WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Jun 26, 2025 – 01:22 PM JST

PDB ID	:	9J0P / pdb_00009j0p
EMDB ID	:	EMD-61060
Title	:	Arrested elongation complex of mammalian RNA polymerase II with nucleosome (AEC2-nuc)
Authors	:	Naganuma, M.; Kujirai, T.; Ehara, H.; Uejima, T.; Ito, T.; Goto, M.; Aoki, M.; Henmi, M.; Miyamoto-Kohno, S.; Shirouzu, M.; Kurumizaka, H.; Sekine, S.
Deposited on	:	2024-08-02
Resolution	:	3.30 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 (i) 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 (i)) were used in the production of this report:

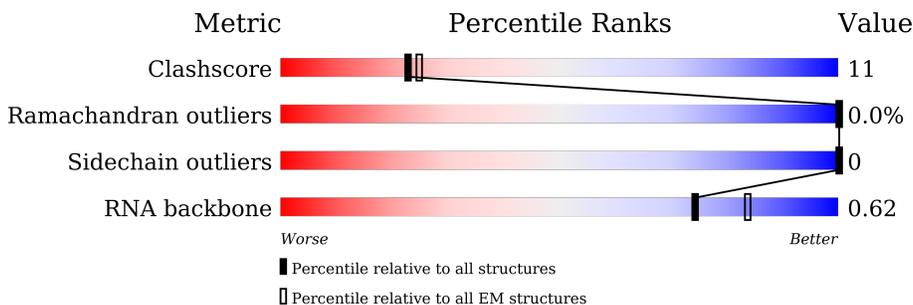|		
EMDB validation analysis	:	0.0.1.dev118
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.30 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	Percentile Ranks	Value
Clashscore		11
Ramachandran outliers		0.0%
Sidechain outliers		0
RNA backbone		0.62

Worse   *Better*

▌ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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 <=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	55% 16% 29%
2	B	1174	74% 21% 5%
3	C	271	73% 22% 5%
4	D	142	62% 27% 11%
5	E	210	73% 26%
6	F	127	53% 9% 39%
7	G	172	66% 34%

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Mol	Chain	Length	Quality of chain
8	H	150	76% · · · · · · 23% ·
9	I	125	66% · · · 26% · · 7%
10	J	67	87% · · · 13%
11	K	117	79% · · · 19% ·
12	L	58	53% · · 26% · · 21%
13	Y	118	78% / 77% · · 21% ·
14	Z	1107	13% / 33% · 10% · · 57%
15	T	198	30% / 37% · · 59% ·
16	N	198	32% / 42% · · 48% · · 9%
17	P	16	69% · · 19% · 12%
18	U	528	5% / 24% · 11% · · 65%
19	V	580	6% / 65% · · 28% · 7%
20	W	611	10% / 64% · · 25% · 11%
21	X	404	6% · · · 91%
22	a	136	49% · · 22% · · 29%
22	e	136	6% / 51% · · 21% · · 29%
23	b	103	49% · · 29% · · 22%
23	f	103	50% · · 25% · · 24%
24	c	130	10% / 52% · · 28% · · 21%
24	g	130	14% / 52% · · 28% · · 19%
25	d	126	9% / 50% · · 25% · · 25%
25	h	126	12% / 48% · · 26% · · 26%

2 Entry composition ⓘ

There are 27 unique types of molecules in this entry. The entry contains 59755 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.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1395	Total	C	N	O	S	0	0
			11050	6952	1982	2047	69		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1121	Total	C	N	O	S	0	0
			8971	5679	1575	1653	64		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	258	Total	C	N	O	S	0	0
			2072	1300	356	410	6		

- Molecule 4 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	126	Total	C	N	O	S	0	0
			1004	630	170	200	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	78	Total	C	N	O	S	0	0
			626	401	106	114	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
			1333	866	214	245	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	149	Total	C	N	O	S	0	0
			1197	759	195	238	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	116	Total	C	N	O	S	0	0
			942	582	168	181	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 DNA-directed RNA polymerase II subunit RPB11-a.

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 RPB12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	46	Total	C	N	O	S	0	0
			389	241	75	67	6		

- Molecule 13 is a protein called Transcription elongation factor SPT4.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	Y	116	Total	C	N	O	S	0	0
			911	570	159	173	9		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Y	0	SER	-	expression tag	UNP P63272

- Molecule 14 is a protein called Transcription elongation factor SPT5.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	Z	480	Total 3837	C 2439	N 676	O 705	S 17	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Z	1088	LYS	-	expression tag	UNP O00267
Z	1089	GLU	-	expression tag	UNP O00267
Z	1090	THR	-	expression tag	UNP O00267
Z	1091	ALA	-	expression tag	UNP O00267
Z	1092	ALA	-	expression tag	UNP O00267
Z	1093	ALA	-	expression tag	UNP O00267
Z	1094	LYS	-	expression tag	UNP O00267
Z	1095	PHE	-	expression tag	UNP O00267
Z	1096	GLU	-	expression tag	UNP O00267
Z	1097	ARG	-	expression tag	UNP O00267
Z	1098	GLN	-	expression tag	UNP O00267
Z	1099	HIS	-	expression tag	UNP O00267
Z	1100	MET	-	expression tag	UNP O00267
Z	1101	ASP	-	expression tag	UNP O00267
Z	1102	SER	-	expression tag	UNP O00267
Z	1103	SER	-	expression tag	UNP O00267
Z	1104	THR	-	expression tag	UNP O00267
Z	1105	SER	-	expression tag	UNP O00267
Z	1106	ALA	-	expression tag	UNP O00267
Z	1107	ALA	-	expression tag	UNP O00267

- Molecule 15 is a DNA chain called TEMPLATE DNA (191-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
15	T	191	Total 3899	C 1848	N 756	O 1105	P 190	0	0

- Molecule 16 is a DNA chain called NON-TEMPLATE DNA (180-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
16	N	180	Total 3706	C 1762	N 647	O 1117	P 180	0	0

- Molecule 17 is a RNA chain called RNA (5'-R(P*AP*AP*UP*UP*AP*GP*CP*UP*CP*U P*UP*GP*UP*GP*UP*U)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
17	P	16	Total 335	C 150	N 52	O 117	P 16	0	0

- Molecule 18 is a protein called Negative elongation factor A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	U	187	Total 1439	C 912	N 245	O 273	S 9	0	0

- Molecule 19 is a protein called Negative elongation factor B.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	V	542	Total 4341	C 2785	N 736	O 795	S 25	0	0

- Molecule 20 is a protein called Negative elongation factor C/D.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	W	543	Total 4312	C 2755	N 722	O 811	S 24	0	0

There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	591	GLY	-	expression tag	UNP Q8IXH7
W	592	SER	-	expression tag	UNP Q8IXH7
W	593	SER	-	expression tag	UNP Q8IXH7
W	594	GLY	-	expression tag	UNP Q8IXH7
W	595	SER	-	expression tag	UNP Q8IXH7
W	596	SER	-	expression tag	UNP Q8IXH7
W	597	GLY	-	expression tag	UNP Q8IXH7
W	598	LEU	-	expression tag	UNP Q8IXH7
W	599	GLU	-	expression tag	UNP Q8IXH7
W	600	VAL	-	expression tag	UNP Q8IXH7
W	601	LEU	-	expression tag	UNP Q8IXH7
W	602	PHE	-	expression tag	UNP Q8IXH7
W	603	GLN	-	expression tag	UNP Q8IXH7
W	604	GLY	-	expression tag	UNP Q8IXH7
W	605	PRO	-	expression tag	UNP Q8IXH7
W	606	HIS	-	expression tag	UNP Q8IXH7

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Chain	Residue	Modelled	Actual	Comment	Reference
W	607	HIS	-	expression tag	UNP Q8IXH7
W	608	HIS	-	expression tag	UNP Q8IXH7
W	609	HIS	-	expression tag	UNP Q8IXH7
W	610	HIS	-	expression tag	UNP Q8IXH7
W	611	HIS	-	expression tag	UNP Q8IXH7

- Molecule 21 is a protein called Negative elongation factor E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	X	35	281	185	48	47	1	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	-23	MET	-	initiating methionine	UNP P18615
X	-22	ASP	-	expression tag	UNP P18615
X	-21	TYR	-	expression tag	UNP P18615
X	-20	LYS	-	expression tag	UNP P18615
X	-19	ASP	-	expression tag	UNP P18615
X	-18	ASP	-	expression tag	UNP P18615
X	-17	ASP	-	expression tag	UNP P18615
X	-16	ASP	-	expression tag	UNP P18615
X	-15	LYS	-	expression tag	UNP P18615
X	-14	LEU	-	expression tag	UNP P18615
X	-13	GLU	-	expression tag	UNP P18615
X	-12	VAL	-	expression tag	UNP P18615
X	-11	LEU	-	expression tag	UNP P18615
X	-10	PHE	-	expression tag	UNP P18615
X	-9	GLN	-	expression tag	UNP P18615
X	-8	GLY	-	expression tag	UNP P18615
X	-7	PRO	-	expression tag	UNP P18615
X	-6	GLY	-	expression tag	UNP P18615
X	-5	SER	-	expression tag	UNP P18615
X	-4	SER	-	expression tag	UNP P18615
X	-3	GLY	-	expression tag	UNP P18615
X	-2	SER	-	expression tag	UNP P18615
X	-1	SER	-	expression tag	UNP P18615
X	0	GLY	-	expression tag	UNP P18615

- Molecule 22 is a protein called Histone H3.3.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	a	97	Total 797	C 503	N 155	O 137	S 2	0	0
22	e	97	Total 796	C 501	N 155	O 138	S 2	0	0

- Molecule 23 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	b	80	Total 638	C 401	N 125	O 111	S 1	0	0
23	f	78	Total 619	C 391	N 120	O 107	S 1	0	0

- Molecule 24 is a protein called Histone H2A type 1-B/E.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	c	103	Total 796	C 502	N 155	O 139	0	0
24	g	105	Total 810	C 511	N 158	O 141	0	0

- Molecule 25 is a protein called Histone H2B type 1-J.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	d	95	Total 746	C 468	N 136	O 140	S 2	0	0
25	h	93	Total 725	C 456	N 130	O 137	S 2	0	0

- Molecule 26 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

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Mol	Chain	Residues	Atoms		AltConf
26	L	1	Total 1	Zn 1	0
26	Y	1	Total 1	Zn 1	0

- Molecule 27 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
27	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 subunit

M1344 R1345 V1346 L1347 D1353 P1354 T1357 T1358 S1359 N1360 D1361 E1372 R1375 E1379 L1382 R1396 H1397 L1398 I1414 V1436 M1440 G1453 N1457 C1470 L1474 M1484 GLU ILE PRO THR ASN ILE PRO GLY LEU GLY ALA ALA GLY PRO THR GLY MET PHE PHE

GLY SER ALA SER PRO GLY MET GLY GLY ILE SER PRO ALA MET THR PRO TRP ASN GLN GLY ALA THR PRO ALA TYR GLY ALA TRP SER PRO SER VAL GLY SER GLY MET THR PRO GLY ALA ALA PHE SER PRO SER ALA ALA SER ASP ALA SER GLY PHE SER PRO GLY TYR SER PRO

ALA TRP SER THR PRO GLY SER PRO SER PRO GLY PRO SER PRO GLY TYR ILE PRO SER PRO GLY ALA MET SER PRO TYR SER PRO THR SER PRO ALA TYR GLU ARG SER PRO GLY TYR THR PRO GLN SER PRO TYR SER PRO THR SER TYR SER

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SER PRO LYS TYR SER PRO THR SER PRO LYS TYR SER PRO THR SER PRO LYS GLY SER THR SER PRO LYS TYR SER PRO SER PRO TYR THR PRO LYS TYR SER PRO SER PRO VAL TYR THR PRO SER PRO LYS TYR SER PRO THR SER PRO LYS TYR

SER PRO THR SER PRO THR TYR SER PRO THR SER PRO LYS GLY SER THR TYR SER PRO SER THR SER PRO GLY TYR SER PRO THR SER PRO THR TYR SER LEU THR SER PRO ALA ILE SER PRO ASP ASP ASP GLU GLU ASN

• Molecule 2: DNA-directed RNA polymerase subunit beta

Chain B:

MET TYR ASP ALA ASP GLU ASP MET GLN TYR ASP GLU ASP ASP E16 W27 D35 V40 Q56 R57 I58 V59 I65 D66 L67 GLN ALA GLU ALA GLN HIS ALA SER GLY GLU VAL GLU GLU P81 P82 R83 Y84 L85 Y92 P96 T97 H98 W99 GLU ARG D102

M108 N117 Y125 T131 G136 K146 G150 K151 I154 I187 N188 G189 A196 Q197 E198 N203 Y206 V207 F208 R222 S223 E226 N227 T234 I235 W236 L240 A241 R242 GLY GLY GLN GLY ALA LYS LYS SER ALA I252 G253 Q254 R265 T259 L260

P261 I271 V272 F273 R274 D281 R282 I288 I289 Y290 D291 D294 P295 E296 M297 M298 E299 M300 V301 K302 P303 S304 L305 D306 E307 A308 F309 V310 I311 N319 F320 S323 R324 K332 K345 L348 P349 H350 V351 G352 V353 S354 D355 F356 C357 K361 Y367 R371

L377 G378 R379 Y388 L393 F402 R405 F408 R416 A419 I423 T437 R438 S441 D442 A449 N452 A459 S477 L482 L485 D492 K497 P498 N503 T504 L505 W506 V509 K524 L528 F544 L545 E546 E547 W548

S549 L553 I556 A562 T565 K566 I567 Q571 H577 P580 E581 Q582 L583 L587 L590 I596 V601 R605 D606 I607 R610 E611 I612 T616 R623 L626 I627 V628 E629 K630 L635 I640 R646 Y647 Y648 V662 E663 E671

M677 D680 D681 L682 Q683 E684 E697 Q718 S719 P720 R721 K730 M733 M744 D745 T746 L747 A748 H749 Y752 Y753 P754 Q755 K756 P757 L758 V759 T760 T761 R762 P773 N789 Q790 E791 D792 S793 V794 I795 R807 S808 Y811 K821 Q825 E826 E827 T833

R834 E835 T836 M840 R841 K847 L848 I854 I866 K869 T872 L873 PRO GLU ASN GLU ASP GLU LEU GLY THR ASN ARG ARG TYR T888 K889 L896 Q906 N912 Y916 P929 Q930 I931 F935 A936 S937 R938 Q948 Y949 D953 M954 I967 N968

R975 M976 E983 K988 A991 N992 F1032 T1038 S1039 Q1040 R1050 M1054 I1059 L1084 E1090 E1105 E1109 D1112 P1113 Y1114 Q1115 V1116 H1117 V1118 C1119 C1122 G1123 I1124 A1128 R1131 R1141 N1142 Q1145 I1146 S1147 L1148 V1149 R1150 M1151 K1156

L1157 L1158 F1159 M1165 R1170 M1171 M1172 S1173 V1174

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

Chain C:

73%   22%   5%

MET P2 N5 Q6 P7 T8 V9 R10 I11 F21 I22 I23 T26 N32 R36 I44 I47 L59 H60 D61 E62 F63 I64 G69 L73 I78 K81 L82 R86 E92 F101 V105 R106 V115 T116 S117 S122 R126 S132 R133

ASN ARG ASP ASN ASP PRO SER ASP TYR VAL GLU Q145 D146 D147 I150 V151 R154 K155 E158 A165 E172 P178 A183 Y186 D189 N190 A191 H194 T195 V196 R228 N232 S238 K255 L256 L259 Q260 D270 VAL

• Molecule 4: DNA-directed RNA polymerase II subunit RPB4

Chain D:

62%   27%   11%

MET ALA ALA GLY GLY SER ASP PRO ARG ALA GLY ASP VAL E14 E15 D16 Q19 L20 P23 K24 E25 F26 E27 T28 A29 L32 L33 N34 V37 L41 R44 F61 M62 K63 N66 Y67 R70 F71 K90 K91 L92 H93 K94 F95 E96 L100 L103 C104

P105 E106 T107 E110 L118 R121 E125 E126 L127 Q128 I134 R138 S139 PHE GLN TYR

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

Chain E:

73%   26%

MET D2 D3 E4 E5 E6 T7 Y8 R9 R14 I17 M18 T36 E39 F40 K41 F44 G45 D46 K47 P53 R54 R55 T56 D57 L58 H64 N65 D66 D67 P68 T69 D70 Q71 M72 F73 V74 P77 E78 Y90 M94 Q95 E96 E97 N98 I99 T100 R101 A102 L103

Q107 Y125 L136 I137 N138 E141 E147 M151 E155 Y163 K164 L165 R166 Q169 I193 I194 G201 R202 Y203 I204 Q210

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

Chain F:

53%   9%   39%

MET SER ASP ASN GLU ASP ASN PHE ASP GLY ASP ASP ASP PHE ASP ASP VAL GLU GLU ASP GLY LEU ASP SER LEU GLU ASN ALA GLU GLU GLU GLY GLN GLU ASN VAL GLU ILE LEU PRO SER GLY GLU ARG PRO GLN ALA ASN GLN K50 M57 R62 A63 T87 L90

M94 K98 A99 R100 I105 D121 E122 L123 D127

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

Chain G:

66% 34%

M1 F2 Y3 H4 E8 I11 V26 L30 F31 T32 E33 V34 E35 C38 F44 V45 I46 A47 V48 T49 T50 G55 P69 V70 K71 Y72 K73 A74 I75 F80 K81 G82 E83 V84 V85 Q91 V92 N93 K94 L97 F98 I101 G102 P103 M104 I108 S109

R110 H111 P114 D120 P121 N122 S123 C127 Y128 D132 Q138 R144 L145 K146 I147 V148 G149 T150 R151 N155 I160 L163 M164 D165 D166 Y167 L168 V171 SER

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

Chain H:

76% 23%

MET A2 L5 D8 D11 D16 P17 E18 R27 S32 M37 I40 L41 D42 I45 V50 R57 I60 T63 G68 R84 Y90 V91 E100 E103 A109 S113 V116 M123 Q126 G127 D128 N131 G134

V141 L144 M145 K146 F150

• Molecule 9: DNA-directed RNA polymerase II subunit RPB9

Chain I:

66% 26% 7%

MET GLU PRO ASP GLY THR TYR GLU PRO G10 F11 R15 F16 N21 L24 D29 R33 I34 L35 C39 R40 N50 S51 C52 I53 T59 V62 D63 E64 L65 I68 I69 A70 D71 V72 S73 Q74 P79 P85 C86 Q87 K88 K92 F96 R103

L110 C119 G120 H121 R122 E125

• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J:

87% 13%

M1 V14 L25 E31 Y43 M48 A51 L55 P64 K67

• Molecule 11: DNA-directed RNA polymerase II subunit RPB11-a

Chain K:

79% 19%

M1 N2 P5 E8 I21 C31 L32 F33 D39 H40 T41 L42 P54 Q55 V56 V63 I71 T77 S82 E85 T88 I91 L94 L100 F105 G115 ILE GLU

• Molecule 12: RPB12

Chain L:

53% 26% 21%

MET ASP THR GLN LYS ASP VAL GLN PRO PRO LYS GLN Q13 P14 M15 I18 C22 H23 T24 E25 N26 E38 C39 G40 M44 K47 R48 V54 A57 R58

• Molecule 13: Transcription elongation factor SPT4

Chain Y:

78%

77% 21% •

• Molecule 14: Transcription elongation factor SPT5

Chain Z:

13%

33% 10% 57%

- Molecule 15: TEMPLATE DNA (191-MER)

Chain T:

- Molecule 16: NON-TEMPLATE DNA (180-MER)

Chain N:

- Molecule 17: RNA (5'-R(P*AP*AP*UP*UP*AP*GP*CP*UP*CP*UP*UP*GP*UP*GP*UP*
U)-3')

Chain P: 69% 19% 12%

A1 A2 U3 U4 A5 G14 U15 U16

• Molecule 18: Negative elongation factor A

Chain U: 5% 24% 11% 65%

M1 A2 S3 M4 R5 E6 S7 D8 T9 G10 L11 W12 L13 H14 N15 K16 L17 G18 P27 S28 I29 L32 L33 T34 A35 A36 V37 I38 D39 N40 I41 R42 L43 C44 F45 H46 G47 L48 S49 K53 L56 L57 L58 G59 T60 L61 H62 L63 K72 G73 A74 L75 I78 I79

Q80 S86 W89 V90 I96 S105 L106 N107 L110 E111 E112 Q113 N114 P115 N116 V117 I120 L121 G122 E123 E126 E130 A133 M136 L137 P138 L139 E140 C141 Q142 Y143 L144 N145 K146 N147 T150 G154 P155 P158 P159 V160 L165 K166 R167 K168 P169

K170 S171 L178 L179 Q180 K181 Q187 GLN LEU LYS ARG SER ALA GLY VAL PRO PHE HIS ALA LYS GLY ARG GLY LEU LEU ARG LYS MET ASP THR THR PRO LEU LEU GLY ILE LYS GLN ALA PRO PHE ARG SER PRO THR ALA PRO SER VAL PHE SER PRO THR GLY ASN ARG

THR PRO ILE PRO PRO SER ARG THR LEU GLN LEU ARG LYS ARG GLY VAL LYS LEU LEU ASP ILE SER GLU LEU ASP MET VAL GLY ALA GLY GLU ALA LYS ARG ARG LYS GLN ASP ALA GLU VAL VAL GLU LYS PRO ALA LYS GLU GLU THR VAL VAL GLU ASN ALA THR PRO

ASP TYR ALA ALA GLY LEU VAL SER THR GLN LEU LYS LEU GLY SER LEU ASN ASN GLU PRO ALA LEU PRO SER THR SER TYR LEU PRO SER THR PRO ALA ALA PRO THR SER PRO VAL VAL PRO ALA SER SER GLU ILE PRO SER SER GLU THR PRO PRO ALA PRO SER ARG GLU ALA ARG PRO PRO GLU GLU

PRO SER ALA SER PRO THR PRO ALA GLN PHE LYS GLN ARG ALA ALA PRO MET TYR ASN SER GLY LEU SER SER PRO ALA THR PRO THR PRO ALA ALA PRO THR SER PRO LEU THR PRO PRO ALA VAL ALA PRO THR THR GLN THR PRO PRO VAL ALA MET VAL ALA PRO GLN

THR GLN ALA ALA PRO ALA GLN GLN GLN PRO LYS LYS ASN LEU SER LEU ARG GLU GLN MET PHE ALA ALA GLN GLU LEU SER PRO ALA THR PRO PRO ALA VAL ALA LEU LEU ILE LEU LEU GLY PHE MET ALA GLY SER GLU ASN PRO CYS GLN GLU GLN GLN GLY ASP VAL ILE

GLN ILE LYS LEU GLU GLU HIS THR GLU GLU ASP LEU PRO LYS ALA ASP GLY GLN GLY SER THR THR MET LEU VAL ASP THR VAL PHE GLU MET ASN TYR ALA THR GLY GLN TRP THR ARG PHE LYS LYS TYR LYS PRO MET THR ASN VAL SER

• Molecule 19: Negative elongation factor B

Chain V: 6% 65% 28% 7%

M1 F2 L5 Q6 D7 V10 G13 E14 D15 L16 K17 E18 T19 L20 T21 N22 C23 T24 E25 P26 L27 K28 A29 I30 E31 V39 L40 L41 L44 Q45 S46 A47 L48 P49 F50 L51 D52 L53 H54 P57 R58 L59 E60 F61 H62 Q63 F66 L69 R70 D71 K72 L73

L74 E75 R76 V77 I80 E83 A86 Y90 D95 E98 K99 S100 L103 M106 P107 S108 P111 V112 V113 M114 M117 L120 P121 K122 V123 P124 K127 L128 V131 M132 A133 Y138 C141 V145 K146 R147 Q148 I149 W150 N153 L156

Y168 F177 S178 N186 F187 F188 S189 R196 Q197 V200 V201 Q202 K210 N211 V212 Y215 L219 R223 F226 Y234 C235 T236 L237 R238 L242 M243 S244 L245 V250 I253 V256 F262 T263 W264 C265 C269 I270 R273 F274 V275 R279

E282 F286 L287 L298 L301 S302 M303 P308 F309 A310 L314 L322 L325 E329 T330 L331 L345 A351 M365 E366 V367 E368 L369 I370 T371 R372 F373 L374 P375 M376 L377 M378 V382 D383 D384 Y385 T386 V389 D390 Q391 K392 L393 P394 ALA GLU GLU LYS

