wwPDB EM Validation Summary Report (i)

Nov 13, 2024 – 10:34 AM JST

PDB ID	:	8XQW
EMDB ID	:	EMD-38589
Title	:	Cryo-EM structure of the Ycf2-FtsHi motor complex from Chlamydomonas reinhardtii in AMPPNP bound state
Authors	:	Liang, K.; Zhan, X.; Wu, J.; Yan, Z.
Deposited on	:	2024-01-10
Resolution	:	2.90 Å(reported)
Based on initial model	:	.

This is a wwPDB EM Validation Summary 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 (i) 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 (i)) were used in the production of this report:

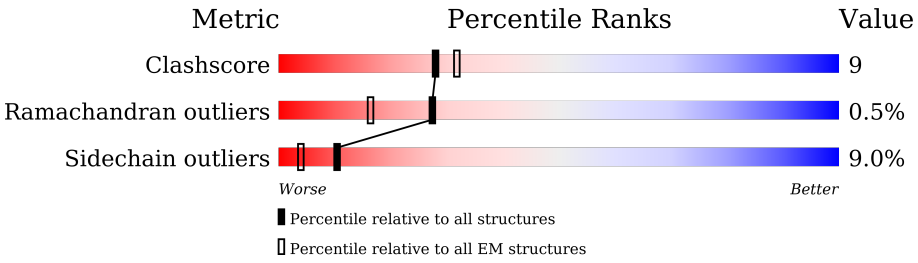
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (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 2.90 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	1182	65% 17% • 16%
2	B	1112	49% 16% • 32%
2	C	1112	44% 16% • 38%
3	D	2971	36% 13% • 48%
4	E	982	20% 71% 16% • 12%
5	F	1024	12% 51% 16% • 32%
6	G	495	56% 19% • 20%
7	H	555	59% 13% • 27%

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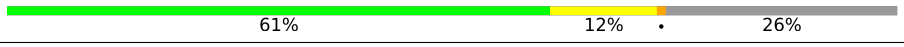
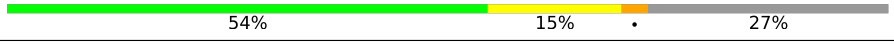
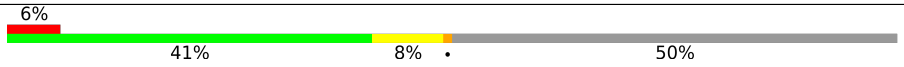
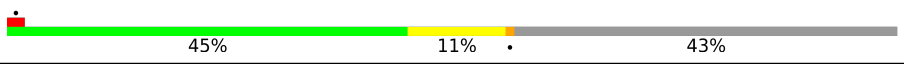
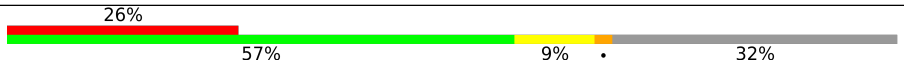
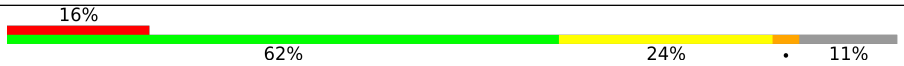
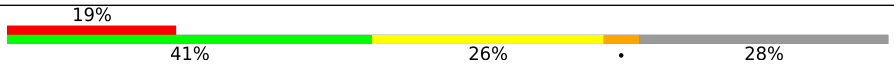
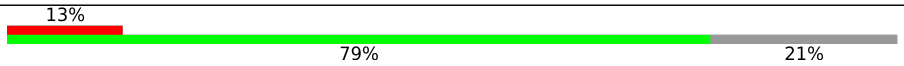
Mol	Chain	Length	Quality of chain
8	I	366	
9	J	117	
10	K	255	
11	L	303	
12	M	682	
13	N	137	
14	O	471	
15	P	691	
16	Q	365	
17	R	462	
18	S	324	
19	T	299	
20	V	86	
21	U	156	

2 Entry composition (i)

There are 30 unique types of molecules in this entry. The entry contains 73643 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 Fhl1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	988	7627	4839	1342	1410	36	0	0

- Molecule 2 is a protein called Fhl3.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	N	O	P	S		
2	B	751	5844	3675	1037	1094	3	35	0	0
			Total	C	N	O	S			
2	C	690	5324	3359	949	985	31		0	0

- Molecule 3 is a protein called Ycf2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	1539	12719	8252	2175	2266	26	0	0

- Molecule 4 is a protein called Ctap1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	868	6229	3888	1143	1184	14	0	0

- Molecule 5 is a protein called Ctap6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	701	5333	3344	963	1007	19	0	0

- Molecule 6 is a protein called ARHL.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	394	Total	C	N	O	S	0	0
			2931	1839	539	549	4		

- Molecule 7 is a protein called PcyA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	406	Total	C	N	O	S	0	0
			3246	2061	547	617	21		

- Molecule 8 is a protein called CrTam39.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	272	Total	C	N	O	S	0	0
			2119	1336	394	374	15		

- Molecule 9 is a protein called ACP.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	J	85	Total	C	N	O	P	S	0	0
			651	404	101	141	1	4		

- Molecule 10 is a protein called CrTam29.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	189	Total	C	N	O	S	0	0
			1567	1032	271	257	7		

- Molecule 11 is a protein called CrTam34.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	151	Total	C	N	O	S	0	0
			1254	844	210	196	4		

- Molecule 12 is a protein called FADL.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	390	Total	C	N	O	S	0	0
			3000	1958	510	516	16		

- Molecule 13 is a protein called CrTam15.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	115	Total	C	N	O	S	0	0
			921	585	172	161	3		

- Molecule 14 is a protein called CrTam49.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	318	Total	C	N	O	S	0	0
			2040	1317	352	367	4		

- Molecule 15 is a protein called Ctap7.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	617	Total	C	N	O	S	0	0
			4510	2802	829	868	11		

- Molecule 16 is a protein called Tic22.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	262	Total	C	N	O	S	0	0
			2078	1316	365	388	9		

- Molecule 17 is a protein called DnaJ.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	R	401	Total	C	N	O	P	S	0	0
			3160	1981	571	585	2	21		

- Molecule 18 is a protein called CrTam35.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	S	117	Total	C	N	O	P	S	0	0
			951	588	169	190	3	1		

- Molecule 19 is a protein called CrTam31.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	T	110	Total	C	N	O	P	S	0	0
			868	535	147	182	2	2		

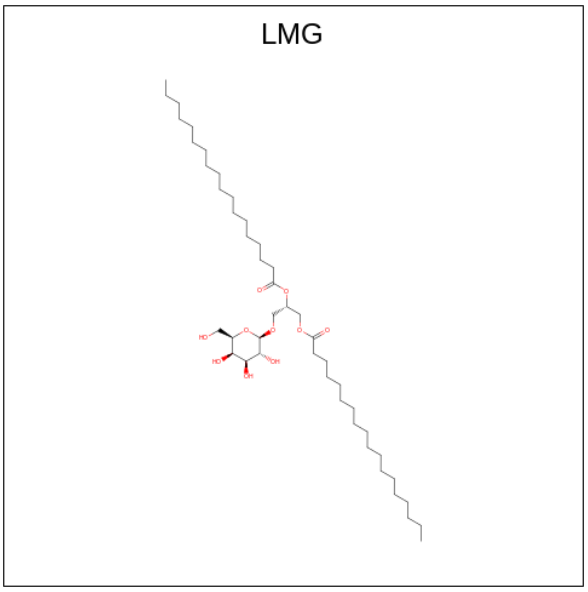
- Molecule 20 is a protein called UNK.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	V	68	Total 340	C 204	N 68	O 68	0	0

- Molecule 21 is a protein called UNK.

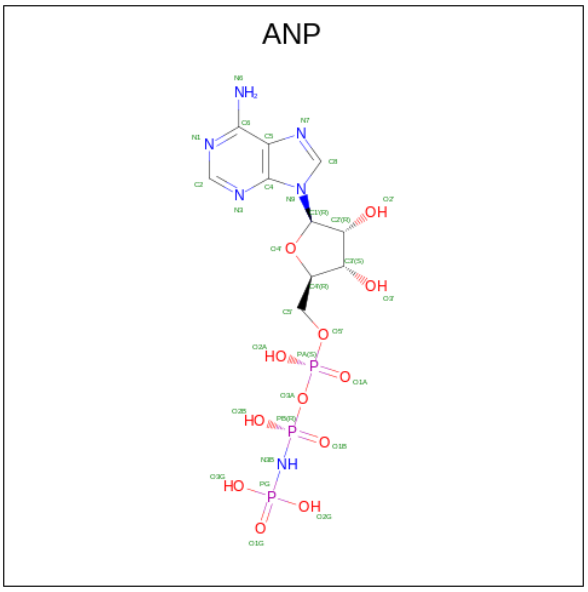
Mol	Chain	Residues	Atoms				AltConf	Trace
21	U	36	Total 188	C 115	N 36	O 37	1	0

- Molecule 22 is 1,2-DISTEAROYL-MONOGALACTOSYL-DIGLYCERIDE (three-letter code: LMG) (formula: $C_{45}H_{86}O_{10}$).



Mol	Chain	Residues	Atoms			AltConf
22	A	1	Total 46	C 36	O 10	0
22	C	1	Total 25	C 20	O 5	0
22	I	1	Total 32	C 22	O 10	0
22	K	1	Total 41	C 31	O 10	0
22	M	1	Total 48	C 38	O 10	0

- Molecule 23 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$).

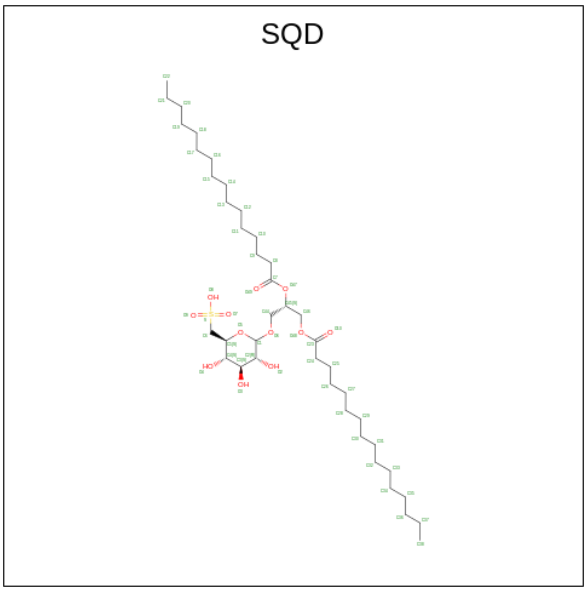


Mol	Chain	Residues	Atoms					AltConf
23	A	1	Total	C	N	O	P	0
			31	10	6	12	3	
23	C	1	Total	C	N	O	P	0
			31	10	6	12	3	
23	E	1	Total	C	N	O	P	0
			31	10	6	12	3	
23	F	1	Total	C	N	O	P	0
			31	10	6	12	3	

- Molecule 24 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

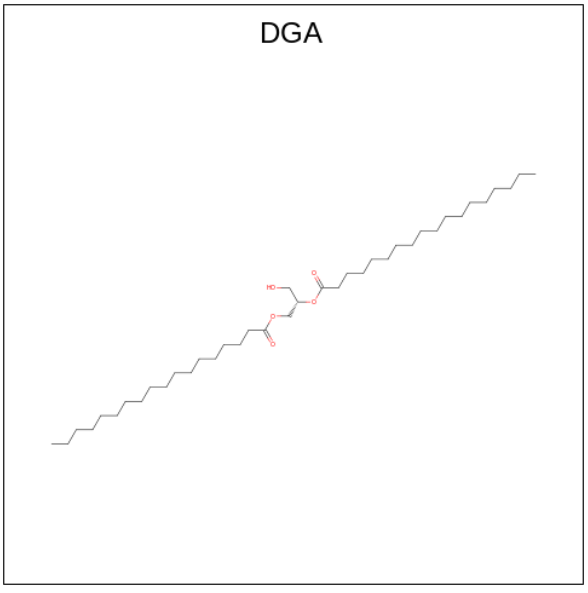
Mol	Chain	Residues	Atoms		AltConf
24	A	1	Total	Mg	0
			1	1	

- Molecule 25 is 1,2-DI-O-ACYL-3-O-[6-DEOXY-6-SULFO-ALPHA-D-GLUCOPYRANOSYL]-SN-GLYCEROL (three-letter code: SQD) (formula: $C_{41}H_{78}O_{12}S$).



Mol	Chain	Residues	Atoms				AltConf
25	A	1	Total	C	O	S	0
			46	33	12	1	
25	I	1	Total	C	O	S	0
			49	36	12	1	
25	K	1	Total	C	O	S	0
			45	32	12	1	

- Molecule 26 is DIACYL GLYCEROL (three-letter code: DGA) (formula: $C_{39}H_{76}O_5$).



Mol	Chain	Residues	Atoms			AltConf
26	D	1	Total	C	O	0
			34	29	5	

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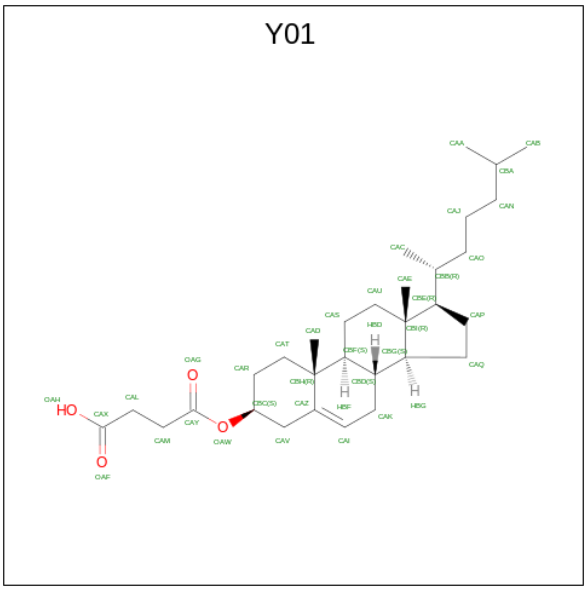
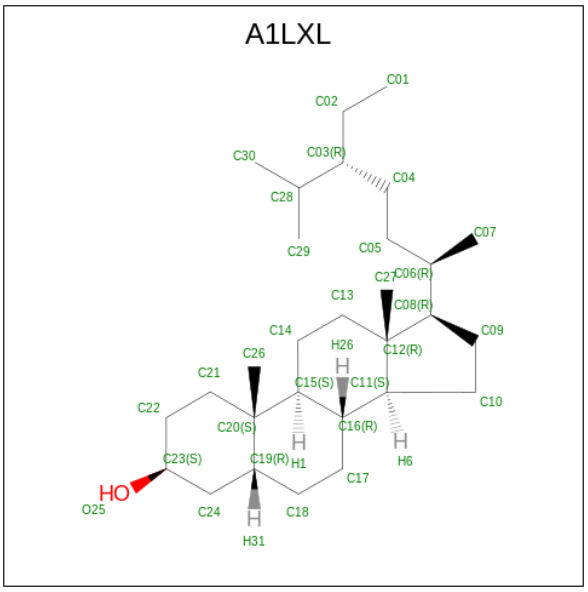
Mol	Chain	Residues	Atoms			AltConf
26	O	1	Total	C	O	0
			39	34	5	

- Molecule 27 is CHOLESTEROL HEMISUCCINATE (three-letter code: Y01) (formula: $C_{31}H_{50}O_4$).



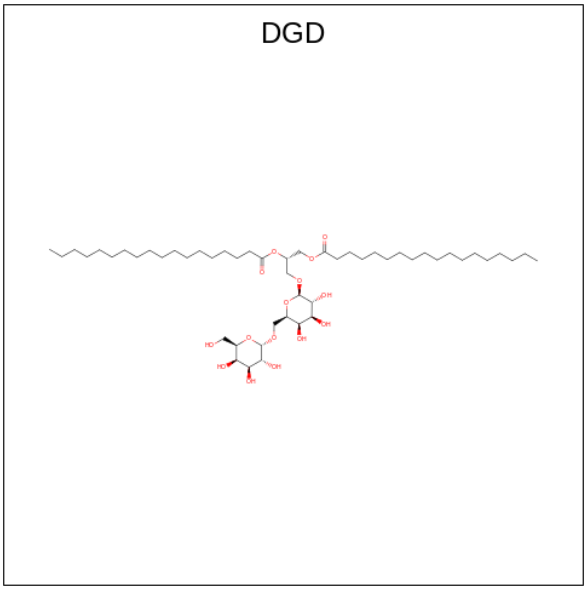
Mol	Chain	Residues	Atoms			AltConf
27	D	1	Total	C	O	0
			35	31	4	
27	M	1	Total	C	O	0
			35	31	4	

- Molecule 28 is Beta-Sitosterol (three-letter code: A1LXL) (formula: $C_{29}H_{52}O$).



Mol	Chain	Residues	Atoms			AltConf
28	D	1	Total	C	O	0
			30	29	1	
28	P	1	Total	C	O	0
			30	29	1	

- Molecule 29 is DIGALACTOSYL DIACYL GLYCEROL (DGDG) (three-letter code: DGD) (formula: $C_{51}H_{96}O_{15}$).



Mol	Chain	Residues	Atoms			AltConf
29	I	1	Total	C	O	0
			40	25	15	

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Mol	Chain	Residues	Atoms			AltConf
29	L	1	Total	C	O	0
			41	26	15	

- Molecule 30 is ZINC ION (three-letter code: ZN) (formula: Zn).

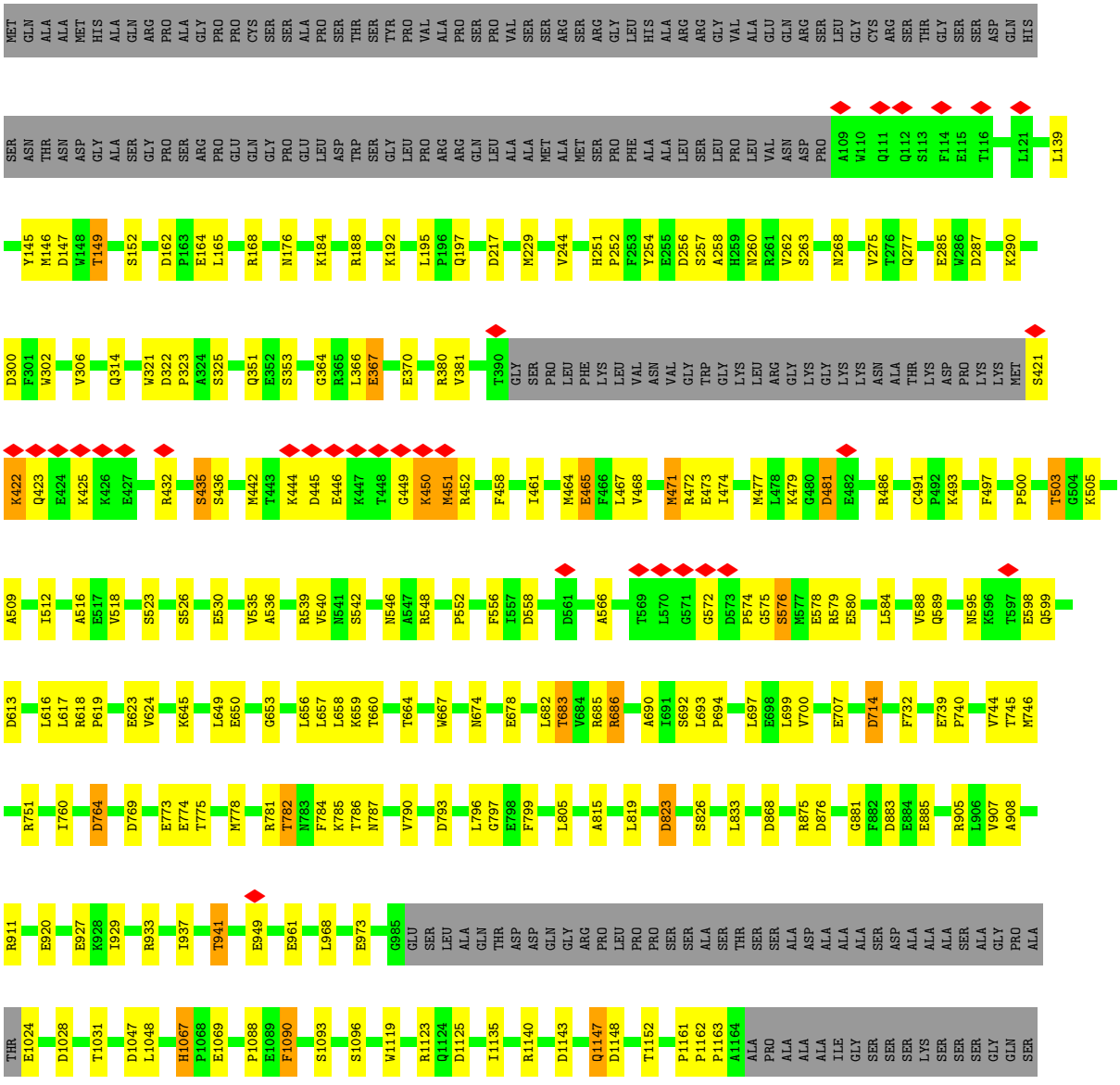
Mol	Chain	Residues	Atoms		AltConf
30	R	2	Total	Zn	0
			2	2	

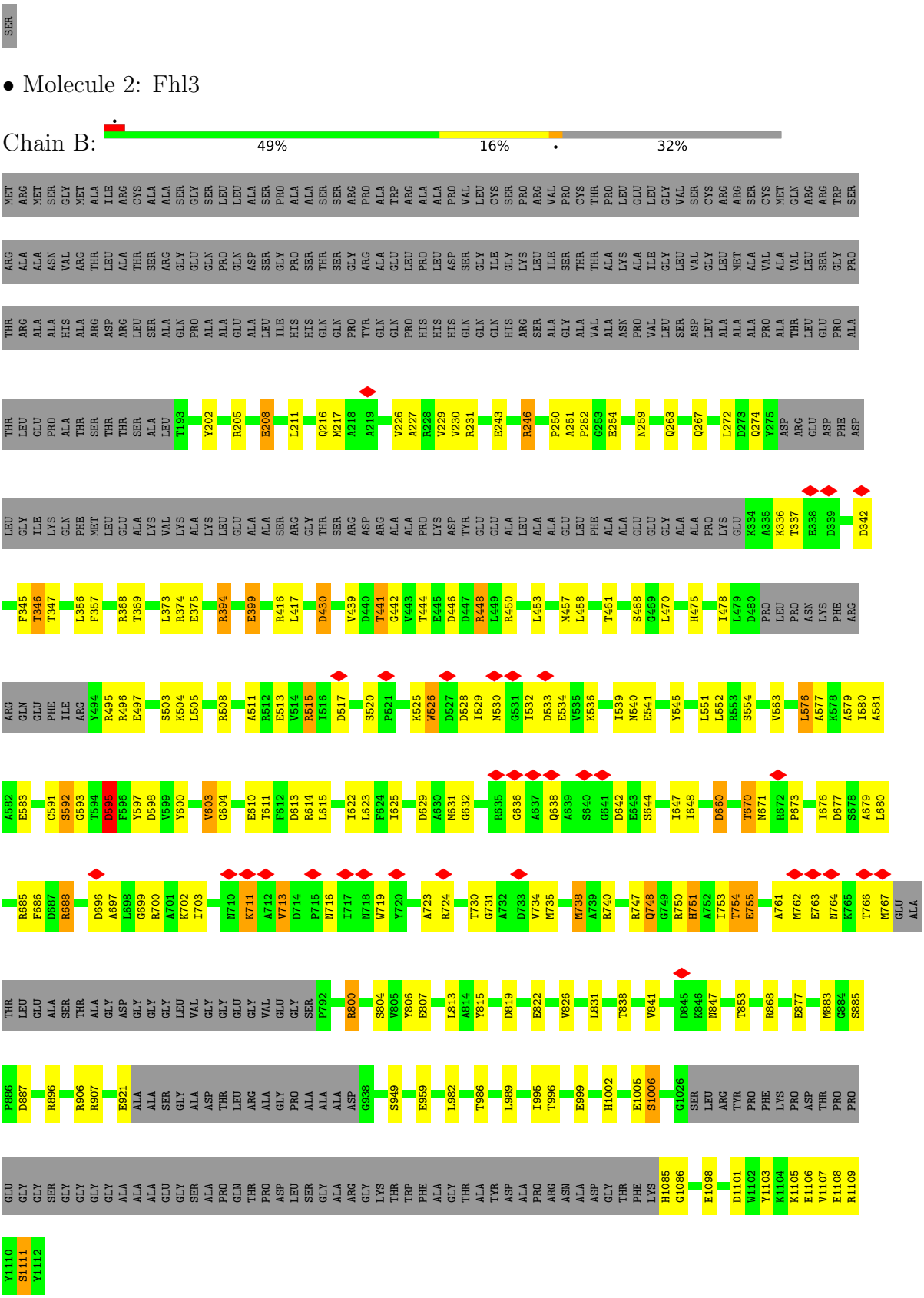
3 Residue-property plots (i)

