



Full wwPDB EM Validation Report ⓘ

Oct 5, 2024 – 10:55 PM EDT

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:

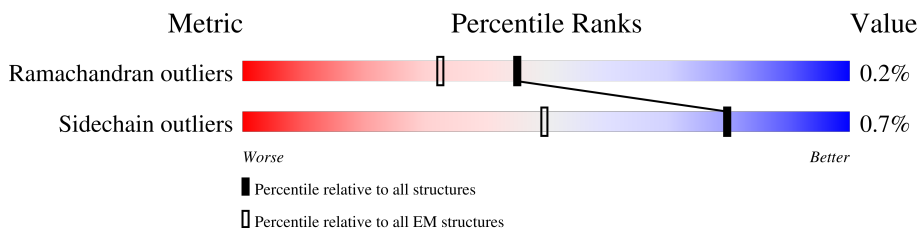
EMDB validation analysis : 0.0.1.dev113
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

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 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	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 $\leq 5\%$. 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

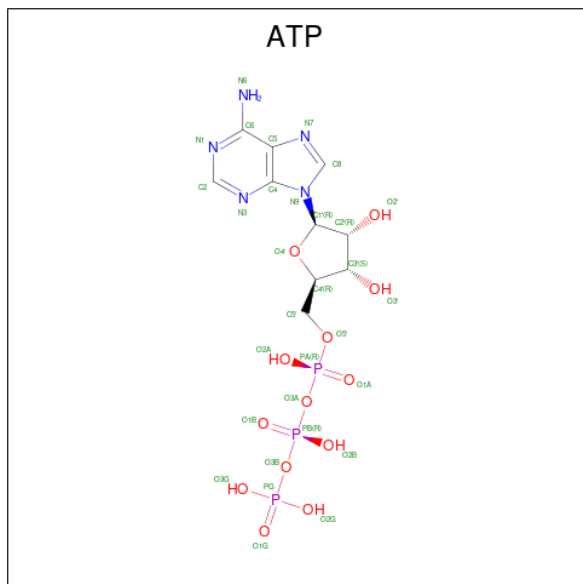
- Molecule 11 is a protein called DNA replication licensing factor MCM6.

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: C₁₀H₁₆N₅O₁₃P₃) (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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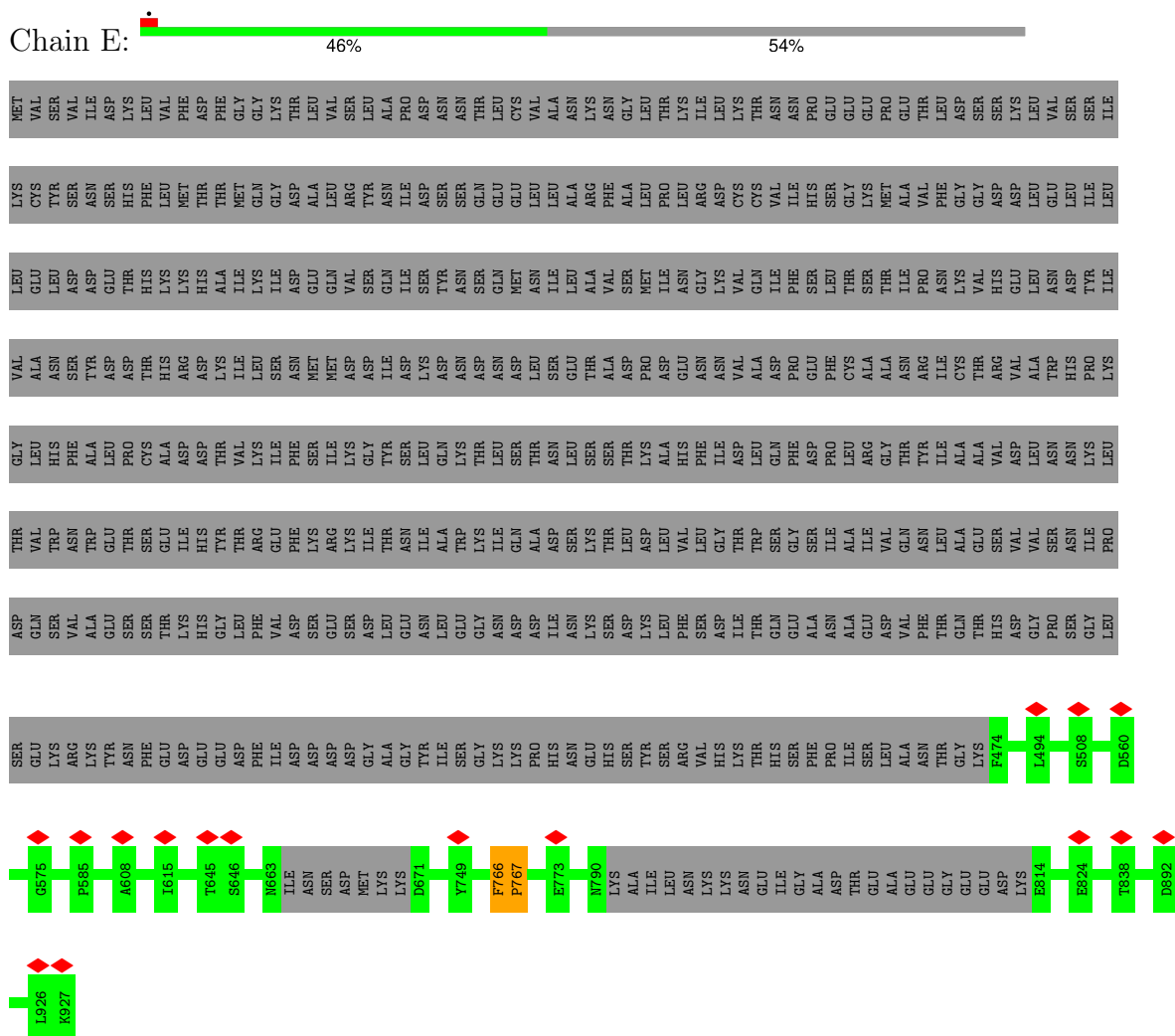
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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
13	j	1	Total 31	10	5	13	3	0
13	1	1	Total 31	10	5	13	3	0
13	2	1	Total 31	10	5	13	3	0
13	3	1	Total 31	10	5	13	3	0
13	5	1	Total 31	10	5	13	3	0

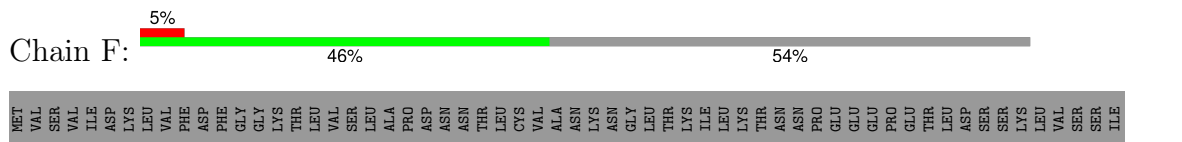
3 Residue-property plots

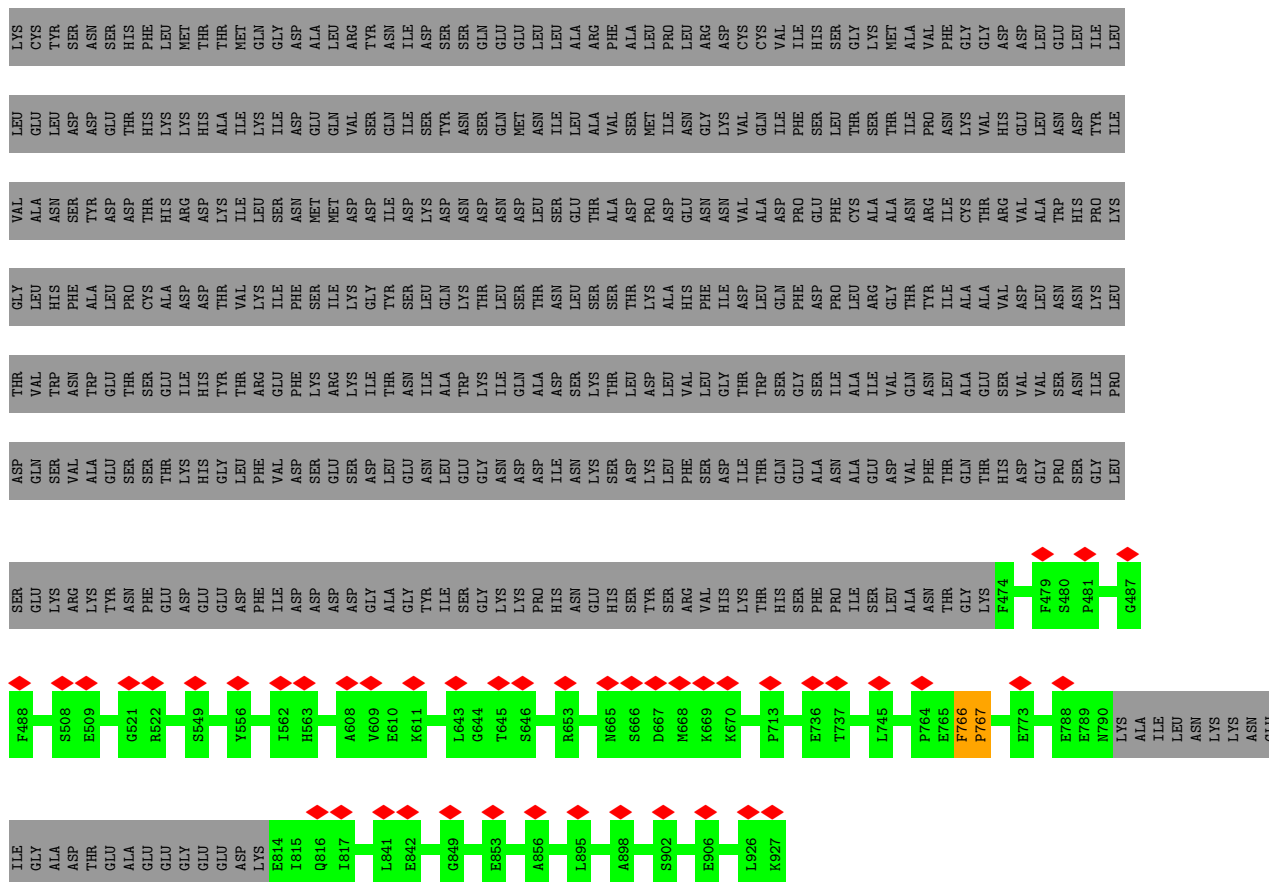
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

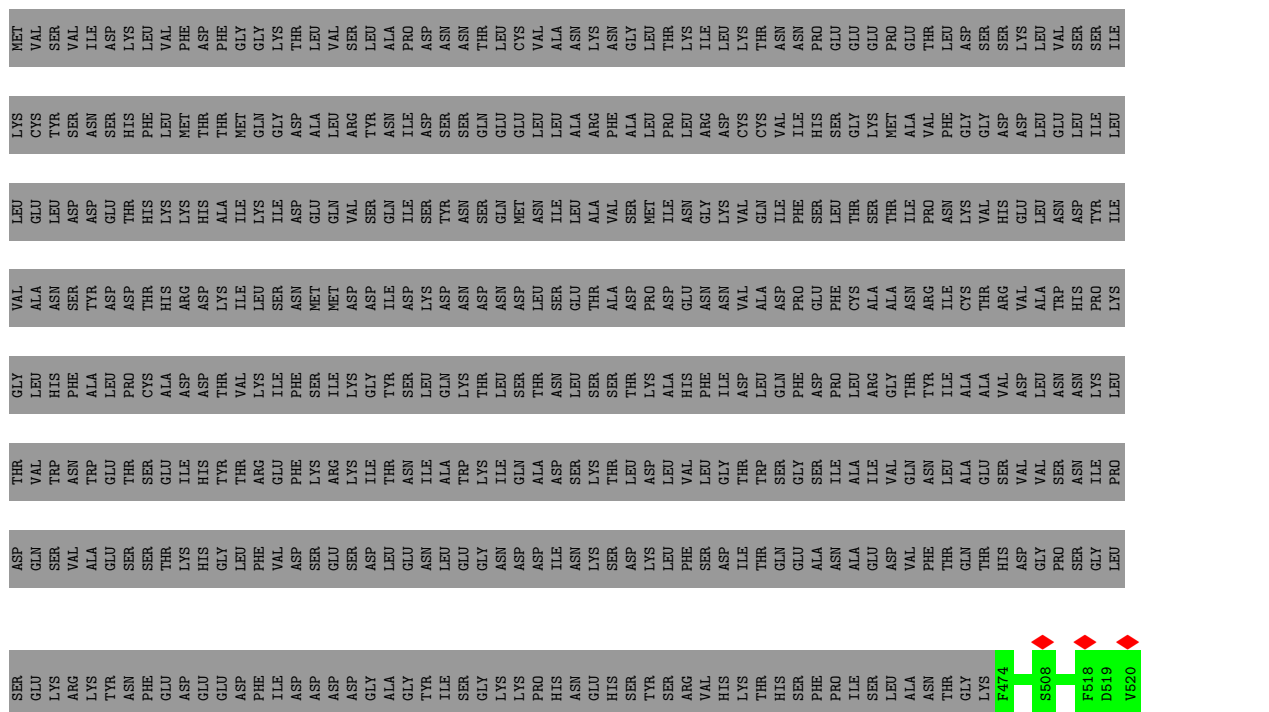


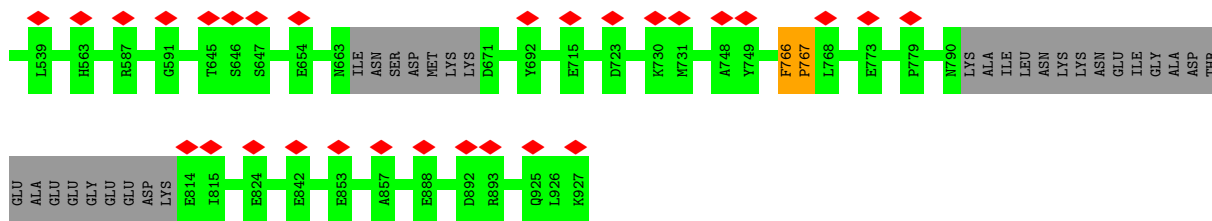
- Molecule 1: DNA polymerase alpha-binding protein



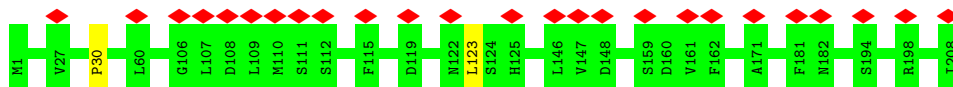


● Molecule 1: DNA polymerase alpha-binding protein

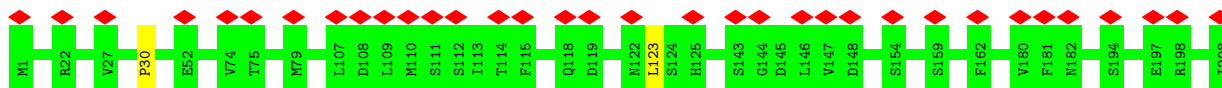




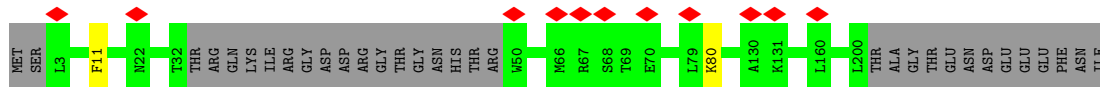
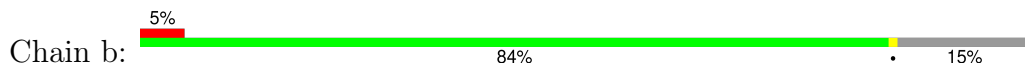
• Molecule 2: DNA replication complex GINS protein PSF1



