG22	8:H:159:ILE:HD11	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:46:PHE:CD2	10:J:53:THR:HB	2.54	0.43
14:N:14:LEU:HD23	14:N:44:CYS:SG	2.58	0.43
14:N:59:VAL:HG11	14:N:82:PHE:CE2	2.53	0.43
8:V:1:THR:HA	8:V:33:LYS:HZ2	1.82	0.43
3:C:102:VAL:HG21	3:C:107:LEU:HB2	2.01	0.43
5:E:106:ARG:O	5:E:110:LEU:HG	2.18	0.43
6:F:66:VAL:HG11	6:F:108:PHE:CE1	2.53	0.43
9:I:82:GLU:OE2	9:I:113:SER:OG	2.32	0.43
10:J:149:ARG:HB3	10:J:152:MET:HG3	2.00	0.43
12:L:105:TYR:O	12:L:107:VAL:N	2.48	0.43
13:M:227:GLY:HA3	13:M:231:GLN:HB3	1.99	0.43
13:a:41:ARG:NH1	13:a:53:ILE:O	2.52	0.43
4:D:113:LEU:HD23	5:E:125:ARG:NH2	2.33	0.43
1:O:115:ALA:HB1	1:O:154:GLY:O	2.19	0.43
5:S:174:THR:HG22	5:S:177:THR:HB	2.00	0.43
14:N:82:PHE:HB3	14:N:113:ILE:HD12	1.99	0.43
9:W:159:PRO:HG2	9:W:190:LYS:HD3	1.99	0.43
4:D:62:ILE:HD12	4:D:84:ALA:HB3	2.01	0.43
6:T:116:VAL:HG21	6:T:147:LEU:HD21	2.00	0.43
13:M:102:GLN:O	13:M:106:LYS:HG2	2.19	0.43
3:C:115:GLN:O	3:C:119:THR:HG23	2.19	0.43
5:S:70:GLY:HA3	5:S:221:PHE:CZ	2.53	0.43
6:T:66:VAL:HG11	6:T:108:PHE:CE1	2.54	0.43
10:X:5:LEU:HD23	10:X:132:ALA:HB2	2.01	0.43
13:a:71:VAL:HG22	13:a:87:LEU:HD12	2.00	0.43
6:F:74:TYR:CD1	6:F:81:GLY:HA3	2.54	0.43
6:F:128:PHE:O	6:F:149:PRO:HB3	2.19	0.43
3:Q:11:PRO:HA	4:R:18:TYR:CE1	2.54	0.43
7:U:106:ASP:OD1	7:U:106:ASP:N	2.45	0.43
8:H:109:HIS:HB3	8:H:111:PHE:CE2	2.52	0.43
9:I:203:GLN:HG3	11:Y:197:PHE:CE2	2.53	0.43
11:K:104:TYR:CZ	11:K:182:GLU:HG2	2.53	0.43
12:Z:126:ASP:OD1	12:Z:130:SER:N	2.51	0.43
2:B:6:ASP:HB3	3:C:4:ARG:HH12	1.83	0.43
13:M:132:LEU:HD23	13:M:132:LEU:H	1.84	0.43
8:V:114:HIS:HB3	8:V:118:SER:OG	2.19	0.43
9:W:26:LEU:HB2	9:W:183:GLY:C	2.43	0.43
5:E:14:PRO:HA	6:F:22:TYR:CD1	2.54	0.43
6:F:20:VAL:O	6:F:24:VAL:HG23	2.19	0.43
1:O:71:ILE:HG12	1:O:138:GLY:HA3	2.01	0.43
1:O:160:LYS:HD3	1:O:179:TRP:CH2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:Q:194:VAL:HG21	3:Q:230:TYR:HB3	2.00	0.43
5:S:114:LYS:HA	5:S:117:LYS:HE2	2.00	0.43
12:L:222:ASP:HB3	8:V:194:ASN:ND2	2.34	0.43
13:M:150:MET:HG2	8:V:132:LEU:HB3	1.99	0.43
1:O:74:VAL:HG22	1:O:75:TYR:H	1.83	0.43
1:O:118:MET:HE2	1:O:152:PRO:HA	2.01	0.43
5:S:175:LEU:HA	5:S:178:PHE:CE2	2.53	0.43
7:U:195:GLU:HA	7:U:239:ILE:HD11	2.00	0.43
11:K:155:TYR:OH	11:K:204:GLU:OE2	2.34	0.43
9:W:28:LEU:HD22	9:W:39:PHE:CD1	2.53	0.43
3:C:11:PRO:HA	4:D:18:TYR:CD1	2.53	0.42
3:C:195:ARG:O	3:C:199:GLU:HG2	2.19	0.42
7:G:8:THR:HB	7:G:120:THR:O	2.19	0.42
7:G:30:ASN:HA	7:G:164:PRO:HG2	2.01	0.42
3:Q:198:LEU:HD23	3:Q:201:VAL:HG23	2.00	0.42
7:U:177:PHE:O	7:U:181:LYS:N	2.47	0.42
14:N:157:HIS:HE1	14:N:196:LEU:HD22	1.84	0.42
8:V:20:SER:HB3	8:V:28:ASP:HB3	2.01	0.42
4:D:30:ILE:HD12	4:D:196:LEU:HG	2.01	0.42
4:R:137:ALA:HB3	4:R:214:ILE:HD13	2.00	0.42
7:U:78:ILE:HG22	7:U:79:PRO:HD3	2.00	0.42
9:I:97:ARG:HD3	9:I:102:TYR:CE2	2.53	0.42
8:V:4:VAL:HG22	8:V:159:ILE:HD11	2.01	0.42
10:X:149:ARG:HB3	10:X:152:MET:HG3	2.01	0.42
11:Y:159:ARG:NH1	11:Y:163:ALA:HB2	2.34	0.42
7:G:71:GLY:HA3	7:G:224:PHE:CZ	2.54	0.42
3:Q:227:ILE:O	3:Q:231:VAL:HG13	2.18	0.42
6:T:74:TYR:HE2	6:T:78:ILE:HG23	1.84	0.42
8:V:87:LEU:HD13	8:V:115:ALA:HA	2.01	0.42
11:Y:12:ILE:HG23	11:Y:112:ILE:HD11	2.02	0.42
1:A:205:ASN:O	1:A:209:ILE:HG12	2.18	0.42
4:D:191:LEU:O	4:D:195:ILE:HG12	2.20	0.42
3:Q:79:ASP:HB2	3:Q:129:VAL:HG23	2.00	0.42
5:S:134:ILE:HD11	5:S:221:PHE:HE1	1.84	0.42
6:T:107:ALA:O	6:T:111:ARG:HG2	2.20	0.42
8:H:134:ALA:O	8:H:138:LEU:HG	2.19	0.42
9:W:98:ARG:HG3	9:W:99:PHE:CD1	2.55	0.42
1:A:176:GLU:HG2	2:B:55:LEU:HG	2.00	0.42
2:B:8:ARG:HH12	4:D:0:TYR:HB3	1.84	0.42
1:O:128:ARG:HG3	7:U:121:GLN:HG3	2.01	0.42
7:U:23:PHE:HE2	7:U:151:ALA:HB2	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:87:THR:HG23	9:I:123:PHE:CZ	2.55	0.42
10:J:50:ALA:O	11:K:91:LYS:NZ	2.49	0.42
13:M:35:ARG:NH1	14:N:135:TYR:OH	2.52	0.42
13:M:50:VAL:HG23	13:M:200:ILE:HD11	2.01	0.42
14:N:67:THR:HA	14:N:71:GLY:O	2.19	0.42
1:A:49:LYS:NZ	1:A:58:SER:O	2.50	0.42
2:B:69:ASN:OD1	2:B:72:ILE:N	2.52	0.42
3:C:195:ARG:HG3	3:C:234:ILE:HD13	2.02	0.42
5:E:35:VAL:HG23	5:E:159:ALA:HB2	2.02	0.42
4:R:140:ASP:OD2	4:R:146:GLN:NE2	2.52	0.42
9:W:50:LEU:HD11	9:W:106:PRO:HB3	2.02	0.42
10:X:185:ASP:CG	10:X:190:ARG:HH12	2.27	0.42
4:D:190:LEU:HD22	4:D:235:LEU:HB2	2.01	0.42
6:T:187:GLU:O	6:T:191:GLN:HG2	2.19	0.42
8:H:12:VAL:HG13	8:H:178:MET:HE3	2.02	0.42
8:H:160:GLN:HG2	8:H:164:TRP:NE1	2.34	0.42
9:I:189:ILE:HG12	9:I:194:VAL:HG13	2.02	0.42
12:Z:124:SER:OG	12:Z:137:ARG:NH1	2.52	0.42
14:b:67:THR:HA	14:b:71:GLY:O	2.20	0.42
1:A:220:ASP:OD1	1:A:220:ASP:N	2.52	0.42
6:F:33:SER:OG	6:F:75:SER:OG	2.28	0.42
3:Q:172:PHE:HZ	3:Q:195:ARG:HD2	1.85	0.42
4:R:44:LYS:HB3	4:R:56:ILE:HD12	2.02	0.42
2:B:106:PRO:HD2	2:B:109:ILE:HD12	2.02	0.42
4:D:83:HIS:CG	4:D:111:LEU:HD11	2.54	0.42
5:E:118:ASN:ND2	15:E:302:SO4:O2	2.53	0.42
2:P:95:GLN:HB3	9:W:68:TYR:CD2	2.54	0.42
8:H:7:LYS:HD2	8:H:110:LEU:HB3	2.01	0.42
9:I:23:ALA:HB1	9:I:170:LEU:HD22	2.02	0.42
10:J:35:THR:HB	10:J:43:LEU:HD11	2.02	0.42
13:M:150:MET:C	13:M:153:PRO:HD2	2.45	0.42
5:E:70:GLY:HA3	5:E:221:PHE:CE1	2.55	0.42
10:J:169:GLU:O	10:X:177:LYS:NZ	2.53	0.42
11:K:65:LEU:HD13	11:K:69:ARG:HH22	1.85	0.42
8:V:62:ASN:CB	8:V:82:MET:HE1	2.50	0.42
12:Z:46:CYS:HG	12:Z:52:MET:HE2	1.84	0.42
12:Z:136:CYS:SG	12:Z:154:VAL:HG11	2.60	0.42
1:A:140:ASP:OD1	1:A:143:ASN:N	2.50	0.41
3:C:225:GLU:OE1	3:C:225:GLU:N	2.50	0.41
5:E:206:THR:OG1	5:E:209:ASN:ND2	2.53	0.41
