



Full wwPDB EM Validation Report ⓘ

Nov 9, 2022 – 11:52 AM EST

PDB ID : 6PTN
EMDB ID : EMD-20472
Title : Structure of Ctf4 trimer in complex with two CMG helicases
Authors : Yuan, Z.; Georgescu, R.; Bai, L.; Santos, R.; Donnell, M.; Li, H.
Deposited on : 2019-07-16
Resolution : 5.80 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:

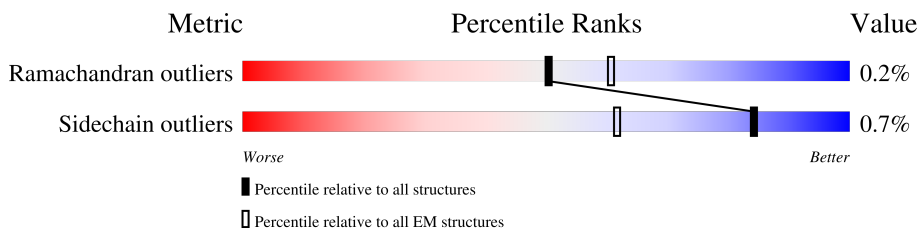
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

1 Overall quality at a glance

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

The reported resolution of this entry is 5.80 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)
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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	E	927	46% 54%
1	F	927	46% 54%
1	G	927	46% 54%
2	A	208	99%
2	a	208	99%
3	B	213	84% 15%
3	b	213	84% 15%
4	C	194	80% 18%
4	c	194	80% 18%

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Mol	Chain	Length	Quality of chain
5	D	294	11% 80% 20%
5	d	294	9% 80% 20%
6	H	650	16% 83% 15%
6	h	650	17% 83% 15%
7	2	868	54% 72% 27%
7	i	868	47% 72% 27%
8	3	971	39% 61% 39%
8	j	971	28% 61% 39%
9	4	933	61% 72% 27%
9	k	933	52% 72% 27%
10	5	775	45% 76% 23%
10	l	775	39% 76% 23%
11	6	1017	48% 59% 40%
11	m	1017	37% 59% 40%
12	7	845	64% 78% 22%
12	n	845	50% 78% 22%

2 Entry composition [i](#)

There are 13 unique types of molecules in this entry. The entry contains 91630 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 polymerase alpha-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	E	424	Total	C	N	O	S	1	0
			3416	2193	566	642	15		
1	F	431	Total	C	N	O	S	1	0
			3472	2227	576	653	16		
1	G	424	Total	C	N	O	S	1	0
			3416	2193	566	642	15		

- Molecule 2 is a protein called DNA replication complex GINS protein PSF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	a	208	Total	C	N	O	S	0	0
			1696	1065	290	331	10		
2	A	208	Total	C	N	O	S	0	0
			1696	1065	290	331	10		

- Molecule 3 is a protein called DNA replication complex GINS protein PSF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	b	181	Total	C	N	O	S	0	0
			1513	978	261	270	4		
3	B	181	Total	C	N	O	S	0	0
			1513	978	261	270	4		

- Molecule 4 is a protein called DNA replication complex GINS protein PSF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	c	159	Total	C	N	O	S	0	0
			1288	843	207	232	6		
4	C	159	Total	C	N	O	S	0	0
			1288	843	207	232	6		

- Molecule 5 is a protein called DNA replication complex GINS protein SLD5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	d	234	1924	1224	315	372	13	0	0
5	D	234	1924	1224	315	372	13	0	0

- Molecule 6 is a protein called Cell division control protein 45.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	h	553	4482	2862	763	844	13	0	0
6	H	553	4482	2862	763	844	13	0	0

- Molecule 7 is a protein called DNA replication licensing factor MCM2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	i	634	4970	3122	897	934	17	0	0
7	2	634	4970	3122	897	934	17	0	0

- Molecule 8 is a protein called DNA replication licensing factor MCM3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	j	594	4659	2936	832	878	13	0	0
8	3	594	4659	2936	832	878	13	0	0

- Molecule 9 is a protein called DNA replication licensing factor MCM4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	k	682	5410	3397	946	1039	28	0	0
9	4	682	5410	3397	946	1039	28	0	0

- Molecule 10 is a protein called Minichromosome maintenance protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	1	597	4688	2946	808	910	24	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	5	597	4688	2946	808	910	24	0	0

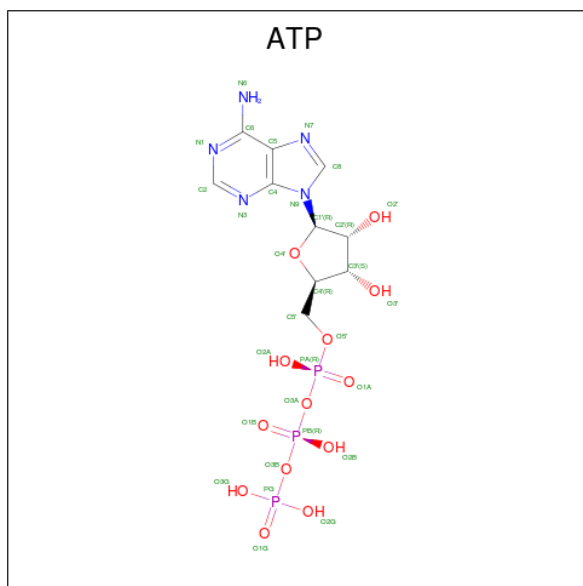
- Molecule 11 is a protein called DNA replication licensing factor MCM6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	m	614	4720	2971	836	893	20	0	0
11	6	614	4720	2971	836	893	20	0	0

- Molecule 12 is a protein called DNA replication licensing factor MCM7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	n	663	5220	3290	904	996	30	0	0
12	7	663	5220	3290	904	996	30	0	0

- Molecule 13 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
			Total	C	N	O	P	
13	i	1	31	10	5	13	3	0

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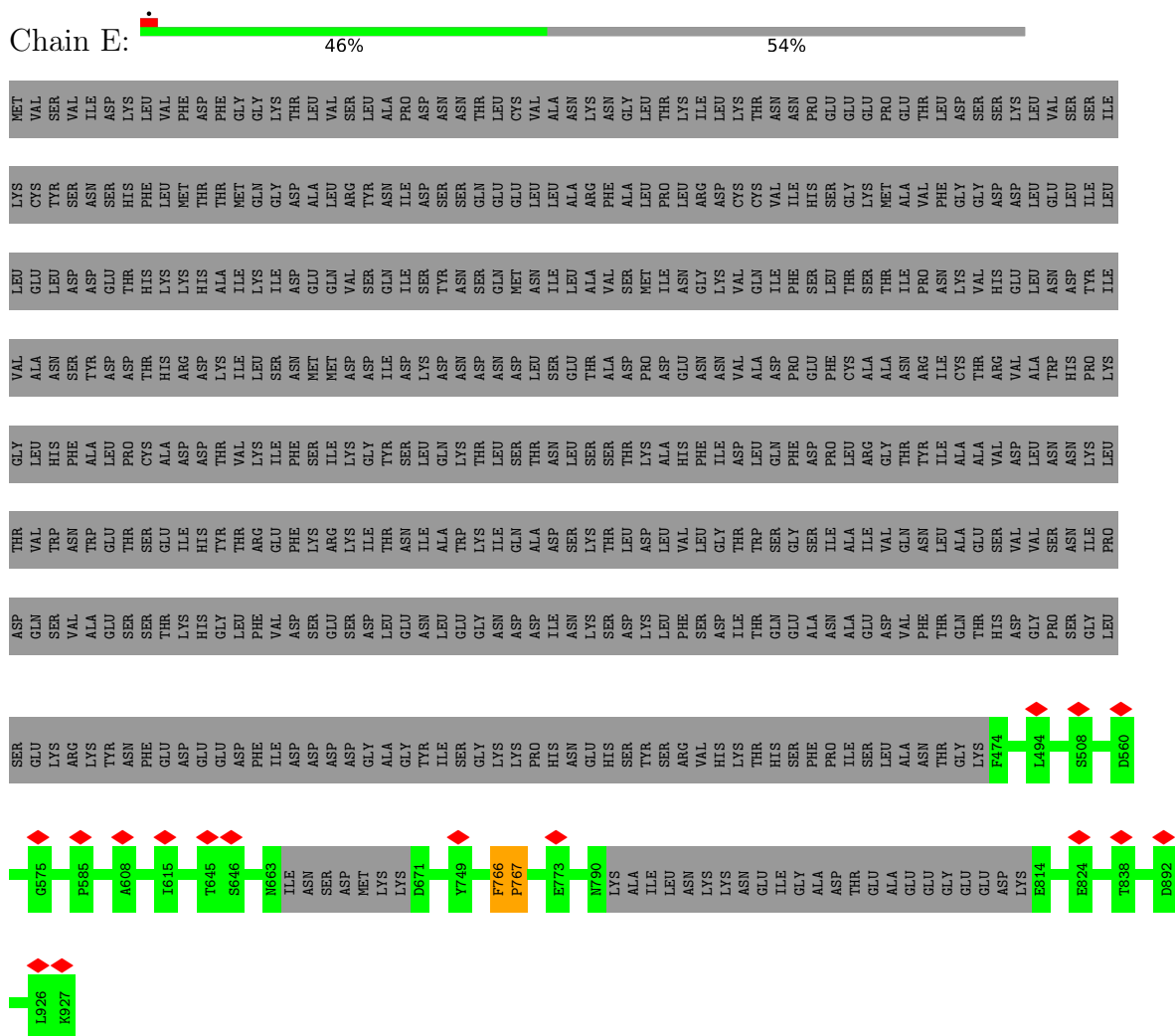
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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
13	j	1	Total 31	C 10	N 5	O 13	P 3	0
13	1	1	Total 31	C 10	N 5	O 13	P 3	0
13	2	1	Total 31	C 10	N 5	O 13	P 3	0
13	3	1	Total 31	C 10	N 5	O 13	P 3	0
13	5	1	Total 31	C 10	N 5	O 13	P 3	0

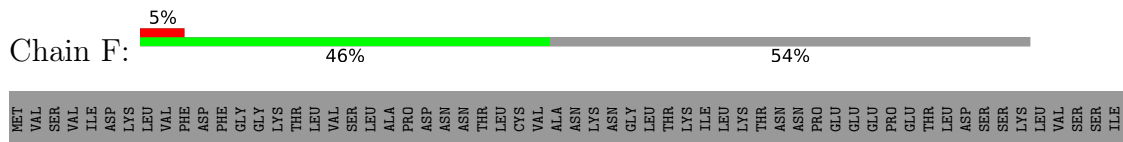
3 Residue-property plots

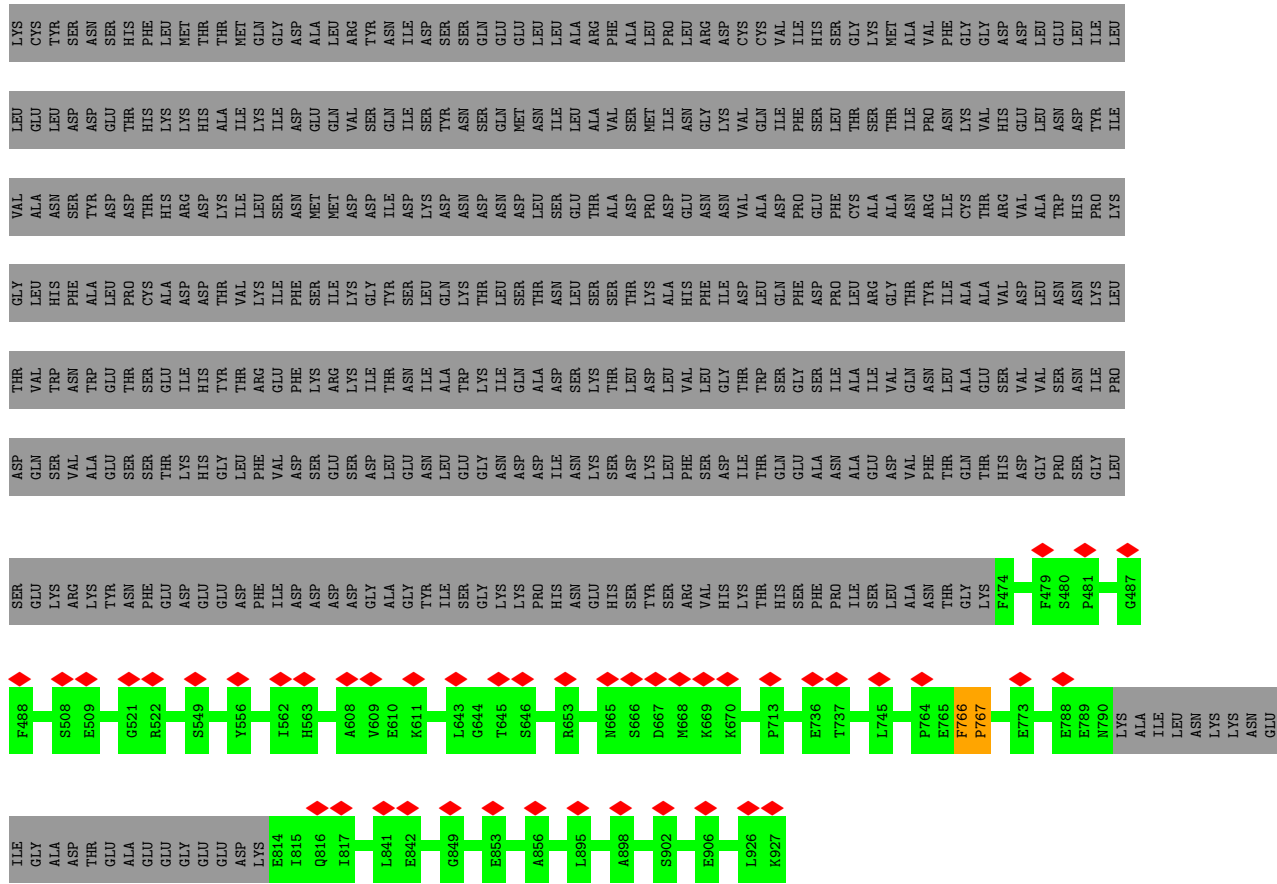
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: DNA polymerase alpha-binding protein

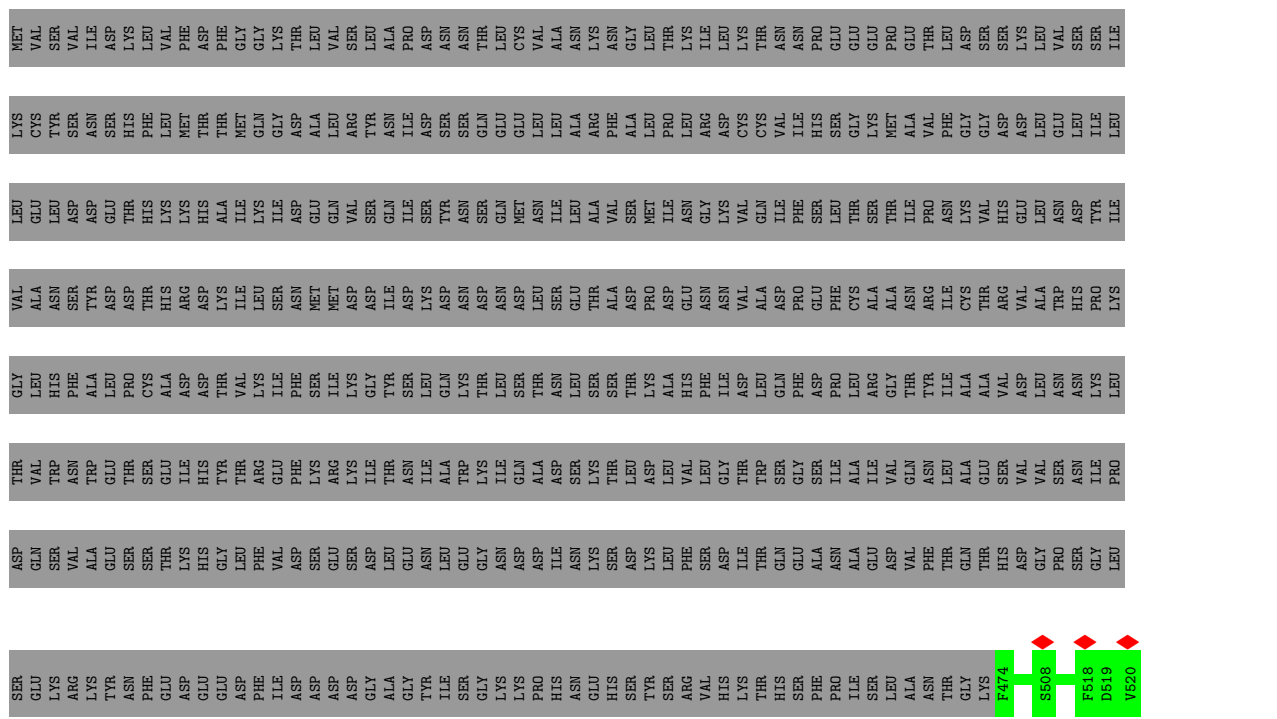


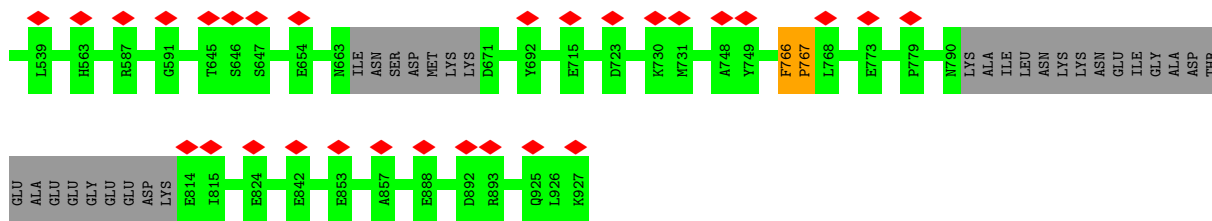
- Molecule 1: DNA polymerase alpha-binding protein



