Full wwPDB EM Validation Report ⓘ

Aug 20, 2023 – 07:51 am BST

PDB ID	:	8B9C
EMDB ID	:	EMD-15924
Title	:	S. cerevisiae pol alpha - replisome complex
Authors	:	Jones, M.L.; Yeeles, J.T.P.
Deposited on	:	2022-10-05
Resolution	:	4.60 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:

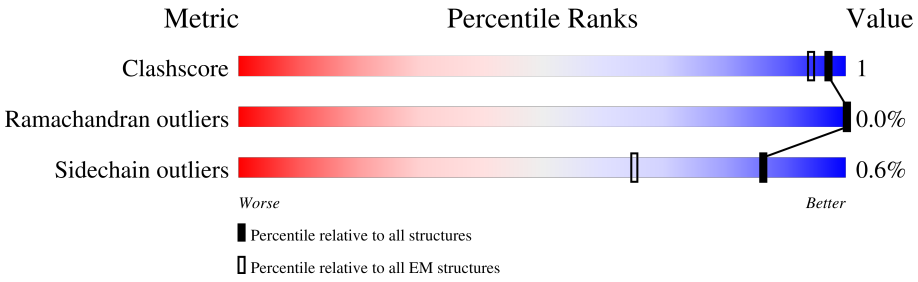
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

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 4.60 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	2	868	64% · 35%
2	3	1009	60% · 39%
3	4	933	67% · 33%
4	5	775	68% · 31%
5	6	1017	61% · 39%
6	7	845	76% · 22%
7	A	528	19% 48% · 51%
8	B	705	29% 73% 6% 20%

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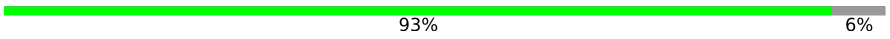
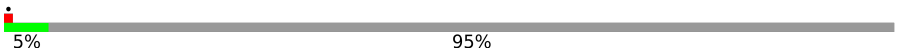
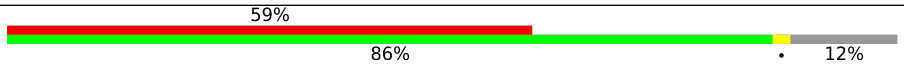
Mol	Chain	Length	Quality of chain
9	C	208	
10	D	213	
11	E	217	
12	F	294	
13	G	657	
14	P	1109	
15	Q	84	
16	R	106	
17	S	444	
18	X	1238	
19	Y	319	
20	J	1468	

2 Entry composition

There are 23 unique types of molecules in this entry. The entry contains 118037 atoms, of which 59070 are hydrogens and 0 are deuteriums.

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

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

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	2	568	9140	2857	4606	810	853	14	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	3	613	9653	3023	4861	853	903	13	0	0

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	-37	MET	-	initiating methionine	UNP P24279
3	-36	LYS	-	expression tag	UNP P24279
3	-35	ARG	-	expression tag	UNP P24279
3	-34	ARG	-	expression tag	UNP P24279
3	-33	TRP	-	expression tag	UNP P24279
3	-32	LYS	-	expression tag	UNP P24279
3	-31	LYS	-	expression tag	UNP P24279
3	-30	ASN	-	expression tag	UNP P24279
3	-29	PHE	-	expression tag	UNP P24279
3	-28	ILE	-	expression tag	UNP P24279
3	-27	ALA	-	expression tag	UNP P24279
3	-26	VAL	-	expression tag	UNP P24279
3	-25	SER	-	expression tag	UNP P24279
3	-24	ALA	-	expression tag	UNP P24279
3	-23	ALA	-	expression tag	UNP P24279
3	-22	ASN	-	expression tag	UNP P24279
3	-21	ARG	-	expression tag	UNP P24279
3	-20	PHE	-	expression tag	UNP P24279
3	-19	LYS	-	expression tag	UNP P24279
3	-18	LYS	-	expression tag	UNP P24279
3	-17	ILE	-	expression tag	UNP P24279

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Chain	Residue	Modelled	Actual	Comment	Reference
3	-16	SER	-	expression tag	UNP P24279
3	-15	SER	-	expression tag	UNP P24279
3	-14	SER	-	expression tag	UNP P24279
3	-13	GLY	-	expression tag	UNP P24279
3	-12	ALA	-	expression tag	UNP P24279
3	-11	LEU	-	expression tag	UNP P24279
3	-10	GLU	-	expression tag	UNP P24279
3	-9	ASN	-	expression tag	UNP P24279
3	-8	LEU	-	expression tag	UNP P24279
3	-7	TYR	-	expression tag	UNP P24279
3	-6	PHE	-	expression tag	UNP P24279
3	-5	GLN	-	expression tag	UNP P24279
3	-4	GLY	-	expression tag	UNP P24279
3	-3	GLU	-	expression tag	UNP P24279
3	-2	ALA	-	expression tag	UNP P24279
3	-1	PRO	-	expression tag	UNP P24279
3	0	VAL	-	expression tag	UNP P24279

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

Mol	Chain	Residues	Atoms						AltConf	Trace
3	4	628	Total	C	H	N	O	S	0	0
			10055	3145	5065	855	961	29		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
4	5	533	Total	C	H	N	O	S	0	0
			8560	2670	4347	724	798	21		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
5	6	623	Total	C	H	N	O	S	0	0
			9908	3112	4980	860	931	25		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
6	7	656	Total	C	H	N	O	S	0	0
			10387	3257	5233	885	983	29		

- Molecule 7 is a protein called DNA primase large subunit.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	A	258	Total	C	H	N	O	S	0	0
			4382	1412	2197	363	405	5		

- Molecule 8 is a protein called DNA polymerase alpha subunit B.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	B	561	Total	C	H	N	O	S	0	0
			8944	2859	4464	758	852	11		

- Molecule 9 is a protein called DNA replication complex GINS protein PSF1.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	C	195	Total	C	H	N	O	S	0	0
			3202	1004	1603	275	311	9		

- Molecule 10 is a protein called DNA replication complex GINS protein PSF2.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	D	188	Total	C	H	N	O	S	0	0
			3191	1010	1620	275	282	4		

- Molecule 11 is a protein called DNA replication complex GINS protein PSF3.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	E	171	Total	C	H	N	O	S	0	0
			2775	899	1396	221	252	7		

There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	-22	MET	-	initiating methionine	UNP Q12146
E	-21	GLY	-	expression tag	UNP Q12146
E	-20	SER	-	expression tag	UNP Q12146
E	-19	SER	-	expression tag	UNP Q12146
E	-18	HIS	-	expression tag	UNP Q12146
E	-17	HIS	-	expression tag	UNP Q12146
E	-16	HIS	-	expression tag	UNP Q12146
E	-15	HIS	-	expression tag	UNP Q12146
E	-14	HIS	-	expression tag	UNP Q12146
E	-13	HIS	-	expression tag	UNP Q12146
E	-12	SER	-	expression tag	UNP Q12146

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-11	SER	-	expression tag	UNP Q12146
E	-10	GLY	-	expression tag	UNP Q12146
E	-9	LEU	-	expression tag	UNP Q12146
E	-8	VAL	-	expression tag	UNP Q12146
E	-7	PRO	-	expression tag	UNP Q12146
E	-6	ARG	-	expression tag	UNP Q12146
E	-5	GLY	-	expression tag	UNP Q12146
E	-4	SER	-	expression tag	UNP Q12146
E	-3	HIS	-	expression tag	UNP Q12146
E	-2	MET	-	expression tag	UNP Q12146
E	-1	ALA	-	expression tag	UNP Q12146
E	0	SER	-	expression tag	UNP Q12146

- Molecule 12 is a protein called DNA replication complex GINS protein SLD5.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	F	224	Total	C	H	N	O	S	0	0
			3709	1179	1861	305	352	12		

- Molecule 13 is a protein called Cell division control protein 45.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	G	565	Total	C	H	N	O	S	0	0
			9185	2929	4598	776	868	14		

There are 11 discrepancies between the modelled and reference sequences:

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

- Molecule 14 is a protein called Mediator of replication checkpoint protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	P	50	Total	C	H	N	O	S	0	0
			805	258	397	68	81	1		

There are 13 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
P	1097	ASP	-	expression tag	UNP P25588
P	1098	TYR	-	expression tag	UNP P25588
P	1099	LYS	-	expression tag	UNP P25588
P	1100	ASP	-	expression tag	UNP P25588
P	1101	ASP	-	expression tag	UNP P25588
P	1102	ASP	-	expression tag	UNP P25588
P	1103	GLY	-	expression tag	UNP P25588
P	1104	ASP	-	expression tag	UNP P25588
P	1105	TYR	-	expression tag	UNP P25588
P	1106	LYS	-	expression tag	UNP P25588
P	1107	ASP	-	expression tag	UNP P25588
P	1108	ASP	-	expression tag	UNP P25588
P	1109	ASP	-	expression tag	UNP P25588

- Molecule 15 is a DNA chain called Leading strand.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	Q	35	Total	C	H	N	O	P	0	0
			1128	350	406	112	225	35		

- Molecule 16 is a DNA chain called Lagging strand.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	R	21	Total	C	H	N	O	P	0	0
			656	202	237	71	125	21		

- Molecule 17 is a protein called DNA primase small subunit.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	S	391	Total	C	H	N	O	S	0	0
			6428	2055	3201	561	595	16		

There are 35 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S	-34	MET	-	initiating methionine	UNP P10363

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Chain	Residue	Modelled	Actual	Comment	Reference
S	-33	LYS	-	expression tag	UNP P10363
S	-32	ARG	-	expression tag	UNP P10363
S	-31	ARG	-	expression tag	UNP P10363
S	-30	TRP	-	expression tag	UNP P10363
S	-29	LYS	-	expression tag	UNP P10363
S	-28	LYS	-	expression tag	UNP P10363
S	-27	ASN	-	expression tag	UNP P10363
S	-26	PHE	-	expression tag	UNP P10363
S	-25	ILE	-	expression tag	UNP P10363
S	-24	ALA	-	expression tag	UNP P10363
S	-23	VAL	-	expression tag	UNP P10363
S	-22	SER	-	expression tag	UNP P10363
S	-21	ALA	-	expression tag	UNP P10363
S	-20	ALA	-	expression tag	UNP P10363
S	-19	ASN	-	expression tag	UNP P10363
S	-18	ARG	-	expression tag	UNP P10363
S	-17	PHE	-	expression tag	UNP P10363
S	-16	LYS	-	expression tag	UNP P10363
S	-15	LYS	-	expression tag	UNP P10363
S	-14	ILE	-	expression tag	UNP P10363
S	-13	SER	-	expression tag	UNP P10363
S	-12	SER	-	expression tag	UNP P10363
S	-11	SER	-	expression tag	UNP P10363
S	-10	GLY	-	expression tag	UNP P10363
S	-9	ALA	-	expression tag	UNP P10363
S	-8	LEU	-	expression tag	UNP P10363
S	-7	GLU	-	expression tag	UNP P10363
S	-6	ASN	-	expression tag	UNP P10363
S	-5	LEU	-	expression tag	UNP P10363
S	-4	TYR	-	expression tag	UNP P10363
S	-3	PHE	-	expression tag	UNP P10363
S	-2	GLN	-	expression tag	UNP P10363
S	-1	GLY	-	expression tag	UNP P10363
S	0	GLU	-	expression tag	UNP P10363

- Molecule 18 is a protein called Topoisomerase 1-associated factor 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	X	665	Total	C	H	N	O	S	0	0
			10978	3506	5563	911	979	19		

- Molecule 19 is a protein called Chromosome segregation in meiosis protein 3.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	Y	92	Total	C	H	N	O	S	0	0
			1575	496	806	139	131	3		

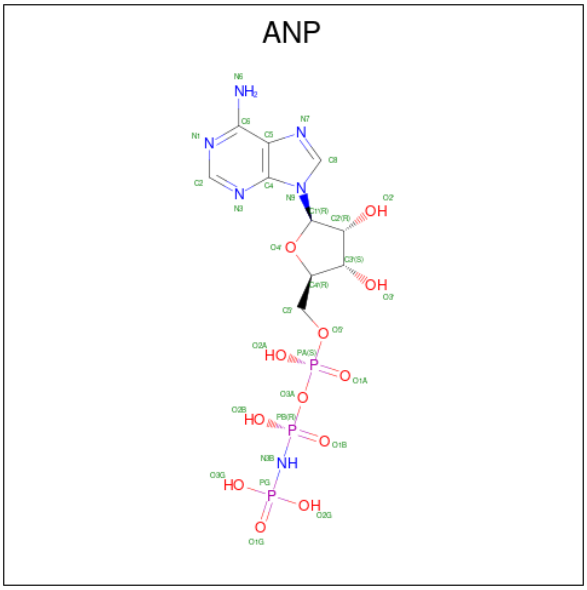
There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Y	-1	GLY	-	expression tag	UNP Q04659
Y	0	GLU	-	expression tag	UNP Q04659

- Molecule 20 is a protein called DNA polymerase alpha catalytic subunit A.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	J	198	Total	C	H	N	O	S	0	0
			3192	1018	1577	271	312	14		

- Molecule 21 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						AltConf
21	2	1	Total	C	H	N	O	P	0
			44	10	13	6	12	3	
21	3	1	Total	C	H	N	O	P	0
			44	10	13	6	12	3	
21	4	1	Total	C	H	N	O	P	0
			44	10	13	6	12	3	
21	7	1	Total	C	H	N	O	P	0
			44	10	13	6	12	3	

- Molecule 22 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
22	2	1	Total Mg 1 1	0
22	4	1	Total Mg 1 1	0
22	5	1	Total Mg 1 1	0
22	7	1	Total Mg 1 1	0

- Molecule 23 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

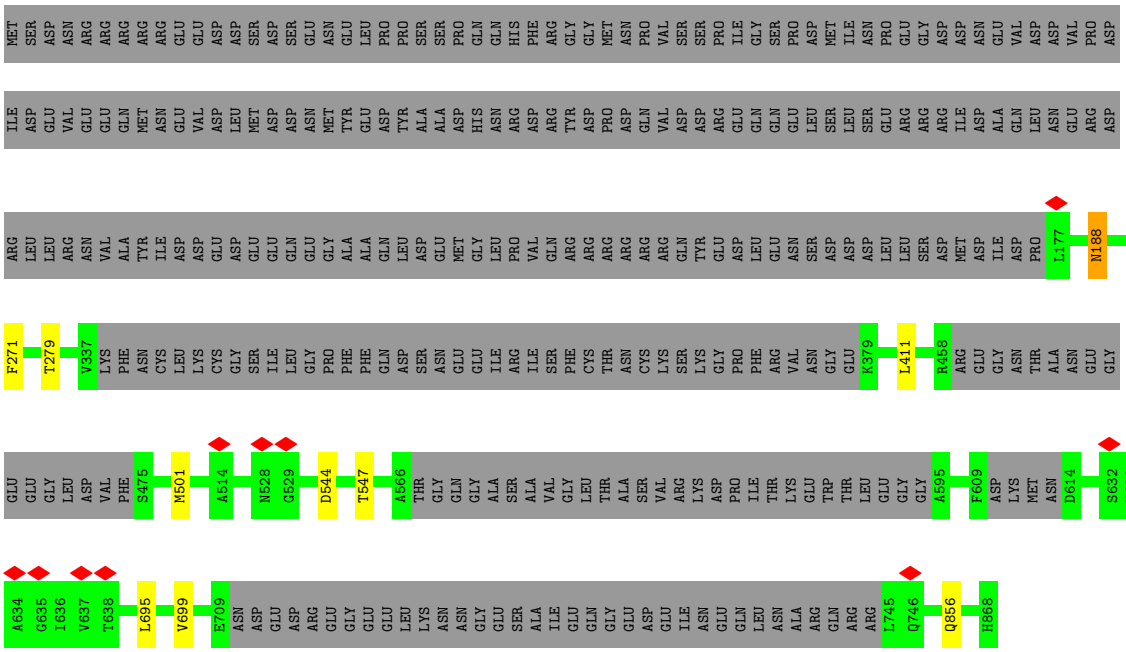
Mol	Chain	Residues	Atoms	AltConf
23	4	1	Total Zn 1 1	0
23	5	1	Total Zn 1 1	0
23	6	1	Total Zn 1 1	0
23	7	1	Total Zn 1 1	0

3 Residue-property plots (i)

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

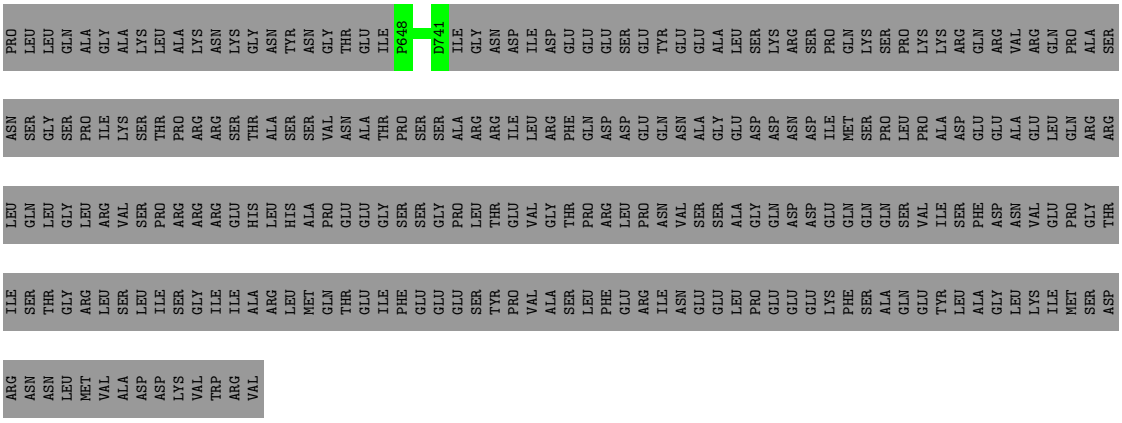
• Molecule 1: DNA replication licensing factor MCM2

