WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Dec 29, 2024 – 11:30 AM EST

PDB ID	:	7P5Z
EMDB ID	:	EMD-13211
Title	:	Structure of a DNA-loaded MCM double hexamer engaged with the Dbf4-dependent kinase
Authors	:	Greiwe, J.F.; Miller, T.C.R.; Martino, F.; Costa, A.
Deposited on	:	2021-07-15
Resolution	:	3.30 Å(reported)
Based on initial models	:	6YA7, 3QBZ, 6EYC, 6F0L, 5BK4

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.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
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)	:	2.40

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		7
Ramachandran outliers		0.1%
Sidechain outliers		0.3%

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures
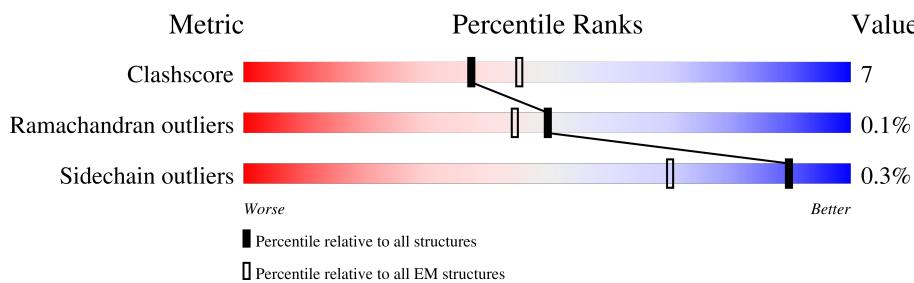
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	2	868	60% 12% 28%
1	A	868	57% 14% 28%
2	3	1006	50% 9% 41%
2	B	1006	52% 7% 41%
3	4	933	60% 12% 28%
3	C	933	60% 9% 30%
4	5	775	70% 14% 16%
4	D	775	70% 14% 16%
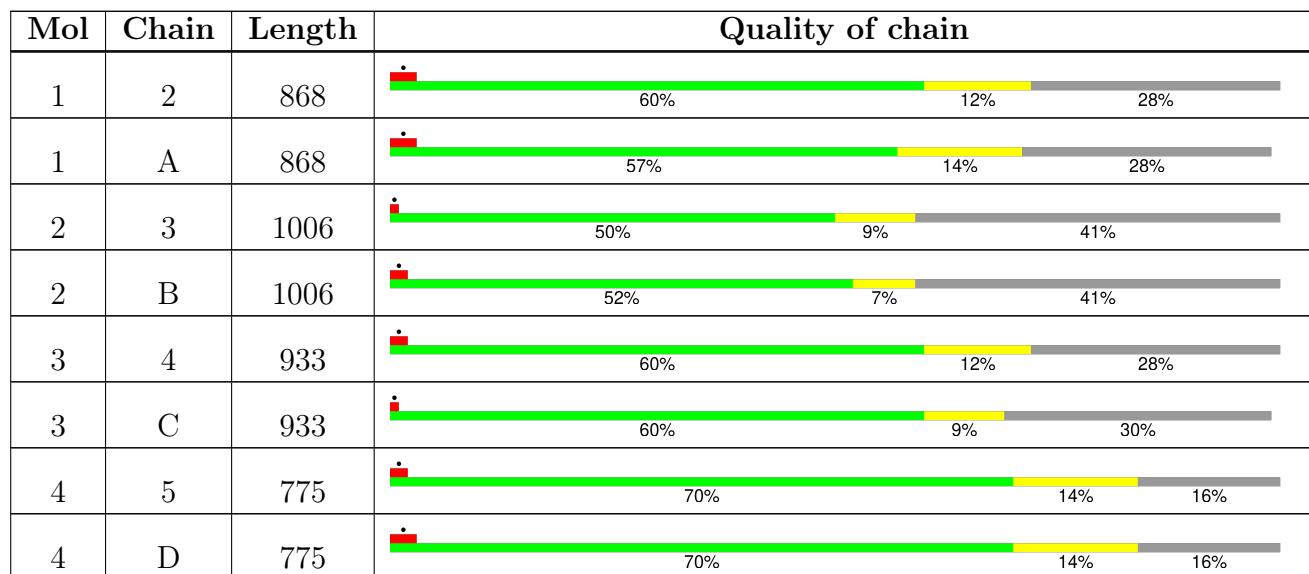
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
5	6	1017	50% 10% 40%
5	E	1017	49% 11% 40%
6	7	845	68% 13% 18%
6	F	845	68% 14% 18%
7	1	507	42% 46% 20% 34%
8	G	738	23% 22% 7% 71%
9	X	53	92% 8%
10	Y	53	87% 13%

2 Entry composition (i)

There are 14 unique types of molecules in this entry. The entry contains 134297 atoms, of which 66896 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 replication licensing factor MCM2.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	2	623	Total	C	H	N	O	S	0	0
			9918	3109	4986	877	927	19		
1	A	623	Total	C	H	N	O	S	0	0
			9915	3109	4983	877	927	19		

- Molecule 2 is a protein called DNA replication licensing factor MCM3.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	3	595	Total	C	H	N	O	S	0	0
			9381	2930	4726	833	879	13		
2	B	595	Total	C	H	N	O	S	0	0
			9381	2930	4726	833	879	13		

There are 70 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	-34	MET	-	initiating methionine	UNP P24279
3	-33	LYS	-	expression tag	UNP P24279
3	-32	ARG	-	expression tag	UNP P24279
3	-31	ARG	-	expression tag	UNP P24279
3	-30	TRP	-	expression tag	UNP P24279
3	-29	LYS	-	expression tag	UNP P24279
3	-28	LYS	-	expression tag	UNP P24279
3	-27	ASN	-	expression tag	UNP P24279
3	-26	PHE	-	expression tag	UNP P24279
3	-25	ILE	-	expression tag	UNP P24279
3	-24	ALA	-	expression tag	UNP P24279
3	-23	VAL	-	expression tag	UNP P24279
3	-22	SER	-	expression tag	UNP P24279
3	-21	ALA	-	expression tag	UNP P24279
3	-20	ALA	-	expression tag	UNP P24279
3	-19	ASN	-	expression tag	UNP P24279
3	-18	ARG	-	expression tag	UNP P24279

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
3	-17	PHE	-	expression tag	UNP P24279
3	-16	LYS	-	expression tag	UNP P24279
3	-15	LYS	-	expression tag	UNP P24279
3	-14	ILE	-	expression tag	UNP P24279
3	-13	SER	-	expression tag	UNP P24279
3	-12	SER	-	expression tag	UNP P24279
3	-11	SER	-	expression tag	UNP P24279
3	-10	GLY	-	expression tag	UNP P24279
3	-9	ALA	-	expression tag	UNP P24279
3	-8	LEU	-	expression tag	UNP P24279
3	-7	GLU	-	expression tag	UNP P24279
3	-6	ASN	-	expression tag	UNP P24279
3	-5	LEU	-	expression tag	UNP P24279
3	-4	TYR	-	expression tag	UNP P24279
3	-3	PHE	-	expression tag	UNP P24279
3	-2	GLN	-	expression tag	UNP P24279
3	-1	GLY	-	expression tag	UNP P24279
3	0	GLU	-	expression tag	UNP P24279
B	-34	MET	-	initiating methionine	UNP P24279
B	-33	LYS	-	expression tag	UNP P24279
B	-32	ARG	-	expression tag	UNP P24279
B	-31	ARG	-	expression tag	UNP P24279
B	-30	TRP	-	expression tag	UNP P24279
B	-29	LYS	-	expression tag	UNP P24279
B	-28	LYS	-	expression tag	UNP P24279
B	-27	ASN	-	expression tag	UNP P24279
B	-26	PHE	-	expression tag	UNP P24279
B	-25	ILE	-	expression tag	UNP P24279
B	-24	ALA	-	expression tag	UNP P24279
B	-23	VAL	-	expression tag	UNP P24279
B	-22	SER	-	expression tag	UNP P24279
B	-21	ALA	-	expression tag	UNP P24279
B	-20	ALA	-	expression tag	UNP P24279
B	-19	ASN	-	expression tag	UNP P24279
B	-18	ARG	-	expression tag	UNP P24279
B	-17	PHE	-	expression tag	UNP P24279
B	-16	LYS	-	expression tag	UNP P24279
B	-15	LYS	-	expression tag	UNP P24279
B	-14	ILE	-	expression tag	UNP P24279
B	-13	SER	-	expression tag	UNP P24279
B	-12	SER	-	expression tag	UNP P24279
B	-11	SER	-	expression tag	UNP P24279

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-10	GLY	-	expression tag	UNP P24279
B	-9	ALA	-	expression tag	UNP P24279
B	-8	LEU	-	expression tag	UNP P24279
B	-7	GLU	-	expression tag	UNP P24279
B	-6	ASN	-	expression tag	UNP P24279
B	-5	LEU	-	expression tag	UNP P24279
B	-4	TYR	-	expression tag	UNP P24279
B	-3	PHE	-	expression tag	UNP P24279
B	-2	GLN	-	expression tag	UNP P24279
B	-1	GLY	-	expression tag	UNP P24279
B	0	GLU	-	expression tag	UNP P24279

- Molecule 3 is a protein called DNA replication licensing factor MCM4.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	4	676	Total 10697	C 3339	H 5364	N 918	O 1046	S 30	0	0
3	C	654	Total 10452	C 3259	H 5256	N 896	O 1011	S 30	0	0

- Molecule 4 is a protein called Minichromosome maintenance protein 5.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	5	652	Total 10253	C 3198	H 5150	N 873	O 1007	S 25	0	0
4	D	652	Total 10251	C 3198	H 5148	N 873	O 1007	S 25	0	0

- Molecule 5 is a protein called DNA replication licensing factor MCM6.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	6	609	Total 9681	C 3041	H 4862	N 840	O 913	S 25	0	0
5	E	609	Total 9681	C 3041	H 4862	N 840	O 913	S 25	0	0

- Molecule 6 is a protein called DNA replication licensing factor MCM7.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	7	689	Total 10935	C 3421	H 5502	N 942	O 1041	S 29	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms						AltConf	Trace
6	F	689	Total 10935	C 3421	H 5502	N 942	O 1041	S 29	0	0

- Molecule 7 is a protein called Cell division control protein 7.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	1	336	Total 5459	C 1749	H 2745	N 467	O 485	S 13	0	0

- Molecule 8 is a protein called DDK kinase regulatory subunit DBF4.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	G	213	Total 3585	C 1162	H 1783	N 300	O 333	S 7	1	0

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	-33	LYS	-	expression tag	UNP P32325
G	-32	ARG	-	expression tag	UNP P32325
G	-31	ARG	-	expression tag	UNP P32325
G	-30	TRP	-	expression tag	UNP P32325
G	-29	LYS	-	expression tag	UNP P32325
G	-28	LYS	-	expression tag	UNP P32325
G	-27	ASN	-	expression tag	UNP P32325
G	-26	PHE	-	expression tag	UNP P32325
G	-25	ILE	-	expression tag	UNP P32325
G	-24	ALA	-	expression tag	UNP P32325
G	-23	VAL	-	expression tag	UNP P32325
G	-22	SER	-	expression tag	UNP P32325
G	-21	ALA	-	expression tag	UNP P32325
G	-20	ALA	-	expression tag	UNP P32325
G	-19	ASN	-	expression tag	UNP P32325
G	-18	ARG	-	expression tag	UNP P32325
G	-17	PHE	-	expression tag	UNP P32325
G	-16	LYS	-	expression tag	UNP P32325
G	-15	LYS	-	expression tag	UNP P32325
G	-14	ILE	-	expression tag	UNP P32325
G	-13	SER	-	expression tag	UNP P32325
G	-12	SER	-	expression tag	UNP P32325
G	-11	SER	-	expression tag	UNP P32325
G	-10	GLY	-	expression tag	UNP P32325

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	-9	ALA	-	expression tag	UNP P32325
G	-8	LEU	-	expression tag	UNP P32325
G	-7	GLU	-	expression tag	UNP P32325
G	-6	ASN	-	expression tag	UNP P32325
G	-5	LEU	-	expression tag	UNP P32325
G	-4	TYR	-	expression tag	UNP P32325
G	-3	PHE	-	expression tag	UNP P32325
G	-2	GLN	-	expression tag	UNP P32325
G	-1	GLY	-	expression tag	UNP P32325
G	0	GLU	-	expression tag	UNP P32325
G	10	ALA	ARG	conflict	UNP P32325
G	13	ALA	LEU	conflict	UNP P32325
G	62	ALA	ARG	conflict	UNP P32325
G	65	ALA	LEU	conflict	UNP P32325

- Molecule 9 is a DNA chain called DNA (53-MER).

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	P		
9	X	53	1682	515	596	199	319	53	0	0

- Molecule 10 is a DNA chain called DNA (53-MER).

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	P		
10	Y	53	1682	515	595	202	317	53	0	0

- Molecule 11 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).

ATP
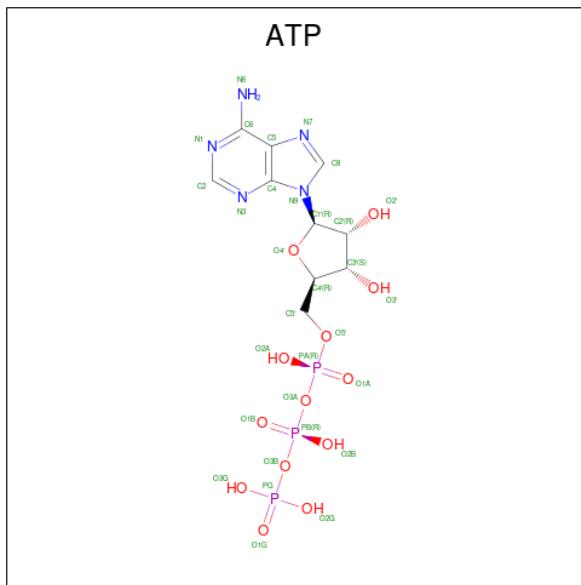
| Mol	Chain	Residues	Atoms						AltConf
11	2	1	Total	C	H	N	O	P	0
			42	10	11	5	13	3	
11	A	1	Total	C	H	N	O	P	0
			42	10	11	5	13	3	

- Molecule 12 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
12	2	1	Total	Mg	0
			1	1	
12	3	1	Total	Mg	0
			1	1	
12	5	1	Total	Mg	0
			1	1	
12	7	2	Total	Mg	0
			2	2	
12	A	1	Total	Mg	0
			1	1	
12	B	1	Total	Mg	0
			1	1	
12	D	1	Total	Mg	0
			1	1	
12	F	2	Total	Mg	0
			2	2	

- Molecule 13 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
13	2	1	Total 1	Zn 1	0
13	4	1	Total 1	Zn 1	0
13	5	1	Total 1	Zn 1	0
13	6	1	Total 1	Zn 1	0
13	7	1	Total 1	Zn 1	0
13	A	1	Total 1	Zn 1	0
13	C	1	Total 1	Zn 1	0
13	D	1	Total 1	Zn 1	0
13	E	1	Total 1	Zn 1	0
13	F	1	Total 1	Zn 1	0
13	G	1	Total 1	Zn 1	0

- Molecule 14 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).
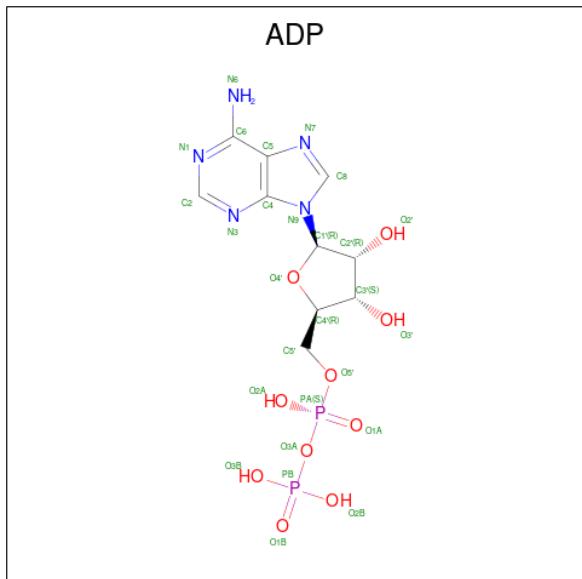
Mol	Chain	Residues	Atoms						AltConf
14	3	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	4	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	5	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	7	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	B	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	C	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	D	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	
14	F	1	Total	C	H	N	O	P	0
			38	10	11	5	10	2	

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 replication licensing factor MCM2

Chain 2:

60% 12% 28%

• Molecule 1: DNA replication licensing factor MCM2

Chain A:

57% 14% 28%

• Molecule 2: DNA replication licensing factor MCM3

Chain 3:

50% 9% 41%

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

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

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

• Molecule 2: DNA replication licensing factor MCM3

Chain B: 52% 7% 41%

MET LYS ARG TRP LYS ASN PHE ILE ALA VAL SER ALA ALA ASN ARG PHE LYS LYS ILE SER SER GLY ALA LEU ASN LEU TYR PHE GLN GLY GLU MET GLU GLY SER THR GLY PHE ASP GLY ASP ALA THR PHE PHE **A16** **F21** **V25** **F31** **T34** **F35**

T36 **R39** **Y48** **A53** ALA ASN TYR ASN ASP GLN ASP ALA ASP SER ALA ASP ARG ASP LEU LEU GLY ASP ASP ASP GLY ASP ASP LEU GLU LYS GLU LYS LYS ALA ALA SER SER THR LEU **N90** **I91** **L92** **L103** **F110** **I114** **D138** VAL PRO HIS PRO ASN ALA

SER ALA VAL SER ARG **H151** **A173** **K195** **T223** **T227** **D235** **T236** **Y245** **I251** **P266** **D284** **Q308** **S309** **N310** **S311** **N312** **T313** **L314** **I350** **I359** **L363** **L382** **N395** **R400** **G401** **D402** **T413** **L419** **V422** **T433** **G436** **A444**

A445 **V446** **R450** **E451** **G460** **D466** **T479** **D482** **R483** **I486** **M490** **Q493** **A498** **R509** **A534** **S538** **S541** **D544** **V549** **T550** **D551** **D552** **I553** **N554** **E555** **D558** **R559** **S562** **E563** **L566** **R570** TYR LEU PRO PRO GLY TYR LEU GLU GLY GLU

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

ASN TYR ASN GLY THR GLU ILE LEU **V651** **Y659** **L671** **T672** **Q673** **I676** **N677** **V680** **T692** **K693** **K694** **R700** **H712** **R716** **V721** **N722** **D725** **L733** **L737** **L738** GLU ASP ILE GLY ASN ASP ILE ASP SER GLU GLY TYR GLU VAL GLU ALA

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

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

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

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

• Molecule 3: DNA replication licensing factor MCM4

Chain 4: 60% 12% 28%

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

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

• Molecule 3: DNA replication licensing factor MCM4

Chain C:

60%　　　9%　　　30%

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

• Molecule 4: Minichromosome maintenance protein 5

Chain 5:

70%   14%   16%

• Molecule 4: Minichromosome maintenance protein 5

Chain D:

70%   14%   16%

• Molecule 5: DNA replication licensing factor MCM6

Chain 6:

50%   10%   40%

• Molecule 5: DNA replication licensing factor MCM6

Chain E:

49%   11%   40%

• Molecule 6: DNA replication licensing factor MCM7

Chain 7:

68%   13%   18%

ASP ILE ASP LEU GLN ASP ALA

• Molecule 6: DNA replication licensing factor MCM7

Chain F:

68% 14% 18%

MET SER A3 S7 L17 I21 V26 D31 THR LEU SER SER ASP ALA THR ARG ASN GLU ASN GLU ASP GLU ASN LEU ASP ALA GLU ASN ILE GLU GLN HIS LEU LEU GLU K59 Y63 M66 L67 V70 R73 D81 L82 D83 L86 Q95 V103

I106 I121 K130 E131 I132 D136 D137 V138 Q145 R146 R147 L148 R149 N150 E151 R152 M153 N159 E160 I161 R162 S163 E164 N165 L166 MET ASP THR THR MET ASP PRO PRO SER SER MET N178 D179 A180 L181 R182 V185 E186 E190 L191 N195 L196 C211 A212 R213

R216 V227 V248 S249 Q264 S282 E283 C284 T285 T294 R303 Q311 E312 C313 E317 R341 S342 L343 A358 K367 E373 V381 T394 S395 D396 R400 V401 M402 E403 L404 I405 V410 N425 V428 L435 G439 V440 D441

