Full wwPDB EM Validation Report ⓘ

Sep 22, 2024 – 08:46 PM EDT

PDB ID	:	8W0G
EMDB ID	:	EMD-43709
Title	:	Cryo-EM structure of a human MCM2-7 dimer
Authors	:	Yang, R.; Hunker, O.; Bleichert, F.
Deposited on	:	2024-02-13
Resolution	:	3.80 Å(reported)

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

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

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

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

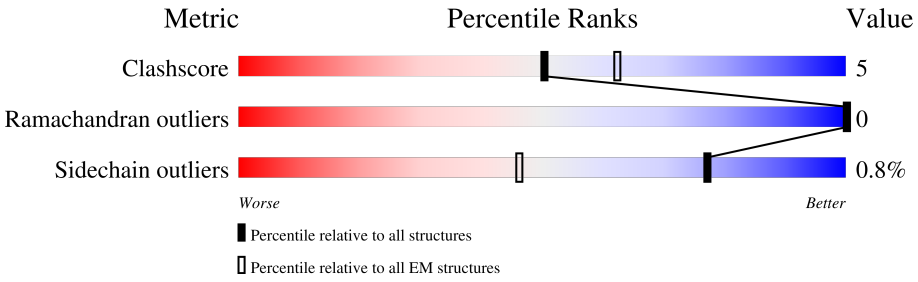
EMDB validation analysis	:	0.0.1.dev112
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.3

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 3.80 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	2	904	10% 55% 11% 34%
1	A	904	33% 56% 10% 34%
2	3	810	64% 9% 27%
2	B	810	66% 7% 27%
3	4	866	56% 11% 33%
3	C	866	10% 59% 8% 33%
4	5	734	68% 13% 19%
4	D	734	10% 70% 11% 19%

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Mol	Chain	Length	Quality of chain
5	6	821	61% 11% 28%
5	E	821	18% 63% 9% 28%
6	7	719	73% 12% 16%
6	F	719	6% 74% 11% 16%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
9	ATP	2	1002	-	-	X	-

2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 114148 atoms, of which 57228 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	598	Total	C	H	N	O	S	0	0
			9472	2980	4740	844	879	29		
1	A	598	Total	C	H	N	O	S	0	0
			9472	2980	4740	844	879	29		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
2	3	594	Total	C	H	N	O	S	0	0
			9354	2916	4691	821	900	26		
2	B	594	Total	C	H	N	O	S	0	0
			9354	2916	4691	821	900	26		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	-1	SER	-	expression tag	UNP P25205
3	0	ASN	-	expression tag	UNP P25205
3	1	ALA	-	expression tag	UNP P25205
B	-1	SER	-	expression tag	UNP P25205
B	0	ASN	-	expression tag	UNP P25205
B	1	ALA	-	expression tag	UNP P25205

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

Mol	Chain	Residues	Atoms						AltConf	Trace
3	4	580	Total	C	H	N	O	S	0	0
			9311	2928	4675	822	860	26		
3	C	580	Total	C	H	N	O	S	0	0
			9313	2928	4677	822	860	26		

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
4	-2	SER	-	expression tag	UNP P33991
4	-1	ASN	-	expression tag	UNP P33991
4	0	ALA	-	expression tag	UNP P33991
4	650	MET	LEU	variant	UNP P33991
C	-2	SER	-	expression tag	UNP P33991
C	-1	ASN	-	expression tag	UNP P33991
C	0	ALA	-	expression tag	UNP P33991
C	650	MET	LEU	variant	UNP P33991

- Molecule 4 is a protein called DNA replication licensing factor MCM5.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	5	597	Total	C	H	N	O	S	0	0
			9469	2953	4783	825	873	35		
4	D	597	Total	C	H	N	O	S	0	0
			9469	2953	4783	825	873	35		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
5	6	591	Total	C	H	N	O	S	0	0
			9496	2982	4759	836	893	26		
5	E	591	Total	C	H	N	O	S	0	0
			9497	2982	4760	836	893	26		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
6	7	607	Total	C	H	N	O	S	0	0
			9749	3044	4904	860	910	31		
6	F	607	Total	C	H	N	O	S	0	0
			9750	3044	4905	860	910	31		

- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
7	2	1	Total	Zn	0
			1	1	
7	4	1	Total	Zn	0
			1	1	
7	5	1	Total	Zn	0
			1	1	

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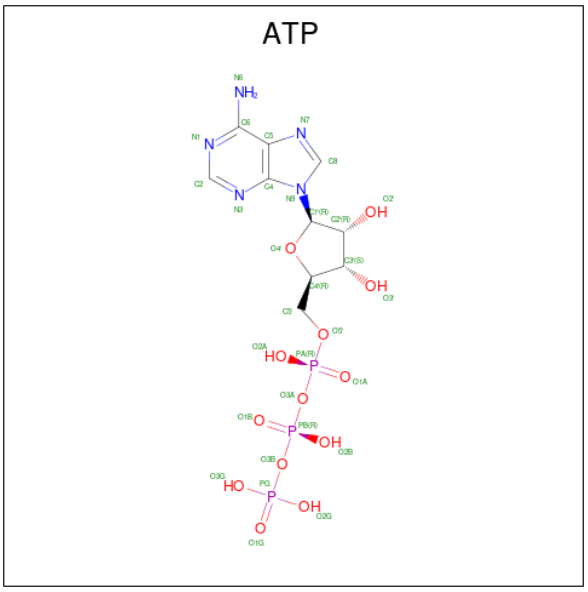
Mol	Chain	Residues	Atoms	AltConf
7	6	1	Total Zn 1 1	0
7	7	1	Total Zn 1 1	0
7	A	1	Total Zn 1 1	0
7	C	1	Total Zn 1 1	0
7	D	1	Total Zn 1 1	0
7	E	1	Total Zn 1 1	0
7	F	1	Total Zn 1 1	0

- Molecule 8 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

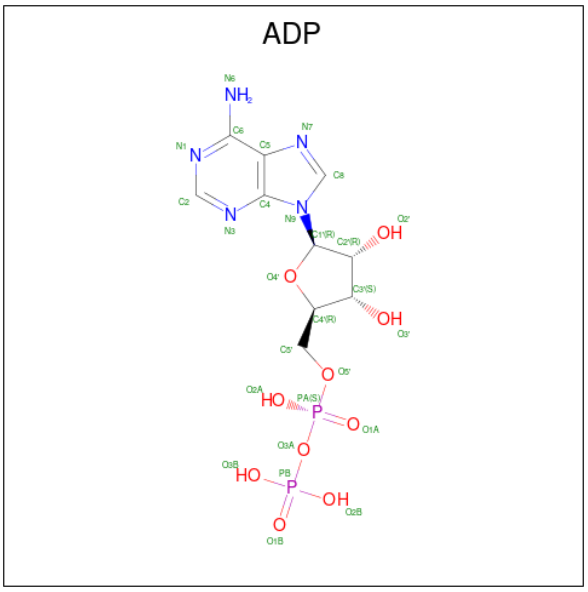
Mol	Chain	Residues	Atoms	AltConf
8	2	1	Total Mg 1 1	0
8	3	1	Total Mg 1 1	0
8	4	2	Total Mg 2 2	0
8	7	1	Total Mg 1 1	0
8	A	1	Total Mg 1 1	0
8	B	1	Total Mg 1 1	0
8	C	1	Total Mg 1 1	0
8	E	1	Total Mg 1 1	0
8	F	1	Total Mg 1 1	0

- Molecule 9 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms						AltConf
9	2	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	4	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	6	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	7	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	A	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	C	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	E	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	
9	F	1	Total	C	H	N	O	P	0
			43	10	12	5	13	3	

- Molecule 10 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



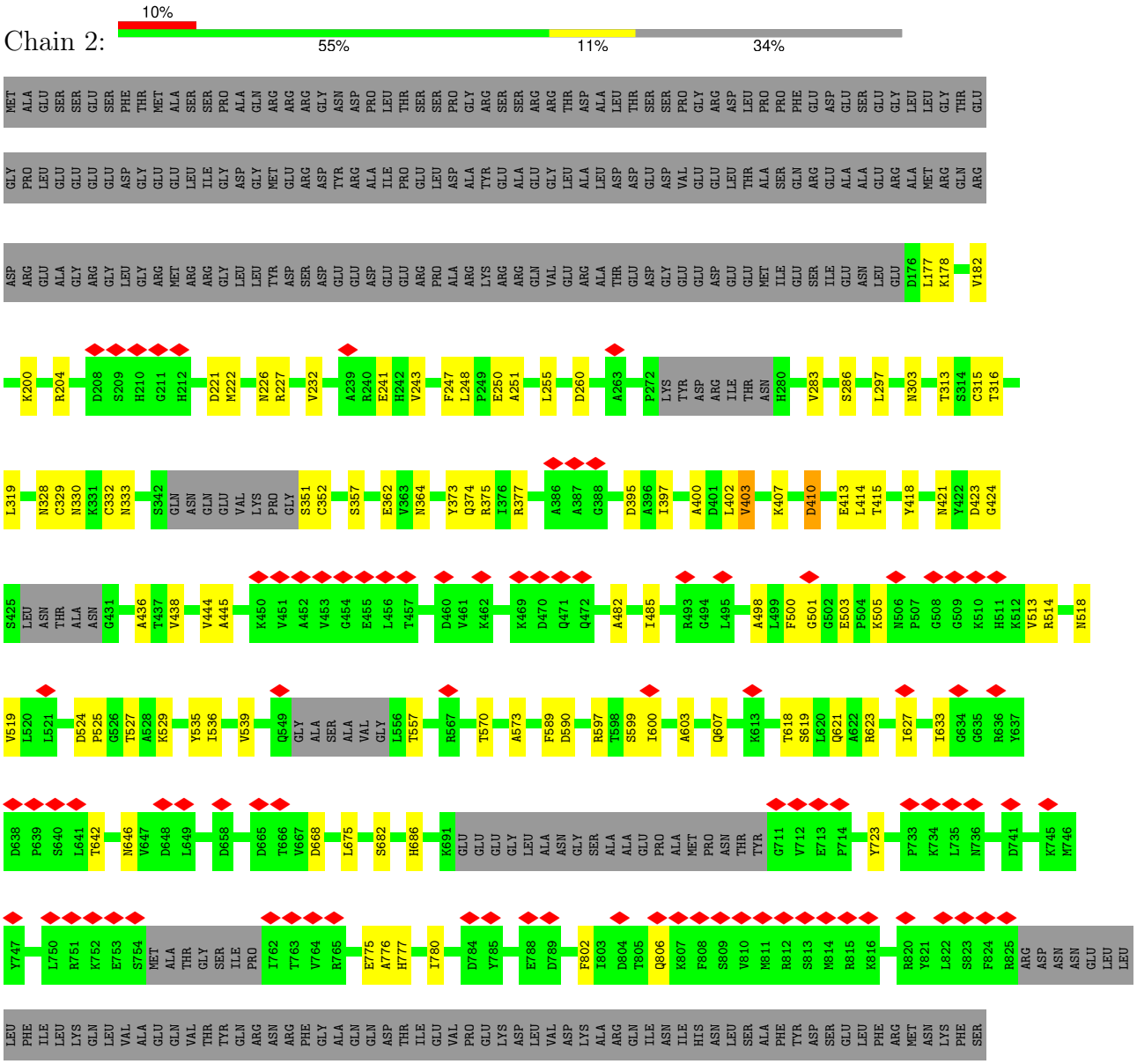
Mol	Chain	Residues	Atoms						AltConf
10	3	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	
10	B	1	Total	C	H	N	O	P	0
			39	10	12	5	10	2	

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.

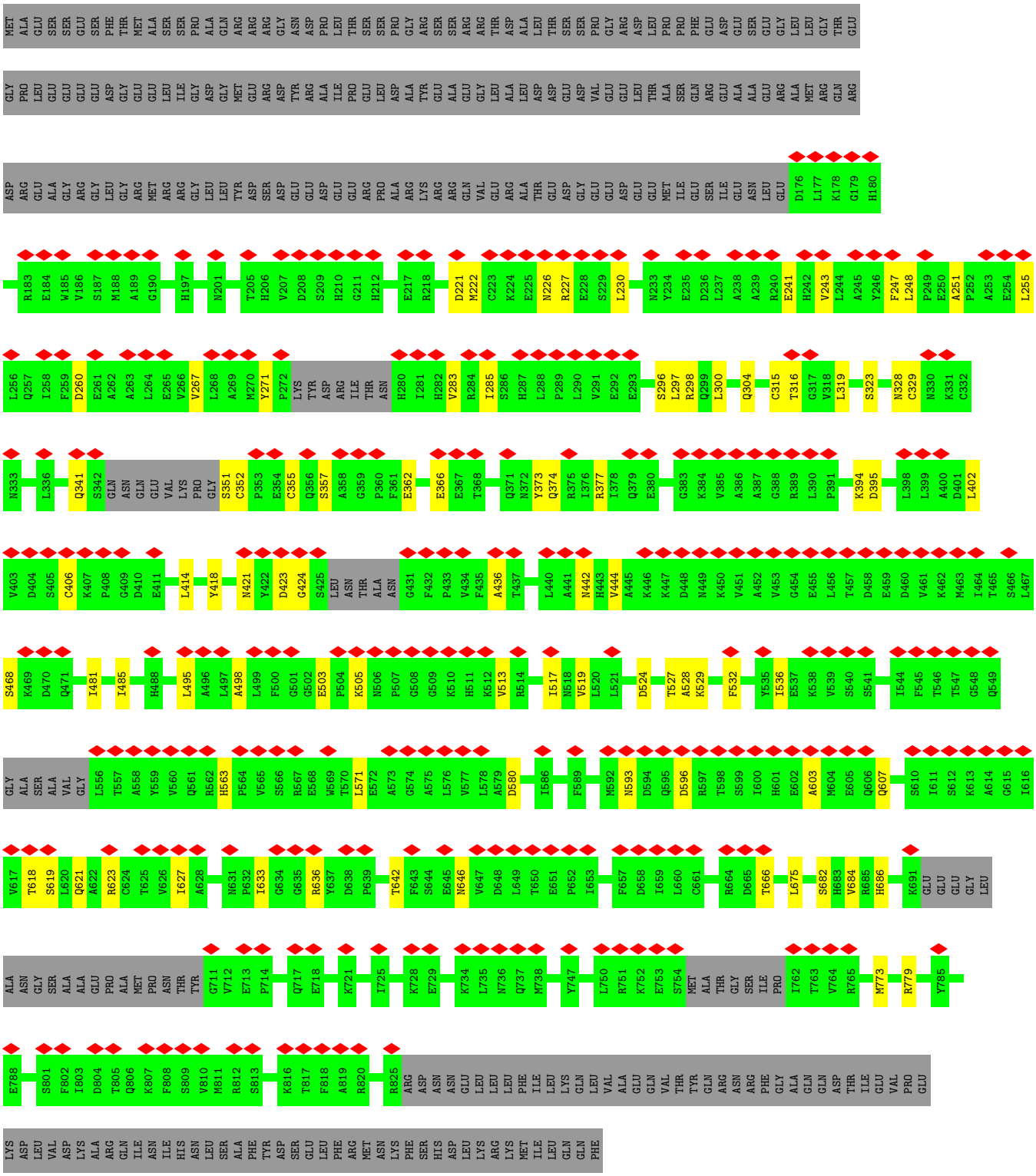
- Molecule 1: DNA replication licensing factor MCM2

Chain 2:



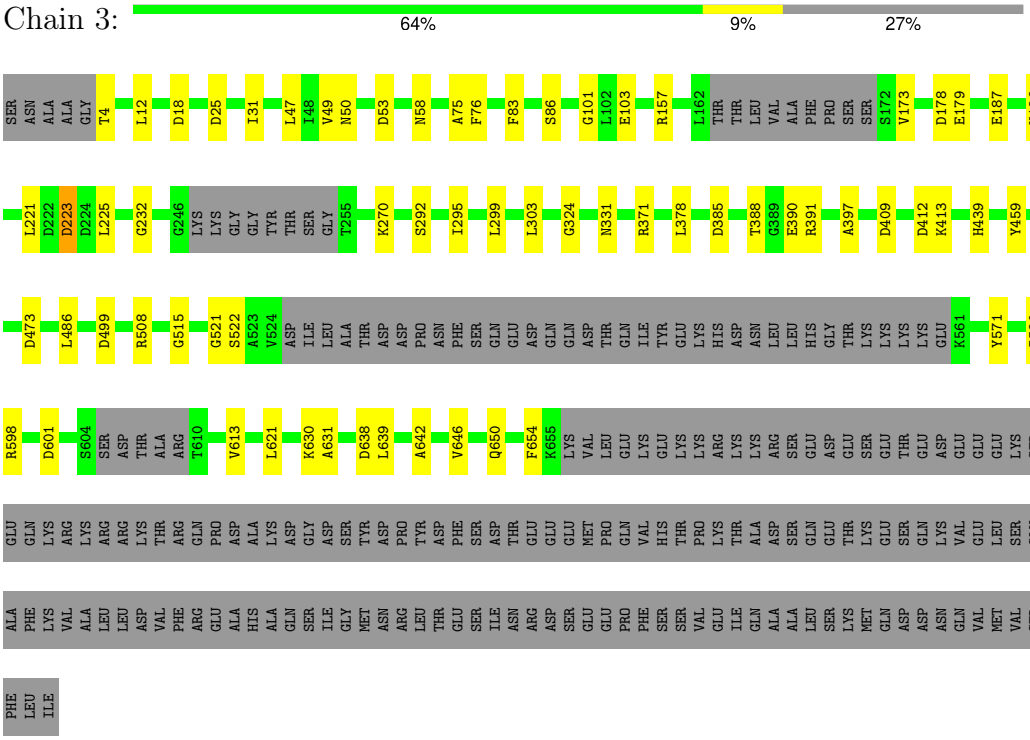
• Molecule 1: DNA replication licensing factor MCM2

Chain A:



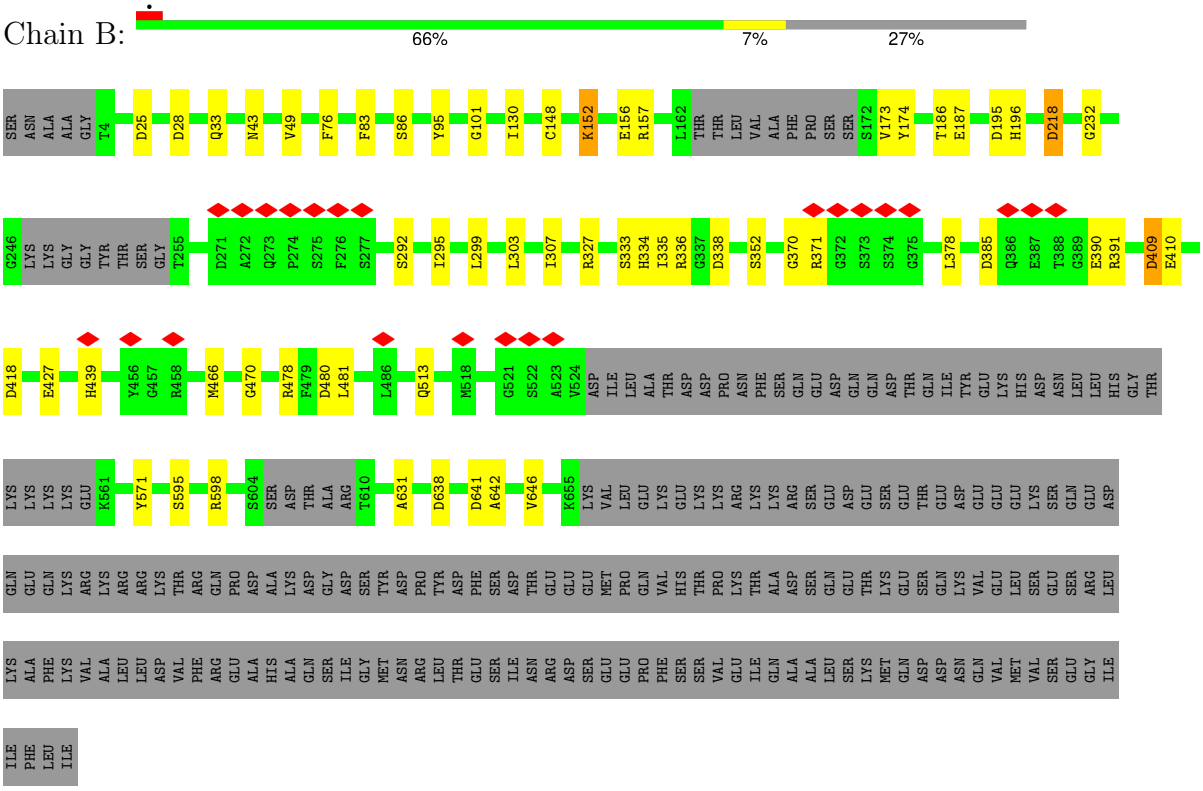
• Molecule 2: DNA replication licensing factor MCM3

Chain 3:



