



wwPDB EM Validation Summary Report ⓘ

Dec 18, 2022 – 09:01 pm GMT

PDB ID : 7AX3
EMDB ID : EMD-11932
Title : CryoEM structure of the super-constricted two-start dynamin 1 filament
Authors : Liu, J.W.; Zhang, P.J.
Deposited on : 2020-11-09
Resolution : 3.74 Å(reported)

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 ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.4, 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) : 2.31.3

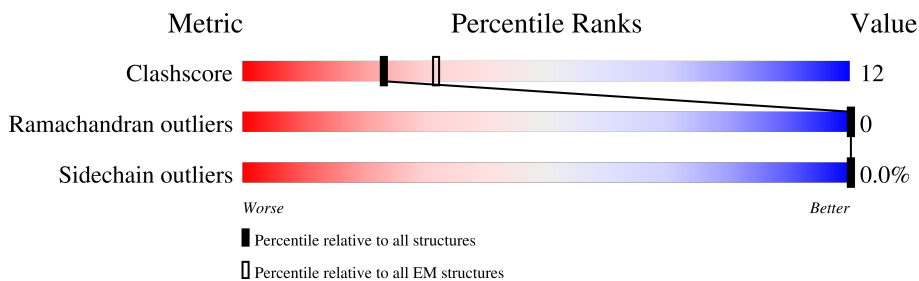
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.74 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.






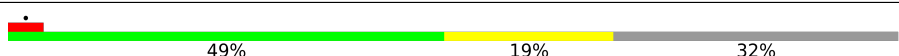




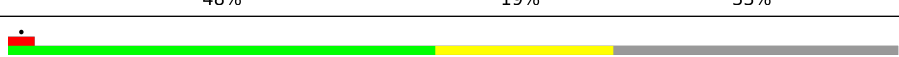










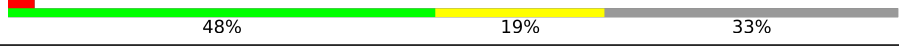





Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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

Mol	Chain	Length	Quality of chain
1	A	864	
1	A2	864	
1	B	864	
1	B2	864	
1	C	864	
1	C2	864	
1	D	864	
1	D2	864	




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Mol	Chain	Length	Quality of chain
1	E	864	 48% 20% 32%
1	E2	864	 5% 49% 18% 33%
1	F	864	 49% 19% 33%
1	F2	864	 49% 19% 32%
1	G	864	 48% 20% 32%
1	G2	864	 48% 19% 33%
1	H	864	 49% 18% 33%
1	H2	864	 48% 19% 33%
1	I	864	 48% 20% 32%
1	I2	864	 6% 49% 18% 33%
1	J	864	 5% 50% 18% 33%
1	J2	864	 49% 18% 33%
1	K	864	 49% 19% 32%
1	L	864	 6% 49% 19% 32%
1	M	864	 48% 19% 33%
1	N	864	 48% 20% 32%
1	O	864	 48% 19% 33%
1	P	864	 47% 20% 32%
1	Q	864	 48% 19% 33%
1	R	864	 48% 20% 32%
1	S	864	 48% 19% 33%
1	T	864	 47% 21% 32%
1	U	864	 48% 19% 33%
1	V	864	 48% 20% 32%
1	W	864	 49% 18% 33%

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Mol	Chain	Length	Quality of chain
1	X	864	 48% 20% 32%
1	Y	864	 49% 19% 33%
1	Z	864	 48% 20% 32%

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 169717 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 Dynamin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C2	587	4703	2955	834	888	26	0	0
1	D2	582	4662	2931	825	881	25	0	0
1	A2	587	4703	2955	834	888	26	0	0
1	B2	582	4662	2931	825	881	25	0	0
1	A	587	4703	2955	834	888	26	0	0
1	B	582	4662	2931	825	881	25	0	0
1	C	587	4703	2955	834	888	26	0	0
1	D	582	4662	2931	825	881	25	0	0
1	E	587	4703	2955	834	888	26	0	0
1	F	582	4662	2931	825	881	25	0	0
1	G	587	4703	2955	834	888	26	0	0
1	H	582	4662	2931	825	881	25	0	0
1	I	587	4703	2955	834	888	26	0	0
1	J	582	4662	2931	825	881	25	0	0
1	K	587	4703	2955	834	888	26	0	0
1	L	587	4703	2955	834	888	26	0	0
1	M	582	4662	2931	825	881	25	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
1	N	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	O	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	P	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	Q	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	R	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	S	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	T	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	U	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	V	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	W	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	X	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	Y	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	Z	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	E2	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	F2	587	Total	C	N	O	S	0	0
			4703	2955	834	888	26		
1	G2	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	H2	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	I2	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		
1	J2	582	Total	C	N	O	S	0	0
			4662	2931	825	881	25		

There are 36 discrepancies between the modelled and reference sequences:

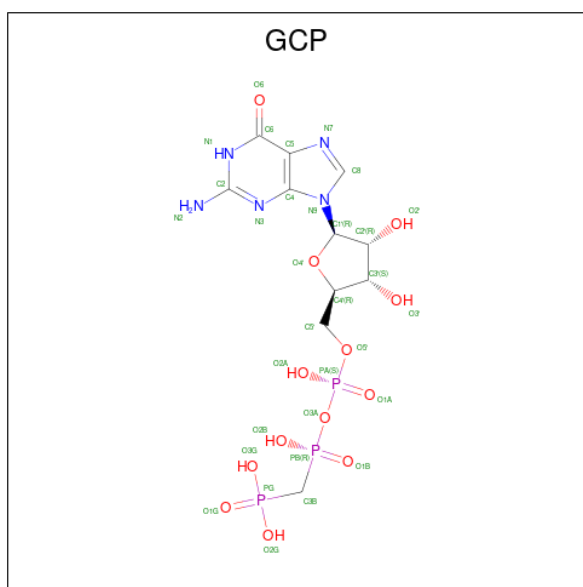
Chain	Residue	Modelled	Actual	Comment	Reference
C2	744	ASN	ASP	variant	UNP Q05193

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Chain	Residue	Modelled	Actual	Comment	Reference
D2	744	ASN	ASP	variant	UNP Q05193
A2	744	ASN	ASP	variant	UNP Q05193
B2	744	ASN	ASP	variant	UNP Q05193
A	744	ASN	ASP	variant	UNP Q05193
B	744	ASN	ASP	variant	UNP Q05193
C	744	ASN	ASP	variant	UNP Q05193
D	744	ASN	ASP	variant	UNP Q05193
E	744	ASN	ASP	variant	UNP Q05193
F	744	ASN	ASP	variant	UNP Q05193
G	744	ASN	ASP	variant	UNP Q05193
H	744	ASN	ASP	variant	UNP Q05193
I	744	ASN	ASP	variant	UNP Q05193
J	744	ASN	ASP	variant	UNP Q05193
K	744	ASN	ASP	variant	UNP Q05193
L	744	ASN	ASP	variant	UNP Q05193
M	744	ASN	ASP	variant	UNP Q05193
N	744	ASN	ASP	variant	UNP Q05193
O	744	ASN	ASP	variant	UNP Q05193
P	744	ASN	ASP	variant	UNP Q05193
Q	744	ASN	ASP	variant	UNP Q05193
R	744	ASN	ASP	variant	UNP Q05193
S	744	ASN	ASP	variant	UNP Q05193
T	744	ASN	ASP	variant	UNP Q05193
U	744	ASN	ASP	variant	UNP Q05193
V	744	ASN	ASP	variant	UNP Q05193
W	744	ASN	ASP	variant	UNP Q05193
X	744	ASN	ASP	variant	UNP Q05193
Y	744	ASN	ASP	variant	UNP Q05193
Z	744	ASN	ASP	variant	UNP Q05193
E2	744	ASN	ASP	variant	UNP Q05193
F2	744	ASN	ASP	variant	UNP Q05193
G2	744	ASN	ASP	variant	UNP Q05193
H2	744	ASN	ASP	variant	UNP Q05193
I2	744	ASN	ASP	variant	UNP Q05193
J2	744	ASN	ASP	variant	UNP Q05193

- Molecule 2 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (three-letter code: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	C2	1	Total 32	11	5	13	3	0
2	D2	1	Total 32	11	5	13	3	0
2	A2	1	Total 32	11	5	13	3	0
2	B2	1	Total 32	11	5	13	3	0
2	A	1	Total 32	11	5	13	3	0
2	B	1	Total 32	11	5	13	3	0
2	C	1	Total 32	11	5	13	3	0
2	D	1	Total 32	11	5	13	3	0
2	E	1	Total 32	11	5	13	3	0
2	F	1	Total 32	11	5	13	3	0
2	G	1	Total 32	11	5	13	3	0
2	H	1	Total 32	11	5	13	3	0
2	I	1	Total 32	11	5	13	3	0
2	J	1	Total 32	11	5	13	3	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	K	1	32	11	5	13	3	0
2	L	1	32	11	5	13	3	0
2	M	1	32	11	5	13	3	0
2	N	1	32	11	5	13	3	0
2	O	1	32	11	5	13	3	0
2	P	1	32	11	5	13	3	0
2	Q	1	32	11	5	13	3	0
2	R	1	32	11	5	13	3	0
2	S	1	32	11	5	13	3	0
2	T	1	32	11	5	13	3	0
2	U	1	32	11	5	13	3	0
2	V	1	32	11	5	13	3	0
2	W	1	32	11	5	13	3	0
2	X	1	32	11	5	13	3	0
2	Y	1	32	11	5	13	3	0
2	Z	1	32	11	5	13	3	0
2	E2	1	32	11	5	13	3	0
2	F2	1	32	11	5	13	3	0
2	G2	1	32	11	5	13	3	0
2	H2	1	32	11	5	13	3	0
2	I2	1	32	11	5	13	3	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	J2	1	32	11	5	13	3	0

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
3	C2	1	1	1	0
3	D2	1	1	1	0
3	A2	1	1	1	0
3	B2	1	1	1	0
3	A	1	1	1	0
3	B	1	1	1	0
3	C	1	1	1	0
3	D	1	1	1	0
3	E	1	1	1	0
3	F	1	1	1	0
3	G	1	1	1	0
3	H	1	1	1	0
3	I	1	1	1	0
3	J	1	1	1	0
3	K	1	1	1	0
3	L	1	1	1	0
3	M	1	1	1	0
3	N	1	1	1	0

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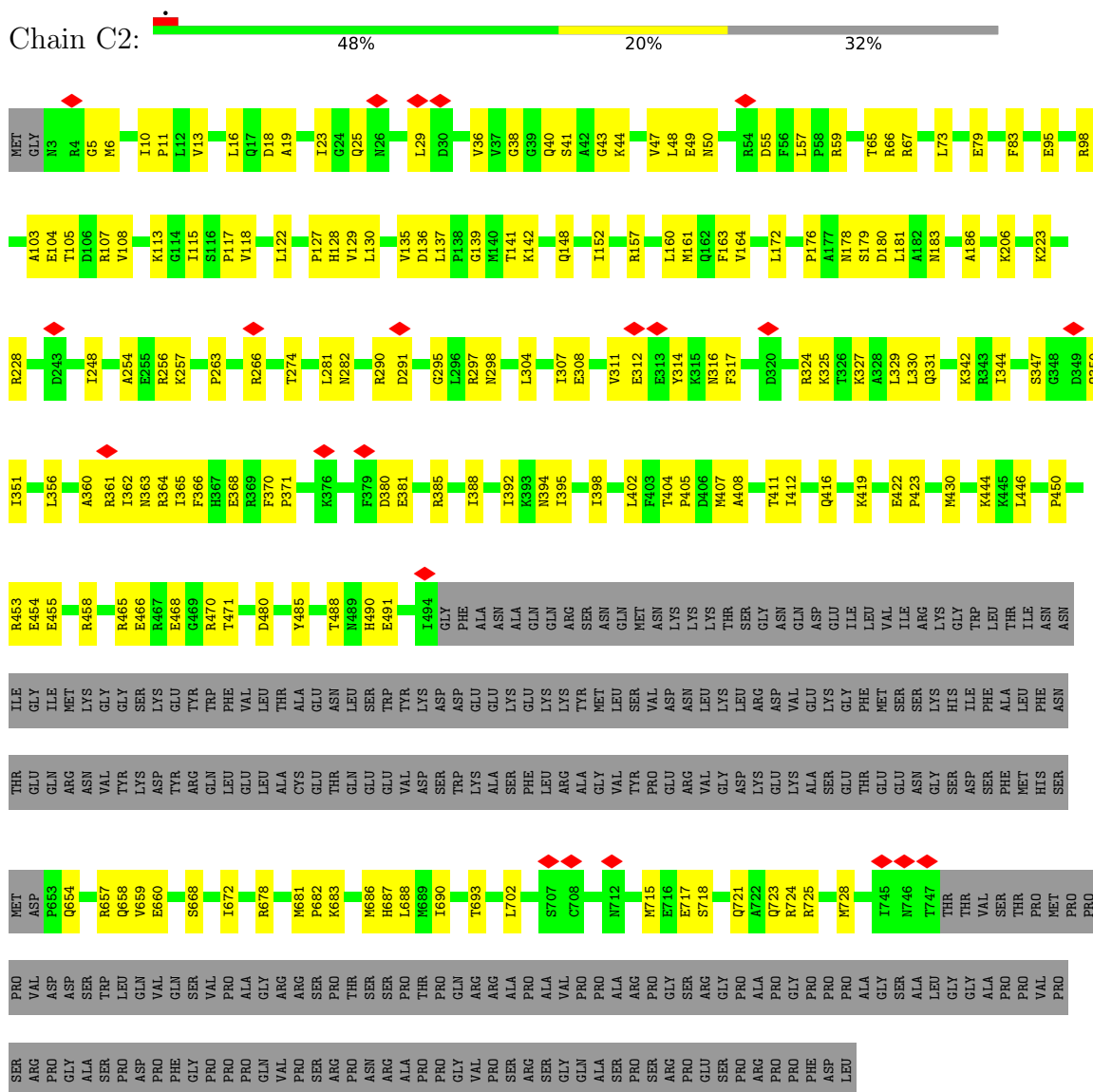
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Mol	Chain	Residues	Atoms		AltConf
3	O	1	Total 1	Mg 1	0
3	P	1	Total 1	Mg 1	0
3	Q	1	Total 1	Mg 1	0
3	R	1	Total 1	Mg 1	0
3	S	1	Total 1	Mg 1	0
3	T	1	Total 1	Mg 1	0
3	U	1	Total 1	Mg 1	0
3	V	1	Total 1	Mg 1	0
3	W	1	Total 1	Mg 1	0
3	X	1	Total 1	Mg 1	0
3	Y	1	Total 1	Mg 1	0
3	Z	1	Total 1	Mg 1	0
3	E2	1	Total 1	Mg 1	0
3	F2	1	Total 1	Mg 1	0
3	G2	1	Total 1	Mg 1	0
3	H2	1	Total 1	Mg 1	0
3	I2	1	Total 1	Mg 1	0
3	J2	1	Total 1	Mg 1	0

