Full wwPDB EM Validation Report ⓘ

Jul 8, 2024 – 12:17 am BST

PDB ID	:	7Z13
EMDB ID	:	EMD-14439
Title	:	S. cerevisiae CMGE dimer nucleating origin DNA melting
Authors	:	Lewis, J.S.; Sousa, J.S.; Costa, A.
Deposited on	:	2022-02-24
Resolution	:	3.40 Å(reported)
Based on initial models	:	7QHS, ?

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

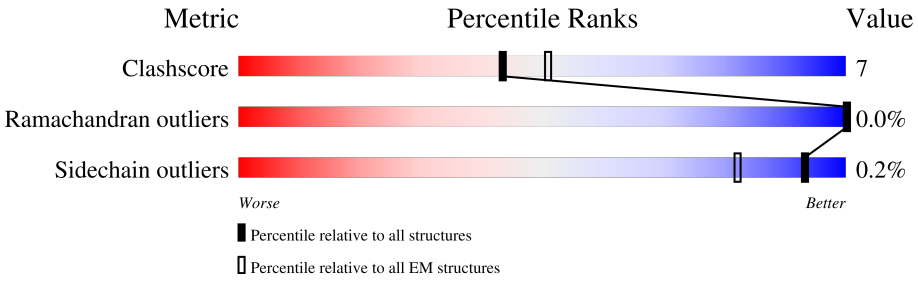
EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.40 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	66% 10% 24%
1	a	868	76% 24%
2	3	1006	56% 7% 37%
2	b	1006	63% 37%
3	4	933	48% 18% 35%
3	c	933	65% 35%
4	5	775	77% 12% 11%
4	d	775	89% 11%

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Mol	Chain	Length	Quality of chain
5	6	1017	51% 10% 38%
5	e	1017	61% 38%
6	7	845	60% 17% 22%
6	f	845	78% 22%
7	A	53	6% 74% 26%
8	B	53	6% 72% 28%
9	C	229	67% 9% 24%
9	J	229	68% 8% 24%
10	D	294	71% 12% 18%
10	K	294	70% 12% 18%
11	E	657	73% 13% 14%
11	L	657	73% 13% 14%
12	F	689	59% 21% 20%
12	M	689	59% 21% 20%
13	H	208	75% 25%
13	O	208	75% 25%
14	I	213	75% 14% 11%
14	P	213	74% 15% 11%
15	N	2222	27% 7% 66%
15	Q	2222	27% 7% 66%

2 Entry composition (i)

There are 19 unique types of molecules in this entry. The entry contains 107381 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called DNA replication licensing factor MCM2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	2	660	Total	C	N	O	S	0	0
			5231	3284	937	991	19		
1	a	660	Total	C	N	O	S	0	0
			5231	3284	937	991	19		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	3	633	Total	C	N	O	S	0	0
			4958	3119	882	944	13		
2	b	633	Total	C	N	O	S	0	0
			4958	3119	882	944	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

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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

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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	609	Total	C	N	O	S	0	0
			4850	3055	838	930	27		
3	c	609	Total	C	N	O	S	0	0
			4850	3055	838	930	27		

- Molecule 4 is a protein called DNA helicase.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	5	690	Total	C	N	O	S	0	0
			5450	3423	948	1055	24		
4	d	690	Total	C	N	O	S	0	0
			5450	3423	948	1055	24		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
5	6	629	Total	C	N	O	S	0	0
			4972	3134	867	946	25		
5	e	629	Total	C	N	O	S	0	0
			4972	3134	867	946	25		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
6	7	658	Total	C	N	O	S	0	0
			5181	3268	897	987	29		

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Mol	Chain	Residues	Atoms					AltConf	Trace
6	f	658	Total	C	N	O	S	0	0
			5181	3268	897	987	29		

- Molecule 7 is a DNA chain called DNA (53-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	A	53	Total	C	N	O	P	0	0
			1087	530	187	317	53		

- Molecule 8 is a DNA chain called DNA (53-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
8	B	53	Total	C	N	O	P	0	0
			1086	530	184	319	53		

- Molecule 9 is a protein called DNA replication complex GINS protein PSF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	C	173	Total	C	N	O	S	0	0
			1398	911	224	256	7		
9	J	173	Total	C	N	O	S	0	0
			1398	911	224	256	7		

There are 70 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-34	TRP	-	expression tag	UNP Q12146
C	-33	SER	-	expression tag	UNP Q12146
C	-32	HIS	-	expression tag	UNP Q12146
C	-31	PRO	-	expression tag	UNP Q12146
C	-30	GLN	-	expression tag	UNP Q12146
C	-29	PHE	-	expression tag	UNP Q12146
C	-28	GLU	-	expression tag	UNP Q12146
C	-27	LYS	-	expression tag	UNP Q12146
C	-26	GLY	-	expression tag	UNP Q12146
C	-25	GLY	-	expression tag	UNP Q12146
C	-24	GLY	-	expression tag	UNP Q12146
C	-23	SER	-	expression tag	UNP Q12146
C	-22	GLY	-	expression tag	UNP Q12146
C	-21	GLY	-	expression tag	UNP Q12146
C	-20	GLY	-	expression tag	UNP Q12146
C	-19	SER	-	expression tag	UNP Q12146

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-18	GLY	-	expression tag	UNP Q12146
C	-17	GLY	-	expression tag	UNP Q12146
C	-16	GLY	-	expression tag	UNP Q12146
C	-15	SER	-	expression tag	UNP Q12146
C	-14	TRP	-	expression tag	UNP Q12146
C	-13	SER	-	expression tag	UNP Q12146
C	-12	HIS	-	expression tag	UNP Q12146
C	-11	PRO	-	expression tag	UNP Q12146
C	-10	GLN	-	expression tag	UNP Q12146
C	-9	PHE	-	expression tag	UNP Q12146
C	-8	GLU	-	expression tag	UNP Q12146
C	-7	LYS	-	expression tag	UNP Q12146
C	-6	GLU	-	expression tag	UNP Q12146
C	-5	ASN	-	expression tag	UNP Q12146
C	-4	LEU	-	expression tag	UNP Q12146
C	-3	TYR	-	expression tag	UNP Q12146
C	-2	PHE	-	expression tag	UNP Q12146
C	-1	GLN	-	expression tag	UNP Q12146
C	0	SER	-	expression tag	UNP Q12146
J	-34	TRP	-	expression tag	UNP Q12146
J	-33	SER	-	expression tag	UNP Q12146
J	-32	HIS	-	expression tag	UNP Q12146
J	-31	PRO	-	expression tag	UNP Q12146
J	-30	GLN	-	expression tag	UNP Q12146
J	-29	PHE	-	expression tag	UNP Q12146
J	-28	GLU	-	expression tag	UNP Q12146
J	-27	LYS	-	expression tag	UNP Q12146
J	-26	GLY	-	expression tag	UNP Q12146
J	-25	GLY	-	expression tag	UNP Q12146
J	-24	GLY	-	expression tag	UNP Q12146
J	-23	SER	-	expression tag	UNP Q12146
J	-22	GLY	-	expression tag	UNP Q12146
J	-21	GLY	-	expression tag	UNP Q12146
J	-20	GLY	-	expression tag	UNP Q12146
J	-19	SER	-	expression tag	UNP Q12146
J	-18	GLY	-	expression tag	UNP Q12146
J	-17	GLY	-	expression tag	UNP Q12146
J	-16	GLY	-	expression tag	UNP Q12146
J	-15	SER	-	expression tag	UNP Q12146
J	-14	TRP	-	expression tag	UNP Q12146
J	-13	SER	-	expression tag	UNP Q12146
J	-12	HIS	-	expression tag	UNP Q12146

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Chain	Residue	Modelled	Actual	Comment	Reference
J	-11	PRO	-	expression tag	UNP Q12146
J	-10	GLN	-	expression tag	UNP Q12146
J	-9	PHE	-	expression tag	UNP Q12146
J	-8	GLU	-	expression tag	UNP Q12146
J	-7	LYS	-	expression tag	UNP Q12146
J	-6	GLU	-	expression tag	UNP Q12146
J	-5	ASN	-	expression tag	UNP Q12146
J	-4	LEU	-	expression tag	UNP Q12146
J	-3	TYR	-	expression tag	UNP Q12146
J	-2	PHE	-	expression tag	UNP Q12146
J	-1	GLN	-	expression tag	UNP Q12146
J	0	SER	-	expression tag	UNP Q12146

- Molecule 10 is a protein called DNA replication complex GINS protein SLD5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	D	242	Total	C	N	O	S	0	0
			1990	1267	328	381	14		
10	K	242	Total	C	N	O	S	0	0
			1990	1267	328	381	14		

- Molecule 11 is a protein called Cell division control protein 45.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	E	566	Total	C	N	O	S	0	0
			4599	2937	778	870	14		
11	L	566	Total	C	N	O	S	0	0
			4599	2937	778	870	14		

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	167G	TYR	-	linker	UNP Q08032
E	167H	LYS	-	linker	UNP Q08032
E	167I	ASP	-	linker	UNP Q08032
E	167J	ASP	-	linker	UNP Q08032
E	167K	ASP	-	linker	UNP Q08032
E	167L	GLY	-	linker	UNP Q08032
E	167M	ASP	-	linker	UNP Q08032
E	167N	TYR	-	linker	UNP Q08032
E	167O	LYS	-	linker	UNP Q08032
E	167P	ASP	-	linker	UNP Q08032

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Chain	Residue	Modelled	Actual	Comment	Reference
E	167Q	ASP	-	linker	UNP Q08032
L	167G	TYR	-	linker	UNP Q08032
L	167H	LYS	-	linker	UNP Q08032
L	167I	ASP	-	linker	UNP Q08032
L	167J	ASP	-	linker	UNP Q08032
L	167K	ASP	-	linker	UNP Q08032
L	167L	GLY	-	linker	UNP Q08032
L	167M	ASP	-	linker	UNP Q08032
L	167N	TYR	-	linker	UNP Q08032
L	167O	LYS	-	linker	UNP Q08032
L	167P	ASP	-	linker	UNP Q08032
L	167Q	ASP	-	linker	UNP Q08032

- Molecule 12 is a protein called DNA polymerase epsilon subunit B.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	F	551	Total	C	N	O	S	0	0
			4396	2819	755	804	18		
12	M	551	Total	C	N	O	S	0	0
			4396	2819	755	804	18		

- Molecule 13 is a protein called DNA replication complex GINS protein PSF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	H	208	Total	C	N	O	S	0	0
			1697	1065	290	332	10		
13	O	208	Total	C	N	O	S	0	0
			1697	1065	290	332	10		

- Molecule 14 is a protein called DNA replication complex GINS protein PSF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	I	189	Total	C	N	O	S	0	0
			1581	1018	277	282	4		
14	P	189	Total	C	N	O	S	0	0
			1581	1018	277	282	4		

- Molecule 15 is a protein called DNA polymerase epsilon catalytic subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	N	756	Total	C	N	O	S	0	0
			6113	3956	1006	1114	37		

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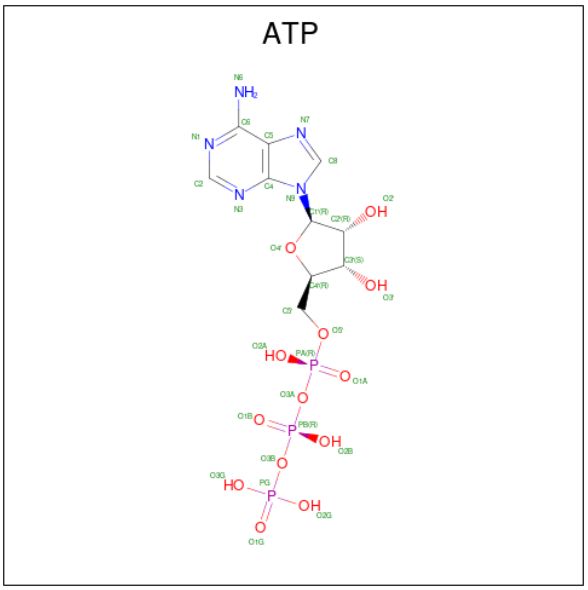
Mol	Chain	Residues	Atoms					AltConf	Trace
15	Q	756	Total	C	N	O	S	0	0
			6113	3956	1006	1114	37		

- Molecule 16 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
16	2	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	3	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	5	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	7	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	a	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	b	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	d	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	f	1	Total	C	N	O	P	0
			31	10	5	13	3	

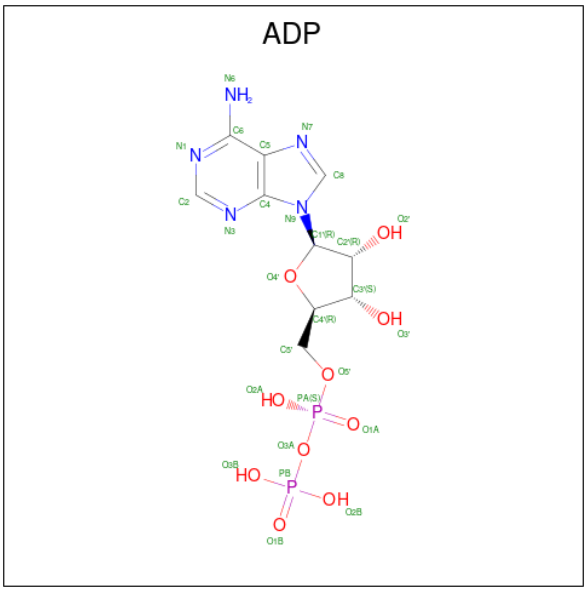
- Molecule 17 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
17	2	1	Total Zn 1 1	0
17	4	1	Total Zn 1 1	0
17	5	1	Total Zn 1 1	0
17	6	1	Total Zn 1 1	0
17	7	1	Total Zn 1 1	0
17	N	2	Total Zn 2 2	0
17	Q	2	Total Zn 2 2	0
17	a	1	Total Zn 1 1	0
17	c	1	Total Zn 1 1	0
17	d	1	Total Zn 1 1	0
17	e	1	Total Zn 1 1	0
17	f	1	Total Zn 1 1	0

- Molecule 18 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
18	3	1	Total Mg 1 1	0
18	5	1	Total Mg 1 1	0
18	7	1	Total Mg 1 1	0
18	b	1	Total Mg 1 1	0
18	d	1	Total Mg 1 1	0
18	f	1	Total Mg 1 1	0

- Molecule 19 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



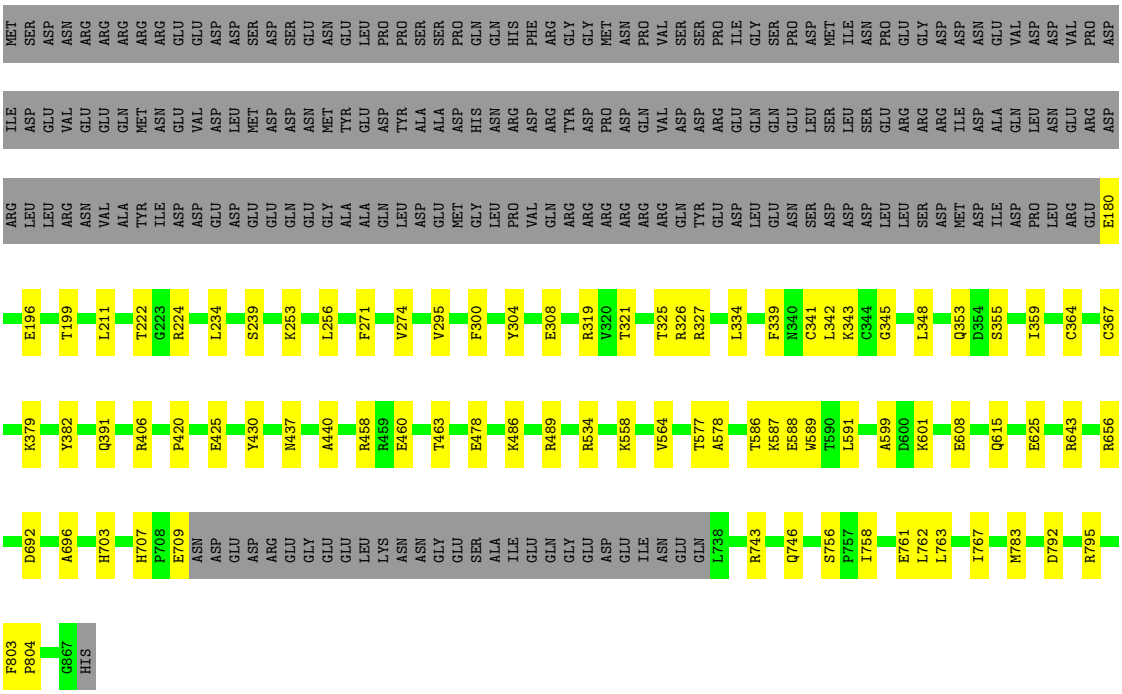
Mol	Chain	Residues	Atoms					AltConf
19	4	1	Total	C	N	O	P	0
			27	10	5	10	2	
19	6	1	Total	C	N	O	P	0
			27	10	5	10	2	
19	c	1	Total	C	N	O	P	0
			27	10	5	10	2	
19	e	1	Total	C	N	O	P	0
			27	10	5	10	2	

3 Residue-property plots (i)

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

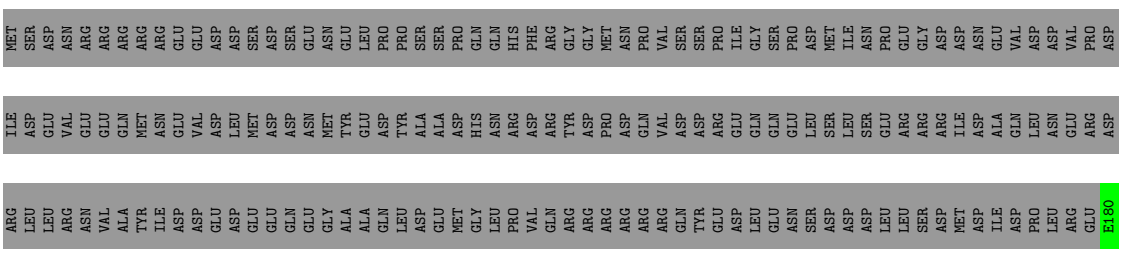
• Molecule 1: DNA replication licensing factor MCM2

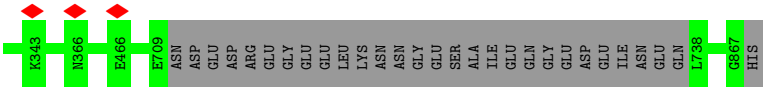
Chain 2:



• Molecule 1: DNA replication licensing factor MCM2

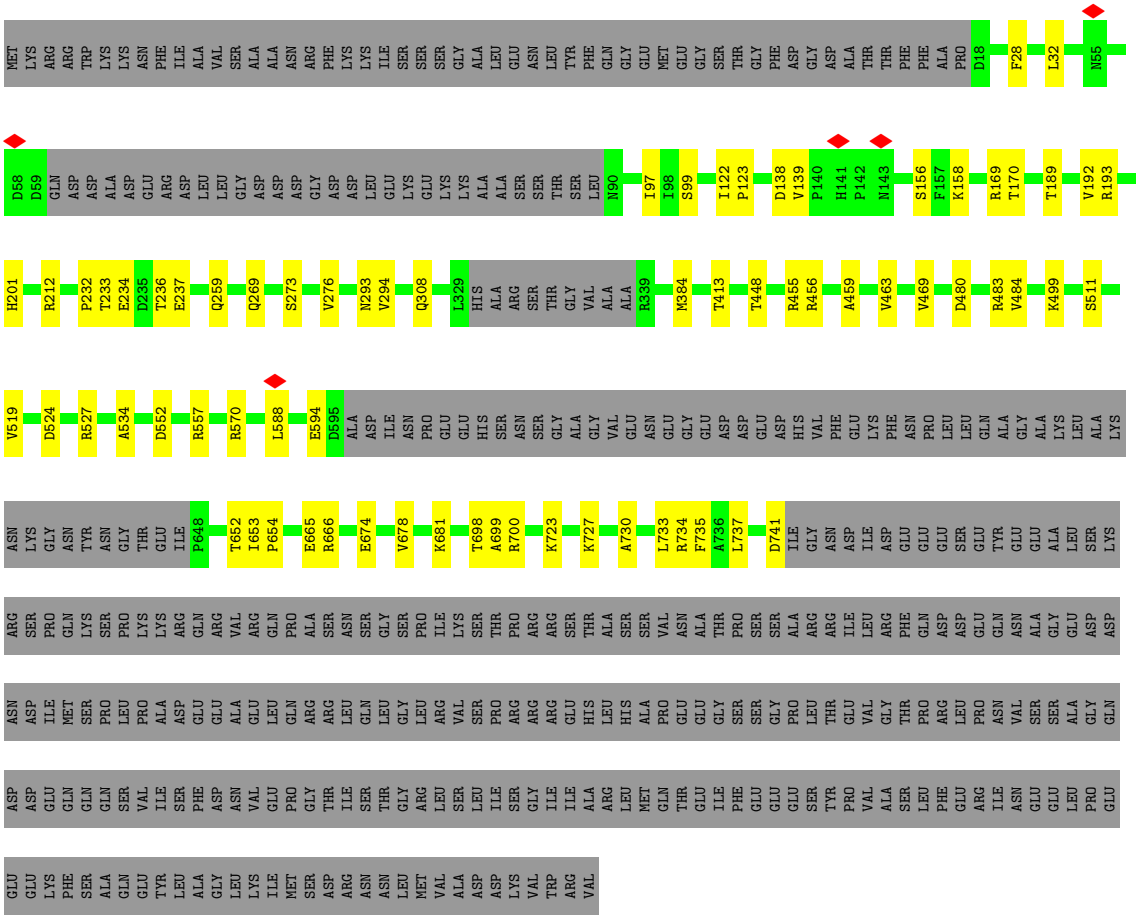
Chain a:





• Molecule 2: DNA replication licensing factor MCM3

Chain 3:



• Molecule 2: DNA replication licensing factor MCM3

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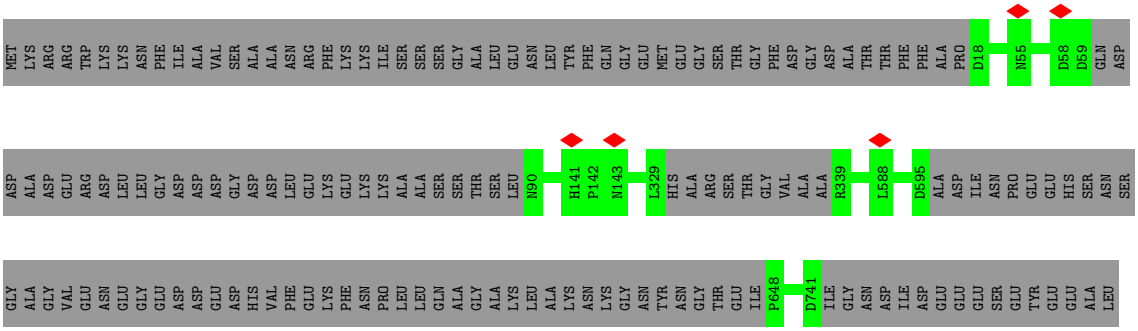
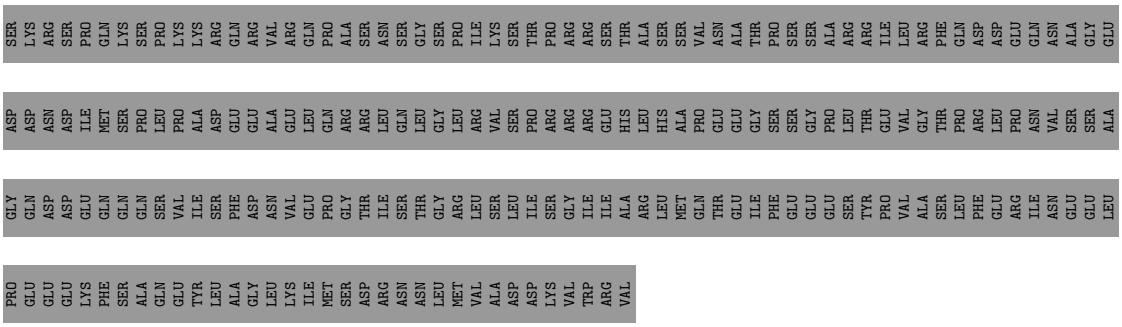
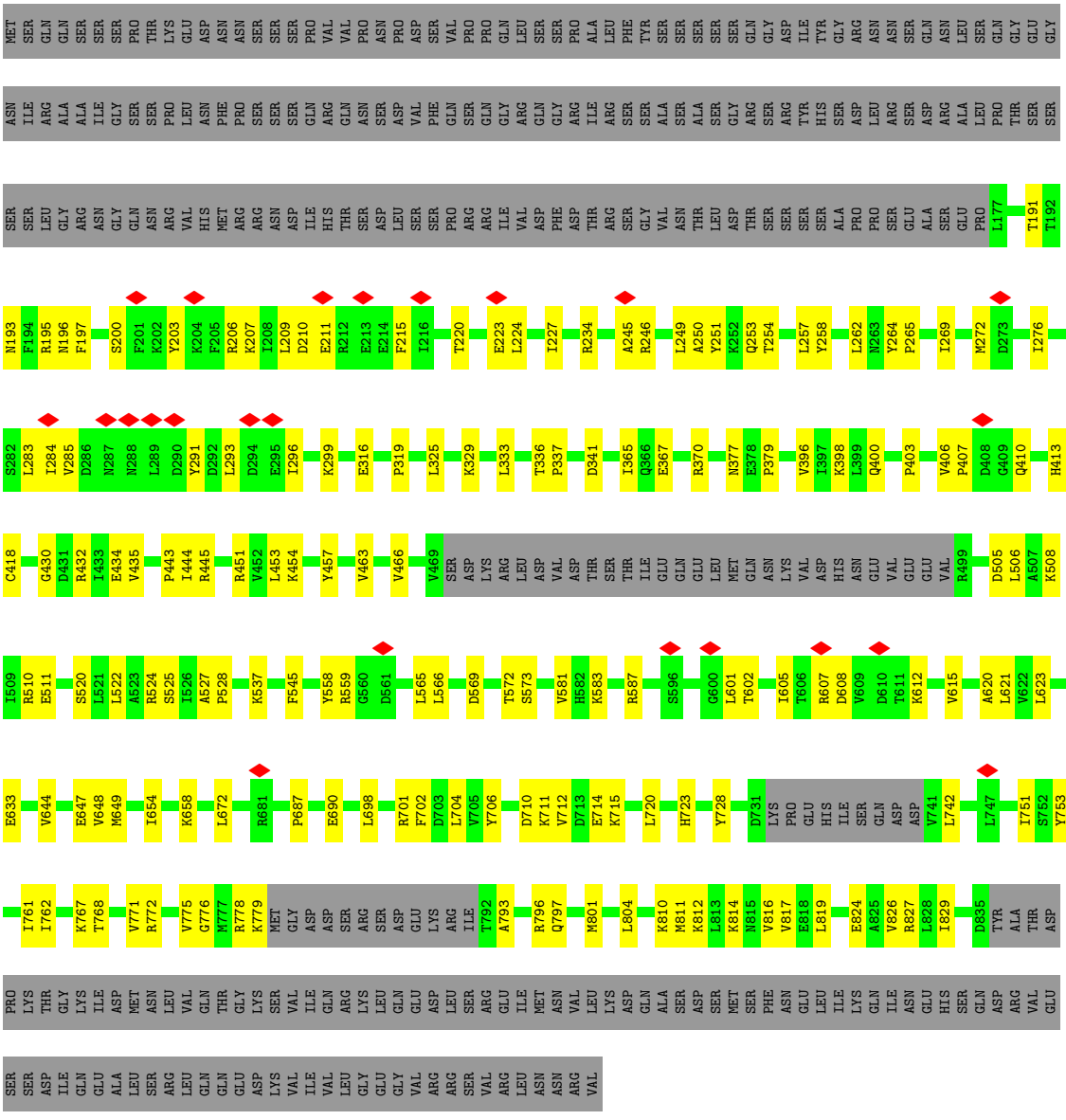




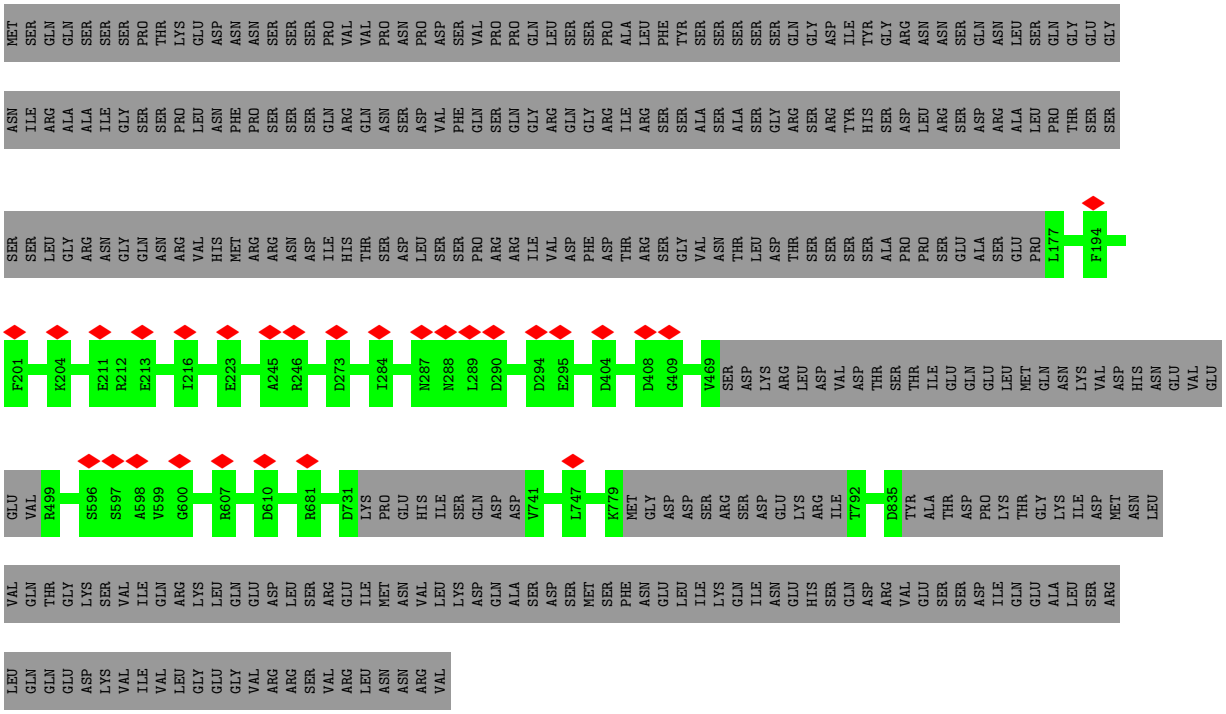
• Molecule 3: DNA replication licensing factor MCM4

Chain 4:



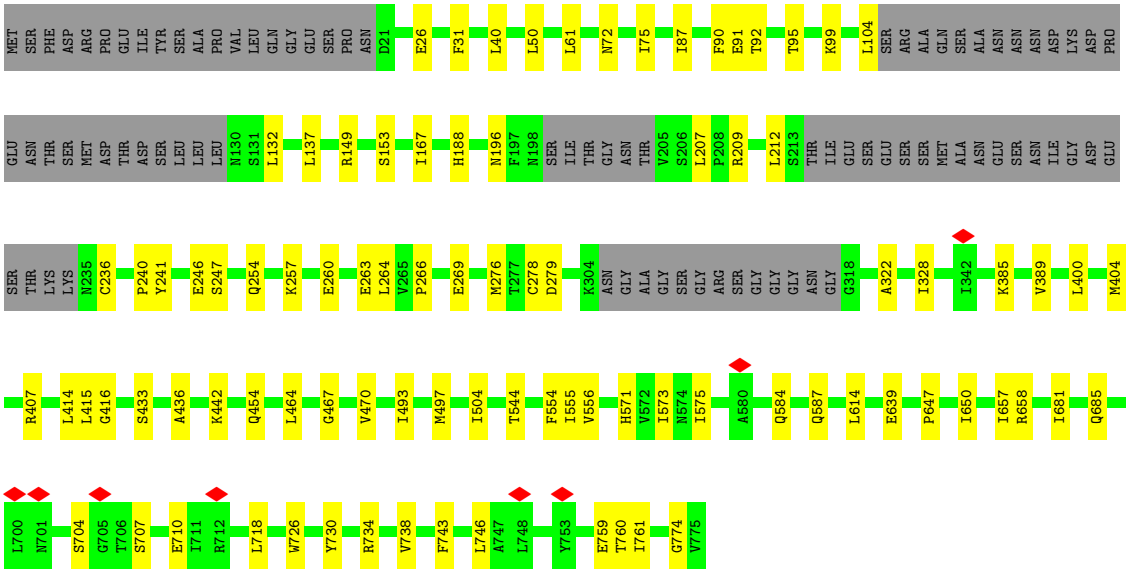
• Molecule 3: DNA replication licensing factor MCM4

Chain c:



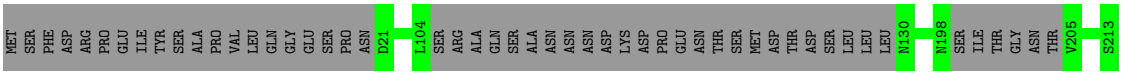
• Molecule 4: DNA helicase

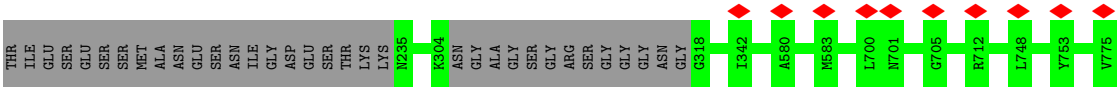
Chain 5:



• Molecule 4: DNA helicase

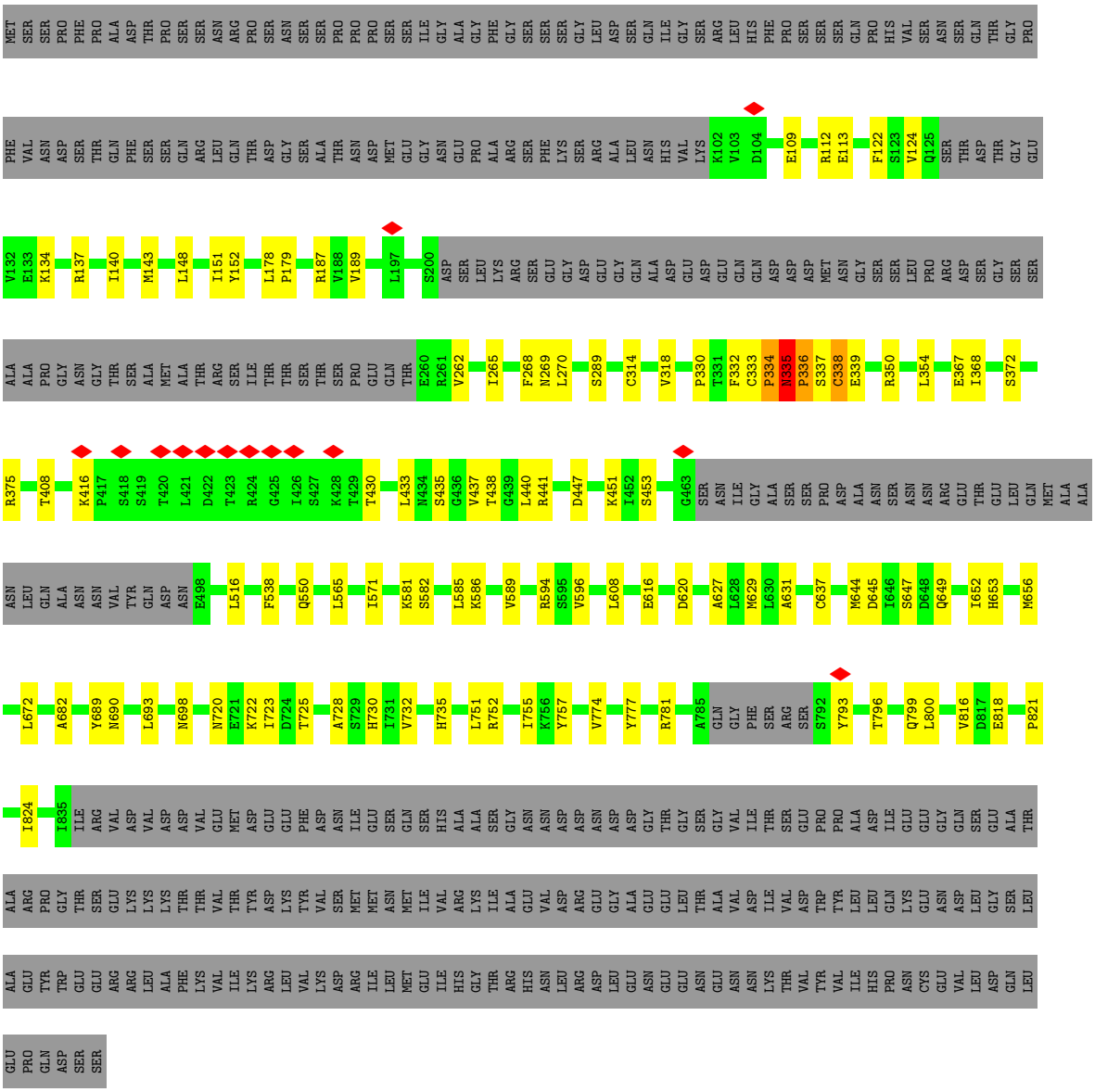
Chain d:





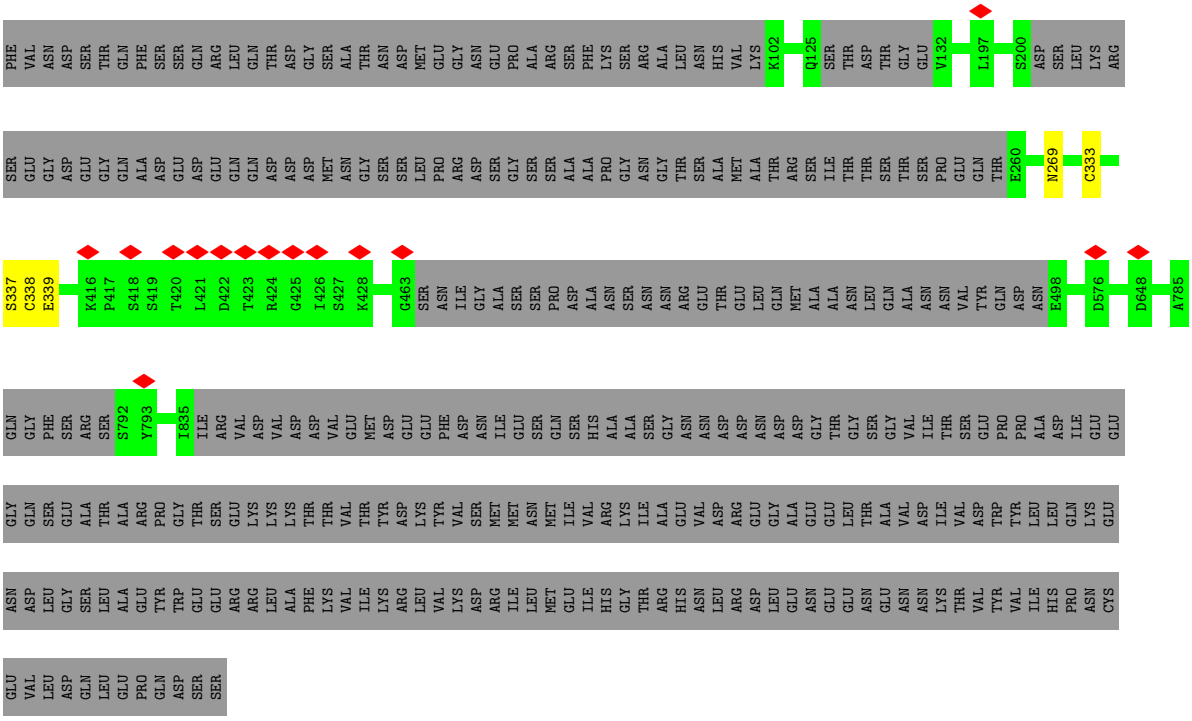
• Molecule 5: DNA replication licensing factor MCM6

Chain 6:



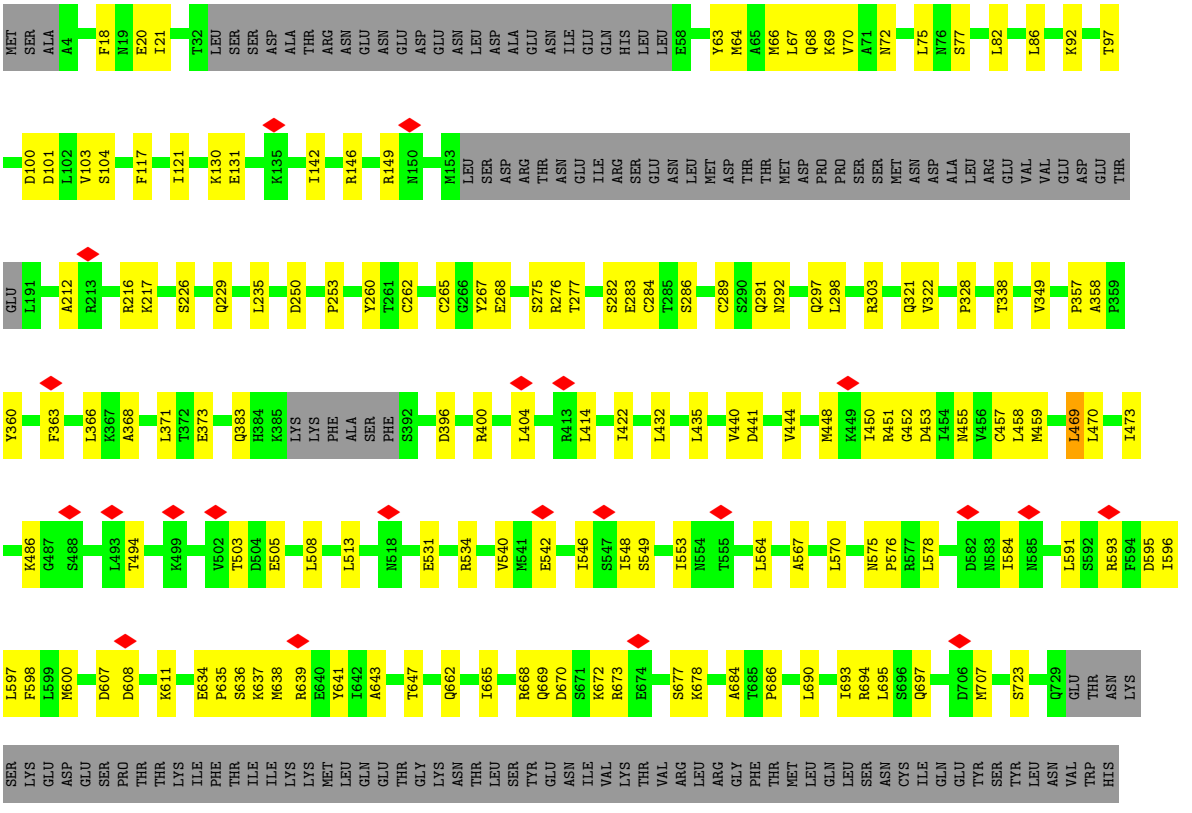
• Molecule 5: DNA replication licensing factor MCM6

Chain e:

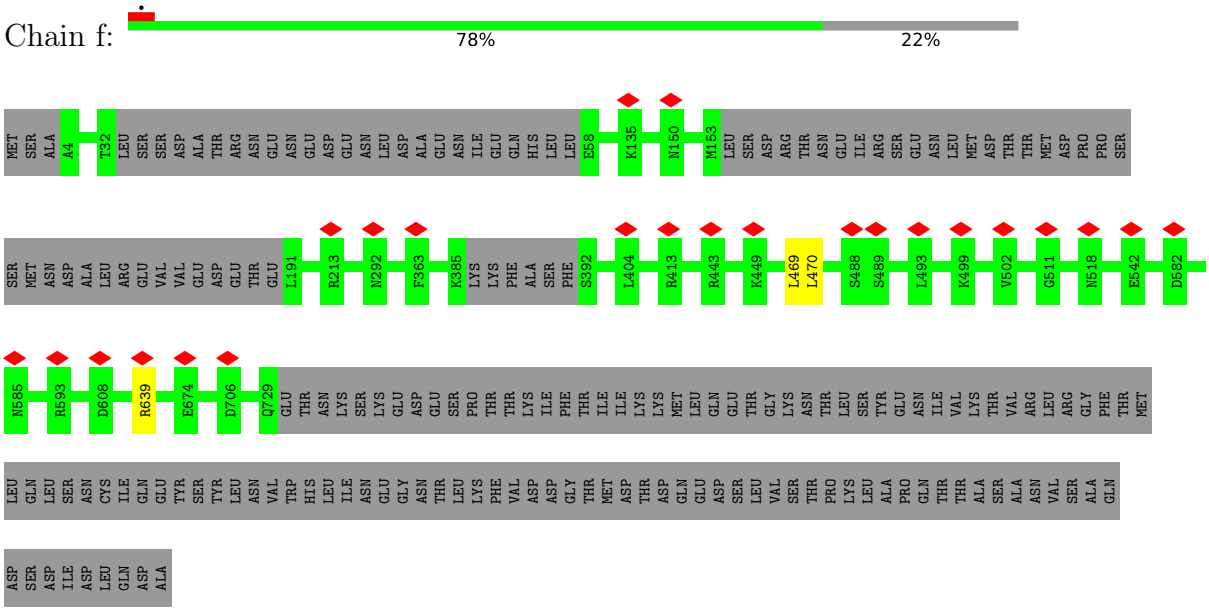


• Molecule 6: DNA replication licensing factor MCM7

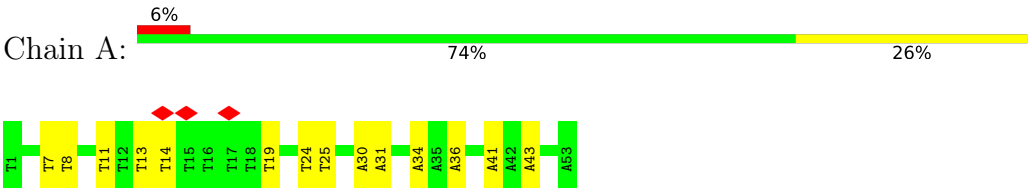
Chain 7:



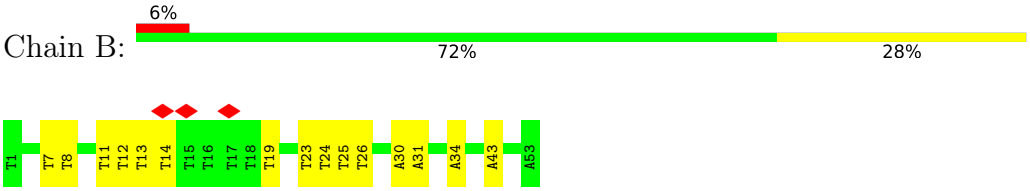
• Molecule 6: DNA replication licensing factor MCM7



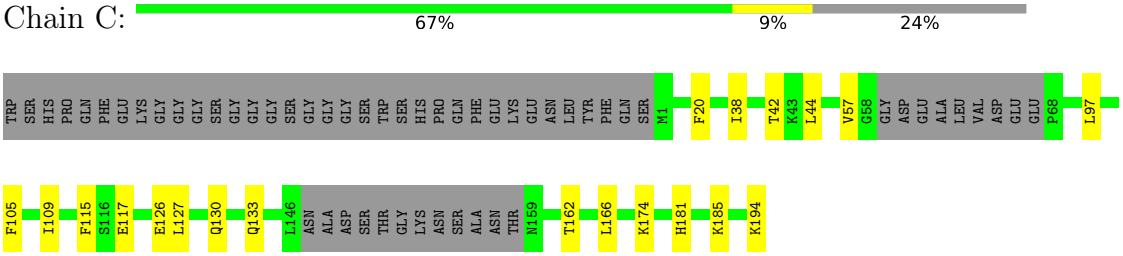
• Molecule 7: DNA (53-MER)



• Molecule 8: DNA (53-MER)

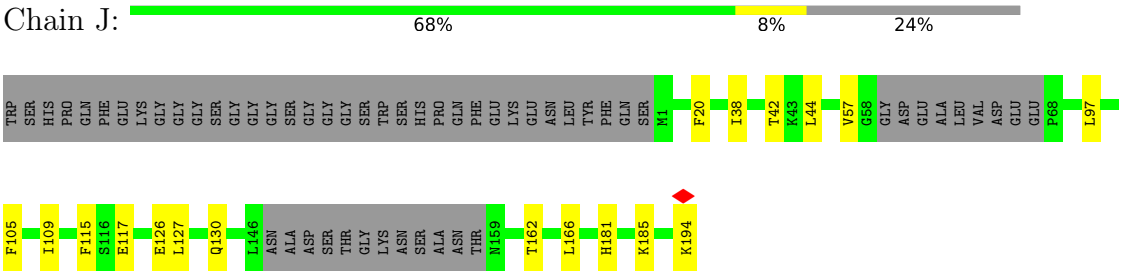


• Molecule 9: DNA replication complex GINS protein PSF3



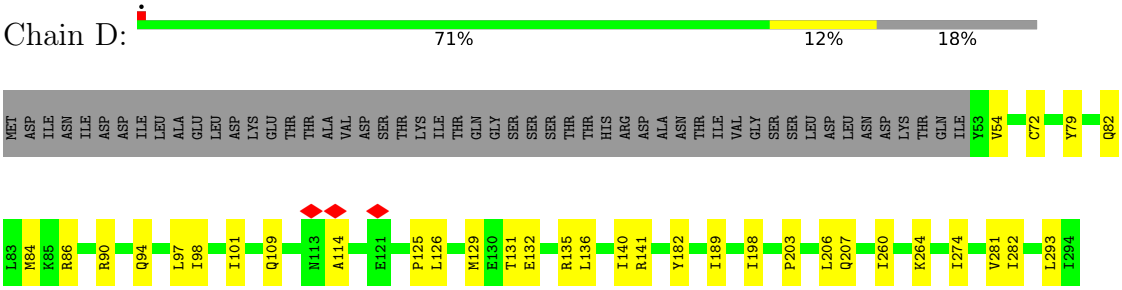
• Molecule 9: DNA replication complex GINS protein PSF3

Chain J:



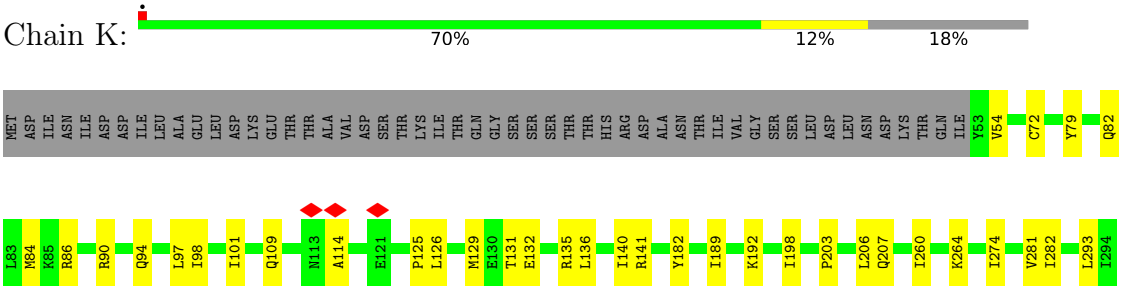
• Molecule 10: DNA replication complex GINS protein SLD5

Chain D:



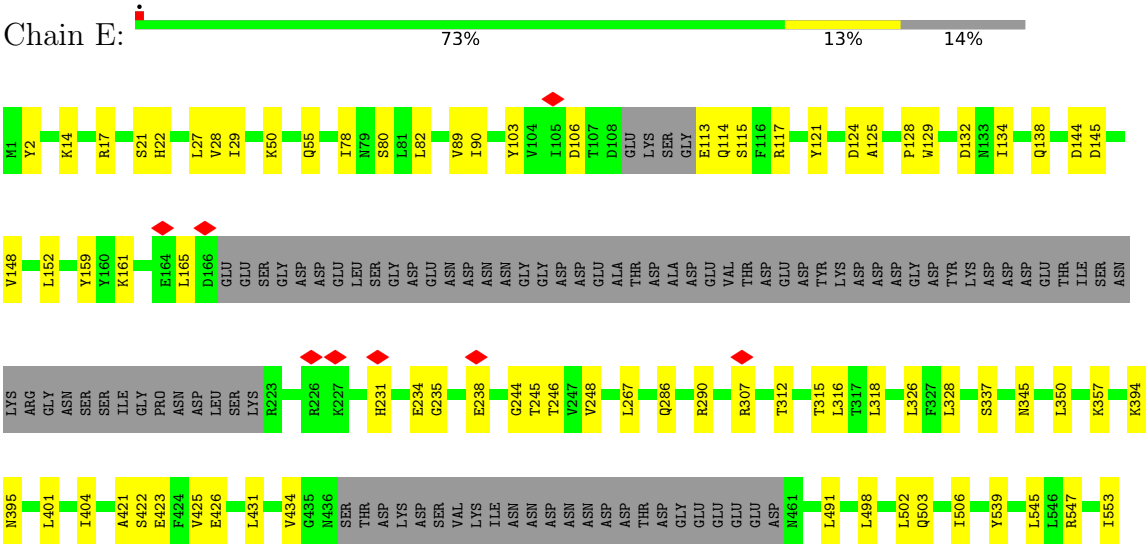
• Molecule 10: DNA replication complex GINS protein SLD5

Chain K:



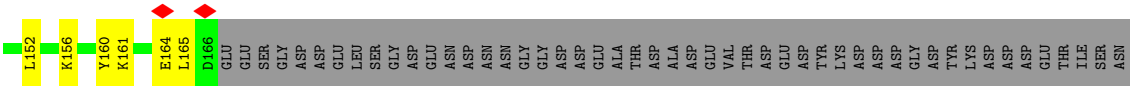
• Molecule 11: Cell division control protein 45

Chain E:



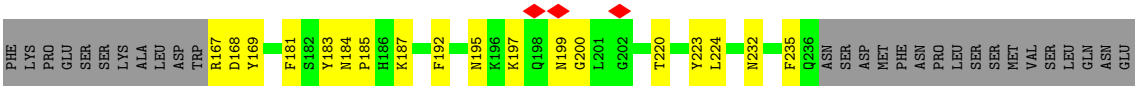
• Molecule 11: Cell division control protein 45

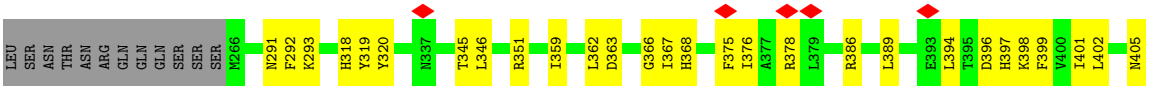
Chain L:

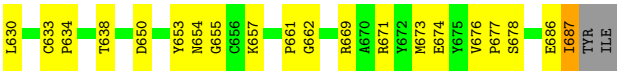


• Molecule 12: DNA polymerase epsilon subunit B

Chain F:

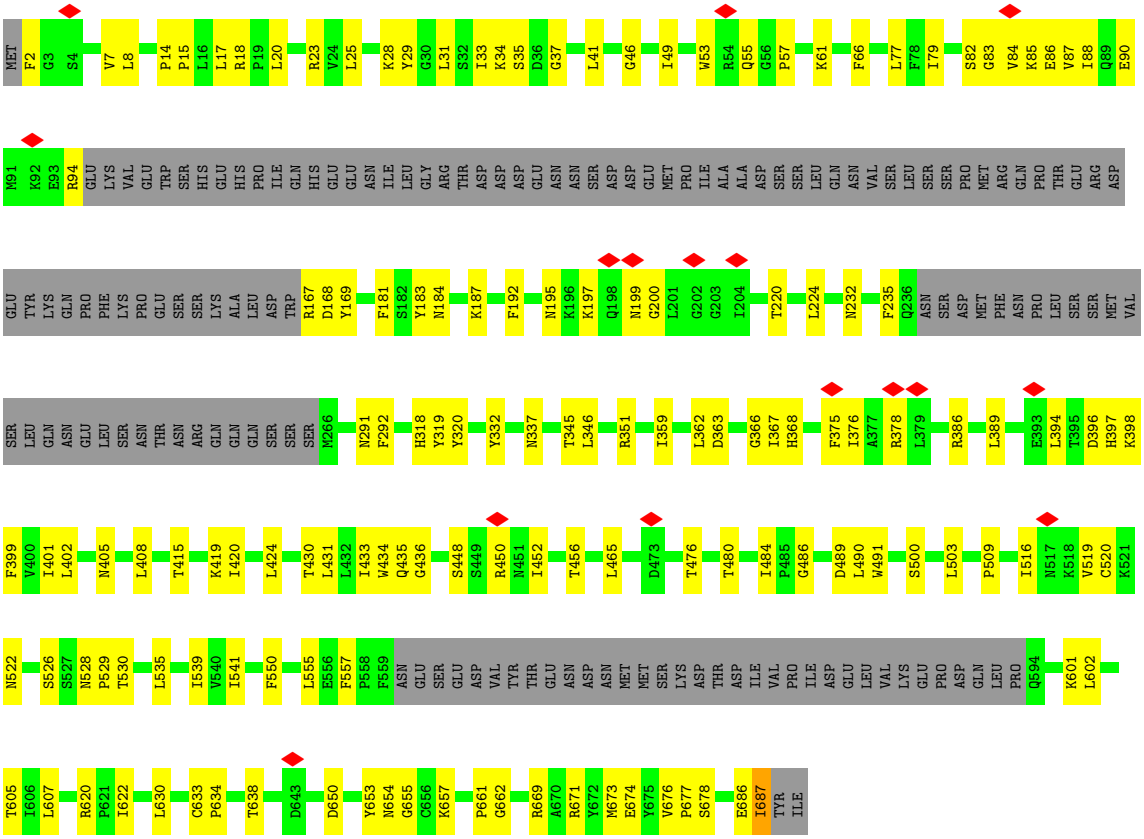






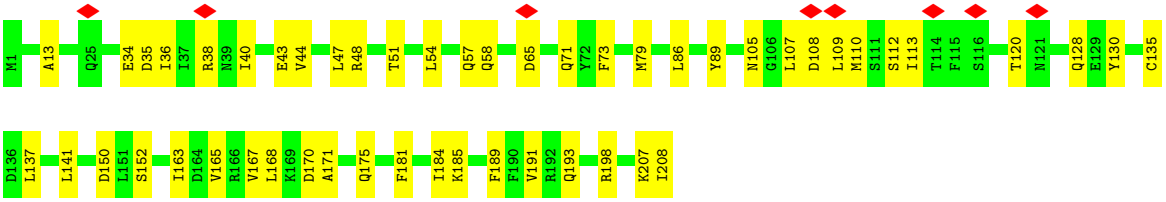
• Molecule 12: DNA polymerase epsilon subunit B

Chain M:



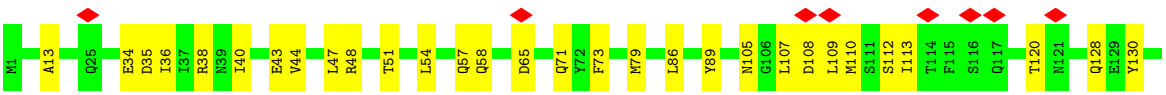
• Molecule 13: DNA replication complex GINS protein PSF1

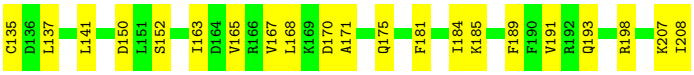
Chain H:



• Molecule 13: DNA replication complex GINS protein PSF1

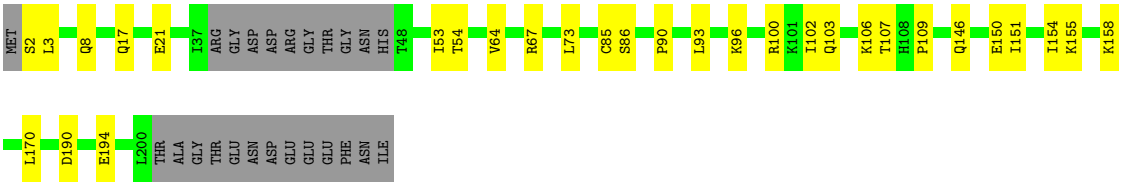
Chain O:





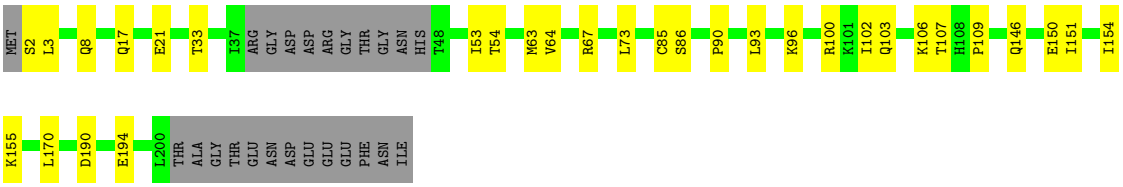
• Molecule 14: DNA replication complex GINS protein PSF2

Chain I:



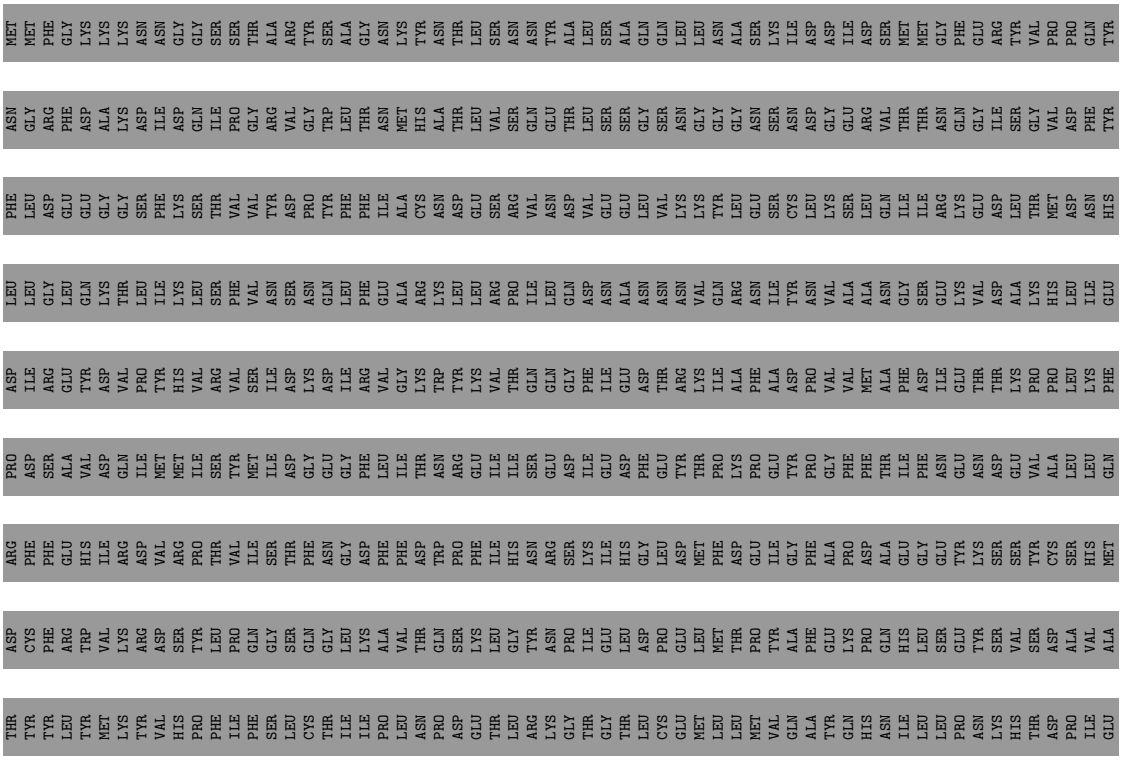
• Molecule 14: DNA replication complex GINS protein PSF2