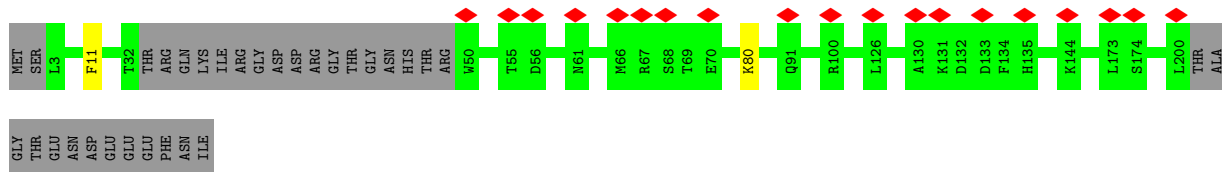
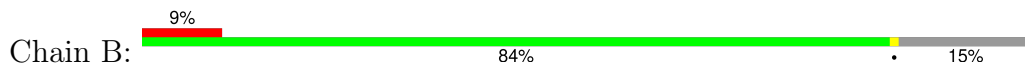
• Molecule 2: DNA replication complex GINS protein PSF1



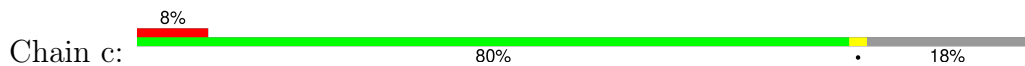
• Molecule 3: DNA replication complex GINS protein PSF2



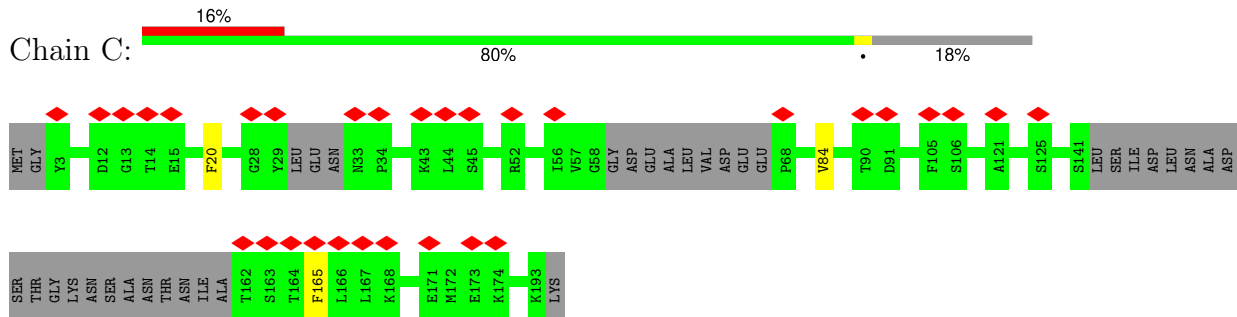
• Molecule 3: DNA replication complex GINS protein PSF2



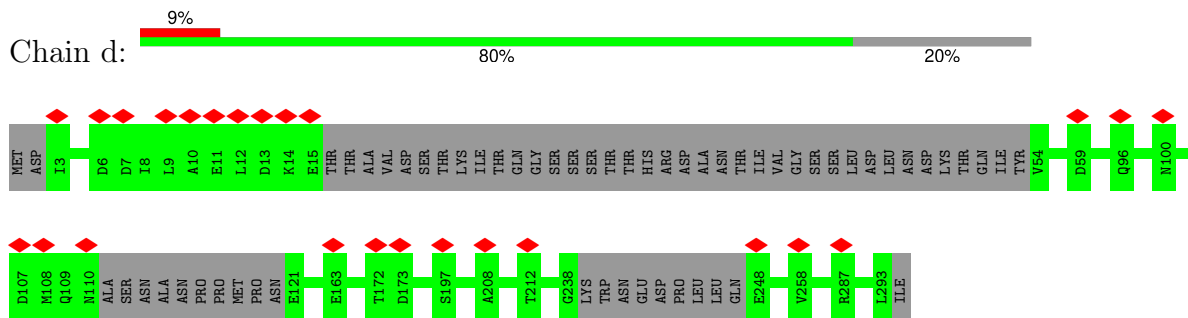
• Molecule 4: DNA replication complex GINS protein PSF3



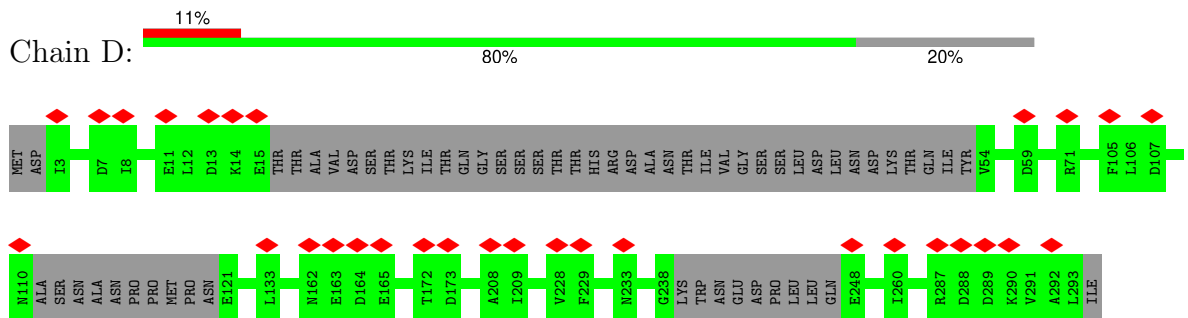
- Molecule 4: DNA replication complex GINS protein PSF3



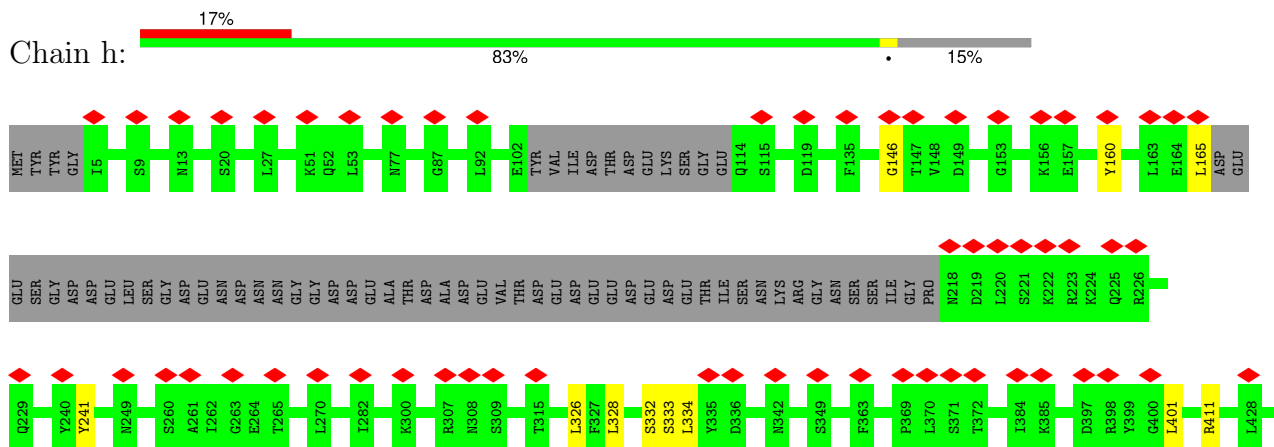
- Molecule 5: DNA replication complex GINS protein SLD5

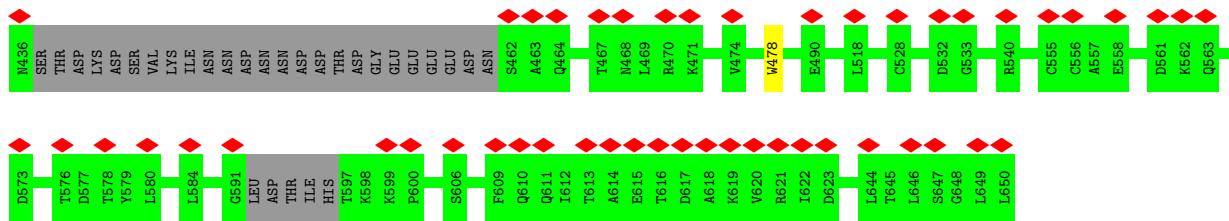


- Molecule 5: DNA replication complex GINS protein SLD5

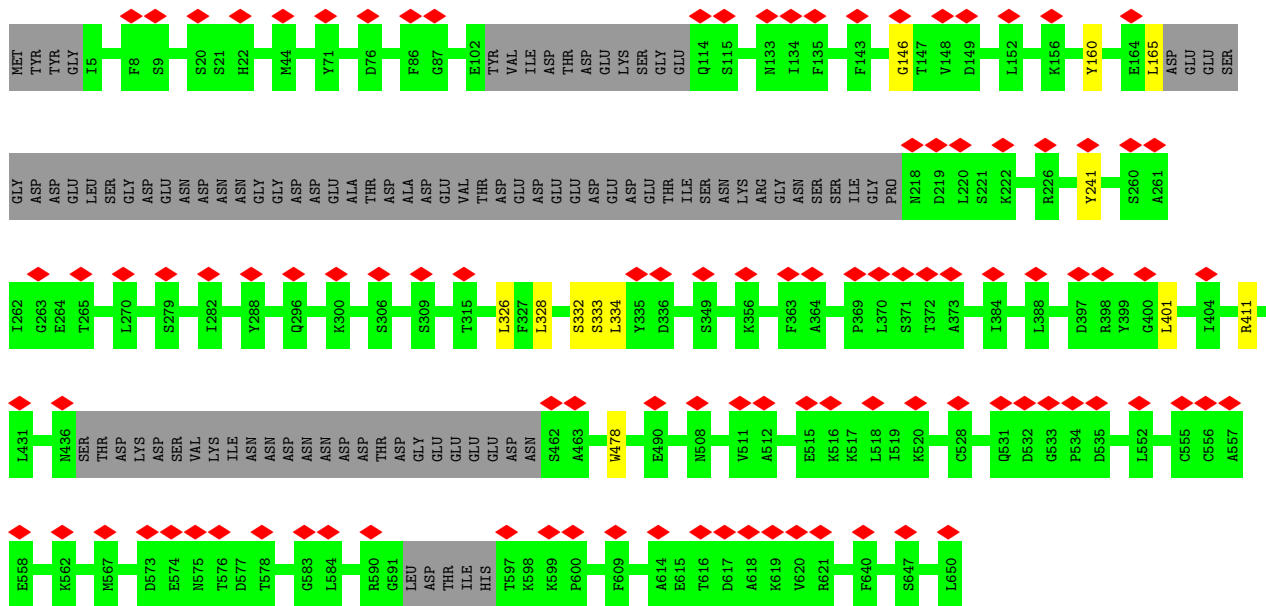
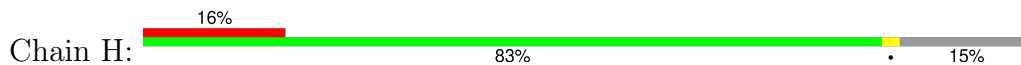