G447 V456 M459 K466 L470 K475 T483 S488 T494 V497 V502 T503 D504 L508 G511 C522 D530 E531 S532 D533 I537 E542 Q543 I584 N585 L586 L590 L591 I596 L597 D602 D608 D609 V619 H622 Q625

P626 D627 T631 R649 P650 V651 M652 Y659 R668 A684 K701 D706 E714 L717 V720 S723 Q729 GLU THR ASN LYS SER LYS GLU ASP GLU GLU SER PRO THR THR LYS ILE PHE THR ILE LYS LYS MET LEU GLU GLN THR GLY LYS ASN THR LEU

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

PRO LYS LEU ALA PRO GLN THR THR ALA SER ALA ASN VAL SER ALA GLN ASP SER ASP ILE ASP LEU GLN ASP ALA

• Molecule 7: Cell division control protein 7

Chain 1:

42%
46% 20% 34%

MET THR SER LYS THR LYS ASN ILE ASP ASP ILE PRO GLU ILE K16 E17 E18 M19 I20 Q21 L26 N31 E32 Y33 D37 K38 I39 G40 E41 G42 T43 S46 V47 Y48 D52 I53 T54 G55 K56 I57 T58 K59 K60 F61 A62 S63 H64 F65 W66 N67 Y68 N71 Y72

V73 A74 L75 K76 K77 I78 Y79 V80 T81 S82 S83 P84 Q85 R86 I87 Y88 N89 E90 L91 N92 L93 L94 Y95 I96 M97 T98 G99 S100 S101 R102 V103 A104 P105 L106 C107 D108 A109 K110 R111 V112 R113 D114 Q115 V116 I117 A118 V119 L120 P124 H125 E126 E127 F128 R129 T130 F131 Y132 R133 D134

L135 P136 I137 K138 G139 I140 K141 K142 Y143 I144 W145 E146 L147 L148 R149 A150 L151 K152 F153 V154 H155 S156 K157 G158 I159 I160 H161 R162 D163 I164 K165 P166 T167 N168 F169 L170 F171 N172 L173 E174 L175 G176 R177 G178 V179 L180 V181 D182 L185 A186 E187 A188 D191 M195 I196 S197 S198

GLN ASN ASP TYR ASP ASN TYR ALA ASN THR ASN HIS ASP GLY TYR SER MET ARG ASN HIS GLU GLN PHE CYS PRO CYS ILE MET ARG ASN SER HIS ASN THR PRO PRO MET VAL THR I245 Q246 K249 V250 L253 N254 N255 V256 N257 C258 V259 D260

L261 T262 K263 G264 Y265 P266 K267 N268 E269 T270 R271 R272 I273 K274 R275 A276 N277 R278 A279 G280 T281 R282 G283 F284 R285 A286 P287 E288 V289 L290 M291 K292 C293 Q296 S297 T298 K299 I300 D301 I302 V305 G306 V307 I308 L309 L310 S311 L312 L313 G314 R315 R316 F317 P318 M319 F320 Q321 S322

L323 D324 D325 A326 D327 S328 L329 L330 E331 L332 C333 T334 I335 F336 G337 E340 L341 R342 K343 A346 L347 H348 G349 L350 G351 F352 L357 I358 W359 D360 N367 GLY LEU LYS GLU PHE VAL TYR ASP LEU LEU ASN LYS GLU CYS THR ILE GLY THR PHE PRO GLU TYR SER VAL ALA

PHE GLU THR GLY PHE LEU GLN GLN LEU HIS ASP ARG MET SER ILE GLU PRO GLN LEU PRO ASP PRO LYS THR ASN MET ASP ALA VAL ASP ALA TYR GLU LEU LYS TYR GLN GLU ILE TRP SER ASP HIS TYR TRP C442 F443 Q444 V445 L446 E447 Q448 C449 F450 E451 M452

D453 P454 Q455 K456 R457 S458 S459 A460 E461 D462 L463 L464 K465 F468 E471 LEU ASN GLU ASN THR TYR LEU LEU ASP GLY GLU SER THR ASP GLU ASP VAL VAL SER SER GLU ALA ASP LEU LEU ASP LYS ASP VAL LEU LEU ILE SER GLU

• Molecule 8: DDK kinase regulatory subunit DBF4

Chain G:

23%

22% 7% 71%

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

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

GLY ALA VAL GLN VAL SER LYS GLY THR GLY LEU K98 N99 V100 E101 P102 R103 V104 T105 P106 K107 E108 L109 L110 E111 W112 Q113 T114 N115 W116 K117 K118 I119 M120 K121 R122 D123 S124 R125 I126 Y127 F128 D129 I130 T131 D132 D133 V134 E135 M136 N137 T138 Y139 N140 K141 S142 K143 M144 D145 K146

R147 R148 D149 L150 L151 L152 K153 G154 F155 L156 T157 L158 G159 A160 Q161 I162 T163 Q164 F165 F166 D167 T168 T169 V170 T171 T172 V173 I174 T175 R176 R177 S178 V179 E180 N181 I182 Y183 L184 L185 L186 D187 T188 D189 I190 L191 S192 R193 A194 K195 K196 N197 Y198 M199 K200 V201 W202 S203 Y204 E205 K206

A207 A208 R209 F210 L211 K212 N213 L214 D215 V216 D217 L218 D219 H220 LEU SER LYS THR LYS SER ALA SER LEU ALA ALA PRO THR LEU SER ASN LEU LEU HIS ASN GLU LYS LEU TYR GLY PRO THR ASP ARG ASP PRO ARG THR LYS ARG ASP ASP ILE HIS Y260 F261 K262 Y263 P264 H265 V266

Y267 L268 Y269 D270 L271 W272 Q273 T274 W275 A276 I279 T280 L281 E282 W283 K284 P285 Q286 E287 L288 T289 N290 L291 D292 E293 L294 P295 Y296 P297 I298 L299 K300 I301 G305 R306 C307 P308 PHE ILE GLY ASP ARG ASN TYR ASP GLU SER SER SER TYR LYS ARG VAL VAL LYS ARG TYR SER ARG

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

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

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

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

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

SER THR SER THR ASN VAL THR LEU HIS PHE ASN ALA ALA GLN THR ALA ALA GLN THR PRO VAL LYS LYS GLU THR VAL LYS ASN SER G659 Y660 C661 E662 N663 C664 R665 V666 K667 Y668 E669 V676 S677 E678 K679 H680 L681 S682 F683 A684 E685 N686 D687 L688 N689 F690 E691 A692 I693 D694

• Molecule 9: DNA (53-MER)

Chain X:

• Molecule 10: DNA (53-MER)

Chain Y:

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	149876	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/Å^2)$	51.3	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	4100	Depositor
Magnification	130000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.031	Depositor
Minimum map value	-0.018	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0043	Depositor
Map size (Å)	518.4, 518.4, 518.4	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.08, 1.08, 1.08	Depositor

5　Model quality ⓘ

5.1　Standard geometry ⓘ

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

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	2	0.25	0/5019	0.51	0/6781
1	A	0.25	0/5019	0.54	1/6781 (0.0%)
2	3	0.24	0/4733	0.52	0/6417
2	B	0.24	0/4733	0.52	0/6417
3	4	0.25	0/5410	0.51	0/7317
3	C	0.24	0/5270	0.50	0/7123
4	5	0.25	0/5176	0.50	0/7000
4	D	0.25	0/5176	0.50	0/7000
5	6	0.25	0/4896	0.53	0/6601
5	E	0.25	0/4896	0.52	0/6601
6	7	0.25	0/5516	0.51	0/7454
6	F	0.25	0/5516	0.51	0/7454
7	1	0.26	0/2774	0.52	0/3735
8	G	0.25	0/1847	0.49	0/2498
9	X	0.49	0/1217	0.90	0/1876
10	Y	0.50	0/1219	0.87	0/1879
All	All	0.26	0/68417	0.53	1/92934 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	587	LYS	CD-CE-NZ	10.86	136.67	111.70

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	2	4932	4986	4984	64	0
1	A	4932	4983	4984	81	0
2	3	4655	4726	4723	67	0
2	B	4655	4726	4723	51	0
3	4	5333	5364	5362	73	0
3	C	5196	5256	5254	60	0
4	5	5103	5150	5147	78	0
4	D	5103	5148	5147	77	0
5	6	4819	4862	4856	71	0
5	E	4819	4862	4856	79	0
6	7	5433	5502	5500	79	0
6	F	5433	5502	5500	81	0
7	1	2714	2745	2745	87	0
8	G	1802	1783	1783	51	0
9	X	1086	596	596	4	0
10	Y	1087	595	595	6	0
11	2	31	11	12	0	0
11	A	31	11	12	0	0
12	2	1	0	0	0	0
12	3	1	0	0	0	0
12	5	1	0	0	0	0
12	7	2	0	0	0	0
12	A	1	0	0	0	0
12	B	1	0	0	0	0
12	D	1	0	0	0	0
12	F	2	0	0	0	0
13	2	1	0	0	0	0
13	4	1	0	0	0	0
13	5	1	0	0	0	0
13	6	1	0	0	0	0
13	7	1	0	0	0	0
13	A	1	0	0	0	0
13	C	1	0	0	0	0
13	D	1	0	0	0	0
13	E	1	0	0	0	0
13	F	1	0	0	0	0
13	G	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
14	3	27	11	12	0	0
14	4	27	11	12	1	0
14	5	27	11	12	4	0
14	7	27	11	12	1	0
14	B	27	11	12	0	0
14	C	27	11	12	0	0
14	D	27	11	12	3	0
14	F	27	11	12	1	0
All	All	67401	66896	66875	952	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (952) 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)
6:7:591:LEU:HD12	6:7:597:LEU:HD11	1.50	0.91
1:2:193:SER:OG	1:2:196:GLU:OE1	1.90	0.88
1:A:495:ASP:OD1	1:A:509:ARG:NH2	2.08	0.86
8:G:279:ILE:HG23	8:G:281:LEU:HD23	1.60	0.84
6:F:591:LEU:HD12	6:F:597:LEU:HD11	1.57	0.84
5:6:548:LEU:HD23	5:6:549:LEU:HD12	1.61	0.82
7:1:18:GLU:OE1	7:1:21:GLN:NE2	2.13	0.82
1:A:488:SER:HG	1:A:766:TYR:HH	1.14	0.81
5:6:117:GLN:NE2	5:6:121:ASP:OD2	2.14	0.81
1:A:212:LYS:NZ	1:A:277:GLU:OE2	2.14	0.79
7:1:89:ASN:OD1	7:1:90:GLU:N	2.15	0.79
5:E:347:ASN:OD1	5:E:349:THR:OG1	1.98	0.79
5:E:657:GLU:OE2	5:E:708:ARG:NH1	2.16	0.79
3:C:692:ILE:HD11	3:C:699:LEU:HD21	1.65	0.78
6:7:579:SER:OG	6:7:582:ASP:OD2	2.02	0.78
8:G:265:HIS:HB2	8:G:281:LEU:HD13	1.65	0.78
3:C:223:GLU:HG3	3:C:228:LYS:HZ3	1.48	0.78
7:1:163:ASP:OD1	7:1:168:ASN:ND2	2.16	0.78
7:1:115:GLN:NE2	7:1:116:VAL:O	2.17	0.78
5:6:156:GLN:NE2	5:6:269:ASN:OD1	2.17	0.78
6:7:364:LYS:NZ	10:Y:-35:DG:OP2	2.17	0.78
6:F:249:SER:O	6:F:311:GLN:NE2	2.17	0.77
6:7:73:ARG:NH2	6:7:130:LYS:O	2.17	0.77
6:7:275:SER:OG	6:7:277:THR:O	2.01	0.77
3:C:639:ASP:OD1	3:C:642:ARG:NH2	2.17	0.77

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:634:ALA:N	4:5:465:GLU:OE2	2.17	0.77
8:G:167:ASP:OD1	8:G:169:THR:OG1	2.03	0.76
4:5:621:LYS:NZ	4:5:678:ASP:OD1	2.17	0.76
5:6:409:GLN:NE2	5:6:450:TYR:O	2.19	0.76
2:B:395:ASN:O	6:F:475:LYS:NZ	2.19	0.75
5:6:117:GLN:OE1	5:6:161:ARG:NH2	2.19	0.75
7:1:32:GLU:OE2	7:1:56:LYS:NZ	2.18	0.75
5:6:553:GLY:O	5:6:812:ARG:NH1	2.20	0.75
3:4:553:THR:OG1	5:6:739:ASP:OD2	2.03	0.74
6:7:95:GLN:NE2	6:7:97:THR:OG1	2.19	0.74
5:E:409:GLN:NE2	5:E:450:TYR:O	2.20	0.74
4:D:407:ARG:NH1	4:D:497:MET:O	2.20	0.73
2:3:559:ARG:O	2:3:562:SER:OG	2.02	0.73
7:1:163:ASP:O	7:1:168:ASN:ND2	2.21	0.73
8:G:173:VAL:HG23	8:G:199:MET:HE2	1.70	0.72
6:F:67:LEU:HD11	6:F:121:ILE:CG2	2.20	0.71
1:2:581:ARG:NH2	1:2:592:GLU:OE1	2.22	0.71
6:F:530:ASP:OD1	6:F:531:GLU:N	2.22	0.71
3:C:315:ARG:NH2	3:C:410:GLN:OE1	2.24	0.71
6:F:625:GLN:OE1	6:F:627:ASP:N	2.23	0.71
1:2:328:THR:O	1:2:386:GLN:NE2	2.23	0.71
1:A:707:HIS:ND1	1:A:708:PRO:O	2.23	0.71
2:B:36:THR:HG23	2:B:39:ARG:NH2	2.06	0.70
3:4:732:LYS:NZ	3:4:734:GLU:OE1	2.24	0.70
6:7:15:ASN:OD1	6:7:16:ASN:N	2.24	0.70
6:7:367:LYS:NZ	6:7:369:GLY:O	2.22	0.70
1:2:525:LYS:NZ	1:2:818:GLU:OE2	2.25	0.70
3:C:224:LEU:O	3:C:228:LYS:NZ	2.21	0.70
3:4:350:ASN:OD1	3:4:381:SER:OG	2.07	0.70
6:7:470:LEU:HD12	6:7:522:CYS:HB3	1.73	0.70
2:B:538:SER:O	2:B:541:SER:OG	2.08	0.70
2:B:235:ASP:OD2	2:B:236:THR:N	2.24	0.69
4:D:90:PHE:CE2	4:D:94:ILE:HD11	2.27	0.69
3:4:370:ARG:NH2	3:4:377:ASN:O	2.25	0.69
3:4:575:SER:N	14:4:1001:ADP:O2B	2.26	0.69
4:5:90:PHE:CE2	4:5:94:ILE:HD11	2.26	0.69
3:4:775:VAL:HG21	5:6:725:THR:HG22	1.75	0.69
1:2:211:LEU:HD13	1:2:271:PHE:HD1	1.56	0.68
6:7:401:VAL:O	6:7:405:ILE:HD12	1.93	0.68
4:D:74:ASP:OD1	4:D:75:ILE:N	2.26	0.68
5:6:663:ILE:HD11	5:6:672:LEU:HD11	1.75	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:227:TYR:O	1:2:231:ILE:HD12	1.94	0.68
2:3:684:THR:OG1	6:7:610:GLU:OE2	2.04	0.68
5:6:310:THR:OG1	5:6:345:THR:OG1	2.11	0.68
6:F:533:ASP:O	6:F:537:ILE:HD12	1.94	0.68
7:1:453:ASP:OD2	7:1:455:GLN:NE2	2.27	0.68
1:A:490:ASP:OD1	1:A:491:ARG:N	2.28	0.67
3:C:766:ALA:O	3:C:770:LEU:HD23	1.94	0.67
4:D:486:ARG:NH2	4:D:488:GLU:OE2	2.27	0.67
2:3:558:ASP:OD1	4:5:630:ARG:NE	2.27	0.67
2:3:716:ARG:NH2	2:3:722:ASN:OD1	2.28	0.67
9:X:45:DC:O2	10:Y:-45:DG:N2	2.19	0.67
2:B:402:ASP:OD2	2:B:493:GLN:NE2	2.27	0.67
7:1:299:LYS:NZ	7:1:453:ASP:O	2.28	0.67
6:7:396:ASP:OD1	6:7:397:VAL:N	2.28	0.67
6:F:466:LYS:O	6:F:470:LEU:HD23	1.95	0.66
7:1:90:GLU:O	7:1:94:LEU:HD23	1.95	0.66
4:D:630:ARG:NH1	4:D:648:ILE:O	2.29	0.66
7:1:337:GLY:N	7:1:340:GLU:OE2	2.28	0.66
1:2:707:HIS:ND1	1:2:708:PRO:O	2.26	0.66
5:E:510:SER:O	5:E:513:ILE:HD12	1.95	0.66
4:5:74:ASP:OD1	4:5:75:ILE:N	2.28	0.66
4:D:90:PHE:HD2	4:D:137:LEU:HD12	1.59	0.66
3:4:286:ASP:OD1	3:4:287:ASN:ND2	2.28	0.66
1:2:490:ASP:OD1	1:2:491:ARG:N	2.29	0.66
5:E:616:GLU:OE1	5:E:619:GLY:N	2.29	0.66
7:1:54:THR:HG22	7:1:55:GLY:H	1.61	0.66
1:2:478:GLU:OE1	1:2:482:ARG:NH2	2.29	0.65
3:4:589:VAL:HG21	3:4:620:ALA:HB1	1.78	0.65
5:6:510:SER:O	5:6:513:ILE:HD12	1.96	0.65
7:1:135:LEU:HD23	7:1:136:PRO:O	1.96	0.65
7:1:274:LYS:NZ	7:1:292:LYS:O	2.20	0.65
4:5:569:ALA:O	4:5:573:ILE:HD12	1.97	0.65
7:1:269:GLU:HA	7:1:273:ILE:HG22	1.79	0.65
4:D:490:ARG:O	4:D:494:HIS:ND1	2.30	0.65
2:B:700:ARG:NH2	14:F:902:ADP:O1B	2.30	0.64
7:1:135:LEU:HD21	7:1:139:GLY:HA3	1.79	0.64
5:6:293:THR:HG22	5:6:394:ARG:HG2	1.80	0.64
8:G:692:ALA:O	8:G:695:SER:OG	2.15	0.64
5:6:616:GLU:OE1	5:6:619:GLY:N	2.31	0.64
6:7:249:SER:O	6:7:311:GLN:NE2	2.31	0.64
5:E:529:LEU:O	5:E:533:ILE:HD12	1.97	0.64

