



## Full wwPDB EM Validation Report ⓘ

Mar 26, 2026 – 11:23 PM UTC

PDB ID : 7OOP / pdb\_00007oop  
EMDB ID : EMD-13010  
Title : Pol II-CSB-CSA-DDB1-UVSSA-PAF-SPT6 (Structure 3)  
Authors : Kokic, G.; Cramer, P.  
Deposited on : 2021-05-28  
Resolution : 2.90 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

---

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

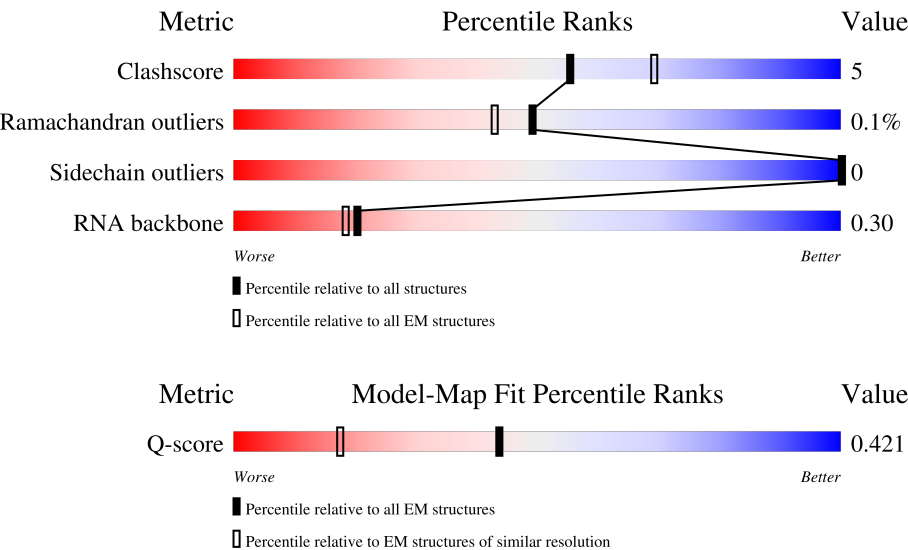
EMDB validation analysis : 0.0.1.dev132  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins)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

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 2.90 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	13054 ( 2.40 - 3.40 )

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  $\geq 3$ , 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	1970	
2	B	1174	
3	C	275	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
4	D	142	
5	E	210	
6	F	127	
7	G	172	
8	H	150	
9	I	125	
10	J	67	
11	K	117	
12	L	58	
13	M	1726	
14	N	47	
15	P	45	
16	R	40	
17	S	1173	
18	T	47	
19	U	666	
20	V	531	
21	Y	305	
22	Z	531	
23	a	396	
24	b	1493	
25	c	709	
26	d	1140	

## 2 Entry composition

There are 28 unique types of molecules in this entry. The entry contains 62441 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 II subunit RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1412	Total	C	N	O	S	0	0
			11179	7033	2002	2074	70		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1131	Total	C	N	O	S	0	0
			9052	5727	1592	1669	64		

- Molecule 3 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	260	Total	C	N	O	S	0	0
			2089	1309	359	415	6		

- Molecule 4 is a protein called RPOL4c domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	128	Total	C	N	O	S	0	0
			1013	636	172	201	4		

- Molecule 5 is a protein called DNA-directed RNA polymerase II subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	209	Total	C	N	O	S	0	0
			1720	1089	300	323	8		

- Molecule 6 is a protein called DNA-directed RNA polymerase II subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	82	Total	C	N	O	S	0	0
			657	418	113	121	5		

- Molecule 7 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	171	Total	C	N	O	S	0	0
			1334	867	216	243	8		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	148	Total	C	N	O	S	0	0
			1186	750	194	237	5		

- Molecule 9 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	117	Total	C	N	O	S	0	0
			949	587	169	182	11		

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	67	Total	C	N	O	S	0	0
			533	345	90	92	6		

- Molecule 11 is a protein called RNA\_pol\_L\_2 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	115	Total	C	N	O	S	0	0
			920	593	152	173	2		

- Molecule 12 is a protein called RNA polymerase II subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	46	Total	C	N	O	S	0	0
			388	241	75	66	6		

- Molecule 13 is a protein called Transcription elongation factor SPT6.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	810	Total	C	N	O	S	0	0
			6648	4226	1155	1234	33		

- Molecule 14 is a DNA chain called NTS.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	35	Total	C	N	O	P	0	0
			727	344	142	206	35		

- Molecule 15 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	21	Total	C	N	O	P	0	0
			454	204	89	140	21		

- Molecule 16 is a protein called LEO1 helix.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	R	40	Total	C	N	O	0	0
			160	80	40	40		

- Molecule 17 is a protein called RNA polymerase-associated protein CTR9 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	S	890	Total	C	N	O	0	0
			3560	1780	890	890		

- Molecule 18 is a DNA chain called TS.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	47	Total	C	N	O	P	0	0
			947	453	159	288	47		

- Molecule 19 is a protein called RNA polymerase-associated protein LEO1.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	U	104	Total	C	N	O	0	0
			416	208	104	104		

- Molecule 20 is a protein called RNA polymerase II-associated factor 1 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	V	217	Total	C	N	O	0	0
			868	434	217	217		

- Molecule 21 is a protein called WD repeat-containing protein 61.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	Y	300	Total	C	N	O	0	0
			1200	600	300	300		

- Molecule 22 is a protein called Parafibromin.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	Z	43	Total	C	N	O	0	0
			172	86	43	43		

- Molecule 23 is a protein called DNA excision repair protein ERCC-8.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	a	365	Total	C	N	O	S	0	0
			2849	1775	507	548	19		

- Molecule 24 is a protein called DNA excision repair protein ERCC-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	b	534	Total	C	N	O	S	0	0
			4356	2803	763	769	21		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	538	ARG	LYS	conflict	UNP Q03468

- Molecule 25 is a protein called UV-stimulated scaffold protein A.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	c	141	Total	C	N	O	0	0
			564	282	141	141		

- Molecule 26 is a protein called DNA damage-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	d	1096	Total	C	N	O	S	0	0
			8491	5397	1423	1625	46		

- Molecule 27 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
27	A	2	Total 2	Zn 2	0
27	B	1	Total 1	Zn 1	0
27	C	1	Total 1	Zn 1	0
27	I	2	Total 2	Zn 2	0
27	J	1	Total 1	Zn 1	0
27	L	1	Total 1	Zn 1	0

- Molecule 28 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

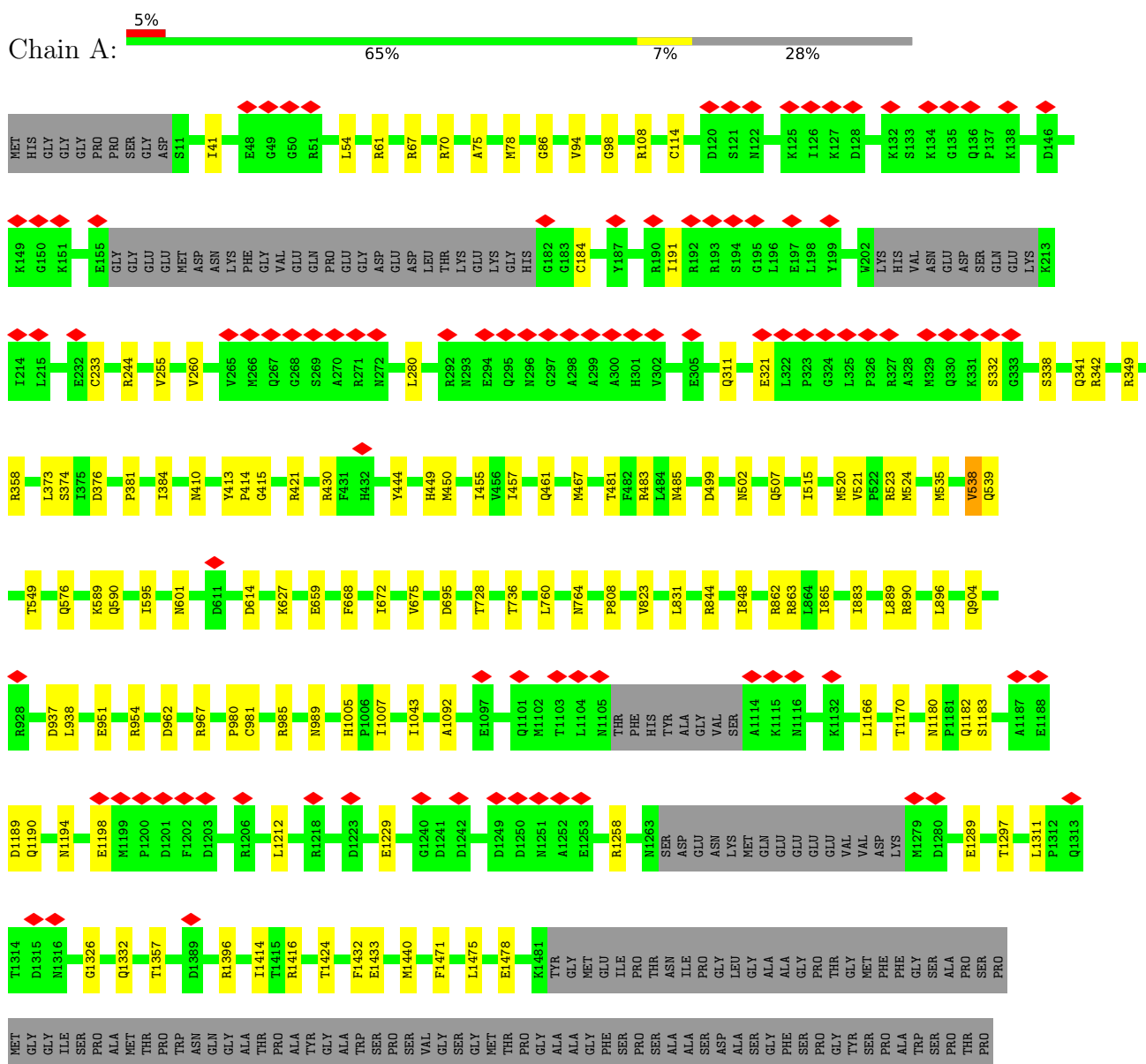
Mol	Chain	Residues	Atoms		AltConf
28	A	1	Total 1	Mg 1	0

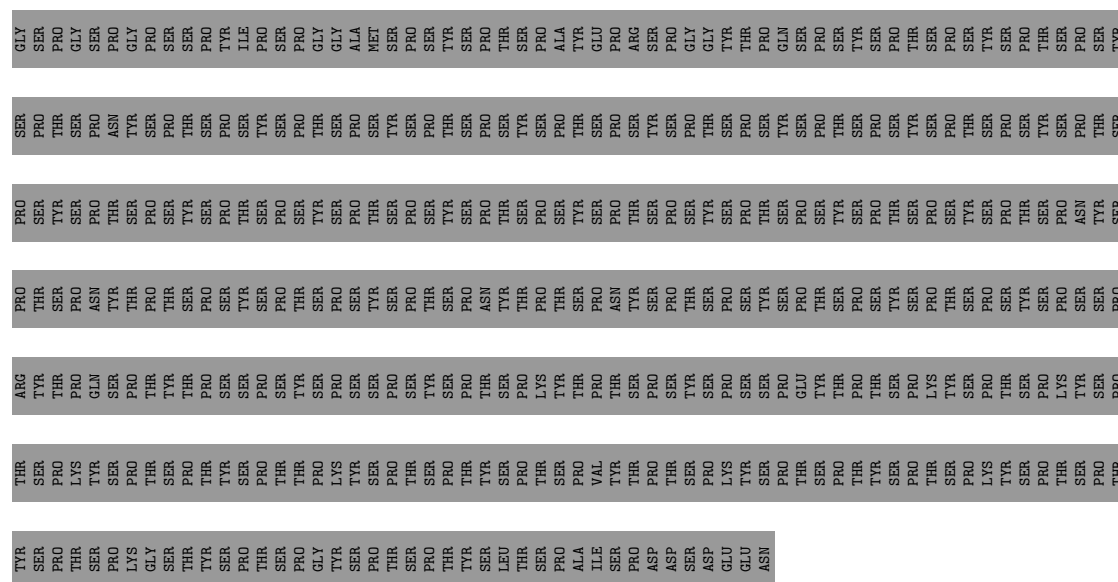


### 3 Residue-property plots

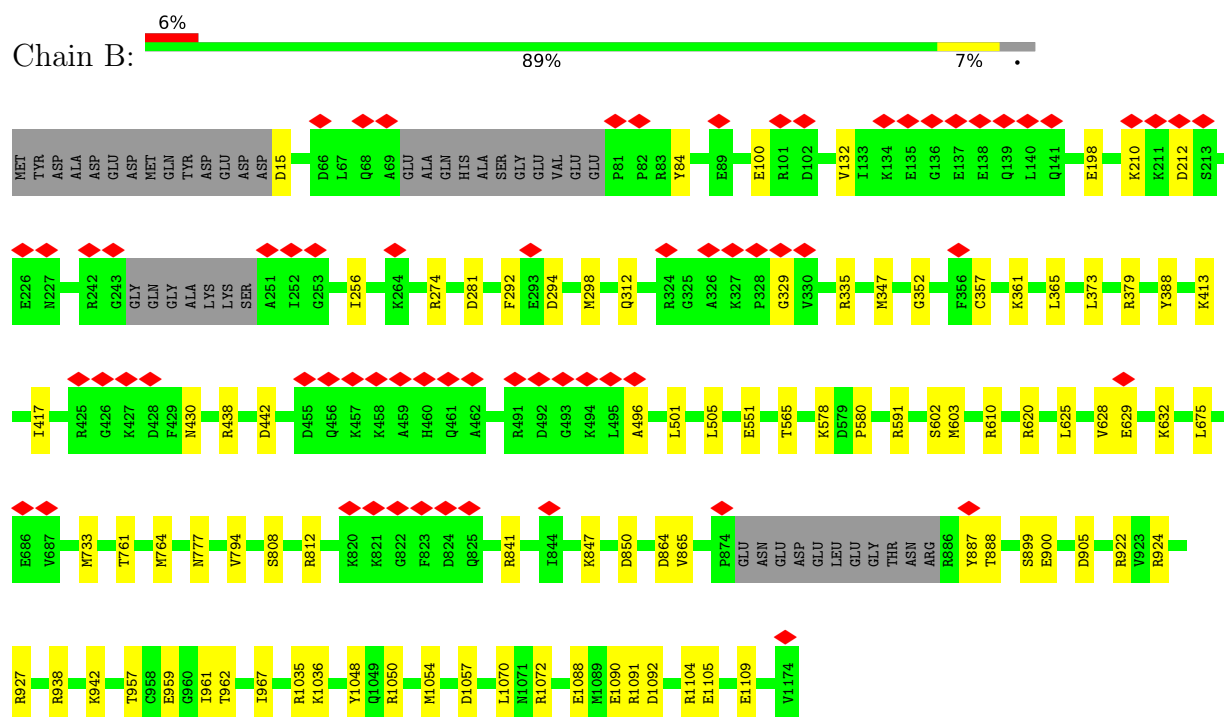
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: DNA-directed RNA polymerase II subunit RPB1

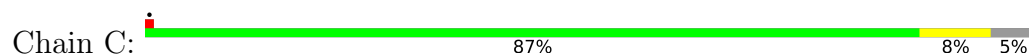




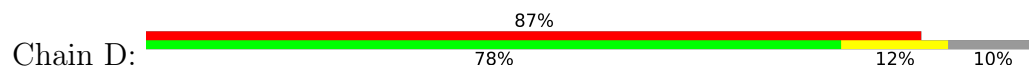
- Molecule 2: DNA-directed RNA polymerase subunit beta



- Molecule 3: DNA-directed RNA polymerase II subunit RPB3



- Molecule 4: RPOL4c domain-containing protein

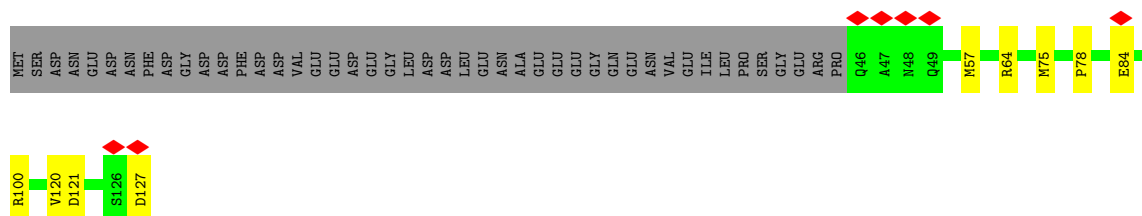




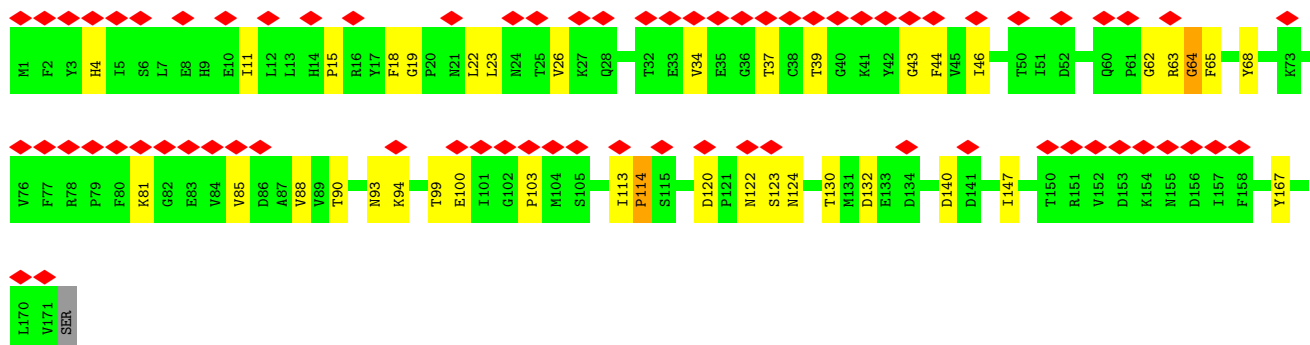
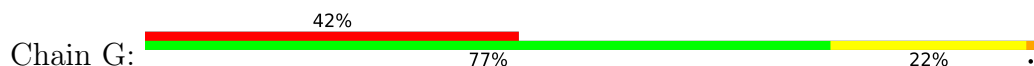
• Molecule 5: DNA-directed RNA polymerase II subunit E