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

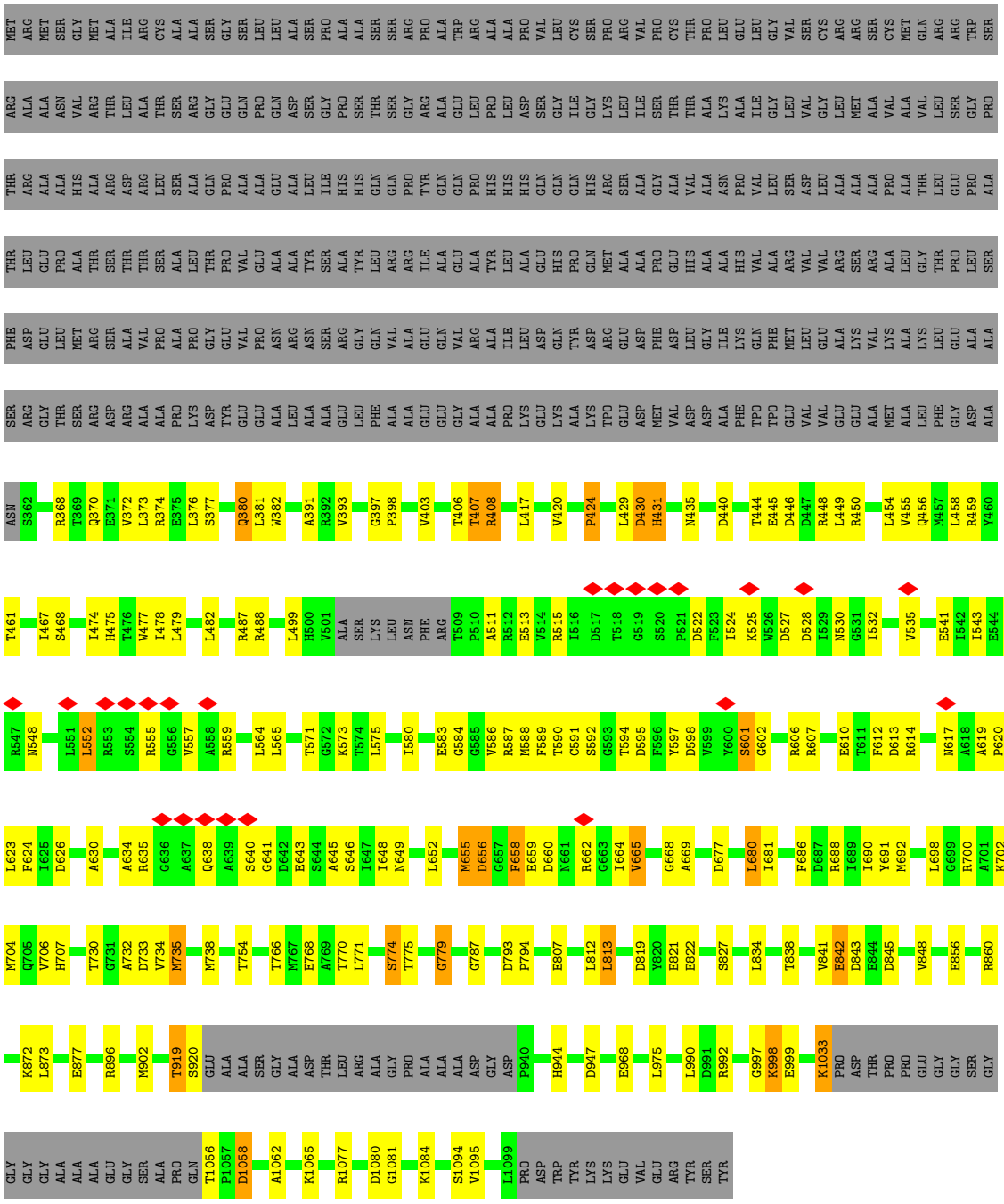
- Molecule 1: Fhl1

Chain A:



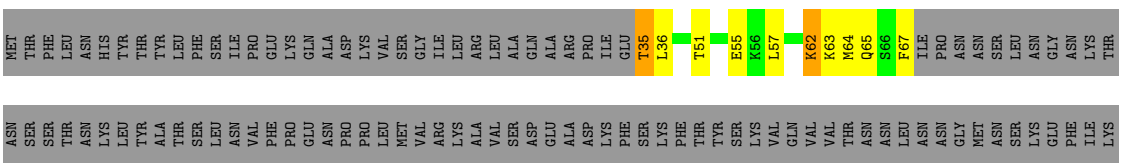

SER
• Molecule 2: Fhl3
Chain B:
49%
16%
32%
• Molecule 2: Fhl3

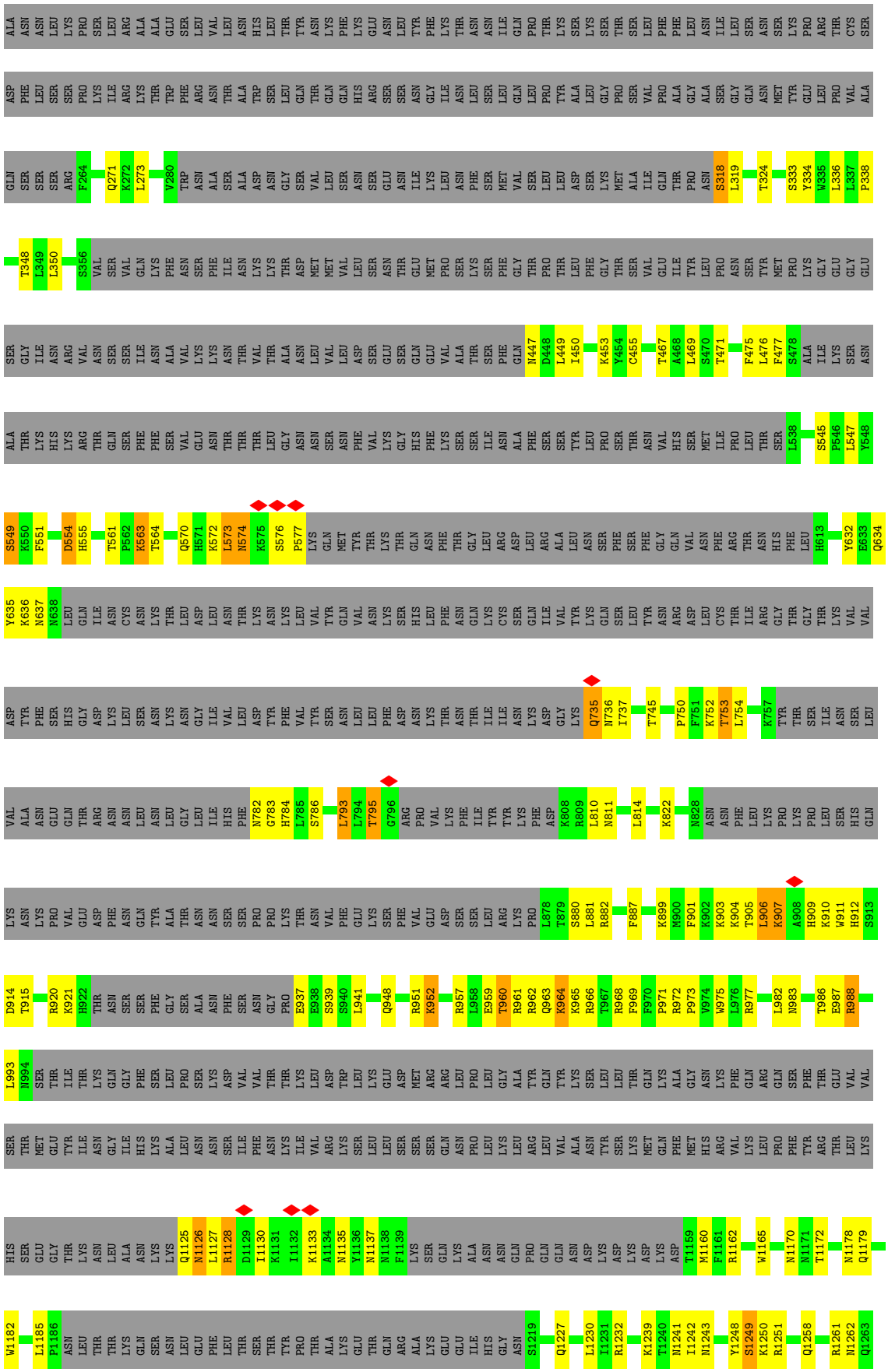
Chain C:

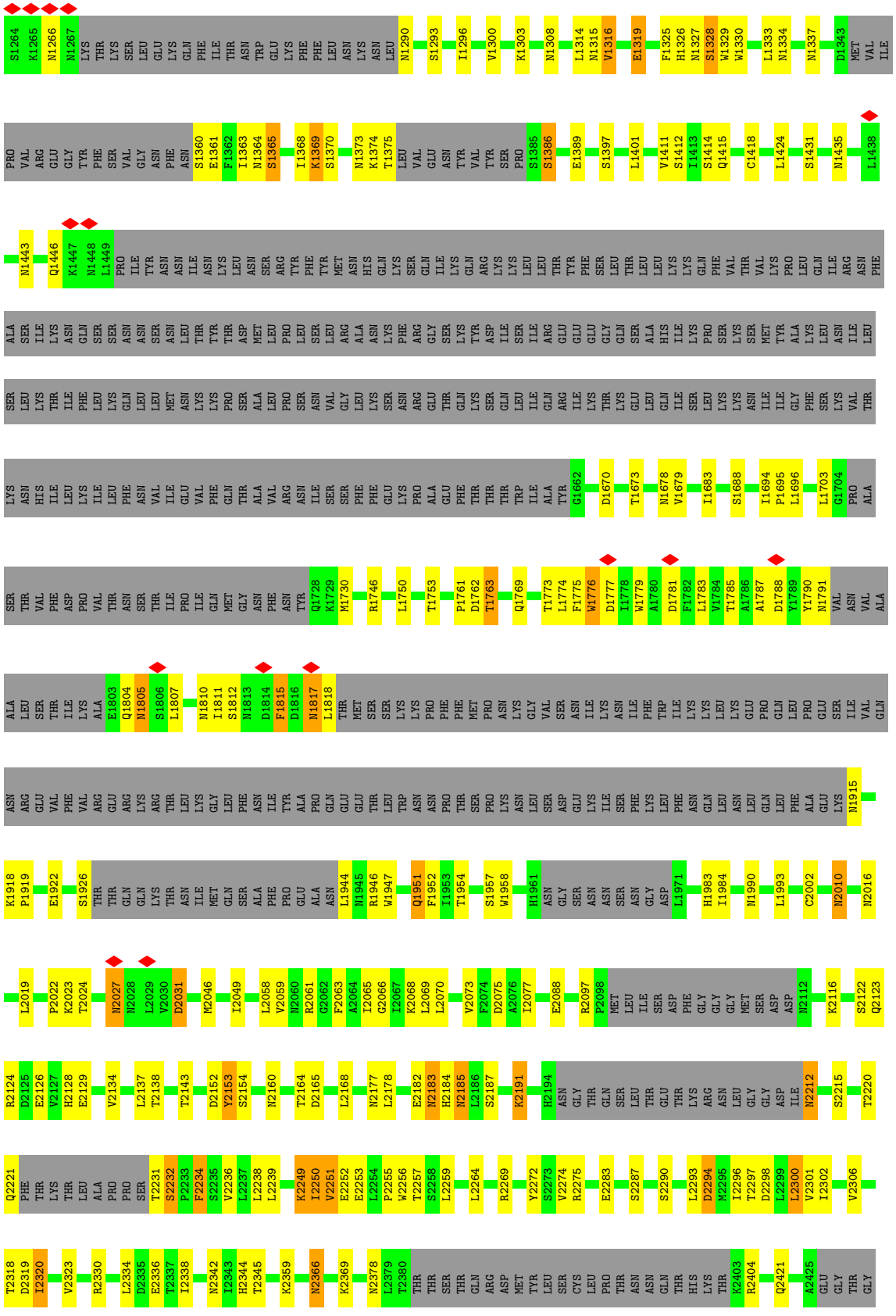


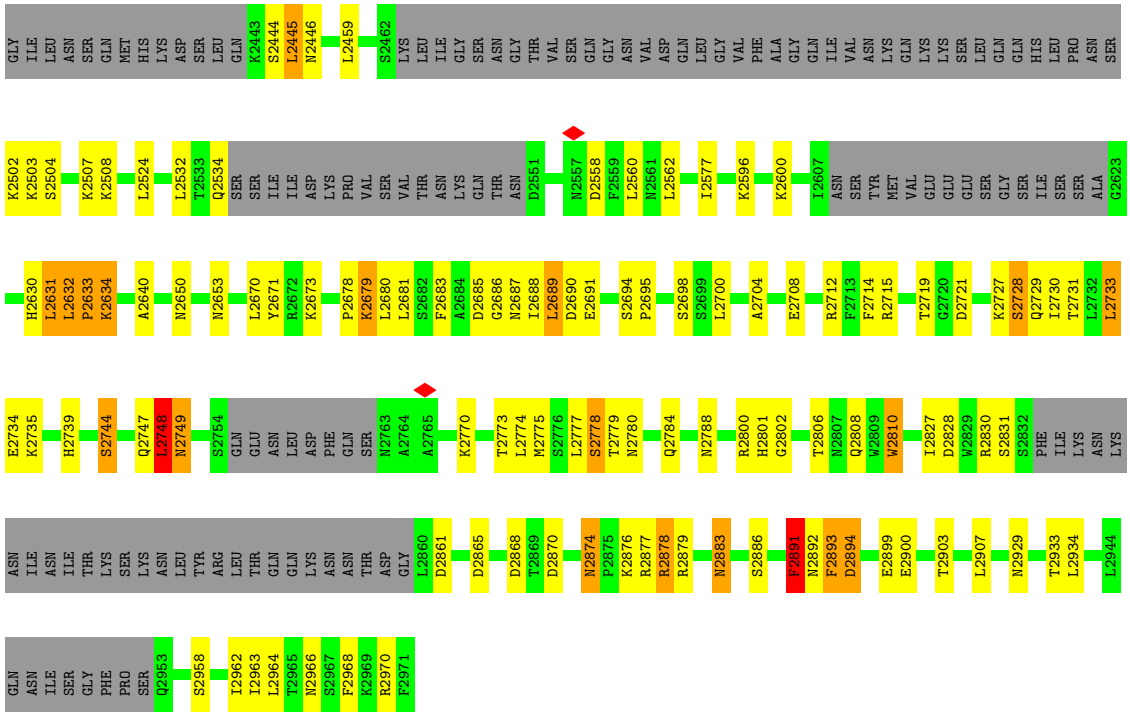
• Molecule 3: Ycf2

Chain D:



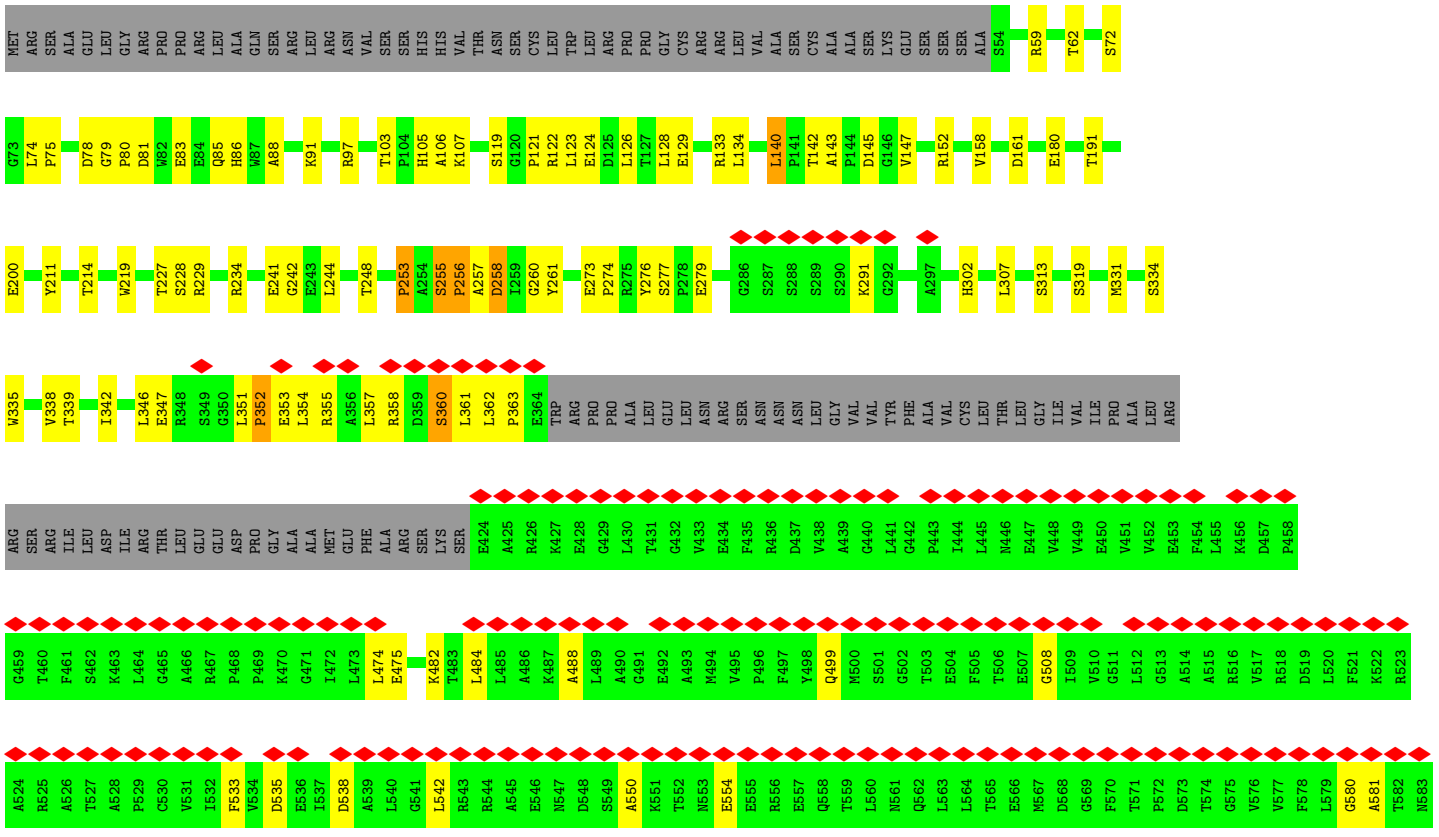


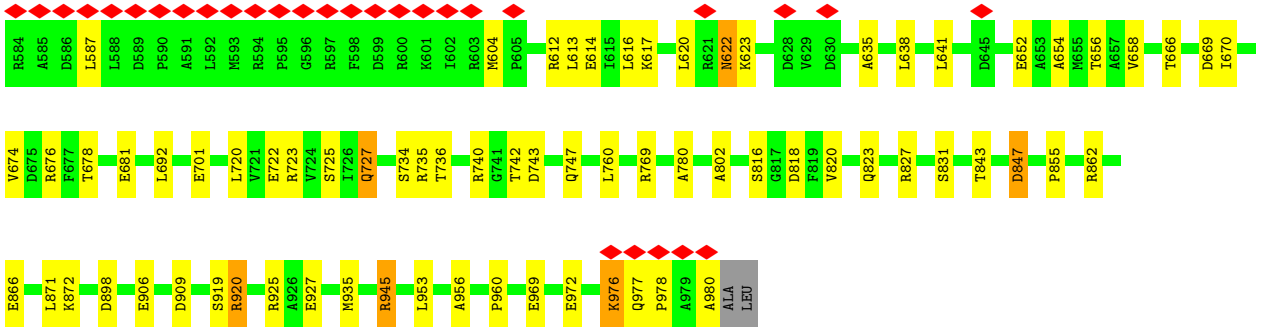

S1264 K1265 N1266 N1267 LYS THR LYS SER LEU GLU LYS GLN PHE ILE THR ASN TRP GLU LYS PHE PHE LEU ASN LYS ASN LEU N1290 S1293 I1296 V1300 K1303 N1308 L1314 N1315 V1316 E1319 F1325 H1326 N1327 S1328 W1329 W1330 L1333 N1334 N1337 D1343 MET VAL ILE
PRO VAL ARG GLU GLY TYR PHE SER VAL GLY ASN PHE ASN S1360 E1361 F1362 I1363 N1364 S1365 I1368 K1369 S1370 N1373 K1374 T1375 LEU VAL GLU ASN TYR VAL TYR SER PRO S1385 S1386 E1389 S1397 L1401 V1411 S1412 I1413 S1414 Q1415 C1418 L1424 S1431 N1435 L1438
N1443 Q1446 K1447 N1448 L1449 PRO ILE TYR ASN ASN ILE ASN LYS LEU ASN SER ARG TYR PHE TYR MET ASN HIS GLN LYS SER GLN ILE LYS GLN ARG LYS LYS LEU LEU THR TYR PHE SER LEU THR LEU LEU LYS LYS GLN PHE VAL THR VAL LYS PRO LEU GLN ILE ARG ASN PHE
ALA SER ILE LYS ASN GLN SER SER ASN ASN SER ASN LEU THR TYR THR ASP MET LEU PRO LEU SER LEU ARG ALA ASN LYS SER LEU ILE SER ILE ARG GLU GLU GLU GLY GLN SER ALA HIS ILE LYS PRO SER LYS SER MET TYR ALA LYS LEU ASN ILE LEU
SER LEU LYS THR ILE PHE LEU LYS GLN LEU LEU MET ASN LYS LYS PRO SER ALA LEU PRO SER ASN VAL GLY LEU LYS SER ASN ARG GLU THR GLN LYS SER GLN LEU ILE GLN ARG ILE LYS THR LYS GLU LEU GLN ILE ILE SER LEU LYS LYS ASN ILE LEU GLY PHE SER LYS VAL THR
LYS ASN HIS ILE LEU LYS ILE LEU PHE ASN VAL ILE GLU VAL PHE GLN THR ALA VAL ARG ASN ILE SER SER PHE PHE GLU LYS PRO ALA GLU PHE THR THR THR TRP ILE ALA TYR G1662 D1670 T1673 N1678 V1679 I1683 S1688 I1694 P1695 L1696 L1703 G1704 PRO ALA
SER THR VAL PHE ASP PRO VAL THR ASN SER THR ILE PRO ILE GLN MET GLY ASN PHE ASN TYR Q1728 K1729 M1730 R1746 L1750 T1753 P1761 D1762 T1763 Q1769 T1773 L1774 F1775 W1776 D1777 I1778 W1779 A1780 D1781 F1782 L1783 V1784 T1785 A1786 A1787 D1788 Y1789 Y1790 N1791 VAL ASN VAL ALA
ALA LEU SER THR ILE LYS ALA E1803 Q1804 N1805 S1806 L1807 N1810 I1811 S1812 N1813 D1814 F1815 D1816 N1817 L1818 THR MET SER SER LYS LYS PRO PHE PHE MET PRO ASN LYS GLY VAL SER ASN ILE LYS ASN ILE PHE TRP ILE LYS LYS LEU LYS GLU PRO GLN LEU PRO GLU SER ILE VAL GLN
ASN ARG GLU VAL PHE VAL ARG GLU ARG LYS ARG THR LEU LYS GLY LEU PHE ASN ILE TYR ALA PRO GLN GLU GLU THR LEU TRP ASN ASN PRO THR SER PRO LYS ASN LEU SER ASP GLU LYS ILE SER PHE LYS LEU PHE ASN GLN LEU LEU ASN LEU GLN LEU PHE ALA GLU LYS N1915
K1918 P1919 E1922 S1926 THR THR GLN GLN LYS THR ASN ILE MET GLN SER ALA PHE PRO GLU ALA ASN L1944 N1945 R1946 W1947 Q1951 F1952 I1953 T1954 S1957 W1958 H1961 ASN GLY SER ASN ASN SER ASN GLY ASP L1971 H1983 I1984 N1990 L1993 C2002 N2010 N2016
L2019 P2022 K2023 T2024 N2027 N2028 L2029 V2030 D2031 M2046 I2049 L2058 V2059 N2060 R2061 G2062 F2063 A2064 I2065 G2066 I2067 K2068 L2069 L2070 V2073 F2074 D2075 A2076 I2077 E2088 R2097 P2098 MET LEU ILE SER ASP PHE GLY GLY GLY MET SER ASP ASP N2112 K2116 S2122 Q2123
R2124 D2125 E2126 V2127 H2128 E2129 V2134 L2137 T2138 T2143 D2152 Y2153 S2154 N2160 T2164 D2165 L2168 N2177 L2178 E2182 N2183 H2184 N2185 L2186 S2187 K2191 H2194 ASN GLY THR GLN SER LEU THR GLU THR LYS ARG ASN LEU GLY GLY ASP ILE N2212 S2215 T2220
Q2221 PHE THR LYS THR LEU ALA PRO PRO SER T2231 S2232 P2233 F2234 S2235 V2236 L2237 L2238 L2239 K2249 I2250 V2251 E2252 E2253 L2254 P2255 W2256 T2257 S2258 L2259 L2264 R2269 Y2272 S2273 V2274 R2275 E2283 S2287 S2290 L2293 D2294 M2295 I2296 T2297 D2298 L2299 L2300 V2301 I2302 V2306
T2318 D2319 T2320 V2323 R2330 L2334 D2335 E2336 T2337 I2338 N2342 I2343 H2344 T2345 K2359 N2366 K2369 N2378 L2379 T2380 THR THR SER THR GLN ARG ASP MET TYR LEU SER CYS LEU PRO THR ASN ASN GLN THR HIS LYS THR K2403 R2404 Q2421 A2425 GLU GLY THR GLY



