



Full wwPDB EM Validation Report ⓘ

Mar 5, 2024 – 01:00 pm GMT

PDB ID : 8RDJ
EMDB ID : EMD-19023
Title : Plastid-encoded RNA polymerase transcription elongation complex (Integrated model)
Authors : Webster, M.W.; Pramanick, I.; Vergara-Cruces, A.
Deposited on : 2023-12-08
Resolution : 2.62 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

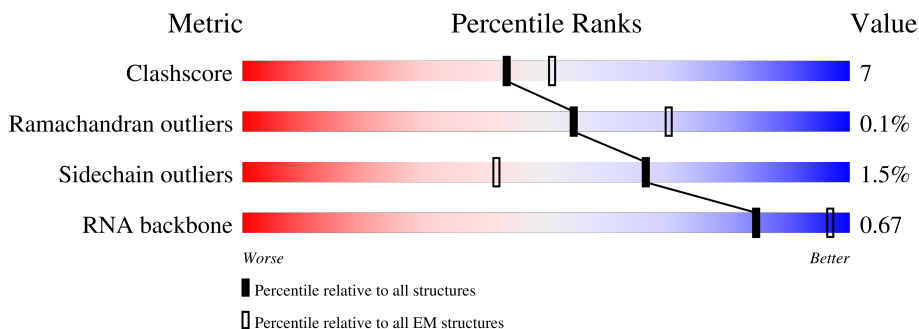
EMDB validation analysis : 0.0.1.dev70
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

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 2.62 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	327	
1	B	327	
2	C	1072	
3	D	680	
4	E	1373	
5	F	911	
6	G	862	

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Mol	Chain	Length	Quality of chain
7	H	675	
8	I	263	
9	J	529	
10	K	460	
11	L	483	
12	M	334	
13	N	297	
14	O	185	
14	P	185	
15	Q	768	
16	R	162	
17	S	611	
18	T	140	
19	U	187	
20	X	81	
21	Y	81	
22	Z	40	

2 Entry composition [i](#)

There are 27 unique types of molecules in this entry. The entry contains 70206 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	301	Total	C	N	O	S	0	0
			2449	1571	422	446	10		
1	B	283	Total	C	N	O	S	0	0
			2292	1461	395	425	11		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	67	PHE	SER	conflict	UNP A0A6C0M610
B	67	PHE	SER	conflict	UNP A0A6C0M610

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	1040	Total	C	N	O	S	0	0
			8287	5278	1462	1517	30		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	113	PHE	SER	conflict	UNP A0A6C0M5W1
C	657	VAL	ILE	conflict	UNP A0A6C0M5W1

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	611	Total	C	N	O	S	0	0
			4983	3200	880	876	27		

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit beta''.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	1091	8758	5612	1554	1561	31	0	0

- Molecule 5 is a protein called PAP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	660	5307	3355	929	990	33	0	0

- Molecule 6 is a protein called PAP2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	G	748	5887	3723	994	1131	39	0	0

- Molecule 7 is a protein called PAP3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	H	549	4607	2937	799	854	17	0	0

- Molecule 8 is a protein called PAP4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	I	215	1771	1141	300	324	6	0	0

- Molecule 9 is a protein called PAP5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	J	234	1970	1247	350	363	10	0	0

- Molecule 10 is a protein called PAP6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	K	384	3103	1985	520	583	15	0	0

- Molecule 11 is a protein called PAP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	L	416	3403	2183	580	620	20	0	0

- Molecule 12 is a protein called PAP8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	M	215	1803	1142	312	341	8	0	0

- Molecule 13 is a protein called PAP9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	N	224	1819	1168	309	338	4	0	0

- Molecule 14 is a protein called PAP10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	O	114	923	588	148	178	9	0	0
14	P	108	865	550	139	167	9	0	0

- Molecule 15 is a protein called PAP11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	Q	539	4148	2584	706	833	25	0	0

- Molecule 16 is a protein called PAP12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	R	128	1069	672	193	201	3	0	0

- Molecule 17 is a protein called FLN2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	S	386	3056	1941	516	578	21	0	0

- Molecule 18 is a protein called PTAC18.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	104	Total	C	N	O	S	0	0
			881	572	148	157	4		

- Molecule 19 is a protein called PRIN2.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	109	Total	C	N	O	S	0	0
			877	561	144	169	3		

- Molecule 20 is a DNA chain called DNA (81-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
20	X	31	Total	C	N	O	P	0	0
			638	304	122	182	30		

- Molecule 21 is a DNA chain called DNA (81-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Y	40	Total	C	N	O	P	0	0
			813	386	145	242	40		

- Molecule 22 is a RNA chain called RNA (40-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Z	10	Total	C	N	O	P	0	0
			215	95	40	70	10		

- Molecule 23 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
23	D	1	Total	Mg	0
			1	1	

- Molecule 24 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

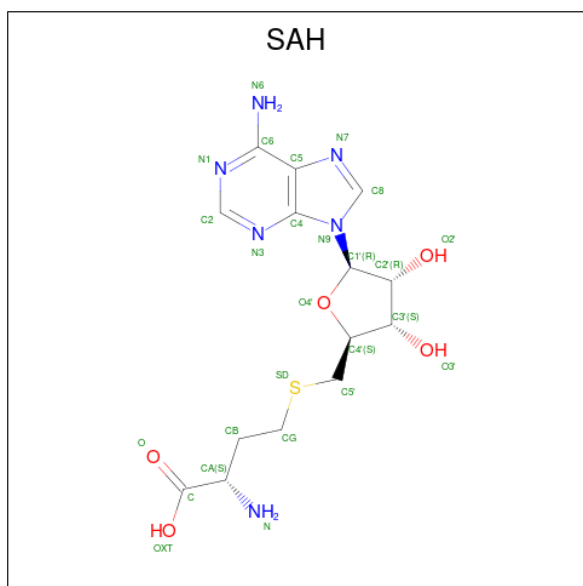
Mol	Chain	Residues	Atoms		AltConf
24	E	1	Total	Zn	0
			1	1	

- Molecule 25 is FE (III) ION (three-letter code: FE) (formula: Fe) (labeled as "Ligand of

Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
25	I	1	Total Fe 1 1	0
25	N	1	Total Fe 1 1	0

- Molecule 26 is S-ADENOSYL-L-HOMOCYSTEINE (three-letter code: SAH) (formula: $C_{14}H_{20}N_6O_5S$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
26	L	1	Total C N O S 26 14 6 5 1	0

- Molecule 27 is water.

Mol	Chain	Residues	Atoms	AltConf
27	A	17	Total O 17 17	0
27	B	12	Total O 12 12	0
27	C	54	Total O 54 54	0
27	D	17	Total O 17 17	0
27	E	24	Total O 24 24	0

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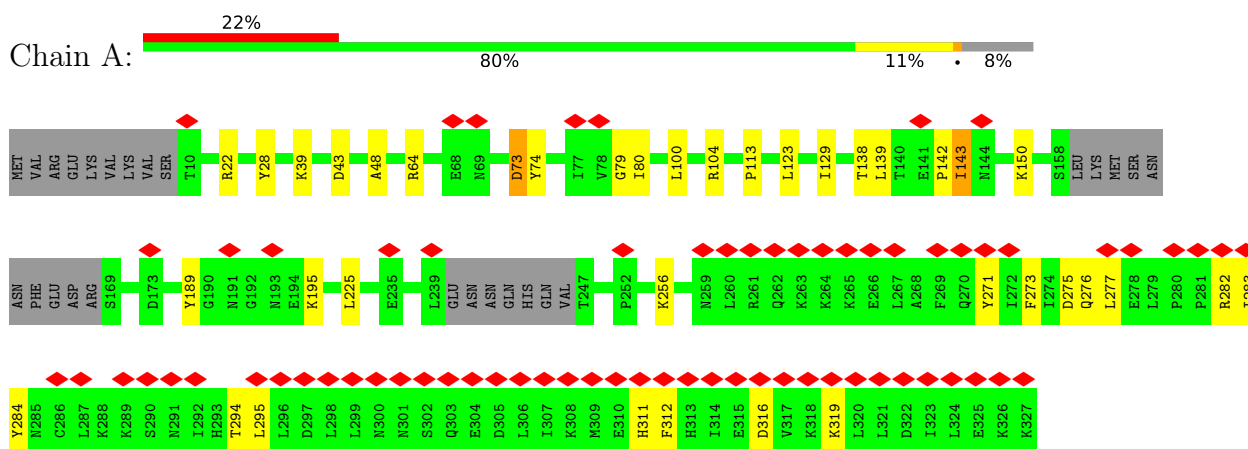
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Mol	Chain	Residues	Atoms		AltConf
27	F	2	Total 2	O 2	0
27	H	6	Total 6	O 6	0
27	I	3	Total 3	O 3	0
27	J	31	Total 31	O 31	0
27	K	17	Total 17	O 17	0
27	L	19	Total 19	O 19	0
27	M	16	Total 16	O 16	0
27	N	4	Total 4	O 4	0
27	O	2	Total 2	O 2	0
27	P	2	Total 2	O 2	0
27	R	3	Total 3	O 3	0
27	S	23	Total 23	O 23	0

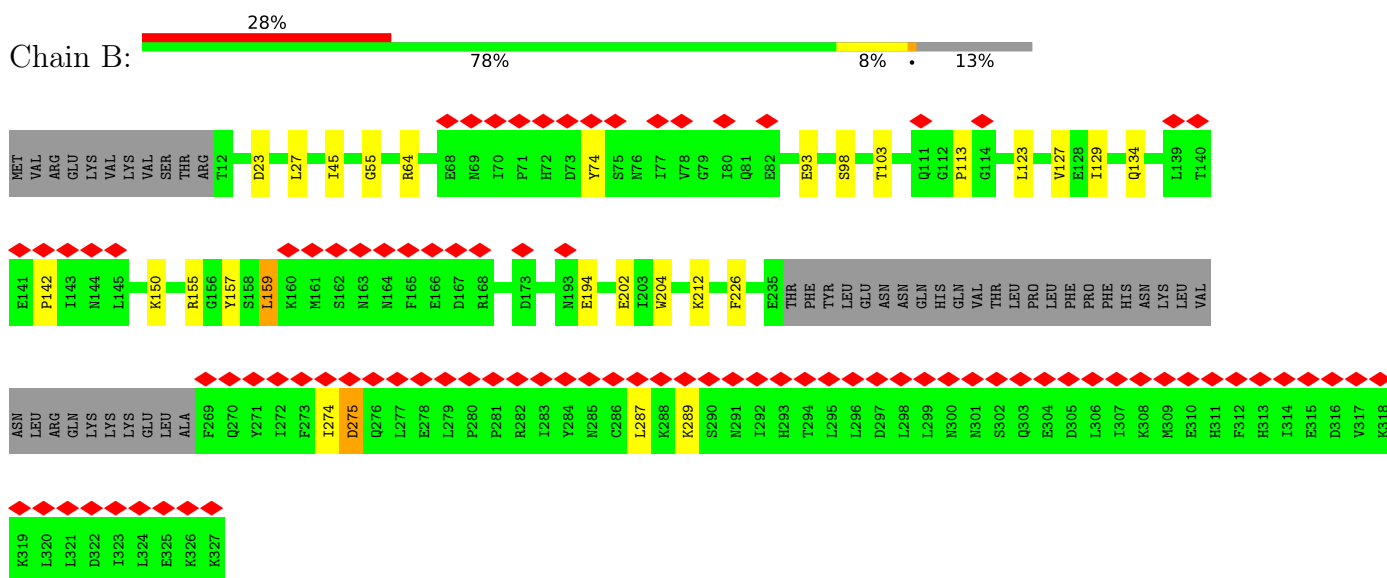
3 Residue-property plots

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.

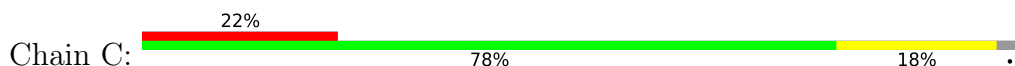
- Molecule 1: DNA-directed RNA polymerase subunit alpha

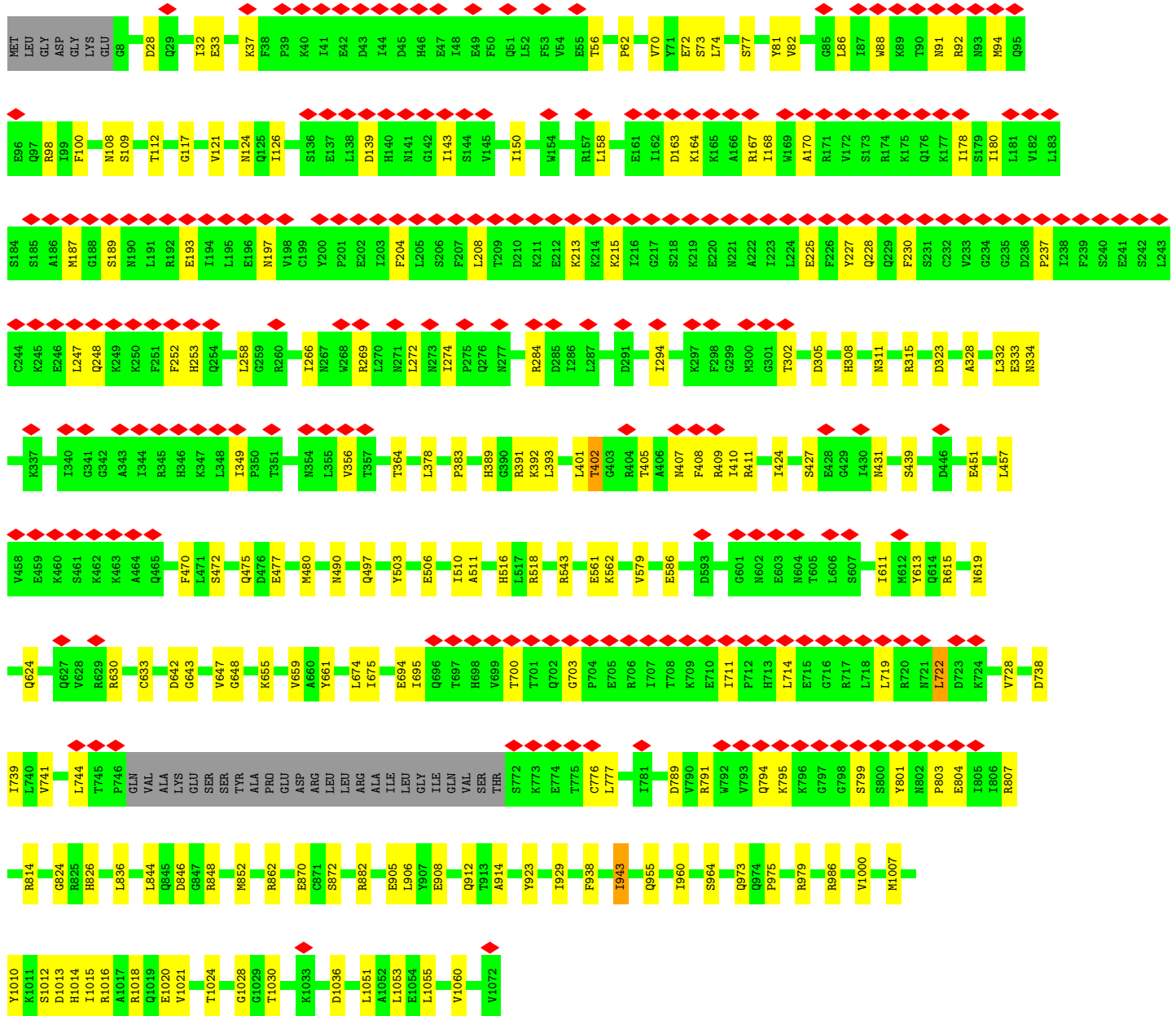


- Molecule 1: DNA-directed RNA polymerase subunit alpha

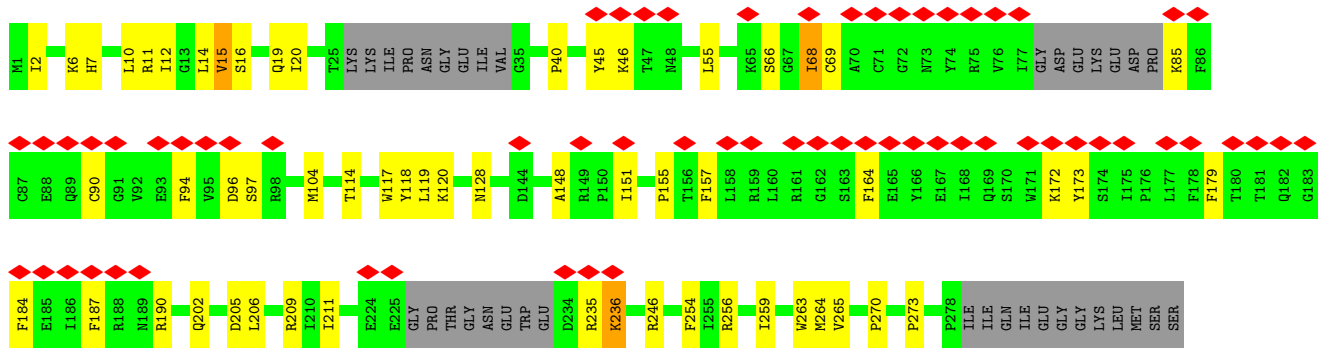
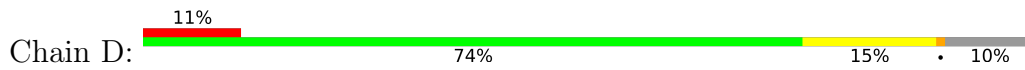


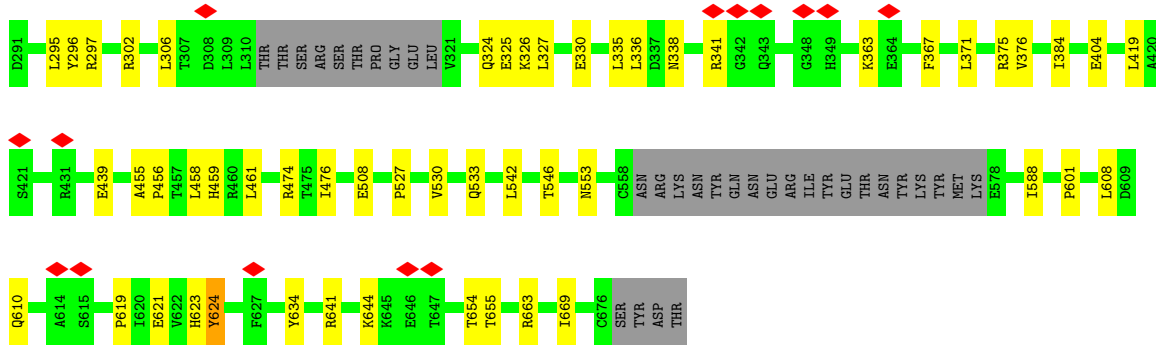
- Molecule 2: DNA-directed RNA polymerase subunit beta



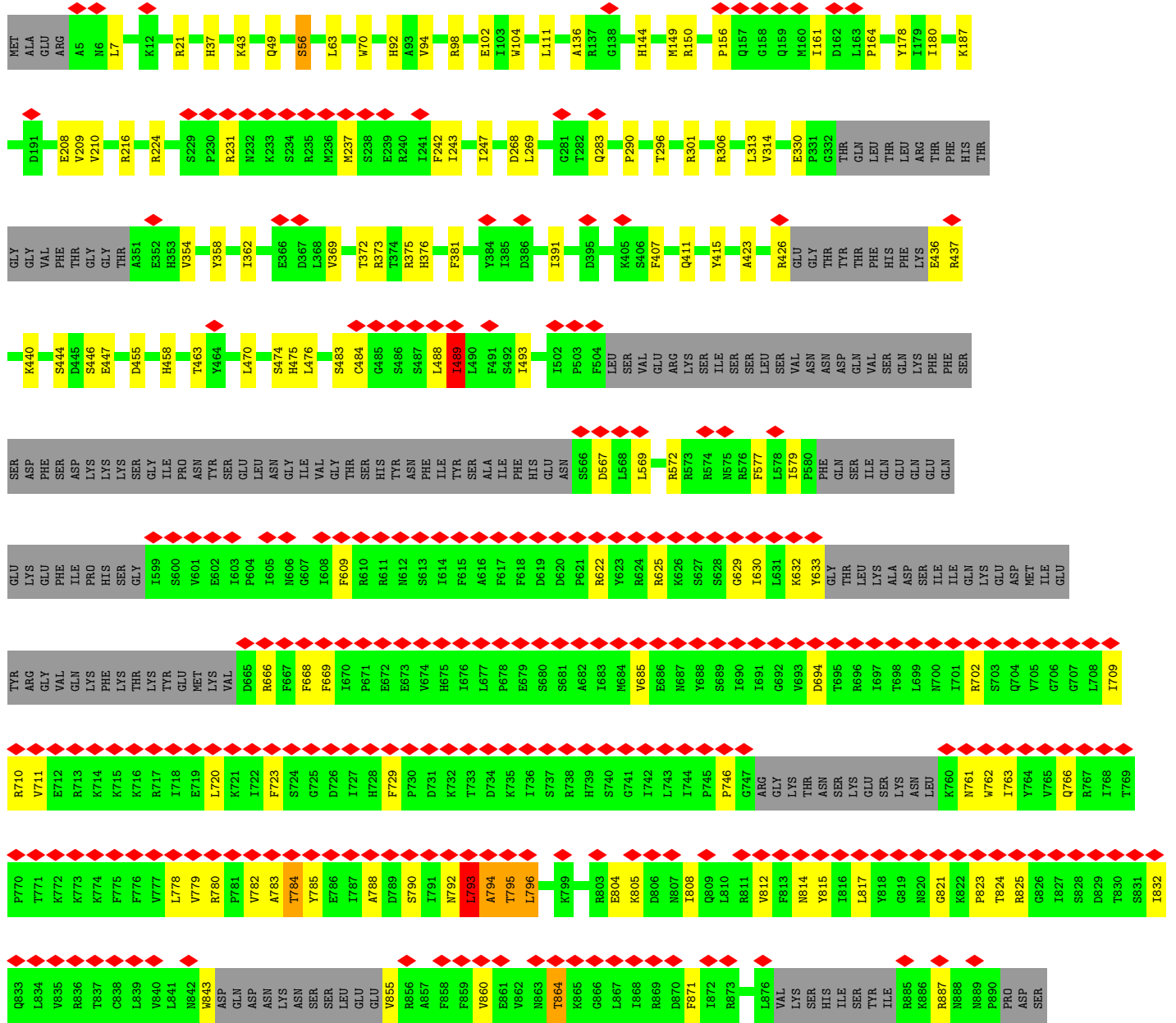


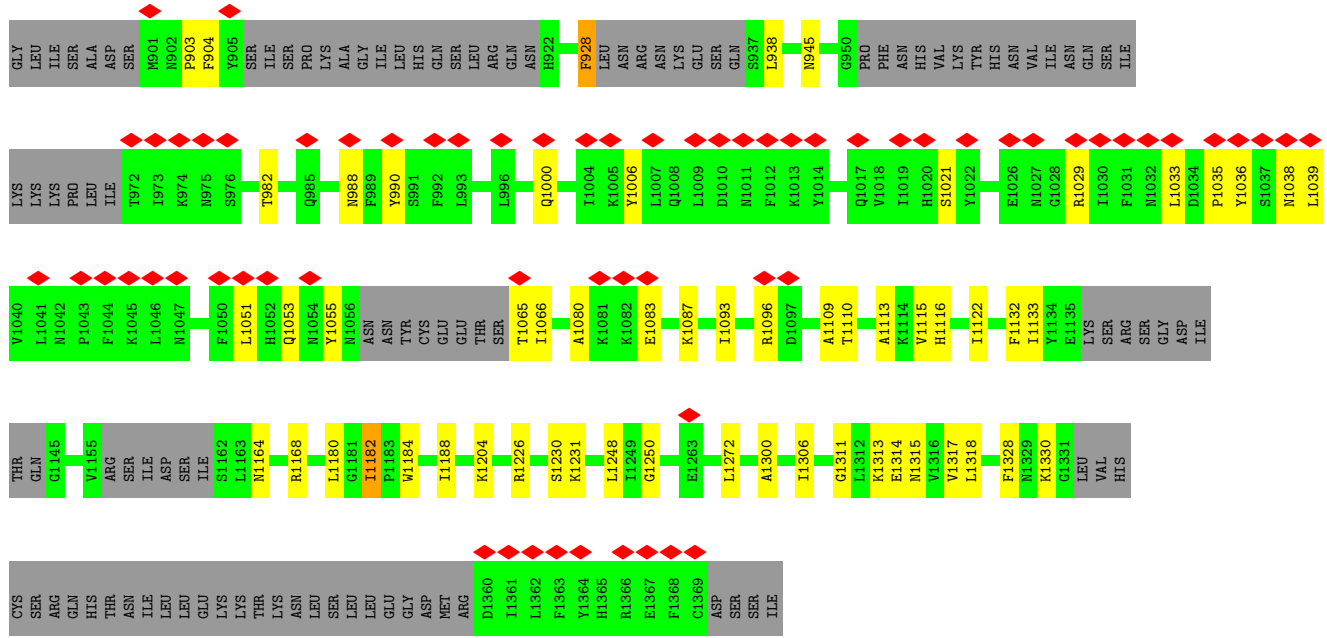
• Molecule 3: DNA-directed RNA polymerase subunit beta'