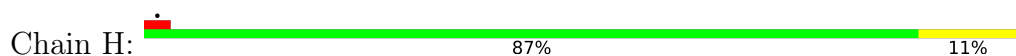
• Molecule 6: DNA-directed RNA polymerase II subunit F



• Molecule 7: DNA-directed RNA polymerase II subunit RPB7



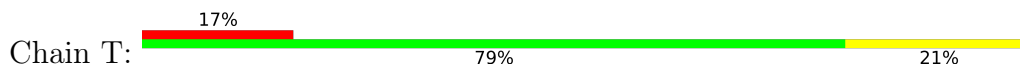
• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3





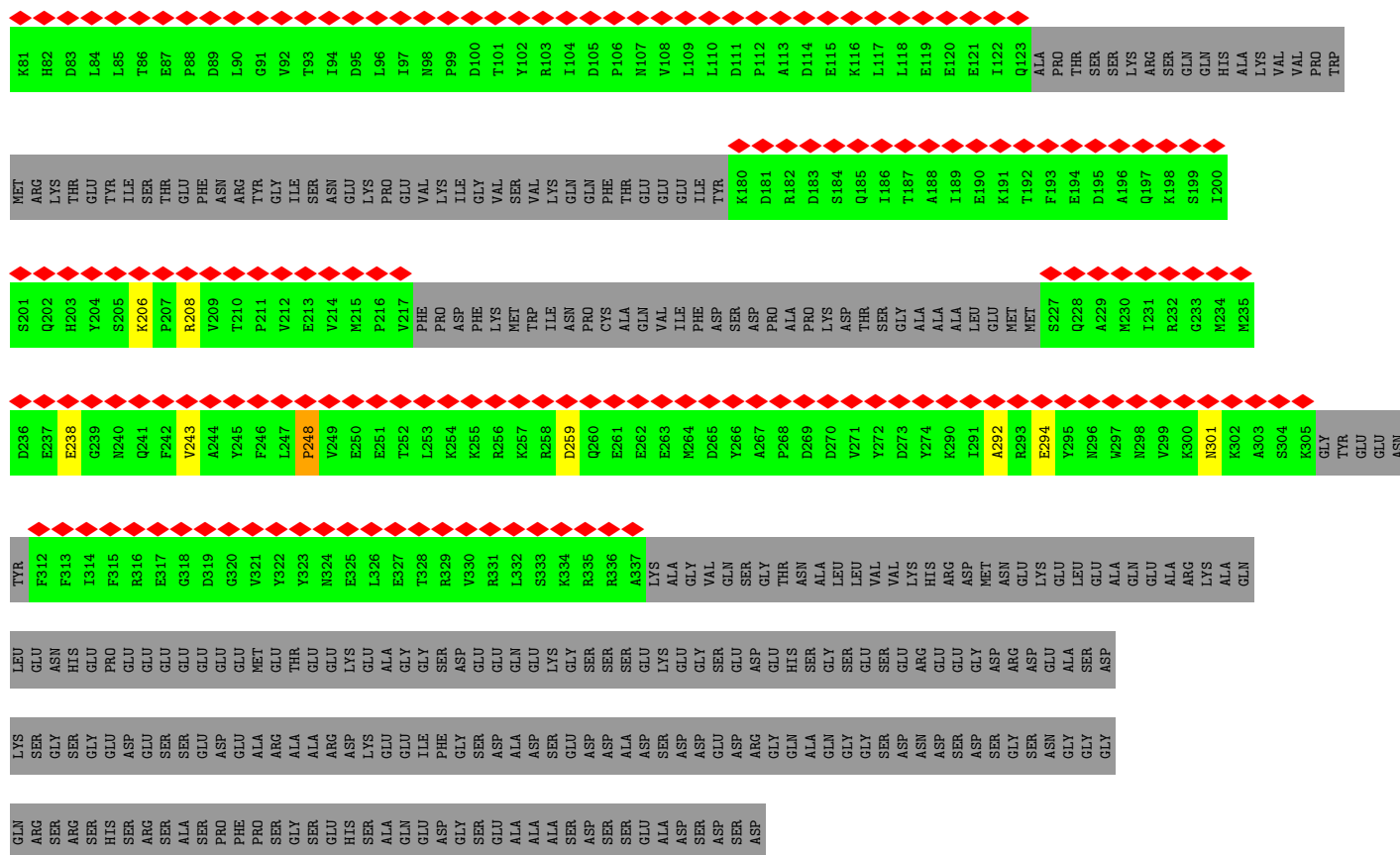


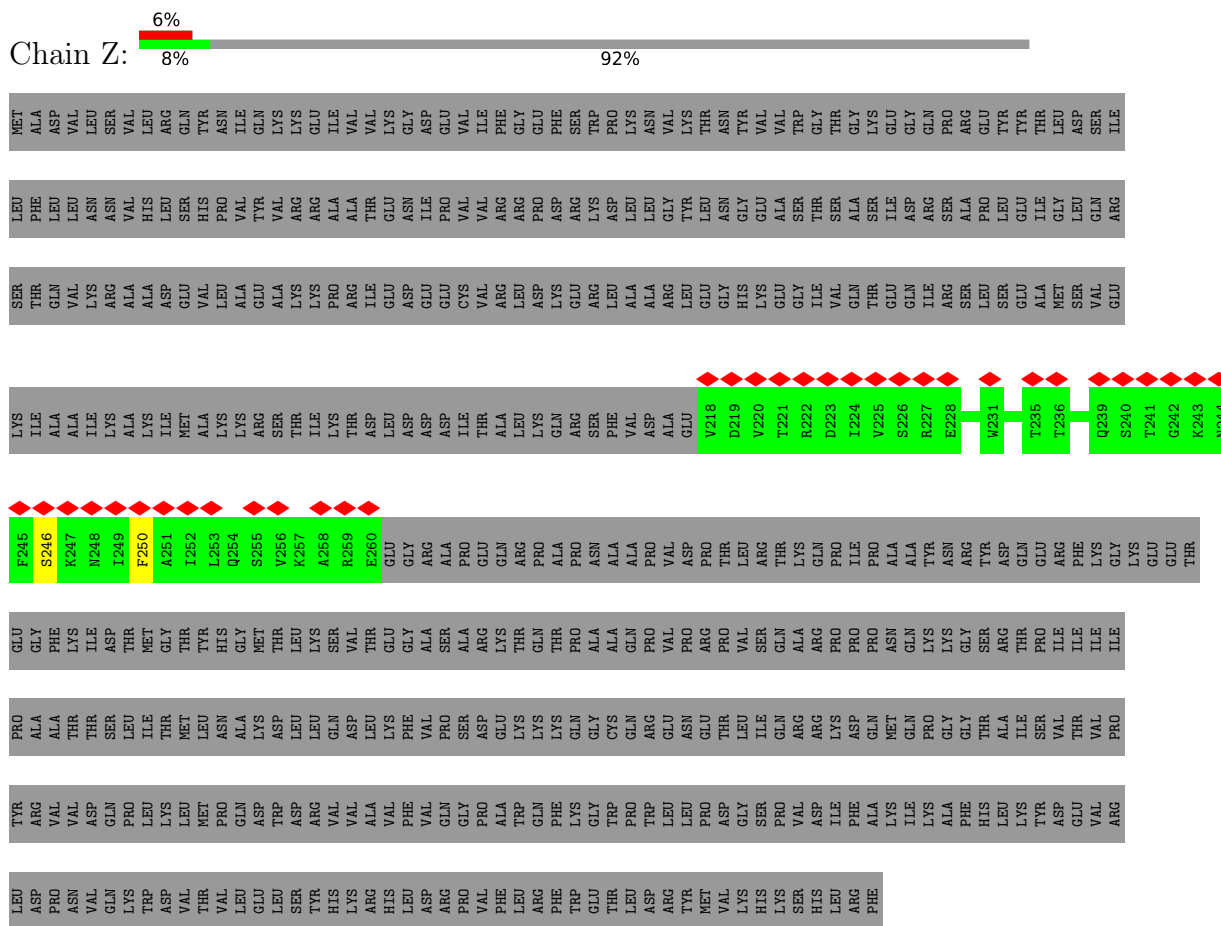




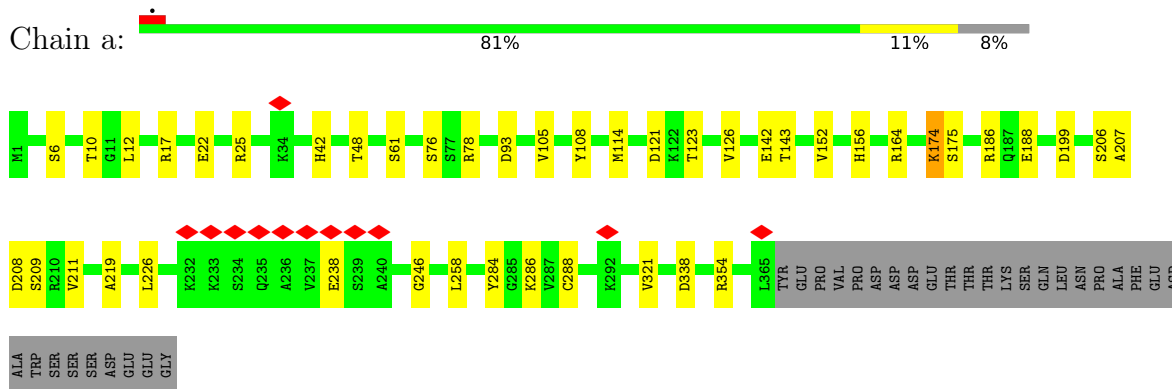




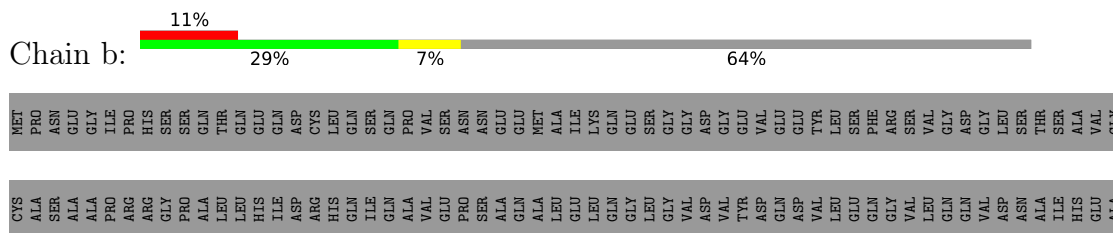




- Molecule 23: DNA excision repair protein ERCC-8

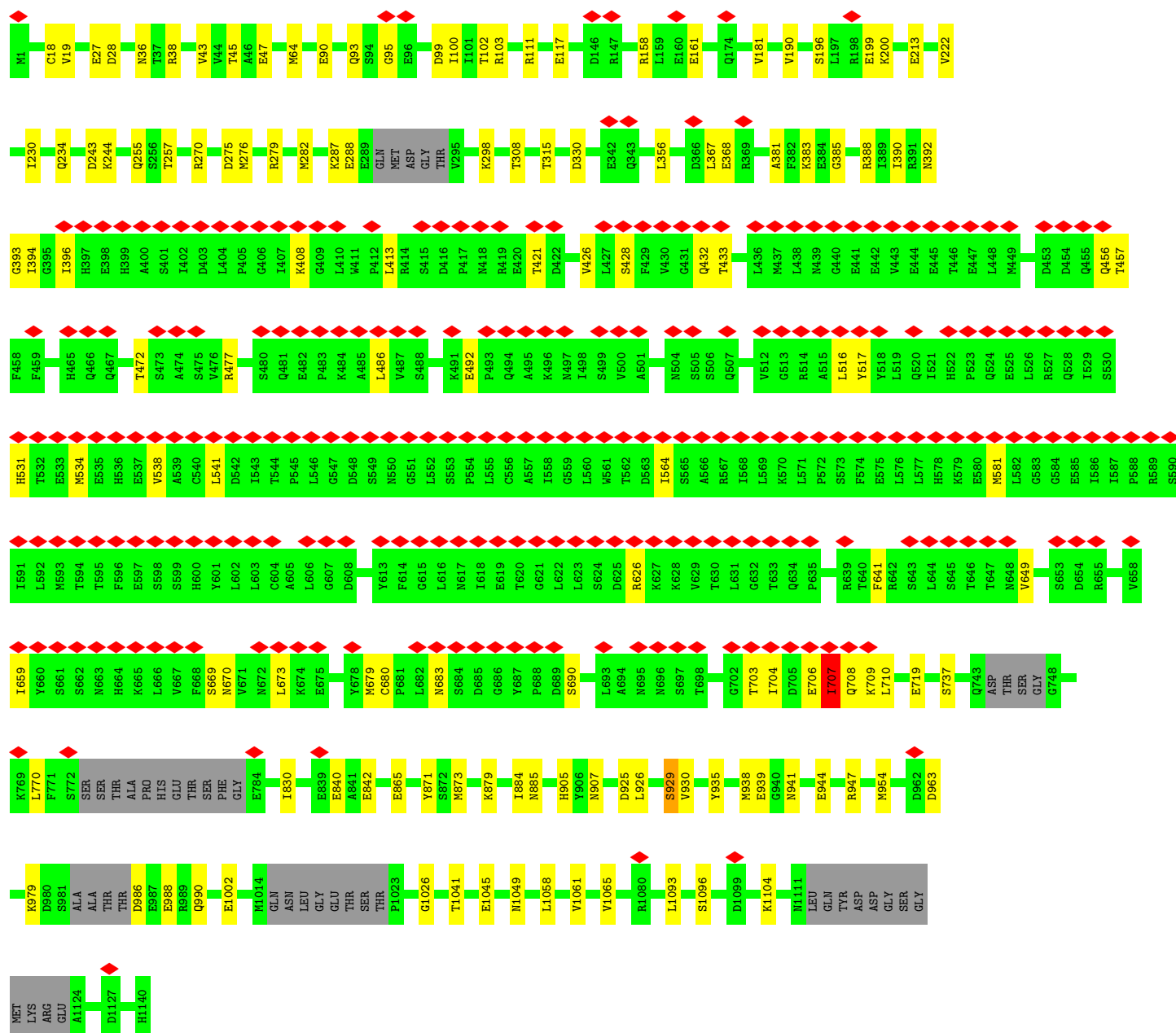


- Molecule 24: DNA excision repair protein ERCC-6









## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	100000	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 ( $e^-/\text{\AA}^2$ )	40.4	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.130	Depositor
Minimum map value	-0.062	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	419.99997, 419.99997, 419.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

## 5 Model quality

### 5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z  > 5$	RMSZ	# $ Z  > 5$
1	A	0.23	0/11382	0.41	0/15368
2	B	0.23	0/9233	0.40	0/12463
3	C	0.26	0/2132	0.41	0/2896
4	D	0.32	0/1027	0.54	0/1384
5	E	0.19	0/1751	0.34	0/2366
6	F	0.21	0/667	0.36	0/901
7	G	0.41	0/1365	0.66	1/1853 (0.1%)
8	H	0.21	0/1207	0.36	0/1628
9	I	0.19	0/972	0.40	0/1316
10	J	0.24	0/542	0.37	0/730
11	K	0.22	0/939	0.34	0/1271
12	L	0.23	0/394	0.41	0/524
13	M	0.39	1/6770 (0.0%)	0.61	3/9119 (0.0%)
14	N	0.38	0/817	0.50	0/1258
15	P	0.79	5/510 (1.0%)	1.04	6/793 (0.8%)
17	S	0.31	0/3559	0.75	2/4447 (0.0%)
18	T	0.53	0/1056	0.58	0/1624
19	U	0.32	0/413	0.66	0/511
20	V	0.33	0/864	0.80	2/1073 (0.2%)
21	Y	0.32	0/1199	0.76	0/1497
22	Z	0.36	0/171	0.86	0/212
23	a	0.56	0/2908	0.49	0/3939
24	b	0.38	0/4460	0.54	1/6024 (0.0%)
25	c	0.08	0/563	0.26	0/702
26	d	0.41	0/8646	0.51	2/11725 (0.0%)
All	All	0.34	6/63547 (0.0%)	0.52	17/85624 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
7	G	0	1
23	a	0	2
24	b	0	2
All	All	0	6

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	M	475	ILE	CA-CB	7.34	1.58	1.53
15	P	26	U	C1'-N1	6.10	1.56	1.47
15	P	30	U	C1'-N1	5.89	1.56	1.47
15	P	32	C	C1'-N1	5.69	1.56	1.48
15	P	25	A	C1'-N9	-5.51	1.39	1.48
15	P	29	A	C1'-N9	-5.30	1.39	1.47

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	P	36	A	OP1-P-OP2	-12.51	82.08	119.60
15	P	36	A	O5'-P-OP2	-12.45	70.65	108.00
15	P	36	A	O5'-P-OP1	9.11	135.32	108.00
15	P	35	A	OP1-P-O3'	-8.88	81.36	108.00
15	P	35	A	OP2-P-O3'	8.61	133.83	108.00
13	M	717	LEU	CB-CG-CD1	8.17	135.22	110.70
15	P	35	A	O3'-P-O5'	-7.66	92.51	104.00
24	b	985	ARG	NE-CZ-NH1	-6.51	114.99	121.50
7	G	114	PRO	CA-N-CD	-6.19	103.33	112.00
17	S	772	GLU	CA-C-N	5.93	132.37	121.70
17	S	772	GLU	C-N-CA	5.93	132.37	121.70
26	d	929	SER	N-CA-C	5.54	122.60	110.80
20	V	71	TYR	CA-C-N	5.31	131.26	121.70
20	V	71	TYR	C-N-CA	5.31	131.26	121.70
13	M	702	VAL	CG1-CB-CG2	5.20	122.23	110.80
26	d	707	ILE	N-CA-C	5.09	119.93	109.34
13	M	475	ILE	N-CA-CB	-5.09	107.30	110.50

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	538	VAL	Peptide

*Continued on next page...*



*Continued from previous page...*

Mol	Chain	Res	Type	Group
7	G	124	ASN	Peptide
23	a	174	LYS	Peptide
23	a	175	SER	Peptide
24	b	912	LEU	Peptide
24	b	995	PHE	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	11179	0	11313	99	0
2	B	9052	0	9087	64	0
3	C	2089	0	2031	15	0
4	D	1013	0	972	18	0
5	E	1720	0	1737	10	0
6	F	657	0	684	7	0
7	G	1334	0	1333	29	0
8	H	1186	0	1147	9	0
9	I	949	0	879	7	0
10	J	533	0	553	4	0
11	K	920	0	942	7	0
12	L	388	0	393	5	0
13	M	6648	0	6644	129	0
14	N	727	0	394	7	0
15	P	454	0	227	24	0
16	R	160	0	2	5	0
17	S	3560	0	940	6	0
18	T	947	0	532	12	0
19	U	416	0	111	0	0
20	V	868	0	212	3	0
21	Y	1200	0	341	15	0
22	Z	172	0	44	1	0
23	a	2849	0	2778	30	0
24	b	4356	0	4390	73	0
25	c	564	0	143	1	0
26	d	8491	0	8402	95	0
27	A	2	0	0	0	0
27	B	1	0	0	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
27	C	1	0	0	0	0
27	I	2	0	0	0	0
27	J	1	0	0	0	0
27	L	1	0	0	0	0
28	A	1	0	0	0	0
All	All	62441	0	56231	594	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 5.