ALA PRO VAL S402 Y403 P404 L407 P408 E409 S410 F411 T412 K413 F414 Q418 R419 M420 A421 C422 L426 V429 Q435 K438 R443 L448 V449 E450 T451 L455 F461 L462 H463 L464 N468 L469 A470 L471 L472 E475 F476 A477 G488 S494 P495 N499

V500 H501 R502 R506 H512 P513 R514 V515 S518 A522 K525 G531 Q532 S533 G534 E535 A536 L540 Q543 L544 G545 E546 K547 L548 E549 GLN LEU ASP HIS ARG LYS PRO SER PRO ALA GLN ALA ALA GLU THR PRO ALA LEU LEU GLU PRO LEU PRO SER VAL PRO ALA

PRO ALA PRO LEU

• Molecule 20: Negative elongation factor C/D

Chain W:

MET ALA GLY ALA VAL PRO ALA ILE MET ASP GLU TYR TYR GLY SER ALA ALA GLU TRP GLY ASP GLU ASP GLY GLN GLN ASP ASP GLY GLU GLY GLU ASP D40 A41 E42 V43 Q44 Q45 E46 C47 L48 H49 K50 F51 S52 T53 R54 D55 Y56 I57 M58 E59 P60

S61 I62 F63 K67 F70 Q71 A72 G73 G74 S75 P76 E77 N78 V79 I80 Q81 L82 L83 S84 E85 N86 Y87 T88 A89 T93 V94 N95 L96 L97 A98 E99 W100 L101 I102 Q103 V106 E107 P108 K120 S121 L122 I123 I124 K125 P129 R130 K131 A132 D133 S134 I135 F136 T137 E138

E139 G140 E141 T142 P143 A144 W145 M149 I150 R156 D157 L158 F159 Y160 K161 L162 A163 E164 A165 H166 P167 D168 C169 L170 M171 L172 S180 D181 A182 G183 Y184 Q185 G186 L198 R203 R206 I212 L220 K229 E235 A241 M245 S246 V247 L248 A257 V258

R259 R260 Q263 E264 V265 Q266 R267 F268 A269 Q270 A276 I279 T280 L283 G284 T285 A286 A287 A292 C293 Q294 A295 M299 L305 N306 V312 M316 S319 P322 P323 Q324 V325 R329 F337 M338 F342 K343 P344 R347 K353 H354 K355 Y356 I357

L360 V367 R375 L383 S387 E391 H394 N399 E400 N401 A404 V408 L411 L414 Y415 Q416 R419 F420 P421 A424 M425 K429 D432 W433 S436 V450 H451 L452 A453 L454 I458 Q468 S482 D485 V486 M487 E491

T495 L496 L497 D498 R499 M500 V501 H502 S505 R506 V515 I516 L520 I530 R531 Y532 F533 V537 L538 I541 A542 F553 L554 L557 D560 S561 I562 A563 G564 T565 I566 K567 T568 E569 G570 E571 H572 D573 P574 F578 I579 A580 H581 C582 LYS SER ASN PHE ILE

MET VAL ASN GLY SER SER GLY SER GLY LEU GLU LEU PHE GLN PRO HIS HIS HIS HIS HIS HIS

• Molecule 21: Negative elongation factor E

Chain X:

MET ASP TYR LYS ASP ASP ASP LYS LEU GLU VAL LEU PHE GLN PRO GLY SER GLY SER GLY M1 I4 E11 L15 Q16 K17 K18 F19 N20 K21 L22 K23 K24 K25 L29 Q35 SER SER SER THR THR SER GLN GLY GLY VAL LYS ARG SER LEU

SER GLU GLN PRO VAL MET ASP ASP THR ALA THR ALA THR GLU GLN GLN ALA LYS GLN LEU VAL LYS SER SER GLY SER ALA ILE SER ALA ILE LYS ALA GLU THR LYS ASN SER GLY PHE LYS ARG SER ARG THR LEU GLU LEU GLY LYS LEU LYS ASP PRO GLU LYS GLY VAL PRO THR PHE GLN PRO PHE

GLN ARG SER ILE SER ALA ASP ASP ASP LEU GLN GLU SER ARG PRO GLN ARG LYS SER LEU TYR GLU SER PHE VAL SER SER ASP ASP LEU ARG GLU LEU GLY LEU PRO ASP GLY GLU GLU ALA GLU GLY LYS PRO ALA GLY ASP GLY PRO PRO ARG SER PHE ASP TRP GLY TYR

GLU GLU ARG SER GLY ALA HIS SER SER ALA SER PRO PRO ARG SER ARG SER ARG ASP SER ARG SER HIS GLU ARG ASN ARG ASP ASP ASP ASP ARG ARG ASP GLU ARG ASP GLU ALA ARG ASP ASP ASP GLU ARG ASP ASP ASP GLU ARG ARG ASP ASP GLU ARG ARG GLU ARG

ASP ARG ASP GLU ARG ASP ASP ARG ASP ARG GLU PRO GLY PRO PHE ARG ARG SER ASP SER PHE PRO GLU ARG ARG ALA PRO ARG LYS GLY ASN THR LEU TYR VAL TYR GLY GLU GLU ASP MET THR PRO THR LEU LEU ARG ARG ALA PHE SER PRO PHE GLY ASN ILE ILE ASP LEU SER

MET ASP PRO ARG ASN CYS ALA PHE VAL THR TYR GLU LYS MET GLU SER ALA ASP GLN ALA VAL ALA GLU LEU ASN GLY THR GLN VAL GLU SER VAL GLN LEU LYS VAL ASN ILE ALA ARG LYS GLN PRO MET LEU ASP ALA ALA THR ALA LYS LYS SER VAL TRP GLY LEU ALA VAL

GLN ASN SER PRO LYS GLY CYS HIS ARG ASP LYS ASP LYS ARG THR GLN ILE VAL LEU TYR SER ASP ASP VAL LYS TYR LYS ASP GLY PHE

• Molecule 22: Histone H3.3

Chain a: 49% 22% 29%

MET ALA ARG THR LYS GLN THR ALA ARG LYS SER THR GLY GLY LYS ALA PRO ARG LYS GLN LEU ALA THR LYS ALA ALA ARG LYS SER ALA PRO SER THR GLY GLY VAL LYS P38 H39 R40 Y41 T45 V46 A47 Y54 T58 L61 I62 R63 K64 L65 P66 F67 Q68

V71 R72 E73 I74 A75 K79 L82 R83 F84 A88 I89 A95 V101 D106 T107 N108 L109 H113 I119 D123 G132 E133 R134 ALA

• Molecule 22: Histone H3.3

Chain e: 6% 51% 21% 29%

MET ALA ARG THR LYS GLN THR ALA ARG LYS SER THR GLY GLY LYS ALA PRO ARG LYS GLN LEU ALA THR LYS ALA ALA ARG LYS SER ALA PRO SER THR GLY GLY VAL LYS PRO H39 R40 Y41 R42 P43 L48 R49 E50 I51 R52 R53 Y54 E59 I62 R63 K64 L65 P66

V71 R72 E73 I74 D77 F78 K79 T80 D81 L82 R83 F84 Q85 S86 A87 L100 V101 F104 N108 I112 V117 D123 A135

• Molecule 23: Histone H4

Chain b: 49% 29% 22%

MET SER GLY ARG GLY LYS GLY GLY LYS GLY LEU GLY LYS GLY GLY ALA LYS ARG HIS ARG LYS VAL LEU R23 I26 A33 I34 R35 R36 L37 A38 R39 G42 V43 K44 R45 L49 I50 Y51 E52 R55 K59 E63 I66 R67 D68 A69 T73 E74 H75 A76

K77 T80 V86 L90 K91 R92 Q93 L97 Y98 G99 G102

• Molecule 23: Histone H4

Chain f: 50% 25% 24%

MET SER GLY ARG GLY LYS GLY GLY LYS GLY LEU GLY LYS GLY GLY ALA LYS ARG HIS ARG LYS VAL LEU ARG ASP N25 I26 K31 P32 R35 R36 L37 A38 R39 R40 G41 G42 V43 K44 R45 I46 I50 Y51 G56 V57 L58 K59 E63 I66 T71 Y72 T73 E74

• Molecule 24: Histone H2A type 1-B/E

Chain c:

• Molecule 24: Histone H2A type 1-B/E

Chain g:

• Molecule 25: Histone H2B type 1-J

Chain d:

• Molecule 25: Histone H2B type 1-J

Chain h:

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	22970	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	57	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.114	Depositor
Minimum map value	-0.041	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	445.19998, 445.19998, 445.19998	wwPDB
Map dimensions	350, 350, 350	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.272, 1.272, 1.272	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	0.14	0/11248	0.32	0/15179
2	B	0.14	0/9149	0.32	0/12348
3	C	0.15	0/2115	0.28	0/2873
4	D	0.09	0/1017	0.27	0/1368
5	E	0.13	0/1751	0.31	0/2366
6	F	0.14	0/636	0.29	0/859
7	G	0.12	0/1364	0.34	0/1853
8	H	0.15	0/1219	0.32	0/1644
9	I	0.11	0/964	0.32	0/1305
10	J	0.15	0/542	0.35	1/730 (0.1%)
11	K	0.17	0/939	0.34	0/1271
12	L	0.15	0/395	0.39	0/524
13	Y	0.08	0/927	0.25	0/1250
14	Z	0.11	0/3903	0.33	1/5254 (0.0%)
15	T	0.16	0/4384	0.33	0/6754
16	N	0.18	0/4147	0.37	0/6407
17	P	0.11	0/372	0.24	0/576
18	U	0.11	0/1463	0.30	0/1985
19	V	0.12	0/4424	0.30	1/5975 (0.0%)
20	W	0.12	0/4404	0.29	0/5982
21	X	0.10	0/283	0.22	0/372
22	a	0.10	0/809	0.25	0/1085
22	e	0.10	0/807	0.26	0/1081
23	b	0.11	0/645	0.26	0/862
23	f	0.12	0/626	0.29	0/837
24	c	0.11	0/806	0.28	0/1089
24	g	0.10	0/820	0.28	0/1107
25	d	0.09	0/757	0.26	0/1015
25	h	0.10	0/736	0.29	0/990
All	All	0.14	0/61652	0.32	3/84941 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	J	14	VAL	N-CA-C	-5.83	107.60	113.20
19	V	513	PRO	CA-N-CD	-5.54	104.25	112.00
14	Z	422	PRO	CA-N-CD	-5.26	104.64	112.00

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts   ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11050	0	11200	216	0
2	B	8971	0	9013	174	0
3	C	2072	0	2019	42	0
4	D	1004	0	980	29	0
5	E	1720	0	1737	41	0
6	F	626	0	657	8	0
7	G	1333	0	1321	46	0
8	H	1197	0	1156	28	0
9	I	942	0	871	27	0
10	J	533	0	553	6	0
11	K	920	0	942	18	0
12	L	389	0	393	11	0
13	Y	911	0	904	20	0
14	Z	3837	0	3895	89	0
15	T	3899	0	2128	104	0
16	N	3706	0	2041	99	0
17	P	335	0	169	2	0
18	U	1439	0	1491	50	0
19	V	4341	0	4435	135	0
20	W	4312	0	4312	125	0
21	X	281	0	330	12	0
22	a	797	0	835	32	0
22	e	796	0	832	26	0
23	b	638	0	676	30	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
23	f	619	0	659	24	0
24	c	796	0	848	36	0
24	g	810	0	866	32	0
25	d	746	0	771	29	0
25	h	725	0	745	29	0
26	A	2	0	0	0	0
26	B	1	0	0	0	0
26	C	1	0	0	0	0
26	I	2	0	0	0	0
26	J	1	0	0	0	0
26	L	1	0	0	0	0
26	Y	1	0	0	0	0
27	A	1	0	0	0	0
All	All	59755	0	56779	1285	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 11.

