



Full wwPDB EM Validation Report ⓘ

Jul 14, 2024 – 09:02 am BST

PDB ID : 7Z8F
EMDB ID : EMD-14549
Title : Composite structure of dynein-dynactin-BICDR on microtubules
Authors : Chaaban, S.; Carter, A.P.
Deposited on : 2022-03-17
Resolution : 20.00 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

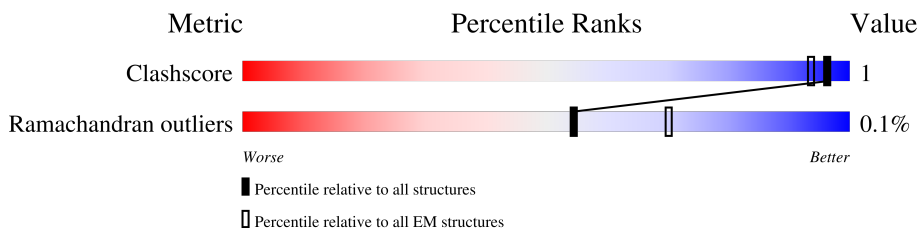
EMDB validation analysis : 0.0.1.dev92
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

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 20.00 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

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	376	98% .
1	B	376	97% ..
1	C	376	100%
1	D	376	98% .
1	E	376	97% ..
1	F	376	98% .
1	G	376	98% ..
1	I	376	98% ..
2	H	375	99% .


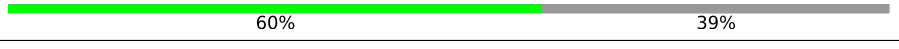
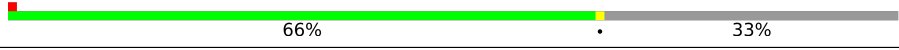
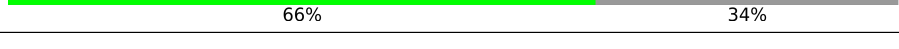

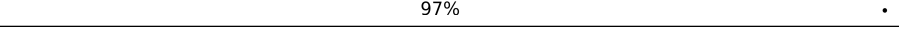
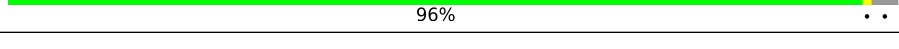
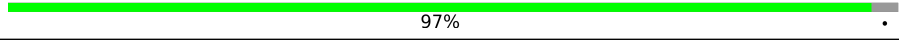
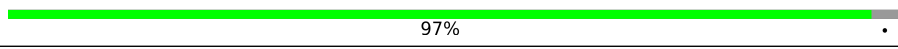
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Mol	Chain	Length	Quality of chain
3	J	417	90% 9%
4	K	286	97%
5	L	272	98%
6	M	405	82% 16%
6	N	405	69% 31%
6	P	405	83% 15%
6	Q	405	80% 20%
7	O	186	91% 9%
7	R	186	91% 5%
8	S	1281	12% 88%
8	T	1281	15% 85%
9	U	190	93% 6%
10	V	182	98%
11	W	577	35% 64%
11	X	577	47% 53%
11	w	577	36% 64%
11	x	577	42% 58%
12	Y	467	81% 18%
13	e	4646	99%
13	f	4646	98%
13	m	4646	98%
13	n	4646	98%
14	g	638	62% 38%
14	h	638	62% 38%
14	o	638	62% 38%

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Mol	Chain	Length	Quality of chain
14	p	638	
15	i	492	
15	j	492	
15	q	492	
15	r	492	
16	k	96	
16	l	96	
16	s	96	
16	t	96	

2 Entry composition

There are 21 unique types of molecules in this entry. The entry contains 118408 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 ARP1 actin related protein 1 homolog A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	A	370	1480	740	370	370	0	0
1	B	370	1480	740	370	370	0	0
1	C	375	1500	750	375	375	0	0
1	D	370	1480	740	370	370	0	0
1	E	370	1480	740	370	370	0	0
1	F	370	1480	740	370	370	0	0
1	G	369	1476	738	369	369	0	0
1	I	370	1480	740	370	370	0	0

- Molecule 2 is a protein called Actin, cytoplasmic 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	H	372	1489	744	372	373	0	0

- Molecule 3 is a protein called Arp11.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	J	379	1516	758	379	379	0	0