All (594) 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)
24:b:532:ASP:O	24:b:538:ARG:NH1	1.72	1.21
1:A:114:CYS:SG	1:A:184:CYS:HB3	1.83	1.18
1:A:430:ARG:HH22	15:P:33:A:N6	1.48	1.09
13:M:561:GLN:OE1	13:M:695:ARG:NE	1.98	0.96
1:A:430:ARG:NH2	15:P:33:A:H61	1.65	0.93
7:G:130:THR:OG1	7:G:132:ASP:OD1	1.88	0.91
24:b:639:ASP:OD1	24:b:666:ARG:NH1	2.06	0.88
13:M:1167:ILE:HD12	13:M:1232:LEU:HD11	1.55	0.88
26:d:394:ILE:HD12	26:d:707:ILE:HA	1.54	0.87
1:A:338:SER:OG	1:A:341:GLN:OE1	1.92	0.87
2:B:501:LEU:HD12	2:B:505:LEU:HD12	1.57	0.86
1:A:430:ARG:NH2	15:P:33:A:N6	2.20	0.86
23:a:206:SER:OG	23:a:208:ASP:OD1	1.94	0.85
1:A:430:ARG:HH22	15:P:33:A:H61	0.88	0.85
2:B:565:THR:OG1	2:B:610:ARG:O	1.95	0.84
13:M:318:ASP:OD1	13:M:322:ARG:NH1	2.12	0.82
26:d:456:GLN:O	26:d:472:THR:OG1	1.98	0.81
24:b:971:LYS:NZ	24:b:1003:GLU:O	2.15	0.79
4:D:60:VAL:HG11	7:G:44:PHE:CZ	2.17	0.79
26:d:196:SER:OG	26:d:199:GLU:OE1	2.00	0.79
1:A:1190:GLN:O	1:A:1194:ASN:ND2	2.16	0.79
9:I:68:ILE:O	9:I:122:ARG:NH1	2.17	0.78
1:A:114:CYS:SG	1:A:184:CYS:CB	2.68	0.78
26:d:704:ILE:HD12	26:d:707:ILE:HG22	1.64	0.78
13:M:790:ARG:NH1	15:P:27:A:OP2	2.19	0.76
13:M:898:LYS:O	13:M:901:ALA:N	2.19	0.76
2:B:357:CYS:SG	2:B:361:LYS:NZ	2.58	0.75
13:M:462:ASP:OD2	13:M:607:ARG:NH2	2.19	0.75

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:a:143:THR:OG1	23:a:164:ARG:NH1	2.20	0.74
2:B:924:ARG:NH1	3:C:62:GLU:OE1	2.21	0.74
2:B:352:GLY:O	2:B:361:LYS:NZ	2.20	0.74
26:d:433:THR:HG1	26:d:457:THR:HG1	1.32	0.74
1:A:374:SER:OG	1:A:376:ASP:OD1	2.06	0.73
1:A:538:VAL:HG12	1:A:539:GLN:H	1.53	0.72
1:A:70:ARG:NH2	1:A:75:ALA:O	2.22	0.72
1:A:413:TYR:OH	1:A:450:MET:O	2.08	0.71
3:C:180:ALA:O	10:J:42:ARG:NH2	2.23	0.71
2:B:430:ASN:ND2	16:R:20:UNK:O	2.22	0.71
2:B:942:LYS:NZ	15:P:45:A:OP1	2.21	0.71
24:b:776:TYR:HD2	24:b:1007:LEU:HD22	1.56	0.71
26:d:394:ILE:HD11	26:d:669:SER:OG	1.90	0.71
1:A:576:GLN:O	1:A:590:GLN:NE2	2.23	0.71
1:A:233:CYS:SG	1:A:244:ARG:NH1	2.64	0.70
26:d:1045:GLU:OE2	26:d:1049:ASN:ND2	2.24	0.70
2:B:198:GLU:OE2	2:B:388:TYR:OH	2.09	0.70
26:d:47:GLU:OE1	26:d:47:GLU:N	2.25	0.70
1:A:549:THR:O	1:A:589:LYS:NZ	2.24	0.70
26:d:102:THR:OG1	26:d:1065:VAL:O	2.07	0.70
1:A:461:GLN:NE2	2:B:1090:GLU:OE2	2.24	0.69
24:b:773:HIS:CD2	24:b:1007:LEU:HD21	2.27	0.69
8:H:92:MET:HE2	8:H:143:LEU:HD22	1.74	0.69
16:R:11:UNK:O	16:R:16:UNK:N	2.26	0.69
2:B:957:THR:OG1	2:B:959:GLU:O	2.11	0.69
1:A:321:GLU:OE1	1:A:341:GLN:NE2	2.26	0.69
13:M:751:ASN:OD1	13:M:754:ARG:NH2	2.25	0.68
1:A:457:ILE:HD11	1:A:515:ILE:HD12	1.76	0.68
4:D:70:ARG:NH2	7:G:140:ASP:O	2.27	0.67
2:B:591:ARG:HE	2:B:603:MET:HE2	1.59	0.67
13:M:934:ASP:OD1	13:M:935:GLU:N	2.27	0.67
26:d:706:GLU:O	26:d:708:GLN:N	2.27	0.67
16:R:11:UNK:O	16:R:15:UNK:N	2.27	0.67
2:B:551:GLU:OE2	2:B:578:LYS:NZ	2.28	0.67
13:M:1004:LEU:HD11	13:M:1011:LEU:HD22	1.78	0.66
13:M:586:GLU:OE1	13:M:589:ARG:NH2	2.28	0.66
1:A:1182:GLN:O	1:A:1190:GLN:NE2	2.29	0.66
2:B:329:GLY:O	2:B:335:ARG:NE	2.29	0.66
1:A:1198:GLU:OE1	1:A:1198:GLU:N	2.29	0.66
13:M:1064:GLU:OE1	13:M:1064:GLU:N	2.28	0.66
23:a:17:ARG:NH1	26:d:117:GLU:O	2.28	0.65

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:P:35:A:OP2	15:P:35:A:H3'	1.96	0.65
23:a:174:LYS:HE3	24:b:1392:LYS:NZ	2.10	0.65
24:b:640:TRP:O	24:b:667:THR:OG1	2.14	0.65
26:d:93:GLN:NE2	26:d:95:GLY:O	2.28	0.65
4:D:87:LEU:HD22	4:D:97:LEU:HD13	1.78	0.65
13:M:522:ASP:O	13:M:590:TYR:OH	2.07	0.65
26:d:18:CYS:SG	26:d:315:THR:OG1	2.38	0.65
1:A:413:TYR:O	1:A:415:GLY:N	2.30	0.65
23:a:76:SER:O	26:d:990:GLN:NE2	2.29	0.65
24:b:606:LYS:NZ	24:b:608:GLU:OE2	2.20	0.65
13:M:550:LEU:HD22	13:M:689:ILE:HD12	1.79	0.64
1:A:373:LEU:O	1:A:485:ASN:ND2	2.30	0.64
13:M:780:ARG:NH2	13:M:844:LYS:O	2.31	0.64
24:b:920:GLY:O	24:b:950:ARG:NH2	2.30	0.64
2:B:1104:ARG:NH1	2:B:1109:GLU:OE2	2.31	0.63
24:b:913:THR:OG1	24:b:916:VAL:HG13	1.98	0.63
26:d:925:ASP:OD1	26:d:926:LEU:N	2.32	0.63
26:d:287:LYS:O	26:d:298:LYS:HE3	1.99	0.63
13:M:589:ARG:NH1	13:M:708:GLN:OE1	2.32	0.62
13:M:753:LEU:HD11	13:M:924:LEU:HD13	1.82	0.62
13:M:790:ARG:NH1	15:P:27:A:H5''	2.13	0.62
3:C:190:ASN:O	3:C:193:ARG:NH1	2.33	0.62
26:d:394:ILE:HG23	26:d:707:ILE:HA	1.81	0.62
1:A:668:PHE:CE1	1:A:672:ILE:HD11	2.35	0.62
13:M:1111:LEU:HD23	13:M:1114:GLN:O	1.98	0.62
1:A:507:GLN:N	2:B:1105:GLU:OE2	2.33	0.62
2:B:347:MET:HE1	2:B:365:LEU:HD22	1.82	0.62
1:A:67:ARG:NH1	15:P:34:A:OP1	2.33	0.62
13:M:450:ARG:O	13:M:454:VAL:HG23	1.99	0.62
14:N:14:DT:OP1	24:b:937:ASN:ND2	2.33	0.61
1:A:41:ILE:HD12	1:A:255:VAL:HG11	1.81	0.61
1:A:1311:LEU:HD12	1:A:1332:GLN:HG3	1.82	0.61
26:d:433:THR:OG1	26:d:457:THR:OG1	2.07	0.61
26:d:396:ILE:HD13	26:d:673:LEU:HD23	1.82	0.61
11:K:63:VAL:HG22	11:K:71:ILE:HG22	1.83	0.61
14:N:16:DT:OP1	24:b:975:ARG:NH1	2.33	0.61
2:B:210:LYS:NZ	2:B:212:ASP:O	2.34	0.61
5:E:56:THR:OG1	5:E:78:GLU:OE2	2.18	0.61
9:I:50:ASN:O	9:I:51:SER:OG	2.16	0.61
1:A:760:LEU:HD22	1:A:764:ASN:ND2	2.15	0.60
8:H:71:ASP:OD2	8:H:142:TYR:OH	2.18	0.60

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:808:PRO:HG2	2:B:675:LEU:HD12	1.83	0.60
2:B:927:ARG:NH1	2:B:1057:ASP:OD1	2.33	0.60
1:A:67:ARG:NH2	15:P:33:A:H5'	2.16	0.60
7:G:11:ILE:HD11	7:G:26:VAL:HG13	1.83	0.60
2:B:100:GLU:OE2	2:B:100:GLU:HA	2.01	0.60
15:P:35:A:H3'	15:P:35:A:P	2.42	0.60
20:V:243:VAL:O	20:V:248:PRO:N	2.35	0.60
2:B:794:VAL:HG12	2:B:967:ILE:HG22	1.83	0.60
13:M:800:ASN:OD1	13:M:801:GLY:N	2.34	0.60
1:A:659:GLU:OE2	1:A:985:ARG:NH1	2.34	0.60
1:A:358:ARG:NH1	18:T:22:DC:OP1	2.36	0.59
24:b:859:LEU:HB2	24:b:929:VAL:HG12	1.85	0.59
24:b:647:GLU:OE1	24:b:649:HIS:NE2	2.36	0.59
1:A:862:ARG:NH2	1:A:1432:PHE:O	2.34	0.59
2:B:847:LYS:NZ	2:B:864:ASP:OD2	2.22	0.59
13:M:886:ASP:OD1	13:M:887:ASN:N	2.35	0.59
13:M:548:GLU:OE1	13:M:551:ARG:NH2	2.36	0.59
5:E:134:GLU:OE2	5:E:181:ARG:NH2	2.36	0.58
24:b:665:PHE:O	24:b:670:ARG:NH2	2.36	0.58
8:H:102:ASP:OD2	8:H:110:THR:OG1	2.21	0.58
13:M:1111:LEU:O	13:M:1116:TYR:N	2.36	0.58
1:A:521:VAL:HG13	1:A:535:MET:HE1	1.84	0.58
1:A:896:LEU:HD13	1:A:980:PRO:HG3	1.86	0.58
13:M:833:ILE:HG23	13:M:867:ILE:HD11	1.84	0.58
21:Y:48:LYS:N	21:Y:55:ASP:O	2.37	0.58
7:G:93:ASN:OD1	7:G:94:LYS:N	2.37	0.58
21:Y:212:GLY:O	21:Y:230:GLY:N	2.37	0.58
2:B:565:THR:HG21	2:B:580:PRO:HB3	1.86	0.57
26:d:929:SER:O	26:d:930:VAL:HG13	2.04	0.57
4:D:84:ARG:O	4:D:88:LEU:HD12	2.03	0.57
13:M:685:TYR:CZ	13:M:689:ILE:HD11	2.40	0.57
26:d:396:ILE:HD13	26:d:673:LEU:CD2	2.34	0.57
2:B:413:LYS:O	2:B:417:ILE:HD12	2.03	0.57
7:G:11:ILE:CD1	7:G:26:VAL:HG13	2.35	0.57
2:B:501:LEU:HD12	2:B:505:LEU:CD1	2.33	0.57
26:d:243:ASP:OD1	26:d:244:LYS:N	2.38	0.57
7:G:63:ARG:O	7:G:65:PHE:N	2.38	0.57
13:M:292:THR:HG21	13:M:299:GLN:NE2	2.20	0.56
24:b:700:LEU:HD11	24:b:704:MET:HE2	1.86	0.56
1:A:1180:ASN:ND2	1:A:1183:SER:OG	2.38	0.56
4:D:36:GLU:OE2	4:D:84:ARG:NH1	2.37	0.56

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:1145:ASN:HB3	13:M:1148:GLU:OE1	2.05	0.56
24:b:921:VAL:HG23	24:b:923:LEU:HD13	1.88	0.56
1:A:421:ARG:NH1	1:A:444:TYR:OH	2.39	0.56
25:c:137:PHE:O	25:c:141:ASN:N	2.37	0.56
13:M:791:ASP:OD2	15:P:28:U:H4'	2.05	0.56
2:B:1090:GLU:OE1	2:B:1090:GLU:N	2.39	0.56
6:F:75:MET:O	7:G:15:PRO:HB2	2.05	0.56
5:E:120:ASP:OD1	5:E:121:MET:N	2.38	0.56
13:M:289:ILE:O	13:M:292:THR:HG22	2.06	0.55
14:N:14:DT:H72	18:T:34:DA:C2	2.41	0.55
23:a:42:HIS:NE2	23:a:61:SER:OG	2.26	0.55
13:M:322:ARG:NH2	13:M:455:GLN:OE1	2.39	0.55
26:d:28:ASP:OD1	26:d:43:VAL:HG13	2.06	0.55
26:d:99:ASP:OD1	26:d:100:ILE:N	2.40	0.55
1:A:54:LEU:O	1:A:61:ARG:NH2	2.40	0.55
1:A:904:GLN:NE2	1:A:981:CYS:O	2.37	0.55
14:N:16:DT:OP1	24:b:975:ARG:NH2	2.39	0.55
4:D:60:VAL:HG13	7:G:103:PRO:HB3	1.87	0.55
13:M:983:GLN:NE2	13:M:1001:LEU:HD13	2.22	0.54
18:T:39:DA:OP1	24:b:575:THR:N	2.39	0.54
21:Y:172:ILE:O	21:Y:186:LEU:N	2.38	0.54
26:d:288:GLU:CG	26:d:298:LYS:HE2	2.37	0.54
5:E:78:GLU:OE1	5:E:78:GLU:N	2.41	0.54
17:S:279:PHE:O	17:S:284:ASP:N	2.40	0.54
24:b:534:MET:O	24:b:747:LYS:NZ	2.41	0.54
13:M:885:VAL:HG22	13:M:920:ILE:HD11	1.89	0.54
2:B:602:SER:OG	2:B:620:ARG:NH1	2.41	0.54
23:a:10:THR:HG23	23:a:12:LEU:HG	1.89	0.54
2:B:274:ARG:NH2	2:B:281:ASP:OD1	2.41	0.54
6:F:84:GLU:OE2	6:F:84:GLU:N	2.40	0.54
13:M:1167:ILE:HD12	13:M:1232:LEU:CD1	2.33	0.54
1:A:67:ARG:HH21	15:P:33:A:H5'	1.73	0.54
3:C:59:LEU:HD13	3:C:63:PHE:CD1	2.42	0.54
26:d:477:ARG:HB3	26:d:486:LEU:HD11	1.88	0.54
13:M:1074:LEU:HD11	13:M:1088:ALA:CB	2.37	0.54
13:M:938:LEU:O	13:M:946:GLN:NE2	2.41	0.54
2:B:625:LEU:HD13	2:B:675:LEU:HD21	1.90	0.54
13:M:301:ARG:HD2	13:M:397:TRP:CZ2	2.43	0.54
1:A:108:ARG:NH2	1:A:191:ILE:O	2.41	0.53
23:a:174:LYS:HE3	24:b:1392:LYS:HZ3	1.71	0.53
1:A:413:TYR:O	1:A:449:HIS:ND1	2.41	0.53