All (1285) 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)
19:V:58:ARG:H	20:W:60:PRO:HD3	1.36	0.88
15:T:-48:DC:O2	16:N:48:DG:N2	2.07	0.86
6:F:57:MET:HB2	6:F:123:LEU:HD13	1.59	0.83
15:T:52:DG:N2	16:N:-52:DC:O2	2.12	0.82
19:V:345:LEU:HB3	19:V:420:MET:HE1	1.59	0.81
15:T:-44:DA:H3'	24:c:28:GLY:HA3	1.62	0.80
15:T:-48:DC:N3	16:N:48:DG:N1	2.25	0.79
2:B:260:LEU:HD12	2:B:261:PRO:HD2	1.64	0.79
14:Z:571:ARG:HD3	14:Z:573:GLN:H	1.48	0.78
2:B:388:TYR:H	2:B:504:THR:HG21	1.50	0.77
2:B:240:LEU:HD12	2:B:255:ARG:HB2	1.66	0.76
22:a:113:HIS:NE2	22:e:123:ASP:OD1	2.18	0.76
2:B:298:MET:HA	2:B:301:VAL:HG12	1.68	0.75
14:Z:440:ILE:HG12	14:Z:450:ILE:HD11	1.69	0.75
9:I:69:ILE:HG22	9:I:71:ASP:H	1.52	0.74
20:W:452:LEU:HB3	20:W:499:ARG:HD2	1.68	0.74
19:V:111:PRO:HA	19:V:114:MET:HG2	1.71	0.73
4:D:92:LEU:HD23	4:D:96:GLU:HB3	1.71	0.73
2:B:754:PRO:HB2	2:B:773:PRO:HG2	1.70	0.72
15:T:73:DA:H2'	15:T:74:DA:C8	2.24	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1115:GLN:HB3	2:B:1148:LEU:HD11	1.72	0.72
14:Z:478:VAL:HB	14:Z:518:LEU:HD22	1.71	0.72
23:b:75:HIS:HB2	25:d:93:THR:HG21	1.72	0.71
2:B:295:PRO:HA	2:B:298:MET:HE3	1.72	0.71
14:Z:355:ASP:HB3	14:Z:358:PHE:HB3	1.71	0.71
7:G:33:GLU:HG3	7:G:34:VAL:HG13	1.71	0.71
15:T:-56:DC:N3	16:N:56:DG:N1	2.29	0.71
22:a:108:ASN:ND2	23:b:42:GLY:O	2.24	0.71
15:T:-70:DC:H2'	15:T:-69:DA:C8	2.26	0.71
1:A:244:ARG:HE	1:A:245:PRO:HD2	1.54	0.70
15:T:-52:DG:N1	16:N:52:DC:N3	2.30	0.70
13:Y:23:LYS:HE2	13:Y:27:GLN:HB3	1.72	0.70
19:V:58:ARG:HA	19:V:61:PHE:CE1	2.25	0.70
22:e:108:ASN:HB2	23:f:43:VAL:HG22	1.71	0.70
19:V:322:LEU:HB3	19:V:378:MET:HE1	1.74	0.70
20:W:51:PHE:O	20:W:86:ASN:ND2	2.24	0.70
1:A:521:VAL:HG13	1:A:535:MET:HE1	1.72	0.70
10:J:64:PRO:O	12:L:23:HIS:NE2	2.25	0.70
1:A:461:GLN:OE1	1:A:502:ASN:ND2	2.25	0.70
16:N:-13:DA:H2'	23:f:32:PRO:HG3	1.75	0.69
20:W:270:GLN:HE22	20:W:276:ALA:H	1.39	0.69
15:T:52:DG:N1	16:N:-52:DC:N3	2.29	0.69
15:T:2:DG:H2'	15:T:3:DT:H71	1.73	0.69
8:H:128:ASP:OD1	8:H:131:ASN:ND2	2.26	0.69
16:N:70:DG:H5'	22:e:41:TYR:HD1	1.58	0.69
7:G:160:ILE:HD11	14:Z:493:VAL:HG22	1.73	0.69
1:A:381:PRO:HB3	1:A:480:SER:HA	1.74	0.68
1:A:1146:GLN:HG2	1:A:1149:ARG:HH21	1.58	0.68
25:h:34:TYR:HA	25:h:37:TYR:HD2	1.58	0.68
1:A:59:ASP:HB3	1:A:62:GLN:HG3	1.75	0.68
2:B:1131:ARG:NH2	14:Z:535:GLU:OE1	2.27	0.68
16:N:58:DC:H5"	24:c:75:LYS:HD2	1.76	0.67
18:U:89:TRP:HE1	20:W:198:LEU:HB2	1.59	0.67
1:A:364:ARG:HB2	2:B:1084:LEU:HD21	1.75	0.67
20:W:120:LYS:O	20:W:124:ILE:HG13	1.94	0.67
18:U:120:ILE:HA	20:W:206:ARG:HD3	1.75	0.67
24:c:92:GLU:HB3	25:d:100:PRO:HG2	1.77	0.67
5:E:44:PHE:HB3	5:E:53:PRO:HB3	1.76	0.66
3:C:183:ALA:HB3	3:C:232:ASN:HB3	1.78	0.66
19:V:178:SER:O	19:V:506:ARG:NH2	2.29	0.66
1:A:1171:ALA:HA	9:I:59:THR:HG23	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:151:ARG:NH2	14:Z:489:THR:OG1	2.28	0.65
1:A:1248:ASN:ND2	1:A:1254:LYS:O	2.29	0.65
19:V:298:LEU:HA	19:V:301:LEU:HD12	1.78	0.65
2:B:581:GLU:OE2	9:I:74:GLN:NE2	2.29	0.65
13:Y:62:ALA:HB3	14:Z:215:VAL:HB	1.79	0.65
20:W:299:MET:HE1	20:W:305:LEU:HD12	1.77	0.65
2:B:635:LEU:HD21	2:B:640:ILE:HD11	1.79	0.65
2:B:1109:GLU:HA	2:B:1113:PRO:HG3	1.77	0.65
3:C:150:ILE:HG22	3:C:151:VAL:HG23	1.78	0.65
14:Z:197:MET:HE3	14:Z:201:ILE:HD11	1.79	0.65
24:c:35:ARG:HH22	24:c:43:VAL:HB	1.61	0.65
1:A:623:PRO:HA	8:H:27:ARG:HH21	1.61	0.65
2:B:629:GLU:HG2	2:B:630:LYS:H	1.62	0.64
20:W:399:ASN:OD1	20:W:401:ASN:ND2	2.30	0.64
3:C:190:ASN:ND2	3:C:195:THR:O	2.30	0.64
14:Z:728:THR:HG23	14:Z:730:SER:H	1.61	0.64
15:T:-52:DG:N2	16:N:52:DC:O2	2.16	0.64
16:N:-23:DT:H2'	16:N:-22:DG:H8	1.62	0.64
25:d:102:GLU:HG3	25:d:106:HIS:CE1	2.33	0.64
12:L:26:ASN:HD21	12:L:44:MET:HE2	1.61	0.64
14:Z:450:ILE:HG23	14:Z:452:PRO:HD3	1.79	0.64
2:B:744:MET:SD	2:B:906:GLN:NE2	2.67	0.64
16:N:68:DC:H2"	16:N:69:DT:H5'	1.79	0.64
14:Z:728:THR:O	14:Z:747:ARG:NH1	2.31	0.64
15:T:39:DA:H5'	24:g:42:ARG:HG2	1.79	0.64
22:a:95:ALA:HB2	23:b:97:LEU:HD11	1.79	0.64
2:B:282:ARG:NH2	9:I:21:ASN:OD1	2.31	0.64
14:Z:286:TYR:HE1	14:Z:310:ARG:HB2	1.62	0.64
18:U:17:LEU:HD21	18:U:29:ILE:HD13	1.79	0.64
1:A:117:LEU:HD22	1:A:120:ASP:H	1.63	0.64
1:A:1036:ASN:OD1	5:E:202:ARG:NH1	2.31	0.64
2:B:242:ARG:HD3	2:B:253:GLY:HA2	1.80	0.64
2:B:309:PHE:HB2	9:I:40:ARG:HH22	1.63	0.64
5:E:71:GLN:HB2	5:E:99:ILE:HD13	1.80	0.64
16:N:20:DG:H2"	16:N:21:DG:H5"	1.78	0.64
7:G:120:ASP:HB2	7:G:127:CYS:H	1.63	0.63
11:K:5:PRO:HG2	11:K:8:GLU:HG3	1.79	0.63
1:A:467:MET:HG3	1:A:524:MET:HE2	1.80	0.63
2:B:309:PHE:HB2	9:I:40:ARG:HH12	1.62	0.63
1:A:659:GLU:OE2	1:A:985:ARG:NH1	2.28	0.63
2:B:1124:ILE:HD11	2:B:1170:ARG:HE	1.62	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:116:LYS:NZ	1:A:182:GLY:O	2.29	0.63
1:A:922:PHE:HB2	1:A:1052:ARG:HB2	1.80	0.63
13:Y:88:SER:HG	13:Y:113:THR:HG1	1.44	0.63
15:T:-56:DC:O2	16:N:56:DG:N2	2.18	0.63
1:A:92:LYS:HD2	1:A:307:VAL:HG11	1.81	0.63
1:A:554:PHE:HB3	1:A:585:LEU:HD23	1.81	0.63
3:C:106:ARG:HD3	3:C:158:GLU:HB3	1.80	0.62
16:N:-95:DG:H2"	16:N:-94:DG:H5'	1.81	0.62
18:U:57:LEU:HD11	18:U:90:VAL:HG13	1.81	0.62
18:U:105:SER:HB2	20:W:287:ALA:HB2	1.81	0.62
19:V:177:PHE:HD2	19:V:502:ARG:HD2	1.63	0.62
20:W:241:ALA:O	20:W:245:MET:HG2	1.99	0.62
22:e:117:VAL:HG11	23:f:44:LYS:HE2	1.81	0.62
2:B:377:LEU:O	9:I:103:ARG:NH1	2.32	0.62
19:V:117:MET:HE3	19:V:123:VAL:HG11	1.81	0.62
23:b:98:TYR:HB2	24:g:102:ILE:HA	1.80	0.62
2:B:323:SER:OG	2:B:324:ARG:NH1	2.33	0.62
1:A:1188:GLU:HG3	1:A:1213:ARG:HH12	1.65	0.62
2:B:929:PRO:O	2:B:948:GLN:NE2	2.32	0.62
14:Z:475:GLY:H	14:Z:492:ILE:HG13	1.65	0.62
16:N:17:DA:H5"	22:a:66:PRO:HG3	1.80	0.62
18:U:136:MET:HB2	20:W:257:ALA:HA	1.80	0.62
14:Z:486:GLU:OE2	14:Z:555:ARG:NH2	2.33	0.62
23:f:26:ILE:HD13	23:f:59:LYS:HB2	1.82	0.62
14:Z:610:ARG:HD3	14:Z:629:LEU:HD21	1.82	0.62
15:T:27:DG:H1'	15:T:28:DG:C5	2.35	0.62
14:Z:554:GLU:OE2	14:Z:559:GLN:NE2	2.31	0.61
1:A:274:ASP:OD1	1:A:275:ASP:N	2.33	0.61
2:B:565:THR:HA	2:B:610:ARG:HB3	1.81	0.61
20:W:123:LEU:HD22	20:W:158:LEU:HD21	1.82	0.61
15:T:58:DG:OP1	24:g:76:THR:N	2.33	0.61
15:T:116:DT:H2"	15:T:117:DG:C8	2.35	0.61
19:V:70:ARG:HH11	19:V:112:VAL:HG23	1.65	0.61
4:D:14:GLU:O	4:D:19:GLN:NE2	2.33	0.61
24:c:42:ARG:HB2	25:d:85:THR:HG22	1.82	0.61
19:V:392:LYS:HD3	21:X:29:LEU:HD21	1.81	0.61
22:e:72:ARG:HH21	22:e:84:PHE:H	1.46	0.61
1:A:465:HIS:ND1	1:A:1097:GLU:OE1	2.33	0.61
1:A:546:ARG:HD3	1:A:772:SER:HB3	1.83	0.61
2:B:789:ASN:HA	2:B:793:SER:HB3	1.81	0.61
19:V:120:LEU:HD12	19:V:121:PRO:HD2	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:h:77:LEU:HD23	25:h:90:GLU:HG3	1.83	0.61
2:B:553:LEU:HD12	2:B:556:ILE:HD11	1.83	0.61
16:N:-76:DC:H2"	16:N:-75:DG:C8	2.36	0.61
19:V:61:PHE:HB2	20:W:122:LEU:HD22	1.81	0.61
19:V:245:LEU:HD13	19:V:253:ILE:HG21	1.83	0.61
19:V:186:ASN:ND2	19:V:189:SER:OG	2.34	0.60
22:e:100:LEU:HD23	23:f:37:LEU:HD13	1.82	0.60
8:H:27:ARG:NH1	8:H:42:ASP:OD1	2.34	0.60
15:T:66:DC:H2"	15:T:67:DA:N7	2.16	0.60
16:N:-77:DC:H2"	16:N:-76:DC:H5"	1.83	0.60
24:c:87:ILE:HG21	24:c:97:LEU:HD12	1.81	0.60
5:E:97:GLU:HG3	19:V:435:GLN:HE22	1.67	0.60
19:V:269:CYS:HB3	19:V:275:VAL:HG22	1.83	0.60
1:A:465:HIS:HD2	1:A:467:MET:HE2	1.66	0.60
2:B:96:PRO:HG3	2:B:154:ILE:HD13	1.82	0.60
7:G:93:ASN:OD1	7:G:94:LYS:N	2.33	0.60
8:H:116:VAL:HG12	8:H:123:MET:HE2	1.81	0.60
23:b:68:ASP:OD2	23:b:93:GLN:NE2	2.34	0.60
23:f:75:HIS:HA	25:h:89:ARG:HH12	1.65	0.60
1:A:823:VAL:HG22	1:A:835:GLU:HB2	1.83	0.60
1:A:922:PHE:H	1:A:1052:ARG:HD2	1.66	0.60
2:B:1115:GLN:HG2	2:B:1150:ARG:HG2	1.84	0.60
3:C:9:VAL:HG11	11:K:105:PHE:HD1	1.66	0.60
7:G:108:ILE:HD11	7:G:145:LEU:HD22	1.84	0.60
20:W:124:ILE:HG12	20:W:158:LEU:HD13	1.83	0.60
2:B:562:ALA:O	2:B:610:ARG:NH2	2.34	0.60
14:Z:286:TYR:HE2	14:Z:374:LYS:HZ1	1.48	0.60
19:V:543:GLN:HG2	19:V:547:LYS:HE3	1.84	0.60
9:I:50:ASN:ND2	9:I:52:CYS:O	2.36	0.59
15:T:105:DA:H2'	15:T:106:DG:C8	2.37	0.59
2:B:677:MET:H	2:B:682:LEU:HD22	1.67	0.59
11:K:21:ILE:HD11	11:K:31:CYS:HB3	1.83	0.59
15:T:-17:DT:H2"	15:T:-16:DT:C5	2.36	0.59
19:V:138:TYR:OH	19:V:150:TRP:NE1	2.28	0.59
14:Z:213:LYS:HG2	14:Z:229:ALA:HA	1.84	0.59
19:V:53:LEU:HD13	20:W:132:ALA:HB2	1.84	0.59
24:g:97:LEU:HB3	24:g:100:VAL:HB	1.84	0.59
1:A:100:LEU:HD22	1:A:193:ARG:HH11	1.68	0.59
20:W:55:ASP:N	20:W:86:ASN:OD1	2.32	0.59
1:A:1179:PRO:HB3	9:I:33:ARG:HG2	1.85	0.59
24:g:65:LEU:HG	24:g:86:ALA:HB1	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:191:ILE:HG22	1:A:200:ALA:HB2	1.84	0.59
15:T:-69:DA:H2"	15:T:-68:DG:C8	2.38	0.59
20:W:531:ARG:HG3	20:W:566:ILE:HG12	1.85	0.59
2:B:953:ASP:OD1	3:C:36:ARG:NH2	2.36	0.59
19:V:219:LEU:HD22	19:V:238:ARG:HG3	1.84	0.59
2:B:477:SER:HA	2:B:730:LYS:HG2	1.84	0.59
9:I:15:ARG:HG3	9:I:24:LEU:HD12	1.83	0.59
16:N:-56:DG:H2"	16:N:-55:DT:C5	2.38	0.59
19:V:243:MET:HE2	19:V:243:MET:HA	1.84	0.59
1:A:1166:LEU:HB3	1:A:1293:LEU:HA	1.85	0.59
16:N:-65:DT:H2"	16:N:-64:DT:H5"	1.83	0.58
19:V:419:ARG:HE	19:V:455:LEU:HD11	1.68	0.58
16:N:38:DG:OP1	24:c:45:ALA:N	2.36	0.58
19:V:219:LEU:HD13	19:V:238:ARG:HH21	1.69	0.58
20:W:150:ILE:O	20:W:156:ARG:NH1	2.35	0.58
24:c:63:LEU:HD11	25:d:38:VAL:HG13	1.84	0.58
20:W:83:LEU:HA	20:W:86:ASN:HB3	1.86	0.58
22:e:54:TYR:HB3	23:f:40:ARG:HG3	1.84	0.58
1:A:487:SER:OG	1:A:673:GLN:NE2	2.36	0.58
1:A:517:GLU:OE1	6:F:62:ARG:NH1	2.37	0.58
19:V:100:SER:HB2	19:V:113:VAL:HG22	1.86	0.58
19:V:464:LEU:O	19:V:468:ASN:ND2	2.29	0.58
21:X:20:ASN:O	21:X:24:LYS:HG2	2.03	0.58
1:A:567:LEU:HD21	1:A:595:ILE:HG12	1.85	0.58
4:D:26:PHE:O	4:D:94:LYS:NZ	2.37	0.58
5:E:18:MET:HE3	5:E:18:MET:HA	1.85	0.58
16:N:39:DA:H5'	24:c:42:ARG:HG2	1.85	0.58
1:A:365:THR:HG22	2:B:1059:ILE:HA	1.85	0.58
16:N:56:DG:H2"	16:N:57:DG:N7	2.18	0.58
1:A:96:HIS:HB2	1:A:250:VAL:HG13	1.86	0.58
1:A:909:LEU:C	1:A:911:PRO:HD3	2.29	0.58
2:B:150:GLY:HA2	2:B:437:THR:HG23	1.84	0.58
3:C:256:LEU:HD13	11:K:94:LEU:HB3	1.85	0.58
5:E:95:GLN:OE1	5:E:125:TYR:OH	2.22	0.58
14:Z:444:ASP:HB2	14:Z:448:ILE:HA	1.85	0.58
16:N:17:DA:H3'	22:a:65:LEU:HB3	1.86	0.58
19:V:69:LEU:HG	20:W:94:VAL:HG13	1.85	0.58
1:A:863:ARG:NH2	1:A:1129:ASN:OD1	2.37	0.57
14:Z:200:PHE:HD1	14:Z:210:LEU:HB2	1.68	0.57
16:N:9:DT:OP1	22:a:46:VAL:N	2.37	0.57
25:h:89:ARG:HA	25:h:92:GLN:OE1	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:105:VAL:HG11	3:C:115:VAL:HG22	1.86	0.57
14:Z:479:LYS:HG3	14:Z:489:THR:HG22	1.85	0.57
18:U:116:ASN:HA	20:W:203:ARG:HH12	1.70	0.57
22:e:40:ARG:NH1	22:e:41:TYR:O	2.36	0.57
18:U:96:ILE:HA	18:U:107:ASN:HB3	1.85	0.57
3:C:61:ASP:OD2	12:L:48:ARG:NH2	2.38	0.57
4:D:106:GLU:N	4:D:110:GLU:OE1	2.37	0.57
24:c:26:PRO:HG2	24:c:29:ARG:HD3	1.86	0.57
4:D:25:GLU:HG3	4:D:26:PHE:HD2	1.69	0.57
7:G:165:ASP:HB3	7:G:168:LEU:HD11	1.86	0.57
14:Z:550:ILE:HG12	14:Z:560:VAL:HG22	1.86	0.57
18:U:139:LEU:HD11	20:W:267:ARG:HH21	1.70	0.57
19:V:149:ILE:O	19:V:153:ASN:ND2	2.38	0.57
23:b:44:LYS:HD3	23:b:45:ARG:HG2	1.86	0.57
14:Z:199:LYS:NZ	14:Z:240:GLU:O	2.37	0.57
15:T:-48:DC:H2"	15:T:-47:DT:C5	2.39	0.57
19:V:287:LEU:HD23	19:V:301:LEU:HD13	1.87	0.57
1:A:1127:LEU:HD13	1:A:1382:LEU:HD12	1.86	0.57
9:I:88:LYS:NZ	9:I:119:CYS:SG	2.66	0.57
22:e:59:GLU:O	23:f:40:ARG:NH2	2.37	0.57
2:B:748:ALA:HB3	2:B:811:TYR:HB2	1.86	0.56
11:K:85:GLU:HA	11:K:88:THR:HG22	1.87	0.56
16:N:-84:DG:H2"	16:N:-83:DT:H5'	1.86	0.56
19:V:384:ASP:OD1	19:V:403:TYR:OH	2.10	0.56
1:A:1122:PRO:O	1:A:1126:GLU:HG2	2.04	0.56
2:B:646:ARG:O	2:B:647:GLU:HG2	2.04	0.56
19:V:121:PRO:O	19:V:148:GLN:NE2	2.38	0.56
19:V:390:ASP:HA	19:V:393:LEU:HB2	1.87	0.56
1:A:47:THR:HG22	1:A:52:PRO:HA	1.88	0.56
1:A:66:GLU:HG3	1:A:69:GLY:HA3	1.87	0.56
1:A:917:GLU:OE2	1:A:921:ARG:NH1	2.39	0.56
1:A:1248:ASN:HD21	1:A:1252:ALA:HB3	1.69	0.56
9:I:39:CYS:SG	9:I:40:ARG:N	2.78	0.56
14:Z:533:GLN:O	14:Z:577:ARG:NH1	2.37	0.56
15:T:105:DA:H2'	15:T:106:DG:H8	1.70	0.56
18:U:5:ARG:O	18:U:9:THR:N	2.30	0.56
22:a:101:VAL:HG11	24:g:107:VAL:HG21	1.85	0.56
23:b:75:HIS:O	25:d:89:ARG:NH1	2.38	0.56
24:g:43:VAL:HG13	25:h:86:ILE:HD12	1.86	0.56
13:Y:61:ILE:HG23	14:Z:216:VAL:HG22	1.86	0.56
18:U:61:LEU:HD22	20:W:279:ILE:HG12	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:V:80:ILE:HA	19:V:83:GLU:HG2	1.88	0.56
24:g:41:GLU:HB2	25:h:84:SER:HB3	1.88	0.56
1:A:299:ALA:HB3	1:A:302:VAL:HG12	1.88	0.56
15:T:77:DG:H2"	15:T:78:DC:C5	2.40	0.56
19:V:389:VAL:O	19:V:393:LEU:N	2.36	0.56
7:G:111:HIS:O	14:Z:494:ARG:NH1	2.38	0.56
8:H:100:GLU:HB2	8:H:113:SER:HB2	1.85	0.56
14:Z:248:GLY:O	14:Z:252:GLN:NE2	2.39	0.56
19:V:196:ARG:O	19:V:202:GLN:NE2	2.38	0.56
1:A:1453:GLY:O	1:A:1457:ASN:ND2	2.37	0.56
3:C:2:PRO:HB3	11:K:54:PRO:HD2	1.86	0.56
8:H:2:ALA:O	8:H:84:ARG:NH2	2.37	0.56
15:T:88:DA:H2"	15:T:89:DA:H5'	1.88	0.56
16:N:-22:DG:H2'	16:N:-21:DG:H8	1.71	0.56
22:a:119:ILE:HD13	23:b:43:VAL:HG21	1.87	0.56
1:A:413:TYR:O	1:A:449:HIS:ND1	2.38	0.56
5:E:9:ARG:HG3	5:E:136:LEU:HD21	1.88	0.56
8:H:103:GLU:HG3	8:H:109:ALA:HB2	1.87	0.56
14:Z:479:LYS:HE2	14:Z:523:GLU:HB2	1.88	0.56
1:A:11:SER:OG	2:B:1117:HIS:NE2	2.34	0.56
14:Z:529:ASP:HB3	14:Z:553:LEU:HD13	1.88	0.56
16:N:6:DA:H2"	16:N:7:DC:C5	2.41	0.56
19:V:31:GLU:HB2	20:W:63:PHE:HZ	1.71	0.56
1:A:1146:GLN:OE1	1:A:1153:ARG:NH1	2.39	0.55
1:A:1212:LEU:HB2	1:A:1259:ILE:HB	1.88	0.55
14:Z:423:GLY:N	14:Z:440:ILE:O	2.38	0.55
16:N:38:DG:H5"	24:c:44:GLY:HA2	1.88	0.55
17:P:4:U:H2'	17:P:5:A:C8	2.41	0.55
20:W:432:ASP:O	20:W:436:SER:OG	2.23	0.55
1:A:760:LEU:HD11	1:A:781:ILE:HG21	1.88	0.55
13:Y:18:LEU:O	13:Y:111:ARG:NH2	2.39	0.55
16:N:-79:DG:H2"	16:N:-78:DG:C8	2.41	0.55
16:N:-43:DT:H5"	24:g:16:THR:HA	1.88	0.55
3:C:36:ARG:NH1	11:K:41:THR:OG1	2.39	0.55
3:C:86:ARG:HG2	14:Z:716:PRO:HA	1.88	0.55
11:K:56:VAL:HG22	11:K:77:THR:HG22	1.89	0.55
16:N:70:DG:H5"	22:e:42:ARG:H	1.71	0.55
1:A:404:GLU:OE2	1:A:407:ARG:NH2	2.30	0.55
2:B:888:THR:HG22	2:B:889:LYS:HD3	1.88	0.55
8:H:90:TYR:HB3	8:H:145:MET:HG3	1.88	0.55
14:Z:493:VAL:HB	14:Z:501:ILE:HG23	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:T:98:DA:H2'	15:T:99:DC:C6	2.41	0.55
19:V:188:PHE:O	19:V:273:ARG:NH2	2.40	0.55
19:V:242:LEU:HD23	19:V:263:THR:HG21	1.88	0.55
5:E:166:ARG:HH21	5:E:169:GLN:HE22	1.52	0.55
2:B:629:GLU:HG2	2:B:630:LYS:N	2.22	0.55
18:U:138:PRO:HA	20:W:260:ARG:HD3	1.87	0.55
22:a:58:THR:HB	24:g:81:ARG:HD3	1.89	0.55
1:A:253:LEU:HD12	1:A:254:PRO:HD2	1.88	0.55
11:K:63:VAL:HG22	11:K:71:ILE:HG22	1.89	0.55
1:A:1440:MET:HE2	2:B:1165:MET:HE3	1.88	0.54
2:B:354:SER:OG	2:B:357:CYS:SG	2.65	0.54
3:C:44:ILE:HD11	3:C:238:SER:HB3	1.90	0.54
4:D:44:ARG:NH2	7:G:35:GLU:OE1	2.40	0.54
6:F:100:ARG:NH2	6:F:121:ASP:O	2.38	0.54
9:I:86:CYS:SG	9:I:121:HIS:ND1	2.75	0.54
20:W:343:LYS:NZ	20:W:344:PRO:O	2.40	0.54
8:H:63:THR:O	8:H:84:ARG:NH1	2.40	0.54
2:B:223:SER:OG	2:B:350:HIS:ND1	2.30	0.54
2:B:549:SER:OG	2:B:577:HIS:NE2	2.40	0.54
16:N:-23:DT:H2'	16:N:-22:DG:C8	2.42	0.54
24:g:26:PRO:HG2	24:g:29:ARG:HB3	1.88	0.54
1:A:896:LEU:HD13	1:A:980:PRO:HG3	1.89	0.54
2:B:296:GLU:O	2:B:300:MET:HG3	2.08	0.54
4:D:63:LYS:HA	4:D:66:ASN:ND2	2.21	0.54
16:N:-24:DT:H2'	16:N:-23:DT:H6	1.73	0.54
18:U:33:LEU:HD22	18:U:38:ILE:HD11	1.89	0.54
19:V:57:PRO:HB3	20:W:59:GLU:HG3	1.89	0.54
25:h:46:HIS:HB3	25:h:49:THR:HB	1.89	0.54
10:J:25:LEU:HD21	10:J:31:GLU:HG3	1.90	0.54
15:T:58:DG:H2"	15:T:59:DA:N7	2.23	0.54
15:T:69:DC:H2"	15:T:70:DG:C8	2.42	0.54
16:N:-42:DG:H4'	24:g:15:LYS:HE2	1.90	0.54
16:N:67:DT:H2"	16:N:68:DC:H5"	1.89	0.54
1:A:890:ARG:HE	1:A:1023:VAL:HG22	1.73	0.54
3:C:44:ILE:HD12	3:C:178:PRO:HB3	1.87	0.54
5:E:41:LYS:NZ	5:E:46:ASP:OD1	2.40	0.54
15:T:76:DG:H2"	15:T:77:DG:H2'	1.89	0.54
1:A:803:LYS:O	1:A:812:LYS:NZ	2.41	0.54
3:C:116:THR:HB	3:C:147:ASP:HB2	1.89	0.54
7:G:11:ILE:HD11	7:G:26:VAL:HG13	1.89	0.54
7:G:81:LYS:HG2	7:G:149:GLY:HA2	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:151:ARG:HH21	14:Z:525:ALA:HB2	1.72	0.54
19:V:502:ARG:HH11	19:V:540:LEU:HD11	1.73	0.54
22:e:104:PHE:HD2	23:f:38:ALA:HA	1.71	0.54
1:A:108:ARG:NH1	1:A:145:TYR:OH	2.41	0.54
2:B:759:VAL:HG11	2:B:983:GLU:HG3	1.89	0.54
13:Y:81:LYS:O	13:Y:85:TYR:OH	2.17	0.54
20:W:248:LEU:HB2	20:W:258:VAL:HG11	1.90	0.54
22:e:62:ILE:HD11	23:f:37:LEU:HD11	1.89	0.54
15:T:-26:DT:H2"	15:T:-25:DA:N7	2.23	0.54
1:A:1208:SER:O	1:A:1260:ARG:NH1	2.40	0.53
2:B:718:GLN:HB2	2:B:976:MET:HB2	1.89	0.53
7:G:50:THR:HG22	7:G:73:LYS:HB3	1.89	0.53
14:Z:286:TYR:CE1	14:Z:310:ARG:HB2	2.40	0.53
18:U:110:LEU:HD22	18:U:117:VAL:HG11	1.90	0.53
24:g:73:ASN:HB3	24:g:75:LYS:HE2	1.89	0.53
25:h:95:VAL:HG13	25:h:99:LEU:HD12	1.89	0.53
1:A:890:ARG:HH21	1:A:1023:VAL:HG13	1.73	0.53
2:B:1032:PHE:O	3:C:32:ASN:ND2	2.42	0.53
7:G:92:VAL:HG22	7:G:97:LEU:HD12	1.89	0.53
9:I:29:ASP:HB2	9:I:34:ILE:H	1.73	0.53
14:Z:478:VAL:HG21	14:Z:492:ILE:HG23	1.89	0.53
2:B:198:GLU:HB3	2:B:393:LEU:HD23	1.90	0.53
5:E:194:ILE:HG12	5:E:204:ILE:HG12	1.89	0.53
3:C:172:GLU:OE2	12:L:58:ARG:NH2	2.41	0.53
7:G:114:PRO:HD2	7:G:163:LEU:HD23	1.90	0.53
16:N:-24:DT:H2'	16:N:-23:DT:C6	2.44	0.53
19:V:219:LEU:O	19:V:223:ARG:HG3	2.08	0.53
2:B:452:ASN:HB3	2:B:459:ALA:HB1	1.90	0.53
15:T:49:DC:H5"	25:h:32:GLU:HA	1.90	0.53
19:V:58:ARG:HB2	20:W:58:MET:O	2.09	0.53
22:a:119:ILE:HG13	23:b:50:ILE:HG13	1.89	0.53
1:A:117:LEU:HD23	1:A:119:VAL:H	1.73	0.53
1:A:1323:THR:OG1	1:A:1325:ASP:OD1	2.27	0.53
2:B:626:LEU:HD23	2:B:662:VAL:HG12	1.91	0.53
14:Z:367:SER:HB2	14:Z:372:LEU:HD23	1.89	0.53
20:W:429:LYS:HB3	20:W:433:TRP:HZ3	1.74	0.53
20:W:454:LEU:O	20:W:458:ILE:HG12	2.09	0.53
22:a:74:ILE:HG22	23:b:66:ILE:HG21	1.90	0.53
1:A:370:ASP:HB2	1:A:483:ARG:HB3	1.89	0.53
1:A:375:ILE:HG12	1:A:666:ARG:HG3	1.90	0.53
13:Y:70:TRP:HD1	13:Y:73:LYS:HE3	1.74	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:U:145:ASN:HA	20:W:421:PRO:HG2	1.90	0.53
1:A:831:LEU:HB3	1:A:835:GLU:HG3	1.90	0.52
15:T:-37:DG:H2"	15:T:-36:DT:C5	2.43	0.52
16:N:-64:DT:H2'	16:N:-63:DT:H71	1.91	0.52
19:V:48:LEU:HD22	19:V:58:ARG:HD2	1.90	0.52
20:W:538:LEU:HD22	20:W:578:PHE:CZ	2.44	0.52
1:A:1239:PHE:HB2	1:A:1243:LEU:HD22	1.91	0.52
14:Z:479:LYS:HD3	14:Z:521:CYS:HB2	1.91	0.52
16:N:-34:DT:P	25:h:84:SER:H	2.32	0.52
18:U:170:LYS:NZ	20:W:532:TYR:OH	2.40	0.52
22:a:83:ARG:HB2	23:b:80:THR:HG22	1.91	0.52
1:A:753:GLY:O	1:A:757:GLN:HG2	2.09	0.52
16:N:-86:DG:H1'	16:N:-85:DG:C8	2.45	0.52
16:N:47:DA:H2"	16:N:48:DG:N7	2.24	0.52
18:U:58:LEU:HD22	20:W:235:GLU:HG2	1.91	0.52
1:A:222:HIS:HB2	1:A:249:ILE:HD11	1.90	0.52
4:D:20:LEU:HD22	4:D:121:ARG:HH12	1.74	0.52
5:E:138:ASN:ND2	5:E:141:GLU:OE1	2.42	0.52
16:N:-118:DT:H2"	16:N:-117:DC:H5'	1.91	0.52
1:A:876:ASP:HB3	1:A:878:THR:HG22	1.91	0.52
2:B:808:SER:OG	2:B:1050:ARG:NH1	2.42	0.52
19:V:215:TYR:CZ	19:V:219:LEU:HD11	2.45	0.52
2:B:627:ILE:HD11	2:B:663:GLU:HB2	1.90	0.52
15:T:14:DT:H2"	15:T:15:DT:C6	2.45	0.52
19:V:59:LEU:HD13	20:W:55:ASP:HB2	1.91	0.52
20:W:495:THR:O	20:W:499:ARG:HG2	2.10	0.52
19:V:376:MET:HE3	21:X:11:GLU:HG3	1.91	0.52
19:V:502:ARG:HH12	19:V:540:LEU:HD21	1.75	0.52
5:E:5:GLU:OE1	5:E:9:ARG:NH1	2.37	0.52
7:G:148:VAL:O	14:Z:475:GLY:HA3	2.10	0.52
19:V:383:ASP:OD2	21:X:18:LYS:NZ	2.41	0.52
19:V:404:PRO:O	19:V:443:ARG:NH1	2.42	0.52
20:W:316:MET:O	20:W:319:SER:OG	2.20	0.52
24:c:17:ARG:NH1	25:d:118:TYR:OH	2.43	0.52
1:A:1178:ASP:OD1	1:A:1183:SER:OG	2.27	0.52
3:C:78:ILE:HG22	3:C:82:LEU:HG	1.92	0.52
4:D:63:LYS:HA	4:D:66:ASN:HD21	1.75	0.52
14:Z:216:VAL:HB	14:Z:226:TYR:HB2	1.92	0.52
20:W:516:ILE:HG13	20:W:533:PHE:CZ	2.45	0.52
8:H:16:ASP:OD2	8:H:16:ASP:N	2.43	0.51
11:K:21:ILE:HD13	11:K:33:PHE:CE1	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:T:-57:DC:H2"	15:T:-56:DC:C5	2.46	0.51
16:N:53:DC:H2"	16:N:54:DT:C5	2.45	0.51
19:V:153:ASN:HB3	19:V:156:LEU:HB3	1.92	0.51
20:W:121:SER:OG	20:W:125:LYS:NZ	2.43	0.51
20:W:101:LEU:HD22	20:W:106:VAL:HG21	1.91	0.51
20:W:163:ALA:HA	20:W:172:LEU:HD13	1.92	0.51