Chain 2:



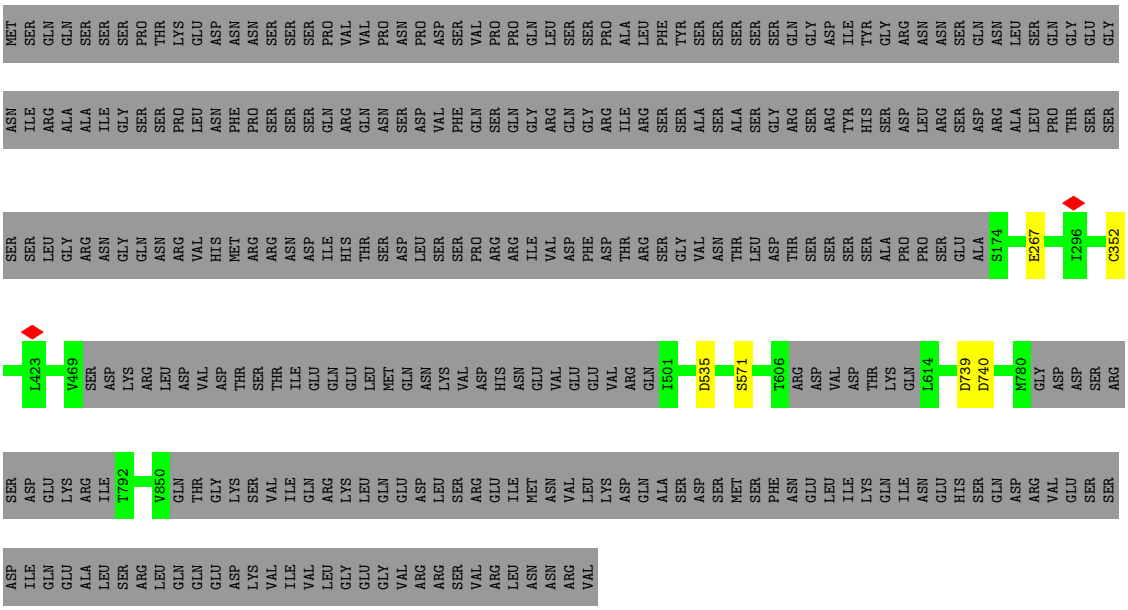
• Molecule 2: DNA replication licensing factor MCM3

Chain 3:



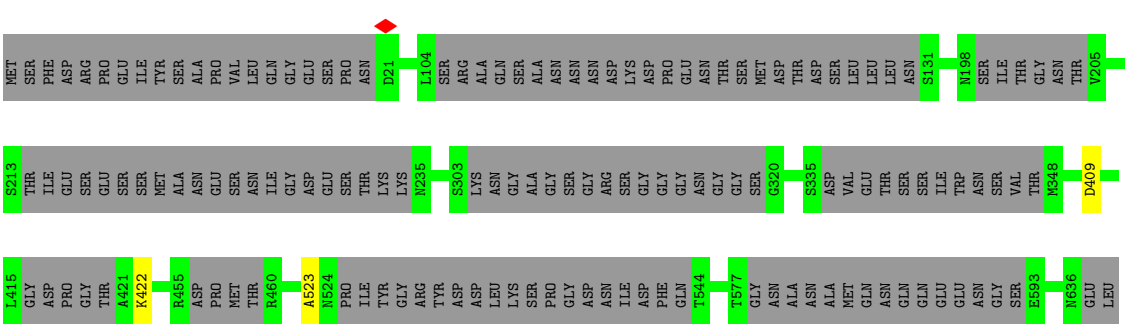
• Molecule 3: DNA replication licensing factor MCM4

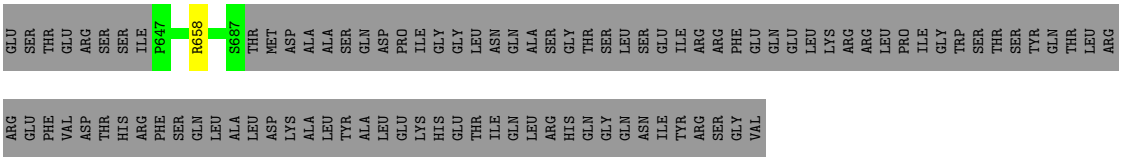
Chain 4:



• Molecule 4: Minichromosome maintenance protein 5

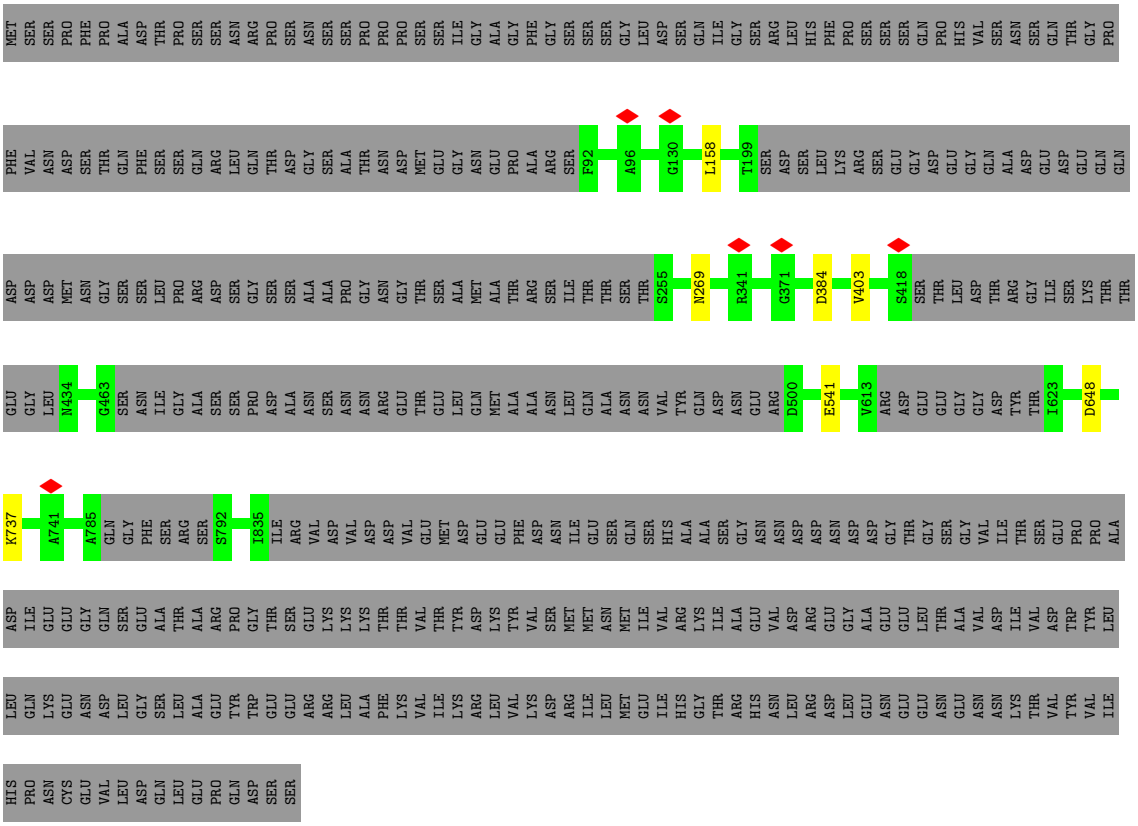
Chain 5:





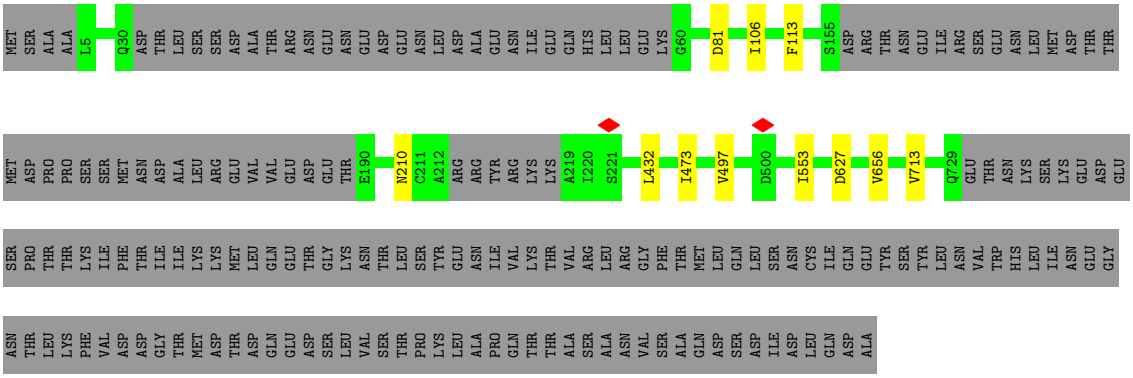
• Molecule 5: DNA replication licensing factor MCM6

Chain 6:



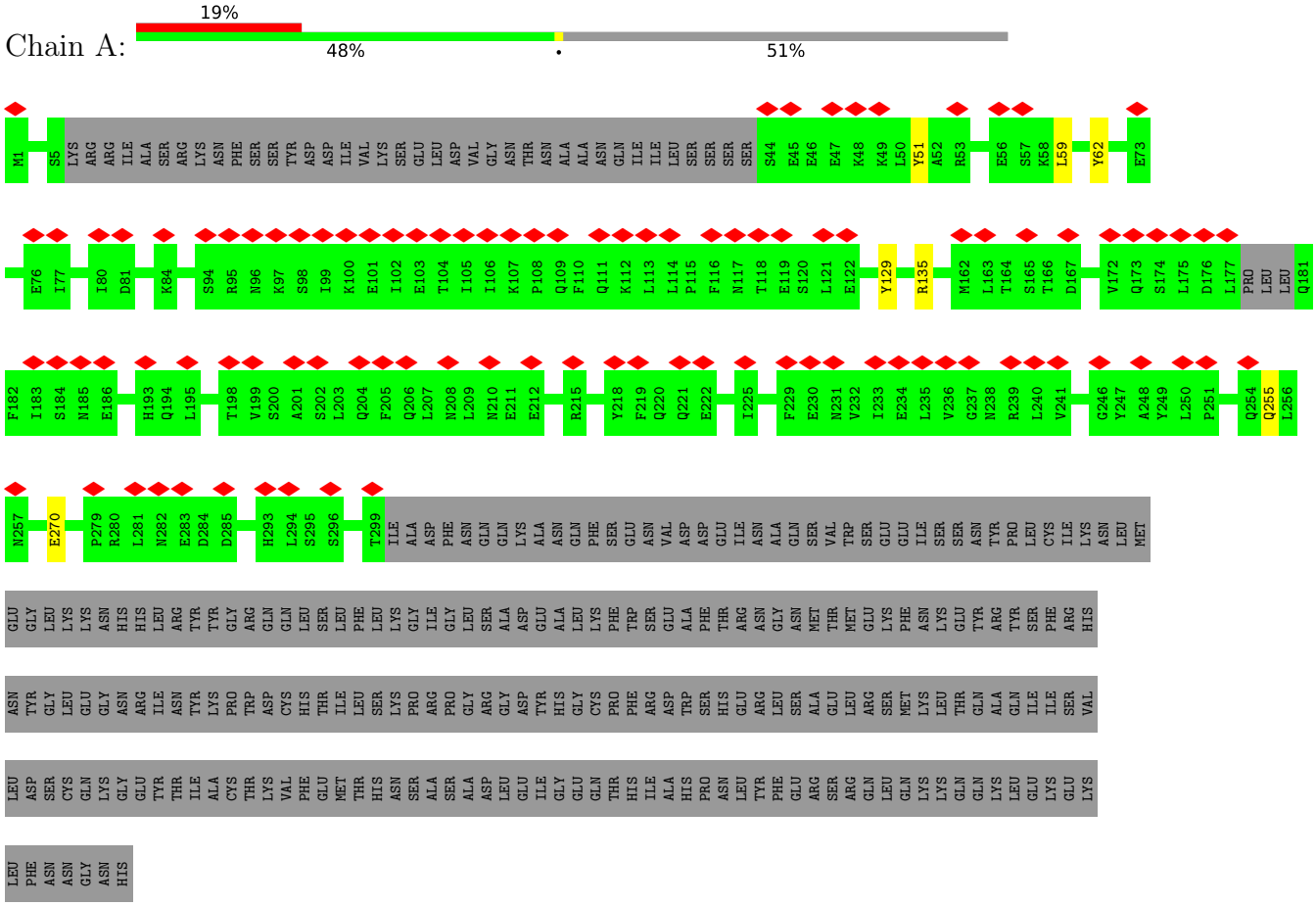
• Molecule 6: DNA replication licensing factor MCM7

Chain 7:



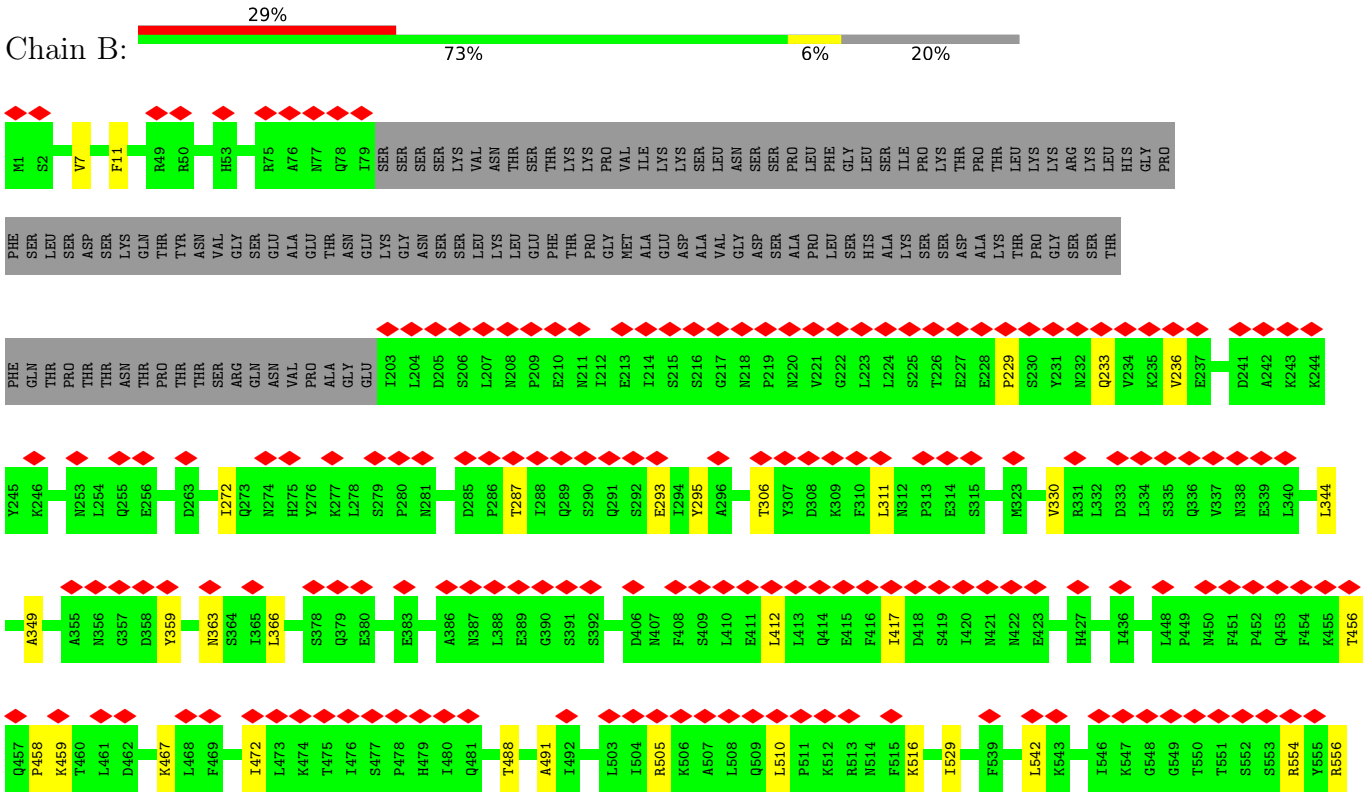
• Molecule 7: DNA primase large subunit

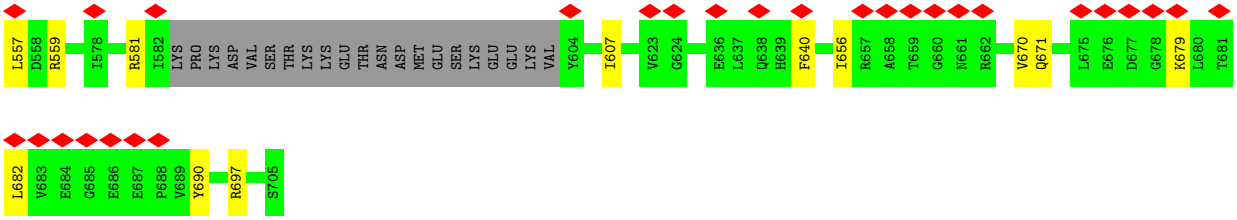
Chain A:



• Molecule 8: DNA polymerase alpha subunit B

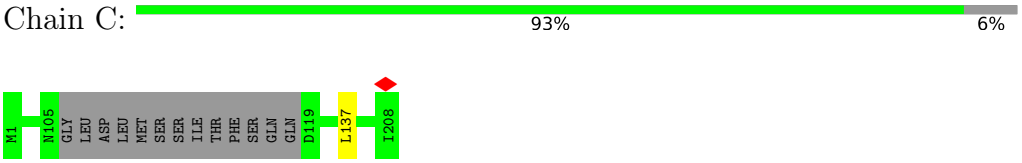
Chain B:





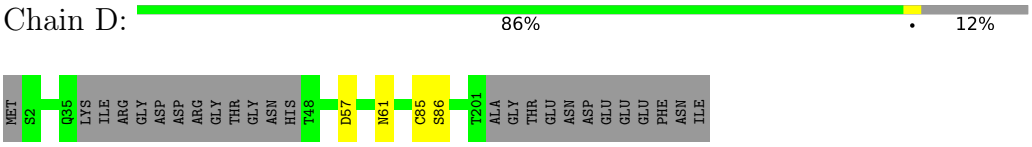
• Molecule 9: DNA replication complex GINS protein PSF1

Chain C:



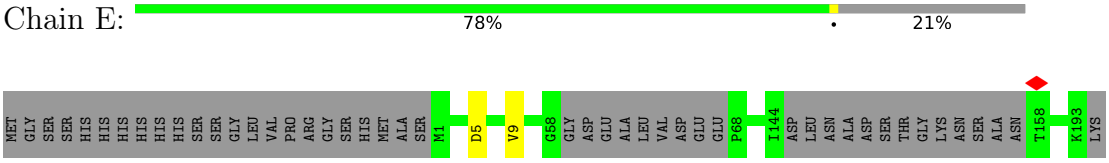
• Molecule 10: DNA replication complex GINS protein PSF2

Chain D:



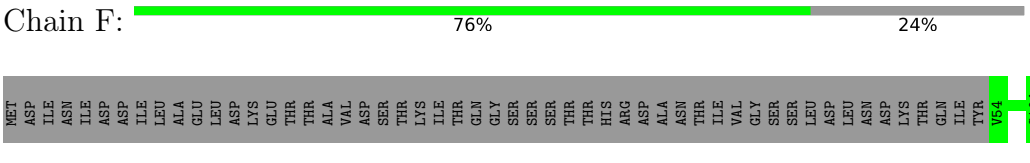
• Molecule 11: DNA replication complex GINS protein PSF3

Chain E:



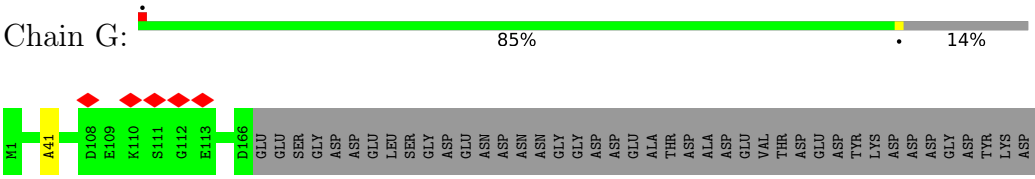
• Molecule 12: DNA replication complex GINS protein SLD5

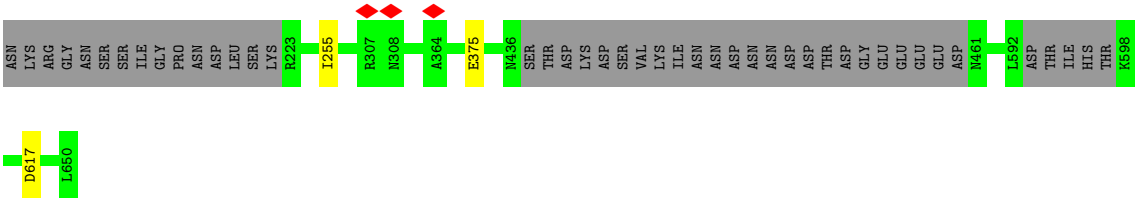
Chain F:



• Molecule 13: Cell division control protein 45

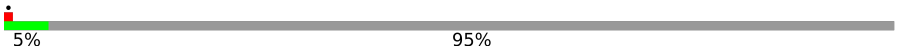
Chain G:

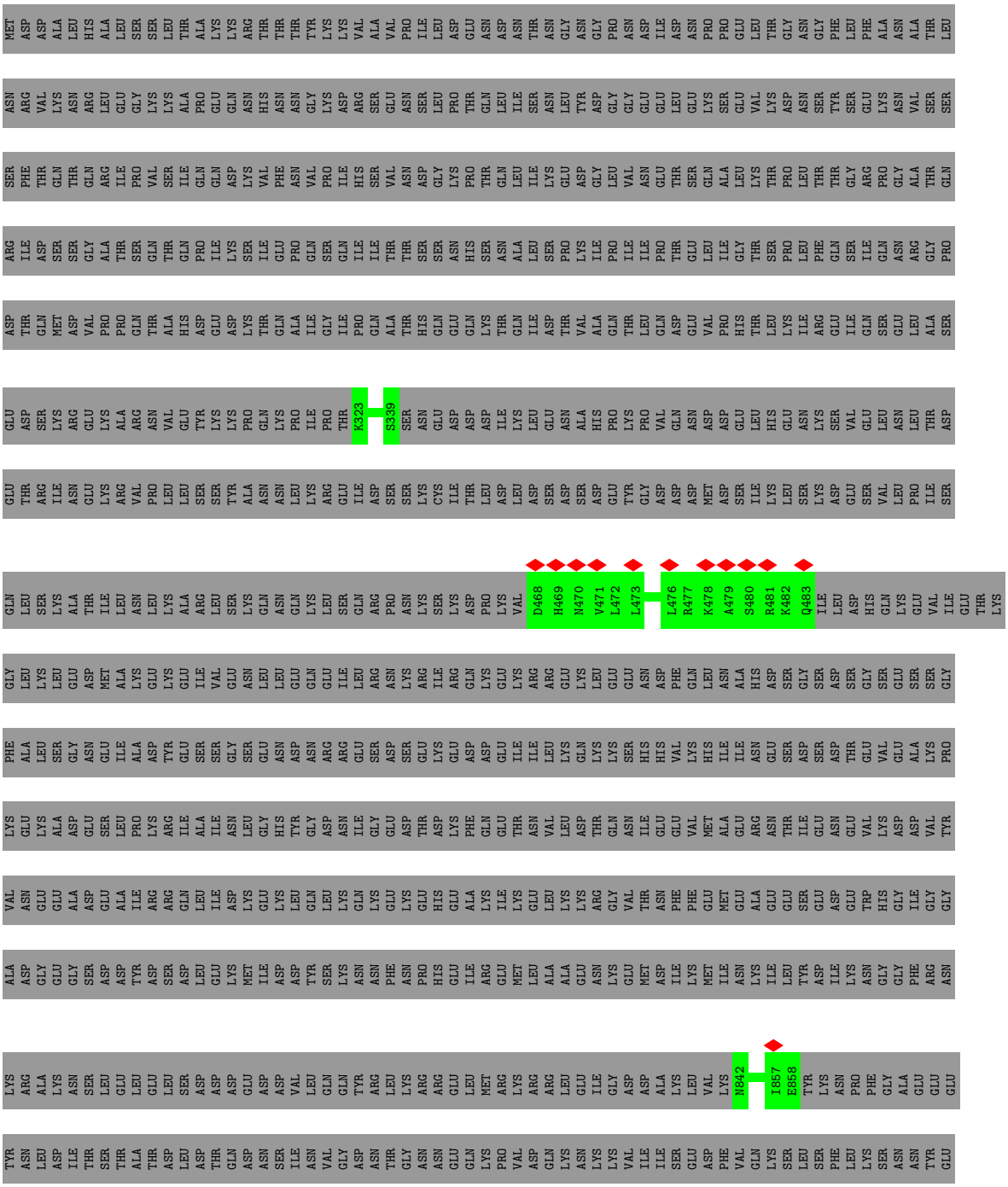


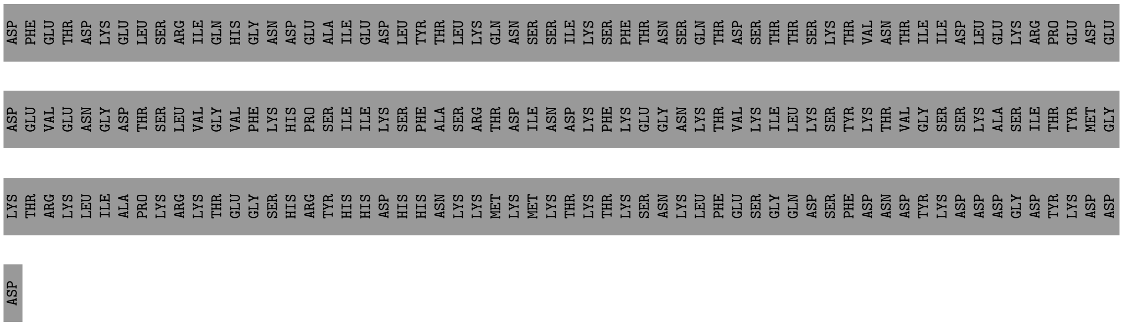


• Molecule 14: Mediator of replication checkpoint protein 1

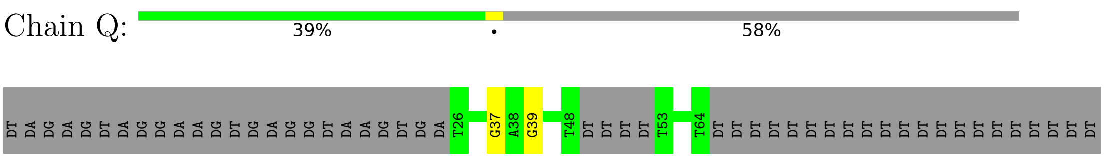
Chain P:



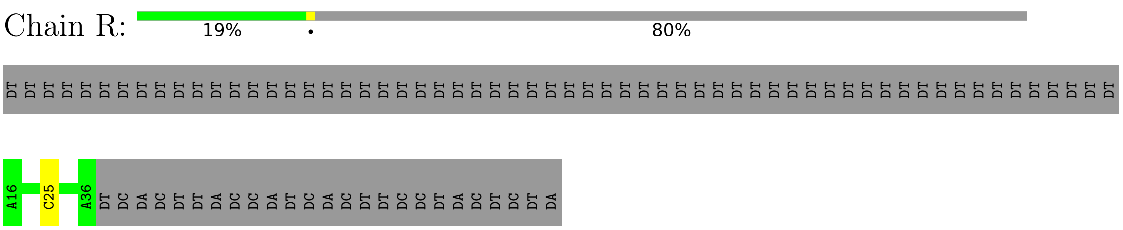




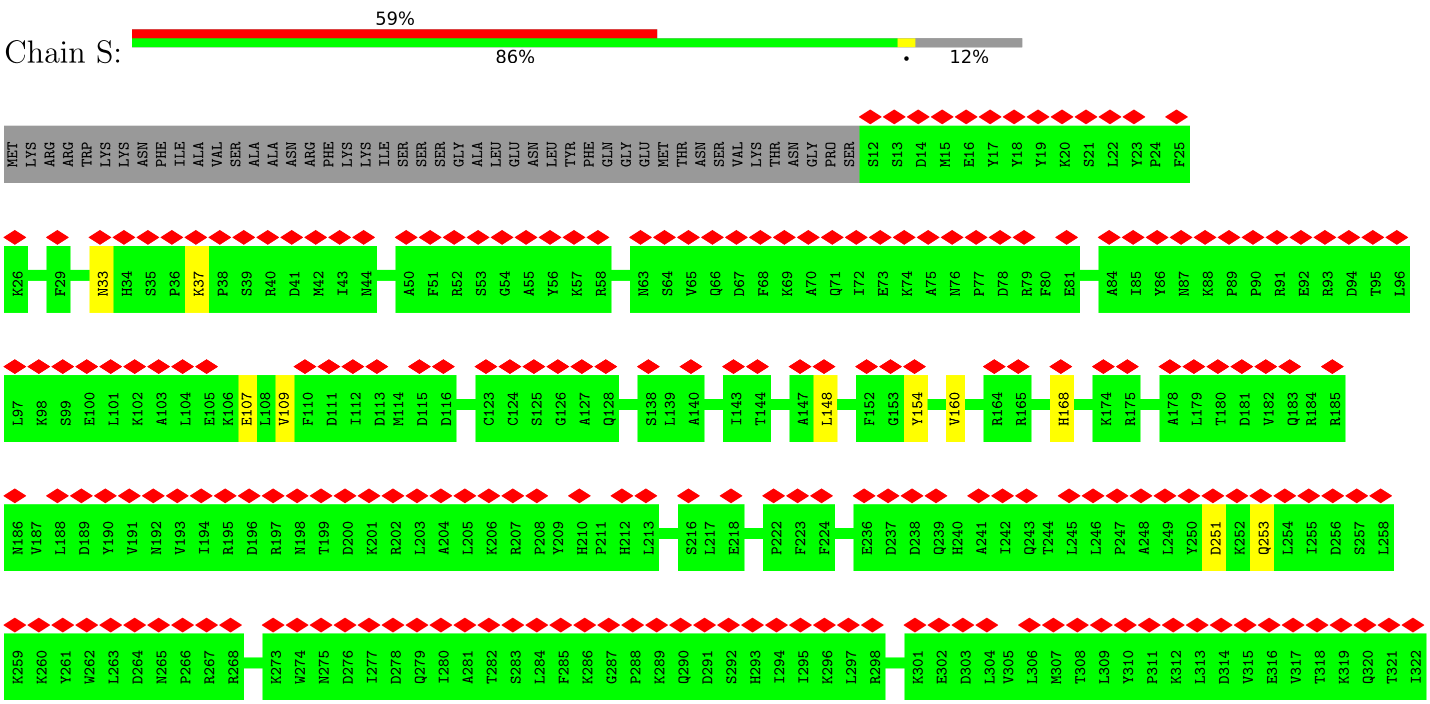
- Molecule 15: Leading strand

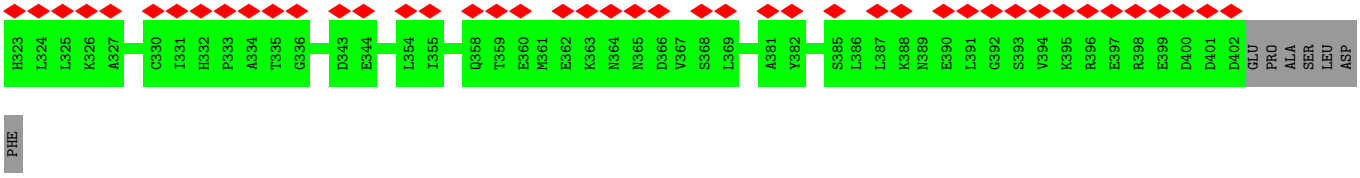


- Molecule 16: Lagging strand



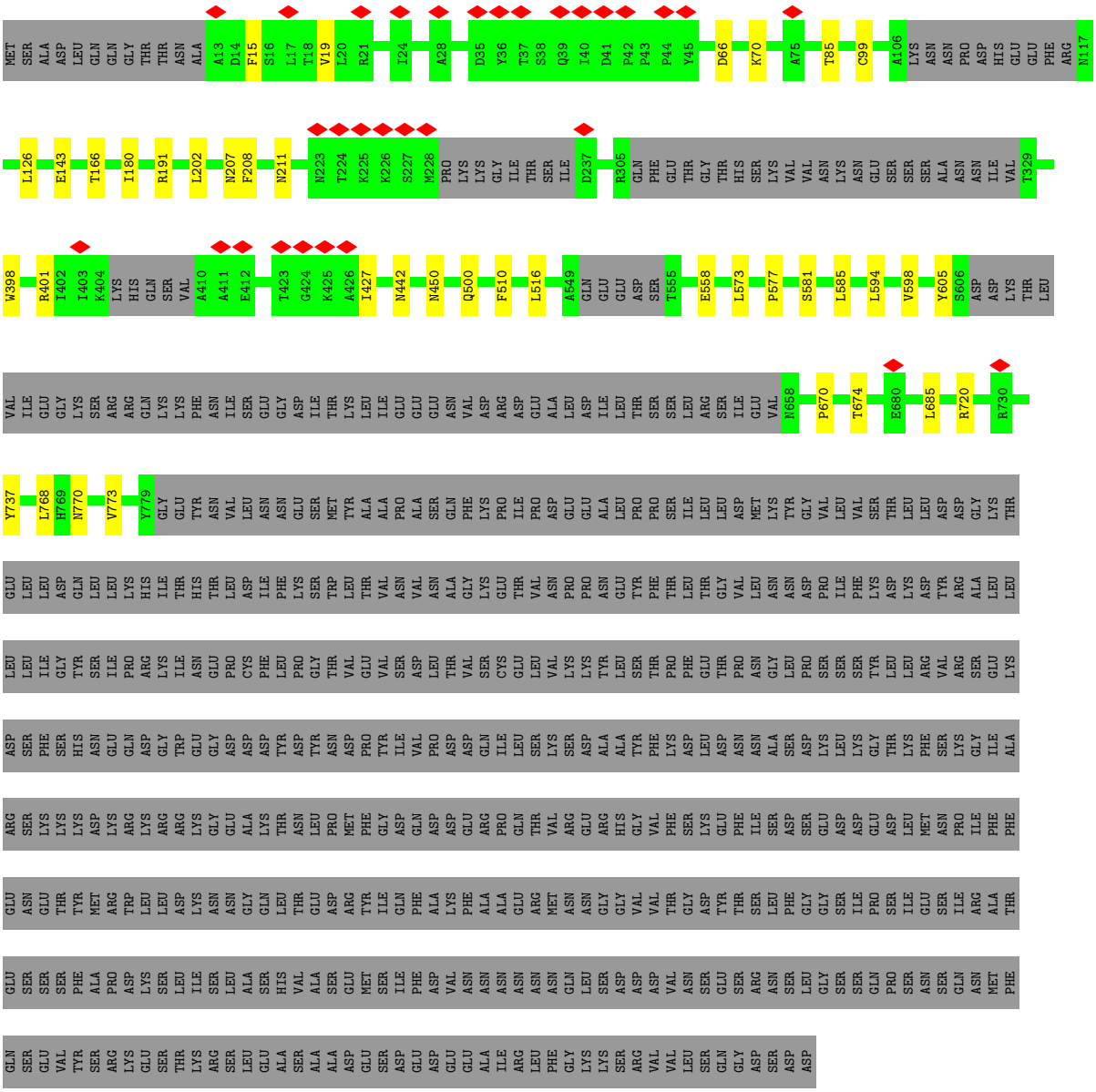
- Molecule 17: DNA primase small subunit