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:494:ILE:HD12	1:A:494:ILE:H	1.62	0.64
2:B:716:ARG:NH2	2:B:722:ASN:OD1	2.32	0.64
4:D:153:SER:O	4:D:156:VAL:HG23	1.98	0.64
6:F:282:SER:OG	6:F:283:GLU:OE1	2.12	0.63
3:C:186:SER:OG	3:C:189:GLU:OE1	2.13	0.63
3:C:838:THR:HG22	3:C:845:ILE:HD13	1.81	0.63
3:C:398:LYS:NZ	3:C:414:SER:OG	2.18	0.63
4:D:650:ILE:HD12	4:D:650:ILE:H	1.64	0.63
6:F:81:ASP:OD1	6:F:83:ASP:N	2.30	0.63
1:2:621:HIS:NE2	4:5:481:GLU:OE1	2.32	0.63
5:6:341:ARG:NH2	1:A:365:THR:HG22	2.13	0.63
5:6:548:LEU:CD2	5:6:549:LEU:HD12	2.29	0.63
2:3:234:GLU:OE2	4:D:5:ARG:NH1	2.30	0.63
4:5:486:ARG:NH2	4:5:489:ASP:OD2	2.32	0.63
1:2:211:LEU:HD13	1:2:271:PHE:CD1	2.32	0.63
5:6:105:ASP:OD2	5:6:107:THR:OG1	2.15	0.63
6:F:67:LEU:HD11	6:F:121:ILE:HG23	1.80	0.63
4:D:456:ASP:OD2	4:D:459:THR:OG1	2.13	0.62
3:C:189:GLU:OE1	3:C:189:GLU:N	2.31	0.62
2:3:402:ASP:OD2	2:3:493:GLN:NE2	2.33	0.62
2:3:419:LEU:HD11	2:3:471:CYS:HB3	1.82	0.62
4:D:20:ASN:OD1	4:D:21:ASP:N	2.32	0.62
6:F:73:ARG:NH2	6:F:130:LYS:O	2.32	0.62
2:3:486:ILE:HG22	2:3:490:MET:CE	2.29	0.62
4:5:90:PHE:HE2	4:5:137:LEU:HD13	1.65	0.62
6:7:358:ALA:N	6:7:373:GLU:O	2.32	0.62
4:5:90:PHE:CE2	4:5:137:LEU:HD13	2.35	0.62
1:2:670:THR:HG22	1:2:672:PRO:HD2	1.82	0.62
2:3:103:LEU:HD21	2:3:114:ILE:HD12	1.81	0.62
5:6:323:GLN:OE1	5:6:328:THR:N	2.27	0.62
5:6:555:VAL:N	5:6:808:GLU:OE1	2.33	0.62
3:C:692:ILE:CD1	3:C:699:LEU:HD21	2.29	0.61
6:F:358:ALA:N	6:F:373:GLU:O	2.32	0.61
4:5:374:ILE:O	4:5:385:LYS:NZ	2.33	0.61
1:A:314:LEU:HD22	1:A:432:ASN:OD1	2.00	0.61
5:6:515:GLU:OE1	5:6:515:GLU:N	2.31	0.61
2:3:700:ARG:NH2	14:7:902:ADP:O1B	2.33	0.61
3:4:468:LYS:NZ	3:4:497:GLU:OE1	2.26	0.61
7:1:73:VAL:HG11	7:1:119:VAL:CG1	2.30	0.61
2:B:558:ASP:OD1	4:D:630:ARG:NE	2.34	0.61
6:F:494:THR:O	6:F:511:GLY:N	2.30	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:6:646:ILE:HD12	5:6:646:ILE:H	1.65	0.61
4:D:569:ALA:O	4:D:573:ILE:HD12	2.01	0.61
5:E:522:ASP:OD1	5:E:523:GLU:N	2.34	0.61
4:5:382:GLU:OE1	4:5:382:GLU:N	2.33	0.61
6:F:182:ARG:O	6:F:186:GLU:OE1	2.18	0.61
7:1:278:ARG:NH2	7:1:289:VAL:O	2.33	0.61
2:3:712:HIS:ND1	2:3:725:ASP:OD1	2.33	0.61
4:5:21:ASP:OD2	4:5:22:ASP:N	2.33	0.60
2:B:400:ARG:NH1	2:B:490:MET:O	2.34	0.60
8:G:288:LEU:O	8:G:289:THR:HG22	2.01	0.60
1:2:689:GLU:N	1:2:689:GLU:OE1	2.33	0.60
6:7:497:VAL:HG22	6:7:508:LEU:CD2	2.31	0.60
4:D:427:LYS:O	4:D:430:GLU:HG2	2.01	0.60
4:D:456:ASP:N	4:D:461:GLU:O	2.33	0.60
4:D:674:GLU:N	4:D:674:GLU:OE1	2.33	0.60
3:4:569:ASP:O	3:4:574:LYS:NZ	2.34	0.60
6:7:494:THR:O	6:7:511:GLY:N	2.35	0.60
8:G:166:PHE:HE2	8:G:190:ILE:HD12	1.66	0.60
3:4:572:THR:HG21	3:4:708:VAL:HG11	1.83	0.60
4:5:20:ASN:OD1	4:5:21:ASP:N	2.35	0.60
7:1:291:MET:SD	7:1:350:LEU:HD12	2.42	0.60
1:2:300:PHE:CE1	1:2:317:LEU:HD23	2.36	0.60
1:2:247:ARG:NH1	1:2:299:ASP:OD1	2.35	0.60
4:5:407:ARG:NH1	4:5:498:GLU:OE1	2.35	0.60
1:2:774:ILE:HG22	1:2:776:PRO:HD3	1.83	0.60
2:B:733:LEU:HD12	2:B:737:LEU:HD23	1.83	0.60
4:D:374:ILE:O	4:D:385:LYS:NZ	2.34	0.60
2:B:559:ARG:O	2:B:563:GLU:OE1	2.20	0.60
1:A:342:LEU:HD13	1:A:372:PRO:HB2	1.84	0.59
6:F:248:VAL:HG22	6:F:313:CYS:SG	2.42	0.59
1:2:576:LEU:HD23	1:2:620:ILE:HD11	1.85	0.59
4:5:456:ASP:N	4:5:461:GLU:O	2.34	0.59
5:6:549:LEU:HD21	5:6:810:ILE:HG13	1.83	0.59
1:A:806:THR:HG21	4:D:419:GLY:HA3	1.84	0.59
3:C:704:LEU:HD11	3:C:804:LEU:HD11	1.83	0.59
5:E:610:ALA:HB2	5:E:629:MET:SD	2.42	0.59
3:4:589:VAL:HG22	3:4:624:SER:OG	2.01	0.59
4:5:374:ILE:HD12	4:5:389:VAL:HG22	1.84	0.59
4:5:156:VAL:O	4:5:157:SER:OG	2.19	0.59
4:5:457:PRO:O	4:5:460:ARG:NH1	2.36	0.59
3:C:572:THR:HG21	3:C:708:VAL:HG11	1.85	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:G:173:VAL:HG23	8:G:199:MET:CE	2.32	0.59
2:3:559:ARG:O	2:3:563:GLU:OE1	2.21	0.59
4:5:422:LYS:O	4:5:426:LEU:HD23	2.03	0.59
6:F:161:ILE:HG23	6:F:181:LEU:HD11	1.85	0.59
3:4:815:ASN:O	3:4:815:ASN:ND2	2.35	0.59
5:6:770:ARG:O	5:6:774:VAL:HG23	2.03	0.59
4:5:423:SER:N	14:5:801:ADP:O2B	2.36	0.59
4:D:425:LEU:O	4:D:429:VAL:HG23	2.02	0.59
2:B:498:ALA:HB3	6:F:488:SER:HB3	1.84	0.58
1:2:279:THR:HG21	1:2:293:ILE:HD13	1.84	0.58
1:2:597:VAL:HG23	1:2:629:ILE:HD12	1.85	0.58
2:3:486:ILE:HG22	2:3:490:MET:HE3	1.83	0.58
5:E:775:GLU:OE1	5:E:778:LYS:NZ	2.30	0.58
5:6:609:THR:OG1	5:6:610:ALA:N	2.36	0.58
2:B:712:HIS:ND1	2:B:725:ASP:OD1	2.36	0.58
5:6:549:LEU:HD21	5:6:810:ILE:CG1	2.34	0.58
6:F:63:TYR:O	6:F:67:LEU:HD23	2.04	0.58
7:1:293:CYS:O	7:1:296:GLN:NE2	2.34	0.58
8:G:179:VAL:HG12	8:G:179:VAL:O	2.04	0.58
6:7:66:MET:O	6:7:70:VAL:HG23	2.04	0.58
1:A:369:SER:OG	1:A:370:LYS:N	2.37	0.58
2:3:206:THR:HG21	2:3:208:ARG:HE	1.68	0.57
3:4:602:THR:CG2	3:4:656:ILE:HD11	2.34	0.57
4:5:153:SER:O	4:5:156:VAL:HG23	2.04	0.57
5:E:109:GLU:O	5:E:113:GLU:OE1	2.22	0.57
5:6:340:ASN:OD1	5:6:341:ARG:N	2.38	0.57
6:7:190:GLU:C	6:7:191:LEU:HD12	2.25	0.57
6:7:441:ASP:OD1	6:7:442:LYS:N	2.37	0.57
7:1:86:ARG:NH2	7:1:185:LEU:HD22	2.19	0.57
4:5:650:ILE:HD12	4:5:650:ILE:H	1.70	0.57
5:E:525:ILE:O	5:E:529:LEU:HD23	2.05	0.57
6:F:190:GLU:O	6:F:191:LEU:HD12	2.05	0.57
4:D:586:GLN:N	4:D:586:GLN:OE1	2.38	0.57
1:A:761:GLU:OE2	1:A:761:GLU:N	2.36	0.57
5:6:691:ARG:HH21	5:6:716:LEU:HD13	1.68	0.57
1:2:333:GLN:OE1	1:2:383:ARG:NH2	2.38	0.57
6:7:185:VAL:O	6:7:189:THR:HG23	2.04	0.57
6:7:625:GLN:OE1	6:7:627:ASP:N	2.38	0.57
6:7:538:HIS:CD2	6:7:593:ARG:NH1	2.73	0.56
1:A:328:THR:O	1:A:386:GLN:NE2	2.35	0.56
3:C:431:ASP:OD1	3:C:587:ARG:NH1	2.37	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:317:LEU:O	6:F:341:ARG:NH2	2.36	0.56
3:4:565:LEU:HD12	3:4:702:PHE:CE1	2.41	0.56
7:1:162:ARG:NH1	7:1:187:GLU:OE1	2.39	0.56
7:1:328:SER:O	7:1:332:LEU:HD23	2.05	0.56
6:F:162:ARG:HG3	6:F:181:LEU:HD21	1.88	0.56
5:E:310:THR:OG1	5:E:345:THR:OG1	2.22	0.56
2:3:29:GLN:NE2	2:3:33:ASP:OD1	2.39	0.55
5:6:447:ASP:C	5:6:448:LEU:HD22	2.27	0.55
6:7:625:GLN:NE2	6:7:627:ASP:O	2.38	0.55
7:1:73:VAL:HG11	7:1:119:VAL:HG13	1.87	0.55
1:A:212:LYS:HD3	1:A:216:LEU:HD23	1.86	0.55
1:A:315:SER:N	1:A:430:TYR:O	2.39	0.55
1:2:394:PRO:O	5:6:673:ASN:ND2	2.33	0.55
2:3:386:MET:CE	2:3:715:VAL:HG22	2.37	0.55
4:5:694:GLN:OE1	4:5:697:ILE:N	2.40	0.55
6:7:586:LEU:HB2	6:7:591:LEU:HD21	1.89	0.55
7:1:309:LEU:HD11	7:1:450:PHE:HZ	1.71	0.55
2:B:48:TYR:CE1	2:B:92:LEU:HD13	2.40	0.55
2:B:195:LYS:N	2:B:251:ILE:O	2.37	0.55
3:C:204:LYS:NZ	3:C:222:GLU:OE1	2.33	0.55
5:E:515:GLU:OE1	5:E:515:GLU:N	2.36	0.55
1:A:547:THR:HG22	1:A:547:THR:O	2.07	0.55
6:F:159:ASN:OD1	6:F:162:ARG:NH2	2.39	0.55
4:5:618:ALA:HB1	4:5:677:VAL:HG21	1.87	0.55
6:7:13:ASP:OD2	6:7:16:ASN:ND2	2.40	0.55
6:F:597:LEU:O	6:F:723:SER:OG	2.24	0.55
5:E:613:VAL:HG13	5:E:613:VAL:O	2.06	0.55
4:5:474:GLY:N	4:5:516:ARG:O	2.36	0.55
7:1:250:VAL:N	7:1:262:THR:OG1	2.40	0.55
3:4:308:VAL:HG21	3:4:325:LEU:HG	1.88	0.54
3:4:578:LEU:HG	3:4:672:LEU:HD22	1.90	0.54
1:A:353:GLN:NE2	1:A:357:GLU:O	2.40	0.54
3:C:503:ASP:OD1	3:C:504:GLN:N	2.40	0.54
3:C:839:ASP:OD2	3:C:842:THR:HG22	2.08	0.54
8:G:661:CYS:O	8:G:665:ARG:N	2.40	0.54
1:A:703:HIS:CE1	5:E:565:LEU:HD13	2.43	0.54
1:A:778:LEU:HD23	1:A:829:VAL:HG11	1.88	0.54
5:E:168:MET:O	5:E:172:GLU:OE1	2.26	0.54
1:2:353:GLN:OE1	1:2:354:ASP:N	2.40	0.54
5:E:424:ARG:NH2	6:F:264:GLN:OE1	2.40	0.54
6:F:470:LEU:HD12	6:F:522:CYS:HB3	1.88	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:839:ASP:OD2	3:4:842:THR:HG22	2.07	0.54
7:1:87:ILE:O	7:1:91:LEU:HD13	2.08	0.54
6:F:668:ARG:NH1	6:F:684:ALA:O	2.41	0.54
8:G:279:ILE:CG2	8:G:281:LEU:HD23	2.36	0.54
2:3:561:ILE:O	2:3:565:VAL:HG23	2.07	0.54
3:4:378:GLU:N	3:4:378:GLU:OE1	2.41	0.54
1:A:240:GLU:OE2	1:A:290:HIS:NE2	2.41	0.54
5:6:311:CYS:SG	5:6:340:ASN:ND2	2.77	0.54
3:C:732:LYS:NZ	3:C:734:GLU:OE1	2.40	0.54
6:F:405:ILE:HD12	6:F:410:VAL:HG21	1.89	0.54
6:7:723:SER:OG	6:7:724:LYS:NZ	2.32	0.54
3:4:315:ARG:NH1	3:4:401:GLU:OE2	2.41	0.54
3:C:550:LYS:NZ	3:C:806:GLU:OE1	2.41	0.54
6:F:213:ARG:O	6:F:216:ARG:NH1	2.41	0.54
7:1:54:THR:HG22	7:1:55:GLY:N	2.22	0.54
3:C:359:GLU:N	3:C:359:GLU:OE1	2.41	0.53
3:C:707:LEU:HD13	3:C:833:ILE:HD12	1.91	0.53
6:7:668:ARG:NH1	6:7:684:ALA:O	2.41	0.53
5:E:557:LYS:HB2	5:E:565:LEU:HB2	1.91	0.53
7:1:66:TRP:O	7:1:66:TRP:CD2	2.61	0.53
2:3:444:ALA:HB2	2:3:460:GLY:H	1.73	0.53
1:A:305:SER:OG	1:A:308:GLU:OE2	2.17	0.53
4:5:630:ARG:NH1	4:5:648:ILE:O	2.41	0.53
4:5:426:LEU:HD12	4:5:478:CYS:HB3	1.90	0.53
3:4:228:LYS:O	3:4:232:GLU:OE1	2.27	0.53
5:6:721:GLU:O	5:6:725:THR:HG23	2.08	0.53
1:A:689:GLU:O	1:A:693:GLU:OE1	2.26	0.53
7:1:270:THR:OG1	8:G:276:ALA:O	2.27	0.53
3:4:327:ASN:O	3:4:328:LEU:HD22	2.09	0.53
4:D:423:SER:N	14:D:801:ADP:O2B	2.42	0.53
6:F:227:VAL:HG22	6:F:317:GLU:HG2	1.91	0.53
1:2:536:ASP:OD1	1:2:645:SER:OG	2.26	0.53
4:5:276:MET:SD	4:5:330:ILE:HD11	2.49	0.53
6:7:529:MET:HG3	6:7:533:ASP:HB2	1.91	0.53
2:B:444:ALA:HB2	2:B:460:GLY:H	1.73	0.53
4:D:151:LEU:HD11	4:D:162:LEU:HD11	1.91	0.53
2:3:386:MET:HE2	2:3:715:VAL:HG22	1.91	0.53
2:B:266:PRO:HA	4:D:343:TRP:CZ3	2.44	0.53
8:G:263:TYR:HB3	8:G:264:PRO:HD2	1.91	0.53
1:A:514:ALA:HB1	1:A:679:ILE:HG21	1.91	0.52
1:A:774:ILE:HG22	1:A:776:PRO:HD3	1.91	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:42:VAL:HG22	2:3:96:ILE:HD11	1.89	0.52
1:A:690:GLU:O	1:A:694:ARG:NE	2.43	0.52
4:D:90:PHE:CD2	4:D:137:LEU:HD12	2.42	0.52
5:E:661:ILE:CD1	5:E:674:ALA:HB2	2.39	0.52
1:A:376:ASN:O	1:A:380:THR:OG1	2.23	0.52
6:7:575:ASN:ND2	6:7:578:LEU:HD23	2.24	0.52
1:A:300:PHE:CE1	1:A:317:LEU:HD23	2.45	0.52
6:F:195:ASN:OD1	6:F:196:LEU:N	2.43	0.52
2:3:667:VAL:O	2:3:668:ILE:HD13	2.10	0.52
2:3:676:ILE:O	2:3:680:VAL:HG23	2.09	0.52
1:2:690:GLU:O	1:2:694:ARG:NE	2.37	0.52
4:5:263:GLU:OE1	4:5:263:GLU:N	2.42	0.52
4:5:694:GLN:OE1	4:5:697:ILE:HG12	2.10	0.52
5:6:663:ILE:HG23	5:6:665:LYS:NZ	2.25	0.52
4:D:456:ASP:OD1	4:D:457:PRO:HD2	2.09	0.52
6:F:497:VAL:HG22	6:F:508:LEU:CD2	2.40	0.52
7:1:54:THR:HB	7:1:56:LYS:HZ3	1.75	0.52
7:1:113:ARG:NE	8:G:687:ASP:OD1	2.38	0.52
3:4:678:ILE:HD12	3:4:691:ASN:O	2.10	0.52
6:7:659:TYR:OH	6:7:714:GLU:OE2	2.26	0.52
1:2:626:GLN:O	1:2:626:GLN:HG3	2.10	0.52
2:3:446:VAL:HG11	4:5:507:ALA:HB1	1.91	0.52
1:A:425:GLU:OE1	1:A:459:ARG:NH2	2.43	0.51
5:E:549:LEU:HD21	5:E:810:ILE:HG12	1.91	0.51
2:3:562:SER:O	2:3:566:LEU:HD23	2.10	0.51
5:6:639:ASP:OD1	5:6:640:GLU:N	2.43	0.51
4:5:149:ARG:NH1	4:5:260:GLU:OE2	2.43	0.51
4:D:493:ILE:O	4:D:497:MET:HG3	2.10	0.51
5:E:657:GLU:OE2	5:E:657:GLU:HA	2.10	0.51
7:1:255:ASN:O	7:1:259:VAL:HG13	2.11	0.51
3:4:268:VAL:O	3:4:272:MET:HG3	2.10	0.51
1:A:587:LYS:HA	1:A:587:LYS:HE2	1.92	0.51
3:4:621:LEU:HD23	3:4:648:VAL:HG21	1.93	0.51
4:5:151:LEU:HD11	4:5:162:LEU:HD11	1.90	0.51
6:7:195:ASN:OD1	6:7:196:LEU:N	2.42	0.51
5:E:119:LEU:O	5:E:134:LYS:NZ	2.33	0.51
2:B:444:ALA:HB2	2:B:460:GLY:N	2.26	0.51
4:D:695:ASP:HB2	4:D:696:PRO:CD	2.41	0.51
4:5:552:MET:CE	4:5:659:ILE:HD11	2.41	0.51
6:7:439:GLY:O	6:7:701:LYS:NZ	2.42	0.51
6:F:26:VAL:HG12	6:F:26:VAL:O	2.11	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:800:THR:HG21	1:2:857:LEU:CD2	2.41	0.50
5:E:652:ILE:HG22	5:E:656:MET:CE	2.41	0.50
3:4:470:SER:O	3:4:499:ARG:NH2	2.44	0.50
6:7:497:VAL:HG22	6:7:508:LEU:HD22	1.93	0.50
2:B:413:THR:O	2:B:413:THR:HG22	2.11	0.50
5:E:642:ASP:OD1	5:E:642:ASP:N	2.44	0.50
3:4:348:LYS:CB	3:4:385:ILE:HD11	2.41	0.50
1:A:639:THR:C	1:A:640:LEU:HD12	2.32	0.50
3:C:378:GLU:OE2	3:C:378:GLU:N	2.44	0.50
3:C:703:ASP:OD1	3:C:800:SER:OG	2.09	0.50
5:6:559:THR:HG22	5:6:561:GLU:OE1	2.12	0.50
6:F:435:LEU:HD12	6:F:456:VAL:HG23	1.93	0.50
6:7:466:LYS:O	6:7:470:LEU:HD23	2.11	0.50
3:4:565:LEU:HD23	3:4:566:LEU:N	2.27	0.50
2:B:36:THR:HG22	2:B:36:THR:O	2.11	0.50
7:1:66:TRP:O	7:1:68:TYR:N	2.44	0.50
7:1:309:LEU:HD11	7:1:450:PHE:CZ	2.45	0.50
2:3:565:VAL:HG12	2:3:569:HIS:CD2	2.47	0.50
2:3:676:ILE:HG23	6:7:617:THR:HG21	1.94	0.50
2:3:701:THR:O	2:3:705:LEU:HD23	2.12	0.50
4:5:69:ILE:HD13	4:5:76:TYR:CD1	2.47	0.50
4:D:35:ILE:HD11	4:D:90:PHE:CZ	2.47	0.50
6:F:441:ASP:OD1	6:F:649:ARG:NH2	2.45	0.50
6:F:608:ASP:OD1	6:F:609:ASP:N	2.45	0.50
1:2:271:PHE:CD2	1:2:295:VAL:HG11	2.47	0.50
5:6:832:ARG:O	5:6:835:ILE:HG22	2.11	0.50
8:G:177:ARG:NH2	8:G:190:ILE:HD11	2.27	0.50
4:D:618:ALA:HB1	4:D:677:VAL:HG21	1.93	0.49
3:4:315:ARG:CZ	3:4:413:HIS:ND1	2.75	0.49
5:E:652:ILE:O	5:E:656:MET:HE2	2.11	0.49
3:4:500:GLN:OE1	3:4:500:GLN:HA	2.12	0.49
1:A:226:VAL:HG23	1:A:227:TYR:N	2.27	0.49
5:E:105:ASP:OD1	5:E:107:THR:OG1	2.28	0.49
5:E:549:LEU:HD21	5:E:810:ILE:CG1	2.42	0.49
3:4:431:ASP:OD1	3:4:587:ARG:NH1	2.45	0.49
3:4:581:VAL:HA	3:4:584:ILE:HG22	1.95	0.49
3:4:790:ARG:NH1	3:4:840:PRO:O	2.45	0.49
7:1:274:LYS:C	7:1:276:ALA:H	2.16	0.49
8:G:175:THR:HG22	8:G:177:ARG:H	1.77	0.49
2:3:454:GLU:N	2:3:454:GLU:OE1	2.44	0.49
4:5:385:LYS:O	4:5:389:VAL:HG23	2.11	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:6:576:ASP:OD1	5:6:579:THR:HG23	2.13	0.49