20:W:537:VAL:O	20:W:541:ILE:HG12	2.11	0.51
2:B:349:PRO:HA	2:B:353:VAL:HG13	1.92	0.51
2:B:623:ARG:NH1	2:B:697:GLU:OE1	2.43	0.51
15:T:-13:DA:H5'	22:a:63:ARG:HH12	1.75	0.51
19:V:386:THR:HG23	21:X:25:LYS:HD2	1.91	0.51
24:g:88:ARG:NH2	24:g:100:VAL:O	2.44	0.51
1:A:557:ARG:O	1:A:561:MET:HG3	2.09	0.51
5:E:69:THR:HG22	19:V:471:LEU:HD13	1.92	0.51
5:E:77:PRO:HG3	5:E:90:TYR:HE2	1.75	0.51
15:T:67:DA:H2"	15:T:68:DA:N7	2.25	0.51
19:V:17:LYS:HG3	20:W:80:ILE:HG22	1.93	0.51
25:d:83:ARG:NH1	25:d:85:THR:O	2.41	0.51
1:A:463:THR:HG23	1:A:468:SER:HB2	1.92	0.51
1:A:1289:GLU:HA	1:A:1292:MET:HG2	1.92	0.51
2:B:847:LYS:HG2	2:B:854:ILE:HD11	1.92	0.51
1:A:972:THR:HG22	1:A:1320:ILE:HD13	1.92	0.51
2:B:271:ILE:HG21	2:B:320:PHE:CD2	2.46	0.51
3:C:5:ASN:HD21	3:C:26:THR:HA	1.75	0.51
3:C:59:LEU:HB2	3:C:64:ILE:HD11	1.93	0.51
14:Z:210:LEU:HB3	14:Z:212:ILE:HG22	1.92	0.51
16:N:-57:DT:H2"	16:N:-56:DG:C8	2.45	0.51
19:V:210:LYS:HG2	19:V:250:VAL:HG13	1.92	0.51
1:A:601:ASN:ND2	1:A:989:ASN:OD1	2.34	0.51
1:A:803:LYS:H	2:B:671:GLU:CD	2.19	0.51
2:B:273:PHE:CE1	2:B:288:ILE:HD11	2.46	0.51
2:B:1038:THR:HA	3:C:195:THR:HA	1.93	0.51
3:C:132:SER:O	3:C:133:ARG:NH1	2.43	0.51
16:N:-78:DG:H2"	16:N:-77:DC:C5	2.46	0.51
22:e:50:GLU:HA	22:e:53:ARG:HG2	1.93	0.51
2:B:271:ILE:HG21	2:B:320:PHE:HD2	1.76	0.51
15:T:66:DC:H2"	15:T:67:DA:C8	2.44	0.51
1:A:488:VAL:HG12	1:A:535:MET:HE2	1.93	0.51
15:T:-5:DA:H2"	15:T:-4:DC:C5	2.46	0.51
24:c:81:ARG:HE	24:c:85:LEU:HD21	1.74	0.51
1:A:465:HIS:CD2	1:A:467:MET:HB2	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:465:HIS:CD2	1:A:467:MET:HE2	2.45	0.51
2:B:1105:GLU:HA	2:B:1109:GLU:OE1	2.10	0.51
15:T:49:DC:OP1	24:g:29:ARG:NH2	2.44	0.51
24:g:51:LEU:HD13	25:h:70:ILE:HG21	1.93	0.51
1:A:58:MET:HE1	1:A:65:ILE:HG12	1.93	0.50
12:L:18:ILE:HG12	12:L:25:GLU:HG2	1.92	0.50
22:e:63:ARG:HG3	22:e:66:PRO:HD2	1.92	0.50
4:D:107:THR:HA	4:D:128:GLN:HE22	1.75	0.50
5:E:151:MET:HB3	5:E:155:GLU:HG3	1.94	0.50
8:H:32:SER:HB3	8:H:37:MET:H	1.76	0.50
15:T:29:DA:H2'	15:T:30:DT:H71	1.92	0.50
20:W:143:PRO:HB3	20:W:145:TRP:NE1	2.26	0.50
22:e:65:LEU:HB3	22:e:66:PRO:HD3	1.92	0.50
5:E:2:ASP:HB3	5:E:5:GLU:HG3	1.93	0.50
24:c:116:LEU:HD23	22:e:48:LEU:HD13	1.92	0.50
1:A:415:GLY:H	1:A:449:HIS:HD1	1.57	0.50
1:A:780:ASN:HD22	2:B:976:MET:HE2	1.76	0.50
1:A:801:GLY:HA3	2:B:503:ASN:HB2	1.93	0.50
8:H:5:LEU:HD22	8:H:134:GLY:HA3	1.93	0.50
14:Z:309:PRO:HB2	14:Z:311:ILE:HG12	1.93	0.50
16:N:-17:DT:H2"	16:N:-16:DT:C4	2.46	0.50
16:N:45:DT:H2"	16:N:46:DG:N7	2.27	0.50
19:V:409:GLU:OE2	19:V:412:THR:OG1	2.29	0.50
20:W:516:ILE:HG13	20:W:533:PHE:CE2	2.46	0.50
24:c:51:LEU:HD13	25:d:70:ILE:HG21	1.92	0.50
1:A:460:ARG:HG2	1:A:462:PRO:HD2	1.94	0.50
1:A:461:GLN:HG3	15:T:102:DA:H2"	1.92	0.50
2:B:545:LEU:HD21	2:B:567:ILE:HG21	1.94	0.50
2:B:834:ARG:HH11	2:B:840:MET:HE3	1.75	0.50
4:D:104:CYS:HB3	4:D:138:ARG:HD2	1.92	0.50
16:N:-22:DG:H2'	16:N:-21:DG:C8	2.47	0.50
23:b:98:TYR:HE2	25:h:62:PHE:HB2	1.75	0.50
25:h:100:PRO:HG2	25:h:103:LEU:HB3	1.94	0.50
1:A:576:GLN:O	1:A:590:GLN:NE2	2.44	0.50
1:A:780:ASN:HA	2:B:976:MET:HE1	1.93	0.50
15:T:55:DA:H2"	15:T:56:DC:C5	2.46	0.50
20:W:50:LYS:HB3	20:W:56:TYR:CZ	2.47	0.50
20:W:53:THR:O	20:W:86:ASN:ND2	2.39	0.50
20:W:89:ALA:O	20:W:93:THR:HG22	2.12	0.50
20:W:429:LYS:HB3	20:W:433:TRP:CZ3	2.46	0.50
22:a:62:ILE:HG12	23:b:33:ALA:HB1	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:348:LEU:HB3	2:B:351:VAL:HG22	1.94	0.50
18:U:147:ASN:HB3	20:W:367:VAL:HG21	1.93	0.50
20:W:343:LYS:HG3	20:W:433:TRP:CG	2.47	0.50
22:a:54:TYR:CZ	23:b:36:ARG:HG2	2.47	0.50
1:A:811:ILE:HD12	9:I:79:PRO:HB3	1.94	0.50
2:B:57:ARG:NH1	2:B:226:GLU:OE2	2.39	0.50
2:B:988:LYS:O	2:B:992:ASN:ND2	2.41	0.50
7:G:101:ILE:HD11	7:G:145:LEU:HD21	1.94	0.50
15:T:27:DG:H1'	15:T:28:DG:N7	2.27	0.50
15:T:111:DT:H2"	15:T:112:DT:C5	2.46	0.50
16:N:-27:DC:H2"	16:N:-26:DC:C5	2.47	0.50
16:N:5:DT:H2"	16:N:6:DA:N7	2.27	0.50
18:U:41:ILE:HA	18:U:44:CYS:SG	2.52	0.50
2:B:393:LEU:HD22	2:B:485:LEU:HD22	1.94	0.50
15:T:22:DC:H2'	15:T:23:DA:C8	2.47	0.50
24:g:87:ILE:HD13	24:g:93:LEU:HD13	1.94	0.50
2:B:117:ASN:HA	2:B:189:GLY:HA3	1.94	0.49
2:B:388:TYR:OH	2:B:524:LYS:HE3	2.11	0.49
2:B:677:MET:HE3	2:B:697:GLU:HG3	1.95	0.49
7:G:49:THR:OG1	7:G:73:LYS:O	2.26	0.49
19:V:250:VAL:HG11	19:V:253:ILE:HD12	1.92	0.49
12:L:54:VAL:HB	14:Z:721:ILE:HG12	1.93	0.49
15:T:70:DG:H2"	15:T:71:DA:H5"	1.94	0.49
14:Z:278:TRP:CD2	14:Z:388:PRO:HG3	2.47	0.49
16:N:-57:DT:H2"	16:N:-56:DG:N7	2.27	0.49
20:W:286:ALA:HB1	20:W:293:CYS:HB2	1.94	0.49
22:a:79:LYS:HD3	22:a:82:LEU:HD21	1.94	0.49
1:A:927:GLU:HG3	1:A:943:LEU:HD11	1.95	0.49
1:A:1117:VAL:HG23	1:A:1119:LEU:HG	1.95	0.49
1:A:1301:ILE:HG23	1:A:1345:ARG:HH21	1.76	0.49
2:B:746:THR:HG22	2:B:747:LEU:HG	1.92	0.49
2:B:866:ILE:HD11	2:B:896:LEU:HB2	1.92	0.49
2:B:872:THR:HA	2:B:889:LYS:HG3	1.95	0.49
7:G:31:PHE:O	7:G:35:GLU:HB2	2.12	0.49
16:N:-28:DC:H2"	16:N:-27:DC:C4	2.46	0.49
1:A:90:LEU:HD23	1:A:310:LEU:HD21	1.95	0.49
1:A:513:ALA:HB2	6:F:90:LEU:HD11	1.93	0.49
1:A:535:MET:O	1:A:669:TYR:OH	2.27	0.49
2:B:255:ARG:HH21	2:B:307:GLU:HG3	1.77	0.49
2:B:792:ASP:OD2	2:B:975:ARG:NH2	2.46	0.49
5:E:58:LEU:HD23	5:E:58:LEU:H	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:163:TYR:HB2	5:E:165:LEU:HD22	1.94	0.49
15:T:88:DA:H2"	15:T:89:DA:H8	1.77	0.49
19:V:236:THR:OG1	19:V:308:PRO:HD2	2.12	0.49
3:C:59:LEU:HD13	3:C:63:PHE:CD2	2.48	0.49
3:C:259:LEU:HD22	11:K:42:LEU:HD23	1.95	0.49
6:F:94:MET:HE3	6:F:98:LYS:HG2	1.94	0.49
15:T:-38:DC:H2"	15:T:-37:DG:C8	2.47	0.49
19:V:223:ARG:HG2	19:V:303:MET:SD	2.52	0.49
20:W:531:ARG:HE	20:W:565:THR:HB	1.78	0.49
23:b:98:TYR:HD2	25:h:58:ILE:HG23	1.77	0.49
24:g:63:LEU:HD12	25:h:41:VAL:HG12	1.94	0.49
1:A:904:GLN:NE2	1:A:981:CYS:O	2.46	0.49
2:B:789:ASN:O	2:B:968:ASN:HB2	2.12	0.49
18:U:111:GLU:HG3	18:U:121:LEU:HD12	1.93	0.49
20:W:408:VAL:HG22	20:W:450:VAL:HG21	1.95	0.49
22:a:106:ASP:HA	22:a:109:LEU:HD12	1.94	0.49
1:A:1342:SER:HB3	1:A:1346:VAL:HG23	1.95	0.49
4:D:16:ASP:HB3	4:D:19:GLN:HG2	1.94	0.49
4:D:23:PRO:O	4:D:27:GLU:N	2.45	0.49
13:Y:62:ALA:HB2	14:Z:193:ALA:HB1	1.95	0.49
16:N:-45:DG:H2"	16:N:-44:DG:C8	2.47	0.49
19:V:197:GLN:HA	19:V:202:GLN:HE21	1.78	0.49
20:W:295:ALA:O	20:W:299:MET:HG3	2.11	0.49
20:W:416:GLN:OE1	20:W:419:ARG:NH1	2.46	0.49
1:A:896:LEU:HB2	1:A:1396:ARG:NH2	2.28	0.49
14:Z:497:GLU:HG2	14:Z:498:ASN:H	1.78	0.49
15:T:117:DG:H2"	15:T:118:DA:H5'	1.93	0.49
16:N:-28:DC:H2"	16:N:-27:DC:C5	2.48	0.49
1:A:977:VAL:HG21	1:A:1040:LEU:HD21	1.94	0.49
2:B:1142:ASN:OD1	2:B:1145:GLN:N	2.24	0.49
14:Z:365:ARG:HD2	14:Z:374:LYS:NZ	2.27	0.49
14:Z:703:ASN:HB3	14:Z:706:ILE:HG12	1.95	0.49
19:V:429:VAL:HG21	19:V:448:LEU:HD21	1.94	0.49
1:A:15:LEU:O	1:A:16:ARG:NH1	2.46	0.48
2:B:1172:MET:HA	2:B:1172:MET:HE3	1.94	0.48
14:Z:470:LYS:HD2	14:Z:472:PHE:CZ	2.48	0.48
15:T:-47:DT:H4'	15:T:-46:DC:H5'	1.94	0.48
18:U:56:LEU:O	18:U:60:THR:HG23	2.13	0.48
19:V:5:LEU:HD23	19:V:103:LEU:HD22	1.94	0.48
3:C:260:GLN:HB2	11:K:91:ILE:HG21	1.95	0.48
5:E:55:ARG:NH1	5:E:107:GLN:OE1	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:66:ASP:OD1	5:E:67:ASP:N	2.46	0.48
5:E:147:GLU:HB3	5:E:194:ILE:HB	1.94	0.48
14:Z:420:PHE:CD1	14:Z:470:LYS:HE3	2.48	0.48
15:T:36:DC:H2"	15:T:37:DC:C5	2.49	0.48
19:V:462:LEU:HD11	19:V:500:VAL:HG22	1.95	0.48
25:d:34:TYR:HD1	25:d:37:TYR:HD2	1.61	0.48
22:e:74:ILE:HD13	23:f:63:GLU:HG2	1.94	0.48
2:B:377:LEU:HB3	2:B:379:ARG:HG3	1.95	0.48
7:G:101:ILE:HB	7:G:104:MET:HE2	1.95	0.48
15:T:107:DC:H2'	15:T:108:DT:H71	1.95	0.48
24:c:37:GLY:HA3	24:c:39:TYR:CZ	2.47	0.48
1:A:30:GLU:HA	1:A:33:ARG:HG2	1.95	0.48
1:A:112:PHE:HD2	1:A:113:PHE:HD1	1.59	0.48
2:B:196:ALA:HB3	2:B:485:LEU:HD23	1.96	0.48
5:E:72:MET:HG3	5:E:101:ARG:HB3	1.95	0.48
8:H:116:VAL:CG1	8:H:123:MET:HE2	2.42	0.48
15:T:95:DC:H2"	15:T:96:DA:C8	2.47	0.48
23:b:52:GLU:CD	23:b:55:ARG:HH21	2.21	0.48
1:A:927:GLU:HG2	1:A:931:ARG:NE	2.28	0.48
1:A:1215:GLU:N	1:A:1215:GLU:OE1	2.46	0.48
5:E:2:ASP:OD1	5:E:3:ASP:N	2.39	0.48
7:G:46:ILE:HB	7:G:75:ILE:HG13	1.95	0.48
7:G:92:VAL:HG21	7:G:138:GLN:HA	1.94	0.48
15:T:-50:DC:H2"	15:T:-49:DG:C8	2.48	0.48
19:V:426:LEU:HB3	19:V:461:PHE:CE1	2.47	0.48
20:W:344:PRO:HB3	20:W:400:GLU:HG2	1.96	0.48
20:W:425:MET:HE3	20:W:429:LYS:HG2	1.95	0.48
20:W:538:LEU:HD21	20:W:553:PHE:CZ	2.47	0.48
24:c:112:GLN:HB2	24:c:115:LEU:HG	1.95	0.48
1:A:1375:ARG:NH1	1:A:1379:GLU:OE1	2.46	0.48
2:B:27:TRP:CE2	2:B:762:ARG:HD3	2.49	0.48
4:D:44:ARG:HD3	4:D:61:PHE:CE1	2.48	0.48
14:Z:354:SER:HA	14:Z:359:LEU:HD23	1.95	0.48
15:T:104:DG:H2'	15:T:105:DA:H8	1.79	0.48
19:V:168:TYR:HB2	19:V:200:VAL:HG11	1.96	0.48
20:W:59:GLU:HG2	20:W:60:PRO:HD2	1.94	0.48
7:G:38:CYS:HB2	7:G:44:PHE:CD2	2.48	0.48
16:N:-46:DT:H1'	16:N:-45:DG:C8	2.48	0.48
20:W:212:ILE:HG23	20:W:220:LEU:HB2	1.96	0.48
1:A:1295:ASP:OD1	1:A:1295:ASP:N	2.47	0.48
2:B:607:ILE:HG21	9:I:72:VAL:HA	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:Y:7:PRO:HB3	13:Y:24:THR:HG23	1.95	0.48
18:U:4:MET:O	18:U:9:THR:OG1	2.31	0.48
18:U:146:LYS:O	18:U:150:THR:HG23	2.14	0.48
19:V:245:LEU:HD13	19:V:253:ILE:HD13	1.95	0.48
19:V:494:SER:OG	19:V:495:PRO:HD3	2.14	0.48
20:W:312:VAL:O	20:W:316:MET:HG2	2.13	0.48
20:W:533:PHE:O	20:W:537:VAL:HG23	2.14	0.48
1:A:95:PHE:HD1	1:A:218:PRO:HG3	1.79	0.48
1:A:321:GLU:H	1:A:321:GLU:CD	2.21	0.48
5:E:72:MET:HG3	5:E:101:ARG:CB	2.44	0.48
9:I:88:LYS:HE3	9:I:121:HIS:HB2	1.95	0.48
14:Z:497:GLU:HG2	14:Z:498:ASN:N	2.29	0.48
19:V:177:PHE:HB3	19:V:502:ARG:HE	1.78	0.48
7:G:114:PRO:HD3	7:G:163:LEU:HB3	1.96	0.48
22:e:83:ARG:HB2	23:f:80:THR:HA	1.96	0.48
15:T:30:DT:H2'	15:T:31:DT:H71	1.96	0.47
15:T:72:DA:H2'	15:T:73:DA:C8	2.48	0.47
19:V:70:ARG:NH1	19:V:111:PRO:HB2	2.29	0.47
1:A:962:ASP:HB3	1:A:1043:ILE:HG23	1.96	0.47
15:T:41:DA:H2'	15:T:42:DC:C6	2.49	0.47
15:T:81:DC:H2'	15:T:82:DC:C6	2.48	0.47
1:A:112:PHE:CD2	1:A:113:PHE:HD1	2.31	0.47
5:E:36:THR:OG1	5:E:39:GLU:OE1	2.25	0.47
16:N:10:DG:H2'	16:N:11:DC:C6	2.50	0.47
18:U:57:LEU:O	18:U:60:THR:OG1	2.28	0.47
19:V:265:CYS:SG	19:V:279:ARG:HD2	2.54	0.47
22:e:51:ILE:HG13	23:f:39:ARG:HD2	1.95	0.47
1:A:140:ARG:HH21	1:A:237:GLY:HA2	1.79	0.47
5:E:55:ARG:HB2	5:E:78:GLU:HG3	1.95	0.47
8:H:45:ILE:HD11	8:H:50:VAL:H	1.79	0.47
15:T:-59:DT:H2"	15:T:-58:DG:H5'	1.96	0.47
15:T:6:DC:H2"	15:T:7:DC:C5	2.50	0.47
2:B:203:ASN:O	2:B:571:GLY:HA3	2.14	0.47
2:B:235:ILE:HG13	2:B:348:LEU:HD12	1.97	0.47
2:B:733:MET:HE2	2:B:749:HIS:HB3	1.97	0.47
14:Z:296:VAL:HA	14:Z:303:ILE:HG23	1.96	0.47
15:T:86:DC:H2"	15:T:87:DA:C8	2.50	0.47
18:U:123:GLU:HB3	20:W:206:ARG:HD2	1.95	0.47
19:V:141:CYS:HB3	19:V:145:VAL:HB	1.96	0.47
19:V:331:LEU:HD12	21:X:15:LEU:HD23	1.97	0.47
20:W:102:ILE:HG12	20:W:108:PRO:HG3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:402:PHE:HA	2:B:405:ARG:HH21	1.80	0.47
3:C:11:ILE:HG13	3:C:21:PHE:HB3	1.97	0.47
16:N:-79:DG:H2"	16:N:-78:DG:H8	1.80	0.47
16:N:-7:DG:H2"	16:N:-6:DG:C4	2.50	0.47
18:U:178:LEU:HD23	18:U:181:LYS:HD2	1.95	0.47
18:U:179:LEU:HD23	20:W:411:LEU:HD23	1.96	0.47
20:W:337:PHE:CE2	20:W:360:LEU:HB2	2.50	0.47
1:A:528:PRO:HG2	1:A:1090:LEU:HD11	1.97	0.47
2:B:590:LEU:HD23	2:B:596:ILE:HB	1.95	0.47
2:B:848:LEU:HD23	2:B:848:LEU:H	1.80	0.47
7:G:81:LYS:NZ	14:Z:476:ASP:OD1	2.47	0.47
16:N:-92:DG:H2"	16:N:-91:DT:OP2	2.15	0.47
16:N:-71:DT:H2"	16:N:-70:DC:H5'	1.96	0.47
18:U:120:ILE:HG13	20:W:203:ARG:HH21	1.80	0.47
19:V:39:VAL:HG11	19:V:44:LEU:HD13	1.96	0.47
19:V:59:LEU:HD13	20:W:55:ASP:O	2.15	0.47
19:V:372:ARG:HB2	19:V:414:PHE:CE2	2.50	0.47
22:e:40:ARG:NH2	22:e:43:PRO:HG3	2.30	0.47
23:f:83:ALA:O	23:f:86:VAL:HG12	2.14	0.47
1:A:642:LYS:HD2	1:A:773:GLY:HA3	1.97	0.47
1:A:805:ARG:NH2	2:B:671:GLU:O	2.46	0.47
1:A:966:LEU:HA	1:A:969:ILE:HG22	1.97	0.47
1:A:1167:ARG:HH21	1:A:1168:LYS:HD2	1.79	0.47
2:B:1151:MET:HE2	2:B:1156:LYS:N	2.30	0.47
14:Z:179:LEU:HD22	14:Z:255:VAL:HG11	1.96	0.47
19:V:212:VAL:HG13	19:V:256:VAL:HG21	1.97	0.47
14:Z:501:ILE:HD11	14:Z:510:GLU:HB3	1.97	0.47
18:U:33:LEU:HD12	18:U:63:LEU:HD21	1.96	0.47
23:f:46:ILE:HB	23:f:50:ILE:HG21	1.96	0.47
1:A:663:ASP:OD1	1:A:666:ARG:NH2	2.39	0.47
1:A:715:GLU:O	1:A:718:GLU:HG3	2.15	0.47
1:A:999:ARG:NH2	8:H:103:GLU:OE1	2.33	0.47
2:B:319:ASN:OD1	2:B:332:LYS:HG2	2.15	0.47
8:H:91:VAL:HG22	8:H:144:LEU:HD23	1.96	0.47
16:N:-67:DT:H2"	16:N:-66:DG:C8	2.49	0.47
18:U:29:ILE:HA	18:U:32:LEU:HB2	1.97	0.47
1:A:108:ARG:HG3	1:A:191:ILE:HD11	1.97	0.46
1:A:255:VAL:HG23	1:A:280:LEU:HD13	1.97	0.46
1:A:421:ARG:NH1	1:A:444:TYR:OH	2.48	0.46
1:A:982:ASN:O	1:A:986:MET:HG3	2.15	0.46
2:B:289:ILE:HG22	2:B:291:ASP:H	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:935:PHE:CE1	2:B:1050:ARG:HG3	2.51	0.46
4:D:63:LYS:HE2	7:G:102:GLY:O	2.16	0.46
16:N:-69:DG:H2"	16:N:-68:DT:H5'	1.97	0.46
16:N:-45:DG:H2"	16:N:-44:DG:H8	1.79	0.46
19:V:51:LEU:HD13	19:V:61:PHE:CE1	2.50	0.46
7:G:38:CYS:HB3	7:G:155:ASN:O	2.14	0.46
15:T:88:DA:H2"	15:T:89:DA:C8	2.50	0.46
20:W:500:MET:HE1	20:W:515:TYR:HD2	1.79	0.46
23:b:67:ARG:HH12	25:d:96:ARG:HB3	1.80	0.46
23:b:90:LEU:HD13	23:b:97:LEU:HG	1.97	0.46
2:B:281:ASP:OD1	2:B:305:LEU:HD11	2.14	0.46
2:B:1112:ASP:OD1	2:B:1112:ASP:N	2.49	0.46
16:N:-17:DT:H2"	16:N:-16:DT:C5	2.50	0.46
18:U:29:ILE:HD12	18:U:32:LEU:HB2	1.98	0.46
19:V:422:CYS:SG	19:V:451:THR:HB	2.55	0.46
20:W:93:THR:HA	20:W:96:LEU:HB2	1.97	0.46
2:B:345:LYS:HD2	2:B:345:LYS:HA	1.79	0.46
2:B:497:LYS:HG3	2:B:498:PRO:HD3	1.96	0.46
2:B:718:GLN:HG2	2:B:720:PRO:HD2	1.97	0.46
8:H:63:THR:HG21	8:H:68:GLY:HA2	1.98	0.46
15:T:86:DC:H2"	15:T:87:DA:H8	1.80	0.46
19:V:392:LYS:HG2	21:X:29:LEU:HD11	1.98	0.46
19:V:429:VAL:HG11	19:V:448:LEU:HD11	1.97	0.46
20:W:280:THR:HA	20:W:283:LEU:HD12	1.96	0.46
13:Y:34:ASP:HB3	13:Y:81:LYS:HD2	1.96	0.46
15:T:-43:DT:OP1	24:c:17:ARG:N	2.42	0.46
19:V:469:LEU:HD23	19:V:472:LEU:HD12	1.97	0.46
1:A:397:PHE:HB3	6:F:87:THR:HG23	1.96	0.46
1:A:1177:TYR:HD2	9:I:35:LEU:HD13	1.80	0.46
2:B:789:ASN:HB3	2:B:795:ILE:HG13	1.98	0.46
3:C:7:PRO:HD2	11:K:100:LEU:HD23	1.97	0.46
5:E:55:ARG:O	5:E:56:THR:OG1	2.28	0.46
15:T:-28:DT:H2"	15:T:-27:DC:C6	2.50	0.46
22:a:88:ALA:HB1	23:b:86:VAL:HG21	1.96	0.46
10:J:1:MET:HA	10:J:55:LEU:HB2	1.98	0.46
15:T:8:DC:H2"	15:T:9:DG:C8	2.50	0.46
16:N:39:DA:OP1	24:c:35:ARG:NH2	2.49	0.46
24:c:73:ASN:O	24:c:75:LYS:HG2	2.15	0.46
24:g:25:PHE:HB2	24:g:52:ALA:HB1	1.97	0.46
24:g:84:GLN:NE2	24:g:88:ARG:HE	2.14	0.46
1:A:123:ASN:HD21	1:A:125:LYS:HE2	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:479:TRP:HB2	2:B:931:ILE:HD11	1.97	0.46
2:B:35:ASP:OD2	2:B:646:ARG:NH2	2.32	0.46
2:B:85:LEU:HD22	2:B:131:THR:HB	1.97	0.46
9:I:65:LEU:HD23	9:I:122:ARG:HG3	1.98	0.46
16:N:-23:DT:C2	16:N:-22:DG:C8	3.04	0.46
19:V:128:LEU:HD22	19:V:149:ILE:HG13	1.98	0.46
2:B:355:ASP:N	2:B:355:ASP:OD1	2.47	0.46
14:Z:258:LYS:H	14:Z:258:LYS:HD2	1.80	0.46
16:N:17:DA:H4'	22:a:63:ARG:HE	1.81	0.46
2:B:222:ARG:HG2	2:B:234:THR:HG22	1.98	0.46
2:B:438:ARG:HG3	2:B:442:ASP:OD2	2.15	0.46
2:B:1090:GLU:OE1	2:B:1090:GLU:N	2.46	0.46
8:H:18:GLU:OE2	8:H:18:GLU:N	2.49	0.46
8:H:57:ARG:HH22	8:H:146:LYS:NZ	2.14	0.46
13:Y:9:ASP:OD1	13:Y:9:ASP:N	2.49	0.46
20:W:245:MET:HE3	20:W:258:VAL:HG13	1.96	0.46
24:g:112:GLN:H	24:g:115:LEU:HD12	1.80	0.46
4:D:103:LEU:HD21	7:G:85:VAL:HA	1.98	0.45
5:E:17:ILE:HG21	5:E:74:VAL:HG11	1.97	0.45
13:Y:61:ILE:HD11	13:Y:87:VAL:HG22	1.97	0.45
14:Z:340:PHE:HE2	14:Z:359:LEU:HD12	1.81	0.45
15:T:104:DG:H2'	15:T:105:DA:C8	2.51	0.45
19:V:77:VAL:HA	19:V:80:ILE:HB	1.99	0.45
16:N:-96:DT:H2"	16:N:-95:DG:C8	2.52	0.45
19:V:374:LEU:O	19:V:378:MET:HG2	2.15	0.45
20:W:180:SER:HA	20:W:185:GLN:HB3	1.98	0.45
25:d:79:HIS:NE2	24:g:38:ASN:OD1	2.49	0.45
22:e:101:VAL:HG13	23:f:41:GLY:HA2	1.97	0.45
2:B:151:LYS:H	2:B:441:SER:HG	1.55	0.45
2:B:236:TRP:HB2	2:B:259:THR:HB	1.98	0.45
2:B:646:ARG:C	2:B:648:TYR:H	2.23	0.45
2:B:937:SER:OG	2:B:938:ARG:N	2.49	0.45
14:Z:306:LYS:HA	14:Z:372:LEU:O	2.17	0.45
16:N:45:DT:H2"	16:N:46:DG:C8	2.50	0.45
16:N:55:DC:H2"	16:N:56:DG:N7	2.30	0.45
16:N:59:DA:OP1	24:c:77:ARG:NH2	2.49	0.45
20:W:353:LYS:HD2	20:W:394:HIS:CD2	2.51	0.45
24:g:26:PRO:HD3	25:h:37:TYR:CE1	2.52	0.45
24:g:97:LEU:HD22	24:g:100:VAL:HG21	1.98	0.45
25:h:73:GLU:HG3	25:h:98:LEU:HD11	1.99	0.45
1:A:349:ARG:HE	2:B:1157:LEU:HD23	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:623:ARG:HH12	2:B:697:GLU:CD	2.24	0.45
20:W:299:MET:HE3	20:W:306:ASN:H	1.81	0.45
23:f:73:THR:HG21	23:f:81:VAL:HG22	1.99	0.45
1:A:1141:VAL:HB	1:A:1336:LEU:HB2	1.98	0.45
1:A:1303:GLN:O	1:A:1340:GLY:HA3	2.16	0.45
2:B:274:ARG:NH1	2:B:311:ILE:O	2.50	0.45
2:B:354:SER:HG	2:B:357:CYS:HG	1.55	0.45
2:B:605:ARG:HD2	2:B:612:ILE:HD11	1.98	0.45
2:B:827:GLU:OE1	2:B:869:LYS:NZ	2.49	0.45
15:T:97:DA:H2"	15:T:98:DA:H8	1.82	0.45
20:W:51:PHE:HB2	20:W:82:LEU:HD23	1.97	0.45
1:A:717:ILE:HG12	1:A:737:PHE:HZ	1.81	0.45
19:V:372:ARG:C	19:V:375:PRO:HD2	2.41	0.45
15:T:-53:DG:H2"	15:T:-52:DG:C8	2.52	0.45
16:N:-58:DC:H2"	16:N:-57:DT:OP2	2.17	0.45
16:N:3:DC:H2"	16:N:4:DG:C8	2.51	0.45
18:U:89:TRP:NE1	20:W:198:LEU:HB2	2.29	0.45
19:V:106:MET:O	19:V:106:MET:HG3	2.17	0.45
22:a:107:THR:HG23	22:a:123:ASP:HB3	1.99	0.45
25:d:42:LEU:O	25:d:46:HIS:N	2.42	0.45
25:h:96:ARG:HE	25:h:108:VAL:HG21	1.82	0.45
2:B:304:SER:HA	2:B:307:GLU:OE1	2.17	0.45
7:G:8:GLU:OE1	7:G:71:LYS:HG2	2.17	0.45
23:b:35:ARG:O	23:b:39:ARG:HG2	2.17	0.45
24:c:49:VAL:HG23	25:d:115:VAL:HG22	1.99	0.45
1:A:457:ILE:HD11	1:A:515:ILE:HD12	1.98	0.45
2:B:752:TYR:HB3	3:C:63:PHE:HE1	1.82	0.45
14:Z:305:LEU:HB2	14:Z:307:MET:HE3	1.98	0.45
18:U:150:THR:HG22	18:U:155:PRO:HA	1.99	0.45
20:W:322:PRO:O	20:W:375:ARG:NH1	2.50	0.45
20:W:424:ALA:HB1	20:W:458:ILE:HD12	1.99	0.45
24:g:58:LEU:HB3	25:h:62:PHE:HZ	1.82	0.45
1:A:915:ALA:HA	1:A:918:LYS:HG2	1.99	0.45
2:B:912:ASN:OD1	2:B:916:TYR:N	2.50	0.45
2:B:1159:PHE:CD2	2:B:1171:MET:HE2	2.52	0.45
4:D:32:LEU:HD21	7:G:4:HIS:HB2	1.98	0.45
13:Y:115:ILE:HG13	14:Z:265:LYS:HE3	1.98	0.45
16:N:48:DG:H5"	25:d:37:TYR:CE1	2.52	0.45
19:V:5:LEU:HD22	19:V:10:VAL:HB	1.99	0.45
1:A:330:GLN:HB2	1:A:336:LEU:HD21	1.99	0.44
1:A:872:MET:HE1	1:A:1470:CYS:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:918:LYS:O	1:A:1052:ARG:NH1	2.50	0.44
8:H:16:ASP:HB3	8:H:27:ARG:HB3	1.99	0.44
18:U:49:SER:O	18:U:53:LYS:HG3	2.17	0.44
20:W:383:LEU:O	20:W:387:SER:OG	2.32	0.44
22:e:71:VAL:HG13	23:f:66:ILE:HD11	1.99	0.44
1:A:967:ARG:NH1	1:A:1326:GLY:O	2.47	0.44
3:C:59:LEU:HD13	3:C:63:PHE:CE2	2.53	0.44
4:D:41:LEU:HD22	4:D:61:PHE:CE1	2.52	0.44
14:Z:450:ILE:HG22	14:Z:463:PHE:H	1.83	0.44
20:W:343:LYS:HG3	20:W:433:TRP:CD1	2.51	0.44
20:W:357:ILE:HD13	20:W:391:GLU:HB2	1.98	0.44
23:f:31:LYS:HE3	23:f:51:TYR:OH	2.17	0.44
25:h:39:TYR:O	25:h:43:LYS:HG2	2.17	0.44
1:A:1210:TRP:HE1	1:A:1261:ILE:HG22	1.82	0.44
2:B:821:LYS:HD3	2:B:825:GLN:HB3	2.00	0.44
15:T:22:DC:H2'	15:T:23:DA:H8	1.82	0.44
15:T:79:DC:H2"	15:T:80:DA:C8	2.52	0.44
18:U:4:MET:CE	18:U:8:ASP:HB3	2.47	0.44
19:V:367:VAL:HG21	21:X:4:ILE:HA	2.00	0.44
24:c:58:LEU:O	24:c:62:ILE:HG12	2.18	0.44
23:f:75:HIS:CD2	25:h:77:LEU:HD21	2.52	0.44
1:A:296:ASN:OD1	1:A:297:GLY:N	2.48	0.44
1:A:542:LEU:HD21	1:A:642:LYS:HB3	1.99	0.44
2:B:565:THR:HG21	2:B:580:PRO:HB3	1.98	0.44
2:B:680:ASP:O	2:B:684:GLU:HG2	2.17	0.44
9:I:64:GLU:O	9:I:68:ILE:HG12	2.16	0.44
14:Z:254:MET:HE2	14:Z:254:MET:HA	1.99	0.44
16:N:-38:DT:H2"	16:N:-37:DG:OP2	2.16	0.44
18:U:145:ASN:ND2	20:W:421:PRO:HD2	2.32	0.44
19:V:138:TYR:HE1	19:V:149:ILE:HG21	1.82	0.44
20:W:292:ALA:HB2	20:W:316:MET:SD	2.58	0.44
1:A:92:LYS:HE2	1:A:92:LYS:HB2	1.88	0.44
1:A:461:GLN:O	1:A:463:THR:N	2.50	0.44
5:E:98:ASN:ND2	19:V:435:GLN:O	2.51	0.44
9:I:85:PRO:HB3	9:I:92:LYS:HA	1.99	0.44
16:N:17:DA:H2"	16:N:18:DG:C8	2.52	0.44