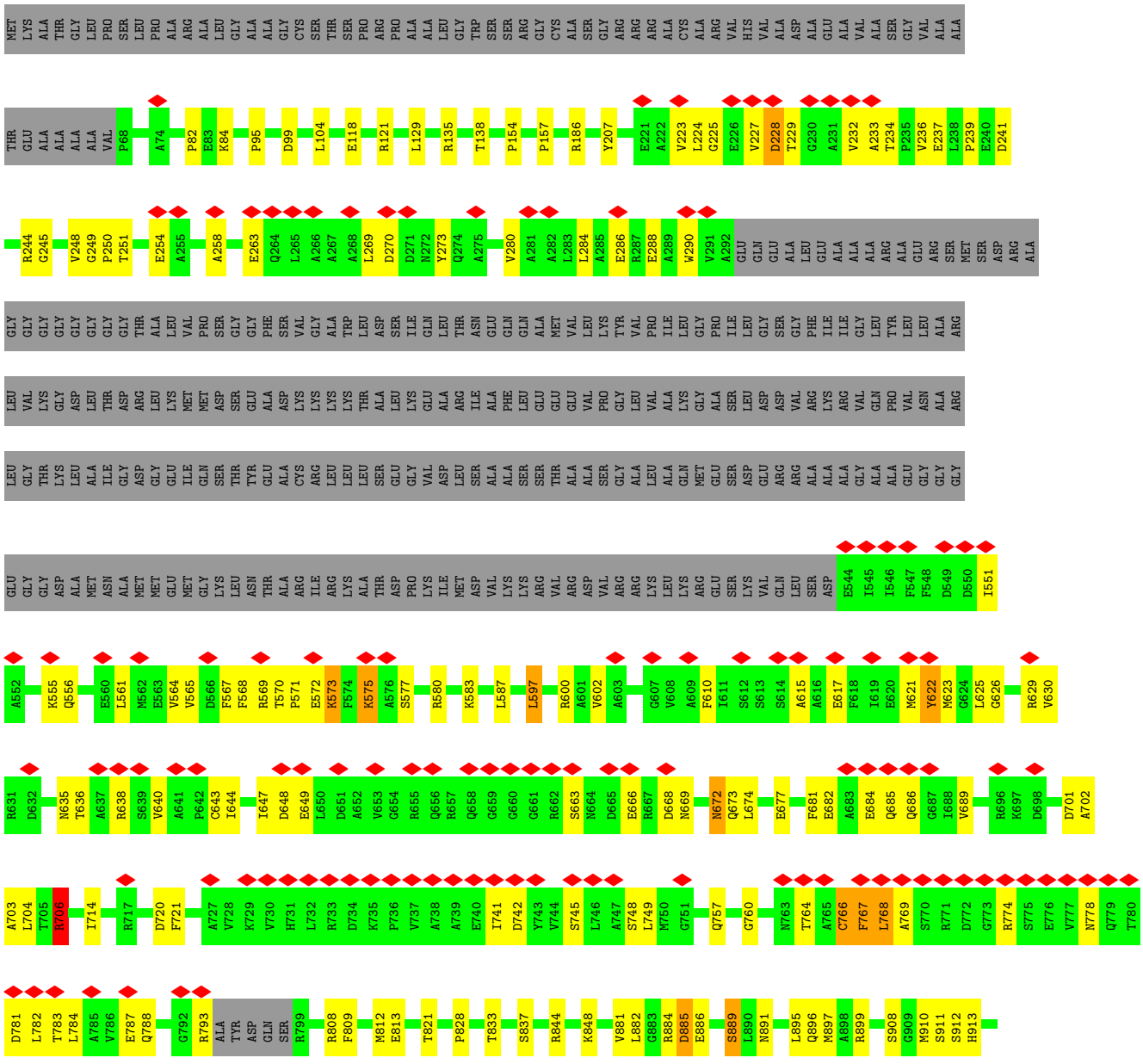
• Molecule 4: Ctap1

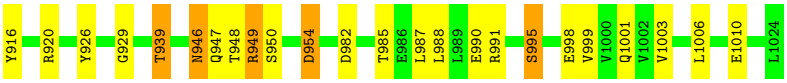
Chain E:





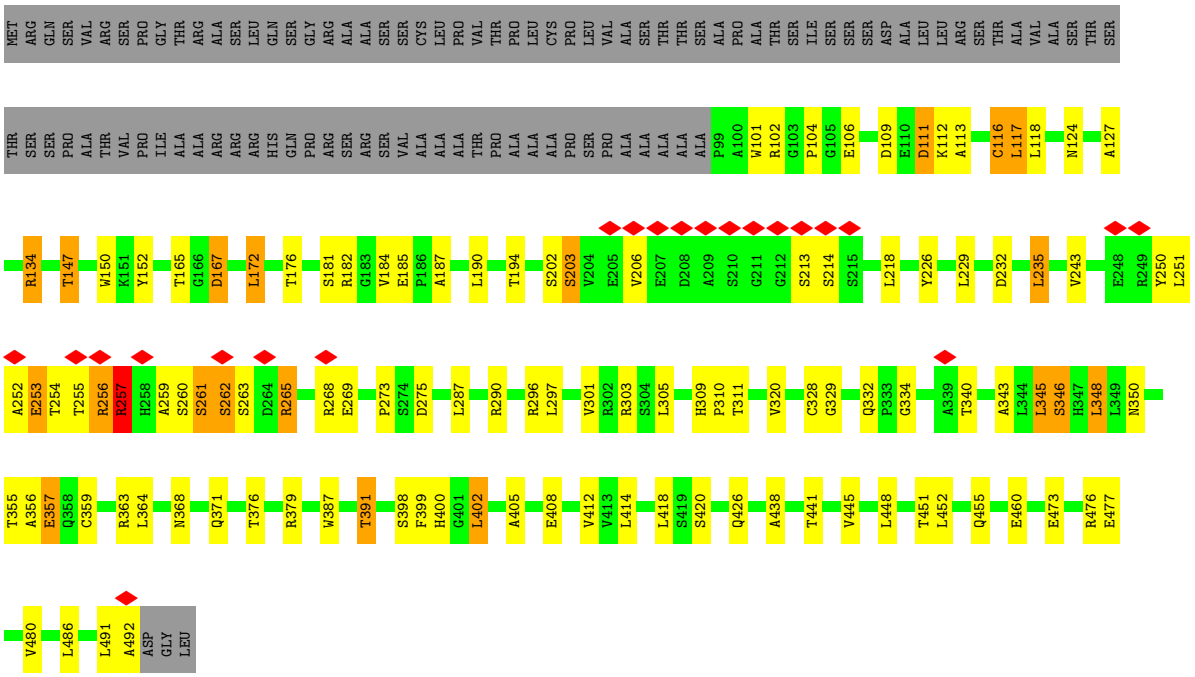
• Molecule 5: Ctap6





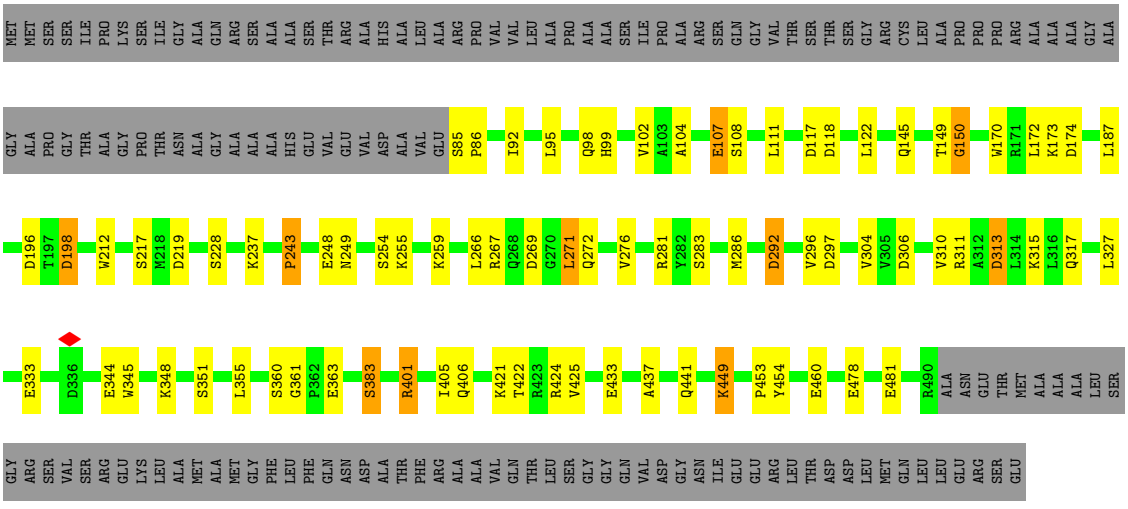
• Molecule 6: ARHL

Chain G:



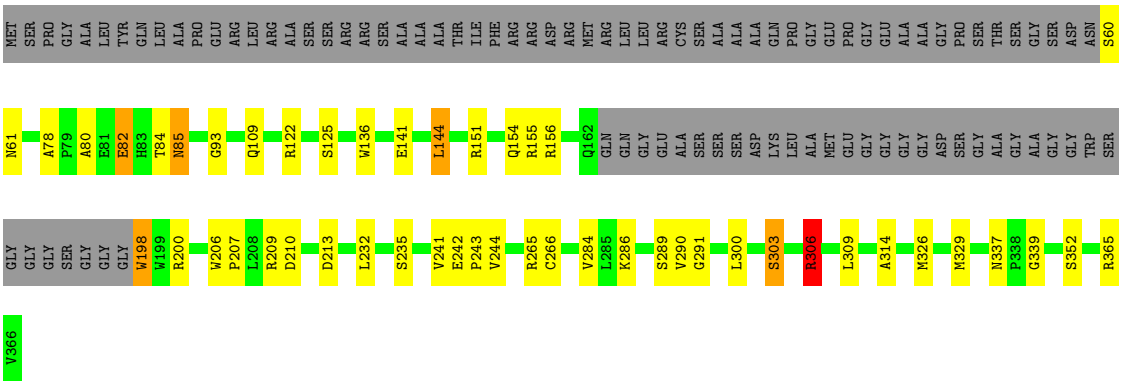
• Molecule 7: PcyA

Chain H:



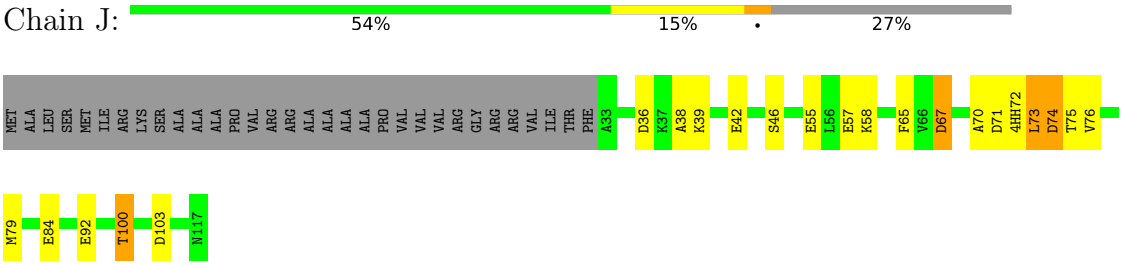
• Molecule 8: CrTam39

Chain I:



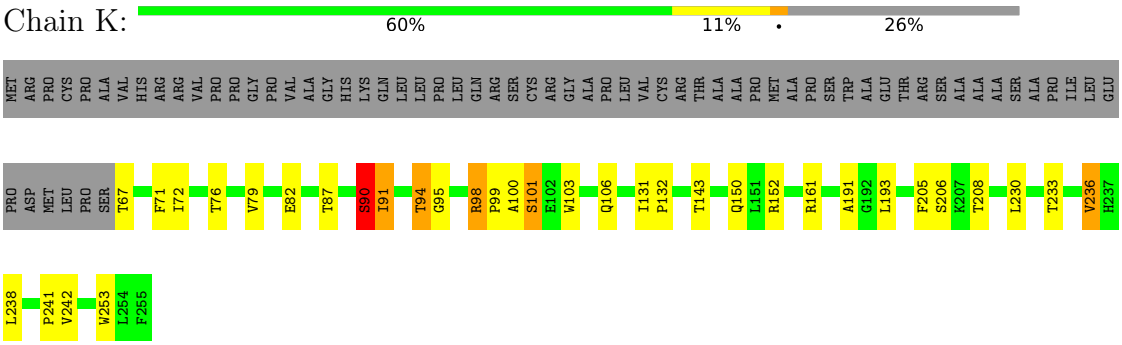
• Molecule 9: ACP

Chain J:



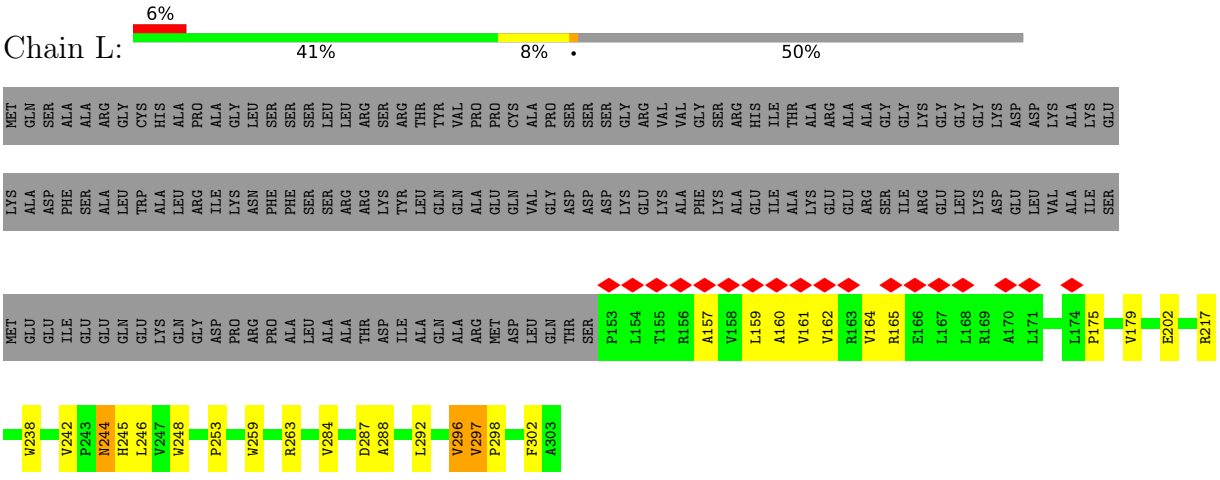
• Molecule 10: CrTam29

Chain K:



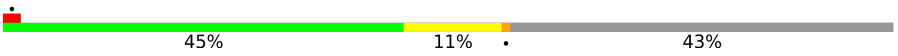
• Molecule 11: CrTam34

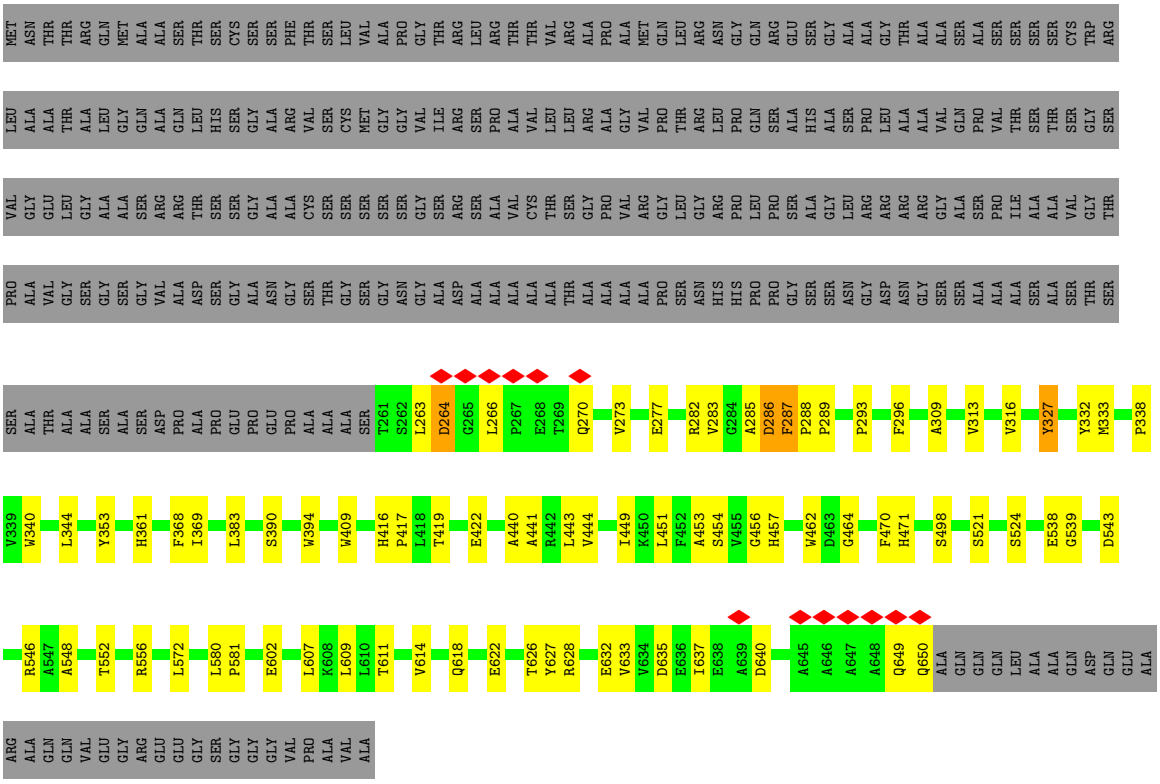
Chain L:



• Molecule 12: FADL

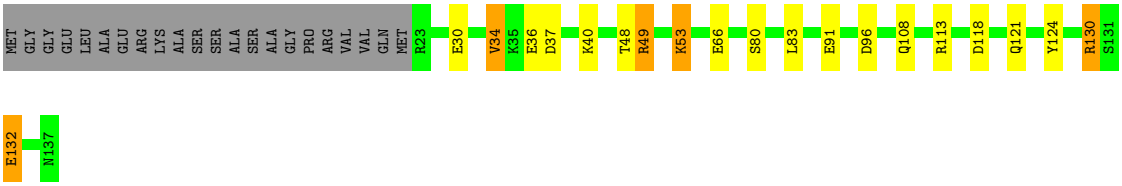
Chain M:





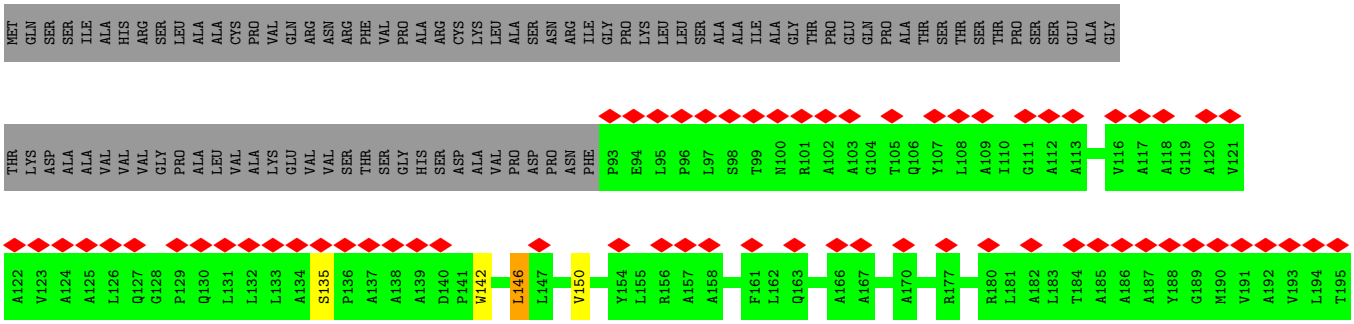
• Molecule 13: CrTam15

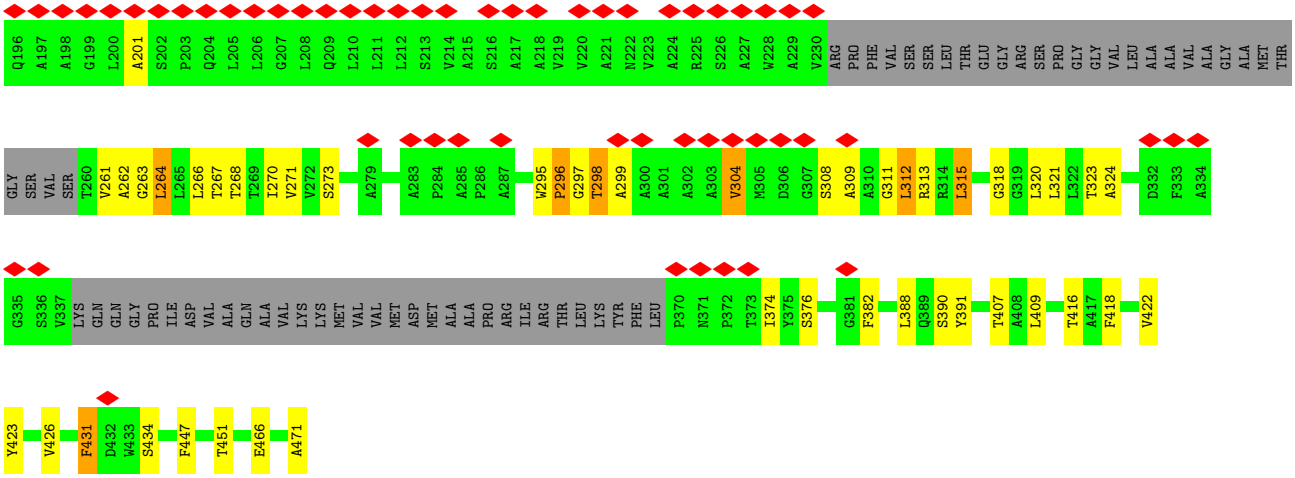
Chain N:



• Molecule 14: CrTam49

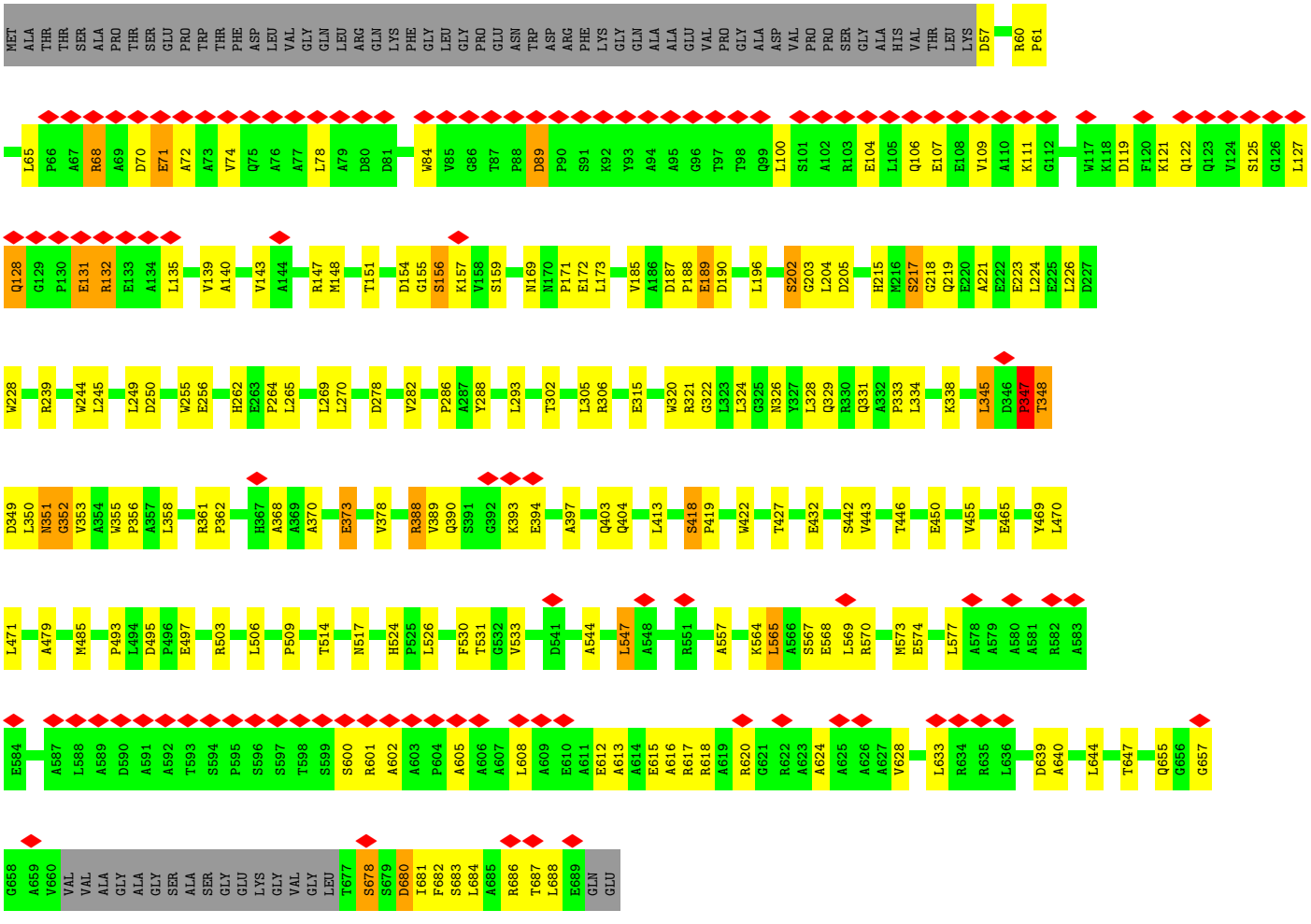
Chain O:





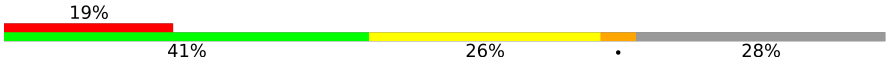
• Molecule 15: Ctap7

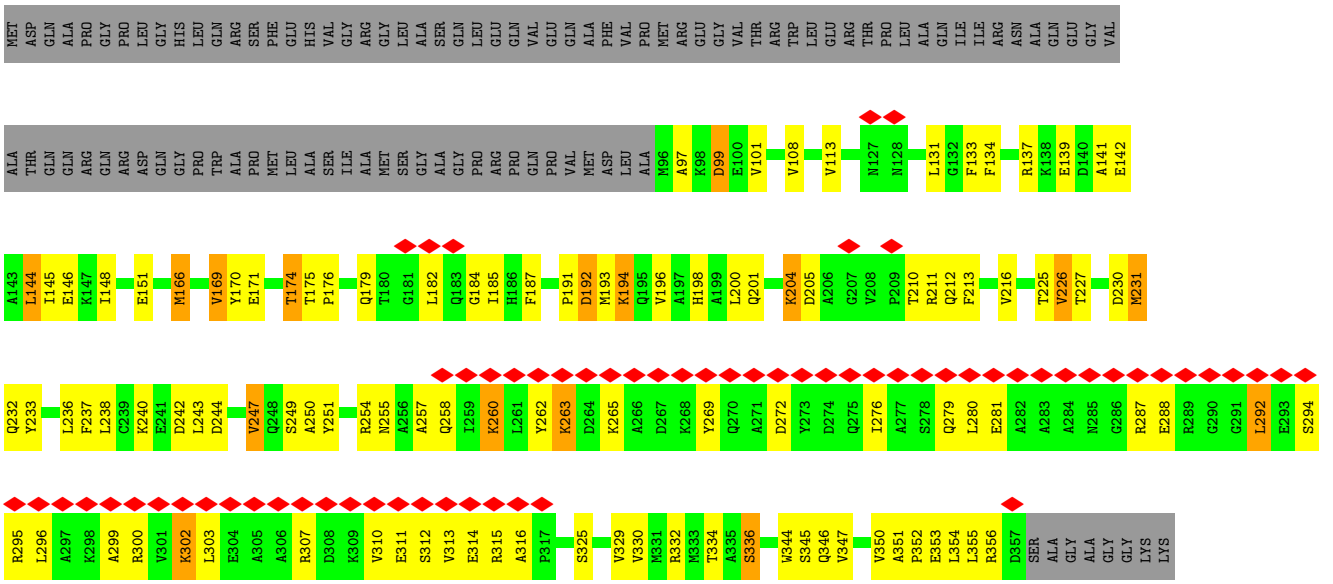
Chain P:



• Molecule 16: Tic22

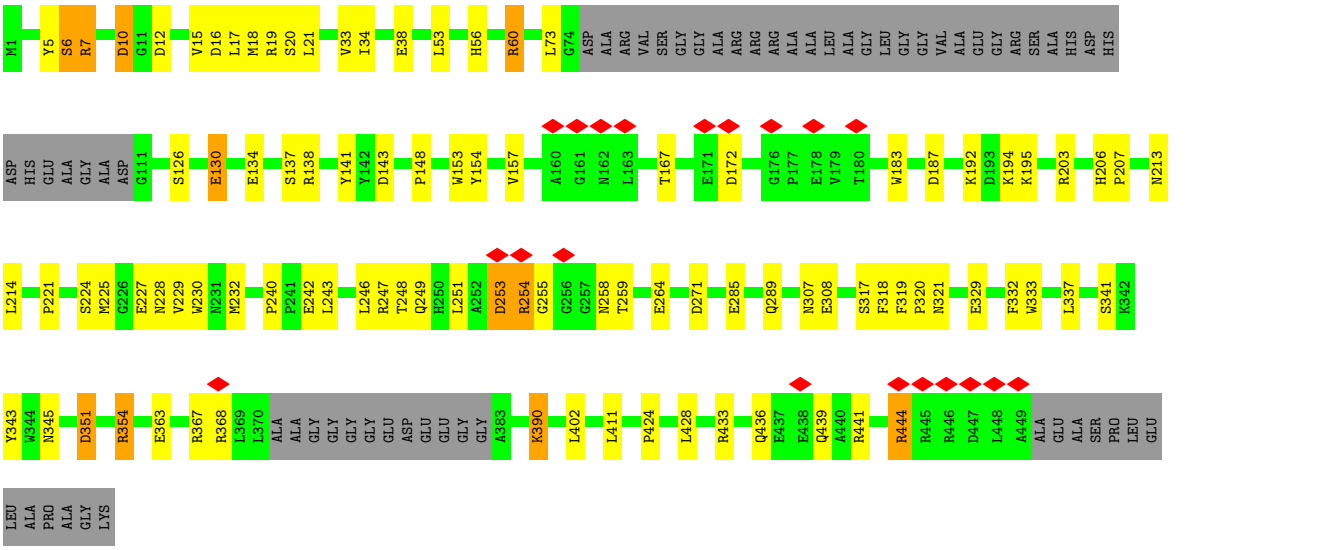
Chain Q:





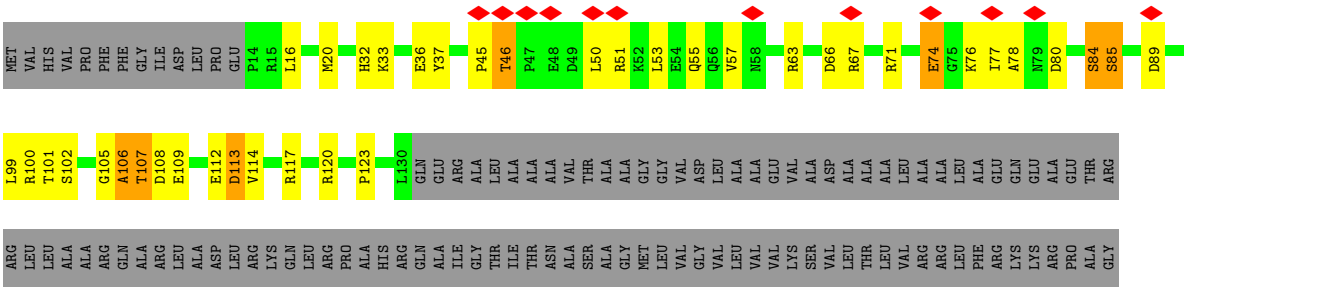
• Molecule 17: DnaJ

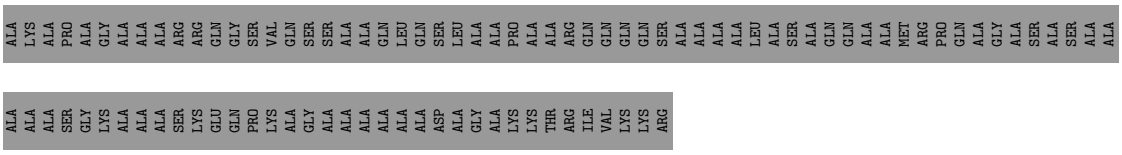
Chain R:



• Molecule 18: CrTam35

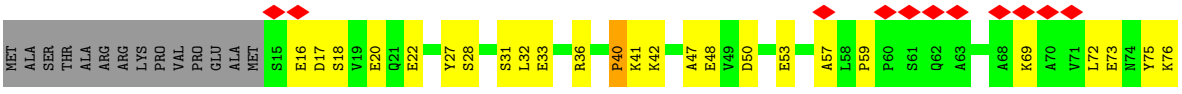
Chain S:

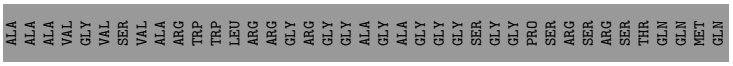




• Molecule 19: CrTam31

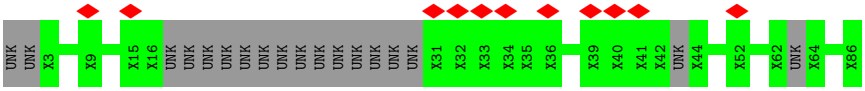
Chain T:





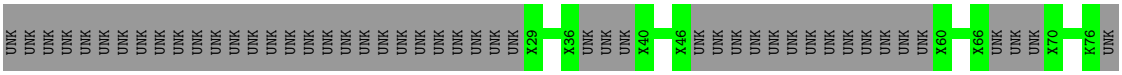
• Molecule 20: UNK

Chain V:



• Molecule 21: UNK

Chain U:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	172550	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	4.162	Depositor
Minimum map value	-1.990	Depositor
Average map value	0.005	Depositor
Map value standard deviation	0.131	Depositor
Recommended contour level	0.45	Depositor
Map size (Å)	391.32, 391.32, 391.32	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.087, 1.087, 1.087	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: 4HH, LMG, DGA, SEP, MG, TPO, A1LXL, ZN, SQD, Y01, DGD, 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	A	0.45	0/7792	0.50	1/10575 (0.0%)
2	B	0.46	0/5925	0.50	0/8024
2	C	0.45	0/5432	0.53	0/7359
3	D	0.46	0/12978	0.53	3/17507 (0.0%)
4	E	0.44	0/6360	0.49	1/8671 (0.0%)
5	F	0.42	0/5432	0.49	0/7366
6	G	0.37	0/2999	0.51	0/4087
7	H	0.53	0/3324	0.49	1/4515 (0.0%)
8	I	0.57	0/2177	0.53	0/2958
9	J	0.41	0/625	0.53	0/839
10	K	0.61	0/1627	0.55	1/2223 (0.0%)
11	L	0.55	0/1303	0.50	0/1786
12	M	0.46	0/3103	0.52	1/4258 (0.0%)
13	N	0.53	1/945 (0.1%)	0.54	0/1280
14	O	0.35	0/2084	0.50	0/2874
15	P	0.31	0/4601	0.53	1/6273 (0.0%)
16	Q	0.29	0/2115	0.48	0/2857
17	R	0.43	0/3224	0.51	0/4379
18	S	0.30	0/936	0.44	0/1267
19	T	0.29	0/862	0.48	0/1164
21	U	0.29	0/45	0.50	0/58
All	All	0.44	1/73889 (0.0%)	0.51	9/100320 (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	A	0	2
2	B	0	3

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Mol	Chain	#Chirality outliers	#Planarity outliers
2	C	0	2
3	D	0	3
5	F	0	1
6	G	0	3
8	I	0	1
13	N	0	2
17	R	0	1
All	All	0	18

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	N	91	GLU	C-O	-5.78	1.12	1.23

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	P	347	PRO	N-CA-CB	-12.11	88.77	103.30
3	D	2891	PHE	CA-CB-CG	-8.34	93.88	113.90
3	D	2891	PHE	CB-CA-C	6.21	122.81	110.40
4	E	253	PRO	N-CA-CB	-5.88	96.13	102.60
1	A	1163	PRO	N-CA-CB	5.69	110.13	103.30

There are no chirality outliers.

5 of 18 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	685	ARG	Sidechain
1	A	686	ARG	Sidechain
2	B	448	ARG	Sidechain
2	B	450	ARG	Sidechain
2	B	496	ARG	Sidechain

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	A	7627	0	7581	125	0
2	B	5844	0	5785	127	0
2	C	5324	0	5301	126	0
3	D	12719	0	13028	293	0
4	E	6229	0	5674	121	0
5	F	5333	0	5318	103	0
6	G	2931	0	2867	67	0
7	H	3246	0	3152	49	0
8	I	2119	0	2069	27	0
9	J	651	0	658	17	0
10	K	1567	0	1558	14	0
11	L	1254	0	1246	16	0
12	M	3000	0	2945	48	0
13	N	921	0	917	11	0
14	O	2040	0	1739	39	0
15	P	4510	0	4451	135	0
16	Q	2078	0	2090	75	0
17	R	3160	0	2999	71	0
18	S	951	0	923	25	0
19	T	868	0	824	41	0
20	V	340	0	76	0	0
21	U	188	0	62	0	0
22	A	46	0	61	3	0
22	C	25	0	31	0	0
22	I	32	0	33	1	0
22	K	41	0	52	0	0
22	M	48	0	66	2	0
23	A	31	0	13	1	0
23	C	31	0	13	1	0
23	E	31	0	13	2	0
23	F	31	0	13	0	0
24	A	1	0	0	0	0
25	A	46	0	54	0	0
25	I	49	0	64	3	0
25	K	45	0	52	0	0
26	D	34	0	50	1	0
26	O	39	0	63	3	0
27	D	35	0	49	0	0
27	M	35	0	49	1	0
28	D	30	0	0	4	0
28	P	30	0	0	7	0
29	I	40	0	38	0	0
29	L	41	0	40	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	R	2	0	0	0	0
All	All	73643	0	72017	1364	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 9.

The worst 5 of 1364 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)
15:P:68:ARG:NH2	15:P:347:PRO:HB3	1.24	1.43
14:O:201:ALA:HB2	14:O:311:GLY:HA3	1.30	1.14
15:P:68:ARG:HH21	15:P:347:PRO:CB	1.62	1.12
15:P:68:ARG:NH2	15:P:347:PRO:CB	2.20	1.01
5:F:926:TYR:O	5:F:939:THR:HG23	1.60	1.00

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	A	982/1182 (83%)	895 (91%)	87 (9%)	0	100	100
2	B	736/1112 (66%)	670 (91%)	62 (8%)	4 (0%)	25	56
2	C	682/1112 (61%)	620 (91%)	60 (9%)	2 (0%)	37	66
3	D	1471/2971 (50%)	1319 (90%)	135 (9%)	17 (1%)	11	35
4	E	864/982 (88%)	803 (93%)	59 (7%)	2 (0%)	44	73
5	F	695/1024 (68%)	637 (92%)	57 (8%)	1 (0%)	48	77
6	G	392/495 (79%)	360 (92%)	31 (8%)	1 (0%)	37	66
7	H	404/555 (73%)	380 (94%)	23 (6%)	1 (0%)	44	73

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
8	I	268/366 (73%)	238 (89%)	30 (11%)	0	100 100
9	J	82/117 (70%)	78 (95%)	3 (4%)	1 (1%)	11 35
10	K	187/255 (73%)	165 (88%)	17 (9%)	5 (3%)	4 17
11	L	149/303 (49%)	137 (92%)	12 (8%)	0	100 100
12	M	388/682 (57%)	366 (94%)	21 (5%)	1 (0%)	37 66
13	N	113/137 (82%)	103 (91%)	10 (9%)	0	100 100
14	O	312/471 (66%)	285 (91%)	25 (8%)	2 (1%)	22 52
15	P	613/691 (89%)	544 (89%)	63 (10%)	6 (1%)	13 40
16	Q	260/365 (71%)	251 (96%)	9 (4%)	0	100 100
17	R	393/462 (85%)	349 (89%)	42 (11%)	2 (0%)	25 56
18	S	112/324 (35%)	97 (87%)	14 (12%)	1 (1%)	14 43
19	T	106/299 (36%)	96 (91%)	9 (8%)	1 (1%)	14 43
21	U	6/156 (4%)	5 (83%)	1 (17%)	0	100 100
All	All	9215/14061 (66%)	8398 (91%)	770 (8%)	47 (0%)	27 56

5 of 47 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	D	2680	LEU
3	D	2749	ASN
3	D	2801	HIS
3	D	2891	PHE
3	D	2894	ASP

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	A	774/936 (83%)	708 (92%)	66 (8%)	8 27
2	B	599/858 (70%)	543 (91%)	56 (9%)	7 23
2	C	548/858 (64%)	497 (91%)	51 (9%)	7 23

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	D	1443/2762 (52%)	1288 (89%)	155 (11%)	5 17
4	E	540/774 (70%)	509 (94%)	31 (6%)	17 47
5	F	542/773 (70%)	489 (90%)	53 (10%)	6 21
6	G	283/358 (79%)	253 (89%)	30 (11%)	5 18
7	H	346/451 (77%)	328 (95%)	18 (5%)	19 50
8	I	204/263 (78%)	185 (91%)	19 (9%)	7 23
9	J	64/87 (74%)	59 (92%)	5 (8%)	10 31
10	K	163/215 (76%)	147 (90%)	16 (10%)	6 21
11	L	124/243 (51%)	118 (95%)	6 (5%)	21 54
12	M	298/492 (61%)	287 (96%)	11 (4%)	29 64
13	N	92/107 (86%)	83 (90%)	9 (10%)	6 21
14	O	129/340 (38%)	117 (91%)	12 (9%)	7 23
15	P	431/485 (89%)	383 (89%)	48 (11%)	5 16
16	Q	218/296 (74%)	190 (87%)	28 (13%)	3 11
17	R	312/345 (90%)	288 (92%)	24 (8%)	10 31
18	S	97/226 (43%)	86 (89%)	11 (11%)	4 15
19	T	83/198 (42%)	77 (93%)	6 (7%)	12 35
21	U	1/7 (14%)	1 (100%)	0	100 100
All	All	7291/11074 (66%)	6636 (91%)	655 (9%)	10 25

5 of 655 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
8	I	122	ARG
15	P	547	LEU
8	I	326	MET
8	I	85	ASN
13	N	48	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 162 such sidechains are listed below:

Mol	Chain	Res	Type
6	G	481	GLN
15	P	331	GLN
7	H	210	GLN

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Mol	Chain	Res	Type
11	L	293	GLN
16	Q	285	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

11 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
18	SEP	S	85	18	8,9,10	1.53	1 (12%)	8,12,14	1.22	1 (12%)
17	TPO	R	167	17	8,10,11	1.57	1 (12%)	10,14,16	2.10	2 (20%)
19	SEP	T	28	19	8,9,10	1.52	1 (12%)	8,12,14	1.64	2 (25%)
2	TPO	B	346	2	8,10,11	1.58	1 (12%)	10,14,16	1.84	1 (10%)
17	SEP	R	126	17	8,9,10	1.52	1 (12%)	8,12,14	1.29	1 (12%)
9	4HH	J	72	9	21,26,27	0.38	0	27,35,37	0.69	0
18	TPO	S	107	18	8,10,11	1.58	1 (12%)	10,14,16	1.90	1 (10%)
2	TPO	B	347	2	8,10,11	1.54	1 (12%)	10,14,16	2.15	2 (20%)
19	SEP	T	18	19	8,9,10	1.53	1 (12%)	8,12,14	1.38	2 (25%)
2	TPO	B	337	2	8,10,11	1.56	1 (12%)	10,14,16	1.83	1 (10%)
18	SEP	S	84	18	8,9,10	1.50	1 (12%)	8,12,14	1.53	2 (25%)

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
18	SEP	S	85	18	-	1/5/8/10	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
17	TPO	R	167	17	-	2/9/11/13	-
19	SEP	T	28	19	-	2/5/8/10	-
2	TPO	B	346	2	-	0/9/11/13	-
17	SEP	R	126	17	-	0/5/8/10	-
9	4HH	J	72	9	-	13/32/35/37	-
18	TPO	S	107	18	-	5/9/11/13	-
2	TPO	B	347	2	-	1/9/11/13	-
19	SEP	T	18	19	-	0/5/8/10	-
2	TPO	B	337	2	-	4/9/11/13	-
18	SEP	S	84	18	-	1/5/8/10	-

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	S	85	SEP	P-O1P	3.38	1.61	1.50
18	S	107	TPO	P-O1P	3.37	1.61	1.50
2	B	337	TPO	P-O1P	3.35	1.61	1.50
2	B	346	TPO	P-O1P	3.33	1.61	1.50
19	T	18	SEP	P-O1P	3.33	1.61	1.50

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	347	TPO	P-OG1-CB	-6.03	104.98	123.21
17	R	167	TPO	P-OG1-CB	-5.88	105.44	123.21
18	S	107	TPO	P-OG1-CB	-5.58	106.34	123.21
2	B	346	TPO	P-OG1-CB	-5.09	107.84	123.21
2	B	337	TPO	P-OG1-CB	-5.07	107.91	123.21

There are no chirality outliers.

5 of 29 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	J	72	4HH	N-CA-CB-OG
9	J	72	4HH	CB-OG-P-O1P
9	J	72	4HH	CB-OG-P-O2P
9	J	72	4HH	CB-OG-P-O3P
9	J	72	4HH	NN-CO-CP-CQ

There are no ring outliers.