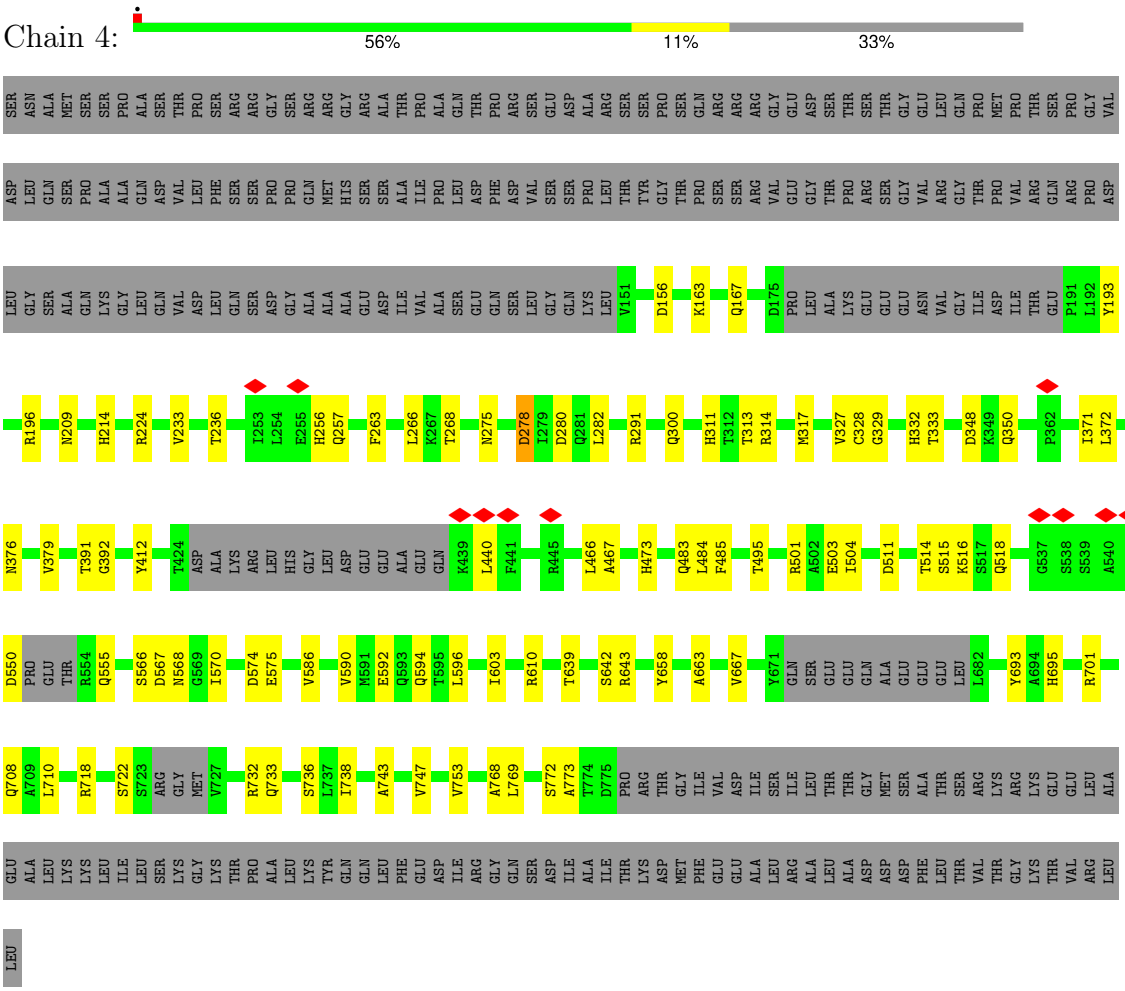
• Molecule 2: DNA replication licensing factor MCM3

Chain B:



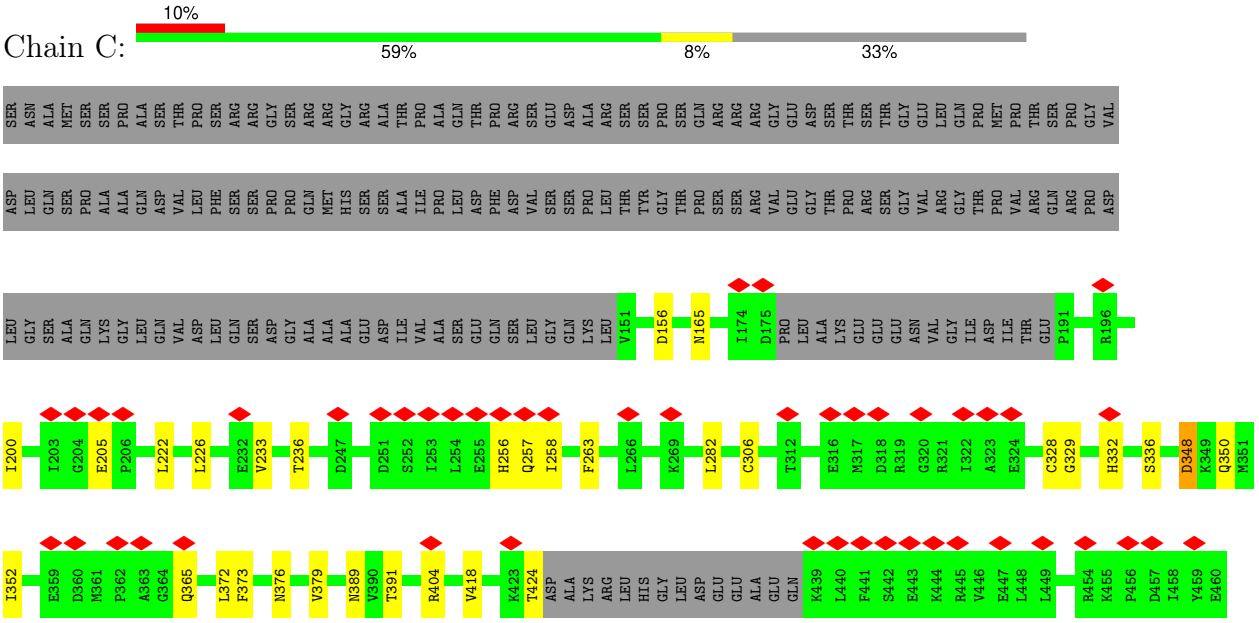
• Molecule 3: DNA replication licensing factor MCM4

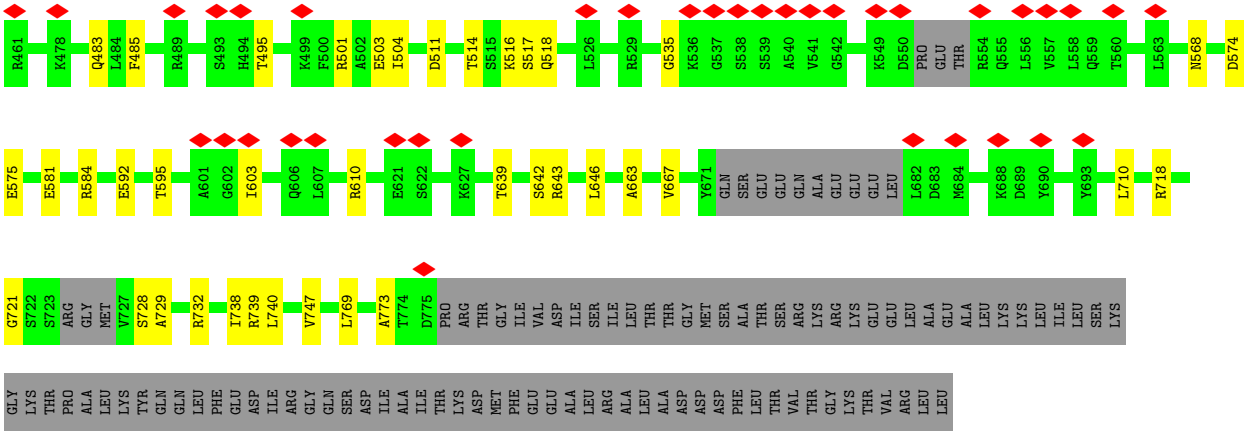
Chain 4:



• Molecule 3: DNA replication licensing factor MCM4

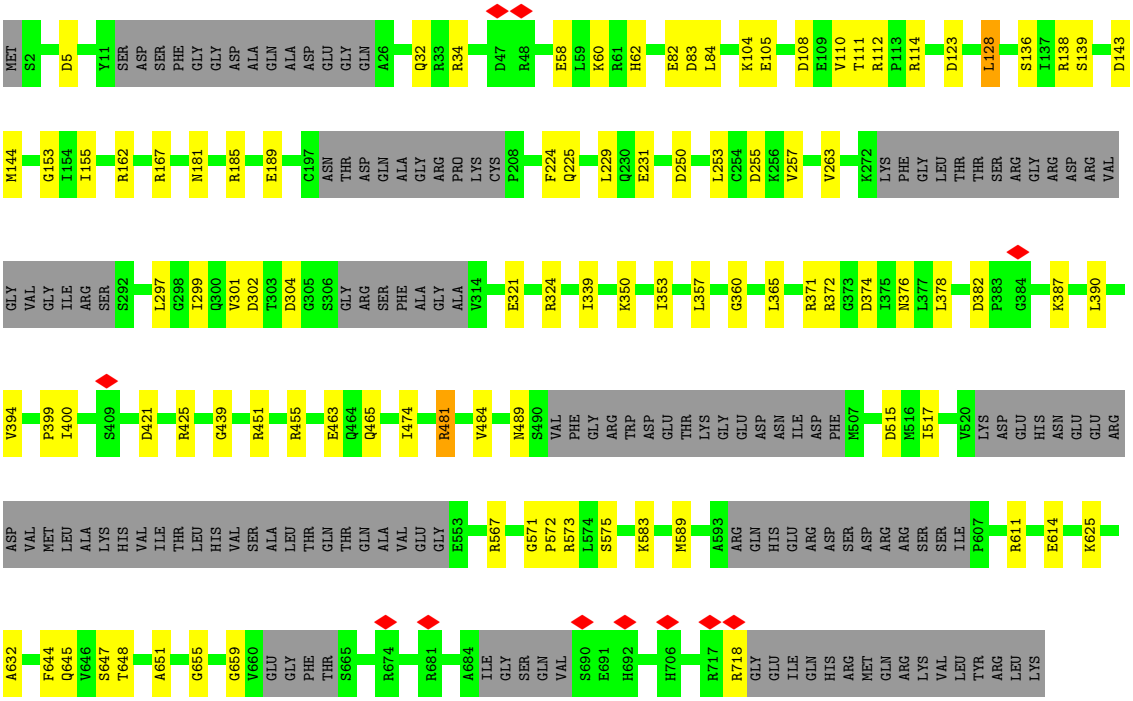
Chain C:





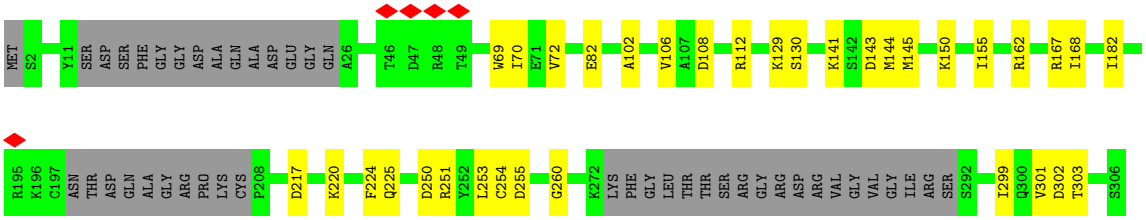
• Molecule 4: DNA replication licensing factor MCM5

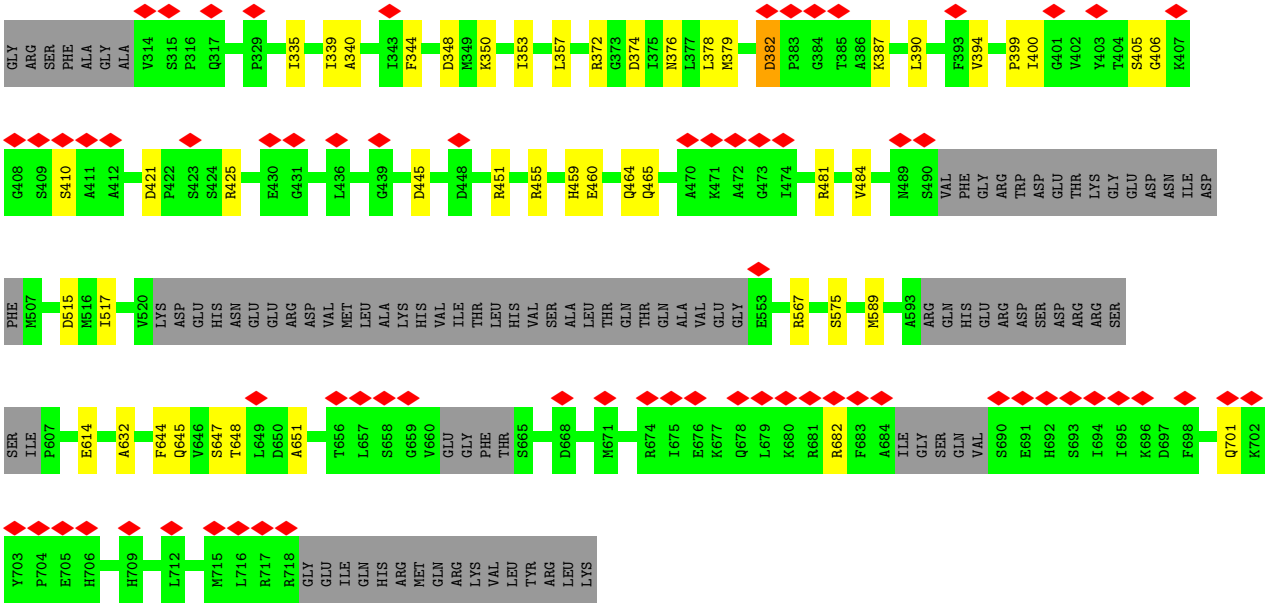
Chain 5:



• Molecule 4: DNA replication licensing factor MCM5

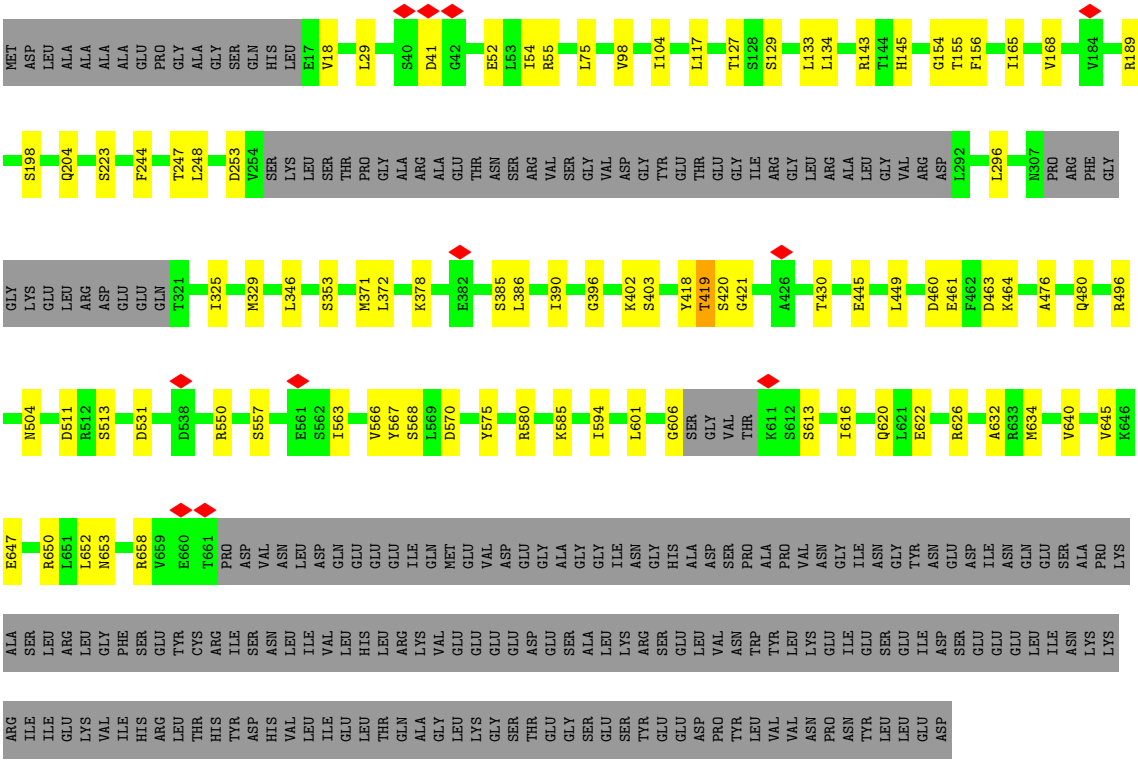
Chain D:





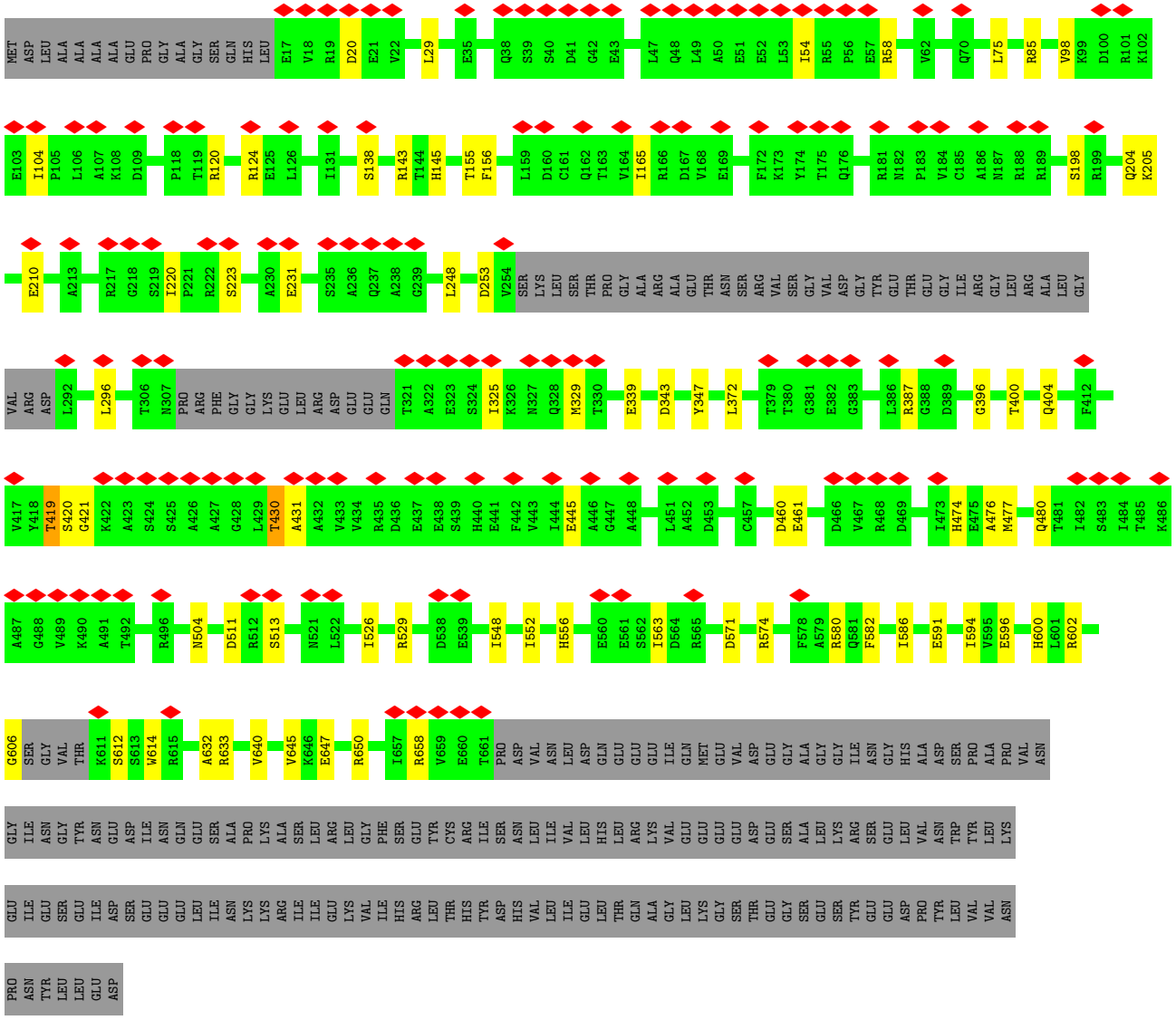
• Molecule 5: DNA replication licensing factor MCM6

Chain 6:



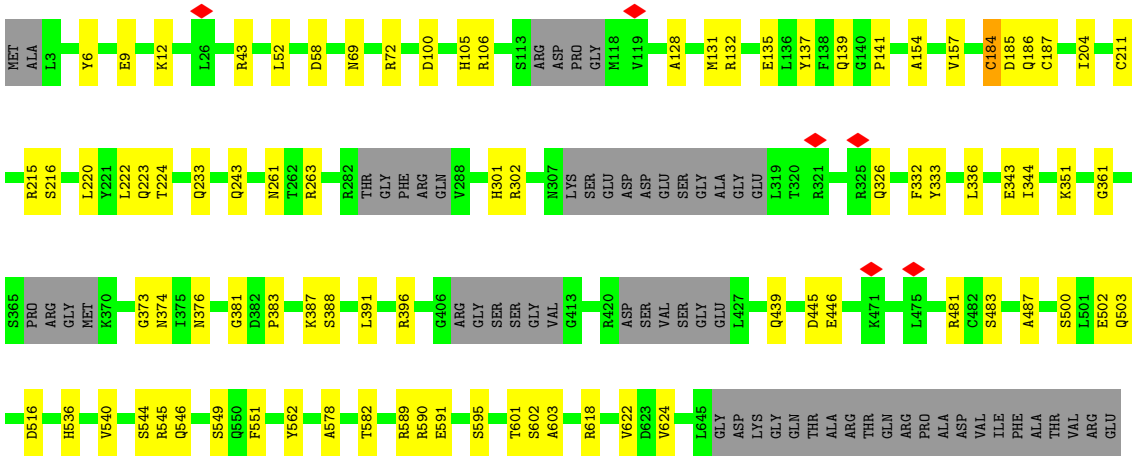
• Molecule 5: DNA replication licensing factor MCM6

Chain E:



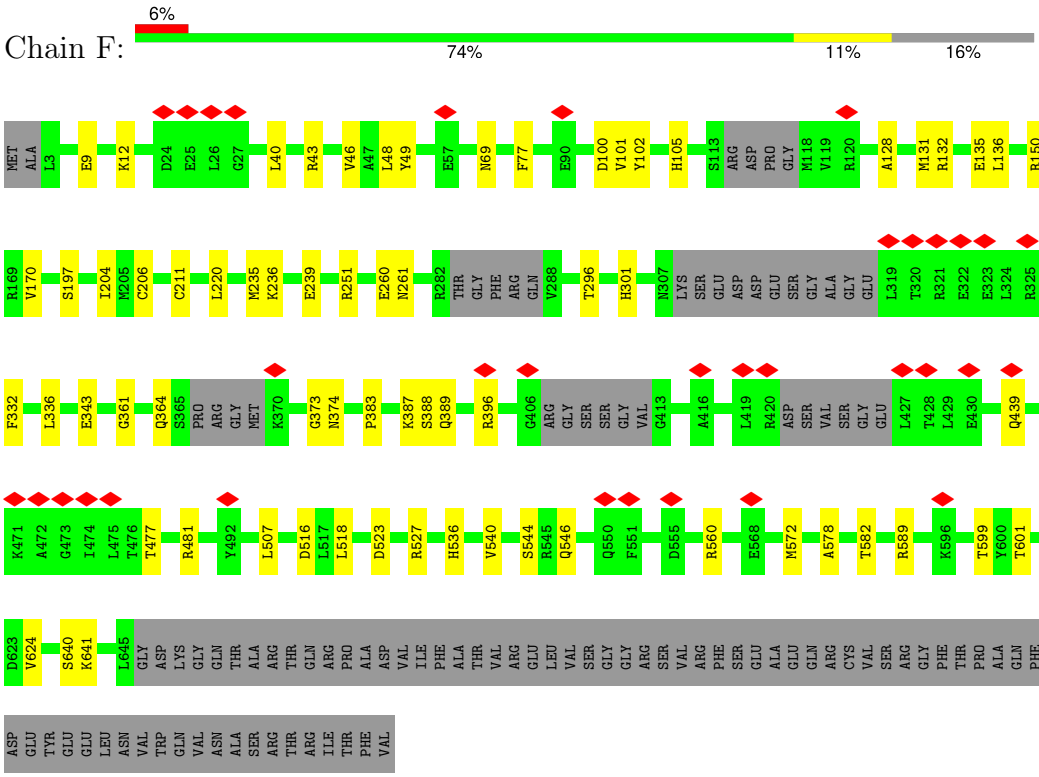
• Molecule 6: DNA replication licensing factor MCM7

Chain 7:



• Molecule 6: DNA replication licensing factor MCM7

Chain F:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	101722	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 ($e^-/Å^2$)	50.96	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.754	Depositor
Minimum map value	-0.266	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.024	Depositor
Recommended contour level	0.18	Depositor
Map size (Å)	499.2, 499.2, 499.2	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.832, 0.832, 0.832	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	2	0.25	0/4818	0.54	0/6501
1	A	0.25	0/4818	0.53	0/6501
2	3	0.27	0/4731	0.55	0/6385
2	B	0.26	0/4731	0.56	0/6385
3	4	0.26	0/4718	0.55	0/6372
3	C	0.26	0/4718	0.55	0/6372
4	5	0.26	0/4754	0.55	0/6381
4	D	0.25	0/4754	0.56	0/6381
5	6	0.26	0/4814	0.56	0/6494
5	E	0.26	0/4814	0.56	0/6494
6	7	0.26	0/4917	0.55	0/6634
6	F	0.26	0/4917	0.56	0/6634
All	All	0.26	0/57504	0.55	0/77534

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

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	4732	4740	4740	73	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4732	4740	4740	53	0
2	3	4663	4691	4691	44	0
2	B	4663	4691	4691	39	0
3	4	4636	4675	4675	64	0
3	C	4636	4677	4676	47	0
4	5	4686	4783	4782	65	0
4	D	4686	4783	4782	47	0
5	6	4737	4759	4759	56	0
5	E	4737	4760	4759	61	0
6	7	4845	4904	4904	52	0
6	F	4845	4905	4905	54	0
7	2	1	0	0	0	0
7	4	1	0	0	0	0
7	5	1	0	0	0	0
7	6	1	0	0	0	0
7	7	1	0	0	0	0
7	A	1	0	0	0	0
7	C	1	0	0	0	0
7	D	1	0	0	0	0
7	E	1	0	0	0	0
7	F	1	0	0	0	0
8	2	1	0	0	0	0
8	3	1	0	0	0	0
8	4	2	0	0	0	0
8	7	1	0	0	0	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
8	C	1	0	0	1	0
8	E	1	0	0	0	0
8	F	1	0	0	0	0
9	2	31	12	12	14	0
9	4	31	12	12	6	0
9	6	31	12	12	5	0
9	7	31	12	12	2	0
9	A	31	12	12	8	0
9	C	31	12	12	6	0
9	E	31	12	12	8	0
9	F	31	12	12	7	0
10	3	27	12	12	6	0
10	B	27	12	12	5	0
All	All	56920	57228	57224	618	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including

hydrogen atoms). The all-atom clashscore for this structure is 5.