6:F:165:ARG:HG3	6:F:166:GLN:N	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:55:LEU:HD12	7:U:170:THR:HG23	2.02	0.41
3:Q:240:GLU:O	3:Q:241:GLN:HG2	2.20	0.41
5:S:14:PRO:HA	6:T:22:TYR:CD1	2.55	0.41
10:J:172:MET:HE3	10:J:172:MET:HB3	1.95	0.41
12:L:58:ALA:HB3	13:M:135:VAL:HG13	2.01	0.41
12:L:156:PHE:CG	12:L:170:LYS:HD3	2.55	0.41
13:M:14:MET:HG2	13:M:177:ILE:HD11	2.02	0.41
9:W:10:ILE:HB	9:W:145:LEU:HD11	2.03	0.41
12:Z:124:SER:O	12:Z:131:TYR:HA	2.19	0.41
6:F:152:SER:N	7:G:79:PRO:HG3	2.35	0.41
1:O:218:ASN:C	1:O:232:GLY:HA3	2.45	0.41
9:I:84:GLU:OE1	9:I:84:GLU:N	2.44	0.41
16:K:301:A1A9B:C46	16:K:301:A1A9B:N28	2.84	0.41
11:Y:174:SER:HA	11:Y:193:VAL:HG23	2.01	0.41
7:G:223:LYS:HA	7:G:223:LYS:HD2	1.92	0.41
3:Q:115:GLN:O	3:Q:119:THR:HG23	2.20	0.41
6:T:47:GLU:HG3	6:T:208:PHE:HB2	2.03	0.41
14:N:8:PHE:HB2	14:N:146:MET:O	2.20	0.41
9:W:20:VAL:HG23	9:W:189:ILE:HB	2.02	0.41
10:X:58:GLU:OE1	11:Y:81:LYS:NZ	2.49	0.41
12:Z:194:ARG:HA	12:Z:194:ARG:HD3	1.89	0.41
14:b:179:THR:OG1	14:b:180:ALA:N	2.53	0.41
1:A:23:TYR:CE1	7:G:12:PRO:HA	2.55	0.41
4:D:211:LEU:HD23	4:D:211:LEU:HA	1.93	0.41
9:I:176:ARG:HG3	12:Z:148:PRO:HG3	2.02	0.41
13:M:110:LEU:O	13:M:112:ASN:N	2.53	0.41
11:Y:6:PHE:HB2	11:Y:126:ILE:HG12	2.02	0.41
14:b:143:ARG:NH2	14:b:146:MET:HE3	2.36	0.41
3:C:66:ASP:OD1	3:C:67:SER:N	2.48	0.41
6:F:146:MET:HE2	6:F:156:TYR:CZ	2.56	0.41
2:P:76:VAL:HG21	2:P:83:ALA:CB	2.50	0.41
3:Q:79:ASP:OD1	3:Q:79:ASP:N	2.54	0.41
9:I:38:LYS:HB3	9:I:38:LYS:HE2	1.80	0.41
11:K:44:THR:O	11:K:99:THR:HA	2.21	0.41
12:L:15:ILE:HB	12:L:22:VAL:HG13	2.01	0.41
2:B:159:TRP:CD2	2:B:162:ILE:HD13	2.55	0.41
5:E:11:THR:HG23	6:F:19:GLN:HE22	1.86	0.41
3:Q:197:LEU:C	3:Q:201:VAL:HG22	2.45	0.41
10:J:119:ILE:HA	10:J:124:THR:O	2.21	0.41
11:K:135:PHE:HB3	10:X:142:SER:HB3	2.02	0.41
1:A:243:ILE:O	1:A:247:LEU:HG	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:250:LEU:HD23	1:A:250:LEU:HA	1.90	0.41
3:Q:35:LYS:HD2	3:Q:145:LEU:HB3	2.02	0.41
3:Q:91:ALA:HA	3:Q:102:VAL:HG11	2.02	0.41
16:N:202:A1A9B:N28	16:N:202:A1A9B:C46	2.84	0.41
9:W:9:GLY:HA2	9:W:25:ASP:OD2	2.21	0.41
10:X:101:ASN:HB3	10:X:133:HIS:CE1	2.54	0.41
14:b:13:ILE:HG12	14:b:177:VAL:HG13	2.03	0.41
14:b:104:ASP:OD1	14:b:104:ASP:N	2.54	0.41
5:E:197:SER:C	5:E:199:SER:H	2.28	0.41
2:P:50:LYS:HD3	2:P:50:LYS:HA	1.91	0.41
4:R:158:ARG:O	5:S:57:SER:N	2.52	0.41
8:H:153:LYS:NZ	8:H:157:ASP:OD2	2.50	0.41
12:L:13:LEU:O	12:L:23:LEU:HD12	2.21	0.41
12:L:28:ARG:HG2	12:L:30:ILE:HG23	2.02	0.41
12:L:126:ASP:OD1	12:L:130:SER:N	2.51	0.41
13:M:219:TRP:CH2	14:b:171:GLY:HA2	2.55	0.41
8:V:78:SER:O	8:V:82:MET:HG3	2.20	0.41
1:A:23:TYR:CD1	7:G:12:PRO:HA	2.56	0.41
6:F:33:SER:HB3	6:F:46:VAL:HG23	2.02	0.41
1:O:69:PRO:HB3	1:O:233:PRO:HB3	2.02	0.41
1:O:217:GLU:HG3	1:O:234:ARG:NH1	2.36	0.41
4:R:59:ILE:HG22	4:R:220:PHE:HZ	1.86	0.41
6:T:33:SER:HB3	6:T:46:VAL:HG23	2.02	0.41
7:U:71:GLY:HA3	7:U:224:PHE:CZ	2.56	0.41
7:U:147:LYS:HB3	7:U:157:TYR:HE1	1.84	0.41
9:I:28:LEU:HD22	9:I:39:PHE:CD1	2.55	0.41
12:L:167:LYS:HE3	12:L:167:LYS:HB3	1.90	0.41
13:M:5:ILE:HG21	14:N:115:LEU:HB2	2.02	0.41
13:M:128:ARG:HG3	13:M:138:SER:HB2	2.03	0.41
9:W:7:ASN:HA	9:W:29:GLY:O	2.20	0.41
9:W:94:LEU:HD11	9:W:106:PRO:HG2	2.03	0.41
7:G:43:VAL:HG11	7:G:194:VAL:HA	2.03	0.41
7:G:78:ILE:HG22	7:G:79:PRO:HD3	2.02	0.41
1:O:196:LEU:HD12	1:O:196:LEU:HA	1.89	0.41
9:W:24:CYS:SG	9:W:42:ILE:HG12	2.61	0.41
9:W:62:LEU:HD12	9:W:104:VAL:HG21	2.03	0.41
10:X:46:PHE:CD2	10:X:53:THR:HB	2.54	0.41
13:a:119:VAL:HG23	13:a:200:ILE:HG22	2.02	0.41
14:b:153:ASP:O	14:b:157:HIS:ND1	2.52	0.41
5:E:189:ILE:HD12	5:E:212:ILE:HG21	2.02	0.40
7:U:70:ILE:HG21	7:U:108:LEU:HD23	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:V:51:ASP:O	8:V:55:VAL:HG22	2.21	0.40
11:Y:207:PHE:O	11:Y:210:VAL:HG12	2.21	0.40
12:Z:169:LYS:HB3	12:Z:169:LYS:HE2	1.88	0.40
4:D:59:ILE:HG22	4:D:220:PHE:HZ	1.85	0.40
7:G:48:LYS:NZ	7:G:60:VAL:O	2.53	0.40
2:P:43:ILE:HD11	2:P:145:TYR:HB3	2.03	0.40
5:S:136:TYR:CZ	5:S:217:LYS:HB2	2.57	0.40
5:S:185:PRO:O	5:S:189:ILE:HG13	2.21	0.40
7:U:52:ASP:HB3	7:U:55:LEU:HG	2.02	0.40
14:N:8:PHE:CE1	14:N:13:ILE:HG13	2.56	0.40
8:V:160:GLN:HG2	8:V:164:TRP:NE1	2.36	0.40
12:Z:172:LEU:HD12	12:Z:172:LEU:H	1.86	0.40
13:a:15:LYS:HG2	13:a:20:VAL:HG12	2.03	0.40
1:A:61:LEU:HB2	7:G:155:VAL:HG23	2.03	0.40
1:A:75:TYR:HB3	1:A:82:TYR:CD1	2.56	0.40
1:O:42:GLY:HA2	1:O:214:ILE:O	2.22	0.40
3:Q:45:GLU:HG3	3:Q:207:ASN:OD1	2.21	0.40
7:U:72:MET:HE2	7:U:72:MET:HB3	1.93	0.40
9:I:9:GLY:HA2	9:I:25:ASP:OD2	2.20	0.40
11:K:106:ARG:HD2	11:K:106:ARG:HA	1.89	0.40
10:X:161:LEU:HD23	10:X:161:LEU:HA	1.92	0.40
1:A:57:MET:HE3	1:A:60:THR:HG21	2.02	0.40
4:D:77:ALA:O	4:D:81:ILE:HG12	2.22	0.40
2:P:75:ALA:HB3	2:P:135:ILE:HB	2.03	0.40
6:T:23:ALA:O	6:T:27:VAL:HG23	2.21	0.40
8:H:104:ASP:OD1	8:H:106:THR:OG1	2.24	0.40
9:W:196:LYS:HE2	9:W:198:TYR:CE1	2.56	0.40
2:B:145:TYR:OH	2:B:217:LYS:HG2	2.21	0.40
3:Q:157:TRP:CZ2	4:R:51:LEU:HD12	2.57	0.40
5:S:197:SER:HA	5:S:200:LEU:HG	2.04	0.40
6:T:16:ARG:NH2	6:T:21:GLU:OE1	2.54	0.40
6:T:146:MET:HE2	6:T:156:TYR:CZ	2.57	0.40
7:U:61:SER:HA	7:U:215:GLU:OE2	2.22	0.40
9:W:29:GLY:HA2	9:W:35:VAL:HG23	2.04	0.40
13:a:7:THR:HA	13:a:55:GLY:O	2.21	0.40
13:a:128:ARG:HG3	13:a:138:SER:HB2	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 X-ray entries followed by that with respect to entries of similar resolution.