5 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
18	S	85	SEP	1	0
2	B	346	TPO	1	0
9	J	72	4HH	4	0
18	S	107	TPO	2	0
18	S	84	SEP	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 23 ligands modelled in this entry, 3 are monoatomic - leaving 20 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	$\#\|Z\| > 2$
22	LMG	A	1201	-	46,46,55	1.03	4 (8%)	54,54,63	1.40	7 (12%)
25	SQD	K	302	-	44,45,54	1.16	6 (13%)	53,56,65	1.76	10 (18%)
23	ANP	A	1202	24	29,33,33	1.21	5 (17%)	31,52,52	1.17	3 (9%)
28	A1LXL	D	3003	-	33,33,33	3.56	11 (33%)	51,51,51	2.25	17 (33%)
22	LMG	I	402	-	32,32,55	1.17	3 (9%)	40,40,63	1.38	8 (20%)
23	ANP	F	1101	-	29,33,33	1.09	4 (13%)	31,52,52	1.16	2 (6%)
22	LMG	C	1201	-	24,24,55	0.73	0	26,26,63	1.13	1 (3%)
25	SQD	I	401	-	48,49,54	1.08	6 (12%)	57,60,65	1.69	10 (17%)
27	Y01	D	3002	-	38,38,38	0.47	0	57,57,57	0.64	0
27	Y01	M	802	-	38,38,38	0.50	0	57,57,57	0.75	1 (1%)
22	LMG	K	301	-	41,41,55	0.90	4 (9%)	49,49,63	1.44	8 (16%)
26	DGA	O	3101	-	38,38,43	1.10	3 (7%)	40,40,45	1.80	5 (12%)
22	LMG	M	801	-	48,48,55	0.89	3 (6%)	56,56,63	1.45	8 (14%)
29	DGD	I	403	-	41,41,67	1.50	12 (29%)	55,55,81	1.54	9 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
23	ANP	C	1202	-	29,33,33	1.07	4 (13%)	31,52,52	1.12	3 (9%)
28	A1LXL	P	701	-	33,33,33	3.63	11 (33%)	51,51,51	2.45	21 (41%)
29	DGD	L	401	-	42,42,67	1.06	2 (4%)	56,56,81	1.42	8 (14%)
26	DGA	D	3001	-	33,33,43	1.19	3 (9%)	35,35,45	1.70	3 (8%)
23	ANP	E	1001	-	29,33,33	1.07	4 (13%)	31,52,52	1.13	2 (6%)
25	SQD	A	1204	-	45,46,54	1.14	6 (13%)	54,57,65	1.75	11 (20%)

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
22	LMG	A	1201	-	-	19/41/61/70	0/1/1/1
25	SQD	K	302	-	-	17/40/60/69	0/1/1/1
23	ANP	A	1202	24	-	4/14/38/38	0/3/3/3
28	A1LXL	D	3003	-	-	9/15/73/73	0/4/4/4
22	LMG	I	402	-	-	16/27/47/70	0/1/1/1
23	ANP	F	1101	-	-	5/14/38/38	0/3/3/3
22	LMG	C	1201	-	-	12/26/26/70	-
25	SQD	I	401	-	-	18/44/64/69	0/1/1/1
27	Y01	D	3002	-	-	13/19/77/77	0/4/4/4
27	Y01	M	802	-	-	3/19/77/77	0/4/4/4
22	LMG	K	301	-	-	13/36/56/70	0/1/1/1
26	DGA	O	3101	-	-	25/40/40/45	-
22	LMG	M	801	-	-	23/43/63/70	0/1/1/1
29	DGD	I	403	-	-	12/29/69/95	0/2/2/2
23	ANP	C	1202	-	-	5/14/38/38	0/3/3/3
28	A1LXL	P	701	-	-	10/15/73/73	0/4/4/4
29	DGD	L	401	-	-	11/30/70/95	0/2/2/2
26	DGA	D	3001	-	-	17/35/35/45	-
23	ANP	E	1001	-	-	3/14/38/38	0/3/3/3
25	SQD	A	1204	-	-	19/41/61/69	0/1/1/1

The worst 5 of 91 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
28	P	701	A1LXL	C06-C08	-11.12	1.35	1.54
28	D	3003	A1LXL	C06-C08	-10.56	1.35	1.54
28	D	3003	A1LXL	C17-C16	7.75	1.67	1.53
28	P	701	A1LXL	C17-C16	7.64	1.67	1.53
28	P	701	A1LXL	C09-C08	7.37	1.69	1.54

The worst 5 of 137 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
26	O	3101	DGA	CDB-CCB-CBB	-6.77	80.05	114.42
26	D	3001	DGA	CDB-CCB-CBB	-6.69	80.47	114.42
28	D	3003	A1LXL	C24-C19-C20	-6.15	106.12	112.66
28	P	701	A1LXL	C12-C11-C16	-5.46	106.30	114.38
26	O	3101	DGA	OG2-CB1-CB2	5.41	123.17	111.50

There are no chirality outliers.

5 of 254 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
22	C	1201	LMG	O1-C7-C8-C9
22	C	1201	LMG	O1-C7-C8-O7
22	I	402	LMG	O6-C1-O1-C7
22	I	402	LMG	C11-C10-O7-C8
22	K	301	LMG	O7-C8-C9-O8

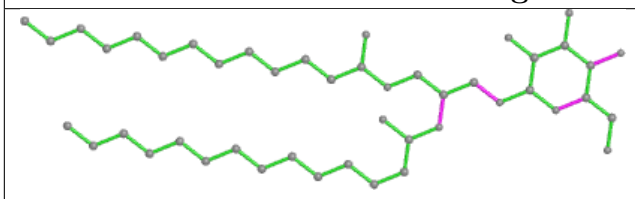
There are no ring outliers.

12 monomers are involved in 28 short contacts:

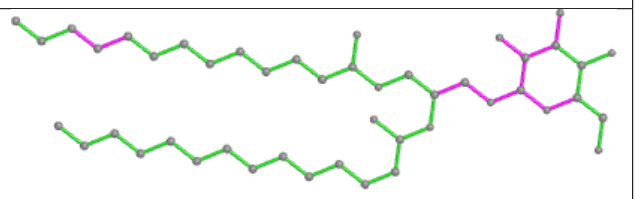
Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	A	1201	LMG	3	0
23	A	1202	ANP	1	0
28	D	3003	A1LXL	4	0
22	I	402	LMG	1	0
25	I	401	SQD	3	0
27	M	802	Y01	1	0
26	O	3101	DGA	3	0
22	M	801	LMG	2	0
23	C	1202	ANP	1	0
28	P	701	A1LXL	7	0
26	D	3001	DGA	1	0
23	E	1001	ANP	2	0

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.

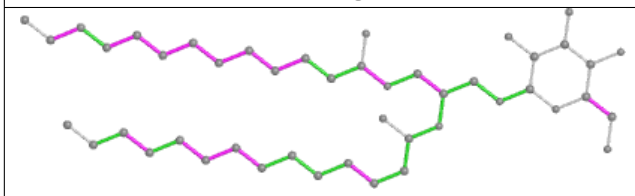
Ligand LMG A 1201



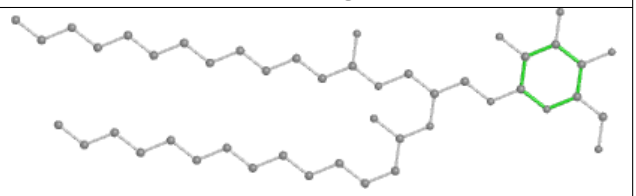
Bond lengths



Bond angles

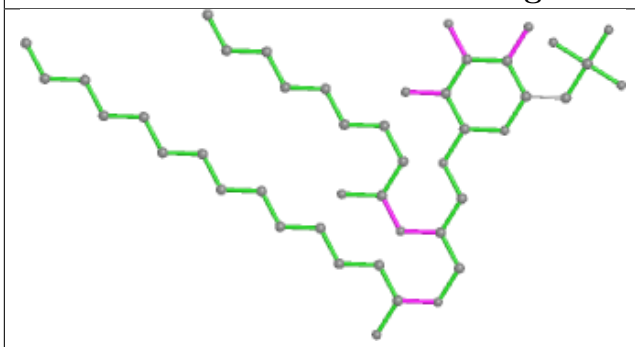


Torsions



Rings

Ligand SQD K 302



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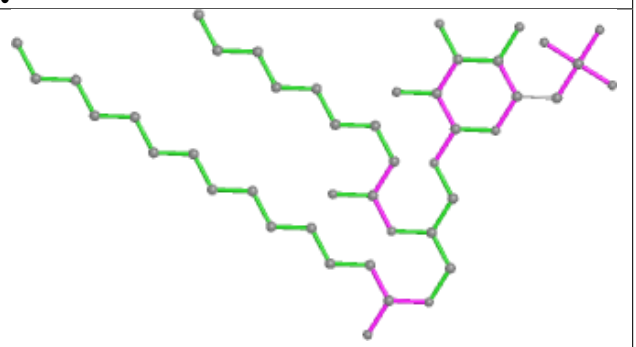

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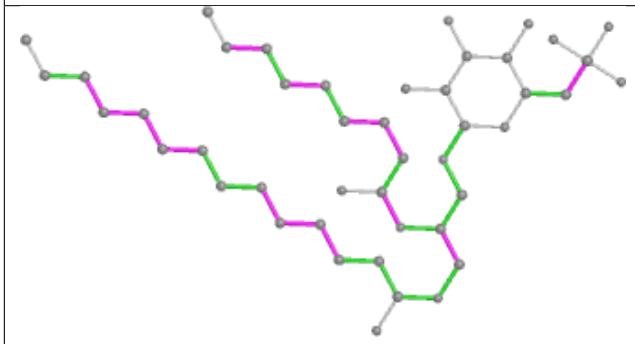

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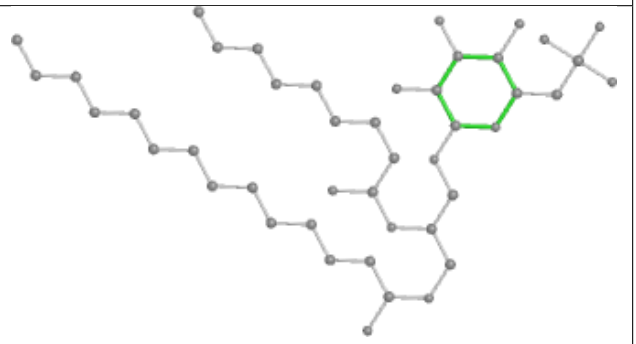
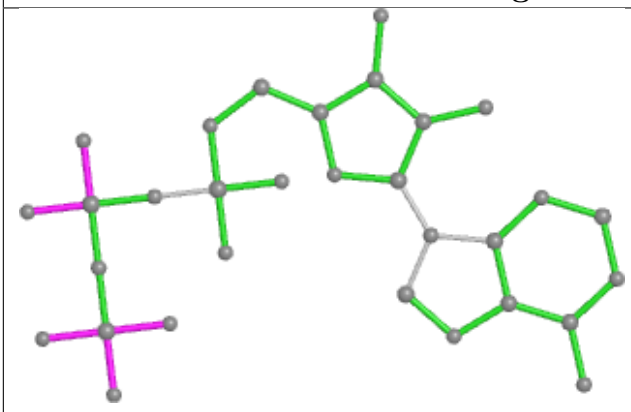


Rings

Ligand ANP A 1202



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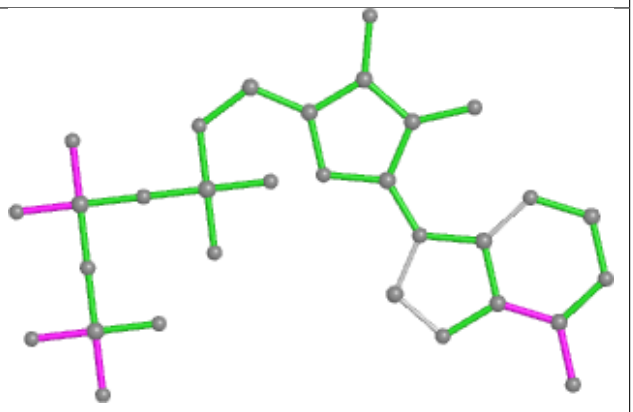

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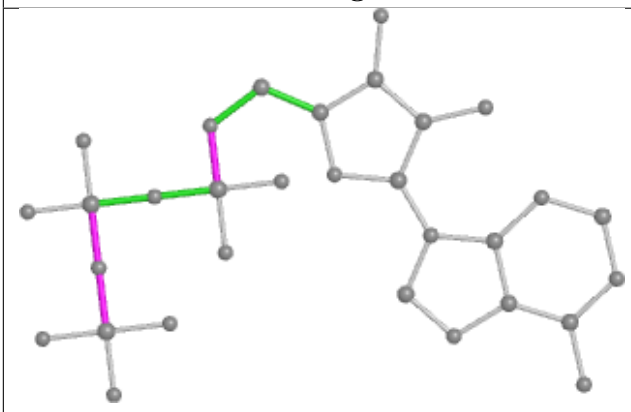

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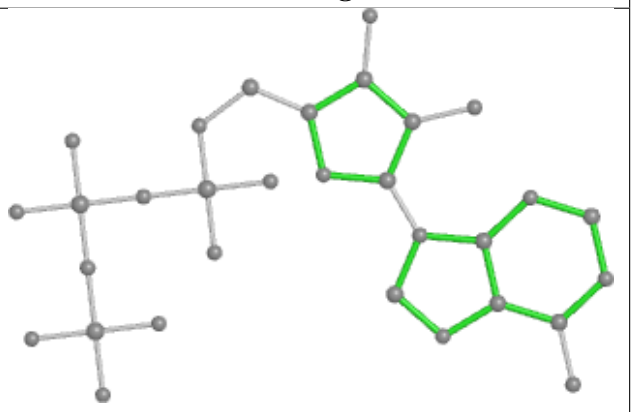
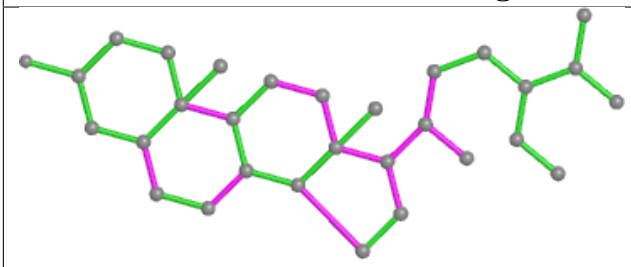
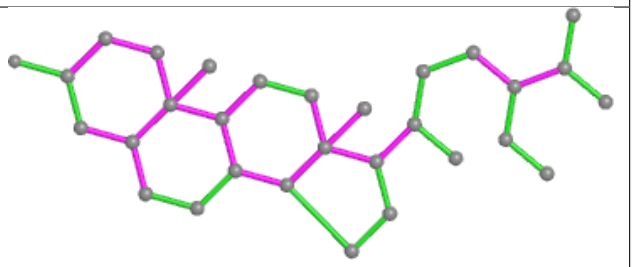


Rings

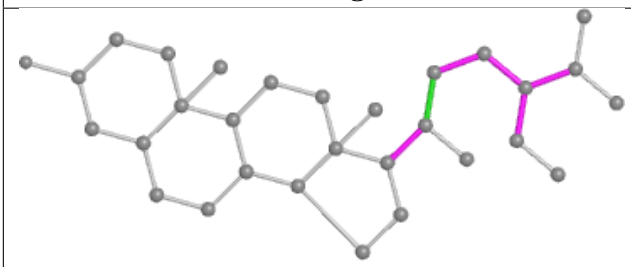
Ligand A1LXL D 3003



Bond lengths



Bond angles



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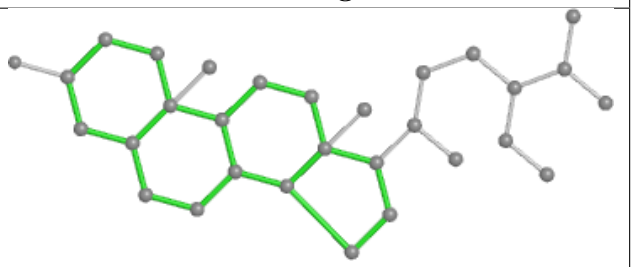
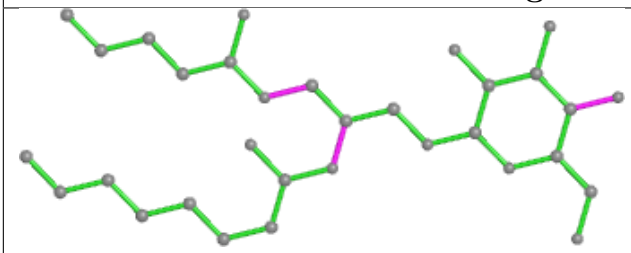
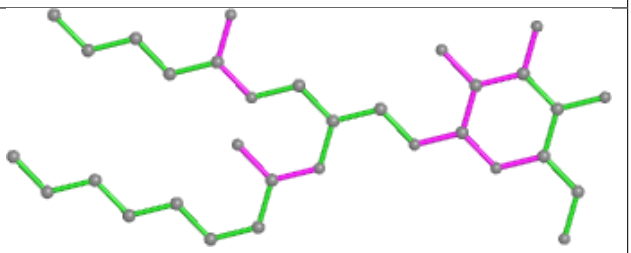