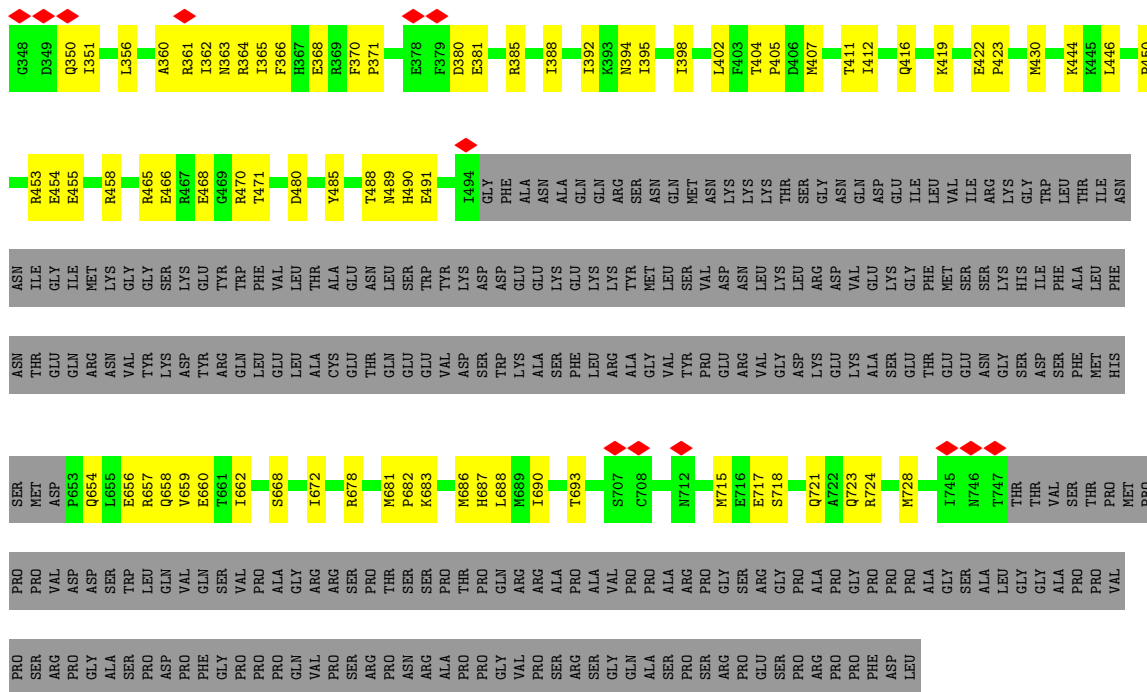
3 Residue-property plots

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

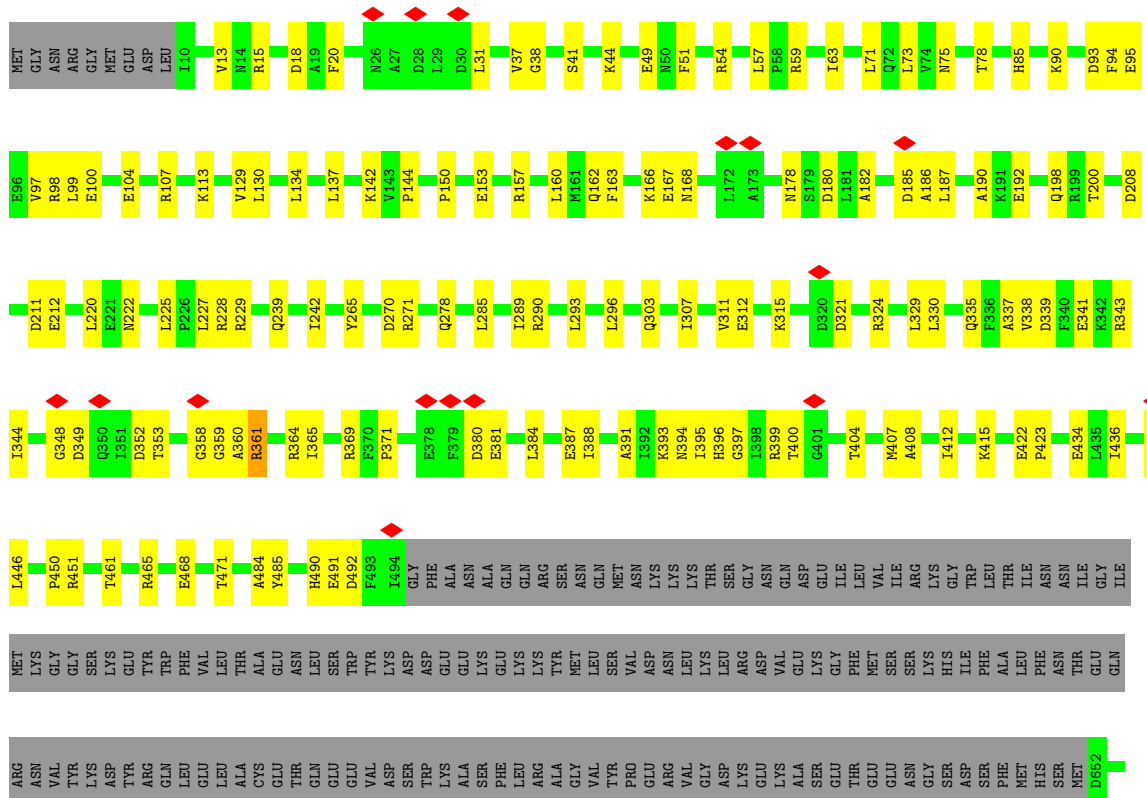
• Molecule 1: Dynammin-1

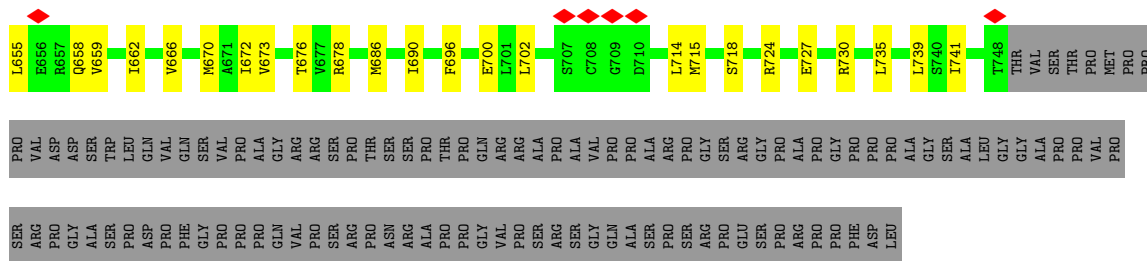


• Molecule 1: Dynammin-1

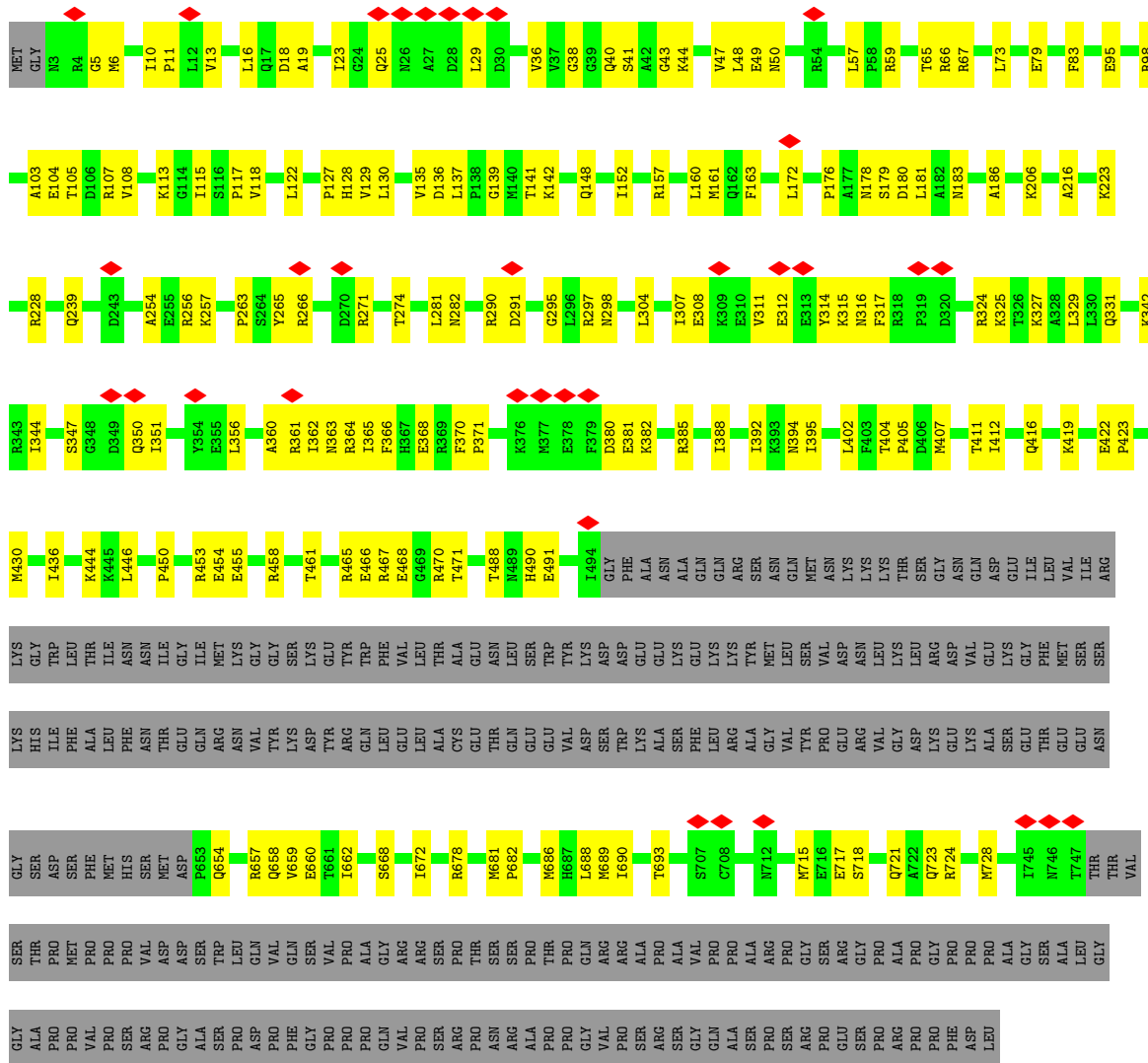


● Molecule 1: Dynamin-1



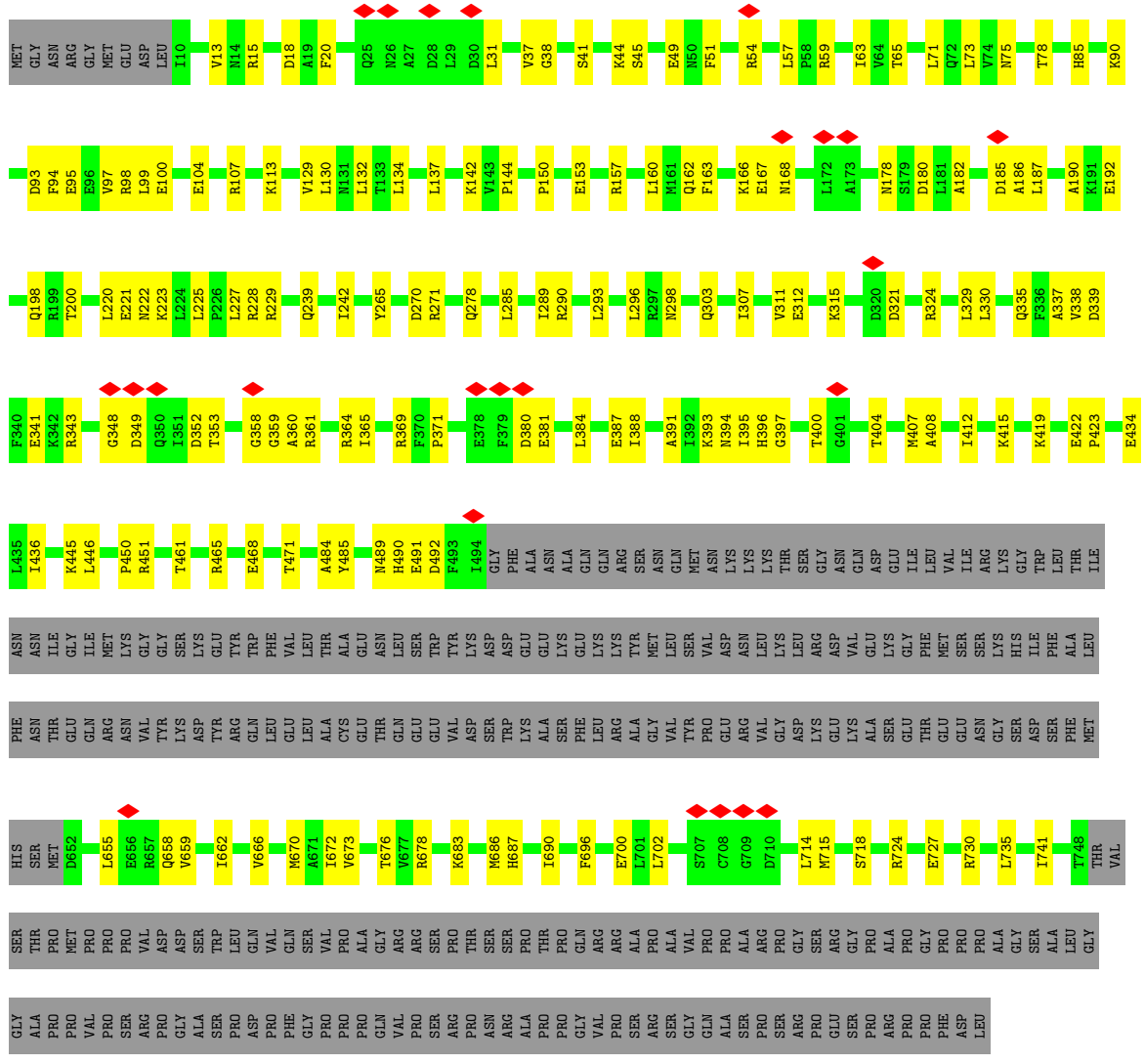


• Molecule 1: Dynamin-1

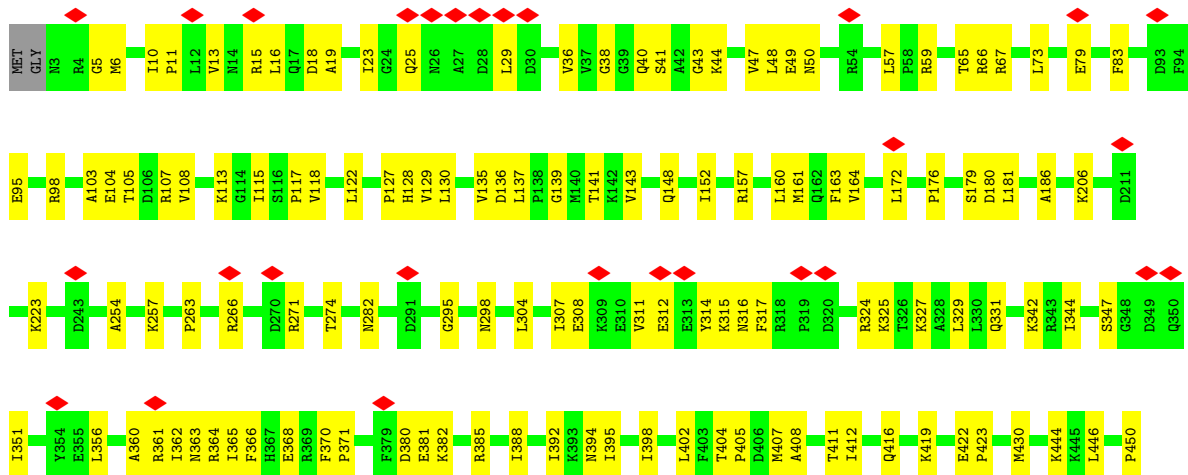


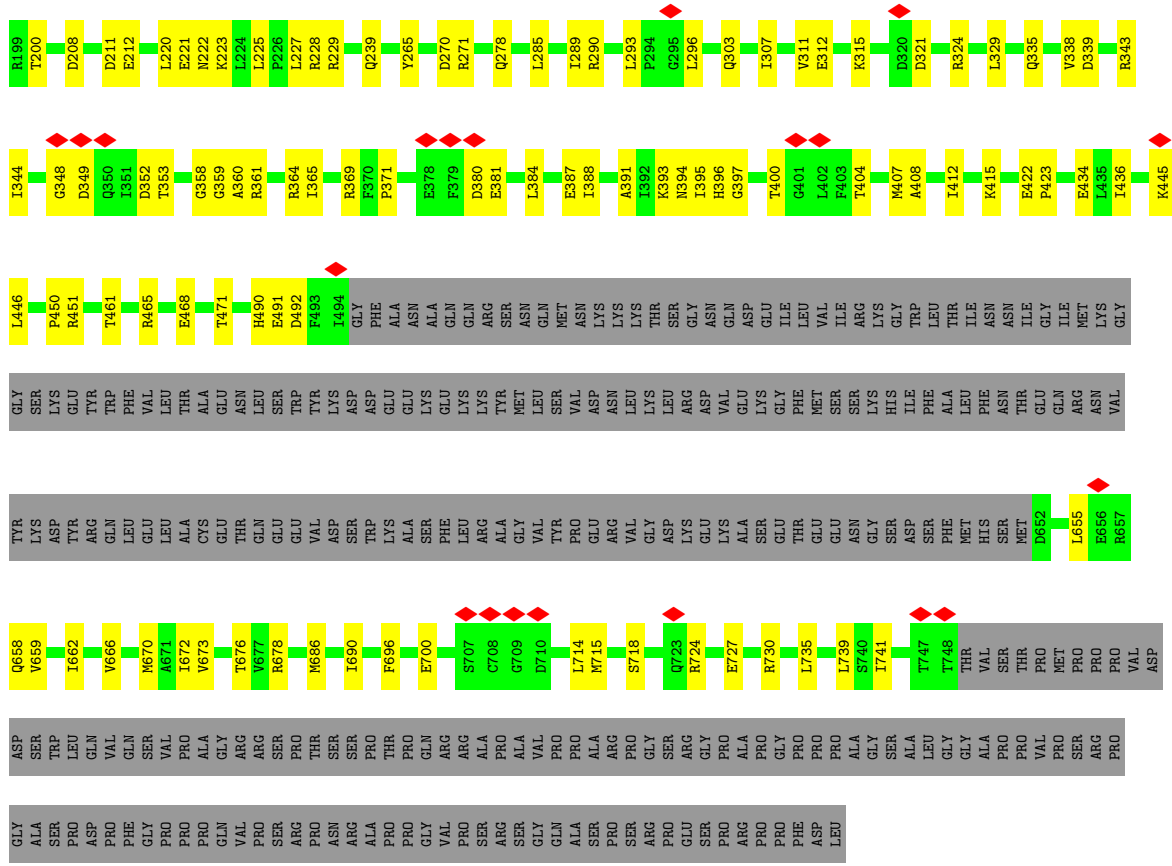
• Molecule 1: Dynamin-1



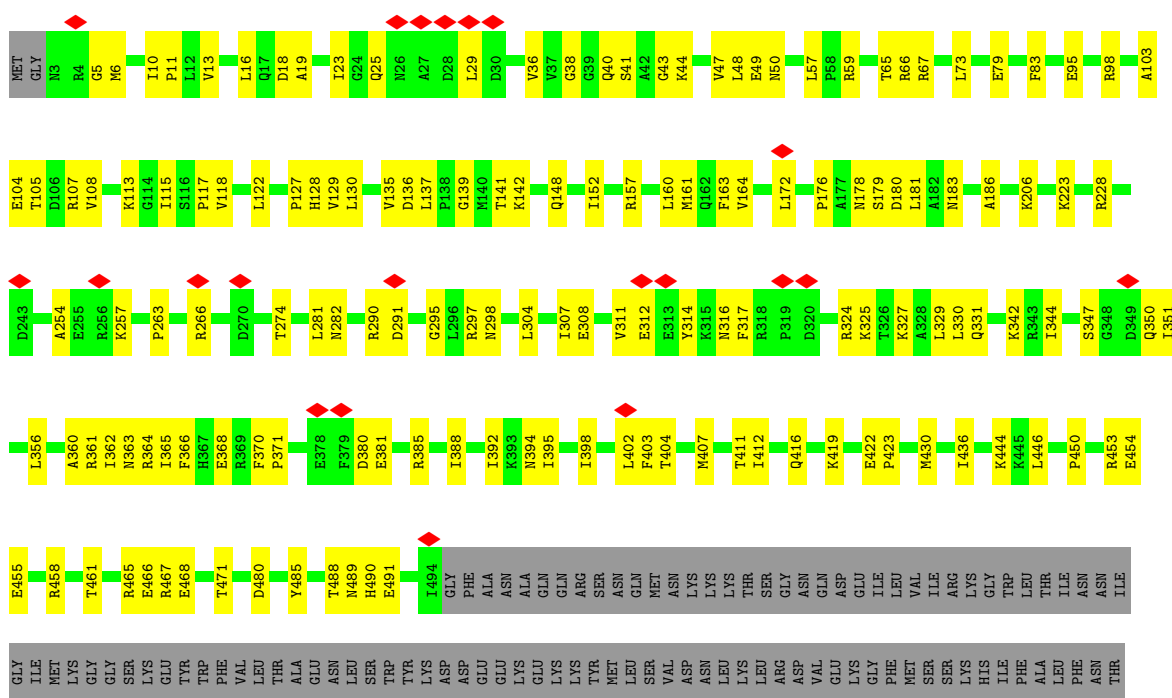


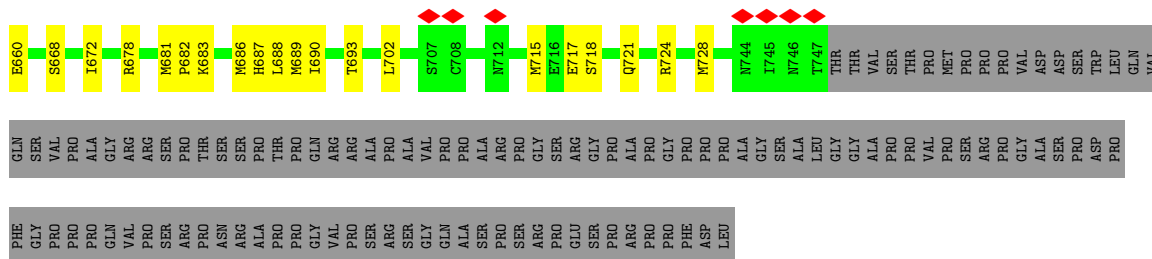
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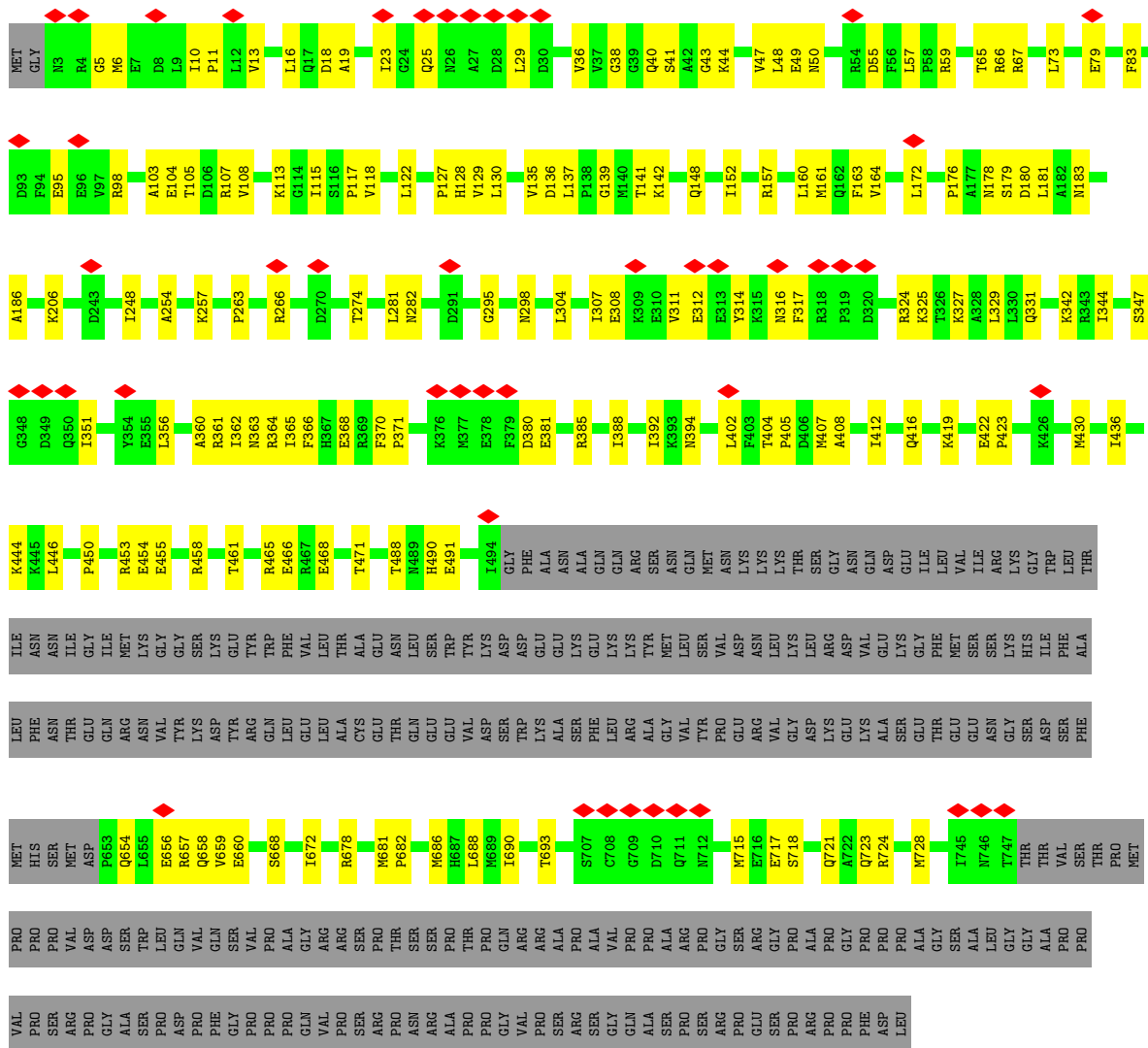