8:G:127:TYR:HD2	8:G:166:PHE:CE1	2.31	0.49
1:2:626:GLN:O	1:2:627:GLN:HG2	2.13	0.49
4:5:694:GLN:NE2	4:5:696:PRO:HD2	2.28	0.49
5:6:160:MET:O	5:6:160:MET:HG2	2.12	0.49
4:D:35:ILE:HD11	4:D:90:PHE:HZ	1.77	0.49
1:A:808:ARG:NH2	14:D:801:ADP:O2A	2.40	0.49
3:C:280:MET:SD	3:C:301:TYR:OH	2.59	0.49
8:G:187[B]:ASP:OD1	8:G:188:THR:N	2.45	0.49
4:5:274:LEU:HD23	4:5:275:THR:N	2.28	0.49
5:E:162:GLU:OE1	5:E:165:ALA:HB3	2.12	0.49
6:F:497:VAL:HG22	6:F:508:LEU:HD21	1.94	0.49
6:F:631:THR:HG23	6:F:631:THR:O	2.13	0.49
6:F:706:ASP:O	6:F:706:ASP:OD2	2.31	0.49
4:5:2:SER:HG	2:B:245:TYR:HE1	1.59	0.49
5:E:150:THR:HG22	5:E:264:GLN:HB2	1.95	0.49
1:2:442:ASN:HA	5:6:326:LYS:HZ3	1.77	0.48
2:3:23:ASP:OD1	2:3:26:ARG:NH2	2.46	0.48
2:3:673:GLN:NE2	2:3:677:ASN:OD1	2.42	0.48
3:4:527:ALA:HB1	3:4:530:ILE:HD13	1.95	0.48
3:4:602:THR:HG21	3:4:656:ILE:HD11	1.95	0.48
6:7:26:VAL:HG12	6:7:26:VAL:O	2.12	0.48
6:7:393:LEU:O	6:7:394:THR:OG1	2.28	0.48
6:7:427:ASP:OD2	6:7:722:VAL:HG11	2.12	0.48
5:E:174:TYR:CE1	5:E:178:LEU:HD13	2.48	0.48
7:1:289:VAL:HG21	7:1:300:ILE:HD12	1.94	0.48
4:D:263:GLU:N	4:D:263:GLU:OE1	2.45	0.48
5:E:363:GLU:OE2	5:E:375:ARG:N	2.43	0.48
6:F:294:THR:HG23	6:F:294:THR:O	2.14	0.48
7:1:275:ARG:O	7:1:276:ALA:O	2.31	0.48
2:3:234:GLU:N	2:3:234:GLU:OE1	2.46	0.48
5:E:696:ARG:NH2	5:E:701:MET:O	2.40	0.48
1:2:240:GLU:OE1	1:2:290:HIS:NE2	2.46	0.48
2:3:413:THR:O	2:3:413:THR:HG22	2.12	0.48
6:7:227:VAL:HG22	6:7:317:GLU:CG	2.43	0.48
4:D:100:ARG:O	4:D:104:LEU:HD13	2.12	0.48
4:D:637:GLU:OE1	4:D:644:SER:N	2.46	0.48
6:F:285:THR:HG22	6:F:285:THR:O	2.13	0.48
6:F:402:MET:HA	6:F:405:ILE:HG22	1.95	0.48
4:5:493:ILE:O	4:5:497:MET:HG3	2.13	0.48
1:A:245:ASN:ND2	1:A:299:ASP:OD2	2.46	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:562:SER:O	2:B:566:LEU:HD23	2.14	0.48
7:1:274:LYS:HG2	8:G:275:TRP:CE3	2.48	0.48
8:G:279:ILE:HG23	8:G:281:LEU:CD2	2.39	0.48
2:3:233:THR:OG1	2:3:234:GLU:OE1	2.21	0.48
5:E:108:GLY:O	5:E:111:VAL:HG12	2.13	0.48
5:E:710:ASP:O	5:E:711:LEU:HD22	2.14	0.48
6:F:162:ARG:CG	6:F:181:LEU:HD21	2.43	0.48
6:F:456:VAL:HG22	6:F:596:ILE:HB	1.95	0.48
7:1:94:LEU:O	7:1:98:THR:OG1	2.32	0.48
7:1:195:MET:SD	7:1:195:MET:N	2.86	0.48
8:G:171:THR:OG1	8:G:172:ILE:HD12	2.13	0.48
2:3:290:ASP:OD1	2:3:291:ARG:N	2.47	0.48
3:4:545:PHE:HD1	3:4:810:LYS:HZ2	1.62	0.48
3:4:794:THR:N	3:4:797:GLN:OE1	2.46	0.48
5:6:704:PRO:O	5:6:708:ARG:NH2	2.47	0.48
6:7:587:PRO:O	6:7:591:LEU:HD23	2.14	0.48
6:7:608:ASP:OD1	6:7:609:ASP:N	2.47	0.48
1:A:271:PHE:HD2	1:A:295:VAL:HG11	1.79	0.48
5:E:529:LEU:HD13	5:E:751:LEU:HD11	1.96	0.48
3:4:348:LYS:HB2	3:4:385:ILE:HD11	1.96	0.48
5:6:548:LEU:O	5:6:549:LEU:HB2	2.13	0.48
3:C:694:LEU:HD23	3:C:698:LEU:HD23	1.96	0.48
7:1:269:GLU:CA	7:1:273:ILE:HG22	2.42	0.48
8:G:664:CYS:C	8:G:665:ARG:HD3	2.34	0.48
1:A:622:GLU:OE1	4:D:444:SER:OG	2.25	0.48
8:G:264:PRO:O	8:G:283:TRP:NE1	2.47	0.48
2:3:460:GLY:O	2:3:464:LEU:HD13	2.14	0.47
5:E:340:ASN:OD1	5:E:341:ARG:N	2.46	0.47
5:E:447:ASP:C	5:E:448:LEU:HD22	2.34	0.47
5:E:639:ASP:OD1	5:E:640:GLU:N	2.47	0.47
3:4:693:ASP:C	3:4:694:LEU:HD12	2.34	0.47
1:A:327:ARG:NH1	1:A:418:SER:O	2.47	0.47
4:D:483:ASP:OD1	4:D:483:ASP:N	2.46	0.47
7:1:73:VAL:HG11	7:1:119:VAL:HG12	1.95	0.47
4:5:374:ILE:HD12	4:5:389:VAL:CG2	2.44	0.47
1:A:701:ASP:HA	1:A:704:VAL:HG22	1.96	0.47
4:D:149:ARG:NH1	4:D:260:GLU:OE2	2.46	0.47
5:E:652:ILE:HG22	5:E:656:MET:HE2	1.95	0.47
7:1:255:ASN:OD1	7:1:256:VAL:N	2.46	0.47
4:5:72:ASN:OD1	4:5:73:GLU:N	2.47	0.47
4:5:274:LEU:HD21	4:5:328:ILE:HG12	1.94	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:6:622:THR:HG22	5:6:623:ILE:N	2.29	0.47
5:6:645:ASP:O	5:6:648:ASP:OD1	2.32	0.47
7:1:148:LEU:HD23	7:1:464:LEU:HD23	1.95	0.47
9:X:45:DC:N3	10:Y:-45:DG:N1	2.59	0.47
10:Y:-21:DT:H4'	10:Y:-20:DG:OP1	2.15	0.47
2:3:413:THR:HG21	2:3:549:VAL:CG2	2.43	0.47
3:4:703:ASP:OD1	3:4:800:SER:OG	2.27	0.47
1:A:417:VAL:HG21	1:A:456:ILE:HG21	1.96	0.47
2:B:446:VAL:HG11	4:D:507:ALA:HB1	1.95	0.47
2:B:676:ILE:O	2:B:680:VAL:HG23	2.15	0.47
7:1:256:VAL:HG23	8:G:267:TYR:CE2	2.49	0.47
4:5:412:VAL:HG23	4:5:520:LEU:HD12	1.97	0.47
2:B:103:LEU:HD21	2:B:114:ILE:HD12	1.97	0.47
7:1:92:ASN:O	7:1:96:ILE:HD12	2.14	0.47
7:1:442:CYS:SG	7:1:443:PHE:N	2.87	0.47
1:2:369:SER:OG	1:2:370:LYS:N	2.48	0.47
1:2:670:THR:HG22	1:2:672:PRO:CD	2.44	0.47
2:3:359:ILE:HD11	2:3:659:TYR:OH	2.15	0.47
2:3:379:LYS:O	2:3:383:LEU:HD23	2.15	0.47
3:4:503:ASP:OD1	3:4:504:GLN:N	2.46	0.47
1:A:789:VAL:O	1:A:793:LEU:HD13	2.15	0.47
1:A:853:VAL:O	1:A:857:LEU:HD23	2.15	0.47
4:D:69:ILE:HD12	4:D:76:TYR:CE2	2.50	0.47
4:D:474:GLY:N	4:D:516:ARG:O	2.40	0.47
5:E:566:ARG:NH1	5:E:568:ASP:O	2.48	0.47
5:E:710:ASP:C	5:E:711:LEU:HD22	2.35	0.47
7:1:351:GLY:N	8:G:269:TYR:O	2.48	0.47
3:4:228:LYS:O	3:4:231:ASN:N	2.48	0.47
3:4:436:THR:O	3:4:464:VAL:HG12	2.15	0.47
5:6:769:ALA:HB1	5:6:824:ILE:HD11	1.97	0.47
2:3:235:ASP:OD1	2:3:236:THR:N	2.45	0.47
4:5:259:GLN:HE21	4:5:271:PRO:HB2	1.78	0.47
6:7:577:ARG:C	6:7:578:LEU:HD22	2.35	0.47
1:A:547:THR:HG21	1:A:683:VAL:HG11	1.97	0.47
4:D:410:ILE:HD13	4:D:659:ILE:HD13	1.95	0.47
1:2:800:THR:HG22	1:2:800:THR:O	2.14	0.47
3:C:295:GLU:OE2	3:C:295:GLU:N	2.45	0.47
8:G:196:LYS:HD3	8:G:196:LYS:N	2.30	0.47
1:2:808:ARG:NH2	14:5:801:ADP:O2A	2.43	0.46
2:3:195:LYS:N	2:3:251:ILE:O	2.40	0.46
2:3:679:ILE:HD13	2:3:706:ILE:HD13	1.97	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:704:THR:O	2:3:708:LEU:HD13	2.15	0.46
3:4:762:ILE:HD11	5:6:736:MET:HB2	1.96	0.46
3:C:183:THR:O	6:F:145:GLN:NE2	2.49	0.46
6:F:164:GLU:OE2	6:F:164:GLU:HA	2.15	0.46
7:1:181:VAL:HG22	7:1:182:ASP:N	2.30	0.46
7:1:256:VAL:HG23	8:G:267:TYR:HE2	1.80	0.46
1:2:824:ARG:NH2	1:2:833:ASP:OD2	2.48	0.46
3:4:327:ASN:C	3:4:328:LEU:HD22	2.35	0.46
4:5:695:ASP:HB2	4:5:696:PRO:CD	2.45	0.46
1:A:707:HIS:HA	5:E:557:LYS:HD2	1.97	0.46
2:B:227:THR:HG23	2:B:227:THR:O	2.15	0.46
1:A:218:TYR:O	1:A:219:THR:OG1	2.31	0.46
2:B:359:ILE:O	2:B:363:LEU:HD23	2.15	0.46
1:2:660:THR:HG22	1:2:660:THR:O	2.14	0.46
1:A:220:ASP:OD2	1:A:222:THR:OG1	2.33	0.46
1:A:660:THR:HG22	1:A:660:THR:O	2.15	0.46
3:C:226:TYR:O	3:C:230:LEU:HD23	2.15	0.46
3:C:692:ILE:HD12	3:C:694:LEU:HB2	1.97	0.46
5:E:742:ILE:HG23	5:E:743:GLU:N	2.31	0.46
6:F:717:LEU:HA	6:F:720:VAL:HG12	1.98	0.46
7:1:253:LEU:HD22	8:G:265:HIS:NE2	2.30	0.46
7:1:451:GLU:OE2	7:1:456:LYS:HB3	2.16	0.46
3:4:179:ILE:HG23	3:4:179:ILE:O	2.16	0.46
6:7:538:HIS:NE2	6:7:593:ARG:CZ	2.78	0.46
5:E:364:ASN:HB2	5:E:367:GLU:OE1	2.16	0.46
7:1:58:THR:O	7:1:62:ALA:HB2	2.16	0.46
2:3:363:LEU:O	2:3:367:LEU:HD12	2.15	0.46
4:5:56:VAL:HG12	4:5:56:VAL:O	2.16	0.46
6:7:130:LYS:HD3	6:7:131:GLU:O	2.15	0.46
5:E:168:MET:O	5:E:169:ALA:C	2.54	0.46
5:E:339:GLU:N	5:E:339:GLU:OE1	2.49	0.46
5:E:509:SER:HB2	5:E:513:ILE:HD11	1.98	0.46
5:E:633:ASN:N	5:E:675:ARG:O	2.39	0.46
3:4:477:ASP:OD2	3:4:479:SER:OG	2.32	0.46
3:4:678:ILE:HD11	3:4:693:ASP:N	2.31	0.46
4:5:154:GLU:OE1	4:5:154:GLU:N	2.43	0.46
5:6:742:ILE:HG23	5:6:743:GLU:N	2.31	0.46
6:7:394:THR:HG22	6:7:395:SER:N	2.31	0.46
3:C:444:ILE:O	3:C:454:LYS:NZ	2.49	0.46
4:5:83:PRO:O	4:5:87:ILE:HD12	2.16	0.46
3:C:569:ASP:O	3:C:574:LYS:NZ	2.43	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:769:ALA:HB1	5:E:824:ILE:HD11	1.98	0.46
2:B:363:LEU:HB3	2:B:382:LEU:HD11	1.97	0.46
4:D:359:GLN:OE1	4:D:362:ARG:NH2	2.47	0.46
6:F:149:ARG:O	6:F:153:MET:HE2	2.16	0.46
6:F:439:GLY:O	6:F:701:LYS:NZ	2.42	0.46
3:C:565:LEU:HD12	3:C:702:PHE:CE1	2.51	0.46
7:1:274:LYS:O	7:1:276:ALA:N	2.49	0.46
4:5:15:GLN:N	4:5:15:GLN:OE1	2.49	0.45
6:7:367:LYS:NZ	4:D:224:GLU:OE1	2.43	0.45
6:7:615:HIS:O	6:7:619:VAL:HG23	2.16	0.45
1:A:271:PHE:CD2	1:A:295:VAL:HG21	2.51	0.45
3:C:370:ARG:NH2	3:C:377:ASN:O	2.48	0.45
4:D:13:VAL:HG23	4:D:14:LEU:N	2.30	0.45
1:2:271:PHE:CD2	1:2:295:VAL:HG21	2.52	0.45
6:7:164:GLU:OE2	6:7:164:GLU:HA	2.15	0.45
4:D:450:THR:HG22	4:D:451:ALA:N	2.31	0.45
5:E:661:ILE:HD11	5:E:674:ALA:HB2	1.98	0.45
6:F:503:THR:HG22	6:F:504:ASP:N	2.30	0.45
5:6:545:LYS:O	5:6:548:LEU:O	2.33	0.45
1:A:446:VAL:HG12	5:E:303:GLU:OE1	2.16	0.45
1:A:478:GLU:OE1	1:A:482:ARG:NH2	2.49	0.45
1:A:612:MET:CE	1:A:616:ASP:HB3	2.46	0.45
5:E:622:THR:HG22	5:E:623:ILE:N	2.32	0.45
5:E:780:LEU:CD2	5:E:795:ILE:HG21	2.46	0.45
7:1:334:THR:HG23	7:1:359:TRP:NE1	2.30	0.45
3:4:700:SER:OG	3:4:701:ARG:NH1	2.50	0.45
4:D:694:GLN:OE1	4:D:697:ILE:HG12	2.16	0.45
7:1:100:SER:O	7:1:103:VAL:HG12	2.15	0.45
1:2:315:SER:N	1:2:430:TYR:O	2.49	0.45
1:2:337:VAL:HA	1:2:380:THR:HG23	1.98	0.45
2:B:555:GLU:OE2	2:B:555:GLU:N	2.42	0.45
6:F:147:ARG:NH1	6:F:147:ARG:HB2	2.32	0.45
3:4:798:LEU:HA	3:4:801:MET:HE2	1.99	0.45
4:D:626:PHE:CZ	4:D:630:ARG:HD2	2.51	0.45
5:E:545:LYS:O	5:E:548:LEU:O	2.34	0.45
6:F:312:GLU:OE1	6:F:502:VAL:HG22	2.16	0.45
7:1:250:VAL:HG23	7:1:262:THR:OG1	2.16	0.45
4:D:449:LEU:HD12	4:D:449:LEU:O	2.17	0.45
6:F:17:LEU:O	6:F:21:ILE:HG13	2.16	0.45
1:2:585:ILE:HG13	1:2:586:THR:HG23	1.98	0.45
6:7:670:ASP:OD2	6:7:670:ASP:C	2.55	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:244:VAL:HG21	1:A:271:PHE:HE2	1.82	0.45
3:C:415:ILE:HG22	3:C:416:SER:N	2.32	0.45
6:F:86:LEU:HD23	6:F:211:CYS:SG	2.57	0.45
6:F:103:VAL:O	6:F:106:ILE:HG22	2.17	0.45
6:F:181:LEU:O	6:F:185:VAL:HG23	2.17	0.45
1:2:433:ASN:OD1	1:2:436:GLY:N	2.47	0.45
1:A:819:SER:O	1:A:823:MET:HG3	2.17	0.45
2:B:31:PHE:O	2:B:34:THR:HG22	2.17	0.45
4:D:103:ILE:HG23	4:D:104:LEU:HD12	1.97	0.45
5:E:312:ASP:O	5:E:315:ARG:NH1	2.50	0.45
1:2:607:ASP:OD1	1:2:608:GLU:N	2.50	0.45
4:5:450:THR:HG22	4:5:451:ALA:N	2.32	0.45
5:6:555:VAL:HG22	5:6:808:GLU:OE2	2.16	0.45
6:7:656:VAL:O	6:7:660:VAL:HG23	2.18	0.45
4:5:23:ASP:OD1	4:5:23:ASP:N	2.50	0.44
4:5:282:LEU:HD13	4:5:330:ILE:HG22	1.97	0.44
5:6:110:LYS:O	5:6:113:GLU:HG3	2.17	0.44
5:6:339:GLU:N	5:6:339:GLU:OE1	2.50	0.44
1:A:212:LYS:CE	1:A:277:GLU:OE2	2.65	0.44
3:C:581:VAL:HA	3:C:584:ILE:HG22	1.98	0.44
3:C:838:THR:HG22	3:C:845:ILE:CD1	2.46	0.44
4:D:17:GLU:N	4:D:17:GLU:OE1	2.50	0.44
4:D:552:MET:CE	4:D:659:ILE:HD11	2.48	0.44
2:3:444:ALA:HB2	2:3:460:GLY:N	2.32	0.44
2:3:555:GLU:OE1	2:3:555:GLU:N	2.43	0.44
3:4:596:SER:OG	3:4:597:SER:N	2.50	0.44
5:6:157:HIS:HA	5:6:160:MET:SD	2.58	0.44
5:6:303:GLU:N	5:6:354:LEU:O	2.51	0.44
6:7:354:ILE:HG22	6:7:356:LEU:HG	1.98	0.44
6:7:405:ILE:HD11	6:7:641:TYR:HE2	1.83	0.44
6:7:631:THR:O	6:7:631:THR:HG23	2.16	0.44
4:D:354:GLU:O	4:D:358:LEU:HD23	2.17	0.44
5:E:595:SER:HA	5:E:635:ILE:O	2.18	0.44
1:2:763:LEU:O	1:2:767:ILE:HG12	2.17	0.44
3:4:819:LEU:HD21	3:4:823:GLN:NE2	2.32	0.44
4:5:452:SER:OG	4:5:454:GLN:NE2	2.40	0.44
5:6:663:ILE:HD11	5:6:672:LEU:CD1	2.45	0.44
5:6:663:ILE:CD1	5:6:672:LEU:HD11	2.45	0.44
3:C:421:ASP:O	3:C:424:VAL:HG22	2.17	0.44
6:F:651:VAL:HG22	6:F:652:MET:H	1.82	0.44
7:1:129:ARG:O	7:1:129:ARG:NH1	2.50	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:200:GLN:HB2	1:2:203:VAL:HG12	1.98	0.44
1:2:226:VAL:HG23	1:2:227:TYR:N	2.32	0.44
2:3:486:ILE:HG22	2:3:490:MET:HE2	1.98	0.44
4:5:354:GLU:O	4:5:358:LEU:HD23	2.18	0.44
5:E:780:LEU:HD22	5:E:795:ILE:HG21	1.98	0.44
1:2:505:ILE:HD11	1:2:551:GLN:HB2	1.98	0.44
2:3:545:LEU:HD21	2:3:732:LEU:CD2	2.47	0.44
6:7:559:ALA:O	6:7:561:THR:N	2.50	0.44
4:D:15:GLN:N	4:D:15:GLN:OE1	2.51	0.44
4:D:407:ARG:NH1	4:D:411:ASN:OD1	2.51	0.44
5:E:645:ASP:O	5:E:648:ASP:OD1	2.35	0.44
8:G:262:LYS:HZ1	8:G:289:THR:HG23	1.83	0.44
1:2:446:VAL:HG12	5:6:303:GLU:OE1	2.18	0.44
2:3:413:THR:HG21	2:3:549:VAL:HG21	2.00	0.44
6:F:394:THR:HG22	6:F:395:SER:N	2.32	0.44
4:5:604:THR:O	4:5:608:LEU:HD23	2.18	0.44
5:6:773:LEU:HD11	5:6:804:ILE:HD13	1.99	0.44
6:7:591:LEU:HD12	6:7:597:LEU:CD1	2.35	0.44
2:B:413:THR:HG21	2:B:549:VAL:CG2	2.48	0.44
3:C:374:ILE:H	3:C:374:ILE:HD12	1.83	0.44
4:D:255:PHE:O	4:D:256:LEU:HD23	2.18	0.44
6:F:459:MET:HE1	6:F:584:ILE:HG12	1.99	0.44
8:G:177:ARG:HH21	8:G:190:ILE:HD11	1.83	0.44
10:Y:-12:DG:H4'	10:Y:-11:DC:OP1	2.18	0.44
4:5:374:ILE:CD1	4:5:389:VAL:HG22	2.48	0.44
4:D:694:GLN:NE2	4:D:696:PRO:HD2	2.32	0.44
3:4:635:ASP:OD1	3:4:636:LYS:N	2.51	0.44
1:A:857:LEU:HD12	1:A:861:PHE:CE2	2.53	0.44
3:C:625:ASP:OD1	3:C:668:ARG:N	2.51	0.44
4:D:395:GLY:N	4:D:408:GLY:O	2.51	0.44
6:F:227:VAL:HG22	6:F:317:GLU:CG	2.47	0.44
7:1:84:PRO:HA	7:1:87:ILE:HG12	1.99	0.44
3:4:527:ALA:O	3:4:537:LYS:NZ	2.51	0.43
6:7:399:GLU:OE2	6:7:400:ARG:HG3	2.18	0.43
1:A:238:ASN:OD1	1:A:289:ILE:HD12	2.16	0.43
2:B:553:ILE:HB	4:D:634:LEU:HD13	1.99	0.43
5:E:276:ILE:H	5:E:276:ILE:HD12	1.83	0.43
5:E:290:ILE:HG22	5:E:291:SER:N	2.34	0.43
5:E:517:LYS:HA	5:E:520:VAL:HG12	1.99	0.43
1:2:264:PRO:CG	1:2:429:ILE:HD12	2.48	0.43
2:3:21:PHE:O	2:3:25:VAL:HG23	2.18	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:5:13:VAL:HG23	4:5:14:LEU:N	2.33	0.43
