



## Full wwPDB EM Validation Report ⓘ

Jan 2, 2025 – 03:44 PM EST

PDB ID : 9C6S  
EMDB ID : EMD-45265  
Title : 18-mer blood cell-specific tubulin in complex with Cryptophycin-52  
Authors : Montecinos, F.  
Deposited on : 2024-06-08  
Resolution : 3.52 Å (reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

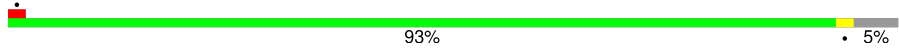
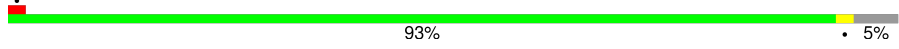
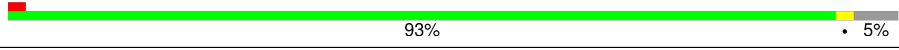
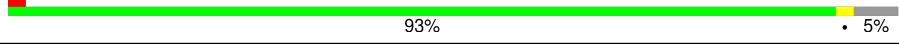
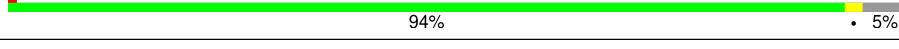
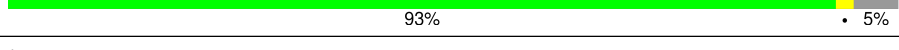
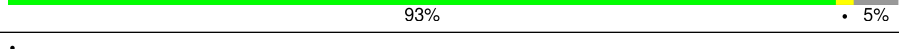
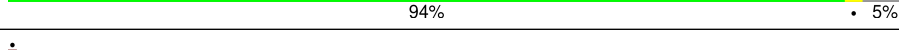
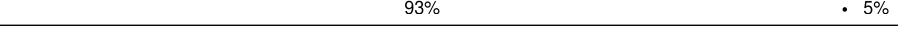
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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

EMDB validation analysis : 0.0.1.dev113  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40



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Mol	Chain	Length	Quality of chain
2	B	446	 93% • 5%
2	F	446	 93% • 5%
2	J	446	 93% • 5%
2	N	446	 93% • 5%
2	R	446	 94% • 5%
2	V	446	 93% • 5%
2	Z	446	 93% • 5%
2	d	446	 94% • 5%
2	h	446	 93% • 5%

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 61137 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 Detyrosinated tubulin alpha-1A chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	428	3337	2114	569	632	22	0	0
1	C	428	3337	2114	569	632	22	0	0
1	I	428	3337	2114	569	632	22	0	0
1	M	428	3337	2114	569	632	22	0	0
1	Q	428	3337	2114	569	632	22	0	0
1	U	428	3337	2114	569	632	22	0	0
1	Y	428	3337	2114	569	632	22	0	0
1	c	428	3337	2114	569	632	22	0	0
1	g	428	3337	2114	569	632	22	0	0

- Molecule 2 is a protein called Tubulin beta-6 chain.

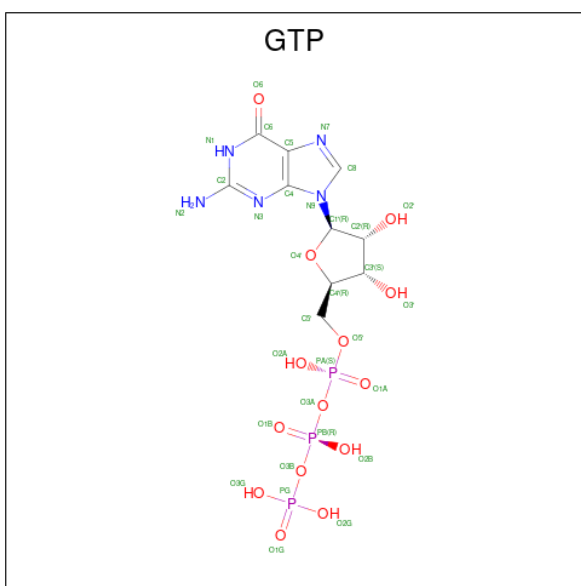
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	425	3349	2107	581	635	26	0	0
2	F	425	3349	2107	581	635	26	0	0
2	J	425	3349	2107	581	635	26	0	0
2	N	425	3349	2107	581	635	26	0	0
2	R	425	3349	2107	581	635	26	0	0
2	V	425	3349	2107	581	635	26	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	Z	425	Total 3349	C 2107	N 581	O 635	S 26	0	0
2	d	425	Total 3349	C 2107	N 581	O 635	S 26	0	0
2	h	425	Total 3349	C 2107	N 581	O 635	S 26	0	0

- Molecule 3 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula:  $C_{10}H_{16}N_5O_{14}P_3$ ) (labeled as "Ligand of Interest" by depositor).



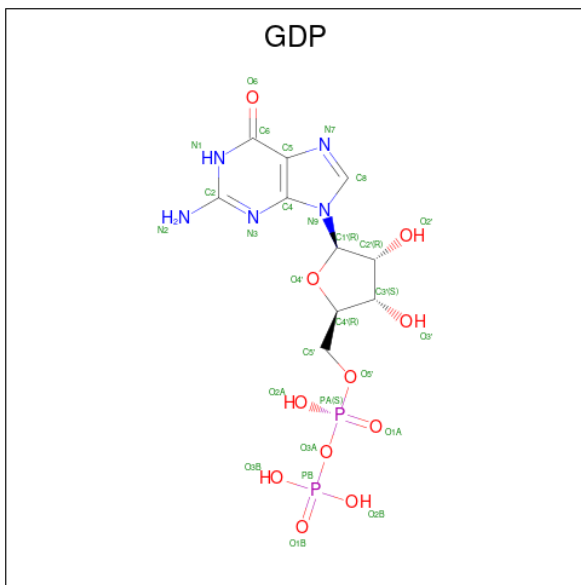
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
3	A	1	Total 32	C 10	N 5	O 14	P 3	0
3	C	1	Total 32	C 10	N 5	O 14	P 3	0
3	I	1	Total 32	C 10	N 5	O 14	P 3	0
3	M	1	Total 32	C 10	N 5	O 14	P 3	0
3	Q	1	Total 32	C 10	N 5	O 14	P 3	0
3	U	1	Total 32	C 10	N 5	O 14	P 3	0
3	Y	1	Total 32	C 10	N 5	O 14	P 3	0
3	c	1	Total 32	C 10	N 5	O 14	P 3	0

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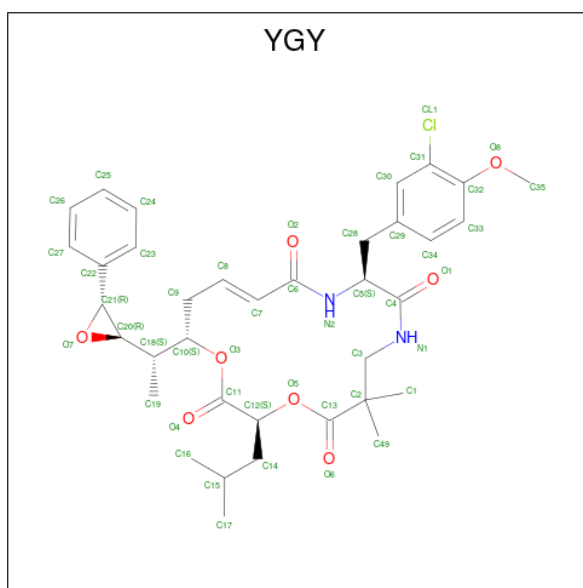
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Mol	Chain	Residues	Atoms				AltConf	
			Total	C	N	O		P
3	g	1	32	10	5	14	3	0

- Molecule 4 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ) (labeled as "Ligand of Interest" by depositor).



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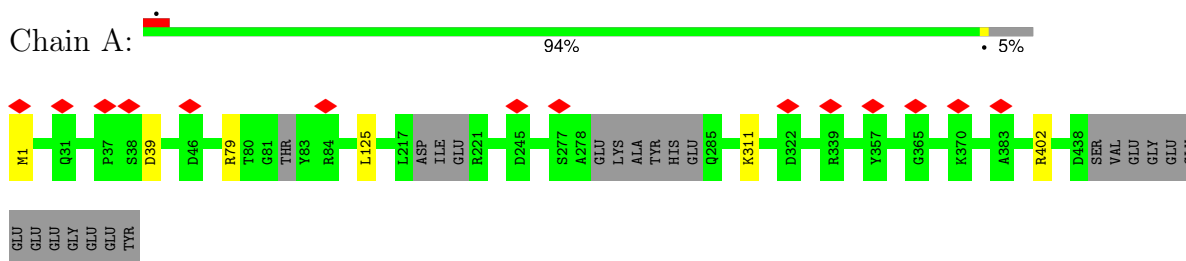


Mol	Chain	Residues	Atoms				AltConf	
			Total	C	Cl	N		O
5	B	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	F	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	J	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	N	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	R	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	V	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	Z	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	d	1	Total	C	Cl	N	O	0
			47	36	1	2	8	
5	h	1	Total	C	Cl	N	O	0
			47	36	1	2	8	

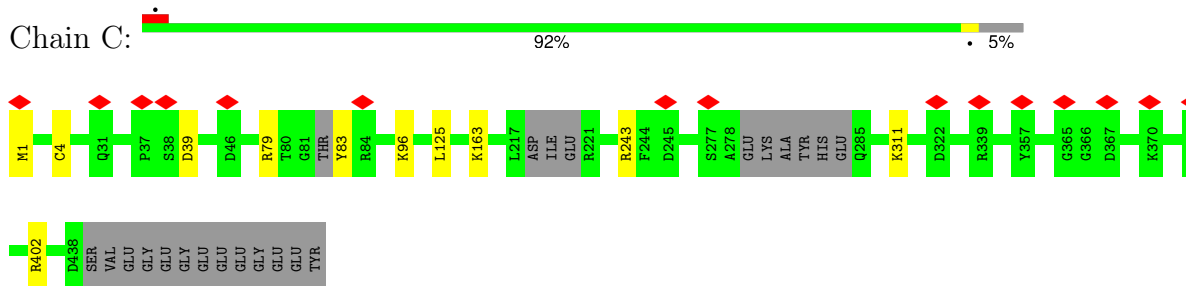
### 3 Residue-property plots [i](#)

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.

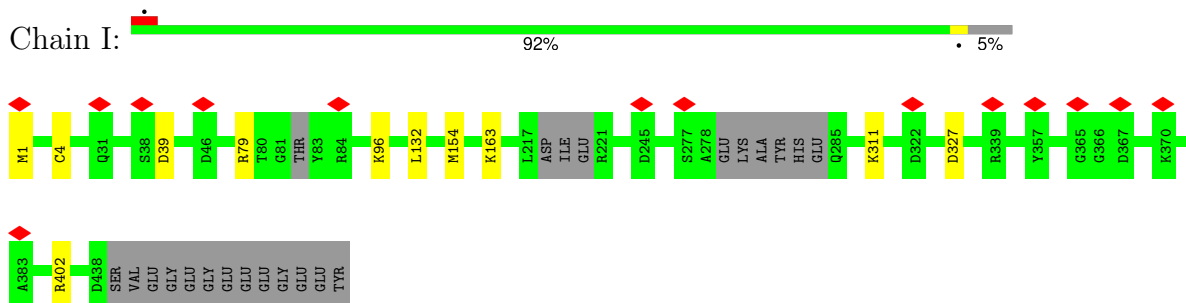
- Molecule 1: Detyrosinated tubulin alpha-1A chain



- Molecule 1: Detyrosinated tubulin alpha-1A chain



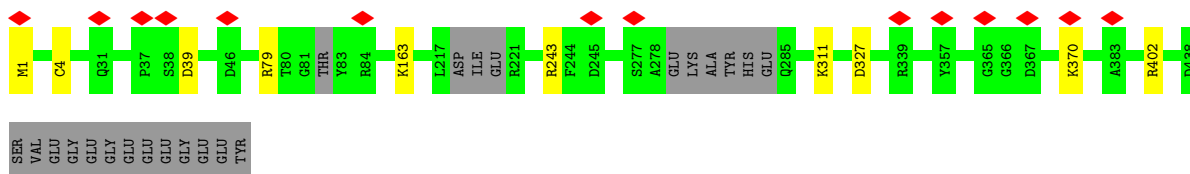
- Molecule 1: Detyrosinated tubulin alpha-1A chain



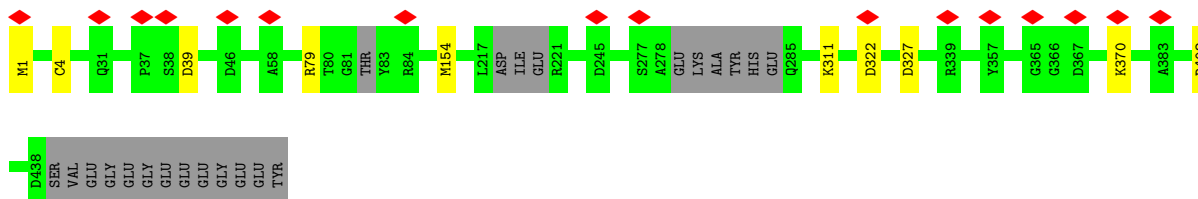
- Molecule 1: Detyrosinated tubulin alpha-1A chain



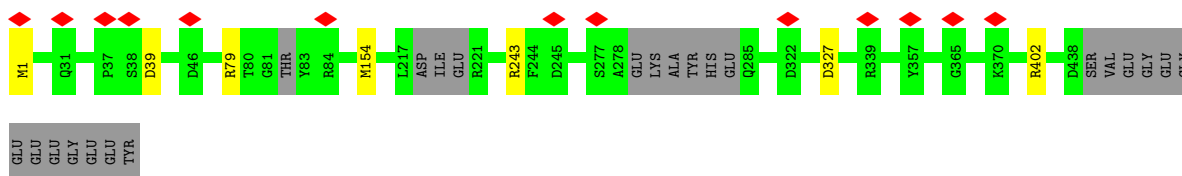




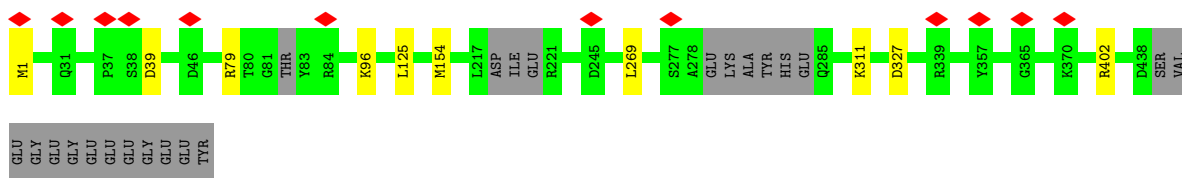
• Molecule 1: Detyrosinated tubulin alpha-1A chain



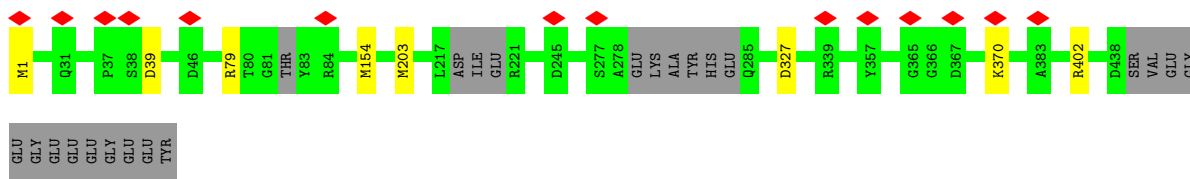
• Molecule 1: Detyrosinated tubulin alpha-1A chain



• Molecule 1: Detyrosinated tubulin alpha-1A chain

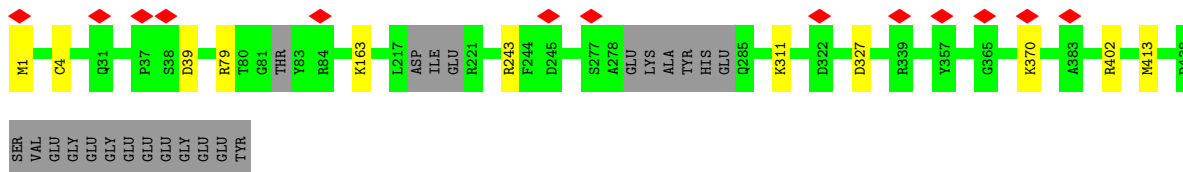


• Molecule 1: Detyrosinated tubulin alpha-1A chain

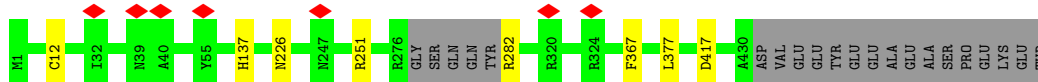


• Molecule 1: Detyrosinated tubulin alpha-1A chain

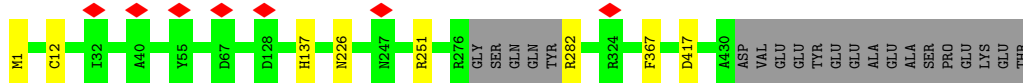




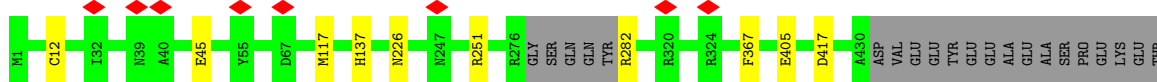
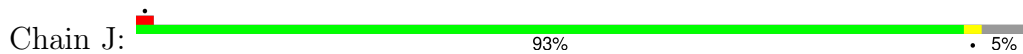
• Molecule 2: Tubulin beta-6 chain



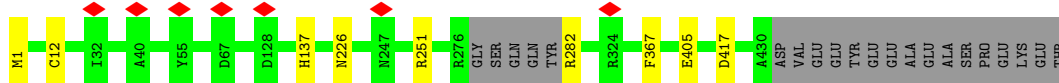
• Molecule 2: Tubulin beta-6 chain



• Molecule 2: Tubulin beta-6 chain



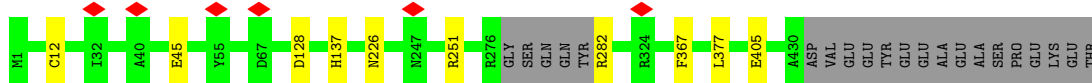
• Molecule 2: Tubulin beta-6 chain



• Molecule 2: Tubulin beta-6 chain

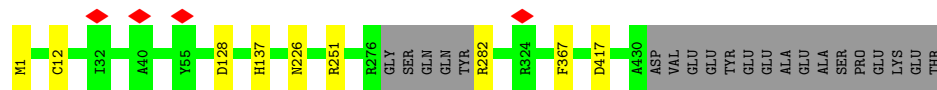


• Molecule 2: Tubulin beta-6 chain

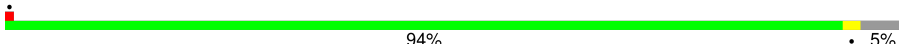


- Molecule 2: Tubulin beta-6 chain

Chain Z:  93% • 5%



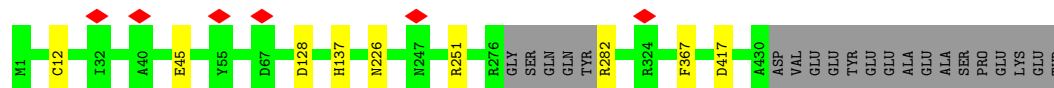
- Molecule 2: Tubulin beta-6 chain

Chain d:  94% • 5%



- Molecule 2: Tubulin beta-6 chain

Chain h:  93% • 5%



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C9	Depositor
Number of particles used	64200	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.476	Depositor
Minimum map value	-0.284	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	547.8, 547.8, 547.8	wwPDB
Map dimensions	660, 660, 660	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	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: GDP, YGY, GTP

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	0.26	0/3410	0.51	0/4625
1	C	0.26	0/3410	0.50	0/4625
1	I	0.26	0/3410	0.51	0/4625
1	M	0.26	0/3410	0.51	0/4625
1	Q	0.26	0/3410	0.50	0/4625
1	U	0.26	0/3410	0.51	0/4625
1	Y	0.26	0/3410	0.50	0/4625
1	c	0.26	0/3410	0.51	0/4625
1	g	0.26	0/3410	0.51	0/4625
2	B	0.26	0/3420	0.50	0/4632
2	F	0.26	0/3420	0.50	0/4632
2	J	0.26	0/3420	0.50	0/4632
2	N	0.26	0/3420	0.50	0/4632
2	R	0.26	0/3420	0.50	0/4632
2	V	0.26	0/3420	0.50	0/4632
2	Z	0.26	0/3420	0.50	0/4632
2	d	0.26	0/3420	0.50	0/4632
2	h	0.26	0/3420	0.50	0/4632
All	All	0.26	0/61470	0.50	0/83313

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	C	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	I	420/451 (93%)	412 (98%)	8 (2%)	0	100	100
1	M	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	Q	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	U	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	Y	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	c	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
1	g	420/451 (93%)	413 (98%)	7 (2%)	0	100	100
2	B	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	F	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	J	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	N	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	R	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	V	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	Z	421/446 (94%)	419 (100%)	2 (0%)	0	100	100
2	d	421/446 (94%)	418 (99%)	3 (1%)	0	100	100
2	h	421/446 (94%)	419 (100%)	2 (0%)	0	100	100
All	All	7569/8073 (94%)	7480 (99%)	89 (1%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains

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	359/378 (95%)	353 (98%)	6 (2%)	56	75
1	C	359/378 (95%)	348 (97%)	11 (3%)	35	62
1	I	359/378 (95%)	348 (97%)	11 (3%)	35	62
1	M	359/378 (95%)	349 (97%)	10 (3%)	38	64
1	Q	359/378 (95%)	349 (97%)	10 (3%)	38	64
1	U	359/378 (95%)	352 (98%)	7 (2%)	52	73
1	Y	359/378 (95%)	349 (97%)	10 (3%)	38	64
1	c	359/378 (95%)	351 (98%)	8 (2%)	47	69
1	g	359/378 (95%)	348 (97%)	11 (3%)	35	62
2	B	367/385 (95%)	359 (98%)	8 (2%)	47	69
2	F	367/385 (95%)	359 (98%)	8 (2%)	47	69
2	J	367/385 (95%)	357 (97%)	10 (3%)	40	65
2	N	367/385 (95%)	358 (98%)	9 (2%)	42	67
2	R	367/385 (95%)	360 (98%)	7 (2%)	52	73
2	V	367/385 (95%)	357 (97%)	10 (3%)	40	65
2	Z	367/385 (95%)	358 (98%)	9 (2%)	42	67
2	d	367/385 (95%)	360 (98%)	7 (2%)	52	73
2	h	367/385 (95%)	358 (98%)	9 (2%)	42	67
All	All	6534/6867 (95%)	6373 (98%)	161 (2%)	43	67

All (161) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	39	ASP
1	A	79	ARG
1	A	125	LEU
1	A	311	LYS
1	A	402	ARG
2	B	12	CYS
2	B	137	HIS
2	B	226	ASN
2	B	251	ARG
2	B	282	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	367	PHE
2	B	377	LEU
2	B	417	ASP
1	C	1	MET
1	C	4	CYS
1	C	39	ASP
1	C	79	ARG
1	C	83	TYR
1	C	96	LYS
1	C	125	LEU
1	C	163	LYS
1	C	243	ARG
1	C	311	LYS
1	C	402	ARG
2	F	1	MET
2	F	12	CYS
2	F	137	HIS
2	F	226	ASN
2	F	251	ARG
2	F	282	ARG
2	F	367	PHE
2	F	417	ASP
1	I	1	MET
1	I	4	CYS
1	I	39	ASP
1	I	79	ARG
1	I	96	LYS
1	I	132	LEU
1	I	154	MET
1	I	163	LYS
1	I	311	LYS
1	I	327	ASP
1	I	402	ARG
2	J	12	CYS
2	J	45	GLU
2	J	117	MET
2	J	137	HIS
2	J	226	ASN
2	J	251	ARG
2	J	282	ARG
2	J	367	PHE
2	J	405	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	J	417	ASP
1	M	1	MET
1	M	4	CYS
1	M	39	ASP
1	M	79	ARG
1	M	163	LYS
1	M	243	ARG
1	M	311	LYS
1	M	327	ASP
1	M	370	LYS
1	M	402	ARG
2	N	1	MET
2	N	12	CYS
2	N	137	HIS
2	N	226	ASN
2	N	251	ARG
2	N	282	ARG
2	N	367	PHE
2	N	405	GLU
2	N	417	ASP
1	Q	1	MET
1	Q	4	CYS
1	Q	39	ASP
1	Q	79	ARG
1	Q	154	MET
1	Q	311	LYS
1	Q	322	ASP
1	Q	327	ASP
1	Q	370	LYS
1	Q	402	ARG
2	R	12	CYS
2	R	137	HIS
2	R	226	ASN
2	R	251	ARG
2	R	282	ARG
2	R	367	PHE
2	R	417	ASP
1	U	1	MET
1	U	39	ASP
1	U	79	ARG
1	U	154	MET
1	U	243	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	U	327	ASP
1	U	402	ARG
2	V	12	CYS
2	V	45	GLU
2	V	128	ASP
2	V	137	HIS
2	V	226	ASN
2	V	251	ARG
2	V	282	ARG
2	V	367	PHE
2	V	377	LEU
2	V	405	GLU
1	Y	1	MET
1	Y	39	ASP
1	Y	79	ARG
1	Y	96	LYS
1	Y	125	LEU
1	Y	154	MET
1	Y	269	LEU
1	Y	311	LYS
1	Y	327	ASP
1	Y	402	ARG
2	Z	1	MET
2	Z	12	CYS
2	Z	128	ASP
2	Z	137	HIS
2	Z	226	ASN
2	Z	251	ARG
2	Z	282	ARG
2	Z	367	PHE
2	Z	417	ASP
1	c	1	MET
1	c	39	ASP
1	c	79	ARG
1	c	154	MET
1	c	203	MET
1	c	327	ASP
1	c	370	LYS
1	c	402	ARG
2	d	12	CYS
2	d	45	GLU
2	d	128	ASP

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Mol	Chain	Res	Type
2	d	137	HIS
2	d	226	ASN
2	d	251	ARG
2	d	282	ARG
1	g	1	MET
1	g	4	CYS
1	g	39	ASP
1	g	79	ARG
1	g	163	LYS
1	g	243	ARG
1	g	311	LYS
1	g	327	ASP
1	g	370	LYS
1	g	402	ARG
1	g	413	MET
2	h	12	CYS
2	h	45	GLU
2	h	128	ASP
2	h	137	HIS
2	h	226	ASN
2	h	251	ARG
2	h	282	ARG
2	h	367	PHE
2	h	417	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry

27 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	YGY	F	502	-	49,50,50	1.00	5 (10%)	62,71,71	1.04	4 (6%)
3	GTP	g	601	-	29,34,34	1.28	2 (6%)	35,54,54	1.30	4 (11%)
5	YGY	V	502	-	49,50,50	1.00	5 (10%)	62,71,71	1.03	5 (8%)
3	GTP	I	601	-	29,34,34	1.28	2 (6%)	35,54,54	1.29	4 (11%)
3	GTP	Q	601	-	29,34,34	1.27	2 (6%)	35,54,54	1.30	4 (11%)
4	GDP	V	501	-	25,30,30	0.96	1 (4%)	30,47,47	1.13	3 (10%)
5	YGY	d	502	-	49,50,50	0.99	5 (10%)	62,71,71	1.03	4 (6%)
4	GDP	h	501	-	25,30,30	0.95	1 (4%)	30,47,47	1.12	3 (10%)
4	GDP	F	501	-	25,30,30	0.95	1 (4%)	30,47,47	1.14	3 (10%)
5	YGY	h	502	-	49,50,50	1.00	5 (10%)	62,71,71	1.04	5 (8%)
3	GTP	Y	601	-	29,34,34	1.25	2 (6%)	35,54,54	1.29	4 (11%)
4	GDP	d	501	-	25,30,30	0.96	1 (4%)	30,47,47	1.14	3 (10%)
5	YGY	Z	502	-	49,50,50	1.00	5 (10%)	62,71,71	1.04	4 (6%)
4	GDP	B	501	-	25,30,30	0.96	1 (4%)	30,47,47	1.13	3 (10%)
4	GDP	R	501	-	25,30,30	0.95	1 (4%)	30,47,47	1.13	3 (10%)
5	YGY	B	502	-	49,50,50	0.99	5 (10%)	62,71,71	1.03	4 (6%)
5	YGY	R	502	-	49,50,50	1.00	5 (10%)	62,71,71	1.04	6 (9%)
3	GTP	U	601	-	29,34,34	1.27	2 (6%)	35,54,54	1.29	4 (11%)
4	GDP	N	501	-	25,30,30	0.96	1 (4%)	30,47,47	1.14	3 (10%)
5	YGY	J	502	-	49,50,50	0.99	5 (10%)	62,71,71	1.03	5 (8%)
3	GTP	C	601	-	29,34,34	1.28	2 (6%)	35,54,54	1.29	4 (11%)
5	YGY	N	502	-	49,50,50	1.00	5 (10%)	62,71,71	1.04	4 (6%)
3	GTP	c	601	-	29,34,34	1.28	2 (6%)	35,54,54	1.29	4 (11%)
4	GDP	Z	501	-	25,30,30	0.96	1 (4%)	30,47,47	1.13	3 (10%)
3	GTP	M	601	-	29,34,34	1.27	2 (6%)	35,54,54	1.29	4 (11%)
4	GDP	J	501	-	25,30,30	0.96	1 (4%)	30,47,47	1.14	3 (10%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	GTP	A	601	-	29,34,34	1.27	2 (6%)	35,54,54	1.29	4 (11%)

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
5	YGY	F	502	-	-	17/60/65/65	0/3/4/4
3	GTP	g	601	-	-	3/18/38/38	0/3/3/3
5	YGY	V	502	-	-	20/60/65/65	0/3/4/4
3	GTP	I	601	-	-	3/18/38/38	0/3/3/3
3	GTP	Q	601	-	-	3/18/38/38	0/3/3/3
4	GDP	V	501	-	-	3/12/32/32	0/3/3/3
5	YGY	d	502	-	-	20/60/65/65	0/3/4/4
4	GDP	h	501	-	-	3/12/32/32	0/3/3/3
4	GDP	F	501	-	-	3/12/32/32	0/3/3/3
5	YGY	h	502	-	-	17/60/65/65	0/3/4/4
3	GTP	Y	601	-	-	3/18/38/38	0/3/3/3
4	GDP	d	501	-	-	3/12/32/32	0/3/3/3
5	YGY	Z	502	-	-	21/60/65/65	0/3/4/4
4	GDP	B	501	-	-	3/12/32/32	0/3/3/3
4	GDP	R	501	-	-	3/12/32/32	0/3/3/3
5	YGY	B	502	-	-	18/60/65/65	0/3/4/4
5	YGY	R	502	-	-	20/60/65/65	0/3/4/4
3	GTP	U	601	-	-	3/18/38/38	0/3/3/3
4	GDP	N	501	-	-	3/12/32/32	0/3/3/3
5	YGY	J	502	-	-	19/60/65/65	0/3/4/4
3	GTP	C	601	-	-	3/18/38/38	0/3/3/3
5	YGY	N	502	-	-	20/60/65/65	0/3/4/4
3	GTP	c	601	-	-	3/18/38/38	0/3/3/3
4	GDP	Z	501	-	-	3/12/32/32	0/3/3/3
3	GTP	M	601	-	-	3/18/38/38	0/3/3/3
4	GDP	J	501	-	-	3/12/32/32	0/3/3/3
3	GTP	A	601	-	-	4/18/38/38	0/3/3/3

All (72) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	I	601	GTP	C5-C6	-4.30	1.38	1.47
3	g	601	GTP	C5-C6	-4.30	1.38	1.47
3	C	601	GTP	C5-C6	-4.27	1.39	1.47
3	U	601	GTP	C5-C6	-4.27	1.39	1.47
3	M	601	GTP	C5-C6	-4.27	1.39	1.47
3	c	601	GTP	C5-C6	-4.26	1.39	1.47
3	Q	601	GTP	C5-C6	-4.25	1.39	1.47
3	Y	601	GTP	C5-C6	-4.22	1.39	1.47
3	A	601	GTP	C5-C6	-4.21	1.39	1.47
5	V	502	YGY	O3-C10	-3.12	1.40	1.46
5	Z	502	YGY	O3-C10	-3.09	1.40	1.46
5	N	502	YGY	O3-C10	-3.08	1.40	1.46
5	F	502	YGY	O3-C10	-3.05	1.40	1.46
5	d	502	YGY	O3-C10	-3.05	1.40	1.46
5	h	502	YGY	O3-C10	-3.05	1.40	1.46
5	R	502	YGY	O3-C10	-3.05	1.40	1.46
5	J	502	YGY	O3-C10	-3.04	1.40	1.46
5	B	502	YGY	O3-C10	-3.03	1.40	1.46
5	Z	502	YGY	C2-C13	2.47	1.56	1.52
5	h	502	YGY	C2-C13	2.47	1.56	1.52
5	N	502	YGY	C2-C13	2.44	1.56	1.52
5	J	502	YGY	C2-C13	2.43	1.56	1.52
5	V	502	YGY	C2-C13	2.42	1.56	1.52
5	R	502	YGY	C2-C13	2.41	1.56	1.52
5	B	502	YGY	C2-C13	2.41	1.56	1.52
5	F	502	YGY	C2-C13	2.41	1.56	1.52
5	d	502	YGY	C2-C13	2.41	1.56	1.52
4	V	501	GDP	C6-N1	-2.39	1.34	1.37
4	B	501	GDP	C6-N1	-2.38	1.34	1.37
4	N	501	GDP	C6-N1	-2.38	1.34	1.37
4	R	501	GDP	C6-N1	-2.37	1.34	1.37
5	N	502	YGY	C22-C21	2.36	1.55	1.51
4	F	501	GDP	C6-N1	-2.35	1.34	1.37
4	h	501	GDP	C6-N1	-2.35	1.34	1.37
5	V	502	YGY	C22-C21	2.34	1.55	1.51
5	R	502	YGY	C31-CL1	2.33	1.79	1.73
4	d	501	GDP	C6-N1	-2.33	1.34	1.37
5	V	502	YGY	C31-CL1	2.32	1.79	1.73
5	F	502	YGY	C31-CL1	2.32	1.79	1.73
4	J	501	GDP	C6-N1	-2.32	1.34	1.37
5	Z	502	YGY	C22-C21	2.32	1.55	1.51
4	Z	501	GDP	C6-N1	-2.32	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	N	502	YGY	C31-CL1	2.32	1.79	1.73
5	h	502	YGY	C31-CL1	2.31	1.79	1.73
5	B	502	YGY	C22-C21	2.31	1.55	1.51
5	Z	502	YGY	C28-C29	2.30	1.56	1.51
5	J	502	YGY	C31-CL1	2.30	1.79	1.73
5	h	502	YGY	C22-C21	2.30	1.55	1.51
5	R	502	YGY	C28-C29	2.30	1.56	1.51
5	d	502	YGY	C31-CL1	2.29	1.79	1.73
5	F	502	YGY	C22-C21	2.29	1.54	1.51
5	B	502	YGY	C31-CL1	2.29	1.79	1.73
5	Z	502	YGY	C31-CL1	2.29	1.79	1.73
5	R	502	YGY	C22-C21	2.28	1.54	1.51
5	J	502	YGY	C22-C21	2.27	1.54	1.51
5	d	502	YGY	C22-C21	2.27	1.54	1.51
5	V	502	YGY	C28-C29	2.26	1.56	1.51
5	J	502	YGY	C28-C29	2.26	1.56	1.51
5	B	502	YGY	C28-C29	2.26	1.56	1.51
5	F	502	YGY	C28-C29	2.26	1.56	1.51
5	d	502	YGY	C28-C29	2.24	1.56	1.51
5	h	502	YGY	C28-C29	2.23	1.56	1.51
5	N	502	YGY	C28-C29	2.22	1.56	1.51
3	C	601	GTP	C2-N3	2.15	1.38	1.33
3	c	601	GTP	C2-N3	2.13	1.38	1.33
3	I	601	GTP	C2-N3	2.12	1.38	1.33
3	Q	601	GTP	C2-N3	2.12	1.38	1.33
3	g	601	GTP	C2-N3	2.10	1.38	1.33
3	U	601	GTP	C2-N3	2.10	1.38	1.33
3	A	601	GTP	C2-N3	2.09	1.38	1.33
3	Y	601	GTP	C2-N3	2.07	1.38	1.33
3	M	601	GTP	C2-N3	2.07	1.38	1.33

All (104) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	601	GTP	C8-N7-C5	3.73	108.89	102.55
3	Y	601	GTP	C8-N7-C5	3.72	108.88	102.55
3	C	601	GTP	C8-N7-C5	3.71	108.87	102.55
3	I	601	GTP	C8-N7-C5	3.71	108.86	102.55
3	U	601	GTP	C8-N7-C5	3.71	108.86	102.55
3	g	601	GTP	C8-N7-C5	3.71	108.86	102.55
3	Q	601	GTP	C8-N7-C5	3.69	108.83	102.55
3	M	601	GTP	C8-N7-C5	3.68	108.82	102.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	c	601	GTP	C8-N7-C5	3.66	108.78	102.55
3	Q	601	GTP	C5-C6-N1	3.12	120.02	114.07
3	I	601	GTP	C5-C6-N1	3.09	119.96	114.07
3	C	601	GTP	C5-C6-N1	3.08	119.96	114.07
3	g	601	GTP	C5-C6-N1	3.08	119.95	114.07
3	c	601	GTP	C5-C6-N1	3.08	119.95	114.07
3	Q	601	GTP	C2-N1-C6	-3.07	119.49	125.11
3	A	601	GTP	C5-C6-N1	3.07	119.92	114.07
3	M	601	GTP	C5-C6-N1	3.06	119.92	114.07
3	Y	601	GTP	C5-C6-N1	3.06	119.91	114.07
3	U	601	GTP	C5-C6-N1	3.05	119.90	114.07
3	I	601	GTP	C2-N1-C6	-3.04	119.54	125.11
3	Y	601	GTP	C2-N1-C6	-3.04	119.54	125.11
3	g	601	GTP	C2-N1-C6	-3.03	119.56	125.11
3	A	601	GTP	C2-N1-C6	-3.03	119.57	125.11
3	U	601	GTP	C2-N1-C6	-3.02	119.58	125.11
3	c	601	GTP	C2-N1-C6	-3.02	119.59	125.11
3	C	601	GTP	C2-N1-C6	-3.02	119.59	125.11
3	M	601	GTP	C2-N1-C6	-3.00	119.61	125.11
5	F	502	YGY	O2-C6-N2	2.97	126.32	122.44
5	N	502	YGY	O2-C6-N2	2.97	126.31	122.44
5	Z	502	YGY	O2-C6-N2	2.94	126.28	122.44
5	B	502	YGY	O2-C6-N2	2.94	126.27	122.44
5	h	502	YGY	O2-C6-N2	2.93	126.26	122.44
5	Z	502	YGY	C12-O5-C13	2.92	120.39	117.01
5	R	502	YGY	O2-C6-N2	2.91	126.23	122.44
5	J	502	YGY	O2-C6-N2	2.90	126.22	122.44
5	d	502	YGY	O2-C6-N2	2.90	126.22	122.44
5	V	502	YGY	O2-C6-N2	2.88	126.20	122.44
4	d	501	GDP	C8-N7-C5	2.83	107.37	102.55
4	R	501	GDP	C8-N7-C5	2.82	107.35	102.55
4	J	501	GDP	C8-N7-C5	2.81	107.33	102.55
4	N	501	GDP	C8-N7-C5	2.81	107.33	102.55
5	N	502	YGY	C12-O5-C13	2.81	120.25	117.01
4	F	501	GDP	C8-N7-C5	2.80	107.32	102.55
4	B	501	GDP	C8-N7-C5	2.80	107.31	102.55
4	h	501	GDP	C8-N7-C5	2.79	107.30	102.55
4	V	501	GDP	C8-N7-C5	2.78	107.28	102.55
4	Z	501	GDP	C8-N7-C5	2.78	107.28	102.55
5	h	502	YGY	C12-O5-C13	2.72	120.15	117.01
5	V	502	YGY	C12-O5-C13	2.71	120.14	117.01
5	R	502	YGY	C12-O5-C13	2.70	120.14	117.01

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	d	502	YGY	C12-O5-C13	2.67	120.09	117.01
5	J	502	YGY	C35-O8-C32	-2.66	113.61	117.51
5	J	502	YGY	C12-O5-C13	2.63	120.05	117.01
5	h	502	YGY	C35-O8-C32	-2.62	113.66	117.51
5	d	502	YGY	C35-O8-C32	-2.58	113.72	117.51
5	Z	502	YGY	C35-O8-C32	-2.58	113.73	117.51
5	B	502	YGY	C35-O8-C32	-2.57	113.75	117.51
5	N	502	YGY	C35-O8-C32	-2.56	113.75	117.51
5	F	502	YGY	C12-O5-C13	2.56	119.97	117.01
5	R	502	YGY	C35-O8-C32	-2.53	113.81	117.51
5	F	502	YGY	C35-O8-C32	-2.53	113.81	117.51
5	V	502	YGY	C35-O8-C32	-2.52	113.82	117.51
5	F	502	YGY	O3-C11-C12	2.45	114.19	110.02
5	N	502	YGY	O3-C11-C12	2.44	114.19	110.02
5	R	502	YGY	O3-C11-C12	2.43	114.16	110.02
5	h	502	YGY	O3-C11-C12	2.42	114.16	110.02
5	B	502	YGY	C12-O5-C13	2.42	119.81	117.01
5	d	502	YGY	O3-C11-C12	2.40	114.12	110.02
5	B	502	YGY	O3-C11-C12	2.39	114.11	110.02
5	J	502	YGY	O3-C11-C12	2.37	114.06	110.02
5	Z	502	YGY	O3-C11-C12	2.34	114.01	110.02
5	V	502	YGY	O3-C11-C12	2.30	113.95	110.02
3	Q	601	GTP	O6-C6-C5	-2.09	120.17	124.32
5	R	502	YGY	C28-C5-N2	2.09	115.17	110.83
4	d	501	GDP	C2'-C3'-C4'	2.09	106.65	102.61
4	J	501	GDP	C5-C6-N1	2.09	118.06	114.07
4	R	501	GDP	C2'-C3'-C4'	2.09	106.65	102.61
4	N	501	GDP	C2'-C3'-C4'	2.09	106.64	102.61
4	B	501	GDP	C5-C6-N1	2.09	118.05	114.07
4	h	501	GDP	C5-C6-N1	2.09	118.05	114.07
4	J	501	GDP	C2'-C3'-C4'	2.08	106.64	102.61
4	V	501	GDP	C5-C6-N1	2.08	118.04	114.07
4	d	501	GDP	C5-C6-N1	2.08	118.04	114.07
4	N	501	GDP	C5-C6-N1	2.08	118.04	114.07
3	M	601	GTP	O6-C6-C5	-2.08	120.19	124.32
3	Y	601	GTP	O6-C6-C5	-2.08	120.20	124.32
3	c	601	GTP	O6-C6-C5	-2.08	120.20	124.32
4	V	501	GDP	C2'-C3'-C4'	2.08	106.62	102.61
4	B	501	GDP	C2'-C3'-C4'	2.08	106.62	102.61
3	g	601	GTP	O6-C6-C5	-2.07	120.21	124.32
4	Z	501	GDP	C5-C6-N1	2.07	118.02	114.07
3	C	601	GTP	O6-C6-C5	-2.07	120.21	124.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	F	501	GDP	C2'-C3'-C4'	2.07	106.61	102.61
4	Z	501	GDP	C2'-C3'-C4'	2.07	106.61	102.61
4	h	501	GDP	C2'-C3'-C4'	2.07	106.61	102.61
4	F	501	GDP	C5-C6-N1	2.07	118.01	114.07
4	R	501	GDP	C5-C6-N1	2.07	118.01	114.07
3	A	601	GTP	O6-C6-C5	-2.06	120.23	124.32
3	I	601	GTP	O6-C6-C5	-2.06	120.23	124.32
5	V	502	YGY	C28-C5-N2	2.04	115.06	110.83
3	U	601	GTP	O6-C6-C5	-2.04	120.28	124.32
5	R	502	YGY	C29-C28-C5	2.04	118.78	113.36
5	J	502	YGY	C28-C5-N2	2.02	115.01	110.83
5	h	502	YGY	C28-C5-N2	2.01	115.00	110.83

There are no chirality outliers.