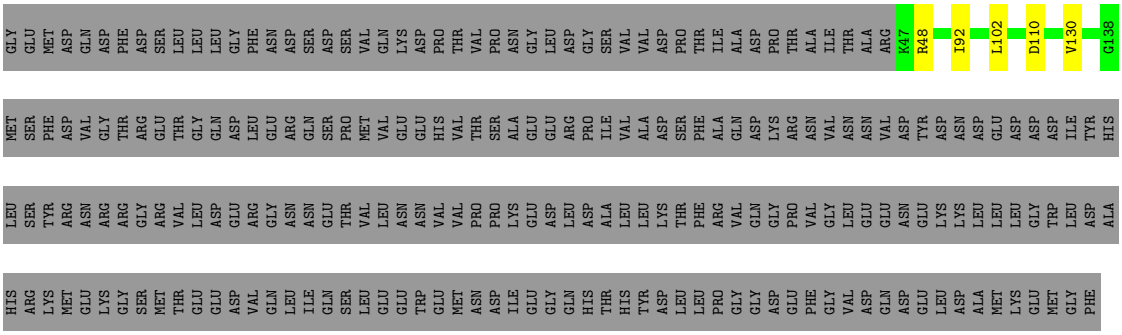
• Molecule 18: Topoisomerase 1-associated factor 1

Chain X:

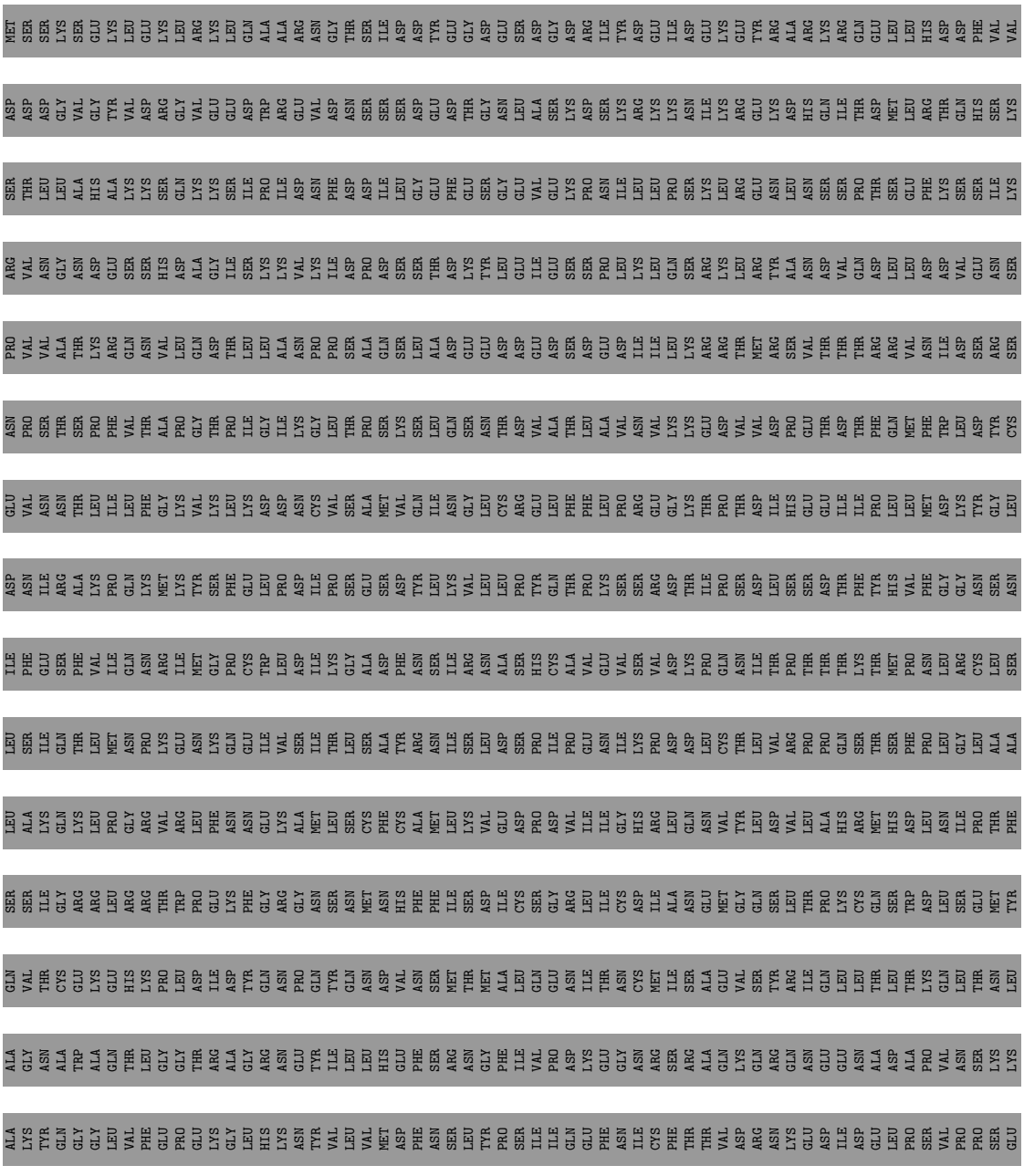


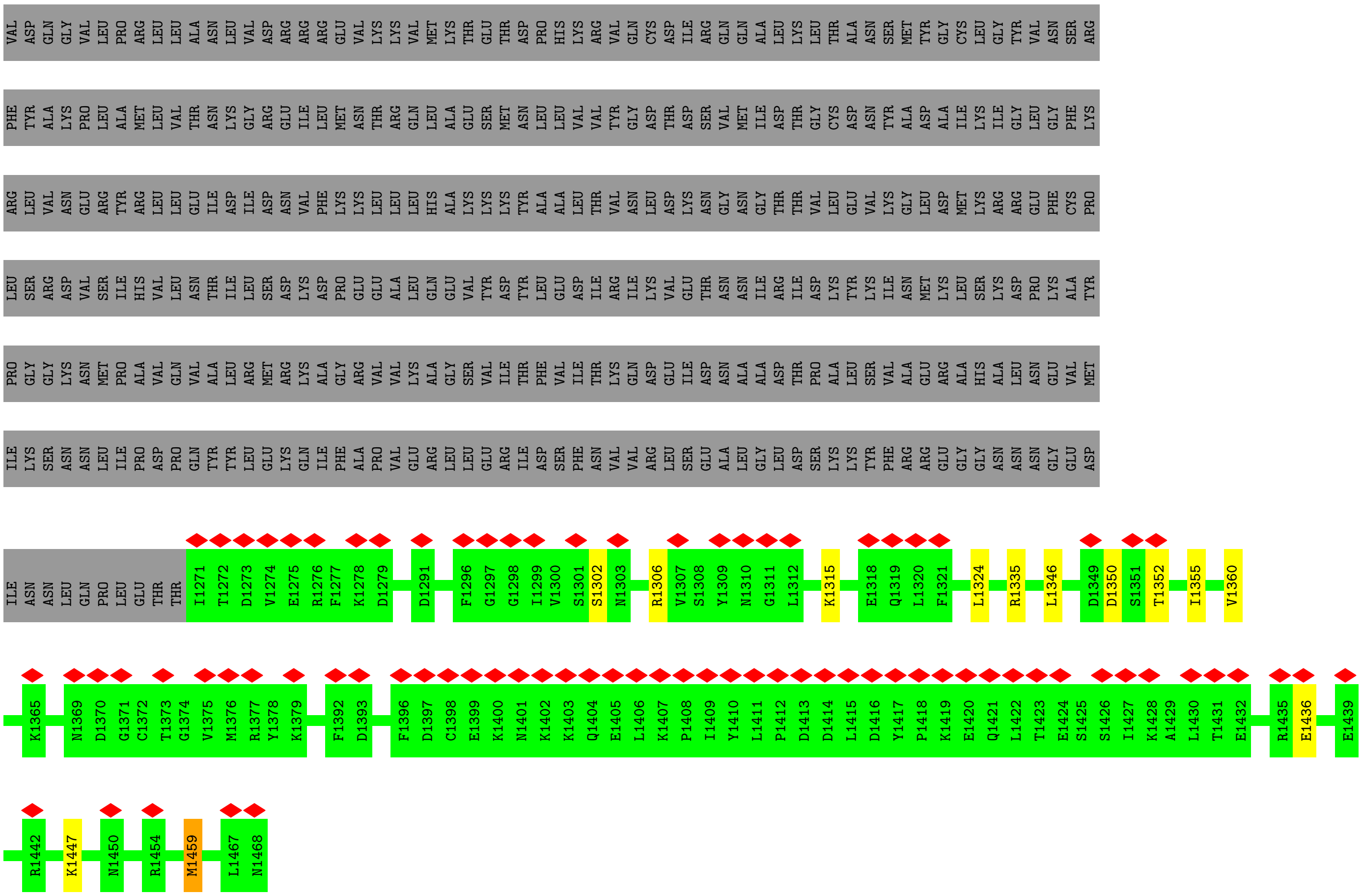
• Molecule 19: Chromosome segregation in meiosis protein 3

Chain Y:



• Molecule 20: DNA polymerase alpha catalytic subunit A




VAL ASP GLN GLY VAL LEU PRO ARG LEU LEU ALA ASN LEU VAL ASP ARG ARG ARG GLU VAL LYS LYS VAL MET LYS THR GLU THR ASP PRO HIS LYS ARG VAL GLN CYS ASP ILE ARG GLN GLN ALA LEU LYS LEU THR ALA ASN SER MET TYR GLY CYS LEU GLY TYR VAL ASN SER ARG
PHE TYR ALA LYS PRO LEU ALA MET LEU VAL THR ASN LYS GLY ARG GLU ILE LEU MET ASN THR ARG GLN LEU ALA GLU SER MET ASN LEU LEU VAL VAL TYR GLY ASP THR ASP SER VAL MET ILE ASP THR GLY CYS ASP ASN TYR ALA ASP ALA ILE LYS ILE GLY LEU GLY PHE LYS
ARG LEU VAL ASN GLU ARG TYR ARG LEU LEU GLU ILE ASP ILE ASP ASN VAL PHE LYS LYS LEU LEU LEU HIS ALA LYS LYS TYR ALA ALA LEU THR VAL ASN LEU ASP LYS ASN GLY ASN GLY THR THR VAL LEU GLU VAL LYS GLY LEU ASP MET LYS ARG ARG GLU PHE CYS PRO
LEU SER ARG ASP VAL SER ILE HIS VAL LEU ASN THR ILE LEU SER ASP LYS ASP PRO GLU GLU ALA LEU GLN GLU VAL TYR ASP TYR LEU GLU ASP ILE ARG ILE LYS VAL GLU THR ASN ASN ILE ARG ILE ASP LYS TYR LYS ILE ASN MET LYS LEU SER LYS ASP PRO LYS ALA TYR
PRO GLY GLY LYS ASN MET PRO ALA VAL GLN VAL ALA LEU ARG MET ARG LYS ALA GLY ARG VAL VAL LYS ALA GLY SER VAL ILE THR PHE VAL ILE THR LYS GLN ASP GLU ILE ASP ASN ALA ALA ASP THR PRO ALA LEU SER VAL ALA GLU ARG ALA HIS ALA LEU ASN GLU VAL MET
ILE LYS SER ASN ASN LEU ILE PRO ASP PRO GLN TYR TYR LEU GLU LYS GLN ILE PHE ALA PRO VAL GLU ARG LEU LEU GLU ARG ILE ASP SER PHE ASN VAL VAL ARG LEU SER GLU ALA LEU GLY LEU ASP SER LYS LYS TYR PHE ARG ARG GLU GLY GLY ASN ASN ASN GLY GLU ASP
ILE ASN ASN LEU GLN PRO LEU GLU THR THR I1271 T1272 D1273 V1274 E1275 R1276 F1277 K1278 D1279 D1291 F1296 G1297 G1298 I1299 V1300 S1301 S1302 N1303 R1306 V1307 S1308 Y1309 N1310 G1311 L1312 K1315 E1318 Q1319 L1320 F1321 L1324 R1335 L1346 D1349 D1350 S1351 T1352 I1355 V1360
K1365 N1369 D1370 G1371 C1372 T1373 G1374 V1375 M1376 R1377 Y1378 K1379 F1392 D1393 F1396 D1397 C1398 E1399 K1400 N1401 K1402 K1403 Q1404 E1405 L1406 K1407 P1408 I1409 Y1410 L1411 P1412 D1413 D1414 L1415 D1416 Y1417 P1418 K1419 E1420 Q1421 L1422 T1423 E1424 S1425 S1426 I1427 K1428 A1429 L1430 T1431 E1432 R1435 E1436 E1439
R1442 K1447 N1450 R1454 M1459 L1467 N1468

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	53964	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	39.2	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	11.148	Depositor
Minimum map value	-6.107	Depositor
Average map value	0.035	Depositor
Map value standard deviation	0.305	Depositor
Recommended contour level	1.68	Depositor
Map size (Å)	498.80597, 498.80597, 498.80597	wwPDB
Map dimensions	220, 220, 220	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	2.2673, 2.2673, 2.2673	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	2	0.33	0/4608	0.63	0/6221
2	3	0.27	0/4877	0.63	0/6616
3	4	0.29	0/5066	0.62	0/6850
4	5	0.28	0/4265	0.61	0/5750
5	6	0.29	0/5008	0.62	0/6755
6	7	0.29	0/5235	0.61	0/7077
7	A	0.29	0/2228	0.56	0/2993
8	B	0.28	0/4579	0.56	0/6211
9	C	0.30	0/1619	0.59	0/2178
10	D	0.27	0/1603	0.60	0/2170
11	E	0.28	0/1412	0.53	0/1910
12	F	0.29	0/1884	0.56	0/2545
13	G	0.28	0/4672	0.61	0/6320
14	P	0.30	0/413	0.56	0/547
15	Q	0.85	0/804	1.27	2/1240 (0.2%)
16	R	0.90	1/467 (0.2%)	1.08	0/715
17	S	0.27	0/3304	0.57	0/4462
18	X	0.32	0/5519	0.64	1/7441 (0.0%)
19	Y	0.31	0/785	0.68	0/1050
20	J	0.28	0/1647	0.56	0/2220
All	All	0.31	1/59995 (0.0%)	0.62	3/81271 (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	2	0	1
5	6	0	1
6	7	0	3

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Mol	Chain	#Chirality outliers	#Planarity outliers
18	X	0	2
All	All	0	7

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
16	R	25	DC	C1'-N1	5.94	1.56	1.49

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	Q	39	DG	O4'-C1'-N9	5.89	112.12	108.00
15	Q	37	DG	O4'-C1'-N9	5.60	111.92	108.00
18	X	208	PHE	CB-CG-CD1	5.15	124.40	120.80

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	2	411	LEU	Peptide
5	6	737	LYS	Mainchain
6	7	210	ASN	Mainchain
6	7	627	ASP	Mainchain
6	7	81	ASP	Mainchain
18	X	401	ARG	Peptide
18	X	427	ILE	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	4534	4606	4599	3	0
2	3	4792	4861	4857	4	0
3	4	4990	5065	5057	3	0
4	5	4213	4347	4335	2	0
5	6	4928	4980	4970	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	7	5154	5233	5224	5	0
7	A	2185	2197	2194	2	0
8	B	4480	4464	4461	26	0
9	C	1599	1603	1601	1	0
10	D	1571	1620	1618	2	0
11	E	1379	1396	1397	1	0
12	F	1848	1861	1859	1	0
13	G	4587	4598	4594	2	0
14	P	408	397	394	0	0
15	Q	722	406	408	0	0
16	R	419	237	238	0	0
17	S	3227	3201	3199	5	0
18	X	5415	5563	5556	15	0
19	Y	769	806	805	1	0
20	J	1615	1577	1576	9	0
21	2	31	13	13	0	0
21	3	31	13	13	1	0
21	4	31	13	13	1	0
21	7	31	13	13	0	0
22	2	1	0	0	0	0
22	4	1	0	0	0	0
22	5	1	0	0	0	0
22	7	1	0	0	0	0
23	4	1	0	0	0	0
23	5	1	0	0	0	0
23	6	1	0	0	0	0
23	7	1	0	0	0	0
All	All	58967	59070	58994	76	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 1.