● Molecule 1: Dynamin-1



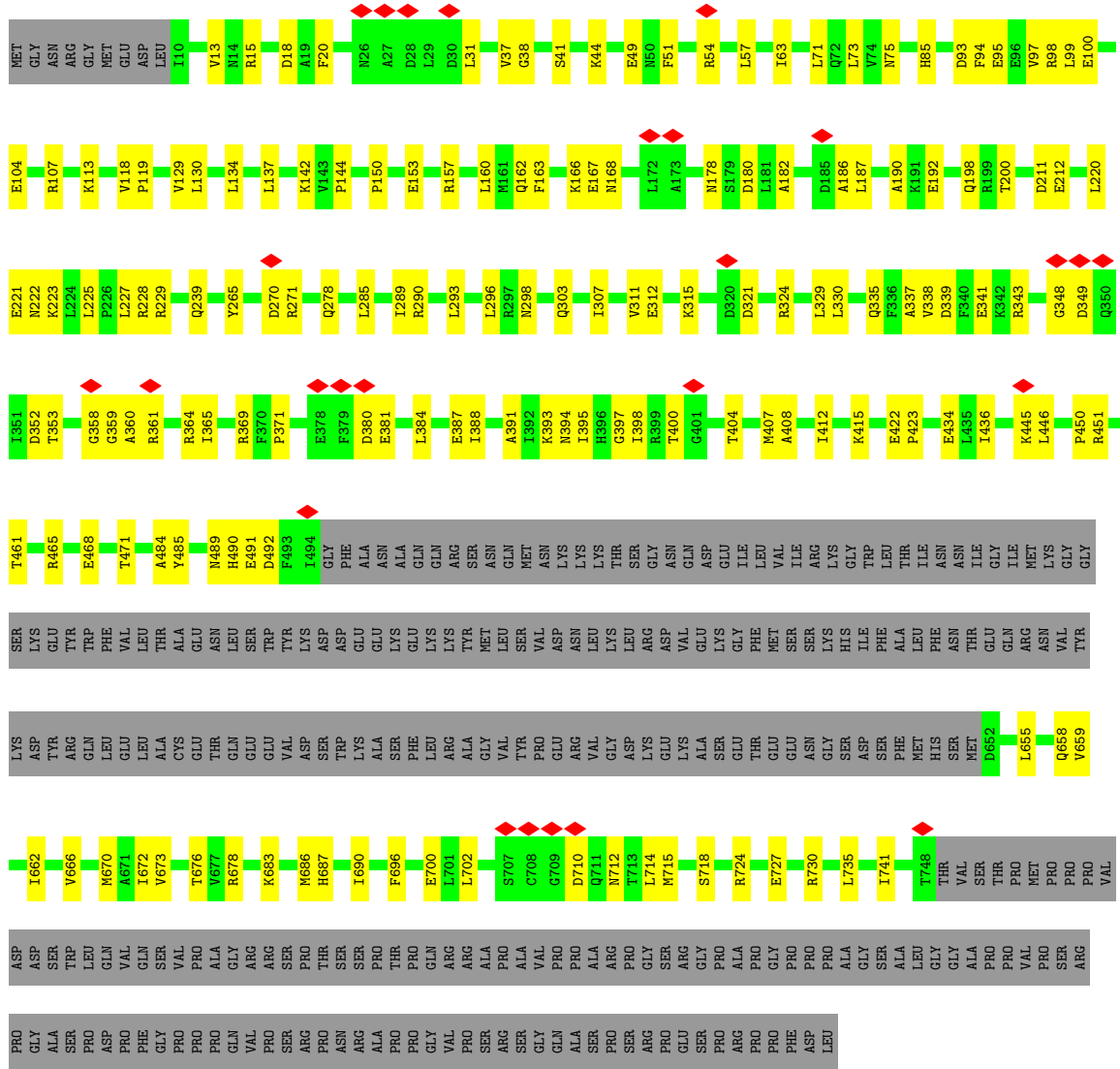


• Molecule 1: Dynammin-1

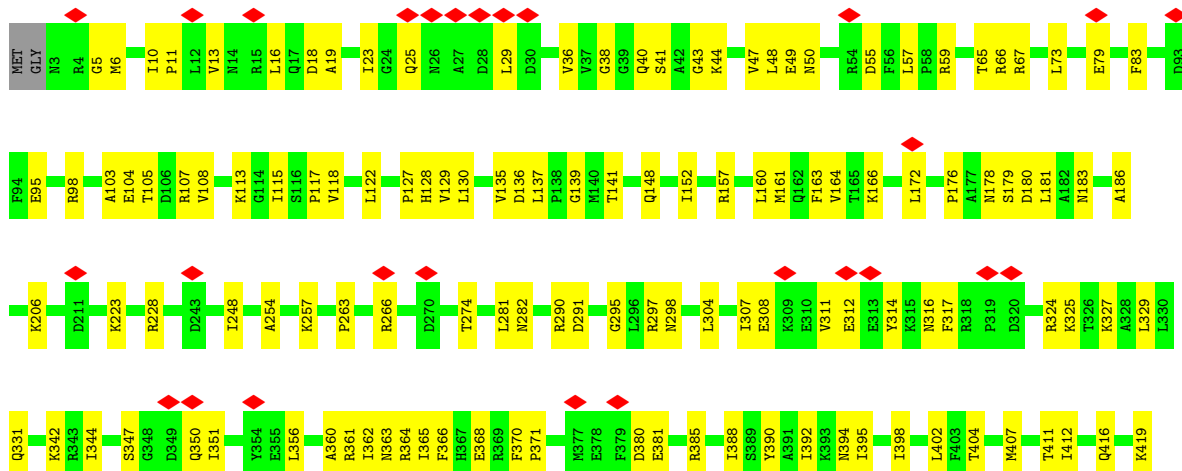


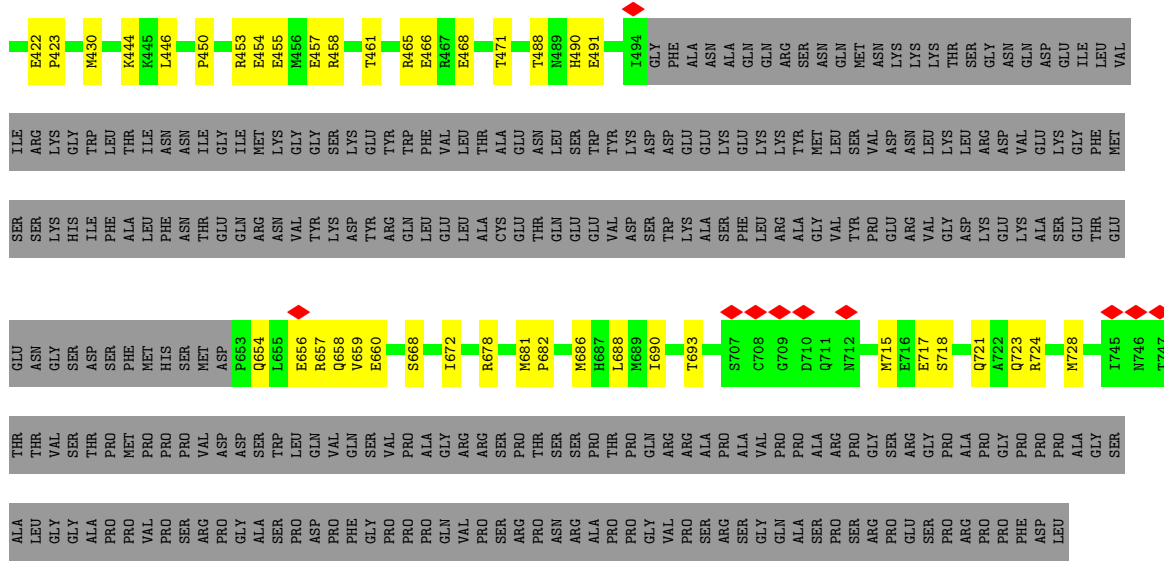
• Molecule 1: Dynammin-1



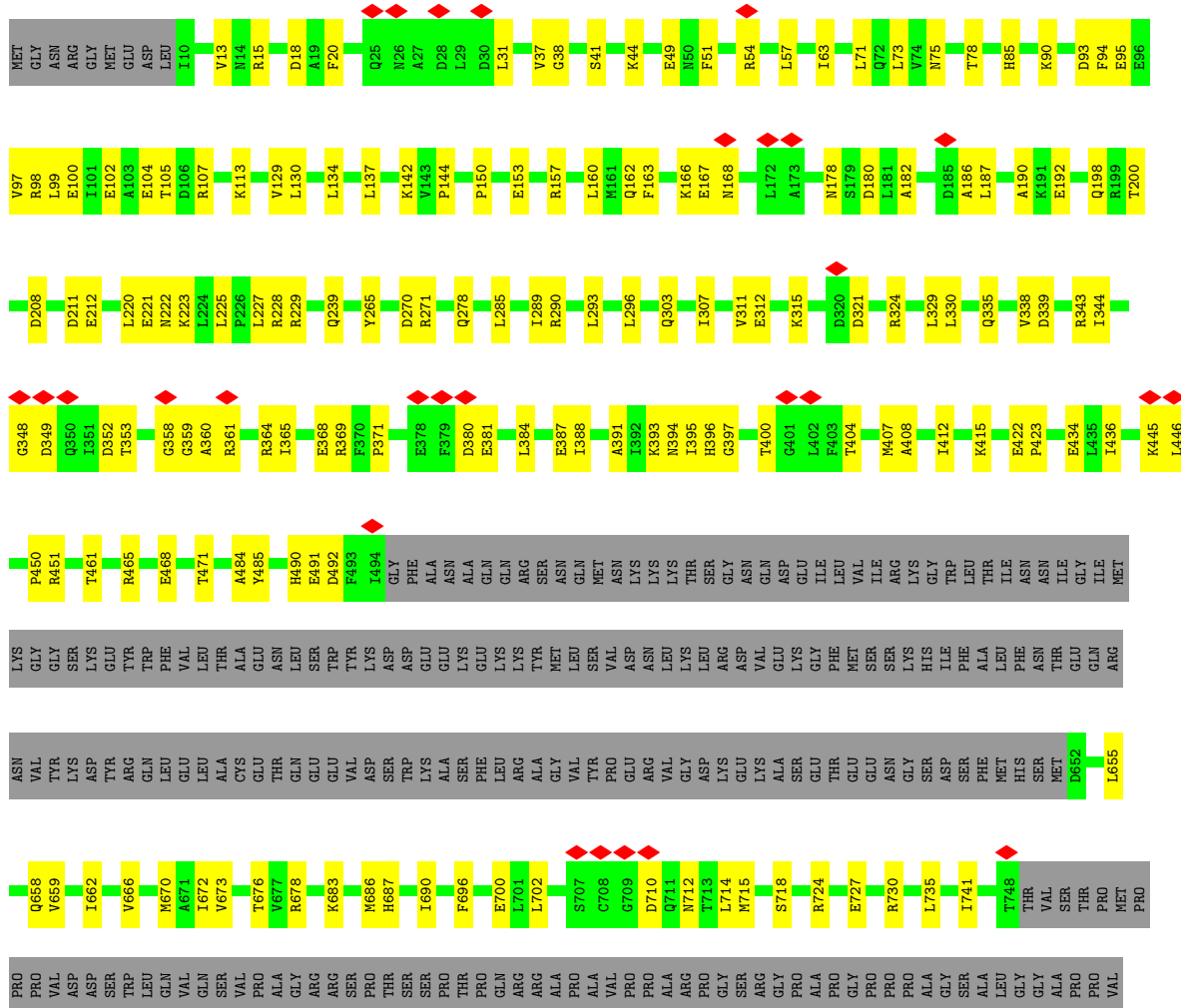


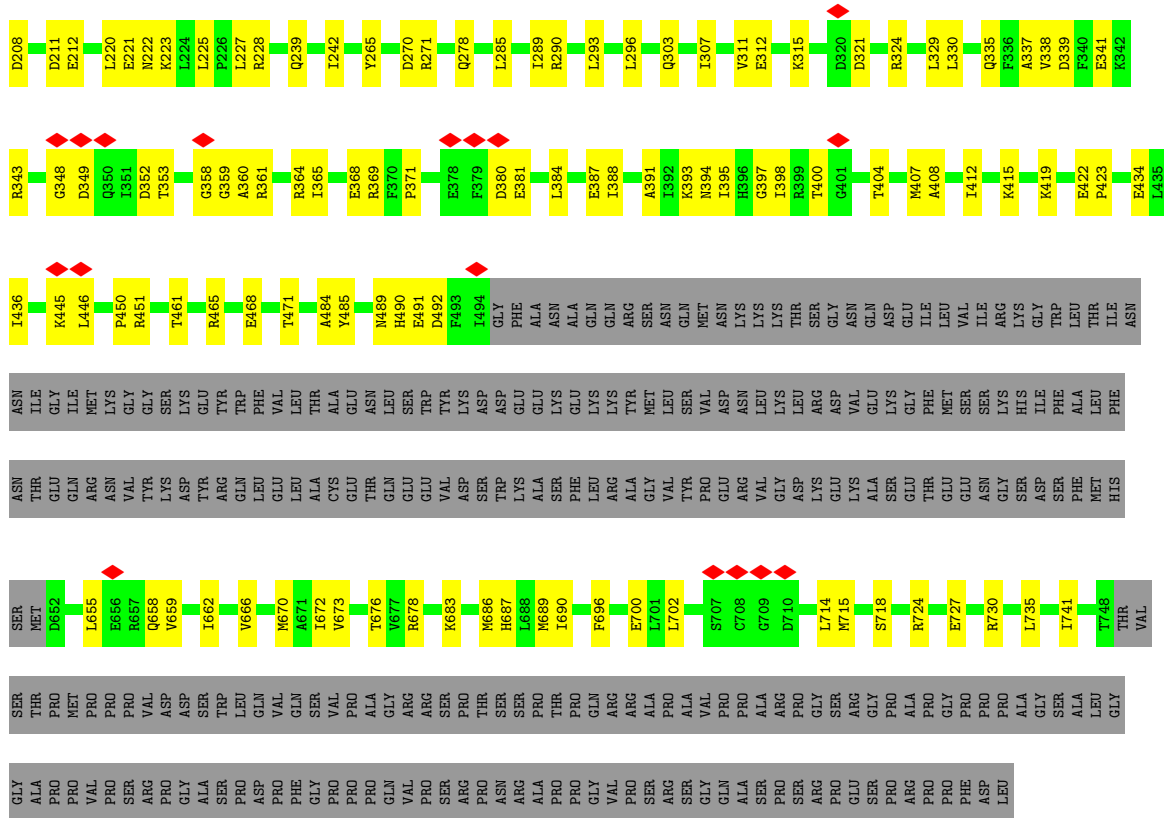
• Molecule 1: Dynammin-1



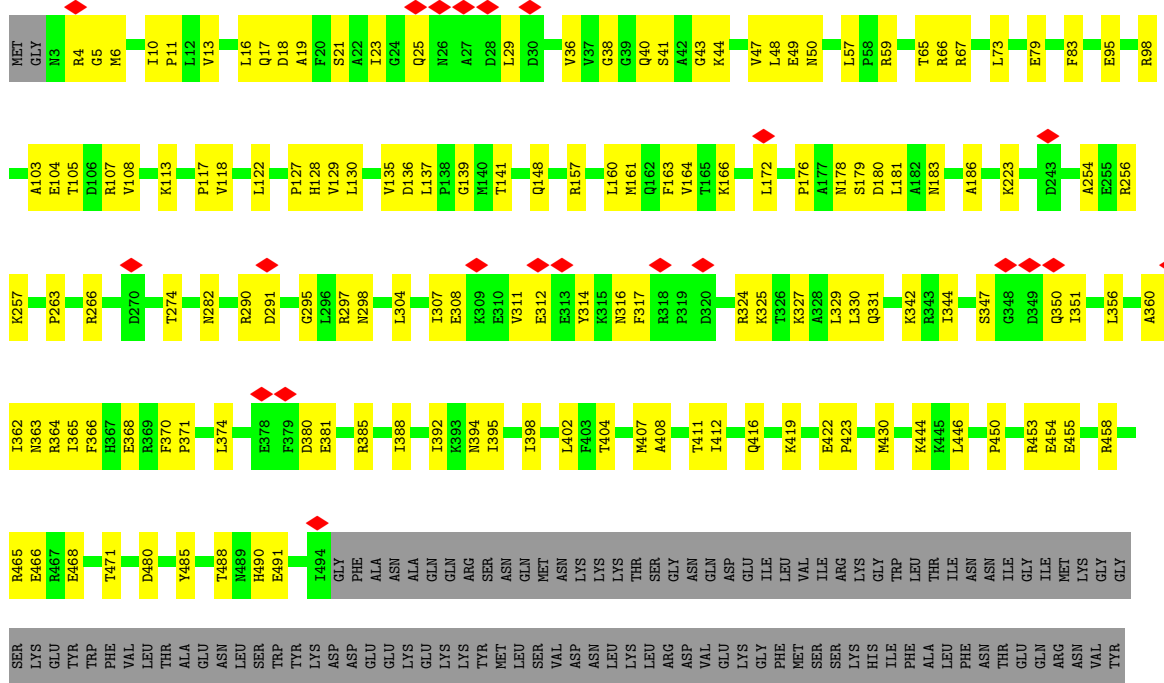


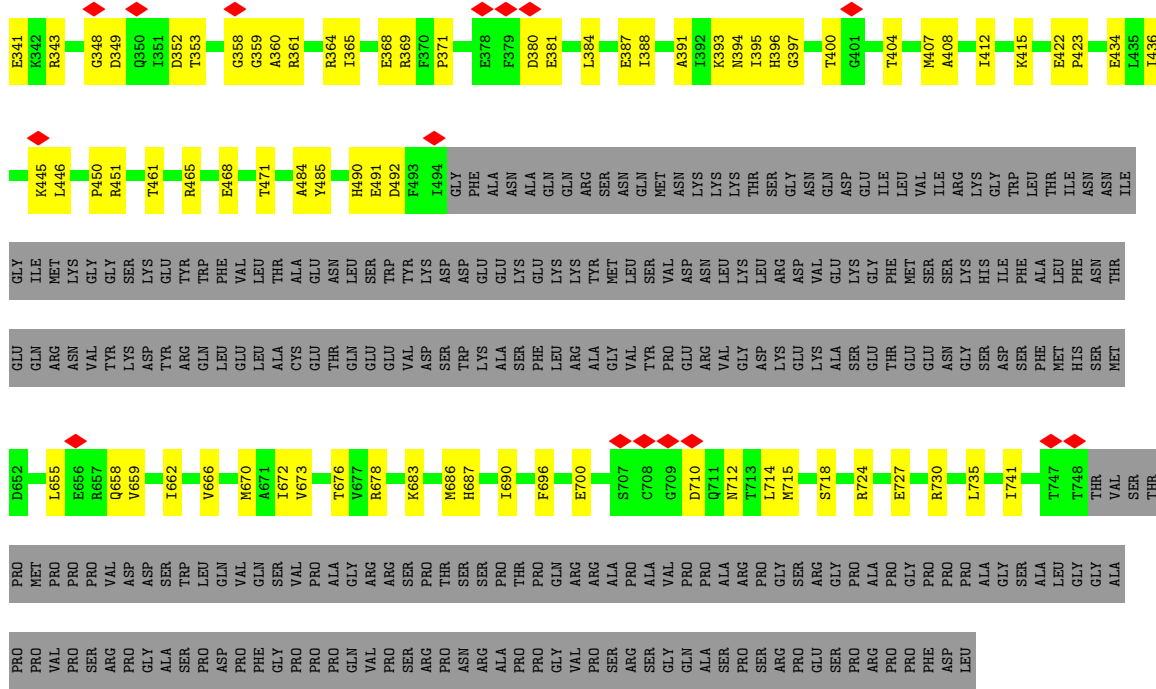
● Molecule 1: Dynammin-1



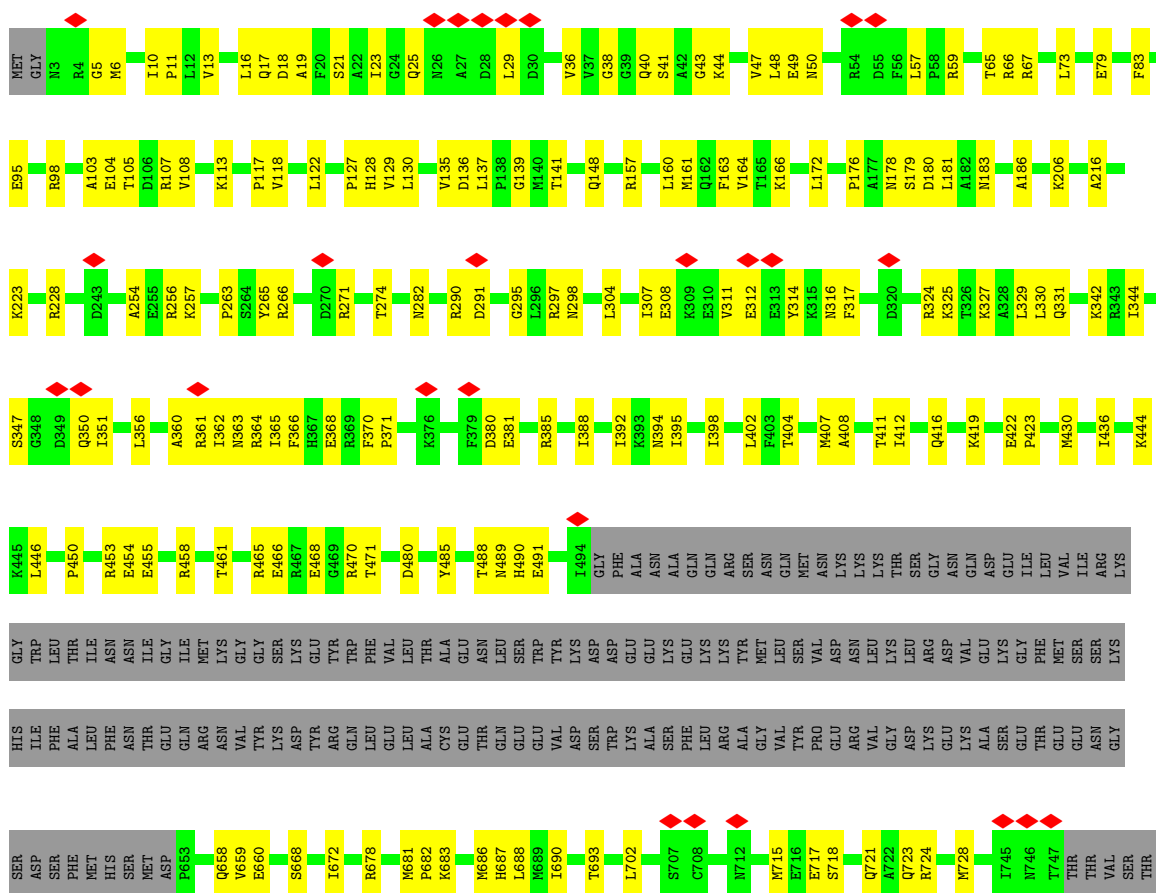


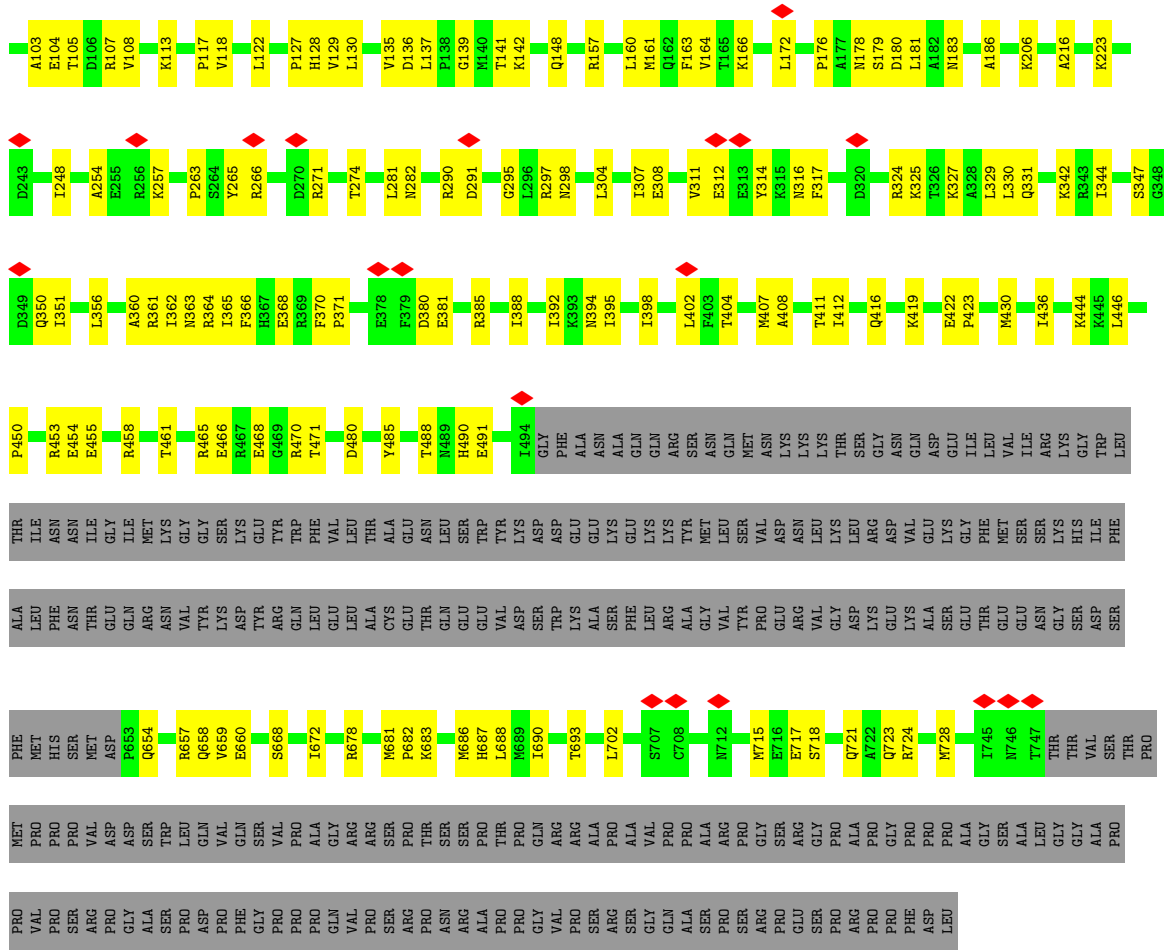
• Molecule 1: Dynamin-1



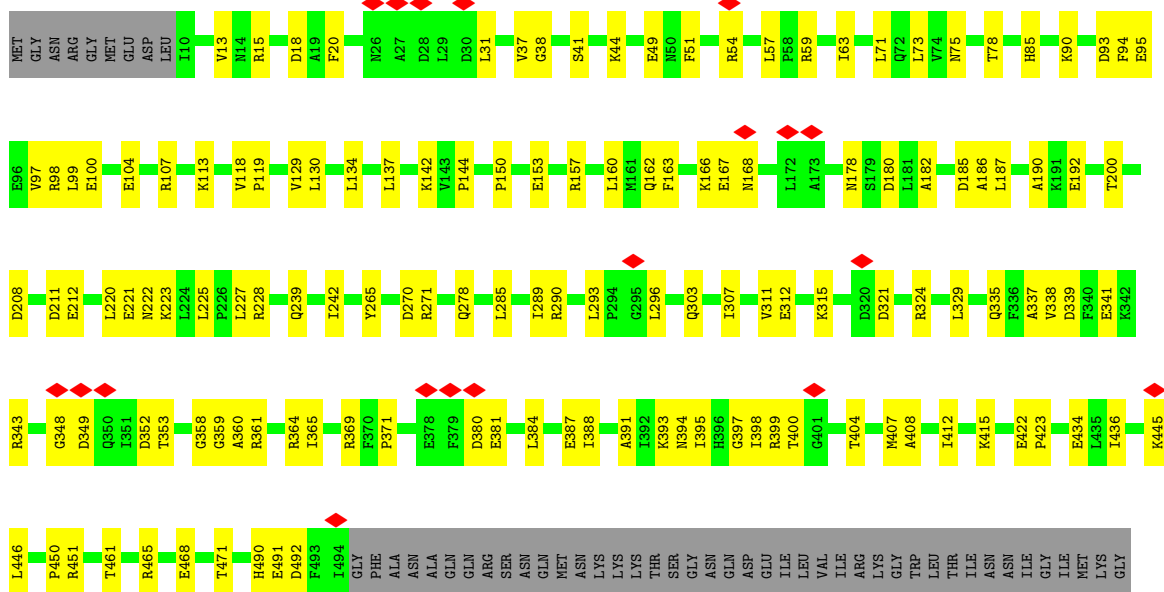


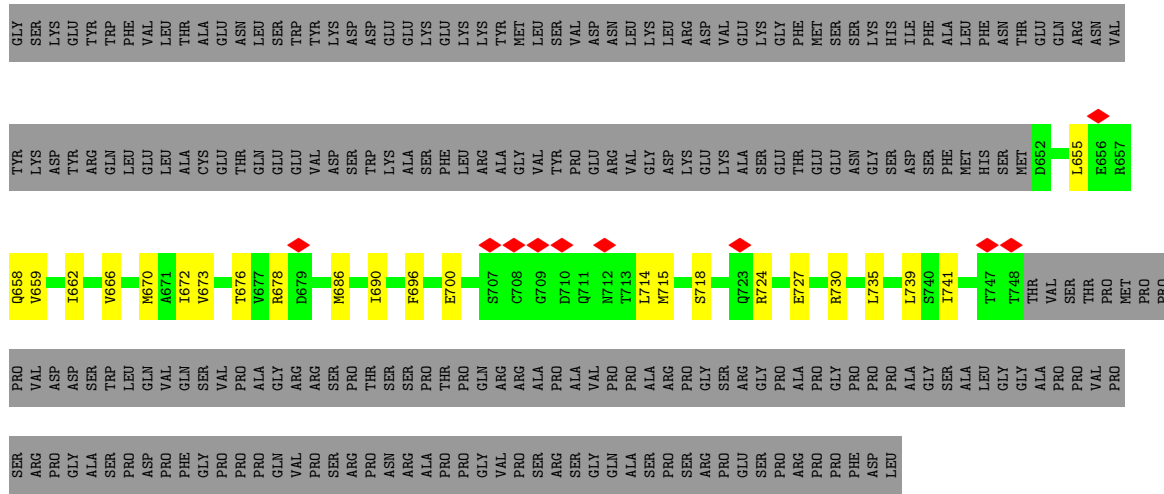
● Molecule 1: Dynamin-1



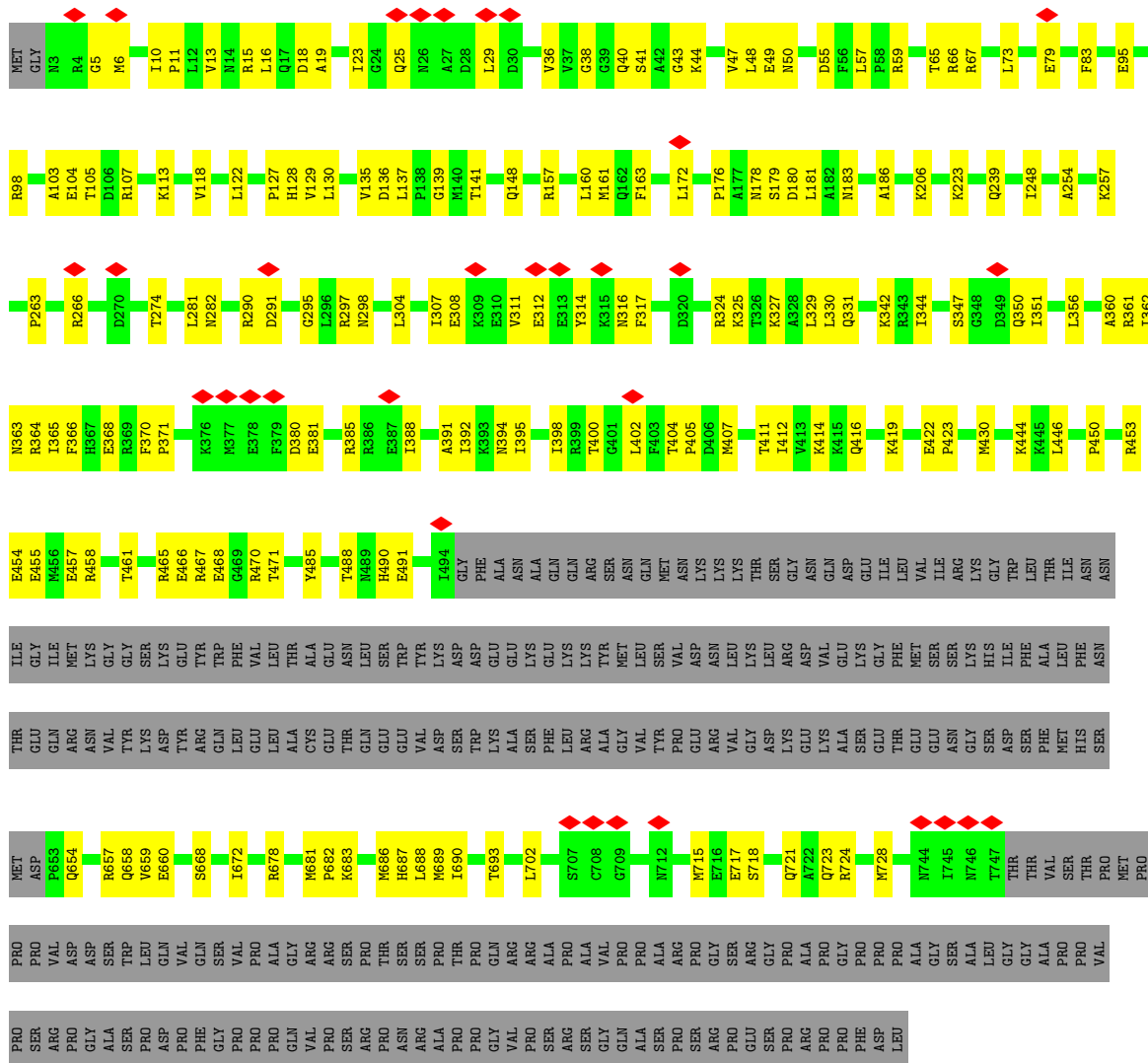


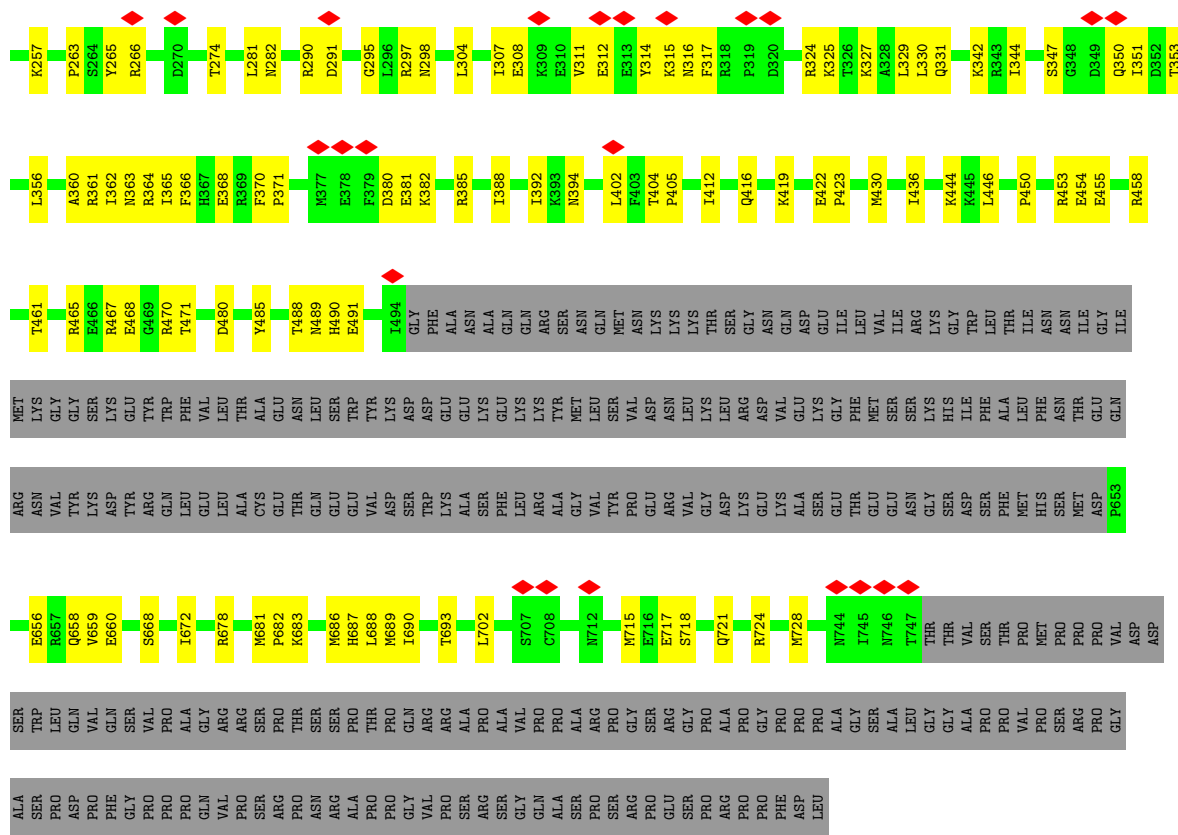
• Molecule 1: Dynamin-1



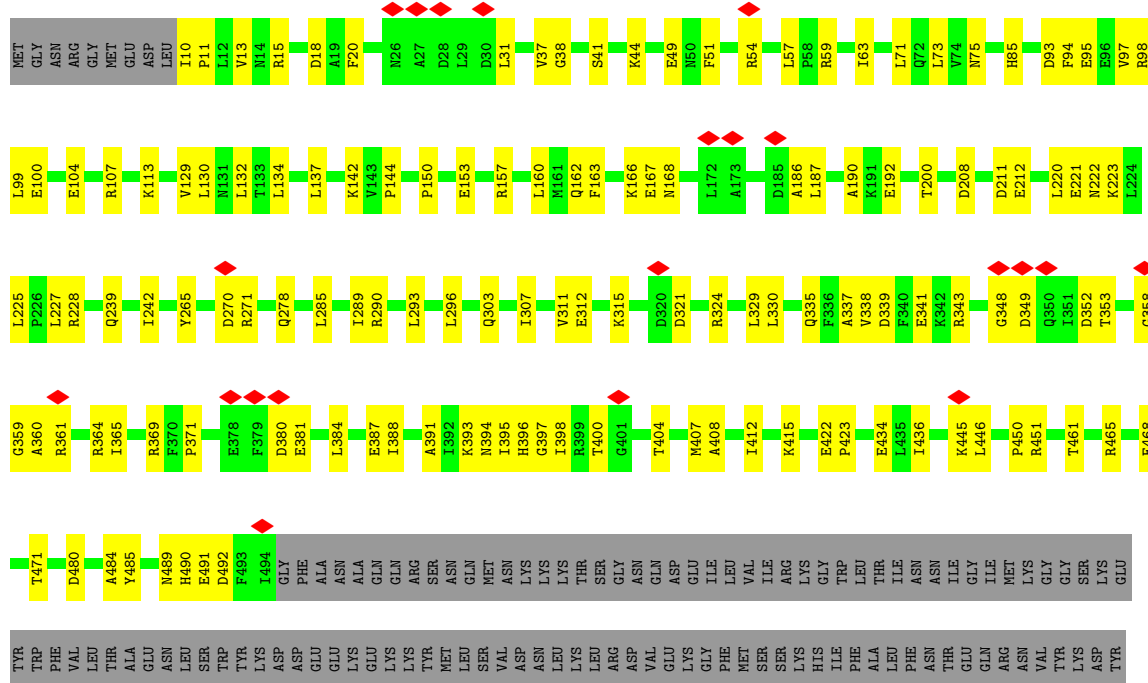


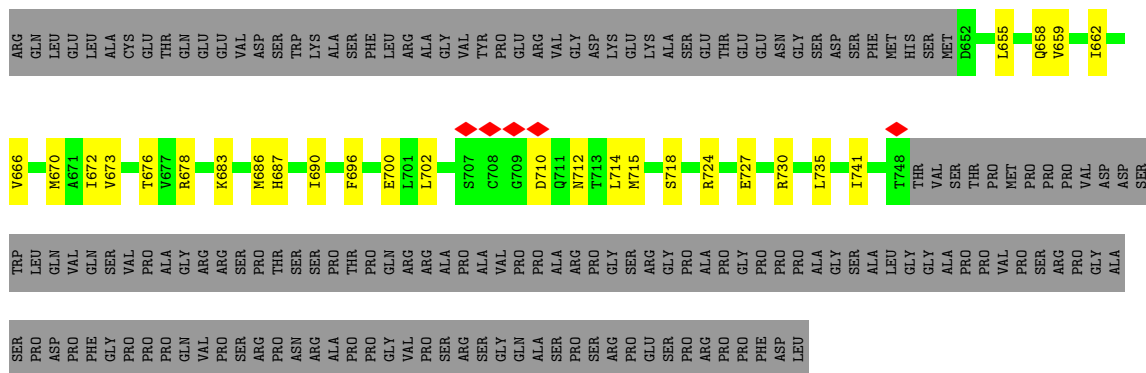
● Molecule 1: Dynamin-1



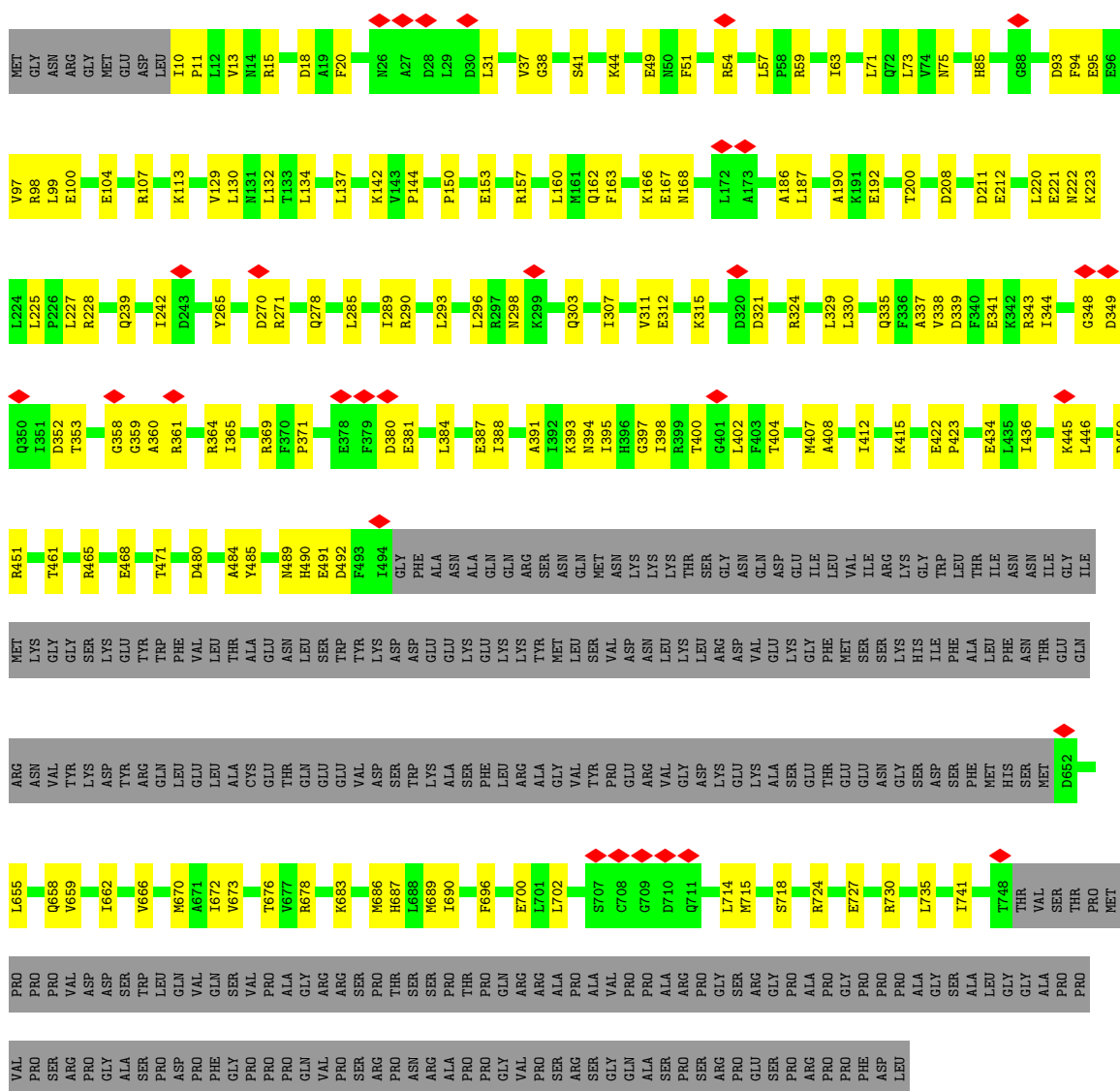


• Molecule 1: Dynammin-1

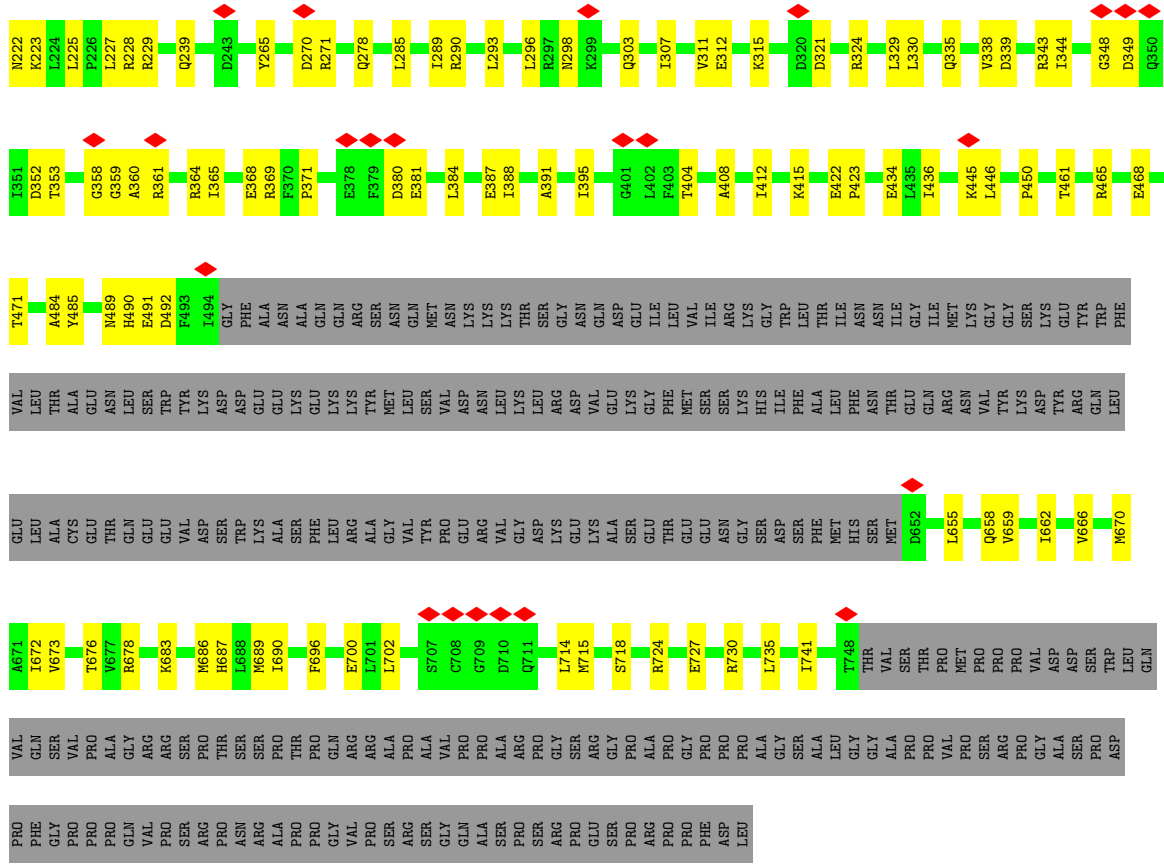




• Molecule 1: Dynammin-1



• Molecule 1: Dynammin-1



4 Experimental information

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=24.43°, rise=13.58 Å, axial sym=C2	Depositor
Number of segments used	16772	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	45	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.077	Depositor
Minimum map value	-0.031	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0115	Depositor
Map size (Å)	534.48, 534.48, 534.48	wwPDB
Map dimensions	510, 510, 510	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.048, 1.048, 1.048	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: GCP, MG

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	0.28	0/4772	0.48	0/6432
1	A2	0.28	0/4772	0.48	0/6432
1	B	0.28	0/4731	0.50	0/6380
1	B2	0.28	0/4731	0.50	1/6380 (0.0%)
1	C	0.28	0/4772	0.48	0/6432
1	C2	0.28	0/4772	0.48	0/6432
1	D	0.28	0/4731	0.50	0/6380
1	D2	0.28	0/4731	0.50	0/6380
1	E	0.28	0/4772	0.48	0/6432
1	E2	0.28	0/4731	0.50	0/6380
1	F	0.28	0/4731	0.50	0/6380
1	F2	0.28	0/4772	0.48	0/6432
1	G	0.28	0/4772	0.48	0/6432
1	G2	0.28	0/4731	0.50	0/6380
1	H	0.28	0/4731	0.50	1/6380 (0.0%)
1	H2	0.28	0/4731	0.50	0/6380
1	I	0.28	0/4772	0.48	0/6432
1	I2	0.28	0/4731	0.50	0/6380
1	J	0.28	0/4731	0.50	0/6380
1	J2	0.28	0/4731	0.50	0/6380
1	K	0.28	0/4772	0.48	0/6432
1	L	0.28	0/4772	0.48	0/6432
1	M	0.28	0/4731	0.50	0/6380
1	N	0.28	0/4772	0.48	0/6432
1	O	0.28	0/4731	0.50	0/6380
1	P	0.28	0/4772	0.48	0/6432
1	Q	0.28	0/4731	0.50	0/6380
1	R	0.28	0/4772	0.48	0/6432
1	S	0.28	0/4731	0.50	0/6380
1	T	0.28	0/4772	0.48	0/6432
1	U	0.28	0/4731	0.50	0/6380
1	V	0.28	0/4772	0.48	0/6432