- Molecule 6: Cell division control protein 45

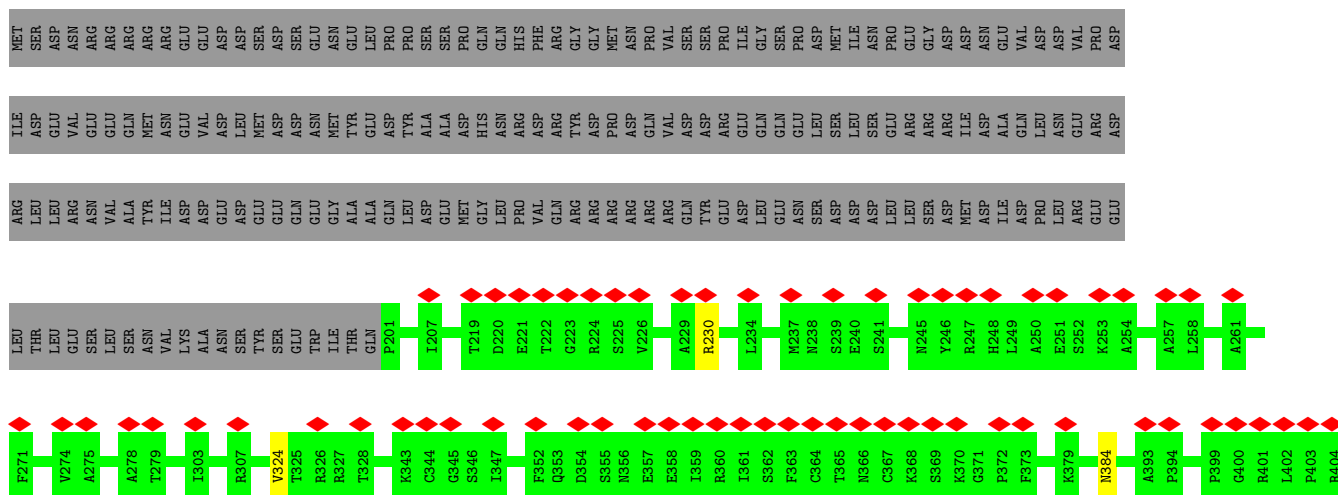


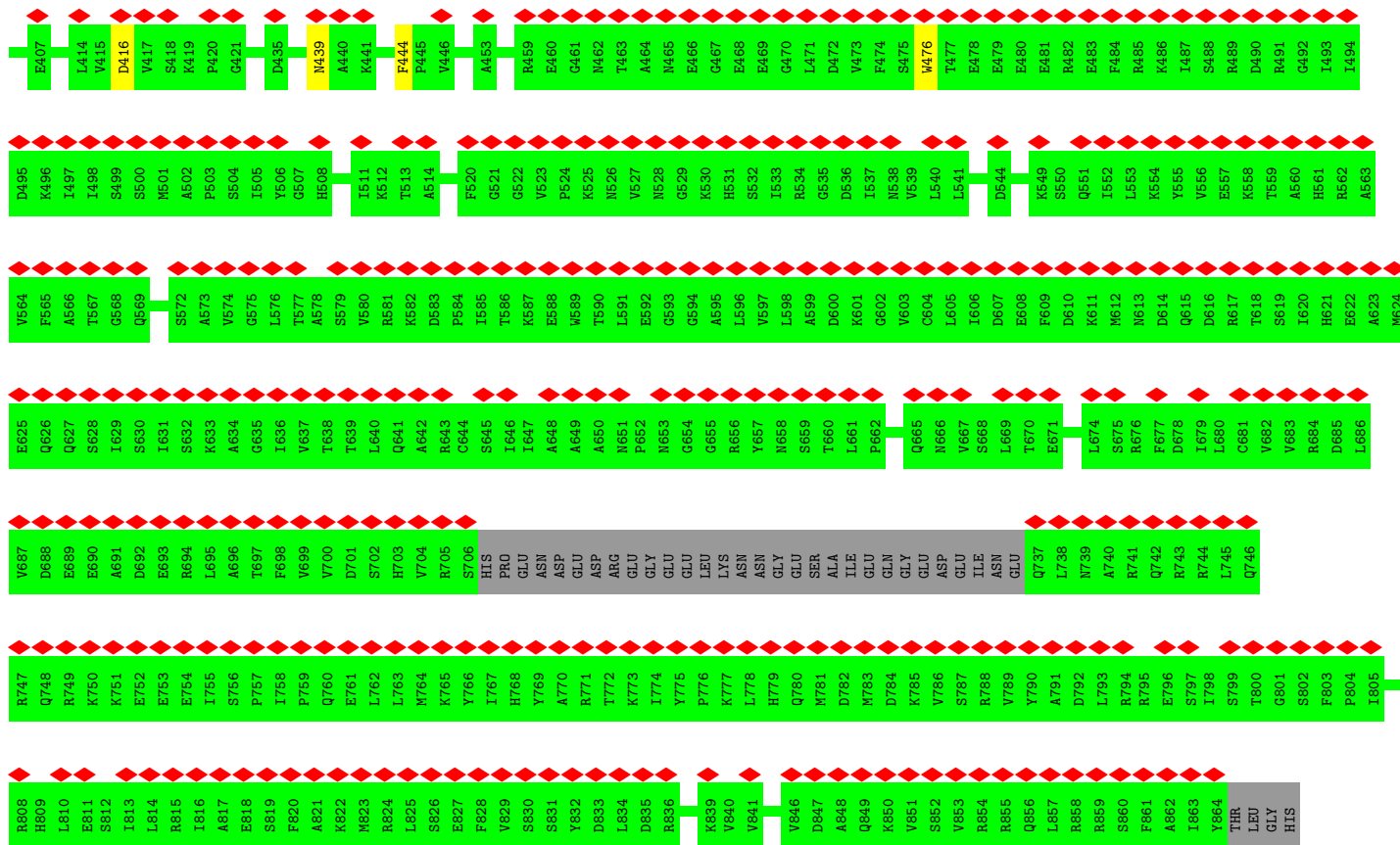


• Molecule 6: Cell division control protein 45

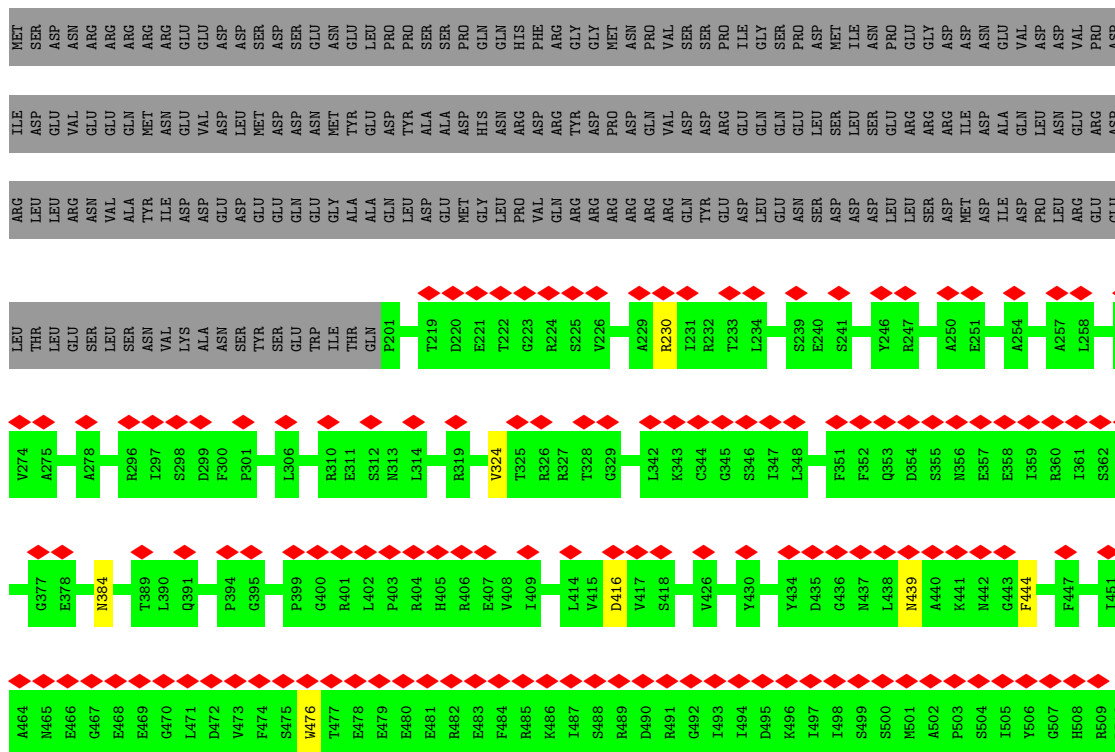


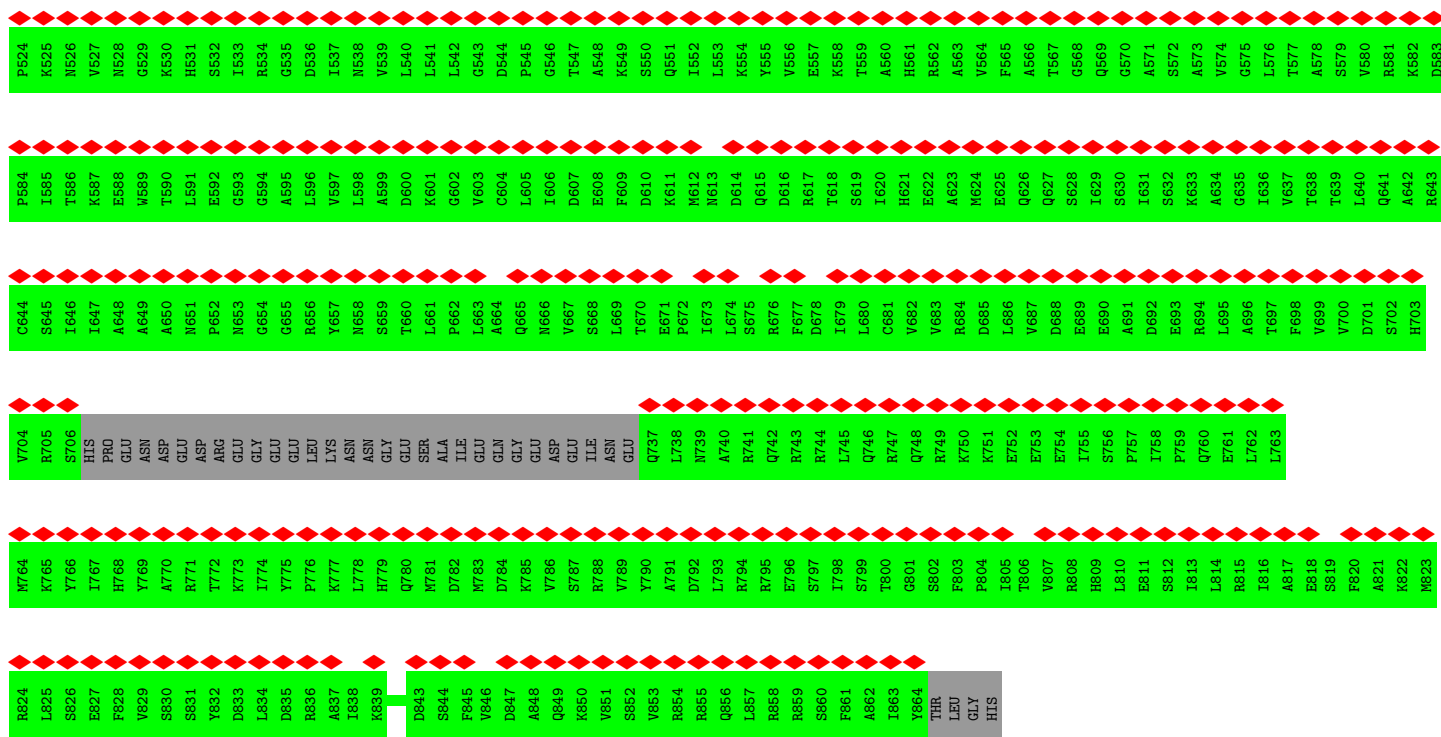
• Molecule 7: DNA replication licensing factor MCM2



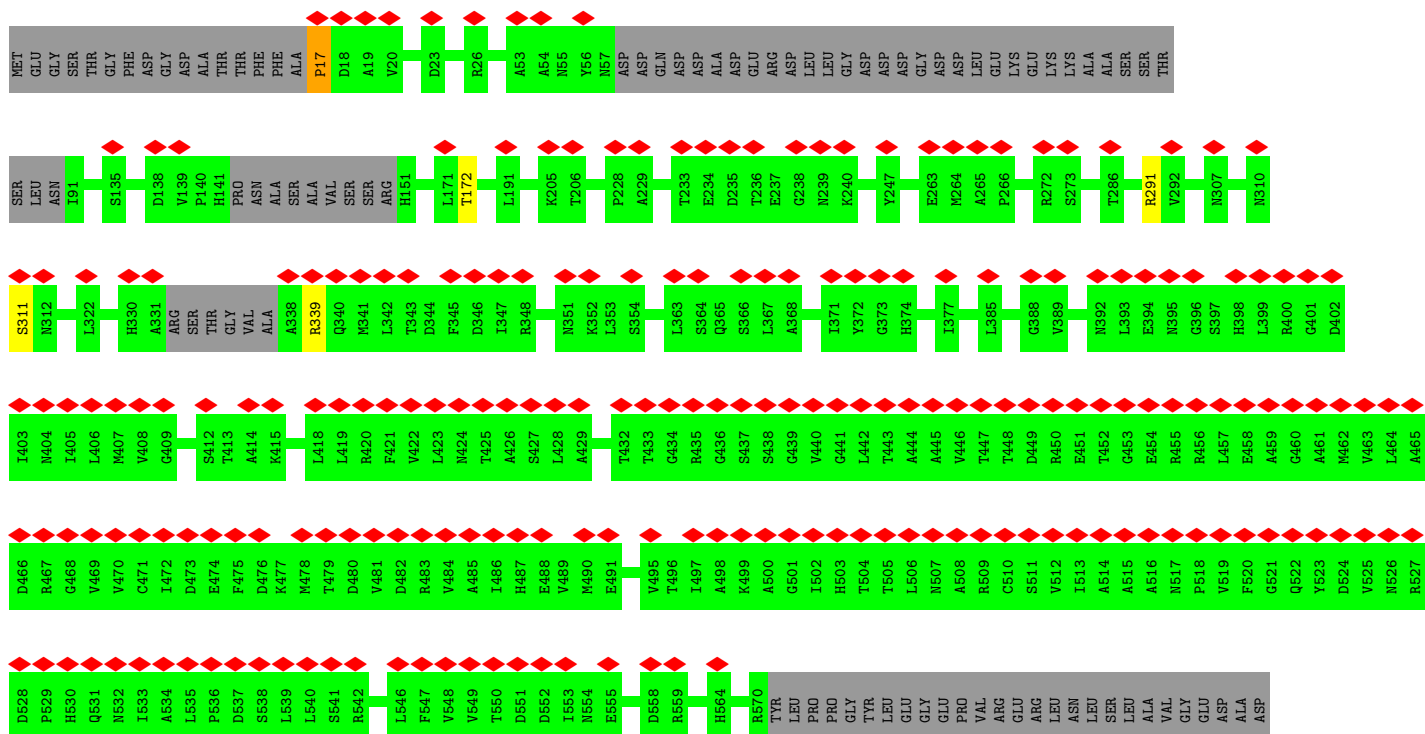


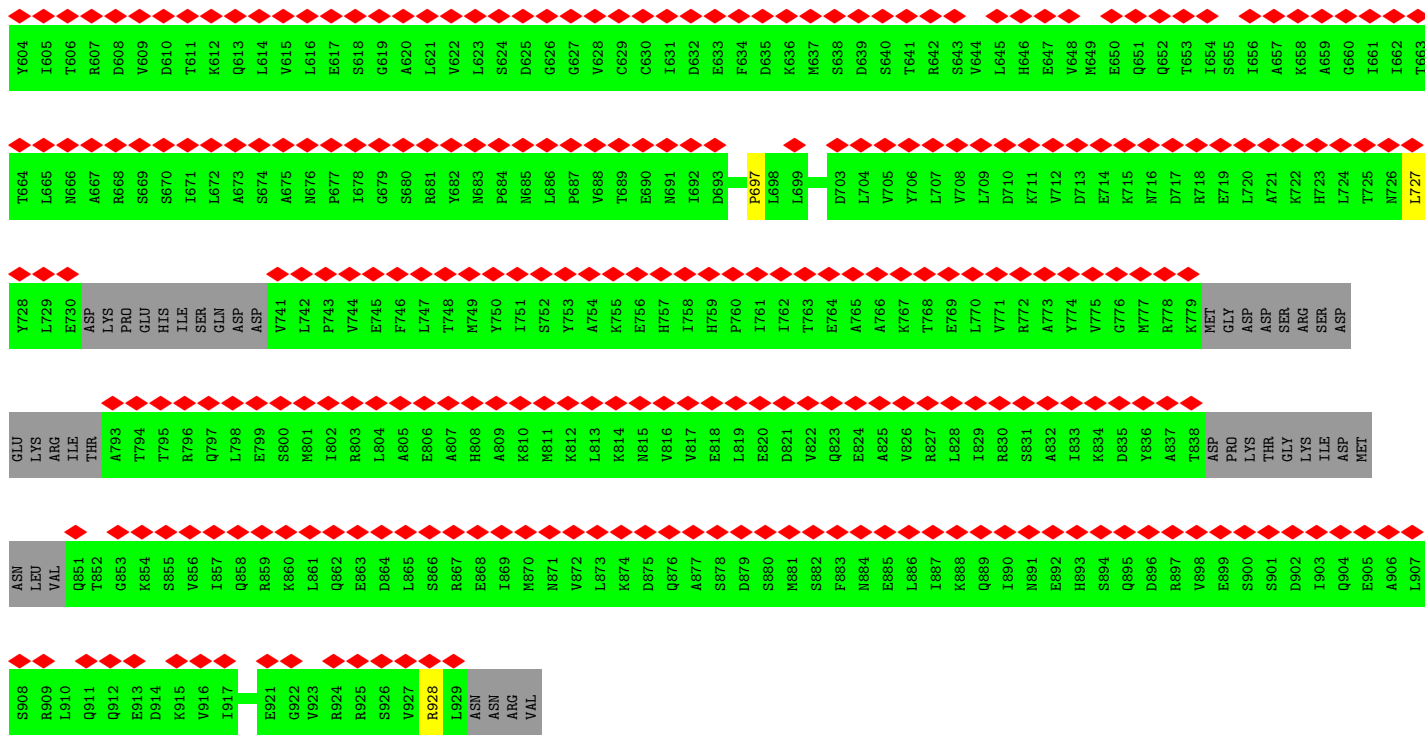
● Molecule 7: DNA replication licensing factor MCM2



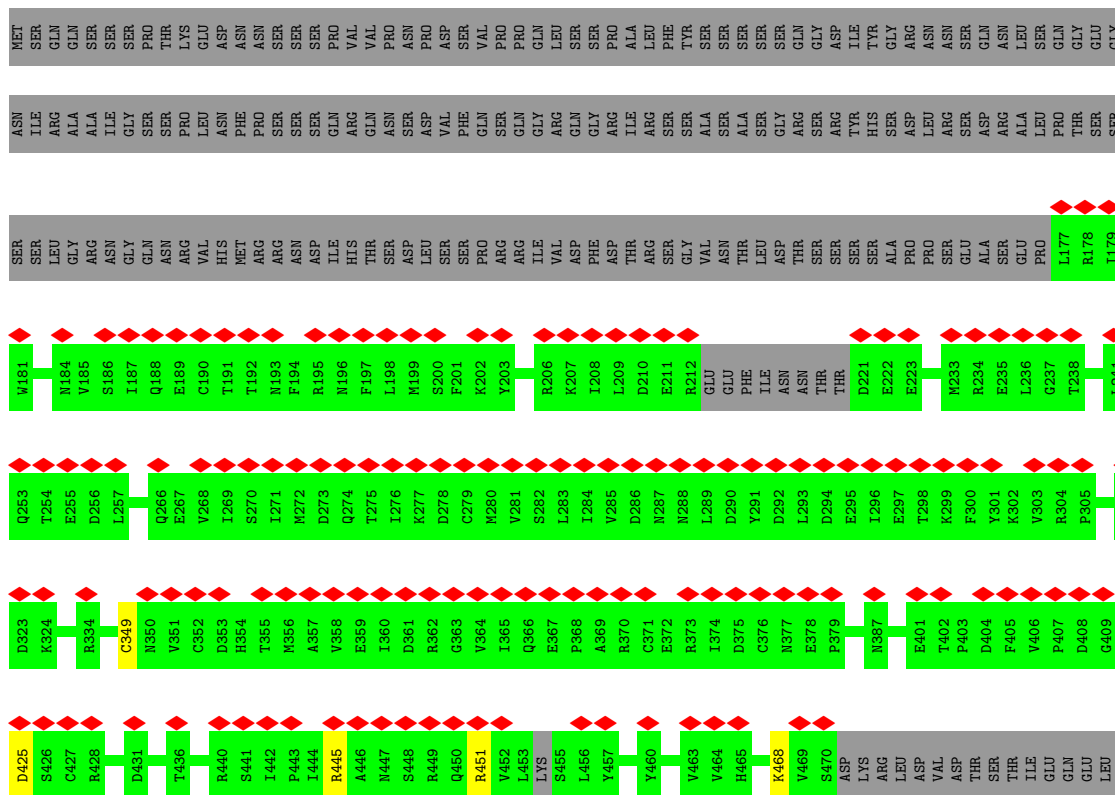
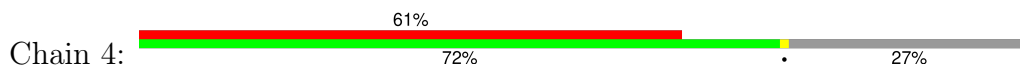