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:1014:ARG:O	13:M:1017:LEU:HD12	2.08	0.53
9:I:109:ARG:HE	9:I:124:THR:HG21	1.74	0.53
13:M:965:ARG:NH1	13:M:968:GLU:OE2	2.42	0.53
13:M:469:LEU:HD21	13:M:524:TYR:CZ	2.44	0.53
13:M:966:VAL:O	13:M:970:GLY:N	2.41	0.53
15:P:35:A:O2'	15:P:36:A:OP2	2.25	0.53
2:B:959:GLU:O	2:B:961:ILE:N	2.40	0.53
23:a:209:SER:OG	23:a:246:GLY:O	2.20	0.53
13:M:999:HIS:NE2	13:M:1003:ILE:HD11	2.23	0.53
26:d:840:GLU:OE2	26:d:842:GLU:N	2.29	0.53
13:M:650:ASP:OD1	13:M:651:ASP:N	2.40	0.52
26:d:939:GLU:HG3	26:d:941:ASN:OD1	2.09	0.52
3:C:86:ARG:HD3	11:K:11:LEU:HD11	1.91	0.52
23:a:142:GLU:OE2	23:a:164:ARG:NE	2.42	0.52
13:M:616:LEU:HD13	13:M:669:ILE:HD11	1.91	0.52
7:G:122:ASN:HB3	13:M:303:ILE:HD11	1.91	0.52
1:A:461:GLN:OE1	1:A:502:ASN:ND2	2.42	0.52
1:A:862:ARG:NH1	2:B:1088:GLU:OE2	2.42	0.52
1:A:865:ILE:HD13	1:A:1092:ALA:HB3	1.91	0.52
4:D:30:GLU:OE2	7:G:4:HIS:ND1	2.42	0.52
24:b:517:TRP:CH2	24:b:521:LEU:HD11	2.45	0.52
4:D:87:LEU:HD22	4:D:97:LEU:CD1	2.39	0.52
24:b:876:ARG:HA	24:b:876:ARG:NE	2.25	0.52
23:a:211:VAL:HB	23:a:226:LEU:HD22	1.92	0.52
26:d:1026:GLY:O	26:d:1041:THR:OG1	2.27	0.52
1:A:889:LEU:O	1:A:890:ARG:NH1	2.42	0.52
26:d:963:ASP:OD1	26:d:979:LYS:HE2	2.10	0.52
24:b:872:GLU:OE2	24:b:876:ARG:NH2	2.42	0.51
24:b:902:ASN:ND2	24:b:922:ASN:O	2.41	0.51
26:d:421:THR:OG1	26:d:683:ASN:O	2.28	0.51
13:M:885:VAL:CG2	13:M:920:ILE:HD11	2.40	0.51
1:A:951:GLU:OE2	1:A:954:ARG:NH2	2.44	0.51
13:M:791:ASP:OD1	15:P:28:U:H5'	2.09	0.51
3:C:7:PRO:O	11:K:104:ARG:NH1	2.43	0.51
26:d:719:GLU:OE2	26:d:737:SER:OG	2.24	0.51
13:M:906:TYR:CG	13:M:910:LEU:HD23	2.46	0.51
13:M:983:GLN:HE22	13:M:1001:LEU:HD22	1.74	0.51
24:b:883:LEU:HD13	24:b:900:ARG:NH2	2.25	0.51
26:d:255:GLN:OE1	26:d:279:ARG:NH2	2.43	0.51
24:b:773:HIS:HD2	24:b:1007:LEU:HD21	1.75	0.51
13:M:610:PHE:O	13:M:614:ALA:HB2	2.11	0.51

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:1014:ARG:NH2	13:M:1056:SER:O	2.44	0.51
21:Y:176:ASP:O	21:Y:180:GLY:N	2.38	0.51
1:A:601:ASN:ND2	1:A:989:ASN:OD1	2.43	0.50
2:B:100:GLU:CD	12:L:42:ARG:NH1	2.69	0.50
13:M:800:ASN:O	13:M:921:GLN:NE2	2.44	0.50
13:M:973:VAL:HG22	13:M:977:ILE:HD11	1.94	0.50
15:P:35:A:HO2'	15:P:36:A:P	2.34	0.50
21:Y:35:VAL:N	21:Y:47:TRP:O	2.44	0.50
26:d:19:VAL:HG22	26:d:64:MET:HE3	1.92	0.50
5:E:141:GLU:N	5:E:141:GLU:OE1	2.45	0.50
13:M:527:CYS:HB2	13:M:591:MET:SD	2.51	0.50
26:d:196:SER:O	26:d:200:LYS:N	2.45	0.50
1:A:67:ARG:NH2	15:P:33:A:H3'	2.26	0.50
13:M:926:GLU:O	13:M:930:VAL:HG12	2.11	0.50
23:a:186:ARG:NH1	23:a:238:GLU:O	2.43	0.50
26:d:432:GLN:OE1	26:d:432:GLN:N	2.44	0.50
3:C:175:LYS:NZ	12:L:57:ALA:O	2.44	0.50
26:d:842:GLU:OE2	26:d:871:TYR:OH	2.28	0.50
2:B:100:GLU:HB3	12:L:42:ARG:HH12	1.76	0.50
4:D:60:VAL:HG11	7:G:44:PHE:CE2	2.46	0.50
13:M:887:ASN:ND2	13:M:912:GLN:OE1	2.45	0.50
13:M:973:VAL:O	13:M:977:ILE:HD12	2.12	0.50
26:d:516:LEU:HG	26:d:534:MET:HE2	1.94	0.50
4:D:70:ARG:O	13:M:521:ARG:NH2	2.46	0.49
24:b:886:ASP:HA	24:b:916:VAL:HG11	1.93	0.49
21:Y:90:LEU:O	21:Y:99:ILE:N	2.41	0.49
2:B:812:ARG:NH2	2:B:900:GLU:OE2	2.45	0.49
26:d:830:ILE:HG22	26:d:873:MET:HE1	1.94	0.49
2:B:312:GLN:NE2	9:I:22:ASN:OD1	2.46	0.49
13:M:827:GLU:OE1	13:M:827:GLU:N	2.38	0.49
5:E:114:ALA:O	5:E:117:SER:OG	2.26	0.49
24:b:670:ARG:NH1	24:b:691:PHE:O	2.44	0.49
1:A:114:CYS:HG	1:A:184:CYS:CB	2.21	0.49
5:E:209:VAL:O	5:E:210:GLN:NE2	2.44	0.49
1:A:481:THR:O	1:A:483:ARG:NE	2.46	0.49
16:R:11:UNK:O	16:R:15:UNK:CA	2.61	0.49
26:d:45:THR:OG1	26:d:47:GLU:O	2.29	0.49
26:d:270:ARG:HD2	26:d:282:MET:HE3	1.94	0.49
26:d:394:ILE:HD12	26:d:707:ILE:CA	2.35	0.49
1:A:728:THR:H	1:A:736:THR:HG21	1.78	0.48
9:I:72:VAL:HG22	9:I:78:LEU:HD11	1.95	0.48

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:560:GLU:OE2	13:M:560:GLU:N	2.46	0.48
13:M:1228:VAL:HG23	13:M:1245:LEU:CD1	2.43	0.48
26:d:1061:VAL:HG22	26:d:1104:LYS:HE3	1.95	0.48
2:B:764:MET:HE1	2:B:938:ARG:NH1	2.28	0.48
7:G:62:GLY:C	7:G:64:GLY:H	2.22	0.48
13:M:569:LEU:HD12	13:M:569:LEU:H	1.78	0.48
13:M:999:HIS:CE1	13:M:1003:ILE:HD11	2.48	0.48
13:M:464:TYR:O	13:M:468:LEU:HD12	2.12	0.48
13:M:1089:LEU:O	13:M:1092:ILE:N	2.45	0.48
13:M:1089:LEU:O	13:M:1093:LEU:HD12	2.12	0.48
21:Y:130:VAL:O	21:Y:144:LEU:N	2.43	0.48
24:b:869:ASP:OD1	24:b:884:LYS:NZ	2.46	0.48
24:b:600:THR:HG23	24:b:601:GLY:H	1.78	0.48
4:D:43:HIS:O	4:D:47:GLN:NE2	2.47	0.48
13:M:316:GLU:HG2	13:M:403:TRP:NE1	2.29	0.48
13:M:403:TRP:NE1	13:M:407:ARG:HD2	2.27	0.48
1:A:455:ILE:HG23	1:A:520:MET:HE1	1.96	0.48
3:C:70:LEU:O	10:J:6:ARG:NE	2.40	0.48
23:a:22:GLU:OE1	23:a:25:ARG:NH2	2.46	0.48
26:d:392:ASN:HA	26:d:710:LEU:HD23	1.96	0.48
1:A:523:ARG:NH1	6:F:127:ASP:OD2	2.47	0.48
1:A:1005:HIS:ND1	1:A:1007:ILE:HG22	2.29	0.48
2:B:1035:ARG:NH1	2:B:1036:LYS:O	2.47	0.48
26:d:581:MET:O	26:d:626:ARG:NH1	2.45	0.48
13:M:445:THR:HA	13:M:448:MET:SD	2.54	0.48
13:M:286:ASP:OD1	13:M:995:ARG:NE	2.38	0.48
13:M:570:ALA:HB1	13:M:584:VAL:CG2	2.44	0.48
13:M:580:THR:O	13:M:580:THR:OG1	2.32	0.48
1:A:1229:GLU:OE1	1:A:1229:GLU:N	2.45	0.47
1:A:1357:THR:O	5:E:142:HIS:NE2	2.45	0.47
13:M:753:LEU:HD11	13:M:924:LEU:CD1	2.44	0.47
13:M:912:GLN:O	13:M:915:SER:OG	2.27	0.47
21:Y:14:ALA:N	21:Y:296:GLN:O	2.47	0.47
1:A:1471:PHE:O	6:F:64:ARG:NH1	2.48	0.47
2:B:841:ARG:NH2	15:P:35:A:N7	2.62	0.47
9:I:50:ASN:ND2	9:I:52:CYS:O	2.46	0.47
2:B:777:ASN:O	10:J:47:ARG:NH1	2.40	0.47
13:M:301:ARG:NE	13:M:303:ILE:O	2.47	0.47
26:d:408:LYS:N	26:d:428:SER:O	2.40	0.47
13:M:1062:THR:HG21	13:M:1126:ILE:HD11	1.96	0.47
4:D:17:ALA:N	7:G:81:LYS:O	2.41	0.47

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:Y:33:GLU:O	21:Y:49:TRP:N	2.48	0.47
24:b:921:VAL:HG23	24:b:923:LEU:CD1	2.44	0.47
24:b:945:ARG:HB2	24:b:959:VAL:HG21	1.96	0.47
2:B:905:ASP:N	2:B:922:ARG:O	2.47	0.47
14:N:15:DA:H2"	24:b:799:LEU:CD2	2.44	0.47
23:a:286:LYS:HE2	23:a:288:CYS:SG	2.54	0.47
24:b:963:LEU:HA	24:b:969:GLU:OE1	2.14	0.47
26:d:181:VAL:HG22	26:d:190:VAL:HG22	1.96	0.47
9:I:109:ARG:NE	9:I:124:THR:HG21	2.29	0.47
13:M:717:LEU:HD21	13:M:722:TYR:CZ	2.50	0.47
13:M:1110:GLU:O	13:M:1114:GLN:N	2.48	0.47
18:T:38:DG:OP2	24:b:894:ARG:NH2	2.45	0.47
21:Y:86:ALA:O	21:Y:104:ALA:N	2.43	0.47
23:a:121:ASP:OD1	23:a:123:THR:OG1	2.21	0.47
23:a:174:LYS:HE3	24:b:1392:LYS:HZ2	1.78	0.47
26:d:929:SER:HB2	26:d:954:MET:HE3	1.96	0.47
1:A:98:GLY:HA3	1:A:1440:MET:HE3	1.97	0.47
13:M:1126:ILE:O	13:M:1130:LEU:HD23	2.14	0.47
3:C:144:GLU:OE1	3:C:144:GLU:N	2.48	0.47
13:M:850:VAL:HB	13:M:861:ILE:HD11	1.97	0.47
13:M:717:LEU:C	13:M:717:LEU:HD23	2.39	0.47
17:S:205:GLY:O	17:S:209:VAL:N	2.47	0.47
18:T:33:DT:H2"	24:b:797:SER:HB2	1.96	0.47
1:A:1297:THR:HG23	1:A:1297:THR:O	2.15	0.46
26:d:36:ASN:ND2	26:d:1002:GLU:OE2	2.45	0.46
26:d:90:GLU:OE1	26:d:103:ARG:NH2	2.42	0.46
26:d:257:THR:HG22	26:d:276:MET:HE2	1.97	0.46
26:d:706:GLU:C	26:d:708:GLN:H	2.23	0.46
2:B:100:GLU:CD	12:L:42:ARG:HH11	2.22	0.46
2:B:808:SER:OG	2:B:1050:ARG:NH1	2.48	0.46
14:N:14:DT:H72	18:T:34:DA:N1	2.30	0.46
13:M:1145:ASN:OD1	13:M:1146:THR:N	2.45	0.46
23:a:152:VAL:CG2	26:d:111:ARG:HE	2.28	0.46
24:b:776:TYR:CD2	24:b:1007:LEU:HD22	2.45	0.46
26:d:394:ILE:HG12	26:d:670:ASN:O	2.16	0.46
2:B:438:ARG:NH2	2:B:442:ASP:OD1	2.48	0.46
13:M:448:MET:SD	13:M:448:MET:N	2.87	0.46
24:b:597:LEU:HD12	24:b:607:LYS:HE2	1.96	0.46
1:A:1166:LEU:O	1:A:1170:THR:OG1	2.13	0.46
13:M:298:PHE:CD2	13:M:305:VAL:HG21	2.51	0.46
24:b:777:GLN:HA	24:b:780:VAL:HG12	1.97	0.46

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:823:VAL:CG1	1:A:831:LEU:HD22	2.46	0.46
7:G:113:ILE:HG22	7:G:114:PRO:CD	2.45	0.46
1:A:1478:GLU:N	1:A:1478:GLU:OE1	2.49	0.46
24:b:651:ILE:HG22	24:b:651:ILE:O	2.15	0.46
4:D:84:ARG:HG3	4:D:88:LEU:HD11	1.97	0.46
23:a:78:ARG:NE	26:d:944:GLU:O	2.39	0.46
1:A:332:SER:HB3	18:T:29:DT:H5''	1.98	0.46
1:A:499:ASP:OD1	15:P:45:A:H4'	2.16	0.46
13:M:580:THR:O	13:M:582:GLU:N	2.49	0.46
21:Y:35:VAL:O	21:Y:47:TRP:N	2.40	0.46
21:Y:88:ILE:N	21:Y:102:ILE:O	2.39	0.46
24:b:921:VAL:HG22	24:b:947:ARG:HE	1.81	0.46
7:G:90:THR:OG1	7:G:100:GLU:OE1	2.17	0.46
1:A:78:MET:O	2:B:1072:ARG:NH2	2.49	0.45
24:b:935:ASP:OD1	24:b:936:TRP:N	2.48	0.45
1:A:321:GLU:OE1	1:A:321:GLU:N	2.50	0.45
7:G:62:GLY:O	7:G:64:GLY:N	2.49	0.45
24:b:647:GLU:N	24:b:673:LEU:O	2.49	0.45
24:b:860:LEU:HG	24:b:871:LEU:HD21	1.98	0.45
1:A:668:PHE:CZ	1:A:672:ILE:HD11	2.52	0.45
1:A:844:ARG:NH2	2:B:501:LEU:HD13	2.31	0.45
2:B:294:ASP:OD1	2:B:379:ARG:NH2	2.47	0.45
26:d:704:ILE:CD1	26:d:707:ILE:HG22	2.40	0.45
3:C:189:ASP:O	3:C:191:ALA:N	2.48	0.45
13:M:589:ARG:NE	13:M:711:MET:SD	2.89	0.45
24:b:693:PHE:CD1	24:b:696:LYS:HB2	2.52	0.45
26:d:413:LEU:HD13	26:d:426:VAL:HG23	1.97	0.45
1:A:1475:LEU:HD23	7:G:68:TYR:OH	2.17	0.45
23:a:48:THR:HG23	23:a:105:VAL:HG12	1.99	0.45
23:a:114:MET:HE3	23:a:126:VAL:HG13	1.98	0.45
13:M:1051:GLU:OE1	13:M:1051:GLU:N	2.50	0.45
26:d:649:VAL:HB	26:d:659:ILE:HG23	1.98	0.45
26:d:709:LYS:HG3	26:d:710:LEU:H	1.81	0.45
21:Y:214:ILE:O	21:Y:228:LEU:N	2.40	0.45
24:b:580:GLN:NE2	24:b:584:GLU:OE1	2.50	0.45
26:d:830:ILE:CG2	26:d:873:MET:HE1	2.47	0.45
21:Y:287:SER:O	21:Y:303:CYS:N	2.46	0.45
24:b:495:GLU:HB3	24:b:519:TRP:HH2	1.81	0.45
24:b:577:VAL:O	24:b:577:VAL:HG12	2.17	0.45
1:A:1433:GLU:OE1	18:T:17:DC:H4'	2.16	0.45
2:B:15:ASP:OD1	2:B:15:ASP:N	2.47	0.45