All (618) 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)
9:A:1002:ATP:PG	5:E:529:ARG:HH22	1.80	1.04
9:A:1002:ATP:O2G	5:E:529:ARG:NH2	1.93	1.01
6:F:383:PRO:HB3	9:F:1002:ATP:O3G	1.64	0.97
3:C:514:THR:N	9:C:1002:ATP:O2B	1.98	0.94
3:C:517:SER:HG	8:C:1001:MG:MG	0.53	0.93
10:3:1002:ADP:O2'	4:5:614:GLU:OE2	1.94	0.84
3:4:282:LEU:HD11	3:4:391:THR:HG22	1.60	0.83
1:2:525:PRO:HB3	9:2:1002:ATP:O1G	1.81	0.80
3:4:514:THR:N	9:4:903:ATP:O2B	2.15	0.79
3:4:658:TYR:OH	9:4:903:ATP:N6	2.21	0.74
1:2:675:LEU:HD22	9:2:1002:ATP:C6	2.23	0.73
3:4:328:CYS:SG	3:4:329:GLY:N	2.62	0.72
2:B:571:TYR:OH	2:B:631:ALA:O	2.08	0.72
5:6:372:LEU:O	5:6:580:ARG:NH2	2.23	0.71
2:3:331:ASN:O	6:7:396:ARG:NH1	2.23	0.71
1:A:503:GLU:OE1	1:A:779:ARG:NH2	2.23	0.71
5:E:372:LEU:O	5:E:580:ARG:NH2	2.23	0.71
3:4:473:HIS:NE2	9:4:903:ATP:N6	2.39	0.71
3:4:708:GLN:OE1	5:6:550:ARG:NH2	2.23	0.71
5:E:552:ILE:HD11	9:E:1002:ATP:H1'	1.72	0.71
6:7:43:ARG:NH1	6:7:100:ASP:OD2	2.24	0.70
10:B:1002:ADP:O2'	4:D:614:GLU:OE2	2.05	0.70
2:B:466:MET:O	2:B:470:GLY:N	2.25	0.70
1:2:377:ARG:NE	1:2:395:ASP:OD1	2.23	0.70
1:2:642:THR:O	1:2:646:ASN:ND2	2.25	0.70
1:2:414:LEU:HD13	1:2:444:VAL:HG22	1.73	0.70
1:2:351:SER:N	1:2:357:SER:O	2.24	0.69
4:5:34:ARG:NH1	4:5:83:ASP:OD2	2.25	0.69
4:5:111:THR:O	4:5:114:ARG:NH1	2.24	0.69
1:A:377:ARG:NE	1:A:395:ASP:OD1	2.25	0.69
4:D:357:LEU:O	4:D:567:ARG:NH1	2.25	0.69
5:E:387:ARG:NH2	5:E:477:MET:O	2.25	0.69
6:F:168:THR:OG1	6:F:236:LYS:O	2.09	0.69
3:C:328:CYS:SG	3:C:329:GLY:N	2.65	0.68
2:3:157:ARG:NH1	2:3:173:VAL:O	2.25	0.68
4:5:60:LYS:NZ	4:5:110:VAL:O	2.27	0.68
6:F:204:ILE:O	6:F:220:LEU:N	2.27	0.68
5:6:143:ARG:NH2	5:6:445:GLU:OE1	2.27	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:43:ARG:NH1	6:F:100:ASP:OD2	2.27	0.68
1:2:328:ASN:N	1:2:362:GLU:O	2.26	0.68
3:C:568:ASN:OD1	3:C:610:ARG:NH1	2.27	0.67
1:A:351:SER:N	1:A:357:SER:O	2.28	0.67
2:B:83:PHE:O	2:B:86:SER:OG	2.11	0.67
3:C:732:ARG:NH2	9:E:1002:ATP:O3G	2.27	0.67
6:7:545:ARG:NH1	6:7:546:GLN:O	2.28	0.66
6:7:590:ARG:NH1	6:7:591:GLU:OE2	2.28	0.66
6:7:106:ARG:NH2	6:7:131:MET:SD	2.68	0.66
4:D:575:SER:OG	4:D:632:ALA:O	2.13	0.66
6:7:326:GLN:OE1	6:7:562:TYR:OH	2.13	0.66
6:7:361:GLY:O	6:7:618:ARG:NH1	2.28	0.66
5:6:511:ASP:OD1	5:6:513:SER:OG	2.10	0.66
4:D:353:ILE:HD11	4:D:390:LEU:HD21	1.78	0.66
5:E:54:ILE:HG22	5:E:104:ILE:HD11	1.76	0.66
1:A:296:SER:O	1:A:298:ARG:NH1	2.27	0.66
4:D:682:ARG:NH2	4:D:701:GLN:OE1	2.28	0.66
4:D:378:LEU:HD23	4:D:517:ILE:HD12	1.77	0.66
6:F:388:SER:HB2	9:F:1002:ATP:O1B	1.95	0.65
1:2:316:THR:O	1:2:374:GLN:NE2	2.29	0.65
1:2:402:LEU:HD13	1:2:444:VAL:HG23	1.76	0.65
2:3:4:THR:N	2:B:156:GLU:O	2.29	0.65
4:5:104:LYS:NZ	4:5:123:ASP:OD1	2.27	0.65
2:3:466:MET:O	2:3:470:GLY:N	2.29	0.65
1:A:642:THR:O	1:A:646:ASN:ND2	2.29	0.65
2:3:83:PHE:O	2:3:86:SER:OG	2.12	0.64
3:C:592:GLU:OE1	3:C:643:ARG:NE	2.28	0.64
3:C:282:LEU:HD11	3:C:391:THR:HG22	1.78	0.64
5:E:552:ILE:HG23	5:E:556:HIS:HE2	1.62	0.64
5:E:571:ASP:OD1	5:E:574:ARG:NH1	2.30	0.64
3:C:306:CYS:SG	3:C:336:SER:OG	2.52	0.64
1:2:675:LEU:HD22	9:2:1002:ATP:N1	2.12	0.64
5:E:552:ILE:HG22	5:E:556:HIS:CD2	2.32	0.64
9:2:1002:ATP:H4'	5:6:622:GLU:OE2	1.97	0.64
3:C:348:ASP:O	3:C:376:ASN:N	2.31	0.64
3:C:501:ARG:O	3:C:739:ARG:NE	2.29	0.64
2:3:49:VAL:N	2:3:101:GLY:O	2.30	0.64
6:7:135:GLU:OE1	6:7:137:TYR:OH	2.16	0.64
4:D:162:ARG:O	4:D:224:PHE:N	2.31	0.64
6:F:343:GLU:O	6:F:536:HIS:NE2	2.31	0.63
5:6:145:HIS:O	5:6:204:GLN:NE2	2.31	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:333:ASN:OD1	5:6:189:ARG:NE	2.32	0.63
1:A:621:GLN:OE1	1:A:623:ARG:NH2	2.31	0.63
5:6:156:PHE:O	5:6:165:ILE:N	2.32	0.63
9:A:1002:ATP:O3G	5:E:529:ARG:NH1	2.30	0.63
3:4:639:THR:O	3:4:642:SER:OG	2.14	0.63
6:7:376:ASN:N	6:7:516:ASP:OD2	2.31	0.63
1:2:525:PRO:CB	9:2:1002:ATP:O1G	2.47	0.63
5:E:145:HIS:O	5:E:204:GLN:NE2	2.31	0.62
1:A:402:LEU:HD13	1:A:444:VAL:HG23	1.80	0.62
5:6:606:GLY:O	5:6:658:ARG:NE	2.33	0.62
3:4:156:ASP:OD1	3:4:224:ARG:NH2	2.32	0.62
2:B:427:GLU:OE1	2:B:478:ARG:NE	2.32	0.62
4:5:225:GLN:OE1	4:5:255:ASP:N	2.33	0.62
1:A:323:SER:OG	1:A:366:GLU:OE2	2.18	0.62
2:B:187:GLU:OE1	6:F:69:ASN:ND2	2.33	0.62
2:B:49:VAL:N	2:B:101:GLY:O	2.33	0.62
3:4:710:LEU:HD13	3:4:738:ILE:HG22	1.82	0.61
3:4:568:ASN:OD1	3:4:610:ARG:NH1	2.34	0.61
6:7:374:ASN:OD1	6:7:483:SER:N	2.34	0.61
2:3:522:SER:OG	4:5:302:ASP:O	2.15	0.61
1:A:316:THR:O	1:A:374:GLN:NE2	2.34	0.61
4:5:357:LEU:HD21	4:5:394:VAL:CG2	2.31	0.61
4:5:138:ARG:NH2	4:5:231:GLU:OE1	2.33	0.61
5:6:575:TYR:OH	5:6:634:MET:O	2.08	0.61
3:C:769:LEU:O	3:C:773:ALA:N	2.33	0.61
2:B:352:SER:HB2	10:B:1002:ADP:PA	2.41	0.60
5:E:552:ILE:HG23	5:E:556:HIS:NE2	2.16	0.60
1:2:319:LEU:N	1:2:373:TYR:O	2.33	0.60
6:F:128:ALA:O	6:F:132:ARG:NH1	2.34	0.60
6:F:239:GLU:OE1	6:F:251:ARG:N	2.33	0.60
5:6:531:ASP:OD2	5:6:626:ARG:NH2	2.34	0.60
1:A:675:LEU:HD22	9:A:1002:ATP:C6	2.36	0.60
3:C:581:GLU:OE2	3:C:584:ARG:NH1	2.34	0.60
5:E:552:ILE:O	5:E:556:HIS:CD2	2.55	0.60
1:2:303:ASN:N	1:2:418:TYR:O	2.34	0.60
4:5:372:ARG:NH2	4:5:515:ASP:OD1	2.34	0.60
2:B:352:SER:HB2	10:B:1002:ADP:O1A	2.02	0.60
6:F:361:GLY:O	6:F:618:ARG:NH1	2.35	0.60
2:3:467:GLU:O	4:5:718:ARG:NH2	2.35	0.59
1:2:675:LEU:CD2	9:2:1002:ATP:C6	2.85	0.59
3:4:483:GLN:NE2	3:4:504:ILE:O	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:5:253:LEU:HD11	4:5:299:ILE:HG12	1.83	0.59
2:B:595:SER:OG	6:F:527:ARG:NH1	2.34	0.59
4:D:376:ASN:OD1	4:D:484:VAL:N	2.36	0.59
4:5:167:ARG:NH2	4:5:181:ASN:O	2.35	0.59
4:5:58:GLU:O	4:5:62:HIS:ND1	2.35	0.59
2:B:218:ASP:OD1	2:B:218:ASP:N	2.33	0.59
3:4:501:ARG:NH1	3:4:503:GLU:O	2.36	0.59
6:7:184:CYS:SG	6:7:185:ASP:N	2.76	0.59
3:4:732:ARG:NH2	9:6:902:ATP:O3B	2.36	0.58
1:A:300:LEU:O	1:A:304:GLN:NE2	2.37	0.58
3:4:291:ARG:NH2	3:4:550:ASP:OD1	2.37	0.58
6:F:374:ASN:ND2	6:F:465:GLN:OE1	2.36	0.58
4:D:374:ASP:OD2	4:D:465:GLN:NE2	2.35	0.58
4:D:72:VAL:O	4:D:129:LYS:N	2.36	0.58
2:3:47:LEU:O	2:3:101:GLY:N	2.36	0.58
6:7:9:GLU:OE1	6:7:12:LYS:NZ	2.31	0.58
1:A:230:LEU:HD23	1:A:283:VAL:HG22	1.85	0.58
6:F:49:TYR:OH	6:F:260:GLU:OE1	2.20	0.58
6:7:445:ASP:OD1	6:7:446:GLU:N	2.36	0.58
3:4:518:GLN:HG3	9:4:903:ATP:O2A	2.03	0.58
5:6:248:LEU:HD11	5:6:296:LEU:HB3	1.85	0.58
5:6:594:ILE:HD13	5:6:645:VAL:HG13	1.86	0.58
4:D:225:GLN:OE1	4:D:255:ASP:N	2.36	0.58
1:A:421:ASN:O	1:A:436:ALA:N	2.36	0.58
1:A:528:ALA:HB2	9:A:1002:ATP:C8	2.39	0.58
1:2:503:GLU:N	1:2:775:GLU:OE1	2.37	0.58
4:5:339:ILE:HD11	4:5:350:LYS:HB3	1.84	0.58
5:6:54:ILE:HG22	5:6:104:ILE:HD11	1.86	0.58
3:C:373:PHE:O	3:C:418:VAL:HG12	2.04	0.58
2:3:466:MET:SD	2:3:473:ASP:N	2.77	0.58
3:4:769:LEU:O	3:4:773:ALA:N	2.36	0.57
3:C:518:GLN:HG3	9:C:1002:ATP:O2A	2.04	0.57
6:F:388:SER:CB	9:F:1002:ATP:O1B	2.52	0.57
4:5:360:GLY:O	4:5:625:LYS:NZ	2.29	0.57
3:C:667:VAL:HG11	6:F:578:ALA:HB2	1.86	0.57
4:5:572:PRO:O	4:5:573:ARG:NH1	2.37	0.57
6:F:261:ASN:ND2	6:F:301:HIS:O	2.38	0.57
1:A:524:ASP:OD2	1:A:636:ARG:NH1	2.38	0.57
1:2:329:CYS:SG	1:2:330:ASN:N	2.78	0.57
10:3:1002:ADP:PA	4:5:611:ARG:HH22	2.28	0.57
3:C:483:GLN:NE2	3:C:504:ILE:O	2.38	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:521:GLY:O	4:5:481:ARG:NH2	2.38	0.57
10:3:1002:ADP:O5'	4:5:611:ARG:NH2	2.38	0.57
1:A:323:SER:O	1:A:341:GLN:N	2.38	0.57
1:2:675:LEU:HD21	9:2:1002:ATP:N6	2.19	0.56
1:2:397:ILE:HD12	1:2:438:VAL:HG21	1.87	0.56
1:2:589:PHE:HZ	1:2:600:ILE:HD13	1.69	0.56
3:4:555:GLN:OE1	3:4:555:GLN:N	2.38	0.56
5:E:156:PHE:N	5:E:165:ILE:O	2.39	0.56
3:4:311:HIS:HA	5:6:18:VAL:HG21	1.87	0.56
6:7:243:GLN:N	6:7:243:GLN:OE1	2.39	0.56
2:B:409:ASP:N	2:B:409:ASP:OD1	2.37	0.56
1:2:603:ALA:O	1:2:607:GLN:N	2.37	0.56
5:E:596:GLU:OE2	5:E:600:HIS:NE2	2.38	0.56
5:E:253:ASP:OD1	5:E:253:ASP:N	2.38	0.56
5:E:552:ILE:CG2	5:E:556:HIS:CD2	2.89	0.56
4:5:365:LEU:HD11	4:5:371:ARG:NE	2.21	0.56
1:A:247:PHE:O	1:A:251:ALA:N	2.38	0.56
1:2:505:LYS:O	1:2:513:VAL:N	2.38	0.55
1:A:260:ASP:OD1	1:A:283:VAL:N	2.38	0.55
6:7:52:LEU:HD12	6:7:141:PRO:HD3	1.87	0.55
10:3:1002:ADP:PA	4:5:611:ARG:NH2	2.80	0.55
3:4:667:VAL:HG11	6:7:578:ALA:HB2	1.88	0.55
4:D:353:ILE:CD1	4:D:390:LEU:HD21	2.36	0.55
5:E:156:PHE:O	5:E:165:ILE:N	2.40	0.55
1:A:328:ASN:N	1:A:362:GLU:O	2.39	0.55
4:D:253:LEU:HD11	4:D:299:ILE:HG12	1.87	0.55
6:7:58:ASP:OD1	6:7:58:ASP:N	2.39	0.55
5:E:606:GLY:O	5:E:658:ARG:NE	2.39	0.55
5:E:120:ARG:NE	5:E:138:SER:OG	2.40	0.55
6:F:9:GLU:OE1	6:F:12:LYS:NZ	2.35	0.55
2:3:299:LEU:O	2:3:303:LEU:N	2.40	0.55
4:5:353:ILE:HD11	4:5:390:LEU:HD21	1.88	0.55
5:E:647:GLU:OE1	5:E:650:ARG:NE	2.40	0.55
6:F:77:PHE:HB3	6:F:136:LEU:HD21	1.88	0.55
2:3:187:GLU:OE1	6:7:69:ASN:ND2	2.40	0.55
5:6:647:GLU:OE1	5:6:650:ARG:NE	2.40	0.55
3:4:701:ARG:O	3:4:753:VAL:N	2.38	0.54
5:6:402:LYS:N	9:6:902:ATP:O2B	2.40	0.54
6:F:387:LYS:HE2	9:F:1002:ATP:O1G	2.08	0.54
1:A:593:ASN:ND2	1:A:596:ASP:OD2	2.39	0.54
6:7:391:LEU:HD11	6:7:487:ALA:HB3	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:682:SER:O	1:A:686:HIS:ND1	2.41	0.54
2:B:307:ILE:HG23	10:B:1002:ADP:C6	2.43	0.54
5:E:552:ILE:CG2	5:E:556:HIS:HE2	2.20	0.54
6:7:222:LEU:HD23	6:7:223:GLN:N	2.23	0.54
2:B:25:ASP:O	2:B:33:GLN:NE2	2.41	0.54
1:2:514:ARG:NH1	1:2:518:ASN:OD1	2.41	0.54
4:5:382:ASP:O	4:5:387:LYS:NZ	2.41	0.54
4:5:451:ARG:O	4:5:455:ARG:N	2.39	0.54
5:E:421:GLY:N	5:E:460:ASP:O	2.41	0.54
5:E:20:ASP:OD2	5:E:85:ARG:NE	2.41	0.53
6:F:170:VAL:HG12	6:F:235:MET:HB3	1.90	0.53
4:5:374:ASP:OD2	4:5:465:GLN:NE2	2.42	0.53
4:D:382:ASP:O	4:D:387:LYS:NZ	2.41	0.53
5:E:124:ARG:NH2	5:E:220:ILE:O	2.41	0.53
5:E:143:ARG:NH2	5:E:445:GLU:OE1	2.42	0.53
5:E:594:ILE:HD13	5:E:645:VAL:HG13	1.90	0.53
6:7:383:PRO:HB3	9:7:1002:ATP:O3G	2.09	0.53
6:7:211:CYS:O	6:7:215:ARG:N	2.42	0.53
2:B:385:ASP:N	2:B:390:GLU:O	2.41	0.53
3:C:732:ARG:NH2	9:E:1002:ATP:O3B	2.41	0.53
5:E:124:ARG:NE	5:E:210:GLU:OE2	2.41	0.53
6:7:128:ALA:O	6:7:132:ARG:NH1	2.42	0.53
2:3:571:TYR:OH	2:3:631:ALA:O	2.24	0.53
6:F:383:PRO:CB	9:F:1002:ATP:O3G	2.49	0.53
1:2:247:PHE:O	1:2:251:ALA:N	2.41	0.53
1:2:777:HIS:HA	1:2:780:ILE:HD12	1.91	0.53
2:3:324:GLY:O	2:3:630:LYS:NZ	2.29	0.53
5:6:378:LYS:O	5:6:386:LEU:N	2.41	0.53
6:7:391:LEU:HD11	6:7:487:ALA:CB	2.39	0.53
5:E:404:GLN:HB2	9:E:1002:ATP:O2A	2.09	0.53
6:F:448:ASP:HA	6:F:507:LEU:HD21	1.90	0.53
5:6:52:GLU:OE2	5:6:55:ARG:NE	2.40	0.53
5:6:253:ASP:OD1	5:6:253:ASP:N	2.42	0.53
4:5:421:ASP:O	4:5:425:ARG:N	2.40	0.52
5:6:460:ASP:OD1	5:6:461:GLU:N	2.41	0.52
1:A:315:CYS:O	1:A:571:LEU:N	2.41	0.52
4:5:5:ASP:OD1	2:B:186:THR:HG23	2.09	0.52
3:4:371:ILE:O	3:4:372:LEU:HD23	2.09	0.52
5:6:127:THR:HG1	5:6:129:SER:HG	1.55	0.52
3:C:503:GLU:N	3:C:503:GLU:OE1	2.42	0.52
3:C:710:LEU:HD13	3:C:738:ILE:HD13	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:675:LEU:CD2	9:2:1002:ATP:N1	2.73	0.52
5:E:552:ILE:CG2	5:E:556:HIS:NE2	2.73	0.52
5:E:552:ILE:HG22	5:E:556:HIS:HD2	1.75	0.52
3:4:278:ASP:OD1	3:4:278:ASP:N	2.42	0.52
1:A:297:LEU:HD12	1:A:297:LEU:O	2.10	0.52
4:5:263:VAL:HG12	4:5:301:VAL:HG12	1.91	0.52
3:4:592:GLU:OE1	3:4:643:ARG:NE	2.43	0.52
3:4:732:ARG:NH2	9:6:902:ATP:PB	2.83	0.52
4:5:304:ASP:OD1	4:5:304:ASP:N	2.39	0.52
1:2:329:CYS:SG	1:2:357:SER:OG	2.68	0.51
2:3:187:GLU:OE2	6:7:6:TYR:OH	2.20	0.51
5:6:154:GLY:O	5:6:168:VAL:N	2.43	0.51
2:B:336:ARG:NH2	2:B:480:ASP:OD1	2.41	0.51
6:7:204:ILE:O	6:7:220:LEU:N	2.40	0.51
1:A:481:ILE:HG21	1:A:495:LEU:HB2	1.91	0.51
3:C:263:PHE:HA	3:C:391:THR:HG21	1.91	0.51
1:A:248:LEU:HA	1:A:255:LEU:HD12	1.92	0.51
3:4:701:ARG:NH2	5:6:557:SER:O	2.43	0.51
1:A:267:VAL:O	1:A:271:TYR:N	2.42	0.51
2:B:513:GLN:N	2:B:513:GLN:OE1	2.42	0.51
1:2:485:ILE:HG23	9:2:1002:ATP:C6	2.46	0.51
2:3:598:ARG:HD2	2:3:613:VAL:HG13	1.93	0.51
5:6:133:LEU:O	5:6:247:THR:OG1	2.25	0.51
5:6:396:GLY:O	5:6:504:ASN:OD1	2.29	0.51
3:C:721:GLY:O	3:C:728:SER:OG	2.18	0.51
5:6:568:SER:OG	5:6:570:ASP:OD1	2.14	0.51
2:3:499:ASP:OD1	4:5:583:LYS:NZ	2.22	0.50
4:5:353:ILE:CD1	4:5:390:LEU:HD21	2.42	0.50
1:2:313:THR:O	1:2:573:ALA:HB3	2.10	0.50
6:7:184:CYS:SG	6:7:186:GLN:N	2.80	0.50
9:A:1002:ATP:PG	5:E:529:ARG:NH2	2.65	0.50
4:D:382:ASP:N	4:D:382:ASP:OD1	2.43	0.50
1:2:221:ASP:O	1:2:227:ARG:NH1	2.44	0.50
1:A:329:CYS:SG	1:A:357:SER:OG	2.69	0.50
2:B:130:ILE:HD11	2:B:232:GLY:HA2	1.93	0.50
3:C:352:ILE:O	3:C:372:LEU:N	2.41	0.50
5:E:511:ASP:OD1	5:E:513:SER:OG	2.28	0.50
1:2:485:ILE:HG23	9:2:1002:ATP:N6	2.27	0.50
4:5:162:ARG:O	4:5:224:PHE:N	2.44	0.50
6:F:439:GLN:N	6:F:481:ARG:O	2.38	0.50
2:3:221:LEU:HD13	2:3:225:LEU:O	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:440:LEU:HD11	3:4:693:TYR:HD1	1.77	0.50
3:4:503:GLU:N	3:4:503:GLU:OE1	2.45	0.50
3:C:732:ARG:HH21	9:E:1002:ATP:PG	2.34	0.50
4:D:406:GLY:N	4:D:445:ASP:O	2.44	0.50
6:F:589:ARG:NH1	6:F:601:THR:O	2.44	0.50
1:2:222:MET:O	1:2:226:ASN:N	2.43	0.50
6:7:540:VAL:O	6:7:544:SER:N	2.44	0.50
1:2:421:ASN:O	1:2:436:ALA:N	2.45	0.50
2:3:378:LEU:O	2:3:397:ALA:N	2.45	0.50
3:4:768:ALA:O	3:4:772:SER:OG	2.19	0.50
1:2:315:CYS:O	1:2:570:THR:OG1	2.22	0.50
4:5:575:SER:OG	4:5:632:ALA:O	2.14	0.50
4:D:301:VAL:HG23	4:D:303:THR:HG23	1.94	0.50
2:3:508:ARG:NH2	4:5:571:GLY:O	2.43	0.50
6:7:381:GLY:O	6:7:387:LYS:NZ	2.32	0.50
6:7:343:GLU:O	6:7:536:HIS:NE2	2.45	0.49
6:7:589:ARG:NH1	6:7:601:THR:O	2.46	0.49
2:B:336:ARG:NH1	2:B:338:ASP:O	2.45	0.49
9:C:1002:ATP:O1A	6:F:604:ARG:NH2	2.43	0.49
6:F:364:GLN:NE2	6:F:572:MET:SD	2.86	0.49
1:2:297:LEU:HD12	1:2:297:LEU:O	2.13	0.49
2:3:232:GLY:O	2:3:270:LYS:NZ	2.38	0.49
3:4:193:TYR:OH	3:4:214:HIS:ND1	2.41	0.49
4:5:128:LEU:HD11	4:5:297:LEU:HB2	1.93	0.49
6:7:602:SER:OG	6:7:603:ALA:N	2.46	0.49
4:5:339:ILE:HD11	4:5:350:LYS:CB	2.42	0.49
4:5:82:GLU:N	4:5:82:GLU:OE1	2.41	0.49
1:2:260:ASP:OD1	1:2:283:VAL:N	2.44	0.49
4:5:153:GLY:HA3	4:5:229:LEU:HD11	1.94	0.49
6:7:233:GLN:OE1	6:7:263:ARG:N	2.41	0.49
6:F:206:CYS:SG	6:F:211:CYS:SG	3.10	0.49
3:C:233:VAL:O	3:C:236:THR:OG1	2.19	0.48
1:2:482:ALA:HB1	1:2:485:ILE:HB	1.95	0.48
4:5:250:ASP:OD1	4:5:250:ASP:N	2.44	0.48
1:A:241:GLU:O	1:A:243:VAL:N	2.45	0.48
1:A:319:LEU:N	1:A:373:TYR:O	2.45	0.48
3:4:196:ARG:NH1	3:4:209:ASN:O	2.46	0.48
6:7:344:ILE:O	6:7:351:LYS:NZ	2.36	0.48
5:E:419:THR:OG1	5:E:420:SER:N	2.47	0.48
5:E:476:ALA:O	5:E:480:GLN:N	2.43	0.48