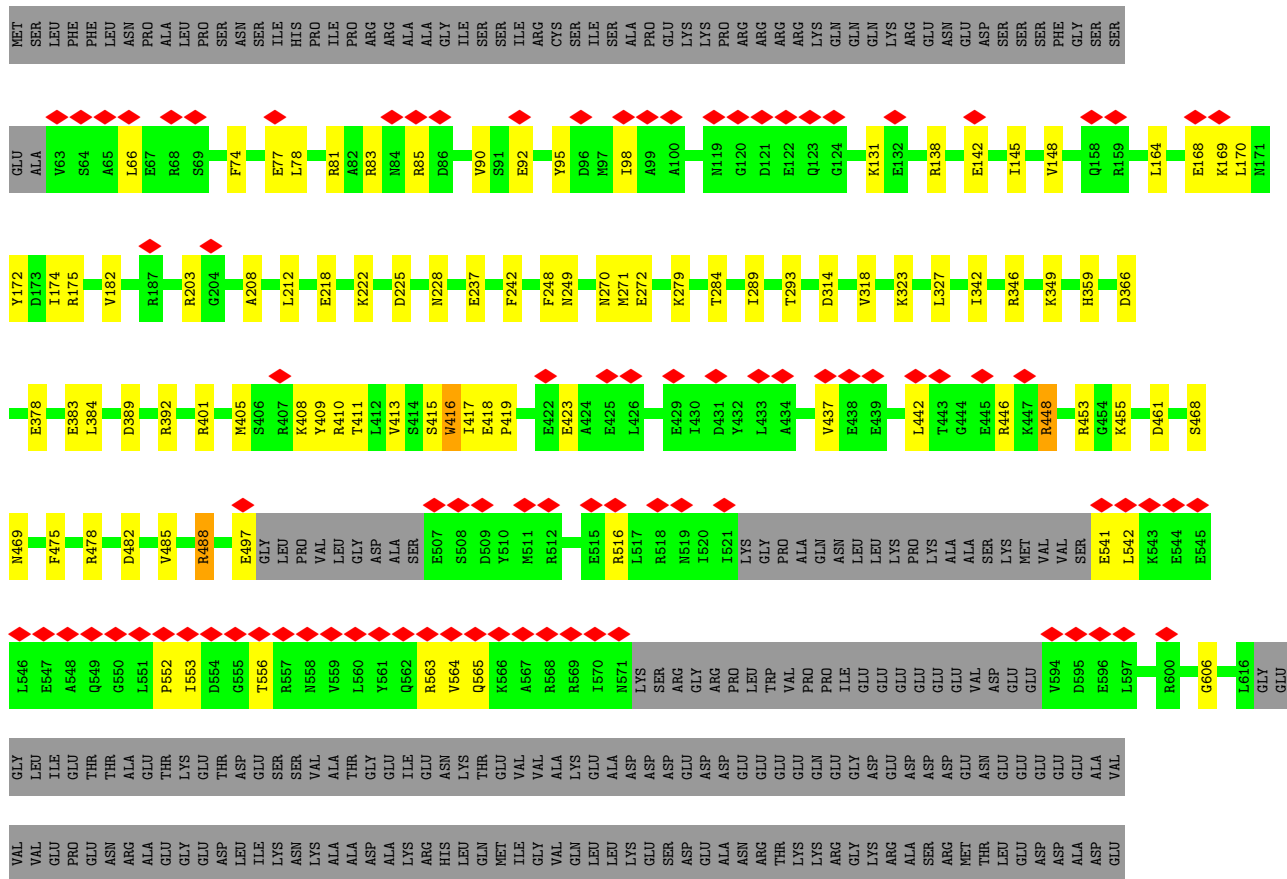


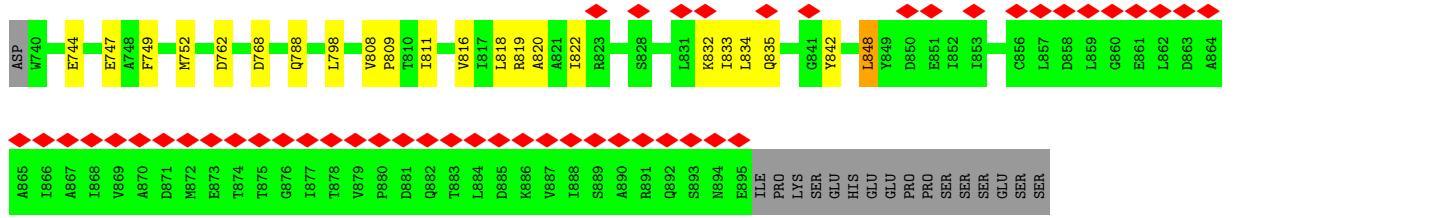
• Molecule 4: DNA-directed RNA polymerase subunit beta”



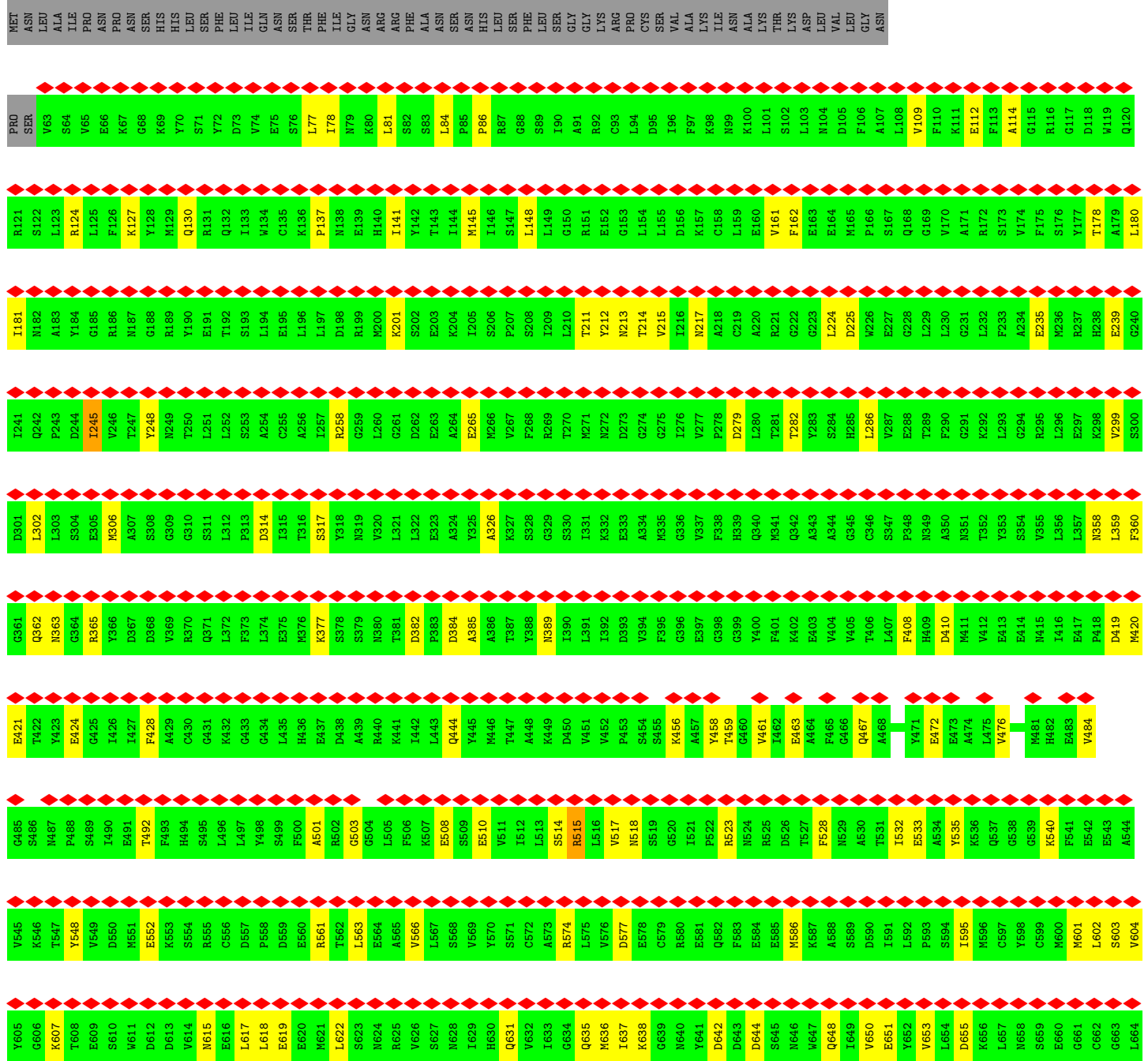
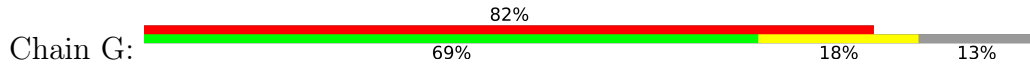


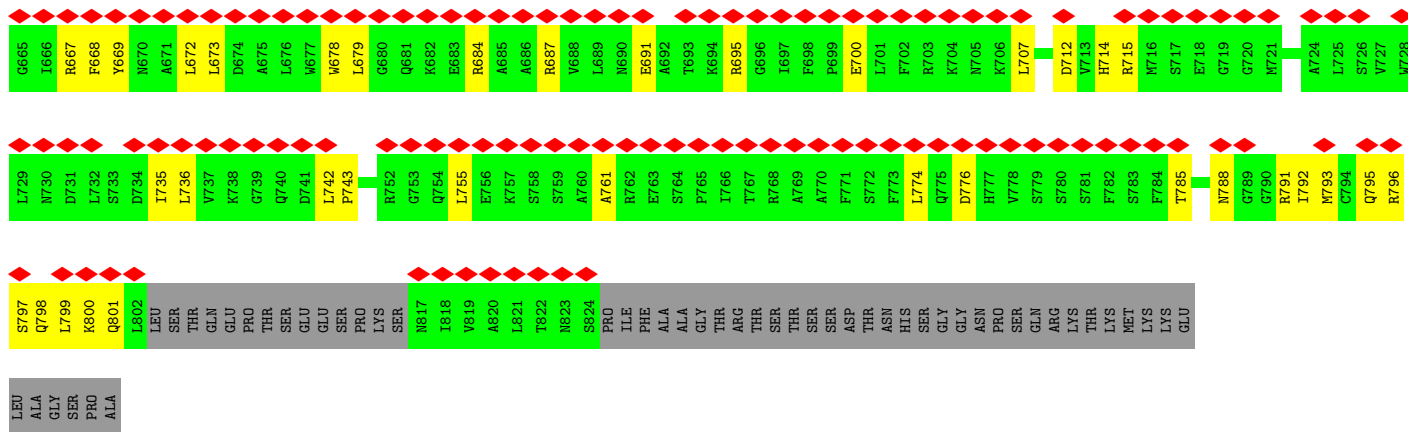
Molecule 5: PAP1



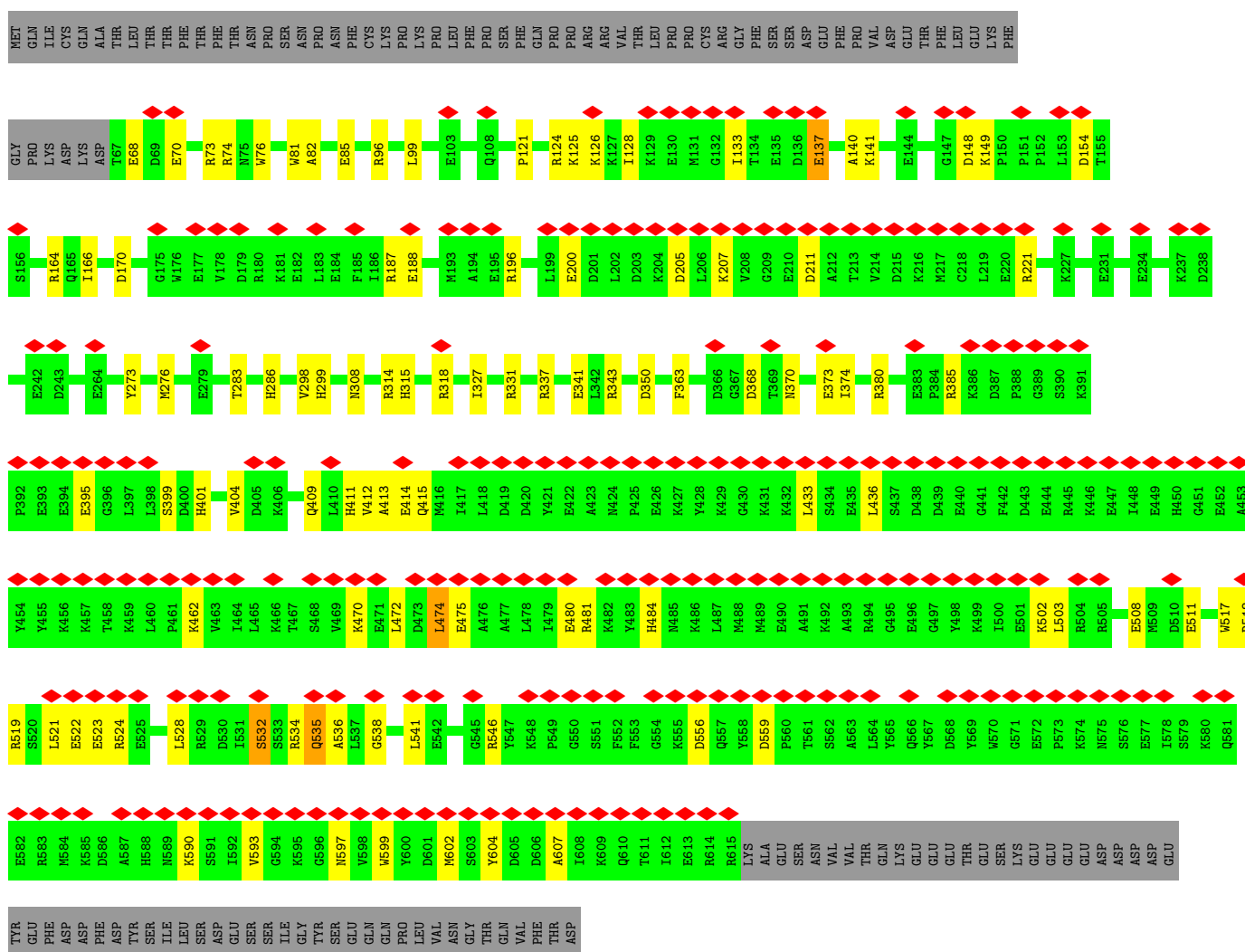


• Molecule 6: PAP2





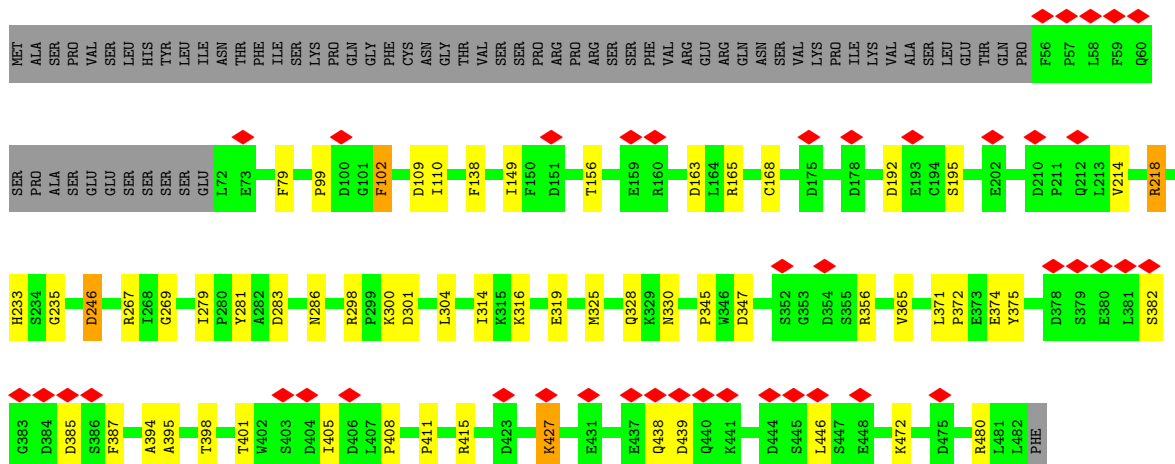
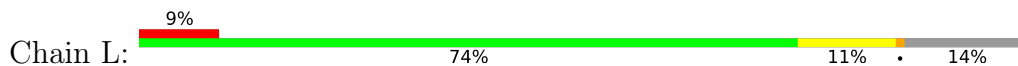
• Molecule 7: PAP3