- Molecule 4 is a protein called Capping protein (Actin filament) muscle Z-line, alpha 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	K	278	1112	556	278	278	0	0

- Molecule 5 is a protein called F-actin capping protein beta subunit.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	L	269	1076	538	269	269	0	0

- Molecule 6 is a protein called Dynactin subunit 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	M	340	1360	680	340	340	0	0
6	N	280	1120	560	280	280	0	0
6	P	343	1372	686	343	343	0	0
6	Q	325	1300	650	325	325	0	0

- Molecule 7 is a protein called Dynactin subunit 3.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	O	170	680	340	170	170	0	0
7	R	179	716	358	179	179	0	0

- Molecule 8 is a protein called Dynactin subunit 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	S	155	620	310	155	155	0	0
8	T	192	768	384	192	192	0	0

- Molecule 9 is a protein called Dynactin 6.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	U	178	712	356	178	178	0	0

- Molecule 10 is a protein called Dynactin subunit 5.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
10	V	182	728	364	182	182	0	0

- Molecule 11 is a protein called BICD family-like cargo adapter 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	W	207	828	414	207	207	0	0
11	X	269	1076	538	269	269	0	0
11	w	207	828	414	207	207	0	0
11	x	240	960	480	240	240	0	0

- Molecule 12 is a protein called Dynactin subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	Y	383	1532	766	383	383	0	0

- Molecule 13 is a protein called Cytoplasmic dynein 1 heavy chain 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	e	4579	18317	9158	4579	4580	0	0
13	f	4579	18317	9158	4579	4580	0	0
13	m	4562	18249	9124	4562	4563	0	0
13	n	4566	18265	9132	4566	4567	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
e	1567	GLU	ARG	conflict	UNP Q14204
e	1610	GLU	LYS	conflict	UNP Q14204
f	1567	GLU	ARG	conflict	UNP Q14204
f	1610	GLU	LYS	conflict	UNP Q14204
m	1567	GLU	ARG	conflict	UNP Q14204

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Chain	Residue	Modelled	Actual	Comment	Reference
m	1610	GLU	LYS	conflict	UNP Q14204
n	1567	GLU	ARG	conflict	UNP Q14204
n	1610	GLU	LYS	conflict	UNP Q14204

- Molecule 14 is a protein called Cytoplasmic dynein 1 intermediate chain 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	g	394	Total	C	N	O	0	0
			1576	788	394	394		
14	h	396	Total	C	N	O	0	0
			1584	792	396	396		
14	o	394	Total	C	N	O	0	0
			1576	788	394	394		
14	p	401	Total	C	N	O	0	0
			1604	802	401	401		

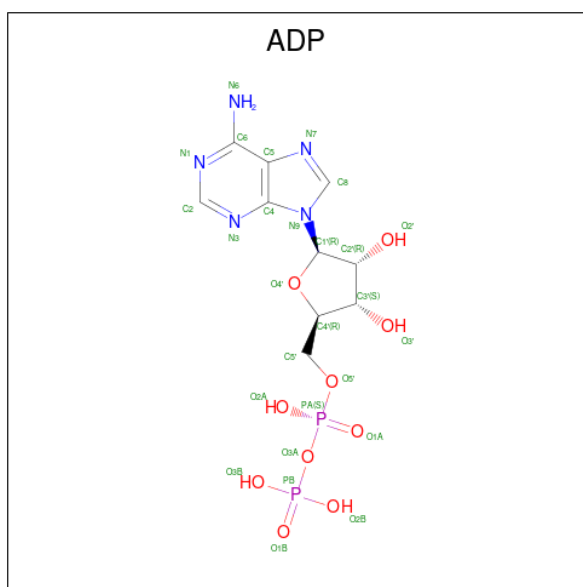
- Molecule 15 is a protein called Cytoplasmic dynein 1 light intermediate chain 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	i	299	Total	C	N	O	0	0
			1196	598	299	299		
15	j	330	Total	C	N	O	0	0
			1320	660	330	330		
15	q	325	Total	C	N	O	0	0
			1300	650	325	325		
15	r	299	Total	C	N	O	0	0
			1196	598	299	299		

- Molecule 16 is a protein called Dynein light chain roadblock-type 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	k	93	Total	C	N	O	0	0
			372	186	93	93		
16	l	93	Total	C	N	O	0	0
			372	186	93	93		
16	s	93	Total	C	N	O	0	0
			372	186	93	93		
16	t	93	Total	C	N	O	0	0
			372	186	93	93		

- Molecule 17 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: C₁₀H₁₅N₅O₁₀P₂).