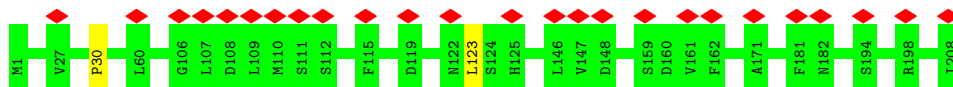


● Molecule 1: DNA polymerase alpha-binding protein

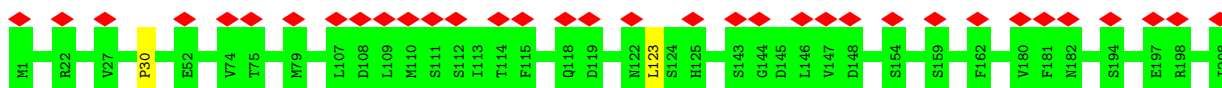




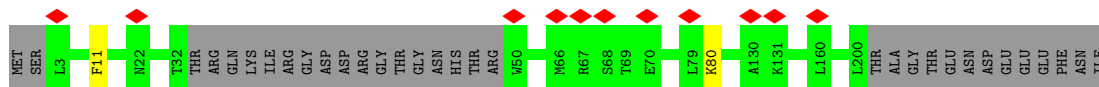
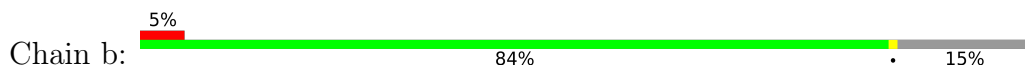
• Molecule 2: DNA replication complex GINS protein PSF1



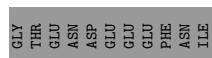
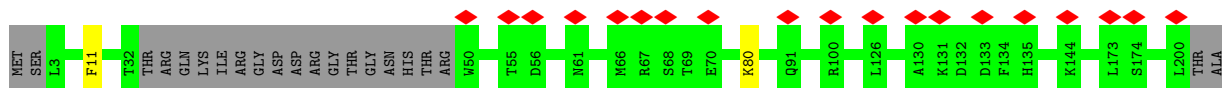
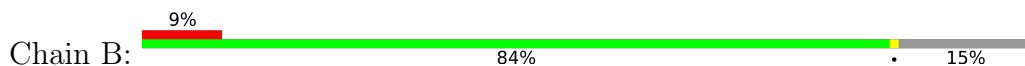
• Molecule 2: DNA replication complex GINS protein PSF1



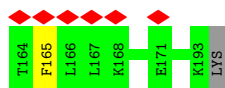
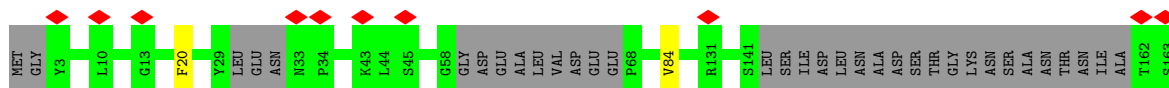
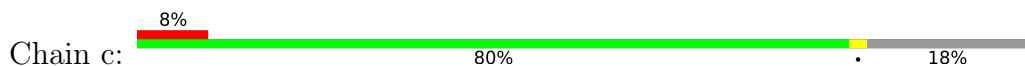
• Molecule 3: DNA replication complex GINS protein PSF2

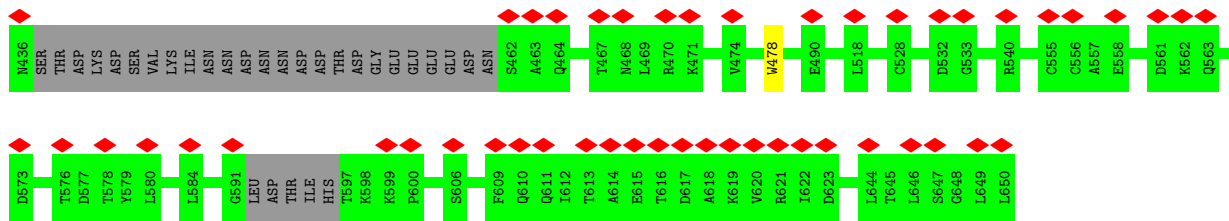


• Molecule 3: DNA replication complex GINS protein PSF2

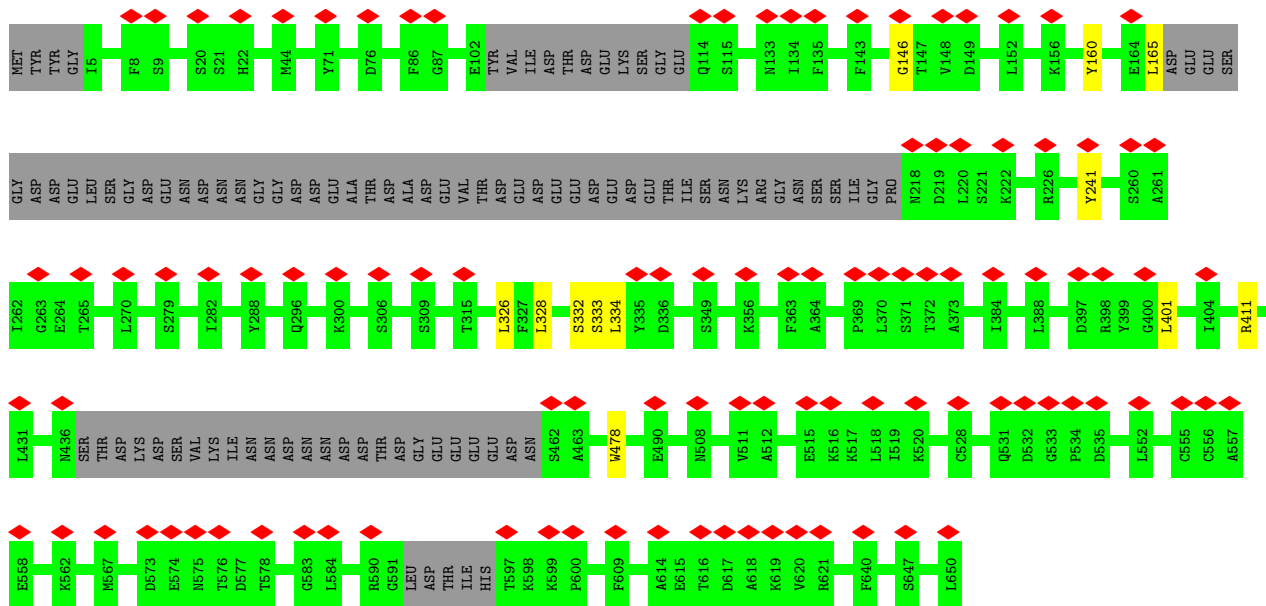
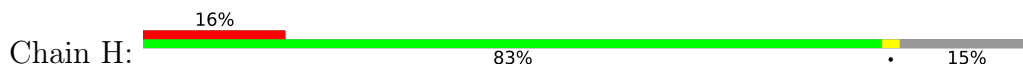


• Molecule 4: DNA replication complex GINS protein PSF3

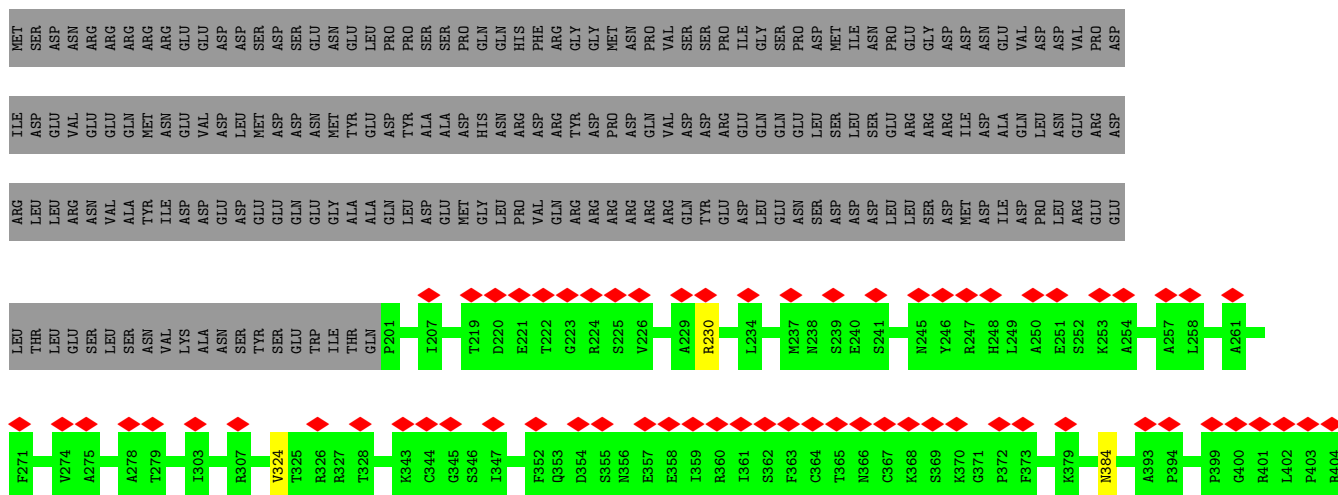


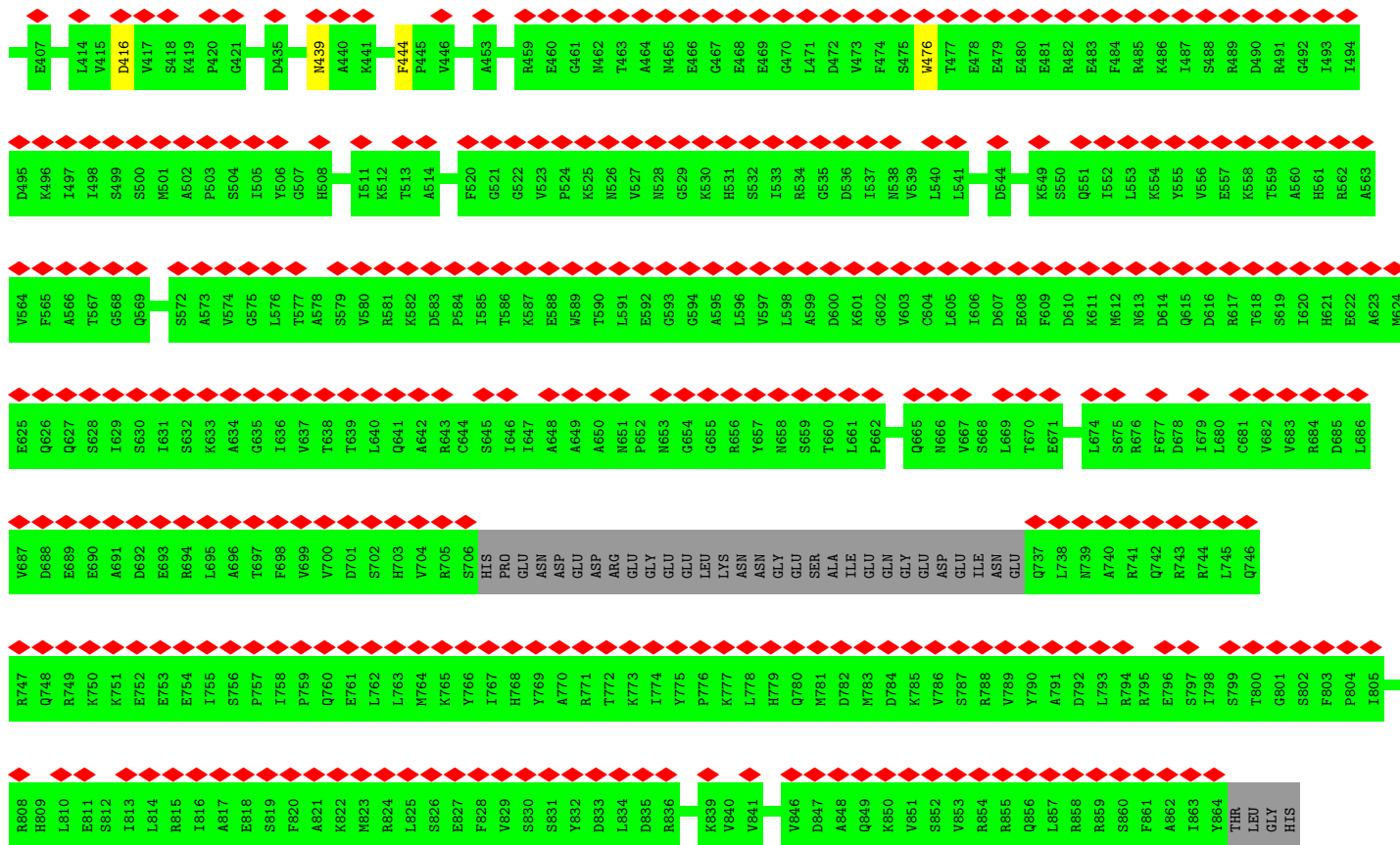


• Molecule 6: Cell division control protein 45

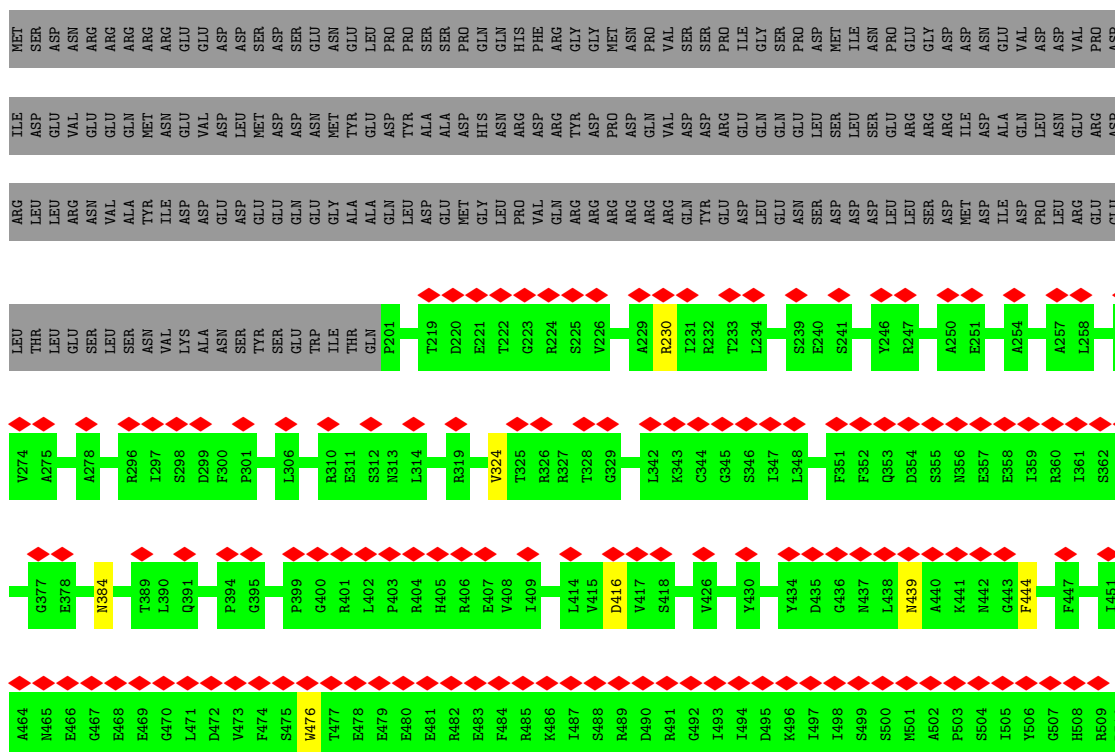
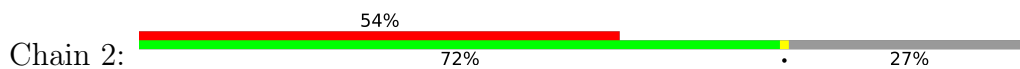


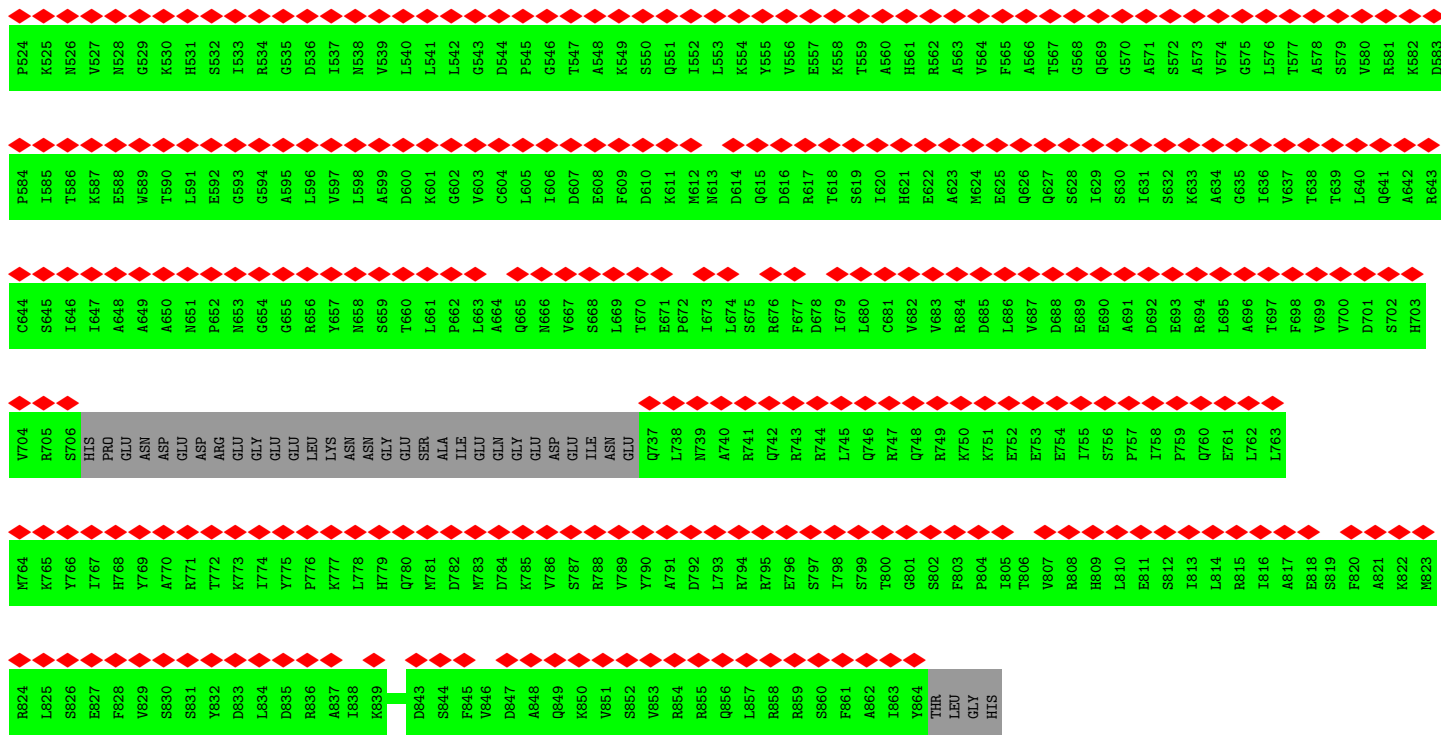
• Molecule 7: DNA replication licensing factor MCM2