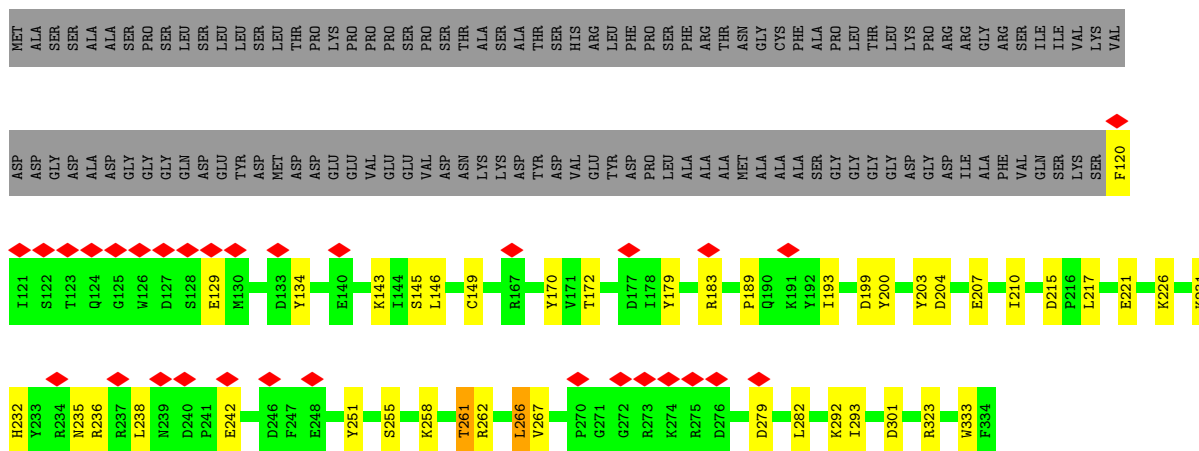
• Molecule 8: PAP4



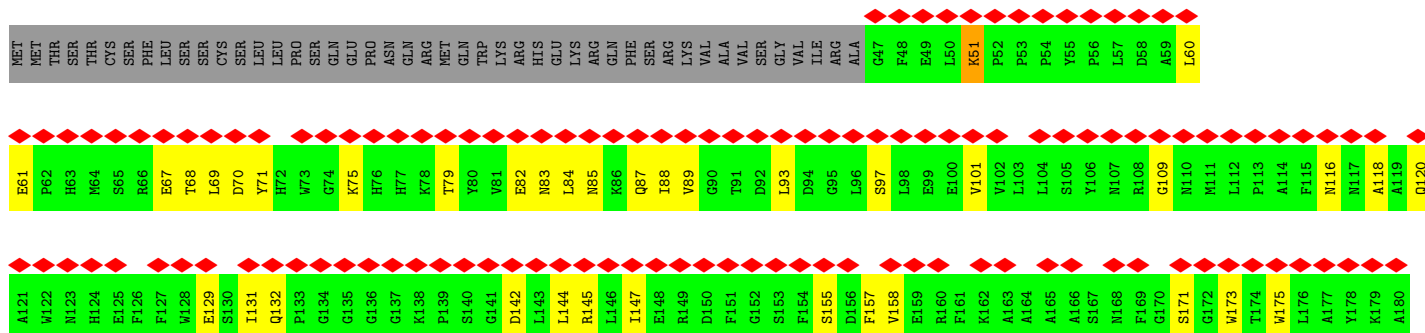
Molecule 11: PAP7

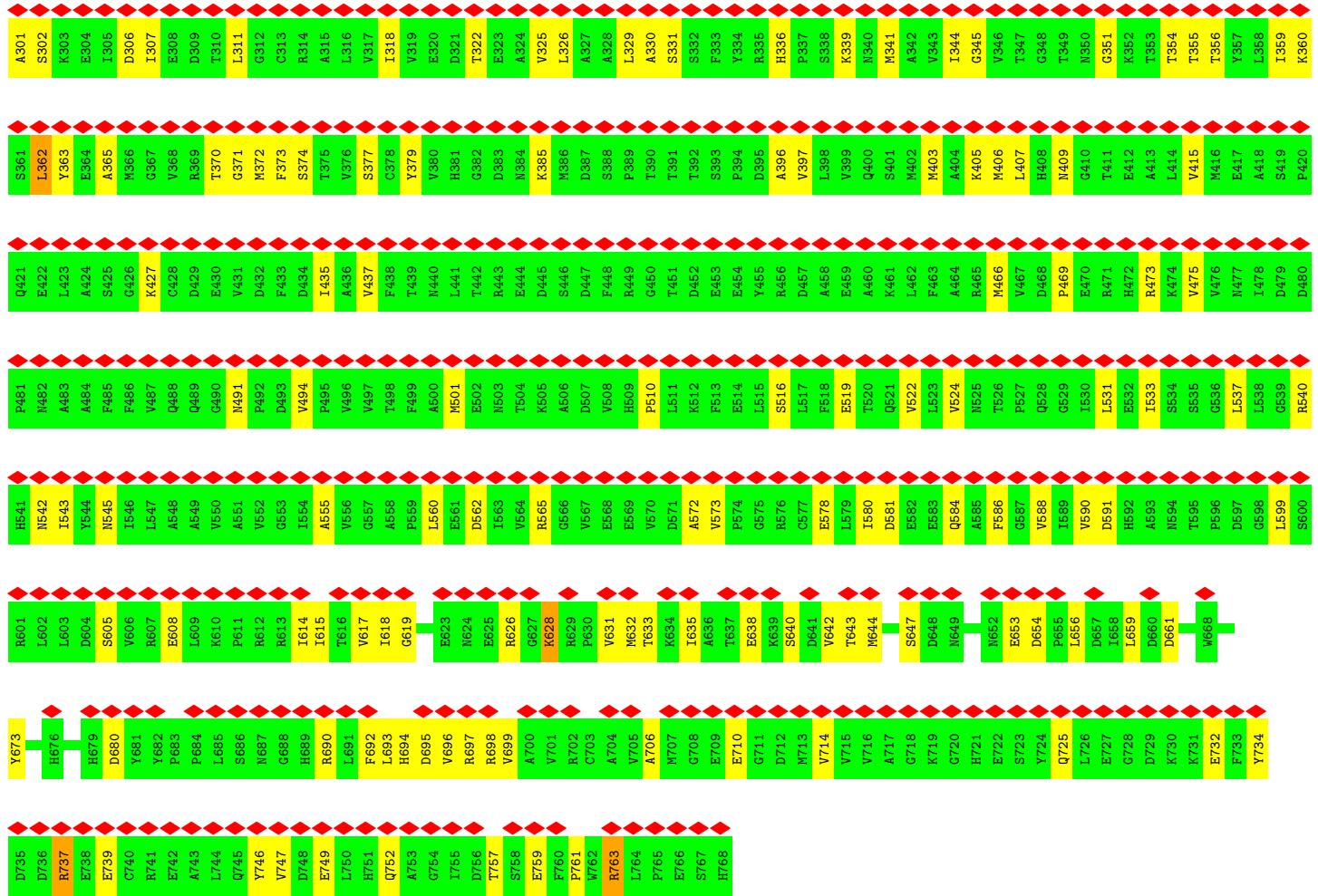


Molecule 12: PAP8

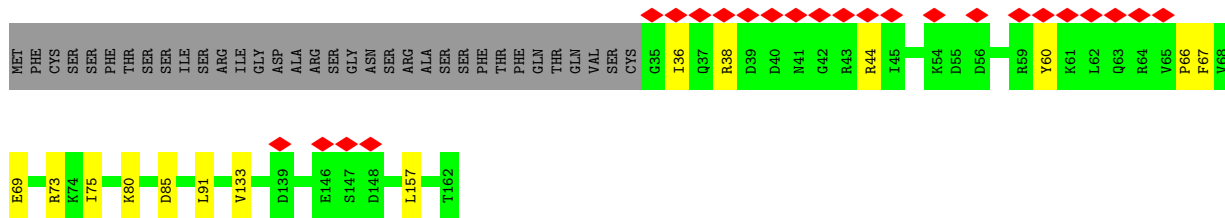


Molecule 13: PAP9

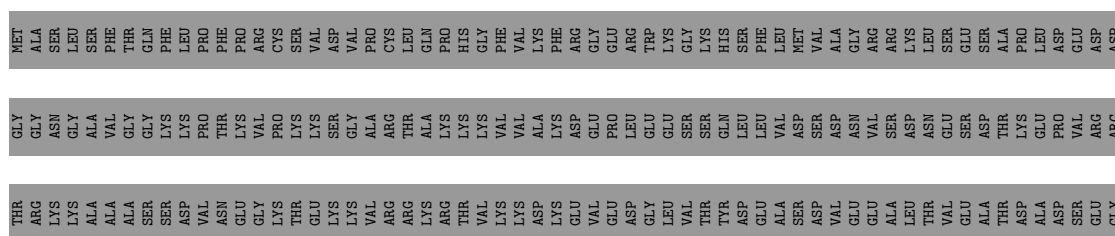


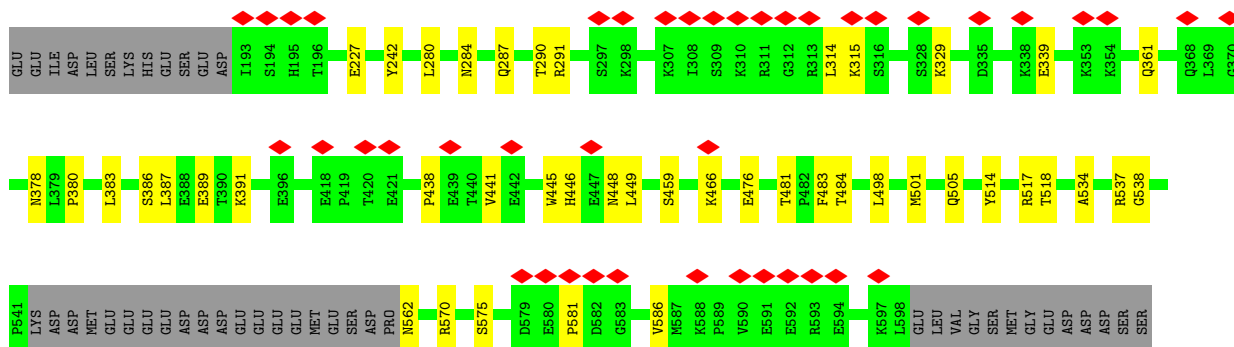


• Molecule 16: PAP12

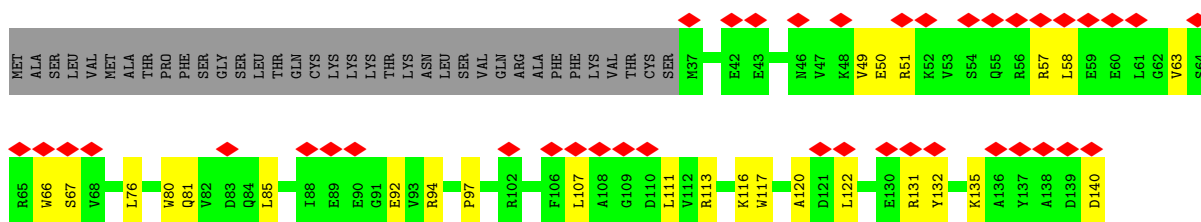


• Molecule 17: FLN2

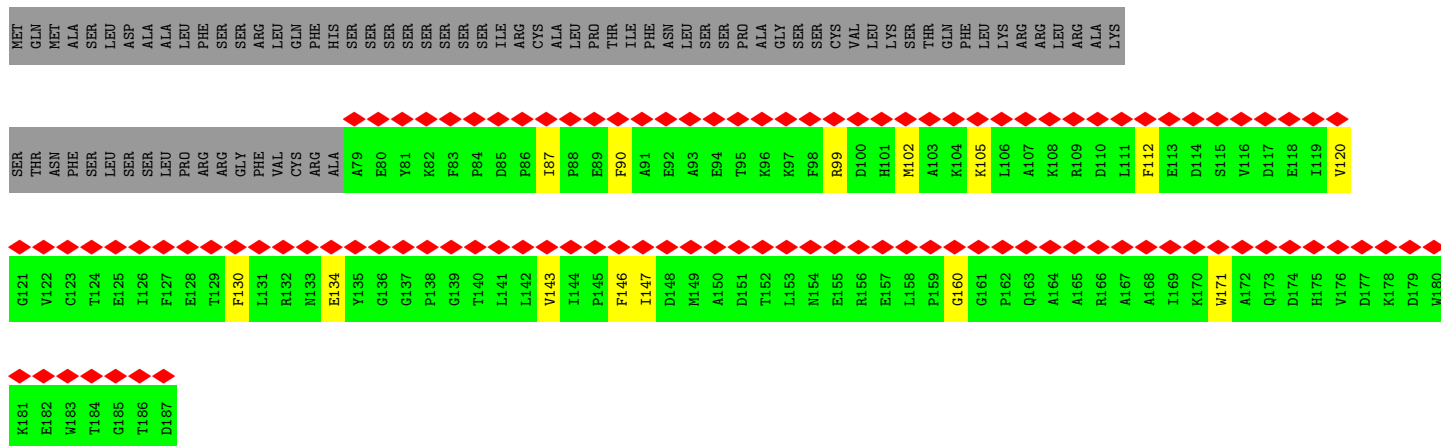




• Molecule 18: PTAC18



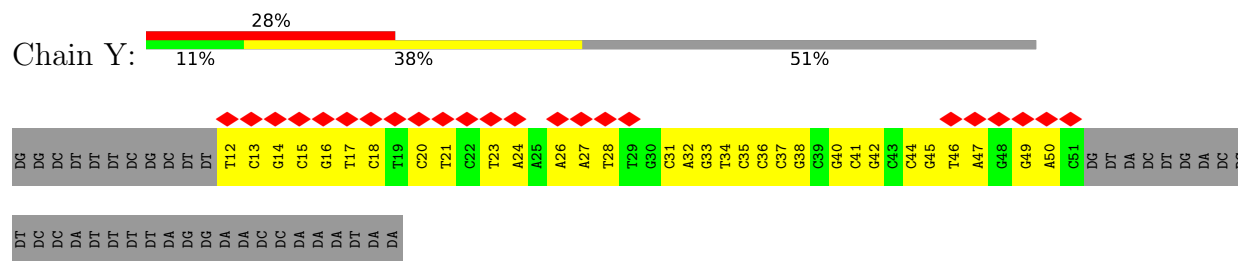
• Molecule 19: PRIN2



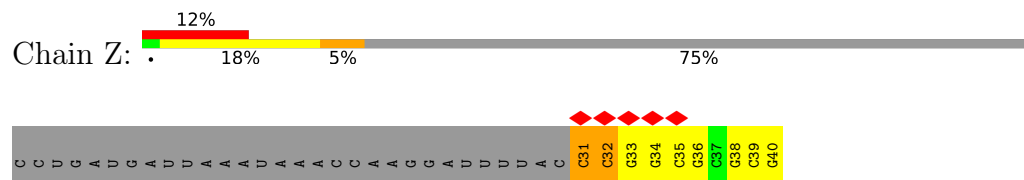
• Molecule 20: DNA (81-MER)



- Molecule 21: DNA (81-MER)



- Molecule 22: RNA (40-MER)



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	417374	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 ($e^-/\text{\AA}^2$)	40.48	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	5.127	Depositor
Minimum map value	-0.951	Depositor
Average map value	0.140	Depositor
Map value standard deviation	0.155	Depositor
Recommended contour level	0.8	Depositor
Map size (Å)	300.0, 300.0, 300.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.5, 0.5, 0.5	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: SAH, MG, ZN, FE

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	0.26	0/2498	0.47	0/3377
1	B	0.26	0/2336	0.48	0/3159
2	C	0.26	0/8458	0.48	0/11422
3	D	0.26	0/5093	0.49	0/6878
4	E	0.26	0/8932	0.49	0/12058
5	F	0.25	0/5410	0.47	0/7306
6	G	0.24	0/5997	0.44	0/8096
7	H	0.25	0/4736	0.47	0/6386
8	I	0.24	0/1825	0.45	0/2481
9	J	0.27	0/2021	0.47	0/2724
10	K	0.27	0/3184	0.47	0/4320
11	L	0.25	0/3492	0.46	0/4727
12	M	0.26	0/1848	0.50	0/2502
13	N	0.24	0/1873	0.45	0/2549
14	O	0.27	0/939	0.48	0/1268
14	P	0.24	0/879	0.46	0/1187
15	Q	0.24	0/4218	0.47	0/5720
16	R	0.27	0/1089	0.50	0/1462
17	S	0.26	0/3123	0.46	0/4226
18	T	0.26	0/906	0.49	0/1225
19	U	0.24	0/900	0.42	0/1219
20	X	0.50	0/716	0.88	0/1102
21	Y	0.53	0/909	0.91	0/1399
22	Z	0.25	0/239	0.88	0/371
All	All	0.26	0/71621	0.49	0/97164

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

Mol	Chain	#Chirality outliers	#Planarity outliers
4	E	0	2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	E	1182	ILE	Peptide
4	E	794	ALA	Peptide