5:6:747:SER:O	5:6:751:LEU:HD23	2.18	0.43
6:7:294:THR:O	6:7:294:THR:HG23	2.19	0.43
2:B:483:ARG:HA	2:B:486:ILE:HG22	1.99	0.43
3:C:696:PRO:N	3:C:697:PRO:CD	2.82	0.43
7:1:331:GLU:OE2	8:G:299:LEU:HD13	2.18	0.43
4:5:599:MET:O	4:5:603:ILE:HG12	2.18	0.43
7:1:75:LEU:HD12	7:1:117:ILE:HG21	2.00	0.43
7:1:337:GLY:O	7:1:341:LEU:HD23	2.18	0.43
8:G:192:SER:O	8:G:196:LYS:HG2	2.17	0.43
2:3:545:LEU:HD21	2:3:732:LEU:HD22	2.00	0.43
3:4:538:LYS:O	3:4:542:LEU:HD23	2.18	0.43
6:7:190:GLU:O	6:7:191:LEU:HD12	2.18	0.43
1:A:234:LEU:CD1	1:A:242:LEU:HD22	2.48	0.43
7:1:267:LYS:O	7:1:268:ASN:CB	2.66	0.43
2:3:446:VAL:HG13	2:3:458:GLU:HG2	2.00	0.43
2:B:433:THR:HG23	2:B:436:GLY:H	1.84	0.43
4:D:458:MET:HG2	4:D:459:THR:HG23	2.00	0.43
5:E:630:LEU:O	5:E:631:ALA:HB3	2.18	0.43
6:F:149:ARG:HG3	6:F:153:MET:CE	2.49	0.43
7:1:66:TRP:O	7:1:66:TRP:CG	2.71	0.43
7:1:461:GLU:O	7:1:465:LYS:HG2	2.18	0.43
2:3:545:LEU:HD23	2:3:547:PHE:CZ	2.53	0.43
2:3:692:THR:HG23	2:3:692:THR:O	2.18	0.43
4:5:569:ALA:O	4:5:573:ILE:CD1	2.64	0.43
5:6:522:ASP:OD1	5:6:523:GLU:N	2.44	0.43
1:A:280:GLU:OE2	1:A:285:ASP:N	2.52	0.43
4:D:625:ASN:ND2	4:D:681:ILE:HD12	2.33	0.43
6:F:503:THR:HG22	6:F:504:ASP:H	1.84	0.43
2:3:18:ASP:OD1	6:F:7:SER:OG	2.36	0.43
2:3:383:LEU:HD12	2:3:711:ALA:HB3	1.99	0.43
2:3:535:LEU:HB2	2:3:540:LEU:HD11	2.00	0.43
6:7:444:VAL:HG22	6:7:444:VAL:O	2.19	0.43
6:7:514:VAL:HG21	6:7:557:LEU:HD23	2.01	0.43
8:G:262:LYS:HD3	8:G:263:TYR:HD2	1.84	0.43
8:G:285:PRO:HB3	8:G:292:ASP:N	2.33	0.43
1:2:292:GLU:OE1	1:2:292:GLU:N	2.52	0.43
2:B:466:ASP:OD2	2:B:509:ARG:NH2	2.52	0.43
5:E:168:MET:O	5:E:171:SER:N	2.52	0.43
7:1:163:ASP:OD1	7:1:163:ASP:O	2.37	0.43
2:3:479:THR:O	2:3:482:ASP:OD1	2.36	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:650:GLU:OE1	3:4:651:GLN:HG3	2.19	0.43
5:6:613:VAL:HG13	5:6:613:VAL:O	2.18	0.43
6:7:228:ARG:NH2	6:7:317:GLU:OE2	2.52	0.43
6:7:493:LEU:O	6:7:494:THR:OG1	2.28	0.43
3:C:225:TYR:O	3:C:229:GLN:OE1	2.37	0.43
5:E:653:HIS:O	5:E:657:GLU:HG2	2.19	0.43
6:F:586:LEU:HB2	6:F:591:LEU:HD21	2.00	0.43
2:3:31:PHE:O	2:3:34:THR:HG22	2.19	0.43
3:4:678:ILE:HD11	3:4:693:ASP:HB2	2.01	0.43
4:5:425:LEU:O	4:5:429:VAL:HG23	2.19	0.43
4:5:473:ASP:OD1	4:5:516:ARG:N	2.52	0.43
1:A:570:GLY:HA2	5:E:650:VAL:HG13	2.01	0.43
1:A:808:ARG:NE	14:D:801:ADP:O2A	2.50	0.43
2:B:110:PHE:HE2	2:B:114:ILE:HD11	1.84	0.43
3:C:701:ARG:HA	3:C:701:ARG:NE	2.33	0.43
5:E:555:VAL:HG22	5:E:808:GLU:OE2	2.19	0.43
9:X:11:DG:H2'	9:X:12:DC:O4'	2.19	0.43
5:6:550:GLN:OE1	5:6:571:ILE:HD12	2.19	0.42
5:6:608:LEU:HD23	5:6:627:ALA:HB3	2.02	0.42
5:6:700:ASN:OD1	5:6:700:ASN:O	2.37	0.42
5:6:705:ILE:HG13	5:6:706:MET:N	2.33	0.42
1:A:800:THR:HG22	1:A:800:THR:O	2.19	0.42
2:B:419:LEU:O	2:B:422:VAL:HG22	2.18	0.42
3:C:569:ASP:O	3:C:572:THR:HG22	2.18	0.42
7:1:164:ILE:HG22	7:1:308:ILE:HD11	2.01	0.42
7:1:292:LYS:O	7:1:292:LYS:HG3	2.19	0.42
9:X:44:DG:N2	10:Y:-43:DG:N3	2.66	0.42
1:2:276:MET:HE2	1:2:276:MET:O	2.18	0.42
4:5:626:PHE:CZ	4:5:630:ARG:HD2	2.53	0.42
4:5:650:ILE:HD12	4:5:650:ILE:N	2.33	0.42
1:A:390:LEU:CD1	1:A:408:VAL:HG21	2.48	0.42
1:A:494:ILE:HG23	1:A:823:MET:CE	2.49	0.42
3:C:225:TYR:O	3:C:228:LYS:HG2	2.19	0.42
3:C:538:LYS:O	3:C:542:LEU:HD23	2.19	0.42
7:1:148:LEU:HD11	7:1:460:ALA:HA	2.00	0.42
1:2:511:ILE:O	1:2:515:VAL:HG23	2.20	0.42
2:3:377:ILE:HD13	2:3:407:MET:SD	2.59	0.42
2:B:413:THR:HG21	2:B:549:VAL:HG21	2.00	0.42
6:F:138:VAL:HG21	6:F:303:ARG:HH21	1.84	0.42
6:F:151:GLU:OE2	6:F:151:GLU:HA	2.18	0.42
6:F:396:ASP:OD2	6:F:400:ARG:NH2	2.51	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:483:THR:HG23	6:F:488:SER:OG	2.19	0.42
7:1:19:MET:SD	7:1:19:MET:N	2.92	0.42
7:1:181:VAL:HG22	7:1:182:ASP:H	1.84	0.42
1:2:285:ASP:OD2	1:2:288:ARG:HG3	2.19	0.42
2:3:206:THR:O	2:3:206:THR:HG22	2.18	0.42
4:5:95:THR:O	4:5:99:LYS:HG2	2.19	0.42
6:7:180:ALA:CB	4:D:107:ALA:HB2	2.49	0.42
6:F:542:GLU:HG3	6:F:543:GLN:OE1	2.20	0.42
7:1:249:LYS:N	7:1:262:THR:OG1	2.52	0.42
7:1:253:LEU:HD22	8:G:265:HIS:CE1	2.54	0.42
8:G:287:GLU:OE1	8:G:287:GLU:N	2.47	0.42
2:3:546:LEU:HD12	2:3:547:PHE:N	2.34	0.42
3:4:315:ARG:CZ	3:4:413:HIS:CE1	3.02	0.42
3:4:444:ILE:O	3:4:454:LYS:NZ	2.52	0.42
4:5:477:VAL:O	4:5:477:VAL:HG13	2.19	0.42
4:5:695:ASP:HB2	4:5:696:PRO:HD3	2.01	0.42
6:7:577:ARG:O	6:7:578:LEU:HD22	2.19	0.42
1:A:212:LYS:HE2	1:A:274:VAL:HG13	2.01	0.42
1:A:763:LEU:O	1:A:767:ILE:HG12	2.20	0.42
3:C:315:ARG:CZ	3:C:413:HIS:CD2	3.02	0.42
4:D:430:GLU:OE1	4:D:438:TYR:CB	2.68	0.42
4:D:457:PRO:O	4:D:460:ARG:NH1	2.53	0.42
6:F:73:ARG:NH1	6:F:136:ASP:OD2	2.52	0.42
6:F:425:ASN:HB3	6:F:428:VAL:CG1	2.50	0.42
4:5:625:ASN:ND2	4:5:681:ILE:HD12	2.35	0.42
14:5:801:ADP:HO2'	14:5:801:ADP:HO3'	1.58	0.42
2:B:673:GLN:NE2	2:B:677:ASN:OD1	2.47	0.42
6:F:66:MET:O	6:F:70:VAL:HG23	2.20	0.42
7:1:310:LEU:HG	7:1:450:PHE:CZ	2.55	0.42
1:2:857:LEU:HD12	1:2:861:PHE:CE2	2.55	0.42
2:3:290:ASP:OD1	2:3:336:VAL:HG21	2.19	0.42
3:4:415:ILE:HG22	3:4:416:SER:N	2.34	0.42
1:A:669:LEU:HB2	1:A:674:LEU:HD21	2.02	0.42
2:B:21:PHE:O	2:B:25:VAL:HG23	2.20	0.42
2:B:382:LEU:HD23	2:B:382:LEU:O	2.19	0.42
3:C:516:GLU:N	3:C:516:GLU:OE1	2.53	0.42
3:C:518:LEU:HD11	3:C:812:LYS:HB3	2.01	0.42
4:D:540:ILE:HD13	4:D:547:LEU:HD11	2.01	0.42
4:D:583:MET:O	4:D:585:ASN:N	2.52	0.42
5:E:340:ASN:ND2	5:E:343:PHE:O	2.51	0.42
7:1:89:ASN:OD1	7:1:89:ASN:C	2.58	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:G:127:TYR:HB2	8:G:163:THR:HG22	2.01	0.42
3:4:813:LEU:O	3:4:814:LYS:HE2	2.20	0.42
6:7:161:ILE:HG23	6:7:181:LEU:HD11	2.00	0.42
6:7:619:VAL:O	6:7:622:HIS:O	2.38	0.42
1:A:213:SER:O	1:A:217:GLU:OE2	2.37	0.42
5:E:174:TYR:CE2	5:E:287:LEU:HD12	2.54	0.42
7:1:26:LEU:HG	7:1:112:VAL:HG11	2.02	0.42
4:5:549:ARG:HH11	4:5:549:ARG:HG3	1.85	0.42
2:B:694:LYS:NZ	2:B:737:LEU:O	2.44	0.42
8:G:175:THR:HG22	8:G:177:ARG:N	2.34	0.42
3:4:315:ARG:NH1	3:4:413:HIS:CE1	2.88	0.42
3:4:602:THR:HG22	3:4:656:ILE:HD11	2.02	0.42
1:A:297:ILE:HG22	1:A:298:SER:N	2.35	0.42
1:A:402:LEU:HD22	5:E:629:MET:CE	2.50	0.42
4:D:74:ASP:O	4:D:78:LYS:HG3	2.20	0.42
4:D:294:ILE:CD1	4:D:333:ILE:HG22	2.49	0.42
4:D:430:GLU:OE1	4:D:438:TYR:HB3	2.20	0.42
1:A:307:ARG:NH1	1:A:392:GLU:OE2	2.51	0.41
5:E:548:LEU:O	5:E:549:LEU:HB2	2.20	0.41
6:F:149:ARG:HG3	6:F:153:MET:HE2	2.01	0.41
1:2:690:GLU:C	1:2:694:ARG:HE	2.22	0.41
4:5:66:GLU:HA	4:5:69:ILE:HG22	2.01	0.41
2:B:382:LEU:HD23	2:B:382:LEU:C	2.41	0.41
3:C:398:LYS:HZ3	3:C:414:SER:CB	2.26	0.41
6:F:343:LEU:HD11	6:F:381:VAL:HG21	2.01	0.41
8:G:262:LYS:HD3	8:G:263:TYR:CD2	2.55	0.41
1:2:811:GLU:OE2	14:5:801:ADP:O3'	2.29	0.41
4:5:321:VAL:HG23	4:5:322:ALA:N	2.35	0.41
4:5:695:ASP:CB	4:5:696:PRO:CD	2.98	0.41
5:6:156:GLN:O	5:6:160:MET:CE	2.69	0.41
6:7:182:ARG:HA	6:7:185:VAL:HG22	2.02	0.41
2:B:479:THR:O	2:B:482:ASP:OD1	2.38	0.41
3:C:386:HIS:CE1	5:E:450:TYR:OH	2.73	0.41
4:D:56:VAL:O	4:D:56:VAL:HG12	2.19	0.41
4:D:156:VAL:O	4:D:157:SER:OG	2.23	0.41
4:D:569:ALA:O	4:D:573:ILE:CD1	2.67	0.41
6:F:619:VAL:O	6:F:622:HIS:O	2.38	0.41
8:G:288:LEU:O	8:G:289:THR:CG2	2.68	0.41
2:3:406:LEU:HD12	2:3:407:MET:N	2.35	0.41
5:6:599:SER:OG	5:6:602:ALA:HB3	2.20	0.41
5:6:816:VAL:HG12	5:6:818:GLU:H	1.85	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:239:SER:OG	1:A:240:GLU:N	2.54	0.41
7:1:115:GLN:OE1	7:1:117:ILE:HD11	2.19	0.41
1:2:695:LEU:C	1:2:695:LEU:HD23	2.41	0.41
3:4:392:ALA:O	5:6:281:SER:OG	2.33	0.41
3:C:700:SER:OG	3:C:701:ARG:NH1	2.53	0.41
8:G:171:THR:O	8:G:199:MET:HG2	2.20	0.41
8:G:666:VAL:HG12	8:G:667:LYS:O	2.21	0.41
8:G:669:GLU:N	8:G:669:GLU:OE1	2.53	0.41
8:G:698:GLU:OE2	8:G:699:ASN:ND2	2.54	0.41
3:4:565:LEU:CD2	3:4:567:CYS:SG	3.09	0.41
4:5:224:GLU:OE2	6:F:367:LYS:NZ	2.54	0.41
6:7:110:ALA:HB1	6:7:354:ILE:HD11	2.03	0.41
6:7:459:MET:SD	6:7:584:ILE:HD13	2.60	0.41
2:B:479:THR:C	2:B:483:ARG:HE	2.23	0.41
3:C:502:THR:OG1	3:C:505:ASP:OD2	2.33	0.41
5:E:799:GLN:N	5:E:799:GLN:OE1	2.52	0.41
7:1:140:ILE:HG21	7:1:312:LEU:HD13	2.03	0.41
7:1:260:ASP:OD1	7:1:261:LEU:N	2.54	0.41
2:3:132:LEU:C	2:3:132:LEU:HD23	2.41	0.41
3:4:696:PRO:N	3:4:697:PRO:CD	2.83	0.41
4:5:107:ALA:CB	6:F:180:ALA:HB2	2.50	0.41
4:5:469:MET:O	4:5:515:SER:OG	2.30	0.41
6:7:718:ARG:NH1	6:7:722:VAL:CG2	2.84	0.41
1:A:600:ASP:OD1	1:A:601:LYS:N	2.54	0.41
1:A:690:GLU:HA	1:A:693:GLU:OE1	2.21	0.41
4:D:253:GLN:NE2	4:D:277:THR:OG1	2.54	0.41
7:1:52:ASP:HB3	7:1:71:ASN:O	2.21	0.41
8:G:173:VAL:CG2	8:G:199:MET:HE2	2.46	0.41
6:7:658:ASP:O	6:7:661:VAL:HG22	2.21	0.41
1:A:433:ASN:OD1	1:A:436:GLY:N	2.52	0.41
3:C:611:THR:O	3:C:611:THR:HG22	2.21	0.41
7:1:334:THR:HG23	7:1:359:TRP:HE1	1.86	0.41
1:2:609:PHE:CE2	1:2:669:LEU:HD21	2.56	0.41
1:2:806:THR:HG22	1:2:807:VAL:N	2.36	0.41
2:3:129:LEU:HD22	2:3:155:LEU:HD21	2.03	0.41
2:3:386:MET:HE3	2:3:715:VAL:HG22	2.03	0.41
3:4:183:THR:O	6:7:145:GLN:NE2	2.52	0.41
3:4:336:THR:HG22	3:4:396:VAL:H	1.85	0.41
3:4:602:THR:HG23	3:4:654:ILE:HG21	2.03	0.41
4:5:410:ILE:HD13	4:5:659:ILE:HD13	2.02	0.41
5:6:159:SER:O	5:6:161:ARG:N	2.48	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:6:792:SER:HB2	5:6:835:ILE:HD11	2.02	0.41
1:A:271:PHE:CD2	1:A:295:VAL:HG11	2.55	0.41
1:A:511:ILE:O	1:A:515:VAL:HG23	2.21	0.41
2:B:223:THR:N	4:D:246:GLU:OE2	2.54	0.41
2:B:692:THR:HG23	2:B:692:THR:O	2.21	0.41
3:C:477:ASP:OD2	3:C:479:SER:OG	2.37	0.41
3:C:710:ASP:OD1	6:F:668:ARG:NH2	2.54	0.41
4:D:23:ASP:OD1	4:D:26:GLU:HB2	2.21	0.41
4:D:477:VAL:HG13	4:D:477:VAL:O	2.21	0.41
5:E:105:ASP:OD2	5:E:176:ARG:NH2	2.53	0.41
7:1:54:THR:HB	7:1:56:LYS:HG2	2.02	0.41
7:1:310:LEU:HD23	7:1:313:LEU:HD21	2.03	0.41
8:G:128:PHE:CD2	8:G:174:ILE:HB	2.56	0.41
8:G:263:TYR:HB3	8:G:264:PRO:CD	2.51	0.41
3:4:226:TYR:O	3:4:230:LEU:HD13	2.21	0.41
5:6:663:ILE:HG23	5:6:665:LYS:HE2	2.01	0.41
6:7:539:GLU:HG2	6:7:545:THR:O	2.21	0.41
6:7:597:LEU:HD22	6:7:724:LYS:HE3	2.01	0.41
1:A:525:LYS:NZ	1:A:818:GLU:OE2	2.48	0.41
2:B:552:ASP:O	2:B:552:ASP:OD1	2.39	0.41
3:C:531:TYR:O	3:C:533:LEU:HD13	2.21	0.41
5:E:158:LEU:O	5:E:158:LEU:HD23	2.21	0.41
6:F:659:TYR:OH	6:F:714:GLU:OE2	2.24	0.41
1:2:612:MET:O	1:2:617:ARG:NH1	2.54	0.40
1:2:832:TYR:O	1:2:836:ARG:HG3	2.21	0.40
3:4:230:LEU:HD23	3:4:280:MET:SD	2.61	0.40
5:6:115:PHE:CZ	5:6:119:LEU:HD11	2.56	0.40
5:6:168:MET:O	5:6:172:GLU:OE1	2.39	0.40
6:7:247:ARG:HB3	6:7:247:ARG:CZ	2.52	0.40
1:A:211:LEU:HD12	1:A:256:LEU:HD13	2.03	0.40
1:A:576:LEU:HD22	1:A:612:MET:HE1	2.04	0.40
2:B:173:ALA:HB3	4:D:252:ASP:OD2	2.21	0.40
6:F:132:ILE:O	6:F:132:ILE:HG23	2.21	0.40
8:G:290:ASN:O	8:G:291:LEU:HG	2.21	0.40
1:2:760:GLN:O	1:2:764:MET:SD	2.80	0.40
1:2:805:ILE:HD11	1:2:845:PHE:CZ	2.56	0.40
3:C:360:ILE:HD11	3:C:363:GLY:HA2	2.02	0.40
5:E:548:LEU:HD12	5:E:548:LEU:HA	1.98	0.40
7:1:81:THR:HG23	8:G:661:CYS:HA	2.04	0.40
7:1:274:LYS:O	7:1:275:ARG:HG2	2.21	0.40
1:2:789:VAL:O	1:2:793:LEU:HG	2.22	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:96:ILE:HG22	2:3:97:ILE:N	2.37	0.40
3:4:616:LEU:HD22	3:4:661:ILE:HD12	2.03	0.40
3:4:811:MET:HG2	3:4:812:LYS:N	2.36	0.40
6:7:263:ASP:OD1	6:7:264:GLN:N	2.55	0.40
1:A:707:HIS:NE2	5:E:764:ILE:HG13	2.36	0.40
7:1:54:THR:O	7:1:55:GLY:C	2.60	0.40
8:G:661:CYS:SG	8:G:664:CYS:N	2.91	0.40
5:6:517:LYS:HA	5:6:520:VAL:HG12	2.03	0.40
6:7:248:VAL:HG12	6:7:313:CYS:SG	2.61	0.40
6:7:557:LEU:N	6:7:557:LEU:HD12	2.37	0.40
1:A:760:GLN:O	1:A:764:MET:HG3	2.21	0.40
2:B:350:ILE:HD12	2:B:659:TYR:HA	2.03	0.40
2:B:671:LEU:HA	2:B:721:VAL:HG22	2.03	0.40
3:C:565:LEU:HD23	3:C:566:LEU:N	2.36	0.40
4:D:66:GLU:O	4:D:69:ILE:HG22	2.22	0.40
5:E:162:GLU:OE2	5:E:165:ALA:HB3	2.22	0.40
7:1:111:ARG:NH2	8:G:694:ASP:OD2	2.54	0.40
4:5:426:LEU:HD13	4:5:520:LEU:CD2	2.52	0.40
6:7:157:ARG:HG2	6:7:189:THR:CG2	2.52	0.40
1:A:518:SER:OG	1:A:537:ILE:O	2.34	0.40
1:A:832:TYR:O	1:A:836:ARG:HG3	2.21	0.40
3:C:223:GLU:HG3	3:C:228:LYS:NZ	2.28	0.40
5:E:555:VAL:HB	5:E:762:LYS:NZ	2.37	0.40
5:E:653:HIS:CD2	5:E:704:PRO:HB2	2.57	0.40
6:F:402:MET:SD	6:F:403:GLU:N	2.95	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	2	617/868 (71%)	602 (98%)	15 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	617/868 (71%)	599 (97%)	18 (3%)	0	100	100
2	3	587/1006 (58%)	566 (96%)	21 (4%)	0	100	100
2	B	587/1006 (58%)	566 (96%)	21 (4%)	0	100	100
3	4	668/933 (72%)	647 (97%)	21 (3%)	0	100	100
3	C	646/933 (69%)	630 (98%)	16 (2%)	0	100	100
4	5	644/775 (83%)	615 (96%)	27 (4%)	2 (0%)	37	66
4	D	644/775 (83%)	615 (96%)	27 (4%)	2 (0%)	37	66
5	6	597/1017 (59%)	572 (96%)	25 (4%)	0	100	100
5	E	597/1017 (59%)	569 (95%)	28 (5%)	0	100	100
6	7	683/845 (81%)	662 (97%)	21 (3%)	0	100	100
6	F	683/845 (81%)	664 (97%)	19 (3%)	0	100	100
7	1	330/507 (65%)	300 (91%)	28 (8%)	2 (1%)	22	53
8	G	208/738 (28%)	193 (93%)	15 (7%)	0	100	100
All	All	8108/12133 (67%)	7800 (96%)	302 (4%)	6 (0%)	50	76