• Molecule 8: DNA replication licensing factor MCM3



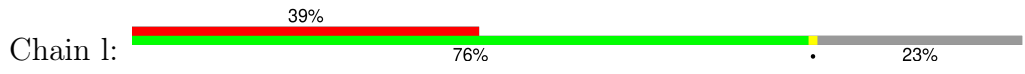


● Molecule 9: DNA replication licensing factor MCM4

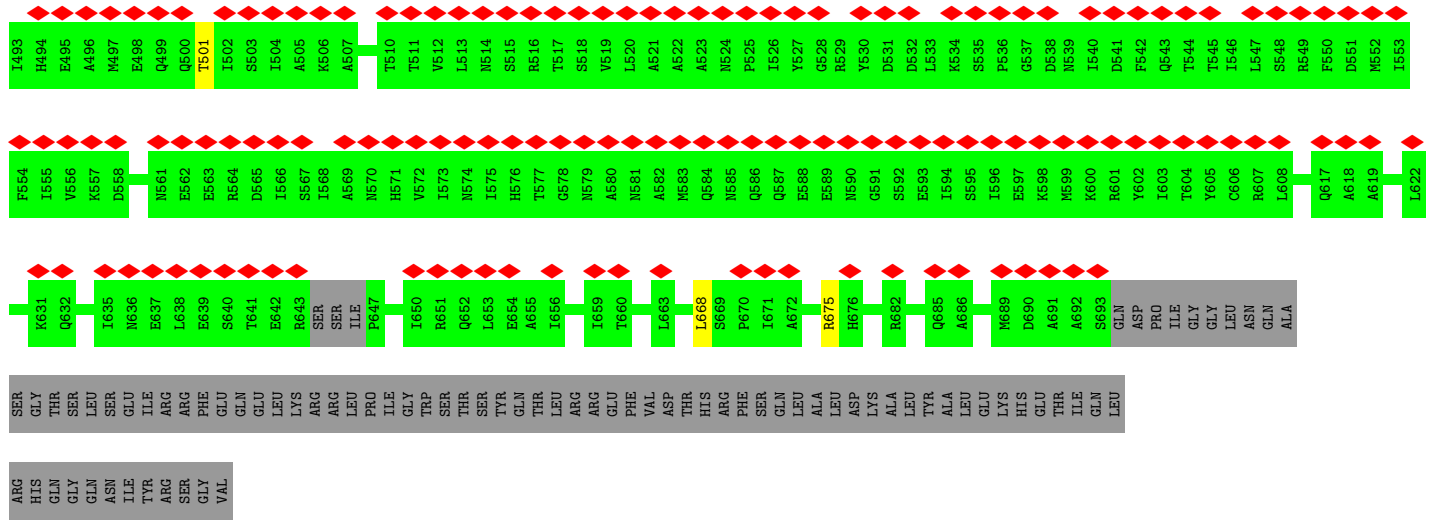


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VAL	K554	G555	G556	R557	Y558	R559	G560	D561	I562	I563	L564	L565	L566	C567	G568	D569	P570	S571	T572	S573	K574	Q575	I576	M577	S578	D579	Y580	V581	H582	K583	I584	T585	P586	R587	G588	V589	E590	Y591	S592	G593	K594	G595	S596	S597	A598	V599	G600	L601	T602	A603	Y604	I605	R606	T607	D608	V609	D610	L611	K612	Q613	
GLU	L614	V615	L616	E617	S618	G619	A620	L621	I622	L623	S624	D625	G626	G627	V628	C629	C630	I631	E632	E633	F634	D635	K636	M637	S638	D639	S640	T641	A642	S643	V644	L645	H646	V647	V648	M649	E650	K711	V712	T653	I654	I655	S656	A657	K658	A659	G660	I661	I662	T663	T664	L665	M666	A667	R668	S669	S670	I671	L672	A673	
S674	A675	M676	P677	G679	S680	R681	Y682	N683	P684	N685	L686	P687	V688	T689	E690	I691	I692	D693	L694	P695	P696	P697	L698	R699	S700	R701	F702	D703	L704	V705	Y706	L707	V708	L709	D710	K711	V712	D713	E714	K715	M716	D717	R718	E719	L720	A721	K722	H723	L724	T725	L726	L727	Y728	L729	E730	ASP	LYS	PRO			
GLU	V741	L742	L743	V744	E745	F746	L747	T748	M749	Y750	I751	S752	V753	A754	K755	E756	H757	I758	H759	P760	I761	I762	T763	E764	A765	A766	K767	T768	E769	L770	V771	R772	A773	V774	V775	G776	M777	R778	K779	MET	GLY	ASP	ASP	ASP	THR	GLY	THR	GLY	LYS	THR	GLY	LYS	ILE	ASP	THR	A793					
T794	T795	R796	Q797	L798	E799	S800	M801	I802	R803	L804	A805	E806	A807	H808	A809	K810	M811	K812	L813	K814	N815	V816	V817	E818	L819	E820	D821	V822	Q823	E824	A825	V826	R827	L828	I829	R830	S831	A832	I833	K834	D835	Y836	A837	T838	ASP	PRO	LYS	THR	GLY	LYS	ILE	ASP	GLU	LYS	ARG	ASN	LEU	VAL	Q851	T852	G853
S854	V855	V856	I857	Q858	R859	K860	L861	Q862	E863	D864	L865	S866	R867	E868	I869	M870	N871	L873	D875	Q876	A877	S878	D879	S880	M881	S882	F883	N884	E885	L886	I887	K888	Q889	R890	N891	E892	H893	S894	Q895	D896	R897	V898	E899	S900	S901	D902	Q904	E905	A906	L907	S908	R909	L910	Q911	Q912	E913					
D914	K915	Y916	I917	Y918	L919	G920	E921	G922	Y923	R924	R925	S926	Y927	R928	L929	ASN	ARG	ARG	VAL																																										

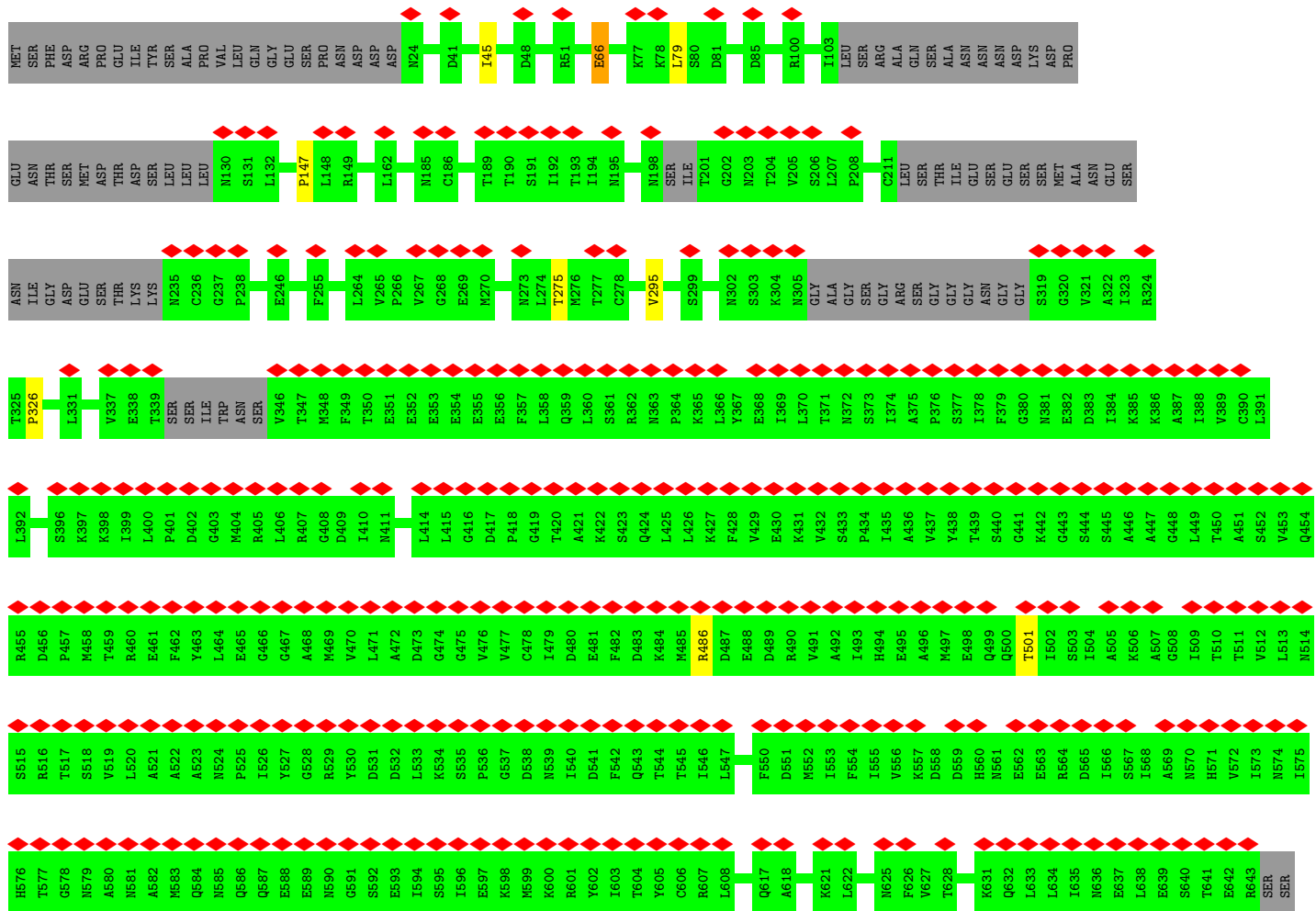
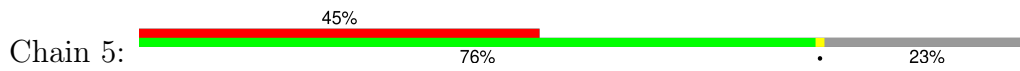
• Molecule 10: Minichromosome maintenance protein 5

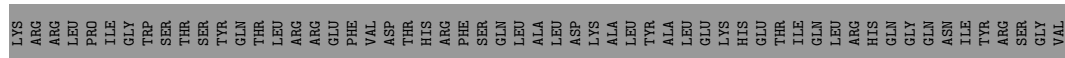
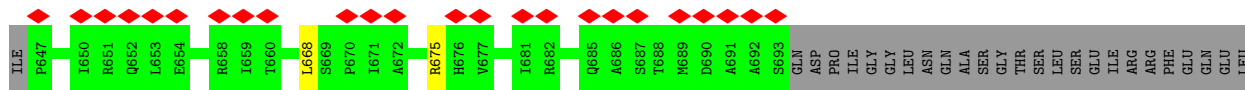


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THR	L369	L370	T371	N372	S373	L374	A375	P376	S377	L378	F379	G380	M381	E382	D383	L384	K385	K386	A387	S388	V389	C390	L391	L392	K397	K398	I399	L400	P401	D402	G403	M404	R405	L406	R407	G408	D409	L410	M411	L414	L415	G416	D417	P418	G419	T420	K422	S423	Q424	L425	L426	K427	F428	V429	E430	K431	V432		
S433	P434	L435	A436	V437	Y438	T439	S440	G441	K442	G443	S444	S445	A446	A447	C448	L449	T450	A451	S452	V453	Q454	R455	D456	P457	M458	T459	R460	E461	F462	Y463	L464	E465	G466	G467	A468	M469	V470	L471	A472	D473	G474	G475	V476	V477	C478	L479	D480	E481	F482	D483	K484	M485	R486	D487	E488	D489	R490	Y491	A492

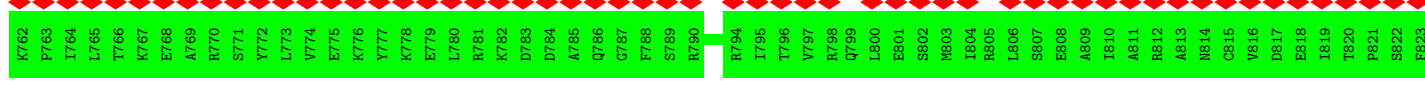
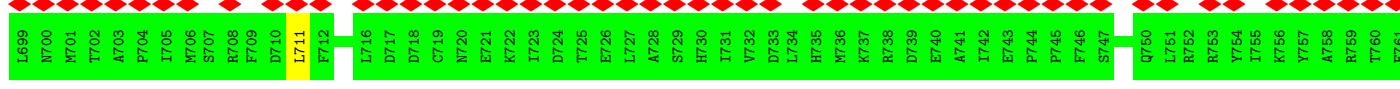
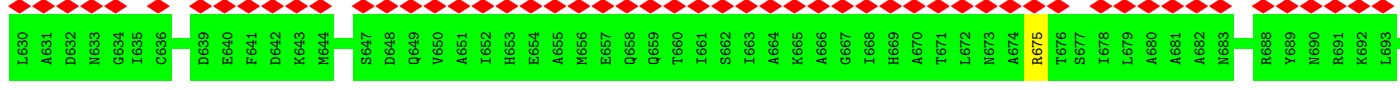
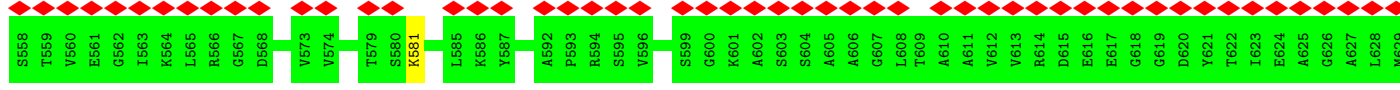
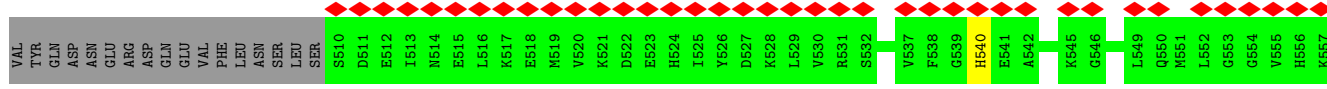
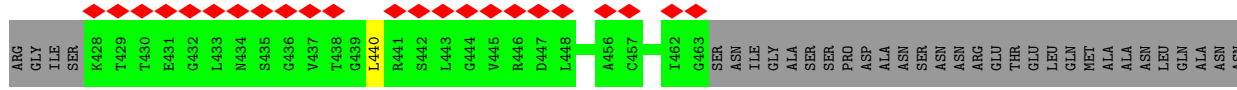
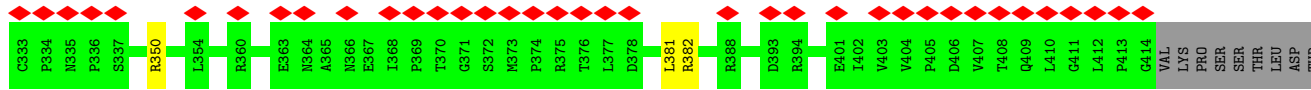
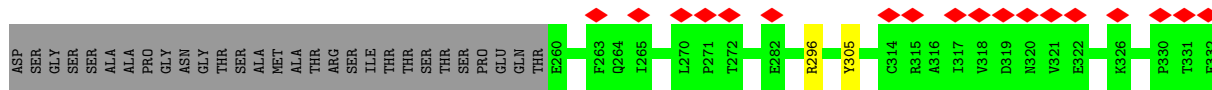
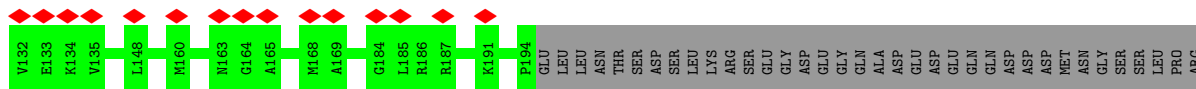
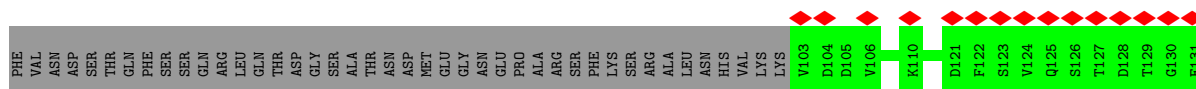
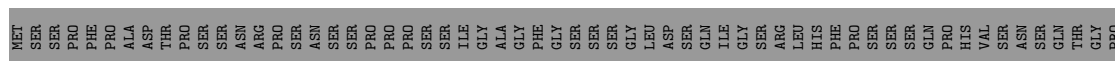