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	2449	0	2490	25	0
1	B	2292	0	2311	23	0
2	C	8287	0	8381	122	0
3	D	4983	0	5052	89	0
4	E	8758	0	8895	157	0
5	F	5307	0	5267	76	0
6	G	5887	0	5803	99	0
7	H	4607	0	4464	84	0
8	I	1771	0	1696	40	0
9	J	1970	0	1923	24	0
10	K	3103	0	3026	30	0
11	L	3403	0	3348	37	0
12	M	1803	0	1756	29	0
13	N	1819	0	1746	42	0
14	O	923	0	917	12	0
14	P	865	0	867	11	0
15	Q	4148	0	4046	95	0
16	R	1069	0	1058	15	0
17	S	3056	0	3042	30	0
18	T	881	0	860	18	0
19	U	877	0	840	10	0
20	X	638	0	351	26	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
21	Y	813	0	450	33	0
22	Z	215	0	111	10	0
23	D	1	0	0	0	0
24	E	1	0	0	0	0
25	I	1	0	0	0	0
25	N	1	0	0	0	0
26	L	26	0	19	2	0
27	A	17	0	0	0	0
27	B	12	0	0	0	0
27	C	54	0	0	1	0
27	D	17	0	0	1	0
27	E	24	0	0	1	0
27	F	2	0	0	0	0
27	H	6	0	0	0	0
27	I	3	0	0	1	0
27	J	31	0	0	1	0
27	K	17	0	0	0	0
27	L	19	0	0	0	0
27	M	16	0	0	0	0
27	N	4	0	0	0	0
27	O	2	0	0	0	0
27	P	2	0	0	0	0
27	R	3	0	0	0	0
27	S	23	0	0	3	0
All	All	70206	0	68719	966	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 (966) 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)
5:F:565:GLN:NE2	20:X:65:DA:OP1	1.65	1.27
4:E:729:PHE:HE1	19:U:147:ILE:HD11	1.42	0.84
3:D:45:TYR:CG	20:X:34:DC:H3'	2.15	0.82
21:Y:45:DG:H1	22:Z:32:C:H42	1.29	0.81
3:D:45:TYR:HD1	20:X:34:DC:H5'	1.45	0.81
5:F:66:LEU:HD21	6:G:793:MET:HE1	1.64	0.80
4:E:729:PHE:CE1	19:U:147:ILE:CD1	2.67	0.78
4:E:790:SER:HB2	7:H:607:ALA:HA	1.66	0.77
15:Q:531:LEU:HD21	15:Q:560:LEU:HB3	1.66	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:567:ASP:HB3	4:E:795:THR:C	2.07	0.74
1:B:202:GLU:OE2	16:R:73:ARG:NH2	2.22	0.73
5:F:131:LYS:NZ	6:G:472:GLU:OE1	2.21	0.73
4:E:729:PHE:CE1	19:U:147:ILE:HD11	2.24	0.73
8:I:119:ASN:OD1	27:I:8101:HOH:O	2.06	0.73
3:D:302:ARG:HD3	3:D:327:LEU:HB3	1.71	0.72
3:D:45:TYR:CD1	20:X:34:DC:H3'	2.24	0.72
7:H:519:ARG:NH1	7:H:522:GLU:OE2	2.23	0.72
11:L:99:PRO:HB2	16:R:44:ARG:NH1	2.03	0.72
11:L:446:LEU:O	16:R:38:ARG:NH1	2.23	0.72
5:F:413:VAL:HG21	5:F:809:PRO:HB3	1.72	0.72
1:A:195:LYS:HG3	1:B:159:LEU:HD13	1.71	0.71
4:E:792:ASN:O	4:E:794:ALA:N	2.22	0.71
9:J:251:ARG:NH1	9:J:276:PRO:O	2.23	0.71
13:N:182:ARG:NH1	13:N:188:ALA:O	2.23	0.71
6:G:359:LEU:O	6:G:363:ASN:ND2	2.23	0.71
3:D:45:TYR:CD1	20:X:34:DC:H5'	2.25	0.71
15:Q:647:SER:O	15:Q:697:ARG:NH1	2.24	0.70
3:D:179:PHE:HA	15:Q:698:ARG:HH12	1.55	0.70
4:E:793:LEU:HD12	7:H:604:TYR:CE1	2.27	0.70
4:E:455:ASP:HB2	4:E:474:SER:HB2	1.74	0.69
15:Q:510:PRO:HA	15:Q:524:VAL:HA	1.74	0.69
3:D:46:LYS:HD3	20:X:34:DC:OP1	1.93	0.69
15:Q:268:SER:HB3	15:Q:287:VAL:HG13	1.73	0.69
8:I:77:LYS:HB3	13:N:235:ASN:HD21	1.56	0.68
4:E:1006:TYR:CB	8:I:247:ALA:HB2	2.24	0.68
15:Q:759:GLU:OE2	15:Q:763:ARG:NH2	2.27	0.68
21:Y:15:DC:H2''	21:Y:16:DG:C8	2.28	0.68
4:E:208:GLU:OE1	4:E:1313:LYS:NZ	2.22	0.68
2:C:92:ARG:HH12	4:E:817:LEU:HB3	1.58	0.68
2:C:305:ASP:O	2:C:311:ASN:ND2	2.27	0.68
17:S:481:THR:HG22	17:S:483:PHE:H	1.58	0.68
21:Y:20:DC:H2''	21:Y:21:DT:H5'	1.75	0.68
3:D:455:ALA:HB1	21:Y:38:DG:H1'	1.75	0.67
4:E:1182:ILE:O	4:E:1184:TRP:N	2.27	0.67
4:E:1096:ARG:HH21	7:H:283:THR:HG22	1.59	0.67
2:C:272:LEU:HB3	2:C:274:ILE:HD13	1.77	0.67
4:E:792:ASN:C	4:E:794:ALA:H	1.97	0.67
1:A:39:LYS:O	1:B:155:ARG:NH2	2.27	0.66
2:C:960:ILE:HG21	3:D:474:ARG:HD3	1.77	0.66
3:D:45:TYR:HB2	20:X:34:DC:H5''	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:433:LEU:HB3	7:H:474:LEU:HD13	1.78	0.66
4:E:761:ASN:HA	4:E:784:THR:HG21	1.79	0.65
2:C:228:GLN:HE21	2:C:237:PRO:HD2	1.61	0.65
4:E:209:VAL:HG13	4:E:210:VAL:HG13	1.78	0.65
6:G:265:GLU:HG3	6:G:302:LEU:HD21	1.79	0.65
20:X:70:DA:N1	21:Y:12:DT:O4	2.30	0.65
18:T:50:GLU:HB3	18:T:111:LEU:HB3	1.79	0.65
3:D:179:PHE:CA	15:Q:698:ARG:HH12	2.10	0.64
4:E:415:TYR:HB2	9:J:227:THR:HG21	1.79	0.64
1:B:289:LYS:HE2	10:K:88:ASP:HB3	1.79	0.64
2:C:112:THR:HG21	2:C:378:LEU:HD22	1.79	0.64
4:E:778:LEU:HD13	4:E:780:ARG:HE	1.63	0.64
15:Q:696:VAL:HG22	15:Q:698:ARG:H	1.62	0.64
1:B:123:LEU:HD11	1:B:129:ILE:HG13	1.78	0.64
2:C:163:ASP:OD1	2:C:167:ARG:N	2.30	0.64
4:E:290:PRO:O	4:E:1226:ARG:NH1	2.31	0.64
15:Q:331:SER:HG	15:Q:336:HIS:HD1	1.45	0.64
15:Q:372:MET:HB2	15:Q:379:TYR:H	1.63	0.64
15:Q:617:VAL:HG22	15:Q:644:MET:HB2	1.80	0.64
17:S:291:ARG:NH2	17:S:339:GLU:OE1	2.30	0.64
10:K:388:ASP:HB2	10:K:435:ILE:HD13	1.78	0.64
8:I:77:LYS:HB3	13:N:235:ASN:ND2	2.13	0.63
4:E:567:ASP:HB3	4:E:795:THR:HA	1.80	0.63
5:F:819:ARG:HH22	5:F:848:LEU:HD11	1.63	0.63
13:N:93:LEU:HD11	13:N:101:VAL:HG13	1.79	0.63
15:Q:642:VAL:HG22	15:Q:690:ARG:HB2	1.81	0.63
5:F:138:ARG:NH2	5:F:170:LEU:O	2.31	0.62
6:G:377:LYS:NZ	6:G:410:ASP:OD2	2.31	0.62
5:F:832:LYS:HA	5:F:835:GLN:HE21	1.63	0.62
3:D:157:PHE:HD2	15:Q:694:HIS:HE2	1.45	0.62
4:E:358:TYR:HD1	12:M:323:ARG:HE	1.47	0.62
21:Y:45:DG:H1	22:Z:32:C:N4	1.97	0.62
2:C:738:ASP:OD1	2:C:739:ILE:N	2.32	0.62
11:L:279:ILE:HD13	11:L:304:LEU:HD22	1.81	0.62
14:P:96:LYS:H	14:P:96:LYS:HD3	1.63	0.62
15:Q:360:LYS:NZ	15:Q:370:THR:O	2.31	0.62
1:A:123:LEU:HD11	1:A:129:ILE:HG12	1.81	0.62
4:E:224:ARG:NH2	5:F:762:ASP:OD2	2.32	0.62
15:Q:405:LYS:O	15:Q:409:ASN:ND2	2.32	0.62
4:E:437:ARG:HH21	4:E:1133:ILE:HG21	1.64	0.62
2:C:586:GLU:HG3	14:O:78:LEU:HD11	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:T:80:TRP:O	18:T:117:TRP:N	2.33	0.62
15:Q:344:ILE:HB	15:Q:415:VAL:HG22	1.82	0.61
2:C:480:MET:H	2:C:516:HIS:HD2	1.48	0.61
1:A:73:ASP:OD1	1:A:73:ASP:N	2.33	0.61
2:C:659:VAL:HG22	2:C:852:MET:HB2	1.82	0.61
10:K:88:ASP:OD1	10:K:88:ASP:N	2.32	0.61
3:D:259:ILE:O	5:F:455:LYS:NZ	2.26	0.61
3:D:206:LEU:HD22	3:D:211:ILE:HD11	1.83	0.61
6:G:503:GLY:HA2	6:G:715:ARG:HG2	1.81	0.61
13:N:217:SER:OG	13:N:264:ARG:NH2	2.32	0.61
4:E:63:LEU:HD11	9:J:285:ARG:HD2	1.82	0.61
2:C:794:GLN:HG3	2:C:804:GLU:HG2	1.82	0.61
5:F:225:ASP:OD2	5:F:228:ASN:ND2	2.34	0.60
3:D:439:GLU:HG2	16:R:157:LEU:HD21	1.83	0.60
10:K:323:ALA:HB1	10:K:328:GLN:HB3	1.83	0.60
15:Q:283:GLU:HB3	15:Q:287:VAL:HG21	1.83	0.60
17:S:284:ASN:ND2	17:S:290:THR:OG1	2.35	0.60
20:X:34:DC:H2'	20:X:35:DT:H5'	1.83	0.60
2:C:139:ASP:OD1	2:C:143:ILE:N	2.34	0.60
4:E:685:VAL:HG21	4:E:709:ILE:HG13	1.84	0.60
15:Q:615:ILE:HB	15:Q:714:VAL:HG12	1.84	0.60
16:R:75:ILE:HG23	16:R:80:LYS:HB2	1.83	0.60
7:H:188:GLU:HB3	7:H:221:ARG:HE	1.67	0.60
5:F:218:GLU:HG2	5:F:222:LYS:HE2	1.84	0.60
12:M:172:THR:HG22	12:M:179:TYR:HA	1.83	0.60
5:F:389:ASP:OD1	5:F:392:ARG:NH2	2.35	0.60
7:H:81:TRP:O	7:H:308:ASN:ND2	2.35	0.60
7:H:436:LEU:O	7:H:470:LYS:NZ	2.35	0.60
7:H:73:ARG:NH2	8:I:257:GLU:OE1	2.35	0.59
5:F:66:LEU:HD21	6:G:793:MET:CE	2.33	0.59
5:F:83:ARG:NH1	11:L:408:PRO:O	2.36	0.59
20:X:49:DC:H2'	20:X:50:DT:H71	1.85	0.59
3:D:624:TYR:HB3	12:M:282:LEU:HB3	1.84	0.59
15:Q:356:THR:HG23	15:Q:415:VAL:HB	1.83	0.59
15:Q:379:TYR:OH	15:Q:385:LYS:NZ	2.35	0.59
15:Q:537:LEU:HD13	15:Q:542:ASN:HB3	1.84	0.59
21:Y:31:DC:H2'	21:Y:32:DA:H5'	1.83	0.59
2:C:694:GLU:HG2	2:C:807:ARG:HG2	1.84	0.59
8:I:180:VAL:HG11	8:I:199:PRO:HG2	1.85	0.59
15:Q:466:MET:HG3	15:Q:494:VAL:HG21	1.83	0.59
1:A:113:PRO:HD3	1:A:142:PRO:HG3	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:236:LYS:NZ	21:Y:24:DA:OP2	2.32	0.59
11:L:99:PRO:HB2	16:R:44:ARG:HH12	1.65	0.59
15:Q:325:VAL:HG12	15:Q:329:LEU:HG	1.85	0.59
21:Y:41:DC:H2'	21:Y:42:DG:H8	1.68	0.59
1:B:274:ILE:HD13	1:B:287:LEU:HD13	1.85	0.59
2:C:391:ARG:NH2	2:C:439:SER:O	2.36	0.59
15:Q:351:GLY:HA3	15:Q:545:ASN:HD21	1.67	0.59
15:Q:354:THR:HG23	15:Q:573:VAL:HG21	1.84	0.59
6:G:213:ASN:O	6:G:217:ASN:ND2	2.36	0.58
6:G:742:LEU:HD21	6:G:799:LEU:HB3	1.84	0.58
14:O:175:GLN:NE2	14:O:179:ASP:OD1	2.36	0.58
2:C:332:LEU:HD11	2:C:356:VAL:HG13	1.85	0.58
4:E:793:LEU:HB3	4:E:796:LEU:HB2	1.84	0.58
3:D:45:TYR:CD1	20:X:34:DC:C5'	2.86	0.58
4:E:567:ASP:HB3	4:E:795:THR:CA	2.32	0.58
6:G:326:ALA:HA	6:G:359:LEU:HD13	1.85	0.58
1:A:282:ARG:NH1	1:A:311:HIS:O	2.37	0.58
2:C:383:PRO:HG3	2:C:579:VAL:HG21	1.85	0.58
6:G:642:ASP:OD2	6:G:684:ARG:NH2	2.33	0.58
1:B:113:PRO:HD3	1:B:142:PRO:HA	1.84	0.58
2:C:661:TYR:HB2	2:C:943:ILE:HG23	1.86	0.58
6:G:419:ASP:OD1	6:G:420:MET:N	2.37	0.58
8:I:180:VAL:HG12	8:I:206:PRO:HA	1.84	0.58
12:M:231:LYS:NZ	12:M:235:ASN:OD1	2.32	0.58
1:A:48:ALA:HB3	1:B:226:PHE:HZ	1.69	0.58
3:D:2:ILE:HA	5:F:270:ASN:HD21	1.68	0.58
3:D:588:ILE:HD12	3:D:663:ARG:HH11	1.68	0.58
4:E:632:LYS:HB2	4:E:668:PHE:HB2	1.84	0.58
8:I:126:ASN:HD21	8:I:198:ASN:HB3	1.68	0.58
2:C:72:GLU:HG3	2:C:74:LEU:HD13	1.85	0.58
2:C:150:ILE:HB	2:C:158:LEU:HB3	1.85	0.58
4:E:150:ARG:NH1	27:E:8105:HOH:O	2.37	0.58
5:F:416:TRP:HB2	5:F:475:PHE:H	1.68	0.58
4:E:766:GLN:HB3	4:E:778:LEU:HD11	1.86	0.58
2:C:108:ASN:OD1	2:C:109:SER:N	2.37	0.57
10:K:119:TYR:HB2	14:O:112:ILE:HG23	1.85	0.57
3:D:10:LEU:HD21	4:E:1318:LEU:HD11	1.85	0.57
6:G:224:LEU:O	6:G:258:ARG:NH2	2.37	0.57
3:D:644:LYS:HG2	12:M:238:LEU:HD22	1.85	0.57
5:F:98:ILE:O	6:G:791:ARG:NH1	2.36	0.57
9:J:367:ARG:NH2	27:J:605:HOH:O	2.36	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:Q:331:SER:OG	15:Q:336:HIS:ND1	2.37	0.57
17:S:287:GLN:O	27:S:701:HOH:O	2.18	0.57
2:C:960:ILE:O	2:C:979:ARG:NH1	2.37	0.57
9:J:239:LYS:HD2	9:J:240:PRO:HD2	1.86	0.57
10:K:389:ARG:O	10:K:392:SER:OG	2.20	0.57
15:Q:659:LEU:HG	15:Q:693:LEU:HD11	1.85	0.57
3:D:11:ARG:HB3	4:E:1306:ILE:HG12	1.85	0.57
3:D:254:PHE:O	5:F:455:LYS:NZ	2.24	0.57
5:F:175:ARG:NH1	11:L:374:GLU:OE2	2.38	0.56
6:G:86:PRO:O	6:G:124:ARG:NH1	2.38	0.56
4:E:111:LEU:HB2	4:E:144:HIS:HE1	1.69	0.56
15:Q:371:GLY:HA3	15:Q:406:MET:HE1	1.87	0.56
3:D:66:SER:HB3	3:D:96:ASP:HA	1.87	0.56
4:E:814:ASN:HB3	7:H:599:TRP:HB3	1.87	0.56
13:N:205:THR:HB	13:N:209:VAL:HB	1.86	0.56
18:T:97:PRO:HA	18:T:120:ALA:HA	1.86	0.56
21:Y:31:DC:H2'	21:Y:32:DA:H8	1.70	0.56
4:E:1065:THR:OG1	4:E:1066:ILE:N	2.35	0.56
5:F:556:THR:O	21:Y:13:DC:H5'	2.06	0.56
8:I:129:PHE:HD2	8:I:209:ASN:HB2	1.71	0.56
3:D:45:TYR:HD1	20:X:34:DC:C5'	2.16	0.56
22:Z:32:C:H2'	22:Z:33:G:C8	2.41	0.56
5:F:461:ASP:OD2	5:F:469:ASN:ND2	2.39	0.56
6:G:602:LEU:HB3	6:G:679:LEU:HD11	1.87	0.56
6:G:514:SER:O	6:G:518:ASN:ND2	2.38	0.56
8:I:89:GLN:OE1	8:I:120:ASN:ND2	2.32	0.56
8:I:79:HIS:HD2	8:I:131:TRP:HE1	1.53	0.56
2:C:193:GLU:O	2:C:197:ASN:ND2	2.33	0.56
2:C:633:CYS:SG	14:O:124:GLU:HG2	2.46	0.56
7:H:187:ARG:NH2	8:I:94:ASP:OD2	2.39	0.56
11:L:387:PHE:HE1	11:L:472:LYS:HE2	1.71	0.56
15:Q:345:GLY:N	15:Q:435:ILE:O	2.29	0.56
7:H:196:ARG:HH11	8:I:53:LYS:HG2	1.70	0.55
20:X:66:DC:H2'	20:X:67:DG:N7	2.20	0.55
1:A:100:LEU:HD13	17:S:575:SER:HB3	1.88	0.55
2:C:248:GLN:HG3	2:C:252:PHE:HB3	1.89	0.55
4:E:763:ILE:HG23	4:E:779:VAL:HG13	1.87	0.55
2:C:180:ILE:HD13	2:C:204:PHE:HE2	1.69	0.55
8:I:208:ILE:HD11	8:I:242:ALA:HB2	1.89	0.55
12:M:129:GLU:OE2	12:M:183:ARG:NH1	2.40	0.55
15:Q:285:ASP:HA	15:Q:288:LEU:HD12	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:333:GLU:HG3	2:C:334:ASN:HD22	1.71	0.55
5:F:448:ARG:NH1	15:Q:661:ASP:OD2	2.39	0.55
13:N:142:ASP:HA	13:N:145:ARG:HG2	1.88	0.55
2:C:579:VAL:HG12	2:C:643:GLY:HA3	1.89	0.55
2:C:795:LYS:HB2	2:C:803:PRO:HG2	1.89	0.55
1:A:195:LYS:HB2	1:B:159:LEU:HD22	1.89	0.55
4:E:793:LEU:HD13	4:E:796:LEU:HG	1.88	0.55
6:G:785:THR:OG1	6:G:788:ASN:O	2.24	0.55
12:M:134:TYR:HH	12:M:170:TYR:HH	1.50	0.55
5:F:809:PRO:O	5:F:842:TYR:OH	2.21	0.55
17:S:378:ASN:OD1	27:S:702:HOH:O	2.18	0.55
6:G:286:LEU:HD13	6:G:302:LEU:HD13	1.87	0.54
15:Q:236:ARG:NH1	15:Q:260:GLU:OE2	2.39	0.54
18:T:66:TRP:O	18:T:131:ARG:NH2	2.40	0.54
21:Y:31:DC:H2 ⁺	21:Y:32:DA:C8	2.42	0.54
4:E:625:ARG:NH1	4:E:785:TYR:OH	2.41	0.54
6:G:798:GLN:O	6:G:801:GLN:NE2	2.41	0.54
13:N:88:ILE:HG21	13:N:93:LEU:HD22	1.90	0.54
16:R:36:ILE:HG23	16:R:44:ARG:HH21	1.72	0.54
15:Q:365:ALA:O	15:Q:565:ARG:NH2	2.40	0.54
4:E:569:LEU:HD21	7:H:415:GLN:HG3	1.89	0.54
6:G:755:LEU:HB3	6:G:761:ALA:HB2	1.90	0.54
7:H:196:ARG:NH1	8:I:53:LYS:HG2	2.23	0.54
1:B:103:THR:HG21	1:B:150:LYS:HE3	1.89	0.54
2:C:112:THR:HG22	2:C:121:VAL:HG22	1.88	0.54
2:C:1055:LEU:HD13	3:D:12:ILE:HG23	1.90	0.54
4:E:805:LYS:HE3	13:N:186:ALA:HB3	1.89	0.54
4:E:812:VAL:N	7:H:602:MET:O	2.39	0.54
2:C:227:TYR:HD1	2:C:247:LEU:HD21	1.73	0.54
2:C:1024:THR:O	2:C:1028:GLY:N	2.40	0.54
4:E:102:GLU:OE1	4:E:376:HIS:NE2	2.34	0.54
4:E:778:LEU:HD22	4:E:780:ARG:HH21	1.72	0.54
15:Q:580:ILE:HB	15:Q:588:VAL:HB	1.90	0.54
1:B:275:ASP:N	1:B:275:ASP:OD1	2.41	0.54
2:C:562:LYS:HG3	2:C:647:VAL:HB	1.90	0.54
21:Y:49:DG:H2 ⁺	21:Y:50:DA:N7	2.23	0.54
4:E:887:ARG:NH2	7:H:523:GLU:OE2	2.41	0.54
4:E:1006:TYR:HB2	8:I:247:ALA:HB2	1.90	0.54
15:Q:618:ILE:HD13	15:Q:632:MET:HB3	1.90	0.54
4:E:1038:ASN:HB2	4:E:1051:LEU:HB2	1.88	0.54
7:H:474:LEU:HD12	7:H:475:GLU:HG2	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:46:LYS:HD2	20:X:34:DC:OP2	2.08	0.53
3:D:533:GLN:HA	4:E:136:ALA:HB1	1.89	0.53
4:E:98:ARG:NH1	4:E:375:ARG:O	2.41	0.53
4:E:493:ILE:O	7:H:380:ARG:NH1	2.41	0.53
4:E:1080:ALA:HB3	4:E:1083:GLU:HG3	1.90	0.53
17:S:380:PRO:HD2	17:S:383:LEU:HD22	1.89	0.53
4:E:440:LYS:HB3	4:E:1132:PHE:HB2	1.89	0.53
6:G:574:ARG:HE	6:G:607:LYS:HB3	1.73	0.53
11:L:356:ARG:NH2	11:L:401:THR:O	2.40	0.53
6:G:742:LEU:HD23	6:G:796:ARG:HG3	1.90	0.53
8:I:58:PRO:HG2	8:I:61:ALA:HB2	1.90	0.53
11:L:246:ASP:N	11:L:246:ASP:OD1	2.40	0.53
11:L:382:SER:HB2	11:L:385:ASP:HB2	1.91	0.53
2:C:70:VAL:HA	2:C:117:GLY:HA2	1.90	0.53
2:C:124:ASN:HB2	2:C:393:LEU:HD23	1.90	0.53
5:F:289:ILE:O	5:F:293:THR:HG23	2.09	0.53
16:R:38:ARG:HG2	16:R:44:ARG:HG2	1.90	0.53
4:E:231:ARG:HB2	4:E:283:GLN:HE21	1.74	0.53
1:B:93:GLU:O	1:B:134:GLN:NE2	2.40	0.53
2:C:1000:VAL:HG12	3:D:508:GLU:HB3	1.91	0.53
15:Q:673:TYR:OH	15:Q:693:LEU:N	2.41	0.53
5:F:541:GLU:OE1	5:F:541:GLU:N	2.41	0.53
6:G:384:ASP:OD1	6:G:385:ALA:N	2.38	0.53
7:H:315:HIS:O	7:H:318:ARG:NH2	2.41	0.53
3:D:40:PRO:O	3:D:297:ARG:NH1	2.42	0.53
4:E:609:PHE:HB2	4:E:855:VAL:HB	1.90	0.53
17:S:387:LEU:HD11	17:S:391:LYS:HE3	1.91	0.53
3:D:20:ILE:HD13	3:D:270:PRO:HD3	1.91	0.53
15:Q:307:ILE:HG22	15:Q:311:LEU:HD12	1.89	0.53
15:Q:562:ASP:OD1	15:Q:565:ARG:NH2	2.42	0.53
1:A:277:LEU:HD11	1:A:295:LEU:HD13	1.90	0.52
15:Q:584:GLN:HG2	15:Q:586:PHE:H	1.73	0.52
6:G:669:TYR:HD1	6:G:672:LEU:HD11	1.74	0.52
6:G:459:THR:OG1	6:G:492:THR:OG1	2.20	0.52
10:K:383:THR:HG1	10:K:386:THR:HG1	1.44	0.52
18:T:63:VAL:HG22	18:T:131:ARG:HD3	1.91	0.52
4:E:21:ARG:NH1	12:M:207:GLU:OE1	2.27	0.52
7:H:370:ASN:HD22	7:H:373:GLU:HG3	1.75	0.52
8:I:79:HIS:CD2	8:I:131:TRP:HE1	2.28	0.52
9:J:216:ILE:HD11	12:M:323:ARG:HH12	1.74	0.52
11:L:330:ASN:ND2	11:L:347:ASP:OD2	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1014:HIS:CE1	2:C:1036:ASP:HB2	2.45	0.52
5:F:66:LEU:HD22	6:G:795:GLN:HE21	1.75	0.52
6:G:603:SER:HB3	6:G:678:TRP:HE3	1.74	0.52
6:G:735:ILE:HG23	6:G:736:LEU:HD12	1.91	0.52
2:C:164:LYS:NZ	21:Y:28:DT:OP1	2.38	0.52
4:E:1033:LEU:HD23	4:E:1039:LEU:HD13	1.92	0.52
5:F:437:VAL:HG13	5:F:442:LEU:HD11	1.91	0.52
4:E:1182:ILE:HD13	5:F:606:GLY:H	1.74	0.52
8:I:230:ASN:OD1	8:I:234:ASN:ND2	2.43	0.52
21:Y:41:DC:H2'	21:Y:42:DG:C8	2.43	0.52
3:D:306:LEU:HD21	3:D:325:GLU:HG2	1.90	0.52
3:D:619:PRO:HG3	3:D:634:TYR:CZ	2.44	0.52
9:J:329:GLN:HE21	9:J:333:GLU:HG3	1.75	0.52
11:L:365:VAL:HG13	11:L:480:ARG:HE	1.75	0.52
22:Z:33:G:H2'	22:Z:34:G:H8	1.73	0.52
1:A:275:ASP:OD2	1:A:284:TYR:OH	2.26	0.52
7:H:154:ASP:OD1	7:H:154:ASP:N	2.40	0.52
3:D:184:PHE:HA	3:D:187:PHE:CE1	2.44	0.52
5:F:237:GLU:HG2	5:F:242:PHE:HA	1.92	0.52
6:G:81:LEU:HD23	6:G:84:LEU:HD12	1.92	0.52
15:Q:599:LEU:HD13	15:Q:618:ILE:HD11	1.92	0.52
3:D:669:ILE:HD12	4:E:7:LEU:HD11	1.92	0.51
4:E:988:ASN:ND2	7:H:200:GLU:OE2	2.43	0.51
6:G:127:LYS:HA	6:G:130:GLN:HE21	1.75	0.51
15:Q:590:VAL:HG21	15:Q:737:ARG:HG3	1.92	0.51
2:C:91:ASN:OD1	4:E:825:ARG:NH1	2.42	0.51
2:C:1013:ASP:OD1	2:C:1013:ASP:N	2.43	0.51
4:E:815:TYR:CZ	7:H:593:VAL:HB	2.46	0.51
2:C:739:ILE:HD11	2:C:776:CYS:HB3	1.92	0.51
4:E:1006:TYR:HE2	8:I:250:GLU:HG3	1.75	0.51
2:C:389:HIS:HD2	2:C:392:LYS:HE2	1.76	0.51
2:C:543:ARG:CZ	2:C:862:ARG:HG3	2.40	0.51
2:C:611:ILE:H	2:C:624:GLN:HE21	1.56	0.51
8:I:105:ILE:HD13	8:I:198:ASN:HD21	1.75	0.51
21:Y:34:DT:H2'	21:Y:35:DC:C6	2.46	0.51
2:C:126:ILE:HD11	2:C:393:LEU:HB3	1.91	0.51
3:D:6:LYS:HB2	4:E:1330:LYS:HD2	1.91	0.51
3:D:209:ARG:HD3	5:F:468:SER:HB3	1.92	0.51
9:J:415:ASN:HB3	9:J:418:SER:HB2	1.92	0.51
14:P:100:ILE:HD11	14:P:181:ILE:HD11	1.91	0.51
4:E:407:PHE:HE1	4:E:426:ARG:HD3	1.76	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:569:LEU:HD22	7:H:412:VAL:HG12	1.93	0.51
15:Q:580:ILE:N	15:Q:588:VAL:O	2.39	0.51
2:C:1051:LEU:HD23	3:D:336:LEU:HD22	1.93	0.51
3:D:459:HIS:CD2	3:D:461:LEU:HB2	2.46	0.51
7:H:395:GLU:O	7:H:524:ARG:NH1	2.33	0.51
17:S:581:PRO:HA	17:S:586:VAL:HG11	1.93	0.51
6:G:603:SER:O	6:G:607:LYS:HG3	2.11	0.51
11:L:286:ASN:ND2	11:L:319:GLU:OE2	2.28	0.51
18:T:49:VAL:HG11	18:T:51:ARG:HH21	1.76	0.51
2:C:503:TYR:O	2:C:506:GLU:HG2	2.11	0.50
4:E:694:ASP:O	4:E:702:ARG:NH2	2.43	0.50
4:E:1311:GLY:O	4:E:1315:ASN:ND2	2.44	0.50
7:H:411:HIS:NE2	7:H:503:LEU:HD12	2.26	0.50
13:N:147:ILE:HD11	13:N:157:PHE:CD2	2.46	0.50
3:D:608:LEU:HD22	16:R:60:TYR:HB3	1.93	0.50
5:F:249:ASN:OD1	5:F:284:THR:OG1	2.23	0.50
7:H:196:ARG:NH2	8:I:132:GLU:OE2	2.44	0.50
13:N:97:SER:O	13:N:101:VAL:HG23	2.12	0.50
15:Q:540:ARG:HA	15:Q:543:ILE:HG12	1.94	0.50
15:Q:572:ALA:HB1	15:Q:578:GLU:HA	1.93	0.50
15:Q:680:ASP:HB2	15:Q:761:PRO:HG3	1.92	0.50
2:C:451:GLU:HB3	2:C:470:PHE:HB3	1.92	0.50
2:C:973:GLN:HG3	2:C:1015:ILE:HD11	1.92	0.50
3:D:96:ASP:OD1	3:D:97:SER:N	2.45	0.50
3:D:118:TYR:HB3	3:D:264:MET:HE2	1.94	0.50
3:D:151:ILE:HD11	3:D:190:ARG:HG2	1.93	0.50
4:E:444:SER:OG	4:E:446:SER:O	2.30	0.50
5:F:175:ARG:NH1	11:L:371:LEU:HD23	2.26	0.50
3:D:542:LEU:HD13	4:E:49:GLN:HG3	1.93	0.50
20:X:69:DG:H2''	20:X:70:DA:C8	2.47	0.50
4:E:369:VAL:HB	4:E:381:PHE:HB3	1.92	0.50
4:E:694:ASP:OD2	4:E:702:ARG:NH2	2.44	0.50
11:L:110:ILE:HB	11:L:314:ILE:HB	1.92	0.50
15:Q:696:VAL:HG13	15:Q:699:VAL:HG12	1.93	0.50
17:S:459:SER:OG	17:S:476:GLU:OE1	2.25	0.50
18:T:81:GLN:O	18:T:116:LYS:NZ	2.43	0.50
2:C:642:ASP:OD2	2:C:648:GLY:N	2.38	0.50
5:F:78:LEU:HG	5:F:90:VAL:HG13	1.92	0.50
9:J:284:TYR:O	9:J:288:ARG:HB3	2.12	0.50
15:Q:374:SER:OG	15:Q:377:SER:O	2.30	0.50
4:E:484:CYS:HB3	4:E:938:LEU:HD22	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:G:501:ALA:HB1	6:G:533:GLU:HG3	1.93	0.50
1:B:23:ASP:HB2	1:B:27:LEU:HD23	1.94	0.50
2:C:929:ILE:HG13	2:C:938:PHE:HD2	1.77	0.50
6:G:114:ALA:HA	6:G:148:LEU:HD13	1.93	0.50
8:I:164:PHE:HA	8:I:190:VAL:HG11	1.94	0.50
15:Q:635:ILE:HA	15:Q:638:GLU:HG2	1.94	0.50
17:S:501:MET:HB2	17:S:518:THR:HG23	1.94	0.50
1:A:79:GLY:HA3	1:A:143:ILE:HD11	1.94	0.49
5:F:342:ILE:HD13	5:F:383:GLU:HG2	1.93	0.49
15:Q:273:SER:HA	15:Q:295:GLY:HA3	1.93	0.49
21:Y:26:DA:H2 ^{''}	21:Y:27:DA:H5 [']	1.92	0.49
2:C:427:SER:OG	2:C:431:ASN:O	2.29	0.49
4:E:622:ARG:HH22	4:E:788:ALA:HB2	1.77	0.49
11:L:267:ARG:NH1	11:L:269:GLY:O	2.45	0.49
12:M:204:ASP:HB3	12:M:221:GLU:HG2	1.94	0.49
18:T:76:LEU:HD23	18:T:122:LEU:HD12	1.95	0.49
11:L:156:THR:OG1	11:L:165:ARG:NH1	2.41	0.49
12:M:143:LYS:NZ	12:M:145:SER:OG	2.45	0.49
17:S:227:GLU:OE1	17:S:227:GLU:N	2.44	0.49
19:U:105:LYS:HG2	19:U:171:TRP:HZ2	1.77	0.49
5:F:272:GLU:O	5:F:279:LYS:NZ	2.31	0.49
5:F:346:ARG:HA	5:F:349:LYS:HD3	1.93	0.49
6:G:548:TYR:O	6:G:552:GLU:HG2	2.13	0.49
12:M:210:ILE:HG23	12:M:215:ASP:HB2	1.93	0.49
5:F:77:GLU:OE1	5:F:81:ARG:NE	2.43	0.49
7:H:480:GLU:OE2	7:H:484:HIS:NE2	2.46	0.49
6:G:648:GLN:HA	6:G:651:GLU:HG2	1.93	0.49
1:A:316:ASP:HA	1:A:319:LYS:HG2	1.95	0.49
2:C:695:ILE:HG21	2:C:741:VAL:HG11	1.95	0.49
5:F:145:ILE:HA	5:F:148:VAL:HG22	1.93	0.49
5:F:811:ILE:HD13	5:F:842:TYR:HB3	1.95	0.49
7:H:196:ARG:NH1	8:I:54:THR:O	2.46	0.49
10:K:271:PRO:HD2	10:K:274:LEU:HD12	1.95	0.49
14:O:160:ASP:HB3	14:O:163:LYS:HE3	1.95	0.49
3:D:546:THR:HG21	3:D:601:PRO:HB3	1.94	0.49
6:G:577:ASP:OD1	6:G:577:ASP:N	2.33	0.49
4:E:928:PHE:HZ	4:E:1122:ILE:HD11	1.78	0.49
6:G:178:THR:OG1	6:G:211:THR:OG1	2.25	0.49
15:Q:516:SER:OG	15:Q:519:GLU:O	2.24	0.49
1:A:80:ILE:HG12	1:A:139:LEU:HD23	1.95	0.48
11:L:372:PRO:HA	11:L:375:TYR:CZ	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:L:438:GLN:NE2	11:L:439:ASP:OD1	2.45	0.48
4:E:723:PHE:HB3	4:E:780:ARG:NH2	2.29	0.48
6:G:672:LEU:HD12	6:G:673:LEU:N	2.28	0.48
7:H:385:ARG:HE	7:H:546:ARG:HD2	1.78	0.48
20:X:59:DA:H2 ^o	20:X:60:DG:H8	1.78	0.48
2:C:1010:TYR:CD1	2:C:1021:VAL:HG21	2.48	0.48
4:E:411:GLN:HE22	9:J:234:TRP:H	1.60	0.48
4:E:1021:SER:OG	4:E:1039:LEU:O	2.30	0.48
19:U:143:VAL:HA	19:U:146:PHE:HD2	1.77	0.48
21:Y:36:DC:H2 ^o	21:Y:37:DC:C6	2.48	0.48
1:A:189:TYR:O	9:J:308:PRO:HB3	2.14	0.48
3:D:371:LEU:HD13	4:E:1317:VAL:HG13	1.94	0.48
4:E:778:LEU:HD13	4:E:780:ARG:NE	2.26	0.48
5:F:408:LYS:HB3	5:F:423:GLU:HG2	1.95	0.48
7:H:148:ASP:OD1	7:H:149:LYS:N	2.46	0.48
15:Q:359:ILE:HG23	15:Q:363:TYR:CE1	2.48	0.48
2:C:308:HIS:NE2	2:C:477:GLU:OE2	2.41	0.48
4:E:630:ILE:HD12	4:E:821:GLY:HA2	1.95	0.48
2:C:561:GLU:HG2	2:C:655:LYS:HD3	1.95	0.48
7:H:205:ASP:OD1	7:H:207:LYS:NZ	2.36	0.48
8:I:49:TYR:N	8:I:97:TYR:HH	2.12	0.48
10:K:124:MET:HG2	10:K:127:TRP:CZ2	2.48	0.48
20:X:32:DT:H2 ^o	20:X:33:DC:C4	2.48	0.48
21:Y:17:DT:H2 ^o	21:Y:18:DC:H5	1.79	0.48
1:A:273:PHE:HA	1:A:294:THR:HA	1.95	0.48
6:G:137:PRO:HA	6:G:141:ILE:HD12	1.95	0.48
13:N:185:VAL:HG23	13:N:188:ALA:HB2	1.94	0.48
18:T:63:VAL:HA	18:T:66:TRP:CD2	2.48	0.48
2:C:170:ALA:N	2:C:178:ILE:O	2.40	0.48
3:D:114:THR:HA	3:D:265:VAL:HA	1.95	0.48
5:F:323:LYS:HE2	5:F:327:LEU:HD11	1.94	0.48
13:N:132:GLN:HG2	13:N:250:SER:HB2	1.94	0.48
17:S:448:ASN:OD1	17:S:448:ASN:N	2.45	0.48
2:C:975:PRO:HD3	2:C:1012:SER:O	2.13	0.48
4:E:746:PRO:HD3	4:E:762:TRP:HA	1.96	0.48
11:L:325:MET:HE2	11:L:328:GLN:HG3	1.95	0.48
13:N:60:LEU:HD12	13:N:69:LEU:HD11	1.96	0.48
4:E:488:LEU:O	4:E:489:ILE:HG13	2.13	0.48
6:G:774:LEU:HD13	6:G:792:ILE:HG21	1.94	0.48
7:H:82:ALA:HB2	7:H:308:ASN:HD22	1.79	0.48
11:L:233:HIS:HD2	11:L:235:GLY:H	1.62	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:Q:330:ALA:HB2	15:Q:397:VAL:HG22	1.96	0.48
19:U:87:ILE:HG22	19:U:90:PHE:H	1.77	0.48
21:Y:46:DT:O3'	21:Y:47:DA:H8	1.97	0.48
2:C:92:ARG:NH2	4:E:817:LEU:O	2.46	0.47
7:H:559:ASP:OD1	7:H:559:ASP:N	2.41	0.47
10:K:81:ASP:O	10:K:229:LYS:HE3	2.14	0.47
15:Q:734:TYR:OH	15:Q:739:GLU:OE1	2.22	0.47
1:A:64:ARG:HB3	1:A:150:LYS:HB2	1.95	0.47
6:G:631:GLN:O	6:G:635:GLN:HG2	2.13	0.47
11:L:79:PHE:O	11:L:281:TYR:OH	2.18	0.47
13:N:83:ASN:O	13:N:87:GLN:HG2	2.13	0.47
3:D:155:PRO:HD2	15:Q:695:ASP:OD2	2.14	0.47
3:D:179:PHE:HD1	15:Q:698:ARG:HH11	1.63	0.47
4:E:470:LEU:HD13	4:E:1113:ALA:HB3	1.97	0.47
4:E:804:GLU:OE2	7:H:399:SER:N	2.45	0.47
4:E:904:PHE:CE1	18:T:94:ARG:HD2	2.49	0.47
2:C:248:GLN:O	2:C:253:HIS:N	2.42	0.47
2:C:711:ILE:HG23	2:C:744:LEU:HD21	1.96	0.47
4:E:710:ARG:HB3	4:E:723:PHE:HE2	1.80	0.47
4:E:1000:GLN:HB3	7:H:154:ASP:OD1	2.14	0.47
6:G:618:LEU:HD13	6:G:638:LYS:HE2	1.94	0.47
17:S:445:TRP:NE1	17:S:466:LYS:HD3	2.29	0.47