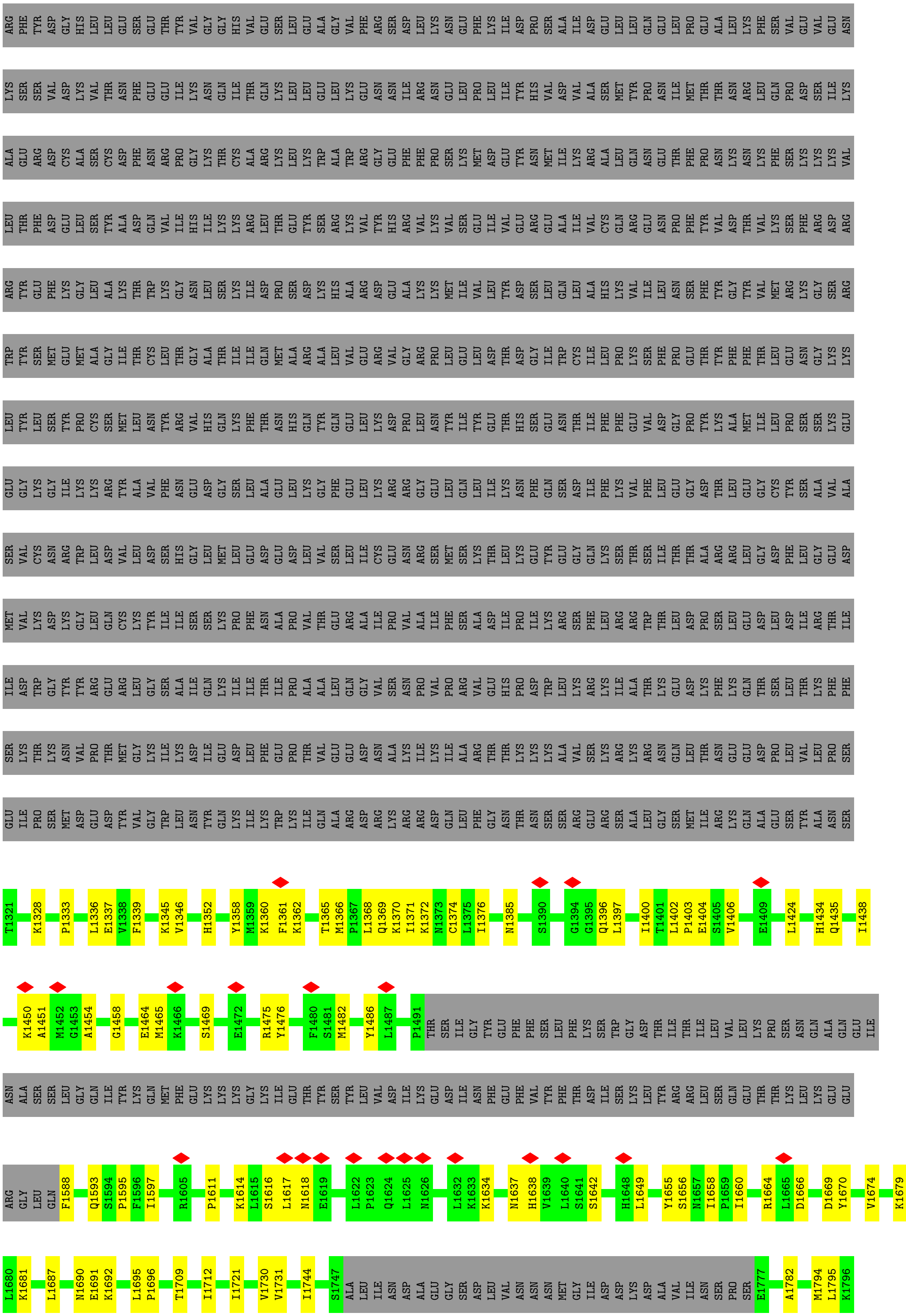
Chain P:

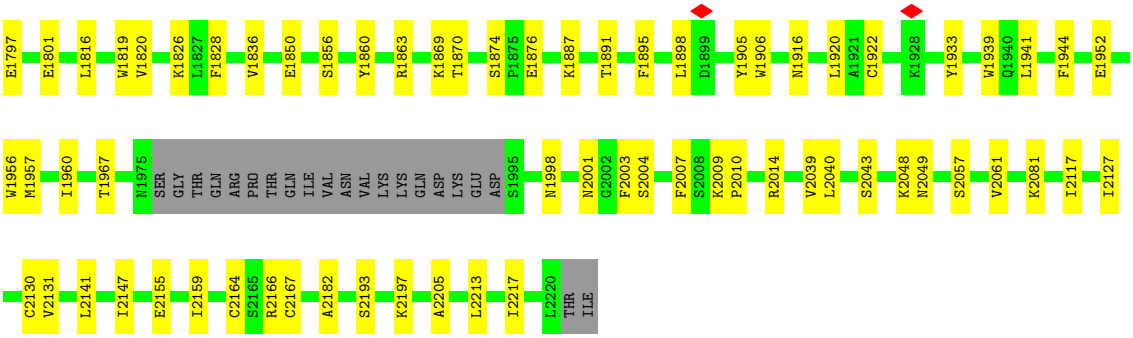


• Molecule 15: DNA polymerase epsilon catalytic subunit A

Chain N:

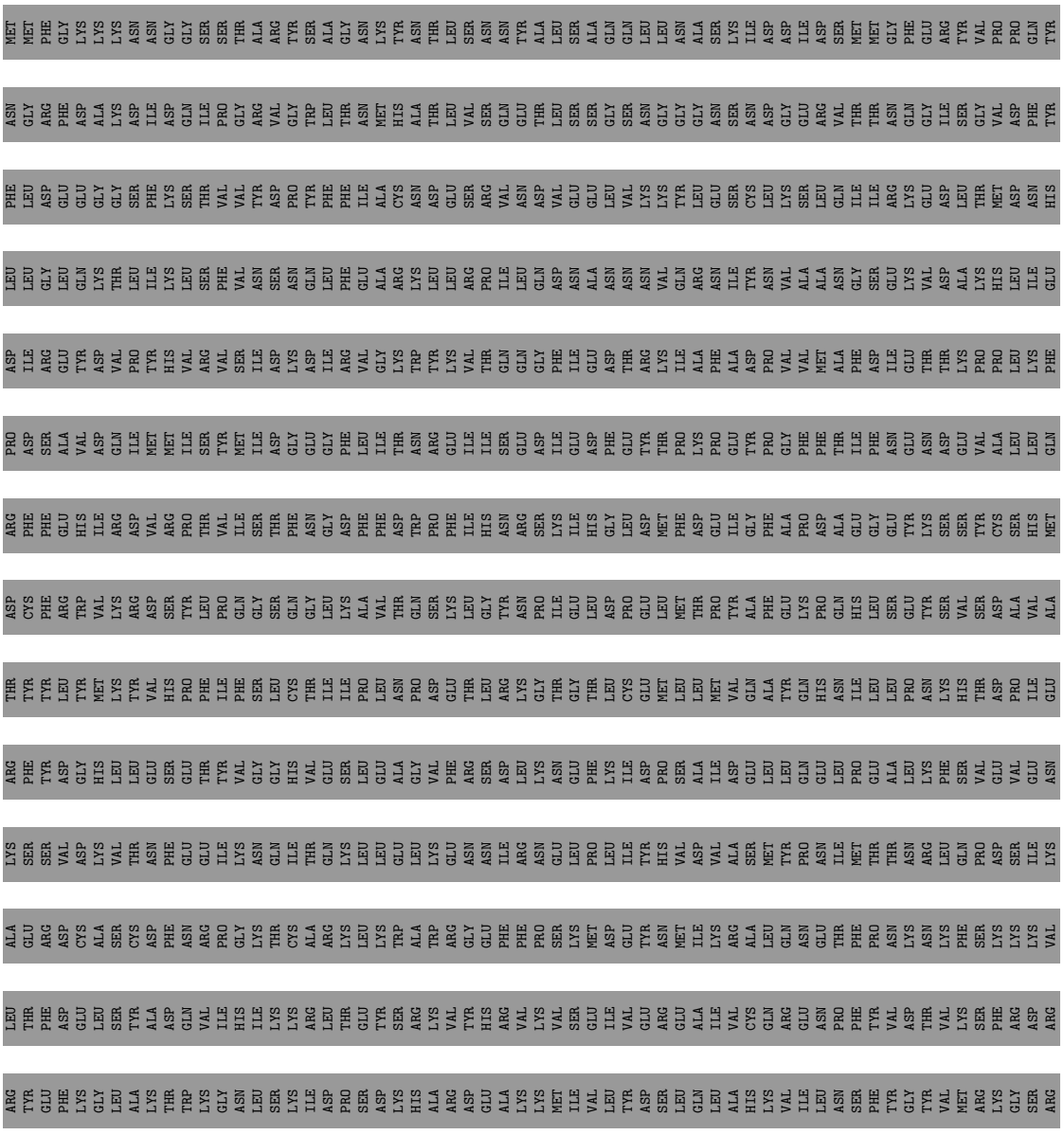


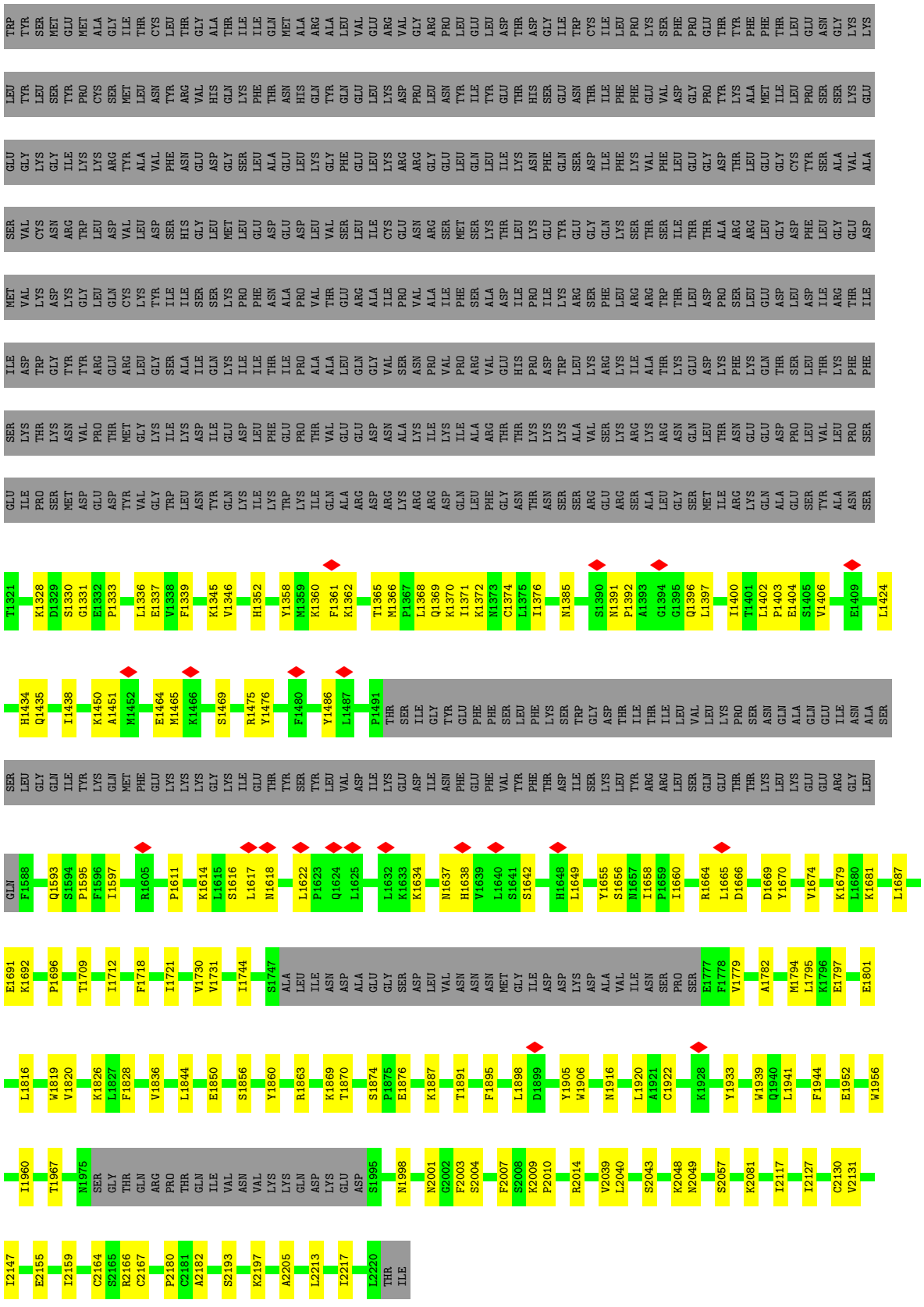

ARG PHE TYR ASP GLY HIS LEU LEU GLU SER GLN THR TYR VAL GLY GLY HIS VAL GLU SER LEU GLU ALA GLY VAL PHE ARG SER ASP LEU LYS ASN GLU PHE LYS ILE ASP PRO SER ALA ILE ASP GLU LEU LEU GLN GLU LEU PRO GLU ALA LEU LYS PHE SER VAL GLU VAL GLU ASN
LYS SER SER VAL ASP LYS VAL THR ASN PHE GLU GLU ILE LYS ASN GLN ILE THR GLN LYS LEU LEU GLU LEU LYS GLU ASN ASN ILE ARG ASN GLU LEU PRO LEU ILE TYR HIS VAL ASP VAL ALA SER MET TYR PRO ASN ILE MET THR THR ASN ARG LEU GLN PRO ASP SER ILE LYS
ALA GLU ARG ASP CYS ALA SER CYS ASP PHE ASN ARG PRO GLY LYS THR CYS ALA ARG LYS LEU LYS TRP ALA TRP ARG GLY GLU PHE PHE PRO SER LYS MET ASP GLU TYR ASN MET ILE LYS ARG ALA LEU GLN ASN GLU THR PHE PRO ASN LYS ASN LYS PHE SER LYS LYS LYS VAL
LEU THR PHE ASP GLU LEU SER TYR ALA ASP GLN VAL ILE HIS ILE LYS LYS ARG LEU THR GLU TYR SER ARG LYS VAL TYR HIS ARG VAL LYS VAL SER GLU ILE VAL GLU ARG GLU ALA ILE VAL CYS GLN ARG GLU ASN PRO PHE TYR VAL ASP THR VAL LYS SER PHE ARG ASP ARG
ARG TYR GLU PHE LYS GLY LEU ALA LYS THR TRP LYS GLY ASN LEU SER LYS ILE ASP PRO SER ASP LYS HIS ALA ARG ASP GLU ALA LYS LYS MET ILE VAL LEU TYR ASP SER LEU GLN LEU ALA HIS LYS VAL ILE LEU ASN SER PHE TYR GLY TYR VAL MET ARG LYS GLY SER ARG
TRP TYR SER MET GLU MET ALA GLY ILE THR CYS LEU THR GLY ALA THR ILE ILE GLN MET ALA ARG ALA LEU VAL GLU ARG VAL GLY ARG PRO LEU GLU LEU ASP THR ASP GLY ILE TRP CYS ILE LEU PRO LYS SER PHE PRO GLU THR TYR PHE PHE THR LEU GLU ASN GLY LYS LYS
LEU TYR LEU SER TYR PRO CYS SER MET LEU ASN TYR ARG VAL HIS GLN LYS PHE THR ASN HIS GLN TYR GLN GLU LEU LYS ASP PRO LEU ASN TYR ILE TYR GLU THR HIS SER GLU ASN THR ILE PHE PHE GLU VAL ASP GLY PRO TYR LYS ALA MET ILE ILE LEU PRO SER SER LYS GLU
GLU GLY LYS GLY ILE LYS LYS ARG TYR ALA VAL PHE ASN GLU ASP GLY SER LEU ALA GLU LEU LYS GLY PHE GLU LEU LYS ARG ARG GLY GLU LEU GLN LEU ILE LYS ASN PHE GLN SER ASP ILE PHE LYS VAL PHE LEU GLU GLY ASP THR LEU GLU GLY CYS TYR SER ALA VAL ALA
SER VAL CYS ASN ARG TRP LEU ASP VAL LEU ASP SER HIS GLY LEU MET LEU GLU ASP GLU ASP LEU VAL SER LEU ILE CYS GLU ASN ARG SER MET SER LYS THR LEU LYS GLU TYR GLU GLY GLN LYS SER THR SER ILE THR THR ALA ARG ARG LEU GLY ASP PHE LEU GLY GLU ASP
MET VAL LYS ASP LYS GLY LEU GLN CYS LYS TYR ILE ILE SER SER LYS PRO PHE ASN ALA PRO VAL THR GLU ARG ALA ILE PRO VAL ALA ILE PHE SER ALA ASP ILE PRO ILE LYS ARG SER PHE LEU ARG ARG TRP THR LEU ASP PRO SER LEU GLU ASP LEU ASP ILE ARG THR ILE
ILE ASP TRP GLY TYR TYR ARG GLU ARG LEU GLY SER ALA ILE GLN LYS ILE ILE THR ILE PRO ALA ALA LEU GLN GLY VAL SER ASN PRO VAL PRO ARG VAL GLU HIS PRO ASP TRP LEU LYS ARG LYS ILE ALA THR LYS GLU ASP LYS PHE LYS GLN THR SER LEU THR LYS PHE PHE
SER LYS THR LYS ASN VAL PRO THR MET GLY LYS ILE LYS ASP ILE GLU ASP LEU PHE GLU PRO THR VAL GLU GLU ASP ASN ALA LYS ILE LYS ILE ALA ARG THR THR LYS LYS ALA VAL SER LYS ARG LYS ARG ASN GLN LEU THR ASN GLU GLU ASP PRO LEU VAL LEU PRO SER
GLU ILE PRO SER MET ASP GLU ASP TYR VAL GLY TRP LEU ASN TYR GLN LYS ILE LYS TRP LYS ILE GLN ALA ARG ASP ARG LYS ARG ARG ASP GLN LEU PHE GLY ASN THR ASN SER SER ARG GLU ARG SER ALA LEU GLY SER MET ILE ARG LYS GLN ALA GLU SER TYR ALA ASN SER
T1321 K1328 P1333 L1336 E1337 V1338 F1339 K1345 V1346 H1352 Y1358 M1359 K1360 F1361 K1362 T1365 M1366 P1367 L1368 Q1369 K1370 I1371 K1372 N1373 C1374 L1375 I1376 N1385 S1390 G1394 G1395 Q1396 L1397 I1400 T1401 L1402 P1403 E1404 S1405 V1406 E1409 L1424 H1434 Q1435 I1438
K1450 A1451 M1452 G1453 A1454 G1458 E1464 M1465 K1466 S1469 E1472 R1475 Y1476 F1480 S1481 M1482 Y1486 L1487 P1491 THR SER ILE GLY TYR GLU PHE PHE SER LEU PHE LYS SER TRP GLY ASP THR ILE THR ILE LEU VAL LEU LYS PRO SER ASN GLN ALA GLN GLU ILE
ASN ALA SER SER LEU GLY GLN ILE TYR LYS GLN MET PHE GLU LYS LYS GLY LYS ILE GLU THR TYR SER TYR LEU VAL ASP ILE LYS GLU ASP ILE ASN PHE GLU PHE VAL TYR PHE THR ASP ILE SER LYS LEU TYR ARG ARG LEU SER GLN GLU THR THR LYS LEU LYS GLU GLU
ARG GLY LEU GLN F1588 Q1593 S1594 P1595 F1596 I1597 R1605 P1611 K1614 L1615 S1616 L1617 N1618 E1619 L1622 P1623 Q1624 L1625 N1626 L1632 K1633 K1634 N1637 H1638 V1639 L1640 S1641 S1642 H1648 L1649 Y1655 S1656 N1657 I1658 P1659 I1660 R1664 L1665 D1666 D1669 Y1670 V1674 K1679
L1680 K1681 L1687 N1690 E1691 K1692 L1695 P1696 T1709 I1712 I1721 V1730 V1731 I1744 S1747 ALA LEU ILE ASN ASP ALA GLU GLY SER ASP LEU VAL ASN ASN ASN MET GLY ILE ASP ASP LYS ASP ALA VAL ILE ASN SER PRO SER E1777 A1782 M1794 L1795 K1796



• Molecule 15: DNA polymerase epsilon catalytic subunit A

Chain Q:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	71348	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 ($e^-/Å^2$)	1.60	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	4400	Depositor
Magnification	130000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.913	Depositor
Minimum map value	-0.926	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.081	Depositor
Recommended contour level	0.055	Depositor
Map size (Å)	277.56, 387.72, 184.68001	wwPDB
Map dimensions	257, 359, 171	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: ZN, MG, ADP, ATP

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	0/5319	0.52	0/7182
1	a	0.25	0/5319	0.52	0/7182
2	3	0.25	0/5044	0.50	0/6842
2	b	0.25	0/5044	0.50	0/6842
3	4	0.25	0/4921	0.52	0/6651
3	c	0.25	0/4921	0.52	0/6651
4	5	0.25	0/5530	0.50	0/7471
4	d	0.25	0/5530	0.50	0/7471
5	6	0.26	0/5051	0.52	0/6813
5	e	0.26	0/5051	0.51	0/6813
6	7	0.27	0/5261	0.51	0/7110
6	f	0.27	0/5261	0.51	0/7110
7	A	0.53	0/1219	0.98	0/1879
8	B	0.52	0/1217	1.00	0/1876
9	C	0.24	0/1431	0.41	0/1933
9	J	0.25	0/1431	0.41	0/1933
10	D	0.26	0/2032	0.48	0/2750
10	K	0.26	0/2032	0.48	0/2750
11	E	0.25	0/4685	0.48	0/6341
11	L	0.25	0/4685	0.48	0/6341
12	F	0.27	0/4492	0.51	0/6078
12	M	0.27	0/4492	0.51	0/6078
13	H	0.26	0/1719	0.52	0/2314
13	O	0.26	0/1719	0.52	0/2314
14	I	0.23	0/1613	0.49	0/2182
14	P	0.23	0/1613	0.49	0/2182
15	N	0.26	0/6250	0.47	0/8458
15	Q	0.26	0/6250	0.46	0/8458
All	All	0.26	0/109132	0.52	0/148005