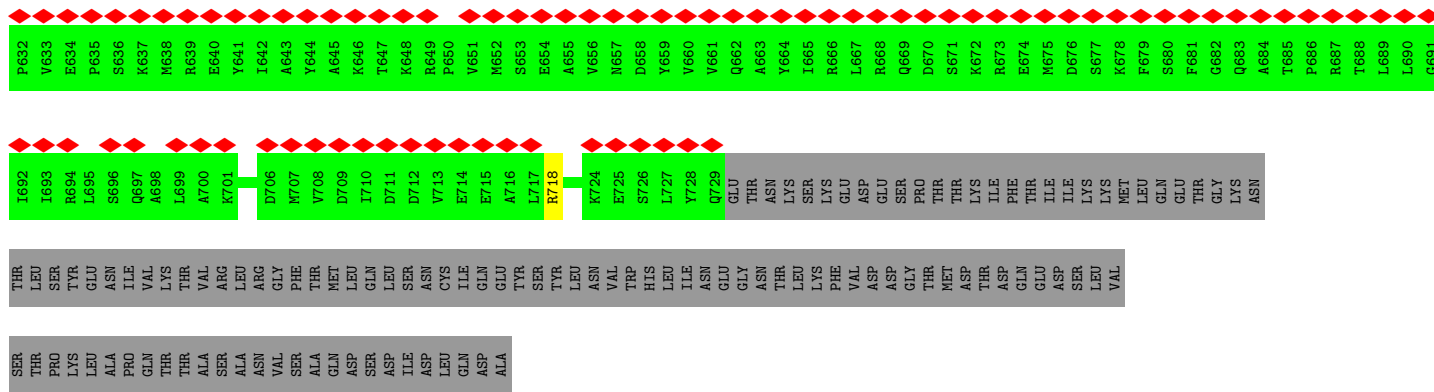
● Molecule 10: Minichromosome maintenance protein 5



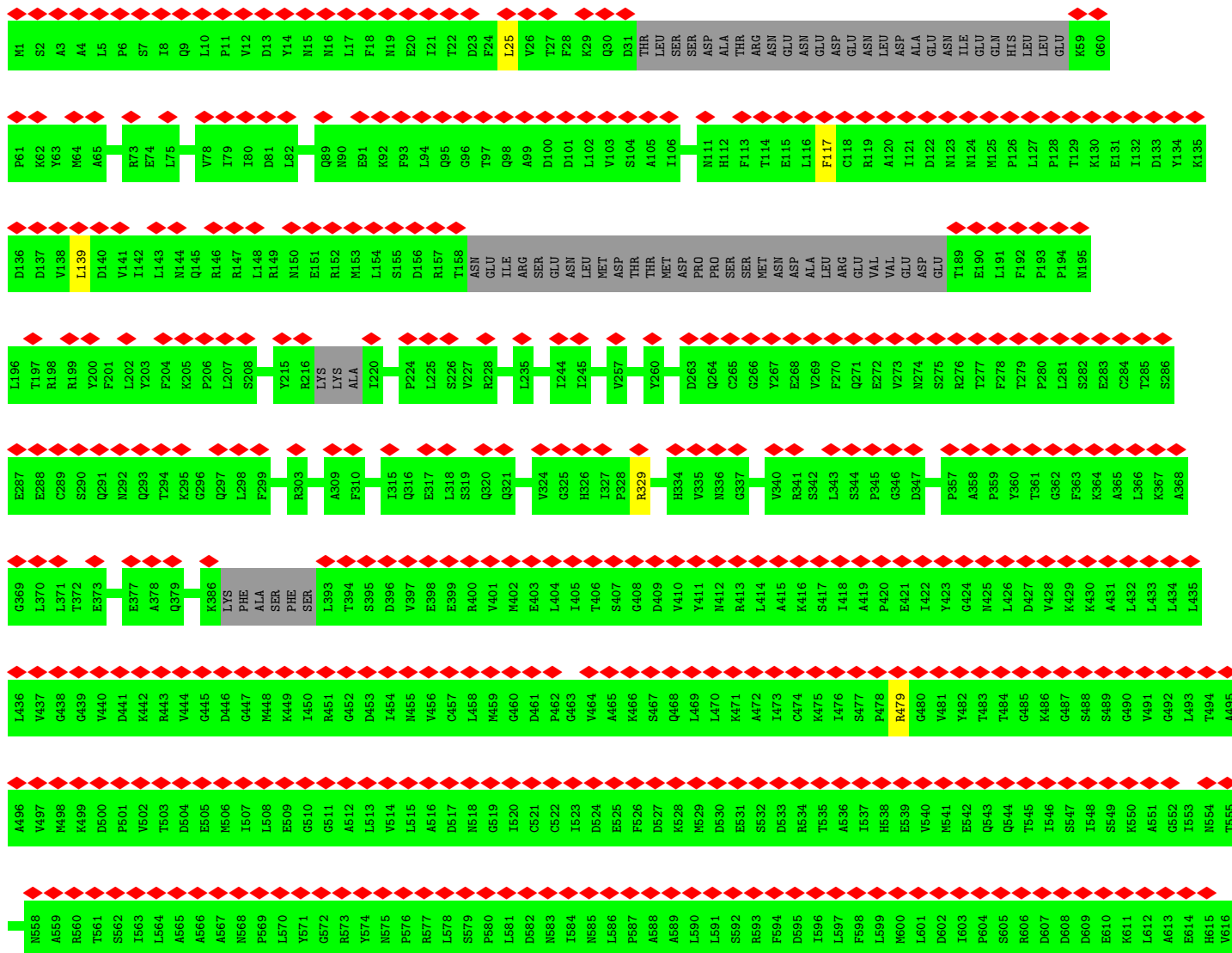
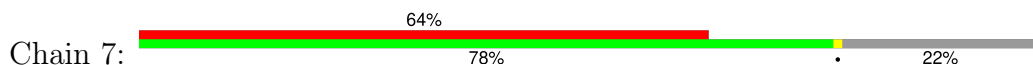


● Molecule 11: DNA replication licensing factor MCM6





● 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	E714	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	THR	LYS	LYS	MET	THR	ASP	LEU	GLN	GLU	THR	GLY	LYS	LEU	VAL	ASN	THR	LEU	THR	PRO	SER	LYS	THR	TYR	TYR	LEU	ASN	ASN	VAL	TRP	HIS	LEU	ILE	ASN													
GLU	GLY	ASN	THR	LYS	PHE	VAL	ASP	GLY	THR	MET	ASP	THR	ASP	GLN	GLU	ASP	SER	VAL	ASN	THR	PRO	LYS	LEU	ALA	ALA	SER	ALA	ASN	VAL	SER	ALA	GLN	ASP	SER	ASP	ILE	ASP	LEU	GLN	ASP	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%)	44	78
1	F	428/927 (46%)	415 (97%)	12 (3%)	1 (0%)	44	78
1	G	417/927 (45%)	407 (98%)	9 (2%)	1 (0%)	44	78
2	A	206/208 (99%)	179 (87%)	26 (13%)	1 (0%)	25	65
2	a	206/208 (99%)	180 (87%)	25 (12%)	1 (0%)	25	65
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%)	22	61
6	h	543/650 (84%)	476 (88%)	64 (12%)	3 (1%)	22	61
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%)	44	78
8	j	584/971 (60%)	506 (87%)	76 (13%)	2 (0%)	37	73
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%)	44	78
10	l	583/775 (75%)	493 (85%)	89 (15%)	1 (0%)	44	78

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
11	6	606/1017 (60%)	506 (84%)	99 (16%)	1 (0%)	44	78
11	m	606/1017 (60%)	506 (84%)	99 (16%)	1 (0%)	44	78
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%)	45	78

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%)	84	88
3	b	171/198 (86%)	170 (99%)	1 (1%)	84	88
4	C	144/173 (83%)	142 (99%)	2 (1%)	62	75
4	c	144/173 (83%)	142 (99%)	2 (1%)	62	75
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%)	84	88
6	h	499/586 (85%)	496 (99%)	3 (1%)	84	88
7	2	535/770 (70%)	529 (99%)	6 (1%)	70	80
7	i	535/770 (70%)	529 (99%)	6 (1%)	70	80
8	3	515/835 (62%)	512 (99%)	3 (1%)	84	88
8	j	515/835 (62%)	512 (99%)	3 (1%)	84	88
9	4	610/848 (72%)	604 (99%)	6 (1%)	73	82
9	k	610/848 (72%)	605 (99%)	5 (1%)	79	85
10	5	534/688 (78%)	527 (99%)	7 (1%)	65	77
10	l	534/688 (78%)	527 (99%)	7 (1%)	65	77
11	6	493/886 (56%)	487 (99%)	6 (1%)	67	78
11	m	493/886 (56%)	487 (99%)	6 (1%)	67	78
12	7	585/753 (78%)	581 (99%)	4 (1%)	81	87
12	n	585/753 (78%)	581 (99%)	4 (1%)	81	87
All	All	10146/14893 (68%)	10071 (99%)	75 (1%)	80	87

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 oligosaccharides 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	i	901	-	28,33,33	0.81	0	34,52,52	1.20	3 (8%)
13	ATP	3	1001	-	28,33,33	0.89	0	34,52,52	1.27	3 (8%)
13	ATP	1	801	-	28,33,33	0.73	0	34,52,52	1.68	5 (14%)
13	ATP	5	801	-	28,33,33	0.74	0	34,52,52	1.68	5 (14%)
13	ATP	j	1001	-	28,33,33	0.89	0	34,52,52	1.26	3 (8%)
13	ATP	2	901	-	28,33,33	0.82	0	34,52,52	1.21	3 (8%)

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
13	ATP	i	901	-	-	6/18/38/38	0/3/3/3
13	ATP	3	1001	-	-	4/18/38/38	0/3/3/3
13	ATP	1	801	-	-	4/18/38/38	0/3/3/3
13	ATP	5	801	-	-	4/18/38/38	0/3/3/3
13	ATP	j	1001	-	-	5/18/38/38	0/3/3/3
13	ATP	2	901	-	-	6/18/38/38	0/3/3/3

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	5	801	ATP	C4'-O4'-C1'	-4.97	105.37	109.92
13	1	801	ATP	C4'-O4'-C1'	-4.92	105.42	109.92
13	5	801	ATP	N3-C2-N1	-4.26	122.89	128.67
13	1	801	ATP	N3-C2-N1	-4.24	122.92	128.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	l	801	ATP	O4'-C1'-N9	3.91	113.93	108.75
13	5	801	ATP	O4'-C1'-N9	3.89	113.90	108.75
13	3	1001	ATP	N3-C2-N1	-3.59	123.80	128.67
13	j	1001	ATP	N3-C2-N1	-3.56	123.84	128.67
13	2	901	ATP	N3-C2-N1	-3.37	124.10	128.67
13	i	901	ATP	N3-C2-N1	-3.29	124.20	128.67
13	l	801	ATP	C4-C5-N7	-2.89	106.28	109.34
13	5	801	ATP	C4-C5-N7	-2.83	106.35	109.34
13	i	901	ATP	C4-C5-N7	-2.67	106.52	109.34
13	2	901	ATP	C4-C5-N7	-2.61	106.58	109.34
13	l	801	ATP	O3G-PG-O2G	2.26	116.29	107.80
13	5	801	ATP	O3G-PG-O2G	2.26	116.26	107.80
13	j	1001	ATP	C2'-C3'-C4'	2.16	106.79	102.61
13	3	1001	ATP	C2'-C3'-C4'	2.12	106.70	102.61
13	3	1001	ATP	C4-C5-N7	-2.10	107.12	109.34
13	j	1001	ATP	C4-C5-N7	-2.08	107.14	109.34
13	i	901	ATP	O2A-PA-O1A	2.04	121.95	112.44
13	2	901	ATP	O2A-PA-O1A	2.02	121.86	112.44

There are no chirality outliers.

All (29) 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	i	901	ATP	C5'-O5'-PA-O3A
13	j	1001	ATP	C5'-O5'-PA-O2A
13	j	1001	ATP	C5'-O5'-PA-O3A
13	l	801	ATP	C5'-O5'-PA-O2A
13	2	901	ATP	C5'-O5'-PA-O1A
13	2	901	ATP	C5'-O5'-PA-O2A
13	2	901	ATP	C5'-O5'-PA-O3A
13	3	1001	ATP	C5'-O5'-PA-O2A
13	3	1001	ATP	C5'-O5'-PA-O3A
13	5	801	ATP	C5'-O5'-PA-O2A
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	O4'-C4'-C5'-O5'
13	3	1001	ATP	O4'-C4'-C5'-O5'
13	l	801	ATP	O4'-C4'-C5'-O5'

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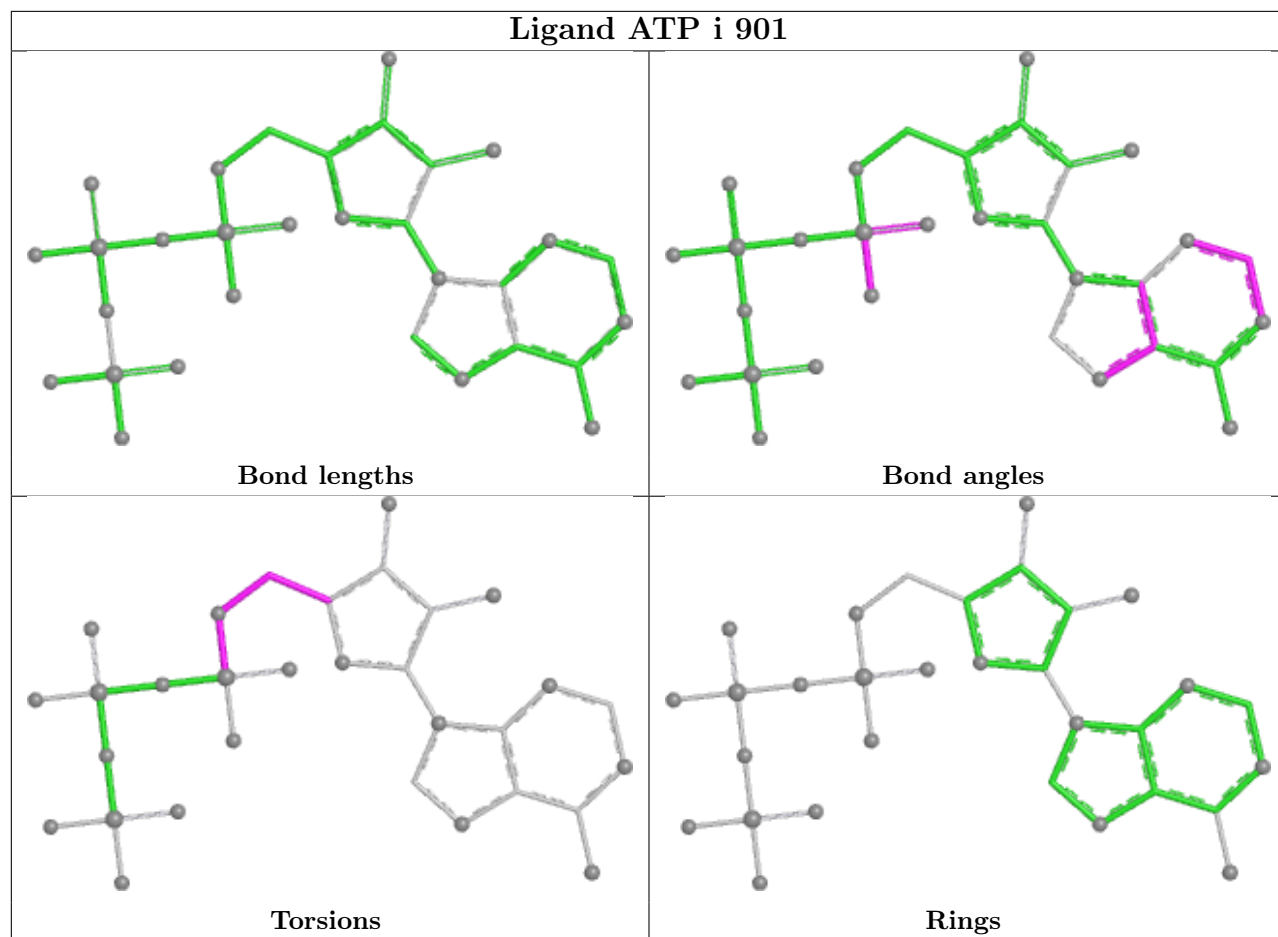
Continued from previous page...