19:V:46:SER:O	19:V:49:PRO:HD2	2.17	0.44
19:V:138:TYR:CE1	19:V:156:LEU:HD21	2.53	0.44
20:W:354:HIS:CE1	20:W:355:LYS:HG3	2.53	0.44
24:g:58:LEU:HD22	25:h:103:LEU:HD21	1.98	0.44
11:K:39:ASP:OD1	11:K:39:ASP:N	2.49	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:Z:477:HIS:HD2	14:Z:491:LEU:HD21	1.82	0.44
19:V:372:ARG:NE	21:X:11:GLU:OE1	2.46	0.44
20:W:411:LEU:HD12	20:W:414:LEU:HD23	1.99	0.44
22:a:41:TYR:HD2	22:a:45:THR:HG21	1.83	0.44
23:f:71:THR:HB	25:h:97:LEU:HD21	2.00	0.44
1:A:26:LEU:HD23	1:A:26:LEU:HA	1.88	0.44
1:A:1003:ASP:N	1:A:1003:ASP:OD1	2.49	0.44
19:V:44:LEU:O	19:V:48:LEU:HG	2.18	0.44
20:W:263:GLN:HA	20:W:266:GLN:HG2	2.00	0.44
22:a:74:ILE:HG23	23:b:63:GLU:OE2	2.17	0.44
24:c:24:GLN:OE1	25:d:44:GLN:NE2	2.49	0.44
24:g:23:LEU:HD11	24:g:53:ALA:HB2	1.98	0.44
1:A:41:ILE:HG21	1:A:57:LEU:HD23	1.99	0.44
1:A:871:VAL:HB	1:A:1088:GLY:HA3	1.99	0.44
13:Y:35:ASN:HD21	13:Y:81:LYS:H	1.64	0.44
15:T:-43:DT:H5”	24:c:16:THR:HA	1.99	0.44
16:N:-11:DC:C2	16:N:-10:DG:N7	2.86	0.44
19:V:53:LEU:HD21	20:W:135:ILE:HD13	1.99	0.44
20:W:260:ARG:NE	20:W:264:GLU:OE2	2.47	0.44
21:X:17:LYS:HA	21:X:17:LYS:HD2	1.86	0.44
2:B:719:SER:OG	2:B:720:PRO:HD3	2.18	0.44
2:B:833:THR:HB	2:B:836:THR:HG22	2.00	0.44
5:E:3:ASP:OD2	5:E:47:LYS:HD3	2.18	0.44
18:U:150:THR:HA	18:U:154:GLY:C	2.43	0.44
19:V:438:LYS:HD2	19:V:475:GLU:OE1	2.18	0.44
20:W:43:VAL:O	20:W:46:GLU:HG2	2.18	0.44
25:h:42:LEU:O	25:h:46:HIS:N	2.51	0.44
25:h:102:GLU:O	25:h:106:HIS:ND1	2.51	0.44
1:A:479:TRP:HB2	1:A:483:ARG:HH21	1.83	0.43
2:B:227:ASN:O	2:B:405:ARG:HD3	2.17	0.43
2:B:601:VAL:HG22	2:B:616:THR:HG22	1.99	0.43
2:B:1141:ARG:NH2	14:Z:522:SER:H	2.16	0.43
3:C:69:GLY:HA3	12:L:57:ALA:HB1	2.00	0.43
14:Z:390:LEU:HD23	14:Z:393:LEU:HD12	1.99	0.43
15:T:6:DC:H2”	15:T:7:DC:C4	2.53	0.43
19:V:95:ASP:O	19:V:98:GLU:HG3	2.17	0.43
25:h:43:LYS:O	25:h:47:PRO:HG3	2.18	0.43
1:A:485:ASN:ND2	1:A:673:GLN:OE1	2.47	0.43
2:B:40:VAL:HG11	2:B:482:LEU:HD13	2.01	0.43
19:V:147:ARG:NH1	19:V:210:LYS:H	2.17	0.43
19:V:325:LEU:O	19:V:329:GLU:N	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:V:370:ILE:HG23	19:V:374:LEU:HD12	2.00	0.43
22:a:61:LEU:HD13	23:b:36:ARG:HD2	2.00	0.43
2:B:345:LYS:HD2	2:B:353:VAL:HB	2.00	0.43
2:B:1054:MET:HE3	2:B:1054:MET:HB2	1.92	0.43
7:G:55:GLY:HA3	7:G:69:PRO:HG2	2.01	0.43
15:T:-12:DC:H1'	15:T:-11:DG:H5'	2.00	0.43
16:N:-49:DG:H2"	16:N:-48:DC:C6	2.53	0.43
16:N:-9:DC:H5'	16:N:-9:DC:C6	2.53	0.43
16:N:27:DG:H2"	16:N:28:DA:C8	2.53	0.43
23:b:91:LYS:HG2	25:d:76:ARG:HH22	1.83	0.43
2:B:528:LEU:HD23	2:B:528:LEU:HA	1.88	0.43
4:D:90:LYS:HB3	4:D:90:LYS:HE3	1.91	0.43
4:D:107:THR:HG23	4:D:110:GLU:H	1.83	0.43
5:E:72:MET:HE3	5:E:103:LEU:HB2	2.00	0.43
7:G:82:GLY:N	7:G:147:ILE:O	2.38	0.43
9:I:33:ARG:O	9:I:34:ILE:HD13	2.18	0.43
13:Y:60:ILE:HG13	14:Z:217:ALA:HB3	1.99	0.43
14:Z:291:ALA:HB1	14:Z:305:LEU:HB3	1.99	0.43
16:N:4:DG:H2"	16:N:5:DT:C6	2.53	0.43
19:V:66:PHE:HA	20:W:94:VAL:HG22	2.00	0.43
19:V:124:PRO:HD2	19:V:127:LYS:HD2	2.00	0.43
19:V:418:GLN:HB2	19:V:421:ALA:HB3	2.01	0.43
1:A:34:MET:HE1	2:B:1122:CYS:SG	2.58	0.43
1:A:1180:ASN:HB3	1:A:1183:SER:HB3	2.00	0.43
1:A:1292:MET:O	1:A:1296:MET:HB2	2.19	0.43
2:B:296:GLU:HB3	2:B:377:LEU:HD21	2.01	0.43
2:B:309:PHE:HB2	9:I:40:ARG:NH1	2.32	0.43
2:B:357:CYS:HB2	2:B:361:LYS:HD2	2.01	0.43
7:G:11:ILE:CD1	7:G:26:VAL:HG13	2.49	0.43
11:K:82:SER:N	11:K:85:GLU:OE2	2.47	0.43
14:Z:473:LYS:HG2	14:Z:476:ASP:OD2	2.19	0.43
15:T:34:DA:H2"	15:T:35:DC:H5'	2.00	0.43
19:V:73:LEU:HD22	20:W:97:LEU:HD22	2.01	0.43
1:A:720:ALA:HB2	1:A:725:LEU:HD11	2.01	0.43
1:A:790:GLN:NE2	1:A:791:GLN:O	2.38	0.43
1:A:1285:LEU:HA	1:A:1288:ILE:HG12	2.00	0.43
1:A:1372:GLU:HG3	5:E:193:ILE:HD13	1.99	0.43
2:B:98:HIS:HB3	2:B:108:MET:HE2	1.99	0.43
4:D:61:PHE:HD2	4:D:62:MET:HE2	1.83	0.43
7:G:110:ARG:HD3	7:G:128:TYR:CE1	2.54	0.43
20:W:485:ASP:N	20:W:485:ASP:OD1	2.50	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
20:W:520:LEU:HD13	20:W:530:ILE:HG21	2.00	0.43
1:A:49:GLY:O	1:A:51:ARG:NH1	2.51	0.43
1:A:137:PRO:HB3	1:A:237:GLY:O	2.18	0.43
1:A:1004:LEU:HD13	1:A:1062:GLY:HA2	2.00	0.43
2:B:187:ILE:HG21	2:B:449:ALA:HB2	2.00	0.43
14:Z:239:ILE:HD11	14:Z:249:TYR:HA	2.01	0.43
14:Z:422:PRO:HA	14:Z:440:ILE:HB	2.00	0.43
20:W:229:LYS:HD3	20:W:268:PHE:HZ	1.82	0.43
20:W:497:LEU:HA	20:W:500:MET:HG2	1.99	0.43
20:W:538:LEU:HD12	20:W:574:PRO:HB2	1.99	0.43
25:d:53:SER:HA	25:d:56:MET:HE3	1.99	0.43
1:A:490:THR:HB	1:A:491:PRO:HD3	2.00	0.43
4:D:70:ARG:HG3	4:D:71:PHE:CD1	2.54	0.43
15:T:-13:DA:H5'	22:a:63:ARG:HH22	1.84	0.43
15:T:5:DC:H2"	15:T:6:DC:C5	2.54	0.43
16:N:-59:DT:H2"	16:N:-58:DC:C6	2.54	0.43
19:V:132:MET:HE3	19:V:156:LEU:HD22	2.01	0.43
19:V:449:VAL:HA	19:V:488:GLY:O	2.18	0.43
1:A:340:LYS:HG3	1:A:1436:VAL:HG11	2.00	0.43
1:A:1058:PHE:HB3	1:A:1060:LEU:HD13	2.00	0.43
1:A:1128:ILE:HG13	1:A:1414:ILE:HG13	2.00	0.43
1:A:1175:ILE:HG23	9:I:53:ILE:HB	2.00	0.43
1:A:1219:LYS:HB2	1:A:1219:LYS:HE3	1.81	0.43
2:B:721:ARG:HA	2:B:721:ARG:HD3	1.80	0.43
3:C:117:SER:OG	3:C:147:ASP:HB3	2.19	0.43
16:N:-47:DC:H2"	16:N:-46:DT:C2	2.54	0.43
16:N:48:DG:H5"	25:d:37:TYR:HE1	1.84	0.43
19:V:90:TYR:CE2	19:V:121:PRO:HG3	2.54	0.43
19:V:512:HIS:CD2	19:V:513:PRO:HG3	2.54	0.43
20:W:502:HIS:O	20:W:506:ARG:HG2	2.19	0.43
24:c:35:ARG:NH2	24:c:43:VAL:HB	2.32	0.43
24:c:115:LEU:HD21	22:e:112:ILE:HD11	2.00	0.43
25:d:96:ARG:HA	25:d:104:ALA:HB1	2.01	0.43
2:B:807:ARG:HE	2:B:807:ARG:HB2	1.61	0.43
2:B:1123:GLY:H	2:B:1170:ARG:HG3	1.84	0.43
8:H:5:LEU:HB2	8:H:60:ILE:HG22	2.00	0.43
8:H:11:ASP:OD1	8:H:11:ASP:N	2.51	0.43
9:I:96:PHE:HD2	9:I:110:LEU:HD22	1.84	0.43
15:T:62:DA:H2"	15:T:63:DA:C8	2.53	0.43
19:V:50:PHE:HA	19:V:53:LEU:HD12	2.01	0.43
19:V:76:ARG:O	19:V:80:ILE:HG13	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:V:407:LEU:HD12	19:V:407:LEU:HA	1.90	0.43
24:c:81:ARG:O	24:c:85:LEU:HG	2.18	0.43
25:d:91:ILE:O	25:d:95:VAL:HG23	2.19	0.43
1:A:757:GLN:HE21	1:A:778:LYS:HB3	1.83	0.42
1:A:1344:MET:HE3	1:A:1344:MET:HA	2.01	0.42
4:D:134:ILE:O	4:D:138:ARG:N	2.52	0.42
7:G:80:PHE:HB2	7:G:83:GLU:HG3	2.00	0.42
11:K:1:MET:HG2	11:K:2:ASN:ND2	2.34	0.42
15:T:25:DG:H2"	15:T:26:DG:N7	2.34	0.42
19:V:365:MET:HE3	19:V:365:MET:HB3	1.88	0.42
19:V:366:GLU:OE1	19:V:368:GLU:HB3	2.19	0.42
19:V:376:MET:HG3	19:V:411:PHE:HB2	2.00	0.42
1:A:1254:LYS:HA	1:A:1254:LYS:HD3	1.75	0.42
1:A:1474:LEU:HB2	6:F:105:ILE:HG13	2.01	0.42
2:B:302:LYS:HB3	2:B:303:PRO:HD3	2.01	0.42
4:D:34:ASN:HA	4:D:37:VAL:HG22	2.01	0.42
7:G:122:ASN:OD1	7:G:123:SER:N	2.50	0.42
13:Y:16:CYS:HA	13:Y:53:THR:HG22	2.00	0.42
15:T:-21:DC:H2"	15:T:-20:DC:H5'	2.01	0.42
15:T:-4:DC:H2"	15:T:-3:DG:C8	2.54	0.42
15:T:4:DC:H5'	15:T:4:DC:C6	2.54	0.42
18:U:75:LEU:HA	18:U:78:ILE:HG22	2.01	0.42
18:U:114:ASN:HB3	18:U:117:VAL:HB	2.00	0.42
19:V:71:ASP:O	19:V:74:LEU:HG	2.19	0.42
20:W:322:PRO:HA	20:W:323:PRO:HD3	1.94	0.42
22:a:58:THR:HG21	24:g:81:ARG:HB2	2.01	0.42
1:A:413:TYR:O	1:A:415:GLY:N	2.46	0.42
1:A:894:ASP:CG	1:A:1396:ARG:HH22	2.28	0.42
1:A:1118:THR:O	1:A:1123:ARG:HB2	2.19	0.42
1:A:1353:ASP:O	1:A:1357:THR:OG1	2.29	0.42
2:B:56:GLN:HA	2:B:59:VAL:HG12	2.01	0.42
2:B:65:ILE:HD11	2:B:416:ARG:HB2	1.99	0.42
2:B:757:PRO:HB2	2:B:760:THR:HG22	2.02	0.42
2:B:991:ALA:HB1	10:J:43:TYR:HB2	2.02	0.42
2:B:1119:CYS:HA	2:B:1146:ILE:HD13	2.00	0.42
5:E:64:HIS:ND1	5:E:66:ASP:OD1	2.52	0.42
14:Z:480:VAL:HG12	14:Z:486:GLU:HA	2.01	0.42
15:T:-52:DG:O6	16:N:52:DC:N4	2.32	0.42
19:V:382:VAL:HG13	21:X:22:LEU:HD22	2.00	0.42
20:W:93:THR:O	20:W:97:LEU:HG	2.20	0.42
23:f:75:HIS:HD2	25:h:77:LEU:HD11	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:h:65:ASP:OD1	25:h:66:ILE:N	2.52	0.42
1:A:460:ARG:HD3	1:A:492:TYR:O	2.19	0.42
1:A:1139:LEU:HG	1:A:1359:SER:HA	2.00	0.42
1:A:1359:SER:C	1:A:1361:ASP:H	2.27	0.42
2:B:59:VAL:HG23	2:B:408:PHE:CZ	2.54	0.42
5:E:14:ARG:O	5:E:18:MET:HG2	2.19	0.42
14:Z:615:ARG:HG3	14:Z:635:MET:HE1	2.01	0.42
15:T:111:DT:H2"	15:T:112:DT:C6	2.53	0.42
19:V:502:ARG:NH1	19:V:540:LEU:HD11	2.35	0.42
19:V:502:ARG:NH1	19:V:540:LEU:HD21	2.34	0.42
22:a:84:PHE:HB3	22:a:89:ILE:HD11	2.01	0.42
14:Z:212:ILE:HD11	14:Z:227:VAL:HG13	2.02	0.42
14:Z:470:LYS:HD2	14:Z:472:PHE:HZ	1.83	0.42
15:T:75:DC:H2"	15:T:76:DG:C8	2.54	0.42
15:T:81:DC:C2'	15:T:82:DC:H5'	2.49	0.42
18:U:138:PRO:HD2	18:U:141:CYS:SG	2.60	0.42
18:U:165:LEU:HD11	20:W:505:SER:HB2	2.01	0.42
20:W:531:ARG:HA	20:W:566:ILE:HD11	2.01	0.42
23:f:35:ARG:O	23:f:39:ARG:HG2	2.19	0.42
1:A:480:SER:HB2	2:B:1059:ILE:HD12	2.02	0.42
1:A:873:VAL:HG22	1:A:879:VAL:HG22	2.01	0.42
5:E:3:ASP:O	5:E:7:THR:OG1	2.36	0.42
16:N:-75:DG:H2"	16:N:-74:DT:H5'	2.02	0.42
16:N:-59:DT:H2"	16:N:-58:DC:C5	2.54	0.42
16:N:46:DG:H2"	16:N:47:DA:N7	2.34	0.42
19:V:215:TYR:O	19:V:219:LEU:HG	2.19	0.42
1:A:1347:LEU:HD22	1:A:1354:PRO:HA	2.02	0.42
2:B:505:LEU:HD22	2:B:509:VAL:HB	2.01	0.42
3:C:47:ILE:HA	3:C:165:ALA:HA	2.01	0.42
3:C:145:GLN:NE2	3:C:146:ASP:O	2.53	0.42
15:T:-36:DT:H2"	15:T:-35:DA:N7	2.35	0.42
15:T:35:DC:H2"	15:T:36:DC:C5	2.54	0.42
15:T:59:DA:H2"	15:T:60:DA:C8	2.54	0.42
15:T:62:DA:H2"	15:T:63:DA:H8	1.84	0.42
16:N:58:DC:H5'	24:c:77:ARG:CG	2.50	0.42
18:U:37:VAL:O	18:U:41:ILE:HG13	2.19	0.42
19:V:270:ILE:HD11	19:V:310:ALA:HB2	2.02	0.42
20:W:404:ALA:O	20:W:408:VAL:HG23	2.20	0.42
22:e:40:ARG:HH22	22:e:43:PRO:HG3	1.83	0.42
22:e:72:ARG:NE	22:e:82:LEU:O	2.52	0.42
1:A:1125:LYS:HA	1:A:1128:ILE:HG22	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:419:ALA:O	2:B:423:ILE:HG12	2.19	0.42
4:D:29:ALA:HB1	7:G:3:TYR:HB3	2.01	0.42
4:D:67:TYR:CE1	7:G:101:ILE:HA	2.55	0.42
7:G:144:ARG:HH22	7:G:171:VAL:HG23	1.83	0.42
15:T:91:DA:H2"	15:T:92:DC:C6	2.55	0.42
16:N:-14:DA:H2"	16:N:-13:DA:C8	2.55	0.42
19:V:177:PHE:HB3	19:V:502:ARG:NE	2.35	0.42
1:A:384:ILE:O	1:A:388:MET:HG2	2.19	0.42
1:A:486:LEU:HD13	2:B:790:GLN:CD	2.45	0.42
1:A:903:PHE:CD1	1:A:976:LYS:HE2	2.55	0.42
2:B:912:ASN:HD21	2:B:916:TYR:HB2	1.85	0.42
8:H:8:ASP:OD2	8:H:32:SER:OG	2.22	0.42
15:T:-8:DC:O2	22:a:40:ARG:NH1	2.53	0.42
18:U:123:GLU:O	18:U:126:GLU:HG2	2.19	0.42
20:W:169:CYS:SG	20:W:171:MET:HG2	2.59	0.42
24:c:41:GLU:HG2	24:c:42:ARG:HG3	2.01	0.42
1:A:129:ILE:HD13	1:A:143:HIS:HB3	2.02	0.42
14:Z:521:CYS:HB3	14:Z:523:GLU:OE1	2.20	0.42
15:T:-66:DA:H5'	15:T:-66:DA:C8	2.55	0.42
15:T:-45:DA:H2"	15:T:-44:DA:C8	2.55	0.42
15:T:-17:DT:H2"	15:T:-16:DT:C4	2.55	0.42
15:T:8:DC:H2"	15:T:9:DG:H8	1.85	0.42
16:N:-46:DT:H4'	16:N:-45:DG:H5'	2.01	0.42
18:U:4:MET:O	18:U:40:ASN:ND2	2.45	0.42
18:U:143:TYR:HE1	20:W:425:MET:HG2	1.84	0.42
24:c:23:LEU:HD11	25:d:114:ALA:HB1	2.02	0.42
1:A:1005:HIS:ND1	1:A:1007:ILE:HG22	2.34	0.41
1:A:1130:ILE:H	1:A:1130:ILE:HD12	1.85	0.41
7:G:47:ALA:O	7:G:75:ILE:HG12	2.20	0.41
14:Z:578:LYS:HE2	14:Z:618:PHE:HE1	1.84	0.41
23:f:84:MET:HB3	23:f:88:TYR:CZ	2.55	0.41
1:A:777:SER:N	1:A:780:ASN:OD1	2.54	0.41
1:A:1262:MET:HE3	1:A:1262:MET:HA	2.03	0.41
2:B:92:TYR:N	2:B:125:TYR:O	2.29	0.41
2:B:506:TRP:HZ2	2:B:677:MET:HE1	1.85	0.41
2:B:583:LEU:O	2:B:587:LEU:HD23	2.20	0.41
4:D:100:LEU:HD11	4:D:118:LEU:HD11	2.02	0.41
14:Z:725:LYS:HA	14:Z:725:LYS:HD2	1.88	0.41
15:T:-56:DC:H2"	15:T:-55:DG:C8	2.55	0.41
16:N:27:DG:H5'	22:a:83:ARG:HH11	1.84	0.41
18:U:158:PRO:HA	18:U:159:PRO:HD3	1.94	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
20:W:276:ALA:HB1	20:W:279:ILE:HD12	2.03	0.41
23:b:59:LYS:HE3	23:b:59:LYS:HB3	1.86	0.41
23:b:69:ALA:O	23:b:73:THR:HG23	2.20	0.41
24:g:31:HIS:NE2	24:g:43:VAL:HB	2.35	0.41
1:A:41:ILE:HB	1:A:88:ILE:HG12	2.02	0.41
1:A:1137:PRO:HB2	1:A:1341:VAL:HG13	2.02	0.41
1:A:1218:ARG:HG3	1:A:1218:ARG:HH11	1.85	0.41
1:A:1286:ARG:O	1:A:1289:GLU:HG3	2.21	0.41
1:A:1310:HIS:ND1	1:A:1335:ILE:HD11	2.36	0.41
4:D:125:GLU:HG2	4:D:126:GLU:N	2.35	0.41
7:G:166:ASP:OD1	7:G:166:ASP:N	2.53	0.41
13:Y:60:ILE:HD11	14:Z:190:ARG:HA	2.02	0.41
14:Z:543:ASP:OD1	14:Z:543:ASP:N	2.53	0.41
16:N:-55:DT:H2"	16:N:-54:DC:C5	2.55	0.41
19:V:275:VAL:HG21	19:V:314:LEU:HD23	2.02	0.41
19:V:282:GLU:HG2	19:V:286:PHE:CZ	2.54	0.41
20:W:347:ARG:HD2	20:W:347:ARG:HA	1.81	0.41
20:W:487:MET:O	20:W:491:GLU:HG2	2.20	0.41
25:d:74:ALA:HB1	25:d:86:ILE:HD13	2.03	0.41
24:g:27:VAL:HG13	24:g:48:PRO:HB2	2.01	0.41
1:A:1283:VAL:HA	1:A:1286:ARG:HG3	2.02	0.41
2:B:125:TYR:HB3	2:B:146:LYS:HA	2.01	0.41
2:B:789:ASN:HB2	2:B:793:SER:O	2.20	0.41
3:C:186:TYR:OH	3:C:194:HIS:ND1	2.26	0.41
14:Z:313:TYR:OH	14:Z:341:ASP:N	2.47	0.41
15:T:96:DA:H2"	15:T:97:DA:C8	2.55	0.41
19:V:106:MET:CE	19:V:108:SER:HB2	2.50	0.41
20:W:50:LYS:HB3	20:W:56:TYR:CE1	2.56	0.41
20:W:95:ASN:O	20:W:99:GLU:OE1	2.39	0.41
1:A:10:ASP:N	1:A:10:ASP:OD1	2.52	0.41
2:B:282:ARG:HG3	9:I:16:PHE:CD2	2.56	0.41
2:B:294:ASP:OD1	2:B:294:ASP:N	2.54	0.41
2:B:367:TYR:CZ	2:B:371:ARG:HD2	2.56	0.41
5:E:45:GLY:HA3	5:E:53:PRO:HD3	2.02	0.41
16:N:-24:DT:OP1	22:e:85:GLN:NE2	2.45	0.41
20:W:149:MET:HG3	20:W:159:PHE:CE2	2.54	0.41
24:c:76:THR:O	25:d:50:GLY:N	2.44	0.41
25:d:74:ALA:HB1	25:d:86:ILE:HG21	2.02	0.41
1:A:296:ASN:HB2	14:Z:267:VAL:HG21	2.03	0.41
2:B:67:LEU:C	2:B:83:ARG:HG2	2.46	0.41
8:H:60:ILE:HG23	8:H:141:VAL:HG13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:Z:639:LYS:HD3	14:Z:642:HIS:CD2	2.55	0.41
15:T:-6:DT:H2"	15:T:-5:DA:N7	2.36	0.41
15:T:81:DC:H2"	15:T:82:DC:H5'	2.03	0.41
19:V:2:PHE:CE1	20:W:88:THR:HA	2.56	0.41
23:b:34:ILE:HB	23:b:51:TYR:HD1	1.86	0.41
24:c:35:ARG:HA	24:c:35:ARG:HD3	1.79	0.41
1:A:31:LEU:HD11	1:A:254:PRO:HB3	2.03	0.41
1:A:486:LEU:HD23	1:A:496:PHE:HE2	1.86	0.41
5:E:54:ARG:HD2	5:E:55:ARG:N	2.35	0.41
10:J:48:MET:HE3	10:J:48:MET:HB3	1.93	0.41
13:Y:18:LEU:HD12	13:Y:111:ARG:HH21	1.86	0.41
15:T:56:DC:H2"	15:T:57:DA:N7	2.36	0.41
18:U:75:LEU:O	18:U:78:ILE:HG22	2.21	0.41
23:b:77:LYS:HG3	25:d:89:ARG:HH12	1.84	0.41
25:d:86:ILE:HG23	25:d:90:GLU:HB2	2.02	0.41
24:g:54:VAL:O	24:g:58:LEU:HG	2.20	0.41
24:g:55:LEU:O	24:g:59:THR:HG23	2.20	0.41
1:A:514:GLU:HA	6:F:63:ALA:HB1	2.03	0.41
1:A:1306:LYS:HE2	1:A:1308:TYR:OH	2.20	0.41
3:C:23:ILE:O	3:C:228:ARG:HA	2.20	0.41
14:Z:309:PRO:HG3	14:Z:340:PHE:HD1	1.85	0.41
14:Z:554:GLU:OE1	14:Z:557:THR:OG1	2.38	0.41
16:N:-6:DG:H1'	16:N:-5:DG:C5	2.55	0.41
19:V:499:ASN:OD1	19:V:500:VAL:N	2.53	0.41
1:A:119:VAL:HG12	1:A:123:ASN:HB2	2.03	0.41
1:A:245:PRO:O	1:A:248:MET:HB2	2.20	0.41
1:A:322:LEU:HD12	1:A:323:PRO:HD2	2.03	0.41
1:A:419:ILE:HG23	1:A:427:ILE:HB	2.02	0.41
1:A:1218:ARG:HG3	1:A:1218:ARG:NH1	2.36	0.41
1:A:1228:MET:HA	1:A:1231:ILE:HD12	2.02	0.41
2:B:544:PHE:O	2:B:547:GLU:HG3	2.21	0.41
3:C:81:LYS:NZ	3:C:126:ARG:HH22	2.19	0.41
3:C:189:ASP:O	3:C:191:ALA:N	2.52	0.41
3:C:255:LYS:HE3	11:K:42:LEU:HD11	2.02	0.41
4:D:37:VAL:O	4:D:41:LEU:HG	2.20	0.41
5:E:94:MET:SD	5:E:102:ALA:HB2	2.60	0.41
7:G:91:GLN:HB3	7:G:98:PHE:HB2	2.03	0.41
7:G:91:GLN:HB3	7:G:98:PHE:HD2	1.86	0.41
7:G:148:VAL:HG23	7:G:160:ILE:HG23	2.02	0.41
7:G:151:ARG:HA	14:Z:477:HIS:NE2	2.36	0.41
12:L:22:CYS:SG	12:L:24:THR:OG1	2.65	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:47:LYS:HE2	12:L:47:LYS:HB3	1.86	0.41
15:T:12:DT:H2'	15:T:13:DT:H71	2.02	0.41
22:a:47:ALA:HB1	23:b:39:ARG:NH1	2.36	0.41
22:a:75:ALA:HB2	23:b:66:ILE:HG12	2.03	0.41
24:c:78:ILE:HG23	24:c:82:HIS:HB2	2.03	0.41
1:A:275:ASP:HA	1:A:278:HIS:ND1	2.36	0.41
1:A:486:LEU:O	1:A:489:THR:HG22	2.21	0.41
1:A:623:PRO:HA	8:H:27:ARG:NH2	2.32	0.41
2:B:794:VAL:HG12	2:B:967:ILE:HG22	2.03	0.41
5:E:41:LYS:HB3	5:E:46:ASP:HB2	2.03	0.41
7:G:30:LEU:O	7:G:34:VAL:HG22	2.21	0.41
8:H:37:MET:HB2	8:H:126:GLN:O	2.21	0.41
16:N:55:DC:H2"	16:N:56:DG:C8	2.56	0.41
24:c:18:SER:HB3	24:c:26:PRO:HA	2.03	0.41
1:A:46:THR:O	1:A:58:MET:HB3	2.22	0.40
1:A:1099:ALA:HA	1:A:1102:MET:HE3	2.04	0.40
2:B:1040:GLN:NE2	3:C:196:VAL:O	2.43	0.40
3:C:73:LEU:O	3:C:238:SER:OG	2.38	0.40
5:E:97:GLU:HG3	19:V:435:GLN:NE2	2.35	0.40
12:L:38:GLU:C	12:L:40:GLY:H	2.29	0.40
14:Z:481:ILE:O	14:Z:481:ILE:HG22	2.21	0.40
15:T:-56:DC:H2"	15:T:-55:DG:N7	2.37	0.40
16:N:-6:DG:H1'	16:N:-5:DG:N7	2.36	0.40
16:N:26:DA:C8	16:N:26:DA:H5'	2.56	0.40
19:V:117:MET:HE1	19:V:131:VAL:HG21	2.03	0.40
19:V:226:PHE:HB2	19:V:234:TYR:HB2	2.02	0.40
22:a:62:ILE:HD11	23:b:37:LEU:HD11	2.02	0.40
1:A:349:ARG:HD3	1:A:349:ARG:HA	1.91	0.40
1:A:477:LEU:HD23	1:A:477:LEU:HA	1.91	0.40
1:A:969:ILE:HD12	5:E:201:GLY:O	2.21	0.40
1:A:977:VAL:HG22	1:A:978:VAL:H	1.86	0.40
1:A:1138:SER:O	1:A:1360:ASN:HB3	2.21	0.40
2:B:206:TYR:HB3	2:B:208:PHE:CZ	2.55	0.40
2:B:295:PRO:HA	2:B:298:MET:CE	2.48	0.40
2:B:756:LYS:O	10:J:51:ALA:HB1	2.21	0.40
2:B:949:TYR:HB2	2:B:954:MET:SD	2.61	0.40
8:H:17:PRO:HD2	8:H:18:GLU:OE2	2.21	0.40
9:I:87:GLN:NE2	9:I:88:LYS:HB3	2.36	0.40
11:K:1:MET:HE3	11:K:1:MET:HB2	1.87	0.40
13:Y:13:LEU:HD22	13:Y:22:VAL:HG12	2.03	0.40
13:Y:22:VAL:HB	13:Y:84:VAL:HG13	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:Z:439:LYS:O	14:Z:452:PRO:HA	2.21	0.40
18:U:72:LYS:HG3	18:U:73:GLY:N	2.37	0.40
19:V:76:ARG:HE	20:W:106:VAL:HG22	1.87	0.40
19:V:146:LYS:HB3	19:V:150:TRP:CZ2	2.56	0.40
19:V:282:GLU:HG2	19:V:286:PHE:CE2	2.56	0.40
19:V:389:VAL:HG11	21:X:25:LYS:HB3	2.04	0.40
20:W:325:VAL:O	20:W:329:ARG:HG3	2.20	0.40
22:a:65:LEU:HA	22:a:68:GLN:HG2	2.03	0.40
24:c:66:ALA:HB1	24:c:78:ILE:HD13	2.02	0.40
1:A:116:LYS:HD3	1:A:182:GLY:HA3	2.03	0.40
1:A:1095:LEU:HD21	1:A:1398:LEU:HD23	2.03	0.40
2:B:841:ARG:NH1	17:P:1:A:O2'	2.55	0.40
3:C:154:ARG:HG2	3:C:155:LYS:H	1.85	0.40
15:T:108:DT:H2"	15:T:109:DA:H8	1.86	0.40
19:V:5:LEU:HB3	19:V:10:VAL:O	2.20	0.40
19:V:262:PHE:HD2	19:V:286:PHE:HB2	1.87	0.40
20:W:51:PHE:HD1	20:W:56:TYR:CD2	2.38	0.40
20:W:99:GLU:HA	20:W:102:ILE:HD12	2.03	0.40
20:W:468:GLN:OE1	20:W:468:GLN:N	2.48	0.40
25:d:69:ARG:O	25:d:73:GLU:HG2	2.20	0.40
1:A:803:LYS:N	2:B:671:GLU:OE1	2.50	0.40
2:B:1117:HIS:HB2	2:B:1128:ALA:HB2	2.03	0.40
12:L:15:MET:HE2	12:L:15:MET:HA	2.04	0.40
14:Z:498:ASN:O	14:Z:515:PRO:HD3	2.21	0.40
16:N:-41:DT:H2"	16:N:-40:DC:C6	2.57	0.40
18:U:110:LEU:HD12	20:W:247:VAL:HG11	2.04	0.40
18:U:171:SER:HB3	20:W:502:HIS:HB2	2.03	0.40
19:V:302:SER:HB2	19:V:351:ALA:HA	2.04	0.40
20:W:338:MET:HA	20:W:342:PHE:HD2	1.87	0.40
1:A:279:LYS:HD3	1:A:336:LEU:HD12	2.03	0.40
3:C:101:PHE:CE2	3:C:122:SER:HB2	2.57	0.40
8:H:27:ARG:HD2	8:H:40:ILE:CG2	2.52	0.40
20:W:285:THR:O	20:W:285:THR:HG22	2.22	0.40
25:d:42:LEU:HA	25:d:45:VAL:HG22	2.03	0.40
25:h:34:TYR:HB2	25:h:60:ASN:OD1	2.21	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	1381/1970 (70%)	1314 (95%)	67 (5%)	0	100	100
2	B	1111/1174 (95%)	1046 (94%)	65 (6%)	0	100	100
3	C	254/271 (94%)	240 (94%)	13 (5%)	1 (0%)	30	61
4	D	124/142 (87%)	119 (96%)	5 (4%)	0	100	100
5	E	207/210 (99%)	203 (98%)	4 (2%)	0	100	100
6	F	76/127 (60%)	75 (99%)	1 (1%)	0	100	100
7	G	169/172 (98%)	161 (95%)	8 (5%)	0	100	100
8	H	147/150 (98%)	139 (95%)	8 (5%)	0	100	100
9	I	114/125 (91%)	113 (99%)	1 (1%)	0	100	100
10	J	65/67 (97%)	63 (97%)	2 (3%)	0	100	100
11	K	113/117 (97%)	110 (97%)	3 (3%)	0	100	100
12	L	44/58 (76%)	42 (96%)	2 (4%)	0	100	100
13	Y	114/118 (97%)	110 (96%)	4 (4%)	0	100	100
14	Z	468/1107 (42%)	446 (95%)	22 (5%)	0	100	100
18	U	185/528 (35%)	179 (97%)	6 (3%)	0	100	100
19	V	538/580 (93%)	531 (99%)	7 (1%)	0	100	100
20	W	541/611 (88%)	531 (98%)	10 (2%)	0	100	100
21	X	33/404 (8%)	33 (100%)	0	0	100	100
22	a	95/136 (70%)	92 (97%)	3 (3%)	0	100	100
22	e	95/136 (70%)	95 (100%)	0	0	100	100
23	b	78/103 (76%)	78 (100%)	0	0	100	100
23	f	76/103 (74%)	76 (100%)	0	0	100	100
24	c	101/130 (78%)	100 (99%)	1 (1%)	0	100	100
24	g	103/130 (79%)	101 (98%)	2 (2%)	0	100	100
25	d	93/126 (74%)	91 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
25	h	91/126 (72%)	90 (99%)	1 (1%)	0	100	100
All	All	6416/8921 (72%)	6178 (96%)	237 (4%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	92	GLU