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	5231	0	5280	58	0
1	a	5231	0	5280	0	0
2	3	4958	0	5005	43	0
2	b	4958	0	5005	0	0
3	4	4850	0	4926	114	0
3	c	4850	0	4926	0	0
4	5	5450	0	5510	59	0
4	d	5450	0	5510	0	0
5	6	4972	0	5007	80	0
5	e	4972	0	5007	0	0
6	7	5181	0	5258	103	0
6	f	5181	0	5258	0	0
7	A	1087	0	610	11	0
8	B	1086	0	611	12	0
9	C	1398	0	1418	12	0
9	J	1398	0	1418	11	0
10	D	1990	0	1985	27	0
10	K	1990	0	1985	27	0
11	E	4599	0	4603	50	0
11	L	4599	0	4603	49	0
12	F	4396	0	4442	103	0
12	M	4396	0	4442	100	0
13	H	1697	0	1698	38	0
13	O	1697	0	1698	39	0
14	I	1581	0	1635	21	0
14	P	1581	0	1635	19	0
15	N	6113	0	6177	89	0
15	Q	6113	0	6177	94	0
16	2	31	0	12	0	0
16	3	31	0	12	0	0
16	5	31	0	12	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
16	7	31	0	12	1	0
16	a	31	0	12	0	0
16	b	31	0	12	0	0
16	d	31	0	12	0	0
16	f	31	0	12	0	0
17	2	1	0	0	0	0
17	4	1	0	0	0	0
17	5	1	0	0	0	0
17	6	1	0	0	0	0
17	7	1	0	0	0	0
17	N	2	0	0	0	0
17	Q	2	0	0	0	0
17	a	1	0	0	0	0
17	c	1	0	0	0	0
17	d	1	0	0	0	0
17	e	1	0	0	0	0
17	f	1	0	0	0	0
18	3	1	0	0	0	0
18	5	1	0	0	0	0
18	7	1	0	0	0	0
18	b	1	0	0	0	0
18	d	1	0	0	0	0
18	f	1	0	0	0	0
19	4	27	0	12	0	0
19	6	27	0	12	4	0
19	c	27	0	12	0	0
19	e	27	0	12	0	0
All	All	107381	0	107253	1074	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 (1074) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:6:333:CYS:SG	5:6:334:PRO:HD2	1.73	1.28
5:6:333:CYS:SG	5:6:334:PRO:CD	2.30	1.17
12:M:526:SER:HB2	12:M:530:THR:HG21	1.48	0.92
12:F:526:SER:HB2	12:F:530:THR:HG21	1.48	0.91
5:6:333:CYS:SG	5:6:334:PRO:HD3	2.06	0.91
15:Q:1438:ILE:HD11	15:Q:1658:ILE:HG23	1.56	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:N:1438:ILE:HD11	15:N:1658:ILE:HG23	1.56	0.86
2:3:652:THR:HG22	2:3:654:PRO:HD2	1.60	0.84
15:Q:1649:LEU:HB3	15:Q:1660:ILE:HD11	1.65	0.79
15:N:1649:LEU:HB3	15:N:1660:ILE:HD11	1.65	0.78
12:F:169:TYR:OH	12:F:368:HIS:ND1	2.20	0.75
10:K:98:ILE:HG23	10:K:126:LEU:HD11	1.70	0.74
12:M:169:TYR:OH	12:M:368:HIS:ND1	2.20	0.74
5:6:335:ASN:N	5:6:336:PRO:HD3	2.03	0.74
11:L:615:GLU:HG3	11:L:616:THR:HG23	1.71	0.72
10:D:98:ILE:HG23	10:D:126:LEU:HD11	1.70	0.72
11:E:615:GLU:HG3	11:E:616:THR:HG23	1.71	0.71
1:2:339:PHE:HB2	1:2:348:LEU:HD12	1.72	0.71
13:H:35:ASP:HA	13:H:38:ARG:HE	1.56	0.70
13:O:35:ASP:HA	13:O:38:ARG:HE	1.56	0.70
3:4:621:LEU:HD13	3:4:648:VAL:HG21	1.74	0.70
12:M:351:ARG:HG2	12:M:654:ASN:HB3	1.74	0.70
12:F:662:GLY:O	12:F:671:ARG:NH2	2.24	0.70
6:7:368:ALA:HB1	6:7:371:LEU:HB2	1.73	0.70
12:M:662:GLY:O	12:M:671:ARG:NH2	2.24	0.70
15:N:2166:ARG:NH1	15:N:2182:ALA:O	2.25	0.70
15:Q:2166:ARG:NH1	15:Q:2182:ALA:O	2.25	0.70
12:F:351:ARG:HG2	12:F:654:ASN:HB3	1.74	0.69
1:2:211:LEU:HD13	1:2:271:PHE:HD1	1.58	0.69
1:2:577:THR:HG22	1:2:578:ALA:H	1.57	0.69
12:M:401:ILE:HG13	12:M:433:ILE:HD12	1.75	0.69
3:4:407:PRO:HG2	3:4:410:GLN:HG3	1.73	0.69
3:4:234:ARG:O	3:4:234:ARG:NH1	2.24	0.69
12:F:401:ILE:HG13	12:F:433:ILE:HD12	1.75	0.68
4:5:400:LEU:HD12	4:5:404:MET:HB3	1.73	0.68
4:5:685:GLN:NE2	15:Q:2180:PRO:O	2.27	0.68
12:F:528:ASN:HB3	12:F:529:PRO:HD3	1.74	0.68
5:6:151:ILE:HD11	5:6:265:ILE:HG12	1.75	0.68
12:M:528:ASN:HB3	12:M:529:PRO:HD3	1.74	0.67
5:6:318:VAL:HG21	5:6:330:PRO:HG3	1.75	0.67
6:7:494:THR:HG21	6:7:546:ILE:HG21	1.78	0.67
3:4:210:ASP:OD1	3:4:211:GLU:N	2.28	0.66
6:7:457:CYS:HB3	6:7:597:LEU:HD13	1.76	0.66
5:6:314:CYS:SG	5:6:338:CYS:HB3	2.34	0.66
5:6:270:LEU:HD12	5:6:289:SER:HB3	1.76	0.66
15:N:1385:ASN:ND2	15:N:1782:ALA:O	2.28	0.66
15:Q:1385:ASN:ND2	15:Q:1782:ALA:O	2.28	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:5:188:HIS:NE2	4:5:212:LEU:O	2.28	0.66
15:Q:1362:LYS:O	15:Q:1396:GLN:NE2	2.28	0.66
5:6:689:TYR:HA	5:6:698:ASN:HD21	1.61	0.66
15:N:1362:LYS:O	15:N:1396:GLN:NE2	2.28	0.66
4:5:493:ILE:HG22	4:5:497:MET:HG3	1.78	0.66
6:7:358:ALA:HB3	6:7:373:GLU:HB2	1.77	0.65
11:L:148:VAL:HG22	11:L:152:LEU:HD12	1.77	0.65
12:M:500:SER:OG	12:M:620:ARG:NH1	2.29	0.65
12:M:539:ILE:HG12	12:M:638:THR:HB	1.78	0.65
15:N:1679:LYS:HD3	15:N:1794:MET:HE2	1.77	0.65
12:M:345:THR:HG22	12:M:346:LEU:H	1.61	0.65
14:P:2:SER:OG	14:P:3:LEU:N	2.29	0.65
12:M:183:TYR:HD1	12:M:224:LEU:HD22	1.62	0.65
3:4:207:LYS:HE3	3:4:215:PHE:HB2	1.79	0.64
7:A:34:DA:N6	8:B:19:DT:O4	2.31	0.64
11:E:148:VAL:HG22	11:E:152:LEU:HD12	1.77	0.64
7:A:19:DT:O4	8:B:34:DA:N6	2.31	0.64
11:E:422:SER:O	11:E:426:GLU:HG2	1.97	0.64
12:F:183:TYR:HD1	12:F:224:LEU:HD22	1.61	0.64
14:I:2:SER:OG	14:I:3:LEU:N	2.29	0.64
2:3:698:THR:HG22	2:3:699:ALA:H	1.61	0.64
6:7:262:CYS:O	6:7:265:CYS:N	2.24	0.64
12:F:345:THR:HG22	12:F:346:LEU:H	1.61	0.64
2:3:169:ARG:NH1	2:3:269:GLN:OE1	2.30	0.64
11:L:422:SER:O	11:L:426:GLU:HG2	1.97	0.64
1:2:353:GLN:HA	1:2:359:ILE:HD11	1.80	0.64
12:M:480:THR:HG23	12:M:522:ASN:HB3	1.79	0.64
11:E:244:GLY:HA3	11:E:602:LEU:HB3	1.79	0.64
12:F:35:SER:HA	13:H:175:GLN:HE21	1.63	0.64
12:F:539:ILE:HG12	12:F:638:THR:HB	1.78	0.63
11:L:244:GLY:HA3	11:L:602:LEU:HB3	1.79	0.63
15:Q:2164:CYS:HB3	15:Q:2167:CYS:O	1.98	0.63
15:N:2164:CYS:HB3	15:N:2167:CYS:O	1.98	0.63
6:7:262:CYS:SG	6:7:284:CYS:HB3	2.37	0.63
12:F:386:ARG:HD3	12:F:389:LEU:HD12	1.81	0.63
12:F:480:THR:HG23	12:F:522:ASN:HB3	1.78	0.63
3:4:246:ARG:HH21	3:4:249:LEU:HD22	1.63	0.63
12:M:633:CYS:HB3	12:M:634:PRO:HD3	1.81	0.63
3:4:797:GLN:O	3:4:801:MET:HG3	1.99	0.63
6:7:212:ALA:O	6:7:216:ARG:N	2.32	0.63
14:I:190:ASP:O	14:I:194:GLU:HG3	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:583:LYS:HE3	3:4:583:LYS:HA	1.79	0.62
12:M:35:SER:HA	13:O:175:GLN:HE21	1.63	0.62
14:P:190:ASP:O	14:P:194:GLU:HG3	1.99	0.62
12:M:77:LEU:HD11	13:O:113:ILE:HG21	1.81	0.62
12:F:77:LEU:HD11	13:H:113:ILE:HG21	1.81	0.62
12:F:633:CYS:HB3	12:F:634:PRO:HD3	1.81	0.62
3:4:284:ILE:HG13	3:4:285:VAL:HG13	1.81	0.62
5:6:314:CYS:SG	5:6:338:CYS:CB	2.87	0.62
9:J:181:HIS:O	9:J:185:LYS:HG3	1.99	0.62
12:M:386:ARG:HD3	12:M:389:LEU:HD12	1.81	0.62
9:C:181:HIS:O	9:C:185:LYS:HG3	1.99	0.62
2:3:700:ARG:NH2	16:7:901:ATP:O3G	2.32	0.62
11:L:503:GLN:OE1	11:L:547:ARG:NH1	2.33	0.62
3:4:607:ARG:NH1	5:6:616:GLU:OE2	2.32	0.61
12:M:82:SER:O	12:M:85:LYS:N	2.33	0.61
6:7:284:CYS:SG	6:7:289:CYS:HB3	2.39	0.61
11:E:503:GLN:OE1	11:E:547:ARG:NH1	2.33	0.61
2:3:308:GLN:OE1	4:5:209:ARG:NH1	2.29	0.61
3:4:812:LYS:O	3:4:814:LYS:HG3	2.00	0.61
6:7:82:LEU:HD23	6:7:103:VAL:HG23	1.82	0.61
13:H:58:GLN:NE2	13:H:65:ASP:OD1	2.33	0.61
11:L:106:ASP:HB2	11:L:115:SER:HB3	1.83	0.61
15:Q:1679:LYS:HD3	15:Q:1794:MET:HE2	1.82	0.61
6:7:578:LEU:HD22	6:7:678:LYS:HB3	1.82	0.61
12:M:405:ASN:H	12:M:436:GLY:HA3	1.65	0.61
15:N:1333:PRO:HB2	15:N:1404:GLU:HB3	1.82	0.61
15:Q:1333:PRO:HB2	15:Q:1404:GLU:HB3	1.82	0.61
5:6:644:MET:HE1	5:6:652:ILE:HD12	1.83	0.61
3:4:454:LYS:HA	6:7:277:THR:HA	1.83	0.61
13:H:163:ILE:HD13	13:H:193:GLN:HG3	1.83	0.61
15:N:1345:LYS:HG2	15:N:1346:VAL:H	1.65	0.61
15:Q:1345:LYS:HG2	15:Q:1346:VAL:H	1.65	0.60
12:F:82:SER:O	12:F:85:LYS:N	2.33	0.60
12:M:676:VAL:HG12	12:M:678:SER:H	1.67	0.60
13:O:163:ILE:HD13	13:O:193:GLN:HG3	1.83	0.60
3:4:796:ARG:NH1	19:6:1201:ADP:O3'	2.34	0.60
6:7:670:ASP:OD1	6:7:673:ARG:NH1	2.34	0.60
1:2:319:ARG:NE	1:2:425:GLU:OE1	2.30	0.60
3:4:569:ASP:OD2	3:4:710:ASP:N	2.34	0.60
12:F:405:ASN:H	12:F:436:GLY:HA3	1.65	0.60
12:F:500:SER:OG	12:F:620:ARG:NH1	2.29	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:N:2205:ALA:HB2	15:N:2213:LEU:HD23	1.84	0.60
2:3:189:THR:O	2:3:456:ARG:NH1	2.35	0.60
12:F:431:LEU:HD23	12:F:480:THR:HB	1.84	0.60
15:N:1352:HIS:HB2	15:N:1464:GLU:HA	1.84	0.60
2:3:236:THR:OG1	2:3:237:GLU:OE2	2.19	0.59
3:4:711:LYS:HD3	3:4:712:VAL:H	1.66	0.59
12:M:431:LEU:HD23	12:M:480:THR:HB	1.84	0.59
12:M:486:GLY:N	12:M:489:ASP:OD2	2.34	0.59
13:O:58:GLN:NE2	13:O:65:ASP:OD1	2.33	0.59
15:Q:2205:ALA:HB2	15:Q:2213:LEU:HD23	1.84	0.59
1:2:587:LYS:NZ	8:B:12:DT:O3'	2.34	0.59
5:6:134:LYS:HG2	5:6:137:ARG:HD3	1.84	0.59
6:7:92:LYS:HD2	6:7:97:THR:HB	1.85	0.59
11:E:106:ASP:HB2	11:E:115:SER:HB3	1.83	0.59
12:F:168:ASP:OD1	12:F:169:TYR:N	2.34	0.59
3:4:370:ARG:HE	3:4:379:PRO:HG3	1.67	0.59
5:6:143:MET:HG2	5:6:148:LEU:HB2	1.84	0.59
9:C:38:ILE:HD11	9:C:42:THR:HG21	1.84	0.59
12:F:486:GLY:N	12:F:489:ASP:OD2	2.34	0.59
4:5:704:SER:HB2	4:5:707:SER:HB2	1.84	0.59
10:K:90:ARG:HD3	14:P:53:ILE:HB	1.84	0.59
9:C:57:VAL:HG11	13:H:73:PHE:HE2	1.68	0.59
5:6:608:LEU:HD23	5:6:652:ILE:HD11	1.85	0.58
6:7:584:ILE:HD11	6:7:591:LEU:HD11	1.85	0.58
11:L:124:ASP:OD1	11:L:125:ALA:N	2.36	0.58
10:D:90:ARG:HD3	14:I:53:ILE:HB	1.84	0.58
11:E:124:ASP:OD1	11:E:125:ALA:N	2.36	0.58
12:F:676:VAL:HG12	12:F:678:SER:H	1.66	0.58
12:M:291:ASN:OD1	12:M:292:PHE:N	2.35	0.58
2:3:480:ASP:OD1	2:3:483:ARG:NH2	2.36	0.58
3:4:510:ARG:NH2	3:4:753:TYR:OH	2.37	0.58
12:M:46:GLY:HA2	12:M:49:ILE:HB	1.84	0.58
2:3:678:VAL:HG21	2:3:723:LYS:HG3	1.86	0.58
12:F:291:ASN:OD1	12:F:292:PHE:N	2.35	0.58
12:F:359:ILE:HG12	12:F:362:LEU:HD12	1.86	0.58
15:Q:1352:HIS:HB2	15:Q:1464:GLU:HA	1.84	0.58
15:Q:1465:MET:O	15:Q:1469:SER:OG	2.22	0.58
3:4:281:VAL:HA	3:4:284:ILE:HG12	1.86	0.58
3:4:370:ARG:NH1	3:4:377:ASN:OD1	2.37	0.58
12:F:46:GLY:HA2	12:F:49:ILE:HB	1.84	0.58
12:M:168:ASP:OD1	12:M:169:TYR:N	2.34	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:325:THR:HG22	1:2:326:ARG:HG3	1.86	0.57
3:4:762:ILE:HA	3:4:817:VAL:HG22	1.86	0.57
5:6:335:ASN:H	5:6:336:PRO:HD3	1.69	0.57
6:7:451:ARG:HG2	6:7:453:ASP:H	1.67	0.57
11:L:89:VAL:HG23	11:L:90:ILE:HG23	1.86	0.57
9:J:38:ILE:HD11	9:J:42:THR:HG21	1.84	0.57
9:J:126:GLU:OE2	9:J:130:GLN:NE2	2.29	0.57
12:M:359:ILE:HG12	12:M:362:LEU:HD12	1.86	0.57
11:E:89:VAL:HG23	11:E:90:ILE:HG23	1.86	0.57
14:P:90:PRO:HD2	14:P:93:LEU:HD12	1.86	0.57
15:Q:1336:LEU:HD11	15:Q:1434:HIS:HA	1.86	0.57
5:6:134:LYS:HB3	5:6:137:ARG:HB2	1.87	0.57
15:N:1435:GLN:HA	15:N:1438:ILE:HG22	1.87	0.57
15:N:2117:ILE:HD11	15:N:2127:ILE:HA	1.86	0.57
5:6:581:LYS:NZ	5:6:682:ALA:O	2.37	0.57
6:7:77:SER:HG	6:7:338:THR:HG1	1.50	0.57
15:Q:2117:ILE:HD11	15:Q:2127:ILE:HA	1.86	0.57
6:7:68:GLN:O	6:7:72:ASN:ND2	2.38	0.57
6:7:597:LEU:O	6:7:723:SER:OG	2.23	0.57
15:Q:1376:ILE:HG22	15:Q:1400:ILE:HG23	1.87	0.57
9:J:57:VAL:HG11	13:O:73:PHE:HE2	1.68	0.57
15:N:1336:LEU:HD11	15:N:1434:HIS:HA	1.86	0.57
15:N:1376:ILE:HG22	15:N:1400:ILE:HG23	1.87	0.57
4:5:167:ILE:HD11	4:5:257:LYS:HE3	1.87	0.56
13:H:36:ILE:O	13:H:40:ILE:HD12	2.06	0.56
10:K:198:ILE:HD13	13:O:86:LEU:HB3	1.88	0.56
11:L:2:TYR:OH	11:L:138:GLN:OE1	2.24	0.56
12:M:399:PHE:HE1	12:M:677:PRO:HG3	1.70	0.56
15:Q:1374:CYS:HB3	15:Q:1402:LEU:HD12	1.87	0.56
2:3:665:GLU:HG3	2:3:666:ARG:HG2	1.87	0.56
9:C:126:GLU:OE2	9:C:130:GLN:NE2	2.29	0.56
10:D:198:ILE:HD13	13:H:86:LEU:HB3	1.88	0.56
12:F:31:LEU:HD11	12:F:77:LEU:HD23	1.87	0.56
12:F:601:LYS:O	12:F:605:THR:HG23	2.05	0.56
15:N:1465:MET:O	15:N:1469:SER:OG	2.22	0.56
13:O:36:ILE:O	13:O:40:ILE:HD12	2.06	0.56
4:5:104:LEU:HD21	14:I:151:ILE:HG23	1.86	0.56
12:F:319:TYR:HB2	12:F:605:THR:HG21	1.88	0.56
11:L:21:SER:O	11:L:55:GLN:NE2	2.39	0.56
12:F:398:LYS:O	12:F:430:THR:N	2.32	0.56
14:I:90:PRO:HD2	14:I:93:LEU:HD12	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:522:LEU:HD12	3:4:811:MET:HE1	1.87	0.56
11:E:2:TYR:OH	11:E:138:GLN:OE1	2.24	0.56
12:M:491:TRP:HZ3	15:N:2147:ILE:HG21	1.71	0.56
15:Q:1435:GLN:HA	15:Q:1438:ILE:HG22	1.86	0.56
3:4:767:LYS:HE2	5:6:732:VAL:HG13	1.88	0.55
2:3:570:ARG:NH1	4:5:614:LEU:O	2.39	0.55
11:E:21:SER:O	11:E:55:GLN:NE2	2.39	0.55
12:F:399:PHE:HE1	12:F:677:PRO:HG3	1.70	0.55
11:L:598:LYS:HG2	11:L:599:LYS:H	1.71	0.55
12:M:319:TYR:HB2	12:M:605:THR:HG21	1.88	0.55
4:5:718:LEU:HD21	4:5:761:ILE:HD11	1.88	0.55
11:E:267:LEU:HD13	11:E:316:LEU:HD22	1.88	0.55
12:M:601:LYS:O	12:M:605:THR:HG23	2.05	0.55
1:2:379:LYS:HD2	1:2:379:LYS:O	2.07	0.55
15:N:1365:THR:HG22	15:N:1366:MET:H	1.72	0.55
1:2:792:ASP:OD1	1:2:795:ARG:NH2	2.39	0.55
2:3:233:THR:HG23	2:3:234:GLU:HG2	1.89	0.55
6:7:101:ASP:OD2	6:7:104:SER:OG	2.24	0.55
10:K:125:PRO:O	10:K:129:MET:HG2	2.07	0.55
12:M:375:PHE:HA	13:O:120:THR:HG21	1.88	0.55
12:F:491:TRP:HZ3	15:Q:2147:ILE:HG21	1.71	0.55
14:P:150:GLU:O	14:P:154:ILE:HG13	2.07	0.55
15:N:1374:CYS:HB3	15:N:1402:LEU:HD12	1.87	0.55
15:Q:1637:ASN:OD1	15:Q:1638:HIS:N	2.40	0.55
15:Q:1797:GLU:O	15:Q:1801:GLU:HG3	2.07	0.55
12:M:398:LYS:O	12:M:430:THR:N	2.32	0.54
15:N:1850:GLU:HG3	15:N:1895:PHE:HE2	1.73	0.54
14:I:150:GLU:O	14:I:154:ILE:HG13	2.07	0.54
12:M:31:LEU:HD11	12:M:77:LEU:HD23	1.87	0.54
15:Q:1967:THR:HG21	15:Q:2003:PHE:HB3	1.89	0.54
1:2:222:THR:HG23	1:2:224:ARG:HG3	1.89	0.54
2:3:499:LYS:HE2	7:A:41:DA:H5'	1.89	0.54
11:L:267:LEU:HD13	11:L:316:LEU:HD22	1.88	0.54
1:2:743:ARG:HA	1:2:746:GLN:HG2	1.89	0.54
3:4:525:SER:HA	3:4:742:LEU:HD22	1.89	0.54
15:N:1797:GLU:O	15:N:1801:GLU:HG3	2.07	0.54
3:4:193:ASN:HB3	3:4:254:THR:HG22	1.89	0.54
13:H:40:ILE:HA	13:H:43:GLU:HG2	1.89	0.54
6:7:451:ARG:O	6:7:694:ARG:NH1	2.39	0.54
1:2:300:PHE:O	1:2:319:ARG:NH1	2.41	0.54
5:6:608:LEU:HD12	5:6:627:ALA:HB3	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:D:125:PRO:O	10:D:129:MET:HG2	2.07	0.54
14:I:21:GLU:HA	14:I:73:LEU:HD23	1.90	0.54
9:J:20:PHE:HE2	9:J:44:LEU:HD12	1.73	0.54
15:N:1637:ASN:OD1	15:N:1638:HIS:N	2.40	0.54
2:3:201:HIS:CE1	2:3:232:PRO:HD2	2.43	0.54
13:O:107:LEU:HD23	13:O:109:LEU:H	1.73	0.54
6:7:513:LEU:HD13	6:7:540:VAL:HG21	1.90	0.54
15:N:1709:THR:HA	15:N:1712:ILE:HG12	1.90	0.54
2:3:99:SER:HB3	2:3:158:LYS:HE2	1.89	0.54
4:5:734:ARG:HH12	12:F:293:LYS:HB3	1.72	0.54
11:E:598:LYS:HG2	11:E:599:LYS:H	1.71	0.54
10:K:182:TYR:CD1	13:O:141:LEU:HD11	2.43	0.54
12:M:195:ASN:HD21	12:M:197:LYS:HB3	1.73	0.54
12:F:375:PHE:HA	13:H:120:THR:HG21	1.88	0.53
15:N:1744:ILE:HD11	15:N:1836:VAL:HG22	1.91	0.53
15:Q:1365:THR:HG22	15:Q:1366:MET:H	1.72	0.53
13:O:40:ILE:HA	13:O:43:GLU:HG2	1.89	0.53
15:Q:1850:GLU:HG3	15:Q:1895:PHE:HE2	1.73	0.53
1:2:391:GLN:NE2	5:6:620:ASP:OD2	2.40	0.53
1:2:586:THR:HG22	1:2:588:GLU:HG3	1.91	0.53
3:4:265:PRO:HB3	3:4:325:LEU:HG	1.89	0.53
15:N:1967:THR:HG21	15:N:2003:PHE:HB3	1.89	0.53
3:4:587:ARG:NH1	3:4:623:LEU:O	2.42	0.53
11:L:161:LYS:O	11:L:165:LEU:HB2	2.09	0.53
3:4:319:PRO:HB3	6:7:253:PRO:HB3	1.91	0.53
12:F:195:ASN:HD21	12:F:197:LYS:HB3	1.74	0.53
12:M:516:ILE:HA	12:M:519:VAL:HG22	1.91	0.53
15:N:1361:PHE:HD2	15:N:1362:LYS:HG3	1.73	0.53
3:4:207:LYS:NZ	3:4:210:ASP:OD2	2.39	0.53
9:C:20:PHE:HE2	9:C:44:LEU:HD12	1.73	0.53
11:E:161:LYS:O	11:E:165:LEU:HB2	2.09	0.53
1:2:608:GLU:OE2	5:6:653:HIS:ND1	2.41	0.53
13:H:107:LEU:HD23	13:H:109:LEU:H	1.73	0.53
14:P:17:GLN:O	14:P:21:GLU:HG3	2.09	0.53
5:6:582:SER:OG	19:6:1201:ADP:O2B	2.23	0.53
6:7:18:PHE:HA	6:7:21:ILE:HD12	1.90	0.53
6:7:444:VAL:HB	6:7:448:MET:HB3	1.90	0.53
12:F:516:ILE:HA	12:F:519:VAL:HG22	1.91	0.53
1:2:321:THR:HG22	1:2:425:GLU:HG3	1.91	0.53
2:3:698:THR:HG22	2:3:699:ALA:N	2.24	0.53
5:6:140:ILE:HD11	5:6:189:VAL:HG22	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:7:441:ASP:OD1	6:7:452:GLY:N	2.43	0.53
10:D:182:TYR:CD1	13:H:141:LEU:HD11	2.43	0.53
3:4:525:SER:O	3:4:528:PRO:HD3	2.09	0.52
11:L:144:ASP:OD1	11:L:145:ASP:N	2.42	0.52
14:P:21:GLU:HA	14:P:73:LEU:HD23	1.90	0.52
15:Q:1361:PHE:HD2	15:Q:1362:LYS:HG3	1.73	0.52
4:5:31:PHE:CG	4:5:90:PHE:HD1	2.27	0.52
5:6:550:GLN:HB2	5:6:571:ILE:HD11	1.90	0.52
15:Q:1475:ARG:HG3	15:Q:1476:TYR:HD1	1.74	0.52
15:N:1664:ARG:HH12	15:N:1666:ASP:HB2	1.74	0.52
13:O:207:LYS:HG2	13:O:208:ILE:H	1.75	0.52
1:2:406:ARG:NH1	1:2:430:TYR:OH	2.42	0.52
5:6:262:VAL:HG21	5:6:354:LEU:HD21	1.91	0.52
5:6:777:TYR:HB2	5:6:800:LEU:HD13	1.91	0.52
11:E:82:LEU:HD23	11:E:121:TYR:HB2	1.92	0.52
1:2:478:GLU:OE1	11:E:357:LYS:NZ	2.29	0.52
11:E:248:VAL:O	11:E:290:ARG:NH2	2.43	0.52
11:L:82:LEU:HD23	11:L:121:TYR:HB2	1.92	0.52
15:Q:1744:ILE:HD11	15:Q:1836:VAL:HG22	1.91	0.52
6:7:435:LEU:HD13	6:7:564:LEU:HD13	1.92	0.52
6:7:548:ILE:HG13	6:7:549:SER:H	1.75	0.52
3:4:506:LEU:O	3:4:510:ARG:HG2	2.10	0.52
3:4:698:LEU:HD12	3:4:701:ARG:HD2	1.91	0.52
10:D:97:LEU:O	10:D:101:ILE:HD12	2.10	0.52
11:E:345:ASN:HA	11:E:350:LEU:HD13	1.92	0.52
11:E:401:LEU:HB3	11:E:404:ILE:HD12	1.92	0.52
14:I:17:GLN:O	14:I:21:GLU:HG3	2.09	0.52
15:Q:1709:THR:HA	15:Q:1712:ILE:HG12	1.90	0.52
6:7:458:LEU:HD23	6:7:598:PHE:HB2	1.91	0.52
8:B:25:DT:H2"	8:B:26:DT:OP2	2.10	0.52
11:E:144:ASP:OD1	11:E:145:ASP:N	2.42	0.52
5:6:816:VAL:HG12	5:6:818:GLU:H	1.75	0.52
6:7:400:ARG:HD2	6:7:637:LYS:HE2	1.91	0.52
11:L:345:ASN:HA	11:L:350:LEU:HD13	1.92	0.52
15:N:1593:GLN:OE1	15:N:1617:LEU:N	2.32	0.52
15:N:1670:TYR:O	15:N:1674:VAL:HG23	2.10	0.52
15:Q:1664:ARG:HH12	15:Q:1666:ASP:HB2	1.74	0.52
15:Q:1952:GLU:OE2	15:Q:2014:ARG:NH2	2.40	0.52
3:4:559:ARG:NH1	3:4:649:MET:O	2.43	0.52
6:7:596:ILE:HD11	6:7:695:LEU:HD11	1.91	0.52
9:J:105:PHE:O	9:J:109:ILE:HD12	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:K:97:LEU:O	10:K:101:ILE:HD12	2.10	0.52
4:5:614:LEU:HD11	4:5:657:ILE:HG23	1.93	0.51
12:F:415:THR:O	12:F:419:LYS:HG3	2.10	0.51
15:Q:1670:TYR:O	15:Q:1674:VAL:HG23	2.10	0.51
1:2:196:GLU:HA	1:2:199:THR:HG22	1.92	0.51
1:2:341:CYS:O	1:2:345:GLY:HA2	2.11	0.51
9:C:105:PHE:O	9:C:109:ILE:HD12	2.09	0.51
12:M:415:THR:O	12:M:419:LYS:HG3	2.10	0.51
13:O:35:ASP:OD1	13:O:36:ILE:HD12	2.10	0.51
1:2:440:ALA:HB1	5:6:408:THR:HG22	1.93	0.51
12:F:84:VAL:O	12:F:88:ILE:HG13	2.10	0.51
12:F:550:PHE:HE2	12:F:602:LEU:HG	1.75	0.51
13:H:207:LYS:HG2	13:H:208:ILE:H	1.75	0.51
15:N:1475:ARG:HG3	15:N:1476:TYR:HD1	1.74	0.51
1:2:271:PHE:HA	1:2:274:VAL:HG12	1.92	0.51
6:7:142:ILE:O	6:7:146:ARG:HG2	2.09	0.51
12:F:394:LEU:HD22	12:F:397:HIS:HE1	1.76	0.51
12:F:669:ARG:NH1	12:F:687:ILE:HG12	2.26	0.51
11:L:328:LEU:HD23	11:L:423:GLU:HG2	1.91	0.51
12:M:669:ARG:NH1	12:M:687:ILE:HG12	2.26	0.51
12:M:378:ARG:NH1	13:O:128:GLN:OE1	2.44	0.51
15:N:1731:VAL:HB	15:N:1906:TRP:HB2	1.93	0.51
15:N:1895:PHE:HB3	15:N:1898:LEU:HD12	1.93	0.51
2:3:170:THR:HG21	2:3:588:LEU:HD11	1.92	0.51
2:3:293:ASN:ND2	2:3:594:GLU:OE2	2.33	0.51
3:4:316:GLU:HG2	3:4:316:GLU:O	2.11	0.51
5:6:152:TYR:HB3	5:6:268:PHE:HE1	1.76	0.51
10:D:94:GLN:O	10:D:98:ILE:HD12	2.11	0.51
13:H:107:LEU:HD21	13:H:112:SER:HB3	1.93	0.51
3:4:196:ASN:O	3:4:200:SER:HB2	2.11	0.51
12:F:378:ARG:NH1	13:H:128:GLN:OE1	2.44	0.51
2:3:519:VAL:HG22	2:3:534:ALA:HB2	1.93	0.51
3:4:209:LEU:HD13	3:4:250:ALA:HA	1.92	0.51
3:4:445:ARG:HA	3:4:453:LEU:HD23	1.92	0.51
3:4:728:TYR:HE1	6:7:450:ILE:HG21	1.76	0.51
3:4:826:VAL:HA	3:4:829:ILE:HG22	1.93	0.51
13:H:35:ASP:OD1	13:H:36:ILE:HD12	2.10	0.51
15:Q:1369:GLN:HG2	15:Q:1371:ILE:H	1.76	0.51
5:6:137:ARG:O	5:6:140:ILE:HG22	2.10	0.50
10:D:182:TYR:HD1	13:H:141:LEU:HD11	1.77	0.50
12:F:398:LYS:NZ	12:F:674:GLU:OE2	2.38	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:M:394:LEU:HD22	12:M:397:HIS:HE1	1.76	0.50
12:M:550:PHE:HE2	12:M:602:LEU:HG	1.75	0.50
15:Q:1856:SER:HA	15:Q:1869:LYS:O	2.11	0.50
6:7:69:LYS:HD2	6:7:75:LEU:HB2	1.93	0.50
10:K:94:GLN:O	10:K:98:ILE:HD12	2.11	0.50
12:M:84:VAL:O	12:M:88:ILE:HG13	2.10	0.50
13:O:107:LEU:HD21	13:O:112:SER:HB3	1.93	0.50
6:7:216:ARG:HG2	6:7:217:LYS:H	1.76	0.50
6:7:432:LEU:HD13	6:7:473:ILE:HD11	1.93	0.50
6:7:575:ASN:OD1	6:7:576:PRO:HD2	2.11	0.50
11:E:328:LEU:HD23	11:E:423:GLU:HG2	1.91	0.50
9:J:97:LEU:HD11	9:J:127:LEU:HD21	1.93	0.50
15:Q:1731:VAL:HB	15:Q:1906:TRP:HB2	1.93	0.50
5:6:652:ILE:HG22	5:6:656:MET:HG3	1.93	0.50
12:M:18:ARG:NE	13:O:175:GLN:OE1	2.44	0.50
15:N:1369:GLN:HG2	15:N:1371:ILE:H	1.76	0.50
15:N:2155:GLU:O	15:N:2159:ILE:HG12	2.11	0.50
2:3:259:GLN:HG3	2:3:273:SER:HB3	1.94	0.50
15:N:1816:LEU:O	15:N:1820:VAL:HG23	2.12	0.50
15:N:1874:SER:OG	15:N:1876:GLU:OE1	2.30	0.50
1:2:589:TRP:HD1	4:5:454:GLN:HE22	1.60	0.50
14:I:109:PRO:HA	14:I:155:LYS:HE2	1.93	0.50
1:2:382:TYR:HB2	4:5:153:SER:HB2	1.92	0.50
5:6:690:ASN:HD22	5:6:693:LEU:HD23	1.77	0.50
11:L:401:LEU:HB3	11:L:404:ILE:HD12	1.92	0.50
15:N:1366:MET:HG2	15:N:1368:LEU:HG	1.94	0.50
12:M:20:LEU:HD22	12:M:23:ARG:HH21	1.77	0.50
1:2:341:CYS:O	1:2:345:GLY:CA	2.60	0.50
2:3:552:ASP:O	2:3:557:ARG:NH1	2.45	0.50
12:F:2:PHE:HE1	12:F:94:ARG:HG2	1.77	0.50
12:F:625:ASP:OD1	12:F:625:ASP:N	2.43	0.50
15:N:1952:GLU:OE2	15:N:2014:ARG:NH2	2.40	0.50
3:4:605:ILE:HD12	3:4:658:LYS:HB2	1.95	0.49
3:4:720:LEU:HD12	3:4:723:HIS:NE2	2.27	0.49
4:5:50:LEU:HG	4:5:61:LEU:HD13	1.94	0.49
6:7:260:TYR:HB3	6:7:298:LEU:HD12	1.94	0.49
6:7:322:VAL:HG21	6:7:328:PRO:HG3	1.93	0.49
9:C:97:LEU:HD11	9:C:127:LEU:HD21	1.93	0.49
12:F:529:PRO:HA	12:F:541:ILE:O	2.12	0.49
11:L:248:VAL:O	11:L:290:ARG:NH2	2.43	0.49
15:N:1856:SER:HA	15:N:1869:LYS:O	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:Q:1816:LEU:O	15:Q:1820:VAL:HG23	2.12	0.49
15:Q:1895:PHE:HB3	15:Q:1898:LEU:HD12	1.93	0.49
3:4:520:SER:O	3:4:524:ARG:HG2	2.11	0.49
6:7:283:GLU:N	6:7:298:LEU:HD23	2.27	0.49
11:E:572:ILE:HD13	11:E:579:TYR:CE1	2.47	0.49
11:L:572:ILE:HD13	11:L:579:TYR:CE1	2.47	0.49
12:M:2:PHE:HE1	12:M:94:ARG:HG2	1.77	0.49
12:M:34:LYS:HB2	12:M:79:ILE:O	2.12	0.49
12:M:232:ASN:HB3	12:M:235:PHE:HD2	1.77	0.49
5:6:335:ASN:N	5:6:336:PRO:CD	2.73	0.49
5:6:538:PHE:HB2	5:6:730:HIS:ND1	2.27	0.49
6:7:291:GLN:NE2	6:7:292:ASN:OD1	2.45	0.49
10:D:126:LEU:HD23	11:E:22:HIS:NE2	2.27	0.49
15:Q:1366:MET:HG2	15:Q:1368:LEU:HG	1.93	0.49
15:Q:2155:GLU:O	15:Q:2159:ILE:HG12	2.12	0.49
4:5:196:ASN:ND2	4:5:279:ASP:OD2	2.46	0.49
4:5:414:LEU:HD23	4:5:554:PHE:HB2	1.93	0.49
4:5:433:SER:HB3	4:5:436:ALA:HB2	1.94	0.49
7:A:13:DT:H3'	7:A:14:DT:H5"	1.95	0.49
12:F:41:LEU:HD11	12:F:66:PHE:CE2	2.47	0.49
14:I:146:GLN:O	14:I:150:GLU:HG3	2.13	0.49
12:M:529:PRO:HA	12:M:541:ILE:O	2.12	0.49
15:Q:1360:LYS:HG3	15:Q:1424:LEU:HB2	1.94	0.49
6:7:226:SER:OG	6:7:229:GLN:HG3	2.13	0.49
2:3:723:LYS:HE2	2:3:727:LYS:HE2	1.94	0.49
4:5:584:GLN:O	4:5:587:GLN:HG2	2.12	0.49
11:L:638:SER:OG	11:L:639:PRO:HD3	2.13	0.49
15:Q:1403:PRO:HG2	15:Q:1406:VAL:HG22	1.94	0.49
1:2:656:ARG:NH2	5:6:793:TYR:OH	2.46	0.49
3:4:191:THR:O	3:4:195:ARG:HG2	2.12	0.49
3:4:251:TYR:CE2	3:4:253:GLN:HB3	2.47	0.49
6:7:643:ALA:O	6:7:647:THR:HG23	2.13	0.49
12:F:18:ARG:NE	13:H:175:GLN:OE1	2.44	0.49
13:H:168:LEU:O	13:H:185:LYS:NZ	2.45	0.49
15:N:1360:LYS:HG3	15:N:1424:LEU:HB2	1.94	0.49
8:B:13:DT:H3'	8:B:14:DT:H5"	1.95	0.49
11:E:638:SER:OG	11:E:639:PRO:HD3	2.13	0.49
12:F:53:TRP:N	12:F:55:GLN:OE1	2.46	0.49
12:F:232:ASN:HB3	12:F:235:PHE:HD2	1.77	0.49
10:K:126:LEU:HD23	11:L:22:HIS:NE2	2.27	0.49
15:Q:1874:SER:OG	15:Q:1876:GLU:OE1	2.30	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:H:110:MET:SD	13:H:120:THR:HG22	2.53	0.49
10:K:182:TYR:HD1	13:O:141:LEU:HD11	1.77	0.49
15:N:1998:ASN:HA	15:N:2001:ASN:OD1	2.13	0.49
13:O:105:ASN:HA	13:O:152:SER:HB2	1.95	0.49
14:P:146:GLN:O	14:P:150:GLU:HG3	2.13	0.49
1:2:271:PHE:CD2	1:2:295:VAL:HG21	2.48	0.49
5:6:690:ASN:ND2	5:6:693:LEU:HD23	2.28	0.49
6:7:235:LEU:HD22	6:7:357:PRO:HG3	1.95	0.49
7:A:7:DT:H2"	7:A:8:DT:H5'	1.95	0.49
12:F:31:LEU:HD22	13:H:198:ARG:HD3	1.95	0.49
12:F:34:LYS:HB2	12:F:79:ILE:O	2.12	0.49
10:K:136:LEU:O	10:K:140:ILE:HG13	2.13	0.49
13:O:34:GLU:OE1	13:O:38:ARG:NH2	2.46	0.49
13:O:54:LEU:HD21	13:O:71:GLN:HB2	1.95	0.49
15:Q:1486:TYR:OH	15:Q:1642:SER:HB2	2.13	0.49
1:2:334:LEU:HD13	4:5:322:ALA:HB1	1.94	0.48
3:4:443:PRO:HB3	3:4:457:TYR:CE1	2.48	0.48
5:6:596:VAL:HG22	5:6:631:ALA:HB2	1.95	0.48
6:7:455:ASN:HB2	6:7:595:ASP:H	1.78	0.48
12:F:386:ARG:CD	12:F:389:LEU:HD12	2.43	0.48
15:N:1486:TYR:OH	15:N:1642:SER:HB2	2.13	0.48
13:O:170:ASP:OD1	13:O:171:ALA:N	2.46	0.48
14:P:109:PRO:HA	14:P:155:LYS:HE2	1.93	0.48
3:4:403:PRO:HD2	3:4:432:ARG:HH22	1.78	0.48
4:5:26:GLU:N	4:5:26:GLU:OE1	2.46	0.48
5:6:644:MET:HE2	5:6:649:GLN:HG2	1.95	0.48
13:H:34:GLU:OE1	13:H:38:ARG:NH2	2.46	0.48
12:M:41:LEU:HD11	12:M:66:PHE:CE2	2.47	0.48
12:M:84:VAL:O	12:M:87:VAL:HG22	2.12	0.48
15:Q:1593:GLN:OE1	15:Q:1617:LEU:N	2.33	0.48
7:A:30:DA:H2'	7:A:31:DA:C8	2.48	0.48
6:7:262:CYS:HB2	6:7:298:LEU:HD11	1.95	0.48
8:B:7:DT:H2"	8:B:8:DT:H5'	1.95	0.48
11:L:28:VAL:HG23	11:L:78:ILE:HD12	1.95	0.48
15:N:1403:PRO:HG2	15:N:1406:VAL:HG22	1.94	0.48
1:2:364:CYS:CB	1:2:367:CYS:HB3	2.43	0.48
3:4:333:LEU:HD12	3:4:398:LYS:HZ2	1.78	0.48
3:4:728:TYR:CE1	6:7:450:ILE:HG21	2.48	0.48
3:4:768:THR:O	3:4:772:ARG:HG2	2.13	0.48
4:5:209:ARG:HG3	4:5:209:ARG:HH11	1.78	0.48
5:6:585:LEU:HD22	5:6:637:CYS:HB3	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:F:84:VAL:O	12:F:87:VAL:HG22	2.12	0.48
12:M:398:LYS:NZ	12:M:674:GLU:OE2	2.38	0.48
13:O:168:LEU:O	13:O:185:LYS:NZ	2.45	0.48
10:D:132:GLU:OE2	14:I:54:THR:OG1	2.27	0.48
12:F:20:LEU:HD22	12:F:23:ARG:HH21	1.77	0.48
12:F:362:LEU:HD21	12:F:376:ILE:HD12	1.96	0.48
12:F:408:LEU:HD21	12:F:465:LEU:HD11	1.96	0.48
12:M:169:TYR:HH	12:M:368:HIS:HD1	1.56	0.48
4:5:544:THR:HG23	4:5:647:PRO:HG3	1.95	0.48
4:5:571:HIS:O	4:5:575:ILE:HG12	2.13	0.48
11:E:28:VAL:HG23	11:E:78:ILE:HD12	1.95	0.48
10:K:203:PRO:O	10:K:207:GLN:HG3	2.14	0.48
12:M:31:LEU:HD22	13:O:198:ARG:HD3	1.95	0.48
6:7:282:SER:HA	6:7:298:LEU:H	1.78	0.48
10:D:203:PRO:O	10:D:207:GLN:HG3	2.14	0.48
12:F:490:LEU:HD23	12:F:509:PRO:HG3	1.96	0.48
11:L:246:THR:HG23	11:L:602:LEU:HD23	1.95	0.48
12:M:386:ARG:CD	12:M:389:LEU:HD12	2.43	0.48
12:F:686:GLU:O	12:F:687:ILE:C	2.52	0.48
12:M:53:TRP:N	12:M:55:GLN:OE1	2.46	0.48
12:M:362:LEU:HD21	12:M:376:ILE:HD12	1.96	0.48
1:2:463:THR:HG22	1:2:558:LYS:HG3	1.95	0.48
6:7:349:VAL:HG12	6:7:383:GLN:HG2	1.96	0.48
12:M:17:LEU:HD13	12:M:53:TRP:HZ2	1.78	0.48
12:M:408:LEU:HD21	12:M:465:LEU:HD11	1.96	0.48
12:M:490:LEU:HD23	12:M:509:PRO:HG3	1.96	0.48
12:M:555:LEU:HD23	12:M:557:PHE:CZ	2.49	0.48
3:4:203:TYR:O	3:4:207:LYS:HG2	2.14	0.47
3:4:527:ALA:HB3	3:4:537:LYS:HD3	1.95	0.47
12:F:555:LEU:HD23	12:F:557:PHE:CZ	2.49	0.47
13:H:170:ASP:OD1	13:H:171:ALA:N	2.46	0.47
15:Q:1998:ASN:HA	15:Q:2001:ASN:OD1	2.13	0.47
3:4:272:MET:O	3:4:276:ILE:HG12	2.14	0.47
4:5:730:TYR:HE2	12:F:293:LYS:HG2	1.79	0.47
6:7:86:LEU:HD21	6:7:103:VAL:HG11	1.95	0.47
6:7:396:ASP:O	6:7:400:ARG:HG2	2.13	0.47
10:D:206:LEU:HD12	10:D:206:LEU:O	2.15	0.47
12:F:17:LEU:HD13	12:F:53:TRP:HZ2	1.78	0.47
15:N:1339:PHE:HD1	15:N:1611:PRO:HB3	1.80	0.47