2:C:872:SER:HB3	2:C:906:LEU:HD11	1.95	0.47
3:D:621:GLU:OE2	3:D:623:HIS:NE2	2.34	0.47
4:E:458:HIS:HE1	7:H:81:TRP:CE2	2.32	0.47
8:I:181:LEU:HD11	8:I:255:LEU:HD21	1.95	0.47
11:L:411:PRO:O	11:L:415:ARG:HG2	2.15	0.47
20:X:69:DG:H1	21:Y:13:DC:H42	1.60	0.47
6:G:595:ILE:HG21	6:G:668:PHE:HE1	1.79	0.47
22:Z:33:G:H2'	22:Z:34:G:C8	2.50	0.47
2:C:33:GLU:O	2:C:37:LYS:NZ	2.33	0.47
3:D:235:ARG:HD2	21:Y:26:DA:C8	2.50	0.47
5:F:417:ILE:HG21	5:F:820:ALA:HB2	1.97	0.47
5:F:749:PHE:HA	5:F:752:MET:HE2	1.96	0.47
5:F:833:ILE:HG23	5:F:834:LEU:HD12	1.96	0.47
6:G:637:ILE:O	6:G:684:ARG:NH1	2.47	0.47
7:H:137:GLU:O	7:H:141:LYS:N	2.48	0.47
7:H:518:ARG:HA	7:H:521:LEU:HD23	1.96	0.47
14:P:173:PRO:HA	17:S:562:ASN:HD21	1.79	0.47
1:B:64:ARG:HB3	1:B:150:LYS:HB2	1.95	0.47
2:C:73:SER:HA	2:C:117:GLY:HA3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:553:ASN:ND2	27:D:804:HOH:O	2.47	0.47
4:E:161:ILE:HD12	4:E:180:ILE:HG23	1.96	0.47
6:G:424:GLU:HG2	6:G:456:LYS:HD2	1.96	0.47
8:I:156:SER:OG	8:I:159:ASN:OD1	2.21	0.47
8:I:172:PHE:CE1	13:N:116:ASN:HB3	2.50	0.47
3:D:120:LYS:HE2	3:D:341:ARG:HA	1.97	0.47
4:E:243:ILE:O	4:E:247:ILE:HG12	2.15	0.47
5:F:208:ALA:HB1	5:F:212:LEU:HD23	1.97	0.47
6:G:514:SER:HA	6:G:517:VAL:HG12	1.96	0.47
2:C:986:ARG:HA	3:D:375:ARG:HA	1.97	0.47
3:D:148:ALA:HB2	3:D:164:PHE:HE1	1.80	0.47
11:L:300:LYS:HD2	16:R:91:LEU:HA	1.97	0.47
15:Q:266:HIS:HB3	15:Q:326:LEU:HD11	1.97	0.47
15:Q:591:ASP:N	15:Q:591:ASP:OD1	2.47	0.47
20:X:65:DA:H1'	20:X:66:DC:H5'	1.97	0.47
2:C:88:TRP:CE2	2:C:349:ILE:HG23	2.50	0.46
2:C:227:TYR:HD2	2:C:237:PRO:HG3	1.80	0.46
4:E:301:ARG:NE	4:E:314:VAL:O	2.41	0.46
12:M:267:VAL:HG22	12:M:293:ILE:HD12	1.96	0.46
20:X:47:DG:H2''	20:X:48:DA:C8	2.50	0.46
7:H:70:GLU:OE1	7:H:74:ARG:NH2	2.48	0.46
15:Q:581:ASP:HA	15:Q:584:GLN:HE22	1.81	0.46
2:C:661:TYR:O	4:E:56:SER:OG	2.29	0.46
5:F:359:HIS:ND1	5:F:366:ASP:OD1	2.47	0.46
5:F:384:LEU:HD23	5:F:798:LEU:HD11	1.97	0.46
5:F:401:ARG:NH2	5:F:461:ASP:O	2.49	0.46
6:G:712:ASP:OD1	6:G:714:HIS:ND1	2.33	0.46
10:K:80:ASP:OD1	10:K:80:ASP:N	2.48	0.46
14:P:79:VAL:HG12	14:P:133:LYS:HG2	1.97	0.46
19:U:99:ARG:HH11	19:U:120:VAL:HG12	1.80	0.46
3:D:295:LEU:HD13	3:D:335:LEU:HA	1.97	0.46
4:E:633:TYR:OH	7:H:597:ASN:OD1	2.32	0.46
6:G:358:ASN:OD1	6:G:362:GLN:NE2	2.48	0.46
6:G:463:GLU:O	6:G:467:GLN:HG2	2.16	0.46
7:H:385:ARG:HH21	7:H:546:ARG:HD2	1.79	0.46
1:A:225:LEU:HD22	1:B:45:ILE:HD11	1.97	0.46
2:C:86:LEU:HD23	2:C:88:TRP:CZ2	2.50	0.46
4:E:982:THR:HB	7:H:166:ILE:HD12	1.98	0.46
7:H:508:GLU:O	7:H:511:GLU:HG2	2.15	0.46
16:R:85:ASP:HB3	16:R:133:VAL:HG21	1.98	0.46
6:G:279:ASP:O	6:G:282:THR:OG1	2.31	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:207:LYS:HD2	7:H:211:ASP:HB3	1.96	0.46
15:Q:302:SER:HB3	15:Q:322:THR:HG23	1.98	0.46
15:Q:605:SER:O	15:Q:608:GLU:HG2	2.16	0.46
18:T:92:GLU:HG3	18:T:107:LEU:HD13	1.97	0.46
2:C:611:ILE:HB	2:C:624:GLN:HE21	1.81	0.46
7:H:141:LYS:HE3	7:H:141:LYS:HB3	1.81	0.46
10:K:358:ASP:HB3	10:K:362:ARG:HB2	1.98	0.46
10:K:416:VAL:O	10:K:420:GLN:HG2	2.15	0.46
14:P:81:LYS:HA	14:P:133:LYS:HG3	1.98	0.46
5:F:819:ARG:HA	5:F:819:ARG:HH11	1.80	0.46
6:G:655:ASP:OD1	6:G:695:ARG:NH2	2.48	0.46
15:Q:673:TYR:CZ	15:Q:693:LEU:HB3	2.51	0.46
5:F:552:PRO:HG2	5:F:563:ARG:HD3	1.98	0.46
7:H:133:ILE:HB	7:H:137:GLU:OE2	2.16	0.46
7:H:331:ARG:NH1	7:H:341:GLU:OE1	2.45	0.46
13:N:144:LEU:O	13:N:147:ILE:HG22	2.16	0.46
13:N:173:TRP:HB2	13:N:175:TRP:NE1	2.31	0.46
16:R:66:PRO:HG2	16:R:67:PHE:CE2	2.51	0.46
1:A:74:TYR:HB3	2:C:613:TYR:CD2	2.51	0.46
4:E:1109:ALA:HA	4:E:1132:PHE:HZ	1.81	0.46
5:F:378:GLU:HB3	5:F:478:ARG:HH21	1.81	0.46
18:T:135:LYS:HE2	18:T:140:ASP:HB2	1.98	0.46
6:G:563:LEU:HA	6:G:566:VAL:HG12	1.97	0.45
8:I:148:GLU:HA	8:I:151:GLU:HG2	1.98	0.45
21:Y:49:DG:H2 ^o	21:Y:50:DA:C5	2.51	0.45
2:C:215:LYS:HD3	2:C:225:GLU:HB2	1.97	0.45
7:H:125:LYS:O	7:H:128:ILE:HG13	2.15	0.45
13:N:226:GLU:O	13:N:230:TYR:HB2	2.16	0.45
15:Q:403:MET:HB3	15:Q:403:MET:HE2	1.86	0.45
1:A:283:ILE:HG23	1:A:312:PHE:HE1	1.81	0.45
2:C:490:ASN:OD1	2:C:497:GLN:NE2	2.44	0.45
3:D:128:ASN:HD22	3:D:246:ARG:HD2	1.82	0.45
4:E:447:GLU:OE1	4:E:483:SER:HB2	2.16	0.45
11:L:102:PHE:N	26:L:8001:SAH:OXT	2.37	0.45
17:S:242:TYR:OH	17:S:476:GLU:OE2	2.33	0.45
4:E:102:GLU:OE2	4:E:375:ARG:NH2	2.50	0.45
4:E:729:PHE:CE1	19:U:147:ILE:HD13	2.47	0.45
6:G:389:ASN:ND2	6:G:421:GLU:OE2	2.49	0.45
6:G:618:LEU:O	6:G:622:LEU:HG	2.16	0.45
12:M:189:PRO:HG3	12:M:251:TYR:OH	2.16	0.45
15:Q:626:ARG:NH1	15:Q:653:GLU:OE1	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:457:LEU:HD11	2:C:518:ARG:HG3	1.99	0.45
6:G:561:ARG:HH22	6:G:667:ARG:HD3	1.81	0.45
5:F:446:ARG:NH1	15:Q:661:ASP:OD1	2.49	0.45
3:D:202:GLN:O	3:D:206:LEU:HG	2.17	0.45
4:E:812:VAL:HG21	7:H:607:ALA:HB2	1.99	0.45
11:L:233:HIS:CD2	11:L:235:GLY:H	2.33	0.45
13:N:71:TYR:O	13:N:75:LYS:HB2	2.17	0.45
13:N:211:PRO:HA	13:N:214:TRP:CE3	2.51	0.45
21:Y:36:DC:H2'	21:Y:37:DC:H6	1.81	0.45
4:E:354:VAL:HB	4:E:423:ALA:HB3	1.98	0.45
12:M:193:ILE:HA	12:M:235:ASN:HD21	1.82	0.45
13:N:264:ARG:O	13:N:267:GLN:HG2	2.17	0.45
20:X:47:DG:H2''	20:X:48:DA:H8	1.82	0.45
20:X:63:DA:H2''	20:X:64:DG:N7	2.32	0.45
22:Z:35:C:H2'	22:Z:36:G:H8	1.82	0.45
3:D:55:LEU:HD21	3:D:296:TYR:HB3	1.99	0.45
3:D:363:LYS:NZ	21:Y:36:DC:OP1	2.30	0.45
5:F:142:GLU:O	5:F:145:ILE:HG13	2.17	0.45
7:H:534:ARG:O	7:H:538:GLY:N	2.49	0.45
14:P:98:PRO:HB3	14:P:185:MET:HG2	1.99	0.45
15:Q:355:THR:OG1	15:Q:545:ASN:ND2	2.50	0.45
2:C:674:LEU:HD11	2:C:836:LEU:HG	1.99	0.45
4:E:98:ARG:HD3	4:E:375:ARG:NH2	2.32	0.45
6:G:245:ILE:HA	6:G:248:TYR:HB2	1.99	0.45
7:H:535:GLN:HE22	7:H:541:LEU:HD11	1.82	0.45
11:L:149:ILE:HD11	11:L:168:CYS:HB3	1.97	0.45
22:Z:31:C:H4'	22:Z:32:C:O5'	2.17	0.45
2:C:424:ILE:HD11	4:E:178:TYR:HE2	1.82	0.44
9:J:212:PRO:HA	12:M:333:TRP:O	2.16	0.44
9:J:305:LYS:HE3	9:J:305:LYS:HB3	1.85	0.44
14:O:118:LEU:HD11	14:O:154:LEU:HD21	2.00	0.44
2:C:408:PHE:HD2	2:C:409:ARG:HH21	1.65	0.44
3:D:69:CYS:HB3	3:D:90:CYS:SG	2.57	0.44
4:E:98:ARG:HD3	4:E:375:ARG:HH21	1.82	0.44
4:E:668:PHE:HB3	4:E:782:VAL:HG11	1.99	0.44
4:E:793:LEU:O	4:E:796:LEU:HB2	2.17	0.44
6:G:515:ARG:HA	6:G:518:ASN:HD21	1.80	0.44
6:G:742:LEU:HD12	6:G:743:PRO:HD2	1.99	0.44
15:Q:501:MET:SD	15:Q:510:PRO:HG2	2.58	0.44
17:S:534:ALA:HB2	27:S:712:HOH:O	2.17	0.44
19:U:112:PHE:HE1	19:U:160:GLY:HA3	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:472:SER:H	2:C:475:GLN:HE21	1.65	0.44
6:G:684:ARG:HA	6:G:687:ARG:HG2	1.99	0.44
12:M:200:TYR:HB3	12:M:226:LYS:HB2	1.99	0.44
15:Q:469:PRO:HG3	15:Q:491:ASN:ND2	2.33	0.44
6:G:214:THR:HA	6:G:217:ASN:HD21	1.83	0.44
7:H:85:GLU:OE2	7:H:314:ARG:NH2	2.50	0.44
7:H:343:ARG:NH2	7:H:350:ASP:OD2	2.49	0.44
8:I:113:ASN:HB2	18:T:117:TRP:CZ3	2.52	0.44
9:J:397:ALA:HB3	9:J:400:ALA:HB2	1.99	0.44
15:Q:654:ASP:OD2	15:Q:656:LEU:HB2	2.18	0.44
17:S:438:PRO:HA	17:S:441:VAL:HG22	1.98	0.44
2:C:1060:VAL:HB	3:D:7:HIS:HB2	1.99	0.44
3:D:641:ARG:NH1	12:M:199:ASP:OD1	2.47	0.44
4:E:1006:TYR:HB3	8:I:247:ALA:HB2	2.00	0.44
4:E:1248:LEU:HD21	4:E:1272:LEU:HD11	1.99	0.44
2:C:675:ILE:HG22	2:C:852:MET:HG2	2.00	0.44
4:E:711:VAL:HG22	4:E:720:LEU:HG	2.00	0.44
5:F:744:GLU:HB3	5:F:747:GLU:HB2	1.99	0.44
6:G:360:PHE:HA	6:G:363:ASN:HD21	1.82	0.44
6:G:508:GLU:OE1	6:G:508:GLU:N	2.46	0.44
7:H:76:TRP:CZ2	7:H:308:ASN:HB3	2.53	0.44
9:J:421:LYS:HE2	14:O:72:PHE:CE1	2.53	0.44
1:A:22:ARG:HG3	1:A:28:TYR:CE1	2.53	0.44
2:C:74:LEU:O	2:C:117:GLY:N	2.46	0.44
2:C:168:ILE:HD11	2:C:294:ILE:HD11	1.98	0.44
2:C:799:SER:OG	2:C:801:TYR:O	2.31	0.44
2:C:882:ARG:NH1	2:C:905:GLU:OE1	2.50	0.44
3:D:85:LYS:O	3:D:94:PHE:N	2.51	0.44
6:G:382:ASP:OD1	6:G:382:ASP:N	2.44	0.44
13:N:84:LEU:HD22	13:N:118:ALA:HA	1.99	0.44
15:Q:469:PRO:HA	15:Q:494:VAL:HG22	1.99	0.44
2:C:208:LEU:HB3	2:C:213:LYS:HE3	2.00	0.44
5:F:169:LYS:HE3	5:F:169:LYS:HB2	1.84	0.44
13:N:71:TYR:HA	13:N:75:LYS:HG3	1.98	0.44
13:N:171:SER:HB3	13:N:225:TRP:CE2	2.53	0.44
13:N:255:SER:O	13:N:259:GLU:HG2	2.18	0.44
1:A:276:GLN:CD	17:S:280:LEU:HD21	2.38	0.44
2:C:1016:ARG:O	2:C:1020:GLU:HG2	2.18	0.44
3:D:157:PHE:HD2	15:Q:694:HIS:NE2	2.15	0.44
4:E:903:PRO:HB2	18:T:94:ARG:HD3	1.99	0.44
5:F:818:LEU:O	5:F:822:ILE:HG12	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:Q:725:GLN:O	15:Q:732:GLU:N	2.51	0.44
15:Q:749:GLU:HA	15:Q:752:GLN:HG3	2.00	0.44
17:S:386:SER:O	17:S:389:GLU:HG2	2.17	0.44
2:C:269:ARG:NH2	2:C:302:THR:O	2.49	0.43
2:C:328:ALA:HB2	2:C:364:THR:HG21	2.00	0.43
4:E:793:LEU:C	4:E:796:LEU:H	2.22	0.43
8:I:79:HIS:NE2	8:I:128:ASP:OD1	2.51	0.43
9:J:186:PHE:CG	12:M:262:ARG:HD3	2.53	0.43
13:N:70:ASP:OD1	13:N:71:TYR:N	2.51	0.43
21:Y:13:DC:H2 ⁷	21:Y:14:DG:H8	1.83	0.43
1:B:74:TYR:OH	12:M:279:ASP:OD1	2.30	0.43
2:C:722:LEU:HD12	2:C:728:VAL:HA	2.00	0.43
2:C:1053:LEU:HD11	3:D:117:TRP:HZ3	1.83	0.43
4:E:630:ILE:HG22	4:E:823:PRO:HA	1.99	0.43
4:E:808:ILE:HA	4:E:843:TRP:HB3	1.99	0.43
10:K:110:HIS:CD2	10:K:130:PRO:HB3	2.53	0.43
10:K:117:ASP:OD1	14:O:133:LYS:NZ	2.27	0.43
2:C:81:TYR:HB3	2:C:98:ARG:HE	1.82	0.43
4:E:458:HIS:N	7:H:68:GLU:OE2	2.33	0.43
5:F:95:TYR:OH	6:G:472:GLU:OE2	2.32	0.43
6:G:181:ILE:HD13	6:G:215:VAL:HB	2.00	0.43
6:G:535:TYR:HD1	6:G:540:LYS:HB2	1.84	0.43
6:G:700:GLU:OE1	6:G:715:ARG:NH2	2.51	0.43
9:J:319:TRP:CG	9:J:346:MET:HG3	2.54	0.43
15:Q:522:VAL:HG23	15:Q:533:ILE:HB	1.99	0.43
2:C:914:ALA:HB3	9:J:356:ARG:HH21	1.82	0.43
4:E:268:ASP:OD1	4:E:268:ASP:N	2.51	0.43
4:E:572:ARG:HG3	4:E:577:PHE:HB3	2.00	0.43
4:E:864:THR:HG21	7:H:413:ALA:HB1	2.00	0.43
5:F:138:ARG:NH1	5:F:172:TYR:OH	2.51	0.43
6:G:669:TYR:HA	6:G:672:LEU:HG	2.00	0.43
7:H:532:SER:HG	13:N:214:TRP:HZ2	1.66	0.43
11:L:427:LYS:HE3	11:L:427:LYS:HB3	1.75	0.43
13:N:131:ILE:HA	13:N:248:LEU:O	2.18	0.43
2:C:700:THR:OG1	2:C:703:GLY:O	2.31	0.43
4:E:92:HIS:CE1	4:E:94:VAL:HB	2.54	0.43
4:E:579:ILE:HD11	4:E:796:LEU:HD22	1.99	0.43
4:E:792:ASN:C	4:E:794:ALA:N	2.65	0.43
15:Q:473:ARG:NH1	15:Q:555:ALA:O	2.51	0.43
2:C:407:ASN:HB3	2:C:410:ILE:HG13	2.00	0.43
2:C:410:ILE:HG22	2:C:411:ARG:H	1.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:419:LEU:HD12	3:D:419:LEU:HA	1.85	0.43
4:E:296:THR:HG21	4:E:1230:SER:HB2	1.99	0.43
4:E:306:ARG:HA	4:E:313:LEU:HA	2.00	0.43
5:F:131:LYS:HG2	6:G:476:VAL:HG21	2.01	0.43
5:F:248:PHE:HB3	5:F:271:MET:SD	2.59	0.43
6:G:797:SER:HA	6:G:800:LYS:HE2	2.00	0.43
13:N:79:THR:O	13:N:82:GLU:HG2	2.19	0.43
15:Q:396:ALA:HB2	15:Q:427:LYS:HA	2.01	0.43
15:Q:725:GLN:HB2	15:Q:734:TYR:HB3	2.01	0.43
17:S:481:THR:HG21	17:S:538:GLY:O	2.18	0.43
18:T:67:SER:HB2	18:T:132:TYR:HE1	1.83	0.43
1:A:256:LYS:HE2	1:A:271:TYR:CE2	2.54	0.43
1:B:55:GLY:HA3	1:B:157:TYR:CZ	2.54	0.43
4:E:70:TRP:CZ2	9:J:278:LEU:HD12	2.54	0.43
4:E:216:ARG:HG2	4:E:1328:PHE:HE1	1.84	0.43
5:F:788:GLN:NE2	5:F:820:ALA:HB1	2.33	0.43
8:I:62:LEU:HB3	8:I:66:MET:HB3	2.01	0.43
12:M:261:THR:HG22	12:M:262:ARG:H	1.83	0.43
2:C:284:ARG:NH1	7:H:556:ASP:OD1	2.52	0.43
2:C:964:SER:HB2	3:D:404:GLU:O	2.19	0.43
4:E:156:PRO:HA	4:E:187:LYS:NZ	2.34	0.43
5:F:175:ARG:HH12	11:L:371:LEU:HD23	1.84	0.43
12:M:236:ARG:NH1	12:M:242:GLU:O	2.47	0.43
13:N:61:GLU:OE1	13:N:61:GLU:N	2.52	0.43
14:P:96:LYS:HG2	14:P:97:VAL:HG13	1.99	0.43
21:Y:44:DC:H2''	21:Y:45:DG:O4'	2.18	0.43
2:C:315:ARG:NH2	2:C:323:ASP:OD2	2.51	0.43
2:C:615:ARG:NH2	2:C:619:ASN:OD1	2.51	0.43
4:E:104:TRP:CD1	4:E:164:PRO:HG3	2.53	0.43
4:E:362:ILE:HD13	4:E:391:ILE:HG12	1.99	0.43
4:E:783:ALA:HB1	4:E:785:TYR:CD2	2.54	0.43
4:E:1035:PRO:HG2	4:E:1036:TYR:CE2	2.54	0.43
5:F:74:PHE:CZ	6:G:707:LEU:HB3	2.54	0.43
6:G:615:ASN:O	6:G:619:GLU:HG2	2.19	0.43
10:K:312:GLU:OE1	10:K:316:ASN:ND2	2.51	0.43
12:M:146:LEU:HB3	12:M:255:SER:HB3	1.99	0.43
15:Q:618:ILE:HG12	15:Q:619:GLY:H	1.83	0.43
21:Y:23:DT:H2''	21:Y:24:DA:C8	2.52	0.43
2:C:739:ILE:HD11	2:C:776:CYS:CB	2.48	0.43
2:C:1014:HIS:O	2:C:1018:ARG:HG3	2.19	0.43
4:E:625:ARG:O	4:E:832:ILE:N	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:276:MET:HB2	7:H:327:ILE:HD12	2.00	0.43
7:H:368:ASP:HB3	7:H:374:ILE:HD11	2.01	0.43
8:I:246:MET:O	8:I:250:GLU:HG2	2.18	0.43
10:K:205:MET:HB2	14:O:88:GLN:HG2	2.00	0.43
13:N:155:SER:HA	13:N:158:VAL:HG22	2.01	0.43
17:S:329:LYS:HZ2	17:S:361:GLN:HB2	1.84	0.43
3:D:256:ARG:HA	3:D:256:ARG:HD2	1.83	0.42
4:E:1006:TYR:CE2	8:I:250:GLU:HG3	2.53	0.42
7:H:137:GLU:HA	7:H:140:ALA:HB3	2.01	0.42
8:I:78:HIS:CD2	13:N:230:TYR:HH	2.36	0.42
9:J:232:GLU:OE1	9:J:232:GLU:N	2.51	0.42
21:Y:33:DG:C8	21:Y:34:DT:H72	2.54	0.42
3:D:114:THR:HG21	3:D:119:LEU:HD22	2.01	0.42
6:G:162:PHE:CG	6:G:180:LEU:HD22	2.54	0.42
11:L:109:ASP:OD1	11:L:316:LYS:N	2.50	0.42
14:P:122:ALA:HB2	14:P:131:ILE:HD12	2.00	0.42
15:Q:372:MET:HB2	15:Q:379:TYR:N	2.33	0.42
1:B:212:LYS:HB2	1:B:212:LYS:HE3	1.82	0.42
3:D:306:LEU:HD13	3:D:324:GLN:HB3	2.00	0.42
5:F:411:THR:O	5:F:415:SER:OG	2.28	0.42
6:G:145:MET:HE1	6:G:161:VAL:HG21	2.00	0.42
6:G:458:TYR:HA	6:G:461:VAL:HG22	2.01	0.42
7:H:535:GLN:HG2	13:N:109:GLY:O	2.19	0.42
10:K:136:PRO:HD2	10:K:389:ARG:O	2.19	0.42
12:M:200:TYR:N	12:M:226:LYS:O	2.51	0.42
15:Q:737:ARG:H	15:Q:737:ARG:HD3	1.84	0.42
21:Y:37:DC:H2'	21:Y:38:DG:C8	2.54	0.42
1:B:55:GLY:HA3	1:B:157:TYR:CE2	2.54	0.42
4:E:629:GLY:O	4:E:824:THR:N	2.34	0.42
4:E:1164:ASN:HB3	4:E:1168:ARG:NH1	2.35	0.42
4:E:1314:GLU:OE1	4:E:1314:GLU:N	2.50	0.42
5:F:405:MET:HG2	5:F:409:TYR:HA	2.01	0.42
6:G:601:MET:HA	6:G:604:VAL:HG12	2.01	0.42
6:G:650:VAL:O	6:G:653:VAL:HG12	2.19	0.42
7:H:370:ASN:ND2	7:H:373:GLU:HG3	2.35	0.42
11:L:283:ASP:N	11:L:283:ASP:OD1	2.52	0.42
20:X:52:DC:H2''	20:X:53:DA:C8	2.54	0.42
2:C:187:MET:SD	2:C:189:SER:OG	2.61	0.42
2:C:908:GLU:OE2	2:C:912:GLN:NE2	2.42	0.42
4:E:476:LEU:HD11	4:E:1115:VAL:HG22	2.01	0.42
5:F:81:ARG:NH1	5:F:92:GLU:OE1	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:G:235:GLU:O	6:G:239:GLU:HG2	2.19	0.42
11:L:163:ASP:OD1	11:L:163:ASP:N	2.51	0.42
11:L:345:PRO:HA	11:L:394:ALA:HB2	2.01	0.42
15:Q:673:TYR:CE2	15:Q:693:LEU:HB3	2.54	0.42
20:X:59:DA:H2'	20:X:60:DG:C8	2.54	0.42
3:D:172:LYS:HE3	3:D:173:TYR:CE2	2.55	0.42
5:F:482:ASP:HA	5:F:485:VAL:HG22	2.00	0.42
9:J:256:GLU:OE1	9:J:256:GLU:N	2.47	0.42
10:K:457:PRO:HA	10:K:460:TRP:CE2	2.54	0.42
13:N:85:ASN:O	13:N:89:VAL:HG23	2.19	0.42
2:C:979:ARG:N	21:Y:40:DG:OP1	2.53	0.42
4:E:1093:ILE:HG12	7:H:286:HIS:CD2	2.55	0.42
7:H:401:HIS:HB3	7:H:404:VAL:HG23	2.01	0.42
15:Q:341:MET:HG3	15:Q:407:LEU:HD13	2.02	0.42
15:Q:628:LYS:O	15:Q:631:VAL:HG22	2.20	0.42
17:S:445:TRP:CD2	17:S:449:LEU:HD23	2.55	0.42
18:T:58:LEU:HD22	18:T:63:VAL:HG11	2.02	0.42
18:T:85:LEU:HD23	18:T:113:ARG:HB2	2.00	0.42
2:C:510:ILE:HD12	2:C:511:ALA:O	2.20	0.42
4:E:904:PHE:CD1	18:T:94:ARG:HD2	2.54	0.42
6:G:472:GLU:H	6:G:472:GLU:HG3	1.64	0.42
10:K:279:ASN:O	10:K:283:LYS:HG2	2.20	0.42
11:L:195:SER:HG	26:L:8001:SAH:HO2'	1.56	0.42
12:M:210:ILE:HD11	12:M:217:LEU:HD23	2.02	0.42
13:N:68:THR:OG1	13:N:232:ASP:OD1	2.36	0.42
13:N:120:GLN:HG2	13:N:208:ALA:HB2	2.00	0.42
15:Q:345:GLY:O	15:Q:437:VAL:N	2.50	0.42
17:S:446:HIS:CE1	17:S:449:LEU:HB2	2.55	0.42
19:U:130:PHE:CD1	19:U:134:GLU:HB2	2.54	0.42
2:C:789:ASP:OD2	2:C:791:ARG:NE	2.48	0.42
3:D:458:LEU:HB3	4:E:330:GLU:HG2	2.02	0.42
6:G:459:THR:HG23	6:G:492:THR:HA	2.02	0.42
10:K:122:TRP:CE2	14:O:106:THR:HG22	2.55	0.42
17:S:484:THR:HG22	17:S:537:ARG:HD2	2.01	0.42
2:C:402:THR:H	2:C:405:THR:HB	1.84	0.42
2:C:844:LEU:HB2	2:C:846:ASP:OD1	2.19	0.42
4:E:1110:THR:HG22	7:H:99:LEU:HD13	2.01	0.42
10:K:234:PHE:HB3	10:K:264:ILE:HD13	2.02	0.42
21:Y:26:DA:H2'	21:Y:27:DA:C8	2.55	0.42
21:Y:37:DC:H2'	21:Y:38:DG:H8	1.84	0.42
1:B:194:GLU:N	1:B:194:GLU:OE1	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:1087:LYS:HE2	10:K:326:PHE:CG	2.54	0.41
6:G:528:PHE:O	6:G:532:ILE:HG12	2.20	0.41
6:G:691:GLU:OE1	6:G:695:ARG:NH1	2.48	0.41
15:Q:615:ILE:HA	15:Q:642:VAL:O	2.20	0.41
3:D:326:LYS:O	3:D:330:GLU:HG2	2.20	0.41
3:D:527:PRO:HB2	3:D:530:VAL:HG23	2.02	0.41
4:E:1204:LYS:HD3	4:E:1204:LYS:HA	1.91	0.41
7:H:337:ARG:HA	7:H:363:PHE:CE2	2.55	0.41
15:Q:710:GLU:H	15:Q:710:GLU:CD	2.24	0.41
2:C:1007:MET:HB3	3:D:376:VAL:HG11	2.02	0.41
4:E:237:MET:SD	4:E:242:PHE:HB2	2.61	0.41
8:I:86:LEU:HD22	8:I:121:ALA:HA	2.02	0.41
11:L:395:ALA:HA	11:L:398:THR:HG22	2.02	0.41
15:Q:692:PHE:CZ	15:Q:759:GLU:HB2	2.55	0.41
17:S:505:GLN:HB2	17:S:514:TYR:CZ	2.55	0.41
20:X:32:DT:H2'	20:X:33:DC:C5	2.55	0.41
22:Z:39:C:H2'	22:Z:40:G:C8	2.55	0.41
1:A:48:ALA:HB3	1:B:226:PHE:CZ	2.53	0.41
4:E:104:TRP:CG	4:E:164:PRO:HG3	2.55	0.41
4:E:860:VAL:O	4:E:871:PHE:N	2.52	0.41
4:E:1231:LYS:HD3	4:E:1250:GLY:HA2	2.03	0.41
5:F:413:VAL:HA	5:F:798:LEU:HD22	2.02	0.41
7:H:399:SER:HB3	7:H:517:TRP:HD1	1.86	0.41
8:I:106:LYS:HE2	8:I:106:LYS:HB3	1.89	0.41
12:M:149:CYS:HB3	12:M:258:LYS:HE2	2.02	0.41
15:Q:359:ILE:HG21	15:Q:415:VAL:HG21	2.02	0.41
17:S:498:LEU:HD23	17:S:518:THR:HG22	2.02	0.41
2:C:826:HIS:NE2	2:C:870:GLU:OE1	2.47	0.41
3:D:68:ILE:HD12	3:D:69:CYS:O	2.21	0.41
4:E:269:LEU:HD23	4:E:269:LEU:HA	1.89	0.41
5:F:542:LEU:HD21	5:F:564:VAL:HG11	2.03	0.41
6:G:77:LEU:HD23	6:G:109:VAL:HG21	2.02	0.41
6:G:145:MET:HE2	6:G:145:MET:HB2	1.92	0.41
6:G:225:ASP:HA	6:G:258:ARG:HH22	1.86	0.41
6:G:574:ARG:HE	6:G:607:LYS:HE2	1.85	0.41
6:G:796:ARG:HG2	6:G:800:LYS:NZ	2.36	0.41
10:K:218:LEU:O	10:K:249:THR:OG1	2.32	0.41
10:K:356:VAL:HB	10:K:364:HIS:HB2	2.01	0.41
13:N:51:LYS:NZ	13:N:129:GLU:OE2	2.38	0.41
15:Q:362:LEU:O	15:Q:365:ALA:N	2.53	0.41
2:C:32:ILE:HD13	2:C:32:ILE:HA	1.96	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:407:ASN:OD1	2:C:408:PHE:N	2.54	0.41
2:C:714:LEU:HD13	2:C:719:LEU:HD21	2.02	0.41
3:D:205:ASP:HB3	5:F:453:ARG:CZ	2.50	0.41
3:D:384:ILE:HG22	3:D:476:ILE:HB	2.02	0.41
4:E:372:THR:OG1	4:E:373:ARG:N	2.53	0.41
6:G:458:TYR:HE2	6:G:484:VAL:HG21	1.84	0.41
8:I:110:ASN:HB3	8:I:113:ASN:O	2.20	0.41
14:P:146:MET:SD	17:S:314:LEU:HB3	2.60	0.41
15:Q:706:ALA:HA	15:Q:747:VAL:HG23	2.03	0.41
2:C:824:GLY:O	27:C:1101:HOH:O	2.22	0.41
4:E:111:LEU:HD12	4:E:149:MET:HG2	2.03	0.41
4:E:666:ARG:N	7:H:599:TRP:HZ2	2.19	0.41
4:E:1180:LEU:HD13	4:E:1188:ILE:HD12	2.02	0.41
6:G:201:LYS:NZ	6:G:235:GLU:OE2	2.48	0.41
6:G:644:ASP:OD1	6:G:644:ASP:N	2.51	0.41
7:H:170:ASP:OD1	7:H:170:ASP:N	2.48	0.41
7:H:414:GLU:HG3	7:H:472:LEU:HD22	2.02	0.41
22:Z:39:C:H2'	22:Z:40:G:H8	1.86	0.41
3:D:367:PHE:HA	3:D:371:LEU:HD12	2.03	0.41
4:E:669:PHE:H	4:E:782:VAL:HG12	1.86	0.41
7:H:298:VAL:HG13	7:H:299:HIS:CD2	2.56	0.41
7:H:536:ALA:O	13:N:207:ASN:ND2	2.53	0.41
10:K:197:LYS:HG3	10:K:210:VAL:HG21	2.01	0.41
11:L:298:ARG:HD2	11:L:301:ASP:OD1	2.21	0.41
1:B:98:SER:HB3	1:B:127:VAL:HA	2.03	0.41
2:C:178:ILE:HD11	2:C:230:PHE:HB2	2.03	0.41
2:C:258:LEU:HD13	2:C:266:ILE:HD12	2.03	0.41
2:C:846:ASP:OD2	2:C:848:ARG:NE	2.52	0.41
3:D:15:VAL:HG22	3:D:19:GLN:HB3	2.03	0.41
3:D:120:LYS:HB3	3:D:120:LYS:HE3	1.85	0.41
5:F:314:ASP:O	5:F:318:VAL:HG12	2.21	0.41
5:F:488:ARG:HA	5:F:488:ARG:HD3	1.76	0.41
6:G:467:GLN:O	6:G:715:ARG:NH1	2.35	0.41
6:G:617:LEU:HD23	6:G:617:LEU:HA	1.93	0.41
7:H:126:LYS:HA	7:H:126:LYS:HD3	1.81	0.41
10:K:383:THR:OG1	10:K:386:THR:OG1	2.16	0.41
10:K:430:ILE:HG13	10:K:450:LEU:HD22	2.03	0.41
13:N:60:LEU:HD12	13:N:69:LEU:HD21	2.03	0.41
14:O:84:ALA:O	14:O:88:GLN:HG3	2.20	0.41
14:P:114:MET:SD	14:P:154:LEU:HD11	2.61	0.41
15:Q:437:VAL:HA	15:Q:475:VAL:HB	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:S:446:HIS:ND1	17:S:448:ASN:OD1	2.52	0.41
22:Z:35:C:H2'	22:Z:36:G:C8	2.55	0.41
1:A:150:LYS:HD3	1:A:150:LYS:HA	1.82	0.41
3:D:104:MET:SD	3:D:273:PRO:HD3	2.61	0.41
3:D:455:ALA:HB3	3:D:456:PRO:HD3	2.03	0.41
4:E:475:HIS:ND1	7:H:96:ARG:HD2	2.36	0.41
4:E:579:ILE:HD13	4:E:579:ILE:HA	1.95	0.41
7:H:528:LEU:HB3	13:N:214:TRP:CD1	2.56	0.41
15:Q:301:ALA:O	15:Q:318:ILE:HA	2.20	0.41
15:Q:614:ILE:O	15:Q:640:SER:OG	2.28	0.41
15:Q:626:ARG:HH12	15:Q:653:GLU:CD	2.23	0.41
4:E:43:LYS:HE2	4:E:43:LYS:HB3	1.87	0.40
5:F:410:ARG:HD3	5:F:816:VAL:HG21	2.04	0.40
6:G:162:PHE:CD1	6:G:180:LEU:HD22	2.56	0.40
6:G:299:VAL:HA	6:G:302:LEU:HD12	2.03	0.40
9:J:415:ASN:HD22	9:J:416:MET:N	2.19	0.40
10:K:124:MET:HA	10:K:127:TRP:CE2	2.56	0.40
15:Q:614:ILE:HB	15:Q:640:SER:HA	2.02	0.40
1:B:204:TRP:HE1	16:R:69:GLU:CD	2.24	0.40
7:H:121:PRO:HB3	7:H:124:ARG:NH2	2.36	0.40
7:H:273:TYR:OH	8:I:98:GLY:O	2.30	0.40
10:K:85:PHE:HD2	10:K:87:TYR:H	1.69	0.40
12:M:266:LEU:HD22	12:M:292:LYS:HE2	2.04	0.40
14:P:173:PRO:CA	17:S:562:ASN:HD21	2.35	0.40
16:R:66:PRO:HG2	16:R:67:PHE:CD2	2.56	0.40
2:C:814:ARG:HH11	2:C:955:GLN:HE21	1.70	0.40
5:F:164:LEU:HD22	5:F:174:ILE:HB	2.04	0.40
7:H:164:ARG:HG2	7:H:166:ILE:HG13	2.03	0.40
7:H:415:GLN:OE1	7:H:481:ARG:NH2	2.51	0.40
7:H:502:LYS:HE2	7:H:502:LYS:HB3	1.83	0.40
7:H:517:TRP:NE1	13:N:187:ASN:O	2.44	0.40
15:Q:659:LEU:HD12	15:Q:659:LEU:HA	1.80	0.40
20:X:47:DG:OP1	20:X:47:DG:H8	2.04	0.40
2:C:62:PRO:HB3	2:C:77:SER:O	2.21	0.40
2:C:695:ILE:HB	2:C:777:LEU:HD22	2.02	0.40
3:D:16:SER:HB3	3:D:263:TRP:CZ2	2.56	0.40
3:D:610:GLN:HG2	12:M:203:TYR:CD2	2.56	0.40
3:D:654:THR:OG1	3:D:655:THR:N	2.53	0.40
4:E:1053:GLN:C	4:E:1055:TYR:H	2.25	0.40
5:F:182:VAL:HG21	5:F:212:LEU:HD21	2.02	0.40
5:F:418:GLU:HG2	5:F:419:PRO:HD3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:G:78:ILE:HD13	6:G:112:GLU:HG2	2.02	0.40
6:G:365:ARG:HD3	6:G:365:ARG:HA	1.89	0.40
6:G:785:THR:HG22	6:G:793:MET:HB2	2.02	0.40
2:C:401:LEU:H	2:C:401:LEU:HG	1.74	0.40
3:D:12:ILE:HD11	4:E:1300:ALA:HB3	2.02	0.40
4:E:37:HIS:CE1	16:R:75:ILE:HD11	2.57	0.40
4:E:436:GLU:OE1	4:E:436:GLU:N	2.55	0.40
6:G:314:ASP:O	6:G:317:SER:OG	2.36	0.40
7:H:590:LYS:HD3	7:H:590:LYS:HA	1.87	0.40
9:J:212:PRO:HB2	9:J:270:LYS:HG2	2.03	0.40
9:J:291:PHE:O	9:J:295:ARG:HG3	2.21	0.40
11:L:214:VAL:HG12	11:L:218:ARG:NE	2.37	0.40
12:M:231:LYS:HG2	12:M:232:HIS:O	2.21	0.40
14:O:160:ASP:OD2	14:O:162:SER:OG	2.39	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	295/327 (90%)	284 (96%)	11 (4%)	0	100	100
1	B	279/327 (85%)	273 (98%)	6 (2%)	0	100	100
2	C	1036/1072 (97%)	1016 (98%)	19 (2%)	1 (0%)	51	74
3	D	597/680 (88%)	571 (96%)	26 (4%)	0	100	100
4	E	1057/1373 (77%)	1011 (96%)	44 (4%)	2 (0%)	47	69
5	F	650/911 (71%)	631 (97%)	18 (3%)	1 (0%)	47	69
6	G	744/862 (86%)	730 (98%)	14 (2%)	0	100	100
7	H	547/675 (81%)	536 (98%)	11 (2%)	0	100	100
8	I	213/263 (81%)	204 (96%)	9 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	J	230/529 (44%)	224 (97%)	6 (3%)	0	100	100
10	K	382/460 (83%)	370 (97%)	11 (3%)	1 (0%)	41	62
11	L	412/483 (85%)	400 (97%)	11 (3%)	1 (0%)	47	69
12	M	213/334 (64%)	210 (99%)	3 (1%)	0	100	100
13	N	222/297 (75%)	216 (97%)	6 (3%)	0	100	100
14	O	112/185 (60%)	110 (98%)	2 (2%)	0	100	100
14	P	106/185 (57%)	105 (99%)	1 (1%)	0	100	100
15	Q	537/768 (70%)	522 (97%)	15 (3%)	0	100	100
16	R	126/162 (78%)	121 (96%)	5 (4%)	0	100	100
17	S	382/611 (62%)	369 (97%)	13 (3%)	0	100	100
18	T	102/140 (73%)	96 (94%)	6 (6%)	0	100	100
19	U	107/187 (57%)	106 (99%)	1 (1%)	0	100	100
All	All	8349/10831 (77%)	8105 (97%)	238 (3%)	6 (0%)	54	74