All (227) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	601	GTP	C5'-O5'-PA-O3A
3	A	601	GTP	C5'-O5'-PA-O1A
3	A	601	GTP	C5'-O5'-PA-O2A
3	C	601	GTP	C5'-O5'-PA-O3A
3	C	601	GTP	C5'-O5'-PA-O1A
3	C	601	GTP	C5'-O5'-PA-O2A
3	I	601	GTP	C5'-O5'-PA-O3A
3	I	601	GTP	C5'-O5'-PA-O1A
3	I	601	GTP	C5'-O5'-PA-O2A
3	M	601	GTP	C5'-O5'-PA-O3A
3	M	601	GTP	C5'-O5'-PA-O1A
3	M	601	GTP	C5'-O5'-PA-O2A
3	Q	601	GTP	C5'-O5'-PA-O3A
3	Q	601	GTP	C5'-O5'-PA-O1A
3	Q	601	GTP	C5'-O5'-PA-O2A
3	U	601	GTP	C5'-O5'-PA-O3A
3	U	601	GTP	C5'-O5'-PA-O1A
3	U	601	GTP	C5'-O5'-PA-O2A
3	Y	601	GTP	C5'-O5'-PA-O3A
3	Y	601	GTP	C5'-O5'-PA-O1A
3	Y	601	GTP	C5'-O5'-PA-O2A
3	c	601	GTP	C5'-O5'-PA-O3A
3	c	601	GTP	C5'-O5'-PA-O1A
3	c	601	GTP	C5'-O5'-PA-O2A
3	g	601	GTP	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
3	g	601	GTP	C5'-O5'-PA-O1A
3	g	601	GTP	C5'-O5'-PA-O2A
4	B	501	GDP	C5'-O5'-PA-O3A
4	B	501	GDP	C5'-O5'-PA-O1A
4	B	501	GDP	C5'-O5'-PA-O2A
4	F	501	GDP	C5'-O5'-PA-O3A
4	F	501	GDP	C5'-O5'-PA-O1A
4	F	501	GDP	C5'-O5'-PA-O2A
4	J	501	GDP	C5'-O5'-PA-O3A
4	J	501	GDP	C5'-O5'-PA-O1A
4	J	501	GDP	C5'-O5'-PA-O2A
4	N	501	GDP	C5'-O5'-PA-O3A
4	N	501	GDP	C5'-O5'-PA-O1A
4	N	501	GDP	C5'-O5'-PA-O2A
4	R	501	GDP	C5'-O5'-PA-O3A
4	R	501	GDP	C5'-O5'-PA-O1A
4	R	501	GDP	C5'-O5'-PA-O2A
4	V	501	GDP	C5'-O5'-PA-O3A
4	V	501	GDP	C5'-O5'-PA-O1A
4	V	501	GDP	C5'-O5'-PA-O2A
4	Z	501	GDP	C5'-O5'-PA-O3A
4	Z	501	GDP	C5'-O5'-PA-O1A
4	Z	501	GDP	C5'-O5'-PA-O2A
4	d	501	GDP	C5'-O5'-PA-O3A
4	d	501	GDP	C5'-O5'-PA-O1A
4	d	501	GDP	C5'-O5'-PA-O2A
4	h	501	GDP	C5'-O5'-PA-O3A
4	h	501	GDP	C5'-O5'-PA-O1A
4	h	501	GDP	C5'-O5'-PA-O2A
5	B	502	YGY	C1-C2-C3-N1
5	B	502	YGY	C13-C2-C3-N1
5	B	502	YGY	C49-C2-C3-N1
5	B	502	YGY	C31-C32-O8-C35
5	F	502	YGY	C1-C2-C3-N1
5	F	502	YGY	C13-C2-C3-N1
5	F	502	YGY	C49-C2-C3-N1
5	F	502	YGY	C31-C32-O8-C35
5	J	502	YGY	C1-C2-C3-N1
5	J	502	YGY	C13-C2-C3-N1
5	J	502	YGY	C49-C2-C3-N1
5	J	502	YGY	C31-C32-O8-C35
5	N	502	YGY	C1-C2-C3-N1

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Mol	Chain	Res	Type	Atoms
5	N	502	YGY	C13-C2-C3-N1
5	N	502	YGY	C49-C2-C3-N1
5	N	502	YGY	C31-C32-O8-C35
5	R	502	YGY	C1-C2-C3-N1
5	R	502	YGY	C13-C2-C3-N1
5	R	502	YGY	C49-C2-C3-N1
5	R	502	YGY	C31-C32-O8-C35
5	V	502	YGY	C1-C2-C3-N1
5	V	502	YGY	C13-C2-C3-N1
5	V	502	YGY	C49-C2-C3-N1
5	V	502	YGY	C31-C32-O8-C35
5	Z	502	YGY	C1-C2-C3-N1
5	Z	502	YGY	C13-C2-C3-N1
5	Z	502	YGY	C49-C2-C3-N1
5	Z	502	YGY	C31-C32-O8-C35
5	d	502	YGY	C1-C2-C3-N1
5	d	502	YGY	C13-C2-C3-N1
5	d	502	YGY	C49-C2-C3-N1
5	d	502	YGY	C31-C32-O8-C35
5	h	502	YGY	C1-C2-C3-N1
5	h	502	YGY	C13-C2-C3-N1
5	h	502	YGY	C49-C2-C3-N1
5	h	502	YGY	C31-C32-O8-C35
5	N	502	YGY	C33-C32-O8-C35
5	R	502	YGY	C33-C32-O8-C35
5	V	502	YGY	C33-C32-O8-C35
5	h	502	YGY	C33-C32-O8-C35
5	B	502	YGY	C33-C32-O8-C35
5	F	502	YGY	C33-C32-O8-C35
5	Z	502	YGY	C33-C32-O8-C35
5	d	502	YGY	C33-C32-O8-C35
5	J	502	YGY	C33-C32-O8-C35
5	N	502	YGY	C2-C13-O5-C12
5	Z	502	YGY	C2-C13-O5-C12
5	d	502	YGY	C2-C13-O5-C12
5	N	502	YGY	O6-C13-O5-C12
5	B	502	YGY	C2-C13-O5-C12
5	F	502	YGY	C2-C13-O5-C12
5	J	502	YGY	C2-C13-O5-C12
5	R	502	YGY	C2-C13-O5-C12
5	V	502	YGY	C2-C13-O5-C12
5	h	502	YGY	C2-C13-O5-C12

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Mol	Chain	Res	Type	Atoms
5	Z	502	YGY	O6-C13-O5-C12
5	B	502	YGY	O6-C13-O5-C12
5	F	502	YGY	O6-C13-O5-C12
5	J	502	YGY	O6-C13-O5-C12
5	R	502	YGY	O6-C13-O5-C12
5	V	502	YGY	O6-C13-O5-C12
5	d	502	YGY	O6-C13-O5-C12
5	h	502	YGY	O6-C13-O5-C12
5	N	502	YGY	N2-C6-C7-C8
5	Z	502	YGY	N2-C6-C7-C8
5	J	502	YGY	C5-C28-C29-C30
5	Z	502	YGY	C5-C28-C29-C30
5	R	502	YGY	C5-C28-C29-C30
5	V	502	YGY	C5-C28-C29-C30
5	F	502	YGY	C5-C28-C29-C30
5	N	502	YGY	C5-C28-C29-C30
5	d	502	YGY	C5-C28-C29-C30
5	B	502	YGY	C5-C28-C29-C30
5	Z	502	YGY	C5-C28-C29-C34
5	J	502	YGY	C5-C28-C29-C34
5	N	502	YGY	O2-C6-C7-C8
5	Z	502	YGY	O2-C6-C7-C8
5	F	502	YGY	C5-C28-C29-C34
5	R	502	YGY	C5-C28-C29-C34
5	d	502	YGY	C5-C28-C29-C34
5	N	502	YGY	C5-C28-C29-C34
5	V	502	YGY	C5-C28-C29-C34
5	h	502	YGY	C5-C28-C29-C30
5	h	502	YGY	C5-C28-C29-C34
5	B	502	YGY	C5-C28-C29-C34
5	R	502	YGY	N2-C6-C7-C8
5	B	502	YGY	C2-C3-N1-C4
5	V	502	YGY	C2-C3-N1-C4
5	Z	502	YGY	C2-C3-N1-C4
5	h	502	YGY	C2-C3-N1-C4
5	V	502	YGY	O7-C21-C22-C23
5	V	502	YGY	O7-C21-C22-C27
5	h	502	YGY	O7-C21-C22-C23
5	h	502	YGY	O7-C21-C22-C27
5	R	502	YGY	O2-C6-C7-C8
5	F	502	YGY	C2-C3-N1-C4
5	J	502	YGY	C2-C3-N1-C4

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Mol	Chain	Res	Type	Atoms
5	N	502	YGY	C2-C3-N1-C4
5	R	502	YGY	C2-C3-N1-C4
5	d	502	YGY	C2-C3-N1-C4
5	B	502	YGY	C12-C14-C15-C17
5	F	502	YGY	C12-C14-C15-C17
5	J	502	YGY	C12-C14-C15-C17
5	R	502	YGY	C12-C14-C15-C17
5	V	502	YGY	C12-C14-C15-C17
5	h	502	YGY	C12-C14-C15-C17
5	J	502	YGY	O7-C21-C22-C27
5	B	502	YGY	O7-C21-C22-C27
5	N	502	YGY	O7-C21-C22-C27
5	R	502	YGY	O7-C21-C22-C27
5	Z	502	YGY	O7-C21-C22-C27
5	d	502	YGY	O7-C21-C22-C27
5	N	502	YGY	C12-C14-C15-C17
5	Z	502	YGY	C12-C14-C15-C17
5	d	502	YGY	C12-C14-C15-C17
5	B	502	YGY	O7-C21-C22-C23
5	F	502	YGY	O7-C21-C22-C27
5	J	502	YGY	O7-C21-C22-C23
5	N	502	YGY	O7-C21-C22-C23
5	R	502	YGY	O7-C21-C22-C23
5	d	502	YGY	N2-C6-C7-C8
5	B	502	YGY	O5-C13-C2-C49
5	F	502	YGY	O5-C13-C2-C49
5	J	502	YGY	O5-C13-C2-C49
5	R	502	YGY	O5-C13-C2-C49
5	V	502	YGY	O5-C13-C2-C49
5	Z	502	YGY	O5-C13-C2-C3
5	d	502	YGY	O5-C13-C2-C49
5	d	502	YGY	O2-C6-C7-C8
5	J	502	YGY	N2-C6-C7-C8
5	J	502	YGY	O2-C6-C7-C8
5	V	502	YGY	N2-C6-C7-C8
5	V	502	YGY	O2-C6-C7-C8
5	F	502	YGY	O7-C21-C22-C23
5	Z	502	YGY	O7-C21-C22-C23
5	d	502	YGY	O7-C21-C22-C23
5	N	502	YGY	O5-C13-C2-C49
5	Z	502	YGY	O5-C13-C2-C49
5	h	502	YGY	O5-C13-C2-C49

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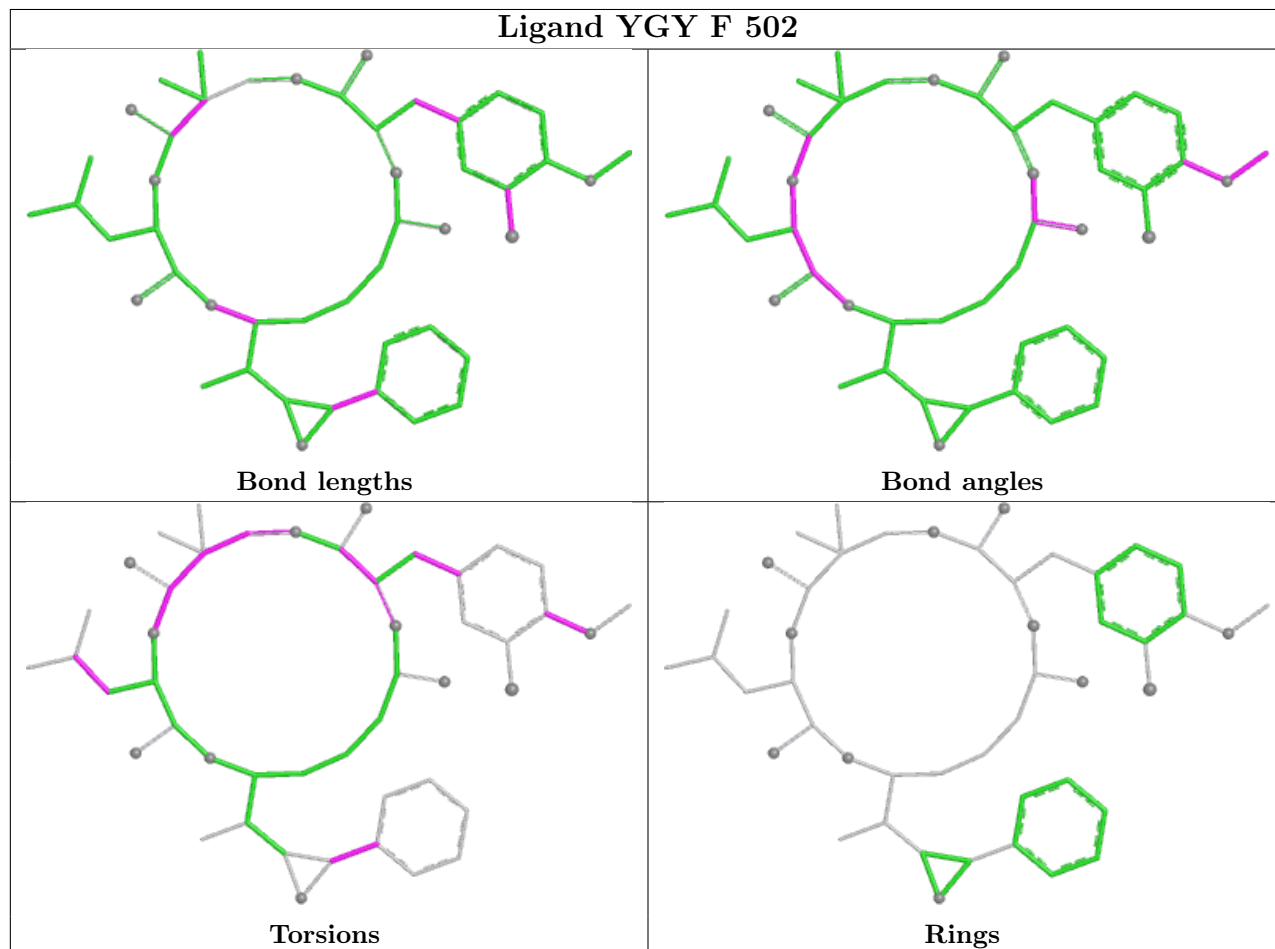
Mol	Chain	Res	Type	Atoms
5	N	502	YGY	O5-C12-C14-C15
5	R	502	YGY	O5-C12-C14-C15
5	V	502	YGY	O5-C12-C14-C15
5	Z	502	YGY	O5-C12-C14-C15
5	d	502	YGY	O5-C12-C14-C15
5	d	502	YGY	O1-C4-C5-C28
5	F	502	YGY	O1-C4-C5-C28
5	V	502	YGY	O1-C4-C5-C28
5	Z	502	YGY	O1-C4-C5-C28
5	h	502	YGY	O1-C4-C5-C28
5	B	502	YGY	O1-C4-C5-C28
5	R	502	YGY	O1-C4-C5-C28
5	B	502	YGY	O5-C13-C2-C3
5	F	502	YGY	O5-C13-C2-C3
5	J	502	YGY	O5-C13-C2-C3
5	N	502	YGY	O5-C13-C2-C3
5	R	502	YGY	O5-C13-C2-C3
5	V	502	YGY	O5-C13-C2-C3
5	d	502	YGY	O5-C13-C2-C3
5	h	502	YGY	O5-C13-C2-C3
5	J	502	YGY	O1-C4-C5-C28
5	N	502	YGY	O1-C4-C5-C28
5	h	502	YGY	C28-C5-N2-C6
5	B	502	YGY	C28-C5-N2-C6
3	A	601	GTP	C3'-C4'-C5'-O5'
5	V	502	YGY	C28-C5-N2-C6
5	F	502	YGY	C28-C5-N2-C6
5	d	502	YGY	C28-C5-N2-C6
5	N	502	YGY	C28-C5-N2-C6
5	R	502	YGY	C28-C5-N2-C6
5	J	502	YGY	C28-C5-N2-C6
5	Z	502	YGY	C28-C5-N2-C6
5	B	502	YGY	N1-C4-C5-C28
5	Z	502	YGY	N1-C4-C5-C28

There are no ring outliers.

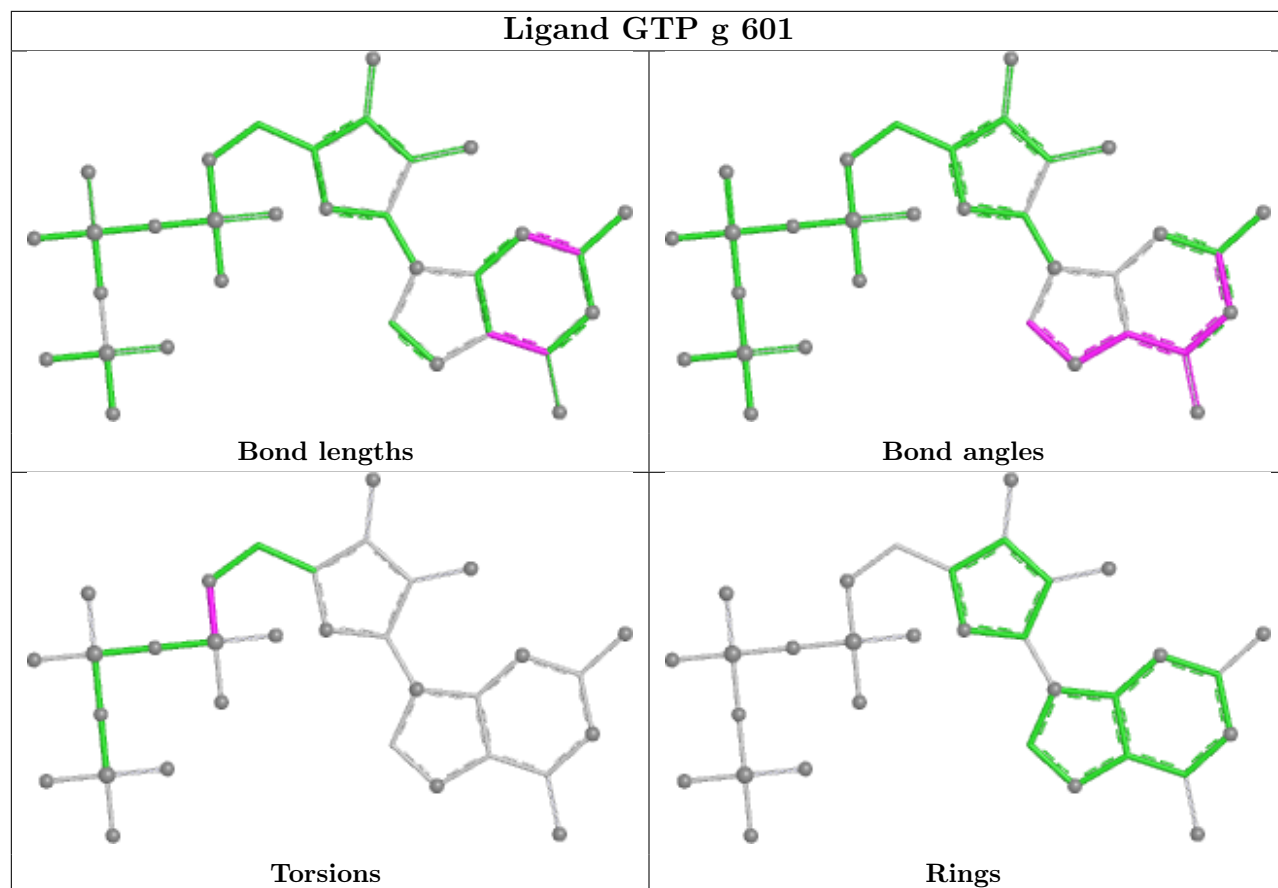
No monomer is involved in short contacts.