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	W	0.28	0/4731	0.50	0/6380
1	X	0.28	0/4772	0.48	0/6432
1	Y	0.28	0/4731	0.50	0/6380
1	Z	0.28	0/4772	0.48	0/6432
All	All	0.28	0/171013	0.49	2/230564 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	361	ARG	CG-CD-NE	5.02	122.33	111.80
1	B2	361	ARG	CG-CD-NE	5.00	122.31	111.80

There are no chirality outliers.

There are no planarity outliers.

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	4703	0	4793	133	0
1	A2	4703	0	4793	146	0
1	B	4662	0	4750	151	0
1	B2	4662	0	4750	143	0
1	C	4703	0	4793	117	0
1	C2	4703	0	4793	154	0
1	D	4662	0	4750	152	0
1	D2	4662	0	4750	147	0
1	E	4703	0	4793	154	0
1	E2	4662	0	4750	111	0
1	F	4662	0	4750	128	0
1	F2	4703	0	4793	140	0
1	G	4703	0	4793	153	0
1	G2	4662	0	4750	147	0
1	H	4662	0	4750	126	0
1	H2	4662	0	4750	147	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	I	4703	0	4793	149	0
1	I2	4662	0	4750	129	0
1	J	4662	0	4750	111	0
1	J2	4662	0	4750	126	0
1	K	4703	0	4793	133	0
1	L	4703	0	4793	116	0
1	M	4662	0	4750	149	0
1	N	4703	0	4793	127	0
1	O	4662	0	4750	149	0
1	P	4703	0	4793	153	0
1	Q	4662	0	4750	149	0
1	R	4703	0	4793	150	0
1	S	4662	0	4750	147	0
1	T	4703	0	4793	159	0
1	U	4662	0	4750	143	0
1	V	4703	0	4793	152	0
1	W	4662	0	4750	124	0
1	X	4703	0	4793	147	0
1	Y	4662	0	4750	122	0
1	Z	4703	0	4793	149	0
2	A	32	0	13	4	0
2	A2	32	0	13	3	0
2	B	32	0	13	3	0
2	B2	32	0	13	3	0
2	C	32	0	13	3	0
2	C2	32	0	13	3	0
2	D	32	0	13	3	0
2	D2	32	0	13	3	0
2	E	32	0	13	3	0
2	E2	32	0	13	3	0
2	F	32	0	13	3	0
2	F2	32	0	13	3	0
2	G	32	0	13	4	0
2	G2	32	0	13	3	0
2	H	32	0	13	3	0
2	H2	32	0	13	3	0
2	I	32	0	13	4	0
2	I2	32	0	13	3	0
2	J	32	0	13	3	0
2	J2	32	0	13	3	0
2	K	32	0	13	4	0
2	L	32	0	13	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	M	32	0	13	3	0
2	N	32	0	13	3	0
2	O	32	0	13	3	0
2	P	32	0	13	3	0
2	Q	32	0	13	3	0
2	R	32	0	13	2	0
2	S	32	0	13	3	0
2	T	32	0	13	3	0
2	U	32	0	13	3	0
2	V	32	0	13	3	0
2	W	32	0	13	3	0
2	X	32	0	13	3	0
2	Y	32	0	13	3	0
2	Z	32	0	13	4	0
3	A	1	0	0	0	0
3	A2	1	0	0	0	0
3	B	1	0	0	0	0
3	B2	1	0	0	0	0
3	C	1	0	0	0	0
3	C2	1	0	0	0	0
3	D	1	0	0	0	0
3	D2	1	0	0	0	0
3	E	1	0	0	0	0
3	E2	1	0	0	0	0
3	F	1	0	0	0	0
3	F2	1	0	0	0	0
3	G	1	0	0	0	0
3	G2	1	0	0	0	0
3	H	1	0	0	0	0
3	H2	1	0	0	0	0
3	I	1	0	0	0	0
3	I2	1	0	0	0	0
3	J	1	0	0	0	0
3	J2	1	0	0	0	0
3	K	1	0	0	0	0
3	L	1	0	0	0	0
3	M	1	0	0	0	0
3	N	1	0	0	0	0
3	O	1	0	0	0	0
3	P	1	0	0	0	0
3	Q	1	0	0	0	0
3	R	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	S	1	0	0	0	0
3	T	1	0	0	0	0
3	U	1	0	0	0	0
3	V	1	0	0	0	0
3	W	1	0	0	0	0
3	X	1	0	0	0	0
3	Y	1	0	0	0	0
3	Z	1	0	0	0	0
All	All	169717	0	172199	4199	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 12.