5:6:476:ALA:O	5:6:480:GLN:N	2.45	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:516:ASP:OD2	6:F:611:ARG:NH1	2.46	0.48
1:2:776:ALA:O	1:2:780:ILE:N	2.44	0.48
3:C:165:ASN:ND2	3:C:222:LEU:HD22	2.28	0.48
5:E:396:GLY:O	5:E:504:ASN:OD1	2.30	0.48
6:F:40:LEU:HD11	6:F:48:LEU:HD22	1.95	0.48
6:7:211:CYS:SG	6:7:216:SER:OG	2.71	0.48
1:A:527:THR:OG1	1:A:529:LYS:NZ	2.45	0.48
2:B:174:TYR:OH	2:B:186:THR:HG21	2.13	0.48
1:2:590:ASP:O	1:2:597:ARG:NH2	2.44	0.48
1:2:525:PRO:HA	9:2:1002:ATP:O1G	2.13	0.48
1:A:485:ILE:HG21	1:A:532:PHE:CZ	2.48	0.48
4:D:410:SER:O	4:D:451:ARG:NH2	2.46	0.48
2:3:18:ASP:OD2	2:3:58:ASN:ND2	2.46	0.47
3:4:667:VAL:HG11	6:7:578:ALA:CB	2.44	0.47
4:5:365:LEU:HD11	4:5:371:ARG:HE	1.78	0.47
6:7:549:SER:OG	6:7:551:PHE:O	2.32	0.47
3:C:667:VAL:HG11	6:F:578:ALA:CB	2.44	0.47
1:2:498:ALA:HB2	1:2:519:VAL:HG21	1.96	0.47
3:4:313:THR:OG1	3:4:314:ARG:N	2.47	0.47
4:5:108:ASP:OD1	4:5:114:ARG:NH2	2.47	0.47
5:6:585:LYS:O	5:6:640:VAL:N	2.45	0.47
1:A:505:LYS:O	1:A:513:VAL:N	2.45	0.47
1:A:580:ASP:O	1:A:623:ARG:N	2.47	0.47
1:2:535:TYR:CE1	1:2:539:VAL:HG21	2.49	0.47
3:C:256:HIS:ND1	3:C:257:GLN:O	2.48	0.47
3:C:329:GLY:O	3:C:332:HIS:NE2	2.47	0.47
5:6:419:THR:OG1	5:6:420:SER:N	2.47	0.47
1:2:668:ASP:N	1:2:668:ASP:OD1	2.48	0.47
2:3:515:GLY:O	4:5:571:GLY:N	2.43	0.47
3:4:163:LYS:NZ	3:4:167:GLN:OE1	2.48	0.47
4:D:167:ARG:O	4:D:220:LYS:N	2.47	0.47
1:A:517:ILE:HD11	1:A:773:MET:HA	1.96	0.47
2:B:327:ARG:O	2:B:335:ILE:N	2.48	0.47
4:D:339:ILE:HD11	4:D:350:LYS:HB3	1.97	0.47
5:E:155:THR:OG1	5:E:198:SER:N	2.48	0.47
5:E:582:PHE:O	5:E:633:ARG:NH1	2.47	0.47
3:4:485:PHE:CD2	3:4:747:VAL:HG22	2.50	0.47
6:7:500:SER:N	6:7:503:GLN:OE1	2.45	0.47
5:E:98:VAL:HG22	5:E:104:ILE:HG12	1.96	0.47
5:6:155:THR:HG1	5:6:198:SER:HG	1.55	0.47
5:E:387:ARG:NE	5:E:480:GLN:OE1	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:364:ASN:ND2	5:6:189:ARG:O	2.49	0.46
1:2:682:SER:O	1:2:686:HIS:ND1	2.48	0.46
5:E:58:ARG:NH1	5:E:231:GLU:OE1	2.49	0.46
1:2:182:VAL:HG11	1:2:250:GLU:HB2	1.98	0.46
4:5:34:ARG:HB3	4:5:84:LEU:HD11	1.98	0.46
9:A:1002:ATP:O3G	5:E:529:ARG:NH2	2.49	0.46
4:D:82:GLU:OE1	4:D:82:GLU:N	2.45	0.46
5:E:339:GLU:O	5:E:343:ASP:N	2.46	0.46
6:F:46:VAL:O	6:F:135:GLU:N	2.44	0.46
1:A:498:ALA:HB2	1:A:519:VAL:HG21	1.97	0.46
4:D:108:ASP:OD2	4:D:112:ARG:NH2	2.48	0.46
6:7:388:SER:OG	6:7:445:ASP:OD2	2.33	0.46
4:D:302:ASP:OD1	4:D:302:ASP:N	2.48	0.46
5:E:248:LEU:HD11	5:E:296:LEU:HB3	1.97	0.46
1:2:241:GLU:O	1:2:243:VAL:N	2.47	0.46
5:6:29:LEU:HB3	5:6:75:LEU:HD22	1.98	0.46
3:C:718:ARG:NH2	3:C:729:ALA:O	2.48	0.46
4:D:644:PHE:O	4:D:648:THR:N	2.48	0.46
4:D:455:ARG:O	4:D:459:HIS:ND1	2.46	0.46
6:F:101:VAL:HG22	6:F:105:HIS:CD2	2.51	0.46
1:2:723:TYR:OH	1:2:780:ILE:O	2.23	0.46
2:3:223:ASP:N	2:3:223:ASP:OD1	2.48	0.46
3:4:485:PHE:O	3:4:695:HIS:NE2	2.47	0.46
1:A:603:ALA:O	1:A:607:GLN:N	2.45	0.46
3:4:263:PHE:HA	3:4:391:THR:HG21	1.97	0.46
3:4:733:GLN:O	3:4:736:SER:OG	2.20	0.46
4:D:399:PRO:HB2	4:D:400:ILE:HD12	1.97	0.46
5:6:117:LEU:HD22	5:6:134:LEU:HD23	1.98	0.45
4:D:168:ILE:O	4:D:182:ILE:N	2.49	0.45
5:E:548:ILE:HG23	9:E:1002:ATP:C2	2.51	0.45
5:E:552:ILE:CD1	9:E:1002:ATP:H1'	2.43	0.45
5:E:632:ALA:HB2	5:E:640:VAL:HG22	1.98	0.45
6:7:139:GLN:OE1	6:7:302:ARG:NE	2.49	0.45
5:E:460:ASP:OD1	5:E:461:GLU:N	2.48	0.45
2:3:12:LEU:CD1	2:3:75:ALA:HB2	2.46	0.45
3:4:350:GLN:HB2	3:4:379:VAL:HG13	1.99	0.45
5:6:353:SER:HB3	5:6:566:VAL:HG12	1.99	0.45
5:6:601:LEU:HG	5:6:616:ILE:HD13	1.97	0.45
5:6:616:ILE:HG23	5:6:620:GLN:HG3	1.98	0.45
1:A:536:ILE:CD1	1:A:627:ILE:HG21	2.47	0.45
9:C:1002:ATP:PA	6:F:604:ARG:NH2	2.90	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:7:261:ASN:ND2	6:7:301:HIS:O	2.49	0.45
4:5:143:ASP:OD1	4:5:144:MET:N	2.50	0.45
4:5:647:SER:O	4:5:651:ALA:N	2.45	0.45
5:6:325:ILE:O	5:6:329:MET:N	2.48	0.45
5:6:585:LYS:O	5:6:640:VAL:HG23	2.17	0.45
4:D:102:ALA:O	4:D:106:VAL:HG22	2.17	0.45
4:D:357:LEU:HD21	4:D:394:VAL:CG2	2.46	0.45
4:D:405:SER:OG	4:D:406:GLY:N	2.50	0.45
1:A:666:THR:O	5:E:602:ARG:NH2	2.49	0.45
1:A:675:LEU:CD2	9:A:1002:ATP:N6	2.80	0.45
4:5:128:LEU:HD12	4:5:128:LEU:O	2.16	0.45
2:B:598:ARG:NH2	6:F:523:ASP:OD1	2.50	0.45
4:D:372:ARG:NH2	4:D:515:ASP:OD1	2.49	0.45
5:E:29:LEU:HB3	5:E:75:LEU:HD22	1.98	0.45
1:2:200:LYS:O	1:2:204:ARG:NH1	2.48	0.45
3:4:718:ARG:O	3:4:722:SER:N	2.50	0.45
4:D:335:ILE:O	4:D:339:ILE:HG23	2.17	0.45
3:4:603:ILE:HD13	5:6:223:SER:HB3	1.99	0.45
2:3:642:ALA:O	2:3:646:VAL:HG23	2.17	0.44
3:4:743:ALA:O	3:4:747:VAL:HG23	2.16	0.44
1:A:355:CYS:O	3:C:404:ARG:NH2	2.49	0.44
4:D:340:ALA:O	4:D:350:LYS:NZ	2.33	0.44
3:4:266:LEU:HG	3:4:268:THR:HG23	2.00	0.44
1:2:400:ALA:HA	1:2:403:VAL:HG13	2.00	0.44
3:4:511:ASP:O	3:4:516:LYS:NZ	2.50	0.44
1:A:684:VAL:HG11	5:E:591:GLU:CD	2.37	0.44
2:3:178:ASP:OD1	2:3:179:GLU:N	2.50	0.44
2:B:292:SER:O	2:B:295:ILE:HG22	2.18	0.44
2:B:333:SER:O	2:B:334:HIS:ND1	2.50	0.44
3:C:350:GLN:HB2	3:C:379:VAL:HG13	1.99	0.44
5:6:98:VAL:HG22	5:6:104:ILE:HG12	1.99	0.44
5:6:418:TYR:OH	5:6:460:ASP:OD2	2.33	0.44
1:A:297:LEU:HD13	1:A:418:TYR:CE1	2.52	0.44
6:F:77:PHE:CB	6:F:136:LEU:HD21	2.48	0.44
3:4:327:VAL:HG23	3:4:333:THR:O	2.18	0.44
3:4:466:LEU:HD13	3:4:467:ALA:N	2.33	0.44
3:4:566:SER:O	3:4:566:SER:OG	2.34	0.44
1:2:332:CYS:SG	1:2:333:ASN:N	2.91	0.44
4:5:655:GLY:O	4:5:659:GLY:N	2.50	0.44
6:7:332:PHE:CZ	6:7:336:LEU:HD11	2.53	0.44
1:A:406:CYS:SG	1:A:444:VAL:HG11	2.58	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:389:ASN:ND2	3:C:424:THR:OG1	2.51	0.43
5:E:612:SER:OG	5:E:614:TRP:O	2.21	0.43
2:B:148:CYS:O	2:B:152:LYS:N	2.51	0.43
2:B:195:ASP:OD1	2:B:195:ASP:N	2.50	0.43
3:C:485:PHE:CD1	3:C:747:VAL:HG22	2.52	0.43
3:C:639:THR:O	3:C:642:SER:OG	2.30	0.43
1:2:248:LEU:HA	1:2:255:LEU:HD12	1.99	0.43
2:3:25:ASP:OD2	2:3:31:ILE:N	2.51	0.43
2:3:590:ILE:HD11	2:3:621:LEU:HD13	2.00	0.43
10:3:1002:ADP:O3'	4:5:614:GLU:OE2	2.35	0.43
3:4:256:HIS:ND1	3:4:257:GLN:O	2.52	0.43
3:4:329:GLY:O	3:4:332:HIS:NE2	2.51	0.43
6:7:184:CYS:SG	6:7:187:CYS:N	2.91	0.43
1:A:297:LEU:HD11	1:A:394:LYS:HE3	2.00	0.43
6:F:389:GLN:NE2	9:F:1002:ATP:H2'	2.32	0.43
1:2:407:LYS:NZ	1:2:619:SER:O	2.31	0.43
1:2:413:GLU:N	1:2:445:ALA:O	2.45	0.43
1:2:675:LEU:CD2	9:2:1002:ATP:N6	2.82	0.43
3:4:348:ASP:O	3:4:376:ASN:N	2.48	0.43
2:B:638:ASP:N	2:B:641:ASP:OD2	2.50	0.43
1:2:618:THR:OG1	1:2:619:SER:N	2.52	0.43
1:2:557:THR:HG21	1:2:599:SER:HB2	2.00	0.43
1:A:221:ASP:O	1:A:227:ARG:NH1	2.46	0.43
4:D:250:ASP:OD1	4:D:251:ARG:N	2.49	0.43
4:D:353:ILE:O	4:D:357:LEU:HD23	2.19	0.43
1:2:621:GLN:OE1	1:2:623:ARG:NH2	2.52	0.43
2:3:597:LEU:O	2:3:601:ASP:N	2.52	0.43
3:4:518:GLN:NE2	9:4:903:ATP:H3'	2.34	0.43
5:6:632:ALA:HB2	5:6:640:VAL:HG22	2.01	0.43
6:7:361:GLY:N	6:7:373:GLY:O	2.47	0.43
4:D:251:ARG:O	4:D:254:CYS:N	2.46	0.43
3:4:233:VAL:O	3:4:236:THR:OG1	2.26	0.43
4:5:378:LEU:HD23	4:5:517:ILE:HD12	2.00	0.43
5:6:155:THR:OG1	5:6:198:SER:OG	2.25	0.43
3:C:365:GLN:O	6:F:477:THR:N	2.48	0.43
1:2:633:ILE:N	1:2:646:ASN:O	2.50	0.43
4:5:108:ASP:OD2	4:5:112:ARG:NH2	2.52	0.43
5:E:155:THR:N	5:E:198:SER:OG	2.48	0.43
6:F:131:MET:SD	6:F:131:MET:N	2.92	0.43
3:4:280:ASP:OD2	6:7:224:THR:OG1	2.37	0.43
4:5:136:SER:OG	4:5:139:SER:OG	2.27	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:5:489:ASN:OD1	4:5:489:ASN:N	2.51	0.43
2:3:208:ALA:CB	4:5:474:ILE:HD13	2.49	0.42
5:6:403:SER:HB2	9:6:902:ATP:O1B	2.18	0.42
5:6:430:THR:HG22	5:6:449:LEU:HD23	2.02	0.42
4:D:130:SER:O	4:D:150:LYS:NZ	2.52	0.42
6:F:389:GLN:NE2	9:F:1002:ATP:C2'	2.82	0.42
1:2:501:GLY:O	1:2:776:ALA:HB2	2.18	0.42
4:5:439:GLY:O	4:5:567:ARG:NH2	2.51	0.42
1:A:684:VAL:HG12	5:E:586:ILE:HB	2.01	0.42
2:B:43:ASN:O	2:B:95:TYR:OH	2.15	0.42
1:2:423:ASP:OD1	1:2:424:GLY:N	2.50	0.42
1:2:500:PHE:HB2	1:2:776:ALA:HB1	2.01	0.42
1:2:802:PHE:O	1:2:806:GLN:NE2	2.48	0.42
3:4:473:HIS:CD2	9:4:903:ATP:N6	2.87	0.42
5:6:421:GLY:N	5:6:460:ASP:O	2.44	0.42
6:F:154:ALA:O	6:F:157:VAL:HG12	2.19	0.42
4:5:185:ARG:N	4:5:189:GLU:OE2	2.52	0.42
1:A:618:THR:OG1	1:A:619:SER:N	2.53	0.42
1:2:589:PHE:CZ	1:2:600:ILE:HD13	2.53	0.42
2:3:650:GLN:O	2:3:654:PHE:N	2.50	0.42
3:4:300:GLN:O	3:4:317:MET:N	2.53	0.42
5:6:594:ILE:CD1	5:6:645:VAL:HG13	2.48	0.42
2:B:352:SER:HB2	10:B:1002:ADP:O2A	2.20	0.42
4:D:421:ASP:O	4:D:425:ARG:N	2.45	0.42
2:3:638:ASP:OD1	2:3:639:LEU:N	2.52	0.42
3:4:732:ARG:HH21	9:6:902:ATP:PG	2.41	0.42
2:3:292:SER:O	2:3:295:ILE:HG22	2.19	0.42
3:C:200:ILE:HG21	3:C:258:ILE:HD12	2.01	0.42
2:3:593:GLU:HG3	2:3:646:VAL:HG21	2.01	0.42
6:F:332:PHE:CE2	6:F:336:LEU:HD11	2.55	0.42
6:F:361:GLY:N	6:F:373:GLY:O	2.51	0.42
6:F:396:ARG:O	6:F:560:ARG:NH2	2.53	0.42
6:7:591:GLU:O	6:7:595:SER:N	2.45	0.42
3:C:511:ASP:O	3:C:516:LYS:NZ	2.53	0.42
1:2:525:PRO:CB	9:2:1002:ATP:PG	3.08	0.42
3:4:574:ASP:OD1	3:4:575:GLU:N	2.53	0.42
4:5:399:PRO:C	4:5:400:ILE:HD12	2.41	0.42
3:C:535:GLY:N	3:C:574:ASP:O	2.46	0.42
1:2:410:ASP:N	1:2:410:ASP:OD1	2.53	0.41
1:2:525:PRO:CA	9:2:1002:ATP:O1G	2.67	0.41
4:5:376:ASN:OD1	4:5:484:VAL:N	2.48	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:370:GLY:N	2:B:409:ASP:O	2.53	0.41
2:3:187:GLU:OE2	6:7:72:ARG:NE	2.49	0.41
1:A:633:ILE:N	1:A:646:ASN:O	2.50	0.41
3:C:495:THR:HA	5:E:563:ILE:HG21	2.02	0.41
4:D:155:ILE:O	4:D:260:GLY:N	2.48	0.41
4:D:647:SER:O	4:D:651:ALA:N	2.48	0.41
1:2:177:LEU:HD12	1:2:178:LYS:HG2	2.02	0.41
2:3:459:TYR:HB3	2:3:486:LEU:HD22	2.03	0.41
10:3:1002:ADP:HO2'	10:3:1002:ADP:HO3'	1.56	0.41
3:4:282:LEU:HD12	3:4:392:GLY:O	2.20	0.41
2:B:390:GLU:OE2	2:B:391:ARG:N	2.53	0.41
3:C:663:ALA:HB3	6:F:582:THR:HG23	2.03	0.41
5:6:652:LEU:HD12	5:6:653:ASN:N	2.36	0.41
2:B:299:LEU:O	2:B:303:LEU:N	2.53	0.41
3:C:156:ASP:OD1	3:C:156:ASP:N	2.54	0.41
6:F:150:ARG:NH1	6:F:239:GLU:OE2	2.53	0.41
2:B:439:HIS:O	2:B:439:HIS:ND1	2.54	0.41
5:E:98:VAL:O	5:E:104:ILE:HD13	2.21	0.41
3:4:495:THR:HA	5:6:563:ILE:HG21	2.02	0.41
4:5:32:GLN:NE2	4:5:105:GLU:OE2	2.53	0.41
5:6:117:LEU:HD22	5:6:134:LEU:CD2	2.51	0.41
5:6:371:MET:HA	5:6:390:ILE:HD11	2.02	0.41
5:6:385:SER:OG	5:6:496:ARG:NH2	2.53	0.41
2:B:157:ARG:NH1	2:B:173:VAL:O	2.54	0.41
3:C:200:ILE:HG23	3:C:205:GLU:O	2.21	0.41
3:C:222:LEU:O	3:C:226:LEU:N	2.48	0.41
5:E:145:HIS:ND1	5:E:205:LYS:O	2.53	0.41
5:E:325:ILE:O	5:E:329:MET:N	2.49	0.41
4:5:589:MET:SD	4:5:645:GLN:NE2	2.94	0.41
3:C:732:ARG:NH2	9:E:1002:ATP:PG	2.94	0.41
1:2:527:THR:OG1	1:2:529:LYS:NZ	2.51	0.41
2:3:390:GLU:OE2	2:3:391:ARG:N	2.54	0.41
2:3:412:ASP:OD1	2:3:413:LYS:N	2.53	0.41
1:A:536:ILE:HD12	1:A:627:ILE:HG21	2.03	0.41
2:B:378:LEU:HD12	2:B:418:ASP:HB3	2.02	0.41
1:2:536:ILE:HD12	1:2:627:ILE:HG21	2.02	0.41
2:3:49:VAL:O	2:3:103:GLU:N	2.53	0.41
3:4:603:ILE:HG21	5:6:223:SER:HB3	2.02	0.41
4:5:155:ILE:HD12	4:5:257:VAL:HG21	2.03	0.41
4:5:644:PHE:O	4:5:648:THR:N	2.52	0.41
1:A:222:MET:O	1:A:226:ASN:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:414:LEU:HD13	1:A:444:VAL:HG22	2.01	0.41
1:A:423:ASP:OD1	1:A:424:GLY:N	2.53	0.41
2:B:642:ALA:O	2:B:646:VAL:HG23	2.20	0.41
3:C:574:ASP:OD1	3:C:575:GLU:N	2.54	0.41
3:C:646:LEU:HD11	3:C:740:LEU:HD21	2.03	0.41
9:C:1002:ATP:O1A	6:F:604:ARG:NH1	2.53	0.41
9:C:1002:ATP:PA	6:F:604:ARG:HH22	2.43	0.41
4:D:348:ASP:OD1	4:D:348:ASP:N	2.54	0.41
5:E:430:THR:OG1	5:E:431:ALA:N	2.54	0.41
5:E:474:HIS:HB2	5:E:526:ILE:HD11	2.03	0.41
6:F:343:GLU:OE1	6:F:343:GLU:N	2.50	0.41
6:F:540:VAL:O	6:F:544:SER:N	2.48	0.41
6:7:388:SER:HB2	9:7:1002:ATP:O1B	2.21	0.41
4:D:217:ASP:N	4:D:217:ASP:OD1	2.54	0.41
4:D:589:MET:SD	4:D:645:GLN:NE2	2.94	0.41
6:F:518:LEU:O	6:F:640:SER:OG	2.37	0.41
6:F:622:VAL:HG12	6:F:624:VAL:H	1.85	0.41
1:2:414:LEU:HD12	1:2:415:THR:N	2.37	0.40
4:5:83:ASP:OD1	4:5:83:ASP:N	2.55	0.40
4:D:460:GLU:O	4:D:464:GLN:N	2.51	0.40
2:3:439:HIS:ND1	2:3:439:HIS:O	2.54	0.40
6:F:546:GLN:OE1	6:F:546:GLN:N	2.51	0.40
6:F:599:THR:O	6:F:641:LYS:NZ	2.55	0.40
1:2:232:VAL:O	1:2:286:SER:N	2.49	0.40
1:2:316:THR:HG22	1:2:375:ARG:O	2.21	0.40
6:7:154:ALA:O	6:7:157:VAL:HG12	2.21	0.40
6:7:622:VAL:HG12	6:7:624:VAL:H	1.86	0.40
2:B:480:ASP:O	2:B:481:LEU:HD22	2.21	0.40
3:C:603:ILE:HG21	5:E:223:SER:HB3	2.03	0.40
4:D:143:ASP:OD1	4:D:144:MET:N	2.55	0.40
2:3:50:ASN:OD1	2:3:53:ASP:N	2.48	0.40
2:3:385:ASP:OD2	2:3:388:THR:HG22	2.22	0.40
3:4:586:VAL:HG13	3:4:596:LEU:HD13	2.04	0.40
5:6:346:LEU:HD12	5:6:567:TYR:CZ	2.56	0.40
5:6:463:ASP:OD1	5:6:464:LYS:N	2.54	0.40
1:A:285:ILE:N	1:A:442:ASN:OD1	2.53	0.40
3:4:193:TYR:HH	3:4:214:HIS:HD1	1.64	0.40
3:4:484:LEU:HD23	3:4:570:ILE:HD12	2.03	0.40
3:4:590:VAL:O	3:4:594:GLN:N	2.50	0.40
3:4:663:ALA:HB3	6:7:582:THR:HG23	2.04	0.40
4:5:253:LEU:HD11	4:5:299:ILE:CG1	2.50	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:5:321:GLU:OE1	4:5:324:ARG:NE	2.47	0.40
6:7:439:GLN:N	6:7:481:ARG:O	2.51	0.40
2:B:371:ARG:NH2	2:B:410:GLU:OE1	2.55	0.40
4:D:69:TRP:O	4:D:70:ILE:HG23	2.21	0.40
4:D:379:MET:HE1	4:D:390:LEU:HD23	2.03	0.40
6:F:40:LEU:CD1	6:F:48:LEU:HD22	2.51	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	584/904 (65%)	545 (93%)	39 (7%)	0	100	100
1	A	584/904 (65%)	548 (94%)	36 (6%)	0	100	100
2	3	584/810 (72%)	547 (94%)	37 (6%)	0	100	100
2	B	584/810 (72%)	540 (92%)	44 (8%)	0	100	100
3	4	568/866 (66%)	543 (96%)	25 (4%)	0	100	100
3	C	568/866 (66%)	537 (94%)	31 (6%)	0	100	100
4	5	577/734 (79%)	549 (95%)	28 (5%)	0	100	100
4	D	577/734 (79%)	559 (97%)	18 (3%)	0	100	100
5	6	583/821 (71%)	559 (96%)	24 (4%)	0	100	100
5	E	583/821 (71%)	566 (97%)	17 (3%)	0	100	100
6	7	593/719 (82%)	566 (95%)	27 (5%)	0	100	100
6	F	593/719 (82%)	567 (96%)	26 (4%)	0	100	100
All	All	6978/9708 (72%)	6626 (95%)	352 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	524/781 (67%)	520 (99%)	4 (1%)	79	84
1	A	524/781 (67%)	521 (99%)	3 (1%)	84	88
2	3	513/708 (72%)	507 (99%)	6 (1%)	67	77
2	B	513/708 (72%)	507 (99%)	6 (1%)	67	77
3	4	515/755 (68%)	510 (99%)	5 (1%)	73	80
3	C	515/755 (68%)	513 (100%)	2 (0%)	89	91
4	5	512/625 (82%)	509 (99%)	3 (1%)	84	88
4	D	512/625 (82%)	507 (99%)	5 (1%)	73	80
5	6	530/724 (73%)	526 (99%)	4 (1%)	79	84
5	E	530/724 (73%)	526 (99%)	4 (1%)	79	84
6	7	530/619 (86%)	526 (99%)	4 (1%)	79	84
6	F	530/619 (86%)	527 (99%)	3 (1%)	84	88
All	All	6248/8424 (74%)	6199 (99%)	49 (1%)	77	84