All (76) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:488:THR:O	20:J:1335:ARG:NH2	2.16	0.78
18:X:207:ASN:O	18:X:211:ASN:ND2	2.18	0.77
8:B:236:VAL:O	8:B:516:LYS:NZ	2.27	0.67
8:B:417:ILE:HD12	8:B:472:ILE:HG22	1.79	0.65
8:B:459:LYS:NZ	20:J:1436:GLU:OE2	2.30	0.64
20:J:1350:ASP:OD1	20:J:1352:THR:OG1	2.20	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:671:GLN:OE1	8:B:679:LYS:NZ	2.34	0.59
6:7:656:VAL:HG13	6:7:713:VAL:HG21	1.85	0.58
18:X:577:PRO:O	18:X:674:THR:HG21	2.02	0.58
8:B:581:ARG:HB3	8:B:607:ILE:HD11	1.86	0.58
8:B:412:LEU:HD12	8:B:656:ILE:HD12	1.88	0.56
18:X:770:ASN:OD1	18:X:773:VAL:HG22	2.06	0.56
9:C:137:LEU:HD13	12:F:185:THR:HG21	1.88	0.55
8:B:671:GLN:O	8:B:697:ARG:NH1	2.39	0.55
8:B:458:PRO:HG2	20:J:1324:LEU:HD22	1.89	0.55
8:B:287:THR:HG22	8:B:330:VAL:HB	1.88	0.54
3:4:571:SER:H	21:4:1001:ANP:HNB1	1.55	0.54
8:B:542:LEU:O	8:B:556:ARG:NH2	2.40	0.54
2:3:143:ASN:O	2:3:147:VAL:HG23	2.08	0.53
18:X:670:PRO:O	18:X:674:THR:HG23	2.08	0.53
7:A:62:TYR:O	7:A:135:ARG:NH2	2.40	0.52
20:J:1302:SER:O	20:J:1315:LYS:NZ	2.34	0.51
8:B:306:THR:HG23	20:J:1355:ILE:HD11	1.92	0.51
8:B:229:PRO:O	8:B:233:GLN:NE2	2.44	0.50
2:3:412:SER:H	21:3:1500:ANP:HNB1	1.59	0.50
17:S:107:GLU:O	17:S:109:VAL:HG23	2.11	0.50
18:X:558:GLU:N	18:X:558:GLU:OE1	2.45	0.49
8:B:491:ALA:O	20:J:1447:LYS:NZ	2.46	0.49
18:X:581:SER:HB2	18:X:674:THR:HG22	1.95	0.49
1:2:544:ASP:O	1:2:547:THR:HG22	2.13	0.49
18:X:450:ASN:ND2	18:X:500:GLN:O	2.45	0.48
10:D:85:CYS:SG	10:D:86:SER:N	2.87	0.48
20:J:1459:MET:N	20:J:1459:MET:SD	2.87	0.48
6:7:432:LEU:HD13	6:7:473:ILE:CD1	2.44	0.48
18:X:85:THR:HG22	18:X:166:THR:HG21	1.96	0.48
8:B:272:ILE:HD13	8:B:349:ALA:HB2	1.96	0.47
4:5:422:LYS:NZ	4:5:523:ALA:O	2.46	0.47
18:X:15:PHE:O	18:X:19:VAL:HG23	2.14	0.47
6:7:106:ILE:HG22	6:7:113:PHE:CG	2.50	0.47
3:4:267:GLU:N	3:4:267:GLU:OE1	2.48	0.47
8:B:293:GLU:OE2	8:B:363:ASN:ND2	2.48	0.47
8:B:529:ILE:HD11	8:B:670:VAL:HG11	1.96	0.46
8:B:295:TYR:CD1	8:B:366:LEU:HD11	2.51	0.46
8:B:7:VAL:O	8:B:11:PHE:N	2.47	0.46
11:E:5:ASP:O	11:E:9:VAL:HG23	2.18	0.44
10:D:57:ASP:OD2	10:D:61:ASN:ND2	2.48	0.44
1:2:188:ASN:O	1:2:188:ASN:ND2	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:7:497:VAL:HG13	6:7:553:ILE:HD12	1.98	0.43
8:B:311:LEU:HD11	8:B:344:LEU:HD11	1.99	0.43
1:2:695:LEU:O	1:2:699:VAL:HG23	2.17	0.43
17:S:33:ASN:ND2	17:S:37:LYS:O	2.48	0.43
18:X:66:ASP:O	18:X:70:LYS:N	2.51	0.43
20:J:1346:LEU:HD11	20:J:1360:VAL:HG22	2.00	0.43
18:X:594:LEU:O	18:X:598:VAL:HG23	2.19	0.43
17:S:251:ASP:OD1	17:S:253:GLN:N	2.52	0.43
8:B:505:ARG:NH1	8:B:510:LEU:O	2.49	0.42
8:B:295:TYR:HD1	8:B:366:LEU:HD11	1.85	0.42
17:S:160:VAL:N	17:S:168:HIS:O	2.51	0.42
6:7:106:ILE:HG22	6:7:113:PHE:CD1	2.55	0.42
8:B:682:LEU:HD13	8:B:690:TYR:CZ	2.55	0.42
18:X:585:LEU:HD11	18:X:685:LEU:HD21	2.02	0.41
8:B:456:THR:O	8:B:467:LYS:NZ	2.53	0.41
13:G:41:ALA:HB1	13:G:255:ILE:CD1	2.50	0.41
5:6:541:GLU:OE1	5:6:541:GLU:N	2.52	0.41
2:3:235:ASP:OD1	2:3:236:THR:N	2.51	0.41
3:4:739:ASP:OD1	3:4:740:ASP:N	2.53	0.41
8:B:554:ARG:O	8:B:559:ARG:NH1	2.53	0.41
2:3:440:VAL:O	2:3:444:ALA:N	2.54	0.41
18:X:573:LEU:HD23	18:X:598:VAL:HG21	2.02	0.41
4:5:409:ASP:O	4:5:658:ARG:NH1	2.54	0.41
8:B:557:LEU:HD13	8:B:640:PHE:CE1	2.56	0.41
7:A:51:TYR:HH	7:A:129:TYR:HE1	1.65	0.40
17:S:148:LEU:HD22	17:S:154:TYR:HD2	1.86	0.40
13:G:617:ASP:OD1	13:G:617:ASP:N	2.54	0.40
18:X:768:LEU:HD21	19:Y:130:VAL:CG1	2.52	0.40
18:X:143:GLU:OE1	18:X:143:GLU:N	2.53	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	2	556/868 (64%)	546 (98%)	10 (2%)	0	100	100
2	3	603/1009 (60%)	587 (97%)	16 (3%)	0	100	100
3	4	620/933 (66%)	605 (98%)	15 (2%)	0	100	100
4	5	511/775 (66%)	494 (97%)	17 (3%)	0	100	100
5	6	611/1017 (60%)	602 (98%)	9 (2%)	0	100	100
6	7	648/845 (77%)	635 (98%)	13 (2%)	0	100	100
7	A	252/528 (48%)	247 (98%)	4 (2%)	1 (0%)	34	72
8	B	555/705 (79%)	544 (98%)	11 (2%)	0	100	100
9	C	191/208 (92%)	189 (99%)	2 (1%)	0	100	100
10	D	184/213 (86%)	182 (99%)	2 (1%)	0	100	100
11	E	165/217 (76%)	164 (99%)	1 (1%)	0	100	100
12	F	220/294 (75%)	216 (98%)	4 (2%)	0	100	100
13	G	557/657 (85%)	540 (97%)	17 (3%)	0	100	100
14	P	44/1109 (4%)	42 (96%)	2 (4%)	0	100	100
17	S	389/444 (88%)	380 (98%)	9 (2%)	0	100	100
18	X	651/1238 (53%)	640 (98%)	11 (2%)	0	100	100
19	Y	90/319 (28%)	87 (97%)	3 (3%)	0	100	100
20	J	196/1468 (13%)	194 (99%)	2 (1%)	0	100	100
All	All	7043/12847 (55%)	6894 (98%)	148 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	A	255	GLN

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	2	503/770 (65%)	498 (99%)	5 (1%)	76	86

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	3	530/866 (61%)	528 (100%)	2 (0%)	91 94
3	4	568/848 (67%)	566 (100%)	2 (0%)	91 94
4	5	482/688 (70%)	482 (100%)	0	100 100
5	6	545/886 (62%)	540 (99%)	5 (1%)	78 87
6	7	578/753 (77%)	578 (100%)	0	100 100
7	A	246/488 (50%)	244 (99%)	2 (1%)	81 89
8	B	508/637 (80%)	507 (100%)	1 (0%)	93 96
9	C	181/193 (94%)	181 (100%)	0	100 100
10	D	178/198 (90%)	178 (100%)	0	100 100
11	E	155/192 (81%)	155 (100%)	0	100 100
12	F	216/279 (77%)	216 (100%)	0	100 100
13	G	510/592 (86%)	509 (100%)	1 (0%)	93 96
14	P	47/1015 (5%)	47 (100%)	0	100 100
17	S	357/402 (89%)	357 (100%)	0	100 100
18	X	607/1125 (54%)	595 (98%)	12 (2%)	55 73
19	Y	85/286 (30%)	81 (95%)	4 (5%)	26 52
20	J	185/1334 (14%)	183 (99%)	2 (1%)	73 85
All	All	6481/11552 (56%)	6445 (99%)	36 (1%)	86 92

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	2	188	ASN
1	2	271	PHE
1	2	279	THR
1	2	501	MET
1	2	856	GLN
2	3	27	ARG
2	3	359	ILE
3	4	352	CYS
3	4	535	ASP
5	6	158	LEU
5	6	269	ASN
5	6	384	ASP
5	6	403	VAL
5	6	648	ASP

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Mol	Chain	Res	Type
7	A	59	LEU
7	A	270	GLU
8	B	359	TYR
13	G	375	GLU
18	X	99	CYS
18	X	126	LEU
18	X	180	ILE
18	X	191	ARG
18	X	202	LEU
18	X	398	TRP
18	X	442	ASN
18	X	510	PHE
18	X	516	LEU
18	X	605	TYR
18	X	720	ARG
18	X	737	TYR
19	Y	48	ARG
19	Y	92	ILE
19	Y	102	LEU
19	Y	110	ASP
20	J	1306	ARG
20	J	1459	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
13	G	296	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 (i)

Of 12 ligands modelled in this entry, 8 are monoatomic - leaving 4 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
21	ANP	7	901	22	29,33,33	1.09	3 (10%)	31,52,52	1.03	2 (6%)
21	ANP	3	1500	22	29,33,33	1.07	4 (13%)	31,52,52	1.10	2 (6%)
21	ANP	4	1001	22	29,33,33	1.08	4 (13%)	31,52,52	1.10	2 (6%)
21	ANP	2	1500	22	29,33,33	1.08	4 (13%)	31,52,52	1.17	2 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
21	ANP	7	901	22	-	3/14/38/38	0/3/3/3
21	ANP	3	1500	22	-	3/14/38/38	0/3/3/3
21	ANP	4	1001	22	-	6/14/38/38	0/3/3/3
21	ANP	2	1500	22	-	5/14/38/38	0/3/3/3

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
21	7	901	ANP	PB-O3A	-3.58	1.54	1.59
21	4	1001	ANP	PB-O3A	-2.59	1.55	1.59
21	3	1500	ANP	PB-O3A	-2.50	1.55	1.59
21	2	1500	ANP	PB-O3A	-2.43	1.56	1.59
21	2	1500	ANP	PG-O1G	2.40	1.50	1.46
21	4	1001	ANP	PG-O1G	2.39	1.49	1.46
21	3	1500	ANP	PG-N3B	2.38	1.69	1.63
21	2	1500	ANP	PG-N3B	2.37	1.69	1.63
21	3	1500	ANP	PG-O1G	2.36	1.49	1.46
21	4	1001	ANP	PG-N3B	2.33	1.69	1.63

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
21	2	1500	ANP	PB-O1B	2.29	1.49	1.46
21	7	901	ANP	PB-O1B	2.23	1.49	1.46
21	7	901	ANP	PG-O1G	2.20	1.49	1.46
21	4	1001	ANP	PB-O1B	2.19	1.49	1.46
21	3	1500	ANP	PB-O1B	2.10	1.49	1.46

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
21	4	1001	ANP	PB-O3A-PA	-4.36	117.25	132.62
21	2	1500	ANP	PB-O3A-PA	-4.04	118.38	132.62
21	3	1500	ANP	PB-O3A-PA	-3.63	119.82	132.62
21	7	901	ANP	PB-O3A-PA	-2.92	122.32	132.62
21	4	1001	ANP	C5-C6-N6	2.29	123.83	120.35
21	7	901	ANP	C5-C6-N6	2.23	123.74	120.35
21	2	1500	ANP	C5-C6-N6	2.22	123.72	120.35
21	3	1500	ANP	C5-C6-N6	2.18	123.66	120.35

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
21	2	1500	ANP	PB-N3B-PG-O1G
21	2	1500	ANP	PG-N3B-PB-O1B
21	2	1500	ANP	C3'-C4'-C5'-O5'
21	3	1500	ANP	PB-N3B-PG-O1G
21	3	1500	ANP	PA-O3A-PB-O1B
21	3	1500	ANP	PA-O3A-PB-O2B
21	4	1001	ANP	PB-N3B-PG-O1G
21	4	1001	ANP	C5'-O5'-PA-O3A
21	7	901	ANP	PB-N3B-PG-O1G
21	7	901	ANP	PG-N3B-PB-O1B
21	7	901	ANP	PG-N3B-PB-O3A
21	2	1500	ANP	O4'-C4'-C5'-O5'
21	2	1500	ANP	C4'-C5'-O5'-PA
21	4	1001	ANP	C5'-O5'-PA-O1A
21	4	1001	ANP	C5'-O5'-PA-O2A
21	4	1001	ANP	PA-O3A-PB-O2B
21	4	1001	ANP	O4'-C4'-C5'-O5'

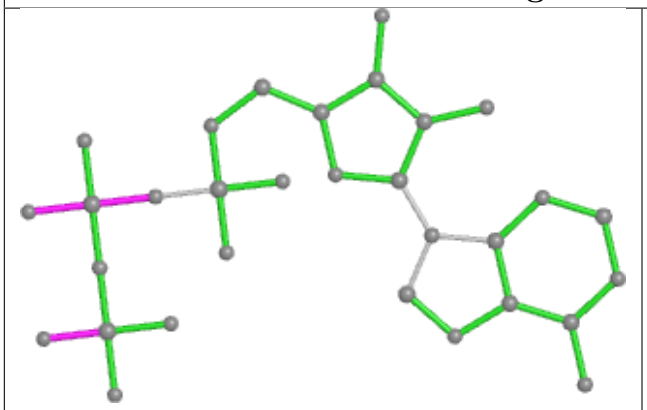
There are no ring outliers.