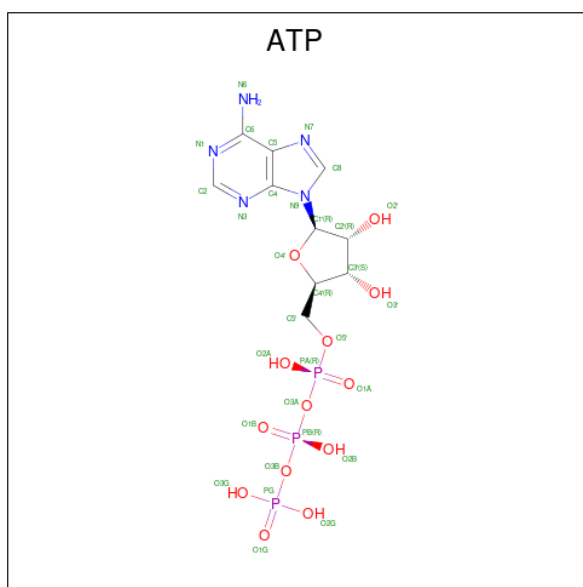


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
17	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	C	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	D	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	F	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	G	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	H	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	I	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	e	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	f	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	m	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	n	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 18 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
18	A	1	Total Mg 1 1	0
18	B	1	Total Mg 1 1	0
18	C	1	Total Mg 1 1	0
18	D	1	Total Mg 1 1	0
18	E	1	Total Mg 1 1	0
18	F	1	Total Mg 1 1	0
18	G	1	Total Mg 1 1	0
18	H	1	Total Mg 1 1	0
18	I	1	Total Mg 1 1	0
18	J	1	Total Mg 1 1	0
18	e	1	Total Mg 1 1	0
18	f	1	Total Mg 1 1	0
18	m	1	Total Mg 1 1	0
18	n	1	Total Mg 1 1	0

- Molecule 19 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
19	J	1	Total	C	N	O	P	0
			31	10	5	13	3	
19	e	1	Total	C	N	O	P	0
			31	10	5	13	3	
19	f	1	Total	C	N	O	P	0
			31	10	5	13	3	
19	m	1	Total	C	N	O	P	0
			31	10	5	13	3	
19	n	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 20 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
20	Y	3	Total	Zn	0
			3	3	

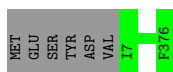
- Molecule 21 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: C₁₀H₁₇N₆O₁₂P₃).

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.

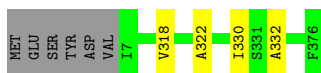
- Molecule 1: ARP1 actin related protein 1 homolog A

Chain A:  98%



- Molecule 1: ARP1 actin related protein 1 homolog A

Chain B:  97%



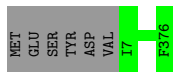
- Molecule 1: ARP1 actin related protein 1 homolog A

Chain C:  100%



- Molecule 1: ARP1 actin related protein 1 homolog A

Chain D:  98%



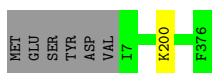
- Molecule 1: ARP1 actin related protein 1 homolog A

Chain E:  97%



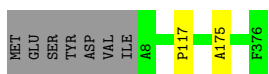
- Molecule 1: ARP1 actin related protein 1 homolog A

Chain F:  98%



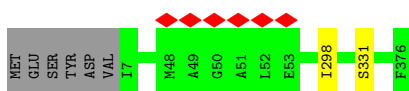
- Molecule 1: ARP1 actin related protein 1 homolog A

Chain G:  98%



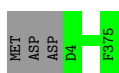
- Molecule 1: ARP1 actin related protein 1 homolog A