All (49) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	2	352	CYS
1	2	403	VAL
1	2	410	ASP
1	2	524	ASP
2	3	76	PHE
2	3	196	HIS
2	3	218	ASP
2	3	223	ASP
2	3	371	ARG
2	3	409	ASP
3	4	275	ASN
3	4	278	ASP
3	4	412	TYR
3	4	515	SER

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Mol	Chain	Res	Type
3	4	567	ASP
4	5	128	LEU
4	5	463	GLU
4	5	481	ARG
5	6	41	ASP
5	6	244	PHE
5	6	419	THR
5	6	613	SER
6	7	105	HIS
6	7	184	CYS
6	7	333	TYR
6	7	502	GLU
1	A	352	CYS
1	A	468	SER
1	A	563	HIS
2	B	28	ASP
2	B	76	PHE
2	B	152	LYS
2	B	196	HIS
2	B	218	ASP
2	B	409	ASP
3	C	348	ASP
3	C	595	THR
4	D	141	LYS
4	D	145	MET
4	D	344	PHE
4	D	382	ASP
4	D	481	ARG
5	E	347	TYR
5	E	400	THR
5	E	419	THR
5	E	430	THR
6	F	102	TYR
6	F	197	SER
6	F	296	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 30 ligands modelled in this entry, 20 are monoatomic - leaving 10 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
9	ATP	2	1002	8	28,33,33	0.73	0	34,52,52	1.42	3 (8%)
9	ATP	A	1002	8	28,33,33	0.72	0	34,52,52	1.42	3 (8%)
9	ATP	6	902	8	28,33,33	0.76	0	34,52,52	1.24	3 (8%)
9	ATP	4	903	8	28,33,33	0.66	0	34,52,52	0.92	1 (2%)
9	ATP	7	1002	8	28,33,33	0.82	1 (3%)	34,52,52	1.42	1 (2%)
9	ATP	E	1002	8	28,33,33	0.75	0	34,52,52	1.24	2 (5%)
10	ADP	B	1002	8	24,29,29	0.86	0	29,45,45	1.25	2 (6%)
9	ATP	C	1002	8	28,33,33	0.65	0	34,52,52	0.92	1 (2%)
10	ADP	3	1002	8	24,29,29	0.85	0	29,45,45	1.25	2 (6%)
9	ATP	F	1002	8	28,33,33	0.81	1 (3%)	34,52,52	1.42	2 (5%)

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
9	ATP	2	1002	8	-	4/18/38/38	0/3/3/3
9	ATP	A	1002	8	-	4/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	ATP	6	902	8	-	4/18/38/38	0/3/3/3
9	ATP	4	903	8	-	3/18/38/38	0/3/3/3
9	ATP	7	1002	8	-	5/18/38/38	0/3/3/3
9	ATP	E	1002	8	-	4/18/38/38	0/3/3/3
10	ADP	B	1002	8	-	2/12/32/32	0/3/3/3
9	ATP	C	1002	8	-	3/18/38/38	0/3/3/3
10	ADP	3	1002	8	-	2/12/32/32	0/3/3/3
9	ATP	F	1002	8	-	5/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	F	1002	ATP	PB-O3B	-2.61	1.56	1.59
9	7	1002	ATP	PB-O3B	-2.56	1.56	1.59

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	7	1002	ATP	C4'-O4'-C1'	-6.58	103.90	109.92
9	F	1002	ATP	C4'-O4'-C1'	-6.58	103.90	109.92
9	A	1002	ATP	C4'-O4'-C1'	-6.39	104.07	109.92
9	2	1002	ATP	C4'-O4'-C1'	-6.37	104.09	109.92
9	E	1002	ATP	C4'-O4'-C1'	-4.61	105.70	109.92
9	6	902	ATP	C4'-O4'-C1'	-4.60	105.71	109.92
10	3	1002	ADP	N3-C2-N1	-4.18	123.00	128.67
10	B	1002	ADP	N3-C2-N1	-4.16	123.03	128.67
10	3	1002	ADP	C4-C5-N7	-2.66	106.53	109.34
10	B	1002	ADP	C4-C5-N7	-2.65	106.53	109.34
9	C	1002	ATP	C5-C6-N6	2.35	123.89	120.31
9	4	903	ATP	C5-C6-N6	2.35	123.89	120.31
9	E	1002	ATP	C5-C6-N6	2.32	123.85	120.31
9	A	1002	ATP	C5-C6-N6	2.31	123.84	120.31
9	6	902	ATP	C5-C6-N6	2.31	123.83	120.31
9	2	1002	ATP	C5-C6-N6	2.29	123.80	120.31
9	2	1002	ATP	O3'-C3'-C4'	-2.05	105.19	111.08
9	A	1002	ATP	O3'-C3'-C4'	-2.02	105.27	111.08
9	F	1002	ATP	C5-C6-N6	2.01	123.37	120.31
9	6	902	ATP	O2'-C2'-C3'	-2.00	105.41	111.82

There are no chirality outliers.

All (36) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	2	1002	ATP	C5'-O5'-PA-O1A
9	2	1002	ATP	C5'-O5'-PA-O3A
9	4	903	ATP	C5'-O5'-PA-O2A
9	6	902	ATP	PB-O3B-PG-O2G
9	6	902	ATP	C5'-O5'-PA-O2A
9	6	902	ATP	C5'-O5'-PA-O3A
9	7	1002	ATP	C5'-O5'-PA-O2A
9	7	1002	ATP	C5'-O5'-PA-O3A
9	A	1002	ATP	C5'-O5'-PA-O1A
9	A	1002	ATP	C5'-O5'-PA-O3A
9	C	1002	ATP	C5'-O5'-PA-O2A
9	E	1002	ATP	PB-O3B-PG-O2G
9	E	1002	ATP	C5'-O5'-PA-O2A
9	E	1002	ATP	C5'-O5'-PA-O3A
9	F	1002	ATP	C5'-O5'-PA-O2A
9	F	1002	ATP	C5'-O5'-PA-O3A
9	7	1002	ATP	O4'-C4'-C5'-O5'
9	F	1002	ATP	O4'-C4'-C5'-O5'
9	7	1002	ATP	C4'-C5'-O5'-PA
9	F	1002	ATP	C4'-C5'-O5'-PA
10	3	1002	ADP	PA-O3A-PB-O1B
10	B	1002	ADP	PA-O3A-PB-O1B
9	7	1002	ATP	C3'-C4'-C5'-O5'
9	F	1002	ATP	C3'-C4'-C5'-O5'
9	2	1002	ATP	PA-O3A-PB-O1B
9	A	1002	ATP	PA-O3A-PB-O1B
9	2	1002	ATP	C5'-O5'-PA-O2A
9	4	903	ATP	C5'-O5'-PA-O1A
9	4	903	ATP	C5'-O5'-PA-O3A
9	A	1002	ATP	C5'-O5'-PA-O2A
9	C	1002	ATP	C5'-O5'-PA-O1A
9	C	1002	ATP	C5'-O5'-PA-O3A
10	3	1002	ADP	C5'-O5'-PA-O1A
10	B	1002	ADP	C5'-O5'-PA-O1A
9	6	902	ATP	PB-O3B-PG-O1G
9	E	1002	ATP	PB-O3B-PG-O1G

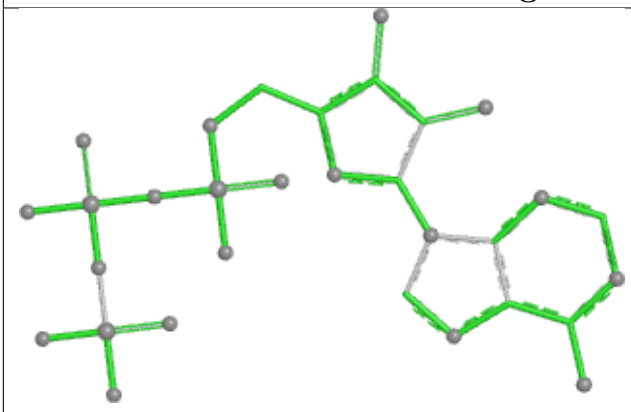
There are no ring outliers.

10 monomers are involved in 67 short contacts:

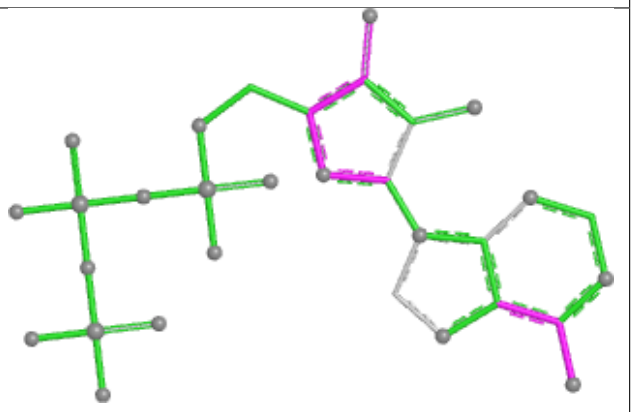
Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	2	1002	ATP	14	0
9	A	1002	ATP	8	0
9	6	902	ATP	5	0
9	4	903	ATP	6	0
9	7	1002	ATP	2	0
9	E	1002	ATP	8	0
10	B	1002	ADP	5	0
9	C	1002	ATP	6	0
10	3	1002	ADP	6	0
9	F	1002	ATP	7	0

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.