The worst 5 of 4199 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)
1:D:702:LEU:CD1	1:X:330:LEU:HD13	1.73	1.18
1:E:330:LEU:HD13	1:M:702:LEU:CD1	1.75	1.16
1:G:330:LEU:HD13	1:O:702:LEU:CD1	1.75	1.15
1:I:330:LEU:HD13	1:Q:702:LEU:CD1	1.77	1.15
1:V:330:LEU:HD13	1:G2:702:LEU:CD1	1.76	1.14

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	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	A2	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	B	578/864 (67%)	541 (94%)	37 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	C	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	C2	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	D	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	D2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	E	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	E2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	F	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	F2	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	G	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	G2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	H	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	H2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	I	583/864 (68%)	554 (95%)	29 (5%)	0	100	100
1	I2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	J	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	J2	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	K	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	L	583/864 (68%)	554 (95%)	29 (5%)	0	100	100
1	M	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	N	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	O	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	P	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	Q	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	R	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	S	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	T	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	U	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	V	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
1	W	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	X	583/864 (68%)	555 (95%)	28 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Y	578/864 (67%)	541 (94%)	37 (6%)	0	100	100
1	Z	583/864 (68%)	555 (95%)	28 (5%)	0	100	100
All	All	20893/31104 (67%)	19712 (94%)	1181 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [\(i\)](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	525/761 (69%)	525 (100%)	0	100	100
1	A2	525/761 (69%)	525 (100%)	0	100	100
1	B	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	B2	521/761 (68%)	521 (100%)	0	100	100
1	C	525/761 (69%)	525 (100%)	0	100	100
1	C2	525/761 (69%)	525 (100%)	0	100	100
1	D	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	D2	521/761 (68%)	521 (100%)	0	100	100
1	E	525/761 (69%)	525 (100%)	0	100	100
1	E2	521/761 (68%)	521 (100%)	0	100	100
1	F	521/761 (68%)	521 (100%)	0	100	100
1	F2	525/761 (69%)	525 (100%)	0	100	100
1	G	525/761 (69%)	525 (100%)	0	100	100
1	G2	521/761 (68%)	521 (100%)	0	100	100
1	H	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	H2	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	I	525/761 (69%)	525 (100%)	0	100	100
1	I2	521/761 (68%)	521 (100%)	0	100	100
1	J	521/761 (68%)	521 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	J2	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	K	525/761 (69%)	525 (100%)	0	100	100
1	L	525/761 (69%)	525 (100%)	0	100	100
1	M	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	N	525/761 (69%)	525 (100%)	0	100	100
1	O	521/761 (68%)	521 (100%)	0	100	100
1	P	525/761 (69%)	525 (100%)	0	100	100
1	Q	521/761 (68%)	521 (100%)	0	100	100
1	R	525/761 (69%)	525 (100%)	0	100	100
1	S	521/761 (68%)	520 (100%)	1 (0%)	93	97
1	T	525/761 (69%)	525 (100%)	0	100	100
1	U	521/761 (68%)	521 (100%)	0	100	100
1	V	525/761 (69%)	525 (100%)	0	100	100
1	W	521/761 (68%)	521 (100%)	0	100	100
1	X	525/761 (69%)	525 (100%)	0	100	100
1	Y	521/761 (68%)	521 (100%)	0	100	100
1	Z	525/761 (69%)	525 (100%)	0	100	100
All	All	18824/27396 (69%)	18817 (100%)	7 (0%)	100	100

5 of 7 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	M	298	ASN
1	S	298	ASN
1	J2	298	ASN
1	H2	298	ASN
1	H	298	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 74 such sidechains are listed below:

Mol	Chain	Res	Type
1	X	363	ASN
1	I2	298	ASN
1	X	394	ASN
1	F2	363	ASN

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Mol	Chain	Res	Type
1	I	363	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](#)

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 72 ligands modelled in this entry, 36 are monoatomic - leaving 36 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
2	GCP	B	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	I	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	V	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	D	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	F	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	G	901	3	27,34,34	4.79	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	N	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	P	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	Q	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	D2	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	GCP	H2	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.67	7 (20%)
2	GCP	A	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	J2	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	M	901	1,3	27,34,34	4.77	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	H	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	G2	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.69	7 (20%)
2	GCP	W	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	O	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.69	7 (20%)
2	GCP	U	901	1,3	27,34,34	4.77	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	J	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	I2	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	F2	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	A2	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	B2	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	C2	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	C	901	3	27,34,34	4.77	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	L	901	3	27,34,34	4.77	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	R	901	3	27,34,34	4.77	11 (40%)	34,54,54	1.64	6 (17%)
2	GCP	E2	901	1,3	27,34,34	4.79	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	K	901	3	27,34,34	4.77	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	E	901	3	27,34,34	4.77	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	Z	901	3	27,34,34	4.77	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	Y	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	S	901	1,3	27,34,34	4.78	11 (40%)	34,54,54	1.68	7 (20%)
2	GCP	X	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.63	6 (17%)
2	GCP	T	901	3	27,34,34	4.78	11 (40%)	34,54,54	1.64	6 (17%)

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
2	GCP	B	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	I	901	3	-	0/15/38/38	0/3/3/3
2	GCP	V	901	3	-	0/15/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GCP	D	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	F	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	G	901	3	-	0/15/38/38	0/3/3/3
2	GCP	N	901	3	-	0/15/38/38	0/3/3/3
2	GCP	P	901	3	-	0/15/38/38	0/3/3/3
2	GCP	Q	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	D2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	H2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	A	901	3	-	0/15/38/38	0/3/3/3
2	GCP	J2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	M	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	H	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	G2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	W	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	O	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	U	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	J	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	I2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	F2	901	3	-	0/15/38/38	0/3/3/3
2	GCP	A2	901	3	-	0/15/38/38	0/3/3/3
2	GCP	B2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	C2	901	3	-	0/15/38/38	0/3/3/3
2	GCP	C	901	3	-	0/15/38/38	0/3/3/3
2	GCP	L	901	3	-	0/15/38/38	0/3/3/3
2	GCP	R	901	3	-	0/15/38/38	0/3/3/3
2	GCP	E2	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	K	901	3	-	0/15/38/38	0/3/3/3
2	GCP	E	901	3	-	0/15/38/38	0/3/3/3
2	GCP	Z	901	3	-	0/15/38/38	0/3/3/3
2	GCP	Y	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	S	901	1,3	-	4/15/38/38	0/3/3/3
2	GCP	X	901	3	-	0/15/38/38	0/3/3/3
2	GCP	T	901	3	-	0/15/38/38	0/3/3/3

The worst 5 of 396 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J2	901	GCP	C2'-C1'	-15.70	1.29	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	I2	901	GCP	C2'-C1'	-15.70	1.29	1.53
2	B2	901	GCP	C2'-C1'	-15.68	1.30	1.53
2	Q	901	GCP	C2'-C1'	-15.67	1.30	1.53
2	H	901	GCP	C2'-C1'	-15.67	1.30	1.53

The worst 5 of 235 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I2	901	GCP	N3-C2-N1	-5.35	120.08	127.22
2	B2	901	GCP	N3-C2-N1	-5.34	120.10	127.22
2	H	901	GCP	N3-C2-N1	-5.34	120.10	127.22
2	W	901	GCP	N3-C2-N1	-5.34	120.10	127.22
2	O	901	GCP	N3-C2-N1	-5.34	120.10	127.22

There are no chirality outliers.

5 of 76 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D2	901	GCP	PB-C3B-PG-O1G
2	D2	901	GCP	C5'-O5'-PA-O1A
2	B2	901	GCP	PB-C3B-PG-O1G
2	B2	901	GCP	C5'-O5'-PA-O1A
2	B	901	GCP	PB-C3B-PG-O1G

There are no ring outliers.

36 monomers are involved in 112 short contacts:

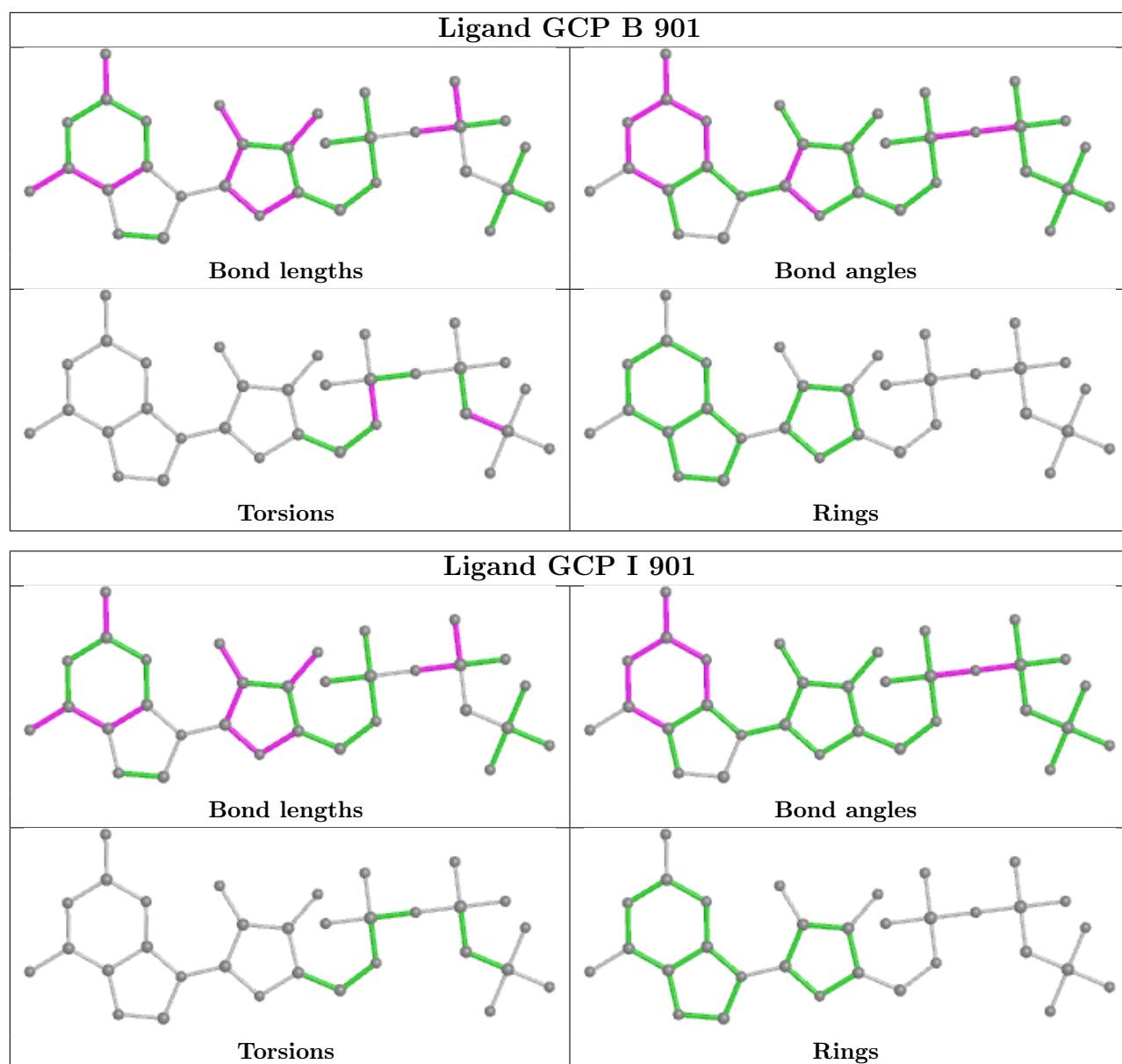
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	901	GCP	3	0
2	I	901	GCP	4	0
2	V	901	GCP	3	0
2	D	901	GCP	3	0
2	F	901	GCP	3	0
2	G	901	GCP	4	0
2	N	901	GCP	3	0
2	P	901	GCP	3	0
2	Q	901	GCP	3	0
2	D2	901	GCP	3	0
2	H2	901	GCP	3	0
2	A	901	GCP	4	0
2	J2	901	GCP	3	0

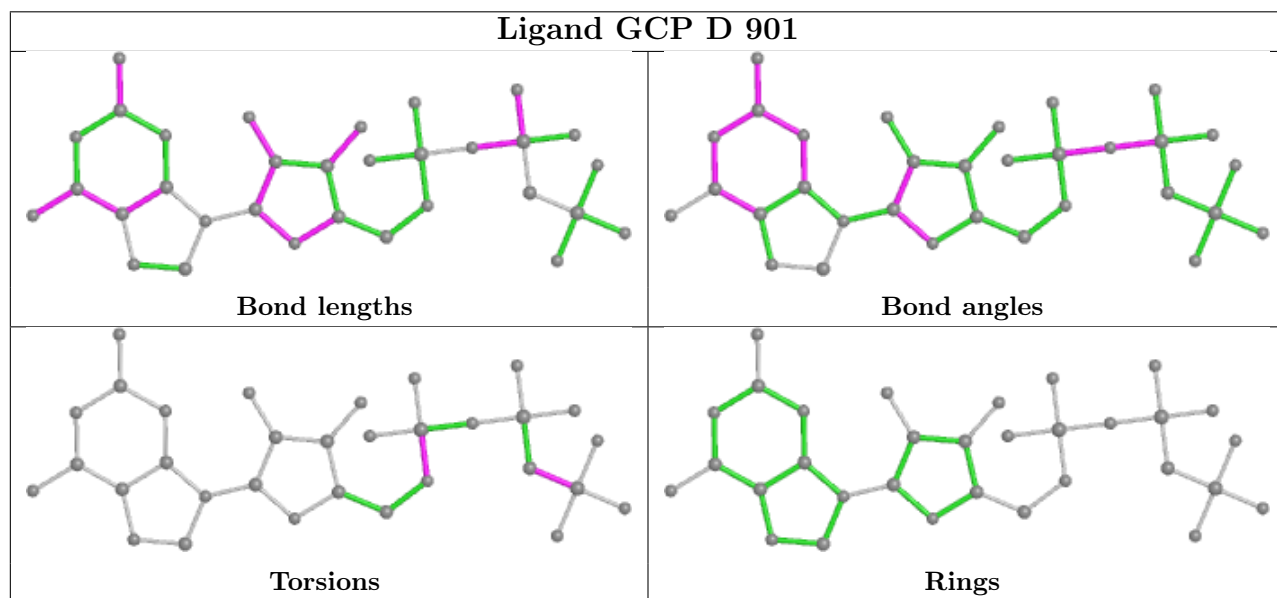
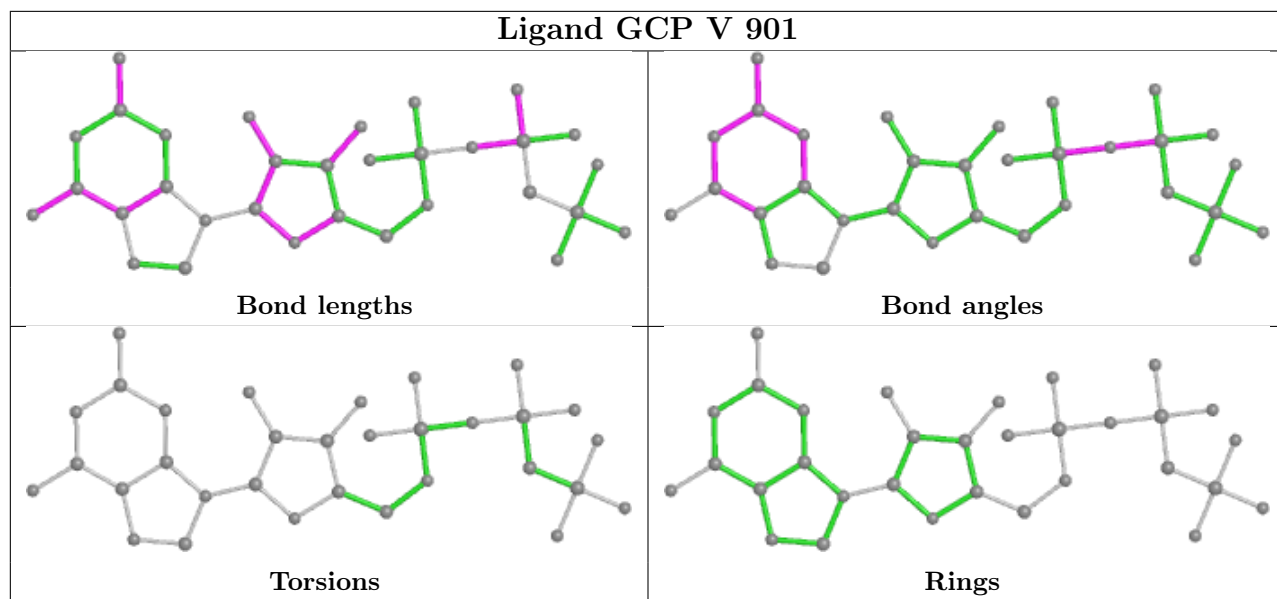
Continued on next page...

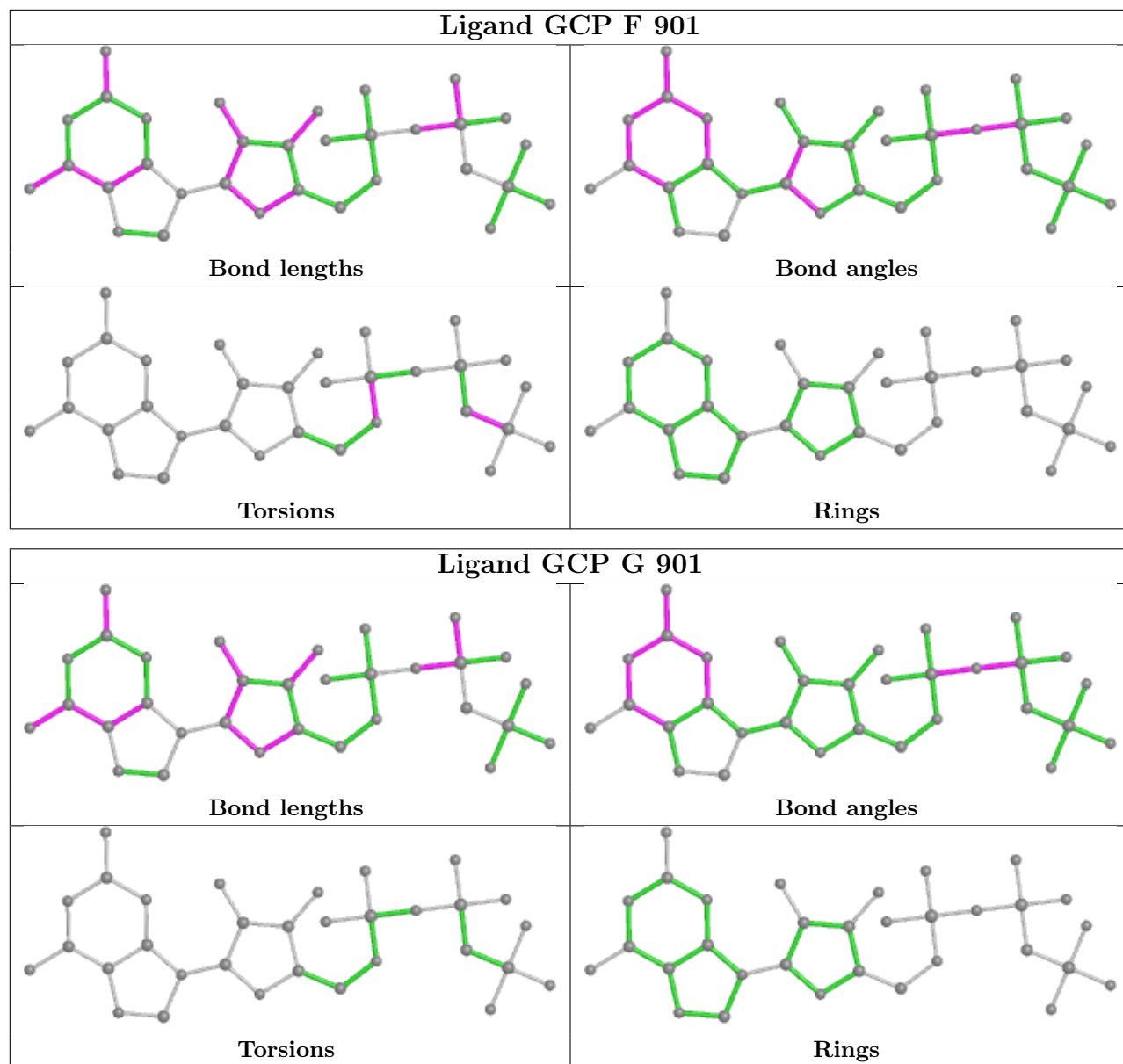
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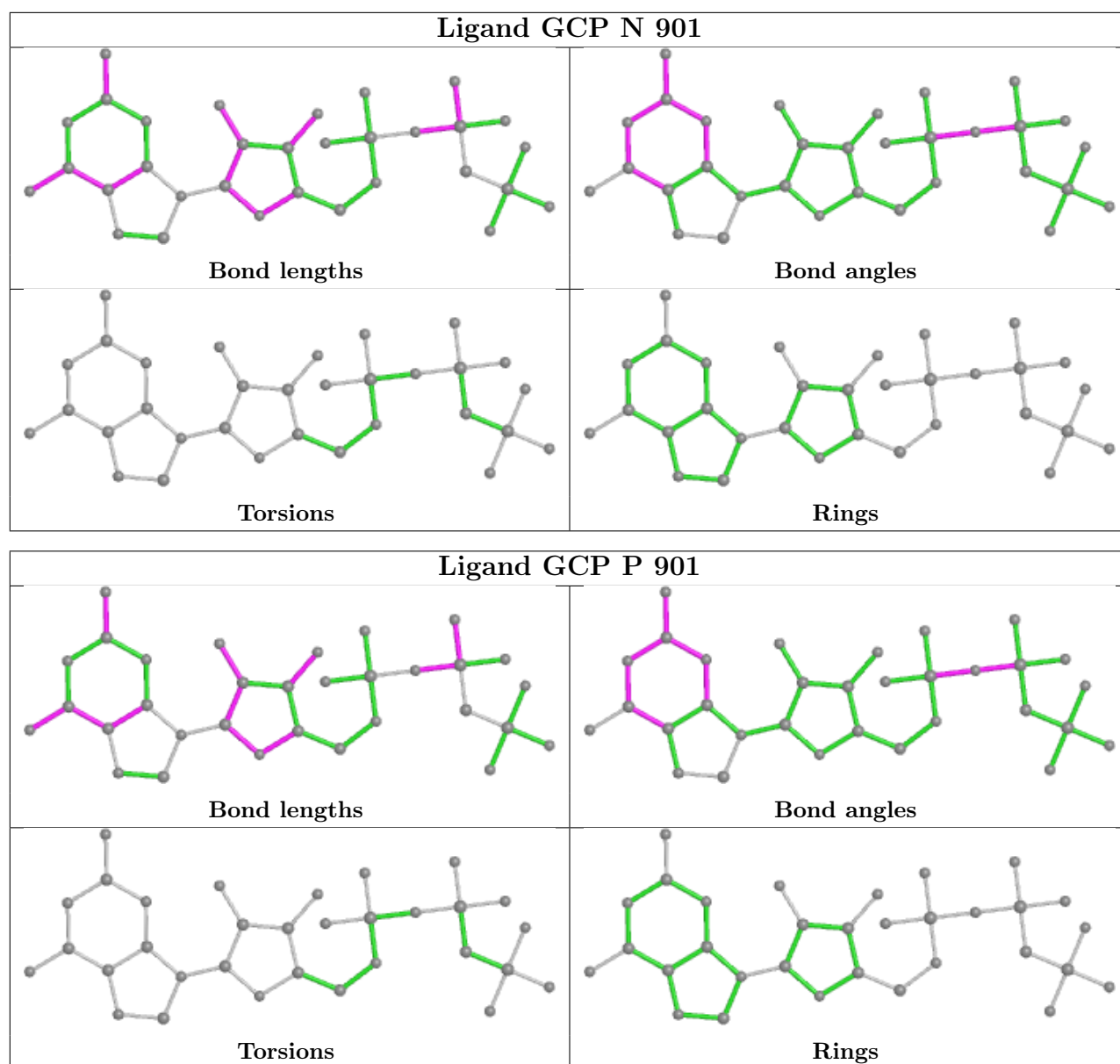
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	M	901	GCP	3	0
2	H	901	GCP	3	0
2	G2	901	GCP	3	0
2	W	901	GCP	3	0
2	O	901	GCP	3	0
2	U	901	GCP	3	0
2	J	901	GCP	3	0
2	I2	901	GCP	3	0
2	F2	901	GCP	3	0
2	A2	901	GCP	3	0
2	B2	901	GCP	3	0
2	C2	901	GCP	3	0
2	C	901	GCP	3	0
2	L	901	GCP	3	0
2	R	901	GCP	2	0
2	E2	901	GCP	3	0
2	K	901	GCP	4	0
2	E	901	GCP	3	0
2	Z	901	GCP	4	0
2	Y	901	GCP	3	0
2	S	901	GCP	3	0
2	X	901	GCP	3	0
2	T	901	GCP	3	0

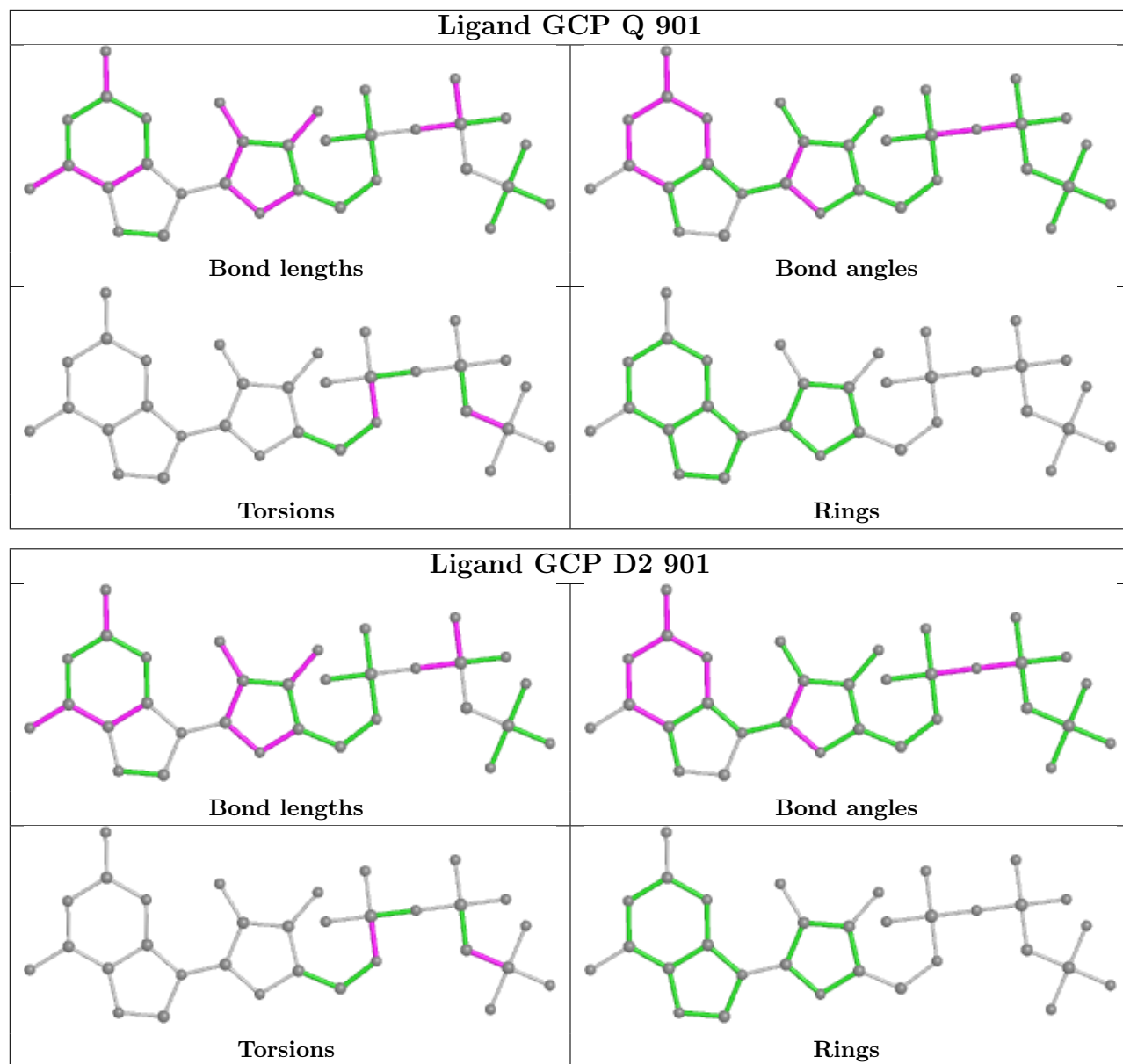
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