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:88:VAL:C	7:G:99:THR:HG1	2.18	0.45
13:M:362:ALA:O	13:M:366:MET:HG3	2.17	0.45
13:M:1017:LEU:O	13:M:1021:CYS:N	2.42	0.45
13:M:1280:THR:OG1	13:M:1285:ASP:OD2	2.30	0.45
1:A:760:LEU:HD22	1:A:764:ASN:HD22	1.80	0.44
1:A:823:VAL:HG11	1:A:831:LEU:HD22	1.99	0.44
13:M:469:LEU:HD12	13:M:598:ARG:HG3	1.99	0.44
20:V:292:ALA:C	20:V:294:GLU:H	2.25	0.44
13:M:590:TYR:CZ	13:M:594:LEU:HD21	2.52	0.44
13:M:594:LEU:HD22	13:M:720:PHE:CE2	2.51	0.44
26:d:516:LEU:O	26:d:531:HIS:ND1	2.50	0.44
8:H:88:PHE:CD1	8:H:144:LEU:HD12	2.52	0.44
13:M:593:ALA:HA	13:M:716:ALA:HB2	1.99	0.44
23:a:93:ASP:OD1	23:a:93:ASP:N	2.43	0.44
24:b:795:ILE:HG12	24:b:799:LEU:HD11	1.99	0.44
26:d:381:ALA:O	26:d:385:GLY:N	2.50	0.44
26:d:394:ILE:HG22	26:d:704:ILE:HB	2.00	0.44
2:B:629:GLU:N	2:B:632:LYS:O	2.41	0.44
13:M:552:ASP:OD2	13:M:556:ARG:NE	2.50	0.44
23:a:6:SER:O	23:a:10:THR:HG22	2.18	0.44
26:d:679:MET:SD	26:d:680:CYS:N	2.91	0.44
1:A:896:LEU:O	1:A:1396:ARG:NH1	2.50	0.44
1:A:1189:ASP:OD2	1:A:1258:ARG:NE	2.50	0.44
13:M:824:GLU:N	13:M:827:GLU:OE1	2.51	0.44
26:d:27:GLU:N	26:d:27:GLU:OE1	2.50	0.44
7:G:120:ASP:OD1	7:G:123:SER:N	2.50	0.44
13:M:311:ASP:OD1	13:M:312:GLU:N	2.45	0.44
4:D:27:GLU:N	4:D:27:GLU:OE1	2.50	0.44
1:A:260:VAL:O	1:A:342:ARG:NH1	2.44	0.44
23:a:338:ASP:OD1	23:a:354:ARG:NH2	2.51	0.44
26:d:393:GLY:O	26:d:394:ILE:HD13	2.18	0.44
1:A:883:ILE:HD11	1:A:1424:THR:HA	1.99	0.43
2:B:84:TYR:HE2	2:B:132:VAL:HG22	1.83	0.43
2:B:887:TYR:O	2:B:888:THR:HG22	2.18	0.43
3:C:5:ASN:OD1	11:K:52:LYS:NZ	2.51	0.43
6:F:78:PRO:HD3	7:G:18:PHE:HB2	1.99	0.43
8:H:71:ASP:OD1	8:H:72:ASP:N	2.51	0.43
8:H:136:GLU:O	8:H:139:SER:OG	2.27	0.43
24:b:510:TYR:OH	24:b:536:LEU:O	2.32	0.43
26:d:1061:VAL:CG2	26:d:1104:LYS:HE3	2.48	0.43
12:L:22:CYS:SG	12:L:24:THR:OG1	2.72	0.43

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:316:GLU:HG2	13:M:403:TRP:CE2	2.53	0.43
13:M:755:VAL:HG23	13:M:923:PRO:HG2	2.00	0.43
13:M:980:PRO:HA	13:M:983:GLN:HG2	2.00	0.43
17:S:413:GLU:O	17:S:416:ILE:N	2.51	0.43
17:S:507:TYR:O	17:S:512:GLU:N	2.45	0.43
26:d:356:LEU:HD21	26:d:390:ILE:HD11	2.00	0.43
1:A:937:ASP:OD1	1:A:938:LEU:N	2.50	0.43
24:b:604:THR:O	24:b:605:HIS:ND1	2.51	0.43
26:d:288:GLU:HB2	26:d:298:LYS:HG2	2.00	0.43
26:d:907:ASN:OD1	26:d:947:ARG:NH2	2.51	0.43
2:B:256:ILE:HD11	2:B:373:LEU:HD21	1.99	0.43
15:P:35:A:O2'	15:P:36:A:P	2.76	0.43
17:S:535:LEU:O	17:S:539:ALA:N	2.47	0.43
24:b:883:LEU:HD11	24:b:897:LEU:CD2	2.48	0.43
1:A:67:ARG:NH2	15:P:33:A:C3'	2.81	0.43
13:M:1148:GLU:OE1	13:M:1148:GLU:N	2.45	0.43
24:b:683:ARG:HG3	24:b:704:MET:HE1	2.00	0.43
24:b:915:ARG:HE	24:b:940:THR:HG21	1.82	0.43
26:d:393:GLY:HA2	26:d:670:ASN:O	2.18	0.43
1:A:410:ASN:OD1	1:A:449:HIS:NE2	2.46	0.43
11:K:81:TYR:OH	11:K:89:ASN:OD1	2.33	0.43
13:M:570:ALA:HB2	13:M:585:LEU:CD2	2.49	0.43
1:A:467:MET:SD	1:A:524:MET:HB3	2.59	0.43
2:B:430:ASN:HD21	16:R:20:UNK:C	2.32	0.43
24:b:760:ASN:OD1	24:b:761:GLU:N	2.51	0.43
26:d:161:GLU:N	26:d:161:GLU:OE1	2.51	0.43
26:d:709:LYS:HG3	26:d:710:LEU:N	2.34	0.43
1:A:255:VAL:HG23	1:A:280:LEU:HD22	2.01	0.43
3:C:123:ASN:OD1	3:C:124:SER:N	2.51	0.43
13:M:574:VAL:O	13:M:574:VAL:HG13	2.19	0.43
13:M:848:VAL:HG11	13:M:864:VAL:HG21	2.00	0.43
20:V:206:LYS:O	20:V:208:ARG:N	2.49	0.43
26:d:884:ILE:HG22	26:d:885:ASN:H	1.83	0.43
1:A:94:VAL:HG21	1:A:311:GLN:HA	2.01	0.42
2:B:628:VAL:HG12	2:B:629:GLU:O	2.18	0.42
2:B:850:ASP:OD1	2:B:850:ASP:N	2.52	0.42
4:D:99:CYS:O	4:D:103:LEU:HG	2.19	0.42
11:K:7:PHE:CD1	11:K:11:LEU:HD12	2.54	0.42
13:M:592:VAL:HG12	13:M:596:ILE:HD12	2.01	0.42
23:a:219:ALA:HB2	24:b:693:PHE:CD2	2.54	0.42
24:b:857:ARG:NH2	24:b:901:TYR:O	2.45	0.42

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
26:d:222:VAL:CG2	26:d:230:ILE:HD12	2.49	0.42
24:b:860:LEU:CG	24:b:871:LEU:HD21	2.48	0.42
26:d:38:ARG:HG3	26:d:38:ARG:HH11	1.84	0.42
26:d:938:MET:HE3	26:d:938:MET:HB3	1.83	0.42
13:M:308:ALA:HB1	13:M:313:LEU:HB2	2.01	0.42
1:A:863:ARG:HB3	1:A:1414:ILE:HG22	2.02	0.42
13:M:522:ASP:O	13:M:523:MET:HG3	2.20	0.42
23:a:142:GLU:CG	23:a:164:ARG:HB2	2.50	0.42
26:d:288:GLU:HG2	26:d:298:LYS:HE2	2.02	0.42
1:A:695:ASP:OD1	1:A:695:ASP:N	2.52	0.42
13:M:618:ILE:HD12	13:M:640:LEU:HD12	2.00	0.42
18:T:38:DG:OP1	24:b:917:GLY:N	2.52	0.42
1:A:413:TYR:HB3	1:A:414:PRO:HD3	2.02	0.42
13:M:464:TYR:CE2	13:M:468:LEU:HD11	2.55	0.42
13:M:937:ILE:CG1	13:M:958:LEU:HD23	2.50	0.42
13:M:1154:THR:O	13:M:1234:ASN:ND2	2.47	0.42
23:a:284:TYR:OH	23:a:321:VAL:O	2.36	0.42
24:b:832:PHE:CE2	24:b:870:ILE:HD11	2.54	0.42
24:b:843:VAL:HG12	24:b:847:LEU:HD13	2.00	0.42
26:d:986:ASP:OD1	26:d:988:GLU:HG3	2.18	0.42
1:A:67:ARG:CZ	15:P:34:A:OP1	2.67	0.42
21:Y:214:ILE:N	21:Y:228:LEU:O	2.38	0.42
26:d:275:ASP:OD2	26:d:279:ARG:NH1	2.52	0.42
1:A:595:ILE:HD11	1:A:675:VAL:HG11	2.02	0.42
1:A:967:ARG:NH2	1:A:1326:GLY:O	2.52	0.42
2:B:1091:ARG:NH2	2:B:1092:ASP:OD1	2.53	0.42
26:d:564:ILE:HD12	26:d:564:ILE:H	1.85	0.42
26:d:1058:LEU:HA	26:d:1061:VAL:HG12	2.02	0.42
4:D:112:LYS:NZ	4:D:124:ASP:OD1	2.41	0.42
7:G:22:LEU:CD1	7:G:23:LEU:HD22	2.49	0.42
7:G:39:THR:O	7:G:43:GLY:N	2.53	0.42
13:M:1018:VAL:HG13	13:M:1028:PHE:CD2	2.55	0.42
13:M:1089:LEU:C	13:M:1093:LEU:HD12	2.45	0.42
22:Z:246:SER:O	22:Z:250:PHE:N	2.42	0.42
26:d:367:LEU:O	26:d:368:GLU:HG2	2.19	0.42
1:A:962:ASP:HB3	1:A:1043:ILE:HG23	2.02	0.42
2:B:761:THR:H	2:B:764:MET:HE3	1.85	0.42
13:M:825:GLU:OE2	15:P:27:A:H4'	2.19	0.42
26:d:492:GLU:OE2	26:d:517:TYR:OH	2.28	0.42
26:d:905:HIS:HE2	26:d:944:GLU:CD	2.28	0.42
1:A:381:PRO:HG2	1:A:384:ILE:HD12	2.01	0.41

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:a:188:GLU:HG2	23:a:207:ALA:HB2	2.01	0.41
26:d:690:SER:HA	26:d:703:THR:HG22	2.02	0.41
2:B:967:ILE:HG21	2:B:1048:TYR:OH	2.19	0.41
4:D:87:LEU:O	4:D:87:LEU:HD23	2.21	0.41
4:D:110:GLU:HA	7:G:167:TYR:CE2	2.55	0.41
13:M:849:THR:HG21	13:M:920:ILE:HG13	2.02	0.41
24:b:679:GLN:N	24:b:684:GLU:OE1	2.43	0.41
24:b:910:PHE:CE2	24:b:923:LEU:HD21	2.55	0.41
1:A:86:GLY:C	1:A:255:VAL:HG12	2.46	0.41
5:E:127:LEU:HD23	5:E:127:LEU:H	1.86	0.41
7:G:19:GLY:O	7:G:22:LEU:HD23	2.20	0.41
8:H:49:PRO:O	8:H:147:LYS:NZ	2.49	0.41
17:S:649:ALA:O	17:S:652:GLY:N	2.53	0.41
23:a:108:TYR:HB2	23:a:114:MET:HE2	2.03	0.41
26:d:1093:LEU:O	26:d:1096:SER:OG	2.31	0.41
13:M:316:GLU:HG2	13:M:403:TRP:CD1	2.55	0.41
13:M:579:PRO:O	13:M:580:THR:OG1	2.36	0.41
24:b:776:TYR:HE2	24:b:1007:LEU:HB2	1.85	0.41
26:d:641:PHE:CZ	26:d:704:ILE:HD11	2.55	0.41
3:C:235:SER:OG	3:C:239:LEU:O	2.37	0.41
5:E:110:MET:HG2	5:E:114:ALA:HB3	2.03	0.41
13:M:865:LYS:HG3	13:M:882:VAL:HG21	2.01	0.41
13:M:942:PHE:CE2	13:M:958:LEU:HD21	2.55	0.41
13:M:971:VAL:HG11	13:M:986:ILE:HG22	2.02	0.41
24:b:795:ILE:HG12	24:b:799:LEU:CD1	2.51	0.41
24:b:929:VAL:HG11	24:b:948:ALA:CB	2.50	0.41
26:d:213:GLU:OE1	26:d:234:GLN:N	2.54	0.41
6:F:57:MET:HE1	6:F:120:VAL:HG13	2.02	0.41
13:M:299:GLN:OE1	13:M:299:GLN:N	2.54	0.41
13:M:980:PRO:O	13:M:983:GLN:HG2	2.20	0.41
13:M:1108:ALA:HA	13:M:1111:LEU:HD12	2.03	0.41
26:d:538:VAL:HG11	26:d:541:LEU:HD11	2.02	0.41
14:N:13:DA:C2	14:N:14:DT:H71	2.55	0.41
26:d:770:LEU:HD23	26:d:865:GLU:HB2	2.01	0.41
26:d:879:LYS:NZ	26:d:935:TYR:OH	2.53	0.41
1:A:349:ARG:NH2	2:B:1070:LEU:HD21	2.36	0.41
2:B:864:ASP:OD1	2:B:865:VAL:N	2.51	0.41
7:G:44:PHE:HD2	7:G:46:ILE:HD13	1.85	0.41
13:M:546:PHE:CZ	13:M:550:LEU:HD21	2.55	0.41
13:M:570:ALA:HB2	13:M:585:LEU:HD21	2.02	0.41
15:P:27:A:H4'	15:P:28:U:OP1	2.21	0.41

*Continued on next page...*



Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:a:258:LEU:O	26:d:158:ARG:NH1	2.50	0.41
24:b:641:HIS:O	24:b:667:THR:HG21	2.21	0.41
26:d:308:THR:O	26:d:383:LYS:NZ	2.47	0.41
1:A:848:ILE:HG21	2:B:496:ALA:HB1	2.03	0.41
26:d:330:ASP:OD1	26:d:388:ARG:NH2	2.48	0.41
2:B:733:MET:HE1	2:B:1054:MET:HE2	2.02	0.40
13:M:403:TRP:CE2	13:M:407:ARG:HD2	2.56	0.40
1:A:614:ASP:OD1	1:A:627:LYS:NZ	2.54	0.40
1:A:883:ILE:O	1:A:883:ILE:HG22	2.20	0.40
2:B:292:PHE:HD1	2:B:298:MET:HE1	1.86	0.40
6:F:100:ARG:NH2	6:F:121:ASP:O	2.52	0.40
7:G:34:VAL:O	7:G:37:THR:OG1	2.23	0.40
8:H:51:ASP:N	8:H:54:ASP:OD2	2.45	0.40
24:b:964:THR:OG1	24:b:967:THR:OG1	2.34	0.40
1:A:883:ILE:HD11	1:A:1424:THR:HG22	2.03	0.40
1:A:1416:ARG:NH2	18:T:16:DC:O2	2.55	0.40
3:C:105:VAL:HG11	3:C:115:VAL:HG22	2.03	0.40
8:H:7:GLU:OE2	8:H:57:ARG:NH1	2.54	0.40
18:T:34:DA:H2'	18:T:35:DT:C6	2.56	0.40
23:a:156:HIS:NE2	23:a:199:ASP:O	2.48	0.40
24:b:683:ARG:CG	24:b:704:MET:HE1	2.51	0.40
24:b:766:CYS:N	24:b:963:LEU:O	2.37	0.40
1:A:1212:LEU:HD11	1:A:1289:GLU:HB2	2.03	0.40
2:B:899:SER:OG	11:K:1:MET:HE2	2.22	0.40
2:B:962:THR:O	10:J:9:THR:HG23	2.21	0.40
7:G:22:LEU:HD12	7:G:23:LEU:HD22	2.02	0.40
7:G:85:VAL:HG11	7:G:147:ILE:HD11	2.04	0.40
13:M:594:LEU:HD22	13:M:720:PHE:CZ	2.57	0.40
13:M:963:ILE:O	13:M:967:ASN:ND2	2.53	0.40
18:T:36:DG:OP1	24:b:865:ARG:HB3	2.20	0.40
3:C:45:ILE:HG22	3:C:165:ALA:HB1	2.04	0.40
13:M:606:LEU:O	13:M:609:THR:OG1	2.31	0.40
13:M:1074:LEU:HD11	13:M:1088:ALA:HB2	2.04	0.40

There are no symmetry-related clashes.