Rings

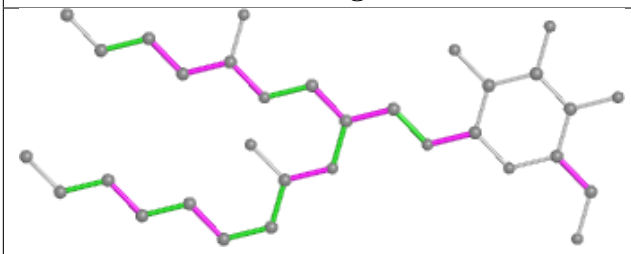
Ligand LMG I 402



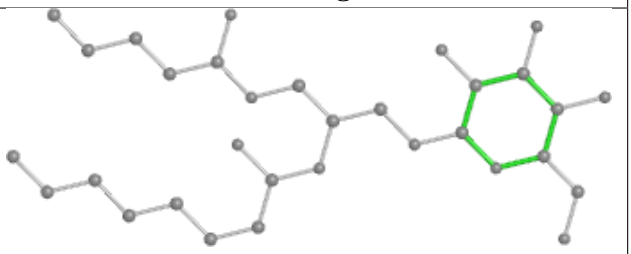
Bond lengths



Bond angles

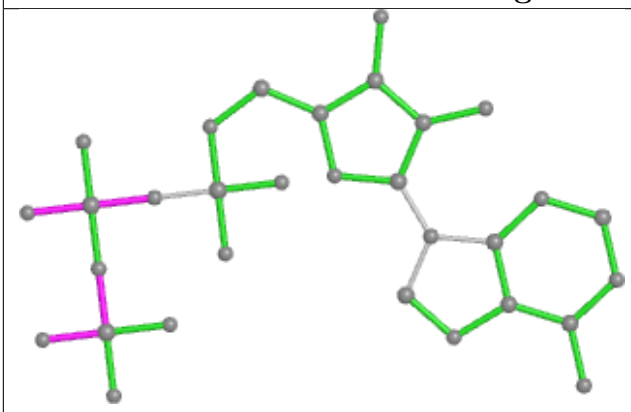


Torsions

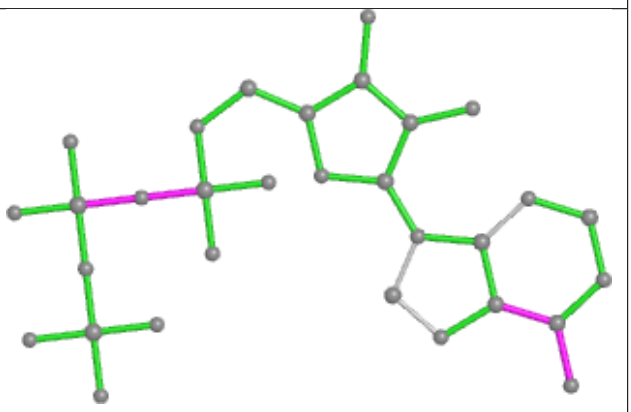


Rings

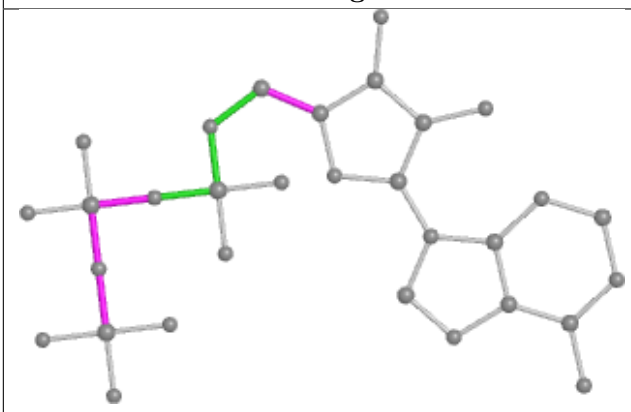
Ligand ANP F 1101



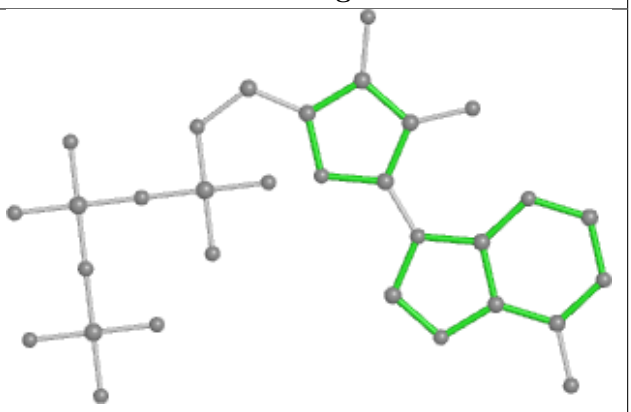
Bond lengths



Bond angles

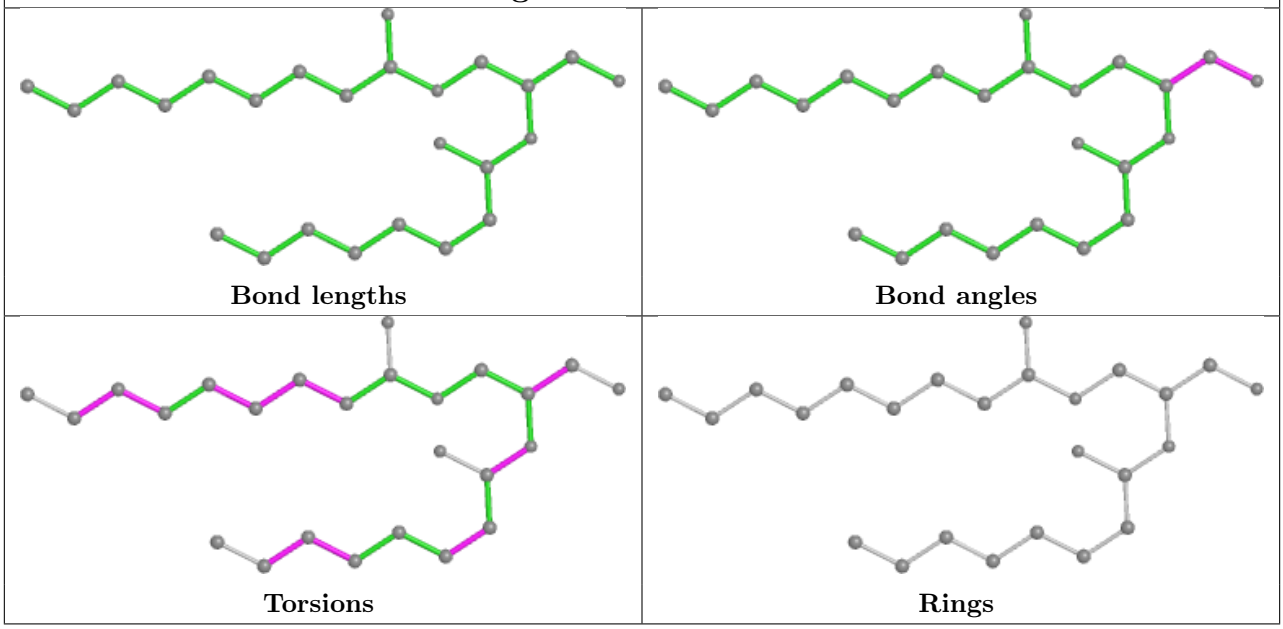


Torsions

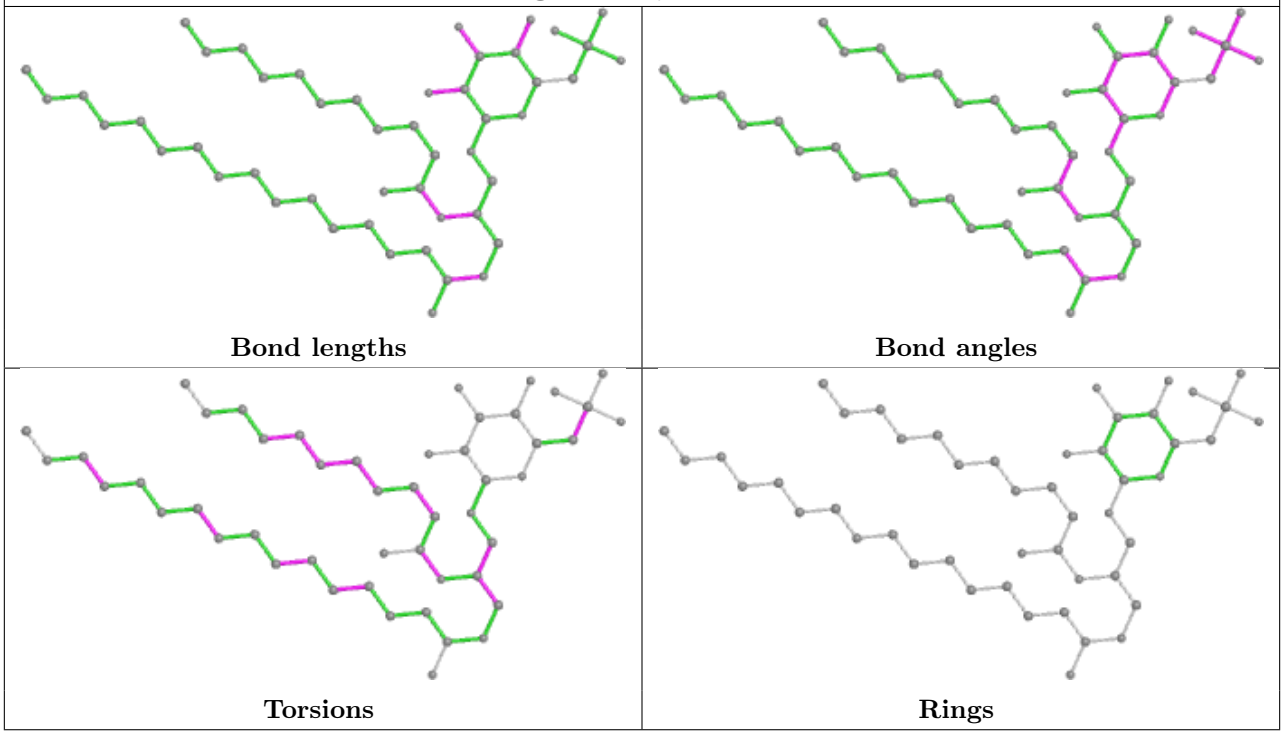


Rings

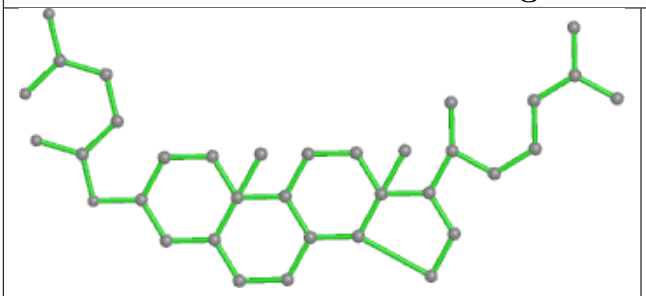
Ligand LMG C 1201



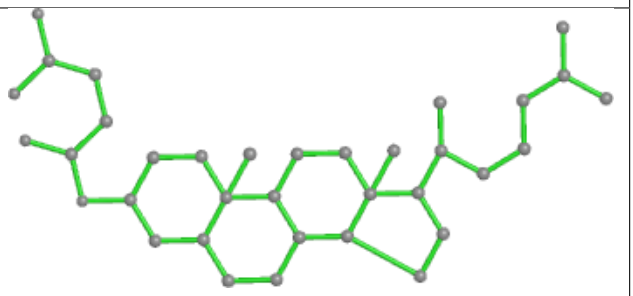
Ligand SQD I 401



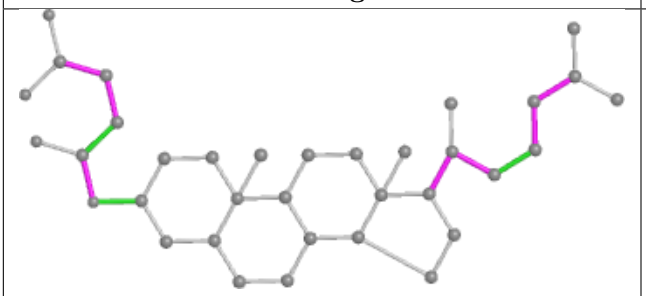
Ligand Y01 D 3002



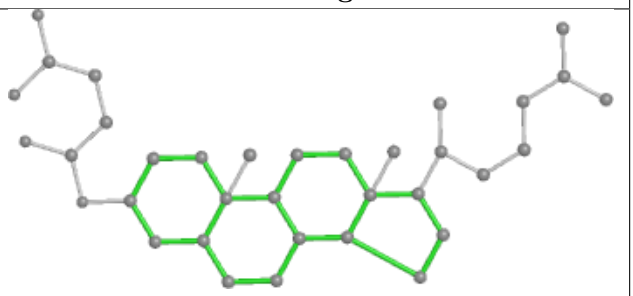
Bond lengths



Bond angles

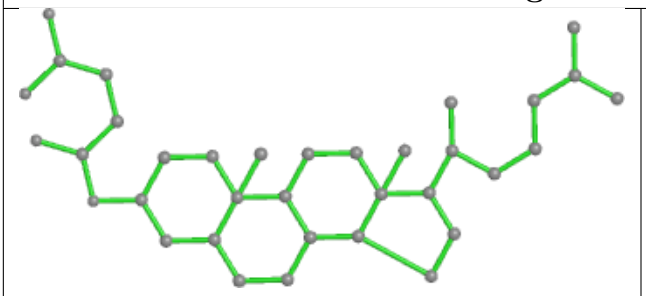


Torsions

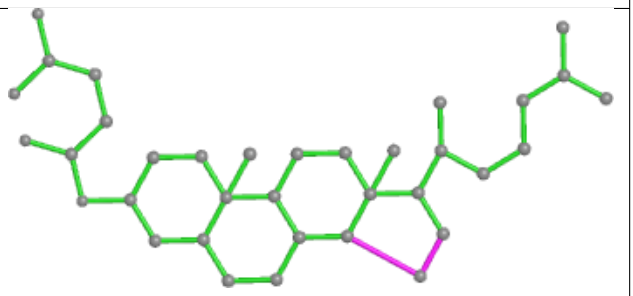


Rings

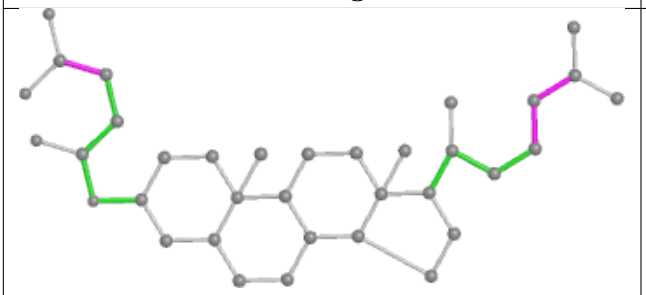
Ligand Y01 M 802



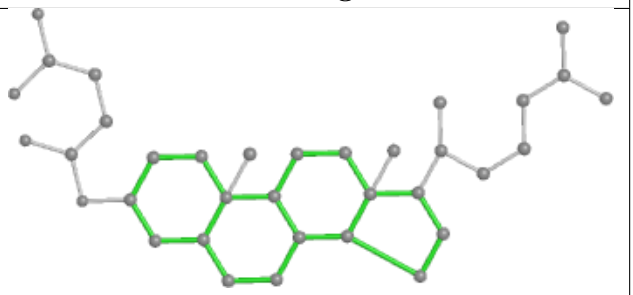
Bond lengths



Bond angles

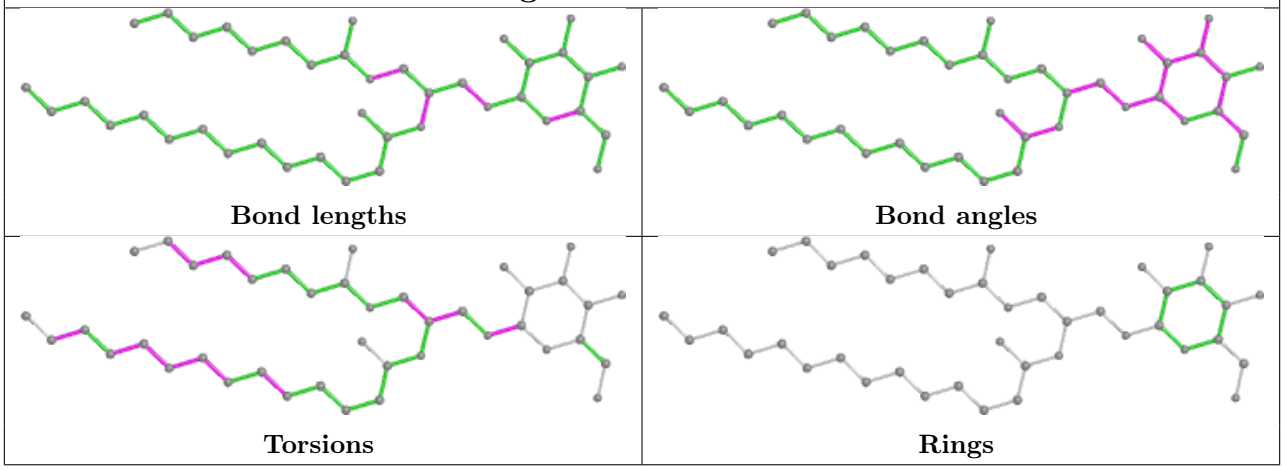


Torsions

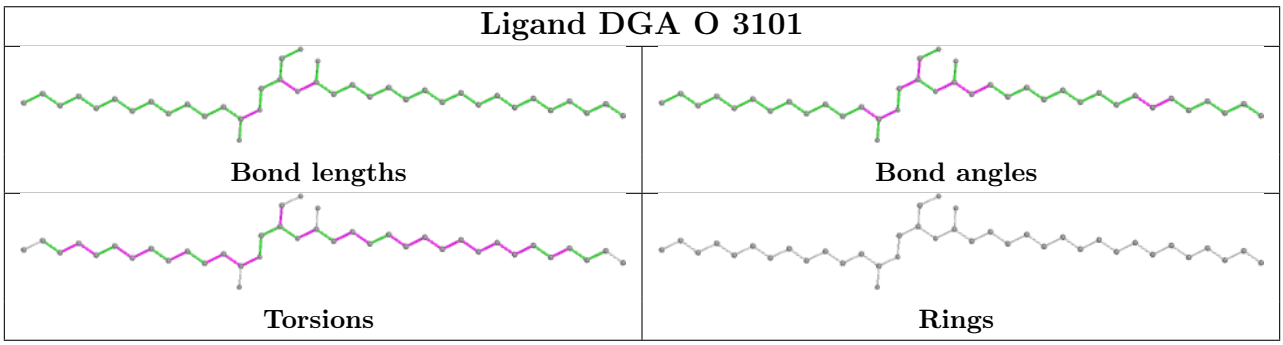


Rings

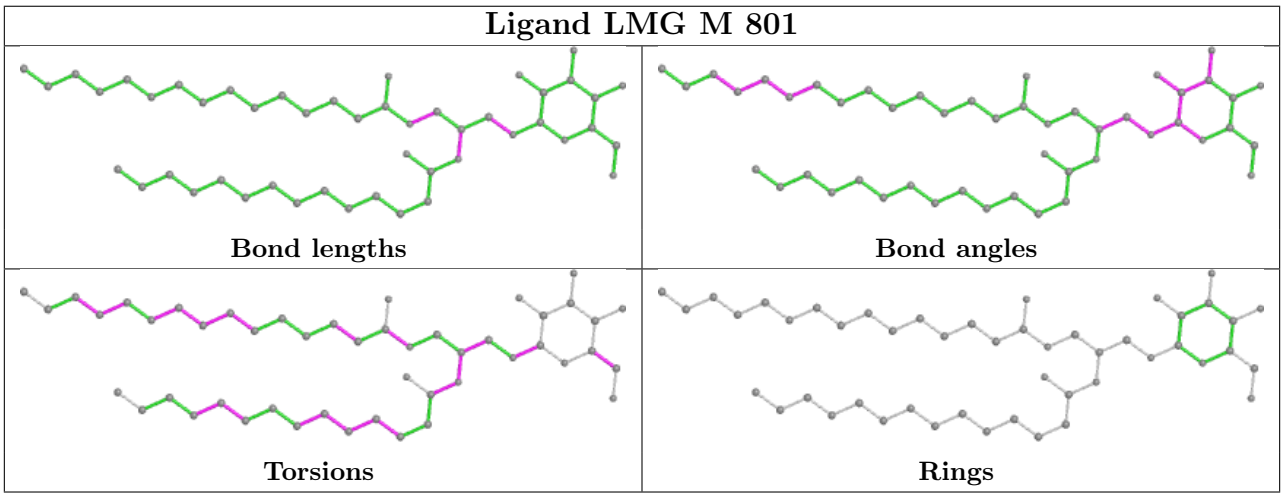
Ligand LMG K 301



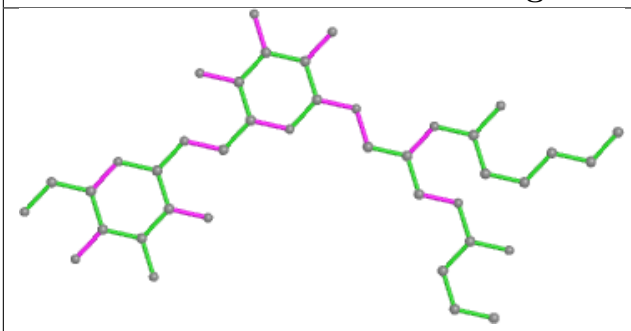
Ligand DGA O 3101



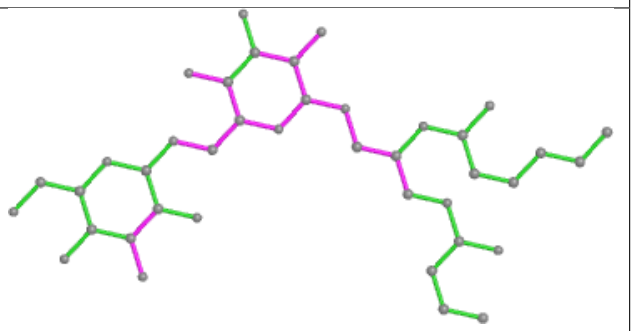
Ligand LMG M 801



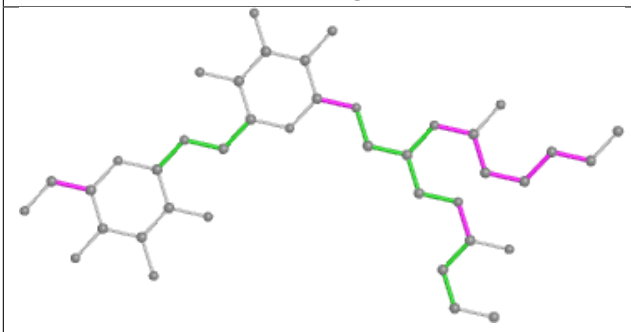
Ligand DGD I 403



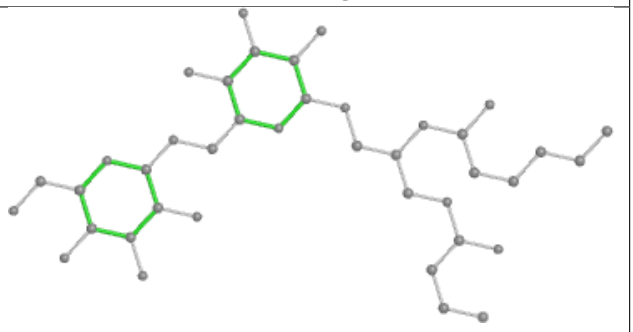
Bond lengths



Bond angles

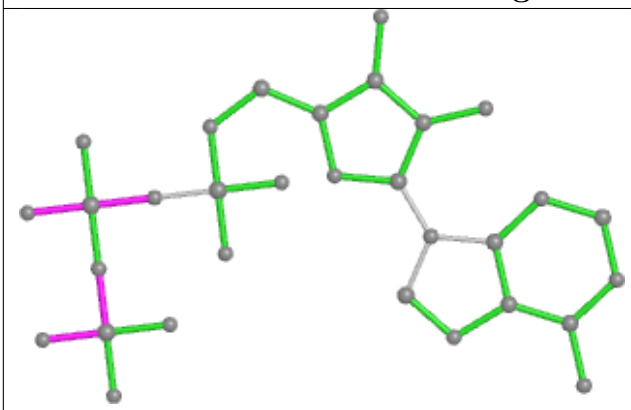


Torsions

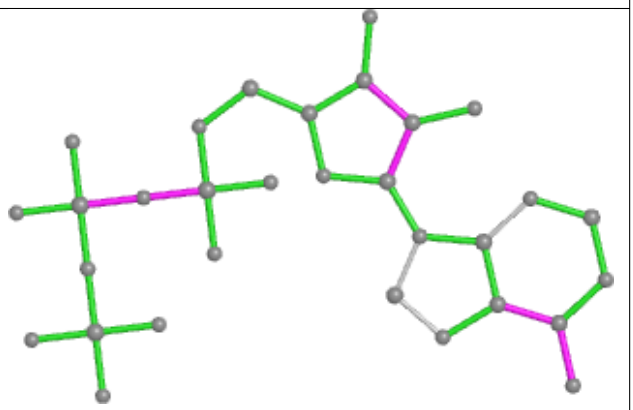


Rings

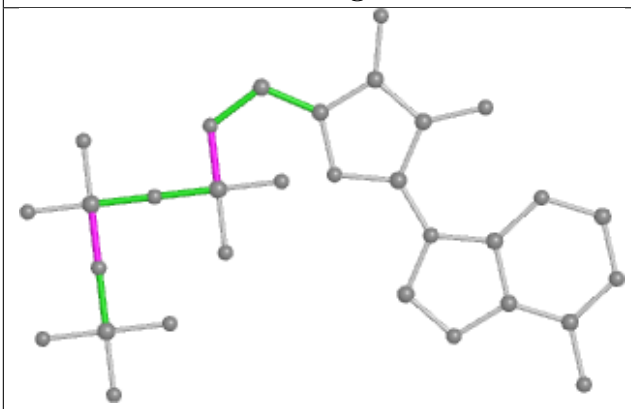
Ligand ANP C 1202



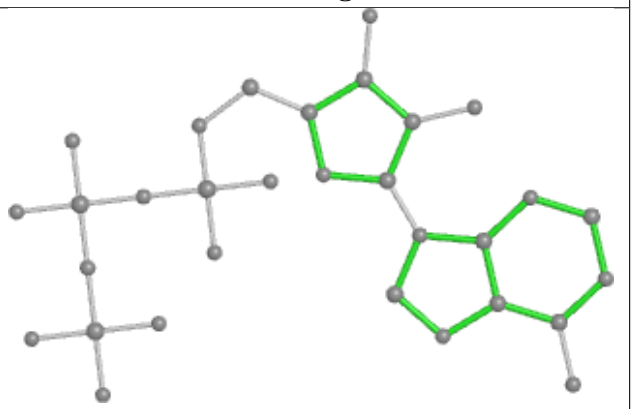
Bond lengths



Bond angles

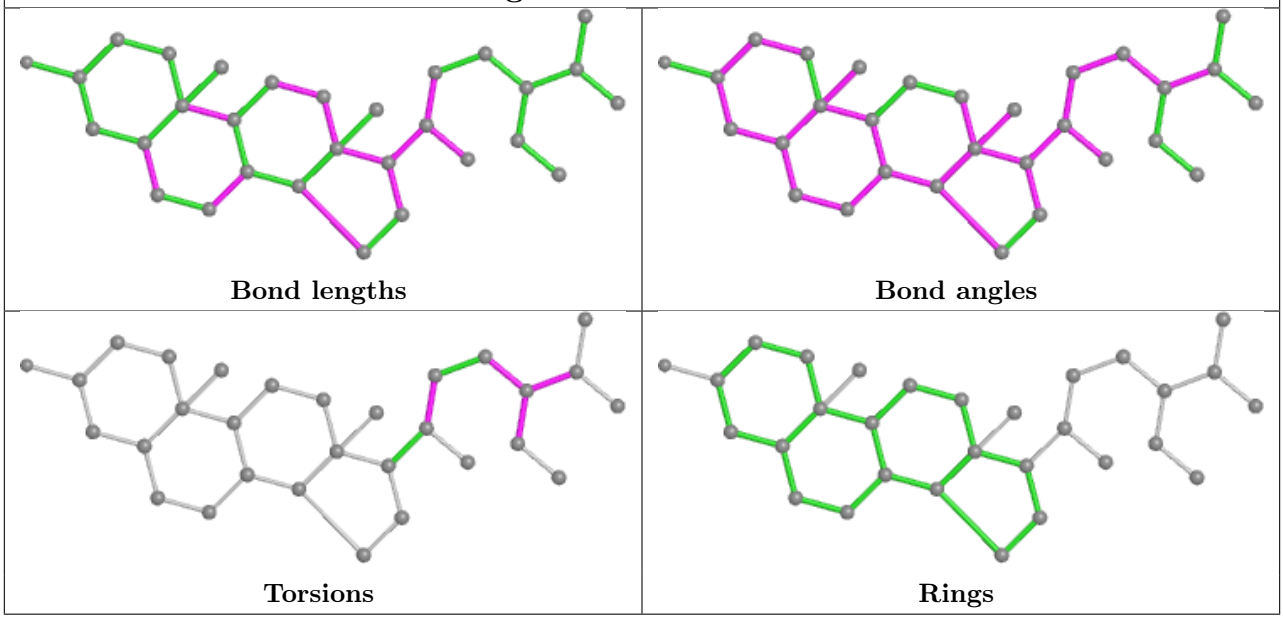


Torsions

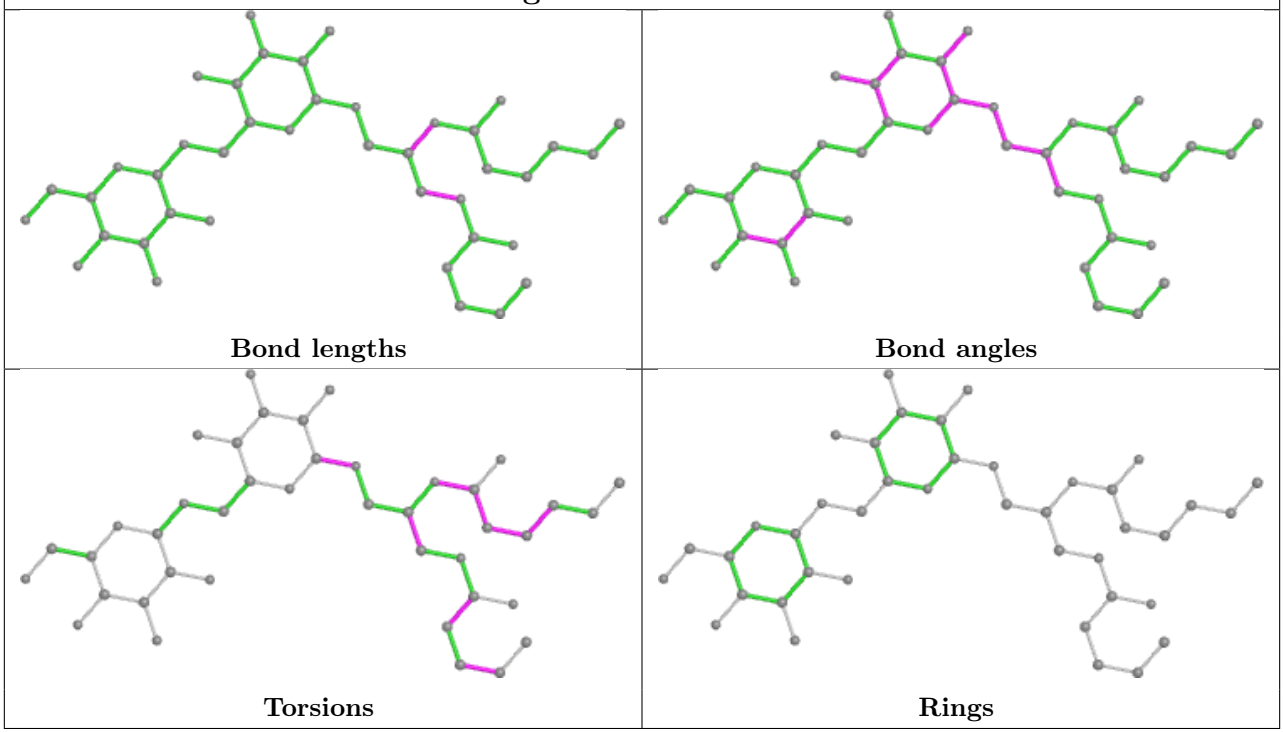


Rings

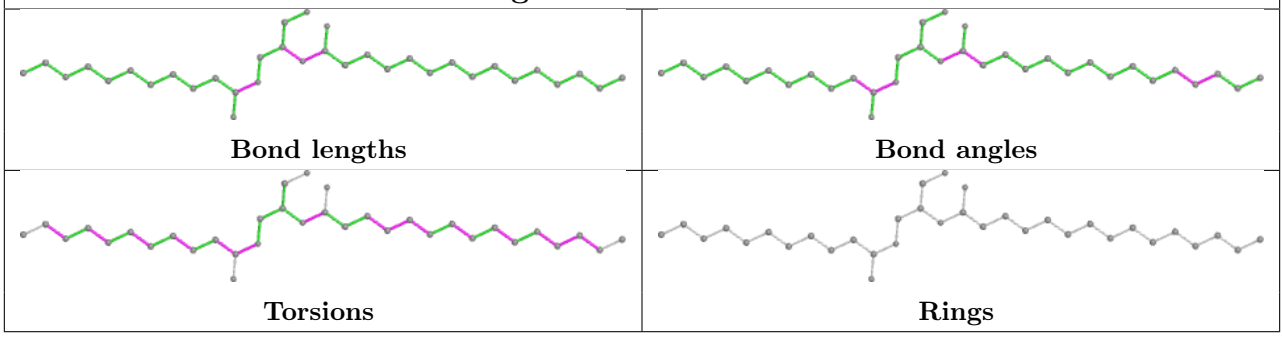
Ligand A1LXL P 701



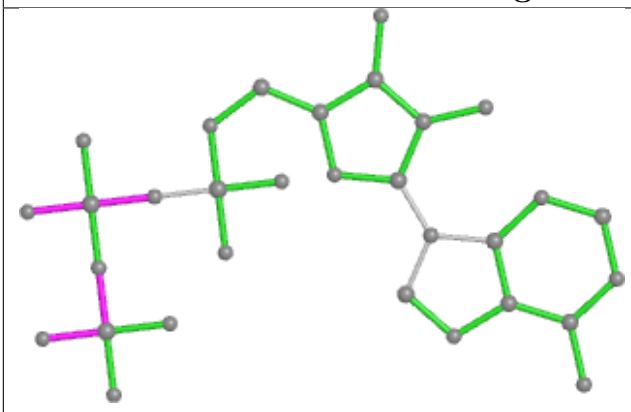
Ligand DGD L 401



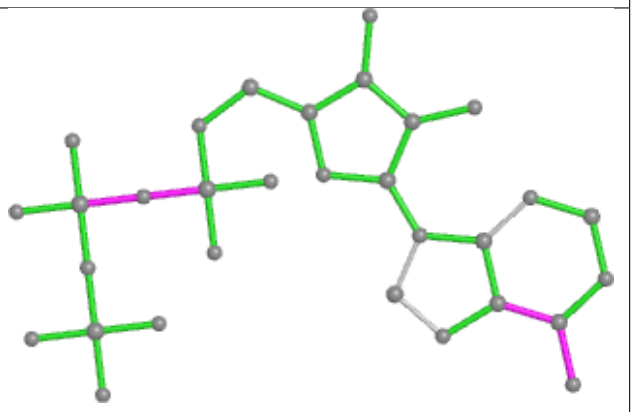
Ligand DGA D 3001



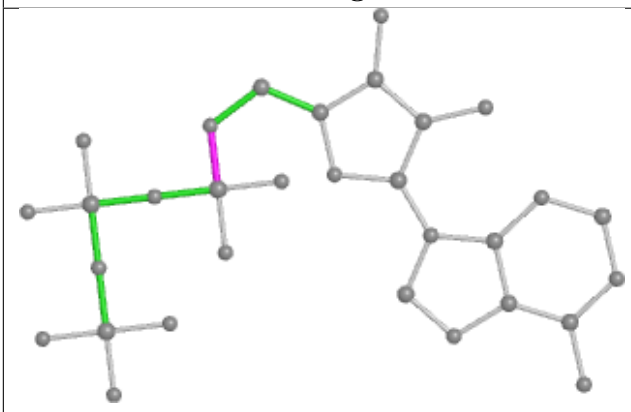
Ligand ANP E 1001



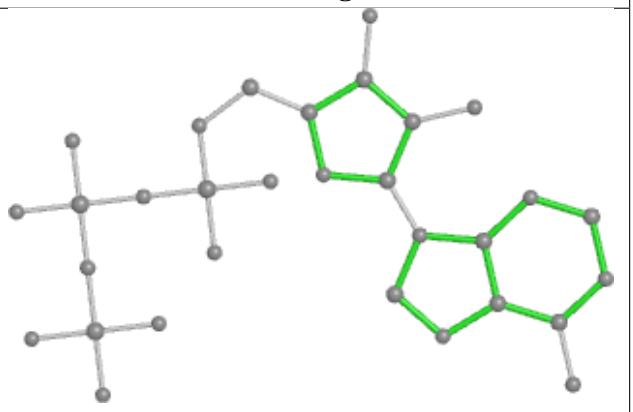
Bond lengths



Bond angles