2 monomers are involved in 2 short contacts:

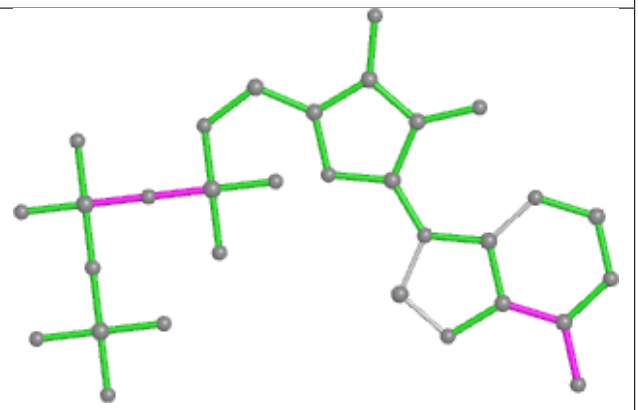
Mol	Chain	Res	Type	Clashes	Symm-Clashes
21	3	1500	ANP	1	0
21	4	1001	ANP	1	0

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

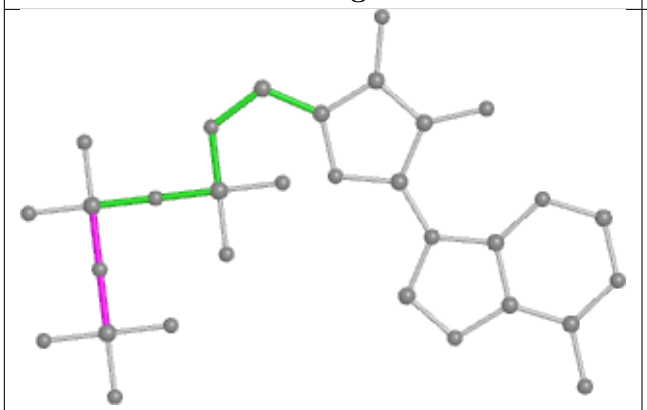
Ligand ANP 7 901



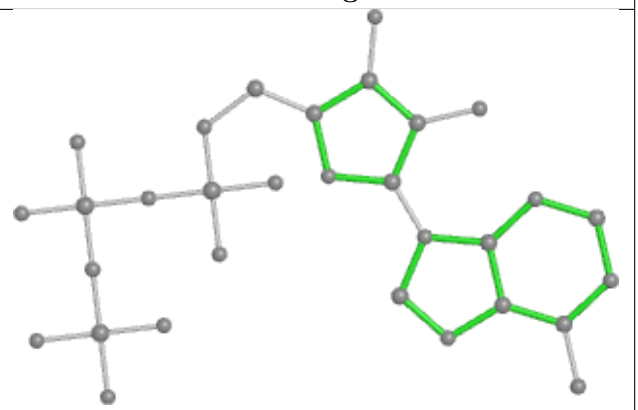
Bond lengths



Bond angles

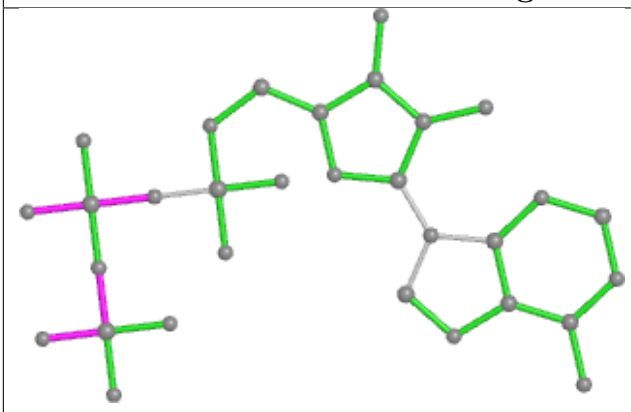


Torsions

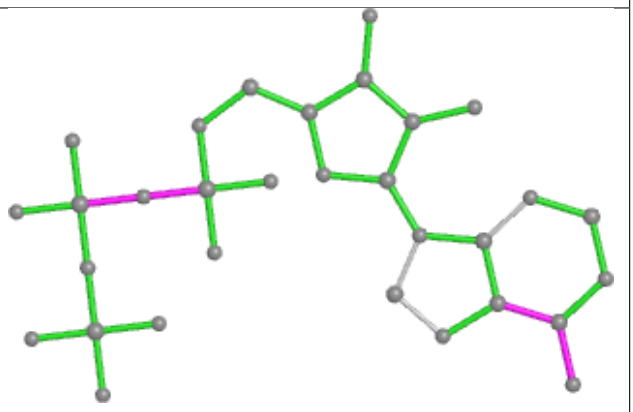


Rings

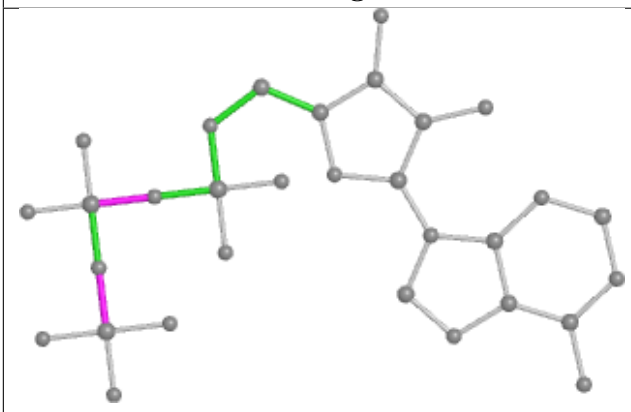
Ligand ANP 3 1500



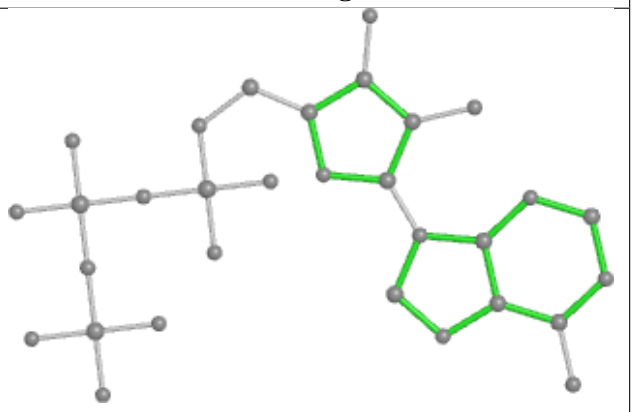
Bond lengths



Bond angles

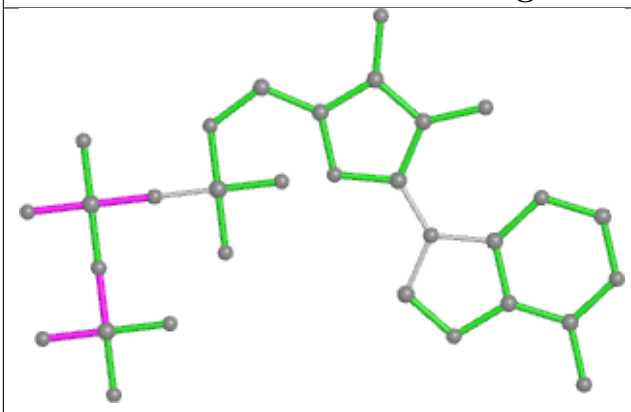


Torsions

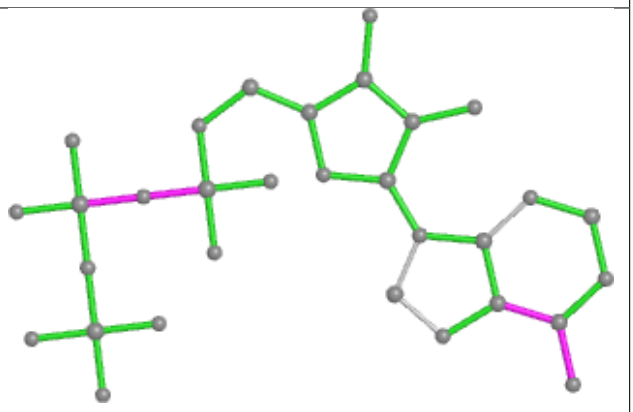


Rings

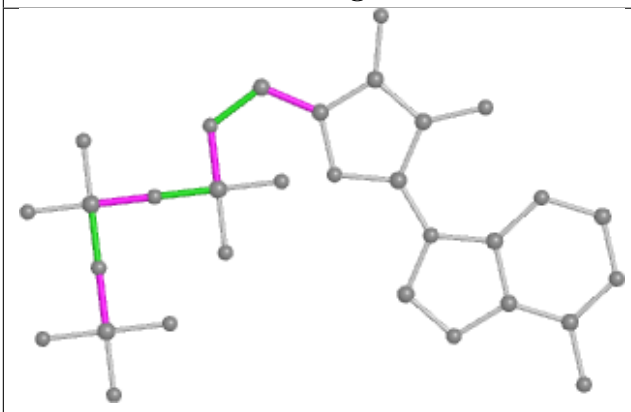
Ligand ANP 4 1001



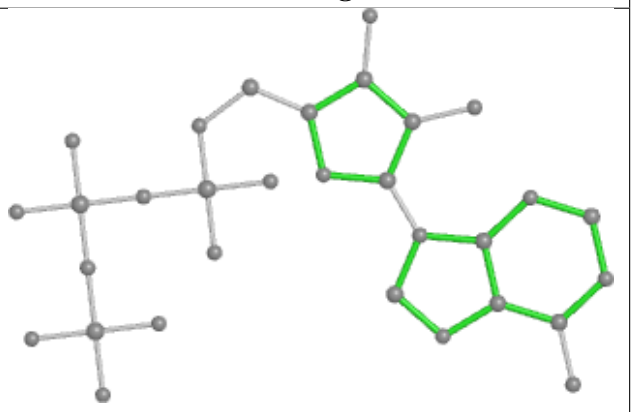
Bond lengths



Bond angles

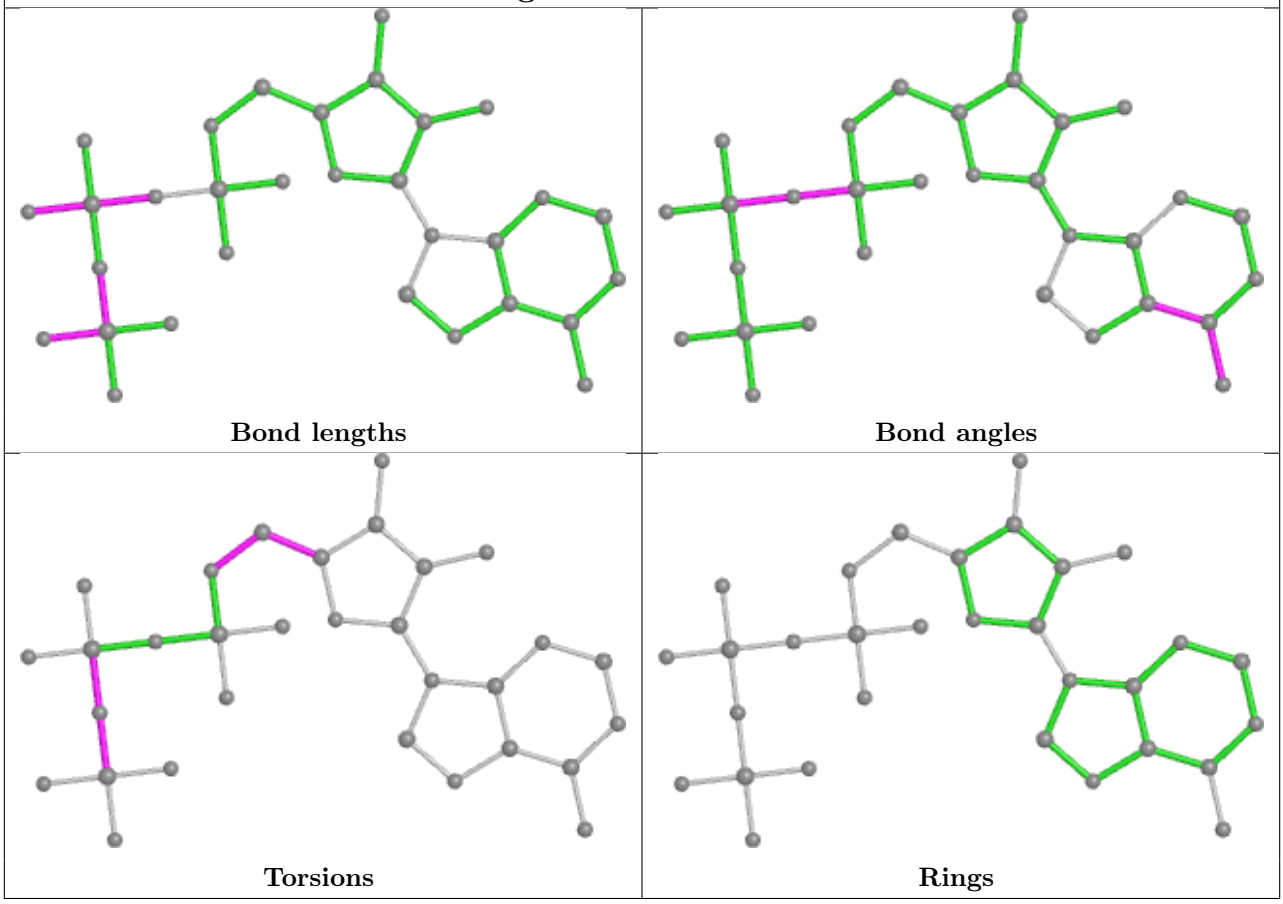


Torsions



Rings

Ligand ANP 2 1500



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

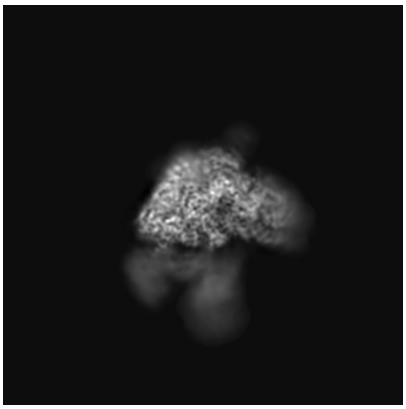
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-15924. These allow visual inspection of the internal detail of the map and identification of artifacts.

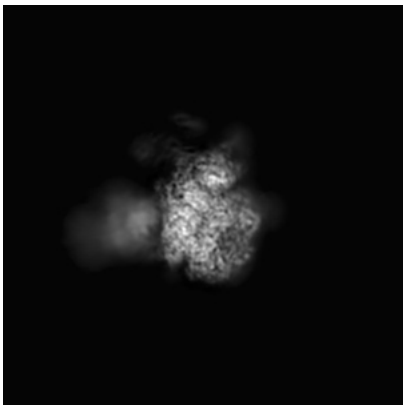
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

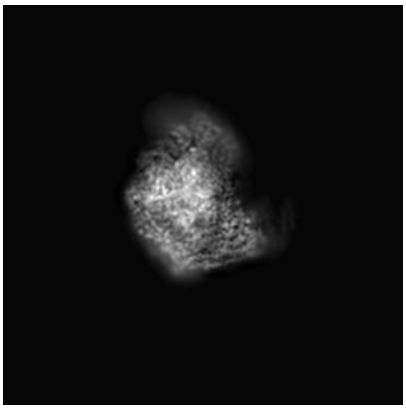
6.1.1 Primary map



X

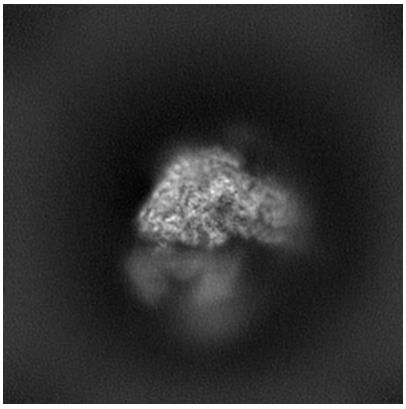


Y

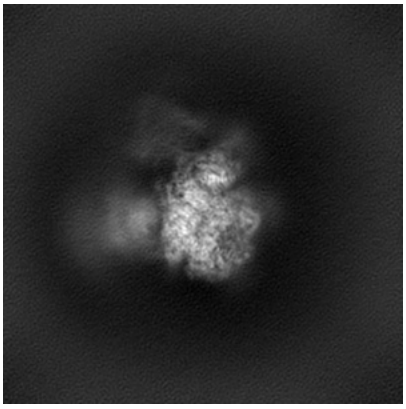


Z

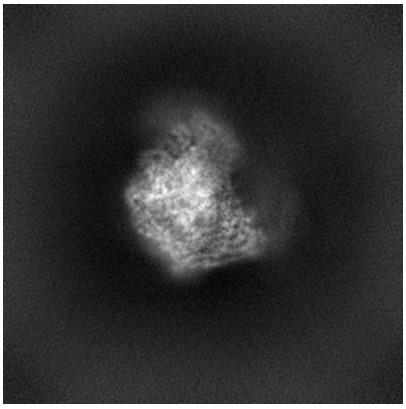
6.1.2 Raw map



X



Y



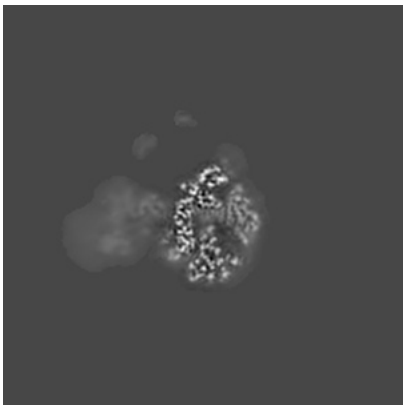
Z

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

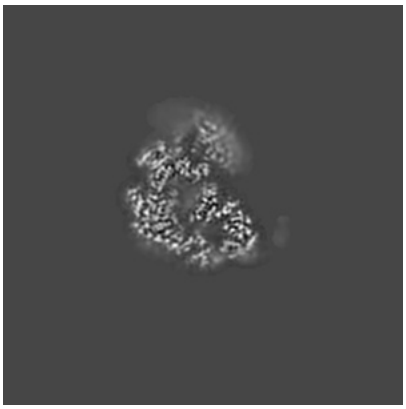
6.2 Central slices (i)