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	1	268	ASN
7	1	276	ALA
4	5	584	GLN
4	D	584	GLN
4	5	337	VAL
4	D	337	VAL

5.3.2   Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	2	547/770 (71%)	546 (100%)	1 (0%)	92	95
1	A	547/770 (71%)	546 (100%)	1 (0%)	92	95

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles		
2	3	514/864 (60%)	513 (100%)	1 (0%)	92	95	
2	B	514/864 (60%)	514 (100%)	0	100	100	
3	4	607/848 (72%)	600 (99%)	7 (1%)	67	80	
3	C	593/848 (70%)	590 (100%)	3 (0%)	86	91	
4	5	584/688 (85%)	583 (100%)	1 (0%)	92	95	
4	D	584/688 (85%)	583 (100%)	1 (0%)	92	95	
5	6	531/886 (60%)	530 (100%)	1 (0%)	92	95	
5	E	531/886 (60%)	531 (100%)	0	100	100	
6	7	608/753 (81%)	607 (100%)	1 (0%)	92	95	
6	F	608/753 (81%)	607 (100%)	1 (0%)	92	95	
7	1	294/454 (65%)	293 (100%)	1 (0%)	91	94	
8	G	201/663 (30%)	199 (99%)	2 (1%)	73	84	
All	All	7263/10735 (68%)	7242 (100%)	21 (0%)	90	94	

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	2	694	ARG
2	3	527	ARG
3	4	228	LYS
3	4	252	LYS
3	4	410	GLN
3	4	488	ASN
3	4	668	ARG
3	4	732	LYS
3	4	815	ASN
4	5	516	ARG
5	6	424	ARG
6	7	718	ARG
1	A	694	ARG
3	C	315	ARG
3	C	488	ASN
3	C	732	LYS
4	D	516	ARG
6	F	95	GLN
7	1	195	MET
8	G	117	LYS
8	G	665	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	2	531	HIS
2	3	29	GLN
2	3	569	HIS
3	4	386	HIS
5	6	156	GLN
5	6	269	ASN
6	7	95	GLN
6	7	615	HIS
1	A	531	HIS
4	D	253	GLN
4	D	585	ASN
7	1	21	GLN
7	1	155	HIS
7	1	257	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 31 ligands modelled in this entry, 21 are monoatomic - leaving 10 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
14	ADP	3	1001	12	24,29,29	0.89	0	29,45,45	1.26	2 (6%)
14	ADP	B	1001	12	24,29,29	0.89	0	29,45,45	1.26	2 (6%)
14	ADP	D	801	12	24,29,29	0.88	0	29,45,45	1.24	2 (6%)
14	ADP	5	801	12	24,29,29	0.88	0	29,45,45	1.24	2 (6%)
11	ATP	A	901	12	28,33,33	0.71	0	34,52,52	0.92	1 (2%)
14	ADP	4	1001	12	24,29,29	0.93	1 (4%)	29,45,45	1.23	2 (6%)
14	ADP	F	902	12	24,29,29	0.89	0	29,45,45	1.30	2 (6%)
11	ATP	2	901	12	28,33,33	0.72	0	34,52,52	0.93	1 (2%)
14	ADP	7	902	12	24,29,29	0.91	0	29,45,45	1.29	2 (6%)
14	ADP	C	1001	12	24,29,29	0.93	0	29,45,45	1.18	2 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
14	ADP	3	1001	12	-	2/12/32/32	0/3/3/3
14	ADP	B	1001	12	-	2/12/32/32	0/3/3/3
14	ADP	D	801	12	-	2/12/32/32	0/3/3/3
14	ADP	5	801	12	-	3/12/32/32	0/3/3/3
11	ATP	A	901	12	-	4/18/38/38	0/3/3/3
14	ADP	4	1001	12	-	7/12/32/32	0/3/3/3
14	ADP	F	902	12	-	3/12/32/32	0/3/3/3
11	ATP	2	901	12	-	4/18/38/38	0/3/3/3
14	ADP	7	902	12	-	1/12/32/32	0/3/3/3
14	ADP	C	1001	12	-	7/12/32/32	0/3/3/3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
14	4	1001	ADP	PA-O3A	2.00	1.61	1.59

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
14	5	801	ADP	N3-C2-N1	-4.16	123.03	128.67
14	7	902	ADP	N3-C2-N1	-4.15	123.03	128.67

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
14	F	902	ADP	N3-C2-N1	-4.15	123.04	128.67
14	B	1001	ADP	N3-C2-N1	-4.15	123.04	128.67
14	D	801	ADP	N3-C2-N1	-4.15	123.04	128.67
14	4	1001	ADP	N3-C2-N1	-4.14	123.05	128.67
14	3	1001	ADP	N3-C2-N1	-4.14	123.05	128.67
14	C	1001	ADP	N3-C2-N1	-4.13	123.06	128.67
14	7	902	ADP	C4-C5-N7	-2.53	106.66	109.34
14	F	902	ADP	C4-C5-N7	-2.47	106.73	109.34
14	5	801	ADP	C4-C5-N7	-2.45	106.75	109.34
14	B	1001	ADP	C4-C5-N7	-2.39	106.81	109.34
14	3	1001	ADP	C4-C5-N7	-2.39	106.81	109.34
14	D	801	ADP	C4-C5-N7	-2.38	106.82	109.34
14	4	1001	ADP	C4-C5-N7	-2.34	106.86	109.34
11	A	901	ATP	C5-C6-N6	2.33	123.86	120.31
14	C	1001	ADP	C4-C5-N7	-2.33	106.88	109.34
11	2	901	ATP	C5-C6-N6	2.32	123.84	120.31

There are no chirality outliers.

All (35) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	A	901	ATP	PB-O3B-PG-O3G
14	3	1001	ADP	C5'-O5'-PA-O1A
14	4	1001	ADP	PA-O3A-PB-O2B
14	4	1001	ADP	PA-O3A-PB-O3B
14	4	1001	ADP	C5'-O5'-PA-O1A
14	4	1001	ADP	C5'-O5'-PA-O2A
14	4	1001	ADP	C5'-O5'-PA-O3A
14	5	801	ADP	C5'-O5'-PA-O1A
14	C	1001	ADP	PA-O3A-PB-O2B
14	C	1001	ADP	C5'-O5'-PA-O1A
14	C	1001	ADP	C5'-O5'-PA-O2A
14	C	1001	ADP	C5'-O5'-PA-O3A
14	D	801	ADP	C5'-O5'-PA-O1A
14	F	902	ADP	C5'-O5'-PA-O1A
14	F	902	ADP	C5'-O5'-PA-O3A
14	4	1001	ADP	O4'-C4'-C5'-O5'
14	4	1001	ADP	C3'-C4'-C5'-O5'
14	C	1001	ADP	C3'-C4'-C5'-O5'
14	C	1001	ADP	O4'-C4'-C5'-O5'
11	A	901	ATP	O4'-C4'-C5'-O5'
11	2	901	ATP	O4'-C4'-C5'-O5'

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
11	2	901	ATP	C5'-O5'-PA-O1A
11	A	901	ATP	C5'-O5'-PA-O1A
14	5	801	ADP	C5'-O5'-PA-O2A
14	5	801	ADP	C5'-O5'-PA-O3A
14	7	902	ADP	C5'-O5'-PA-O1A
14	B	1001	ADP	C5'-O5'-PA-O1A
14	D	801	ADP	C3'-C4'-C5'-O5'
11	2	901	ATP	C4'-C5'-O5'-PA
11	2	901	ATP	PB-O3B-PG-O3G
14	C	1001	ADP	PA-O3A-PB-O3B
14	F	902	ADP	O4'-C4'-C5'-O5'
11	A	901	ATP	PG-O3B-PB-O2B
14	3	1001	ADP	O4'-C4'-C5'-O5'
14	B	1001	ADP	O4'-C4'-C5'-O5'

There are no ring outliers.

5 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
14	D	801	ADP	3	0
14	5	801	ADP	4	0
14	4	1001	ADP	1	0
14	F	902	ADP	1	0
14	7	902	ADP	1	0

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

Ligand ADP 3 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP B 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP D 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP 5 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP A 901

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP 4 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP F 902

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP 2 901

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP 7 902

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP C 1001

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-13211. 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 ⓘ
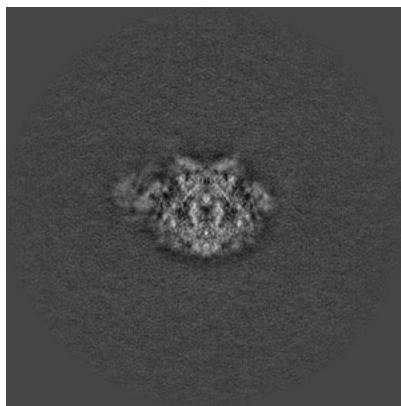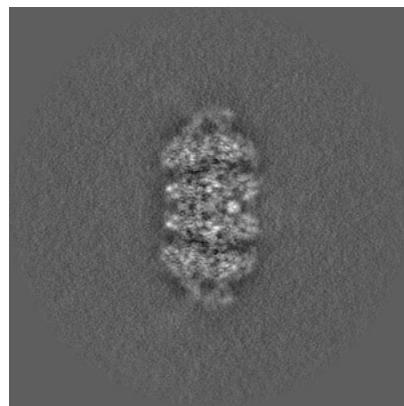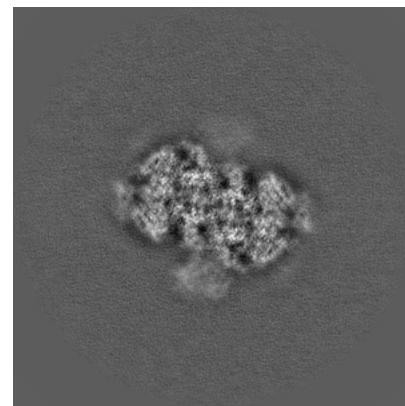
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