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	247/250 (99%)	239 (97%)	8 (3%)	0	100	100
1	O	247/250 (99%)	239 (97%)	8 (3%)	0	100	100
2	B	239/258 (93%)	229 (96%)	10 (4%)	0	100	100
2	P	240/258 (93%)	231 (96%)	9 (4%)	0	100	100
3	C	244/254 (96%)	236 (97%)	8 (3%)	0	100	100
3	Q	239/254 (94%)	229 (96%)	10 (4%)	0	100	100
4	D	235/260 (90%)	225 (96%)	10 (4%)	0	100	100
4	R	242/260 (93%)	230 (95%)	12 (5%)	0	100	100
5	E	230/234 (98%)	217 (94%)	13 (6%)	0	100	100
5	S	230/234 (98%)	219 (95%)	11 (5%)	0	100	100
6	F	242/287 (84%)	234 (97%)	8 (3%)	0	100	100
6	T	243/287 (85%)	235 (97%)	8 (3%)	0	100	100
7	G	240/252 (95%)	233 (97%)	7 (3%)	0	100	100
7	U	240/252 (95%)	233 (97%)	7 (3%)	0	100	100
8	H	220/232 (95%)	212 (96%)	8 (4%)	0	100	100
8	V	220/232 (95%)	212 (96%)	8 (4%)	0	100	100
9	I	202/205 (98%)	191 (95%)	11 (5%)	0	100	100
9	W	202/205 (98%)	192 (95%)	10 (5%)	0	100	100
10	J	194/198 (98%)	188 (97%)	6 (3%)	0	100	100
10	X	193/198 (98%)	186 (96%)	7 (4%)	0	100	100
11	K	210/212 (99%)	201 (96%)	9 (4%)	0	100	100
11	Y	210/212 (99%)	201 (96%)	9 (4%)	0	100	100
12	L	220/222 (99%)	210 (96%)	10 (4%)	0	100	100
12	Z	220/222 (99%)	210 (96%)	10 (4%)	0	100	100
13	M	231/233 (99%)	221 (96%)	10 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	a	231/233 (99%)	221 (96%)	10 (4%)	0	100	100
14	N	194/196 (99%)	189 (97%)	5 (3%)	0	100	100
14	b	194/196 (99%)	189 (97%)	5 (3%)	0	100	100
All	All	6299/6586 (96%)	6052 (96%)	247 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	208/209 (100%)	207 (100%)	1 (0%)	81	81
1	O	208/209 (100%)	207 (100%)	1 (0%)	81	81
2	B	204/216 (94%)	202 (99%)	2 (1%)	68	75
2	P	204/216 (94%)	203 (100%)	1 (0%)	81	81
3	C	218/226 (96%)	216 (99%)	2 (1%)	70	76
3	Q	213/226 (94%)	211 (99%)	2 (1%)	70	76
4	D	198/215 (92%)	197 (100%)	1 (0%)	81	81
4	R	202/215 (94%)	201 (100%)	1 (0%)	81	81
5	E	191/193 (99%)	188 (98%)	3 (2%)	55	70
5	S	191/193 (99%)	188 (98%)	3 (2%)	55	70
6	F	201/238 (84%)	199 (99%)	2 (1%)	68	75
6	T	202/238 (85%)	201 (100%)	1 (0%)	81	81
7	G	207/210 (99%)	206 (100%)	1 (0%)	81	81
7	U	207/210 (99%)	207 (100%)	0	100	100
8	H	181/190 (95%)	180 (99%)	1 (1%)	78	80
8	V	181/190 (95%)	181 (100%)	0	100	100
9	I	172/173 (99%)	172 (100%)	0	100	100
9	W	172/173 (99%)	171 (99%)	1 (1%)	78	80