6.2.1 Primary map

X Index: 110

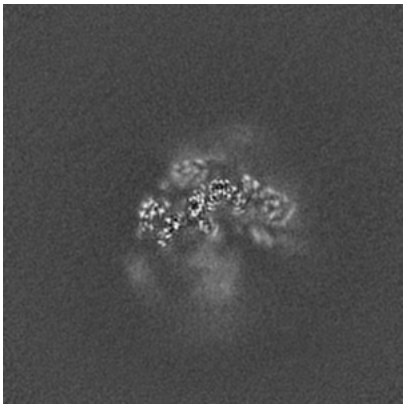


Y Index: 110

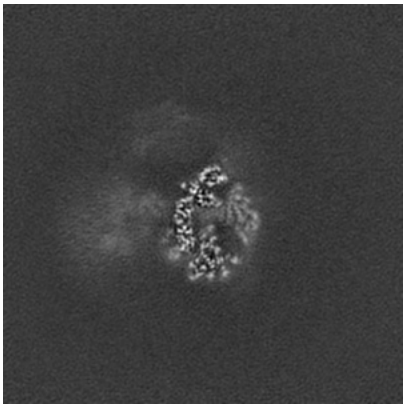


Z Index: 110

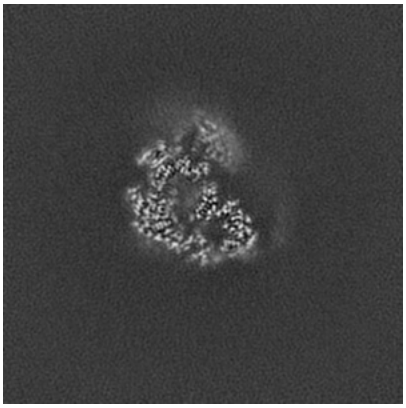
6.2.2 Raw map



X Index: 110



Y Index: 110

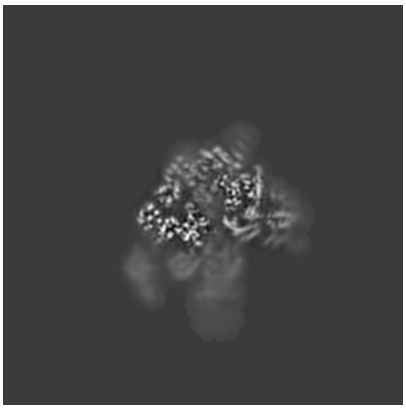


Z Index: 110

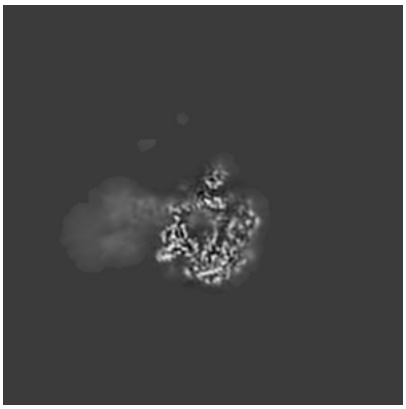
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

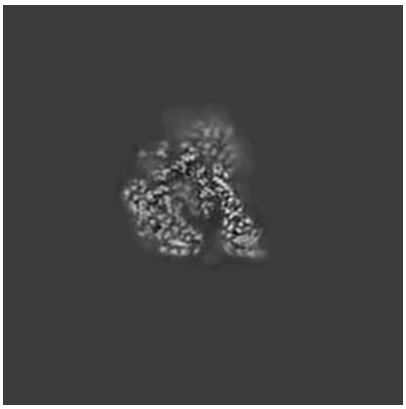
6.3.1 Primary map



X Index: 104

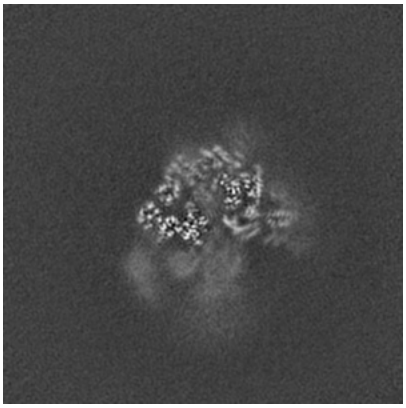


Y Index: 114

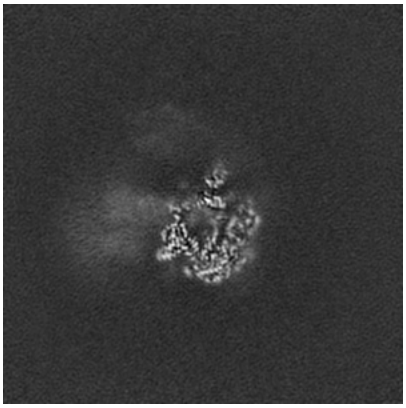


Z Index: 115

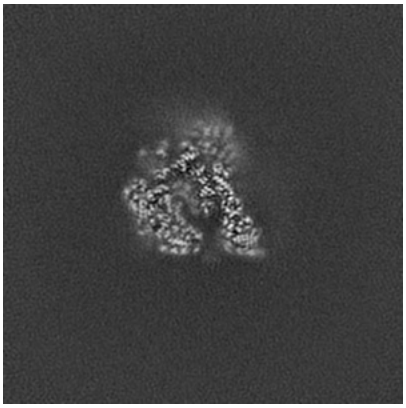
6.3.2 Raw map



X Index: 104



Y Index: 114

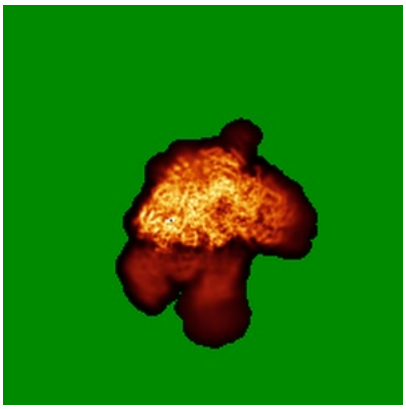


Z Index: 115

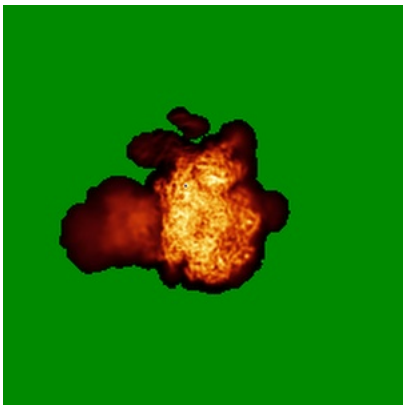
The images above show the largest variance slices of the map in three orthogonal directions.

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

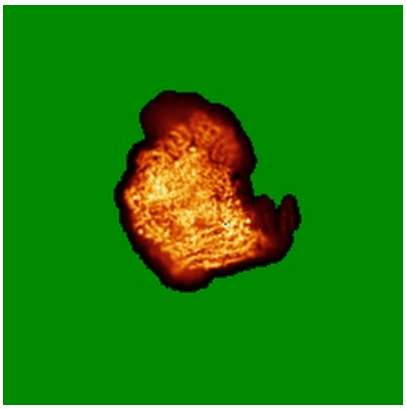
6.4.1 Primary map



X

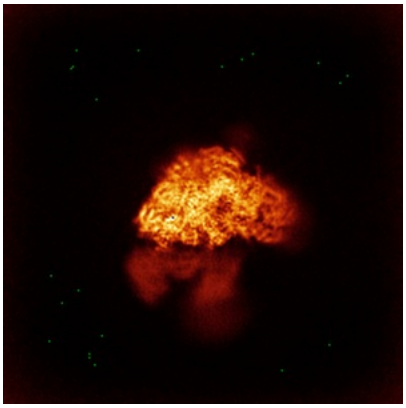


Y

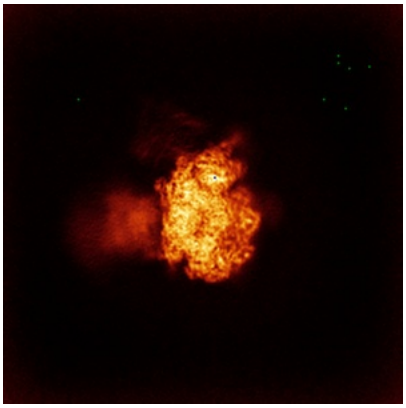


Z

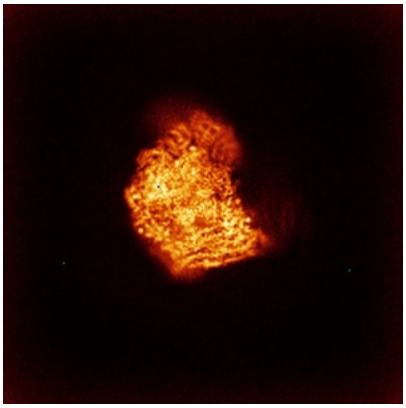
6.4.2 Raw map



X



Y

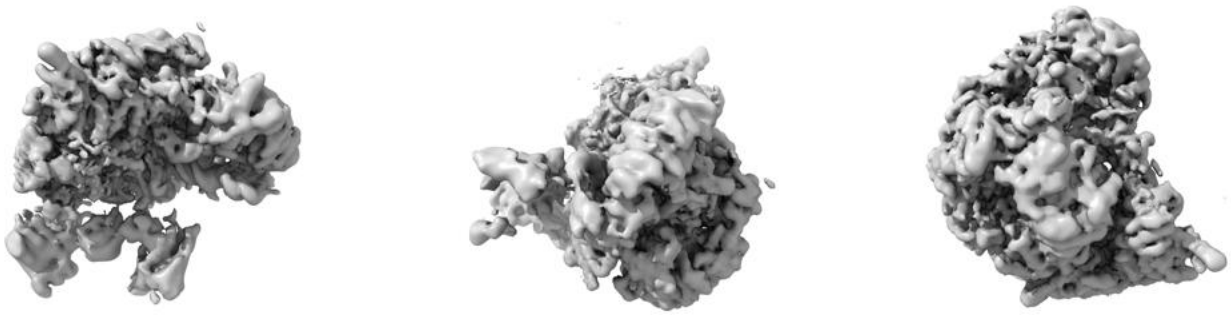


Z

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

6.5 Orthogonal surface views (i)

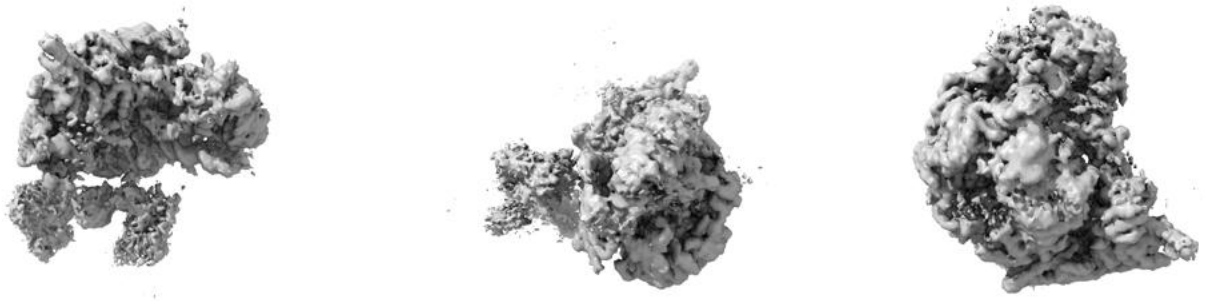
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 1.68. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

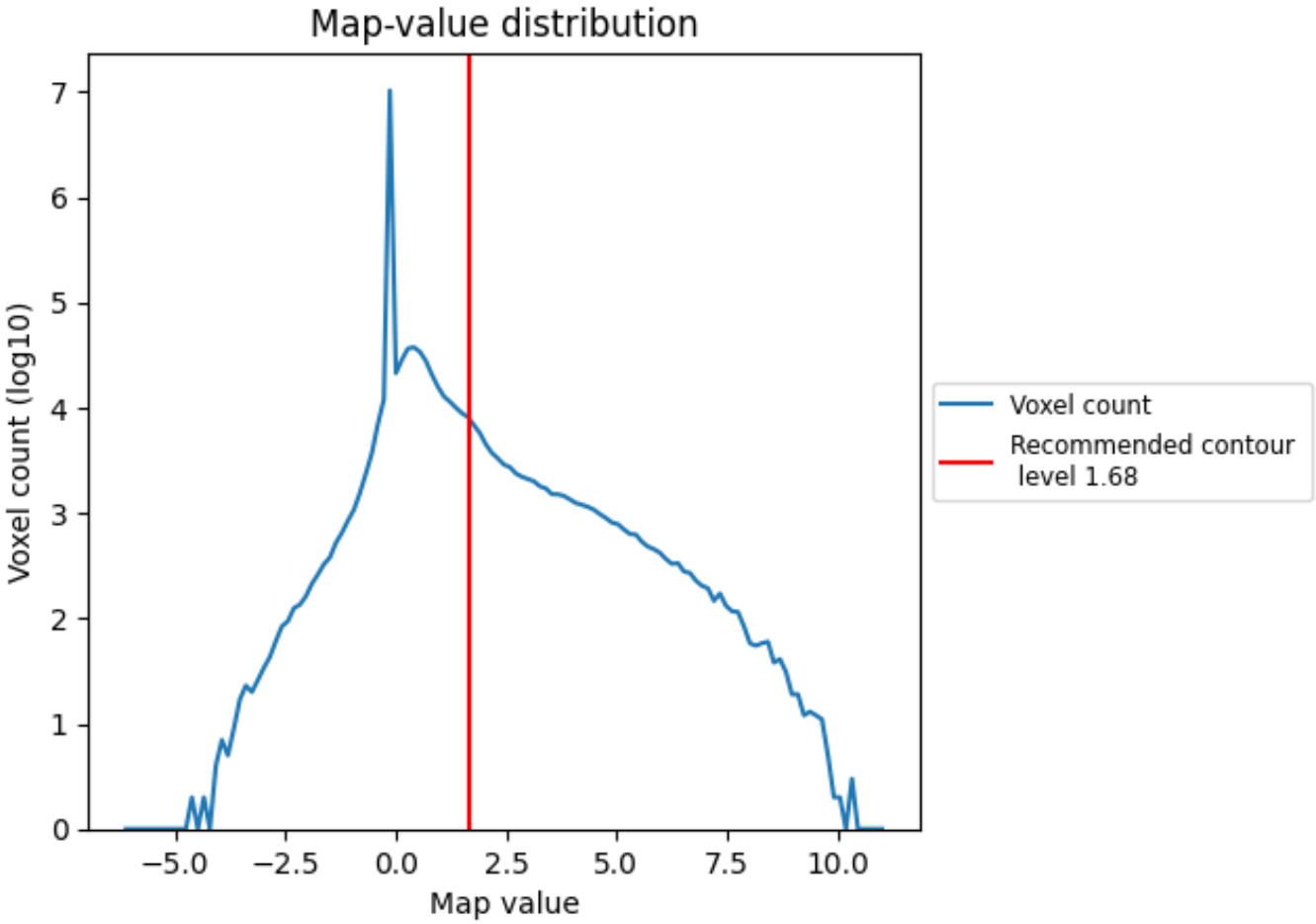
6.6 Mask visualisation (i)

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

7 Map analysis

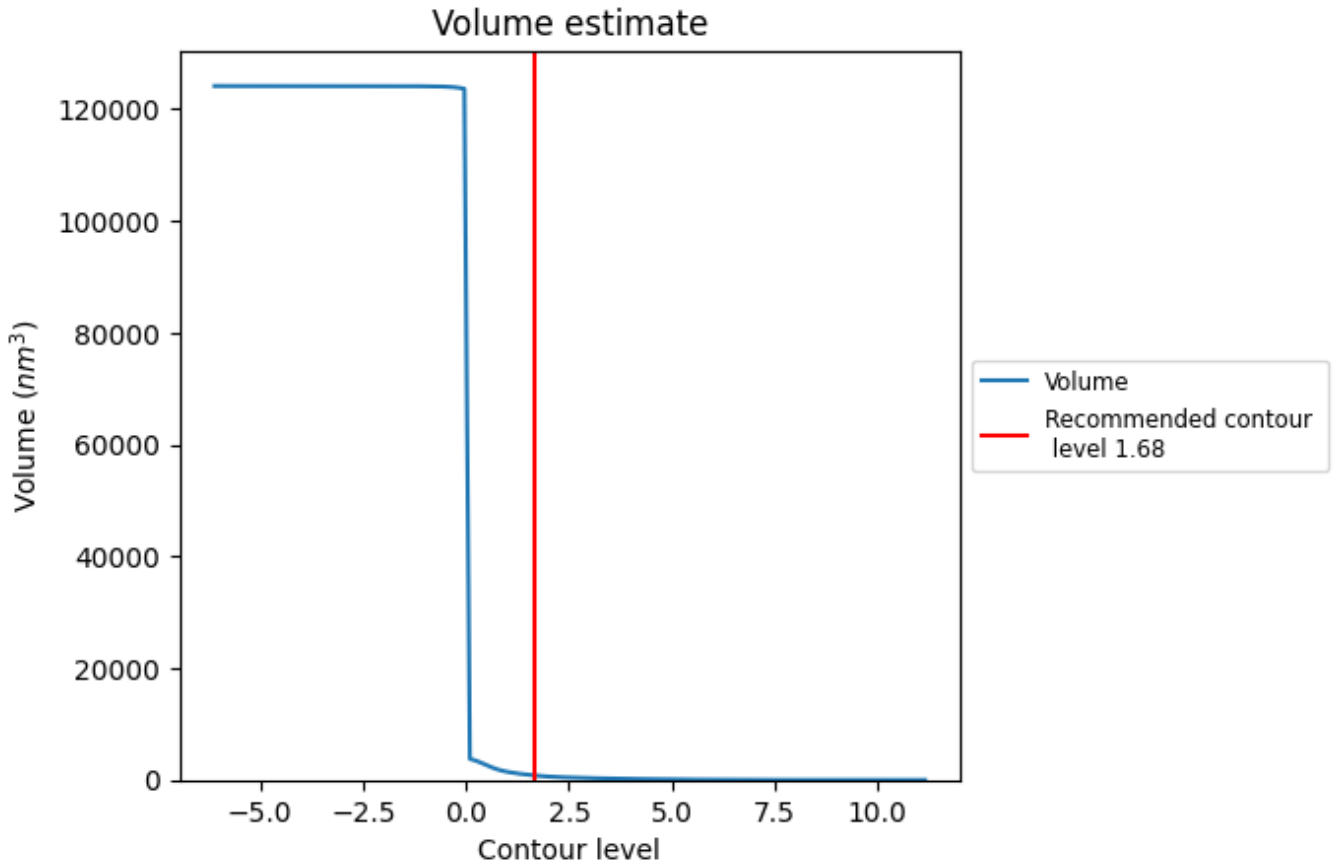
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