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1229/1749 (70%)	1229 (100%)	0	100	100
2	B	985/1027 (96%)	985 (100%)	0	100	100
3	C	235/248 (95%)	235 (100%)	0	100	100
4	D	109/126 (86%)	109 (100%)	0	100	100
5	E	191/192 (100%)	191 (100%)	0	100	100
6	F	68/111 (61%)	68 (100%)	0	100	100
7	G	146/153 (95%)	146 (100%)	0	100	100
8	H	130/131 (99%)	130 (100%)	0	100	100
9	I	104/112 (93%)	104 (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	Y	102/104 (98%)	102 (100%)	0	100	100
14	Z	423/955 (44%)	423 (100%)	0	100	100
18	U	161/451 (36%)	161 (100%)	0	100	100
19	V	485/515 (94%)	485 (100%)	0	100	100
20	W	480/530 (91%)	480 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
21	X	31/351 (9%)	31 (100%)	0	100	100
22	a	83/110 (76%)	83 (100%)	0	100	100
22	e	82/110 (74%)	82 (100%)	0	100	100
23	b	65/79 (82%)	65 (100%)	0	100	100
23	f	63/79 (80%)	63 (100%)	0	100	100
24	c	82/100 (82%)	82 (100%)	0	100	100
24	g	83/100 (83%)	83 (100%)	0	100	100
25	d	81/105 (77%)	81 (100%)	0	100	100
25	h	79/105 (75%)	79 (100%)	0	100	100
All	All	5700/7760 (74%)	5700 (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 (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	273	GLN
1	A	301	HIS
1	A	387	ASN
1	A	620	HIS
1	A	662	HIS
1	A	735	GLN
1	A	1077	ASN
1	A	1172	ASN
1	A	1182	GLN
2	B	390	ASN
2	B	642	GLN
2	B	725	GLN
2	B	1049	GLN
3	C	51	GLN
3	C	145	GLN
5	E	30	GLN
5	E	107	GLN
5	E	108	GLN
5	E	138	ASN
5	E	169	GLN
7	G	9	HIS
8	H	131	ASN
11	K	49	GLN