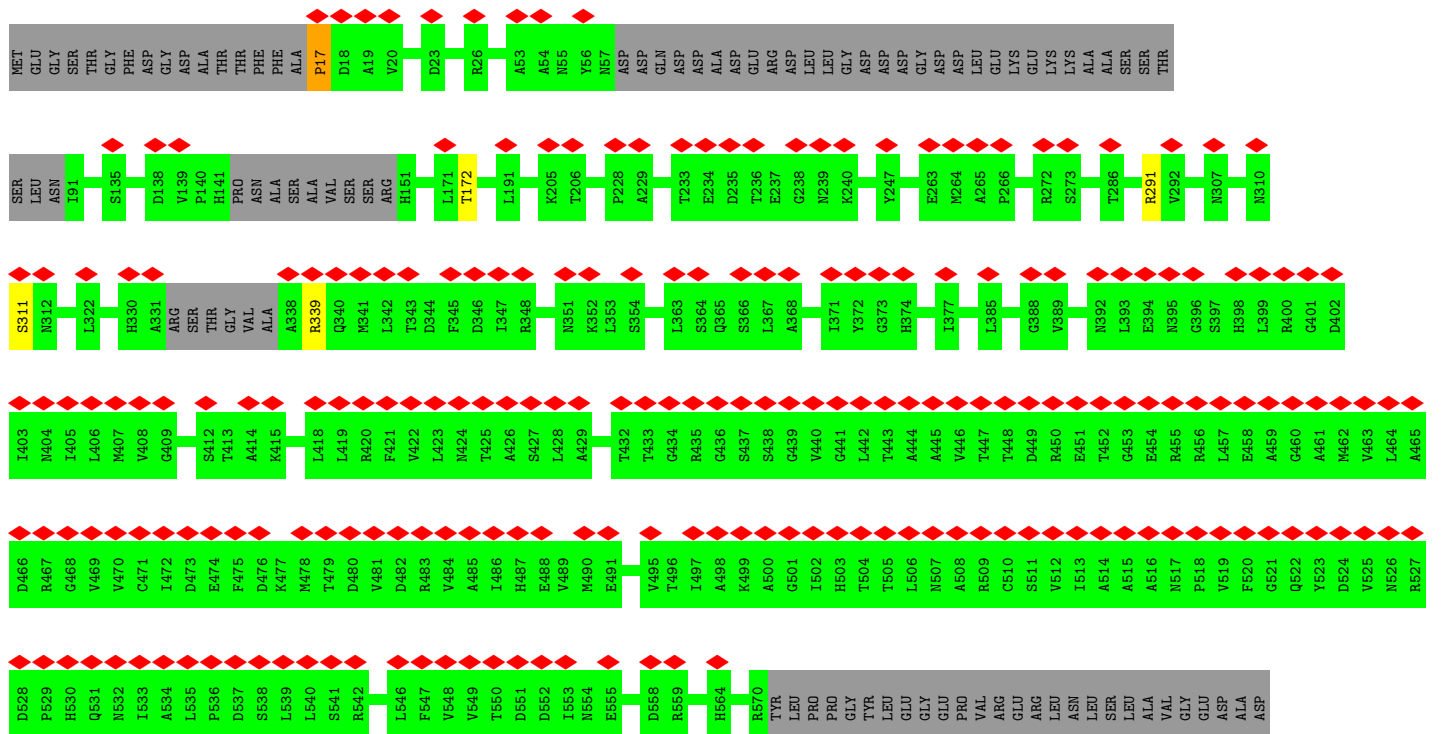


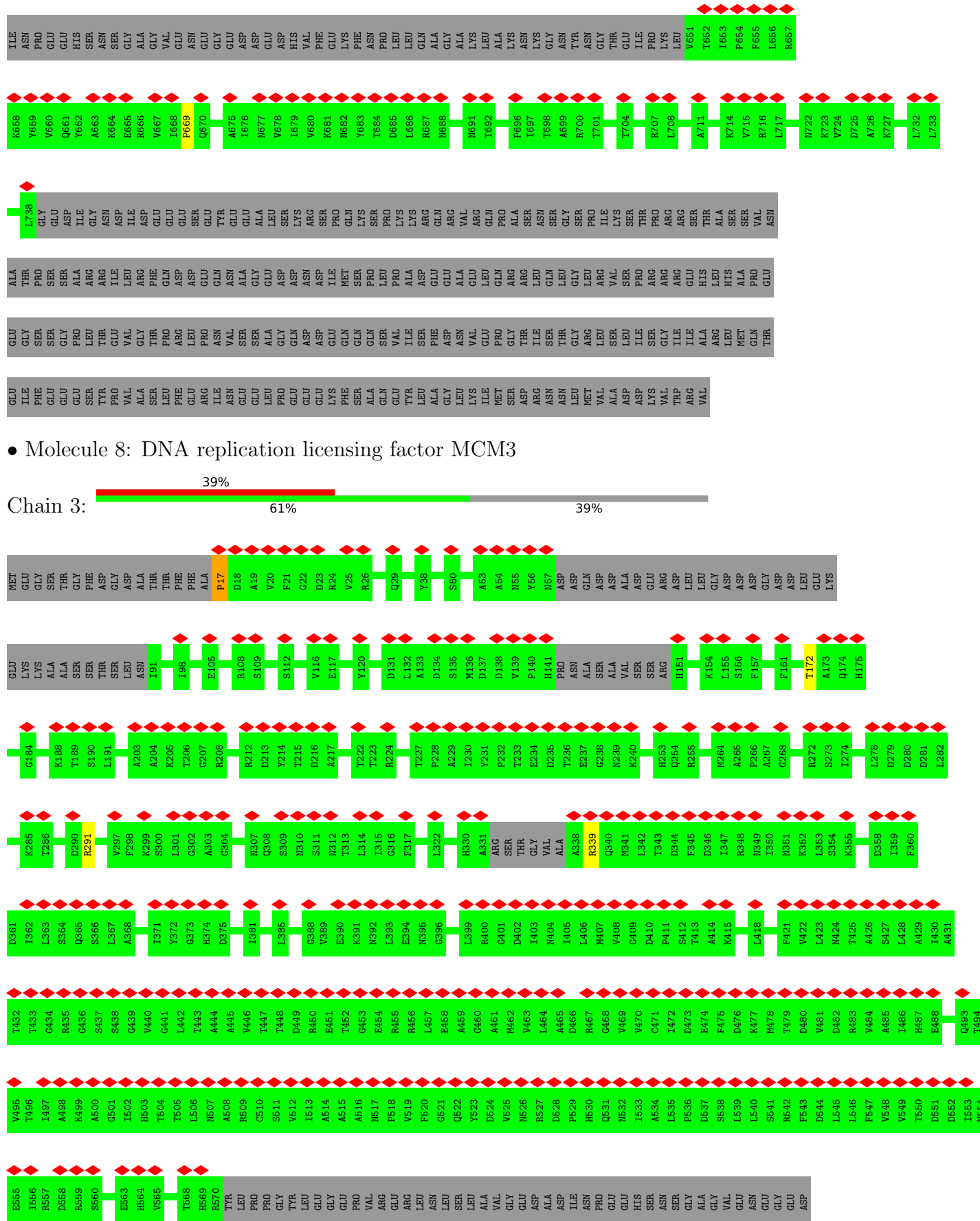
• Molecule 7: DNA replication licensing factor MCM2



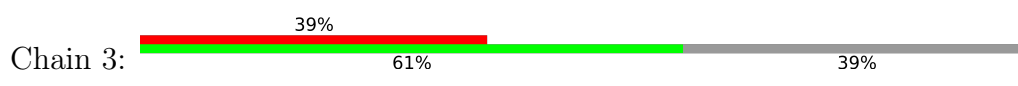


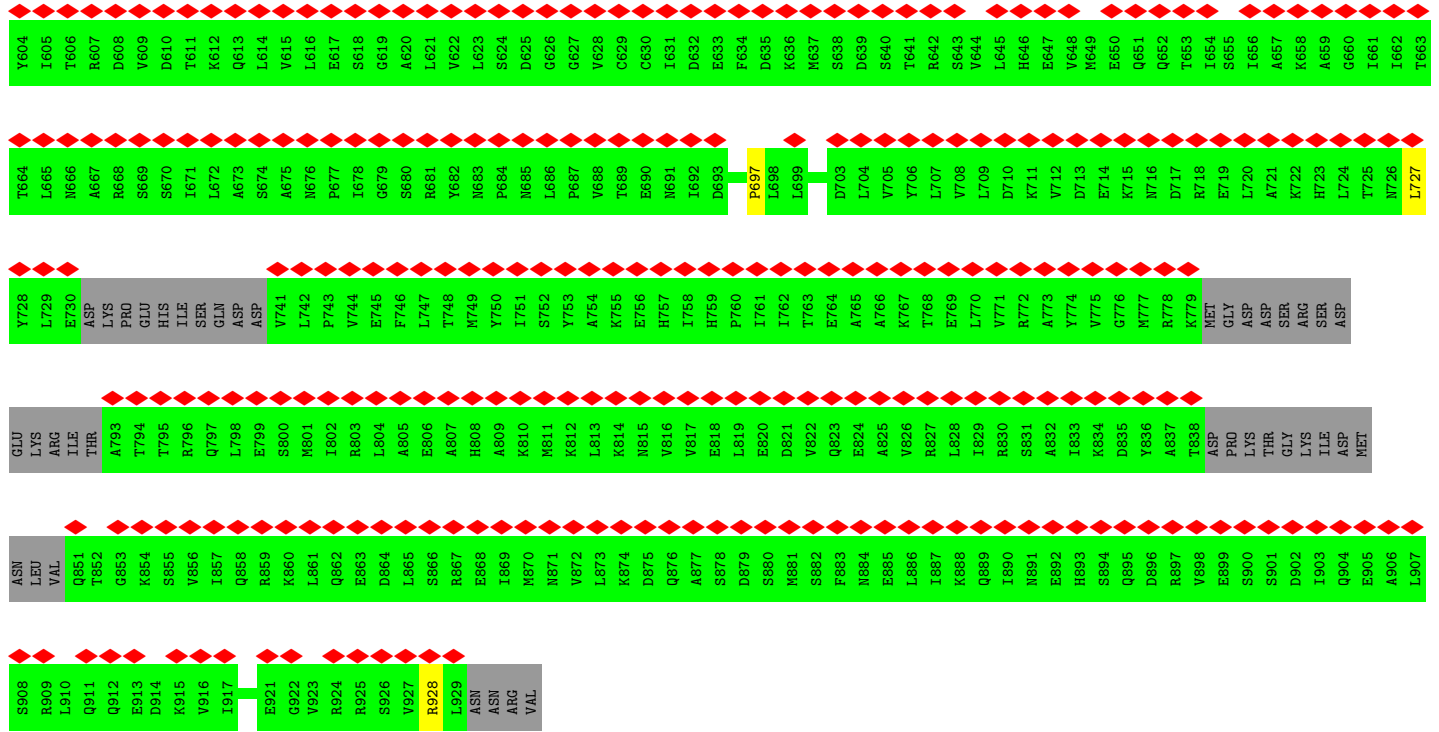
• Molecule 8: DNA replication licensing factor MCM3



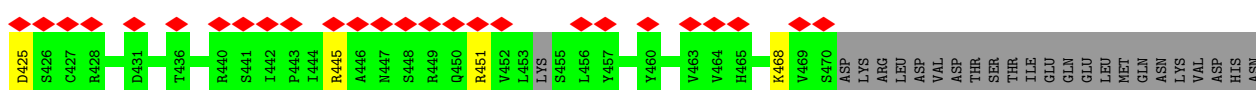
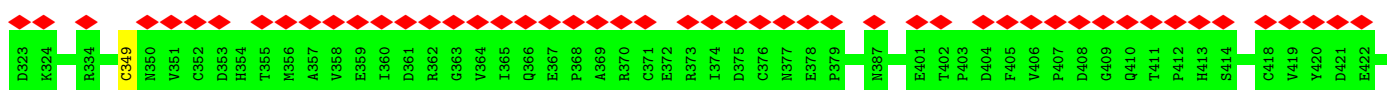
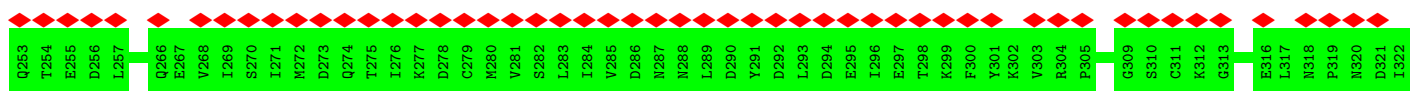
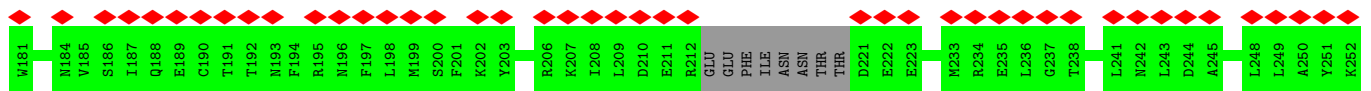
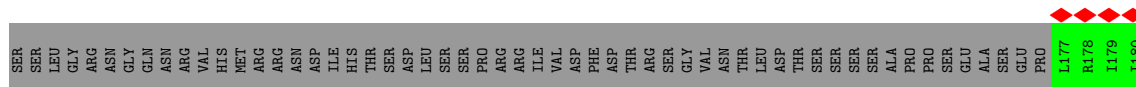
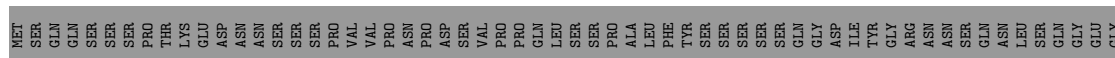
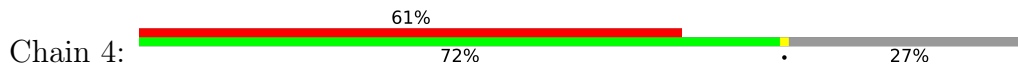