13:O:110:MET:SD	13:O:120:THR:HG22	2.53	0.47
15:Q:1597:ILE:HG21	15:Q:1614:LYS:HD2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:329:LYS:HG2	3:4:434:GLU:HB3	1.96	0.47
4:5:738:VAL:HG22	4:5:743:PHE:HB2	1.96	0.47
13:H:54:LEU:HD21	13:H:71:GLN:HB2	1.95	0.47
13:H:105:ASN:HA	13:H:152:SER:HB2	1.95	0.47
11:L:502:LEU:O	11:L:506:ILE:HG12	2.14	0.47
2:3:484:VAL:HG11	6:7:486:LYS:HE2	1.96	0.47
3:4:367:GLU:OE1	5:6:441:ARG:N	2.48	0.47
4:5:236:CYS:HB3	4:5:240:PRO:HG2	1.95	0.47
4:5:467:GLY:H	4:5:470:VAL:HB	1.78	0.47
5:6:451:LYS:NZ	5:6:453:SER:OG	2.47	0.47
5:6:751:LEU:O	5:6:755:ILE:HG12	2.14	0.47
11:E:246:THR:HG23	11:E:602:LEU:HD23	1.95	0.47
15:N:1795:LEU:HD13	15:N:1816:LEU:HD22	1.97	0.47
4:5:90:PHE:CD2	4:5:137:LEU:HD22	2.49	0.47
6:7:275:SER:OG	6:7:276:ARG:N	2.46	0.47
11:E:502:LEU:O	11:E:506:ILE:HG12	2.14	0.47
12:M:332:TYR:OH	12:M:337:ASN:OD1	2.22	0.47
12:M:435:GLN:HA	12:M:484:ILE:HB	1.97	0.47
15:N:1664:ARG:NH1	15:N:1666:ASP:HB2	2.30	0.47
15:Q:1944:PHE:HE1	15:Q:2043:SER:HB3	1.80	0.47
4:5:681:ILE:O	4:5:685:GLN:HG3	2.14	0.47
5:6:430:THR:HA	5:6:433:LEU:HB2	1.96	0.47
6:7:404:LEU:HD23	6:7:641:TYR:CD1	2.50	0.47
6:7:707:MET:SD	6:7:707:MET:N	2.87	0.47
12:M:420:ILE:O	12:M:424:LEU:HD13	2.15	0.47
12:M:686:GLU:O	12:M:687:ILE:C	2.52	0.47
15:Q:1450:LYS:HG3	15:Q:1451:ALA:H	1.79	0.47
2:3:469:VAL:HG12	2:3:511:SER:HB2	1.96	0.47
10:D:72:CYS:HB3	10:D:293:LEU:HD23	1.97	0.47
10:D:281:VAL:HG23	10:D:282:ILE:HG23	1.96	0.47
12:F:669:ARG:NH1	12:F:687:ILE:HG23	2.30	0.47
11:L:14:LYS:HG2	11:L:17:ARG:HH12	1.80	0.47
1:2:696:ALA:HB3	5:6:774:VAL:HG23	1.97	0.47
3:4:714:GLU:OE1	3:4:715:LYS:HD3	2.14	0.47
6:7:67:LEU:HD21	6:7:121:ILE:HD12	1.97	0.47
11:E:14:LYS:HG2	11:E:17:ARG:HH12	1.80	0.47
12:F:49:ILE:HG13	12:F:53:TRP:CZ3	2.49	0.47
12:M:184:ASN:HD22	12:M:187:LYS:HE2	1.80	0.47
15:N:1920:LEU:HG	15:N:1933:TYR:HB3	1.97	0.47
15:Q:1365:THR:HG22	15:Q:1366:MET:N	2.30	0.47
10:D:136:LEU:O	10:D:140:ILE:HG13	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:K:206:LEU:O	10:K:206:LEU:HD12	2.15	0.47
15:N:1956:TRP:O	15:N:1960:ILE:HG13	2.15	0.47
15:Q:1920:LEU:HG	15:Q:1933:TYR:HB3	1.97	0.47
3:4:220:THR:HA	3:4:223:GLU:HG3	1.97	0.46
12:F:435:GLN:HA	12:F:484:ILE:HB	1.97	0.46
10:K:281:VAL:HG23	10:K:282:ILE:HG23	1.96	0.46
15:N:1595:PRO:HA	15:N:1618:ASN:OD1	2.15	0.46
15:N:1944:PHE:HE1	15:N:2043:SER:HB3	1.80	0.46
15:Q:1956:TRP:O	15:Q:1960:ILE:HG13	2.15	0.46
4:5:759:GLU:O	4:5:774:GLY:N	2.47	0.46
12:F:650:ASP:HB2	12:F:657:LYS:HZ1	1.81	0.46
10:D:109:GLN:NE2	10:D:114:ALA:O	2.48	0.46
12:M:49:ILE:HG13	12:M:53:TRP:CZ3	2.49	0.46
15:N:1597:ILE:HG21	15:N:1614:LYS:HD2	1.96	0.46
15:N:1616:SER:OG	15:N:1664:ARG:NH2	2.48	0.46
15:Q:1616:SER:OG	15:Q:1664:ARG:NH2	2.48	0.46
15:Q:1795:LEU:HD13	15:Q:1816:LEU:HD22	1.97	0.46
1:2:578:ALA:HB1	1:2:591:LEU:HD22	1.97	0.46
3:4:269:ILE:O	3:4:272:MET:HB2	2.14	0.46
4:5:266:PRO:HG2	4:5:269:GLU:HG3	1.97	0.46
12:F:28:LYS:HE3	12:F:29:TYR:CE1	2.51	0.46
15:Q:2039:VAL:O	15:Q:2040:LEU:HD23	2.16	0.46
8:B:24:DT:H2”	8:B:25:DT:O5’	2.16	0.46
8:B:30:DA:H2’	8:B:31:DA:C8	2.50	0.46
12:F:420:ILE:O	12:F:424:LEU:HD13	2.15	0.46
3:4:197:PHE:HB2	3:4:254:THR:HG21	1.96	0.46
3:4:545:PHE:O	3:4:810:LYS:NZ	2.42	0.46
15:N:1450:LYS:HG3	15:N:1451:ALA:H	1.79	0.46
15:Q:1339:PHE:HD1	15:Q:1611:PRO:HB3	1.80	0.46
15:Q:1595:PRO:HA	15:Q:1618:ASN:OD1	2.16	0.46
3:4:209:LEU:HD22	3:4:250:ALA:HB2	1.98	0.46
4:5:87:ILE:O	4:5:91:GLU:HG2	2.16	0.46
5:6:645:ASP:OD2	5:6:647:SER:OG	2.24	0.46
12:F:661:PRO:HG3	12:F:673:MET:SD	2.56	0.46
12:M:28:LYS:HE3	12:M:29:TYR:CE1	2.50	0.46
12:M:476:THR:HG23	12:M:520:CYS:HA	1.98	0.46
15:N:1365:THR:HG22	15:N:1366:MET:N	2.30	0.46
3:4:607:ARG:HH21	3:4:612:LYS:HB3	1.80	0.46
5:6:335:ASN:N	5:6:335:ASN:OD1	2.49	0.46
5:6:796:THR:H	5:6:799:GLN:HG2	1.80	0.46
15:N:1887:LYS:O	15:N:1891:THR:OG1	2.26	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:N:2039:VAL:O	15:N:2040:LEU:HD23	2.16	0.46
15:Q:1655:TYR:OH	15:Q:1801:GLU:OE2	2.28	0.46
15:Q:1941:LEU:HD21	15:Q:2057:SER:HB2	1.97	0.46
3:4:778:ARG:HD3	3:4:793:ALA:O	2.16	0.46
6:7:63:TYR:HA	6:7:66:MET:HG2	1.98	0.46
6:7:459:MET:HG2	6:7:567:ALA:HB3	1.96	0.46
12:F:669:ARG:HH11	12:F:687:ILE:HG12	1.81	0.46
10:K:72:CYS:HB3	10:K:293:LEU:HD23	1.97	0.46
12:M:669:ARG:NH1	12:M:687:ILE:HG23	2.30	0.46
15:N:1721:ILE:O	15:N:1860:TYR:HA	2.16	0.46
15:Q:1721:ILE:O	15:Q:1860:TYR:HA	2.16	0.46
2:3:97:ILE:HG12	2:3:156:SER:HB2	1.97	0.46
3:4:251:TYR:HE2	3:4:253:GLN:HB3	1.81	0.46
6:7:70:VAL:HG22	6:7:75:LEU:HB3	1.98	0.46
10:K:131:THR:O	10:K:135:ARG:HG3	2.16	0.46
13:O:109:LEU:HD23	13:O:135:CYS:SG	2.56	0.46
15:Q:1664:ARG:NH1	15:Q:1666:ASP:HB2	2.30	0.46
1:2:783:MET:HG2	4:5:573:ILE:HG21	1.99	0.45
2:3:730:ALA:O	2:3:734:ARG:HG3	2.16	0.45
3:4:336:THR:HG22	3:4:396:VAL:H	1.81	0.45
6:7:668:ARG:HD2	6:7:684:ALA:HB3	1.98	0.45
13:H:109:LEU:HD23	13:H:135:CYS:SG	2.56	0.45
4:5:416:GLY:HA3	4:5:556:VAL:HB	1.99	0.45
6:7:360:TYR:HD1	6:7:373:GLU:HG3	1.81	0.45
12:M:669:ARG:HH11	12:M:687:ILE:HG12	1.81	0.45
15:Q:2048:LYS:HG3	15:Q:2049:ASN:N	2.31	0.45
3:4:245:ALA:HB1	3:4:258:TYR:HE1	1.82	0.45
12:F:650:ASP:OD1	12:F:650:ASP:N	2.48	0.45
15:N:1634:LYS:HD2	15:N:1634:LYS:HA	1.76	0.45
14:P:102:ILE:O	14:P:106:LYS:HG2	2.17	0.45
15:Q:1691:GLU:OE2	15:Q:1692:LYS:HG2	2.17	0.45
7:A:24:DT:H2"	7:A:25:DT:O5'	2.16	0.45
10:D:131:THR:O	10:D:135:ARG:HG3	2.16	0.45
12:F:476:THR:HG23	12:F:520:CYS:HA	1.98	0.45
13:H:44:VAL:HG23	13:H:79:MET:HG2	1.99	0.45
13:H:167:VAL:HG21	13:H:184:ILE:O	2.17	0.45
14:I:102:ILE:O	14:I:106:LYS:HG2	2.17	0.45
11:L:231:HIS:HA	11:L:234:GLU:HG2	1.99	0.45
15:N:1941:LEU:HD21	15:N:2057:SER:HB2	1.97	0.45
15:Q:2213:LEU:O	15:Q:2217:ILE:HG12	2.16	0.45
5:6:516:LEU:HD21	5:6:757:TYR:CG	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:6:728:ALA:O	5:6:732:VAL:HG12	2.16	0.45
11:L:50:LYS:HB2	11:L:50:LYS:HE3	1.78	0.45
11:L:539:TYR:HB3	11:L:545:LEU:HD13	1.98	0.45
13:O:167:VAL:HG21	13:O:184:ILE:O	2.17	0.45
3:4:508:LYS:HA	3:4:511:GLU:HG2	1.99	0.45
4:5:104:LEU:HD12	14:I:158:LYS:NZ	2.31	0.45
6:7:149:ARG:NH1	6:7:267:TYR:HB3	2.32	0.45
12:F:181:PHE:CD1	12:F:192:PHE:HA	2.52	0.45
11:L:553:ILE:HD11	11:L:584:LEU:HB3	1.99	0.45
1:2:253:LYS:HB3	1:2:256:LEU:HD12	1.98	0.45
3:4:522:LEU:HA	3:4:525:SER:OG	2.17	0.45
3:4:704:LEU:HD11	3:4:804:LEU:HD21	1.99	0.45
4:5:254:GLN:HB3	4:5:278:CYS:SG	2.56	0.45
6:7:503:THR:HG23	6:7:505:GLU:HG2	1.99	0.45
6:7:686:PRO:O	6:7:690:LEU:HG	2.17	0.45
9:C:162:THR:O	9:C:166:LEU:HG	2.17	0.45
11:E:553:ILE:HD11	11:E:584:LEU:HB3	1.99	0.45
12:M:503:LEU:HD12	12:M:622:ILE:HG12	1.99	0.45
12:M:650:ASP:OD1	12:M:650:ASP:N	2.48	0.45
12:M:661:PRO:HG3	12:M:673:MET:SD	2.56	0.45
3:4:632:ASP:OD2	3:4:633:GLU:N	2.50	0.45
4:5:92:THR:HA	4:5:95:THR:HG22	1.99	0.45
15:N:2213:LEU:O	15:N:2217:ILE:HG12	2.16	0.45
14:P:96:LYS:O	14:P:100:ARG:HG3	2.17	0.45
1:2:763:LEU:O	1:2:767:ILE:HG13	2.17	0.45
3:4:608:ASP:HB2	3:4:615:VAL:HG23	1.99	0.45
4:5:246:GLU:O	4:5:247:SER:OG	2.32	0.45
5:6:332:PHE:O	5:6:332:PHE:CD1	2.70	0.45
6:7:662:GLN:HA	6:7:665:ILE:HG12	1.98	0.45
12:F:184:ASN:HD22	12:F:187:LYS:HE2	1.80	0.45
12:F:452:ILE:HG13	12:F:456:THR:OG1	2.17	0.45
10:K:54:VAL:HG12	10:K:54:VAL:O	2.16	0.45
15:N:2048:LYS:HG3	15:N:2049:ASN:N	2.31	0.45
14:P:151:ILE:HA	14:P:154:ILE:HD12	1.99	0.45
15:Q:1887:LYS:O	15:Q:1891:THR:OG1	2.26	0.45
3:4:203:TYR:HB2	3:4:220:THR:O	2.17	0.45
11:E:539:TYR:HB3	11:E:545:LEU:HD13	1.98	0.45
12:F:435:GLN:HG2	12:F:436:GLY:N	2.32	0.45
12:M:435:GLN:HG2	12:M:436:GLY:N	2.32	0.45
15:N:1454:ALA:O	15:N:1458:GLY:N	2.44	0.45
4:5:407:ARG:HH21	4:5:658:ARG:NH1	2.14	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:D:54:VAL:HG12	10:D:54:VAL:O	2.16	0.44
14:I:151:ILE:HA	14:I:154:ILE:HD12	1.99	0.44
5:6:109:GLU:O	5:6:113:GLU:HG2	2.16	0.44
6:7:531:GLU:HA	6:7:534:ARG:HB2	1.99	0.44
14:I:96:LYS:O	14:I:100:ARG:HG3	2.17	0.44
9:J:162:THR:O	9:J:166:LEU:HG	2.17	0.44
10:K:141:ARG:HD3	13:O:150:ASP:O	2.17	0.44
10:K:192:LYS:HB2	10:K:192:LYS:HE3	1.83	0.44
12:M:363:ASP:HB3	12:M:366:GLY:HA2	1.98	0.44
1:2:656:ARG:NH2	5:6:793:TYR:CZ	2.85	0.44
2:3:413:THR:O	2:3:413:THR:HG22	2.16	0.44
3:4:417:LEU:HD23	3:4:463:VAL:HG11	1.98	0.44
3:4:505:ASP:HA	3:4:508:LYS:HG2	1.99	0.44
4:5:707:SER:HA	4:5:710:GLU:HB2	1.99	0.44
6:7:260:TYR:O	6:7:268:GLU:HA	2.17	0.44
6:7:635:PRO:O	6:7:638:MET:HB2	2.18	0.44
6:7:693:ILE:O	6:7:697:GLN:HG2	2.18	0.44
10:D:141:ARG:HD3	13:H:150:ASP:O	2.17	0.44
11:E:103:TYR:O	11:E:117:ARG:N	2.50	0.44
11:E:231:HIS:HA	11:E:234:GLU:HG2	1.99	0.44
12:F:503:LEU:HD12	12:F:622:ILE:HG12	1.99	0.44
15:N:1691:GLU:OE2	15:N:1692:LYS:HG2	2.17	0.44
13:O:44:VAL:HG23	13:O:79:MET:HG2	1.99	0.44
1:2:234:LEU:HG	1:2:239:SER:HB3	1.99	0.44
5:6:367:GLU:N	5:6:367:GLU:OE2	2.50	0.44
6:7:282:SER:HB3	6:7:297:GLN:HB2	2.00	0.44
12:F:363:ASP:HB3	12:F:366:GLY:HA2	1.99	0.44
12:M:396:ASP:OD1	12:M:397:HIS:N	2.51	0.44
2:3:459:ALA:HB1	2:3:463:VAL:HG23	2.00	0.44
3:4:776:GLY:HA2	3:4:779:LYS:HG2	1.98	0.44
6:7:217:LYS:HE2	6:7:217:LYS:HA	1.99	0.44
12:F:345:THR:HG22	12:F:346:LEU:N	2.32	0.44
12:F:503:LEU:HD13	12:F:630:LEU:HD13	1.99	0.44
10:K:126:LEU:HA	10:K:129:MET:HG2	2.00	0.44
11:L:27:LEU:HD12	11:L:80:SER:HB2	2.00	0.44
11:L:129:TRP:CD2	11:L:134:ILE:HD11	2.53	0.44
12:M:181:PHE:CD1	12:M:192:PHE:HA	2.52	0.44
1:2:437:ASN:OD1	5:6:416:LYS:HB3	2.18	0.44
5:6:112:ARG:NH1	5:6:187:ARG:HH12	2.16	0.44
5:6:332:PHE:O	5:6:332:PHE:CG	2.70	0.44
11:E:431:LEU:HD23	11:E:431:LEU:HA	1.86	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:F:14:PRO:N	12:F:15:PRO:HD2	2.33	0.44
12:M:452:ILE:HG13	12:M:456:THR:OG1	2.17	0.44
15:N:1863:ARG:HE	15:N:1863:ARG:HB3	1.63	0.44
3:4:227:ILE:HD11	3:4:283:LEU:HD21	1.99	0.44
3:4:234:ARG:HH21	3:4:291:TYR:HB3	1.83	0.44
3:4:413:HIS:CE1	6:7:250:ASP:HB3	2.52	0.44
3:4:775:VAL:HG21	5:6:725:THR:HG22	2.00	0.44
11:E:326:LEU:HB3	11:E:337:SER:HB3	2.00	0.44
11:L:326:LEU:HB3	11:L:337:SER:HB3	2.00	0.44
15:N:1696:PRO:HG3	15:N:1828:PHE:O	2.18	0.44
15:Q:1656:SER:HB3	15:Q:1658:ILE:HD12	2.00	0.44
2:3:733:LEU:HD21	2:3:737:LEU:HD12	1.99	0.44
2:3:735:PHE:CD2	2:3:741:ASP:HB3	2.53	0.44
19:6:1201:ADP:H8	19:6:1201:ADP:H2'	1.76	0.44
11:E:50:LYS:HB2	11:E:50:LYS:HE3	1.78	0.44
10:K:109:GLN:NE2	10:K:114:ALA:O	2.48	0.44
11:L:431:LEU:HD11	11:L:491:LEU:HG	2.00	0.44
12:M:86:GLU:O	12:M:90:GLU:HG3	2.18	0.44
12:M:220:THR:O	12:M:224:LEU:HD23	2.18	0.44
3:4:264:TYR:HA	6:7:303:ARG:HH22	1.83	0.44
9:C:194:LYS:HD3	9:C:194:LYS:HA	1.80	0.44
2:3:276:VAL:HG11	2:3:294:VAL:HG11	1.99	0.43
3:4:451:ARG:HH22	6:7:282:SER:HB2	1.83	0.43
11:E:129:TRP:CD2	11:E:134:ILE:HD11	2.53	0.43
12:F:396:ASP:OD1	12:F:397:HIS:N	2.51	0.43
12:M:402:LEU:HD13	12:M:434:TRP:HD1	1.81	0.43
3:4:819:LEU:HD12	3:4:819:LEU:H	1.82	0.43
4:5:760:THR:HG22	4:5:761:ILE:HG12	2.00	0.43
5:6:821:PRO:HA	5:6:824:ILE:HD13	2.01	0.43
6:7:117:PHE:O	6:7:121:ILE:HG12	2.18	0.43
6:7:360:TYR:CD1	6:7:373:GLU:HG3	2.53	0.43
11:E:434:VAL:HG23	11:E:498:LEU:HD13	2.00	0.43
12:F:402:LEU:HD13	12:F:434:TRP:HD1	1.81	0.43
12:M:181:PHE:HD1	12:M:192:PHE:HA	1.83	0.43
15:Q:1371:ILE:HG13	15:Q:1372:LYS:HG3	2.00	0.43
1:2:458:ARG:HE	1:2:460:GLU:HB3	1.83	0.43
3:4:418:CYS:O	3:4:463:VAL:HG22	2.18	0.43
6:7:634:GLU:OE1	6:7:636:SER:HB2	2.19	0.43
10:D:82:GLN:O	10:D:86:ARG:HG3	2.18	0.43
11:E:27:LEU:HD12	11:E:80:SER:HB2	2.00	0.43
12:F:49:ILE:HG13	12:F:53:TRP:HZ3	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:M:49:ILE:HG13	12:M:53:TRP:HZ3	1.83	0.43
13:O:107:LEU:HD23	13:O:108:ASP:N	2.33	0.43
4:5:207:LEU:HD23	4:5:241:TYR:HB3	2.01	0.43
4:5:650:ILE:HD12	4:5:650:ILE:H	1.83	0.43
5:6:122:PHE:O	5:6:124:VAL:HG23	2.18	0.43
5:6:538:PHE:H	19:6:1201:ADP:N6	2.16	0.43
6:7:363:PHE:CD1	7:A:36:DA:H1'	2.52	0.43
6:7:451:ARG:HD2	6:7:453:ASP:HB2	2.01	0.43
10:D:274:ILE:HB	14:I:170:LEU:O	2.18	0.43
12:F:181:PHE:HD1	12:F:192:PHE:HA	1.84	0.43
12:F:220:THR:O	12:F:224:LEU:HD23	2.18	0.43
15:N:1402:LEU:HD21	15:N:1406:VAL:HG23	2.00	0.43
14:P:64:VAL:HG21	14:P:67:ARG:HE	1.83	0.43
1:2:707:HIS:CE1	1:2:709:GLU:HB2	2.53	0.43
3:4:224:LEU:HB3	3:4:227:ILE:HG22	1.99	0.43
5:6:594:ARG:HG3	5:6:594:ARG:HH11	1.83	0.43
10:K:274:ILE:HB	14:P:170:LEU:O	2.18	0.43
11:L:434:VAL:HG23	11:L:498:LEU:HD13	2.01	0.43
15:N:1328:LYS:O	15:N:1337:GLU:N	2.51	0.43
15:N:1905:TYR:HB2	15:N:1922:CYS:SG	2.59	0.43
15:Q:1905:TYR:HB2	15:Q:1922:CYS:SG	2.59	0.43
15:Q:2009:LYS:HB3	15:Q:2010:PRO:HD3	2.00	0.43
4:5:99:LYS:HG2	4:5:132:LEU:HD12	2.01	0.43
10:D:126:LEU:HA	10:D:129:MET:HG2	2.00	0.43
15:N:1656:SER:HB3	15:N:1658:ILE:HD12	2.00	0.43
15:Q:1368:LEU:HB3	15:Q:1370:LYS:NZ	2.34	0.43
15:Q:1656:SER:HB3	15:Q:1658:ILE:CD1	2.49	0.43
1:2:534:ARG:NH2	1:2:625:GLU:OE1	2.51	0.43
4:5:726:TRP:HB3	15:Q:1779:VAL:HG13	2.00	0.43
5:6:333:CYS:CB	5:6:334:PRO:HD2	2.47	0.43
6:7:608:ASP:O	6:7:611:LYS:HG2	2.18	0.43
11:E:132:ASP:OD1	11:E:159:TYR:OH	2.24	0.43
10:K:189:ILE:HG22	13:O:130:TYR:CD2	2.54	0.43
12:M:503:LEU:HD13	12:M:630:LEU:HD13	1.99	0.43
13:O:47:LEU:O	13:O:51:THR:HG23	2.18	0.43
15:Q:1863:ARG:HE	15:Q:1863:ARG:HB3	1.62	0.43
1:2:577:THR:HG22	1:2:578:ALA:N	2.31	0.43
3:4:403:PRO:O	3:4:406:VAL:HG12	2.18	0.43
3:4:728:TYR:OH	6:7:690:LEU:HD22	2.19	0.43
5:6:333:CYS:CB	5:6:334:PRO:CD	2.89	0.43
7:A:11:DT:H3	8:B:43:DA:H61	1.66	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:F:318:HIS:NE2	12:F:320:TYR:OH	2.49	0.43
13:H:47:LEU:O	13:H:51:THR:HG23	2.18	0.43
14:I:103:GLN:O	14:I:107:THR:HG23	2.19	0.43
15:N:2081:LYS:HB2	15:N:2081:LYS:HE2	1.87	0.43
1:2:304:TYR:HD2	1:2:308:GLU:HG3	1.84	0.43
1:2:342:LEU:HD12	1:2:343:LYS:N	2.33	0.43
1:2:353:GLN:HG2	1:2:355:SER:H	1.84	0.43
2:3:674:GLU:OE1	2:3:723:LYS:HB2	2.18	0.43
3:4:444:ILE:HG13	3:4:454:LYS:HZ3	1.83	0.43
3:4:644:VAL:O	3:4:647:GLU:HG2	2.19	0.43
5:6:720:ASN:OD1	5:6:723:ILE:HB	2.19	0.43
6:7:440:VAL:HG12	6:7:697:GLN:HG3	2.01	0.43
10:K:132:GLU:OE2	14:P:54:THR:N	2.48	0.43
15:N:1656:SER:HB3	15:N:1658:ILE:CD1	2.49	0.43
15:N:2004:SER:HA	15:N:2007:PHE:CE1	2.54	0.43
15:Q:1696:PRO:HG3	15:Q:1828:PHE:O	2.18	0.43
3:4:280:MET:O	3:4:284:ILE:HG23	2.18	0.43
13:H:107:LEU:HD23	13:H:108:ASP:N	2.33	0.43
9:J:194:LYS:HA	9:J:194:LYS:HD3	1.80	0.43
12:M:14:PRO:N	12:M:15:PRO:HD2	2.33	0.43
14:P:3:LEU:HA	14:P:8:GLN:OE1	2.19	0.43
3:4:602:THR:HB	3:4:654:ILE:HG21	2.01	0.42
4:5:40:LEU:HD23	4:5:40:LEU:HA	1.89	0.42
4:5:415:LEU:O	4:5:555:ILE:HA	2.19	0.42
5:6:752:ARG:HG3	5:6:752:ARG:HH11	1.83	0.42
7:A:43:DA:H61	8:B:11:DT:H3	1.66	0.42
1:2:564:VAL:HG23	1:2:599:ALA:HB2	2.01	0.42
6:7:494:THR:HB	6:7:548:ILE:HD12	2.01	0.42
9:C:174:LYS:HE2	9:C:174:LYS:HB3	1.78	0.42
12:F:86:GLU:O	12:F:90:GLU:HG3	2.18	0.42
15:N:1371:ILE:HG13	15:N:1372:LYS:HG3	2.00	0.42
15:Q:1669:ASP:HB2	15:Q:1819:TRP:HD1	1.84	0.42
1:2:486:LYS:HA	1:2:489:ARG:NH1	2.34	0.42
1:2:803:PHE:HD1	1:2:804:PRO:HD2	1.84	0.42
4:5:276:MET:HA	4:5:328:ILE:O	2.19	0.42
11:E:29:ILE:HG12	11:E:82:LEU:HD12	2.01	0.42
12:F:28:LYS:HE3	12:F:29:TYR:HE1	1.84	0.42
10:K:82:GLN:O	10:K:86:ARG:HG3	2.18	0.42
12:M:318:HIS:NE2	12:M:320:TYR:OH	2.49	0.42
12:M:399:PHE:HB2	12:M:431:LEU:HB2	2.02	0.42
15:N:2009:LYS:HB3	15:N:2010:PRO:HD3	1.99	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:N:2193:SER:O	15:N:2197:LYS:HG3	2.19	0.42
13:O:105:ASN:OD1	13:O:152:SER:OG	2.25	0.42
15:Q:1402:LEU:HD21	15:Q:1406:VAL:HG23	2.00	0.42
15:Q:1681:LYS:HE2	15:Q:1687:LEU:HD11	2.01	0.42
1:2:300:PHE:HB3	1:2:319:ARG:HD2	2.02	0.42
4:5:72:ASN:HB3	4:5:75:ILE:HD12	2.01	0.42
5:6:722:LYS:O	5:6:725:THR:OG1	2.29	0.42
6:7:422:ILE:HD13	6:7:469:LEU:HD22	2.01	0.42
14:I:3:LEU:HA	14:I:8:GLN:OE1	2.19	0.42
14:P:103:GLN:O	14:P:107:THR:HG23	2.19	0.42
3:4:779:LYS:HB3	3:4:779:LYS:HE3	1.75	0.42
6:7:130:LYS:NZ	6:7:131:GLU:OE1	2.34	0.42
6:7:414:LEU:HD23	6:7:638:MET:SD	2.59	0.42
6:7:469:LEU:HD13	6:7:469:LEU:HA	1.77	0.42
15:N:1368:LEU:HB3	15:N:1370:LYS:NZ	2.34	0.42
6:7:286:SER:HB2	6:7:289:CYS:SG	2.58	0.42
6:7:508:LEU:HD11	6:7:548:ILE:HG12	2.01	0.42
10:D:189:ILE:HG22	13:H:130:TYR:CD2	2.54	0.42
12:F:7:VAL:HG23	12:F:8:LEU:N	2.35	0.42
13:H:13:ALA:HB2	13:H:89:TYR:HD1	1.85	0.42
15:Q:1679:LYS:HD3	15:Q:1794:MET:CE	2.49	0.42
15:Q:2004:SER:HA	15:Q:2007:PHE:CE1	2.54	0.42
1:2:327:ARG:NH1	1:2:420:PRO:HD3	2.35	0.42
1:2:692:ASP:OD1	5:6:781:ARG:NH2	2.52	0.42
2:3:28:PHE:O	2:3:32:LEU:HD23	2.20	0.42
3:4:341:ASP:OD2	5:6:435:SER:OG	2.29	0.42
4:5:442:LYS:HD2	4:5:442:LYS:HA	1.80	0.42
6:7:64:MET:HA	6:7:67:LEU:HD12	2.01	0.42
6:7:542:GLU:OE2	6:7:593:ARG:NH2	2.52	0.42
11:E:431:LEU:HD11	11:E:491:LEU:HG	2.00	0.42
12:F:199:ASN:OD1	12:F:200:GLY:N	2.53	0.42
9:J:38:ILE:HD12	9:J:38:ILE:HA	1.88	0.42
11:L:161:LYS:HB3	11:L:161:LYS:HE3	1.68	0.42
15:N:1669:ASP:HB2	15:N:1819:TRP:HD1	1.84	0.42
15:Q:2193:SER:O	15:Q:2197:LYS:HG3	2.19	0.42
3:4:258:TYR:O	3:4:262:LEU:HD13	2.19	0.42
12:F:399:PHE:CE1	12:F:677:PRO:HG3	2.53	0.42
14:I:64:VAL:HG21	14:I:67:ARG:HE	1.83	0.42
15:N:1916:ASN:HB3	15:N:1939:TRP:CZ3	2.55	0.42
1:2:615:GLN:O	4:5:442:LYS:NZ	2.48	0.42
1:2:756:SER:OG	1:2:758:ILE:O	2.35	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:196:ASN:O	3:4:200:SER:CB	2.67	0.42
3:4:293:LEU:HA	3:4:296:ILE:HD12	2.02	0.42
7:A:14:DT:H5"	7:A:14:DT:O2	2.20	0.42
10:D:260:ILE:O	10:D:264:LYS:N	2.53	0.42
10:K:79:TYR:CZ	10:K:84:MET:HG3	2.55	0.42
11:L:156:LYS:HZ1	11:L:160:TYR:HE2	1.67	0.42
11:L:394:LYS:HG3	11:L:395:ASN:OD1	2.20	0.42
15:N:1681:LYS:HE2	15:N:1687:LEU:HD11	2.01	0.42
2:3:678:VAL:O	2:3:681:LYS:HG2	2.20	0.42
3:4:365:ILE:HD11	5:6:437:VAL:HB	2.02	0.42
3:4:824:GLU:OE1	3:4:827:ARG:NH2	2.53	0.42
4:5:149:ARG:NH2	4:5:260:GLU:OE2	2.52	0.42
6:7:282:SER:HA	6:7:298:LEU:HB2	2.02	0.42
11:E:394:LYS:HG3	11:E:395:ASN:OD1	2.20	0.42
12:F:399:PHE:HB2	12:F:431:LEU:HB2	2.02	0.42
12:M:199:ASN:OD1	12:M:200:GLY:N	2.53	0.42
3:4:581:VAL:HG11	3:4:672:LEU:HD23	2.01	0.41
4:5:639:GLU:HG2	4:5:746:LEU:HD11	2.01	0.41
11:E:128:PRO:HD2	11:E:245:THR:HG22	2.02	0.41
13:H:105:ASN:OD1	13:H:152:SER:OG	2.26	0.41
10:K:203:PRO:HG3	13:O:48:ARG:HG2	2.01	0.41
10:K:260:ILE:O	10:K:264:LYS:N	2.53	0.41
11:L:103:TYR:O	11:L:117:ARG:N	2.50	0.41
15:Q:1330:SER:OG	15:Q:1331:GLY:N	2.53	0.41
1:2:761:GLU:HG2	1:2:762:LEU:N	2.35	0.41
2:3:138:ASP:OD1	2:3:139:VAL:N	2.53	0.41
3:4:435:VAL:HG12	3:4:466:VAL:HG13	2.01	0.41
5:6:350:ARG:HE	5:6:350:ARG:HB2	1.67	0.41
10:D:203:PRO:HG3	13:H:48:ARG:HG2	2.01	0.41
12:F:169:TYR:CE1	12:F:367:ILE:HG22	2.55	0.41
11:L:235:GLY:O	11:L:238:GLU:HG2	2.20	0.41
15:N:2141:LEU:HD23	15:N:2141:LEU:HA	1.80	0.41
15:Q:1616:SER:H	15:Q:1664:ARG:HH21	1.68	0.41
3:4:767:LYS:O	3:4:771:VAL:HG23	2.19	0.41
15:Q:1916:ASN:HB3	15:Q:1939:TRP:CZ3	2.54	0.41
2:3:448:THR:HG22	2:3:455:ARG:HG2	2.02	0.41
4:5:385:LYS:O	4:5:389:VAL:HG23	2.21	0.41
5:6:438:THR:HB	5:6:447:ASP:OD1	2.20	0.41
6:7:146:ARG:CZ	6:7:149:ARG:HD3	2.50	0.41
8:B:23:DT:H2"	8:B:24:DT:O5'	2.20	0.41
12:F:386:ARG:HE	12:F:535:LEU:HD22	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:M:28:LYS:HE3	12:M:29:TYR:HE1	1.84	0.41
12:M:85:LYS:HA	12:M:88:ILE:HD12	2.03	0.41
1:2:180:GLU:N	1:2:180:GLU:OE2	2.54	0.41
6:7:20:GLU:OE1	6:7:100:ASP:HB2	2.20	0.41
11:E:286:GLN:H	11:E:286:GLN:CD	2.24	0.41
11:L:29:ILE:HG12	11:L:82:LEU:HD12	2.01	0.41
12:M:7:VAL:HG23	12:M:8:LEU:N	2.35	0.41
12:M:653:TYR:O	12:M:655:GLY:N	2.54	0.41
15:Q:1328:LYS:O	15:Q:1337:GLU:N	2.51	0.41
15:Q:1391:ASN:HA	15:Q:1392:PRO:HD3	1.96	0.41
15:Q:1794:MET:O	15:Q:1797:GLU:HG2	2.21	0.41
5:6:586:LYS:HA	5:6:589:VAL:HG12	2.02	0.41
6:7:607:ASP:O	6:7:611:LYS:HE3	2.20	0.41
10:D:79:TYR:CZ	10:D:84:MET:HG3	2.55	0.41
11:E:421:ALA:O	11:E:425:VAL:HG13	2.21	0.41
11:E:598:LYS:HG2	11:E:599:LYS:N	2.35	0.41
12:F:83:GLY:O	12:F:87:VAL:HG13	2.21	0.41
12:M:650:ASP:HB2	12:M:657:LYS:HZ1	1.86	0.41
13:O:137:LEU:O	13:O:141:LEU:HG	2.21	0.41
15:Q:1358:TYR:CD2	15:Q:1397:LEU:HD21	2.56	0.41
15:Q:2130:CYS:SG	15:Q:2131:VAL:N	2.94	0.41
3:4:572:THR:OG1	3:4:573:SER:N	2.54	0.41
6:7:366:LEU:HD23	6:7:366:LEU:HA	1.92	0.41
6:7:600:MET:HE2	6:7:600:MET:HB2	1.92	0.41
6:7:669:GLN:O	6:7:672:LYS:HG2	2.21	0.41
9:C:133:GLN:H	9:C:133:GLN:HG2	1.71	0.41
12:M:83:GLY:O	12:M:87:VAL:HG13	2.21	0.41
15:N:1358:TYR:CD2	15:N:1397:LEU:HD21	2.56	0.41
15:N:1730:VAL:HG23	15:N:1870:THR:HB	2.03	0.41
1:2:364:CYS:HB3	1:2:367:CYS:H	1.86	0.41
2:3:192:VAL:O	2:3:193:ARG:HD2	2.20	0.41
2:3:698:THR:CG2	2:3:699:ALA:H	2.33	0.41
3:4:565:LEU:HB2	3:4:702:PHE:CD2	2.56	0.41
4:5:464:LEU:HD21	4:5:504:ILE:HG21	2.02	0.41
11:E:161:LYS:HE3	11:E:161:LYS:HB3	1.68	0.41
11:L:128:PRO:HD2	11:L:245:THR:HG22	2.02	0.41
11:L:255:ILE:O	11:L:259:LEU:HG	2.21	0.41
12:M:7:VAL:HG23	12:M:8:LEU:H	1.86	0.41
13:O:107:LEU:HD23	13:O:109:LEU:N	2.36	0.41
13:O:181:PHE:CZ	13:O:191:VAL:HG21	2.56	0.41
2:3:122:ILE:HB	2:3:123:PRO:HD3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:601:LEU:HA	3:4:620:ALA:H	1.86	0.41
3:4:711:LYS:HD3	3:4:712:VAL:N	2.33	0.41
5:6:440:LEU:HD12	5:6:440:LEU:HA	1.88	0.41
6:7:531:GLU:HG3	6:7:534:ARG:HD2	2.03	0.41
11:E:318:LEU:HD23	11:E:318:LEU:HA	1.91	0.41
12:F:37:GLY:O	12:F:41:LEU:HD23	2.21	0.41
12:F:57:PRO:O	12:F:61:LYS:HG2	2.21	0.41
12:F:185:PRO:HG3	12:F:223:TYR:CE2	2.56	0.41
13:H:137:LEU:O	13:H:141:LEU:HG	2.21	0.41
13:H:165:VAL:HG23	13:H:189:PHE:HB2	2.03	0.41
9:J:115:PHE:O	9:J:117:GLU:HG3	2.21	0.41
11:L:431:LEU:HD23	11:L:431:LEU:HA	1.86	0.41
12:M:169:TYR:CE1	12:M:367:ILE:HG22	2.55	0.41
12:M:607:LEU:HD23	12:M:607:LEU:HA	1.80	0.41
15:N:1482:MET:HE1	15:N:1588:PHE:HA	2.03	0.41
15:N:1691:GLU:HA	15:N:1826:LYS:HE3	2.03	0.41
15:N:1957:MET:SD	15:N:2061:VAL:HG11	2.61	0.41
13:O:165:VAL:HG23	13:O:189:PHE:HB2	2.03	0.41
15:Q:1336:LEU:HD23	15:Q:1336:LEU:HA	1.92	0.41
15:Q:1634:LYS:HD2	15:Q:1634:LYS:HA	1.77	0.41
15:Q:1691:GLU:HA	15:Q:1826:LYS:HE3	2.03	0.41
15:Q:1730:VAL:HG23	15:Q:1870:THR:HB	2.03	0.41
1:2:601:LYS:HE3	1:2:643:ARG:HH21	1.86	0.41
3:4:623:LEU:HD23	3:4:623:LEU:HA	1.91	0.41
4:5:263:GLU:HG3	4:5:264:LEU:HD12	2.02	0.41
4:5:730:TYR:CE2	12:F:293:LYS:HG2	2.56	0.41
5:6:629:MET:SD	5:6:672:LEU:HD13	2.62	0.41
6:7:578:LEU:HD13	6:7:677:SER:HB2	2.03	0.41
8:B:14:DT:H5”	8:B:14:DT:O2	2.20	0.41
13:H:181:PHE:CZ	13:H:191:VAL:HG21	2.56	0.41
11:L:421:ALA:O	11:L:425:VAL:HG13	2.21	0.41
12:M:653:TYR:CG	12:M:654:ASN:N	2.88	0.41
2:3:212:ARG:NH1	2:3:232:PRO:HG3	2.36	0.40
3:4:333:LEU:HD11	3:4:400:GLN:OE1	2.21	0.40
3:4:337:PRO:HA	5:6:375:ARG:HH12	1.86	0.40
3:4:761:ILE:HG13	3:4:816:VAL:HG23	2.03	0.40
9:C:115:PHE:O	9:C:117:GLU:HG3	2.21	0.40
11:L:286:GLN:CD	11:L:286:GLN:H	2.24	0.40
12:M:57:PRO:O	12:M:61:LYS:HG2	2.21	0.40
12:M:386:ARG:HE	12:M:535:LEU:HD22	1.85	0.40
13:O:13:ALA:HB2	13:O:89:TYR:HD1	1.85	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:Q:2081:LYS:HB2	15:Q:2081:LYS:HE2	1.87	0.40
1:2:703:HIS:CE1	5:6:565:LEU:HD13	2.56	0.40
2:3:524:ASP:OD2	2:3:527:ARG:NH2	2.34	0.40
2:3:653:ILE:HD12	2:3:653:ILE:H	1.86	0.40
3:4:206:ARG:HH12	3:4:246:ARG:HG2	1.86	0.40
3:4:430:GLY:HA3	6:7:553:ILE:O	2.20	0.40
3:4:545:PHE:HE1	3:4:751:ILE:HG12	1.85	0.40
3:4:558:TYR:HD2	5:6:735:HIS:CE1	2.39	0.40
6:7:226:SER:HB3	6:7:321:GLN:NE2	2.36	0.40
10:D:132:GLU:OE2	14:I:54:THR:N	2.48	0.40
11:E:235:GLY:O	11:E:238:GLU:HG2	2.20	0.40
12:F:20:LEU:HD22	12:F:23:ARG:NH2	2.36	0.40
12:F:653:TYR:CG	12:F:654:ASN:N	2.88	0.40
12:F:653:TYR:O	12:F:655:GLY:N	2.54	0.40
11:L:598:LYS:HG2	11:L:599:LYS:N	2.35	0.40
15:N:1690:ASN:ND2	15:N:1695:LEU:O	2.51	0.40
14:P:85:CYS:SG	14:P:86:SER:N	2.95	0.40
2:3:384:MET:HB2	2:3:384:MET:HE2	1.95	0.40
6:7:570:LEU:HG	6:7:584:ILE:HA	2.03	0.40
11:E:312:THR:OG1	11:E:315:THR:HG23	2.22	0.40
15:N:1655:TYR:OH	15:N:1801:GLU:OE2	2.28	0.40
15:N:1794:MET:O	15:N:1797:GLU:HG2	2.21	0.40
14:P:33:THR:OG1	14:P:63:MET:HB2	2.22	0.40
3:4:257:LEU:HD23	3:4:257:LEU:HA	1.93	0.40
3:4:566:LEU:HD23	3:4:706:TYR:HB2	2.04	0.40
3:4:687:PRO:HG2	3:4:690:GLU:OE1	2.21	0.40
5:6:178:LEU:HB3	5:6:179:PRO:HD3	2.03	0.40
11:E:113:GLU:HB3	11:E:114:GLN:H	1.73	0.40
12:F:7:VAL:HG23	12:F:8:LEU:H	1.85	0.40
12:F:85:LYS:HA	12:F:88:ILE:HD12	2.02	0.40
11:L:26:GLN:HE21	11:L:26:GLN:HB2	1.63	0.40
15:N:2130:CYS:SG	15:N:2131:VAL:N	2.94	0.40
15:Q:1665:LEU:HD23	15:Q:1665:LEU:HA	1.83	0.40
3:4:296:ILE:HA	3:4:299:LYS:HG2	2.03	0.40
5:6:368:ILE:HG23	5:6:372:SER:HB3	2.04	0.40
6:7:634:GLU:HA	6:7:635:PRO:HD3	2.00	0.40
14:I:85:CYS:SG	14:I:86:SER:N	2.95	0.40
11:L:161:LYS:HA	11:L:164:GLU:HG3	2.03	0.40
12:M:25:LEU:HB2	12:M:33:ILE:HD11	2.04	0.40
12:M:37:GLY:O	12:M:41:LEU:HD23	2.21	0.40
12:M:448:SER:HB2	12:M:450:ARG:HH21	1.87	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:Q:1622:LEU:HA	15:Q:1622:LEU:HD23	1.82	0.40
15:Q:1718:PHE:HE2	15:Q:1844:LEU:HD23	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	2	656/868 (76%)	642 (98%)	14 (2%)	0	100	100
1	a	656/868 (76%)	641 (98%)	15 (2%)	0	100	100
2	3	625/1006 (62%)	609 (97%)	16 (3%)	0	100	100
2	b	625/1006 (62%)	609 (97%)	16 (3%)	0	100	100
3	4	601/933 (64%)	579 (96%)	22 (4%)	0	100	100
3	c	601/933 (64%)	579 (96%)	22 (4%)	0	100	100
4	5	680/775 (88%)	653 (96%)	27 (4%)	0	100	100
4	d	680/775 (88%)	653 (96%)	27 (4%)	0	100	100
5	6	619/1017 (61%)	594 (96%)	22 (4%)	3 (0%)	29	61
5	e	619/1017 (61%)	596 (96%)	22 (4%)	1 (0%)	47	78
6	7	650/845 (77%)	614 (94%)	36 (6%)	0	100	100
6	f	650/845 (77%)	614 (94%)	36 (6%)	0	100	100
9	C	167/229 (73%)	164 (98%)	3 (2%)	0	100	100
9	J	167/229 (73%)	164 (98%)	3 (2%)	0	100	100
10	D	240/294 (82%)	231 (96%)	9 (4%)	0	100	100
10	K	240/294 (82%)	231 (96%)	9 (4%)	0	100	100
11	E	558/657 (85%)	546 (98%)	12 (2%)	0	100	100
11	L	558/657 (85%)	546 (98%)	12 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
12	F	543/689 (79%)	510 (94%)	33 (6%)	0	100	100
12	M	543/689 (79%)	510 (94%)	33 (6%)	0	100	100
13	H	206/208 (99%)	195 (95%)	11 (5%)	0	100	100
13	O	206/208 (99%)	195 (95%)	11 (5%)	0	100	100
14	I	185/213 (87%)	174 (94%)	11 (6%)	0	100	100
14	P	185/213 (87%)	174 (94%)	11 (6%)	0	100	100
15	N	748/2222 (34%)	716 (96%)	32 (4%)	0	100	100
15	Q	748/2222 (34%)	715 (96%)	33 (4%)	0	100	100
All	All	12956/19912 (65%)	12454 (96%)	498 (4%)	4 (0%)	100	100