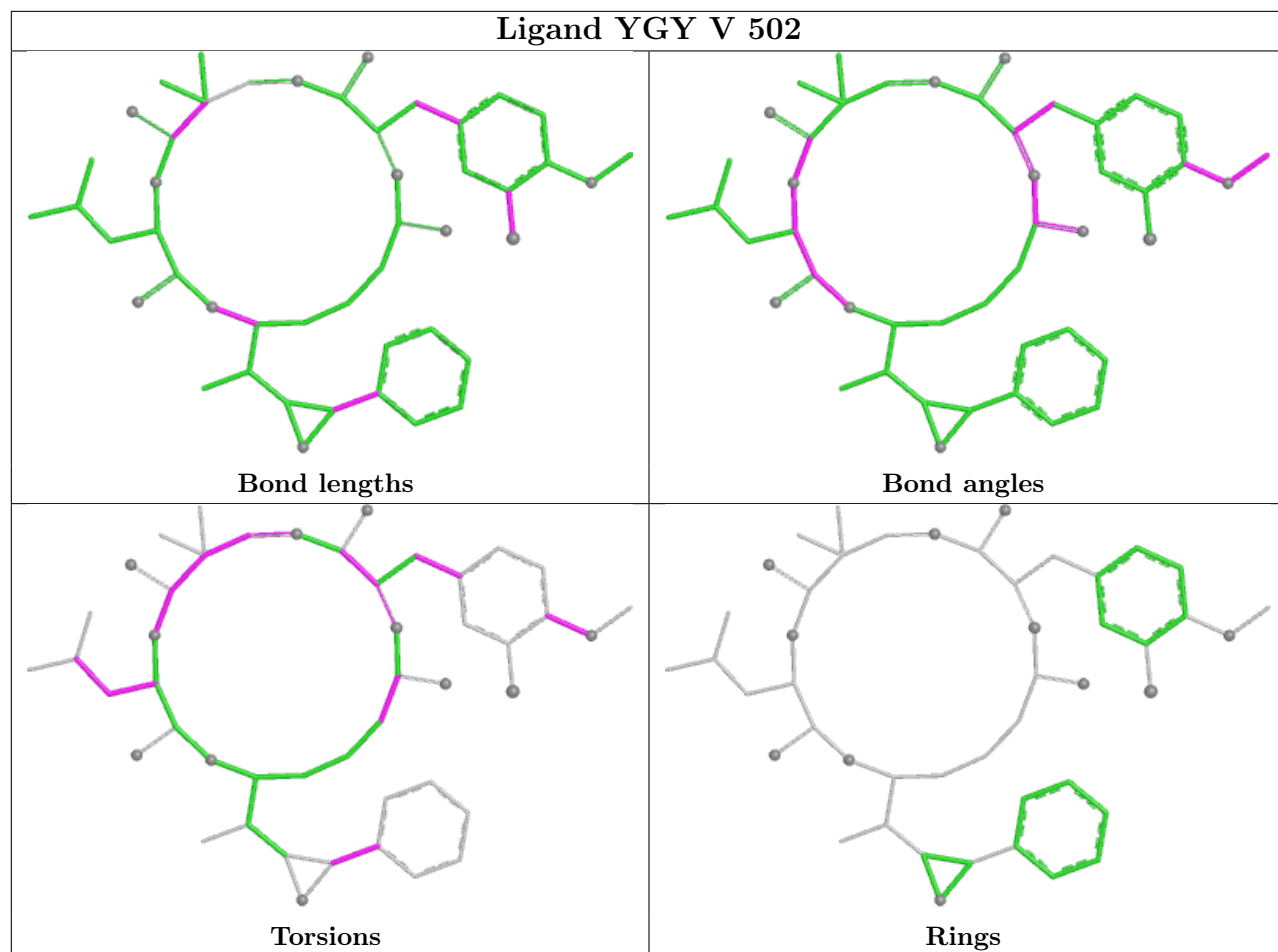
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier.

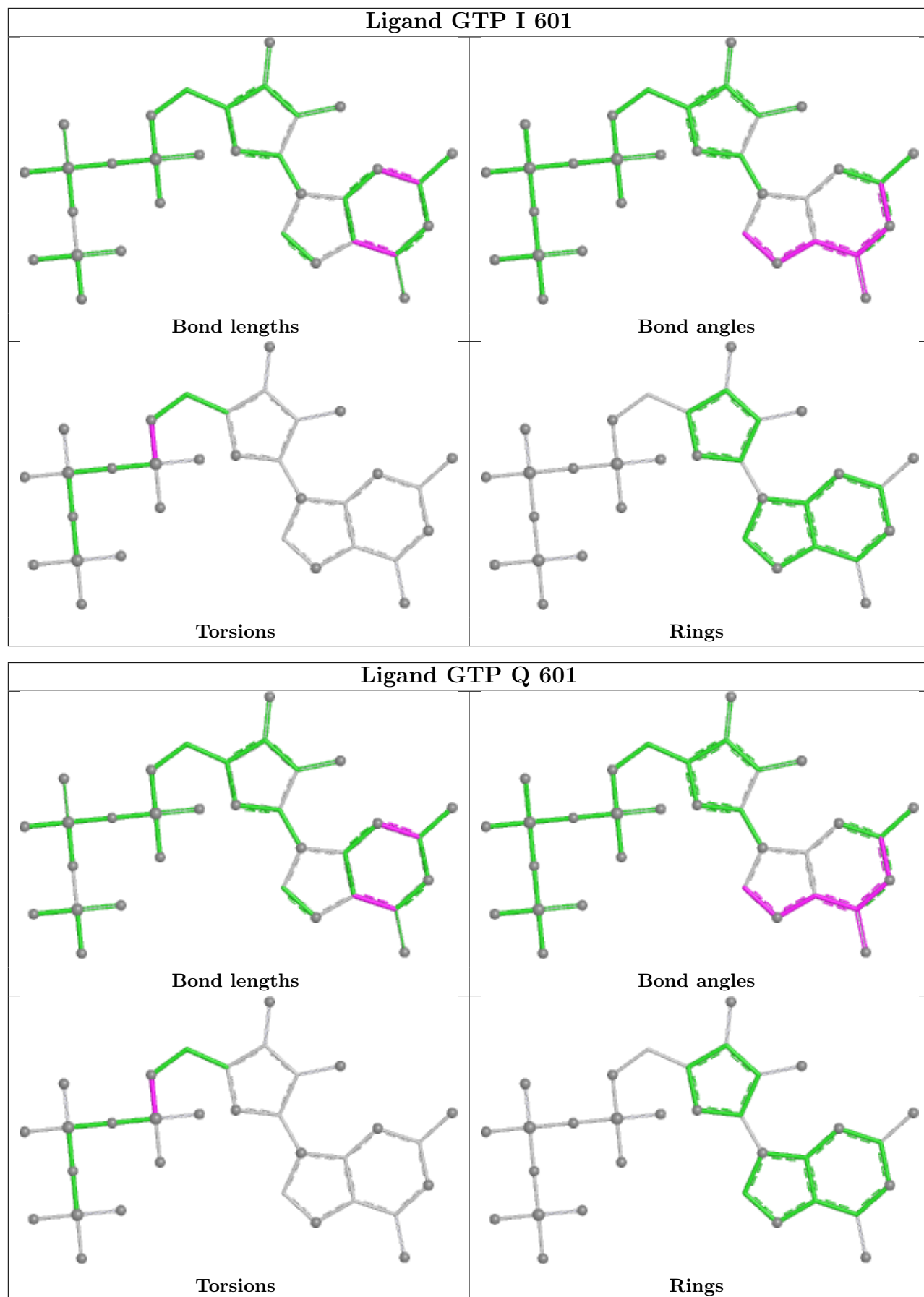
Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

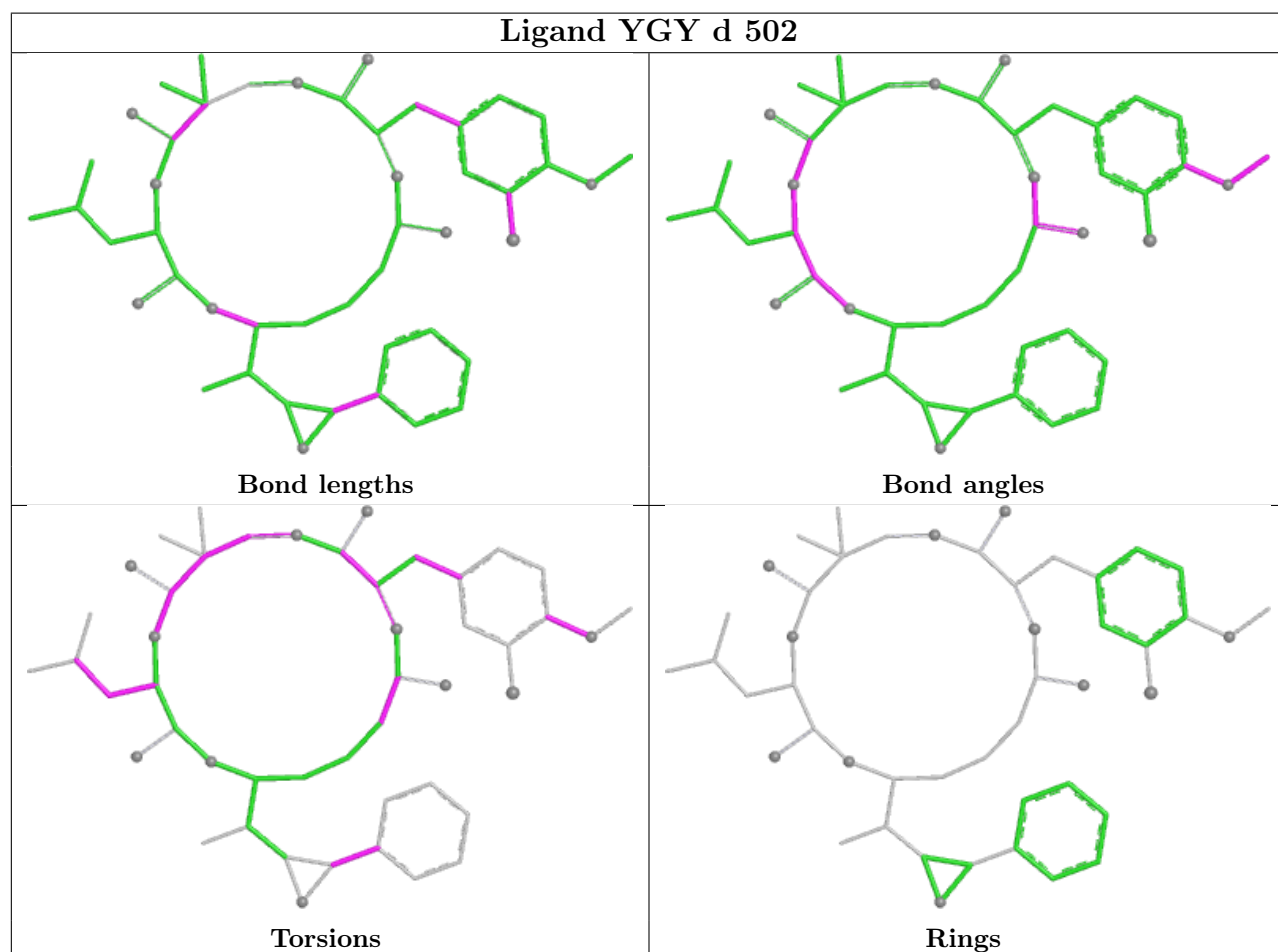
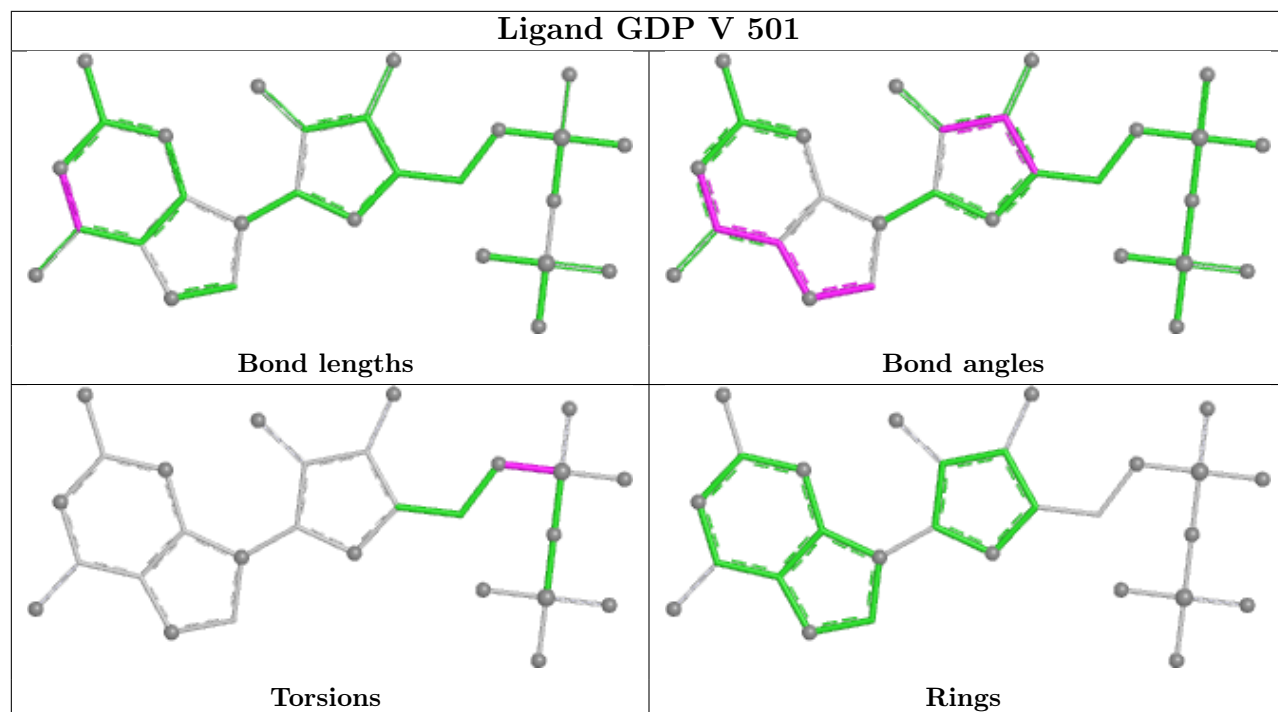