● Molecule 8: DNA replication licensing factor MCM3



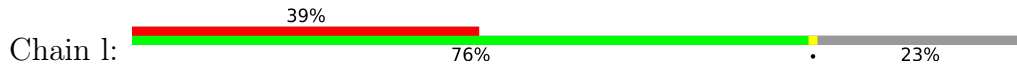


● Molecule 9: DNA replication licensing factor MCM4

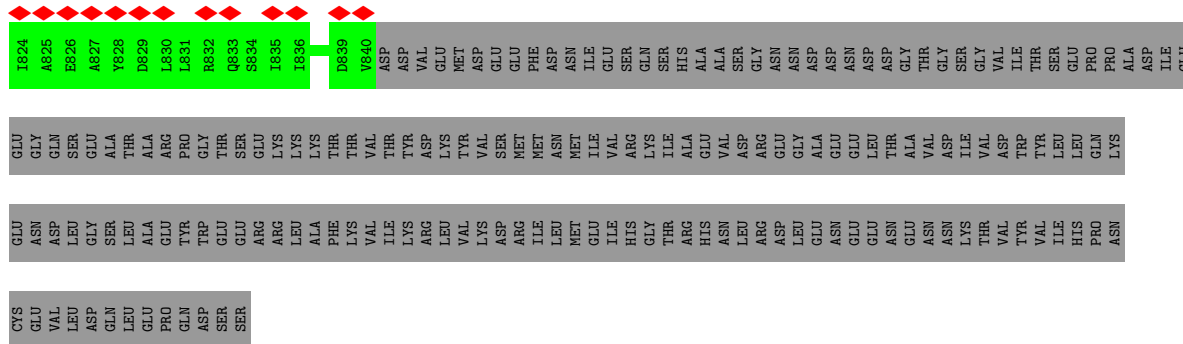


GLU	K554	L614	S674	GLU	T794	K854	D914
VAL	G555	V615	A675	HIS	T795	S655	K915
GLU	G556	L616	M676	ILE	R796	V656	Y916
GLU	R557	E617	P677	GLN	Q797	L857	L917
V498	Y558	S618	G679	ASP	L798	Q658	Y918
R499	Y559	G619	S680	ASP	E799	R659	G920
Q500	G560	A620	S880	V741	S900	K860	E921
I501	D561	L621	R881	L742	M801	L861	E921
T502	D562	I622	Y881	P743	I802	Q662	G922
D503	I563	L623	Y882	V744	R803	E663	Y923
Q504	I564	S624	P883	E745	L804	D664	R924
D505	L565	D625	P884	F746	A805	L865	R925
L506	L566	G26	P885	L747	E806	S866	S926
A507	L567	G26	L886	T748	A807	R667	Y927
K508	C567	G27	P887	M749	H808	E668	R928
I509	G568	V28	V888	Y750	A809	E669	L929
R510	D569	C29	T889	Y751	K810	L869	ASN
E511	P570	C30	E890	S752	M811	M670	ARG
V512	S571	I631	N691	Y753	K812	N871	ARG
A513	T572	I632	I692	A754	L813	L873	VAL
A514	S573	E633	D693	K755	K814	D875	
R515	K574	F634	L694	E756	N815	Q876	
E516	S575	D635	P695	H757	V816	A877	
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L518	I577	M637	P697	H759	E818	D879	
Y519	S578	S638	L698	P760	L819	S880	
S520	Q579	D639	L699	I761	E820	M881	
L521	Y880	S640	S700	I762	D821	S882	
L522	V881	T641	R701	T763	Q822	F883	
A523	H881	R642	F702	E764	V823	M884	
R524	K883	S643	D703	A765	E824	E885	
S525	I884	V644	L704	A766	A825	L886	
I526	T885	L645	V705	K767	V826	L887	
A527	P886	H646	Y706	T768	R827	K888	
P528	R887	E647	L707	E769	L828	Q889	
S529	G888	V648	V708	L770	I829	R890	
I530	V889	M649	L709	V771	R830	N891	
Y531	E590	E650	D710	R772	S831	E892	
E532	T591	Q651	K711	A773	A832	H893	
L533	S592	L652	V712	V774	I833	S894	
E534	G593	T653	D713	V775	K834	Q895	
D535	K594	I654	E714	G776	D835	D896	
V536	G595	S655	K715	M777	Y836	R897	
K537	S596	I656	M716	R778	A837	V898	
K538	S597	A657	D717	K779	T838	E899	
G539	A598	K658	R718	MET	ASP	E899	
I540	G599	E659	E719	GLY	PRO	S900	
L541	G600	G660	L720	ASP	PRO	S901	
L542	L601	I661	A721	ASP	LYS	S901	
Q543	L602	I662	K722	ASP	THR	D902	
L544	T602	I663	A723	ASP	GLY	L903	
F545	A603	T663	H723	ASP	LYS	Q904	
G546	Y604	T664	L724	ASP	ILE	E905	
G547	I605	L665	T725	LYS	MET	A906	
T548	I606	M666	M726	ARG	ASN	L907	
N549	R607	A667	L727	ARG	LEU	S908	
K550	D608	R668	Y728	THR	VAL	R909	
T551	V609	S669	L729	LYS	ASP	Q910	
F552	D610	E670	E730	LYS	THR	L911	
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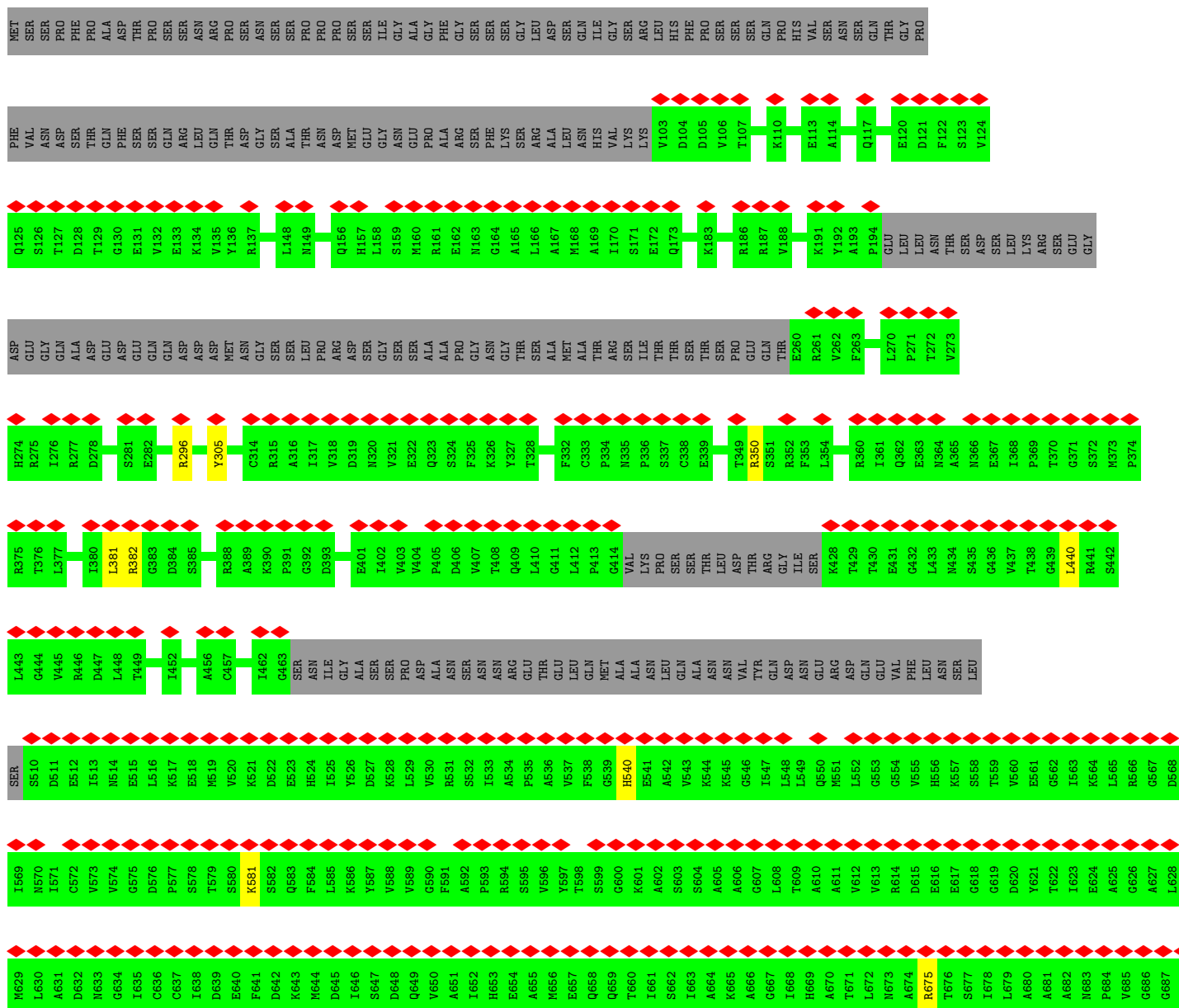
● Molecule 10: Minichromosome maintenance protein 5

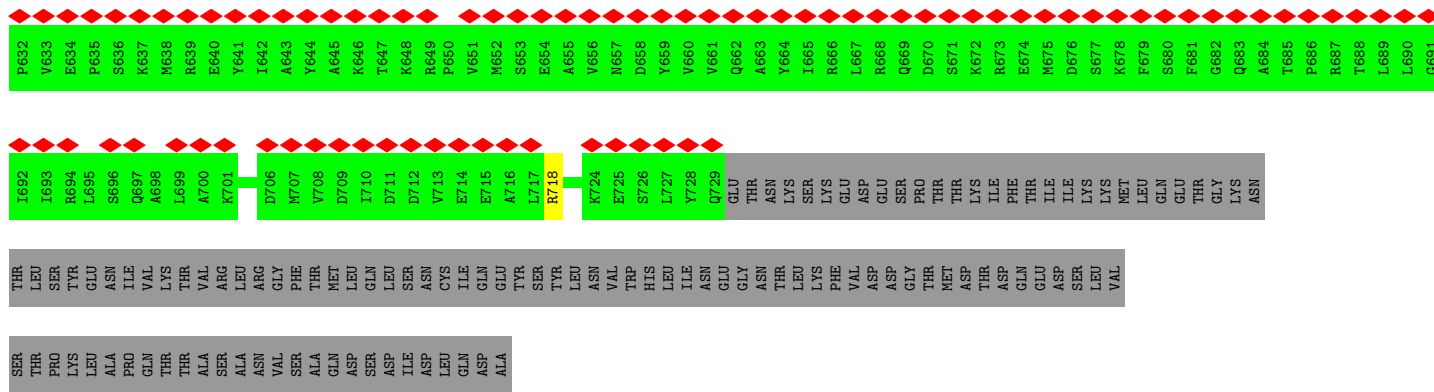


MET	T277	I369	S433
SER	C278	L370	P434
PHE	V295	T371	L435
ASP	K304	N372	A436
ARG	M305	S373	V437
PRO	G305	L374	Y438
GLU	P147	A375	T439
ILE	L148	G440	S440
TYR	ALA	GLY	G441
GLY	R149	PRO	K442
ALA	D150	SER	L443
VAL	V153	GLY	G444
LEU	S153	ARG	S444
LEU	N198	GLN	A445
LEU	SER	GLY	S446
GLY	I201	GLY	A447
GLY	ILE	GLY	C448
SER	T202	ASN	A447
PRO	C202	GLY	C448
ASP	N203	GLY	L449
ASN	T204	ASN	L450
ASP	V205	GLY	A451
ASP	C211	S319	S452
N24	LEU	G320	Q454
D41	SER	V321	R455
I45	THR	A322	D456
D48	THR	P326	P457
E66	ILE	D336	M458
I69	GLU	V337	T459
L79	GLU	E338	L460
S80	SER	T339	R461
D81	SER	L400	F462
I103	ILE	P401	A463
LEU	MET	D402	L464
LEU	ALA	G403	E465
SER	ASN	SER	A466
SER	ASN	V346	G466
GLY	ASN	T347	G467
GLY	ILE	M348	A468
ALA	ASP	F349	M469
GLN	GLU	T350	V470
GLU	SER	E351	L471
ALA	THR	E352	A472
ALA	THR	E353	D473
ASN	LYS	E354	G474
ASN	LYS	E355	G475
ASP	ASP	E356	V476
LYS	ASP	F357	L477
LYS	PRO	L358	C478
ASP	GLU	V267	I479
ASP	ASN	Q359	D480
THR	THR	L360	F482
MET	MET	S361	D483
ASP	ASP	R362	K484
		K363	M485
		S423	R486
		Q424	D487
		L425	E488
		L426	D489
		K427	K431
		F428	R490
		V429	A492
		E430	
		K431	
		V432	

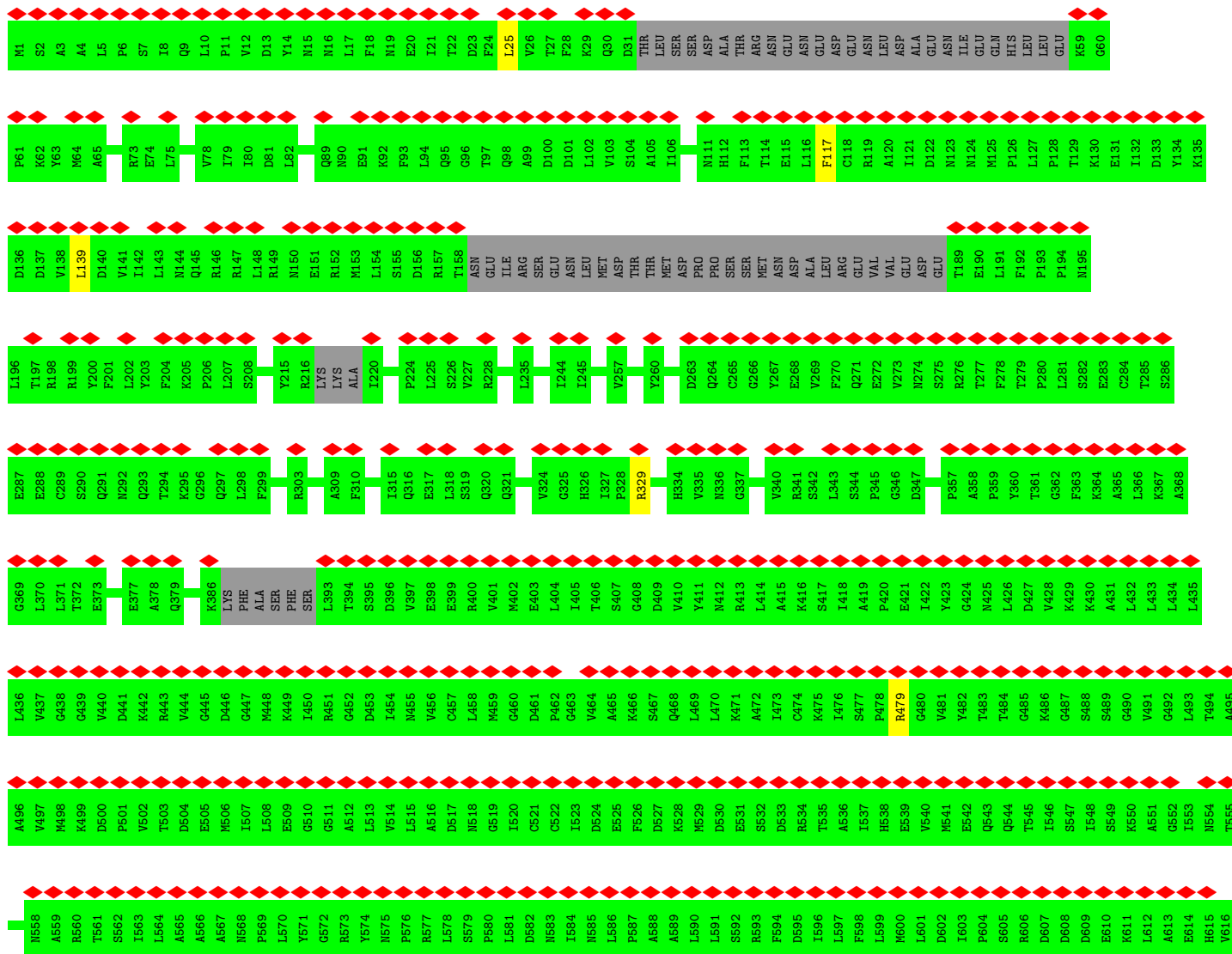
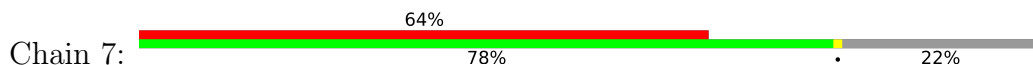


● Molecule 11: DNA replication licensing factor MCM6





● Molecule 12: DNA replication licensing factor MCM7



T617	Y618	V619	H620	M621	H622	N623	K624	Q625	P626	D627	L628	D629	F630	T631	P632	V633	E634	P635	S636	K637	M638	R639	E640	Y641	I642	A643	Y644	A645	K646	T647	K648	R649	P650	V651	M652	S653	E654	A655	V656	M657	D658	Y659	V660	V661	Q662	A663	Y664	I665	R666	L667	R668	Q669	D670	S671	K672	R673	E674	M675	D676																				
S677	K678	F679	S680	F681	G682	Q683	A684	T685	P686	R687	T688	L689	L690	G691	I692	I693	R694	L695	S696	Q697	A698	L699	A700	K701	L702	R703	L704	A705	D706	M707	V708	D709	I710	D711	D712	V713	V714	E715	A716	L717	R718	L719	V720	R721	V722	S723	K724	E725	S726	L727	Y728	Q729	GLU	THR	ASN	LYS	SER	LYS	GLU																				
ASP	GLU	SER	PRO	LEU	THR	LYS	ILE	PHE	ASP	THR	GLY	ILE	ILE	LYS	LYS	MET	THR	ASP	LEU	GLN	GLU	THR	GLY	LYS	LEU	VAL	ASN	THR	LEU	SER	PRO	LYS	LEU	GLU	ALA	ASN	ILE	VAL	THR	THR	THR	ALA	VAL	VAL	ARG	LEU	ASN	ARG	GLY	PHE	THR	THR	MET	GLN	ASP	SER	LEU	ASP	ASP	ILE	ASP	LEU	GLN	ILE	GLN	ASP	GLU	TYR	SER	TYR	LEU	ASN	ASN	VAL	TRP	HIS	LEU	ILE	ASN
GLU	GLY	ASN	THR	LEU	LYS	PHE	VAL	ASP	GLY	THR	MET	ASP	THR	THR	ASP	THR	VAL	ASN	THR	PRO	LYS	LEU	ALA	ALA	PRO	ILE	GLN	VAL	THR	THR	THR	ALA	VAL	SER	ASN	ASN	VAL	SER	ALA	THR	ALA	GLN	ASP	SER	ASP	ASP	ILE	ASP	LEU	GLN	ILE	GLN	ASP	ALA	ALA																								

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	53853	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.087	Depositor
Minimum map value	-0.039	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.0246	Depositor
Map size (Å)	429.6, 429.6, 429.6	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.074, 1.074, 1.074	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: 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	E	0.41	0/3501	0.60	3/4741 (0.1%)
1	F	0.40	0/3558	0.61	3/4817 (0.1%)
1	G	0.40	0/3500	0.62	3/4738 (0.1%)
2	A	0.42	0/1718	0.66	2/2314 (0.1%)
2	a	0.43	0/1718	0.66	2/2314 (0.1%)
3	B	0.46	1/1545 (0.1%)	0.65	0/2092
3	b	0.46	1/1545 (0.1%)	0.65	0/2092
4	C	0.47	0/1320	0.63	1/1784 (0.1%)
4	c	0.47	0/1320	0.63	1/1784 (0.1%)
5	D	0.43	0/1956	0.58	0/2638
5	d	0.43	0/1956	0.58	0/2638
6	H	0.46	1/4563 (0.0%)	0.67	5/6173 (0.1%)
6	h	0.46	1/4563 (0.0%)	0.67	5/6173 (0.1%)
7	2	0.45	0/5051	0.64	1/6821 (0.0%)
7	i	0.45	0/5051	0.64	1/6821 (0.0%)
8	3	0.44	0/4739	0.78	3/6425 (0.0%)
8	j	0.44	0/4739	0.78	3/6425 (0.0%)
9	4	0.37	0/5479	0.62	2/7392 (0.0%)
9	k	0.37	0/5479	0.61	2/7392 (0.0%)
10	5	0.47	0/4750	0.69	4/6412 (0.1%)
10	l	0.47	0/4750	0.69	4/6412 (0.1%)
11	6	0.43	0/4789	0.65	3/6466 (0.0%)
11	m	0.43	0/4789	0.65	3/6466 (0.0%)
12	7	0.37	0/5299	0.61	3/7160 (0.0%)
12	n	0.37	0/5299	0.61	3/7160 (0.0%)
All	All	0.43	4/92977 (0.0%)	0.65	57/125650 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	E	0	1
1	F	0	1
1	G	0	1
8	3	0	1
8	j	0	1
All	All	0	5