Continued from previous page...

Mol	Chain	Res	Type
14	Z	418	HIS
14	Z	435	ASN
18	U	107	ASN
18	U	145	ASN
19	V	45	GLN
19	V	186	ASN
19	V	202	GLN
19	V	435	GLN
20	W	223	ASN
20	W	266	GLN
20	W	270	GLN
20	W	401	ASN
20	W	442	GLN
20	W	462	HIS
22	a	108	ASN
23	b	64	ASN
24	c	38	ASN
24	g	110	ASN
25	h	81	ASN

5.3.3　RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
17	P	15/16 (93%)	3 (20%)	1 (6%)

All (3) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
17	P	3	U
17	P	5	A
17	P	14	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
17	P	4	U

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 10 ligands modelled in this entry, 10 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 ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-61060. 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 ⓘ
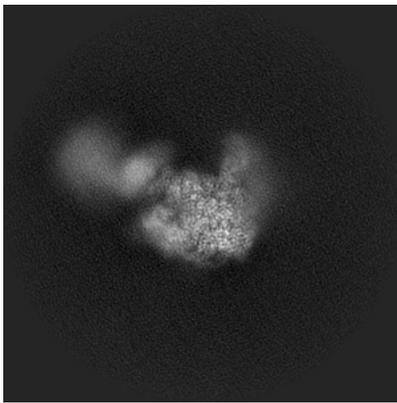
6.1.1 Primary map

X
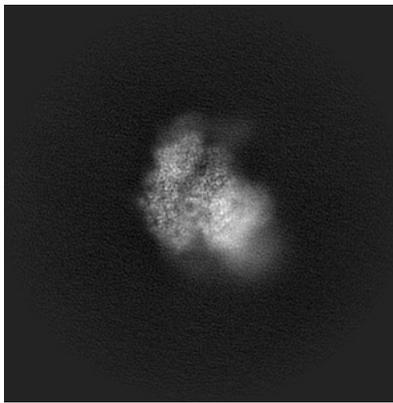
Y
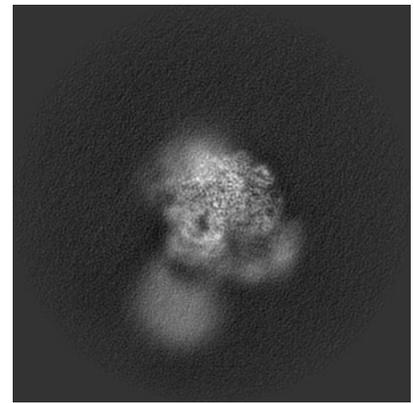
Z

6.1.2 Raw map

X

Y

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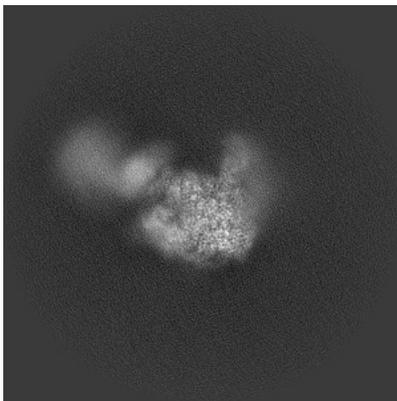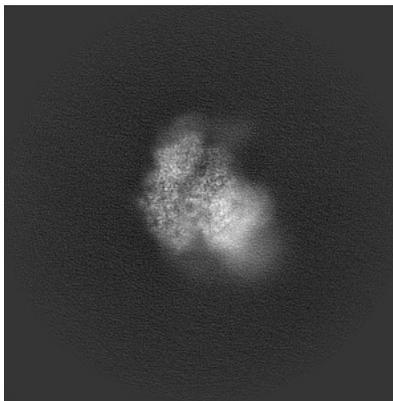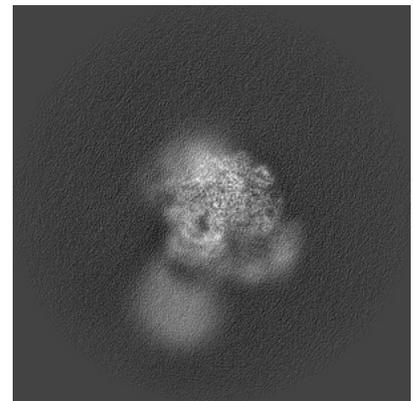
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ
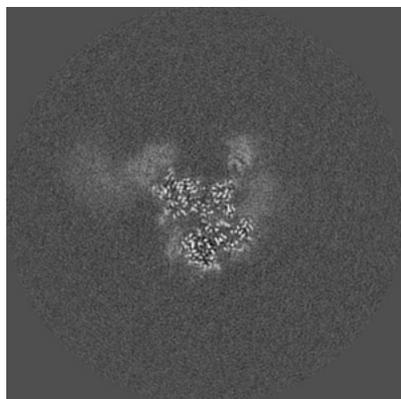
6.2.1   Primary map
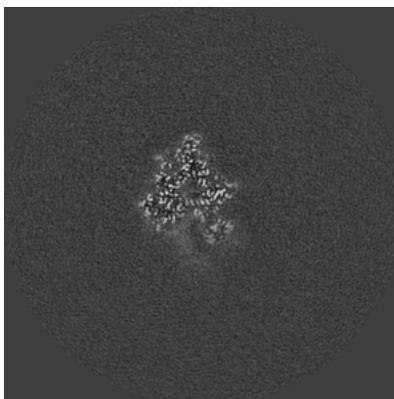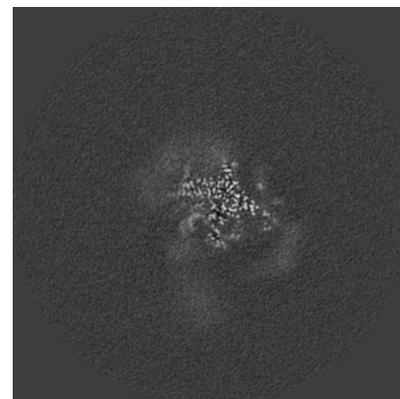
X Index: 175   Y Index: 175   Z Index: 175

6.2.2   Raw map
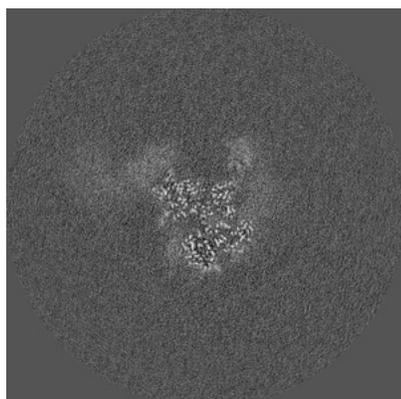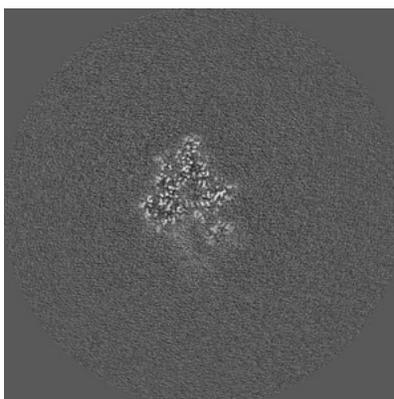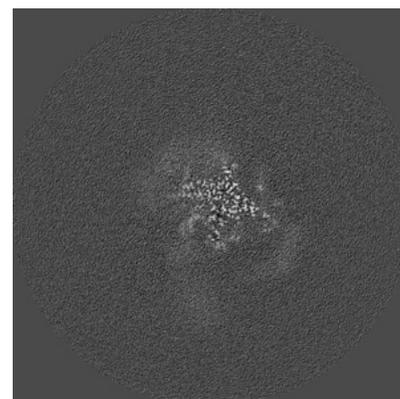
X Index: 175   Y Index: 175   Z Index: 175

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

6.3　Largest variance slices (i)

6.3.1　Primary map
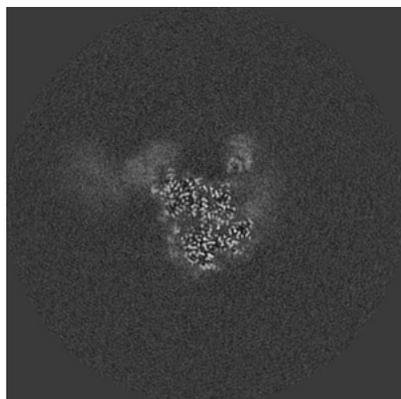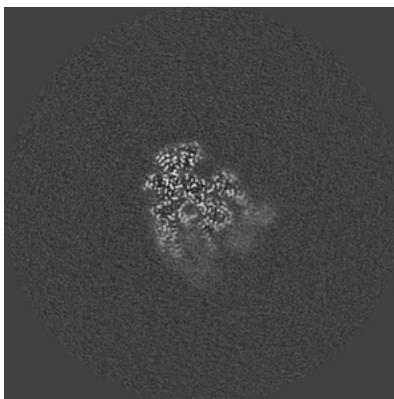
| X Index: 177 | Y Index: 195 | Z Index: 148 |
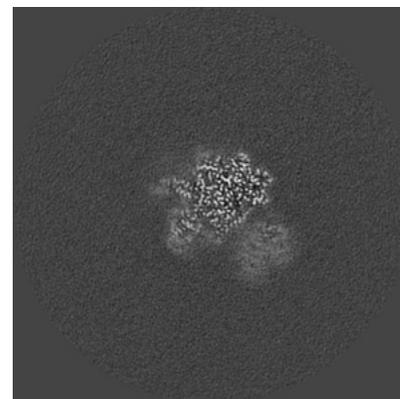
6.3.2　Raw map
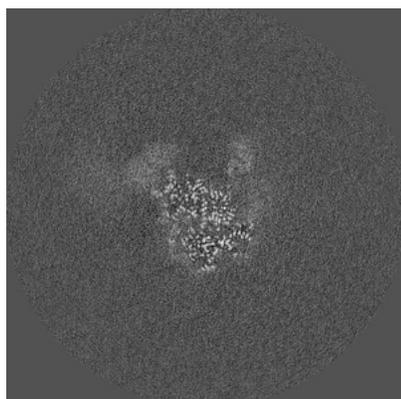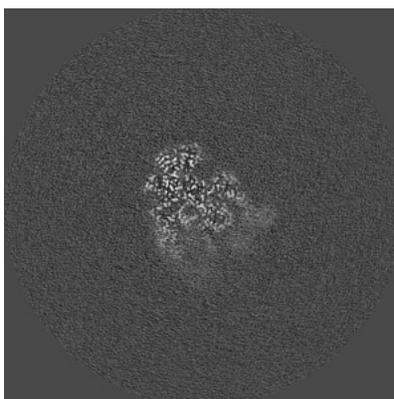
| X Index: 178 | Y Index: 195 | Z Index: 148 |
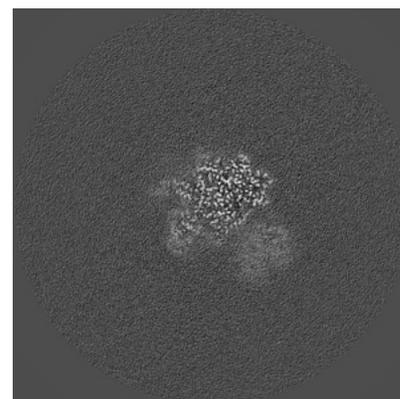
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map

X   Y   Z

6.4.2 Raw map

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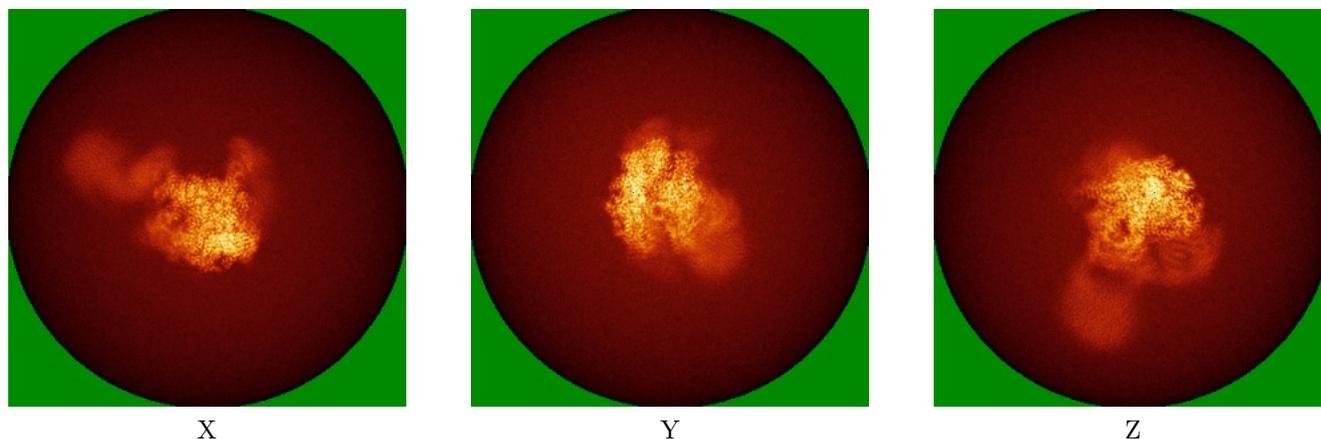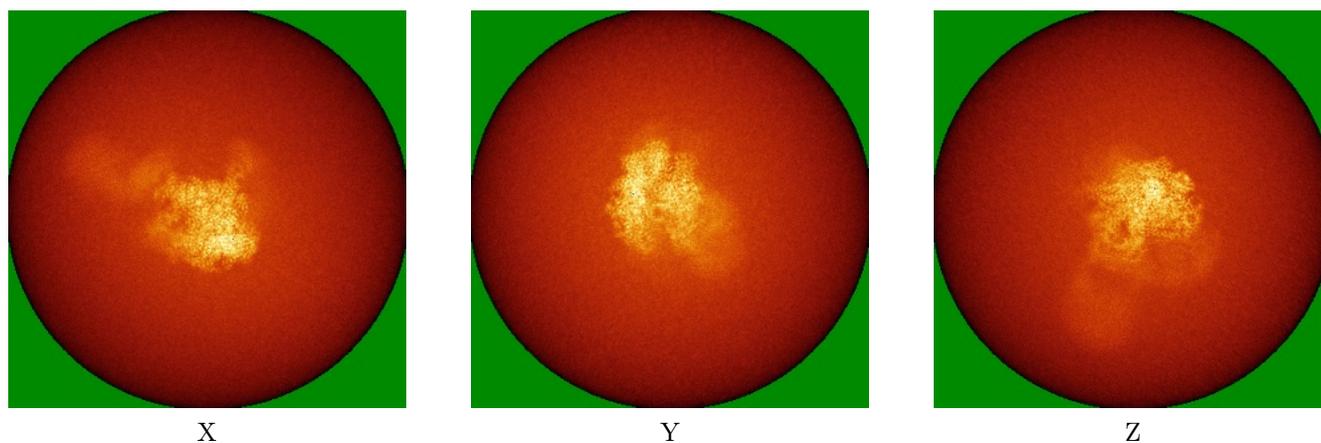
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

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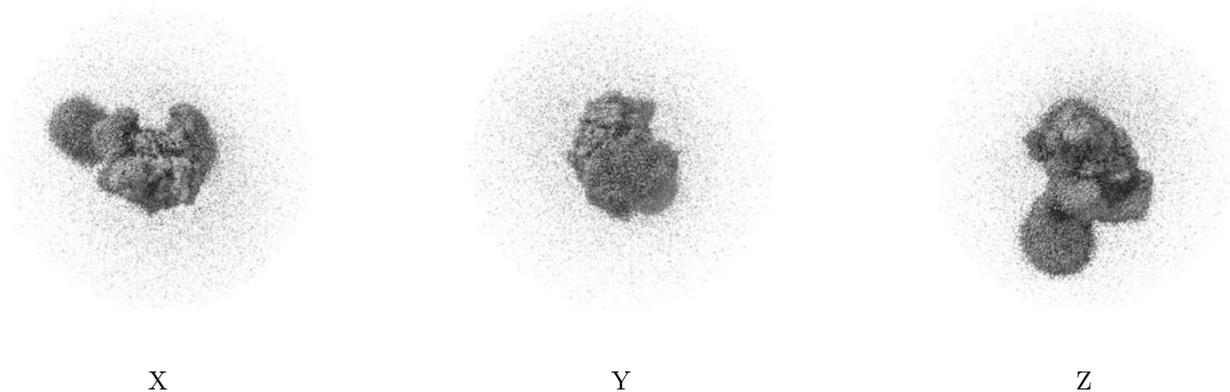
The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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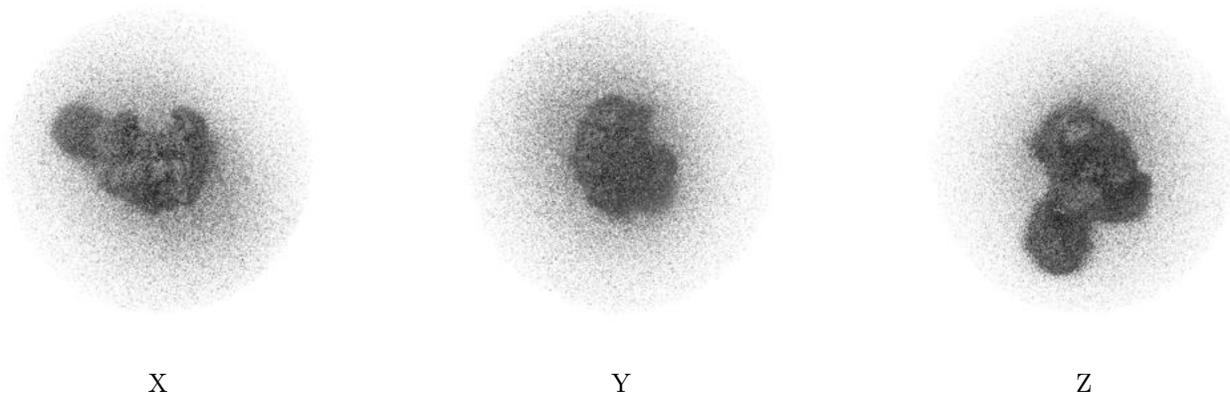
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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_61060_msk_1.map (i)

X

Y

Z
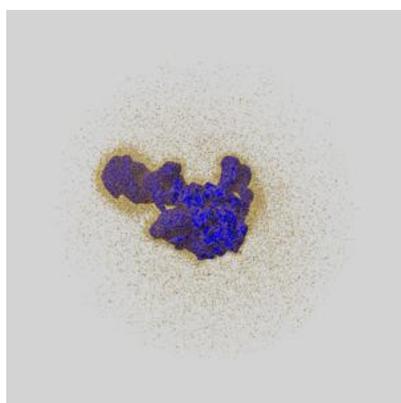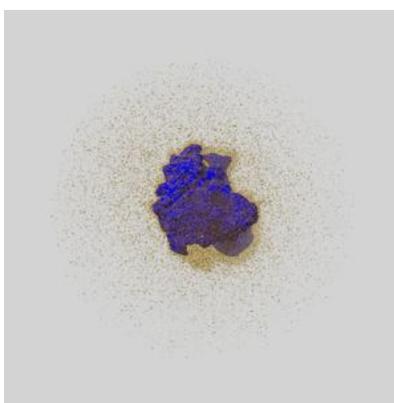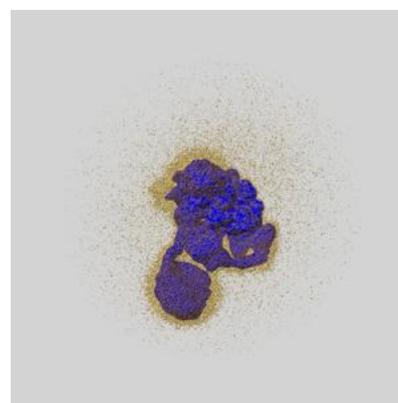
7 Map analysis ⓘ