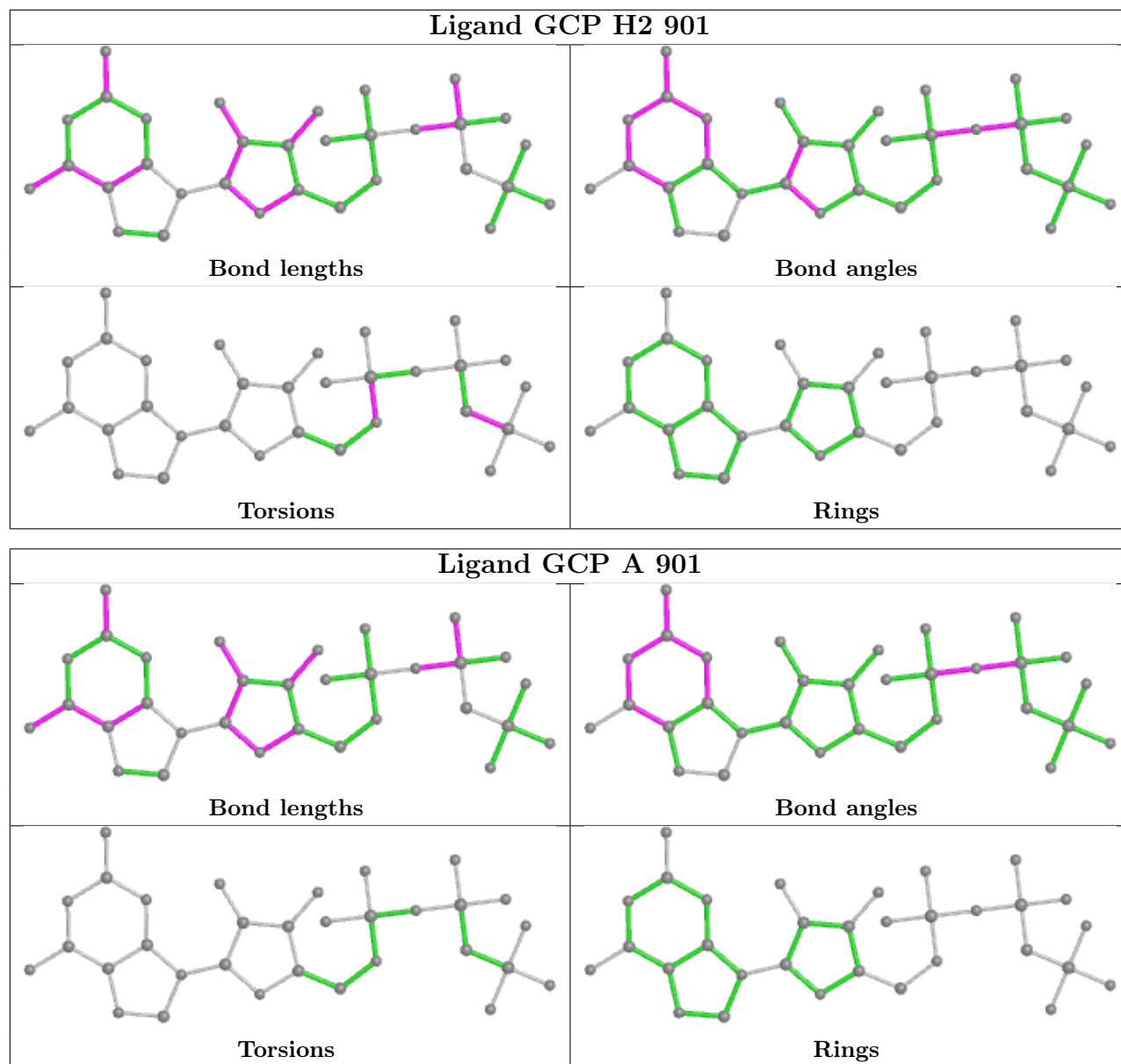


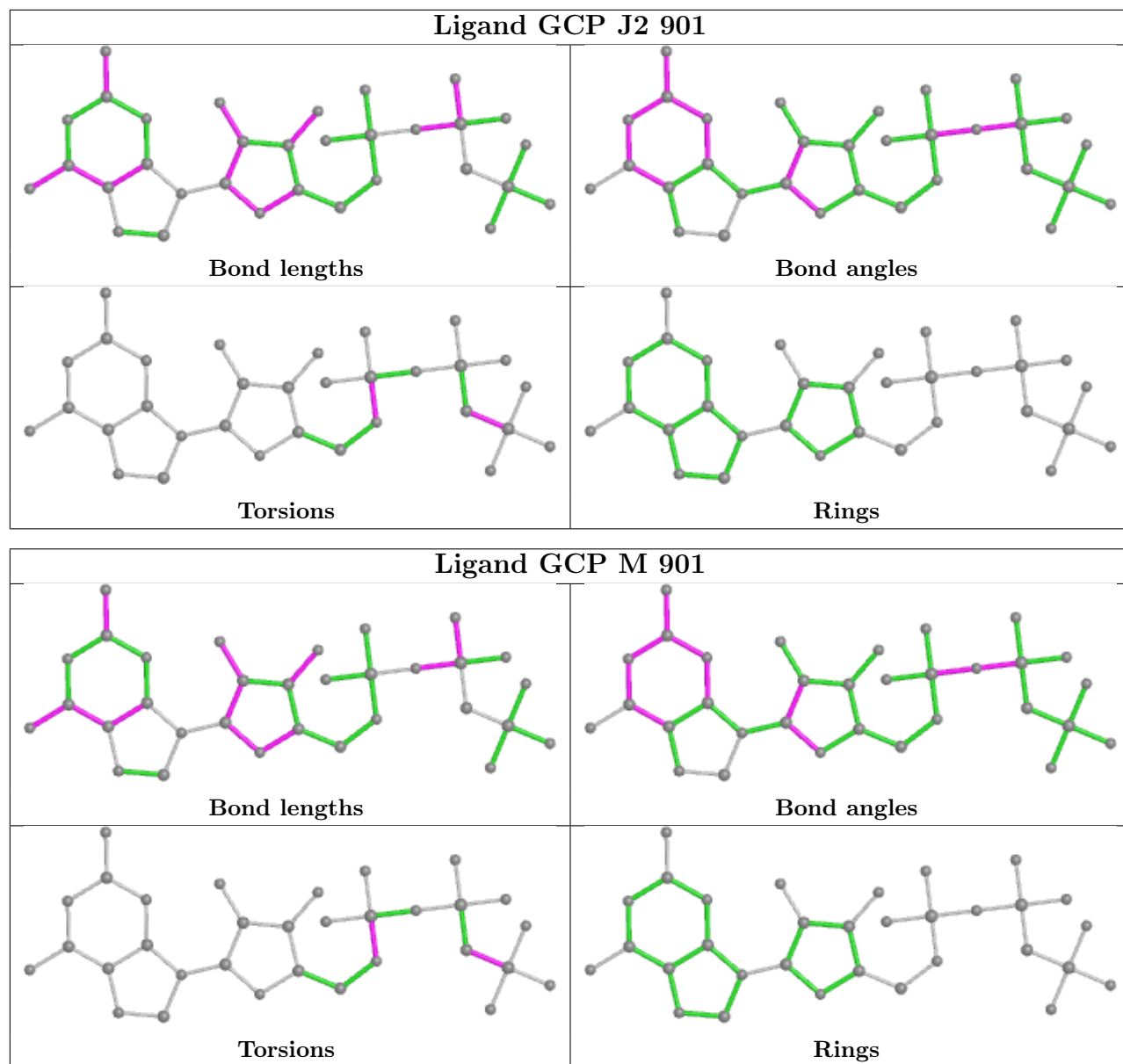


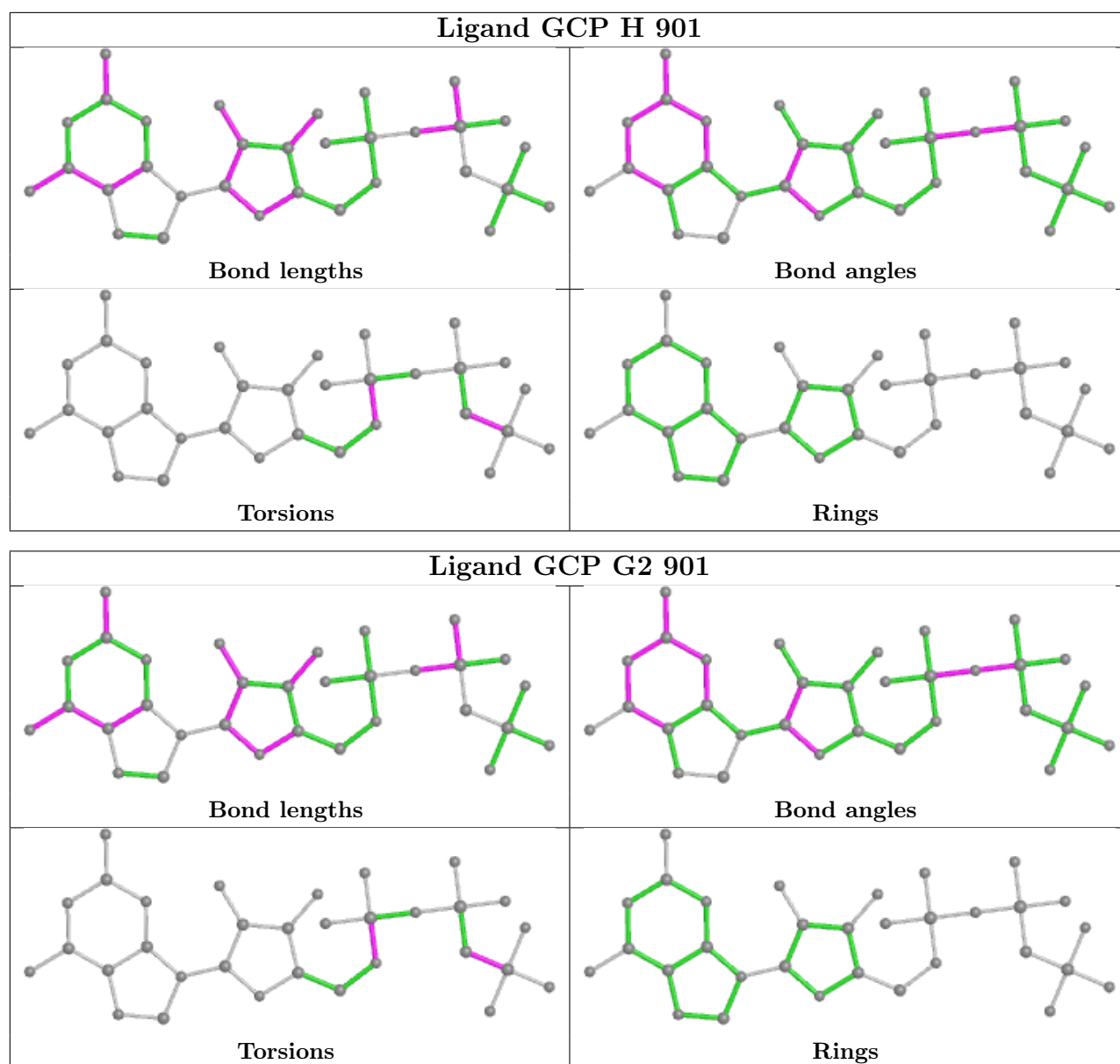


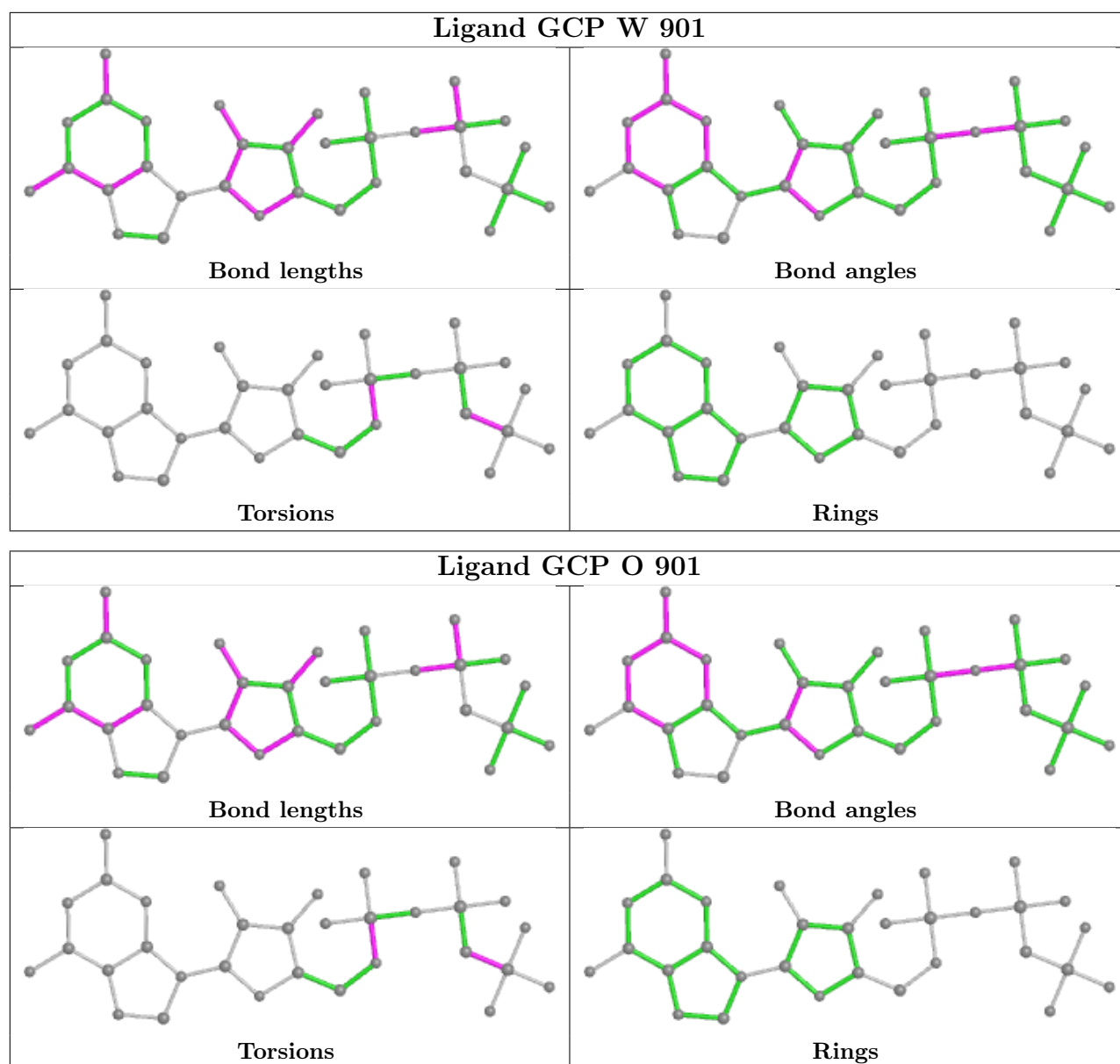


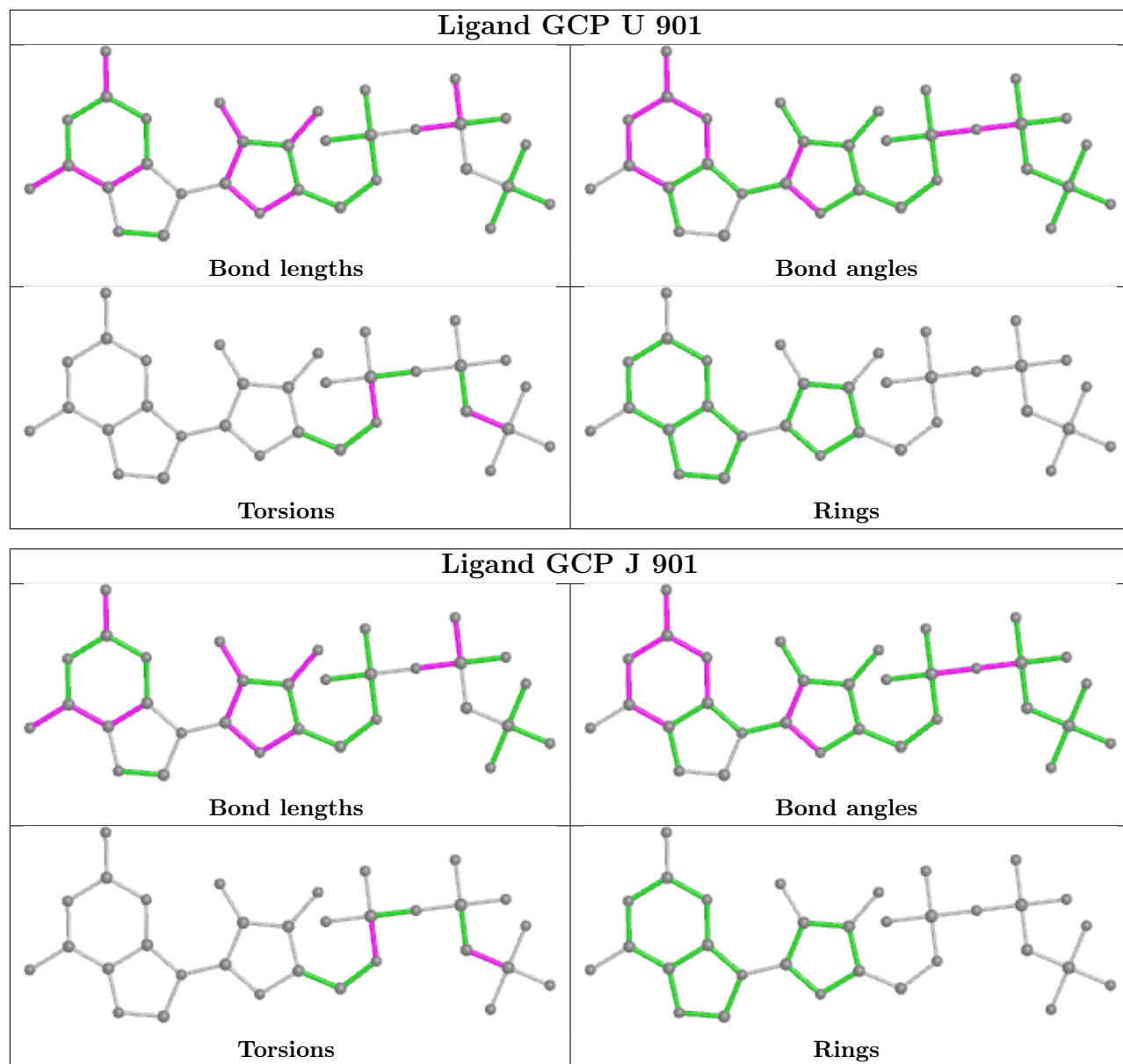


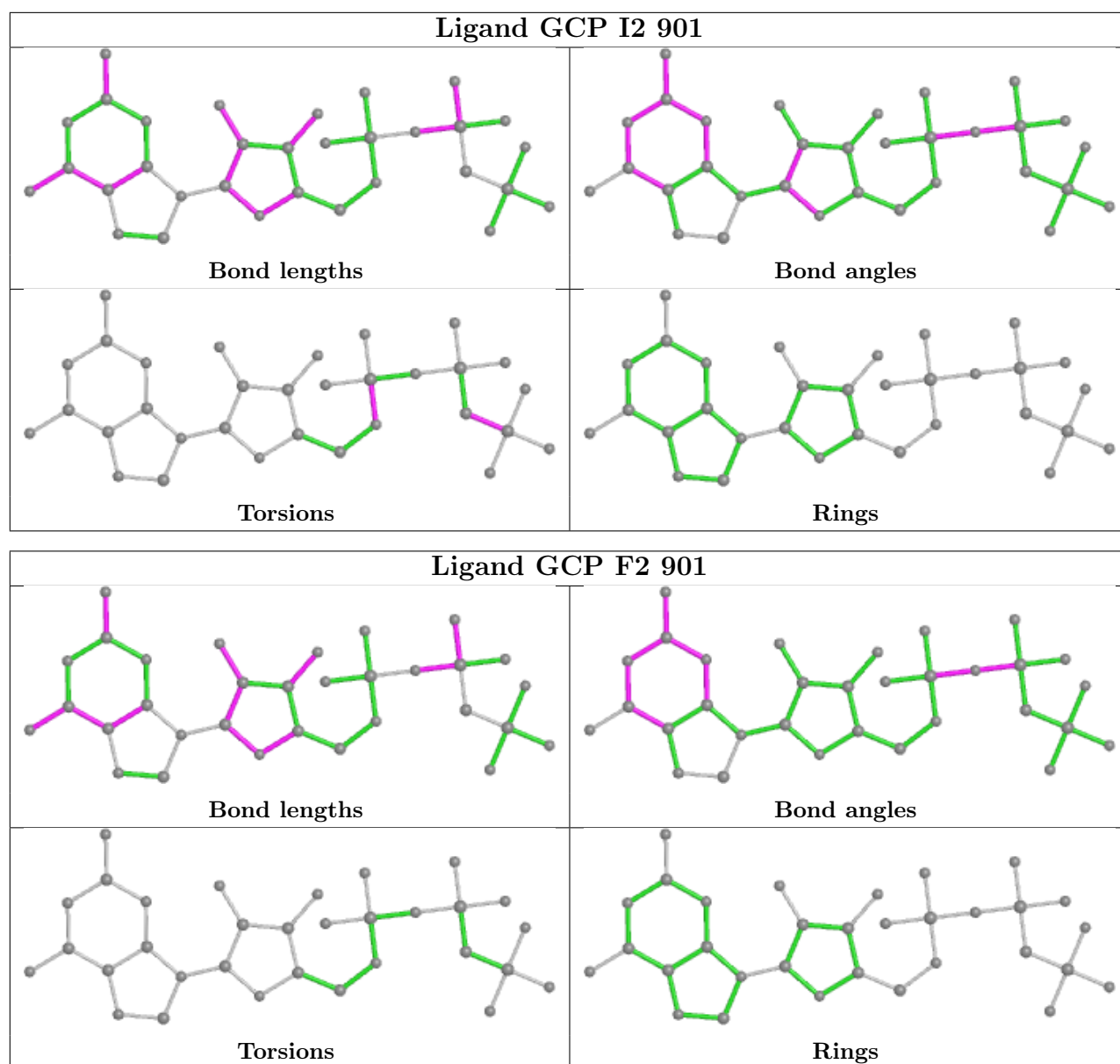


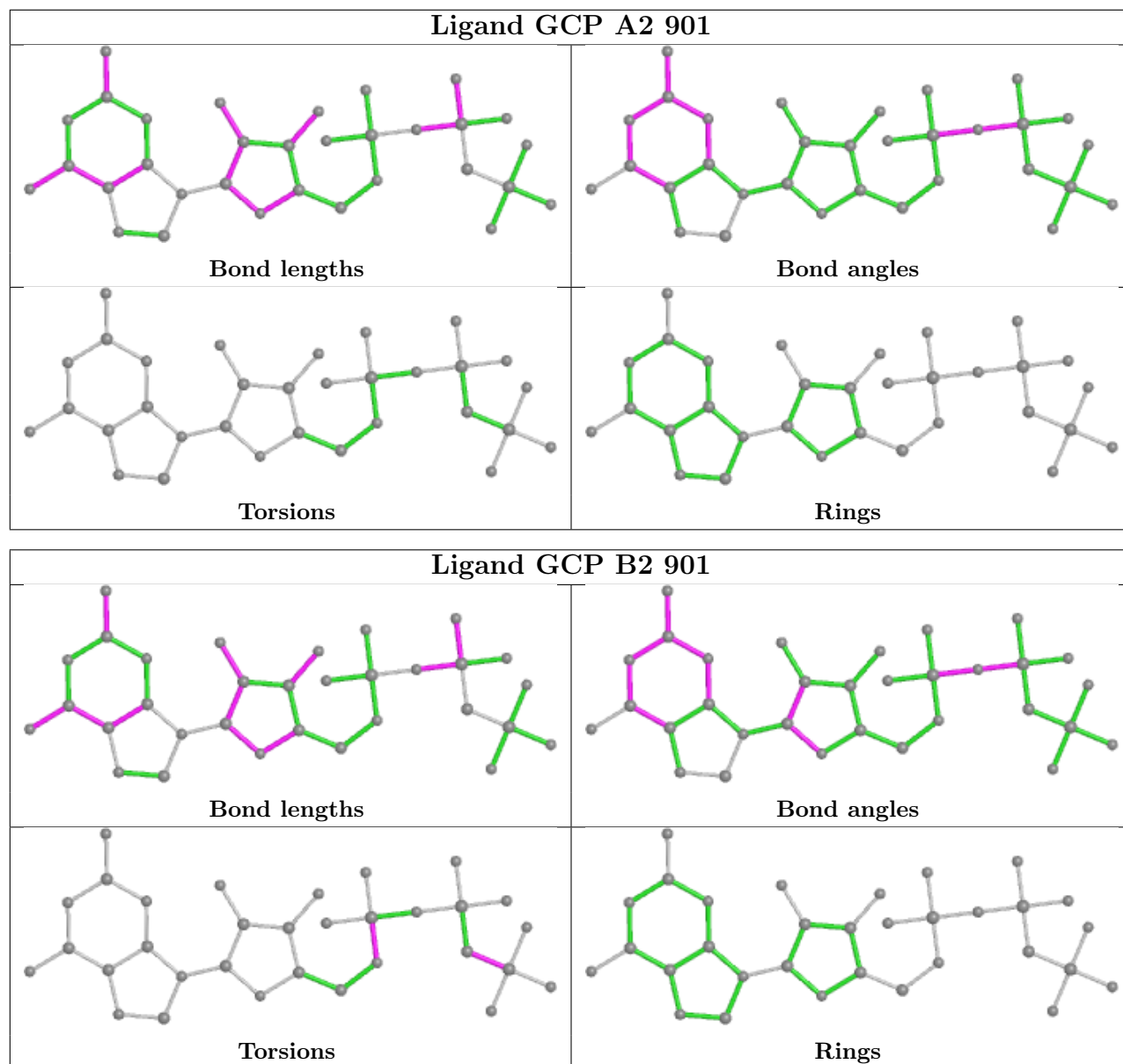


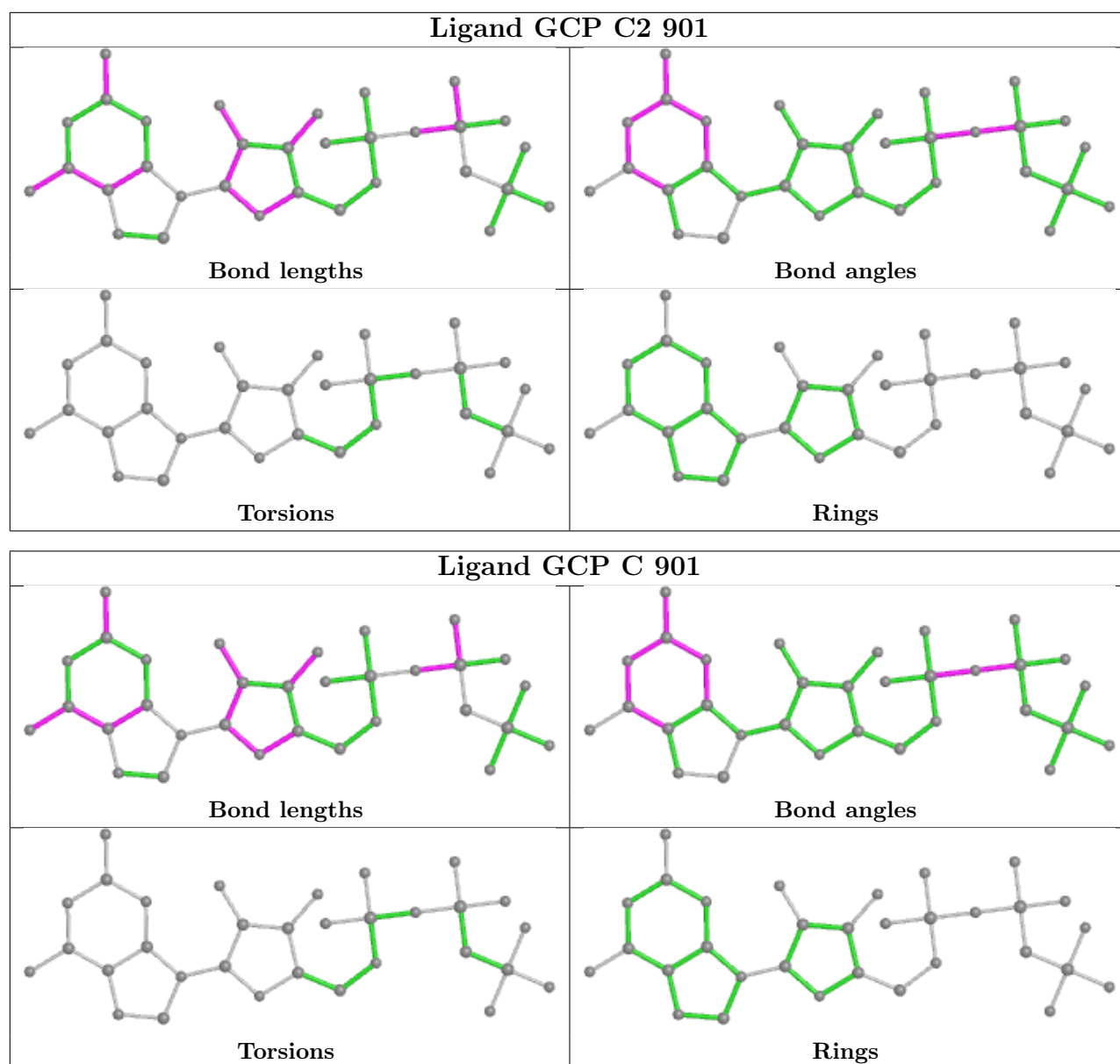


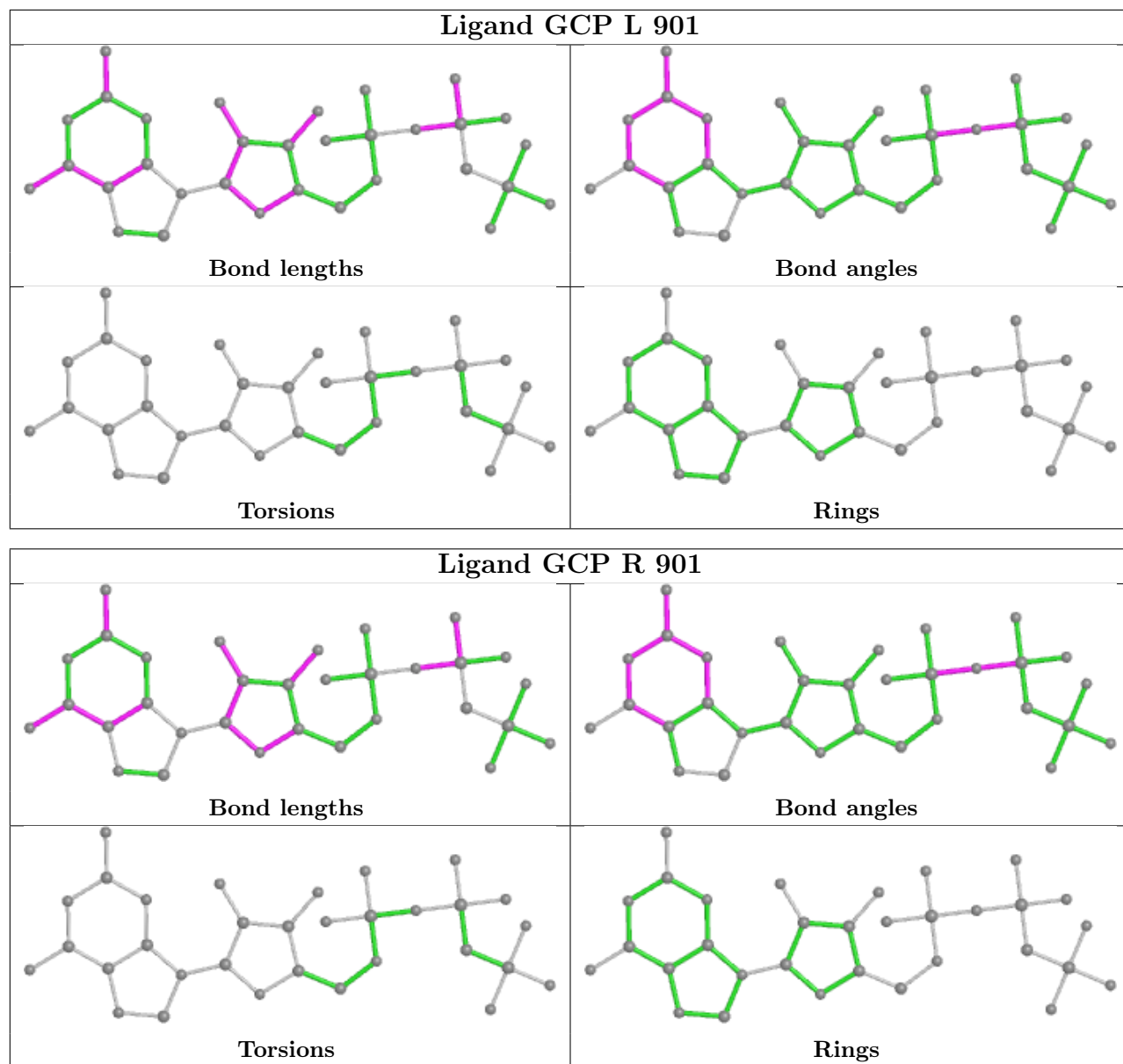