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	h	478	TRP	CB-CG	-6.12	1.39	1.50
6	H	478	TRP	CB-CG	-6.07	1.39	1.50
3	B	11	PHE	C-N	-5.28	1.22	1.34
3	b	11	PHE	C-N	-5.25	1.22	1.34

All (57) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	j	17	PRO	CA-C-O	-29.18	50.16	120.20
8	3	17	PRO	CA-C-O	-29.18	50.17	120.20
8	3	17	PRO	CA-C-N	15.27	150.80	117.20
8	j	17	PRO	CA-C-N	15.23	150.72	117.20
1	G	766	PHE	C-N-CD	-13.93	89.95	120.60
8	j	17	PRO	O-C-N	-13.06	101.80	122.70
8	3	17	PRO	O-C-N	-13.01	101.88	122.70
1	F	766	PHE	C-N-CD	-10.80	96.84	120.60
1	E	766	PHE	C-N-CD	-10.31	97.92	120.60
1	G	766	PHE	C-N-CA	8.47	157.59	122.00
1	F	766	PHE	C-N-CA	8.29	156.84	122.00
1	E	766	PHE	C-N-CA	8.09	155.96	122.00
10	5	79	LEU	CA-CB-CG	7.61	132.81	115.30
10	l	79	LEU	CA-CB-CG	7.61	132.80	115.30
12	7	628	LEU	CA-CB-CG	7.45	132.44	115.30
12	7	139	LEU	CA-CB-CG	7.44	132.42	115.30
12	n	139	LEU	CA-CB-CG	7.43	132.40	115.30
12	n	628	LEU	CA-CB-CG	7.42	132.37	115.30
11	m	440	LEU	CA-CB-CG	7.40	132.33	115.30
11	6	440	LEU	CA-CB-CG	7.40	132.31	115.30
10	l	668	LEU	CA-CB-CG	7.28	132.03	115.30
10	5	668	LEU	CA-CB-CG	7.25	131.97	115.30
9	k	727	LEU	CA-CB-CG	6.75	130.83	115.30
9	4	727	LEU	CA-CB-CG	6.74	130.80	115.30
7	i	416	ASP	CB-CG-OD1	6.19	123.87	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	2	416	ASP	CB-CG-OD1	6.15	123.83	118.30
2	a	123	LEU	CB-CG-CD1	-6.05	100.71	111.00
2	A	123	LEU	CB-CG-CD1	-6.05	100.71	111.00
6	h	333	SER	N-CA-C	6.03	127.28	111.00
6	H	333	SER	N-CA-C	6.02	127.26	111.00
10	l	66	GLU	N-CA-C	5.93	127.02	111.00
10	5	66	GLU	N-CA-C	5.92	127.00	111.00
6	H	326	LEU	N-CA-C	-5.87	95.16	111.00
6	h	326	LEU	N-CA-C	-5.86	95.17	111.00
6	h	328	LEU	CA-CB-CG	5.83	128.71	115.30
6	H	328	LEU	CA-CB-CG	5.83	128.71	115.30
6	h	401	LEU	CA-CB-CG	5.65	128.29	115.30
11	6	382	ARG	N-CA-C	5.63	126.21	111.00
11	m	382	ARG	N-CA-C	5.63	126.21	111.00
6	H	401	LEU	CA-CB-CG	5.61	128.20	115.30
2	a	123	LEU	CA-CB-CG	5.60	128.18	115.30
2	A	123	LEU	CA-CB-CG	5.59	128.16	115.30
11	6	711	LEU	CA-CB-CG	-5.53	102.58	115.30
12	7	25	LEU	CA-CB-CG	5.51	127.97	115.30
12	n	25	LEU	CA-CB-CG	5.50	127.95	115.30
11	m	711	LEU	CA-CB-CG	-5.49	102.67	115.30
1	E	767	PRO	CA-N-CD	-5.47	103.84	111.50
6	H	165	LEU	CA-CB-CG	5.41	127.73	115.30
6	h	165	LEU	CA-CB-CG	5.37	127.66	115.30
10	5	45	ILE	N-CA-C	5.14	124.89	111.00
1	F	767	PRO	CA-N-CD	-5.14	104.31	111.50
10	l	45	ILE	N-CA-C	5.13	124.84	111.00
9	4	425	ASP	CB-CG-OD2	5.12	122.91	118.30
1	G	767	PRO	CA-N-CD	-5.06	104.42	111.50
9	k	425	ASP	CB-CG-OD2	5.03	122.82	118.30
4	c	165	PHE	N-CA-C	5.02	124.56	111.00
4	C	165	PHE	N-CA-C	5.01	124.52	111.00

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
8	3	17	PRO	Mainchain
1	E	766	PHE	Peptide
1	F	766	PHE	Peptide
1	G	766	PHE	Peptide
8	j	17	PRO	Mainchain

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	E	419/927 (45%)	407 (97%)	11 (3%)	1 (0%)	47	81
1	F	428/927 (46%)	415 (97%)	12 (3%)	1 (0%)	47	81
1	G	417/927 (45%)	407 (98%)	9 (2%)	1 (0%)	47	81
2	A	206/208 (99%)	179 (87%)	26 (13%)	1 (0%)	29	69
2	a	206/208 (99%)	180 (87%)	25 (12%)	1 (0%)	29	69
3	B	177/213 (83%)	150 (85%)	27 (15%)	0	100	100
3	b	177/213 (83%)	150 (85%)	27 (15%)	0	100	100
4	C	151/194 (78%)	139 (92%)	12 (8%)	0	100	100
4	c	151/194 (78%)	139 (92%)	12 (8%)	0	100	100
5	D	226/294 (77%)	202 (89%)	24 (11%)	0	100	100
5	d	226/294 (77%)	202 (89%)	24 (11%)	0	100	100
6	H	543/650 (84%)	476 (88%)	64 (12%)	3 (1%)	25	66
6	h	543/650 (84%)	476 (88%)	64 (12%)	3 (1%)	25	66
7	2	630/868 (73%)	537 (85%)	93 (15%)	0	100	100
7	i	630/868 (73%)	537 (85%)	93 (15%)	0	100	100
8	3	584/971 (60%)	506 (87%)	77 (13%)	1 (0%)	47	81
8	j	584/971 (60%)	506 (87%)	76 (13%)	2 (0%)	41	76
9	4	668/933 (72%)	579 (87%)	89 (13%)	0	100	100
9	k	668/933 (72%)	578 (86%)	90 (14%)	0	100	100
10	5	583/775 (75%)	493 (85%)	89 (15%)	1 (0%)	47	81
10	l	583/775 (75%)	493 (85%)	89 (15%)	1 (0%)	47	81

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
11	6	606/1017 (60%)	506 (84%)	99 (16%)	1 (0%)	47	81
11	m	606/1017 (60%)	506 (84%)	99 (16%)	1 (0%)	47	81
12	7	653/845 (77%)	556 (85%)	97 (15%)	0	100	100
12	n	653/845 (77%)	554 (85%)	99 (15%)	0	100	100
All	All	11318/16717 (68%)	9873 (87%)	1427 (13%)	18 (0%)	50	81

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	h	334	LEU
6	H	334	LEU
1	G	767	PRO
6	h	332	SER
10	l	147	PRO
11	m	305	TYR
6	H	332	SER
10	5	147	PRO
11	6	305	TYR
1	E	767	PRO
2	a	30	PRO
2	A	30	PRO
8	j	311	SER
8	j	669	PRO
8	3	669	PRO
1	F	767	PRO
6	h	146	GLY
6	H	146	GLY

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	E	377/825 (46%)	377 (100%)	0	100	100
1	F	384/825 (46%)	384 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	377/825 (46%)	377 (100%)	0	100	100
2	A	193/193 (100%)	193 (100%)	0	100	100
2	a	193/193 (100%)	193 (100%)	0	100	100
3	B	171/198 (86%)	170 (99%)	1 (1%)	86	92
3	b	171/198 (86%)	170 (99%)	1 (1%)	86	92
4	C	144/173 (83%)	142 (99%)	2 (1%)	67	80
4	c	144/173 (83%)	142 (99%)	2 (1%)	67	80
5	D	225/279 (81%)	225 (100%)	0	100	100
5	d	225/279 (81%)	225 (100%)	0	100	100
6	H	499/586 (85%)	496 (99%)	3 (1%)	86	92
6	h	499/586 (85%)	496 (99%)	3 (1%)	86	92
7	2	535/770 (70%)	529 (99%)	6 (1%)	73	84
7	i	535/770 (70%)	529 (99%)	6 (1%)	73	84
8	3	515/835 (62%)	512 (99%)	3 (1%)	86	92
8	j	515/835 (62%)	512 (99%)	3 (1%)	86	92
9	4	610/848 (72%)	604 (99%)	6 (1%)	76	86
9	k	610/848 (72%)	605 (99%)	5 (1%)	81	89
10	5	534/688 (78%)	527 (99%)	7 (1%)	69	82
10	l	534/688 (78%)	527 (99%)	7 (1%)	69	82
11	6	493/886 (56%)	487 (99%)	6 (1%)	71	83
11	m	493/886 (56%)	487 (99%)	6 (1%)	71	83
12	7	585/753 (78%)	581 (99%)	4 (1%)	84	90
12	n	585/753 (78%)	581 (99%)	4 (1%)	84	90
All	All	10146/14893 (68%)	10071 (99%)	75 (1%)	84	90

All (75) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	b	80	LYS
4	c	20	PHE
4	c	84	VAL
6	h	160	TYR
6	h	241	TYR
6	h	411	ARG

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Mol	Chain	Res	Type
7	i	230	ARG
7	i	324	VAL
7	i	384	ASN
7	i	439	ASN
7	i	444	PHE
7	i	476	TRP
8	j	172	THR
8	j	291	ARG
8	j	339	ARG
9	k	349	CYS
9	k	445	ARG
9	k	451	ARG
9	k	697	PRO
9	k	928	ARG
10	l	66	GLU
10	l	275	THR
10	l	295	VAL
10	l	326	PRO
10	l	486	ARG
10	l	501	THR
10	l	675	ARG
11	m	296	ARG
11	m	350	ARG
11	m	381	LEU
11	m	540	HIS
11	m	581	LYS
11	m	675	ARG
12	n	117	PHE
12	n	329	ARG
12	n	479	ARG
12	n	718	ARG
3	B	80	LYS
4	C	20	PHE
4	C	84	VAL
6	H	160	TYR
6	H	241	TYR
6	H	411	ARG
7	2	230	ARG
7	2	324	VAL
7	2	384	ASN
7	2	439	ASN
7	2	444	PHE

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Mol	Chain	Res	Type
7	2	476	TRP
8	3	172	THR
8	3	291	ARG
8	3	339	ARG
9	4	349	CYS
9	4	445	ARG
9	4	451	ARG
9	4	468	LYS
9	4	697	PRO
9	4	928	ARG
10	5	66	GLU
10	5	275	THR
10	5	295	VAL
10	5	326	PRO
10	5	486	ARG
10	5	501	THR
10	5	675	ARG
11	6	296	ARG
11	6	350	ARG
11	6	381	LEU
11	6	540	HIS
11	6	581	LYS
11	6	675	ARG
12	7	117	PHE
12	7	329	ARG
12	7	479	ARG
12	7	718	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (163) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	527	HIS
1	E	573	GLN
1	F	548	GLN
1	F	678	ASN
1	F	790	ASN
1	G	622	ASN
1	G	790	ASN
2	a	28	ASN
2	a	39	ASN
2	a	90	GLN
2	a	182	ASN

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Mol	Chain	Res	Type
3	b	103	GLN
4	c	21	GLN
4	c	41	ASN
4	c	130	GLN
4	c	133	GLN
4	c	181	HIS
6	h	18	ASN
6	h	22	HIS
6	h	26	GLN
6	h	52	GLN
6	h	55	GLN
6	h	70	HIS
6	h	155	GLN
6	h	289	ASN
6	h	331	HIS
6	h	374	GLN
6	h	395	ASN
6	h	468	ASN
6	h	497	GLN
6	h	563	GLN
6	h	604	ASN
7	i	202	ASN
7	i	238	ASN
7	i	245	ASN
7	i	333	GLN
7	i	340	ASN
7	i	433	ASN
7	i	526	ASN
7	i	551	GLN
7	i	779	HIS
7	i	780	GLN
7	i	809	HIS
8	j	51	ASN
8	j	52	ASN
8	j	57	ASN
8	j	210	HIS
8	j	312	ASN
8	j	330	HIS
8	j	351	ASN
8	j	503	HIS
8	j	554	ASN
8	j	677	ASN

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Mol	Chain	Res	Type
9	k	184	ASN
9	k	196	ASN
9	k	274	GLN
9	k	413	HIS
9	k	858	GLN
9	k	876	GLN
10	l	53	ASN
10	l	67	HIS
10	l	185	ASN
10	l	203	ASN
10	l	254	GLN
10	l	539	ASN
10	l	561	ASN
10	l	574	ASN
10	l	617	GLN
10	l	652	GLN
11	m	182	GLN
11	m	514	ASN
11	m	570	ASN
11	m	750	GLN
11	m	814	ASN
11	m	833	GLN
12	n	87	GLN
12	n	150	ASN
12	n	292	ASN
12	n	293	GLN
12	n	316	GLN
12	n	326	HIS
12	n	379	GLN
12	n	383	GLN
12	n	468	GLN
12	n	657	ASN
12	n	683	GLN
2	A	28	ASN
2	A	39	ASN
2	A	90	GLN
2	A	182	ASN
3	B	103	GLN
4	C	21	GLN
4	C	41	ASN
4	C	133	GLN
4	C	181	HIS

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Mol	Chain	Res	Type
6	H	13	ASN
6	H	18	ASN
6	H	22	HIS
6	H	26	GLN
6	H	52	GLN
6	H	55	GLN
6	H	70	HIS
6	H	155	GLN
6	H	289	ASN
6	H	331	HIS
6	H	374	GLN
6	H	395	ASN
6	H	402	GLN
6	H	468	ASN
6	H	497	GLN
6	H	563	GLN
6	H	604	ASN
7	2	202	ASN
7	2	238	ASN
7	2	245	ASN
7	2	333	GLN
7	2	340	ASN
7	2	433	ASN
7	2	526	ASN
7	2	551	GLN
7	2	779	HIS
7	2	780	GLN
7	2	809	HIS
8	3	51	ASN
8	3	52	ASN
8	3	57	ASN
8	3	210	HIS
8	3	312	ASN
8	3	330	HIS
8	3	351	ASN
8	3	554	ASN
8	3	677	ASN
9	4	184	ASN
9	4	196	ASN
9	4	274	GLN
9	4	413	HIS
9	4	858	GLN

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Mol	Chain	Res	Type
9	4	876	GLN
10	5	53	ASN
10	5	67	HIS
10	5	203	ASN
10	5	254	GLN
10	5	539	ASN
10	5	561	ASN
10	5	574	ASN
10	5	617	GLN
10	5	652	GLN
11	6	182	GLN
11	6	514	ASN
11	6	570	ASN
11	6	750	GLN
11	6	814	ASN
11	6	833	GLN
12	7	87	GLN
12	7	292	ASN
12	7	293	GLN
12	7	316	GLN
12	7	326	HIS
12	7	379	GLN
12	7	383	GLN
12	7	468	GLN
12	7	657	ASN
12	7	683	GLN

5.3.3 RNA [i](#)

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 monosaccharides in this entry.

5.6 Ligand geometry

6 ligands are modelled in this entry.

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
13	ATP	5	801	-	26,33,33	0.87	1 (3%)	31,52,52	1.93	7 (22%)
13	ATP	j	1001	-	26,33,33	0.92	1 (3%)	31,52,52	1.90	6 (19%)
13	ATP	2	901	-	26,33,33	0.91	1 (3%)	31,52,52	1.64	5 (16%)
13	ATP	l	801	-	26,33,33	0.86	1 (3%)	31,52,52	1.93	7 (22%)
13	ATP	i	901	-	26,33,33	0.92	1 (3%)	31,52,52	1.64	5 (16%)
13	ATP	3	1001	-	26,33,33	0.91	1 (3%)	31,52,52	1.90	6 (19%)

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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
13	ATP	5	801	-	-	4/18/38/38	0/3/3/3
13	ATP	j	1001	-	-	4/18/38/38	0/3/3/3
13	ATP	2	901	-	-	6/18/38/38	0/3/3/3
13	ATP	l	801	-	-	4/18/38/38	0/3/3/3
13	ATP	i	901	-	-	6/18/38/38	0/3/3/3
13	ATP	3	1001	-	-	4/18/38/38	0/3/3/3

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	i	901	ATP	C5-C4	2.17	1.46	1.40
13	2	901	ATP	C5-C4	2.12	1.46	1.40
13	j	1001	ATP	C5-C4	2.12	1.46	1.40
13	3	1001	ATP	C5-C4	2.06	1.46	1.40
13	l	801	ATP	C5-C4	2.01	1.46	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	5	801	ATP	C5-C4	2.01	1.46	1.40

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	j	1001	ATP	PA-O3A-PB	-6.31	111.18	132.83
13	3	1001	ATP	PA-O3A-PB	-6.30	111.19	132.83
13	5	801	ATP	PA-O3A-PB	-5.28	114.70	132.83
13	1	801	ATP	PA-O3A-PB	-5.28	114.71	132.83
13	5	801	ATP	PB-O3B-PG	-5.04	115.55	132.83
13	1	801	ATP	PB-O3B-PG	-5.03	115.57	132.83
13	i	901	ATP	PA-O3A-PB	-4.66	116.85	132.83
13	2	901	ATP	PA-O3A-PB	-4.63	116.94	132.83
13	3	1001	ATP	PB-O3B-PG	-4.42	117.67	132.83
13	j	1001	ATP	PB-O3B-PG	-4.41	117.70	132.83
13	5	801	ATP	N3-C2-N1	-3.70	122.89	128.68
13	1	801	ATP	N3-C2-N1	-3.68	122.92	128.68
13	i	901	ATP	C3'-C2'-C1'	3.25	105.86	100.98
13	2	901	ATP	C3'-C2'-C1'	3.22	105.83	100.98
13	2	901	ATP	PB-O3B-PG	-3.15	122.03	132.83
13	i	901	ATP	PB-O3B-PG	-3.12	122.12	132.83
13	3	1001	ATP	N3-C2-N1	-3.12	123.80	128.68
13	j	1001	ATP	N3-C2-N1	-3.09	123.84	128.68
13	1	801	ATP	C4-C5-N7	-2.99	106.28	109.40
13	3	1001	ATP	C3'-C2'-C1'	2.96	105.43	100.98
13	j	1001	ATP	C3'-C2'-C1'	2.95	105.42	100.98
13	2	901	ATP	N3-C2-N1	-2.93	124.10	128.68
13	5	801	ATP	C4-C5-N7	-2.93	106.35	109.40
13	i	901	ATP	N3-C2-N1	-2.86	124.20	128.68
13	i	901	ATP	C4-C5-N7	-2.76	106.52	109.40
13	2	901	ATP	C4-C5-N7	-2.70	106.58	109.40
13	1	801	ATP	O3G-PG-O2G	2.27	116.29	107.64
13	5	801	ATP	O3G-PG-O2G	2.26	116.26	107.64
13	1	801	ATP	C3'-C2'-C1'	2.23	104.33	100.98
13	5	801	ATP	C3'-C2'-C1'	2.22	104.32	100.98
13	5	801	ATP	C2-N1-C6	2.21	122.54	118.75
13	1	801	ATP	C2-N1-C6	2.19	122.51	118.75
13	3	1001	ATP	C4-C5-N7	-2.18	107.12	109.40
13	j	1001	ATP	C4-C5-N7	-2.17	107.14	109.40
13	j	1001	ATP	C2'-C3'-C4'	2.14	106.79	102.64
13	3	1001	ATP	C2'-C3'-C4'	2.09	106.70	102.64

There are no chirality outliers.