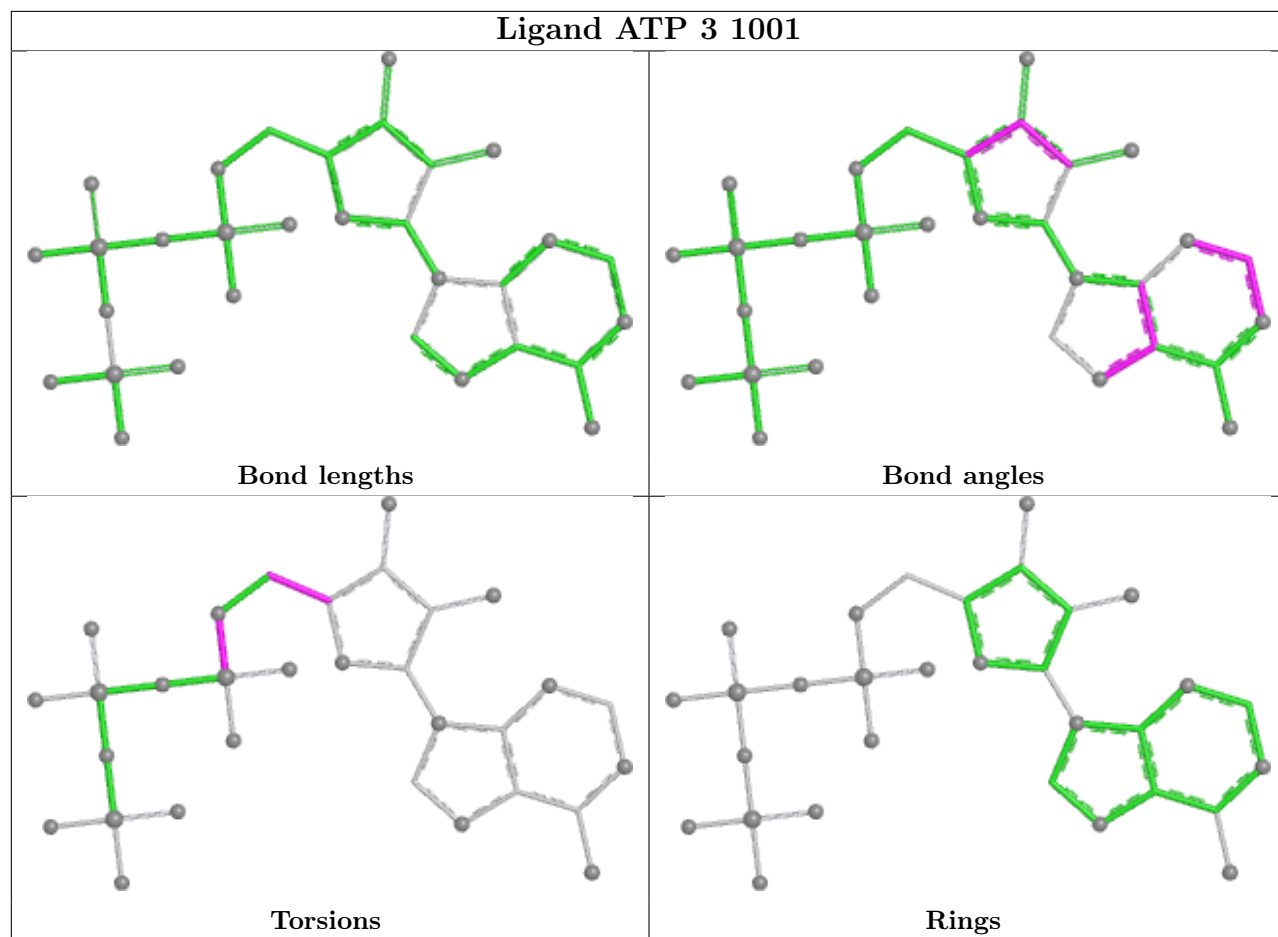
Mol	Chain	Res	Type	Atoms
13	5	801	ATP	O4'-C4'-C5'-O5'
13	j	1001	ATP	C3'-C4'-C5'-O5'
13	3	1001	ATP	C3'-C4'-C5'-O5'
13	1	801	ATP	C5'-O5'-PA-O3A
13	5	801	ATP	C5'-O5'-PA-O3A
13	i	901	ATP	C4'-C5'-O5'-PA
13	2	901	ATP	C4'-C5'-O5'-PA
13	1	801	ATP	C3'-C4'-C5'-O5'
13	5	801	ATP	C3'-C4'-C5'-O5'
13	j	1001	ATP	PG-O3B-PB-O2B

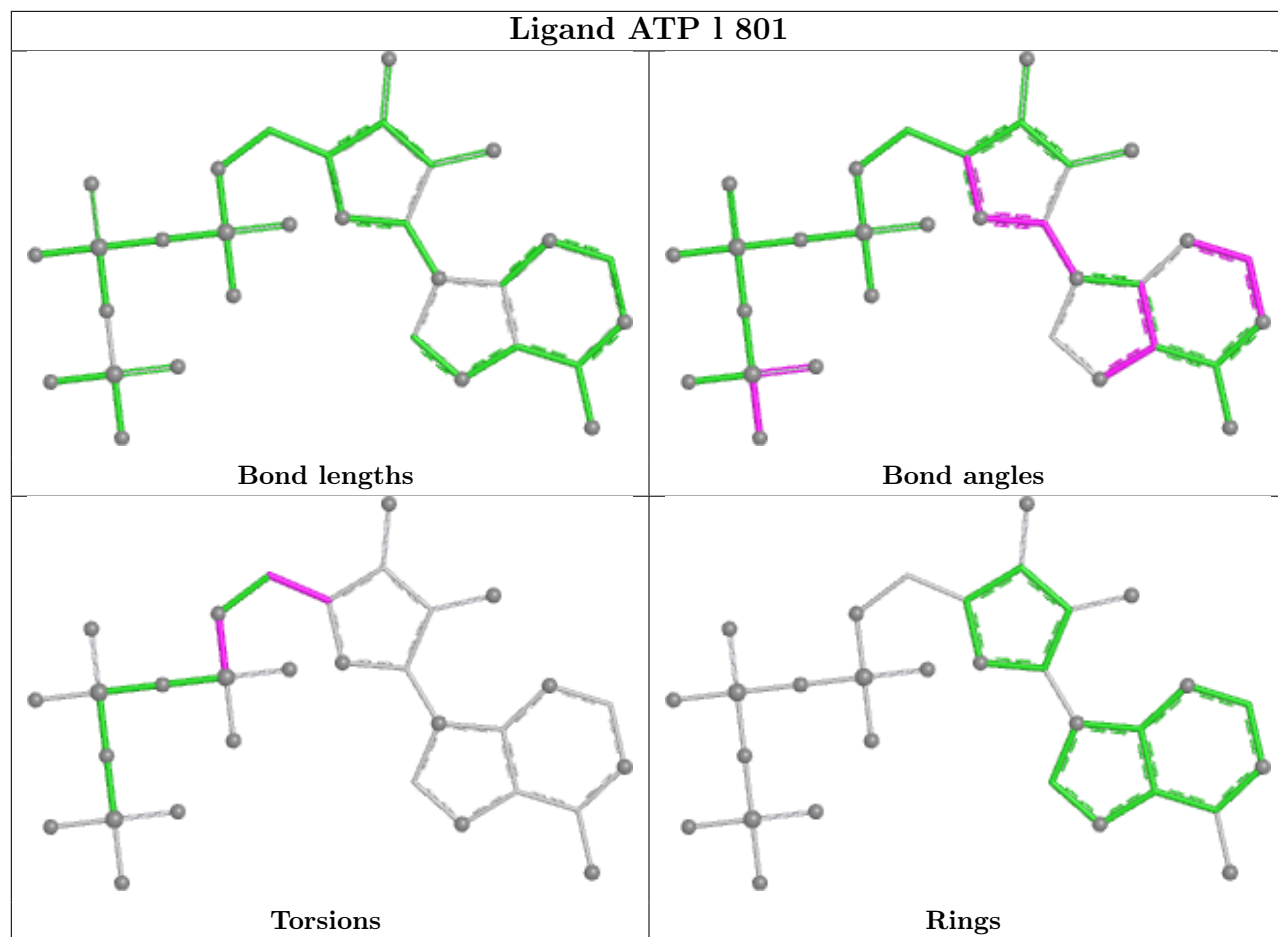
There are no ring outliers.

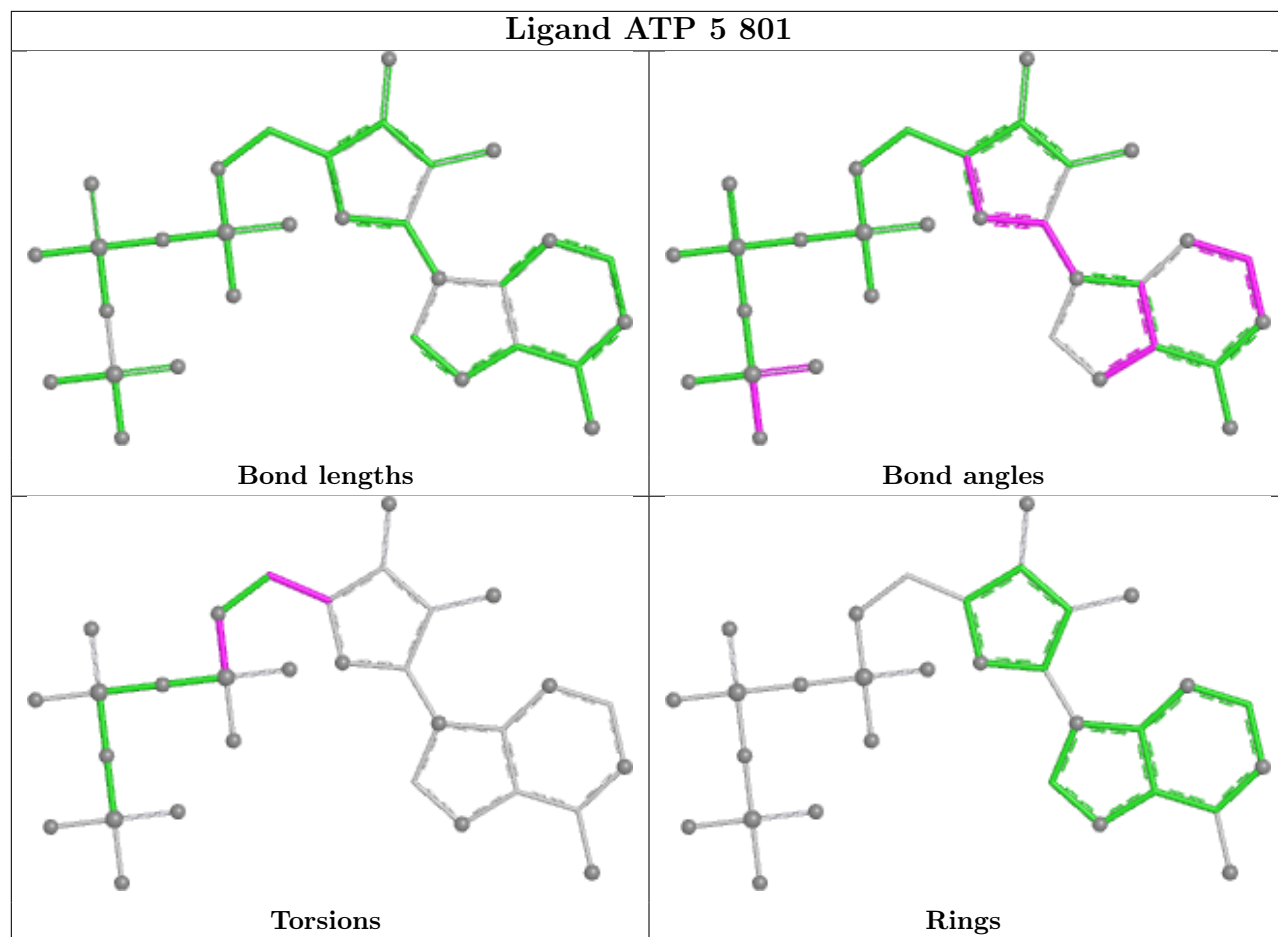
No monomer is involved in short contacts.

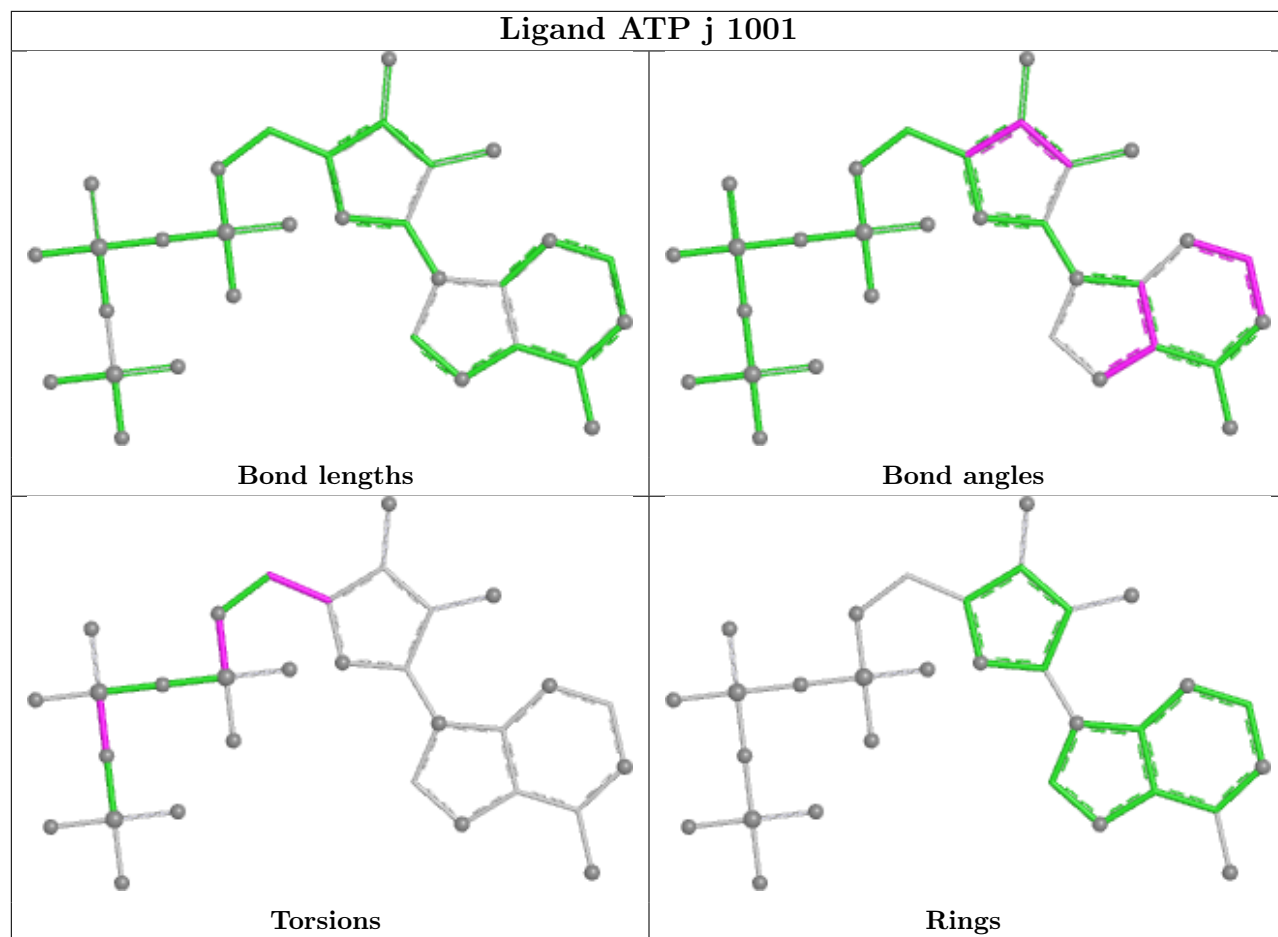
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