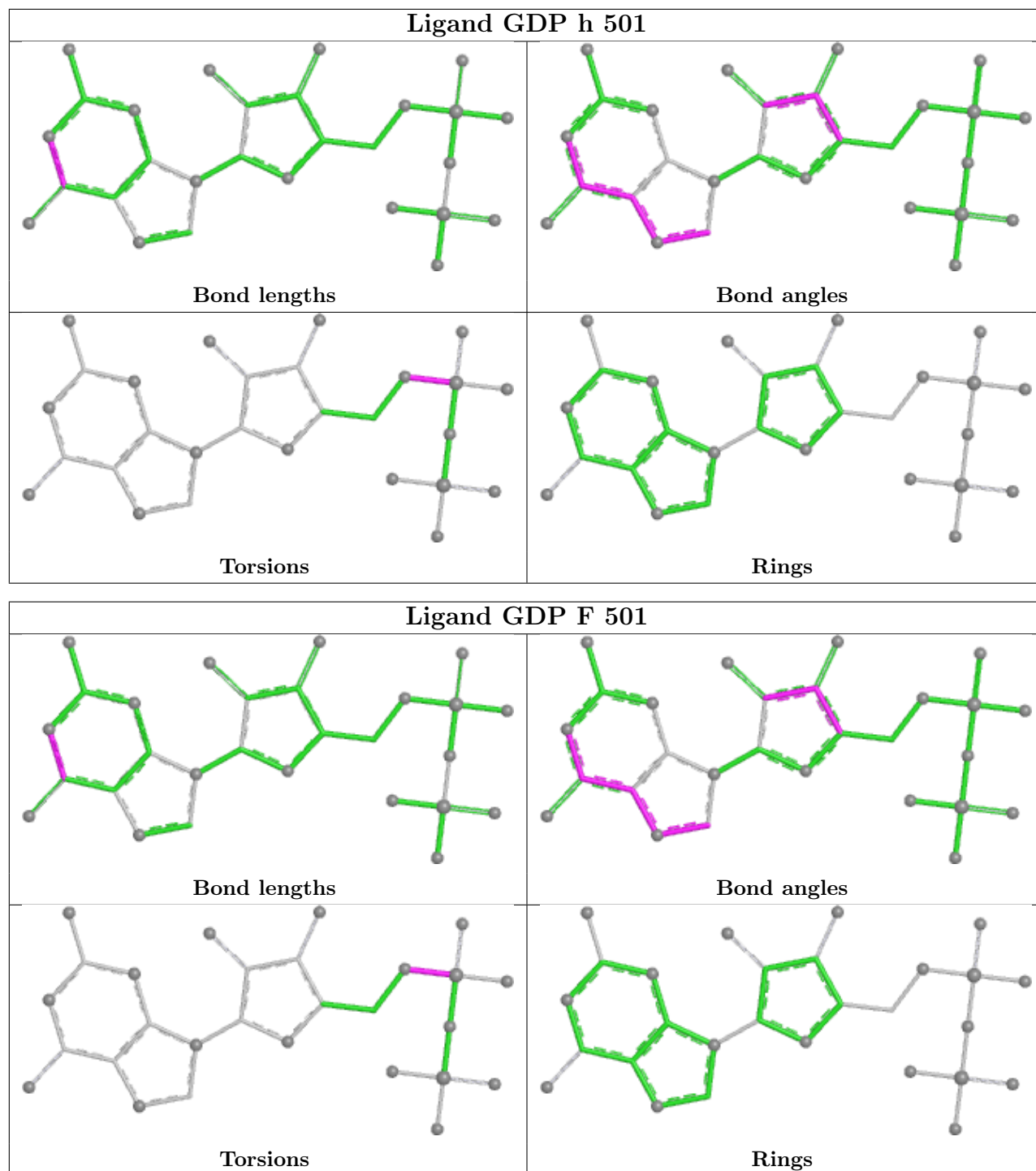


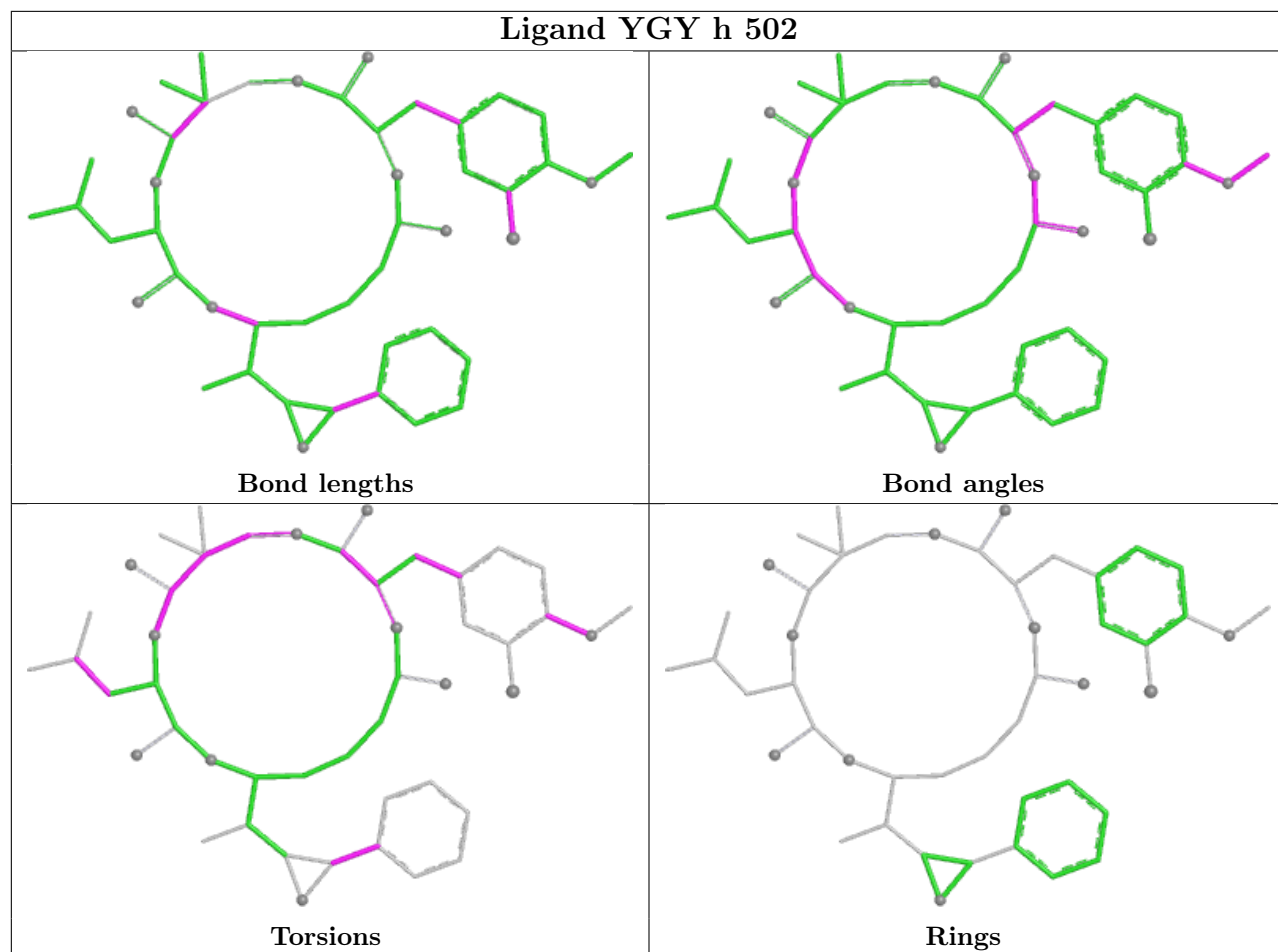


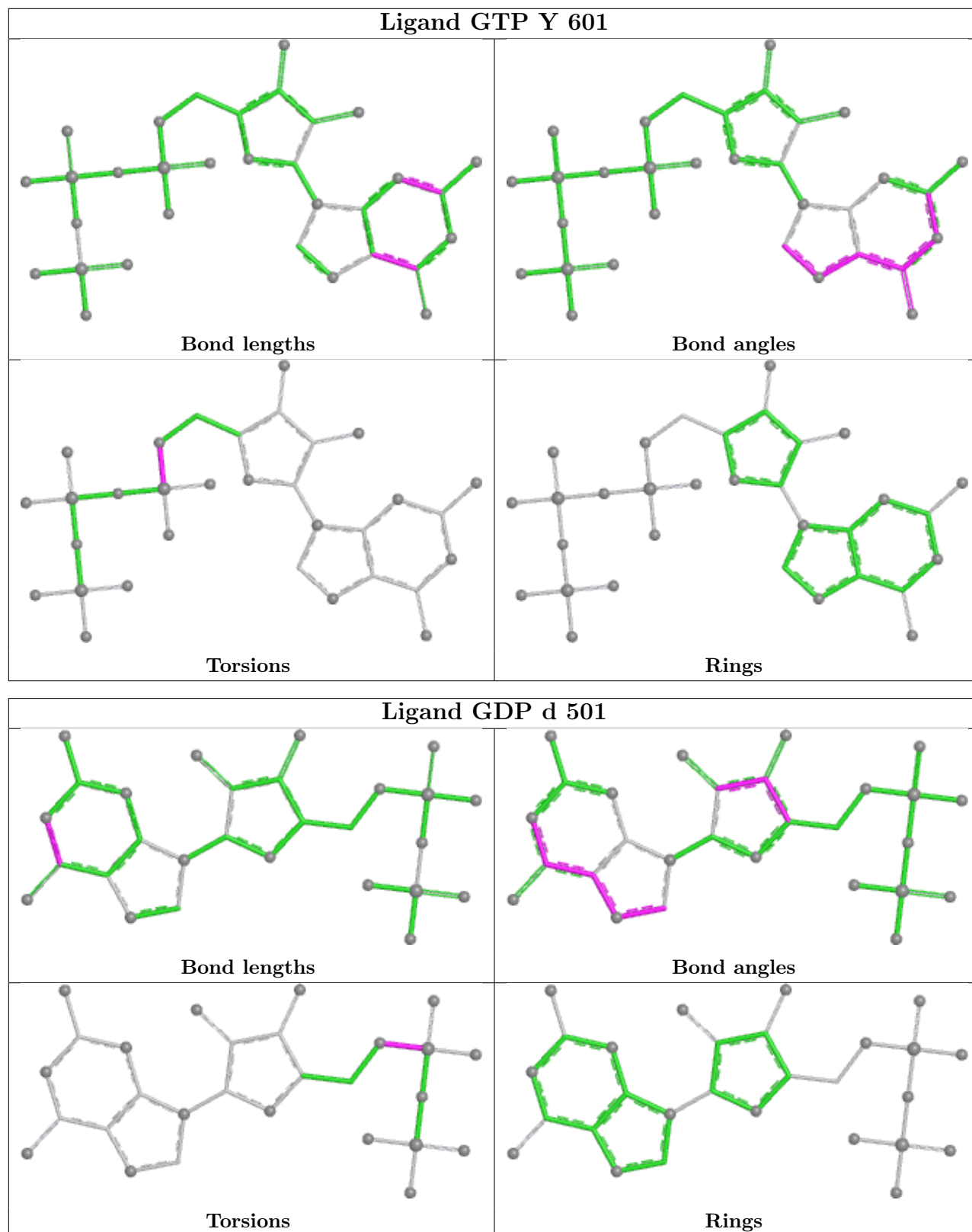


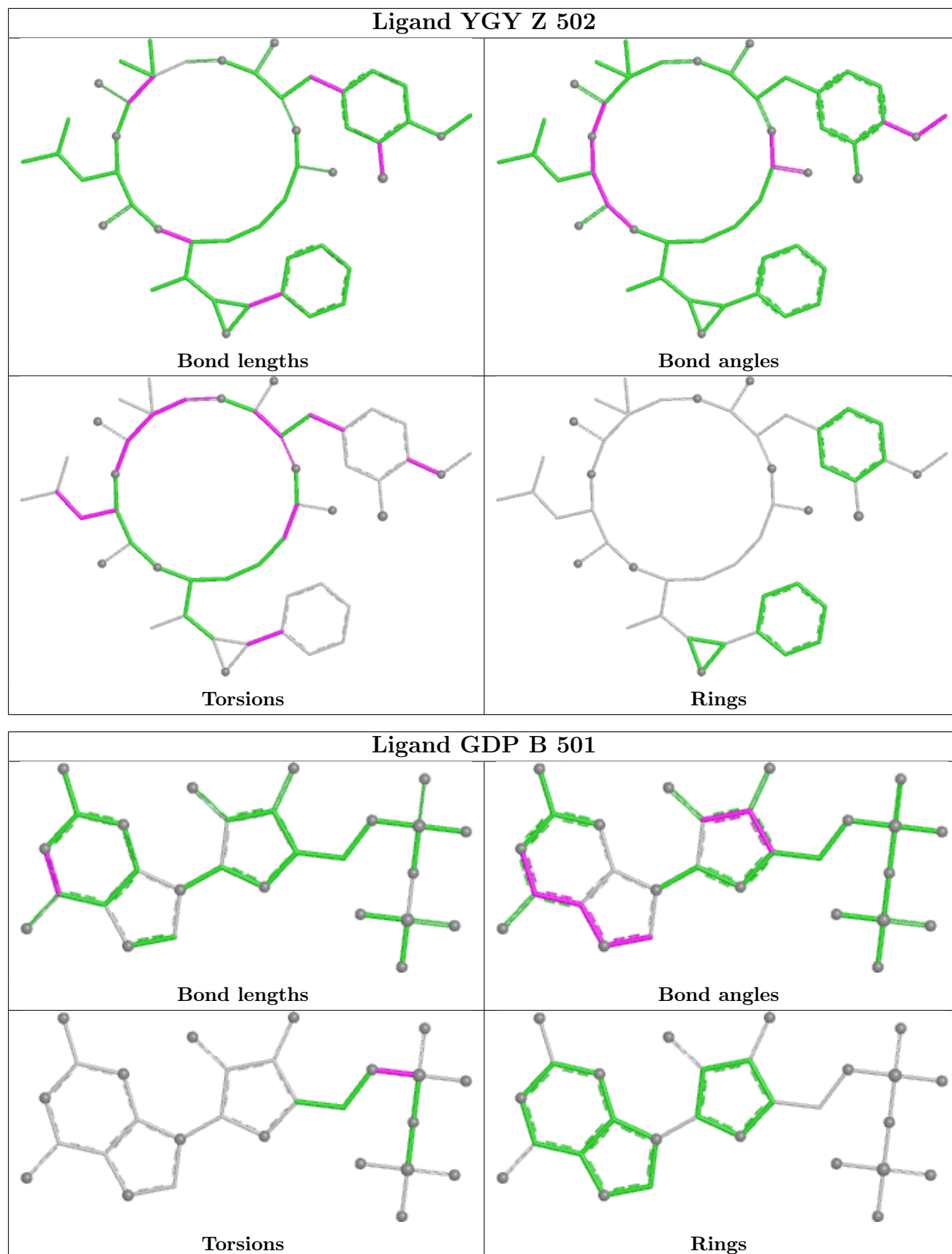




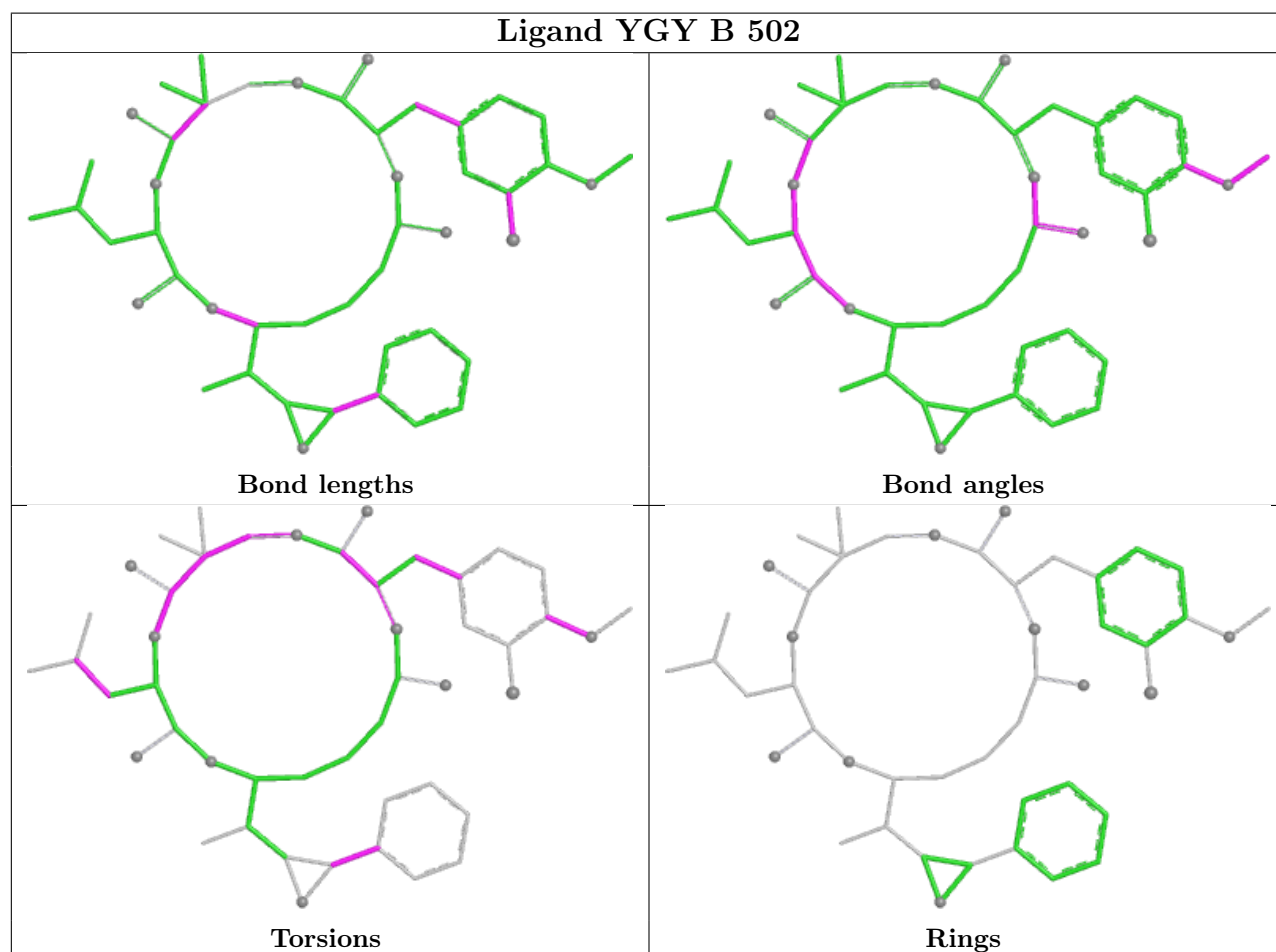
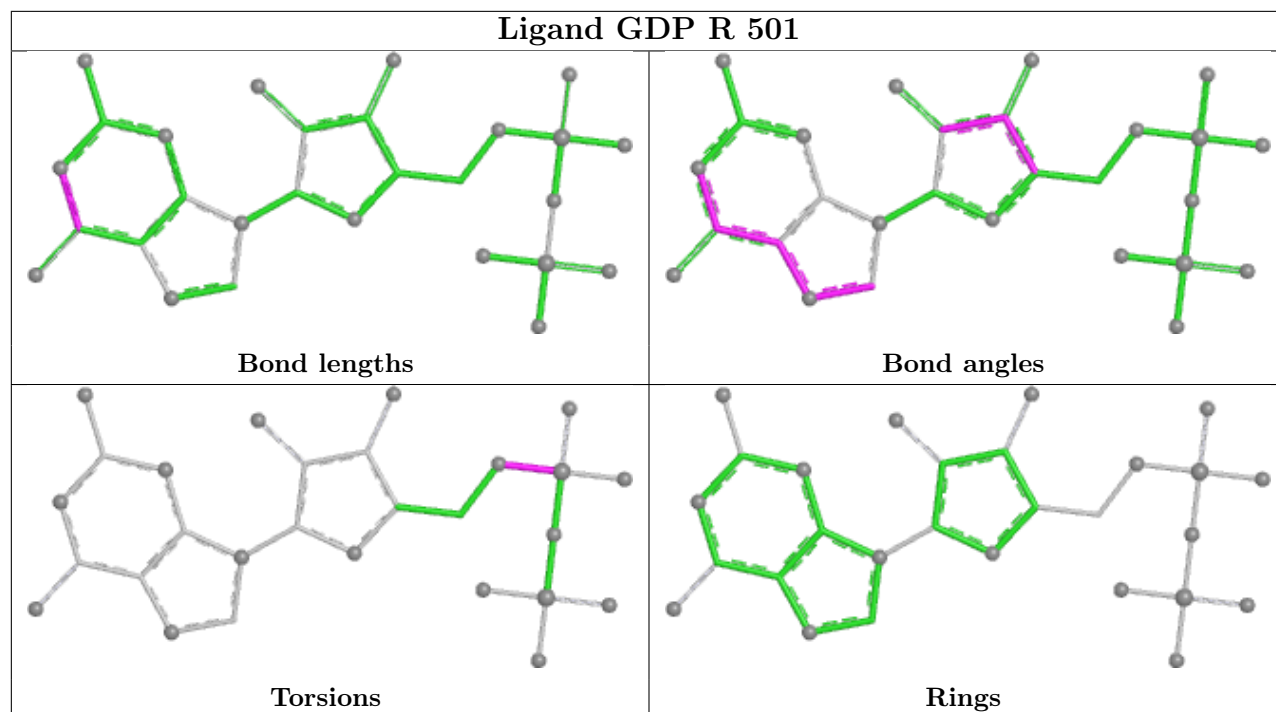