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	6	334	PRO
5	6	336	PRO
5	e	337	SER
5	6	335	ASN

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	2	578/770 (75%)	578 (100%)	0	100	100
1	a	578/770 (75%)	578 (100%)	0	100	100
2	3	549/864 (64%)	549 (100%)	0	100	100
2	b	549/864 (64%)	549 (100%)	0	100	100
3	4	551/848 (65%)	551 (100%)	0	100	100
3	c	551/848 (65%)	551 (100%)	0	100	100
4	5	618/688 (90%)	618 (100%)	0	100	100
4	d	618/688 (90%)	618 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
5	6	549/886 (62%)	544 (99%)	5 (1%)	78 90
5	e	549/886 (62%)	545 (99%)	4 (1%)	84 92
6	7	580/753 (77%)	577 (100%)	3 (0%)	88 94
6	f	580/753 (77%)	577 (100%)	3 (0%)	88 94
9	C	157/199 (79%)	157 (100%)	0	100 100
9	J	157/199 (79%)	157 (100%)	0	100 100
10	D	232/279 (83%)	232 (100%)	0	100 100
10	K	232/279 (83%)	232 (100%)	0	100 100
11	E	512/592 (86%)	511 (100%)	1 (0%)	93 98
11	L	512/592 (86%)	511 (100%)	1 (0%)	93 98
12	F	494/629 (78%)	492 (100%)	2 (0%)	91 95
12	M	494/629 (78%)	492 (100%)	2 (0%)	91 95
13	H	193/193 (100%)	192 (100%)	1 (0%)	88 94
13	O	193/193 (100%)	192 (100%)	1 (0%)	88 94
14	I	179/198 (90%)	179 (100%)	0	100 100
14	P	179/198 (90%)	179 (100%)	0	100 100
15	N	694/2014 (34%)	694 (100%)	0	100 100
15	Q	694/2014 (34%)	694 (100%)	0	100 100
All	All	11772/17826 (66%)	11749 (100%)	23 (0%)	93 98

All (23) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	6	269	ASN
5	6	335	ASN
5	6	337	SER
5	6	338	CYS
5	6	339	GLU
6	7	469	LEU
6	7	470	LEU
6	7	639	ARG
11	E	307	ARG
12	F	167	ARG
12	F	687	ILE
13	H	57	GLN
11	L	307	ARG

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Mol	Chain	Res	Type
12	M	167	ARG
12	M	687	ILE
13	O	57	GLN
5	e	269	ASN
5	e	333	CYS
5	e	338	CYS
5	e	339	GLU
6	f	469	LEU
6	f	470	LEU
6	f	639	ARG

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

Mol	Chain	Res	Type
2	3	201	HIS
2	3	417	GLN
4	5	196	ASN
4	5	499	GLN
5	6	690	ASN
5	6	698	ASN
15	N	1391	ASN
1	a	238	ASN
2	b	201	HIS
2	b	417	GLN
4	d	284	ASN
4	d	499	GLN
5	e	690	ASN
5	e	698	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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 32 ligands modelled in this entry, 20 are monoatomic - leaving 12 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	$\#\|Z\| > 2$
16	ATP	f	901	18	26,33,33	0.62	0	31,52,52	0.78	1 (3%)
16	ATP	7	901	18	26,33,33	0.62	0	31,52,52	0.79	1 (3%)
19	ADP	4	1001	-	24,29,29	0.95	1 (4%)	29,45,45	1.44	4 (13%)
16	ATP	5	1701	18	26,33,33	0.60	0	31,52,52	0.76	1 (3%)
16	ATP	2	901	-	26,33,33	0.60	0	31,52,52	0.77	2 (6%)
16	ATP	a	901	-	26,33,33	0.61	0	31,52,52	0.78	2 (6%)
16	ATP	b	1101	18	26,33,33	0.62	0	31,52,52	0.76	2 (6%)
19	ADP	c	1001	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
16	ATP	d	1701	18	26,33,33	0.62	0	31,52,52	0.75	1 (3%)
16	ATP	3	1101	18	26,33,33	0.62	0	31,52,52	0.76	1 (3%)
19	ADP	6	1201	-	24,29,29	0.93	1 (4%)	29,45,45	1.45	4 (13%)
19	ADP	e	1201	-	24,29,29	0.93	1 (4%)	29,45,45	1.44	4 (13%)

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
16	ATP	f	901	18	-	6/18/38/38	0/3/3/3
16	ATP	7	901	18	-	6/18/38/38	0/3/3/3
19	ADP	4	1001	-	-	5/12/32/32	0/3/3/3
16	ATP	5	1701	18	-	1/18/38/38	0/3/3/3
16	ATP	2	901	-	-	3/18/38/38	0/3/3/3
16	ATP	a	901	-	-	3/18/38/38	0/3/3/3
16	ATP	b	1101	18	-	2/18/38/38	0/3/3/3
19	ADP	c	1001	-	-	5/12/32/32	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	ATP	d	1701	18	-	1/18/38/38	0/3/3/3
16	ATP	3	1101	18	-	2/18/38/38	0/3/3/3
19	ADP	6	1201	-	-	3/12/32/32	0/3/3/3
19	ADP	e	1201	-	-	3/12/32/32	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
19	c	1001	ADP	C5-C4	2.50	1.47	1.40
19	4	1001	ADP	C5-C4	2.49	1.47	1.40
19	6	1201	ADP	C5-C4	2.44	1.47	1.40
19	e	1201	ADP	C5-C4	2.43	1.47	1.40

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	c	1001	ADP	C3'-C2'-C1'	3.64	106.46	100.98
19	4	1001	ADP	C3'-C2'-C1'	3.63	106.45	100.98
19	e	1201	ADP	PA-O3A-PB	-3.61	120.43	132.83
19	6	1201	ADP	PA-O3A-PB	-3.61	120.44	132.83
19	6	1201	ADP	N3-C2-N1	-3.25	123.59	128.68
19	e	1201	ADP	N3-C2-N1	-3.23	123.64	128.68
19	c	1001	ADP	N3-C2-N1	-3.20	123.68	128.68
19	6	1201	ADP	C3'-C2'-C1'	3.11	105.66	100.98
19	4	1001	ADP	N3-C2-N1	-3.09	123.84	128.68
19	e	1201	ADP	C3'-C2'-C1'	3.08	105.62	100.98
19	c	1001	ADP	PA-O3A-PB	-2.98	122.58	132.83
19	4	1001	ADP	PA-O3A-PB	-2.98	122.60	132.83
19	c	1001	ADP	C4-C5-N7	-2.58	106.71	109.40
19	4	1001	ADP	C4-C5-N7	-2.56	106.73	109.40
19	e	1201	ADP	C4-C5-N7	-2.54	106.75	109.40
19	6	1201	ADP	C4-C5-N7	-2.53	106.76	109.40
16	7	901	ATP	C5-C6-N6	2.31	123.86	120.35
16	3	1101	ATP	C5-C6-N6	2.29	123.84	120.35
16	b	1101	ATP	C5-C6-N6	2.27	123.80	120.35
16	5	1701	ATP	C5-C6-N6	2.26	123.79	120.35
16	f	901	ATP	C5-C6-N6	2.26	123.78	120.35
16	a	901	ATP	C5-C6-N6	2.25	123.77	120.35
16	2	901	ATP	C5-C6-N6	2.24	123.76	120.35
16	d	1701	ATP	C5-C6-N6	2.24	123.75	120.35
16	a	901	ATP	PB-O3B-PG	2.05	139.86	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	2	901	ATP	PB-O3B-PG	2.04	139.84	132.83
16	b	1101	ATP	PB-O3B-PG	2.00	139.71	132.83

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
16	7	901	ATP	PB-O3B-PG-O2G
16	7	901	ATP	C5'-O5'-PA-O3A
16	7	901	ATP	C4'-C5'-O5'-PA
16	f	901	ATP	PB-O3B-PG-O2G
16	f	901	ATP	C5'-O5'-PA-O3A
16	f	901	ATP	C4'-C5'-O5'-PA
19	4	1001	ADP	C5'-O5'-PA-O1A
19	4	1001	ADP	C5'-O5'-PA-O2A
19	6	1201	ADP	O4'-C4'-C5'-O5'
19	6	1201	ADP	C3'-C4'-C5'-O5'
19	c	1001	ADP	C5'-O5'-PA-O1A
19	c	1001	ADP	C5'-O5'-PA-O2A
19	e	1201	ADP	O4'-C4'-C5'-O5'
19	e	1201	ADP	C3'-C4'-C5'-O5'
16	2	901	ATP	O4'-C4'-C5'-O5'
16	a	901	ATP	O4'-C4'-C5'-O5'
16	2	901	ATP	C3'-C4'-C5'-O5'
16	a	901	ATP	C3'-C4'-C5'-O5'
19	6	1201	ADP	C4'-C5'-O5'-PA
19	e	1201	ADP	C4'-C5'-O5'-PA
16	7	901	ATP	PB-O3B-PG-O3G
16	f	901	ATP	PB-O3B-PG-O3G
19	4	1001	ADP	O4'-C4'-C5'-O5'
19	c	1001	ADP	O4'-C4'-C5'-O5'
16	7	901	ATP	C5'-O5'-PA-O1A
16	f	901	ATP	C5'-O5'-PA-O1A
16	3	1101	ATP	PA-O3A-PB-O2B
16	b	1101	ATP	PA-O3A-PB-O2B
16	2	901	ATP	PA-O3A-PB-O1B
16	a	901	ATP	PA-O3A-PB-O1B
16	7	901	ATP	PB-O3B-PG-O1G
16	f	901	ATP	PB-O3B-PG-O1G
16	3	1101	ATP	C5'-O5'-PA-O3A
16	5	1701	ATP	C5'-O5'-PA-O3A
16	b	1101	ATP	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
16	d	1701	ATP	C5'-O5'-PA-O3A
19	4	1001	ADP	C5'-O5'-PA-O3A
19	c	1001	ADP	C5'-O5'-PA-O3A
19	4	1001	ADP	C3'-C4'-C5'-O5'
19	c	1001	ADP	C3'-C4'-C5'-O5'

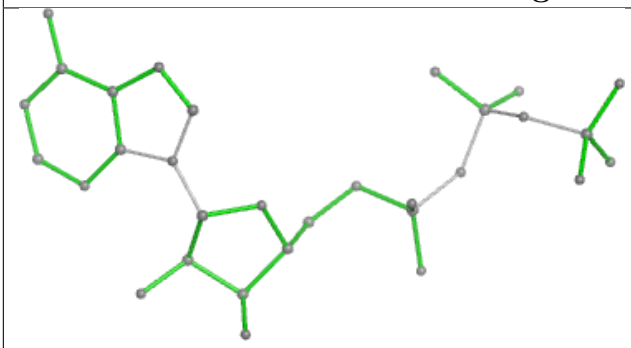
There are no ring outliers.