Chain I:  98%




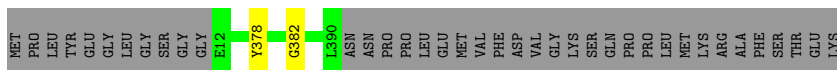
- Molecule 2: Actin, cytoplasmic 1

Chain H:  99%



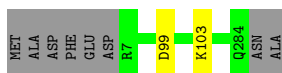
- Molecule 3: Arp11

Chain J:  90%



- Molecule 4: Capping protein (Actin filament) muscle Z-line, alpha 1

Chain K:  97%




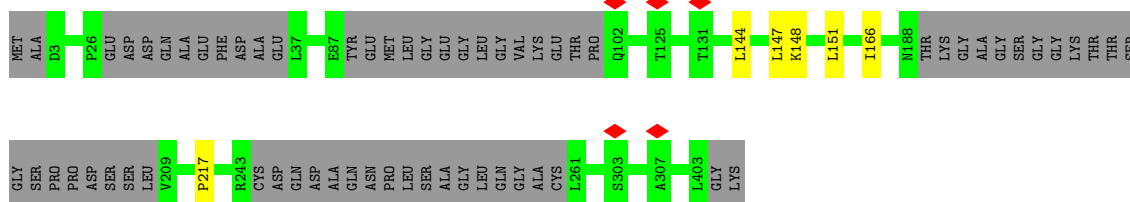
- Molecule 5: F-actin capping protein beta subunit