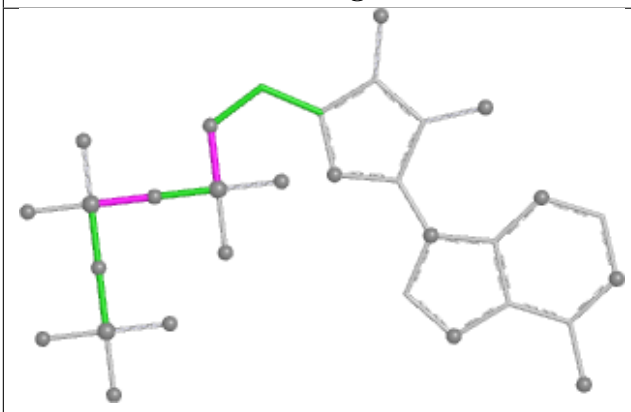
Ligand ATP 2 1002



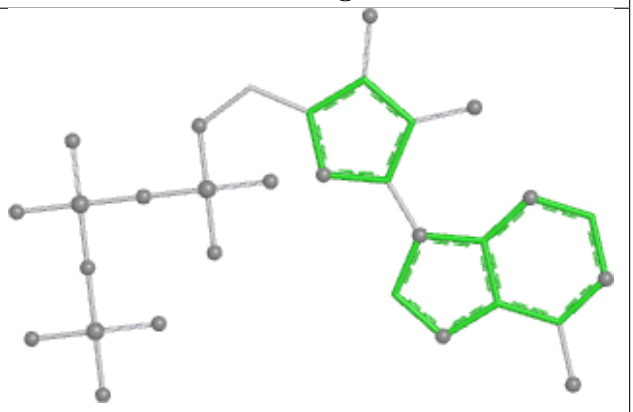
Bond lengths



Bond angles

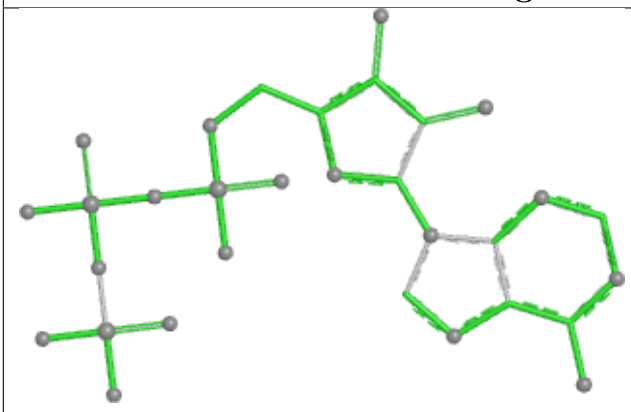


Torsions

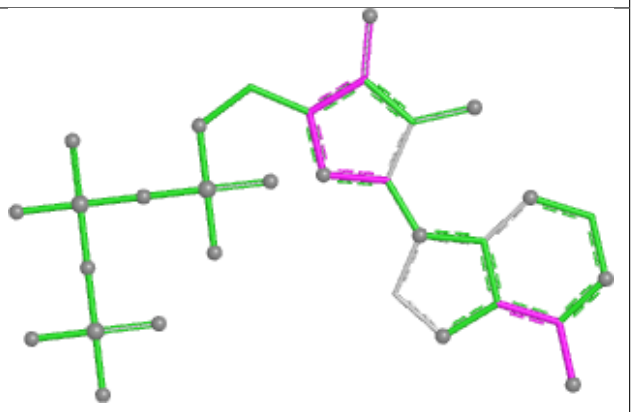


Rings

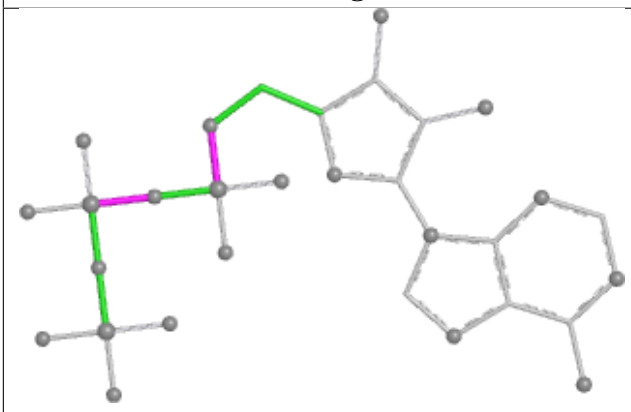
Ligand ATP A 1002



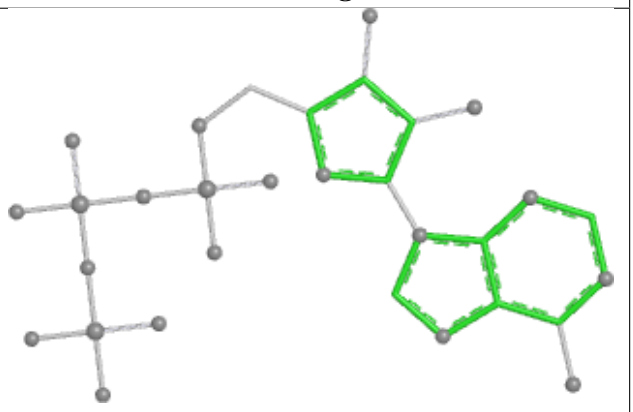
Bond lengths



Bond angles

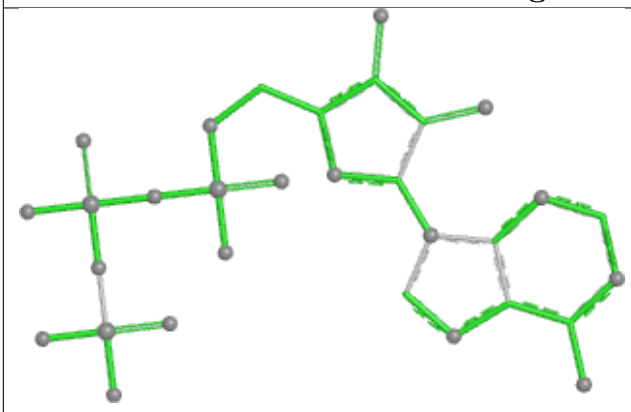


Torsions

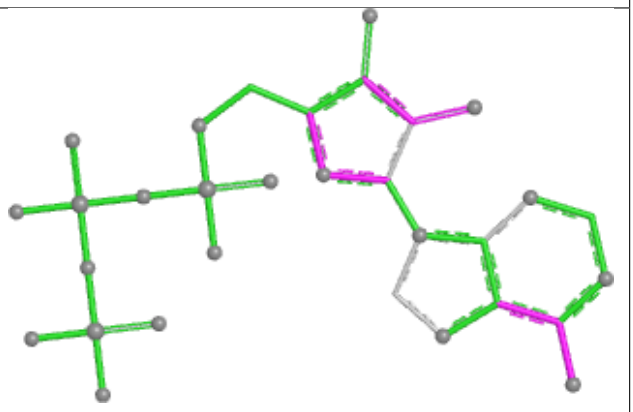


Rings

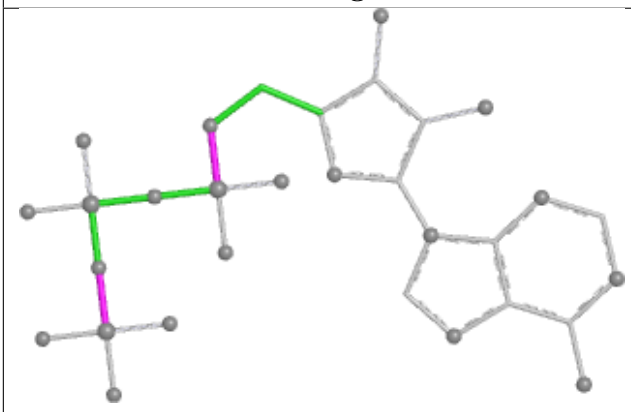
Ligand ATP 6 902



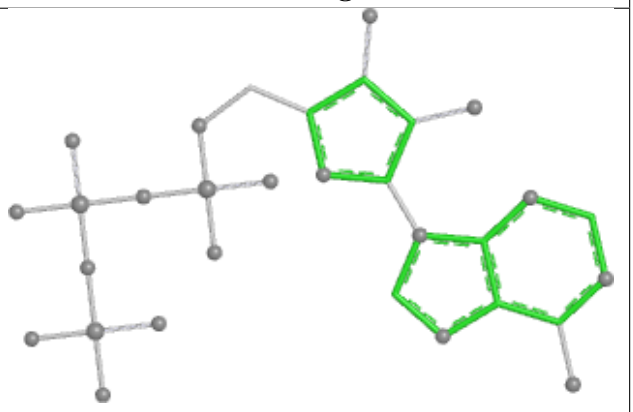
Bond lengths



Bond angles

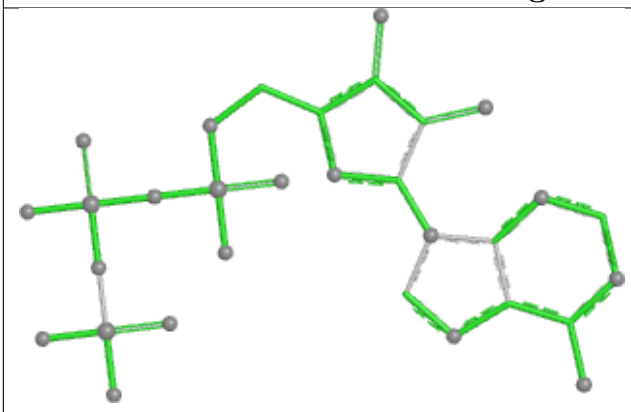


Torsions

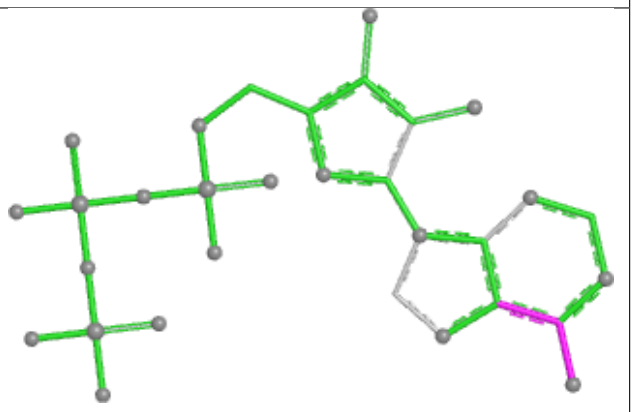


Rings

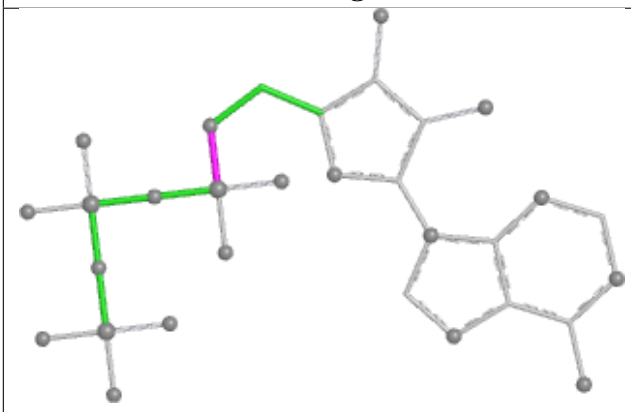
Ligand ATP 4 903



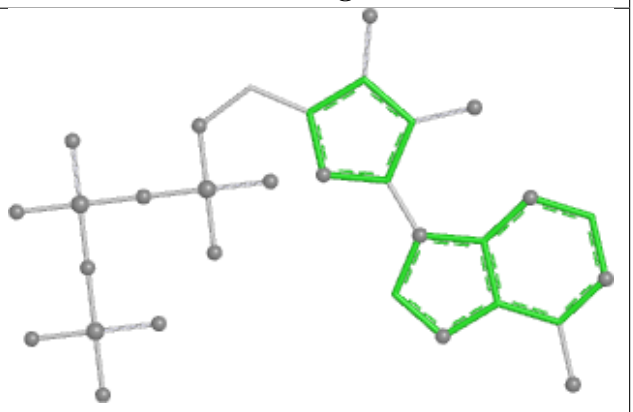
Bond lengths



Bond angles

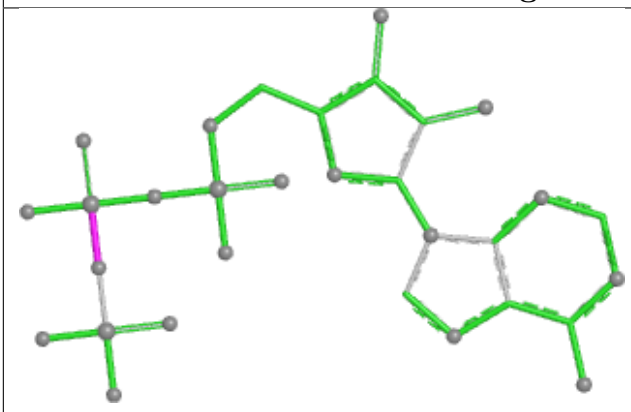


Torsions

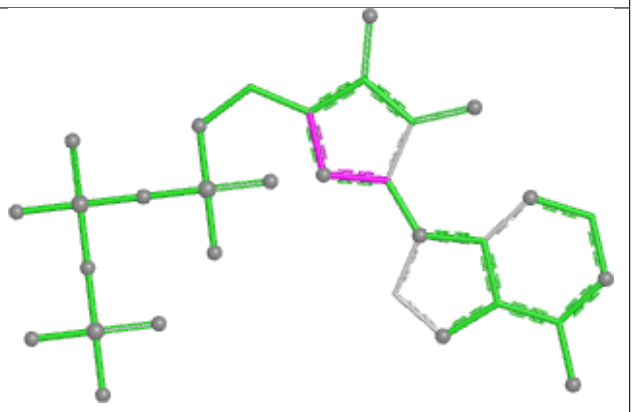


Rings

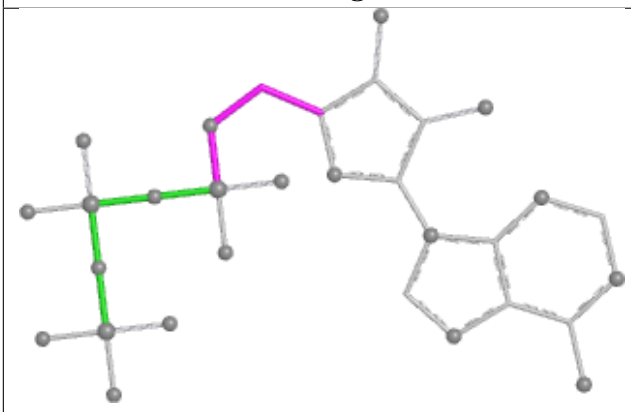
Ligand ATP 7 1002



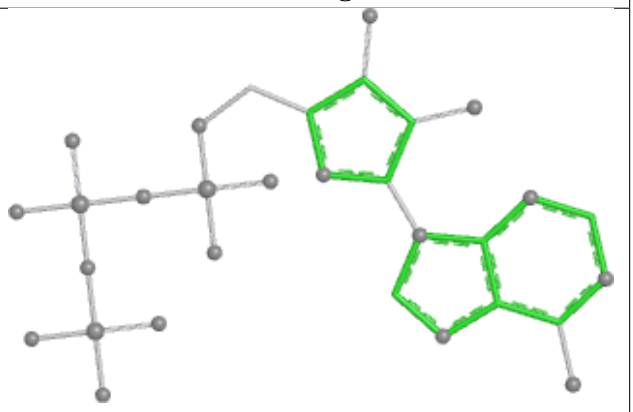
Bond lengths



Bond angles

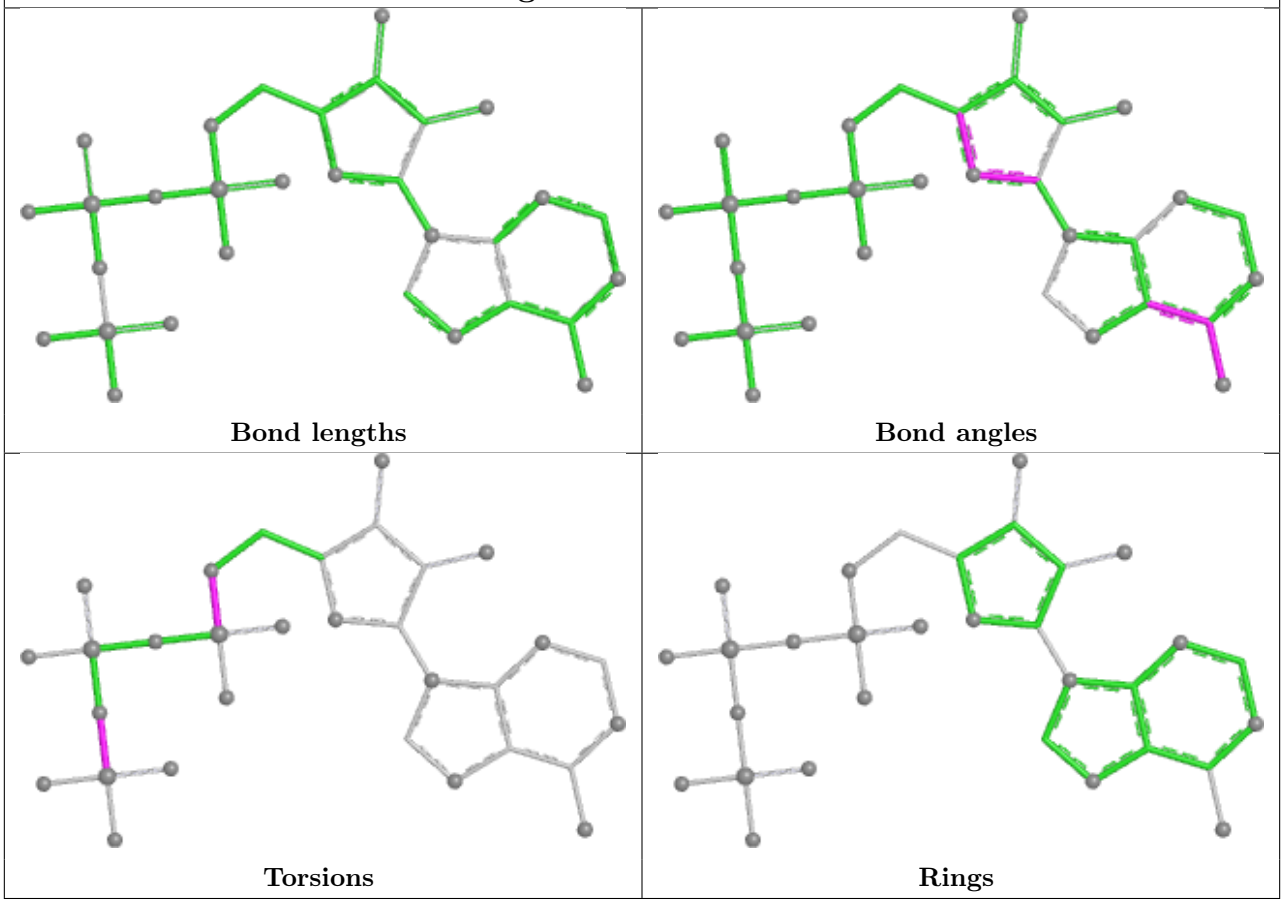


Torsions

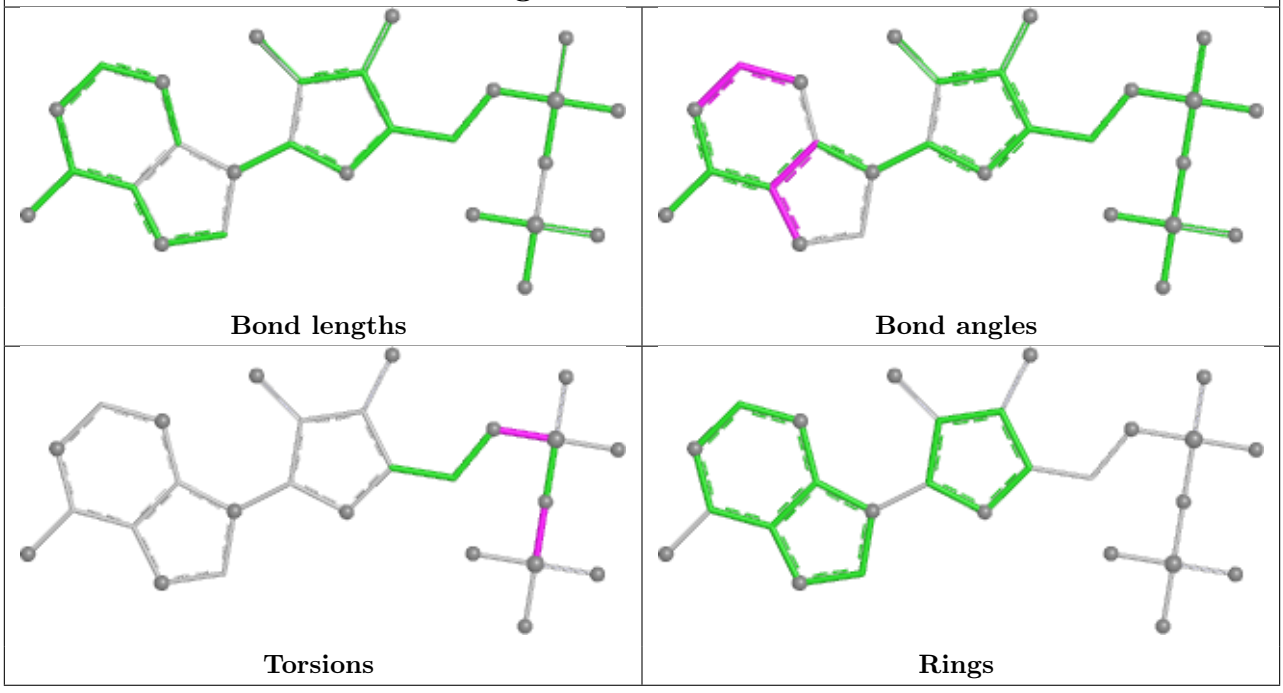


Rings

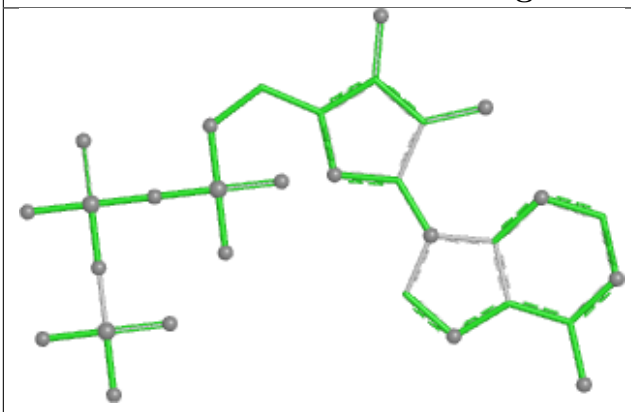
Ligand ATP E 1002



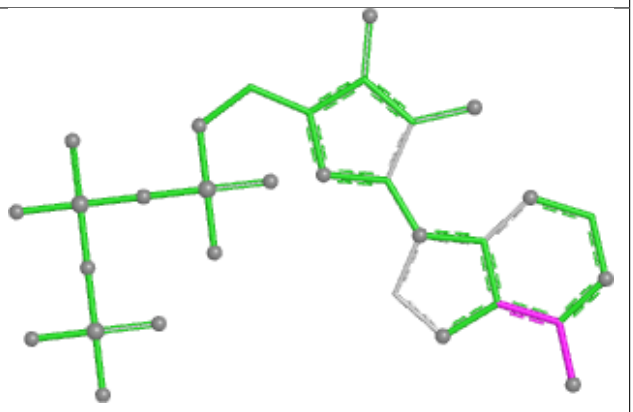
Ligand ADP B 1002



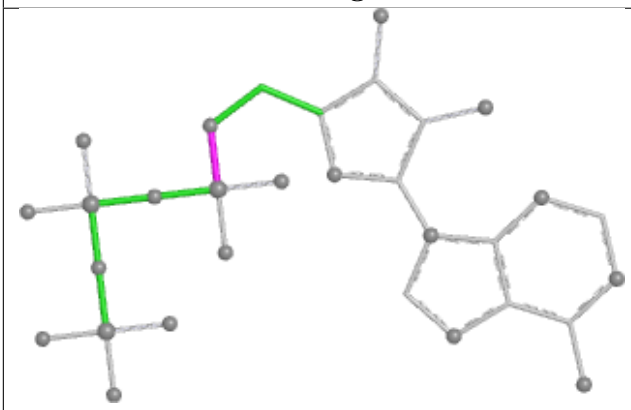
Ligand ATP C 1002



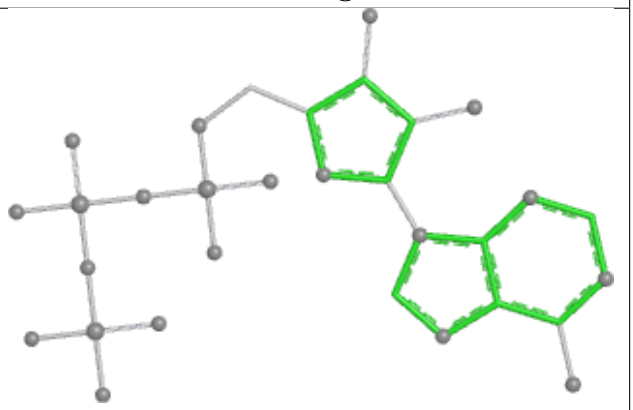
Bond lengths



Bond angles

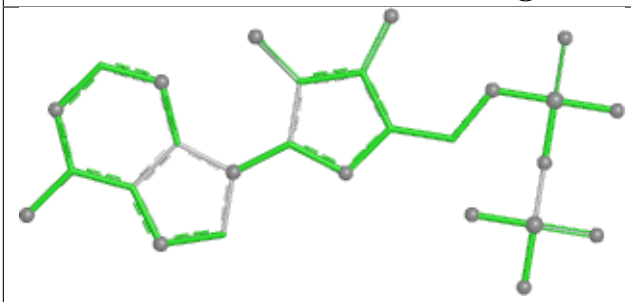


Torsions

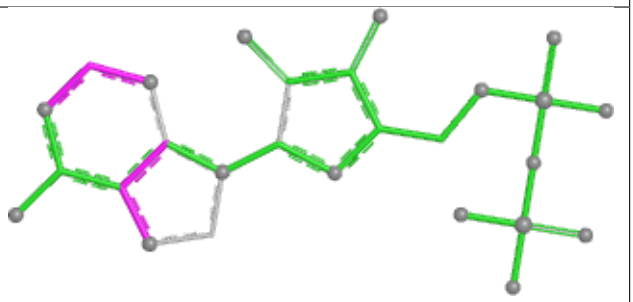


Rings

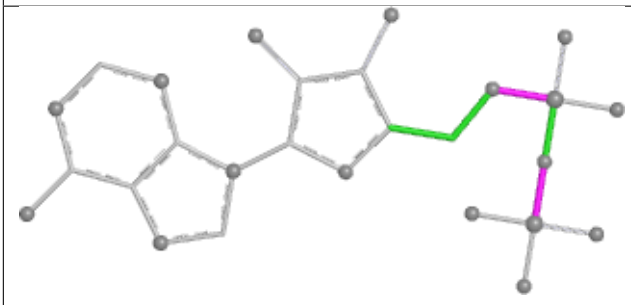
Ligand ADP 3 1002



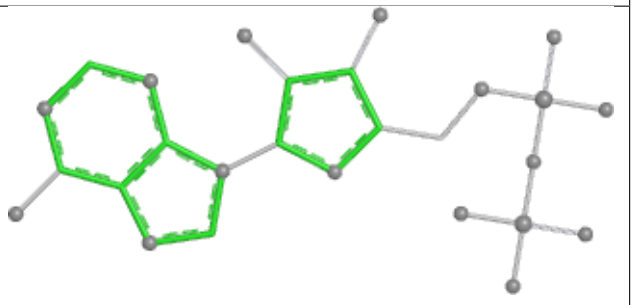
Bond lengths



Bond angles

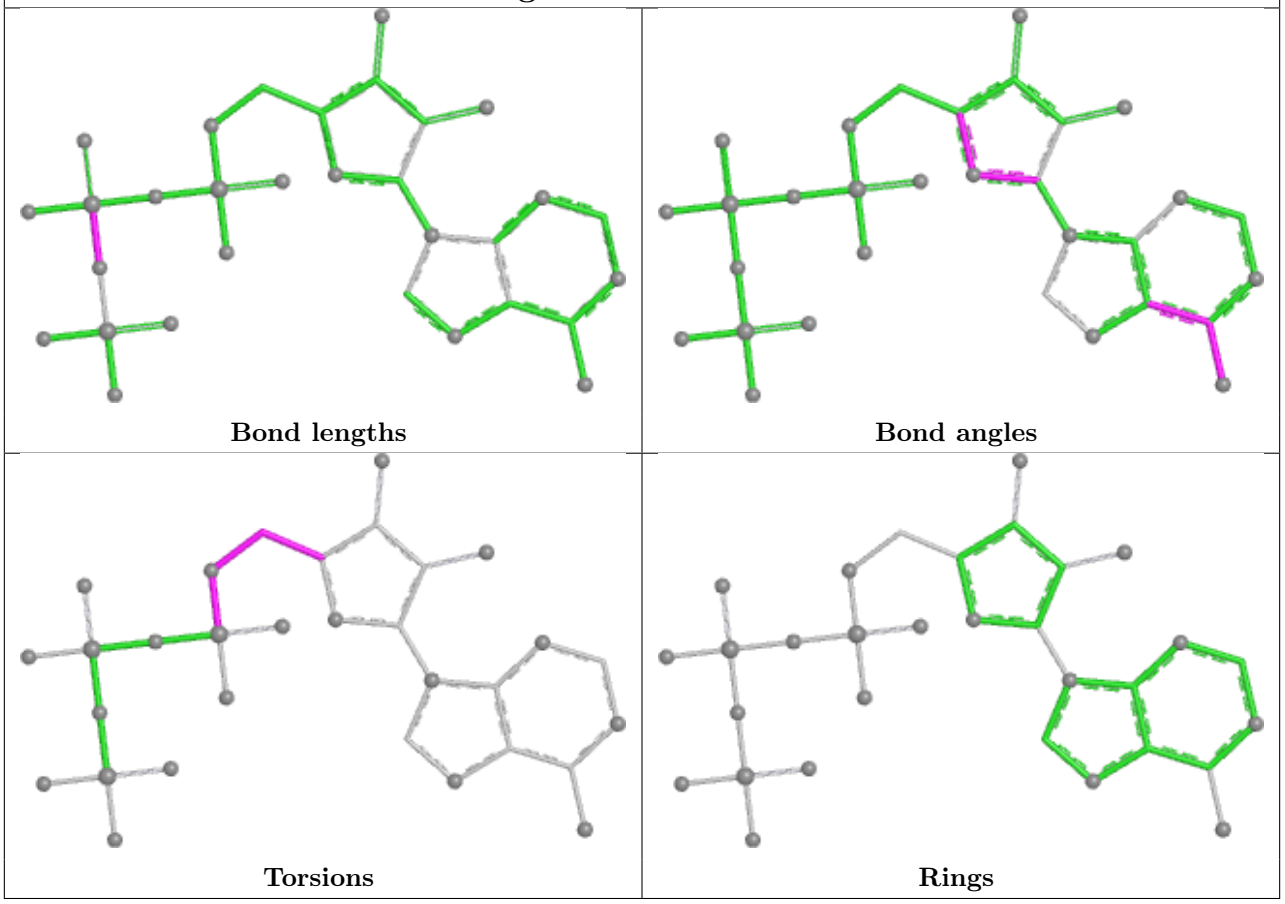


Torsions



Rings

Ligand ATP F 1002



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.

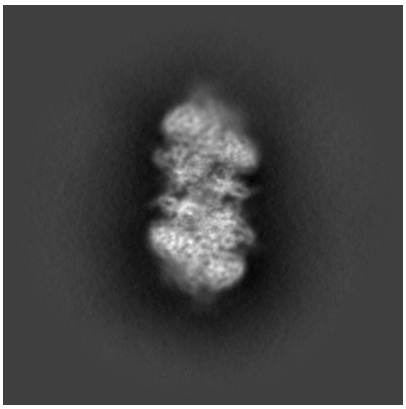
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-43709. These allow visual inspection of the internal detail of the map and identification of artifacts.