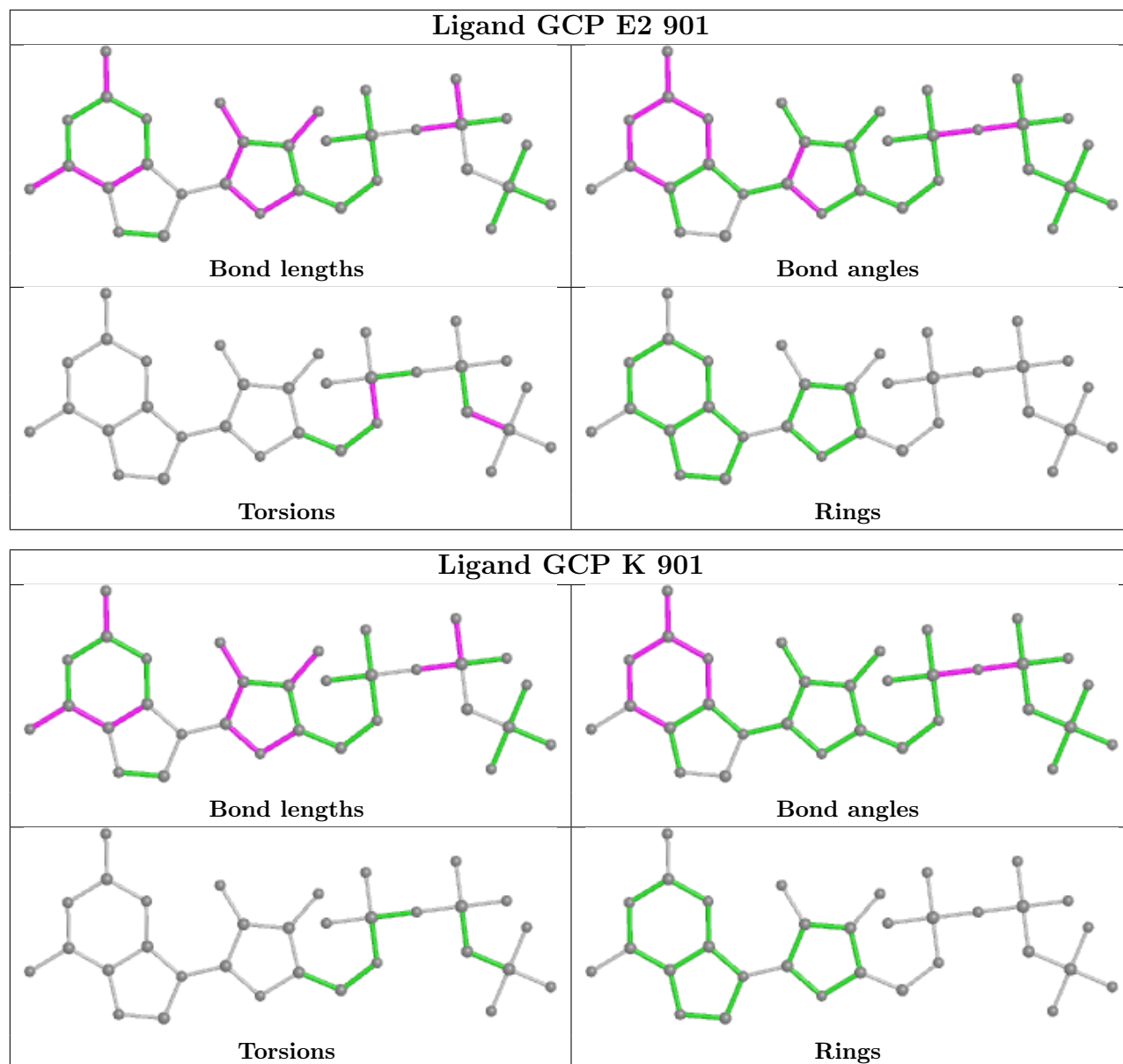


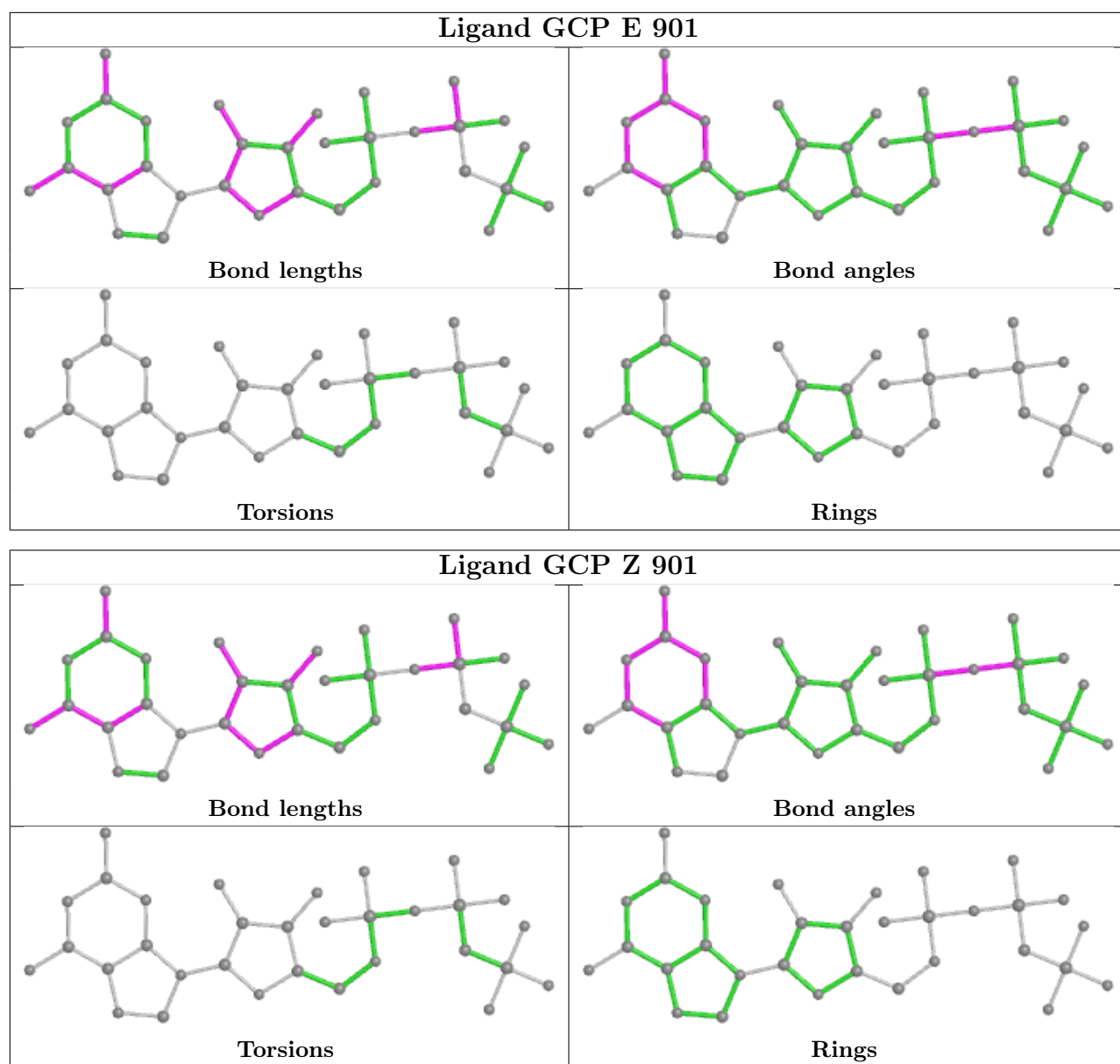


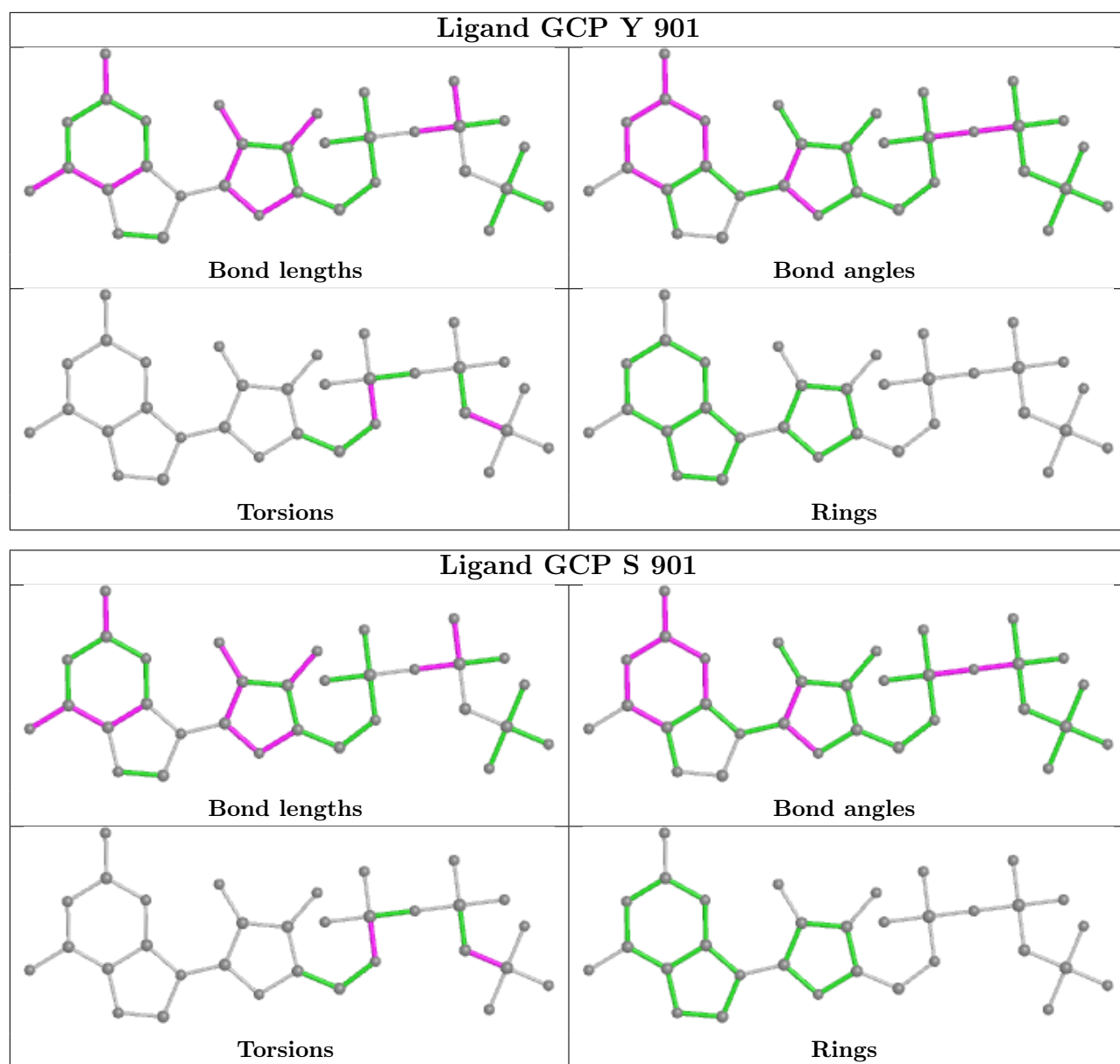


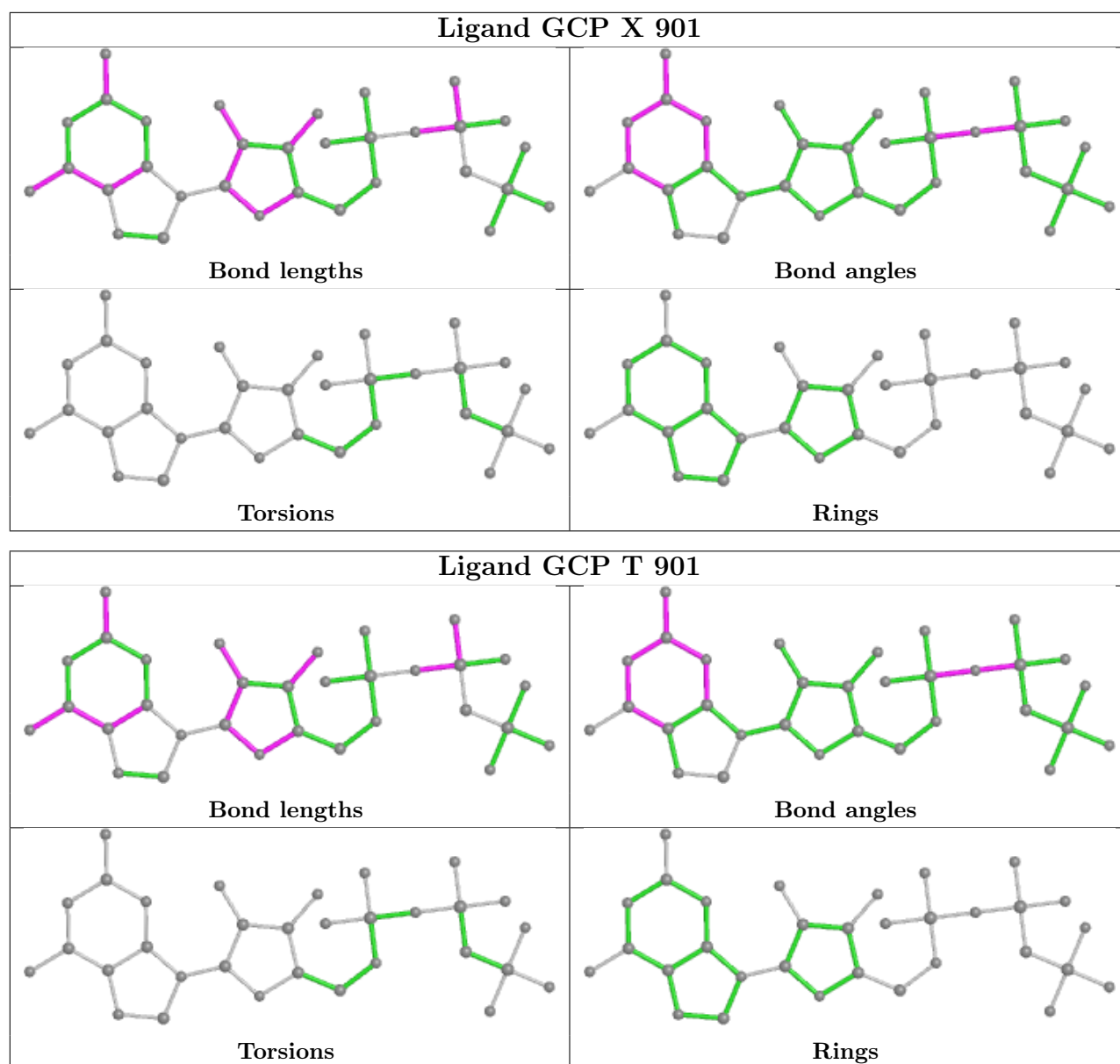












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

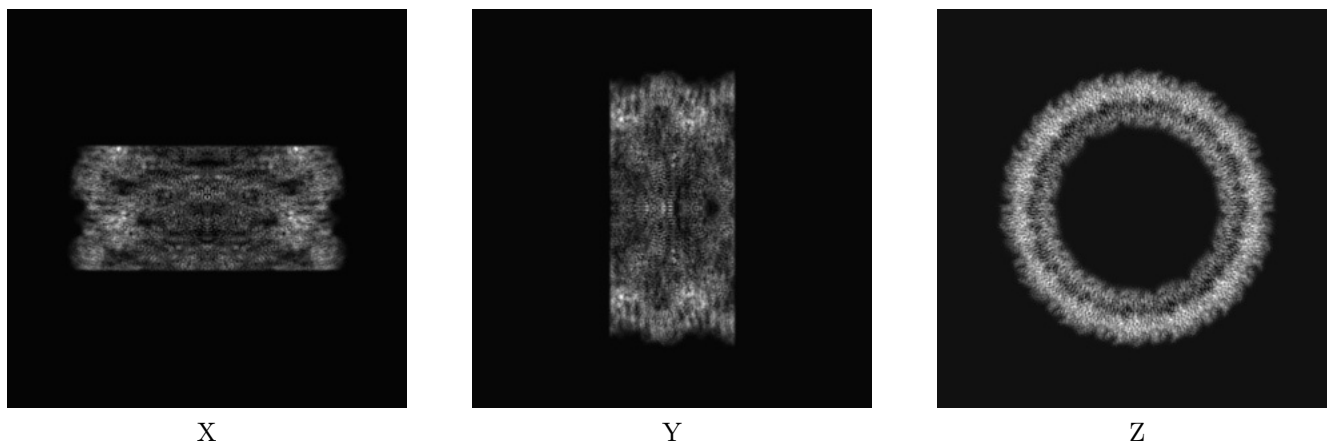
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11932. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections [i](#)