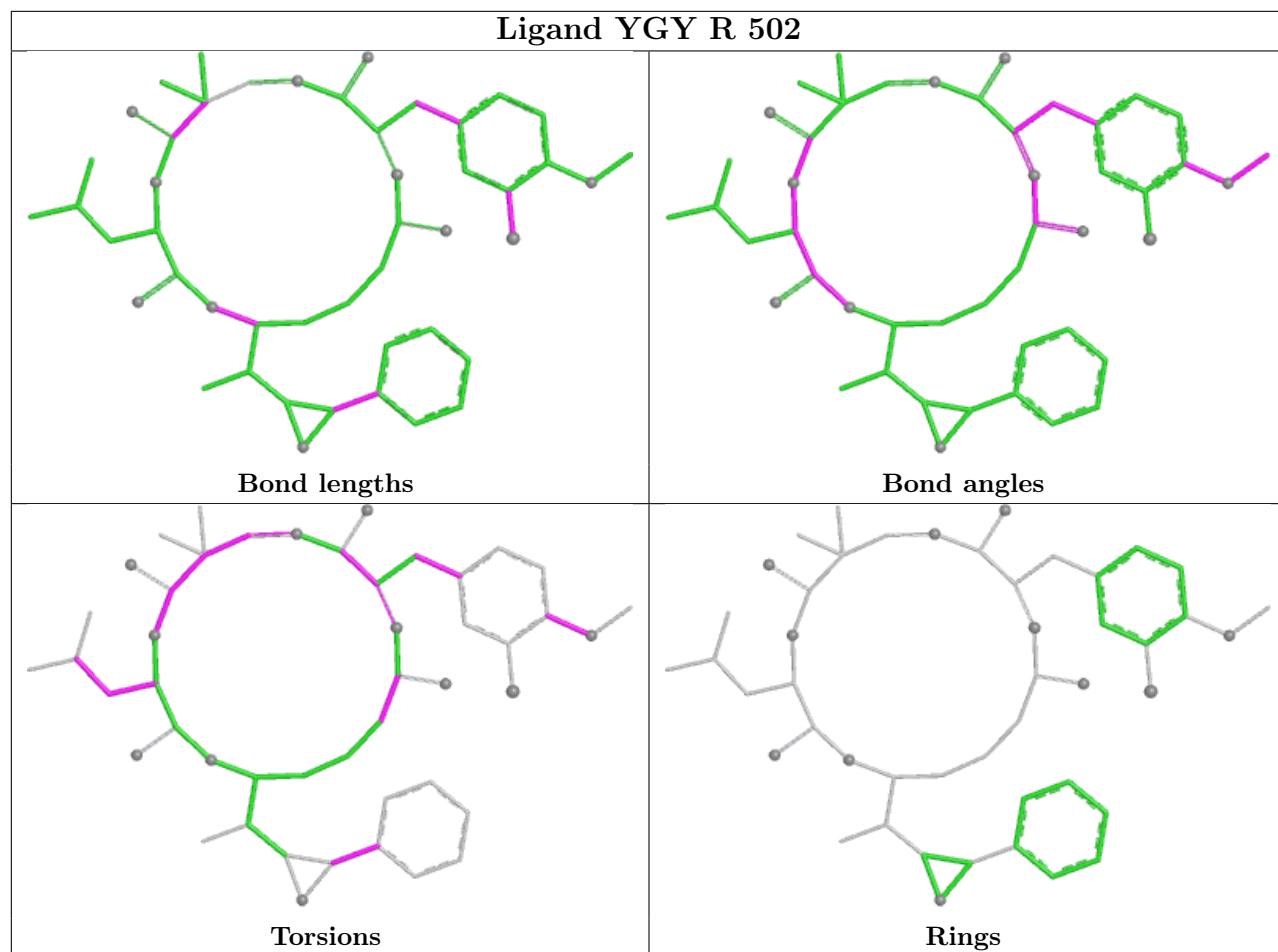


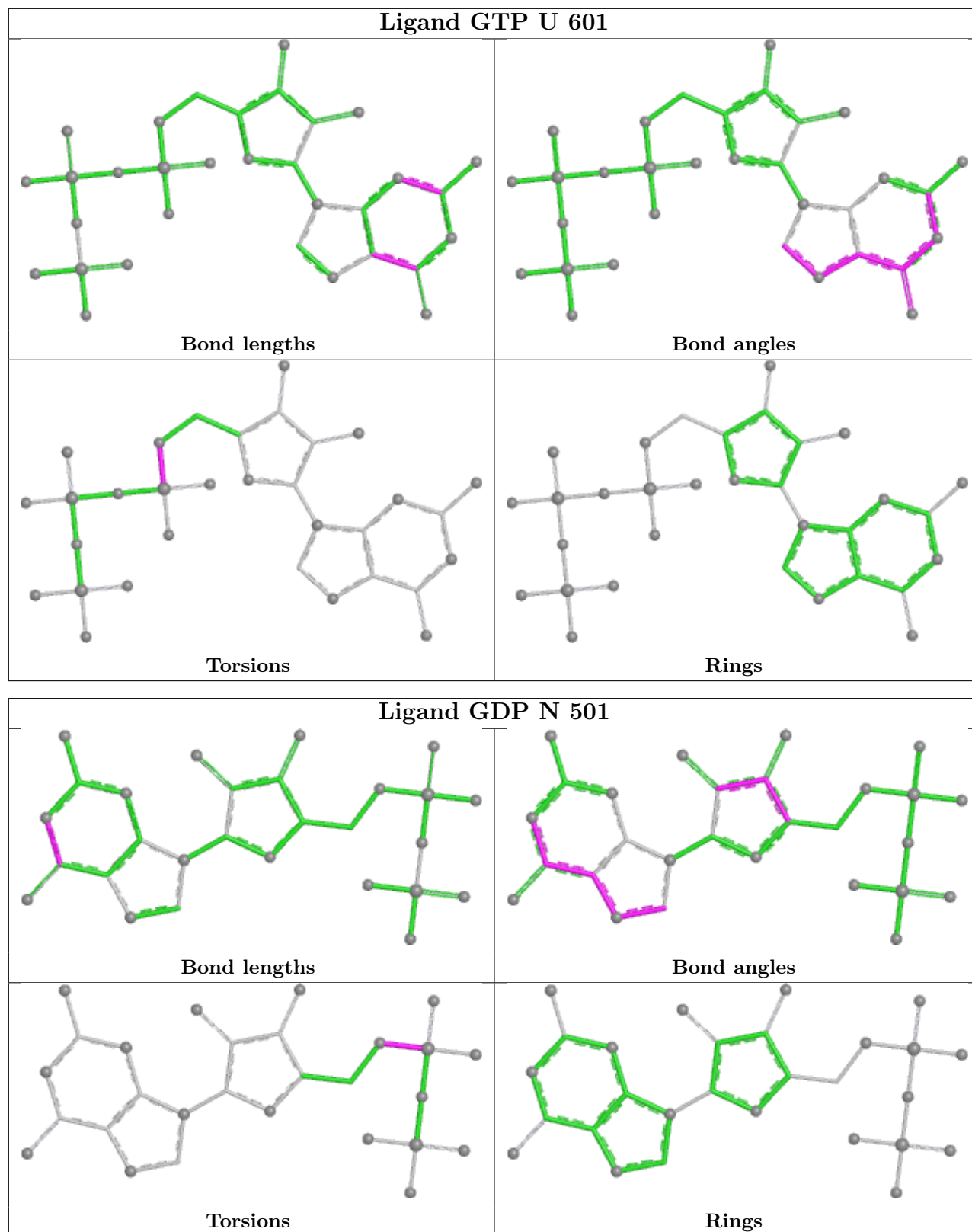


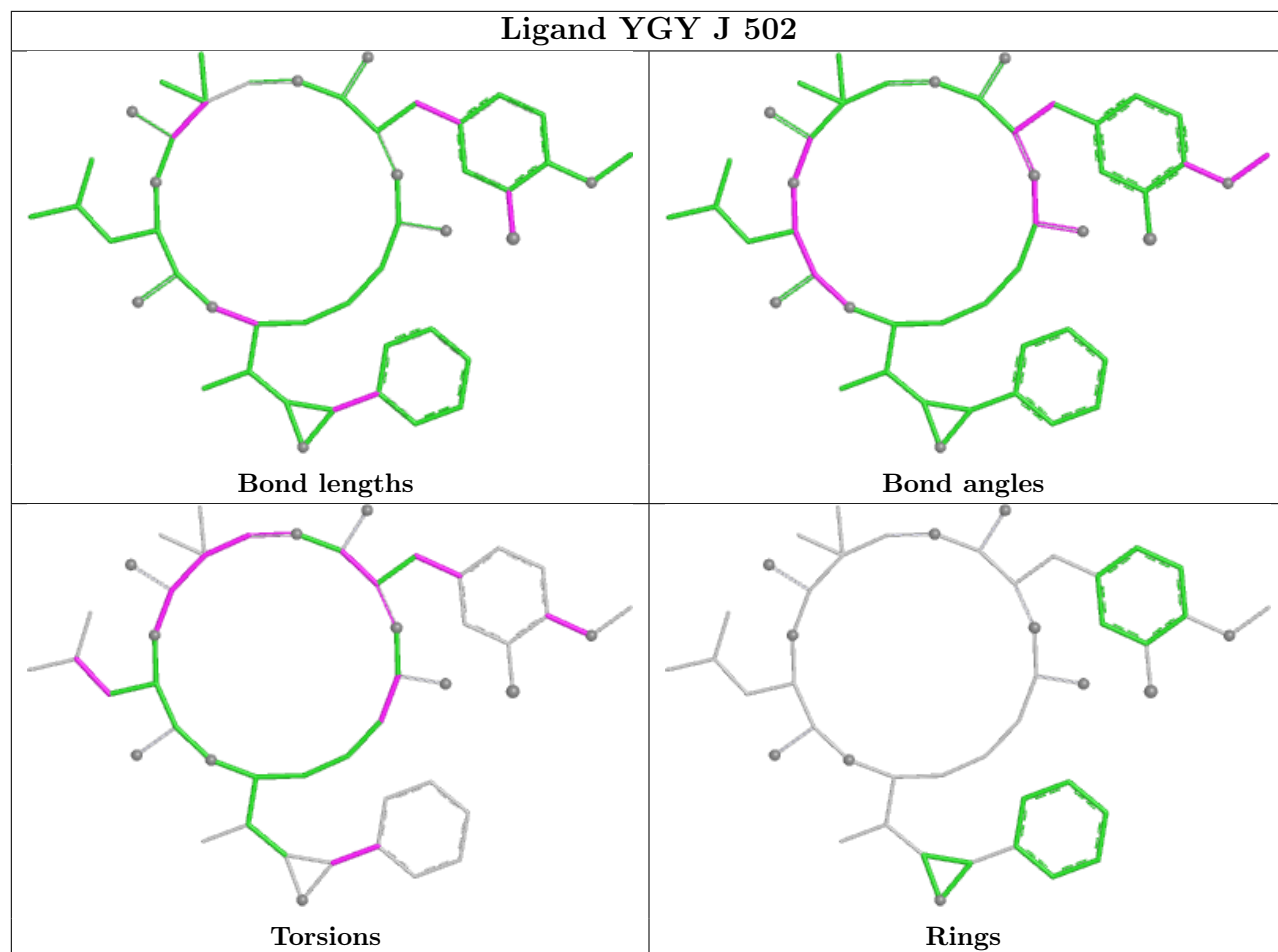


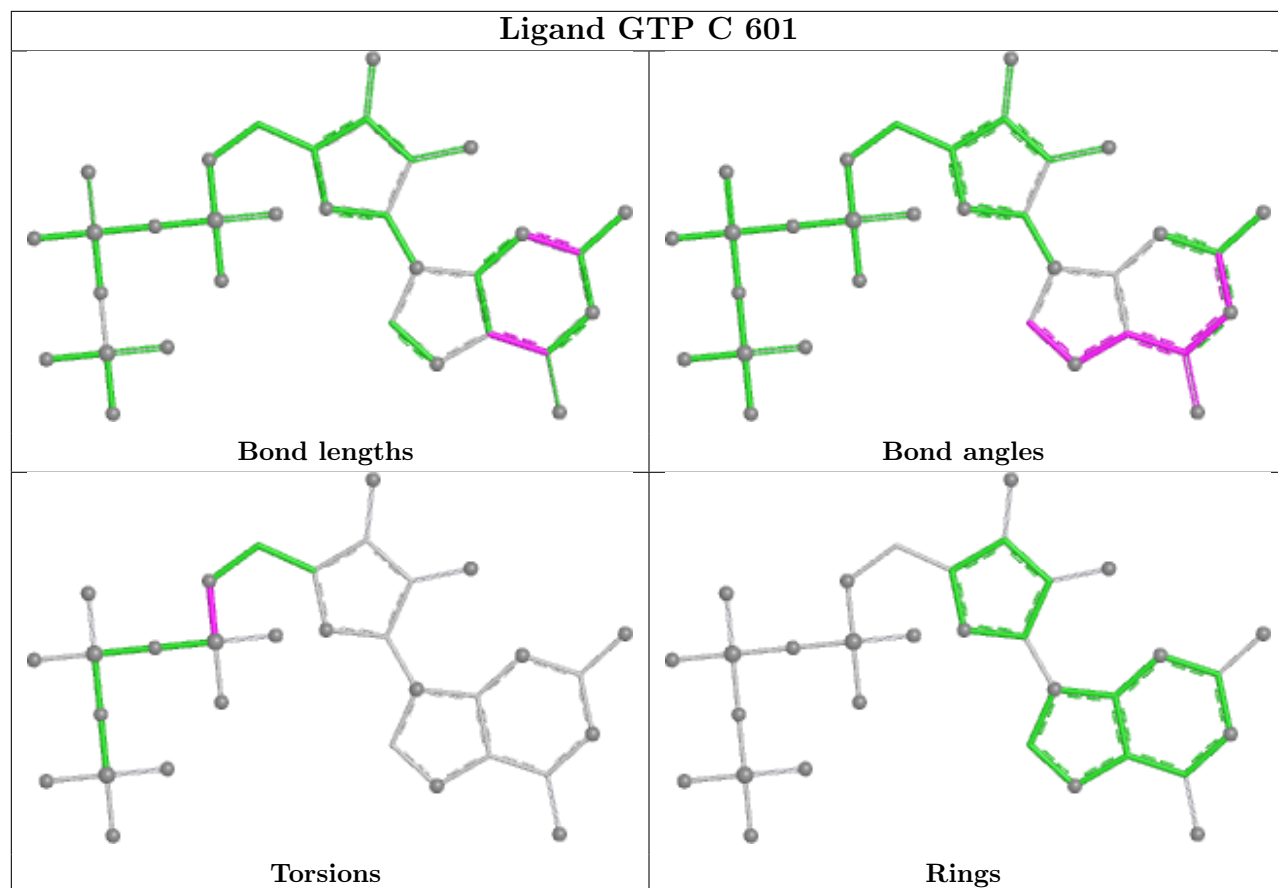


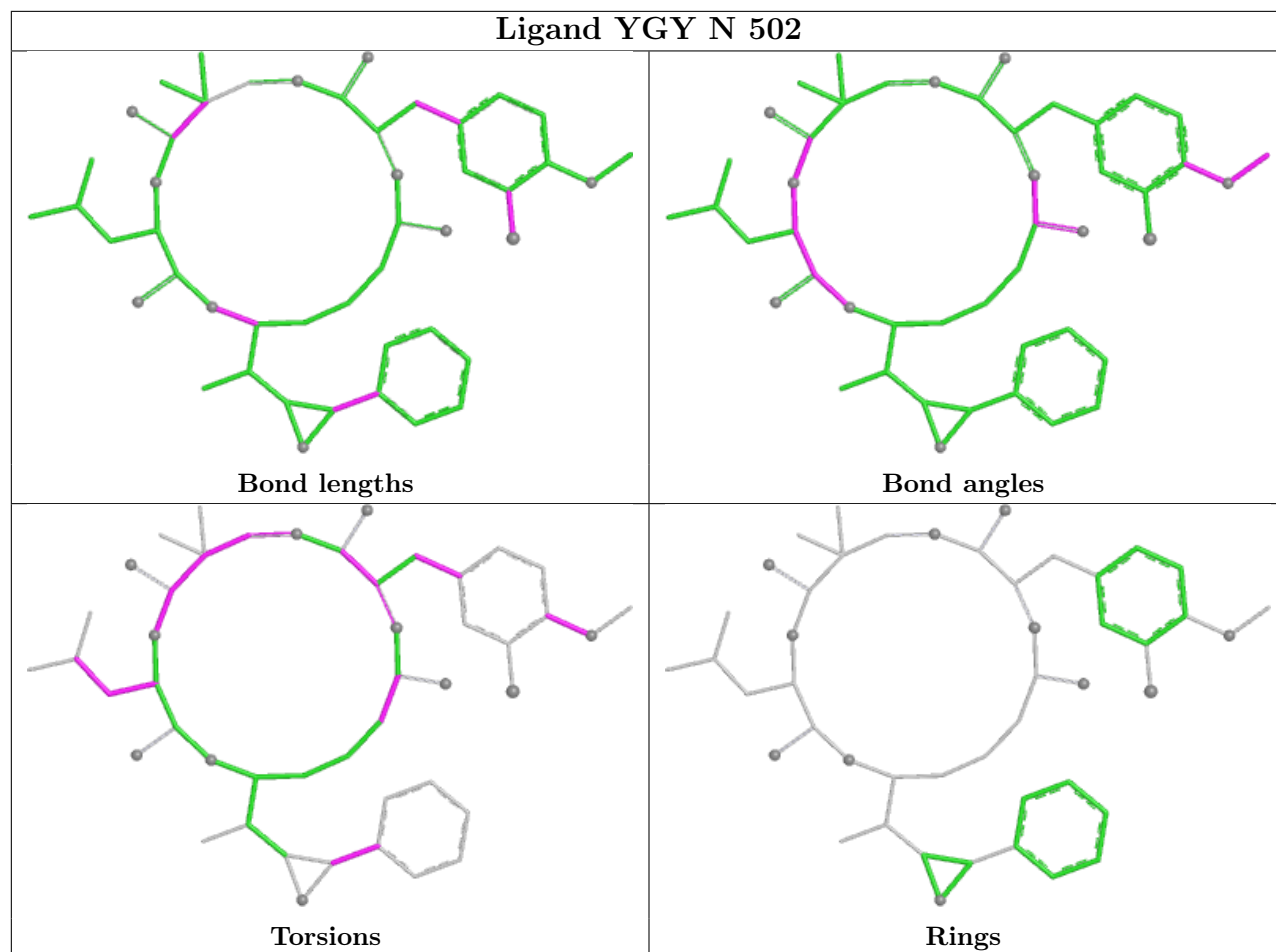


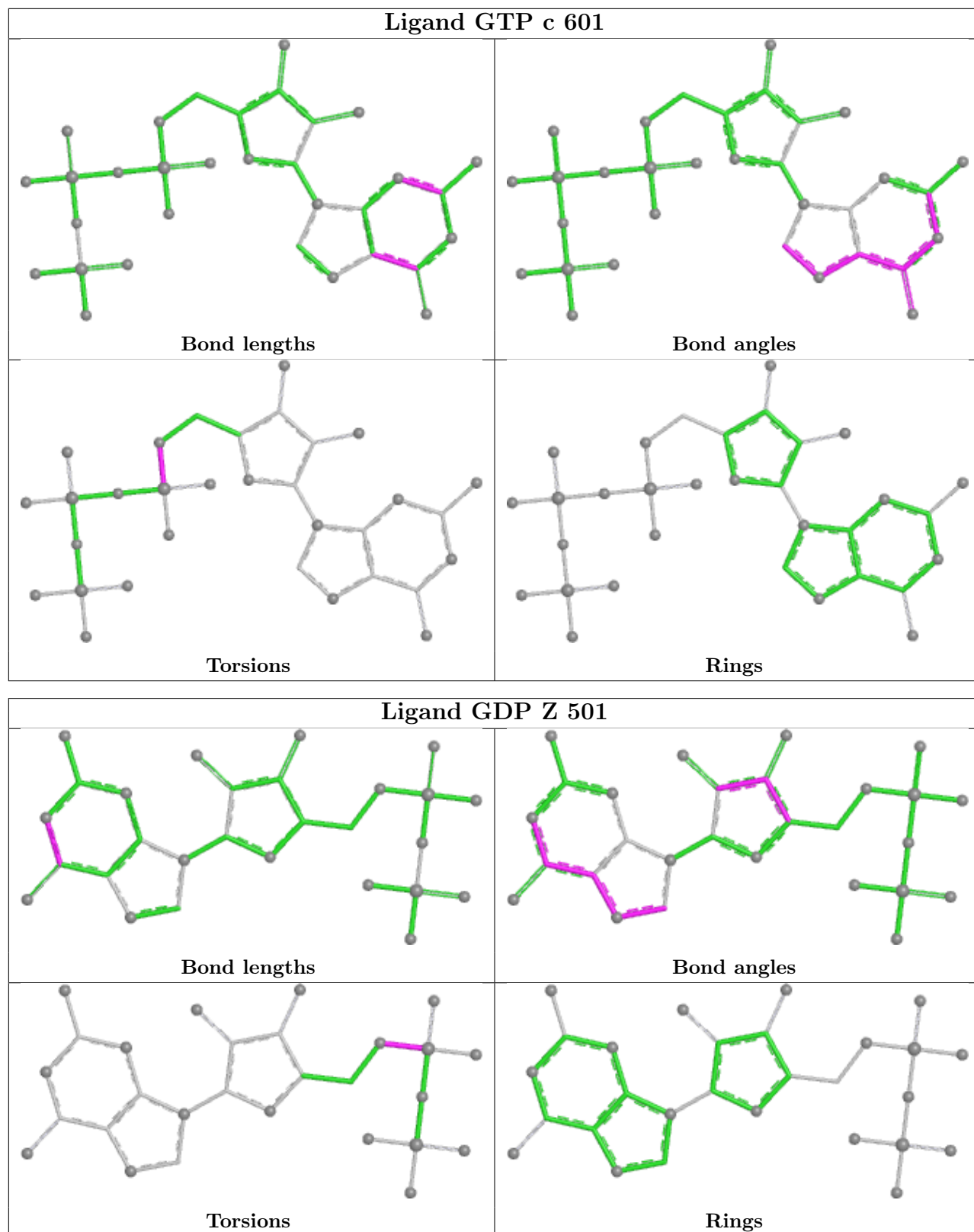


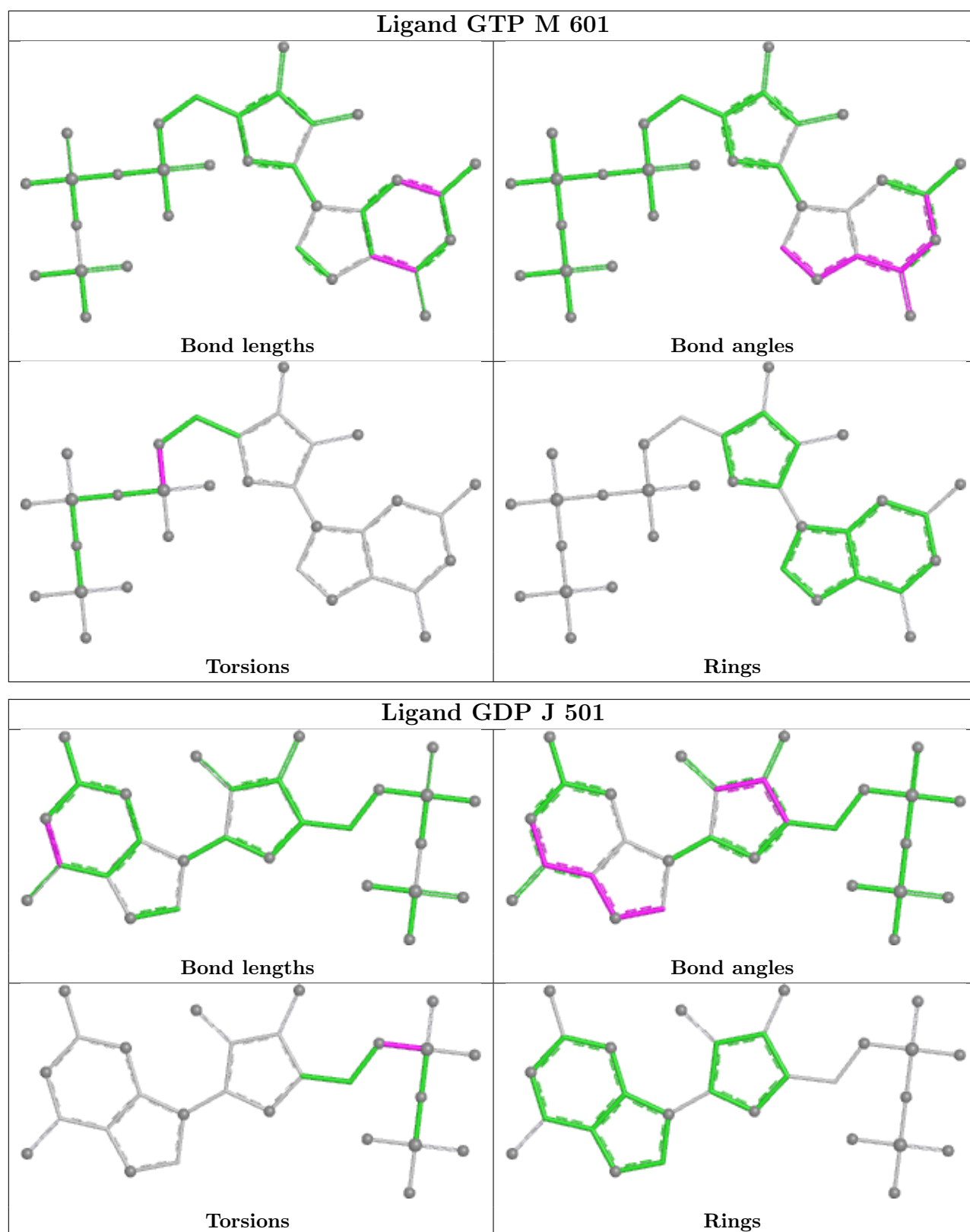




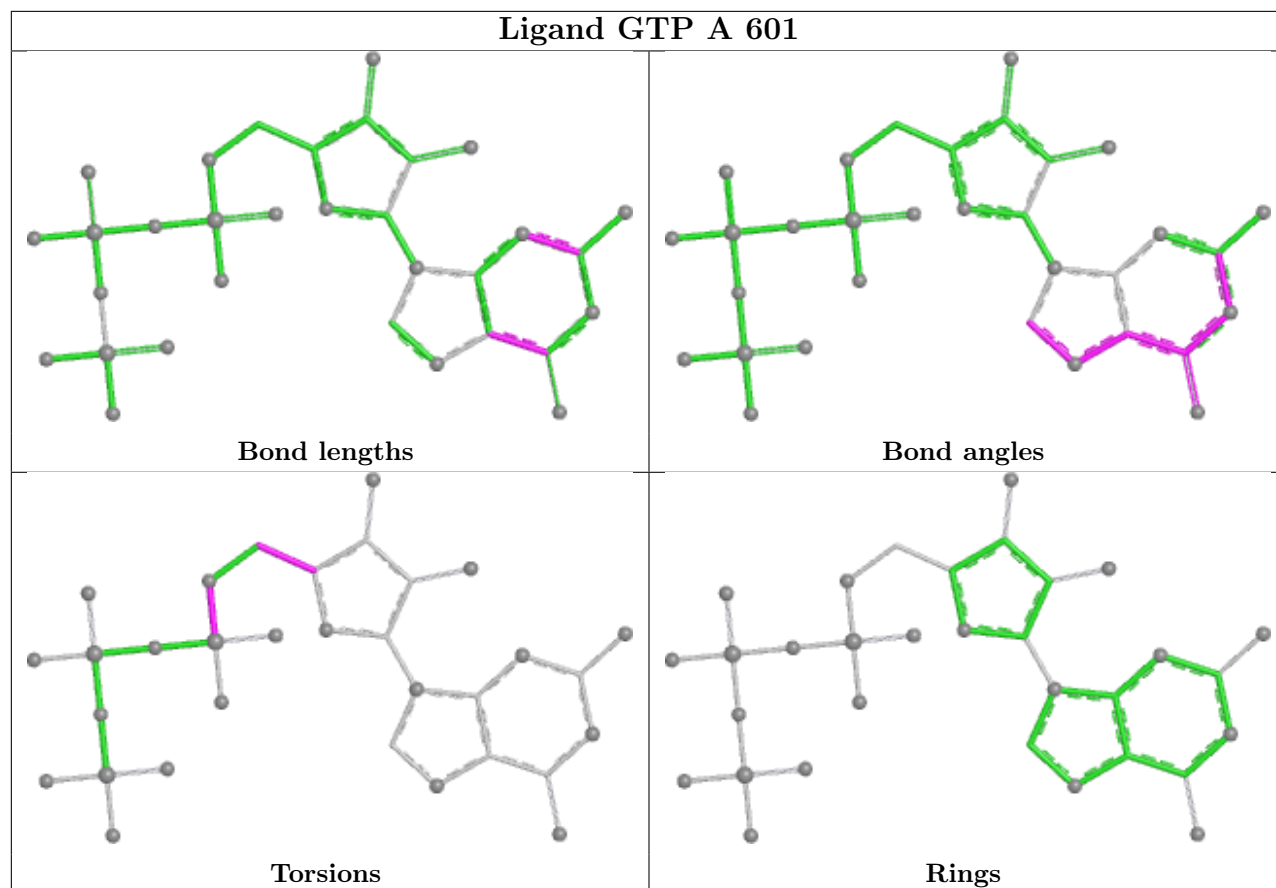












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

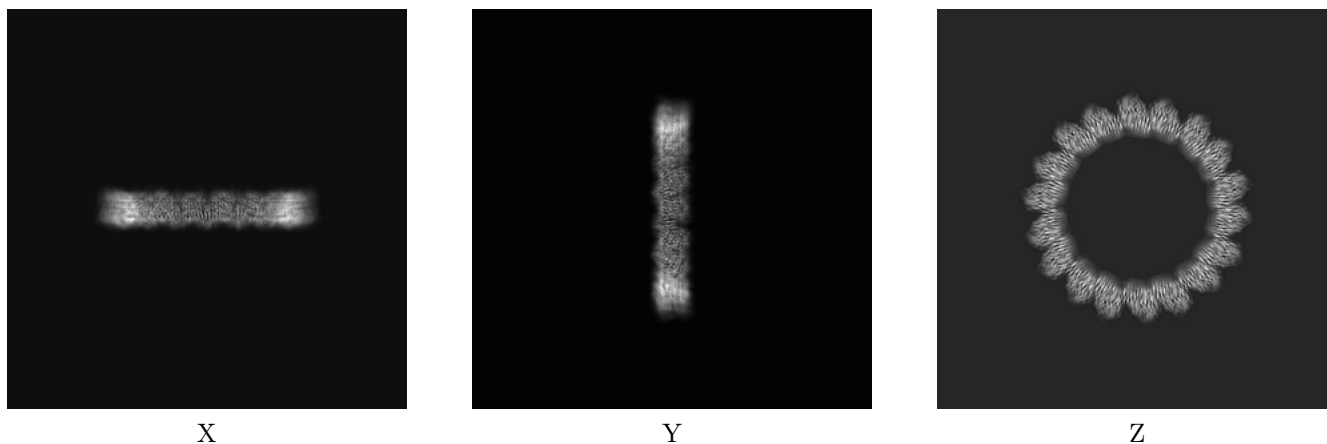
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-45265. These allow visual inspection of the internal detail of the map and identification of artifacts.