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	J	174/175 (99%)	174 (100%)	0	100	100
10	X	173/175 (99%)	173 (100%)	0	100	100
11	K	169/169 (100%)	168 (99%)	1 (1%)	78	80
11	Y	169/169 (100%)	166 (98%)	3 (2%)	51	68
12	L	185/185 (100%)	183 (99%)	2 (1%)	65	74
12	Z	185/185 (100%)	185 (100%)	0	100	100
13	M	199/199 (100%)	199 (100%)	0	100	100
13	a	199/199 (100%)	199 (100%)	0	100	100
14	N	162/162 (100%)	162 (100%)	0	100	100
14	b	162/162 (100%)	162 (100%)	0	100	100
All	All	5337/5520 (97%)	5308 (100%)	29 (0%)	81	81

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	THR
2	B	52	THR
2	B	82	ASP
3	C	56	ARG
3	C	102	VAL
4	D	25	LEU
5	E	12	PHE
5	E	112	CYS
5	E	174	THR
6	F	14	ASP
6	F	130	VAL
7	G	34	LEU
1	O	2	THR
2	P	82	ASP
3	Q	102	VAL
3	Q	212	VAL
4	R	125	LEU
5	S	12	PHE
5	S	112	CYS
5	S	174	THR
6	T	203	ASN
8	H	36	ARG
11	K	209	ASN