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	E	489	ILE
4	E	793	LEU
11	L	405	ILE
2	C	1030	THR
5	F	553	ILE
10	K	87	TYR

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	275/301 (91%)	270 (98%)	5 (2%)	59	79
1	B	258/301 (86%)	256 (99%)	2 (1%)	81	92
2	C	905/931 (97%)	895 (99%)	10 (1%)	73	88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	D	546/608 (90%)	540 (99%)	6 (1%)	73	88
4	E	969/1230 (79%)	956 (99%)	13 (1%)	69	85
5	F	565/782 (72%)	554 (98%)	11 (2%)	57	78
6	G	642/740 (87%)	630 (98%)	12 (2%)	57	78
7	H	489/609 (80%)	483 (99%)	6 (1%)	71	86
8	I	187/230 (81%)	182 (97%)	5 (3%)	44	69
9	J	212/469 (45%)	210 (99%)	2 (1%)	78	90
10	K	338/401 (84%)	333 (98%)	5 (2%)	65	82
11	L	369/431 (86%)	363 (98%)	6 (2%)	62	81
12	M	205/299 (69%)	201 (98%)	4 (2%)	55	77
13	N	192/259 (74%)	189 (98%)	3 (2%)	62	81
14	O	103/169 (61%)	103 (100%)	0	100	100
14	P	97/169 (57%)	96 (99%)	1 (1%)	76	89
15	Q	458/661 (69%)	446 (97%)	12 (3%)	46	70
16	R	114/144 (79%)	114 (100%)	0	100	100
17	S	336/532 (63%)	333 (99%)	3 (1%)	78	90
18	T	93/126 (74%)	92 (99%)	1 (1%)	73	88
19	U	91/160 (57%)	90 (99%)	1 (1%)	73	88
All	All	7444/9552 (78%)	7336 (98%)	108 (2%)	66	82