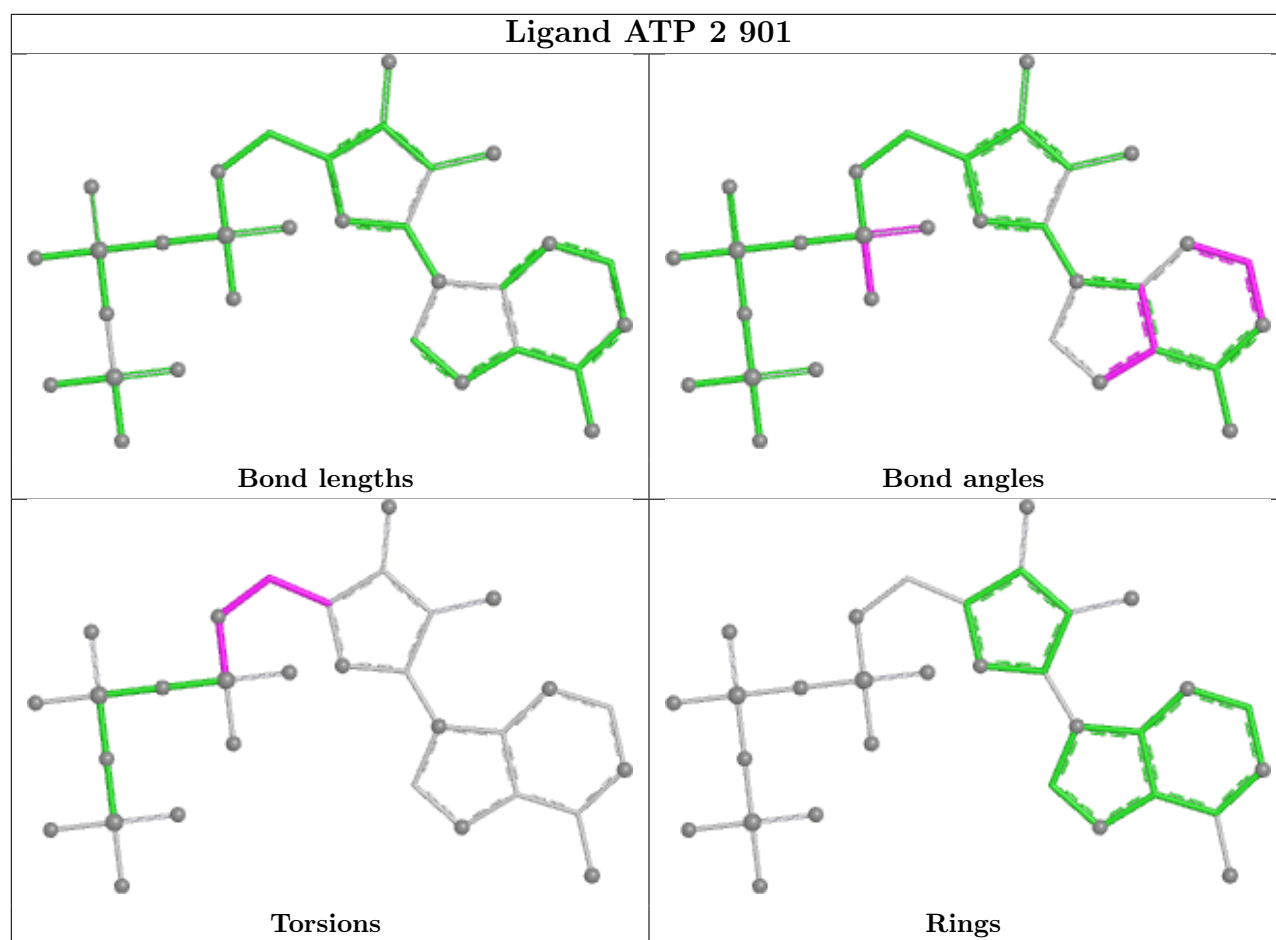












5.7 Other polymers [i](#)

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

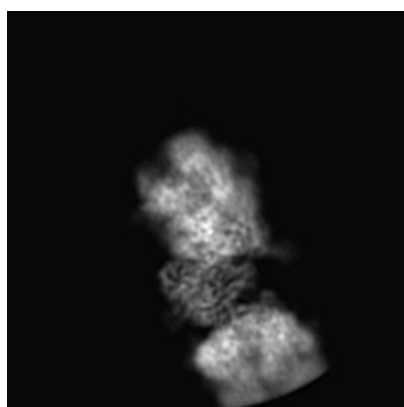
6 Map visualisation [i](#)

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.

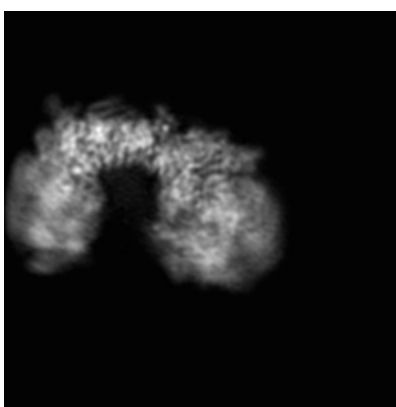
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

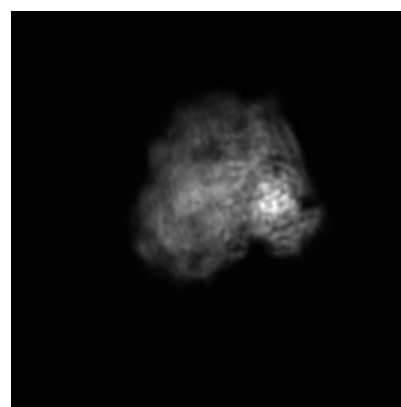
6.1.1 Primary map



X



Y

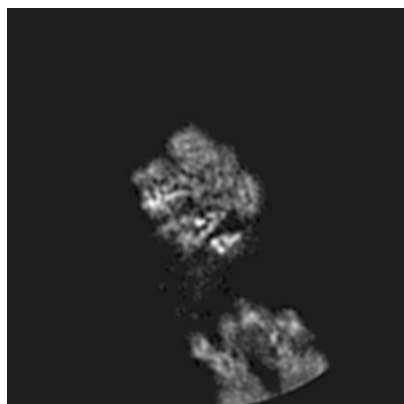


Z

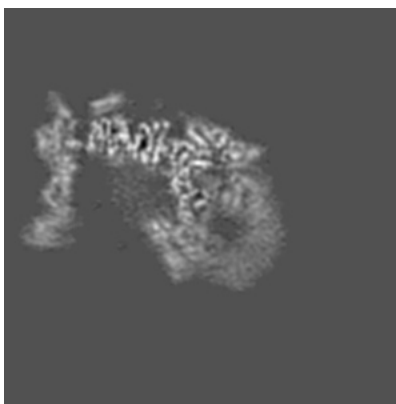
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

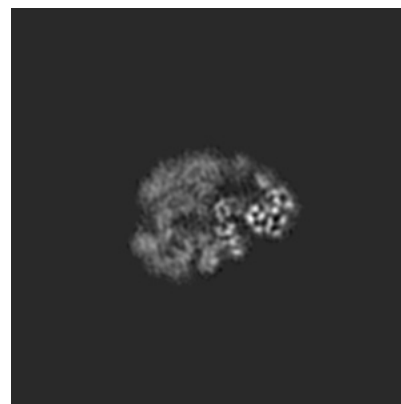
6.2.1 Primary map



X Index: 200



Y Index: 200

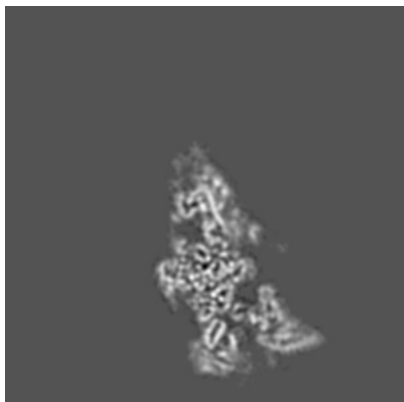


Z Index: 200

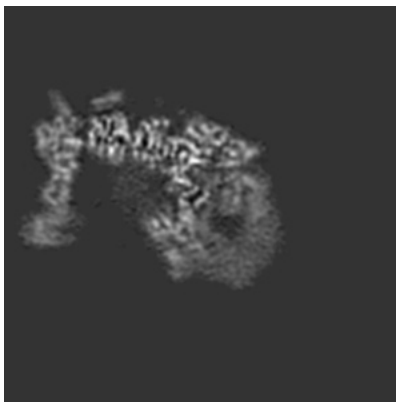
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [\(i\)](#)

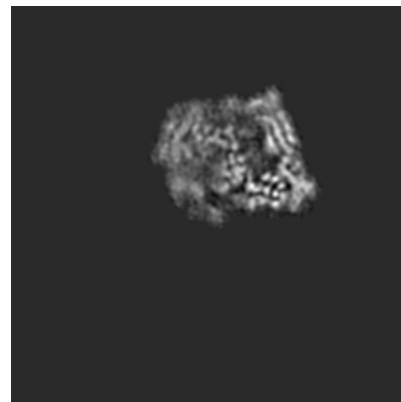
6.3.1 Primary map



X Index: 264



Y Index: 202



Z Index: 68

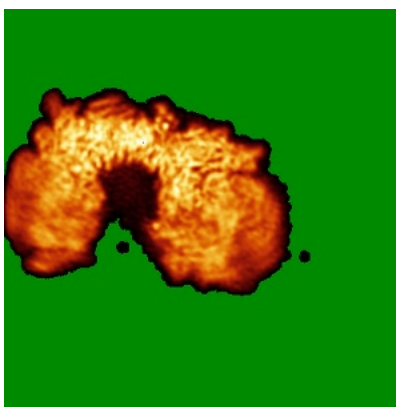
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [\(i\)](#)

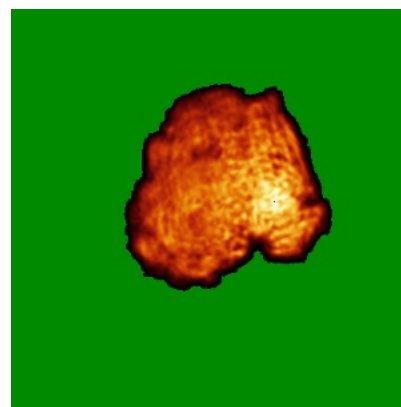
6.4.1 Primary map



X



Y

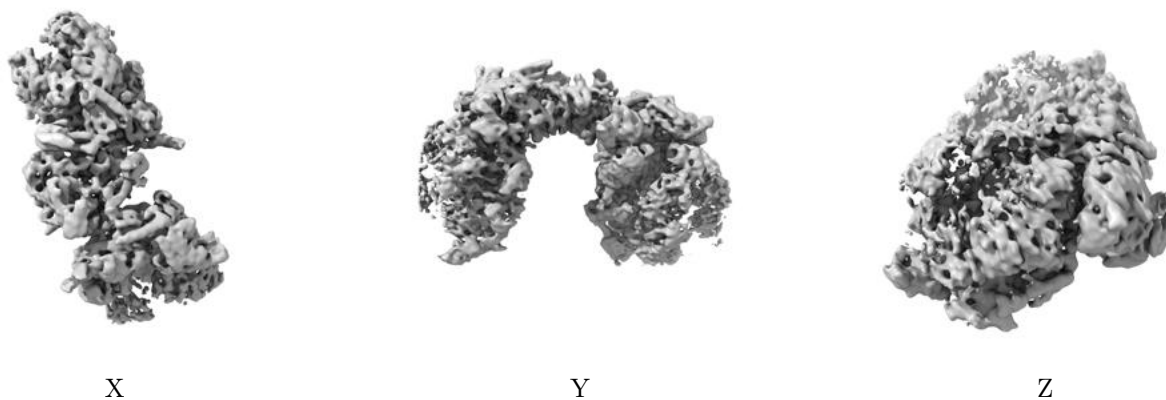


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



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.

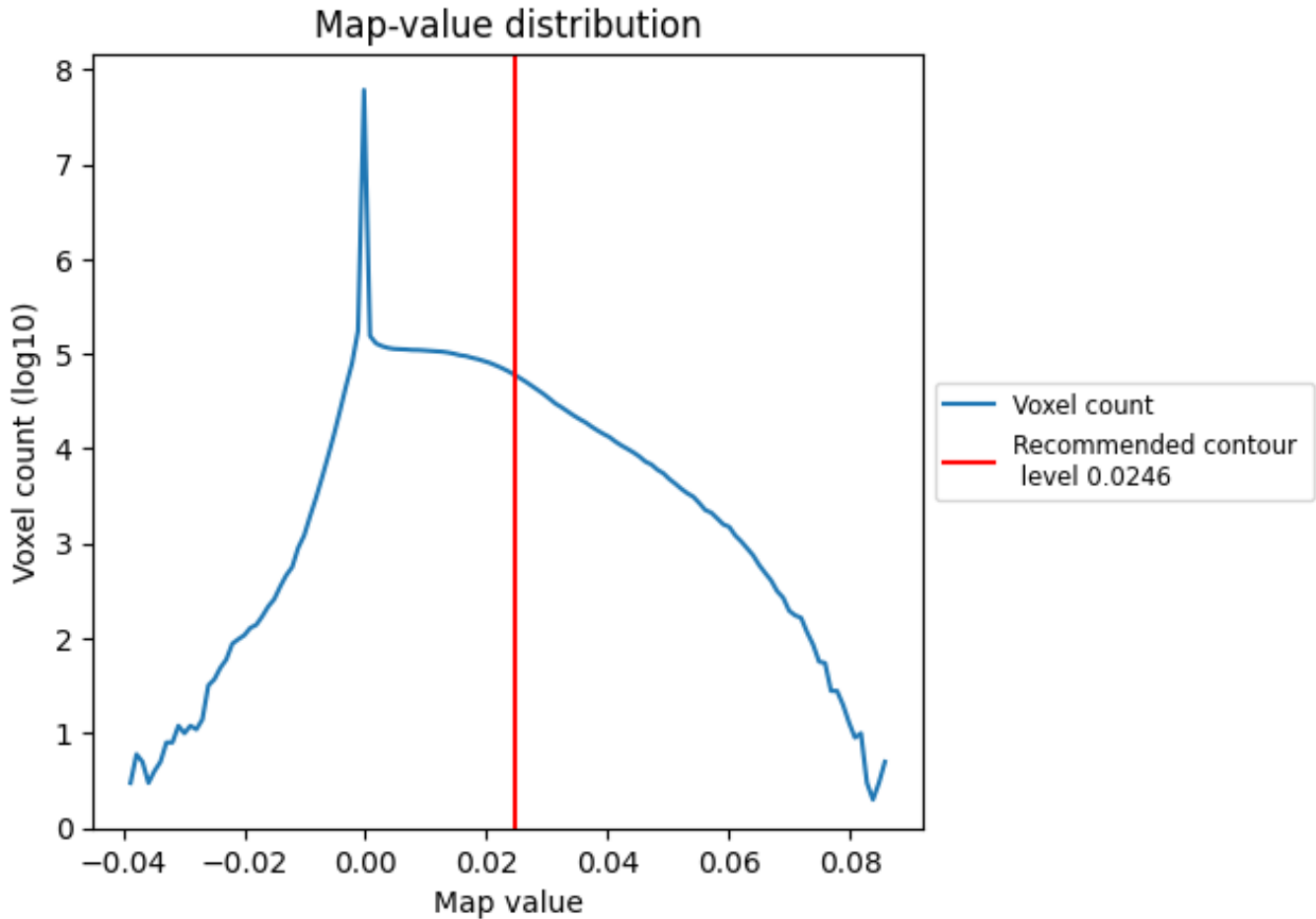
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

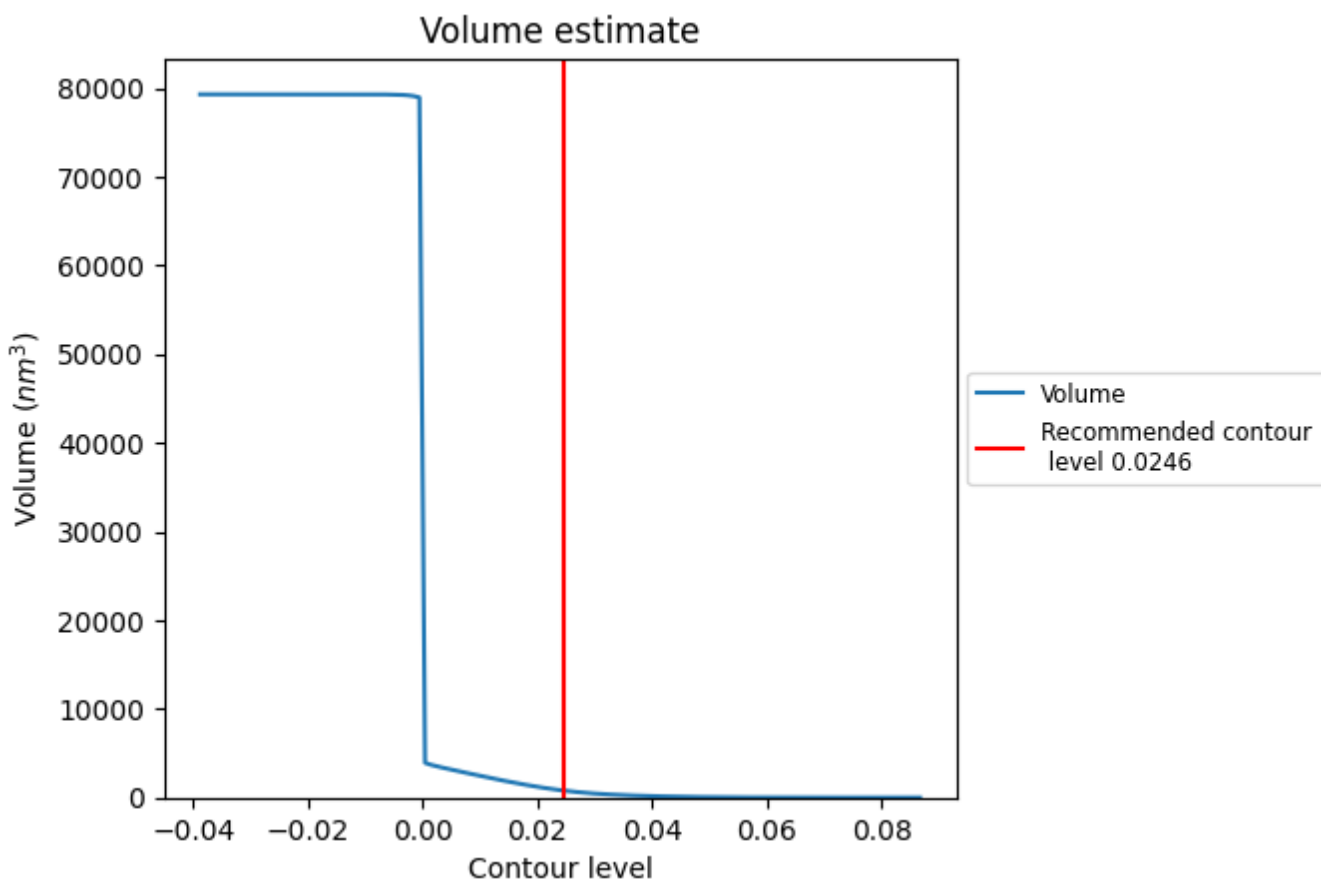
This section contains the results of statistical analysis of the map.