## 5.3 Torsion angles

### 5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1402/1970 (71%)	1368 (98%)	34 (2%)	0	100	100
2	B	1123/1174 (96%)	1075 (96%)	48 (4%)	0	100	100
3	C	256/275 (93%)	249 (97%)	7 (3%)	0	100	100
4	D	126/142 (89%)	121 (96%)	5 (4%)	0	100	100
5	E	207/210 (99%)	204 (99%)	3 (1%)	0	100	100
6	F	80/127 (63%)	75 (94%)	5 (6%)	0	100	100
7	G	169/172 (98%)	163 (96%)	5 (3%)	1 (1%)	21	51
8	H	146/150 (97%)	142 (97%)	4 (3%)	0	100	100
9	I	115/125 (92%)	111 (96%)	4 (4%)	0	100	100
10	J	65/67 (97%)	65 (100%)	0	0	100	100
11	K	113/117 (97%)	111 (98%)	2 (2%)	0	100	100
12	L	44/58 (76%)	40 (91%)	4 (9%)	0	100	100
13	M	788/1726 (46%)	743 (94%)	45 (6%)	0	100	100
17	S	888/1173 (76%)	842 (95%)	46 (5%)	0	100	100
19	U	98/666 (15%)	82 (84%)	14 (14%)	2 (2%)	6	22
20	V	209/531 (39%)	174 (83%)	31 (15%)	4 (2%)	6	23
21	Y	298/305 (98%)	278 (93%)	20 (7%)	0	100	100
22	Z	41/531 (8%)	40 (98%)	1 (2%)	0	100	100
23	a	363/396 (92%)	344 (95%)	19 (5%)	0	100	100
24	b	526/1493 (35%)	504 (96%)	22 (4%)	0	100	100
25	c	139/709 (20%)	136 (98%)	3 (2%)	0	100	100
26	d	1082/1140 (95%)	1012 (94%)	69 (6%)	1 (0%)	48	77
All	All	8278/13257 (62%)	7879 (95%)	391 (5%)	8 (0%)	49	77

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
20	V	248	PRO
26	d	707	ILE
7	G	64	GLY
19	U	481	GLY
20	V	301	ASN
19	U	463	PRO
20	V	238	GLU
20	V	259	ASP

### 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	1242/1749 (71%)	1242 (100%)	0	100	100
2	B	992/1027 (97%)	992 (100%)	0	100	100
3	C	237/252 (94%)	237 (100%)	0	100	100
4	D	108/126 (86%)	108 (100%)	0	100	100
5	E	191/192 (100%)	191 (100%)	0	100	100
6	F	71/111 (64%)	71 (100%)	0	100	100
7	G	147/153 (96%)	147 (100%)	0	100	100
8	H	129/131 (98%)	129 (100%)	0	100	100
9	I	105/112 (94%)	105 (100%)	0	100	100
10	J	56/56 (100%)	56 (100%)	0	100	100
11	K	104/106 (98%)	104 (100%)	0	100	100
12	L	43/55 (78%)	43 (100%)	0	100	100
13	M	722/1522 (47%)	722 (100%)	0	100	100
23	a	320/348 (92%)	320 (100%)	0	100	100
24	b	476/1297 (37%)	476 (100%)	0	100	100
26	d	938/999 (94%)	938 (100%)	0	100	100
All	All	5881/8236 (71%)	5881 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	222	HIS
1	A	735	GLN
1	A	792	ASN
1	A	1077	ASN
2	B	98	HIS
2	B	227	ASN
2	B	319	ASN
2	B	1160	GLN
4	D	43	HIS
4	D	48	ASN
4	D	89	GLN
7	G	111	HIS
8	H	29	HIS
11	K	36	ASN
13	M	943	HIS
13	M	983	GLN
23	a	133	GLN
24	b	580	GLN
24	b	669	HIS
24	b	680	ASN
26	d	399	HIS
26	d	467	GLN
26	d	617	ASN
26	d	670	ASN
26	d	789	HIS
26	d	908	ASN
26	d	950	ASN
26	d	964	ASN
26	d	1009	HIS
26	d	1034	ASN

### 5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
15	P	20/45 (44%)	10 (50%)	1 (5%)

All (10) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
15	P	27	A

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
15	P	28	U
15	P	29	A
15	P	30	U
15	P	33	A
15	P	34	A
15	P	35	A
15	P	36	A
15	P	39	G
15	P	44	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
15	P	27	A

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 9 ligands modelled in this entry, 9 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

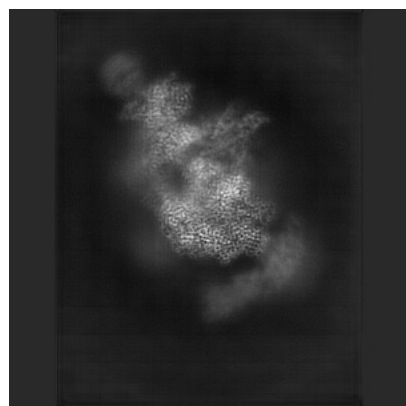
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13010. These allow visual inspection of the internal detail of the map and identification of artifacts.

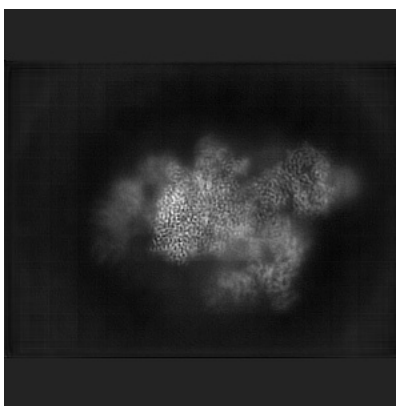
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

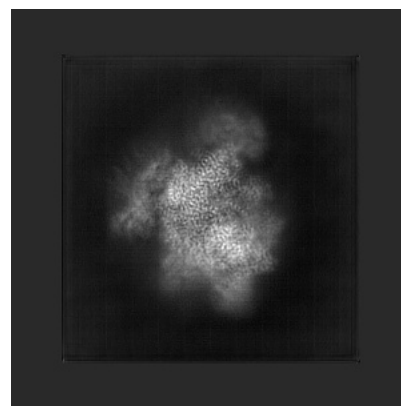
#### 6.1.1 Primary map



X

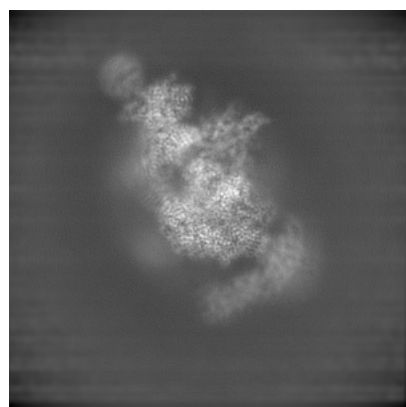


Y

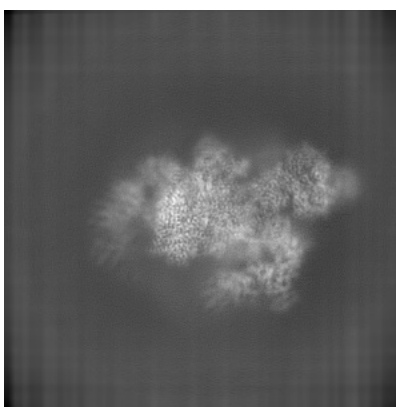


Z

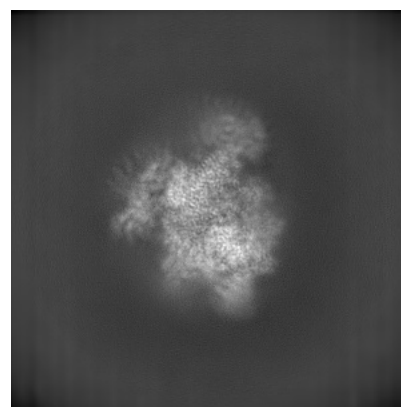
#### 6.1.2 Raw map



X



Y

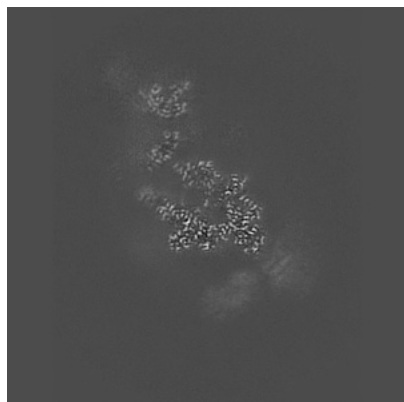


Z

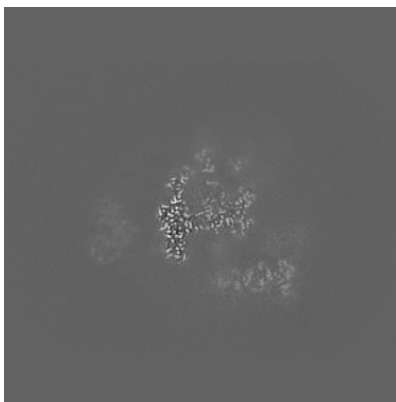
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

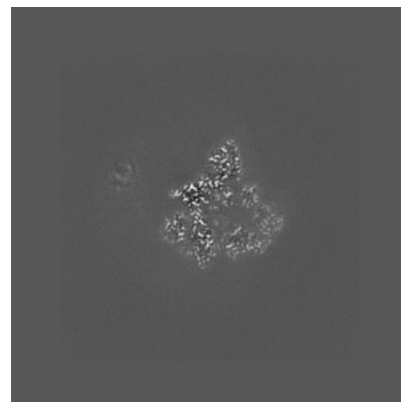
### 6.2.1 Primary map



X Index: 200

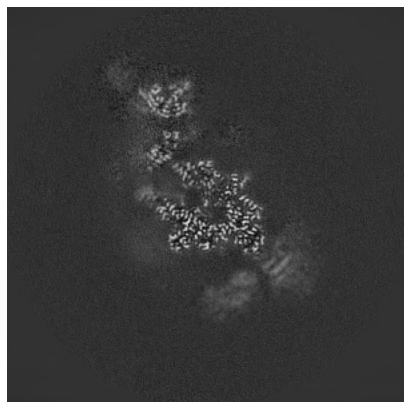


Y Index: 200

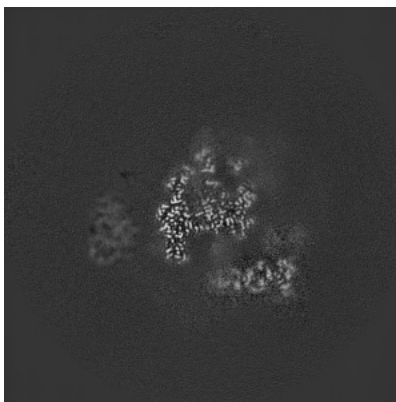


Z Index: 200

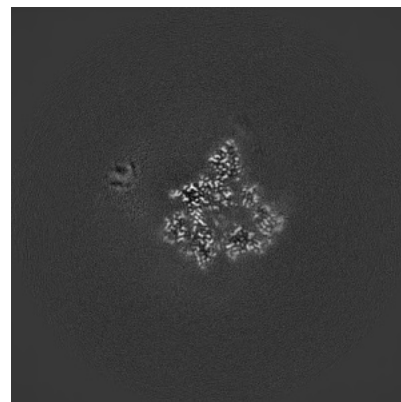
### 6.2.2 Raw map



X Index: 200



Y Index: 200



Z Index: 200

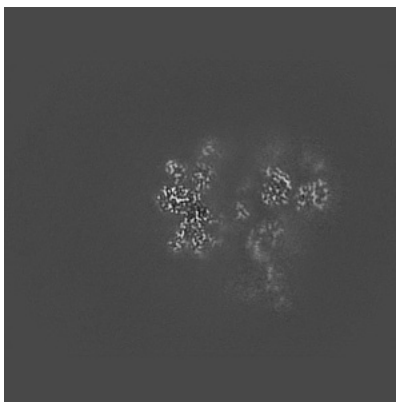
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

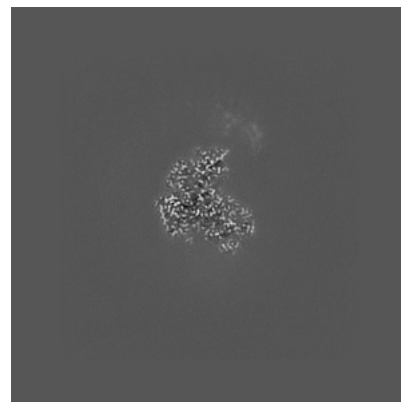
### 6.3.1 Primary map



X Index: 195

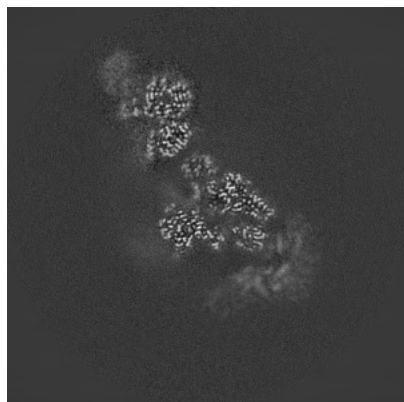


Y Index: 173

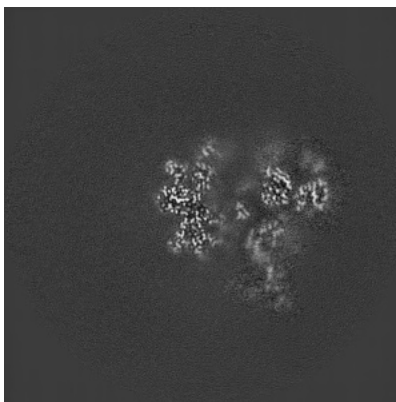


Z Index: 173

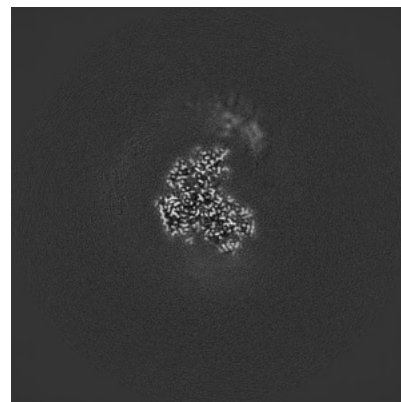
### 6.3.2 Raw map



X Index: 211



Y Index: 173



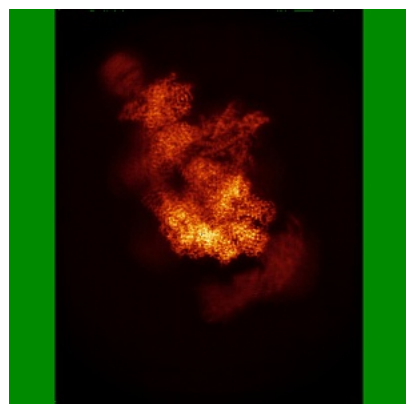
Z Index: 173

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

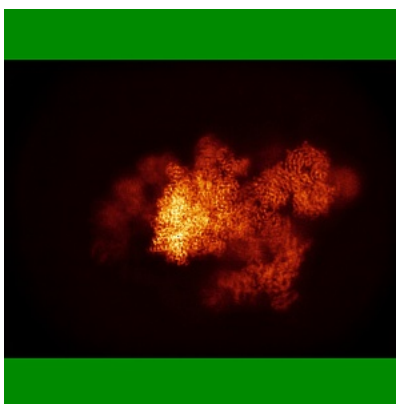


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

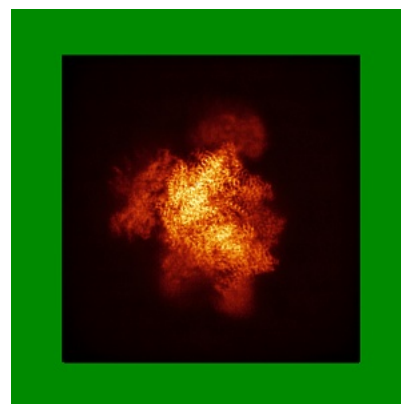
### 6.4.1 Primary map



X

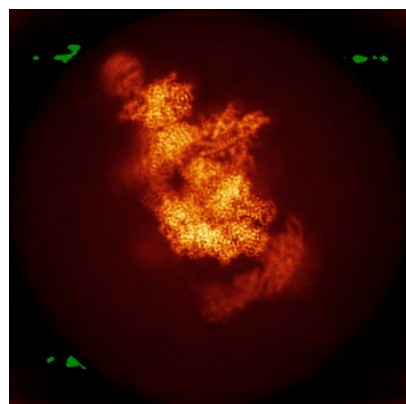


Y

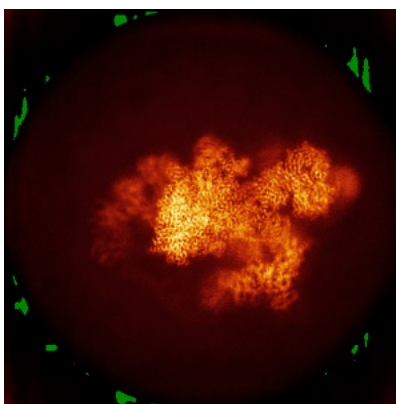


Z

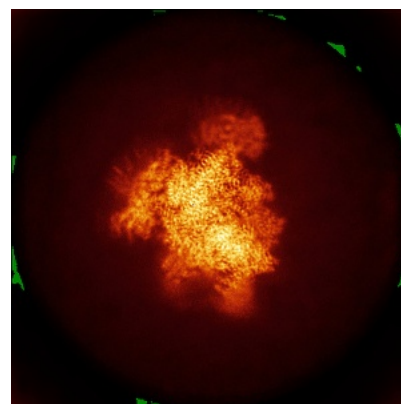
### 6.4.2 Raw map



X



Y



Z

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

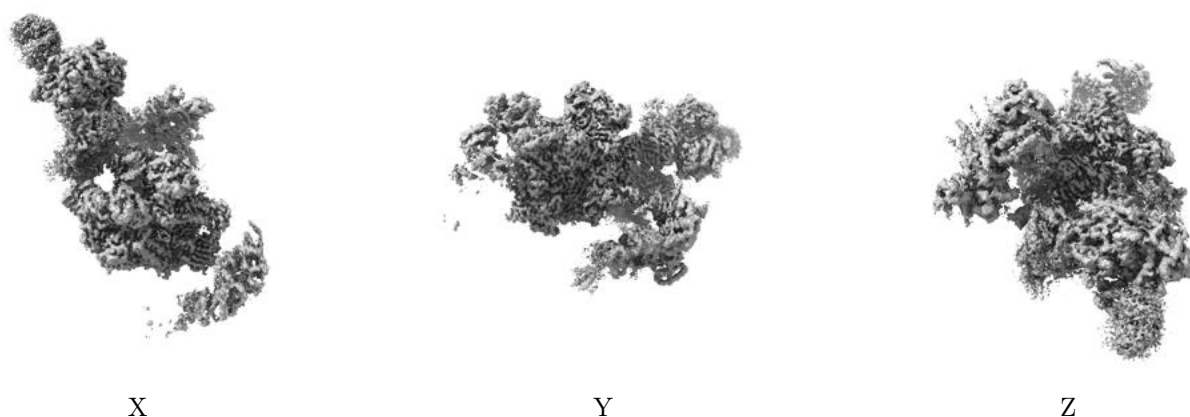
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