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Mol	Chain	Res	Type
12	L	22	VAL
12	L	128	VAL
9	W	37	ASN
11	Y	65	LEU
11	Y	73	ARG
11	Y	147	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	149	GLN
2	B	30	HIS
2	B	95	GLN
2	B	124	HIS
2	B	226	GLN
3	C	115	GLN
4	D	198	GLN
4	D	207	ASN
6	F	17	ASN
6	F	200	HIS
6	F	203	ASN
1	O	30	GLN
1	O	139	HIS
1	O	149	GLN
1	O	190	HIS
1	O	218	ASN
3	Q	115	GLN
3	Q	165	ASN
4	R	83	HIS
4	R	146	GLN
6	T	200	HIS
6	T	224	HIS
7	U	184	HIS
8	H	35	HIS
8	H	93	HIS
9	I	203	GLN
11	K	133	GLN
11	K	143	ASN
12	L	92	ASN
12	L	108	HIS
12	L	197	GLN
13	M	26	ASN

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Mol	Chain	Res	Type
13	M	62	HIS
13	M	211	ASN
14	N	69	GLN
14	N	141	ASN
14	N	161	GLN
9	W	203	GLN
11	Y	62	GLN
11	Y	208	ASN
12	Z	95	HIS
12	Z	197	GLN
13	a	26	ASN
13	a	62	HIS
13	a	211	ASN
14	b	69	GLN
14	b	161	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](#)

Mogul was not executed - this section is therefore empty.

5.5 Carbohydrates [i](#)

Mogul was not executed - this section is therefore empty.