All (28) torsion outliers are listed below:

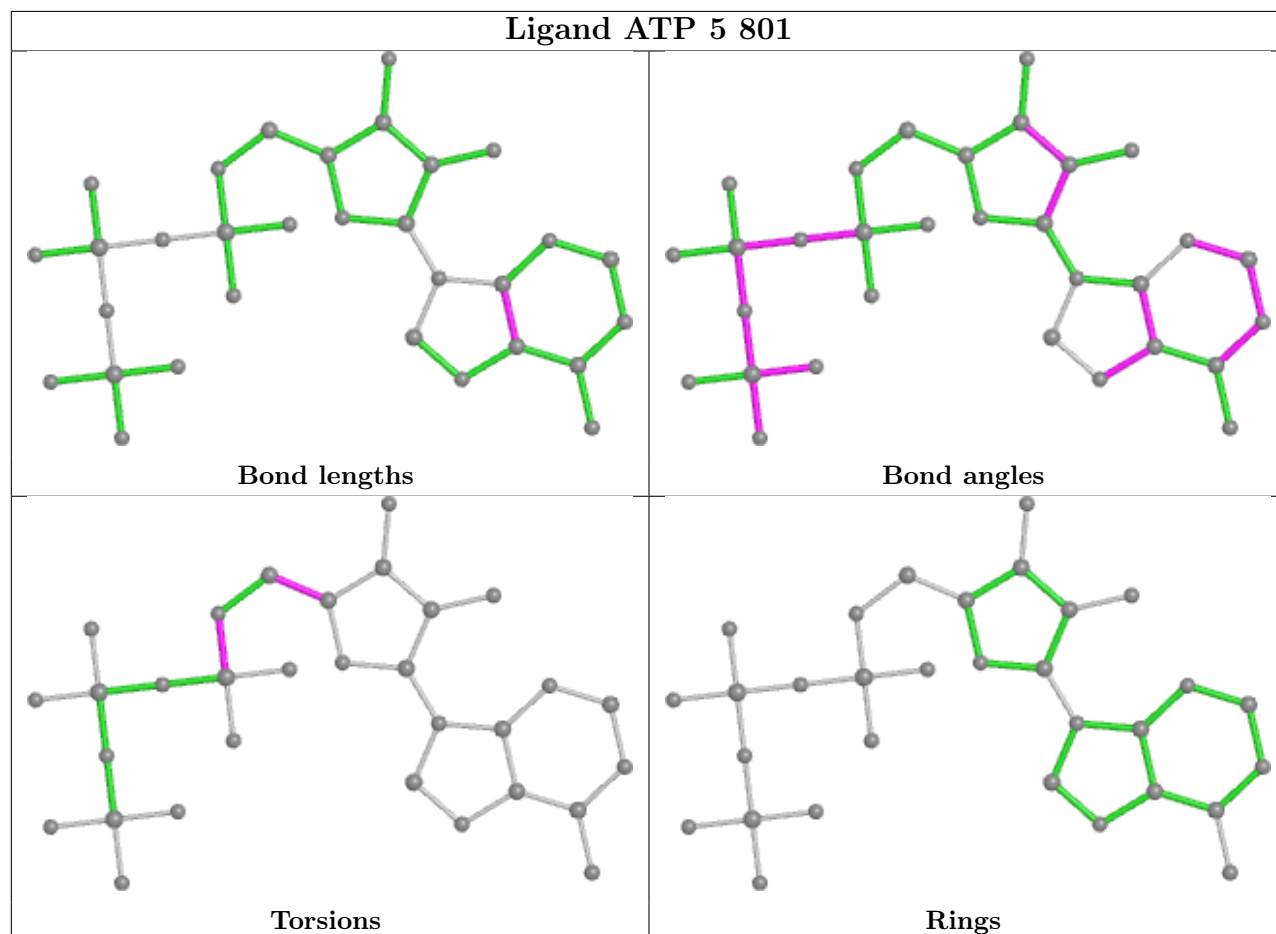
Mol	Chain	Res	Type	Atoms
13	i	901	ATP	C5'-O5'-PA-O1A
13	i	901	ATP	C5'-O5'-PA-O2A
13	j	1001	ATP	C5'-O5'-PA-O2A
13	j	1001	ATP	C5'-O5'-PA-O3A
13	2	901	ATP	C5'-O5'-PA-O1A
13	2	901	ATP	C5'-O5'-PA-O2A
13	3	1001	ATP	C5'-O5'-PA-O2A
13	3	1001	ATP	C5'-O5'-PA-O3A
13	i	901	ATP	C3'-C4'-C5'-O5'
13	2	901	ATP	C3'-C4'-C5'-O5'
13	i	901	ATP	O4'-C4'-C5'-O5'
13	2	901	ATP	O4'-C4'-C5'-O5'
13	j	1001	ATP	C3'-C4'-C5'-O5'
13	3	1001	ATP	C3'-C4'-C5'-O5'
13	j	1001	ATP	O4'-C4'-C5'-O5'
13	3	1001	ATP	O4'-C4'-C5'-O5'
13	1	801	ATP	O4'-C4'-C5'-O5'
13	5	801	ATP	O4'-C4'-C5'-O5'
13	i	901	ATP	C4'-C5'-O5'-PA
13	2	901	ATP	C4'-C5'-O5'-PA
13	1	801	ATP	C5'-O5'-PA-O2A
13	5	801	ATP	C5'-O5'-PA-O2A
13	1	801	ATP	C3'-C4'-C5'-O5'
13	5	801	ATP	C3'-C4'-C5'-O5'
13	i	901	ATP	C5'-O5'-PA-O3A
13	1	801	ATP	C5'-O5'-PA-O3A
13	2	901	ATP	C5'-O5'-PA-O3A
13	5	801	ATP	C5'-O5'-PA-O3A

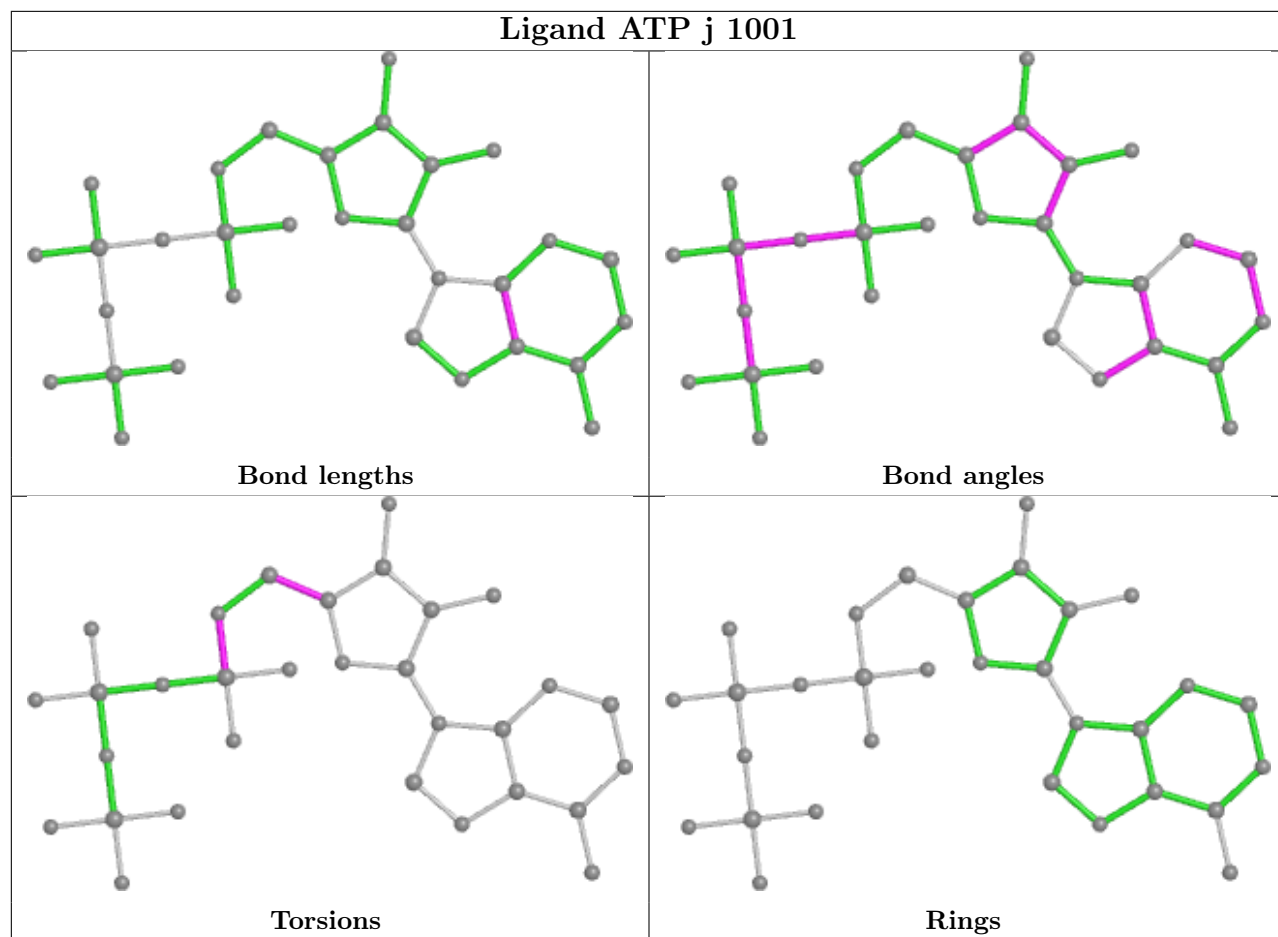
There are no ring outliers.

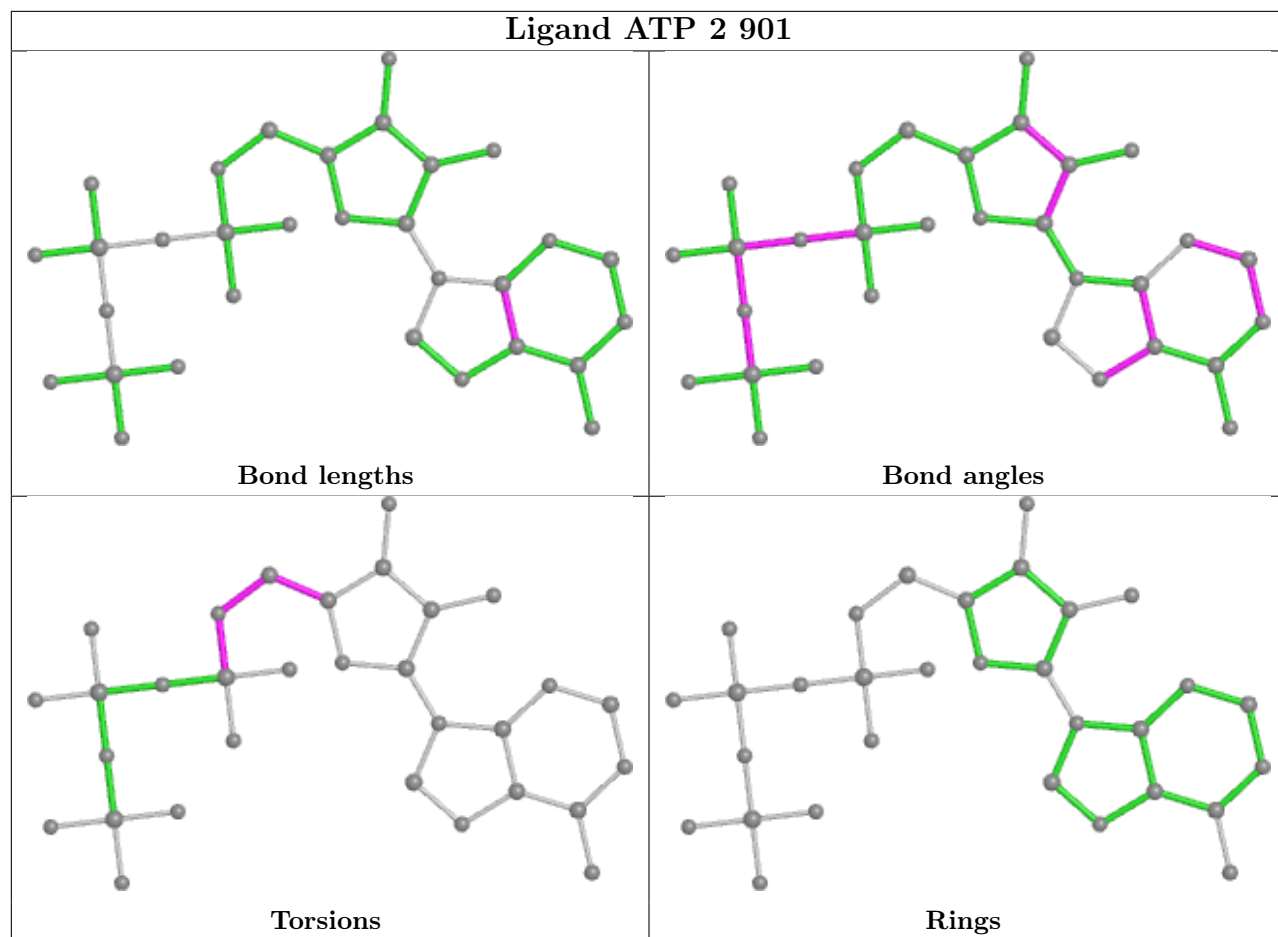
No monomer is involved in short contacts.

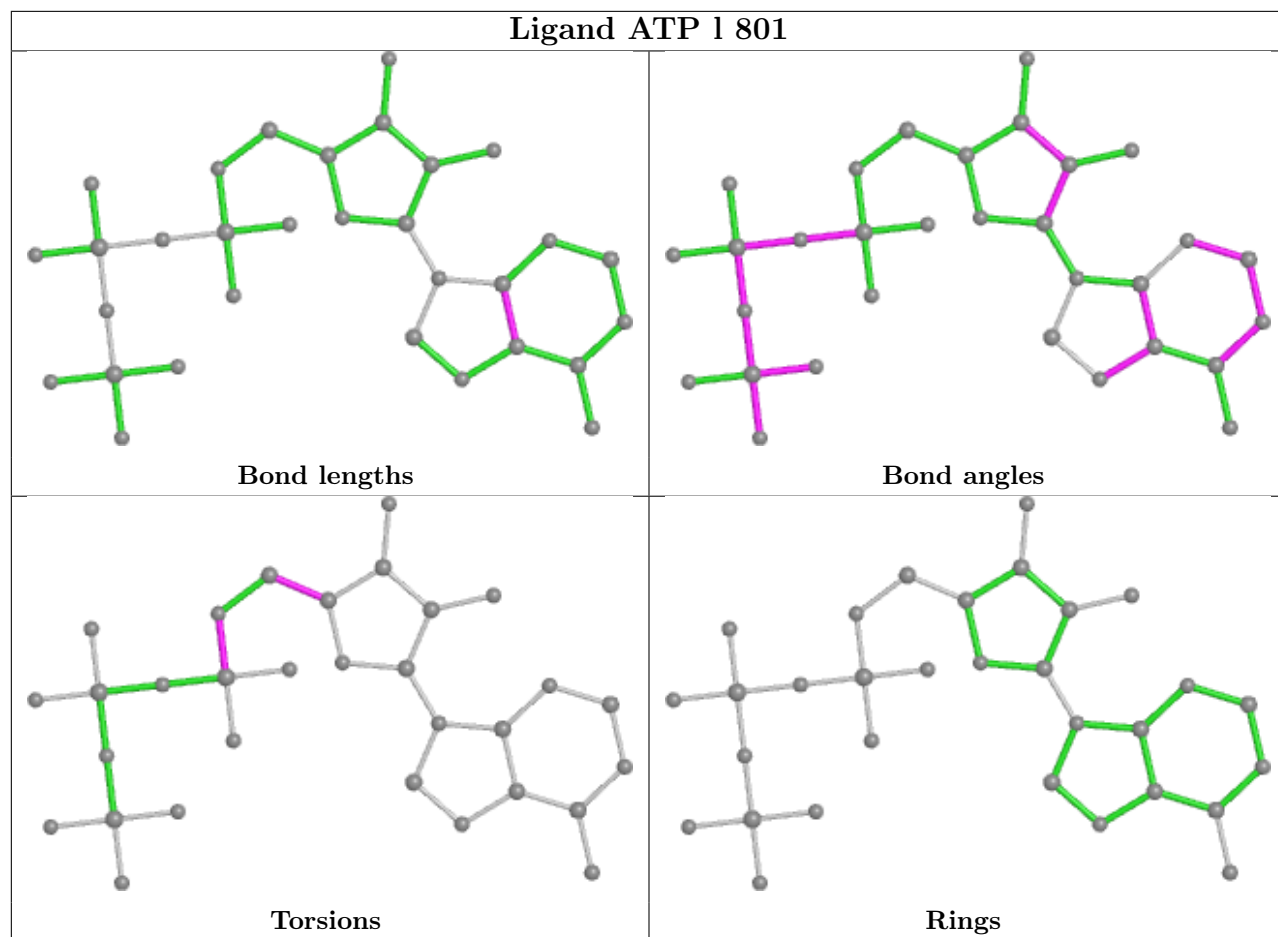
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 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