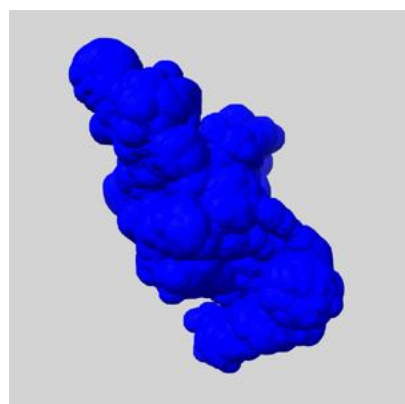
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

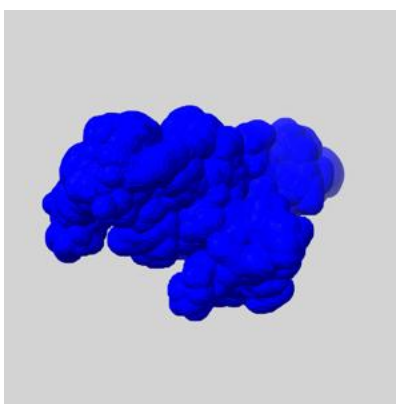
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

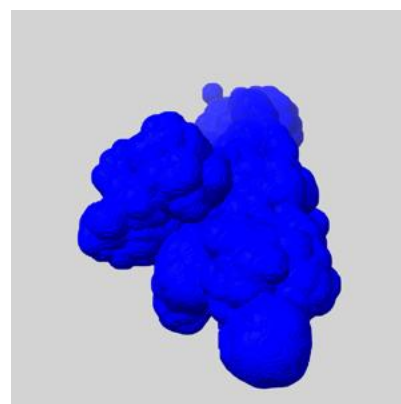
### 6.6.1 emd\_13010\_msk\_1.map [i](#)



X

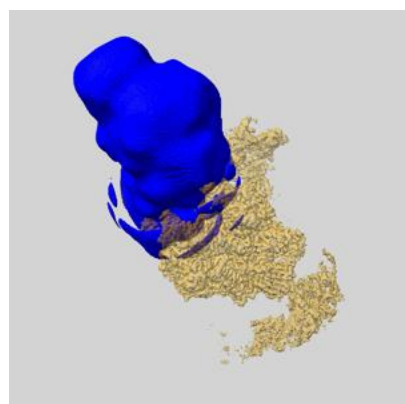


Y

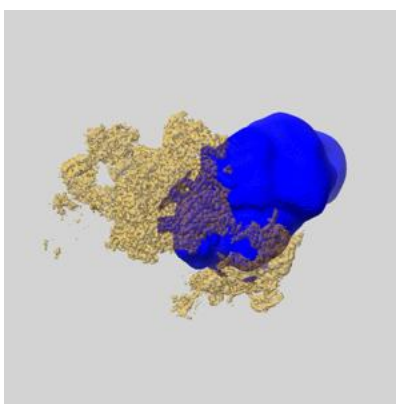


Z

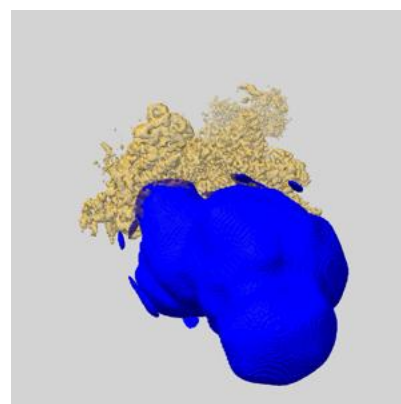
### 6.6.2 emd\_13010\_msk\_2.map [i](#)



X

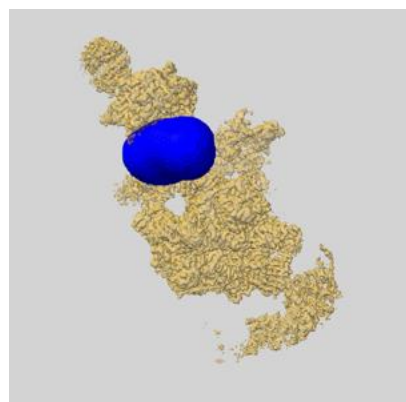


Y

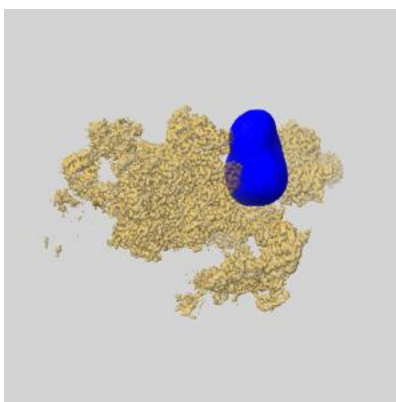


Z

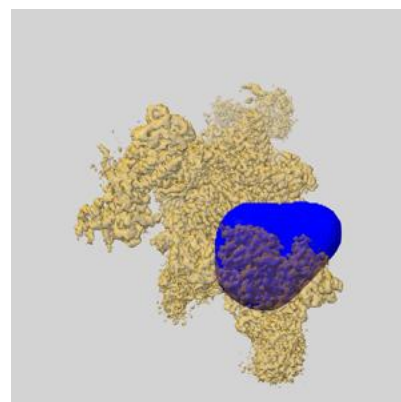
### 6.6.3 emd\_13010\_msk\_3.map [i](#)



X

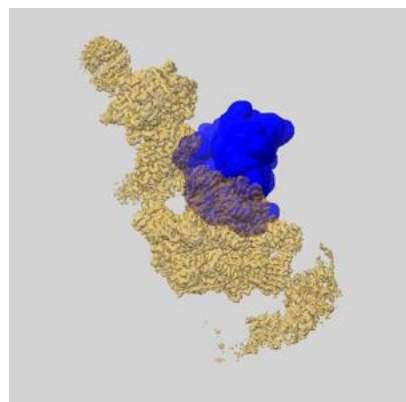


Y

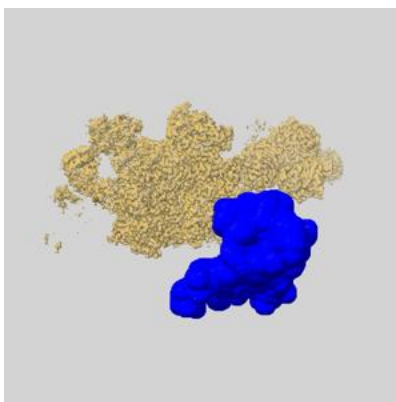


Z

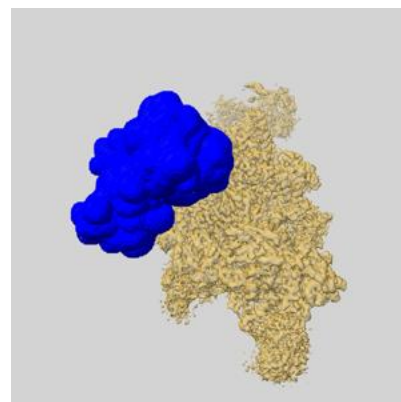
### 6.6.4 emd\_13010\_msk\_4.map [i](#)



X

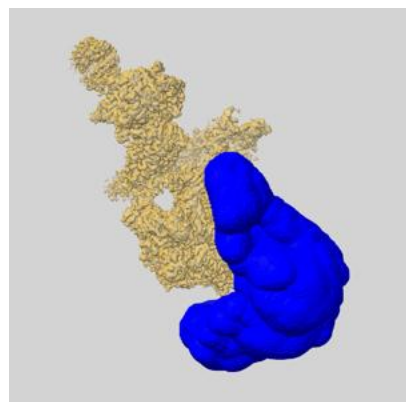


Y

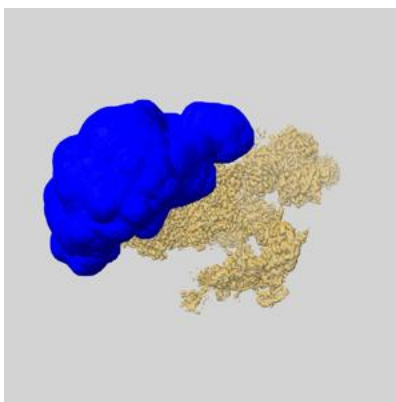


Z

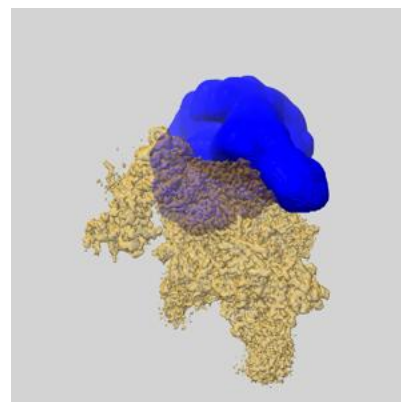
### 6.6.5 emd\_13010\_msk\_5.map [i](#)



X



Y

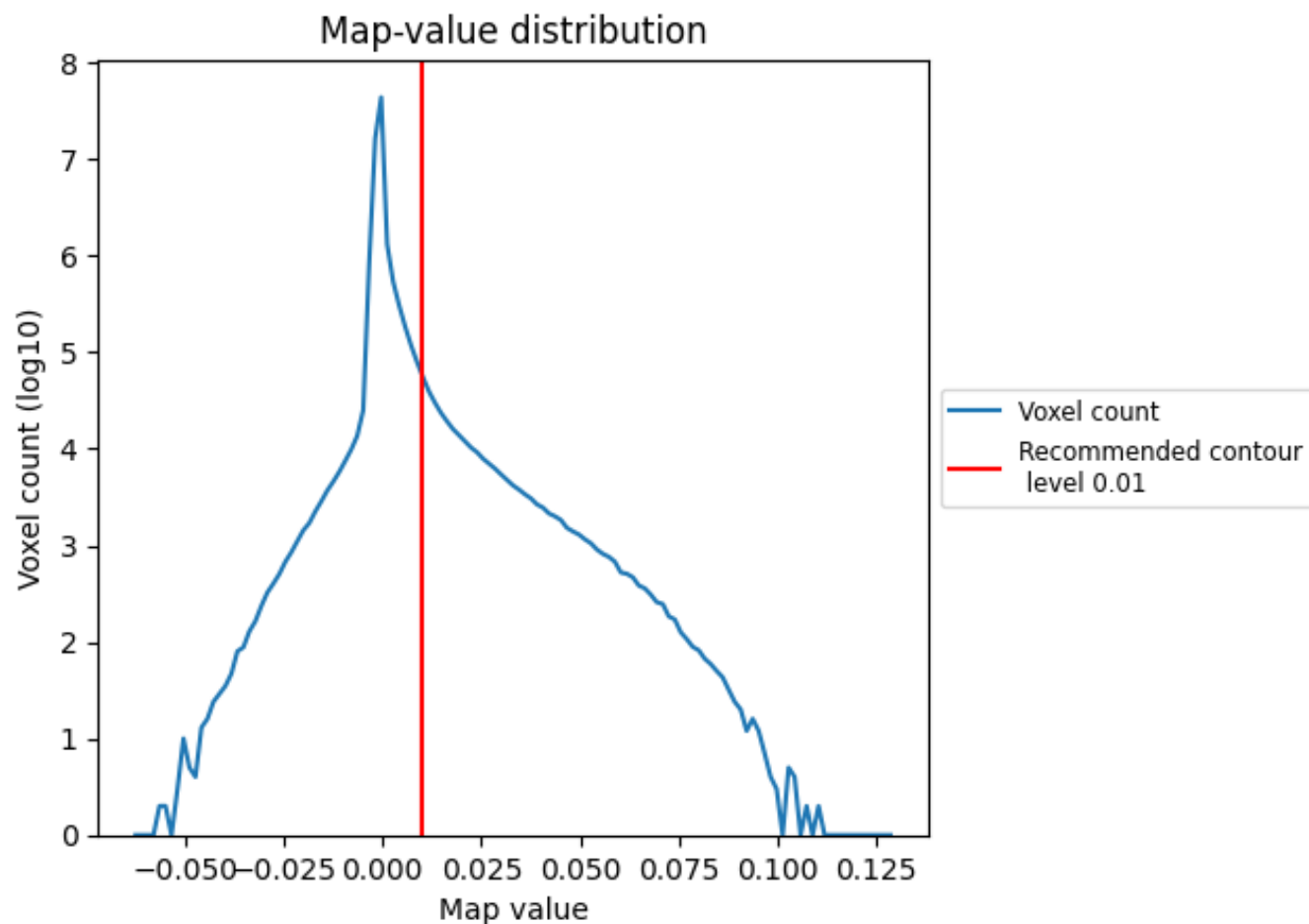


Z

## 7 Map analysis [i](#)

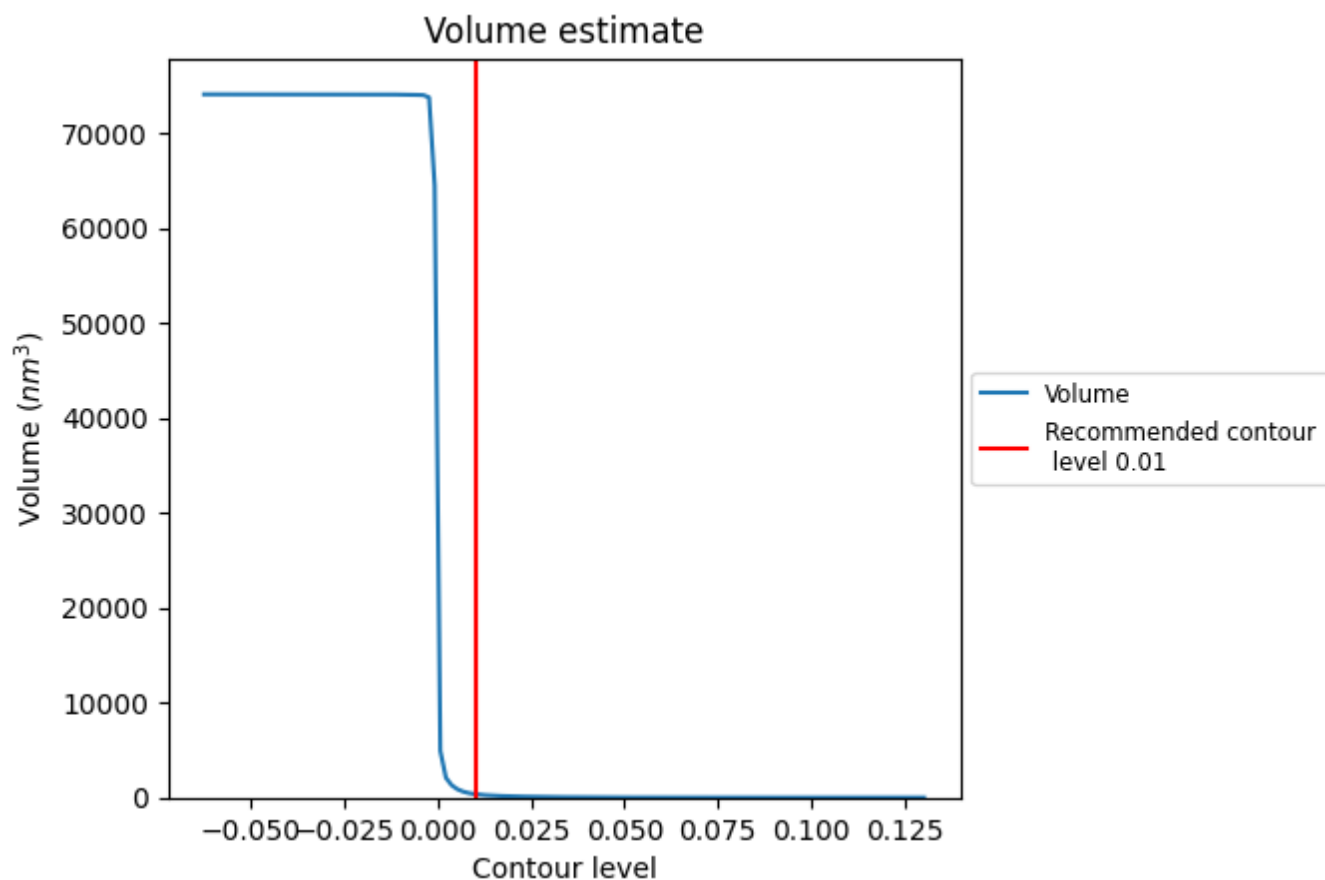
This section contains the results of statistical analysis of the map.