5.6 Ligand geometry [i](#)

Mogul was not executed - this section is therefore empty.

5.7 Other polymers [i](#)

Mogul was not executed - this section is therefore empty.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

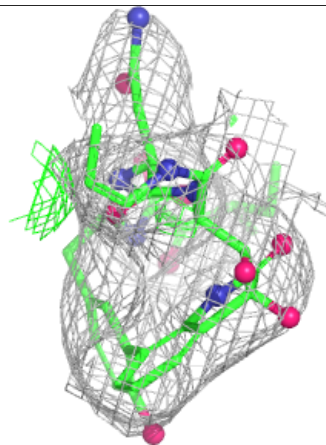
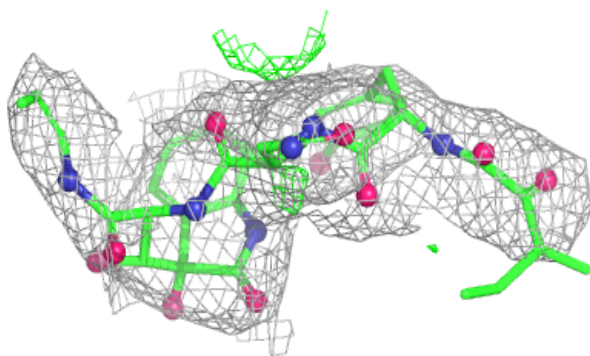
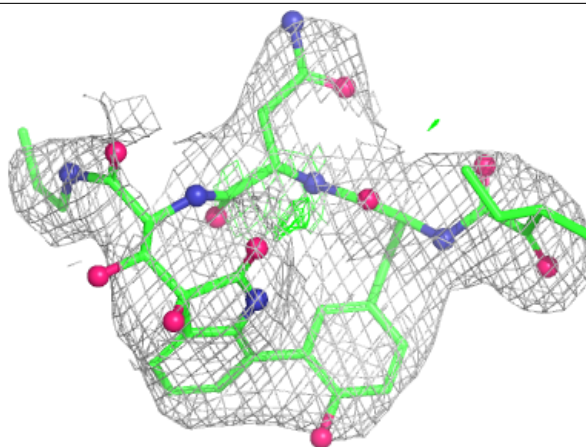
6.4 Ligands

EDS was not executed - this section is therefore empty.

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

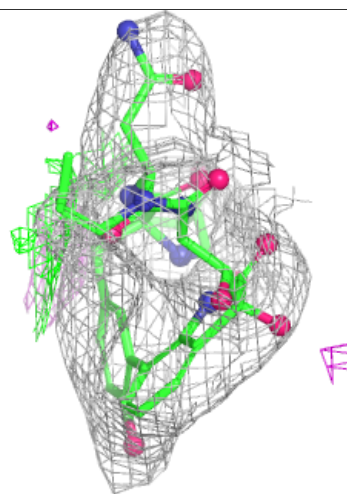
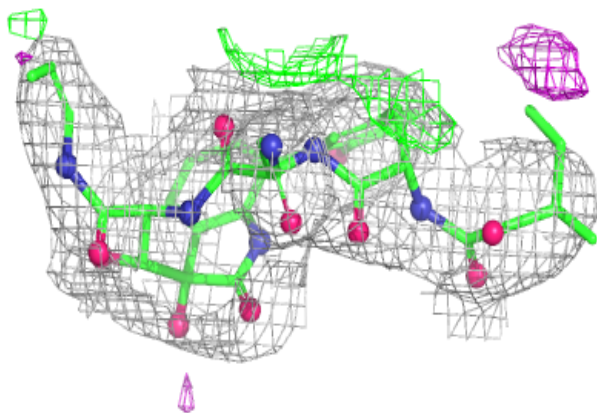
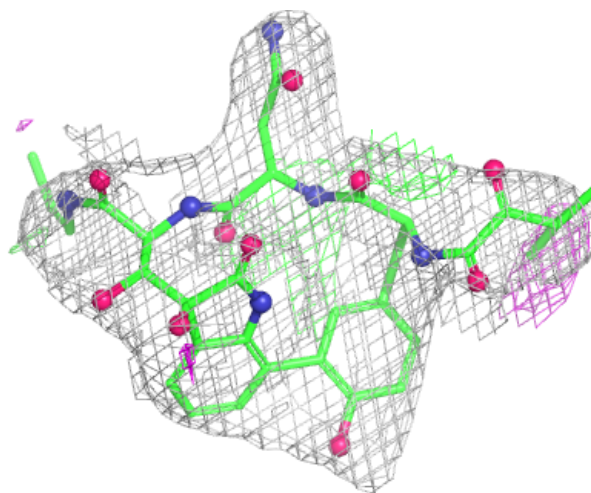
Electron density around A1A9B H 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