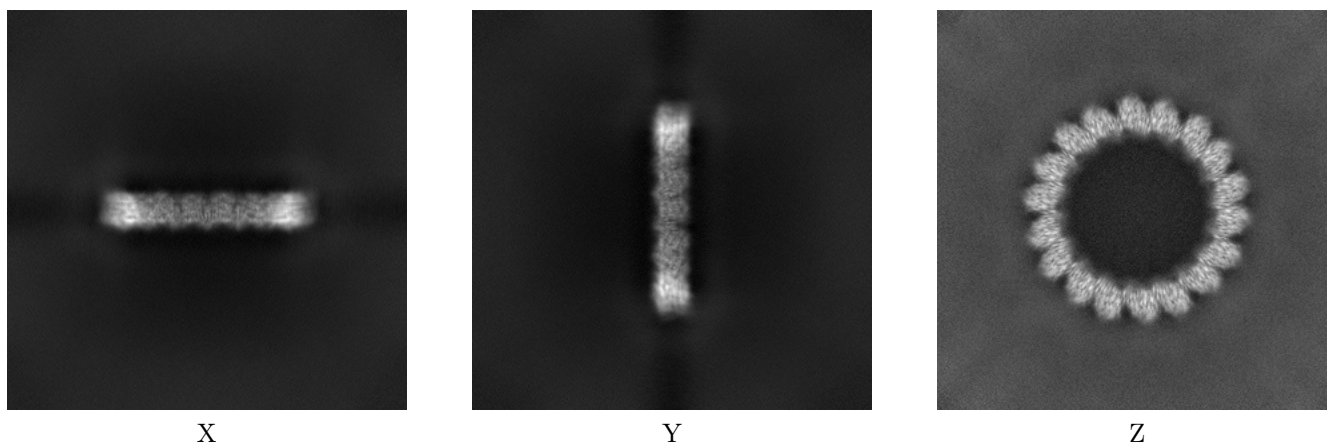
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

#### 6.1.1 Primary map



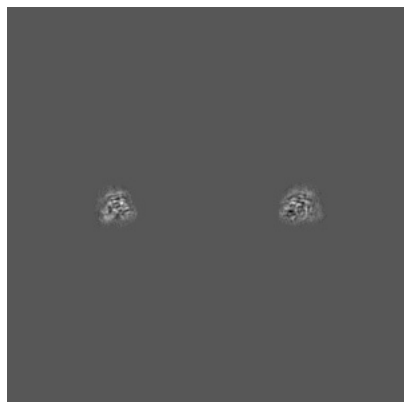
#### 6.1.2 Raw map



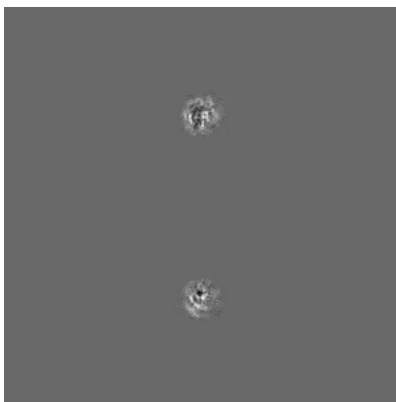
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

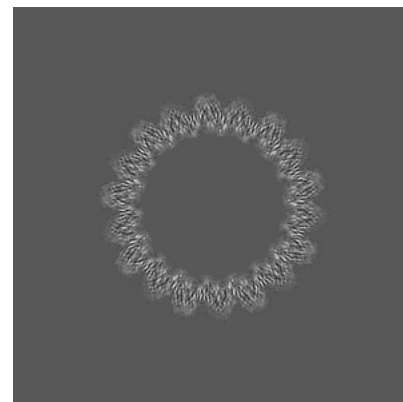
### 6.2.1 Primary map



X Index: 330

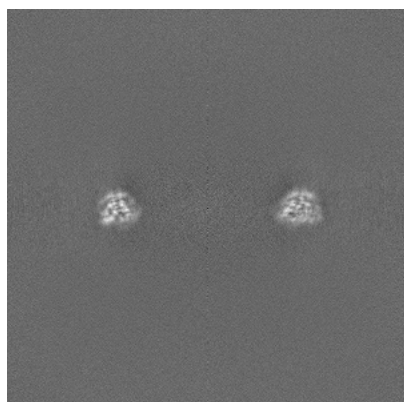


Y Index: 330

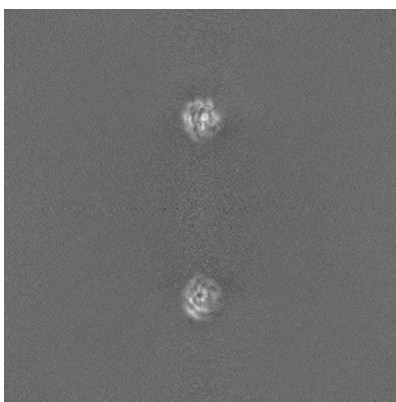


Z Index: 330

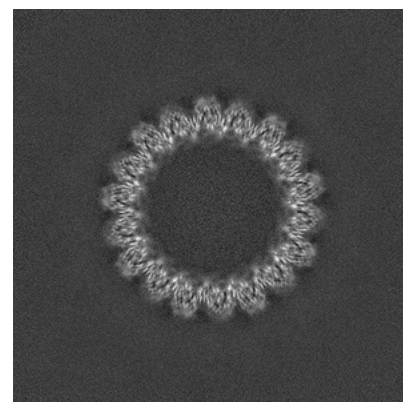
### 6.2.2 Raw map



X Index: 330



Y Index: 330

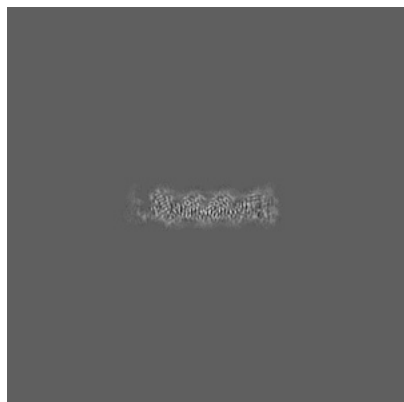


Z Index: 330

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

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

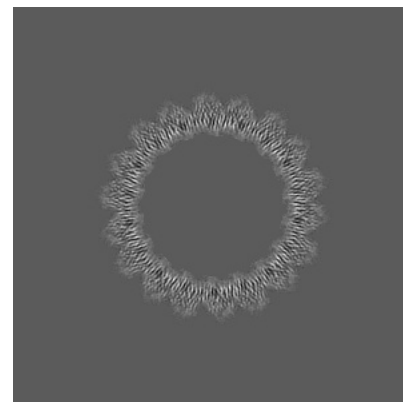
### 6.3.1 Primary map



X Index: 466

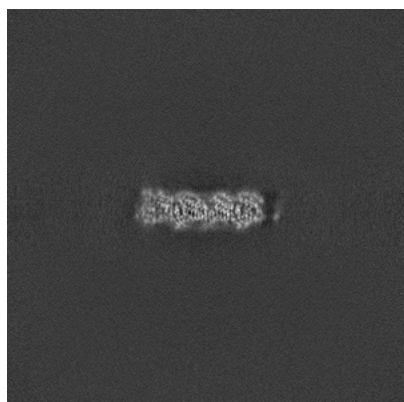


Y Index: 465

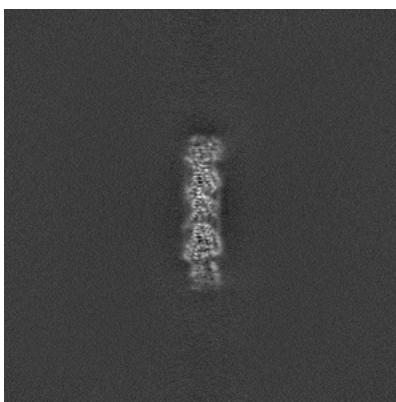


Z Index: 322

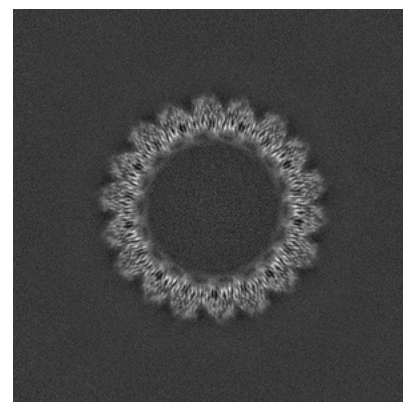
### 6.3.2 Raw map



X Index: 192



Y Index: 463

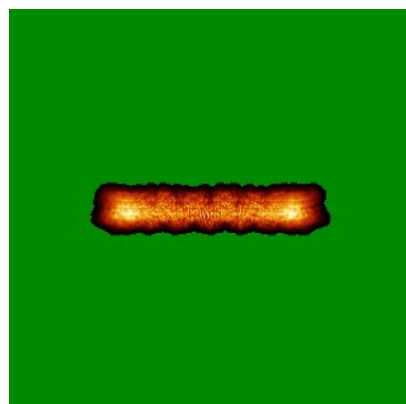


Z Index: 322

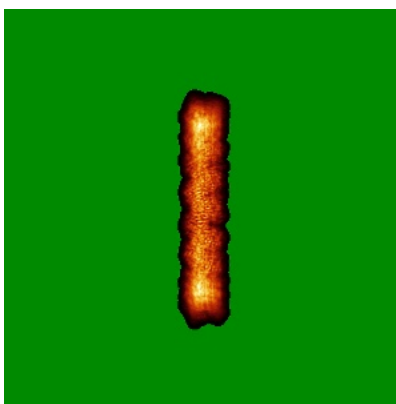
The images above show the largest variance slices of the map in three orthogonal directions.

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

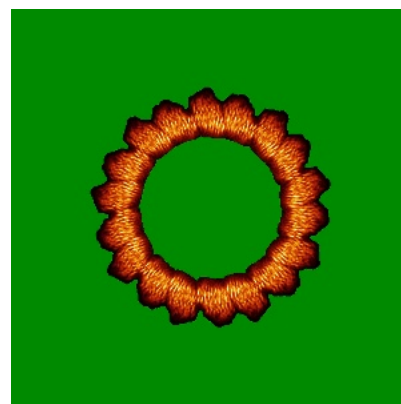
### 6.4.1 Primary map



X



Y

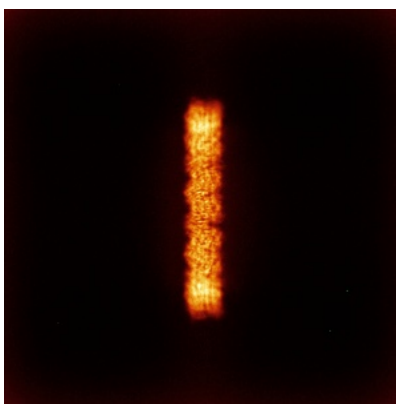


Z

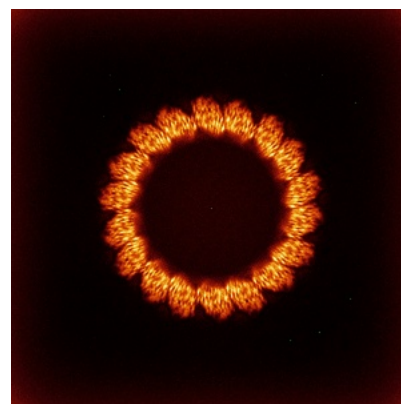
### 6.4.2 Raw map



X



Y

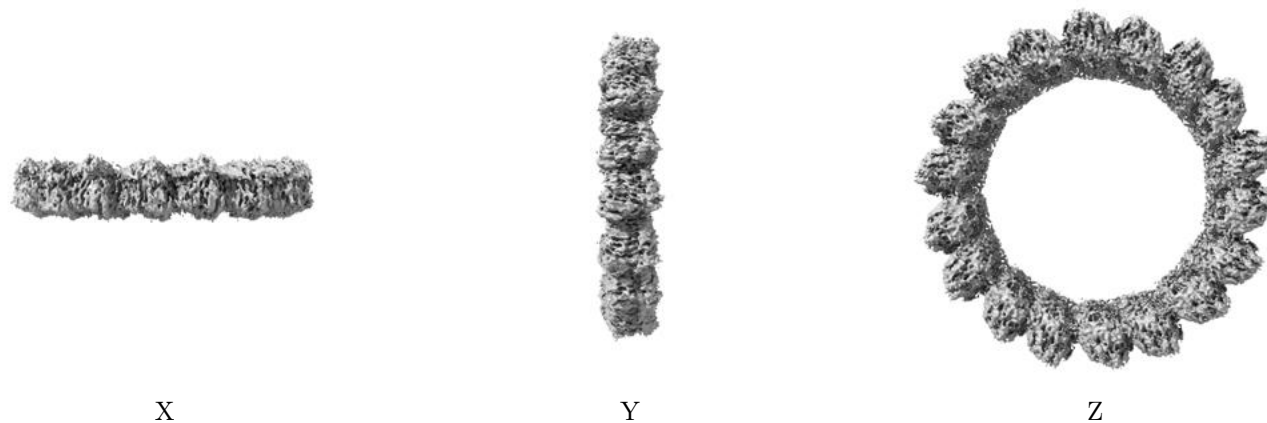


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.05. 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



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.

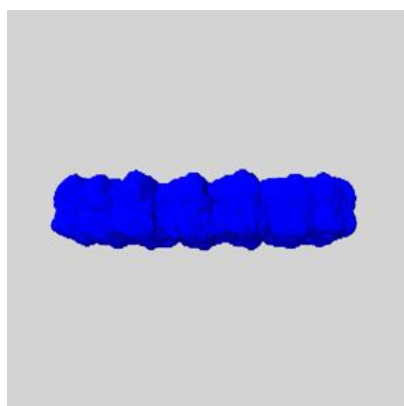
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

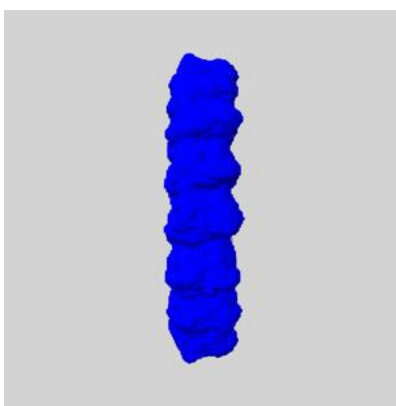
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

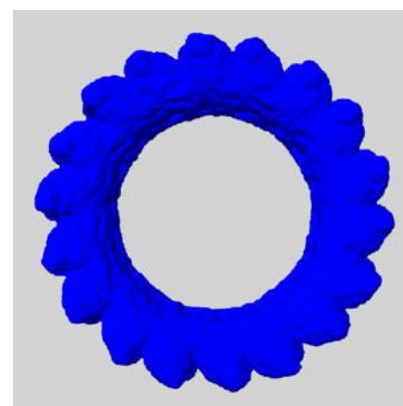
### 6.6.1 emd\_45265\_msk\_1.map [i](#)