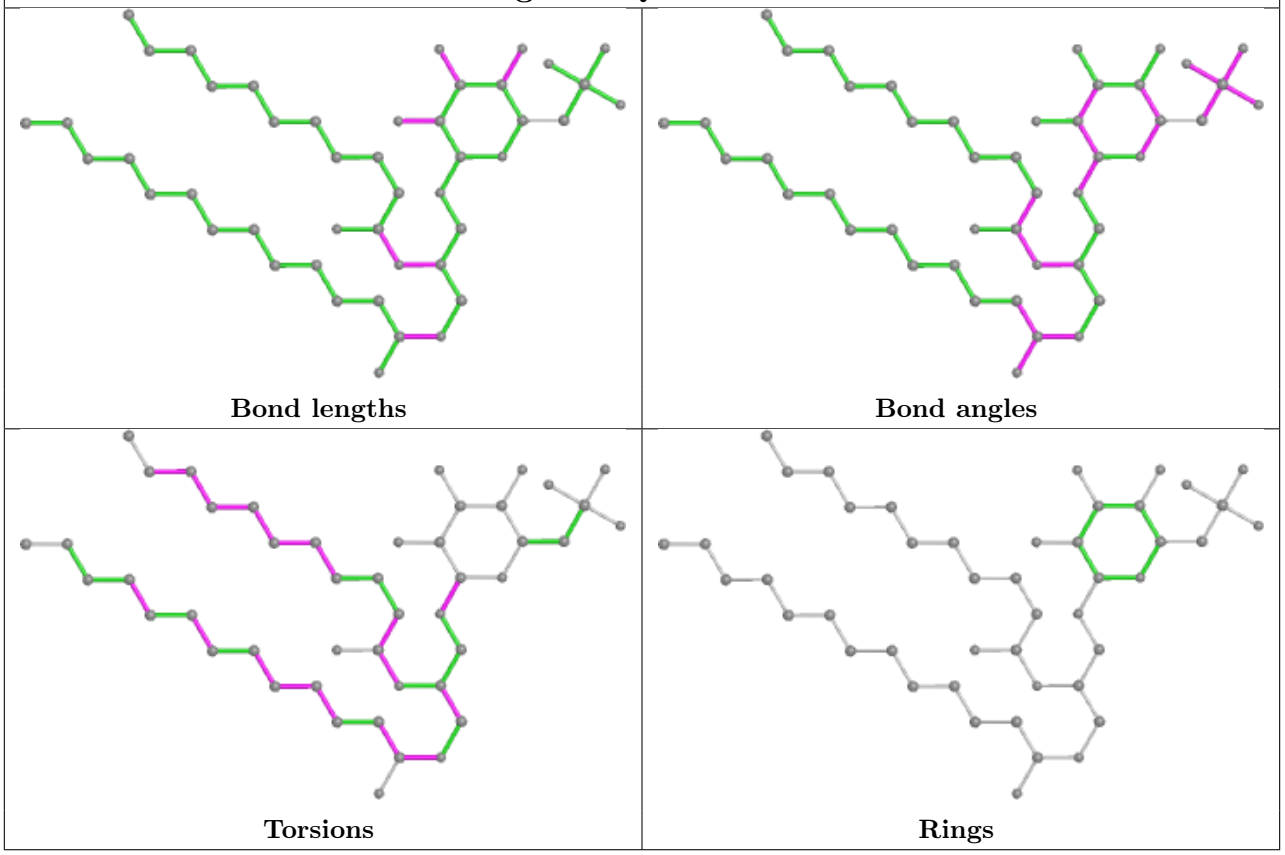


Torsions



Rings

Ligand SQD A 1204



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.

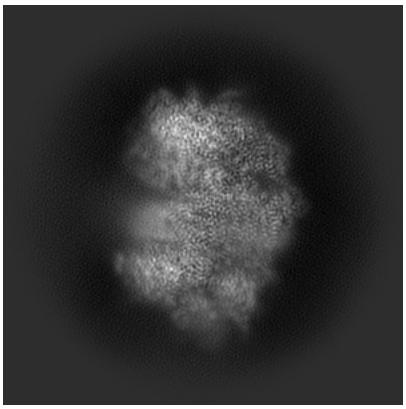
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-38589. These allow visual inspection of the internal detail of the map and identification of artifacts.

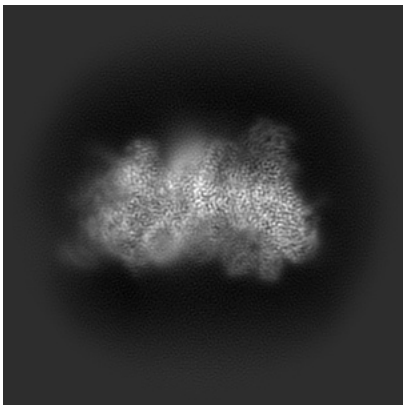
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

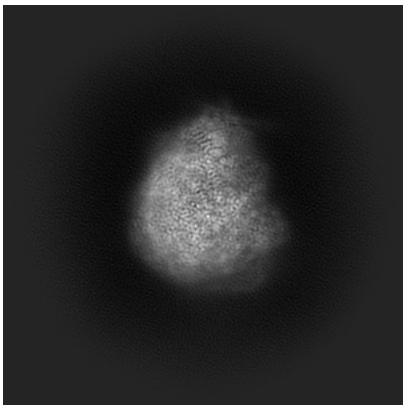
6.1.1 Primary map



X

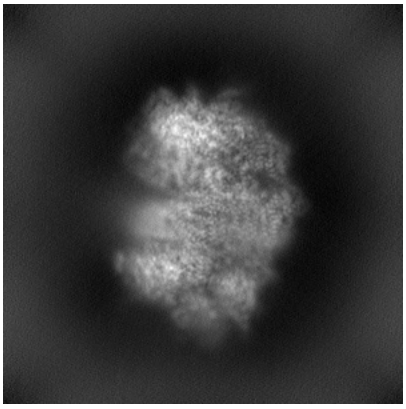


Y

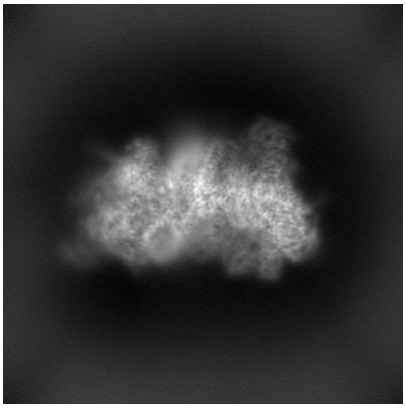


Z

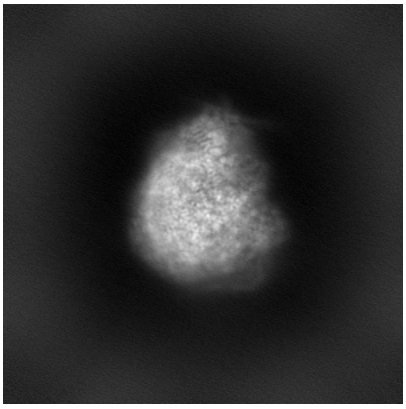
6.1.2 Raw map



X



Y

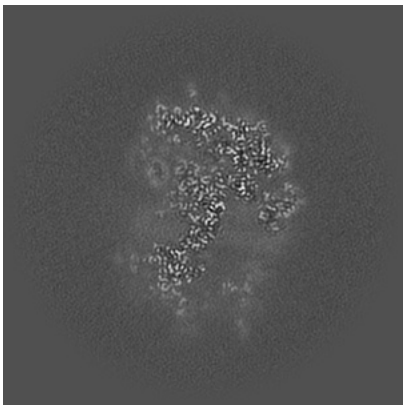


Z

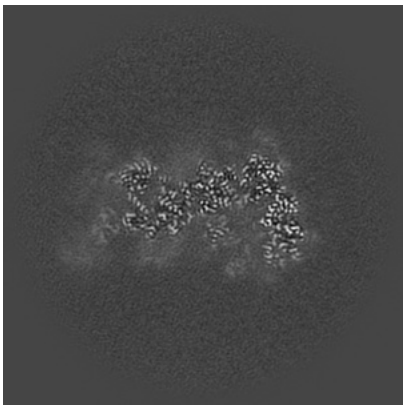
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

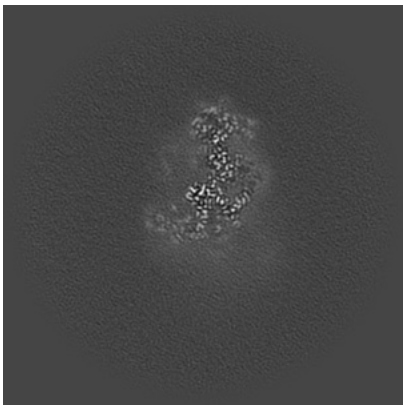
6.2.1 Primary map



X Index: 180

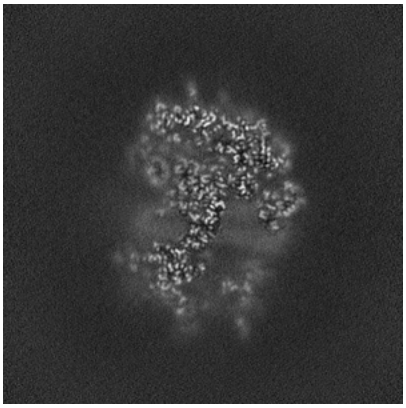


Y Index: 180

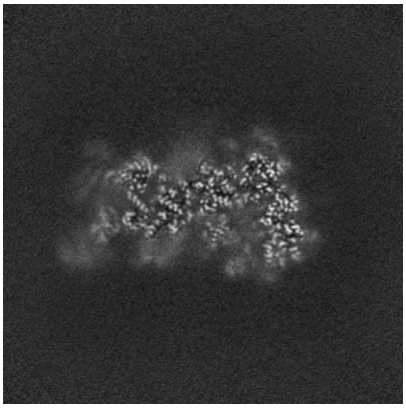


Z Index: 180

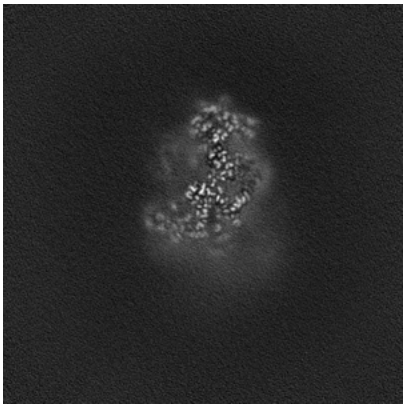
6.2.2 Raw map



X Index: 180



Y Index: 180

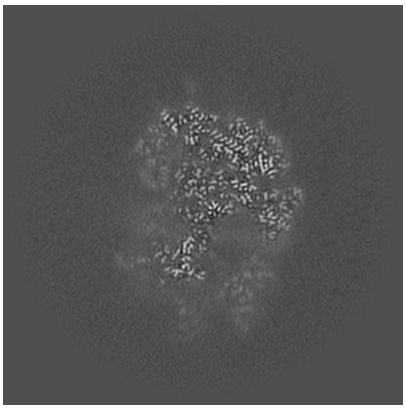


Z Index: 180

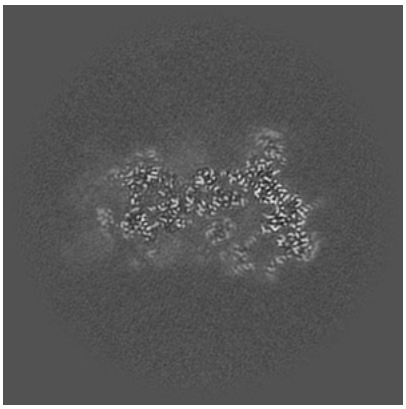
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

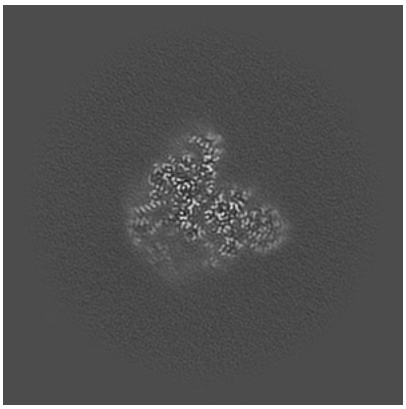
6.3.1 Primary map



X Index: 185

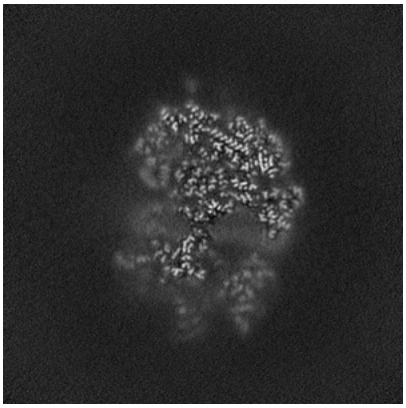


Y Index: 173

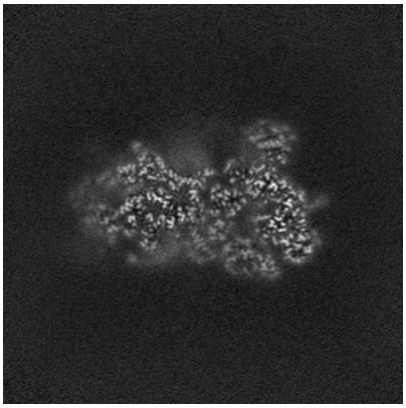


Z Index: 241

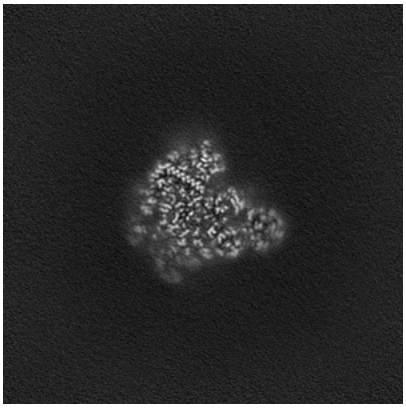
6.3.2 Raw map



X Index: 185



Y Index: 167

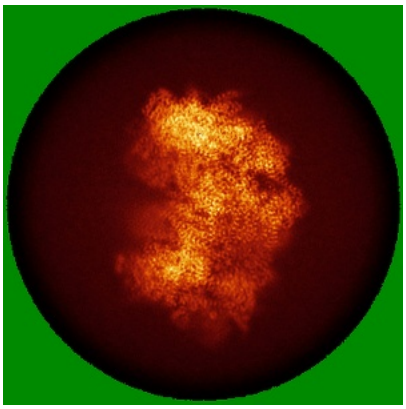


Z Index: 248

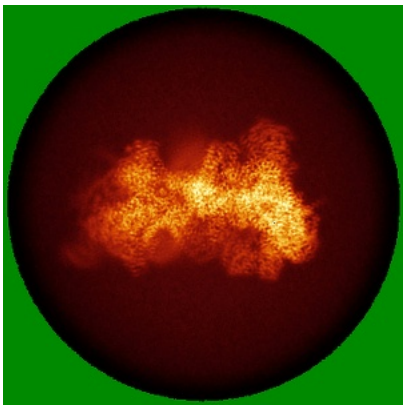
The images above show the largest variance slices of the map in three orthogonal directions.

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

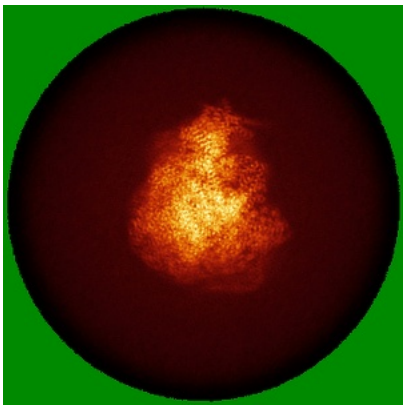
6.4.1 Primary map



X

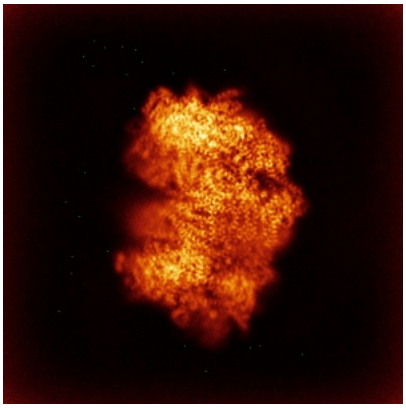


Y

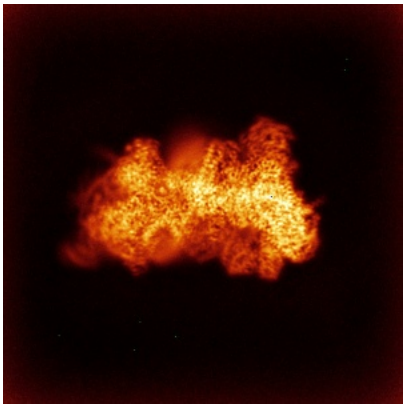


Z

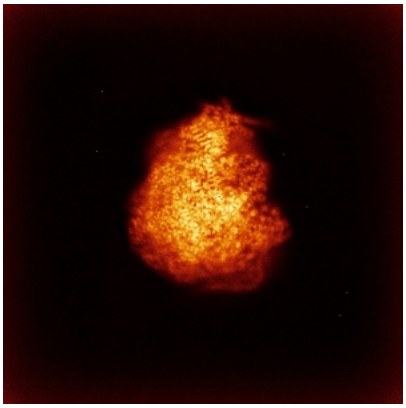
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.45. 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.