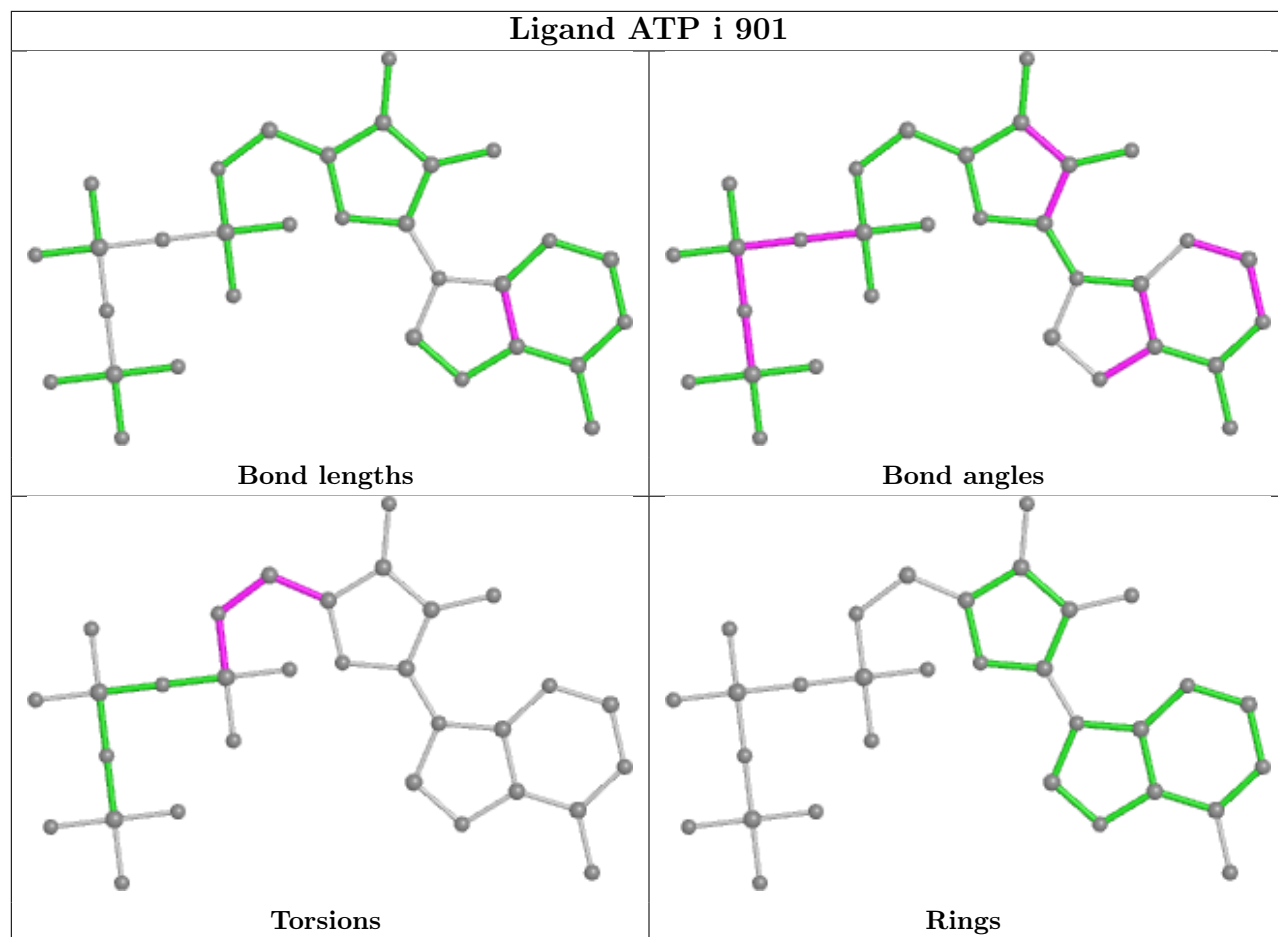
any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

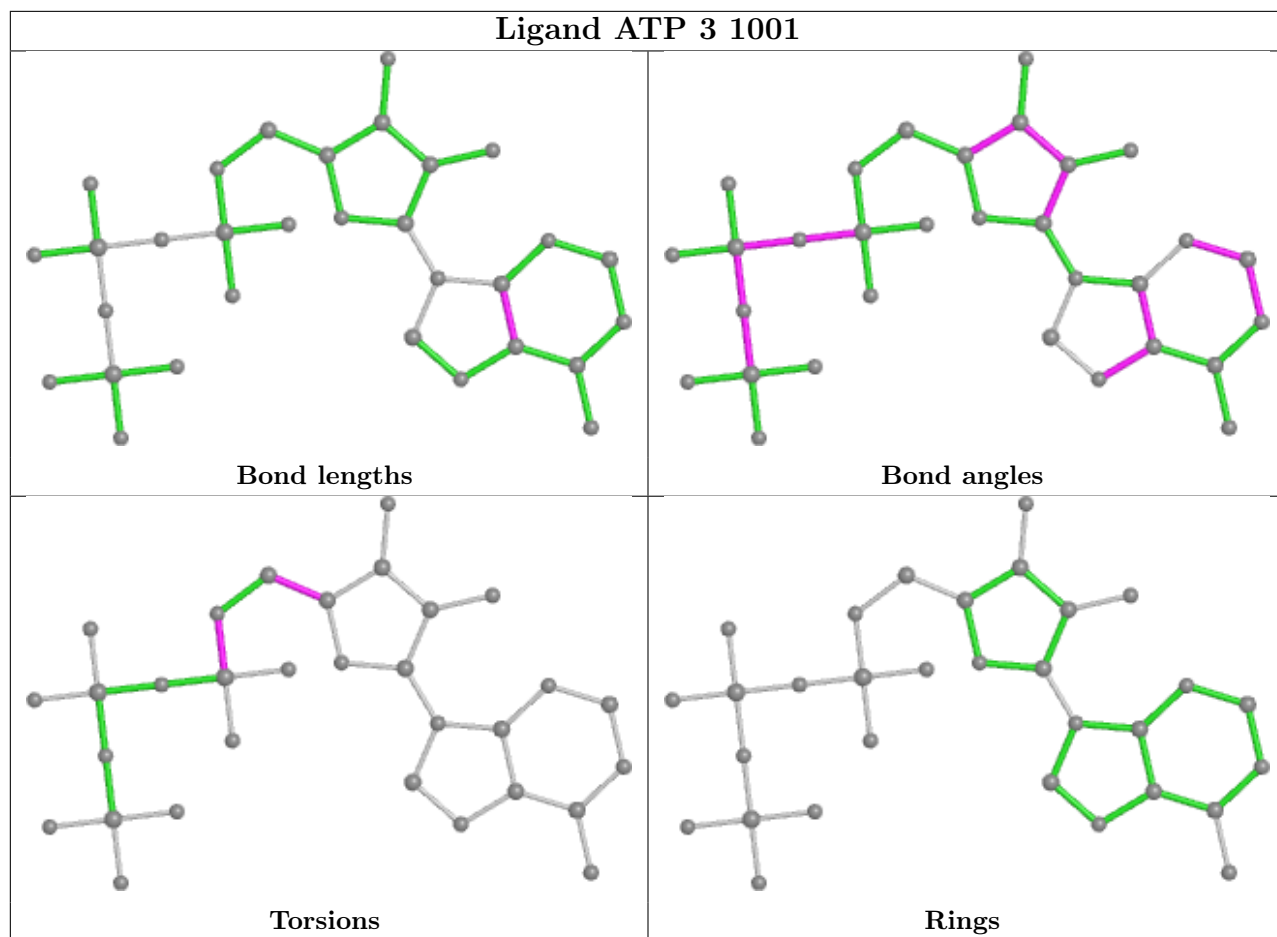












5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [\(i\)](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	G	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	G	776:ILE	C	777:ARG	N	2.04

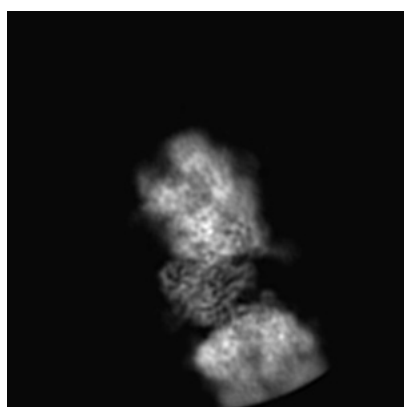
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20472. These allow visual inspection of the internal detail of the map and identification of artifacts.

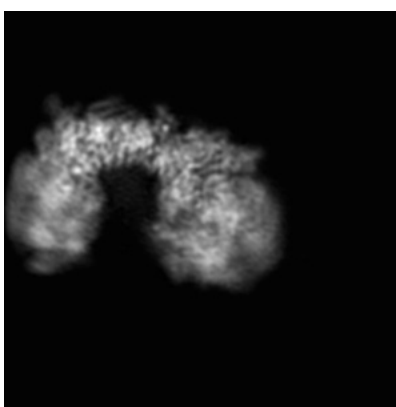
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

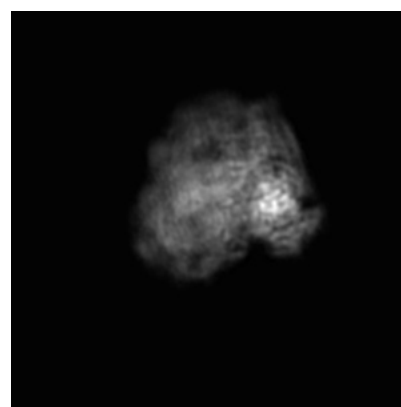
6.1.1 Primary map



X



Y

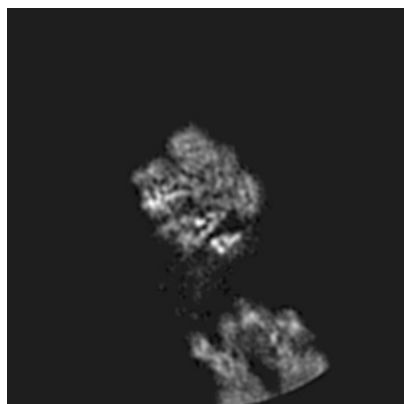


Z

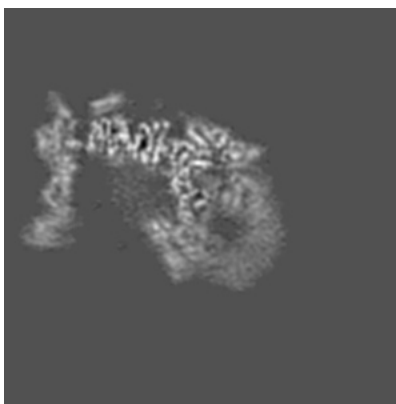
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

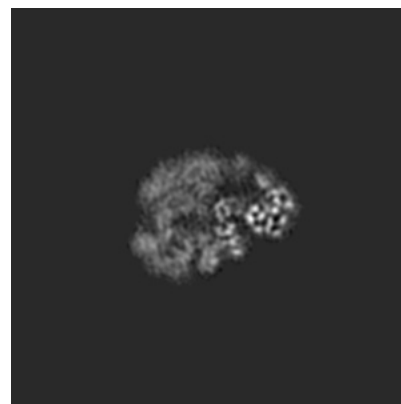
6.2.1 Primary map



X Index: 200



Y Index: 200

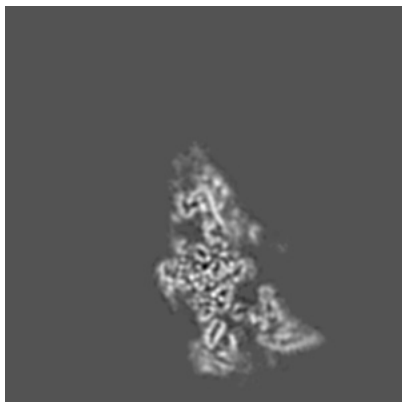


Z Index: 200

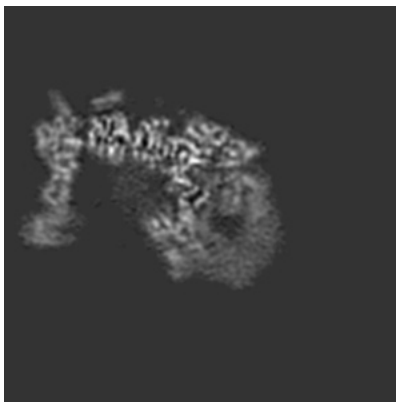
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

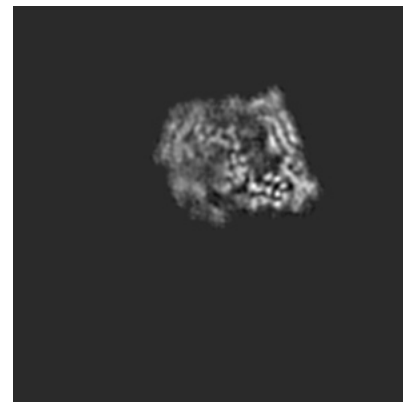
6.3.1 Primary map



X Index: 264



Y Index: 202



Z Index: 68

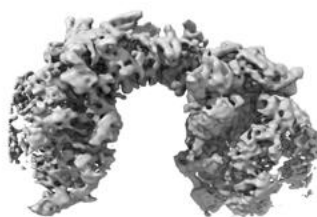
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

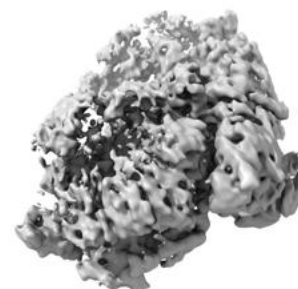
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0246. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