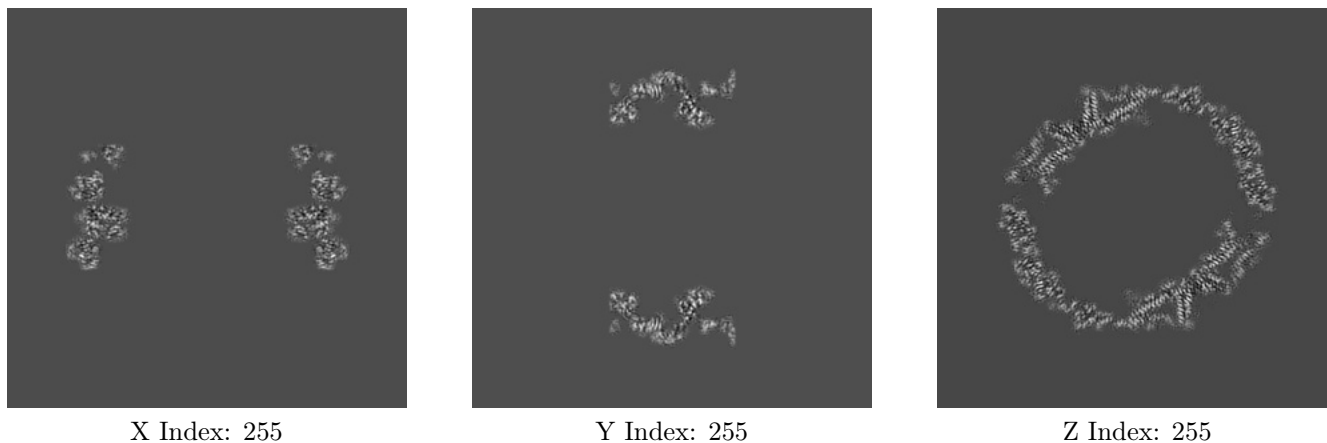
6.1.1 Primary map



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

6.2 Central slices [i](#)

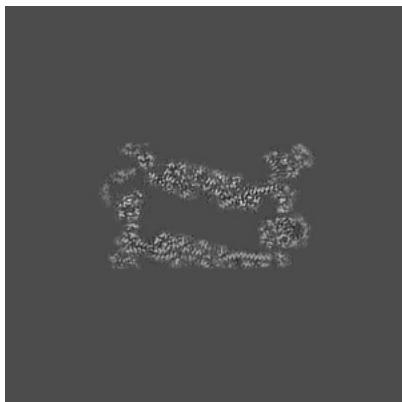
6.2.1 Primary map



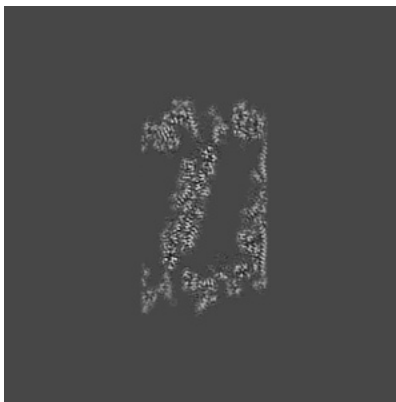
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 141



Y Index: 142

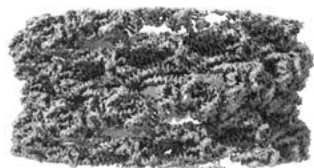


Z Index: 256

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

6.4 Orthogonal surface views [i](#)

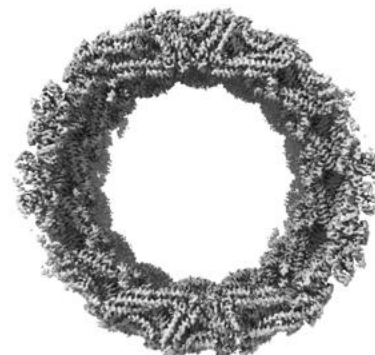
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0115. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

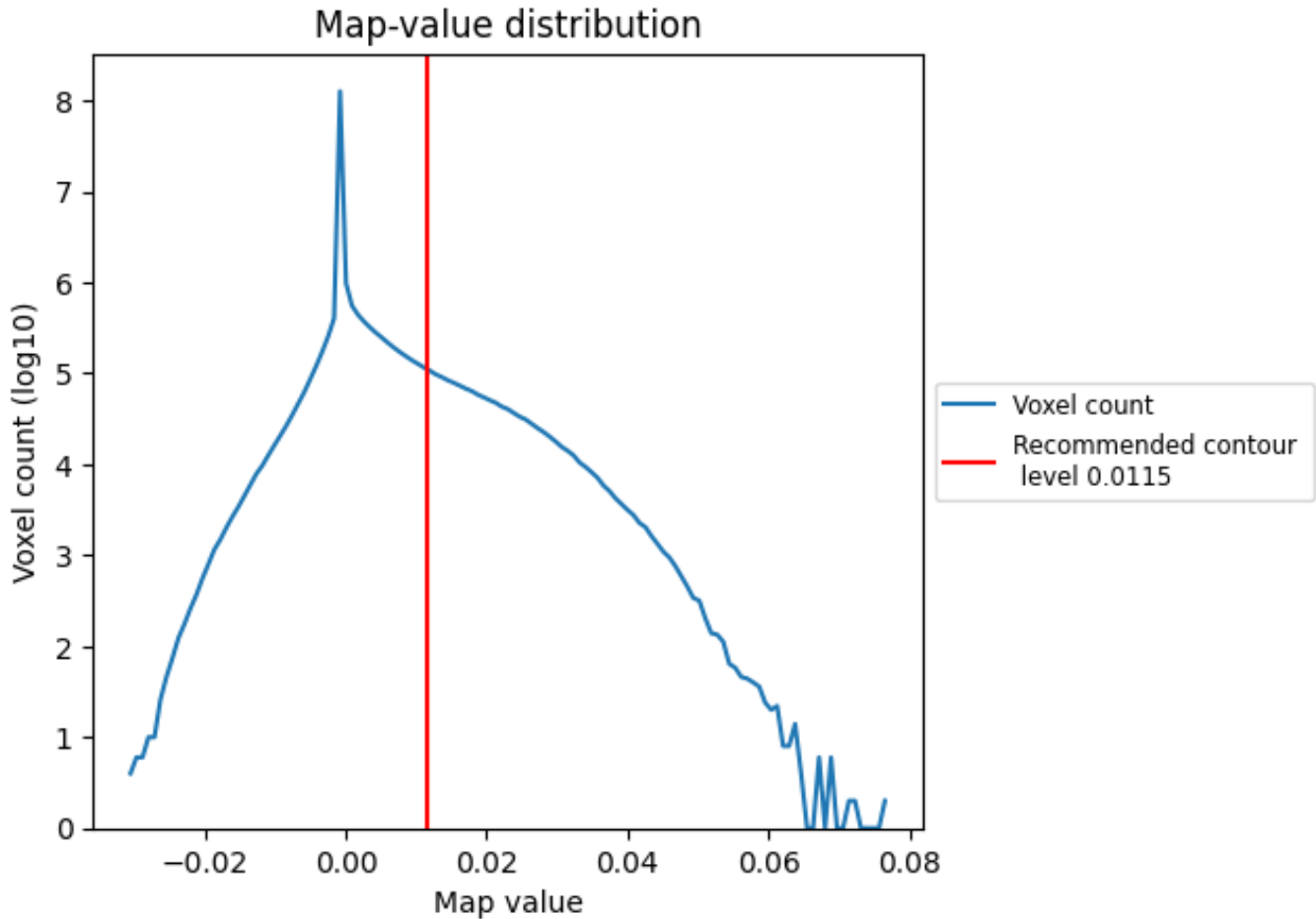
6.5 Mask visualisation

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

7 Map analysis [i](#)

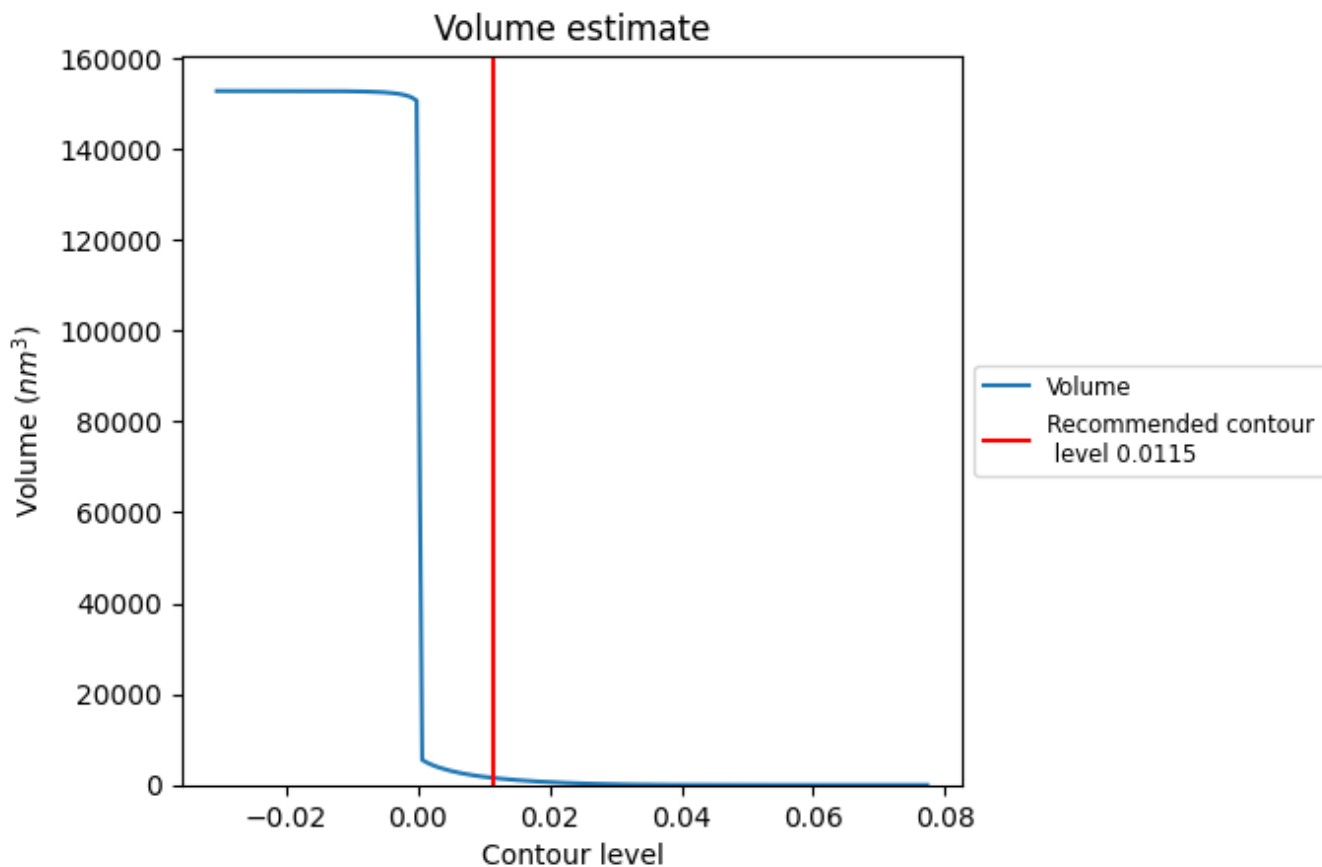
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

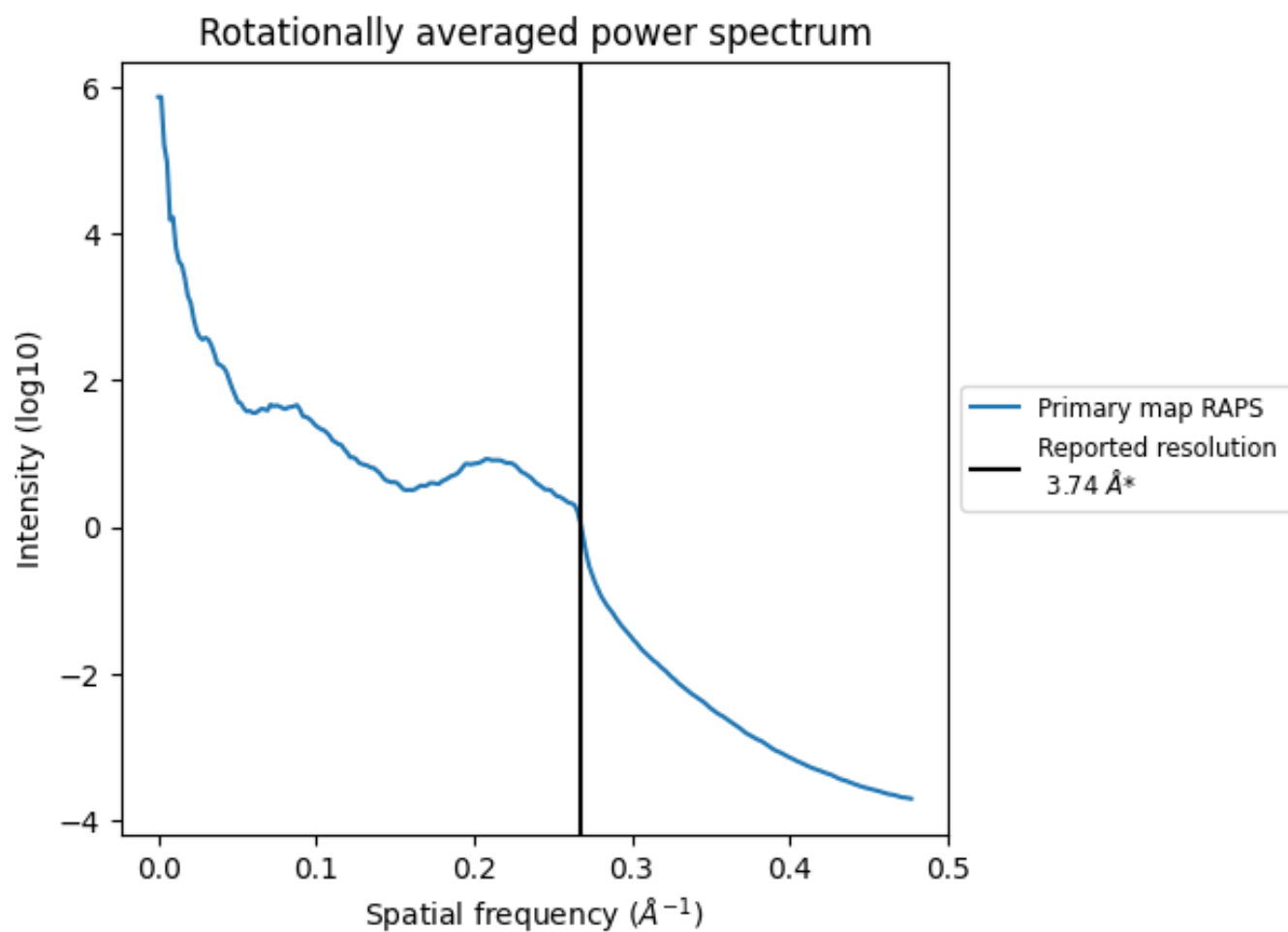
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1548 nm³; this corresponds to an approximate mass of 1398 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 0.267 Å⁻¹

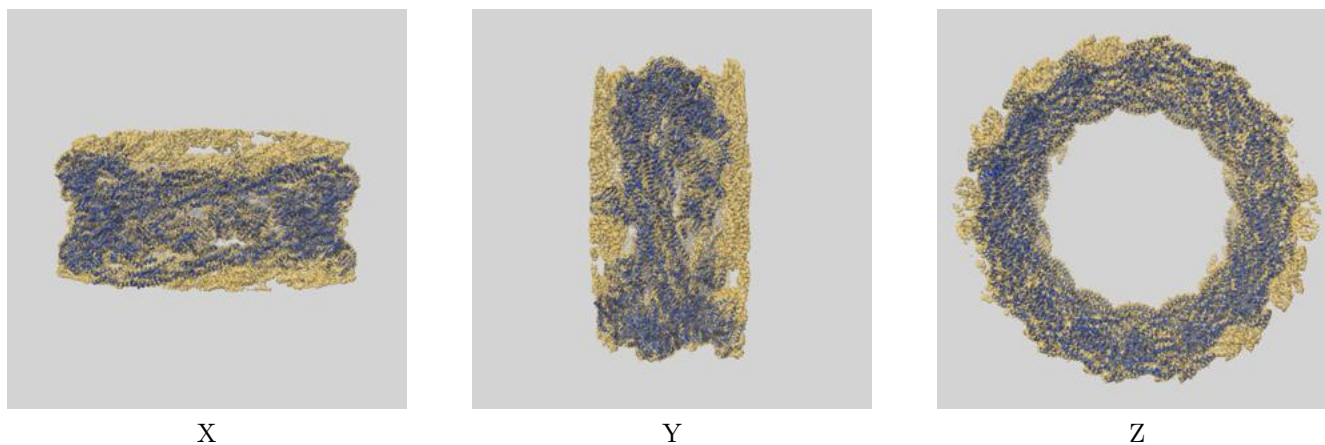
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-11932 and PDB model 7AX3. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)

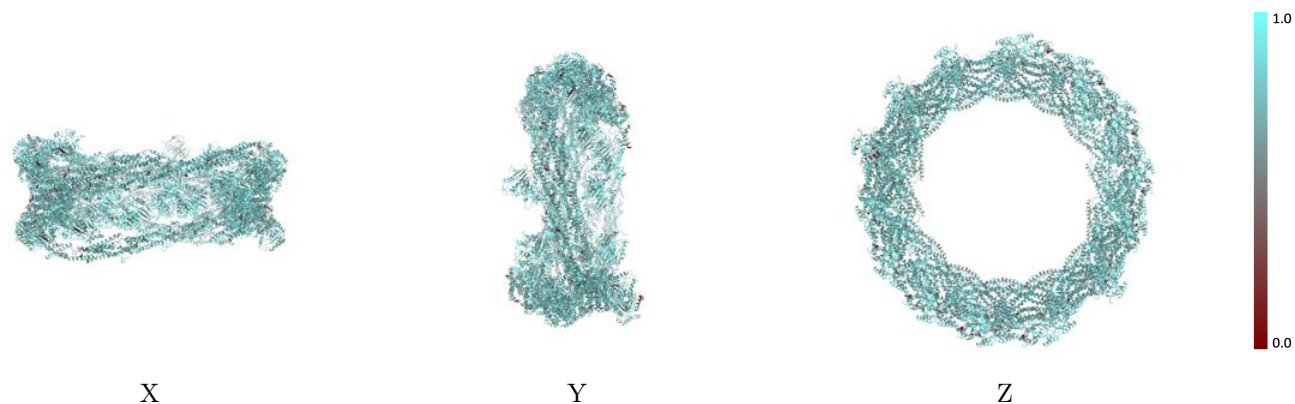


The images above show the 3D surface view of the map at the recommended contour level 0.0115 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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

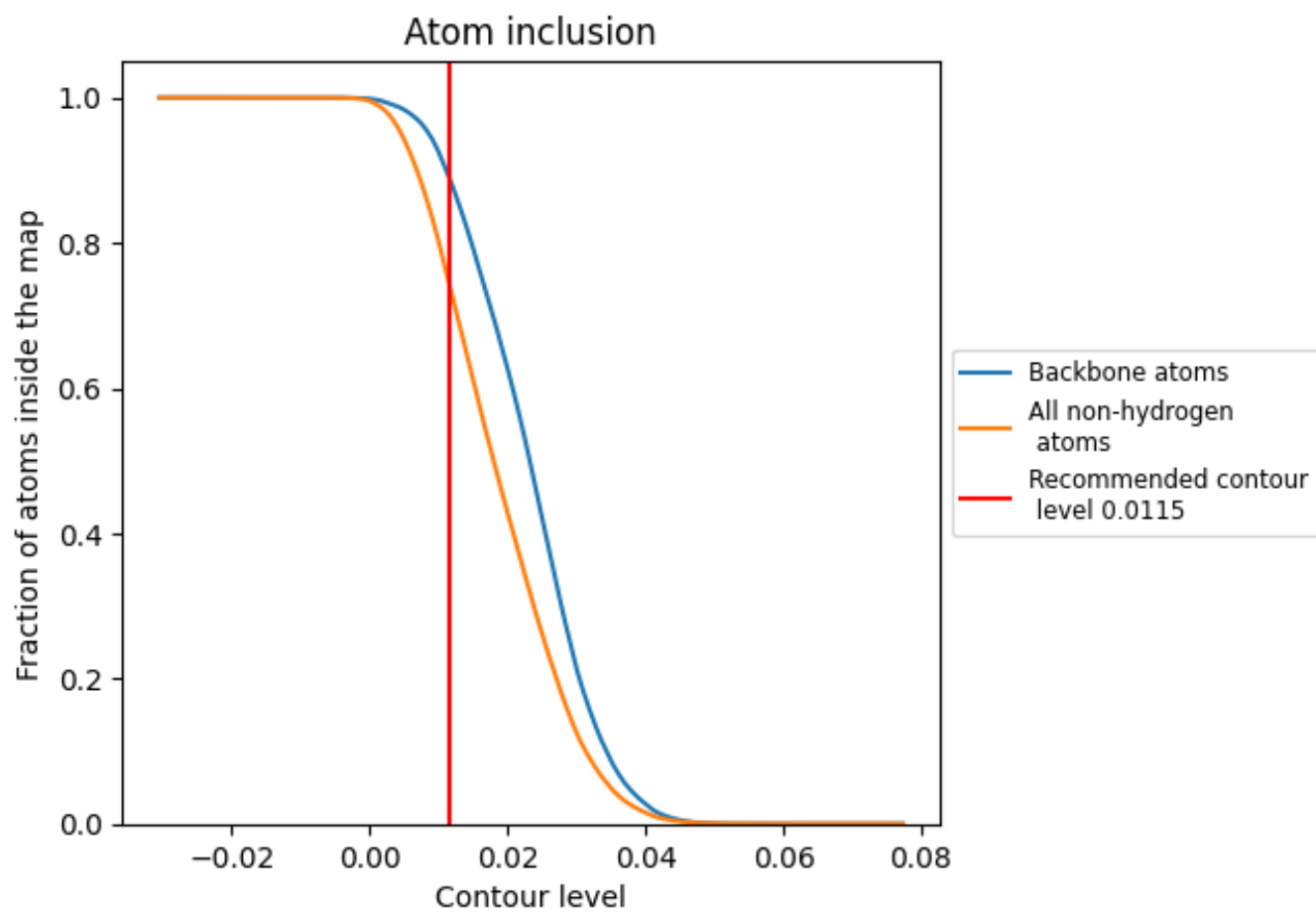
This section was not generated.

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0115).




































9.4 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 75% 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 (0.0115) and Q-score for the entire model and for each chain.

Chain	Atom inclusion
All	 0.7452
A	 0.7466
A2	 0.7578
B	 0.7675
B2	 0.7736
C	 0.7302
C2	 0.7721
D	 0.7582
D2	 0.7734
E	 0.7591
E2	 0.6938
F	 0.7621
F2	 0.7140
G	 0.7464
G2	 0.7532
H	 0.7360
H2	 0.7325
I	 0.7354
I2	 0.6977
J	 0.6949
J2	 0.7353
K	 0.7143
L	 0.7080
M	 0.7523
N	 0.7289
O	 0.7601
P	 0.7455
Q	 0.7695
R	 0.7574
S	 0.7732
T	 0.7710
U	 0.7729
V	 0.7570
W	 0.7614
X	 0.7473



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Chain	Atom inclusion
Y	 0.7362
Z	 0.7334