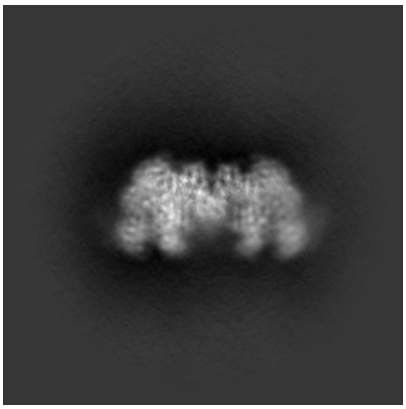
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

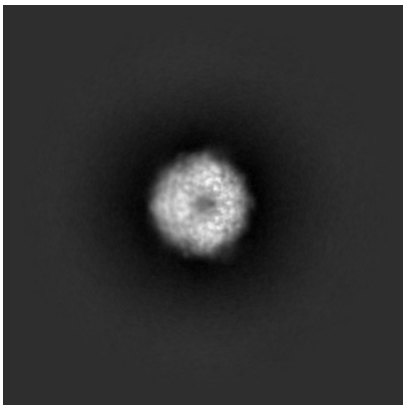
6.1.1 Primary map



X

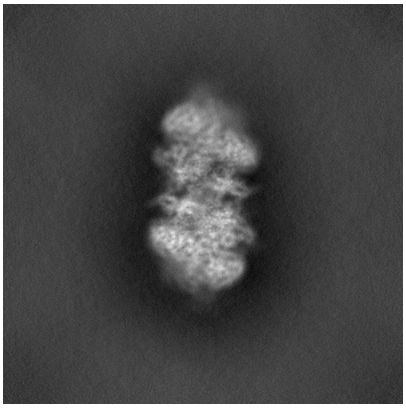


Y

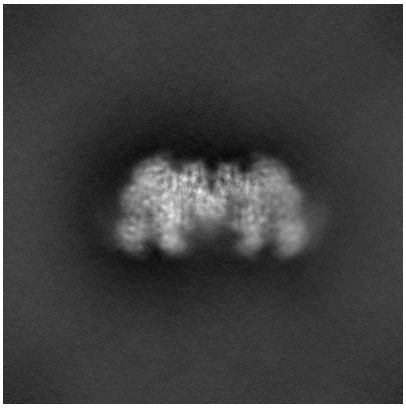


Z

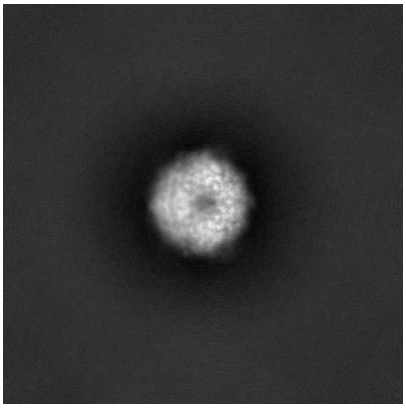
6.1.2 Raw map



X



Y

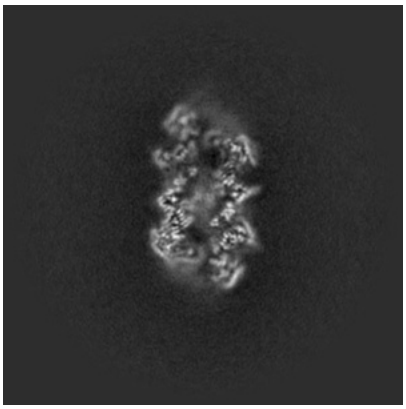


Z

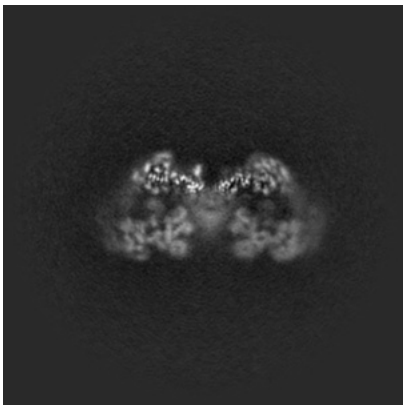
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

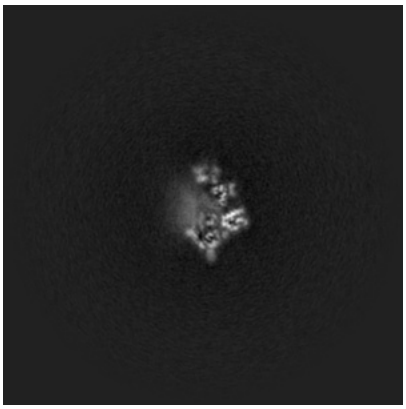
6.2.1 Primary map



X Index: 300

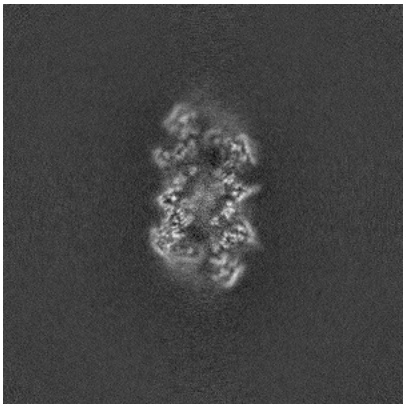


Y Index: 300

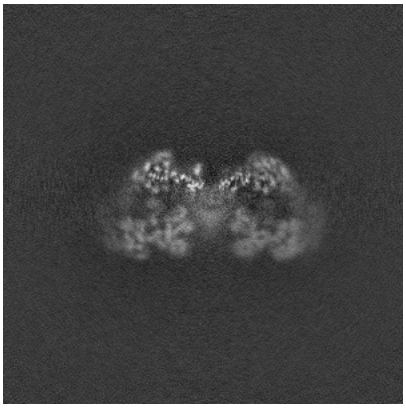


Z Index: 300

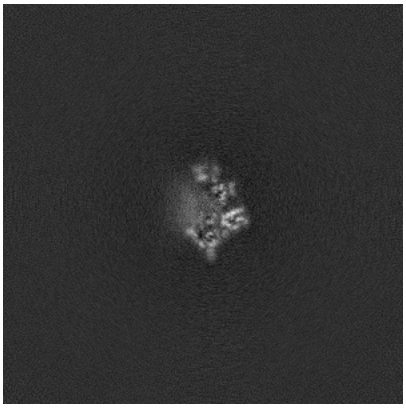
6.2.2 Raw map



X Index: 300



Y Index: 300

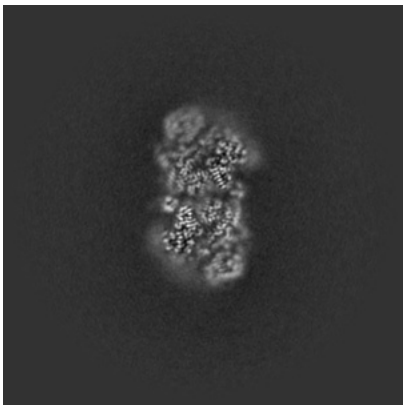


Z Index: 300

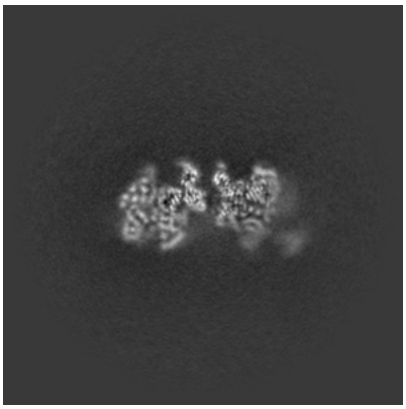
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

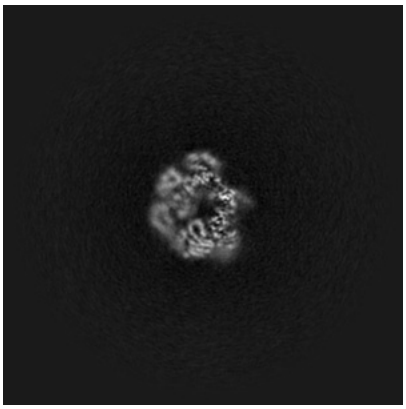
6.3.1 Primary map



X Index: 321

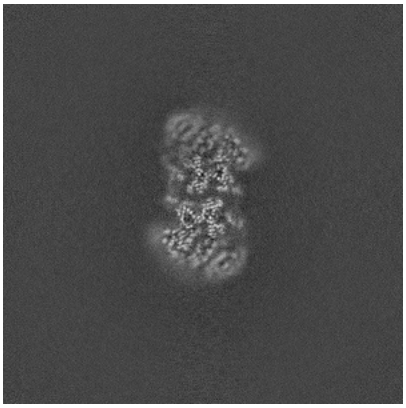


Y Index: 338

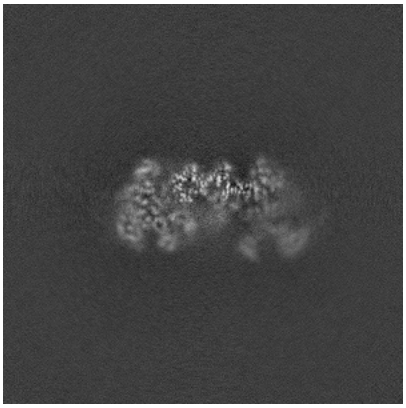


Z Index: 254

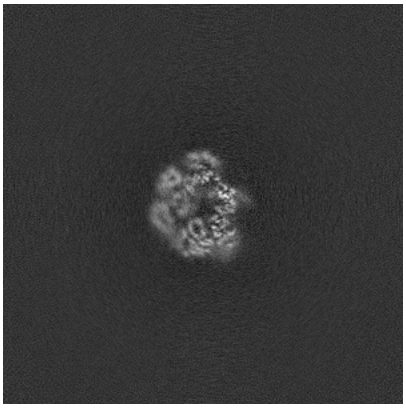
6.3.2 Raw map



X Index: 328



Y Index: 323

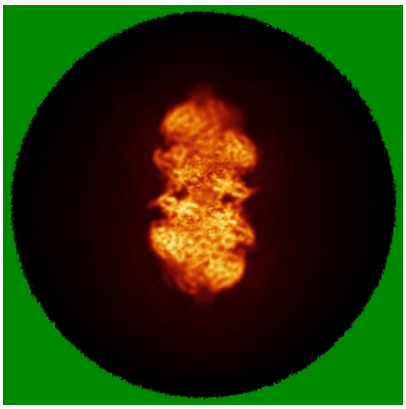


Z Index: 255

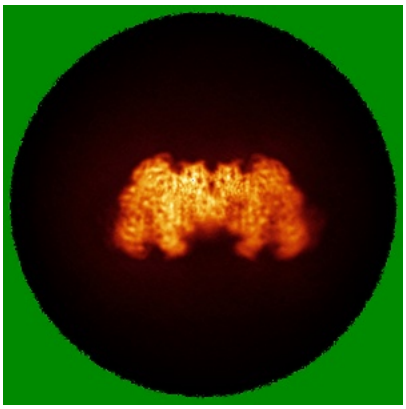
The images above show the largest variance slices of the map in three orthogonal directions.

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

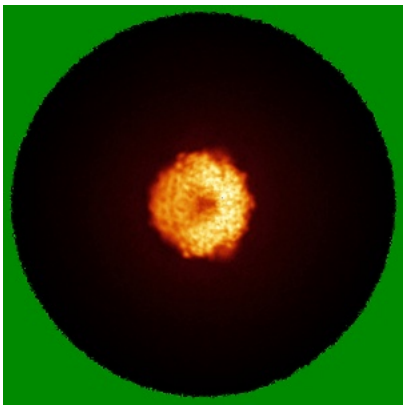
6.4.1 Primary map



X

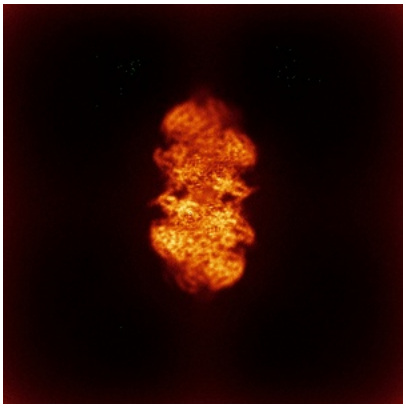


Y

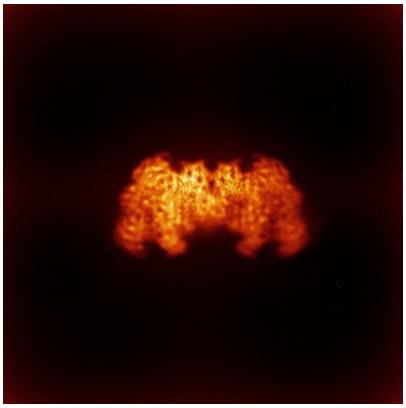


Z

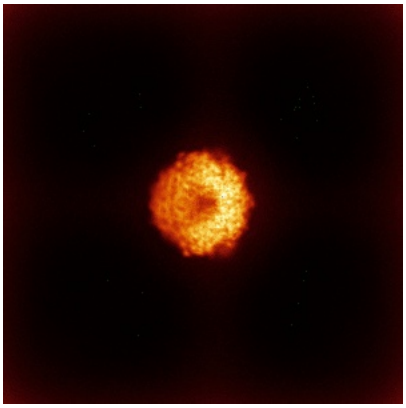
6.4.2 Raw map



X



Y



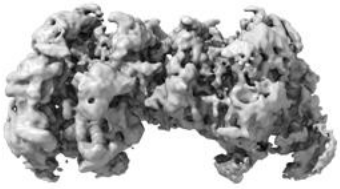
Z

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

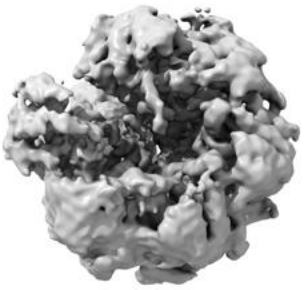
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.18. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X