### 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.

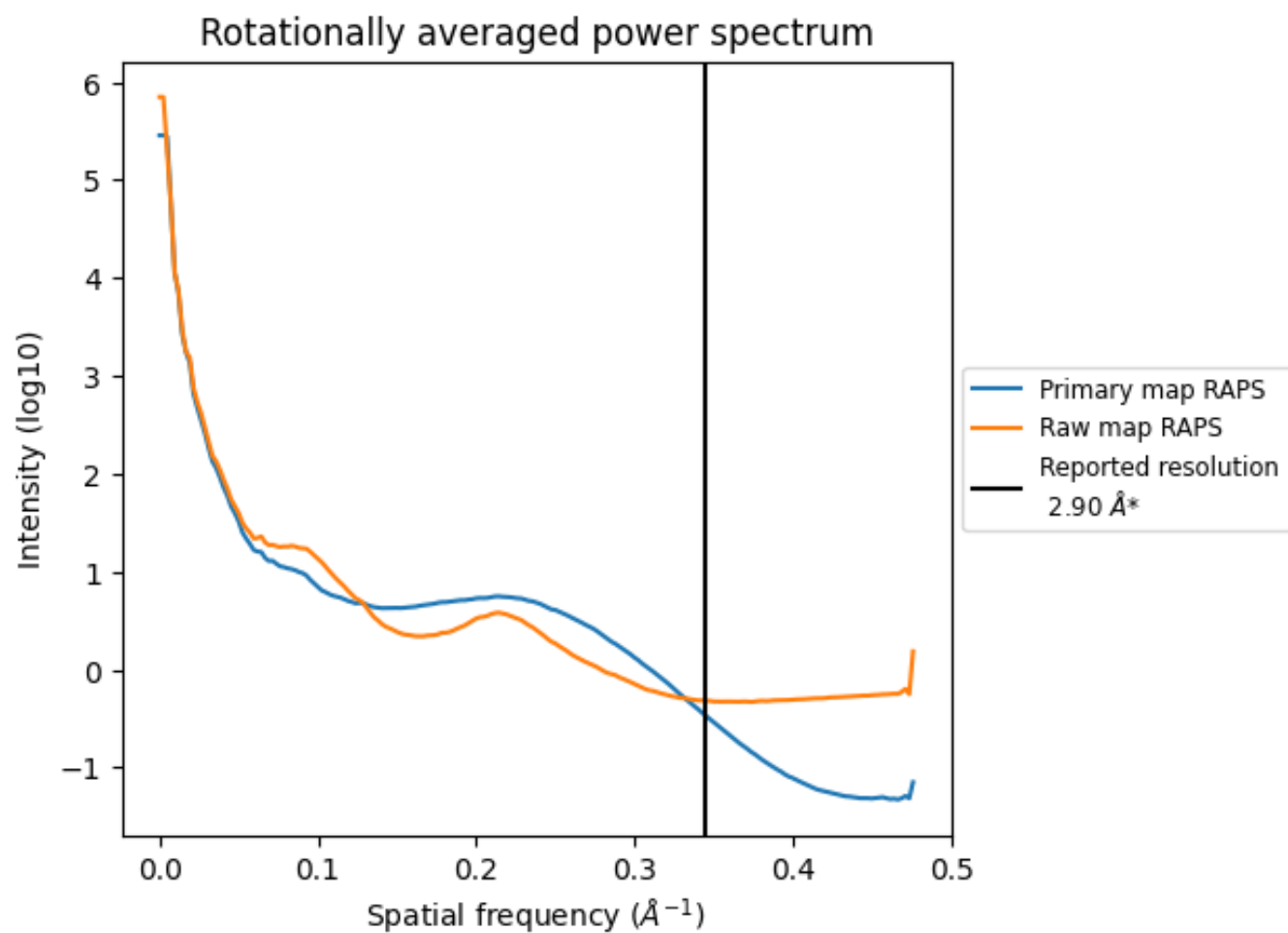
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 363  $\text{nm}^3$ ; this corresponds to an approximate mass of 328 kDa.

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

### 7.3 Rotationally averaged power spectrum ⓘ

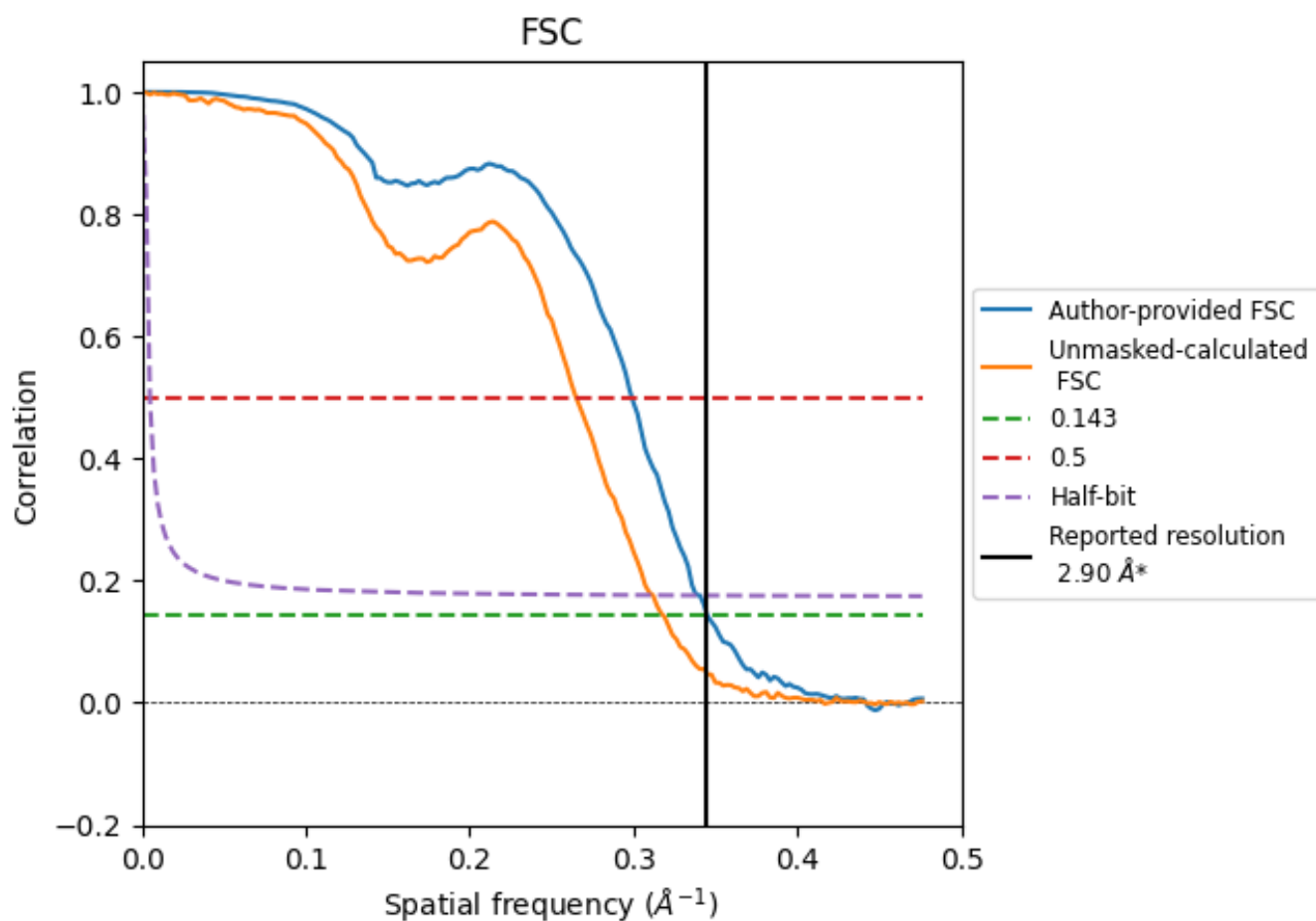


\*Reported resolution corresponds to spatial frequency of 0.345 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.345  $\text{\AA}^{-1}$



## 8.2 Resolution estimates [i](#)

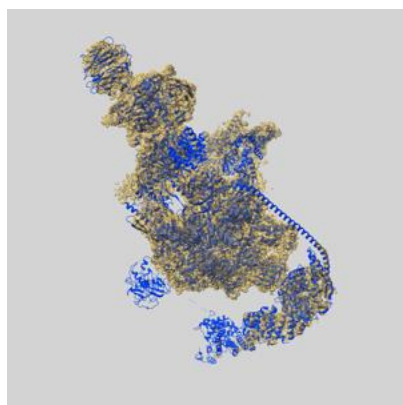
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.90	3.34	2.94
Unmasked-calculated*	3.14	3.78	3.21

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

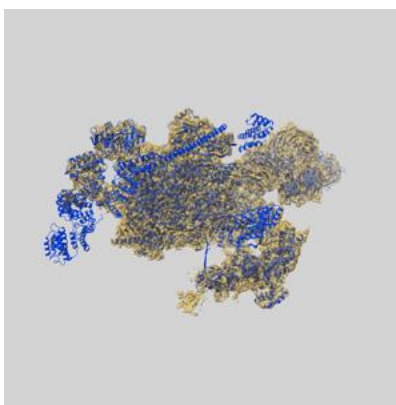
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-13010 and PDB model 7OOP. Per-residue inclusion information can be found in [section 3](#) on [page 9](#).

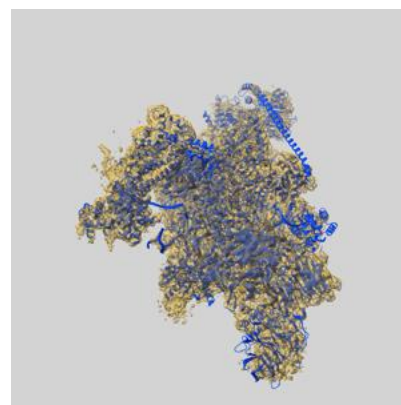
### 9.1 Map-model overlay [i](#)



X



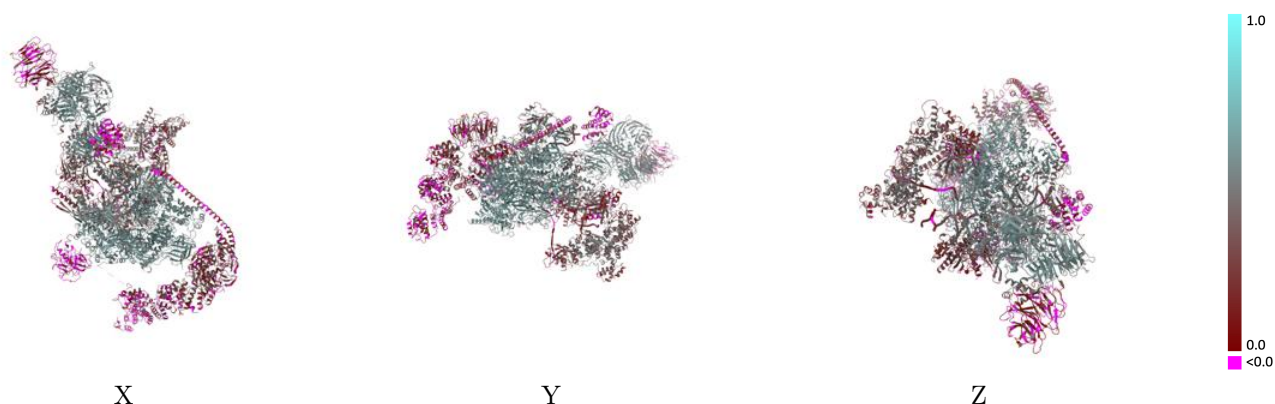
Y



Z

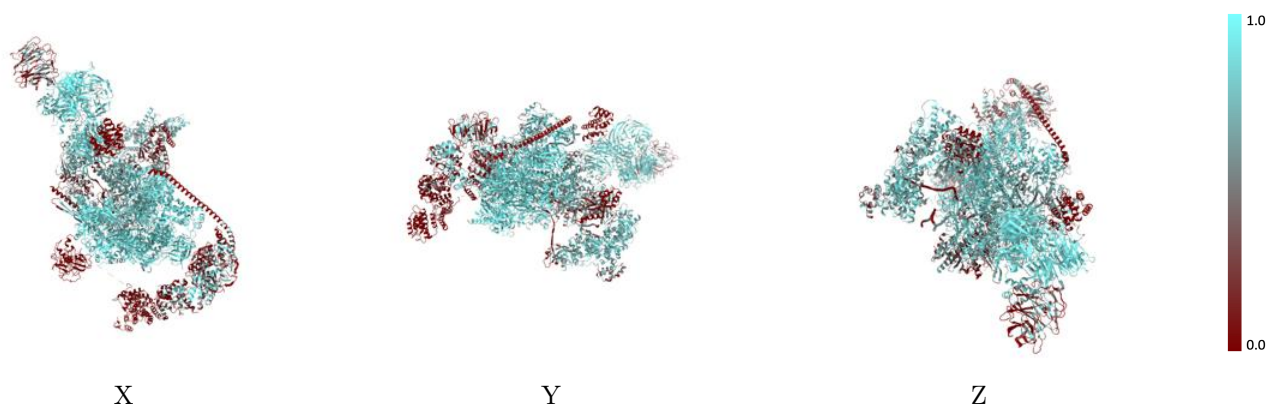
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



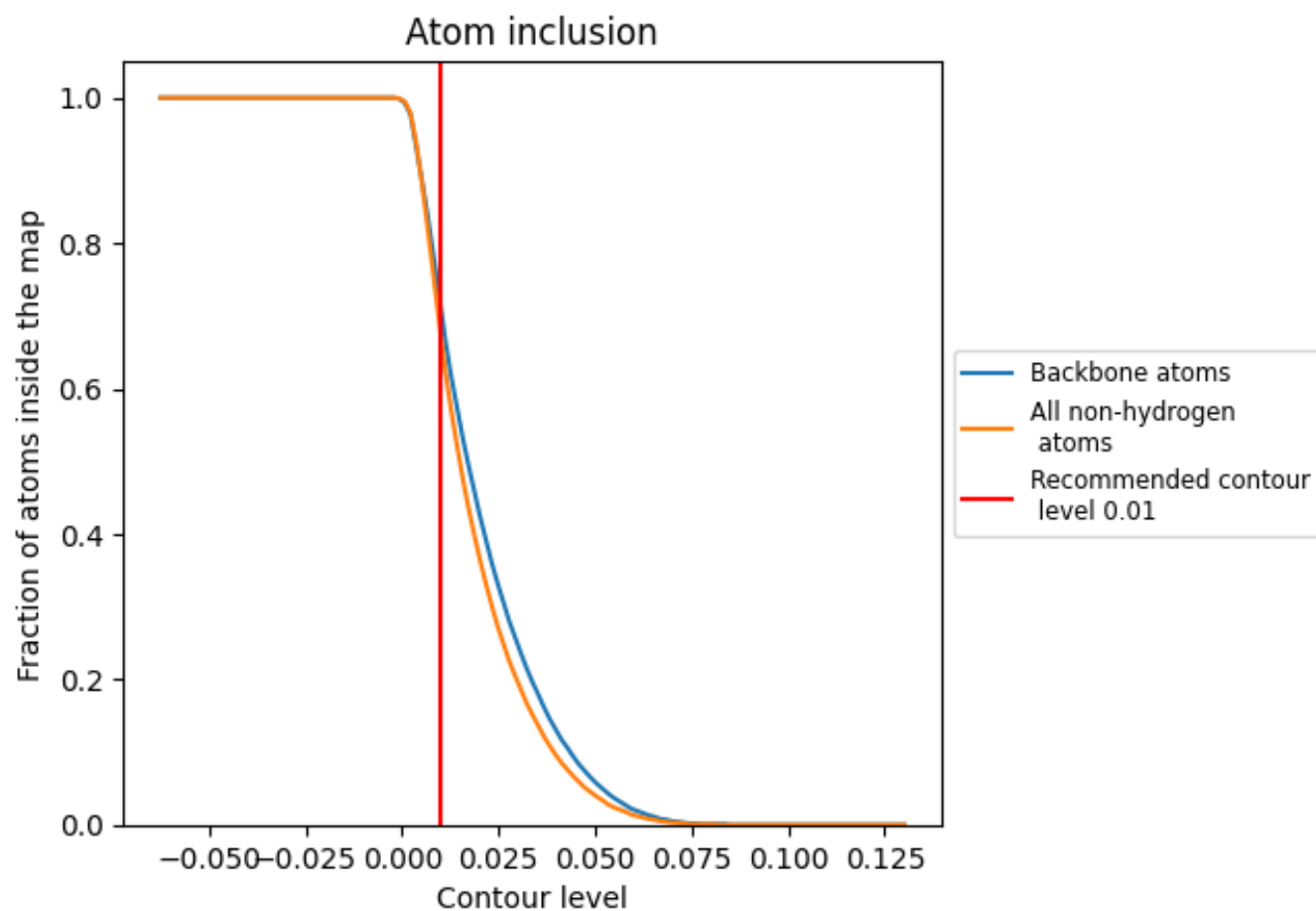
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.01).























































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 68% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6760	 0.4210
A	 0.8210	 0.5330
B	 0.8430	 0.5380
C	 0.8950	 0.5680
D	 0.0530	 0.1490
E	 0.8390	 0.5150
F	 0.8450	 0.5570
G	 0.4260	 0.2800
H	 0.8750	 0.5600
I	 0.7700	 0.4670
J	 0.9150	 0.5960
K	 0.9060	 0.5750
L	 0.8230	 0.4910
M	 0.6700	 0.3590
N	 0.6250	 0.3510
P	 0.4490	 0.2920
R	 0.2630	 0.2860
S	 0.2160	 0.1440
T	 0.6870	 0.3820
U	 0.0000	 0.0240
V	 0.0500	 0.0590
Y	 0.3380	 0.2250
Z	 0.1400	 0.1580
a	 0.8420	 0.5330
b	 0.5690	 0.3340
c	 0.0050	 0.0070
d	 0.6680	 0.3920