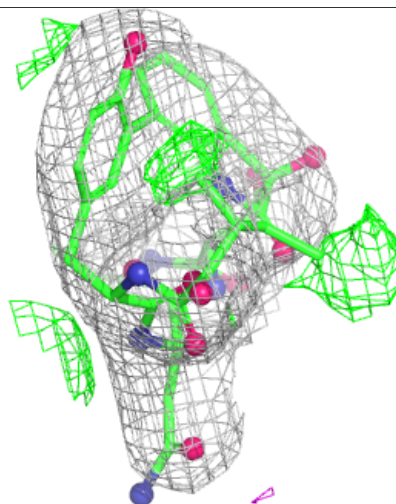
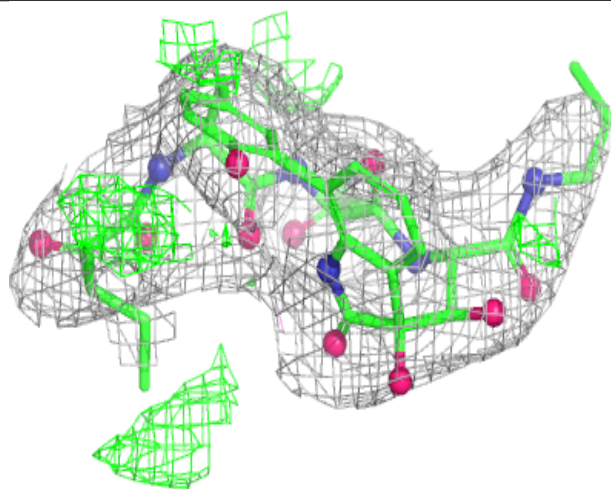
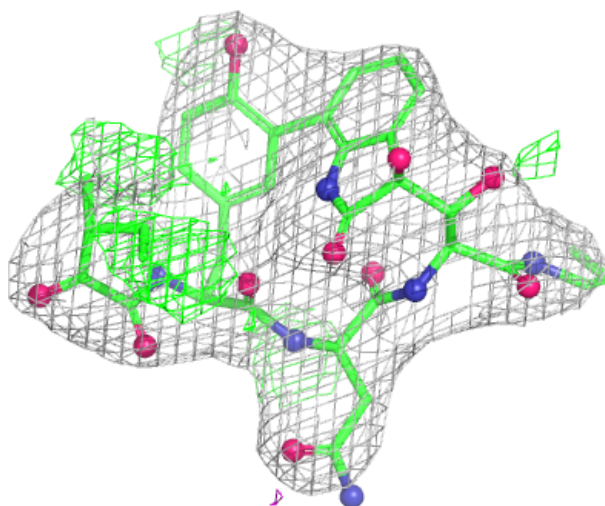
Electron density around A1A9B K 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



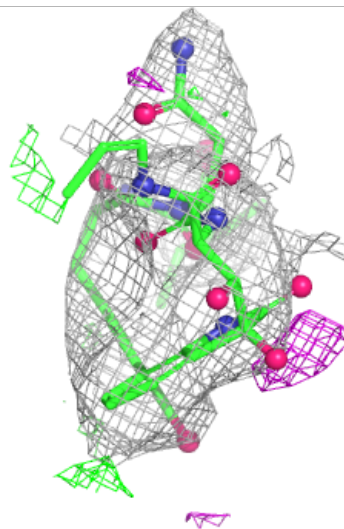
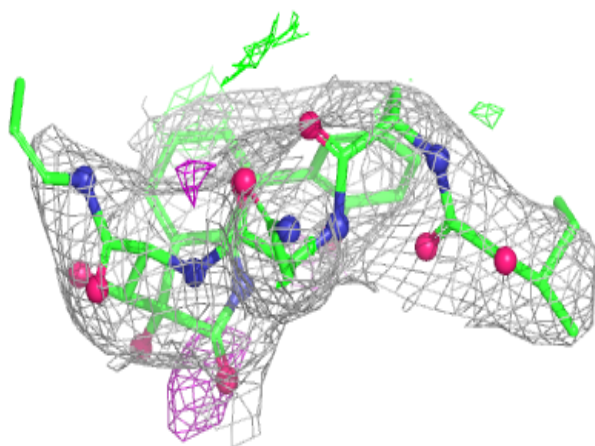
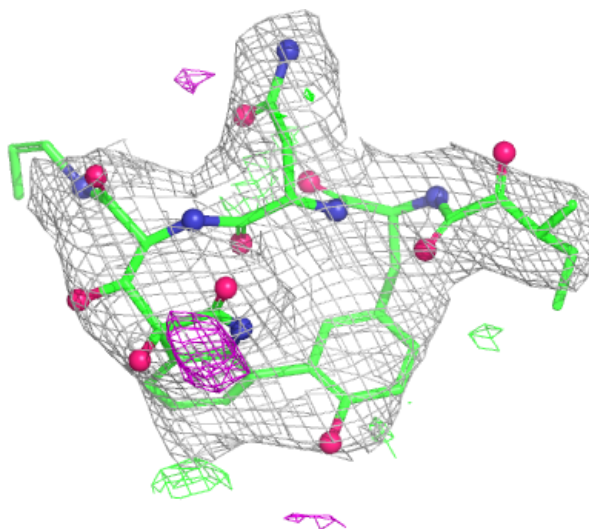
Electron density around A1A9B N 202:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