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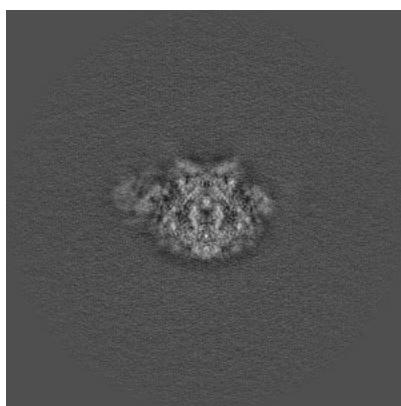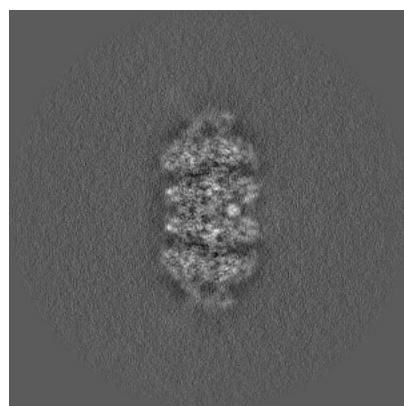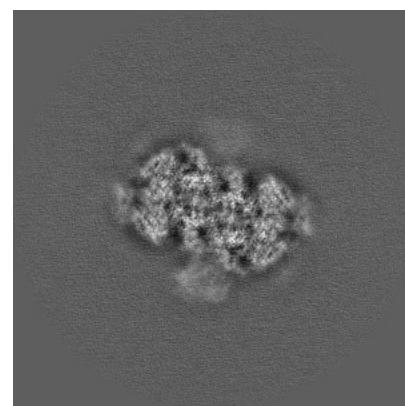
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
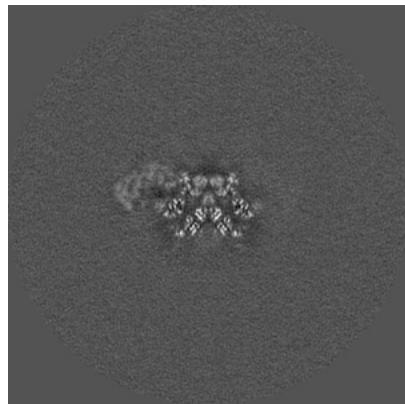
6.2.1 Primary map
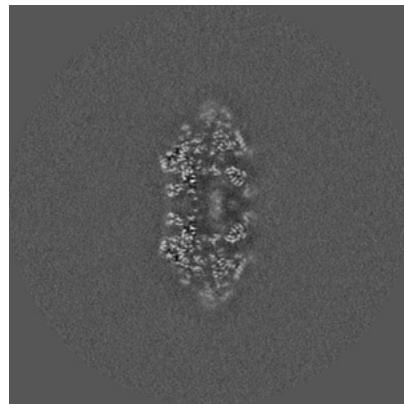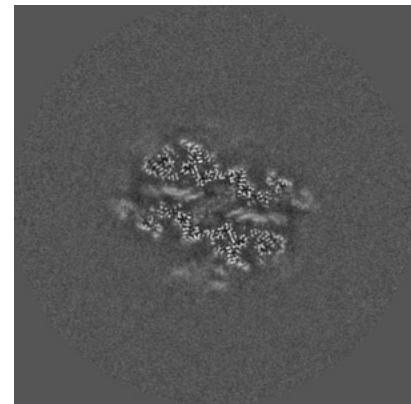
| X Index: 240 | Y Index: 240 | Z Index: 240 |

6.2.2 Raw map
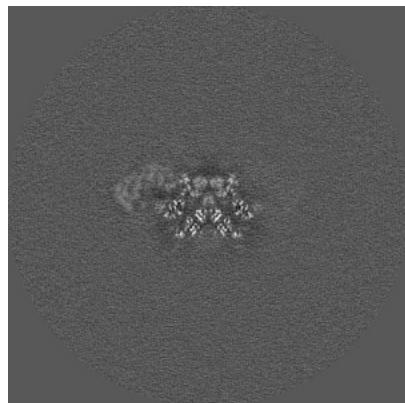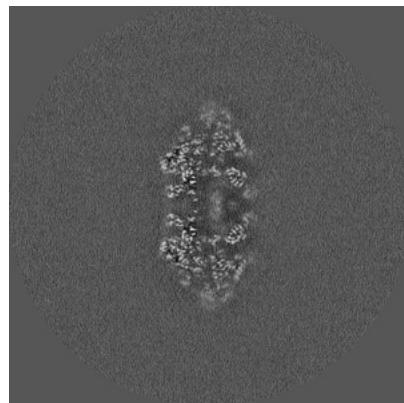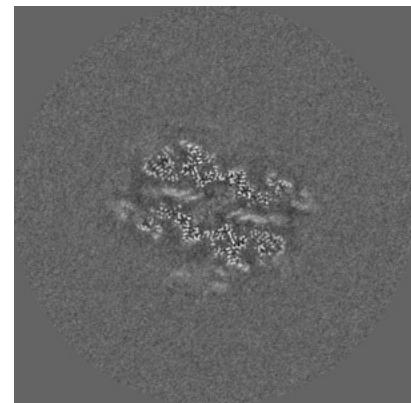
| X Index: 240 | Y Index: 240 | Z Index: 240 |

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

6.3 Largest variance slices (i)

6.3.1 Primary map
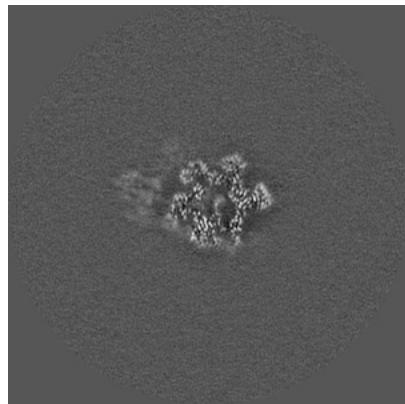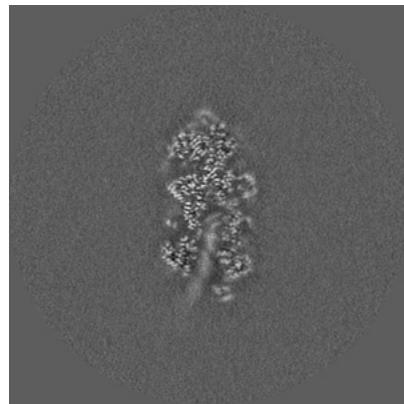
| X Index: 215 | Y Index: 253 | Z Index: 243 |
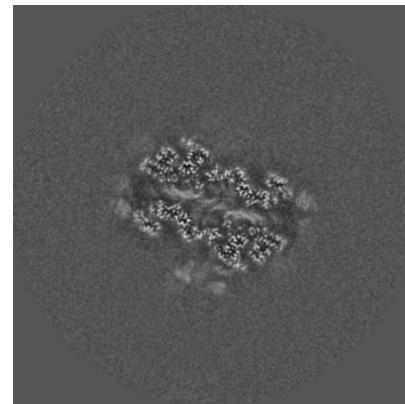
6.3.2 Raw map
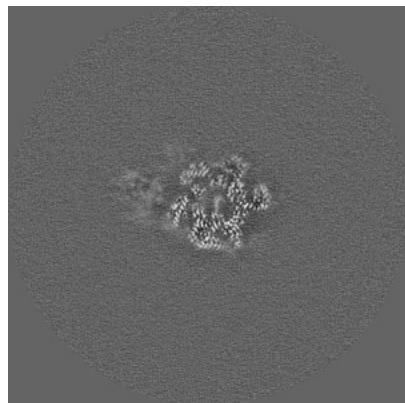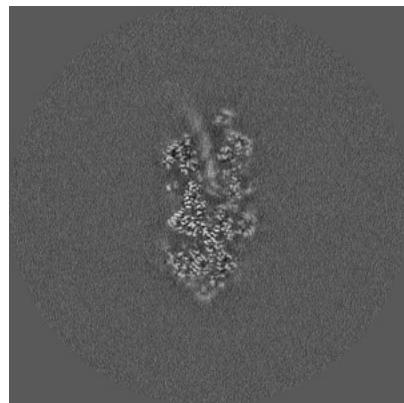
| X Index: 217 | Y Index: 227 | Z Index: 213 |
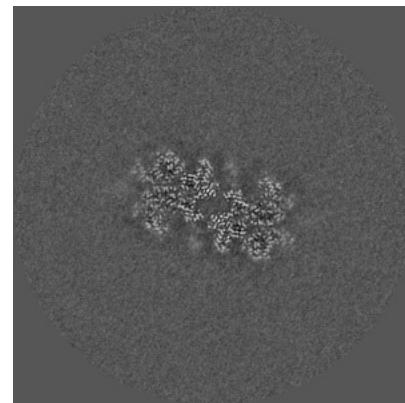
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
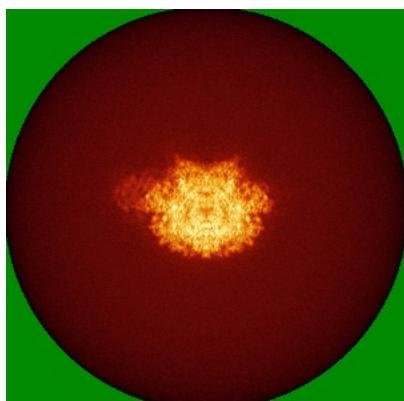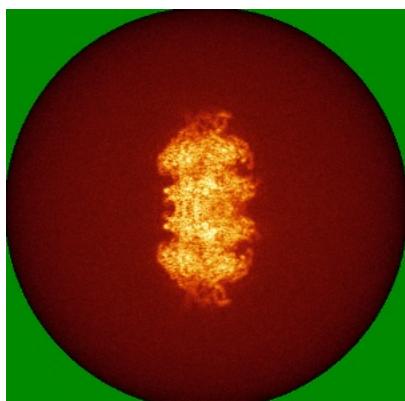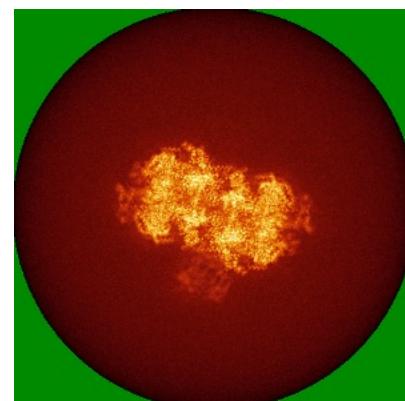
X	Y	Z

6.4.2 Raw map

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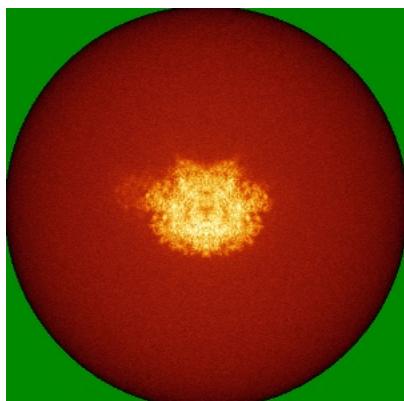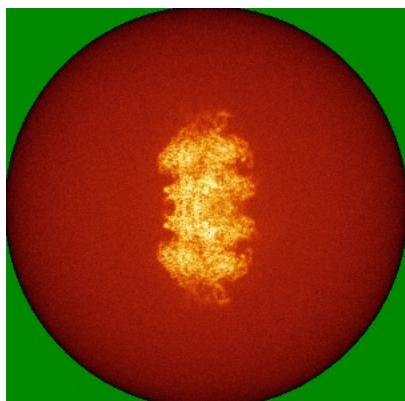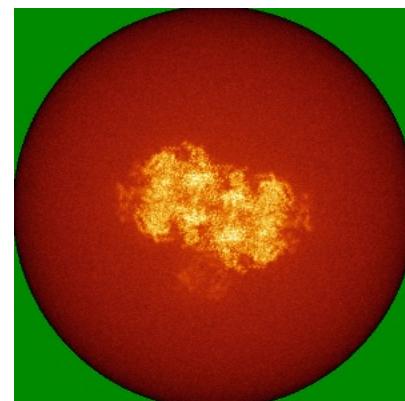
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X	Y	Z
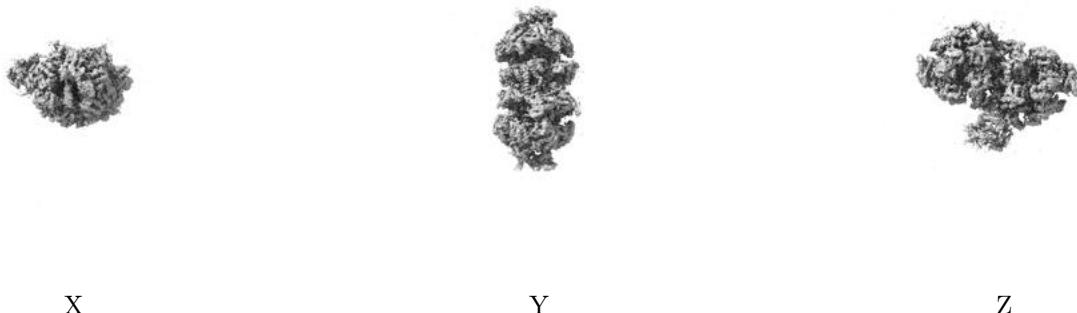
The images above show the 3D surface view of the map at the recommended contour level 0.0043. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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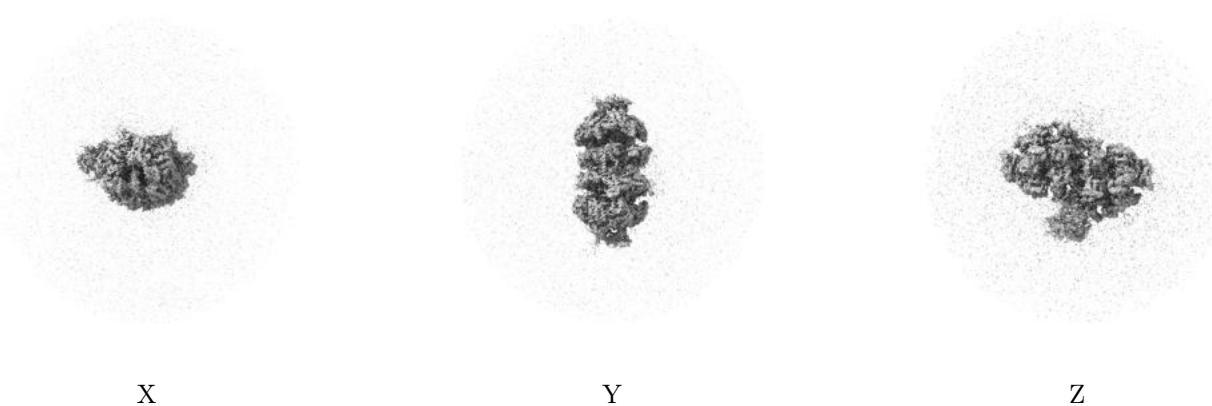
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6　Mask visualisation ⓘ

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_13211_msk_1.map ⓘ

X　　　　　　　　　　Y　　　　　　　　　　Z
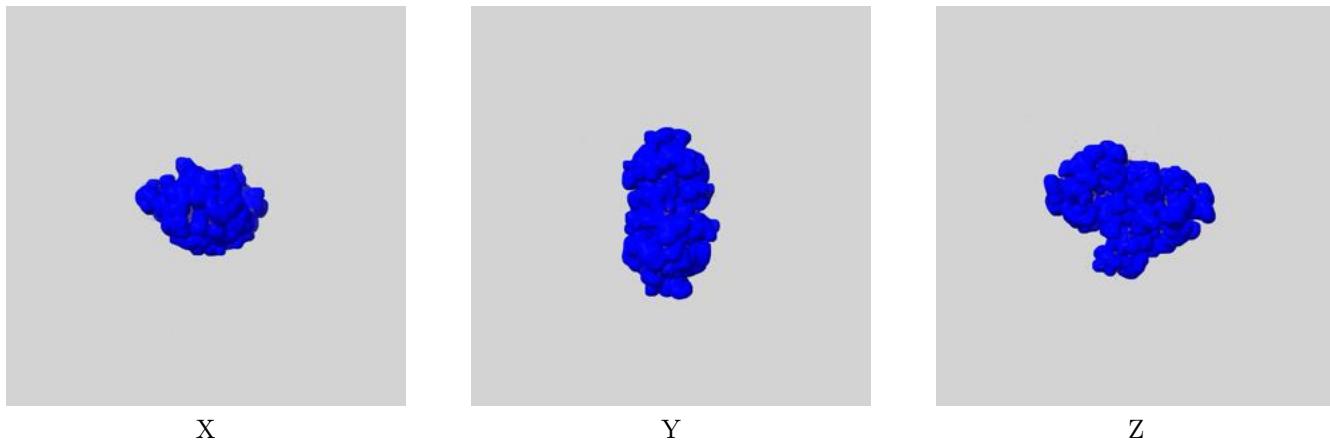
7 Map analysis ⓘ

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

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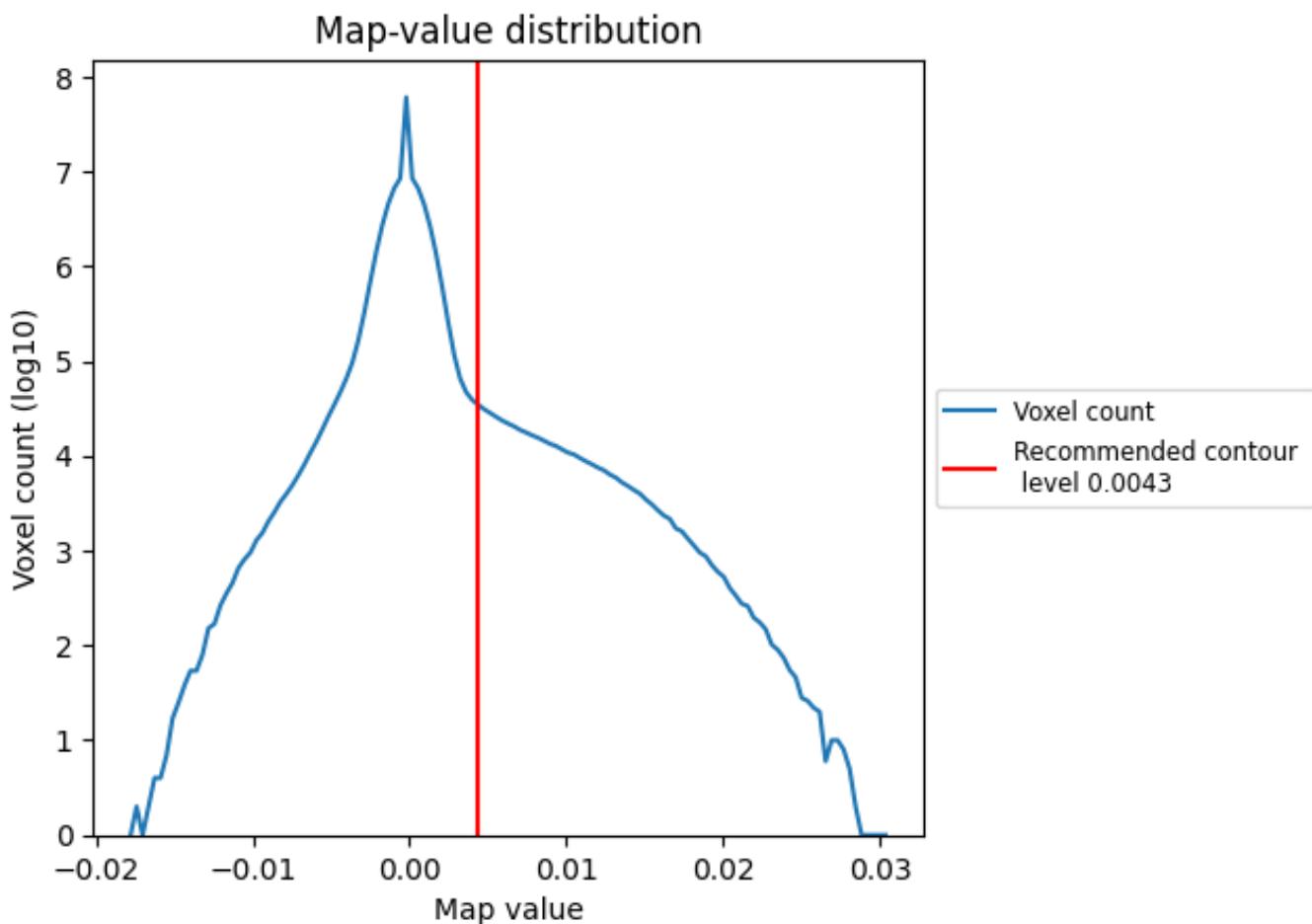
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
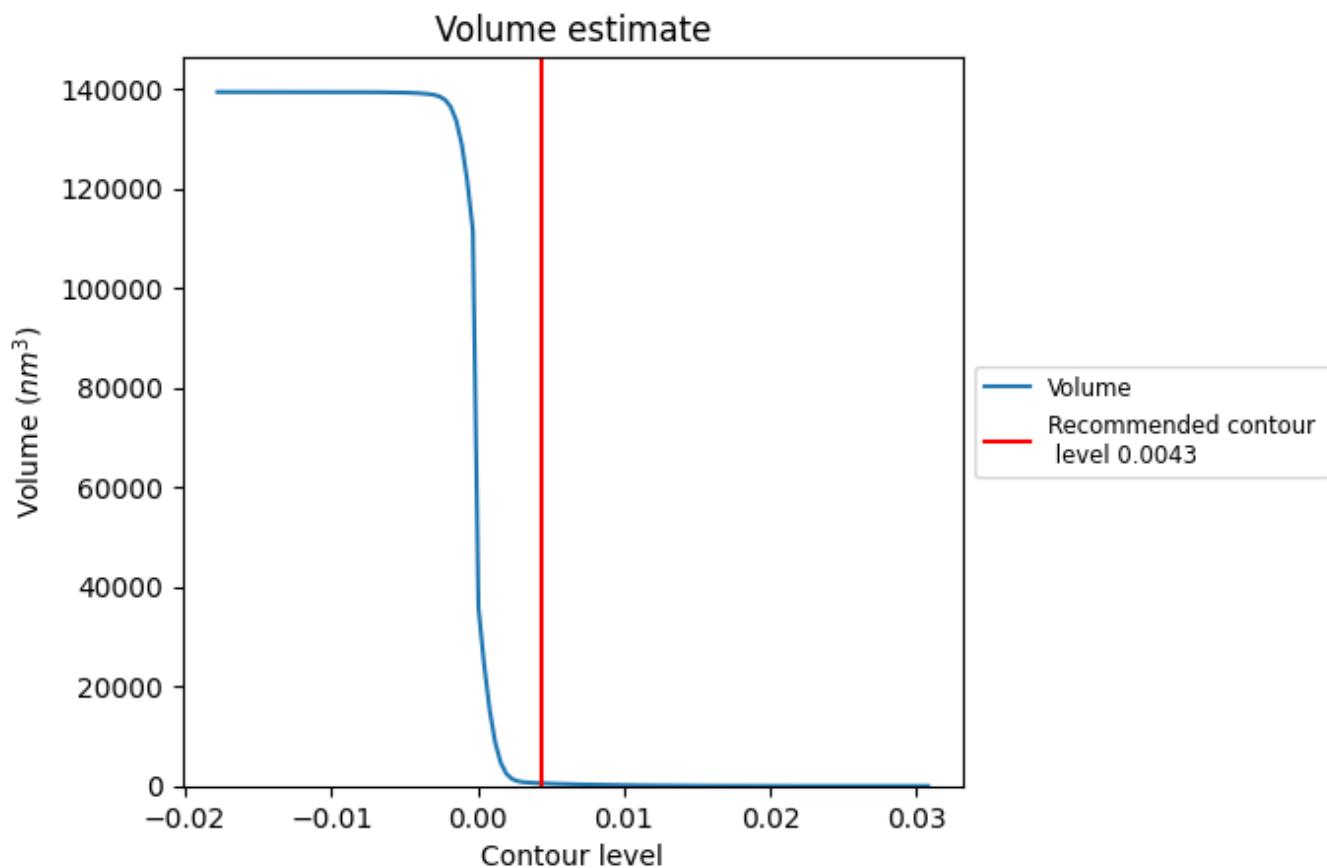
The volume at the recommended contour level is 545 nm³; this corresponds to an approximate mass of 492 kDa.