X



Y

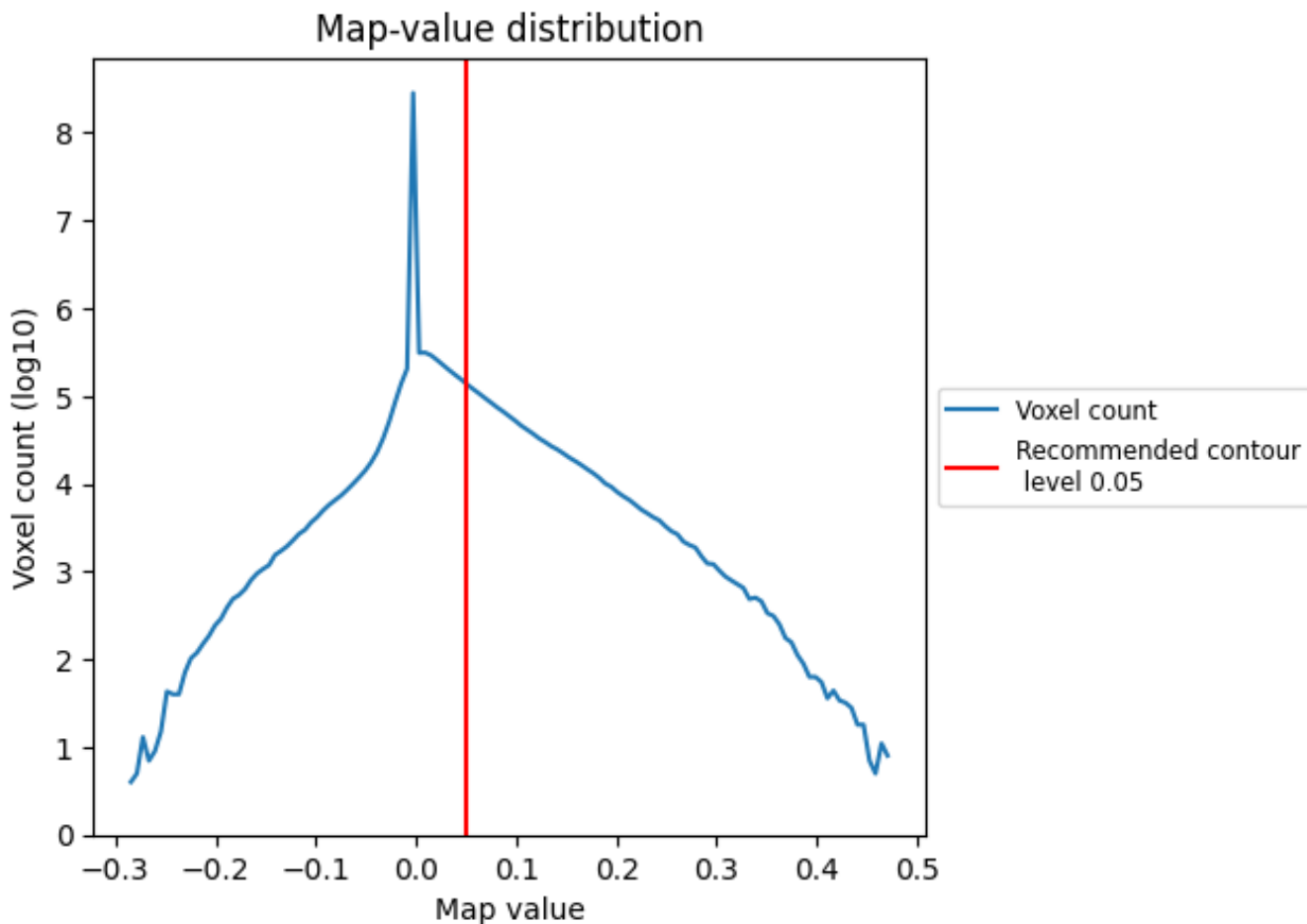


Z

## 7 Map analysis [i](#)

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

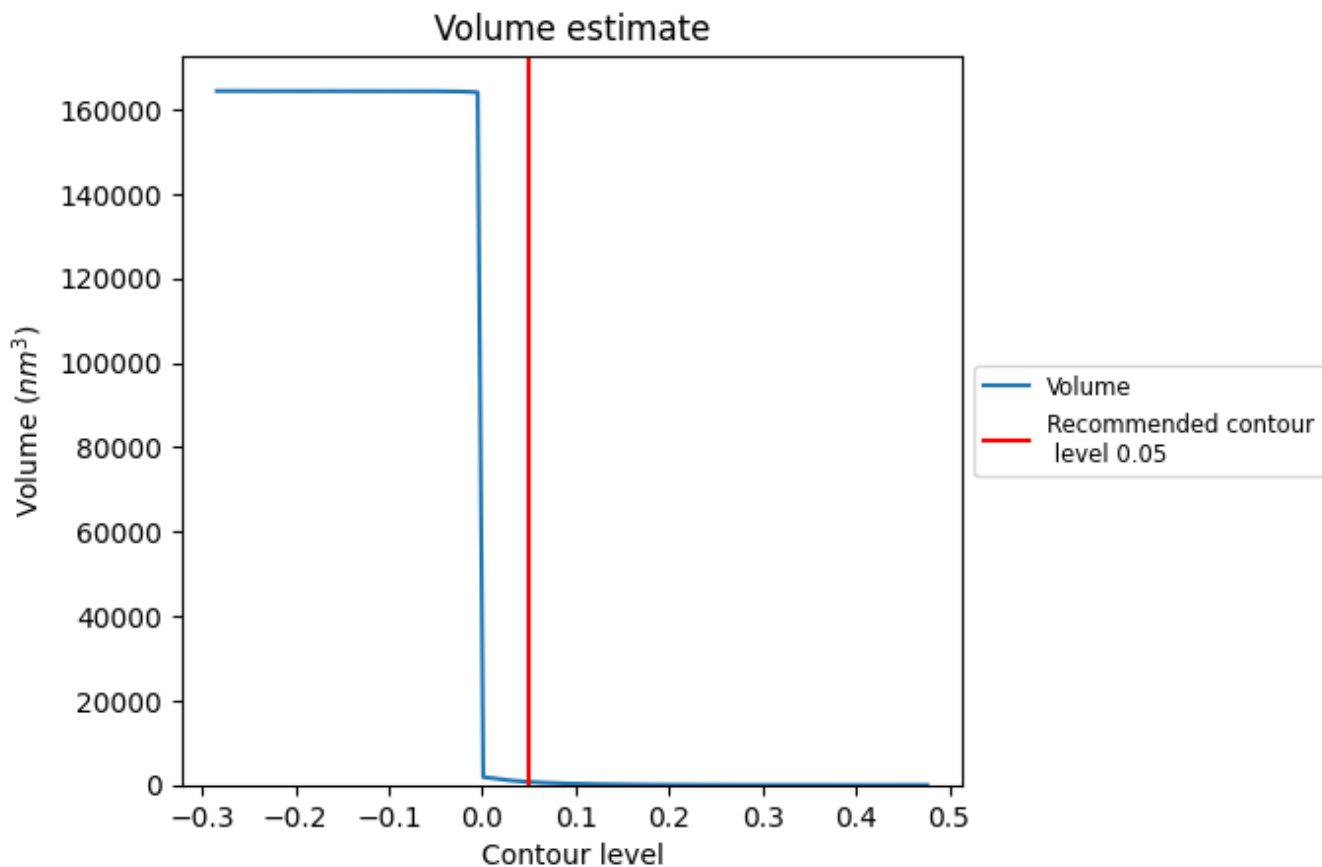
### 7.1 Map-value distribution [i](#)



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.



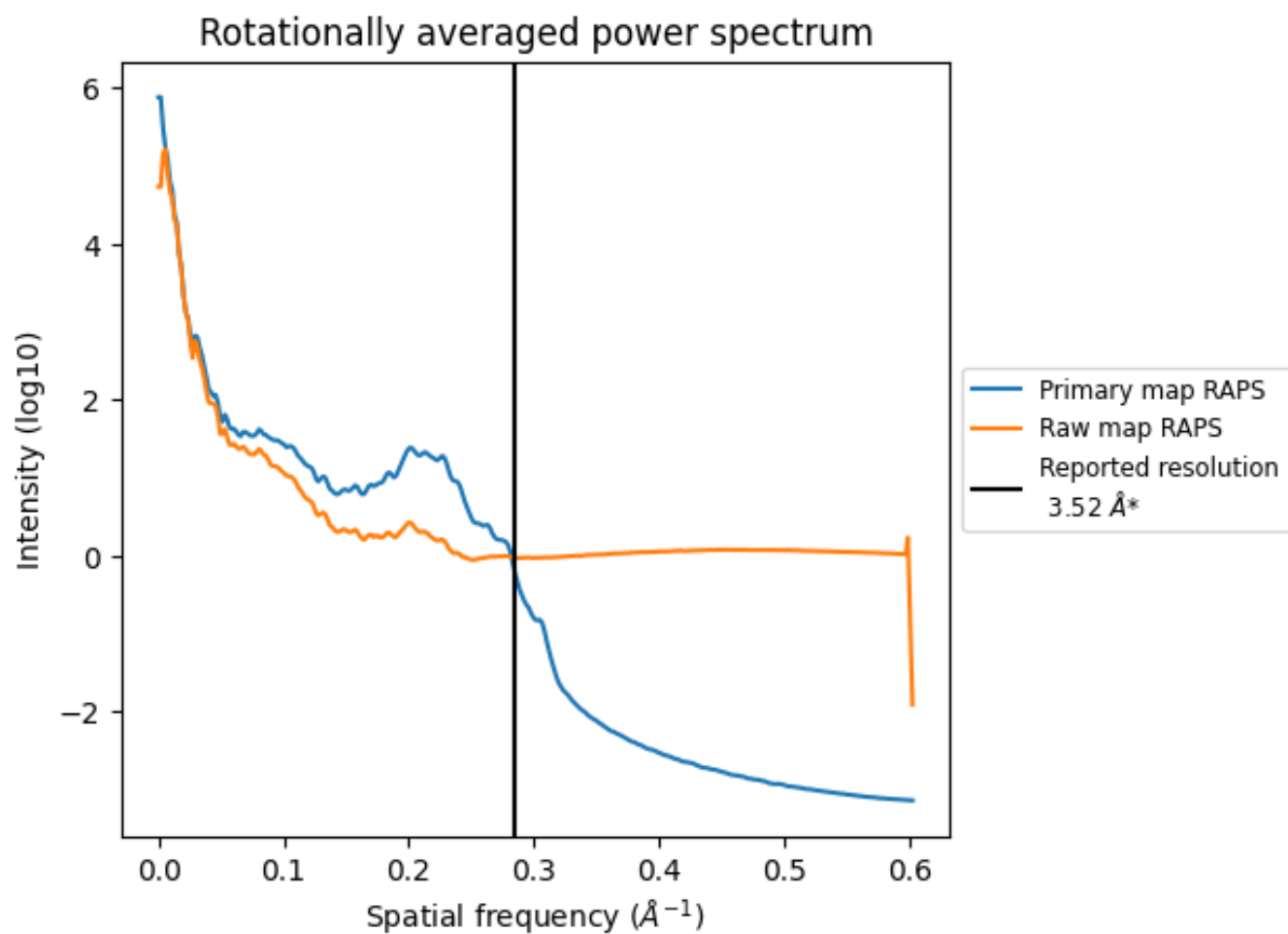
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is  $724 \text{ nm}^3$ ; this corresponds to an approximate mass of 654 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

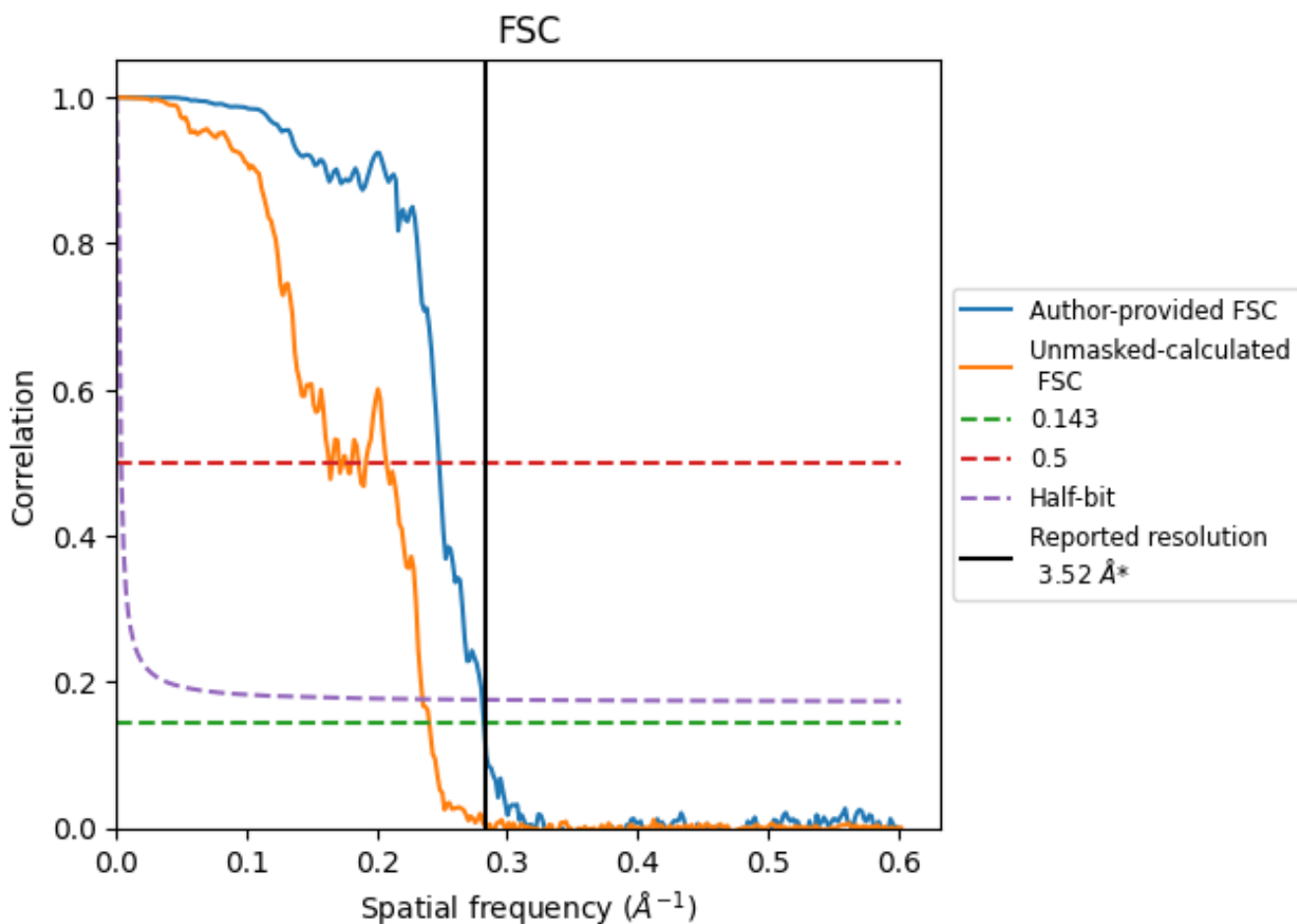


\*Reported resolution corresponds to spatial frequency of 0.284 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of 0.284 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

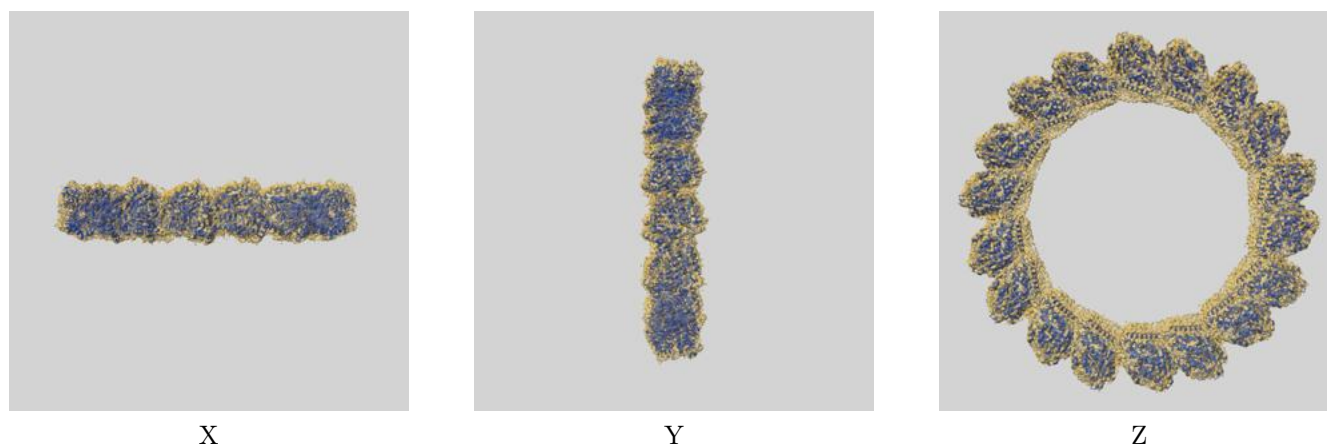
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.52	-	-
Author-provided FSC curve	3.54	4.04	3.56
Unmasked-calculated*	4.16	6.13	4.26

\*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 4.16 differs from the reported value 3.52 by more than 10 %

## 9 Map-model fit [i](#)

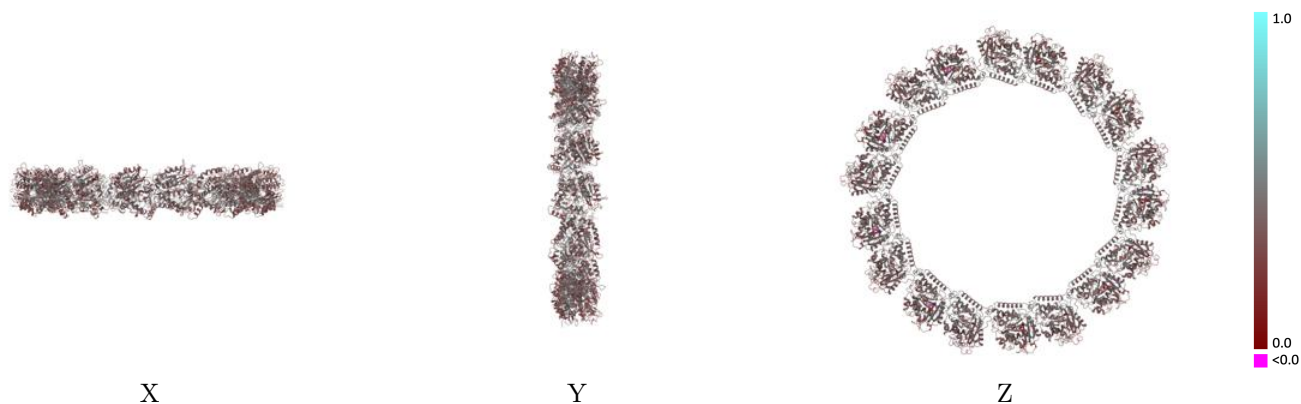
This section contains information regarding the fit between EMDB map EMD-45265 and PDB model 9C6S. Per-residue inclusion information can be found in section 3 on page 8.

### 9.1 Map-model overlay [i](#)



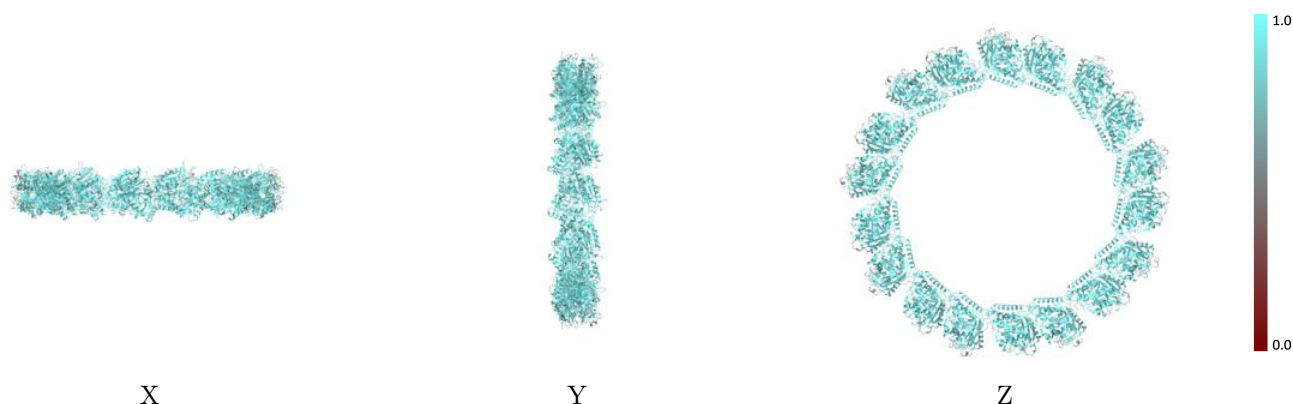
The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



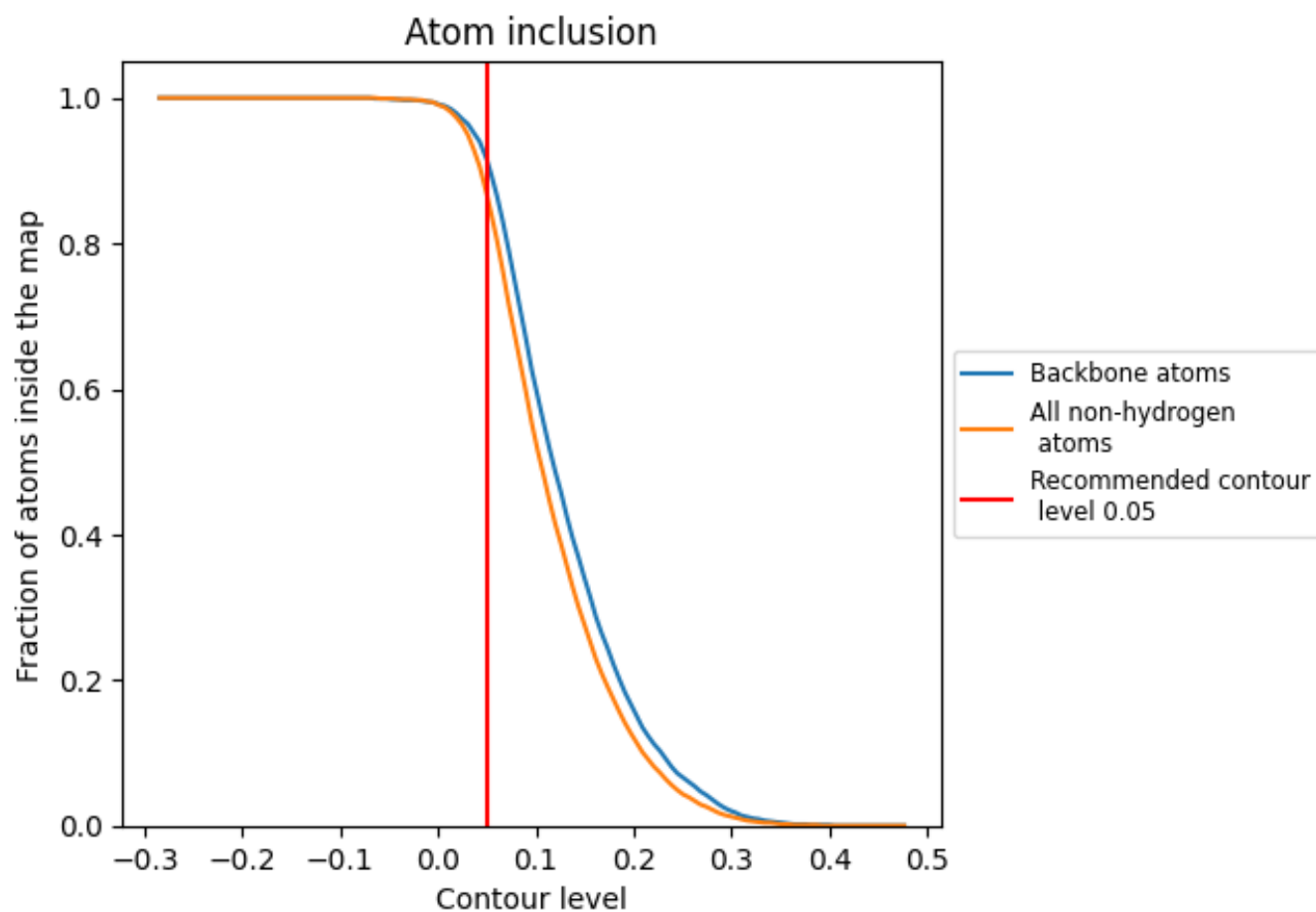
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.05).







































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 87% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8670	 0.3810
A	 0.8580	 0.3800
B	 0.8750	 0.3810
C	 0.8590	 0.3800
F	 0.8730	 0.3830
I	 0.8590	 0.3810
J	 0.8730	 0.3830
M	 0.8580	 0.3820
N	 0.8750	 0.3830
Q	 0.8580	 0.3800
R	 0.8760	 0.3830
U	 0.8580	 0.3810
V	 0.8750	 0.3820
Y	 0.8610	 0.3790
Z	 0.8770	 0.3820
c	 0.8580	 0.3800
d	 0.8770	 0.3830
g	 0.8580	 0.3810
h	 0.8750	 0.3830