All (108) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	43	ASP
1	A	73	ASP
1	A	104	ARG
1	A	138	THR
1	A	143	ILE
1	B	159	LEU
1	B	275	ASP
2	C	28	ASP
2	C	56	THR
2	C	82	VAL
2	C	94	MET
2	C	100	PHE
2	C	402	THR

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Mol	Chain	Res	Type
2	C	630	ARG
2	C	722	LEU
2	C	923	TYR
2	C	943	ILE
3	D	14	LEU
3	D	15	VAL
3	D	68	ILE
3	D	236	LYS
3	D	338	ASN
3	D	624	TYR
4	E	56	SER
4	E	463	THR
4	E	489	ILE
4	E	784	THR
4	E	793	LEU
4	E	795	THR
4	E	796	LEU
4	E	864	THR
4	E	928	PHE
4	E	945	ASN
4	E	990	TYR
4	E	1029	ARG
4	E	1116	HIS
5	F	85	ARG
5	F	168	GLU
5	F	203	ARG
5	F	416	TRP
5	F	448	ARG
5	F	488	ARG
5	F	497	GLU
5	F	516	ARG
5	F	768	ASP
5	F	808	VAL
5	F	848	LEU
6	G	212	TYR
6	G	245	ILE
6	G	306	MET
6	G	408	PHE
6	G	428	PHE
6	G	444	GLN
6	G	510	GLU
6	G	515	ARG

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Mol	Chain	Res	Type
6	G	523	ARG
6	G	586	MET
6	G	636	MET
6	G	776	ASP
7	H	137	GLU
7	H	409	GLN
7	H	462	LYS
7	H	474	LEU
7	H	532	SER
7	H	535	GLN
8	I	94	ASP
8	I	97	TYR
8	I	128	ASP
8	I	148	GLU
8	I	203	ASP
9	J	335	THR
9	J	415	ASN
10	K	88	ASP
10	K	246	MET
10	K	265	PHE
10	K	383	THR
10	K	392	SER
11	L	102	PHE
11	L	138	PHE
11	L	192	ASP
11	L	218	ARG
11	L	246	ASP
11	L	427	LYS
12	M	120	PHE
12	M	261	THR
12	M	266	LEU
12	M	301	ASP
13	N	51	LYS
13	N	67	GLU
13	N	197	ASP
14	P	96	LYS
15	Q	266	HIS
15	Q	306	ASP
15	Q	339	LYS
15	Q	362	LEU
15	Q	373	PHE
15	Q	628	LYS

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Mol	Chain	Res	Type
15	Q	633	THR
15	Q	643	THR
15	Q	737	ARG
15	Q	746	TYR
15	Q	757	THR
15	Q	763	ARG
17	S	315	LYS
17	S	517	ARG
17	S	570	ARG
18	T	57	ARG
19	U	102	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (91) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	193	ASN
1	A	303	GLN
1	B	14	GLN
1	B	196	GLN
1	B	303	GLN
2	C	17	GLN
2	C	124	ASN
2	C	135	GLN
2	C	221	ASN
2	C	228	GLN
2	C	276	GLN
2	C	307	ASN
2	C	322	GLN
2	C	334	ASN
2	C	475	GLN
2	C	516	HIS
2	C	542	ASN
2	C	623	HIS
2	C	624	GLN
2	C	696	GLN
2	C	713	HIS
2	C	725	ASN
2	C	812	GLN
2	C	867	GLN
2	C	883	HIS
2	C	974	GLN
2	C	1014	HIS

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Mol	Chain	Res	Type
2	C	1057	HIS
3	D	446	GLN
3	D	464	GLN
3	D	467	GLN
3	D	583	ASN
3	D	610	GLN
3	D	629	ASN
3	D	674	GLN
4	E	41	GLN
4	E	49	GLN
4	E	78	GLN
4	E	87	HIS
4	E	113	GLN
4	E	144	HIS
4	E	283	GLN
4	E	310	HIS
4	E	326	GLN
4	E	728	HIS
4	E	842	ASN
4	E	1011	ASN
4	E	1053	GLN
4	E	1151	GLN
4	E	1206	GLN
4	E	1291	GLN
4	E	1365	HIS
5	F	270	ASN
5	F	788	GLN
5	F	835	GLN
6	G	130	GLN
6	G	182	ASN
6	G	217	ASN
6	G	362	GLN
6	G	363	ASN
6	G	518	ASN
6	G	624	ASN
6	G	630	HIS
6	G	640	ASN
7	H	228	GLN
7	H	315	HIS
8	I	68	GLN
8	I	126	ASN
8	I	149	GLN

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Mol	Chain	Res	Type
8	I	215	HIS
9	J	329	GLN
9	J	415	ASN
10	K	110	HIS
10	K	112	ASN
10	K	179	GLN
10	K	414	GLN
11	L	233	HIS
12	M	124	GLN
12	M	190	GLN
15	Q	440	ASN
15	Q	545	ASN
15	Q	676	HIS
15	Q	725	GLN
15	Q	745	GLN
16	R	71	GLN
17	S	284	ASN
17	S	371	ASN
17	S	562	ASN
18	T	46	ASN
19	U	101	HIS
19	U	175	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
22	Z	10/40 (25%)	2 (20%)	1 (10%)

All (2) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
22	Z	32	C
22	Z	38	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
22	Z	31	C

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 5 ligands modelled in this entry, 4 are monoatomic - leaving 1 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	SAH	L	8001	-	24,28,28	1.21	3 (12%)	25,40,40	1.80	5 (20%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
26	SAH	L	8001	-	-	3/11/31/31	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	L	8001	SAH	C2-N3	3.94	1.38	1.32
26	L	8001	SAH	C2-N1	2.36	1.38	1.33
26	L	8001	SAH	OXT-C	-2.19	1.23	1.30

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	L	8001	SAH	N3-C2-N1	-5.50	120.08	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	L	8001	SAH	C5'-SD-CG	-3.81	90.83	102.27
26	L	8001	SAH	C3'-C2'-C1'	3.29	105.94	100.98
26	L	8001	SAH	OXT-C-O	-2.73	117.89	124.09
26	L	8001	SAH	OXT-C-CA	2.30	121.23	113.38

There are no chirality outliers.

All (3) torsion outliers are listed below:

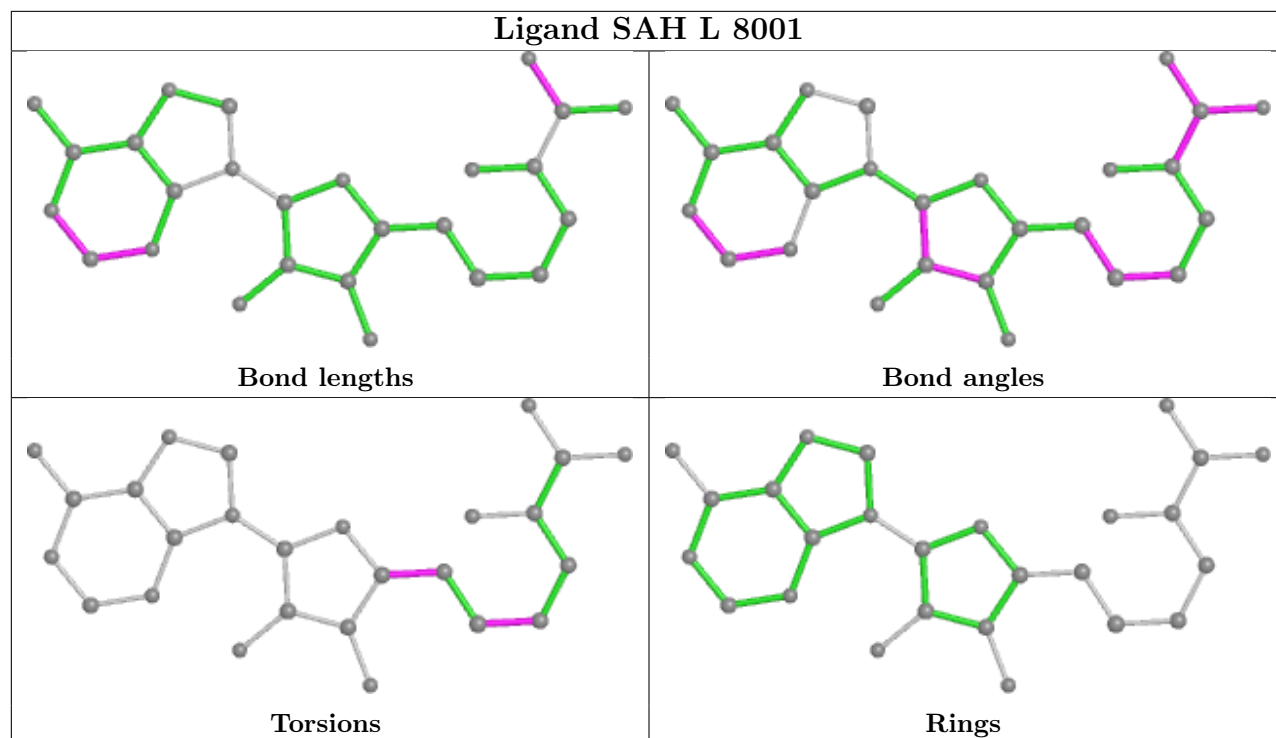
Mol	Chain	Res	Type	Atoms
26	L	8001	SAH	O4'-C4'-C5'-SD
26	L	8001	SAH	C3'-C4'-C5'-SD
26	L	8001	SAH	CB-CG-SD-C5'

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
26	L	8001	SAH	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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.

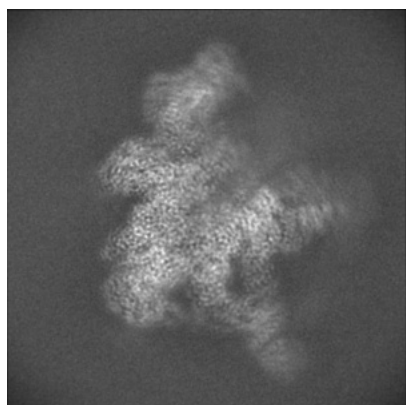
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-19023. These allow visual inspection of the internal detail of the map and identification of artifacts.

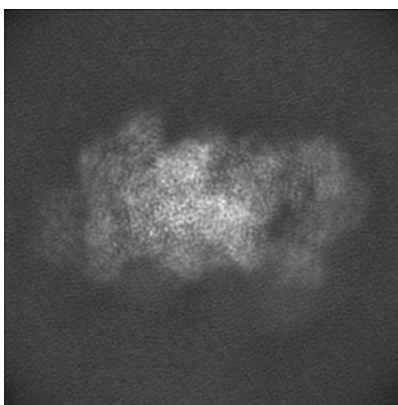
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

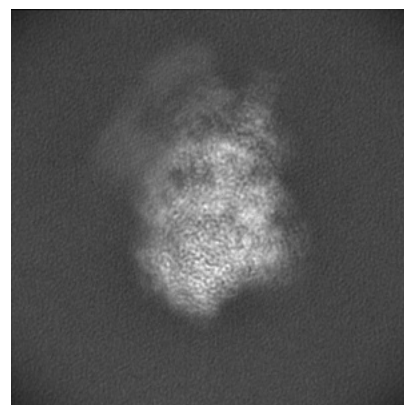
6.1.1 Primary map



X



Y

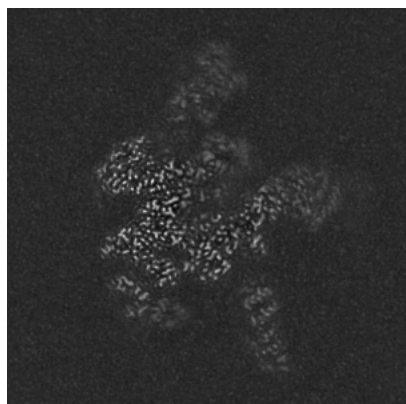


Z

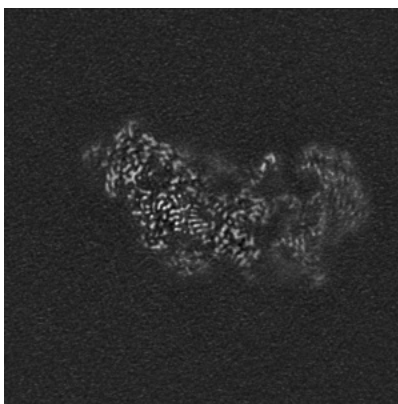
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

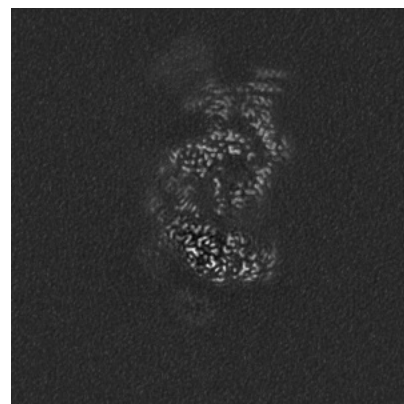
6.2.1 Primary map



X Index: 300



Y Index: 300

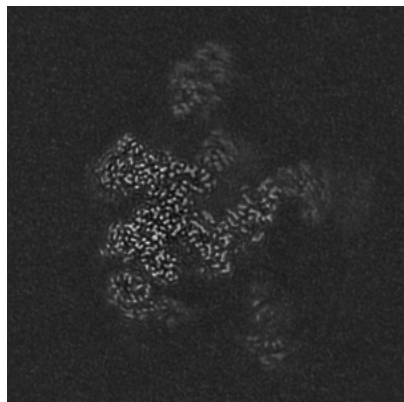


Z Index: 300

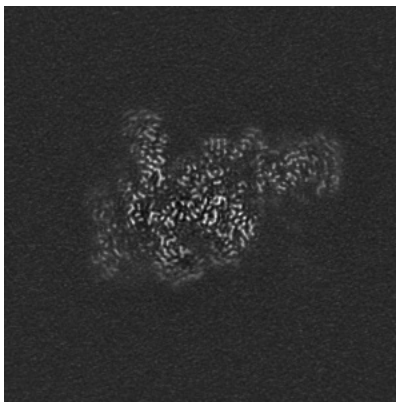
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

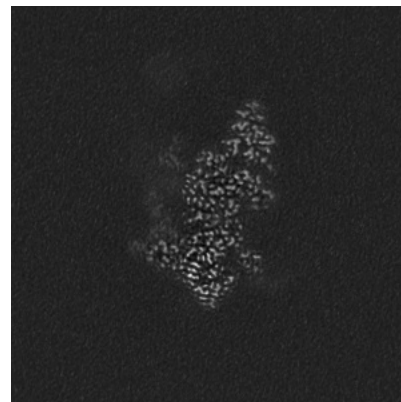
6.3.1 Primary map



X Index: 288



Y Index: 233

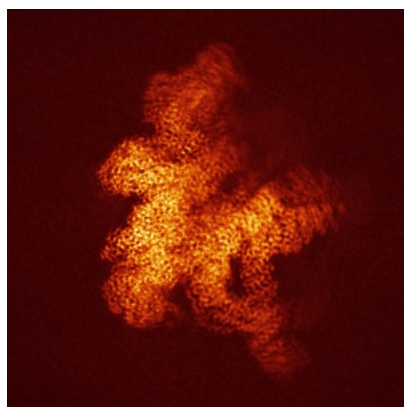


Z Index: 253

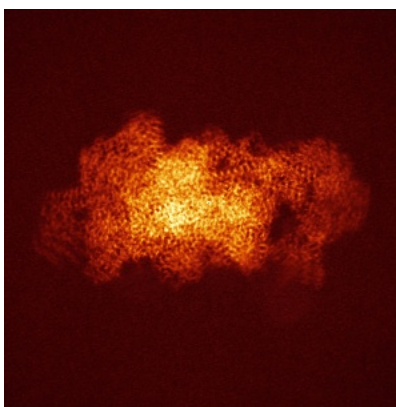
The images above show the largest variance slices of the map in three orthogonal directions.