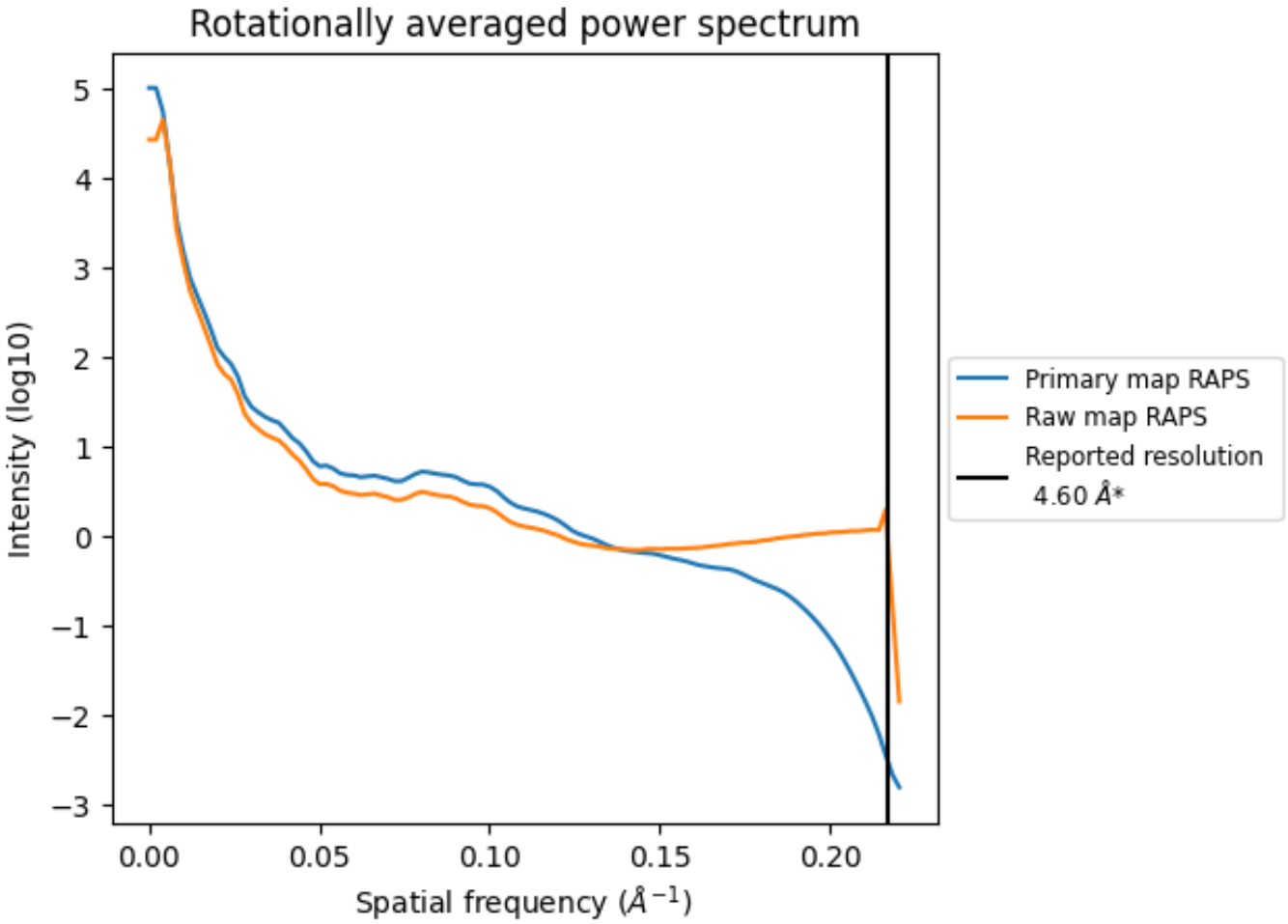
7.2 Volume estimate



The volume at the recommended contour level is 800 nm^3; this corresponds to an approximate mass of 723 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)

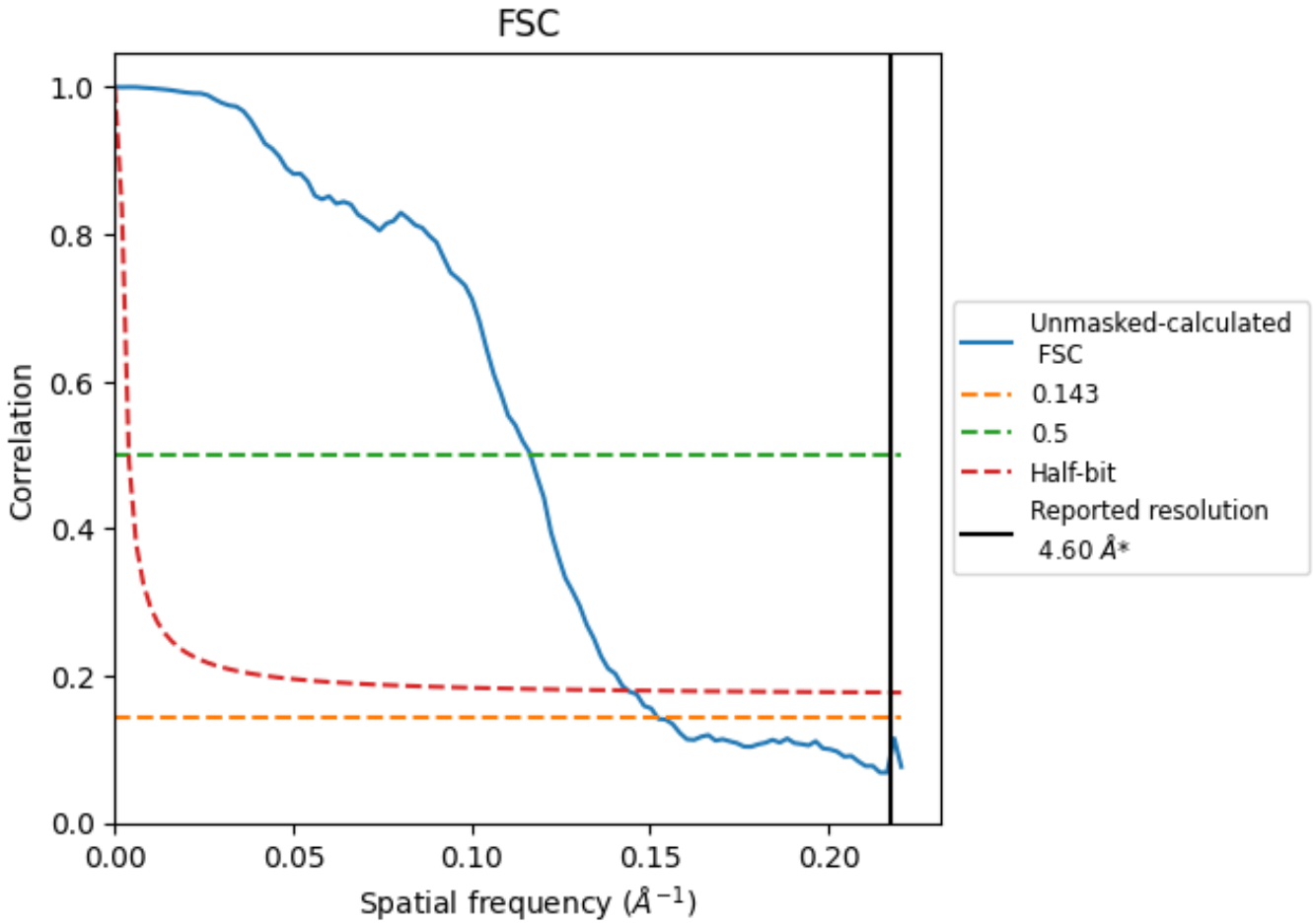


*Reported resolution corresponds to spatial frequency of 0.217 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.217 Å^{-1}

8.2 Resolution estimates (i)

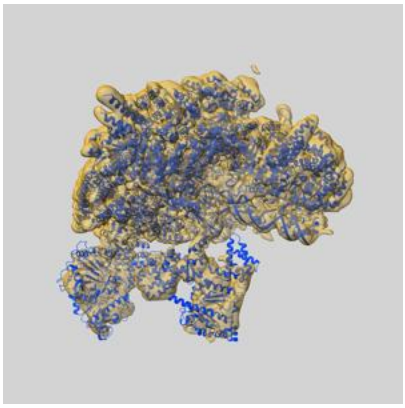
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.60	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.57	8.58	6.95

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.57 differs from the reported value 4.6 by more than 10 %

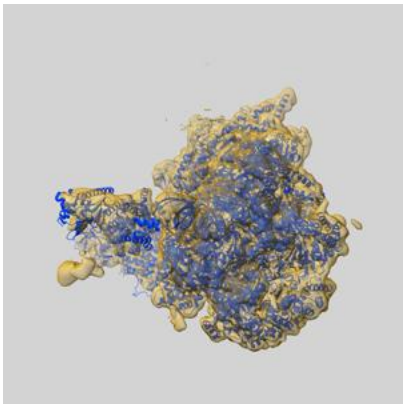
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-15924 and PDB model 8B9C. Per-residue inclusion information can be found in section 3 on page 12.

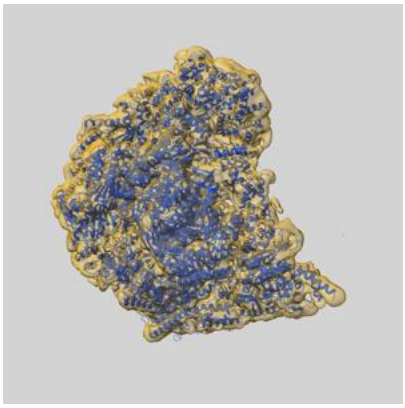
9.1 Map-model overlay



X



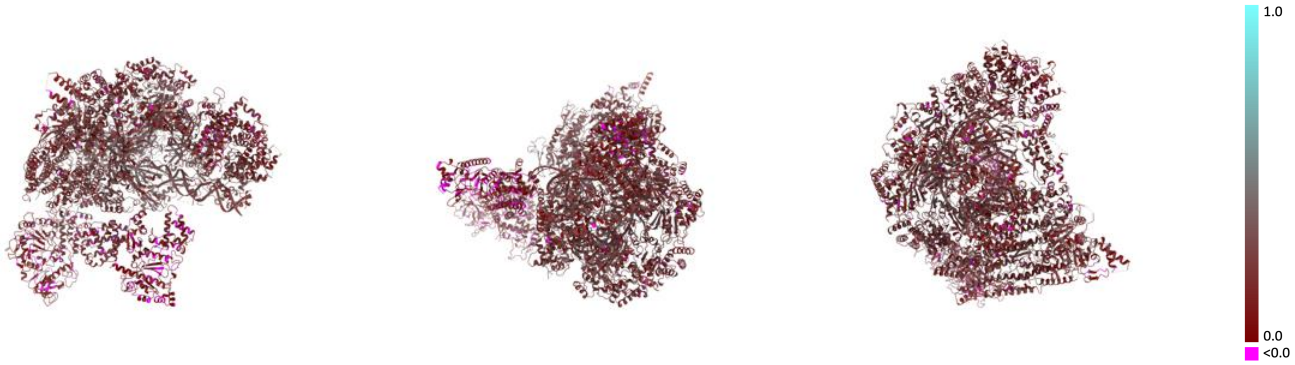
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 1.68 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

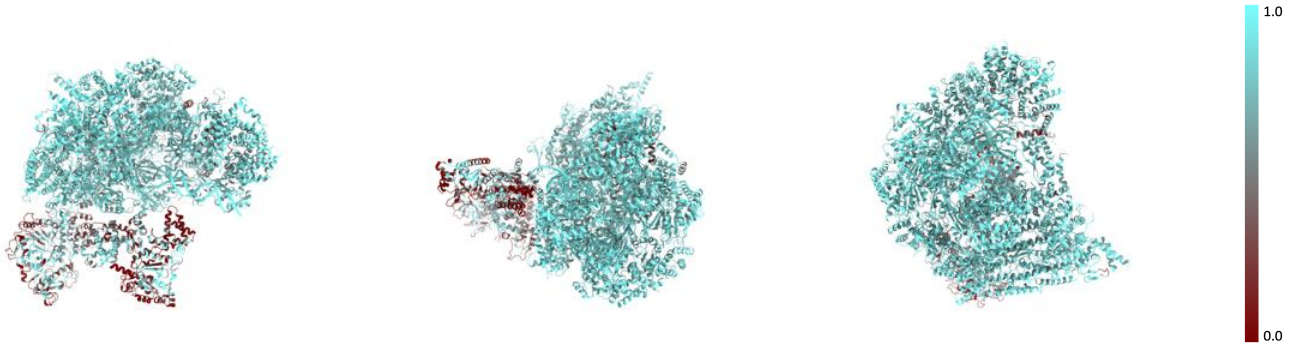
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

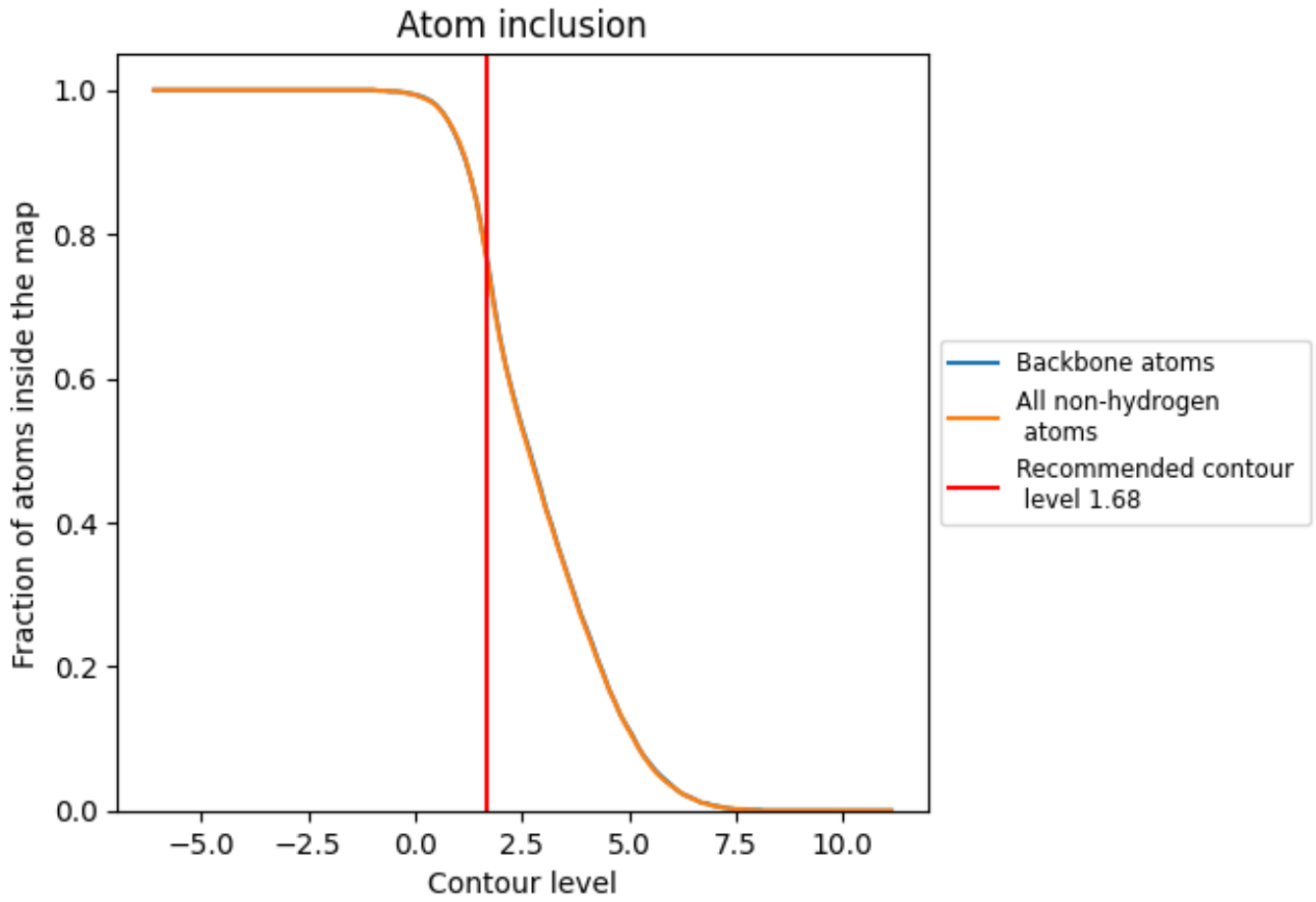
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (1.68).

9.4 Atom inclusion (i)



At the recommended contour level, 77% of all backbone atoms, 76% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (1.68) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7640	0.2170
2	0.8490	0.2240
3	0.8560	0.2750
4	0.8520	0.2470
5	0.8620	0.2670
6	0.8370	0.2390
7	0.8570	0.2610
A	0.5200	0.1350
B	0.5550	0.1250
C	0.8470	0.2360
D	0.8180	0.2520
E	0.8270	0.2590
F	0.8450	0.2450
G	0.8410	0.2320
J	0.4830	0.1310
P	0.6480	0.1770
Q	0.9290	0.2870
R	0.9550	0.2820
S	0.3190	0.0690
X	0.7880	0.1960
Y	0.8170	0.2260