2 monomers are involved in 5 short contacts:

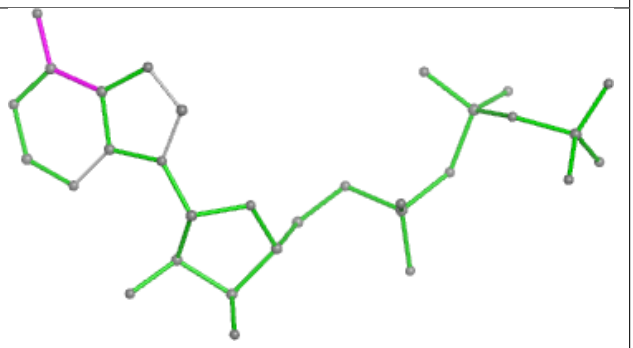
Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	7	901	ATP	1	0
19	6	1201	ADP	4	0

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.

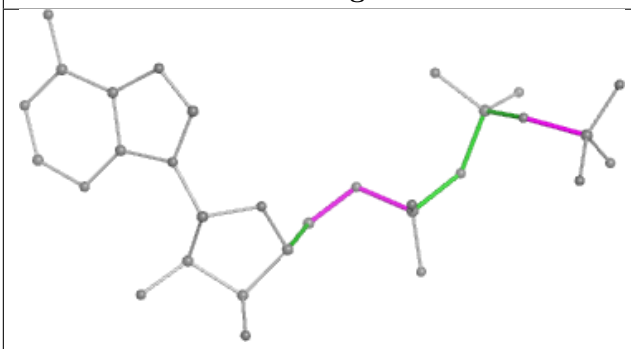
Ligand ATP f 901



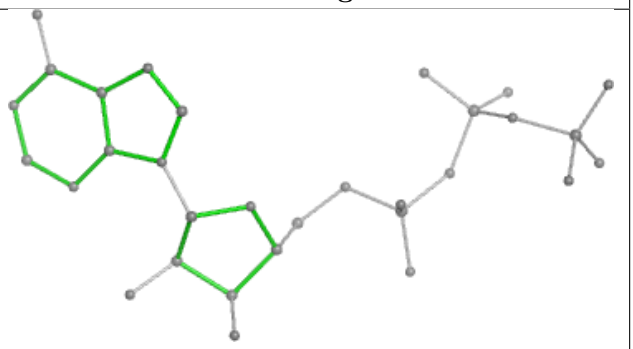
Bond lengths



Bond angles

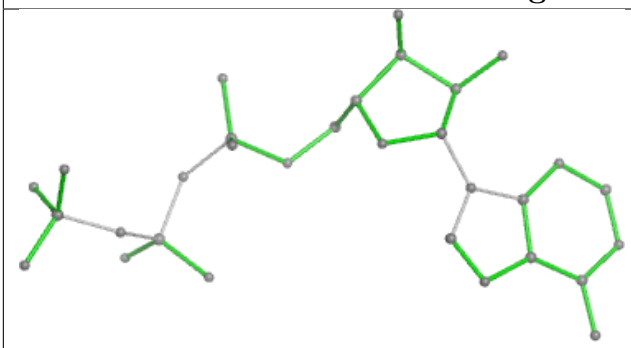


Torsions

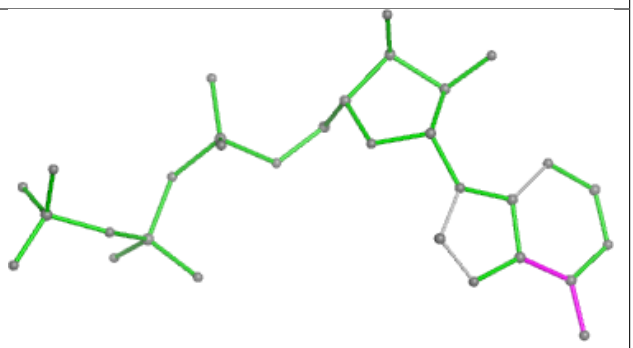


Rings

Ligand ATP 7 901



Bond lengths



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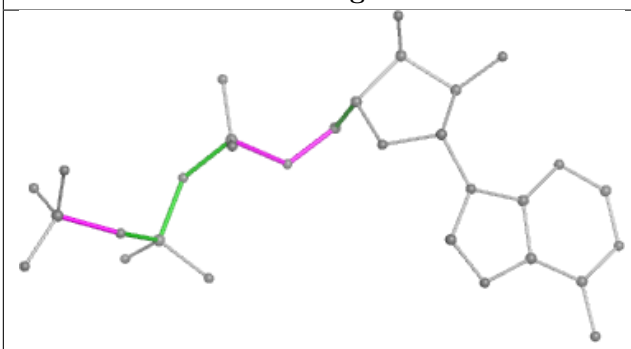

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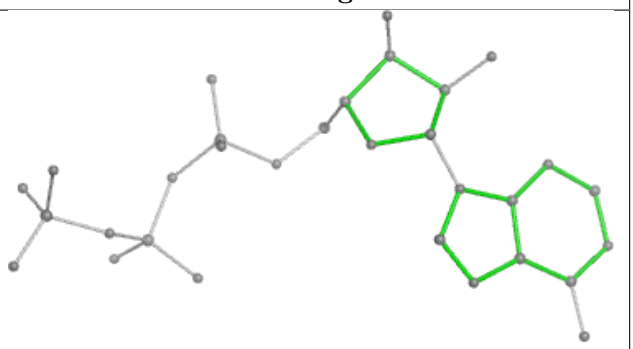
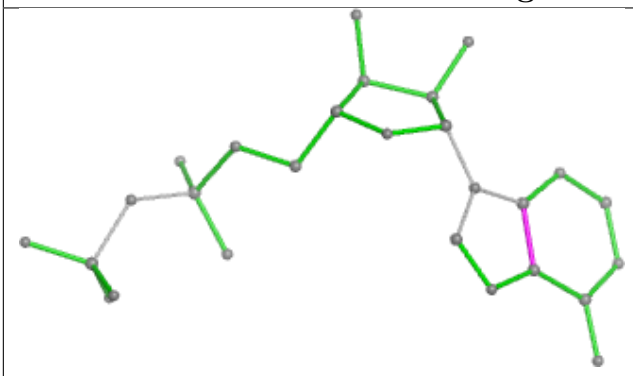


Rings

Ligand ADP 4 1001



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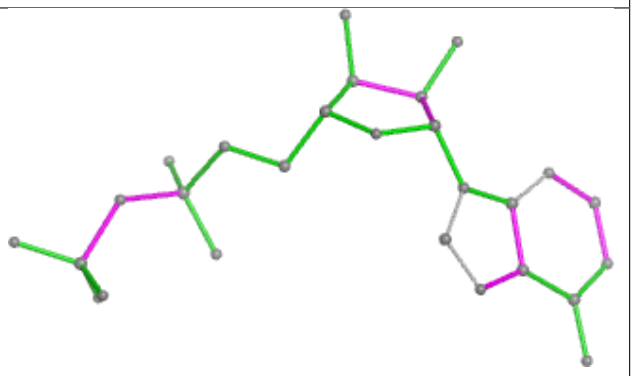

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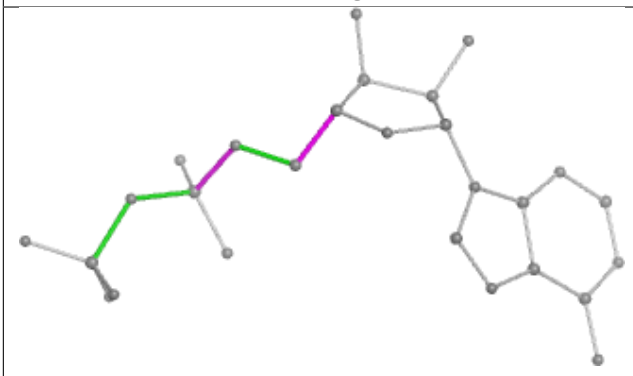

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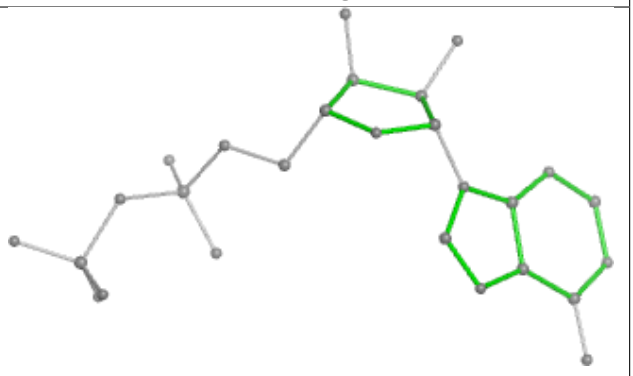
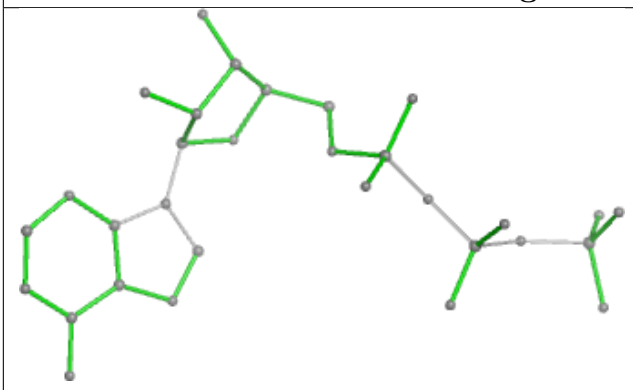


Rings

Ligand ATP 5 1701



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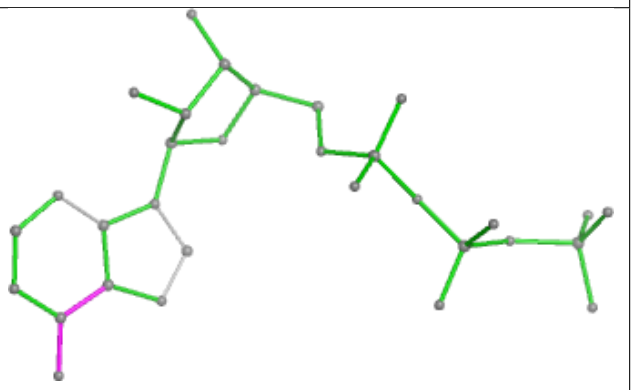

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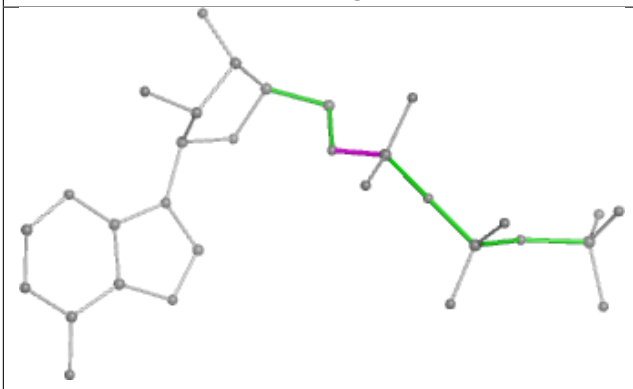

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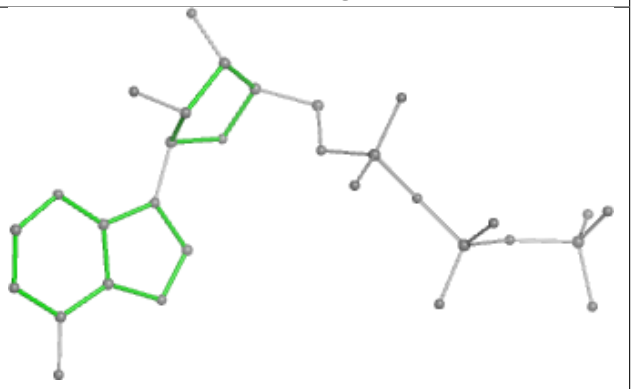
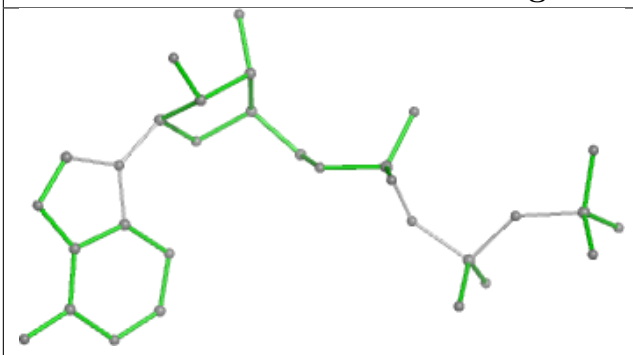
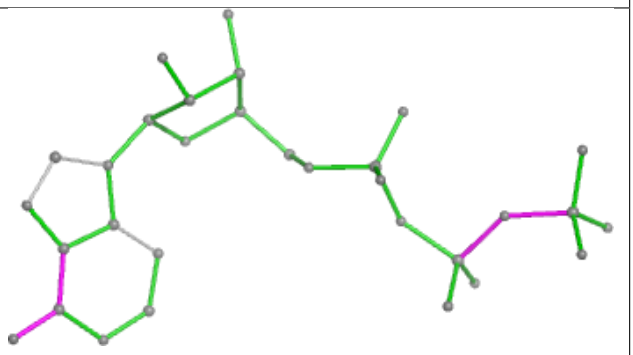


Rings

Ligand ATP 2 901



Bond lengths



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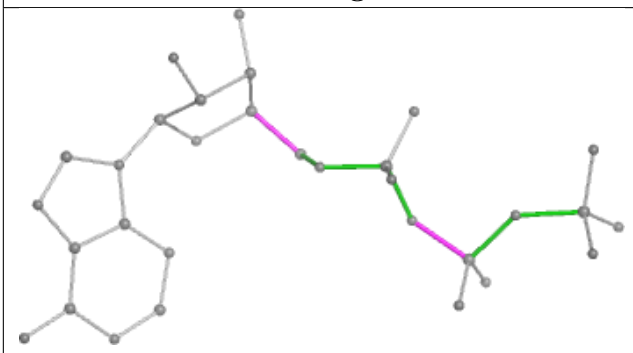

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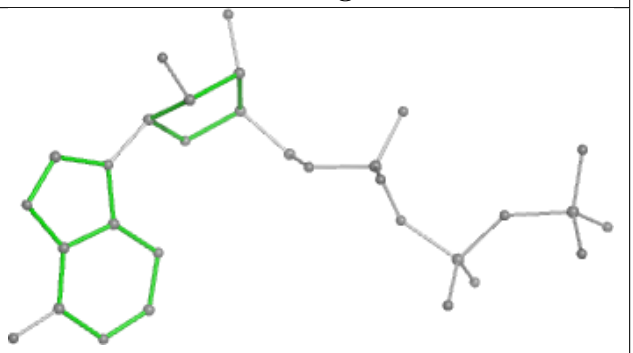
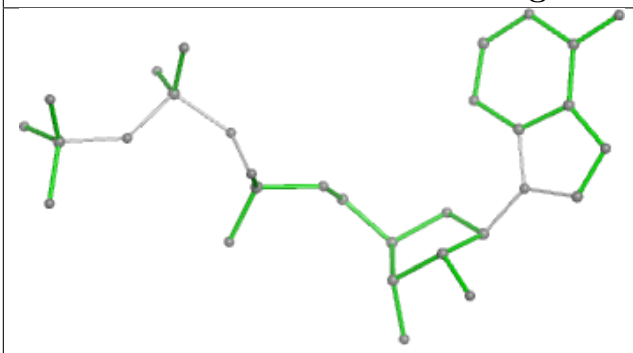


Rings

Ligand ATP a 901



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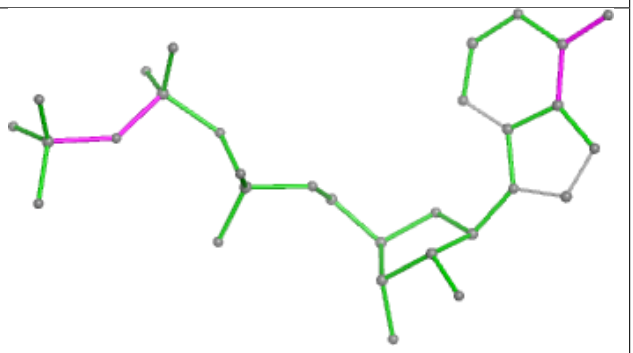

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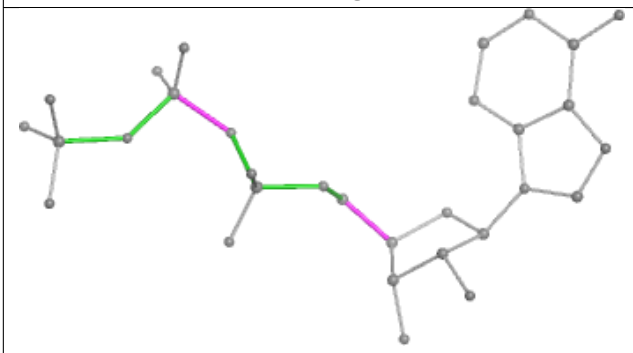

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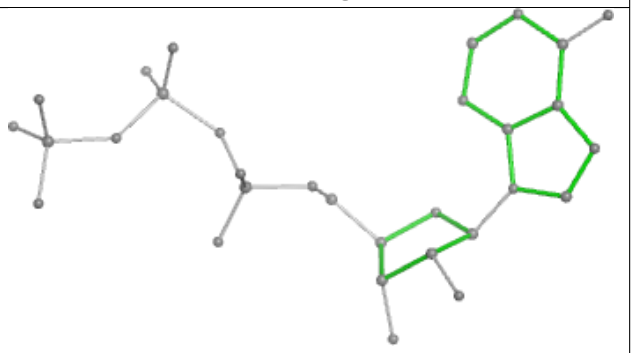
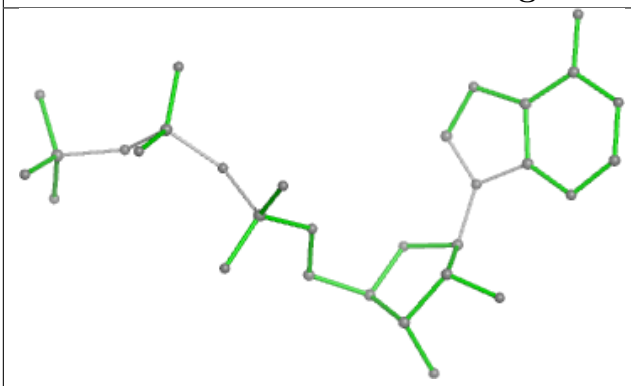


Rings

Ligand ATP b 1101



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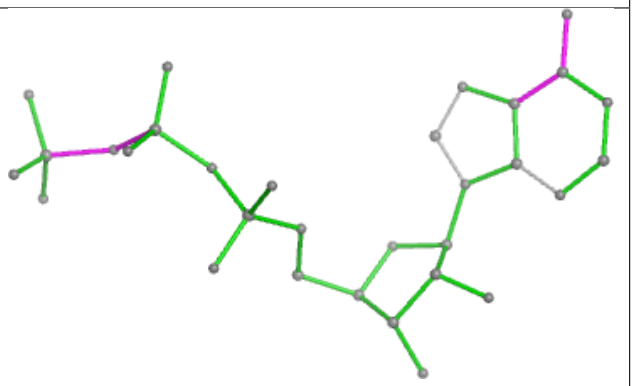

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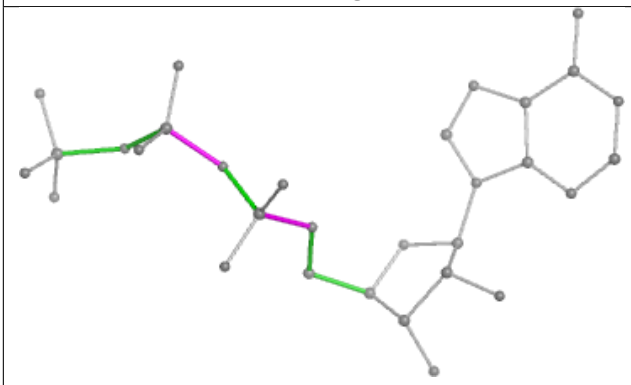

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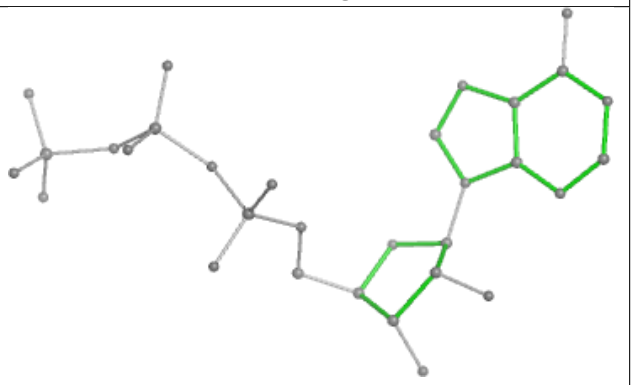
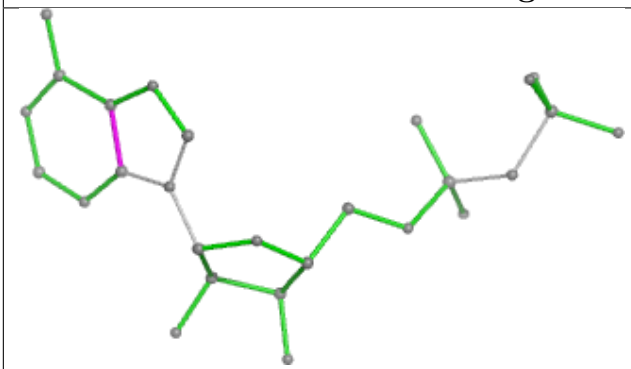


Rings

Ligand ADP c 1001



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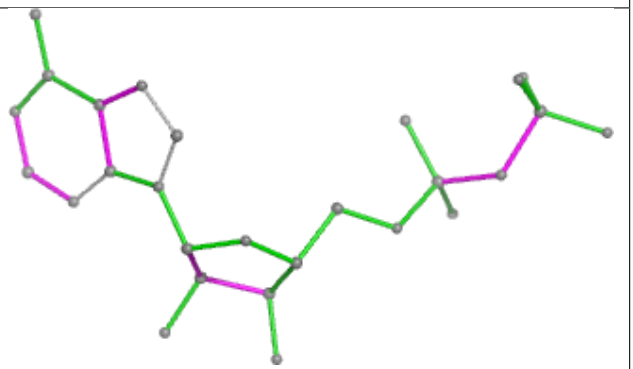

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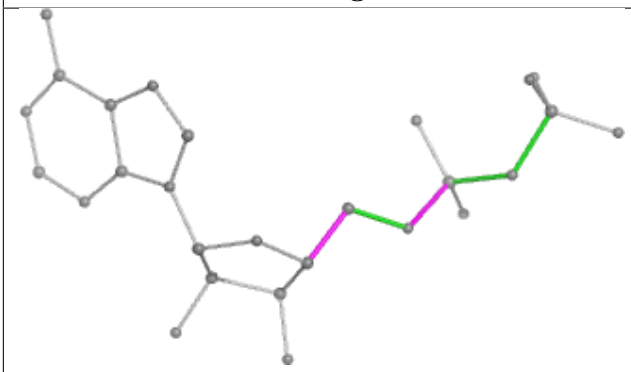

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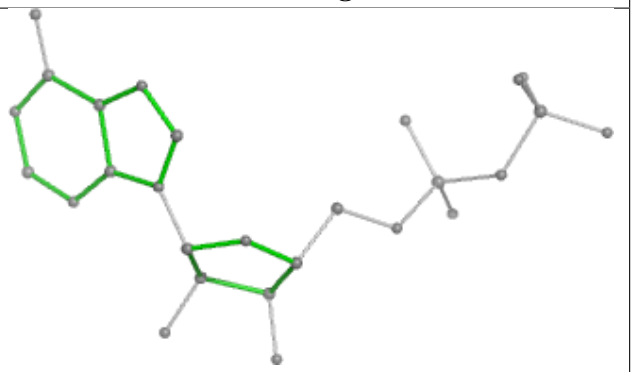
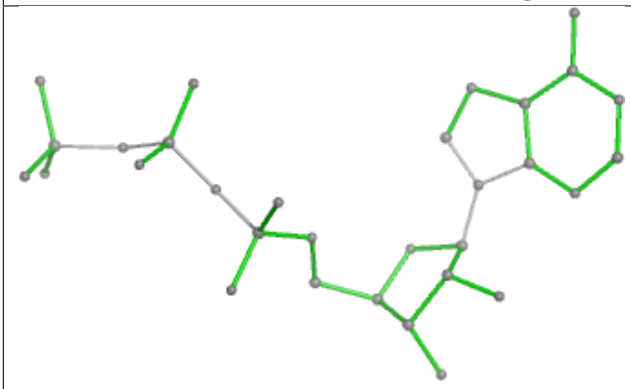
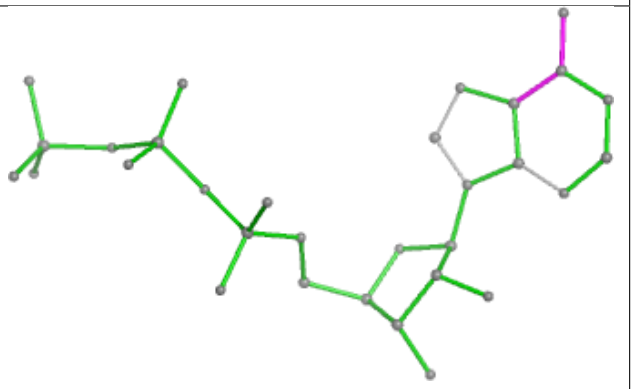


Rings

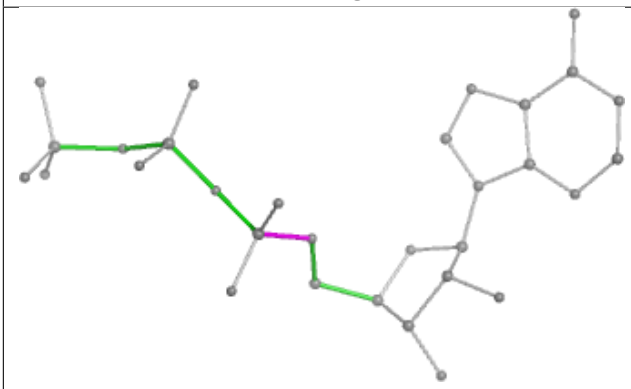
Ligand ATP d 1701



Bond lengths



Bond angles



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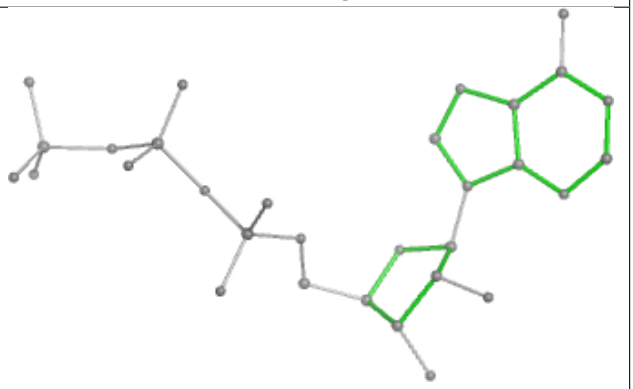
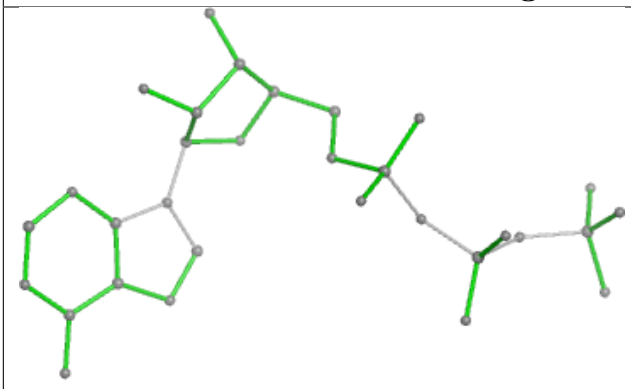