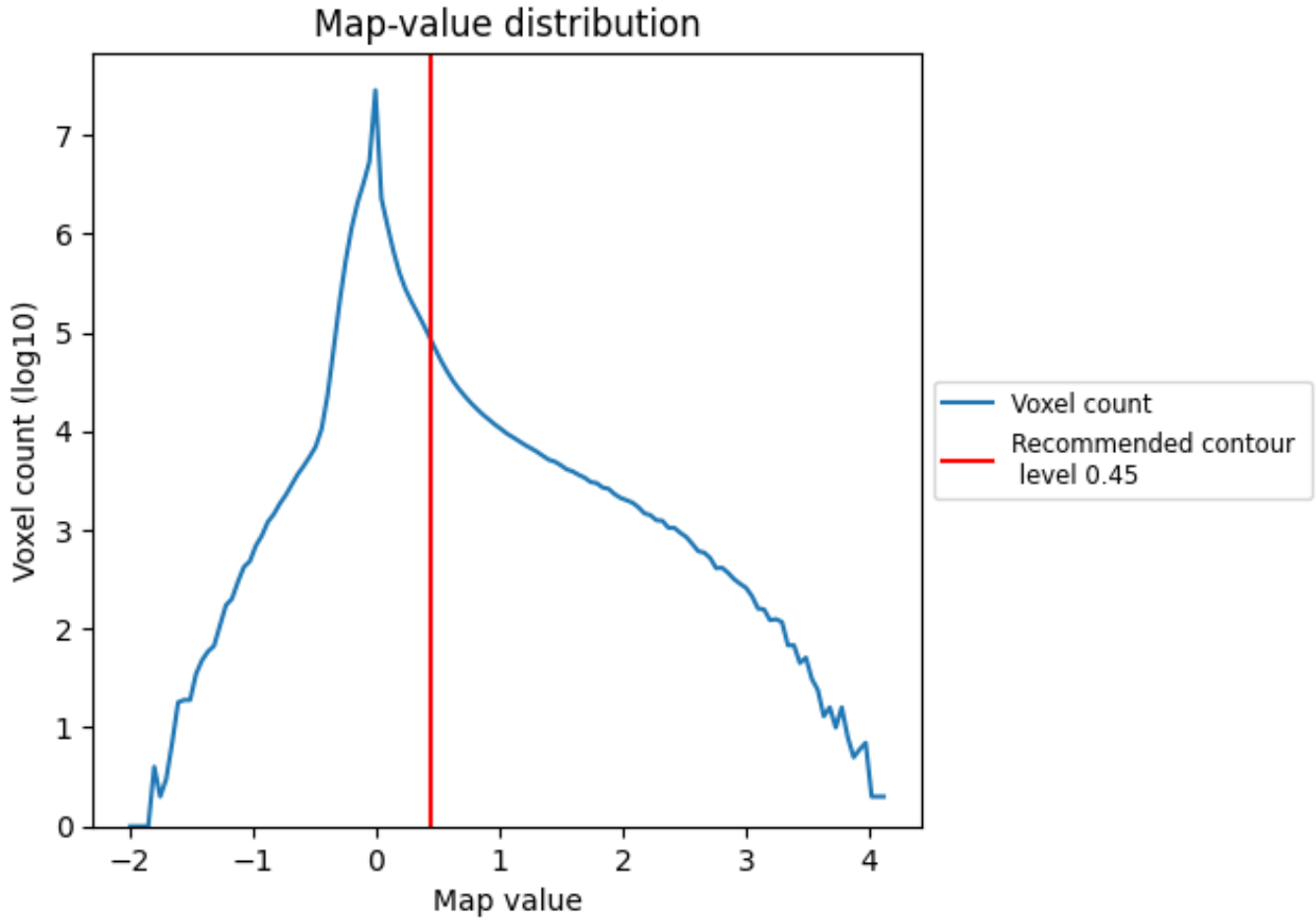
6.6 Mask visualisation (i)

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

7 Map analysis

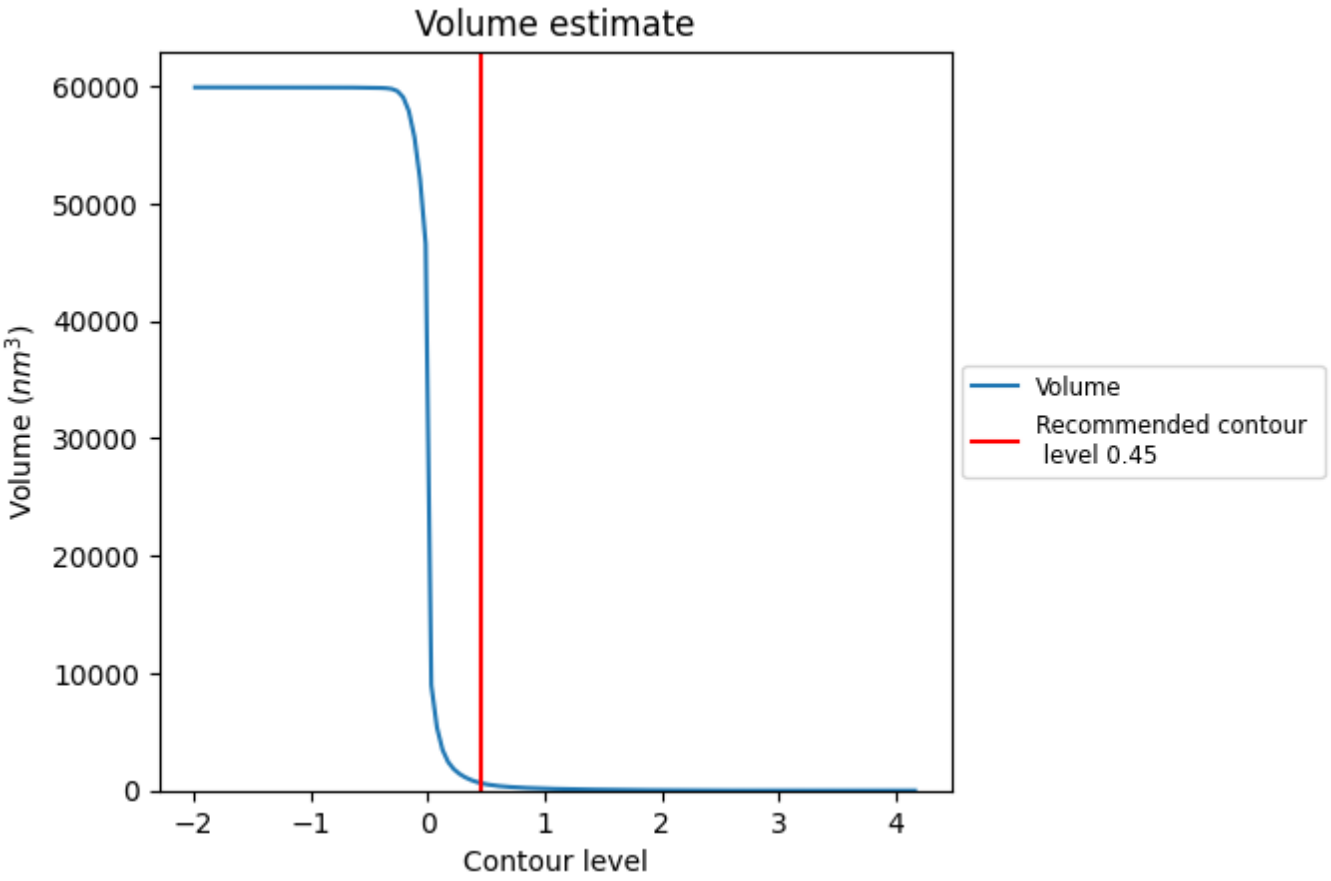
This section contains the results of statistical analysis of the map.

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.

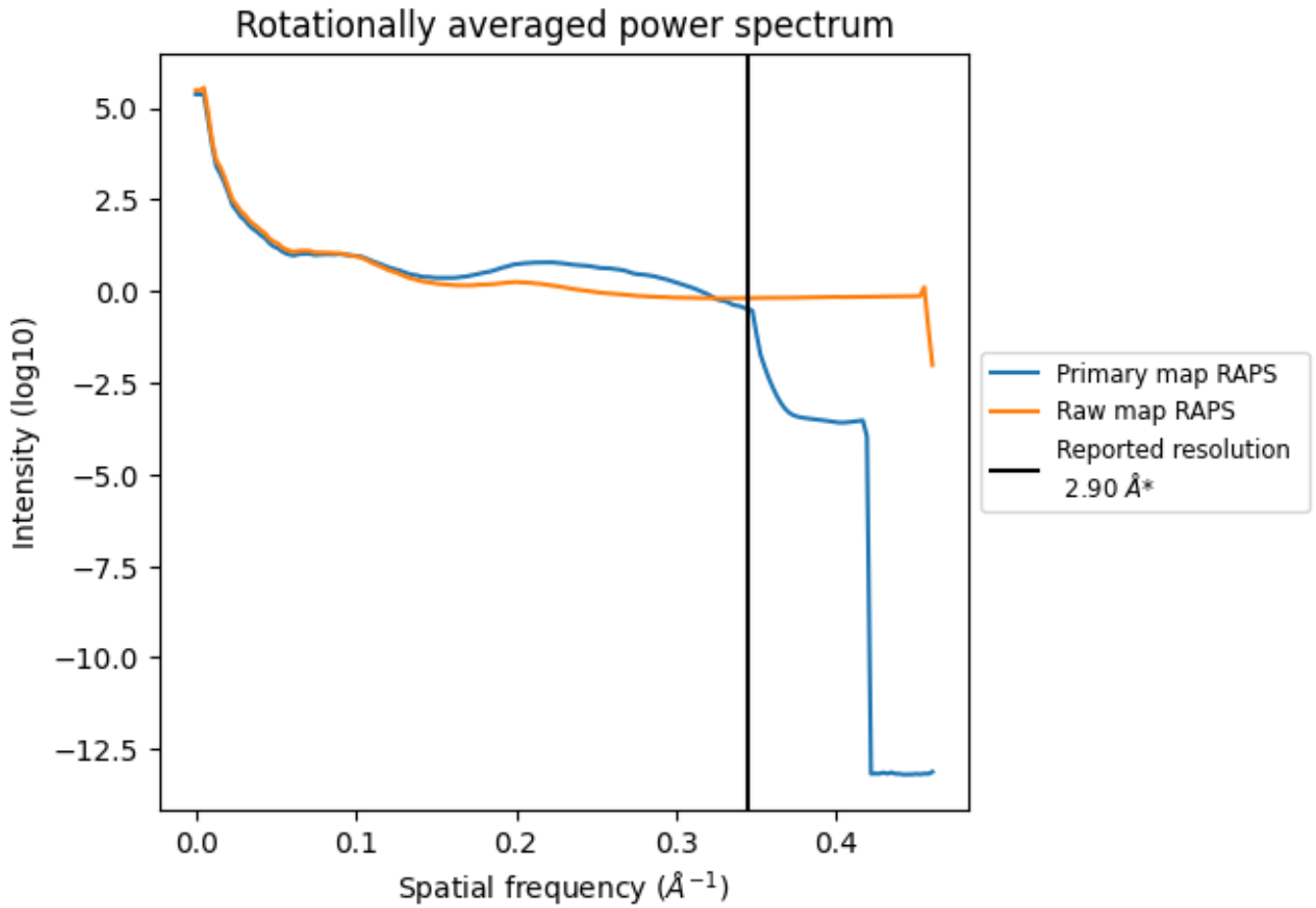
7.2 Volume estimate (i)



The volume at the recommended contour level is 643 nm^3; this corresponds to an approximate mass of 581 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)

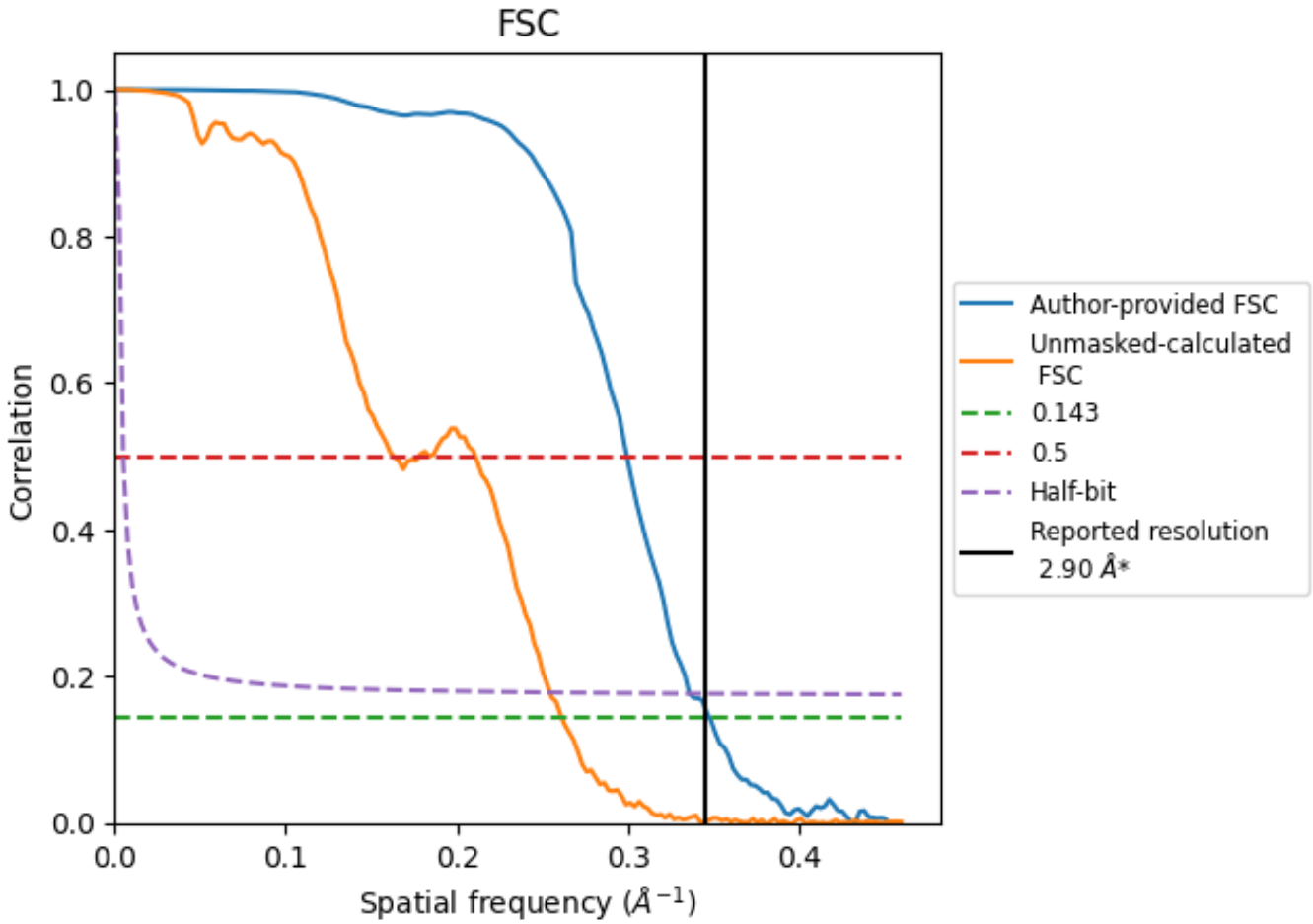


*Reported resolution corresponds to spatial frequency of 0.345 $Å^{-1}$

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 0.345 Å^{-1}

8.2 Resolution estimates (i)

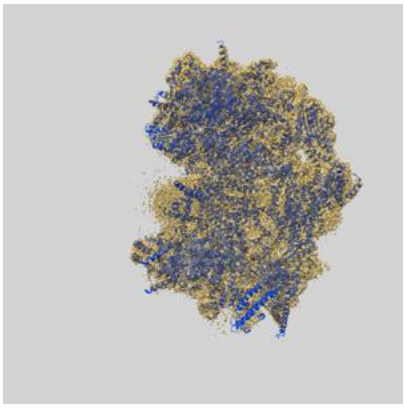
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.88	3.34	2.97
Unmasked-calculated*	3.83	6.14	3.93

*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 3.83 differs from the reported value 2.9 by more than 10 %

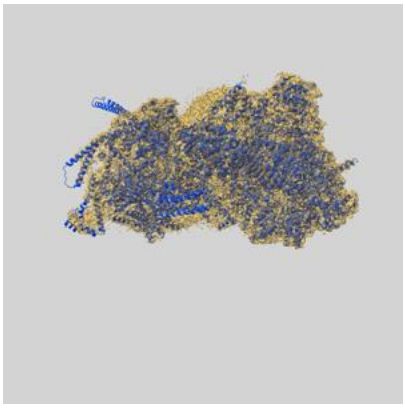
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-38589 and PDB model 8XQW. Per-residue inclusion information can be found in section 3 on page 13.

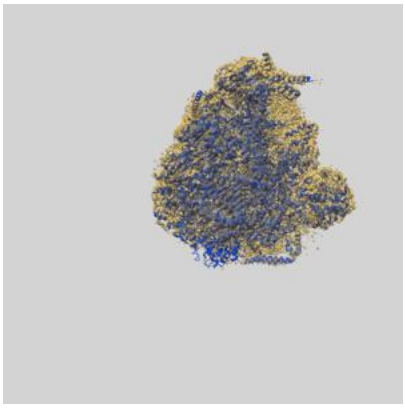
9.1 Map-model overlay



X



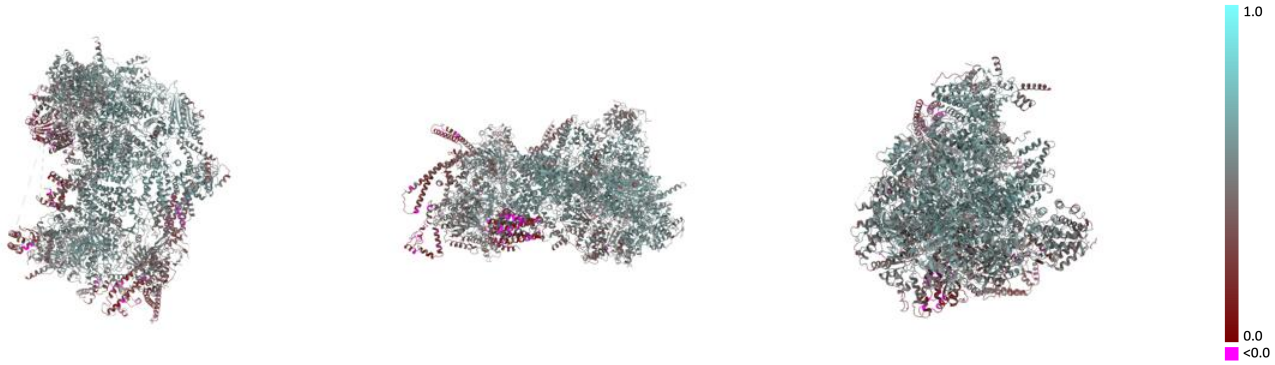
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.45 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

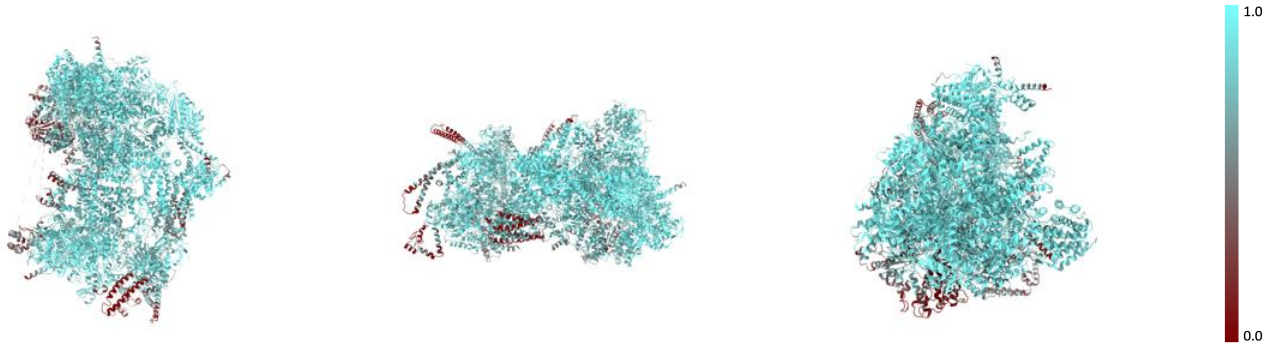
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

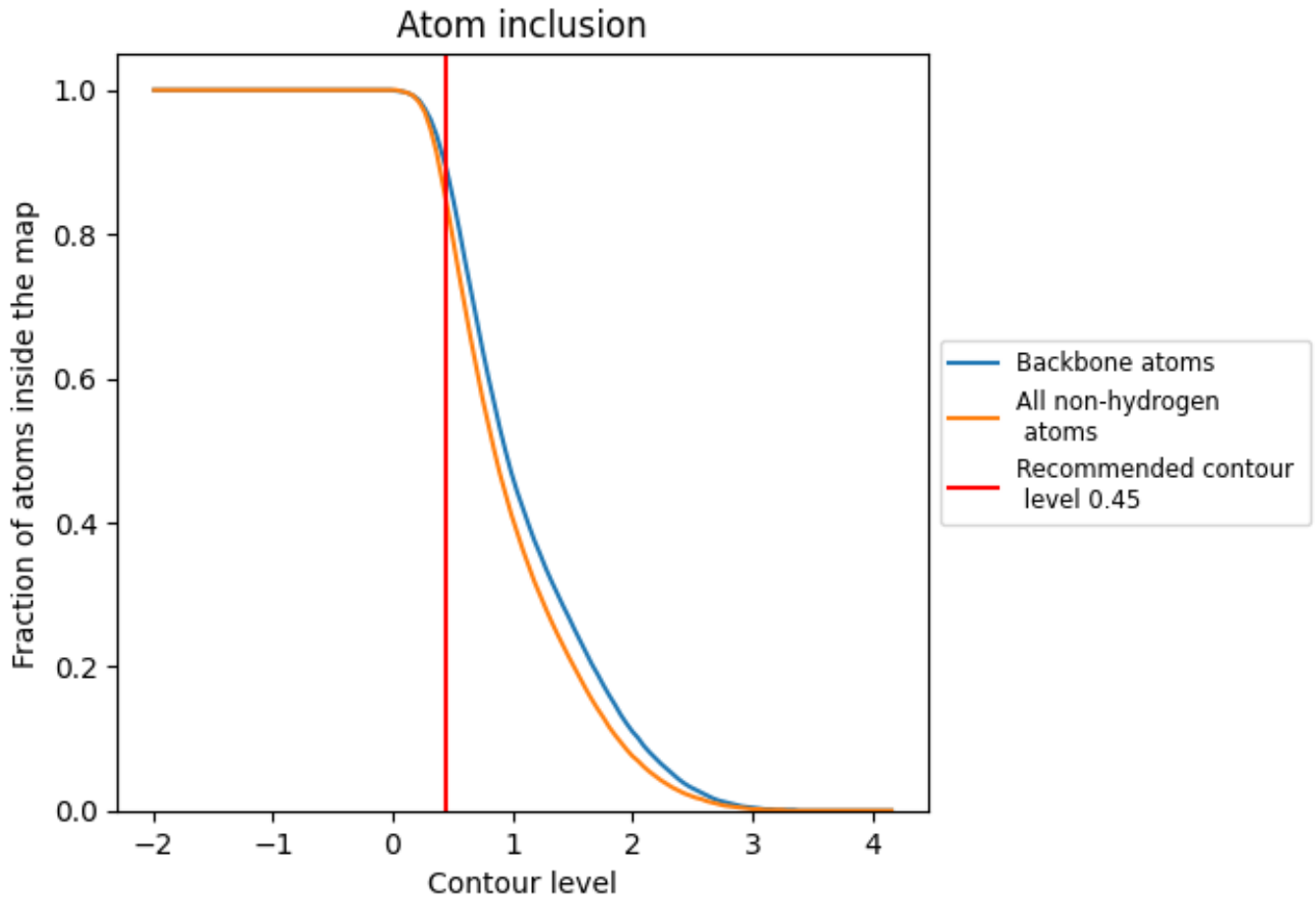
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.45).

9.4 Atom inclusion (i)



At the recommended contour level, 89% of all backbone atoms, 84% 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 (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8430	0.5020
A	0.8970	0.5340
B	0.8780	0.5240
C	0.8810	0.5130
D	0.9010	0.5380
E	0.7800	0.4730
F	0.7390	0.4900
G	0.8360	0.4830
H	0.9390	0.5520
I	0.9530	0.5790
J	0.9010	0.5370
K	0.9660	0.5890
L	0.8560	0.5360
M	0.9240	0.5450
N	0.8930	0.5420
O	0.6210	0.3320
P	0.6970	0.3820
Q	0.6270	0.3780
R	0.8860	0.5280
S	0.7510	0.4620
T	0.6370	0.3630
U	0.9190	0.4750
V	0.7530	0.3300