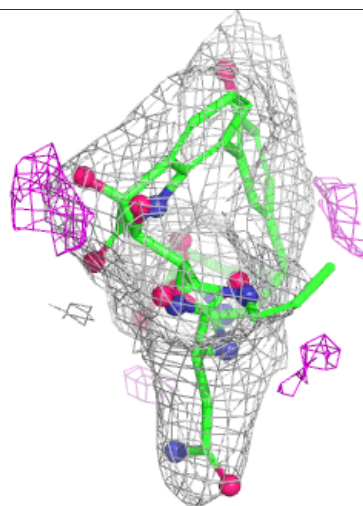
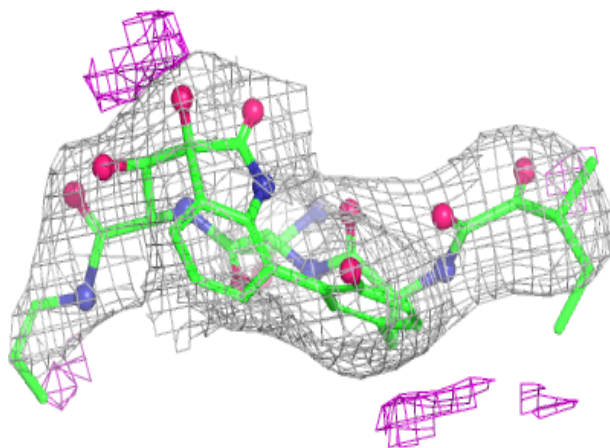
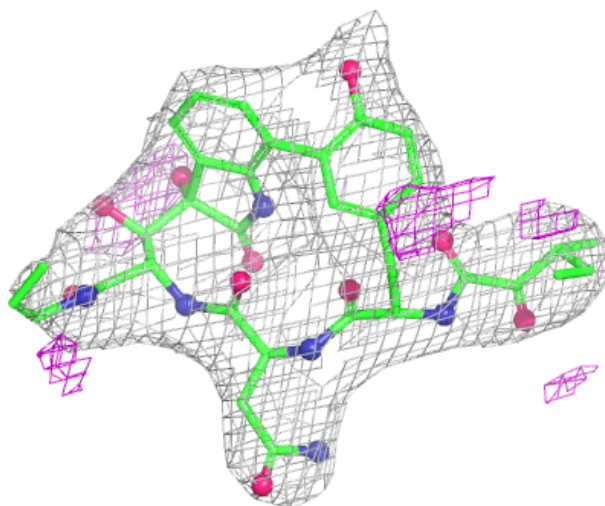
Electron density around A1A9B V 301:

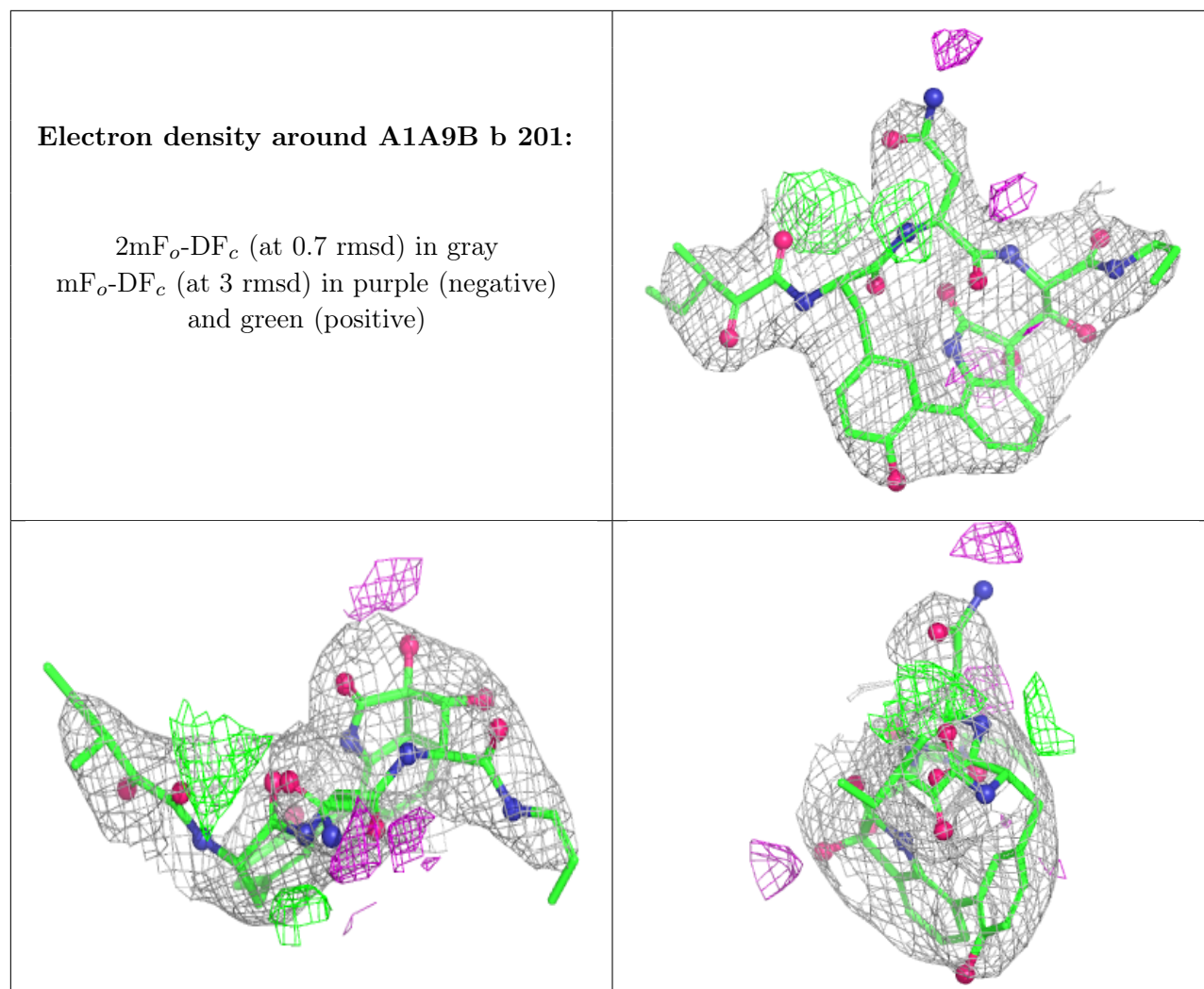
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around A1A9B Y 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.