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.

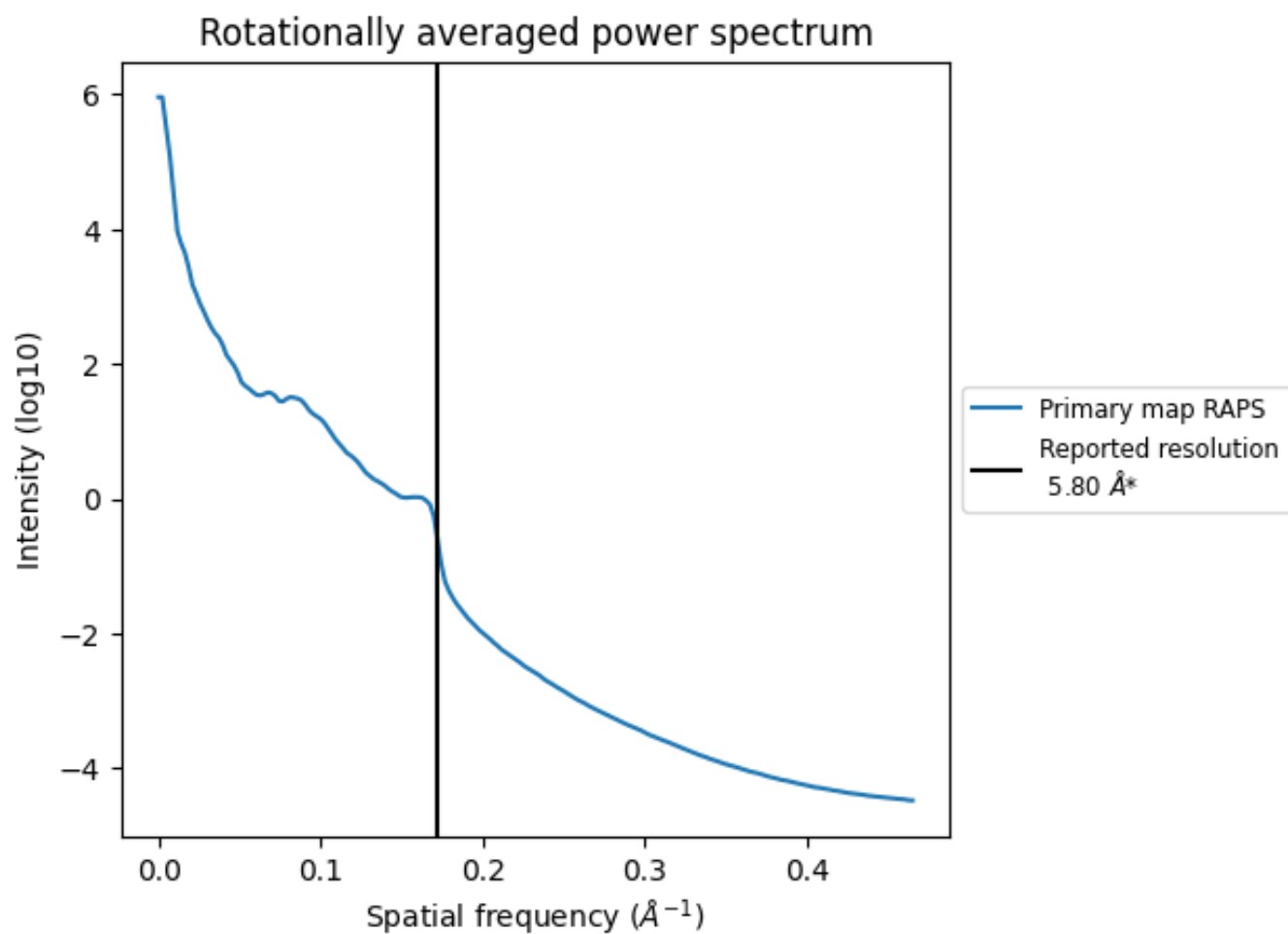
7.2 Volume estimate [\(i\)](#)



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}

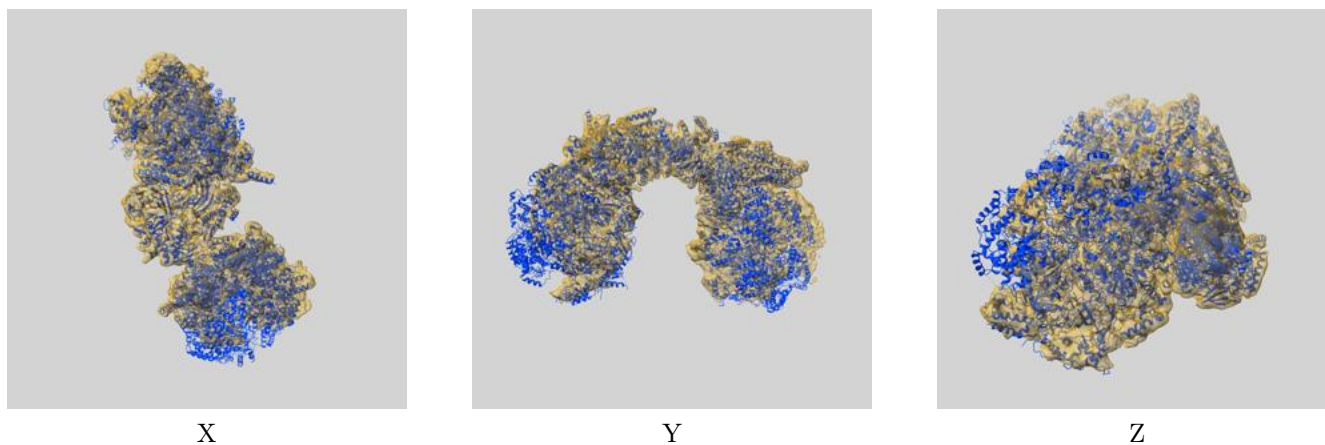
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

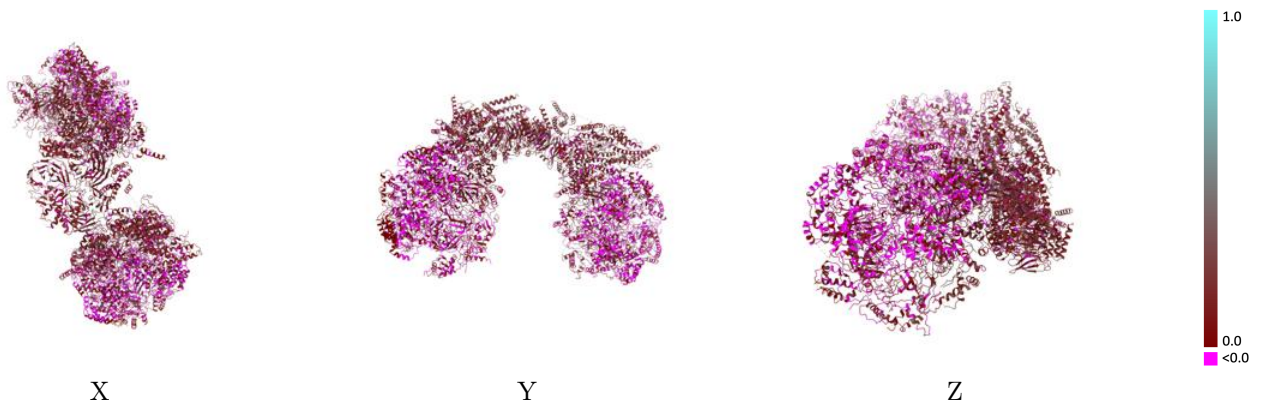
This section contains information regarding the fit between EMDB map EMD-20472 and PDB model 6PTN. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay [i](#)



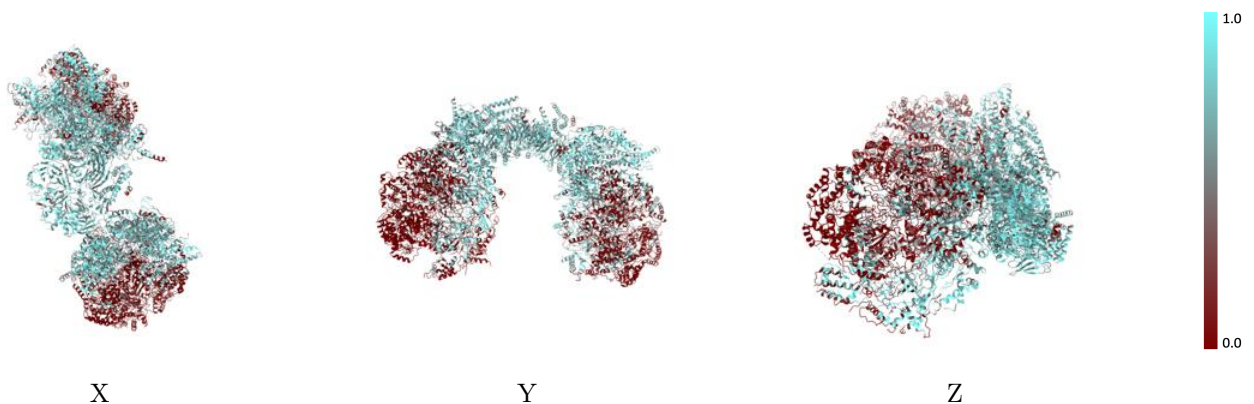
The images above show the 3D surface view of the map at the recommended contour level 0.0246 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



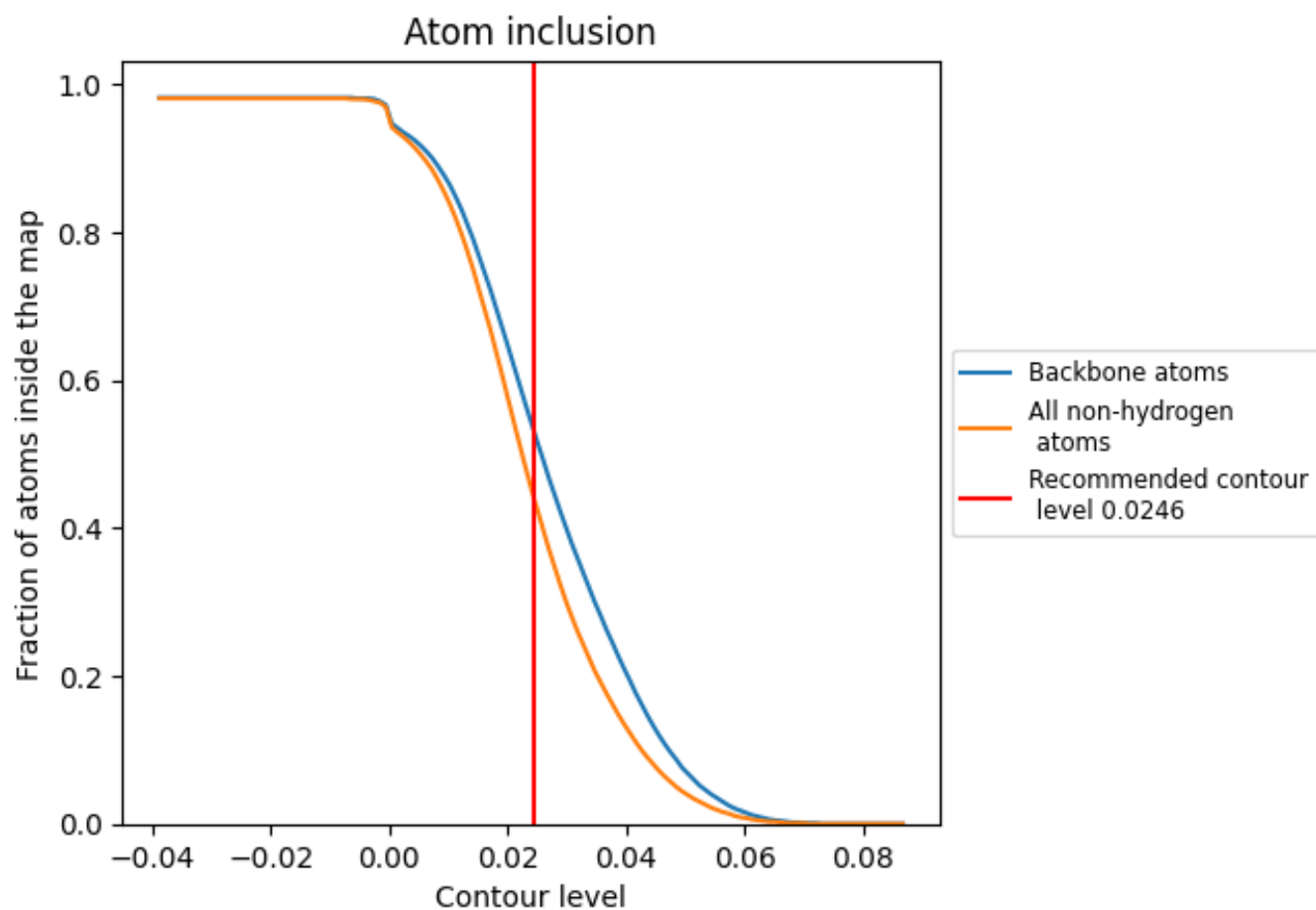
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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	 0.4360	 0.0870
2	 0.2410	 0.0390
3	 0.3320	 0.0510
4	 0.1460	 0.0300
5	 0.3520	 0.0660
6	 0.1940	 0.0320
7	 0.1580	 0.0300
A	 0.6820	 0.1640
B	 0.6730	 0.1620
C	 0.6840	 0.1410
D	 0.7090	 0.1630
E	 0.7120	 0.1720
F	 0.7070	 0.1510
G	 0.7170	 0.1680
H	 0.6800	 0.1390
a	 0.7450	 0.1660
b	 0.7480	 0.1750
c	 0.7360	 0.1620
d	 0.7480	 0.1740
h	 0.6770	 0.1390
i	 0.3080	 0.0380
j	 0.4640	 0.0880
k	 0.2590	 0.0460
l	 0.4060	 0.0750
m	 0.3480	 0.0570
n	 0.3290	 0.0540