Y

Z

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

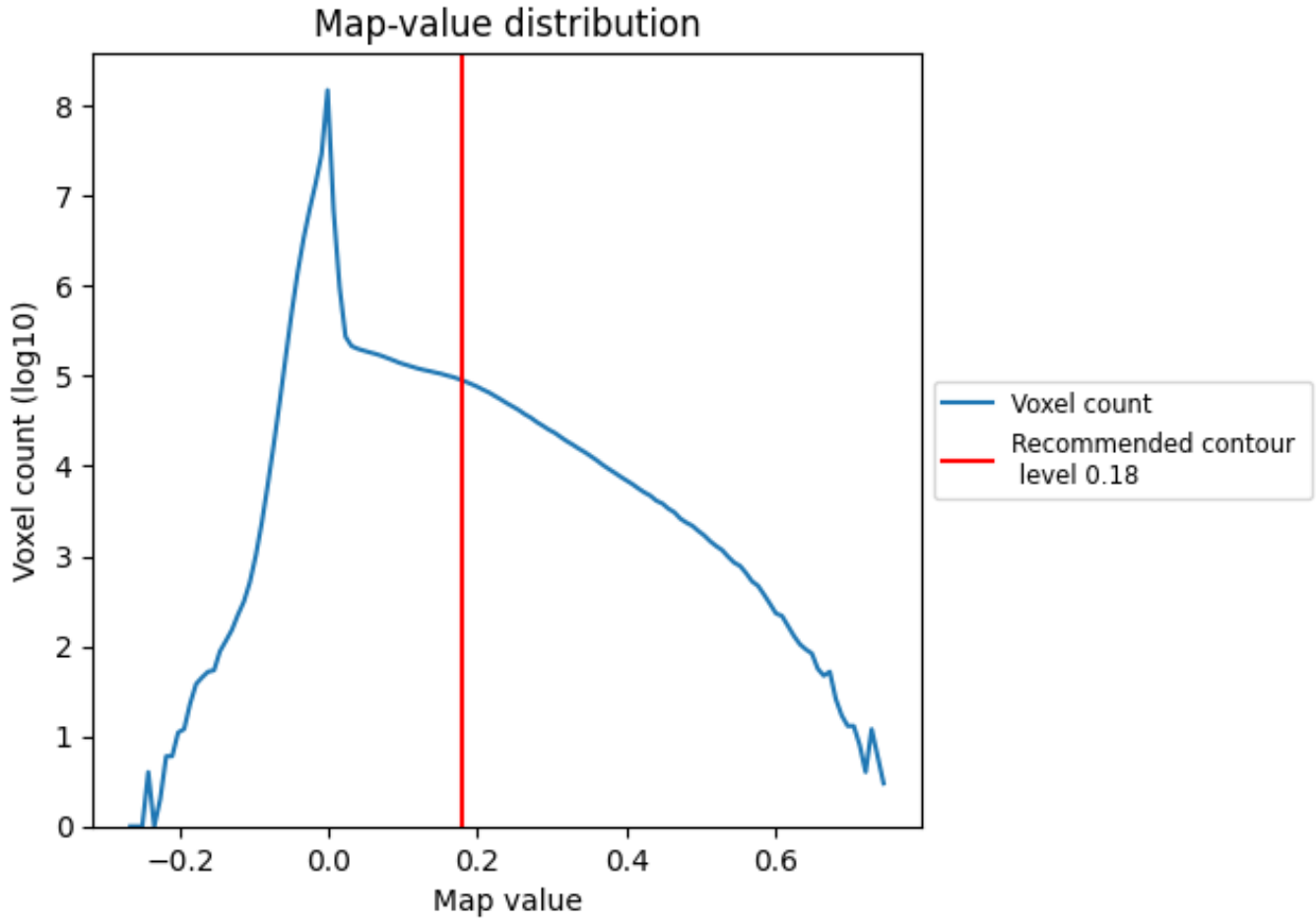
6.6 Mask visualisation (i)

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

7 Map analysis

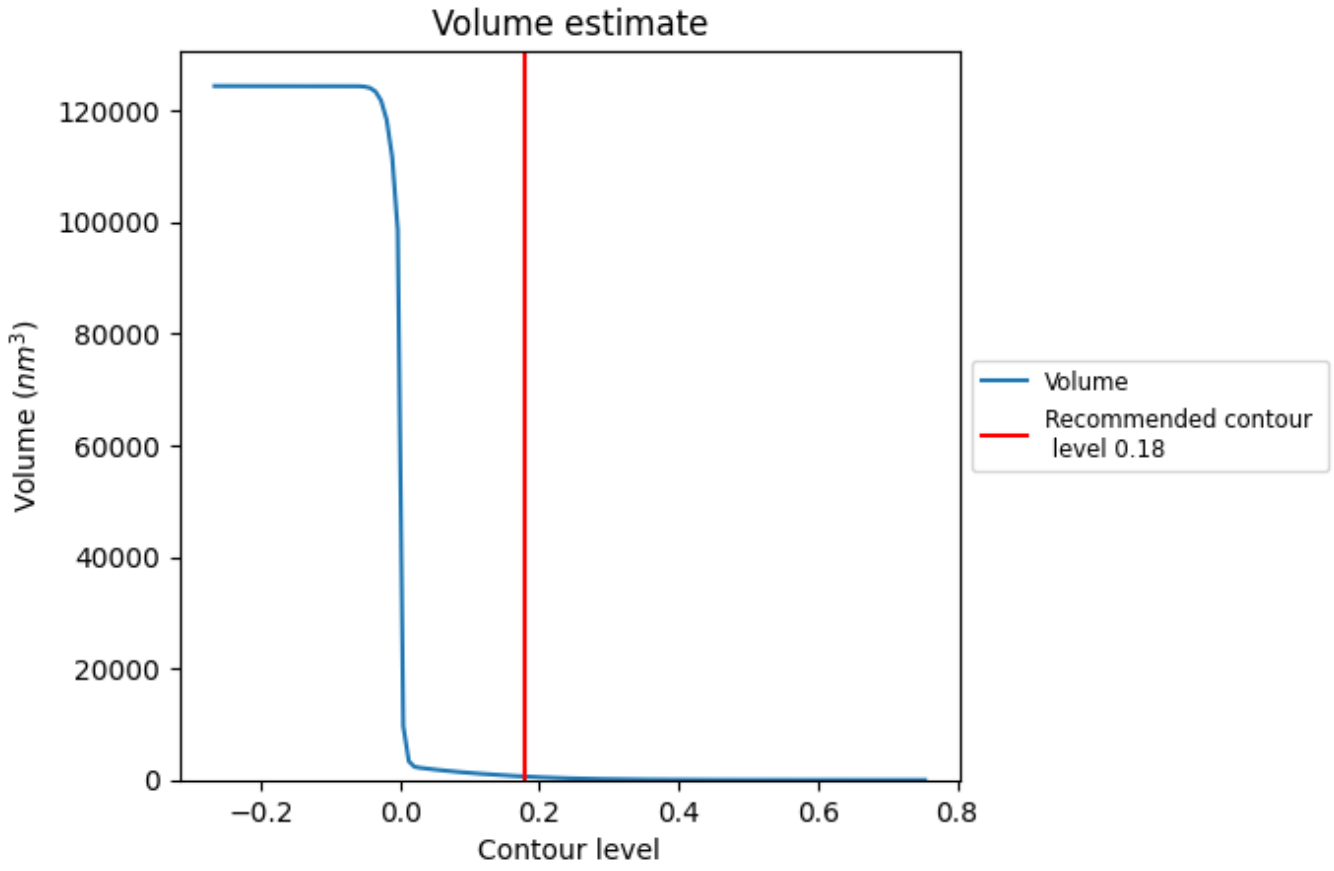
This section contains the results of statistical analysis of the map.

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.

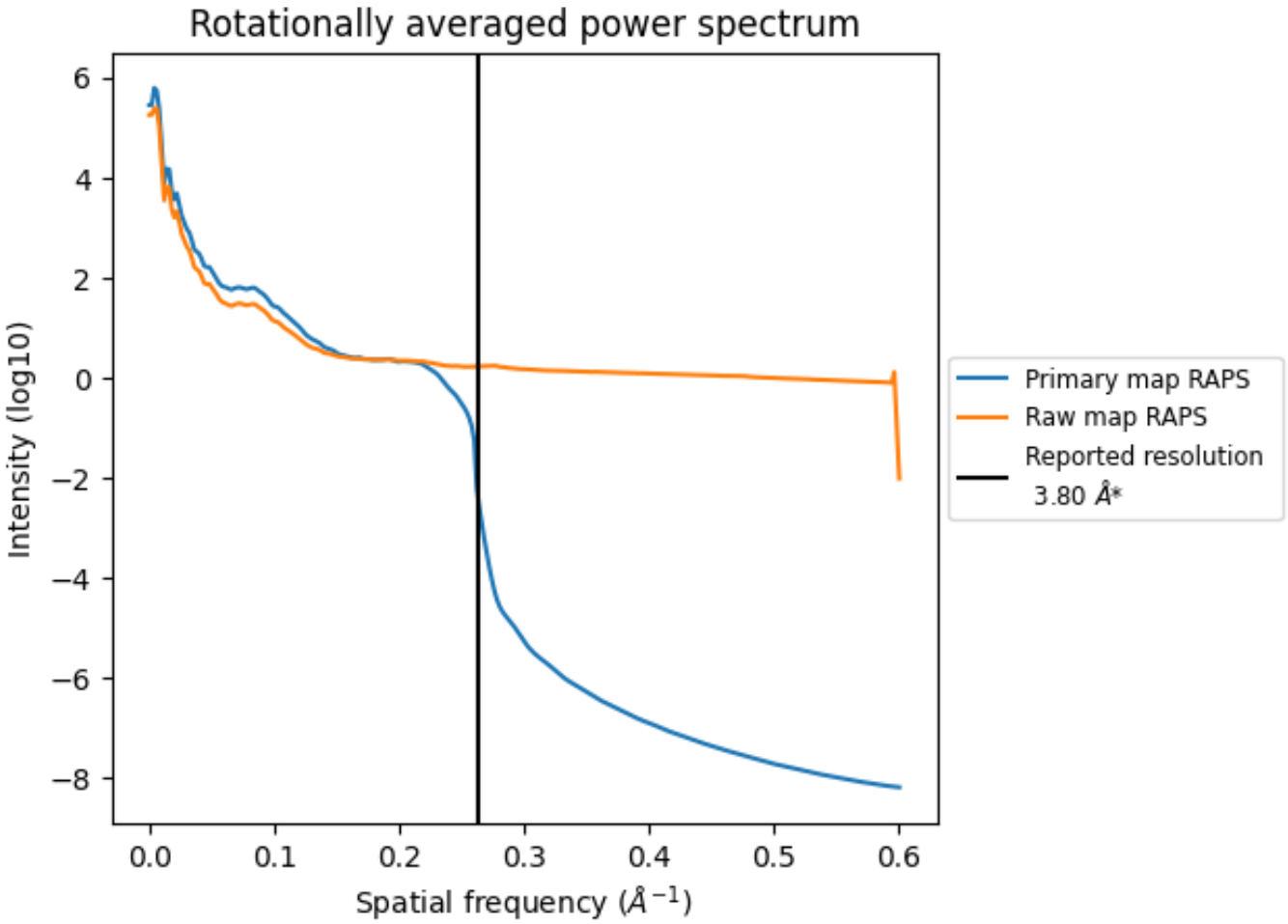
7.2 Volume estimate



The volume at the recommended contour level is 612 nm^3; this corresponds to an approximate mass of 553 kDa.

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

7.3 Rotationally averaged power spectrum (i)

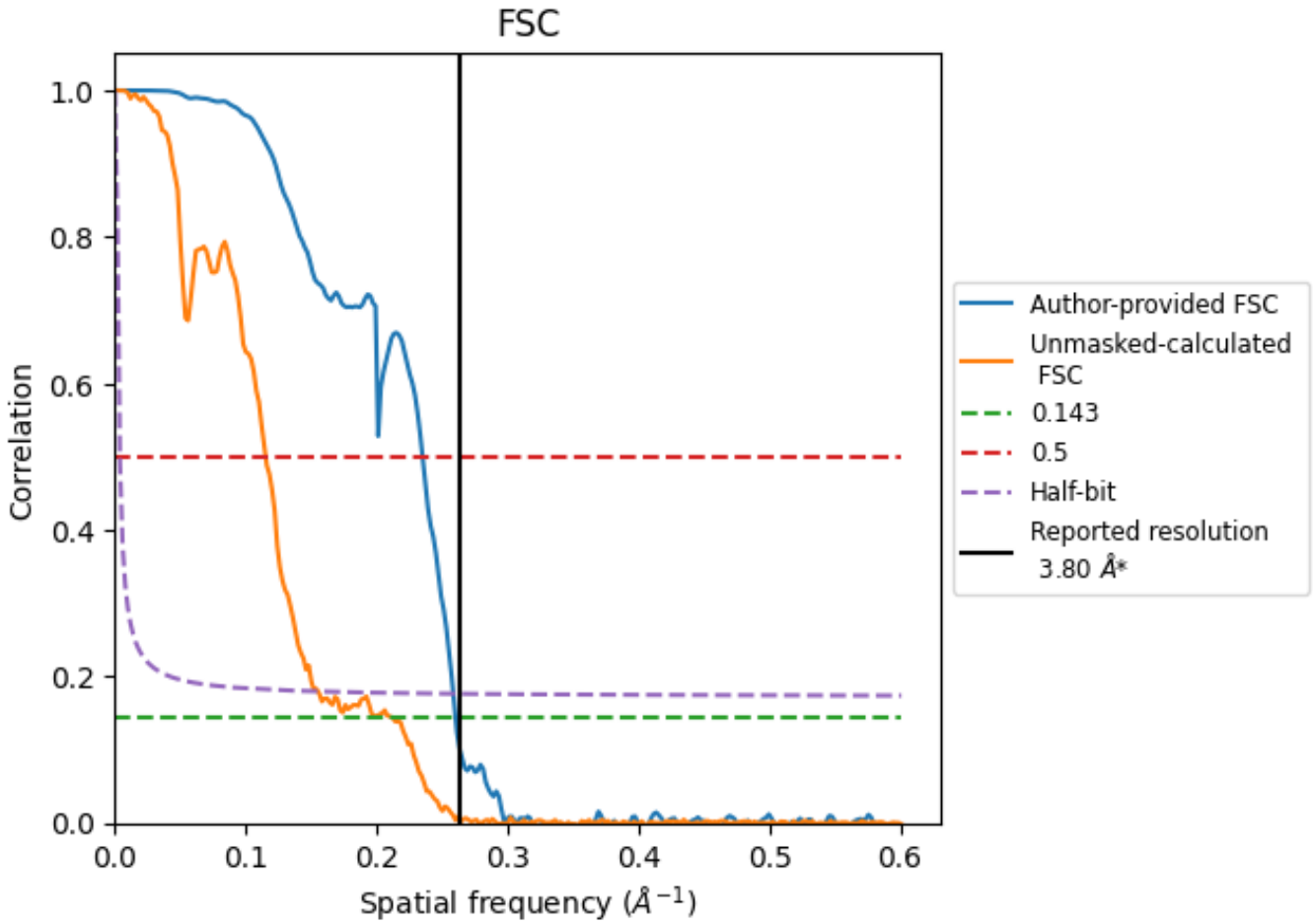


*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8.2 Resolution estimates (i)

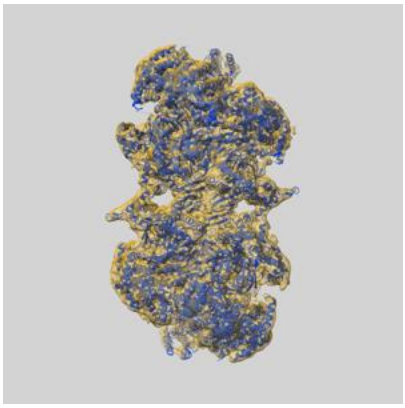
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.84	4.25	3.87
Unmasked-calculated*	4.71	8.67	6.44

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.71 differs from the reported value 3.8 by more than 10 %

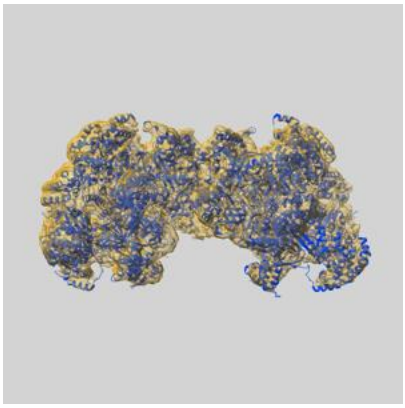
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-43709 and PDB model 8W0G. Per-residue inclusion information can be found in section 3 on page 9.

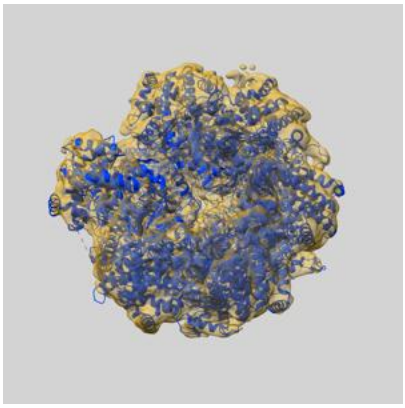
9.1 Map-model overlay



X



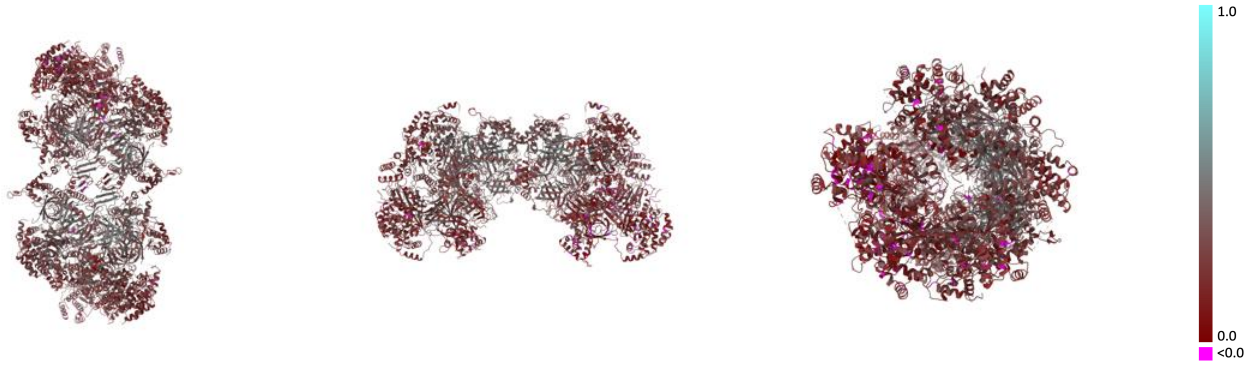
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.18 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.

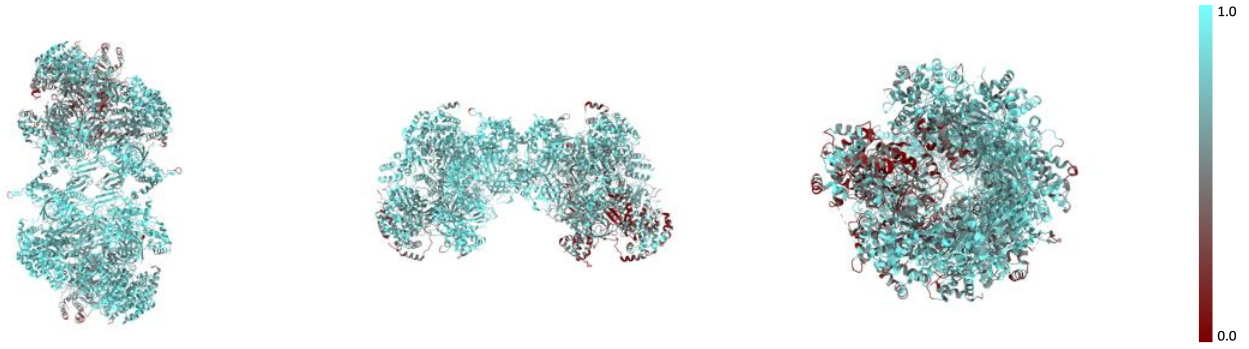
9.2 Q-score mapped to coordinate model (i)



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.

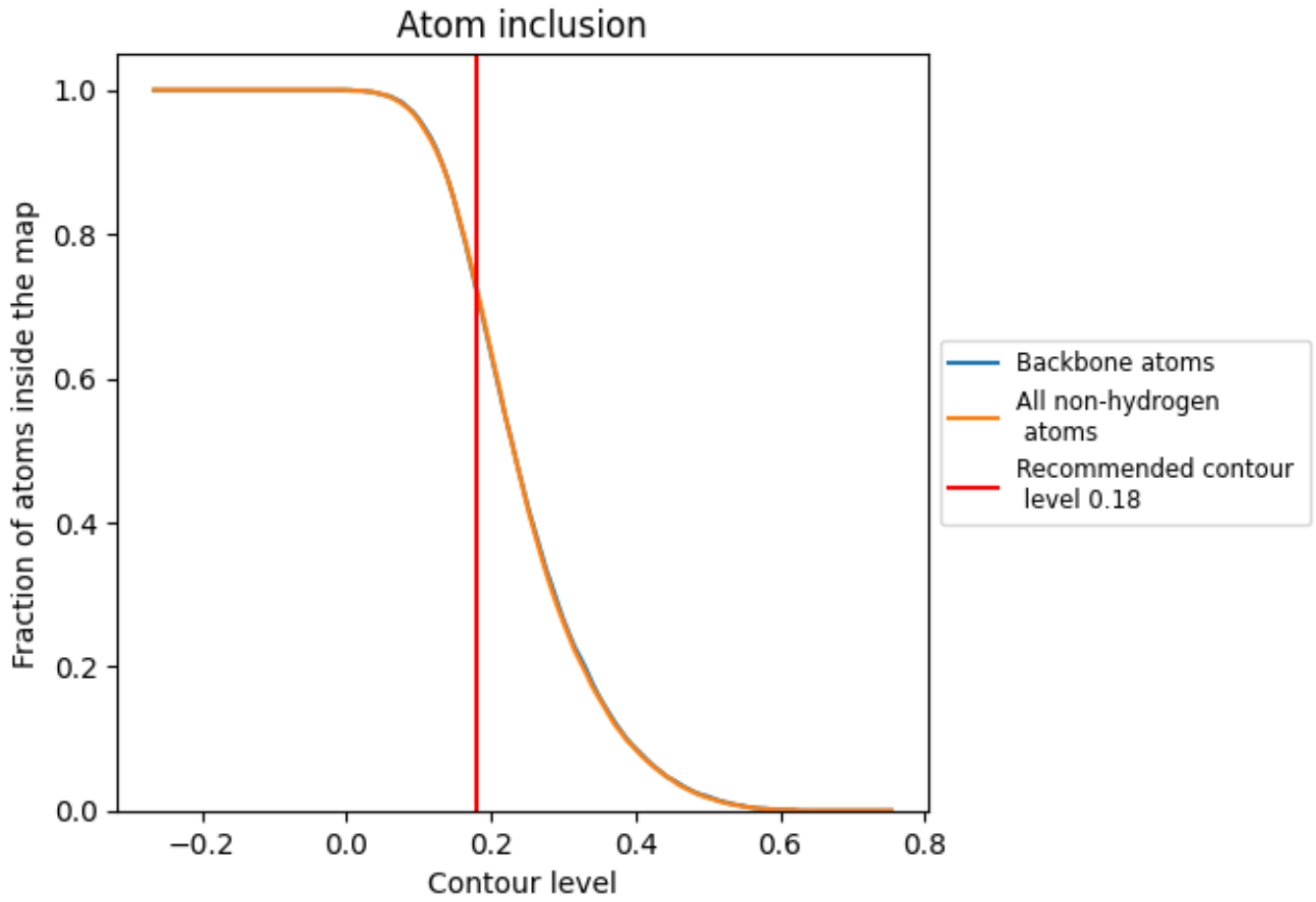
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.18).

9.4 Atom inclusion (i)



At the recommended contour level, 72% of all backbone atoms, 72% 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 (0.18) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7240	0.2680
2	0.6830	0.2100
3	0.8980	0.3640
4	0.8420	0.2780
5	0.8610	0.2930
6	0.7970	0.2350
7	0.8720	0.3430
A	0.4210	0.1630
B	0.7950	0.3390
C	0.6510	0.2320
D	0.7040	0.2610
E	0.5880	0.1870
F	0.7340	0.3070