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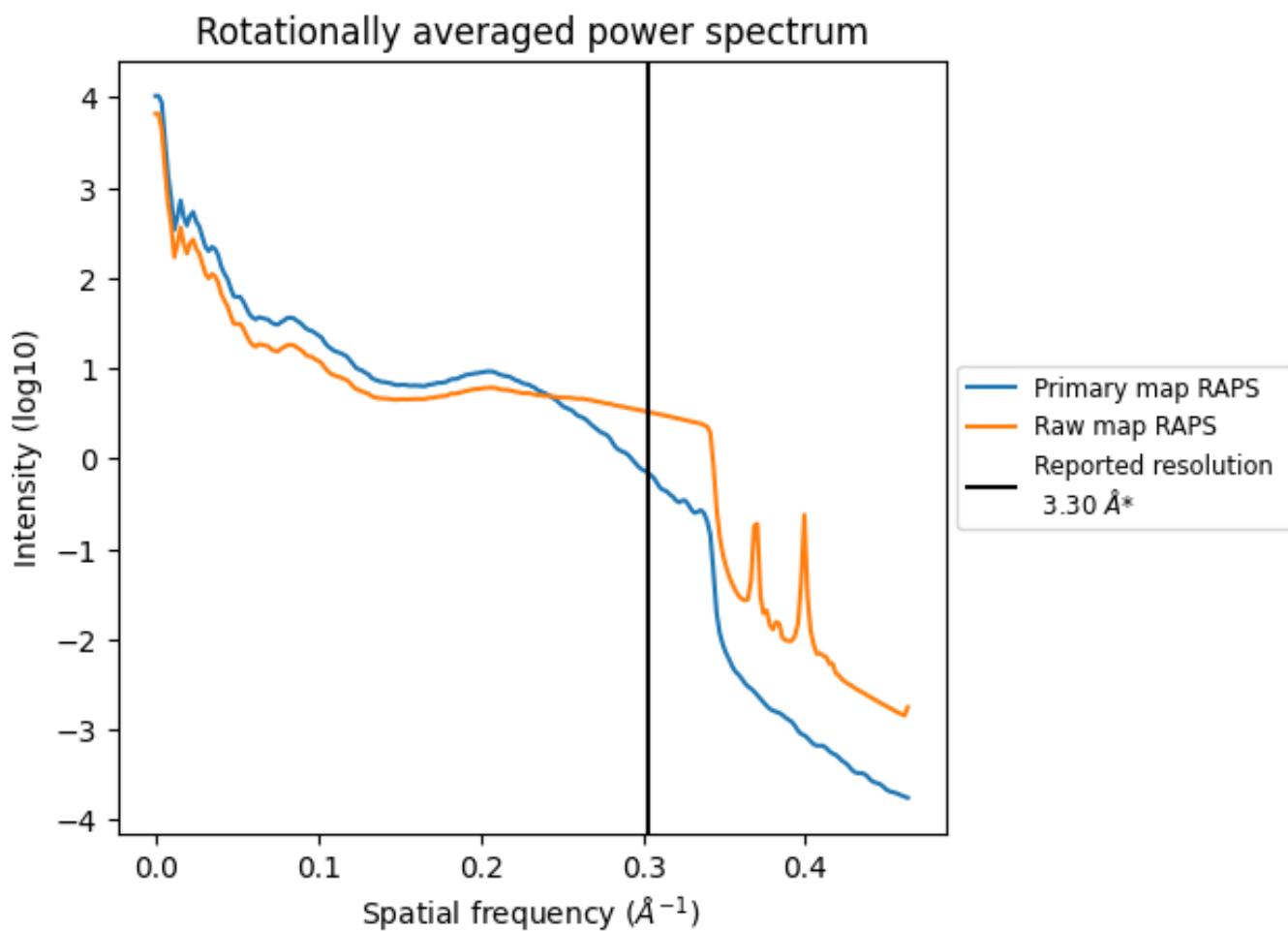
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

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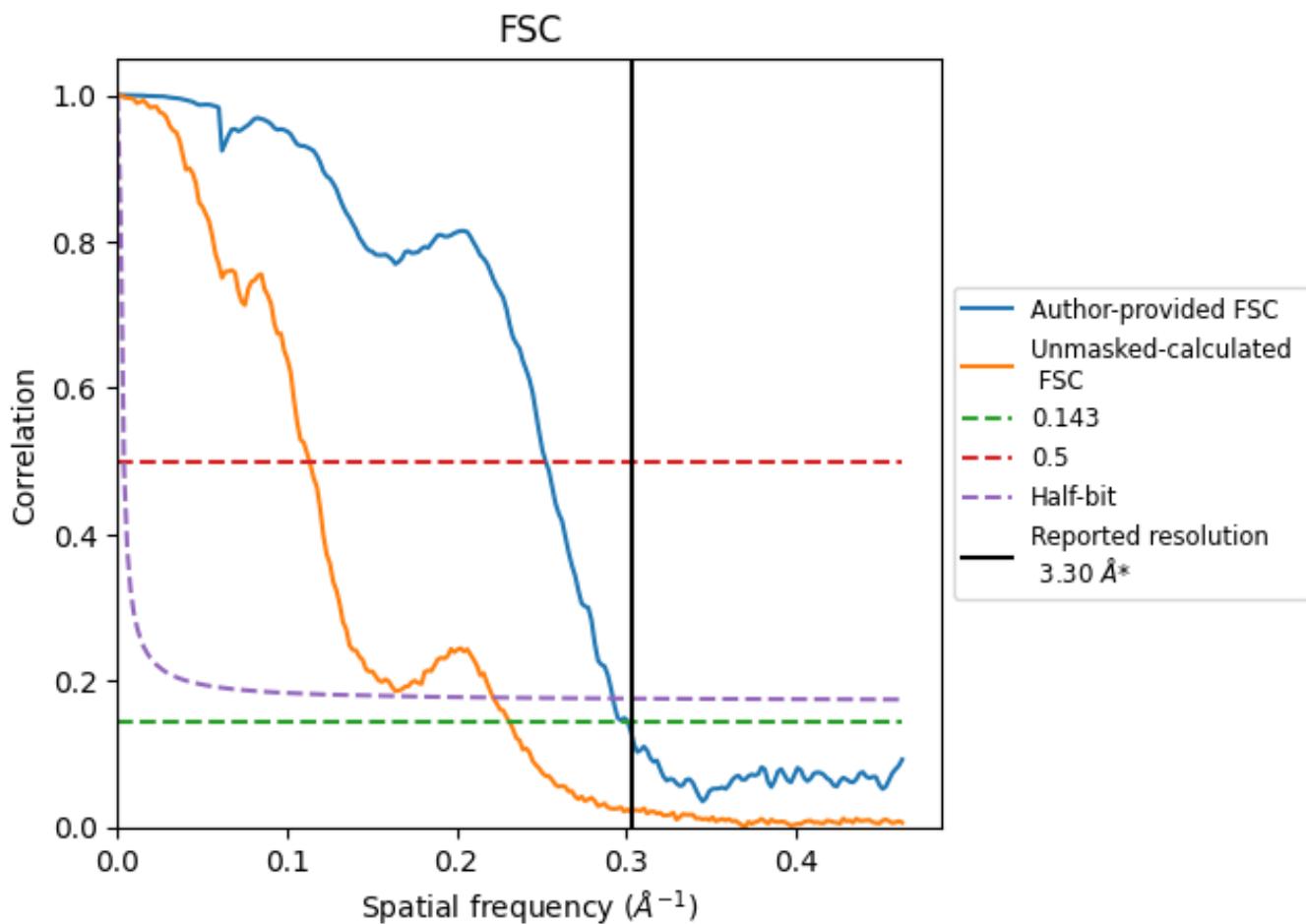
*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

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	3.32	3.96	3.42
Unmasked-calculated*	4.32	8.83	4.51

*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 4.32 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-13211 and PDB model 7P5Z. Per-residue inclusion information can be found in section 3 on page 12.

9.1　Map-model overlay ⓘ
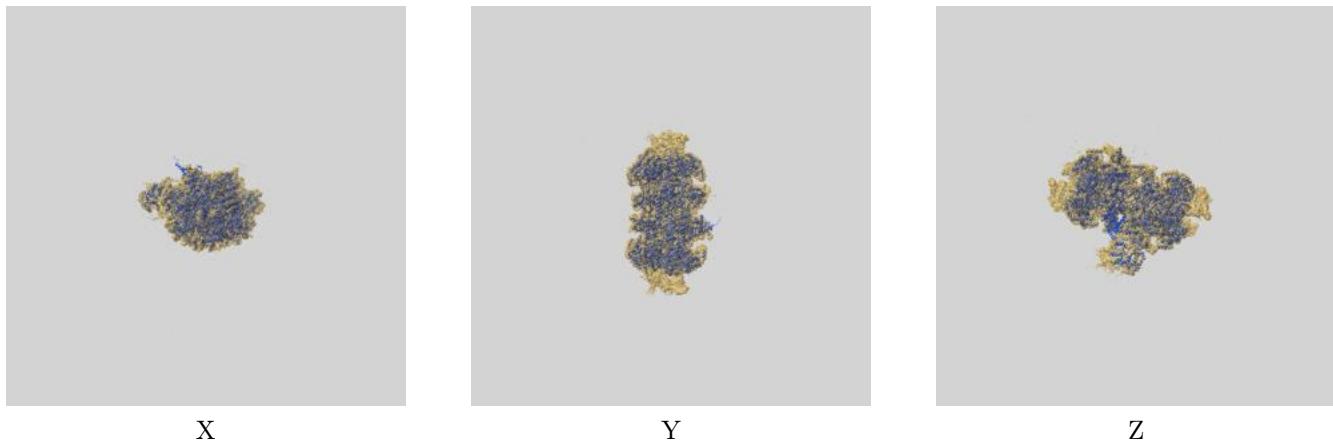
| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.0043 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
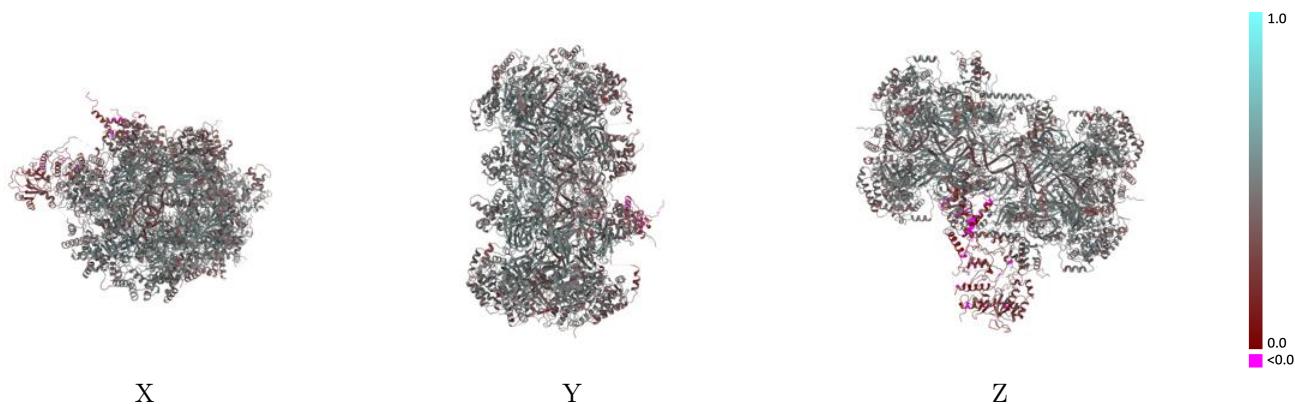
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
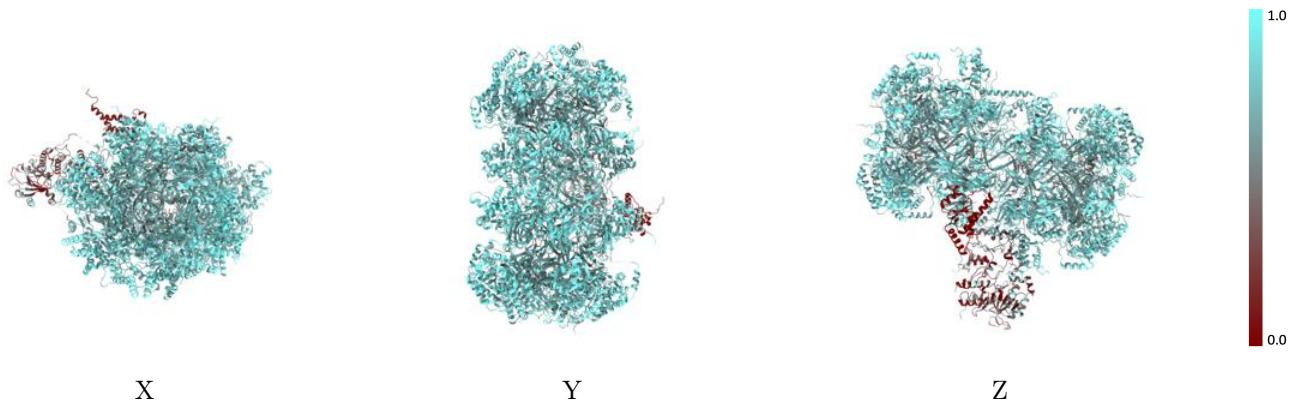
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0043).

9.4 Atom inclusion ⓘ
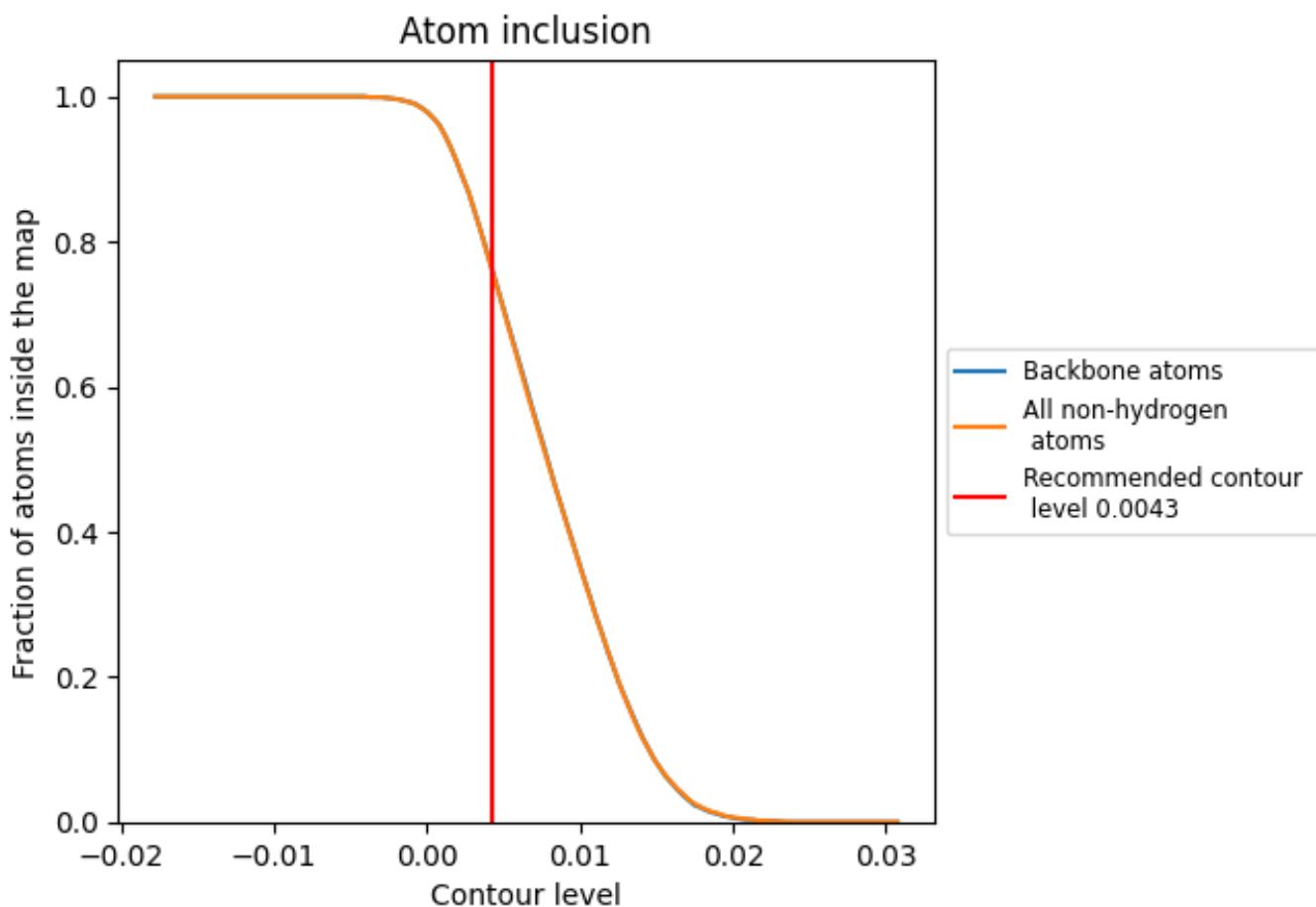
At the recommended contour level, 76% of all backbone atoms, 76% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0043) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7570	0.4510
1	0.3290	0.2270
2	0.7940	0.4530
3	0.8260	0.4970
4	0.7860	0.4730
5	0.8120	0.4790
6	0.7710	0.4450
7	0.8300	0.4900
A	0.7940	0.4540
B	0.8200	0.4880
C	0.8020	0.4760
D	0.8150	0.4800
E	0.7720	0.4480
F	0.8280	0.4880
G	0.1740	0.1680
X	0.6550	0.3530
Y	0.6620	0.3540

1.0

0.0
<0.0