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

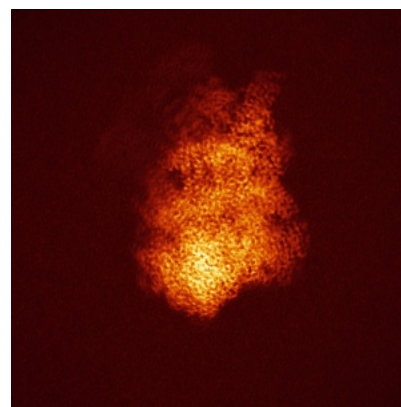
6.4.1 Primary map



X



Y

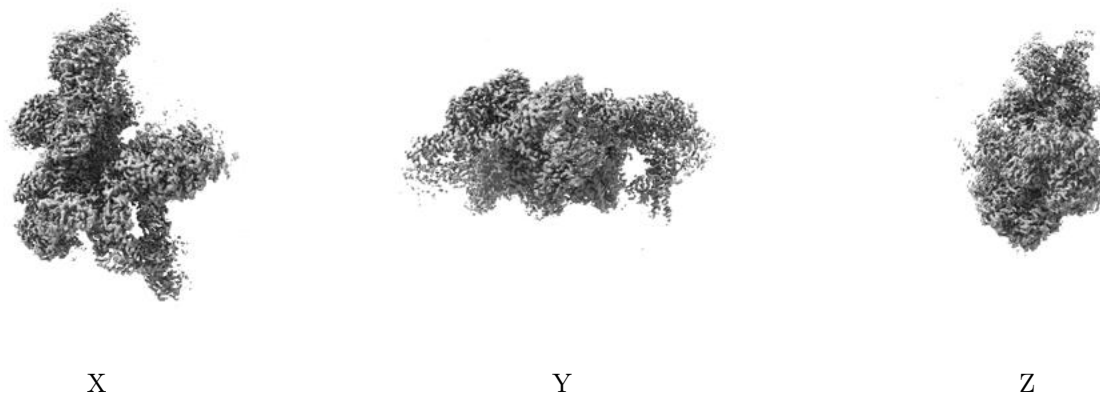


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.8. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

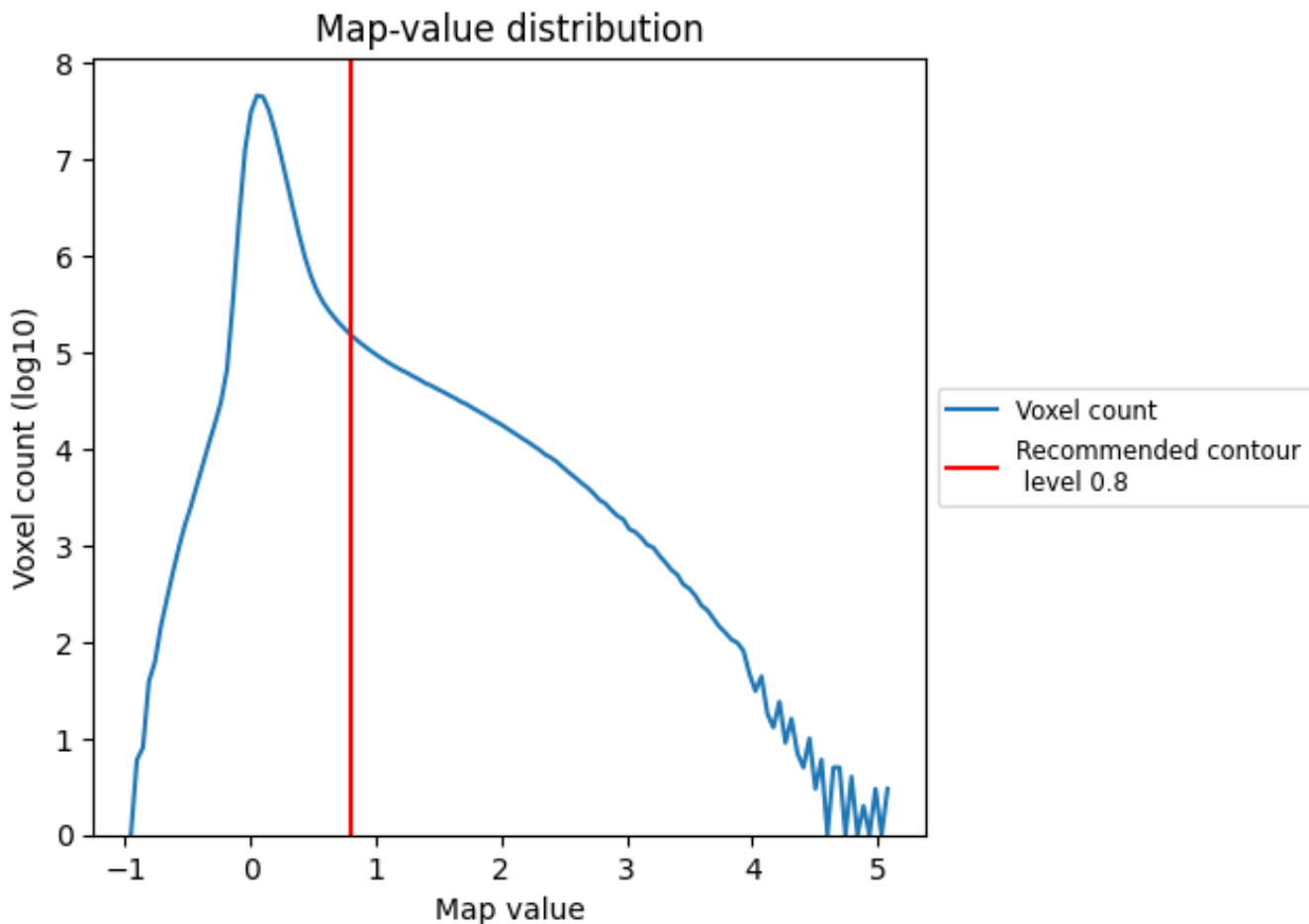
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

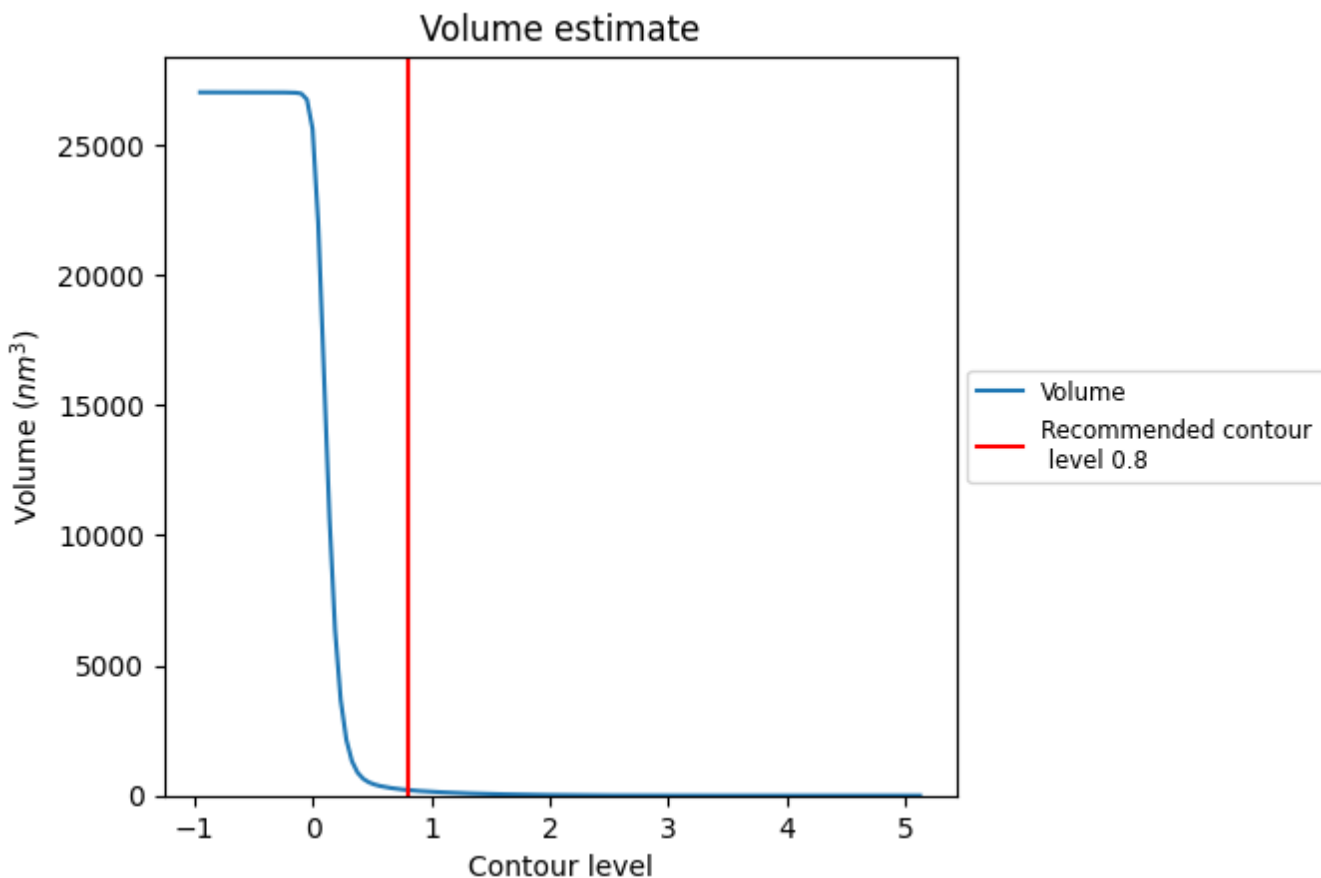
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

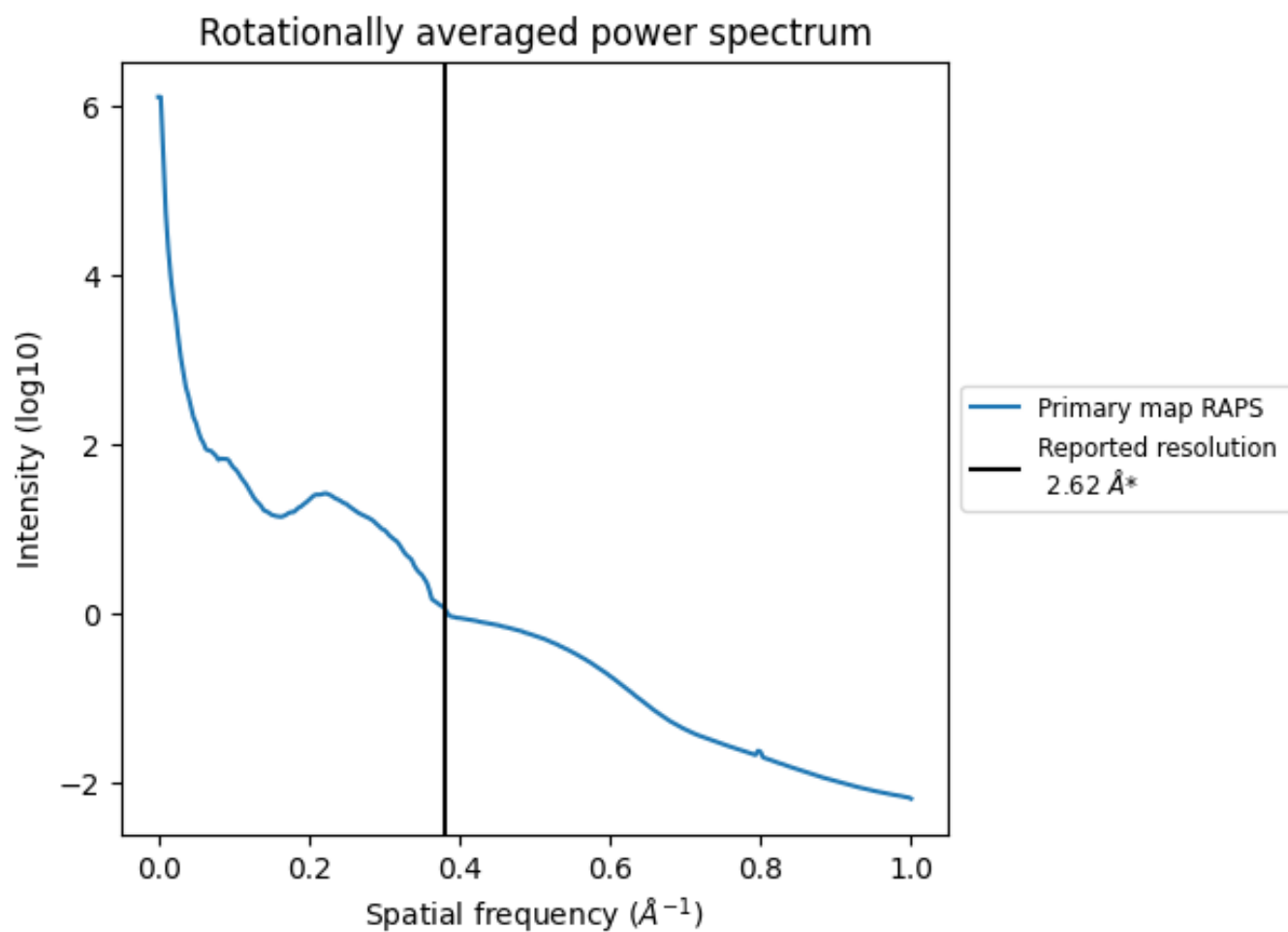
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 214 nm^3 ; this corresponds to an approximate mass of 193 kDa.

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

7.3 Rotationally averaged power spectrum [i](#)



*Reported resolution corresponds to spatial frequency of 0.382 Å⁻¹

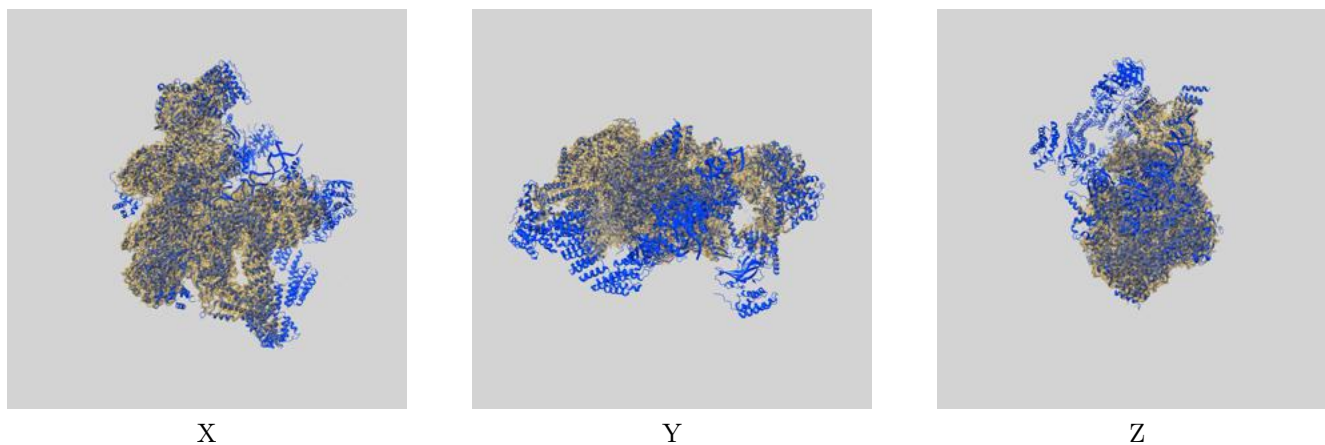
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

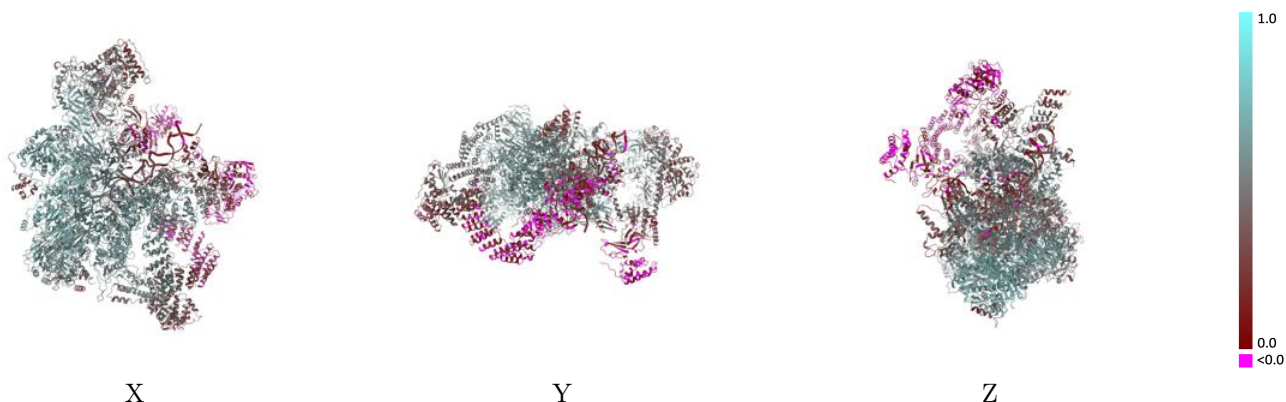
This section contains information regarding the fit between EMDB map EMD-19023 and PDB model 8RDJ. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlay [i](#)



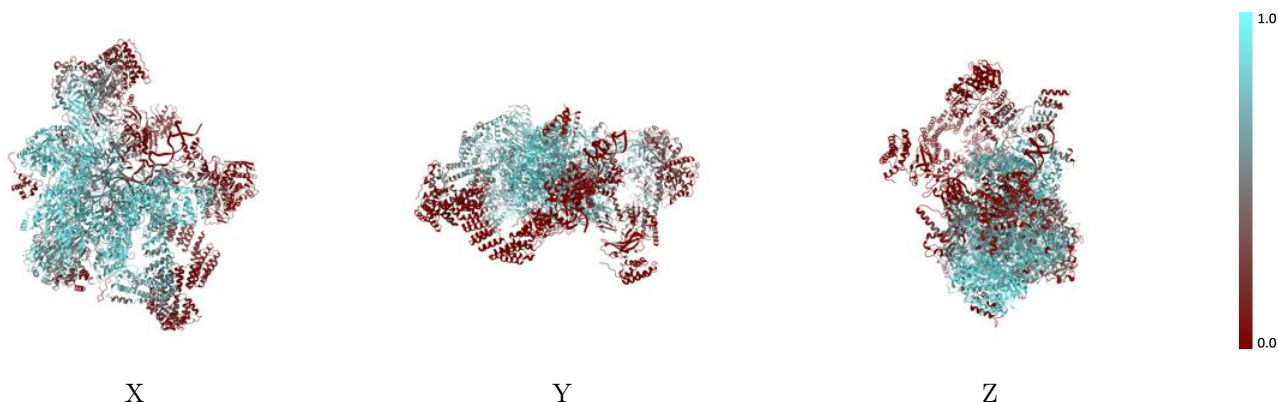
The images above show the 3D surface view of the map at the recommended contour level 0.8 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



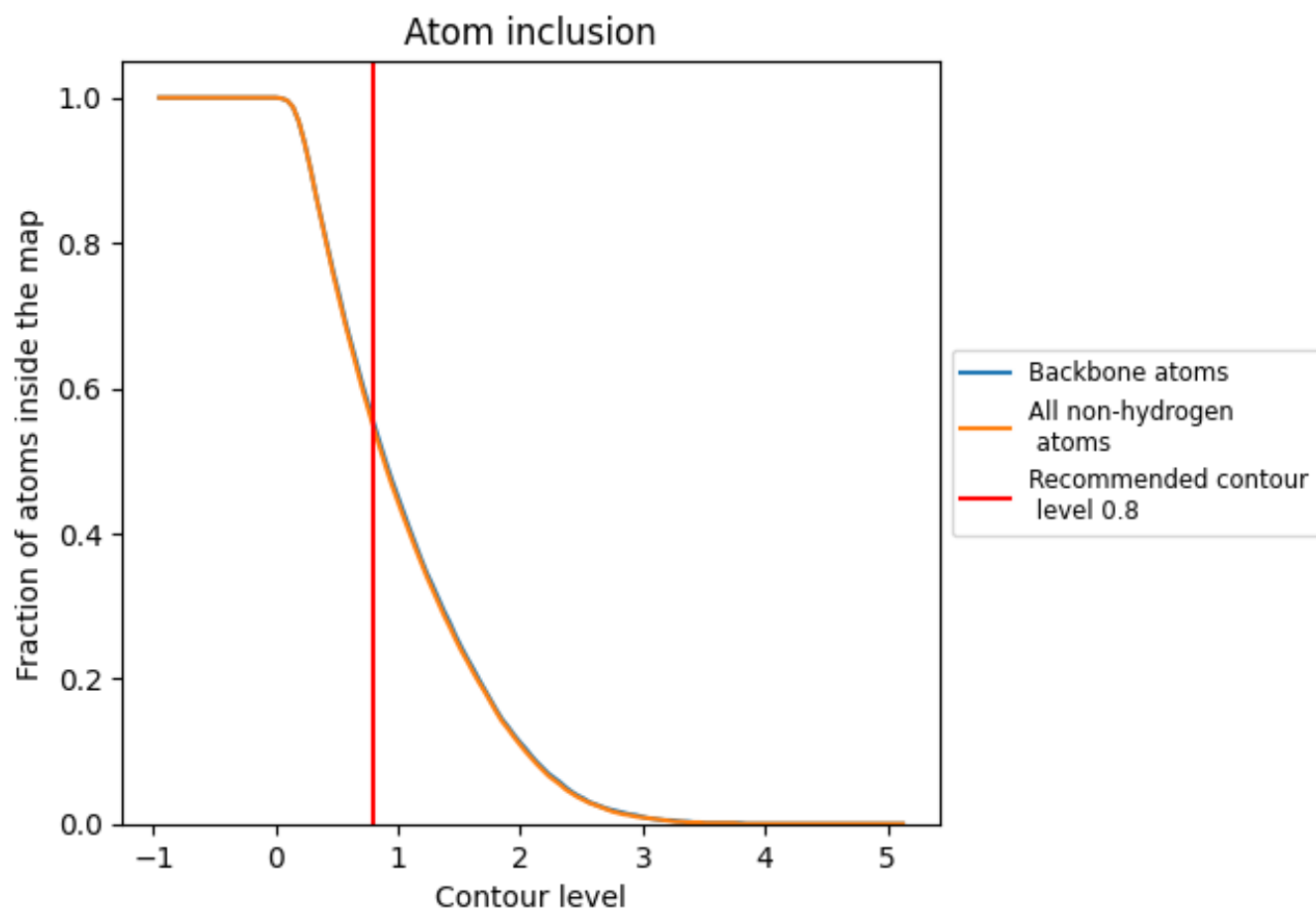
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.8).



















































9.4 Atom inclusion [i](#)



At the recommended contour level, 55% of all backbone atoms, 55% 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 (0.8) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5450	 0.4680
A	 0.6670	 0.5700
B	 0.5780	 0.5310
C	 0.6660	 0.5220
D	 0.7640	 0.5570
E	 0.6020	 0.4940
F	 0.6710	 0.4890
G	 0.0740	 0.2470
H	 0.4830	 0.4760
I	 0.4460	 0.4440
J	 0.8670	 0.6370
K	 0.8720	 0.6330
L	 0.7370	 0.5480
M	 0.6850	 0.5660
N	 0.1470	 0.3720
O	 0.8620	 0.6180
P	 0.5520	 0.5450
Q	 0.0710	 0.1330
R	 0.7050	 0.5630
S	 0.7540	 0.5930
T	 0.4670	 0.4500
U	 0.0000	 -0.0200
X	 0.1470	 0.1820
Y	 0.3530	 0.3440
Z	 0.4650	 0.3220