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

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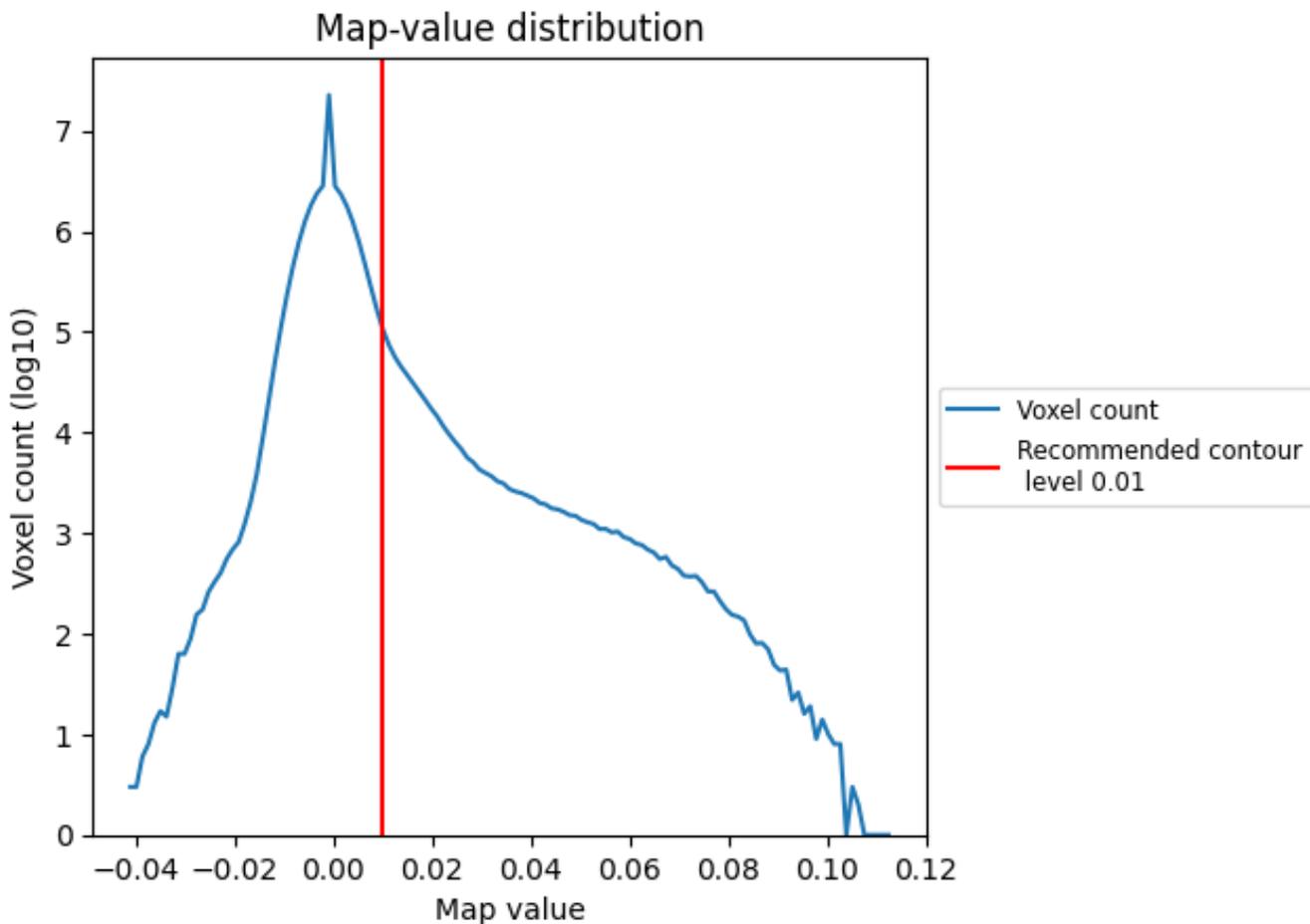
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate　ⓘ
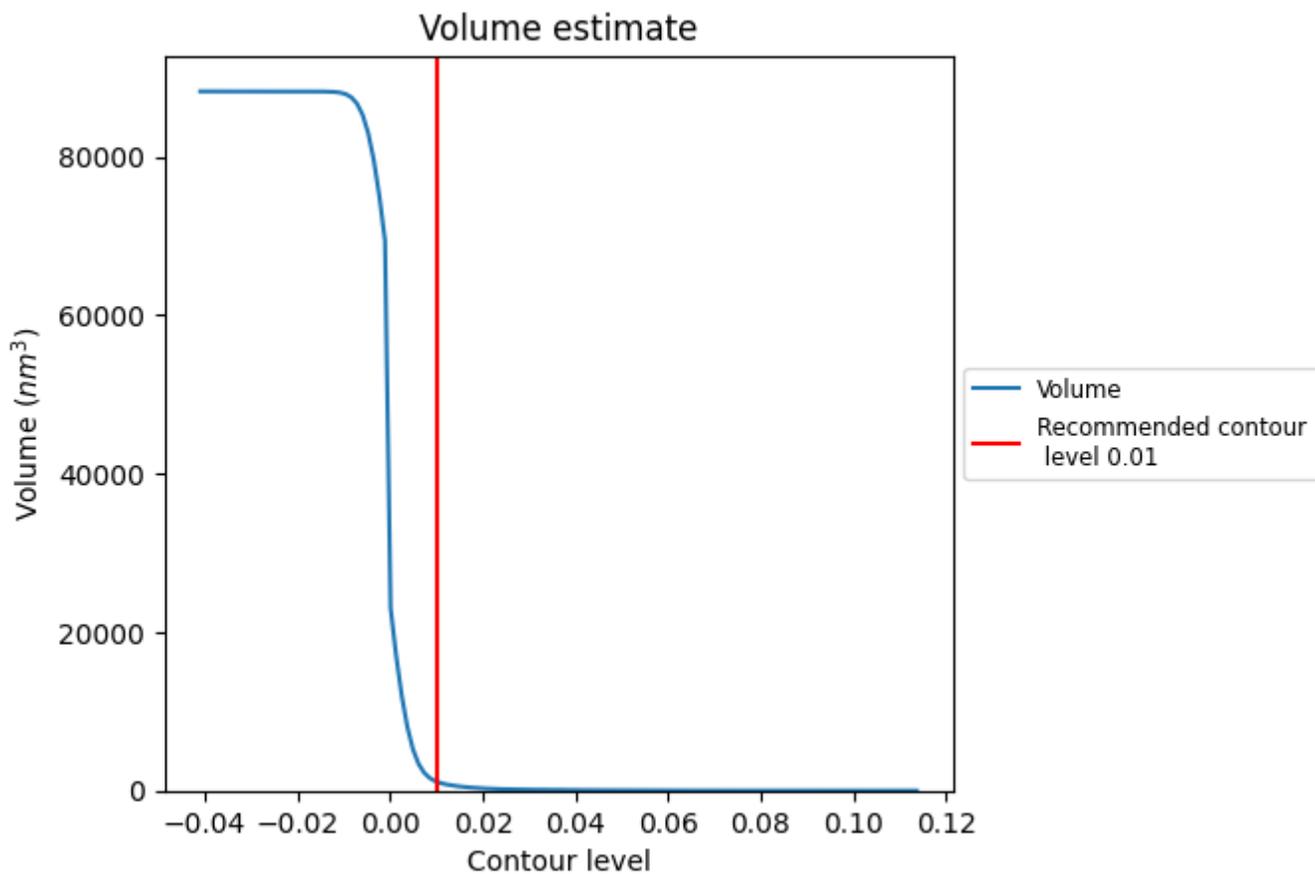
The volume at the recommended contour level is 1141 nm^3; this corresponds to an approximate mass of 1030 kDa.

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 ⓘ
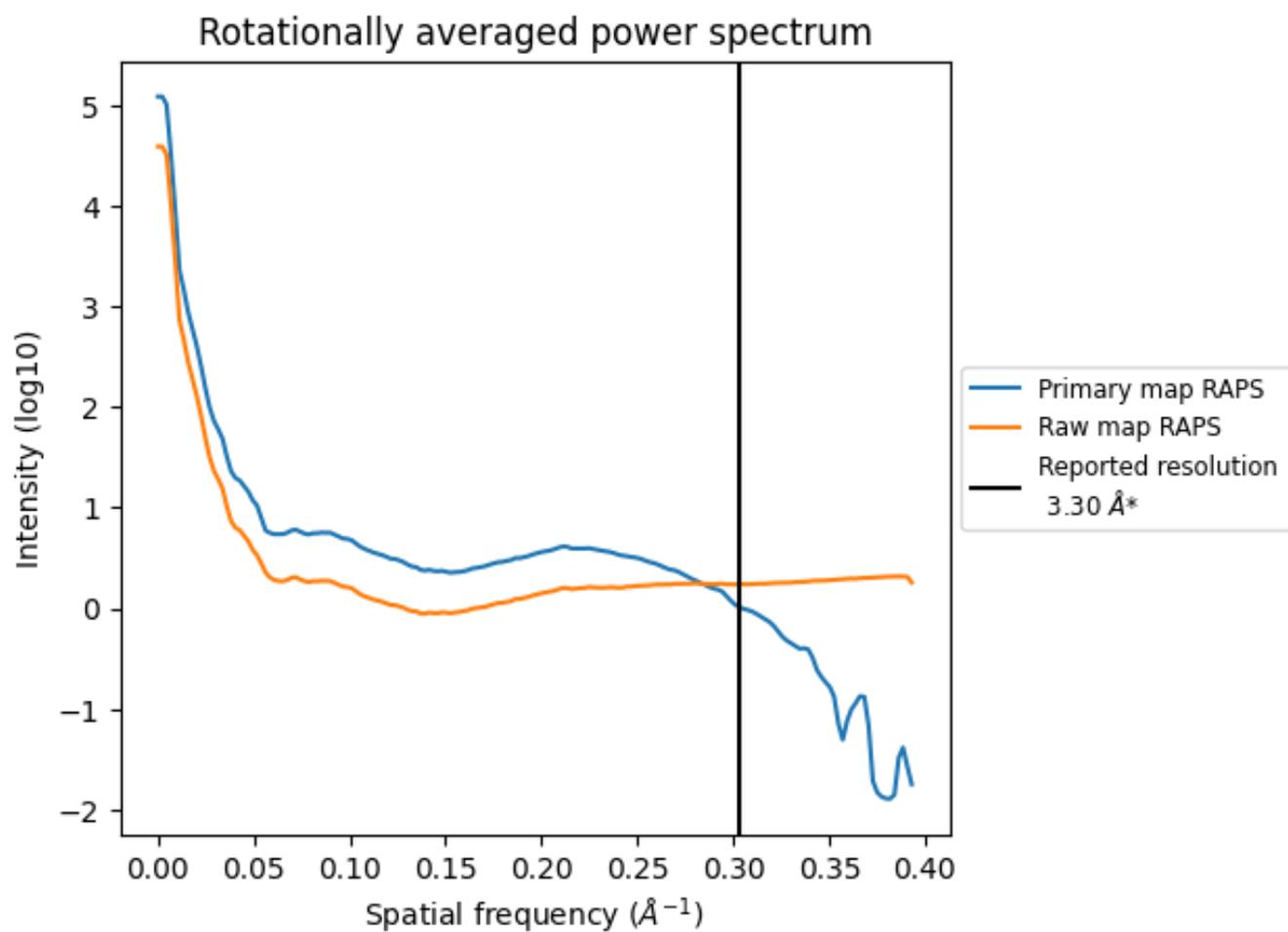
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

8   Fourier-Shell correlation ⓘ

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 ⓘ
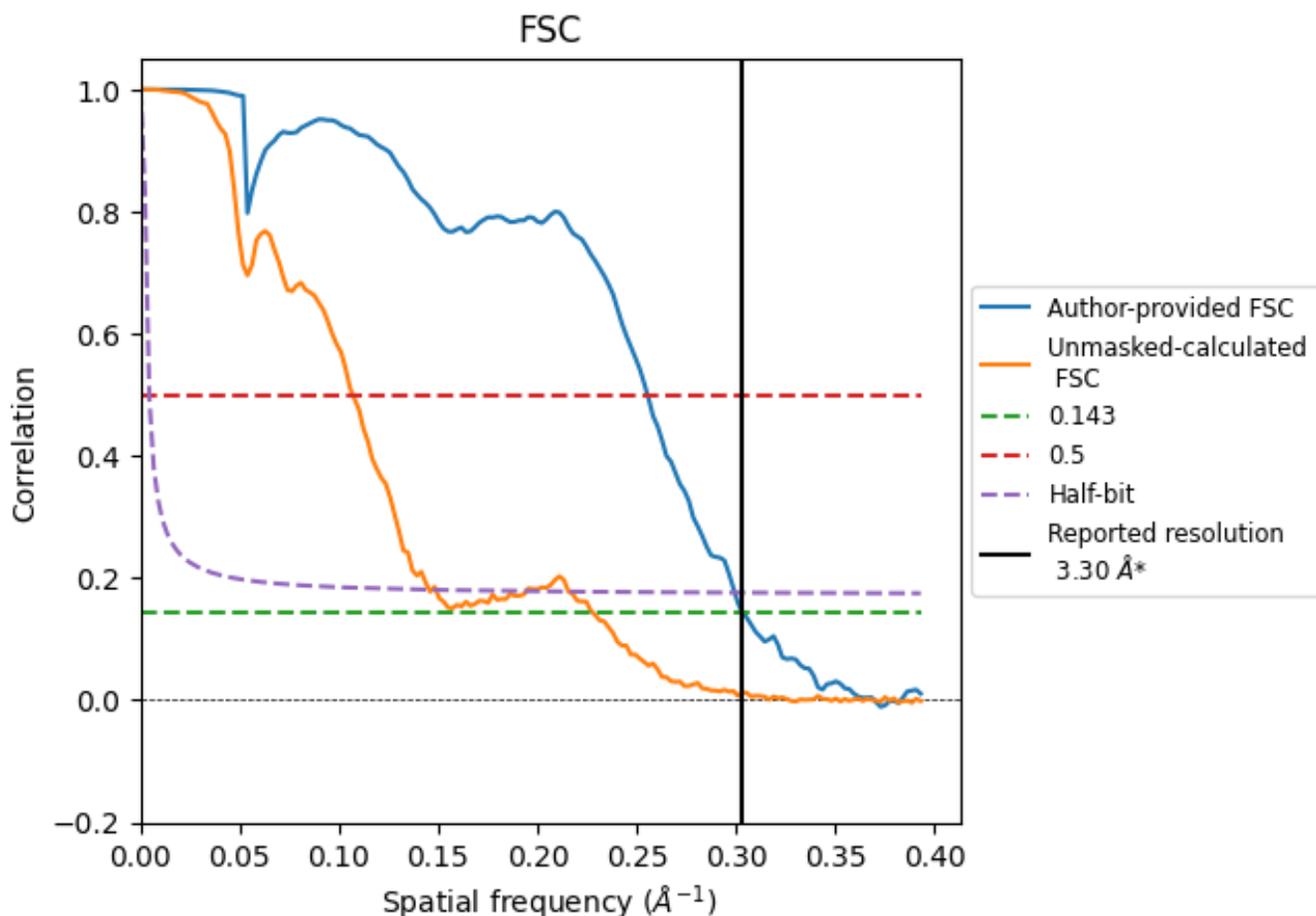
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

8.2   Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.30	3.92	3.34
Unmasked-calculated*	4.39	9.35	6.87

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.39 differs from the reported value 3.3 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-61060 and PDB model 9J0P. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay ⓘ

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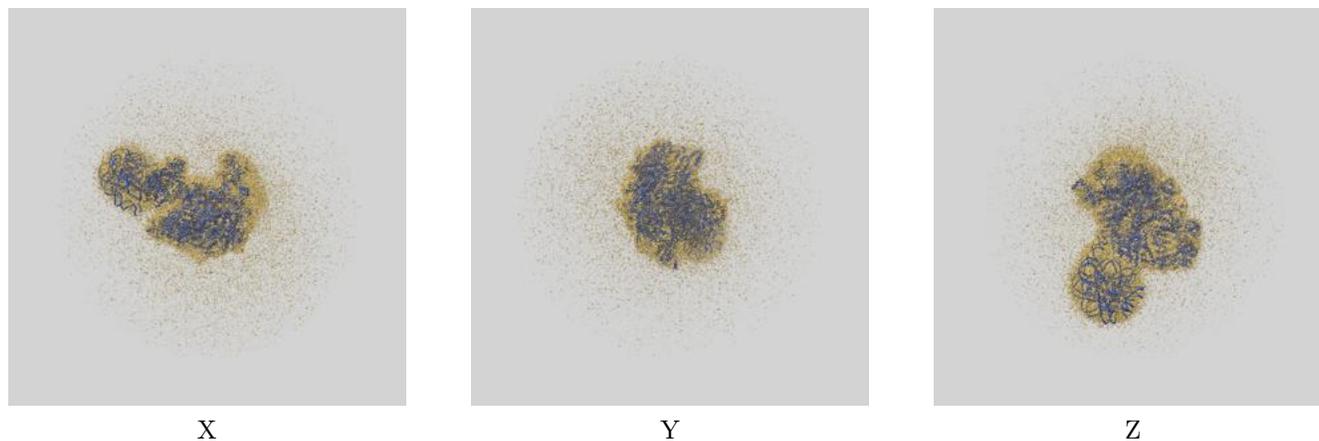
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2　Q-score mapped to coordinate model ⓘ

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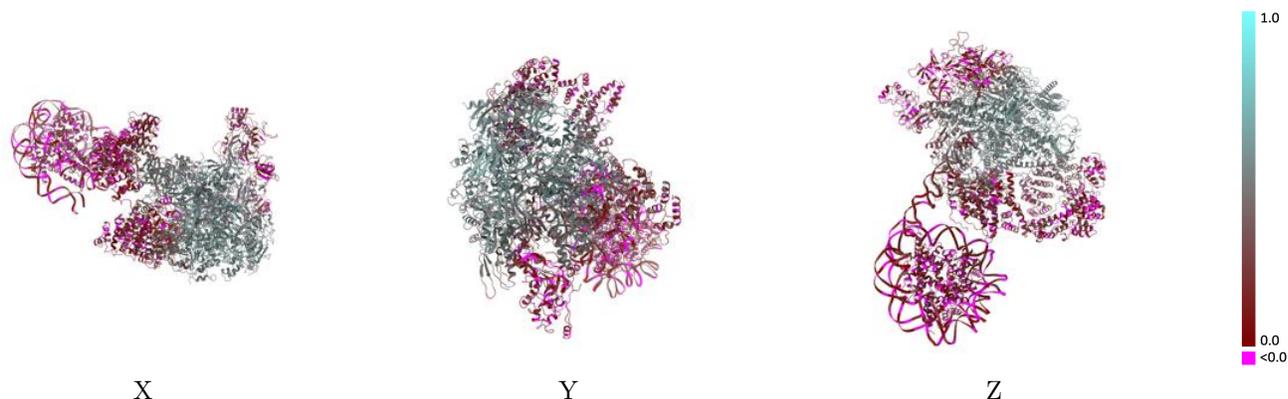
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　Z
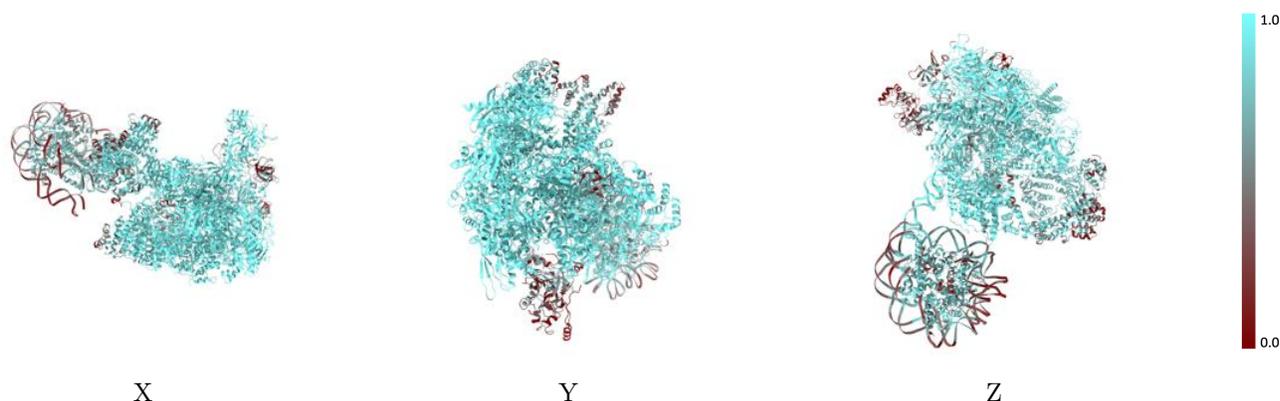
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).

9.4 Atom inclusion ⓘ
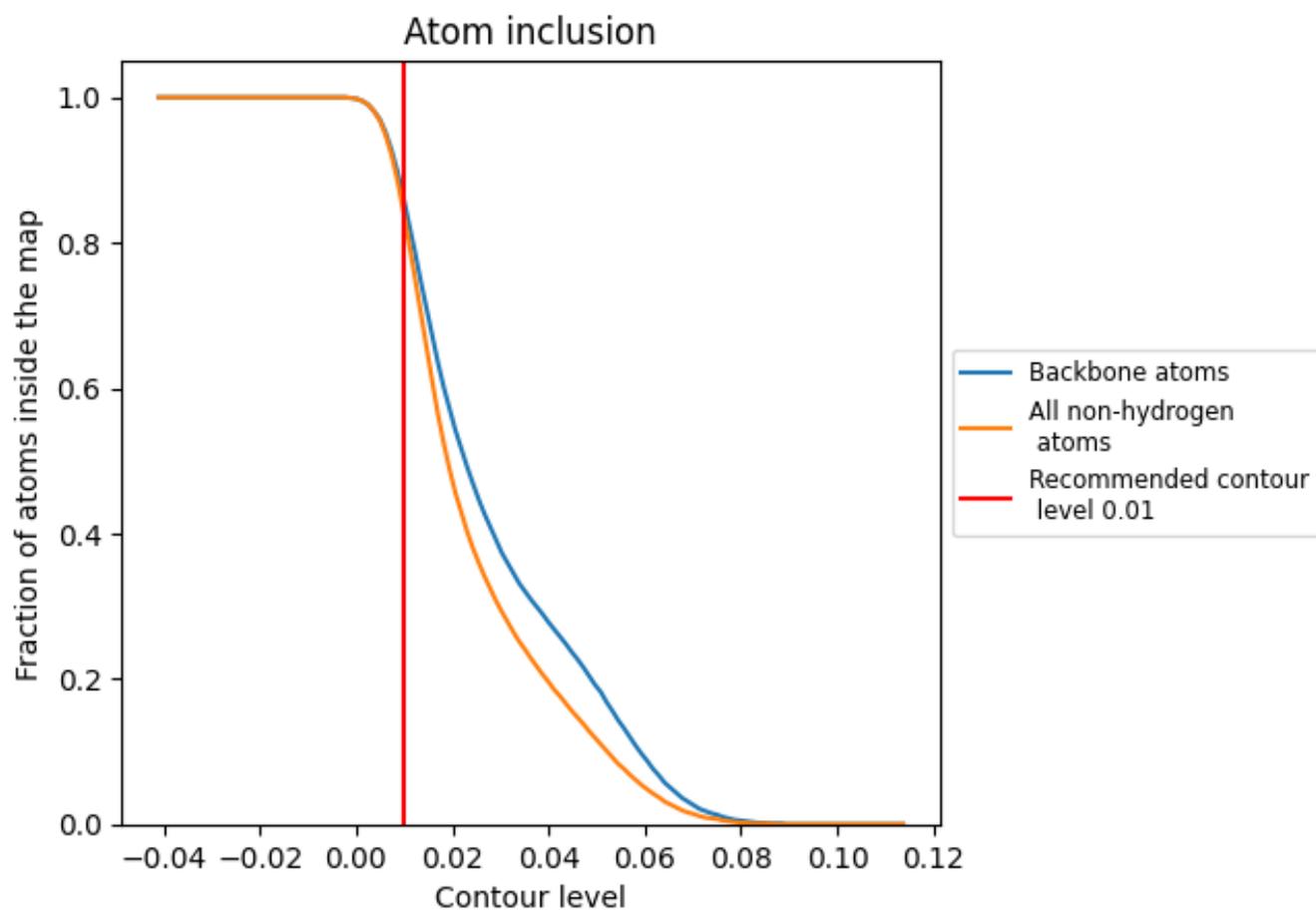
At the recommended contour level, 86% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary (i)

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	0.8370	0.3110
A	0.9740	0.4890
B	0.9810	0.4970
C	0.9870	0.5370
D	0.9380	0.2150
E	0.9760	0.4800
F	0.9850	0.5360
G	0.9570	0.2930
H	0.9780	0.5250
I	0.9230	0.3220
J	0.9870	0.5560
K	0.9920	0.5450
L	0.9920	0.4710
N	0.5830	0.0970
P	0.9610	0.4770
T	0.6100	0.1280
U	0.7350	0.1500
V	0.8410	0.1520
W	0.7830	0.1600
X	0.9360	0.2100
Y	0.2330	0.0950
Z	0.5750	0.1510
a	0.8460	0.1030
b	0.8170	0.0870
c	0.7200	0.0960
d	0.7130	0.0820
e	0.7710	0.1420
f	0.7980	0.1090
g	0.6840	0.1030
h	0.6650	0.0870

1.0

0.0
<0.0