Rings

Ligand ATP 3 1101



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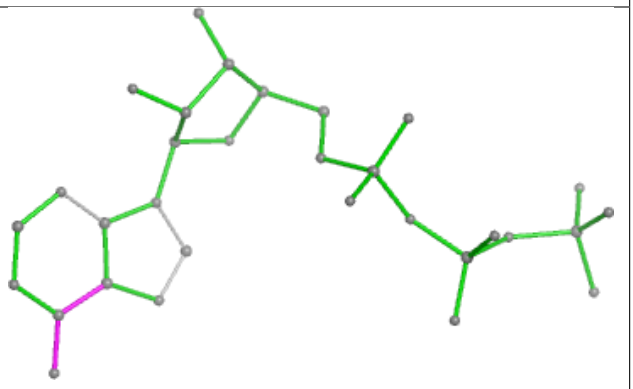

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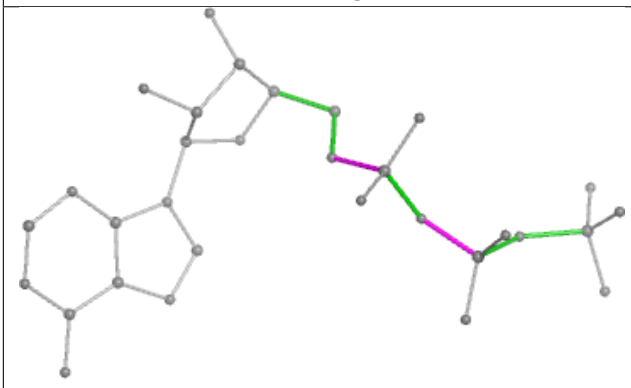

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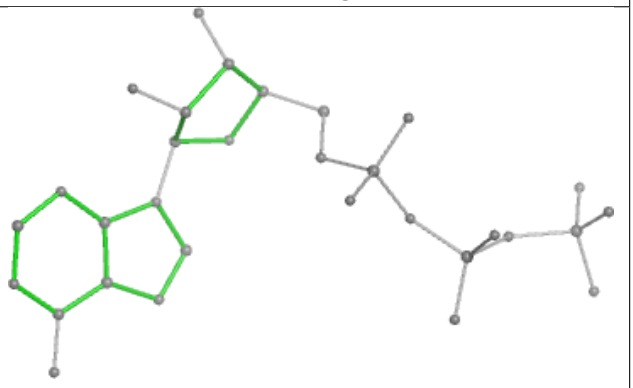
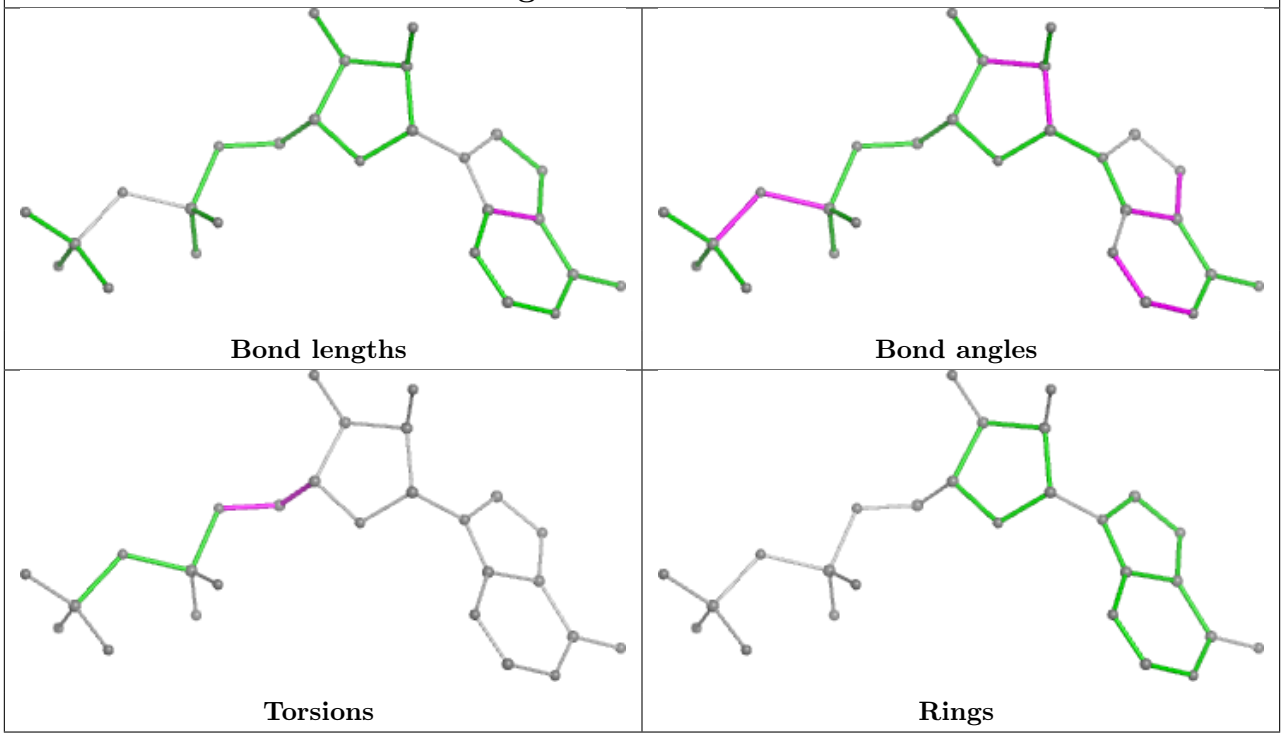
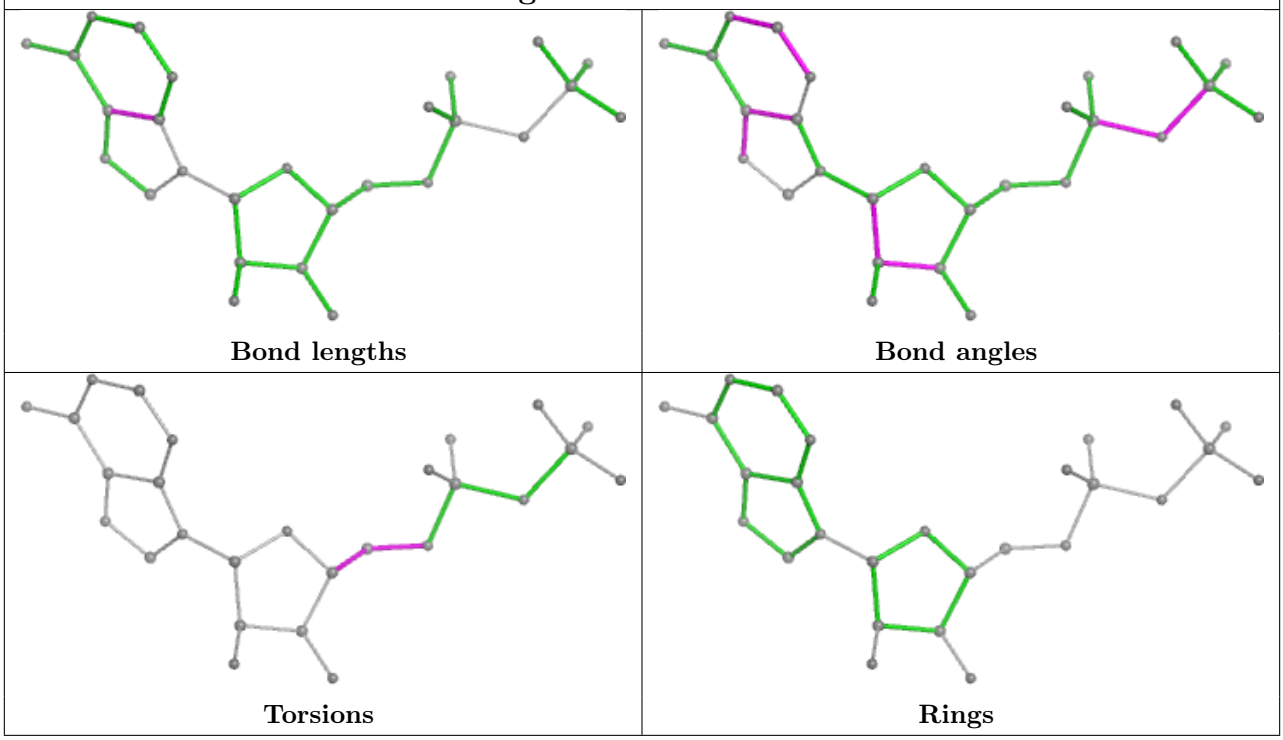


Rings

Ligand ADP 6 1201



Ligand ADP e 1201



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

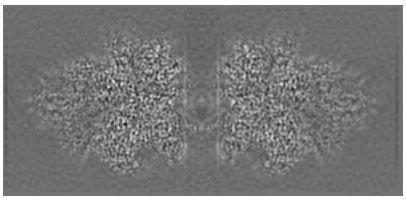
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-14439. These allow visual inspection of the internal detail of the map and identification of artifacts.

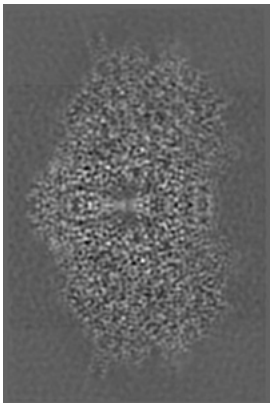
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

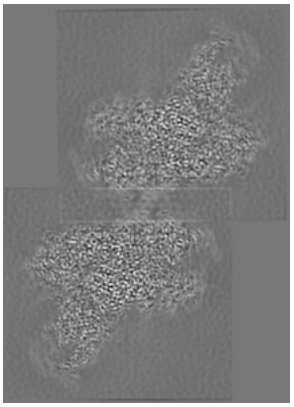
6.1.1 Primary map



X



Y

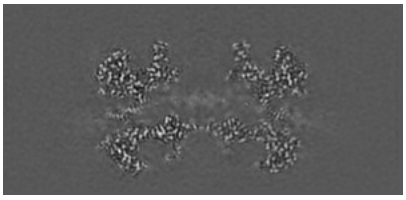


Z

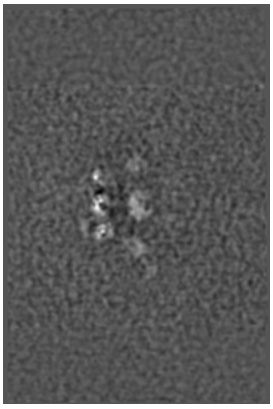
The images above show the map projected in three orthogonal directions.

6.2 Central slices

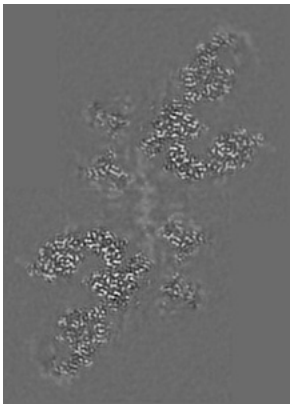
6.2.1 Primary map



X Index: 128



Y Index: 179

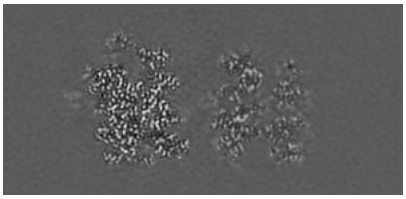


Z Index: 85

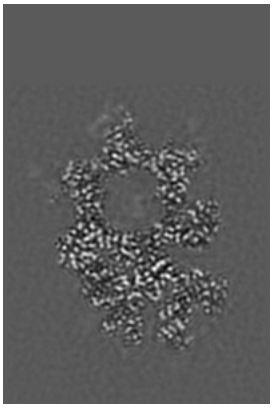
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

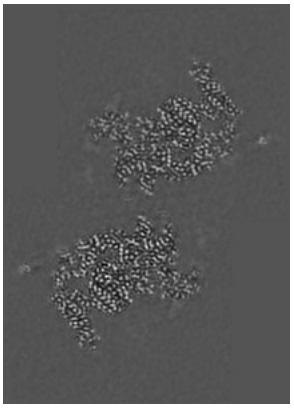
6.3.1 Primary map



X Index: 103



Y Index: 142

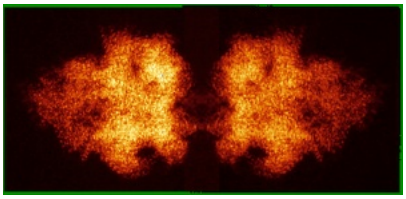


Z Index: 54

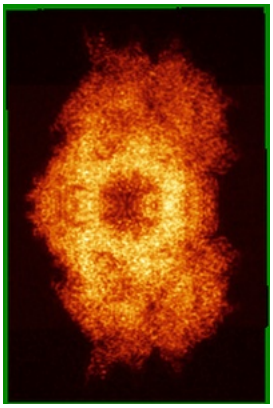
The images above show the largest variance slices of the map in three orthogonal directions.

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

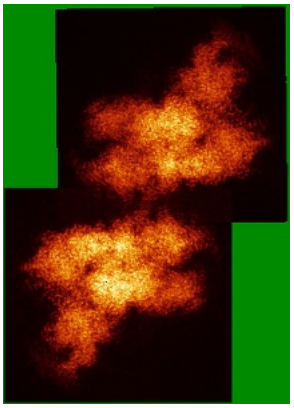
6.4.1 Primary map



X



Y

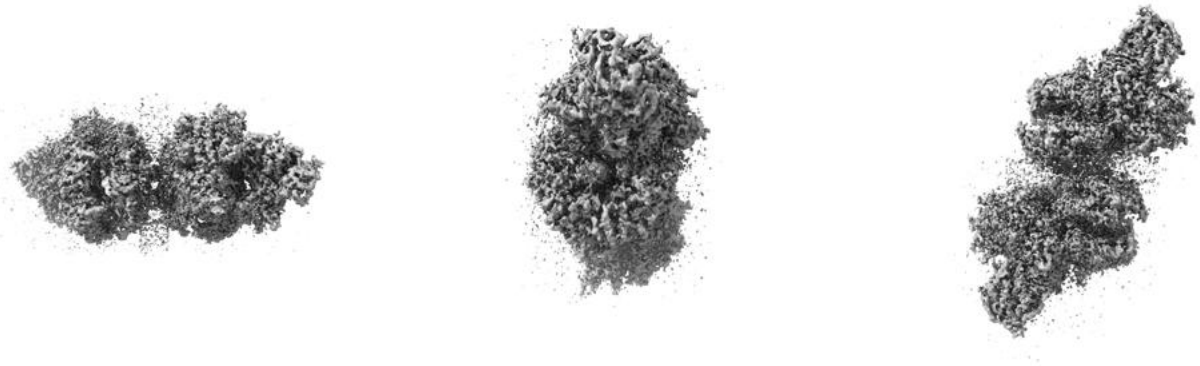


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.055. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

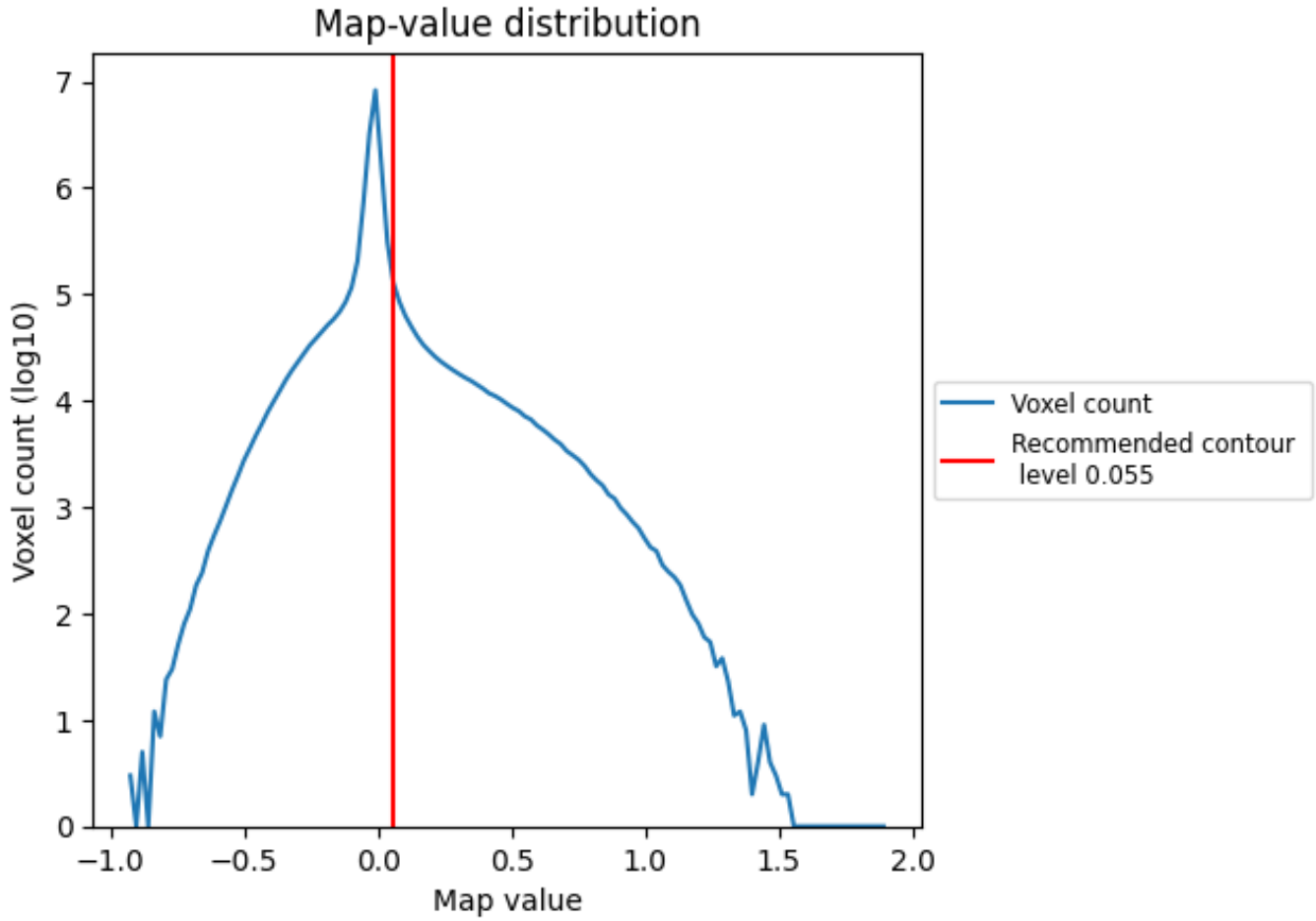
6.6 Mask visualisation (i)

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

7 Map analysis

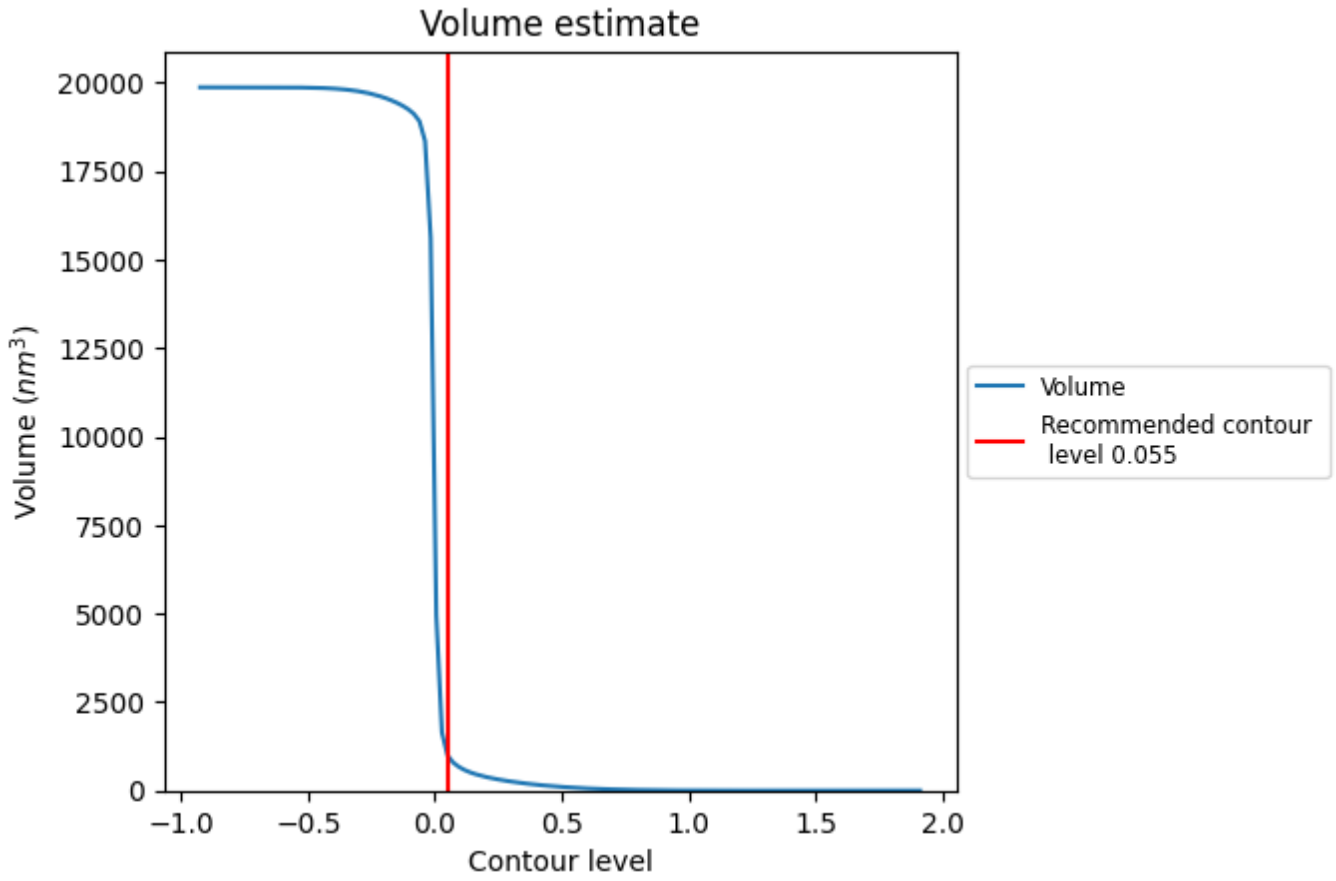
This section contains the results of statistical analysis of the map.

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 945 nm^3; this corresponds to an approximate mass of 853 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

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

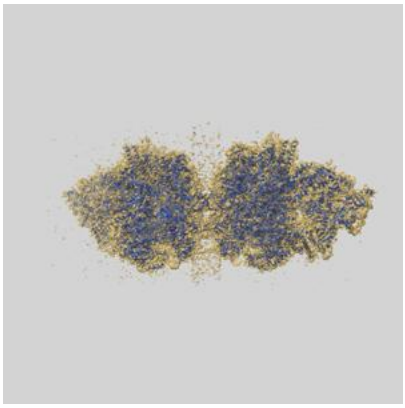
8 Fourier-Shell correlation

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

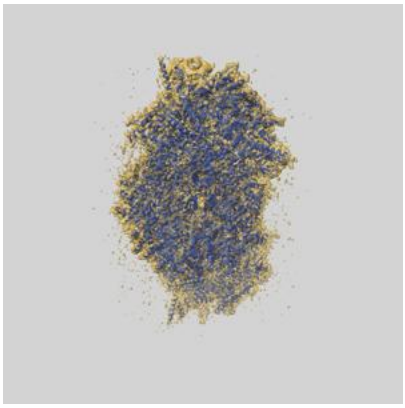
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-14439 and PDB model 7Z13. Per-residue inclusion information can be found in section 3 on page 14.

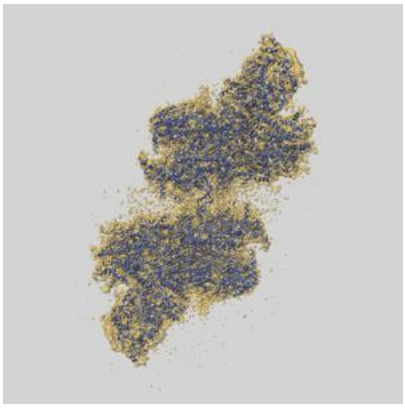
9.1 Map-model overlay



X



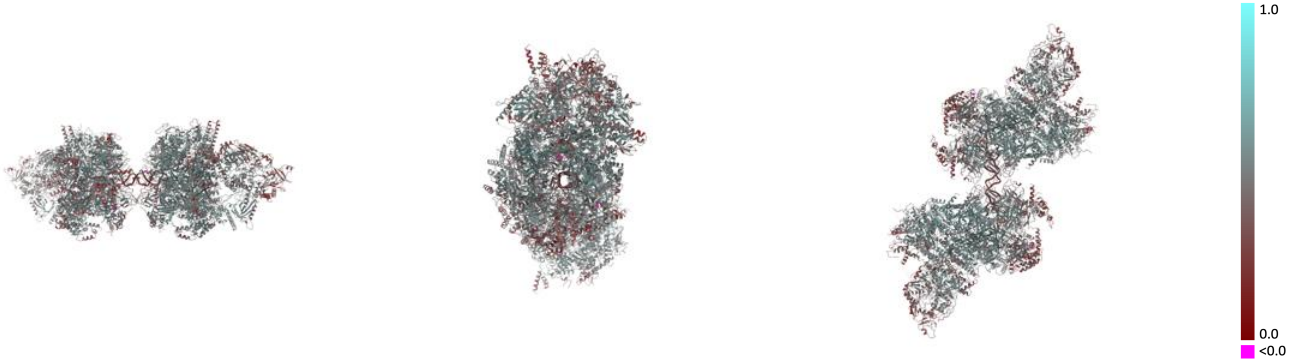
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.055 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

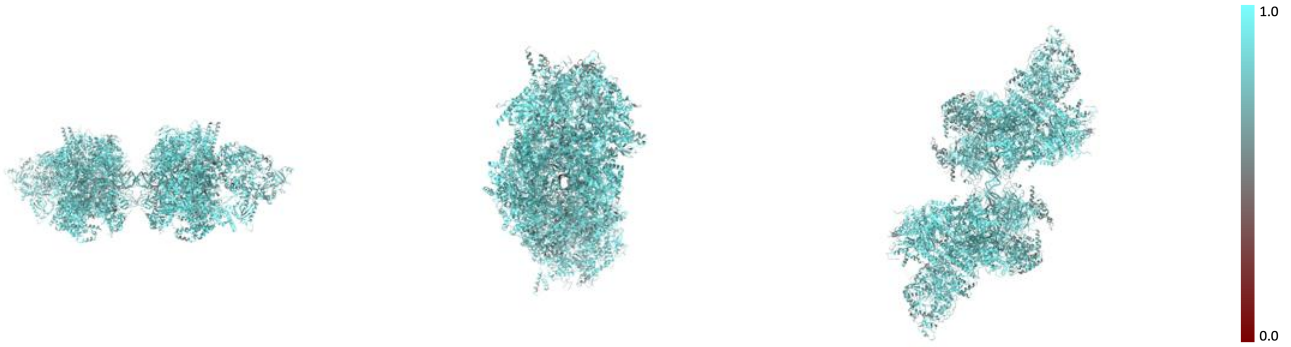
9.2 Q-score mapped to coordinate model (i)



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.

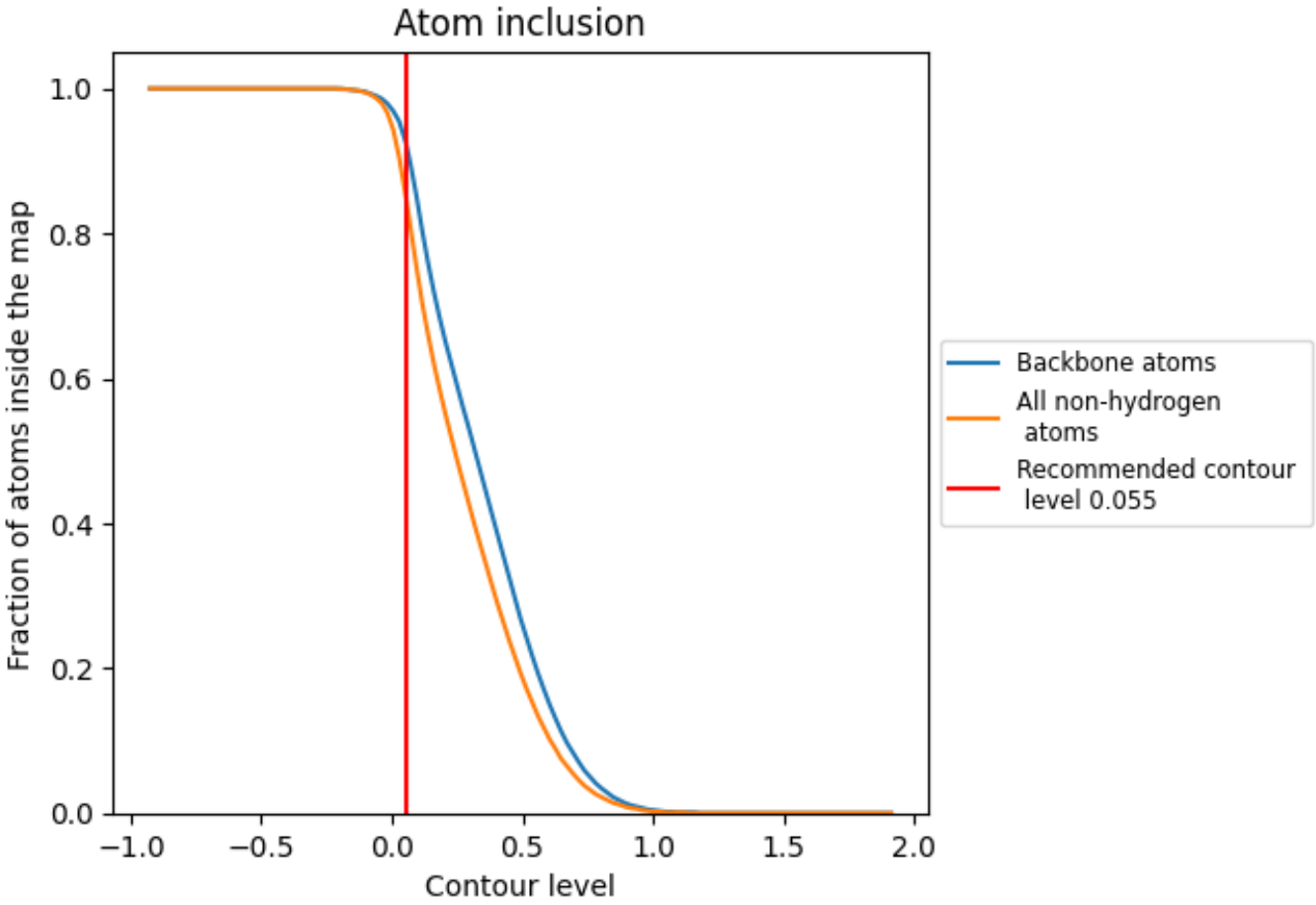
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.055).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 85% 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 (0.055) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8480	0.4710
2	0.9160	0.5340
3	0.9050	0.5200
4	0.7900	0.4010
5	0.8990	0.5260
6	0.8640	0.4810
7	0.7860	0.4010
A	0.8030	0.3500
B	0.8000	0.3430
C	0.8880	0.5100
D	0.8560	0.4750
E	0.8880	0.5040
F	0.8140	0.4380
H	0.8300	0.4550
I	0.9100	0.5240
J	0.8750	0.5070
K	0.8460	0.4770
L	0.8810	0.5010
M	0.7960	0.4380
N	0.8030	0.4450
O	0.8180	0.4560
P	0.8920	0.5160
Q	0.8170	0.4480
a	0.9070	0.5270
b	0.8930	0.5170
c	0.7770	0.4000
d	0.8910	0.5200
e	0.8510	0.4760
f	0.7670	0.4010