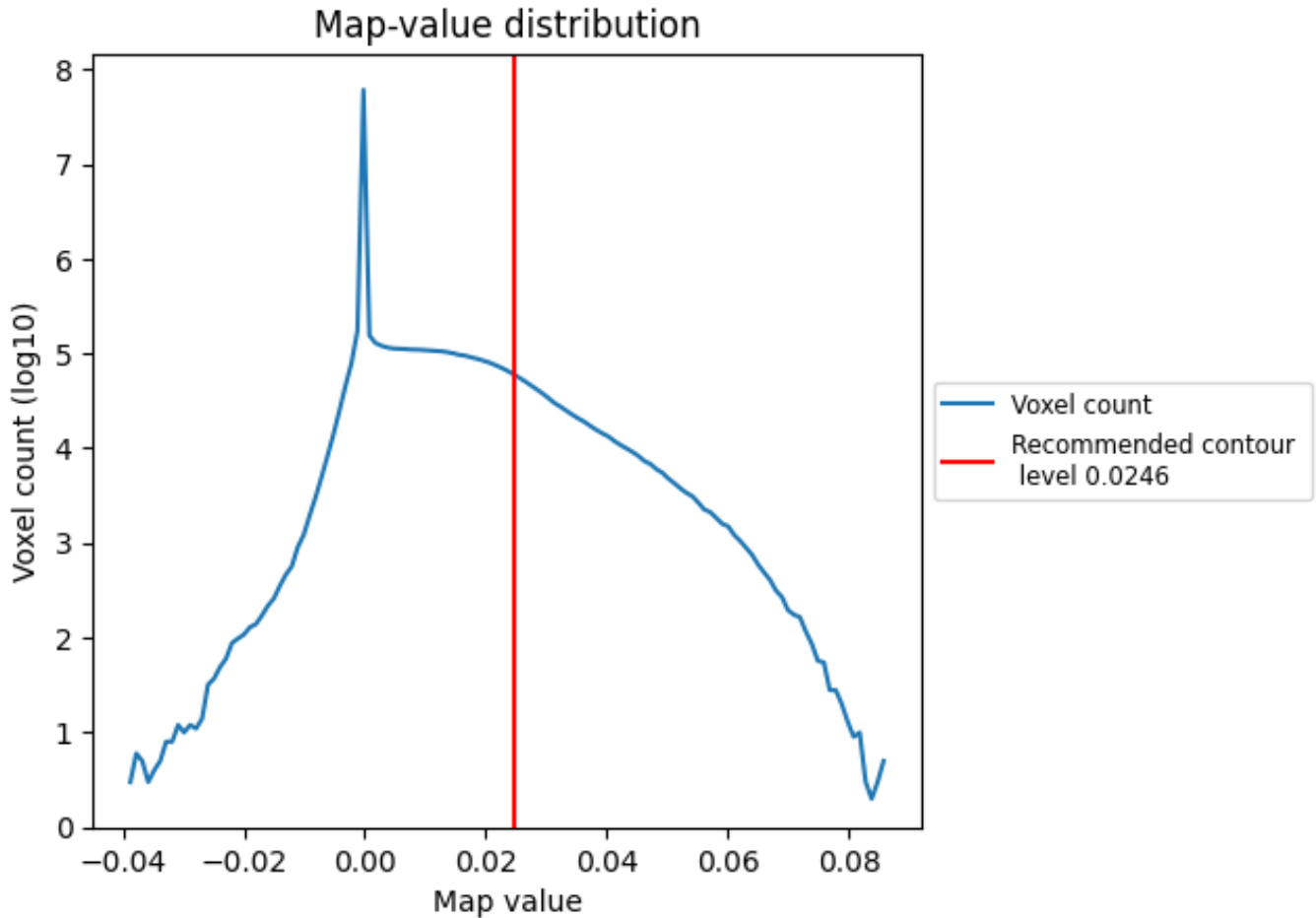
6.5 Mask visualisation

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

7 Map analysis [i](#)

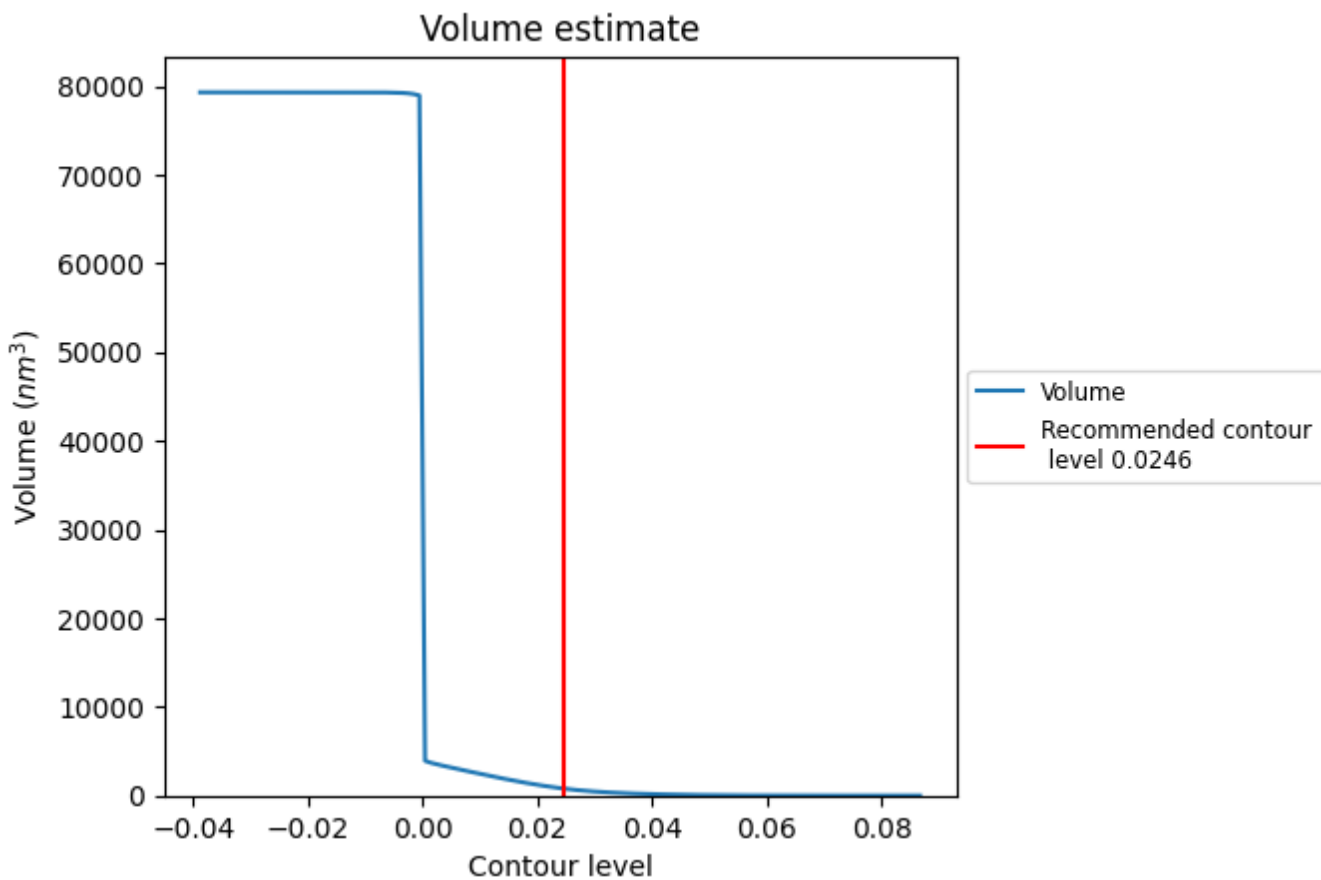
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

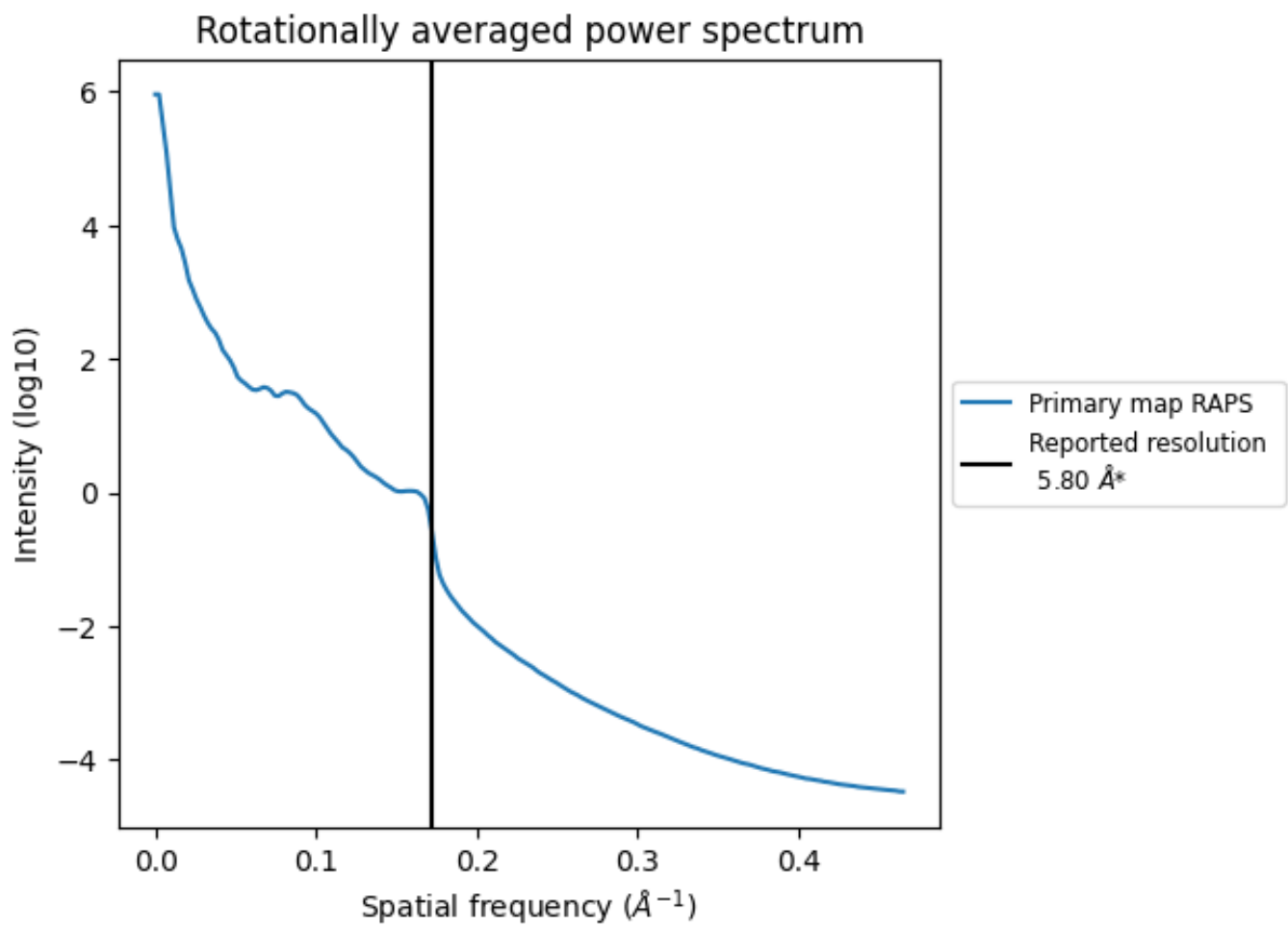
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 790 nm³; this corresponds to an approximate mass of 713 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 0.172\AA^{-1}

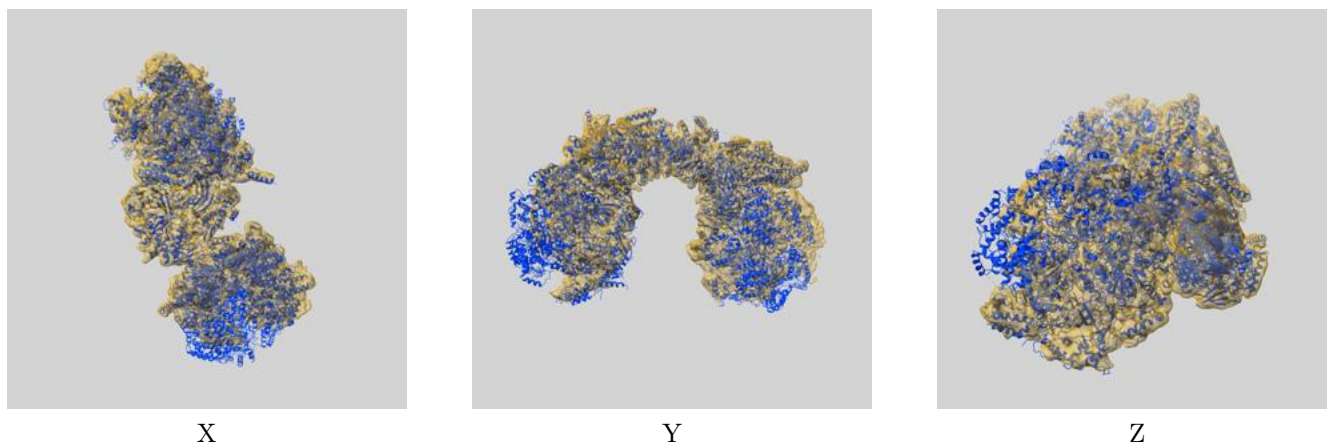
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

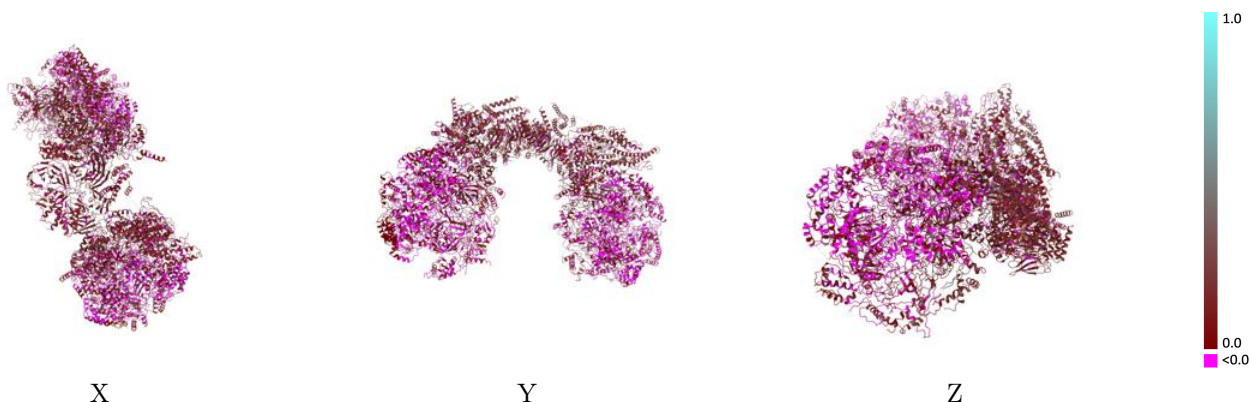
This section contains information regarding the fit between EMDB map EMD-20472 and PDB model 6PTN. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay [i](#)



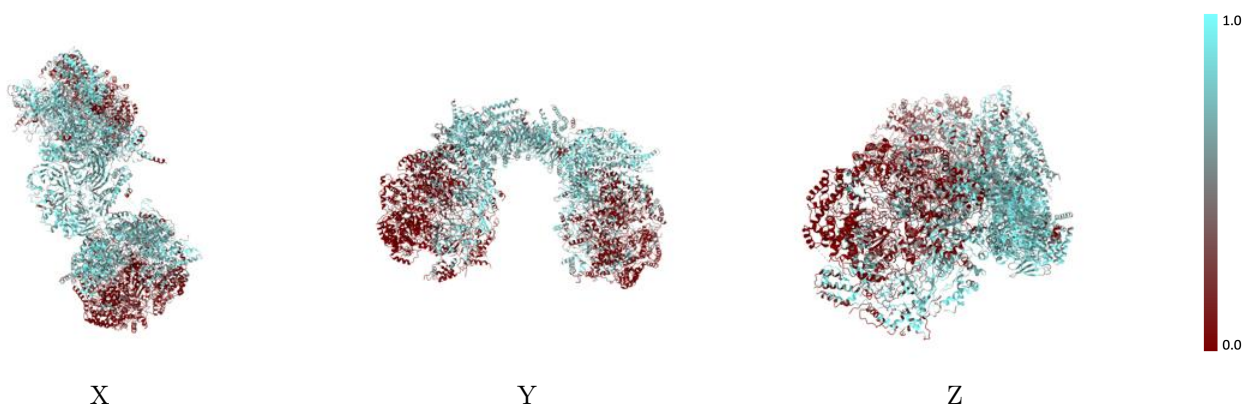
The images above show the 3D surface view of the map at the recommended contour level 0.0246 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



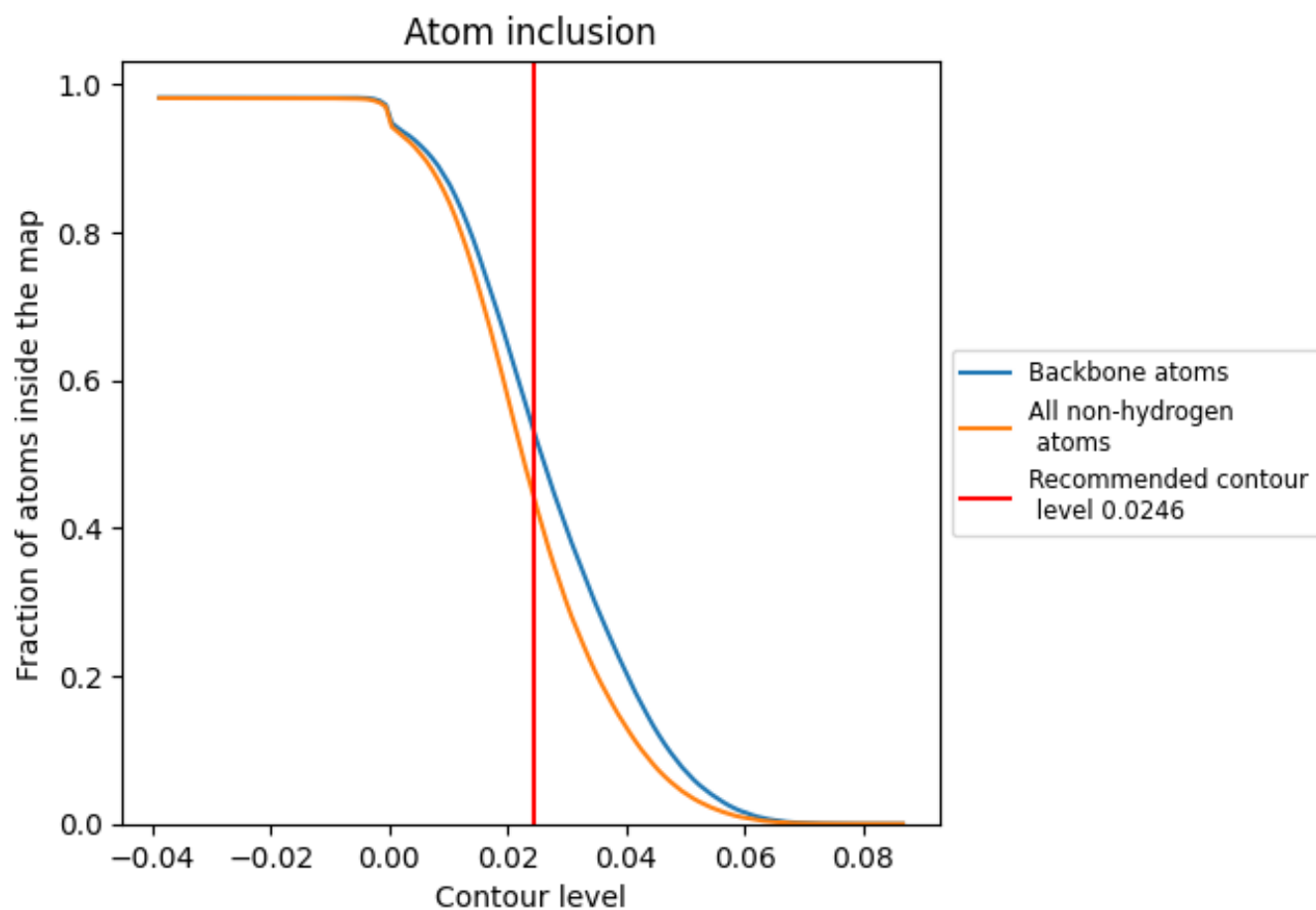
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0246).





















































9.4 Atom inclusion [i](#)



At the recommended contour level, 53% of all backbone atoms, 44% 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 (0.0246) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4365	 0.0870
2	 0.2415	 0.0390
3	 0.3322	 0.0510
4	 0.1458	 0.0290
5	 0.3517	 0.0660
6	 0.1943	 0.0320
7	 0.1583	 0.0290
A	 0.6825	 0.1640
B	 0.6729	 0.1620
C	 0.6837	 0.1410
D	 0.7086	 0.1630
E	 0.7115	 0.1720
F	 0.7071	 0.1510
G	 0.7166	 0.1680
H	 0.6803	 0.1390
a	 0.7450	 0.1660
b	 0.7483	 0.1750
c	 0.7364	 0.1610
d	 0.7483	 0.1740
h	 0.6771	 0.1390
i	 0.3084	 0.0380
j	 0.4638	 0.0880
k	 0.2588	 0.0460
l	 0.4063	 0.0750
m	 0.3485	 0.0570
n	 0.3288	 0.0540