Chain L:  98%



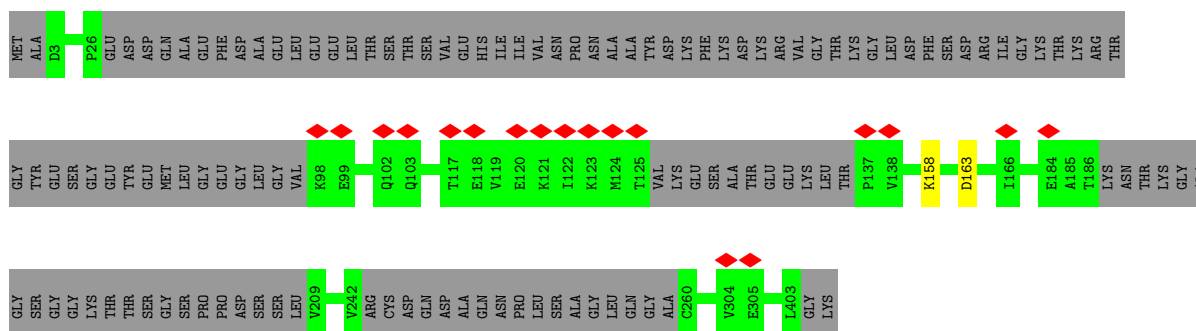
- Molecule 6: Dynactin subunit 2

Chain M:  82% 16%




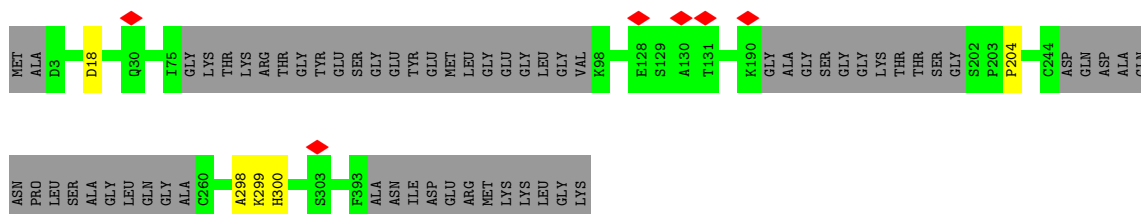
- Molecule 6: Dynactin subunit 2

Chain N:  69% 31%




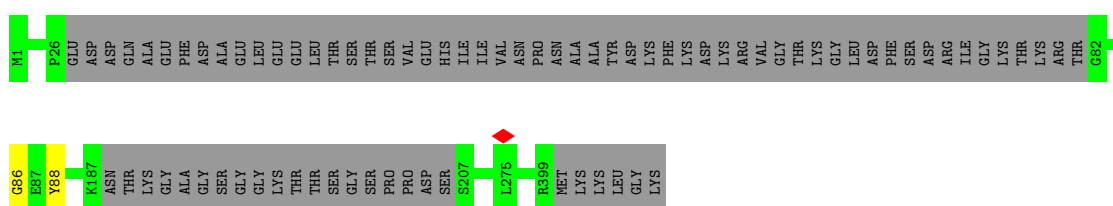
- Molecule 6: Dynactin subunit 2

Chain P:  83% 15%



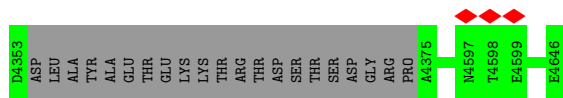
- Molecule 6: Dynactin subunit 2

Chain Q:  80% 20%

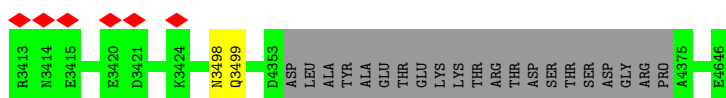
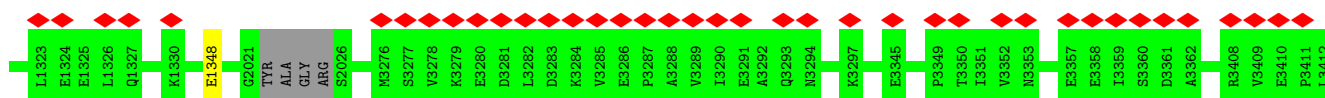
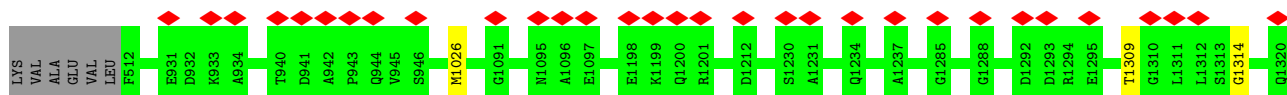
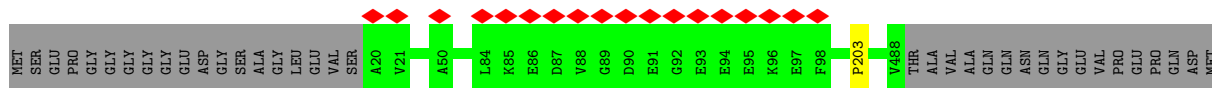


- Molecule 7: Dynactin subunit 3

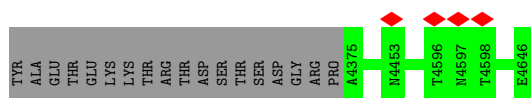
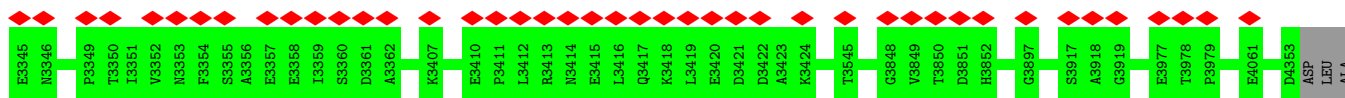
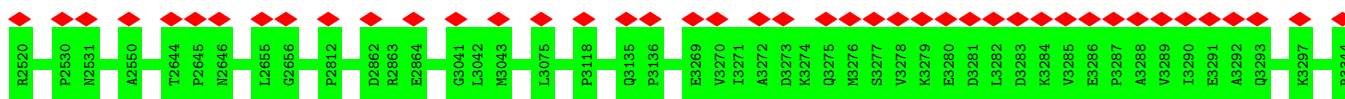
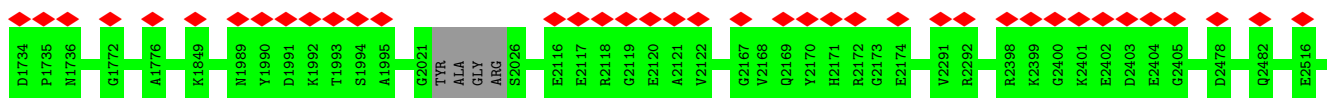
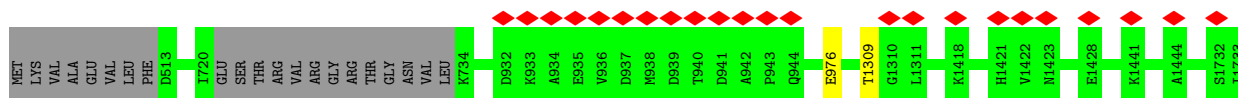
Chain O:  91% 9%



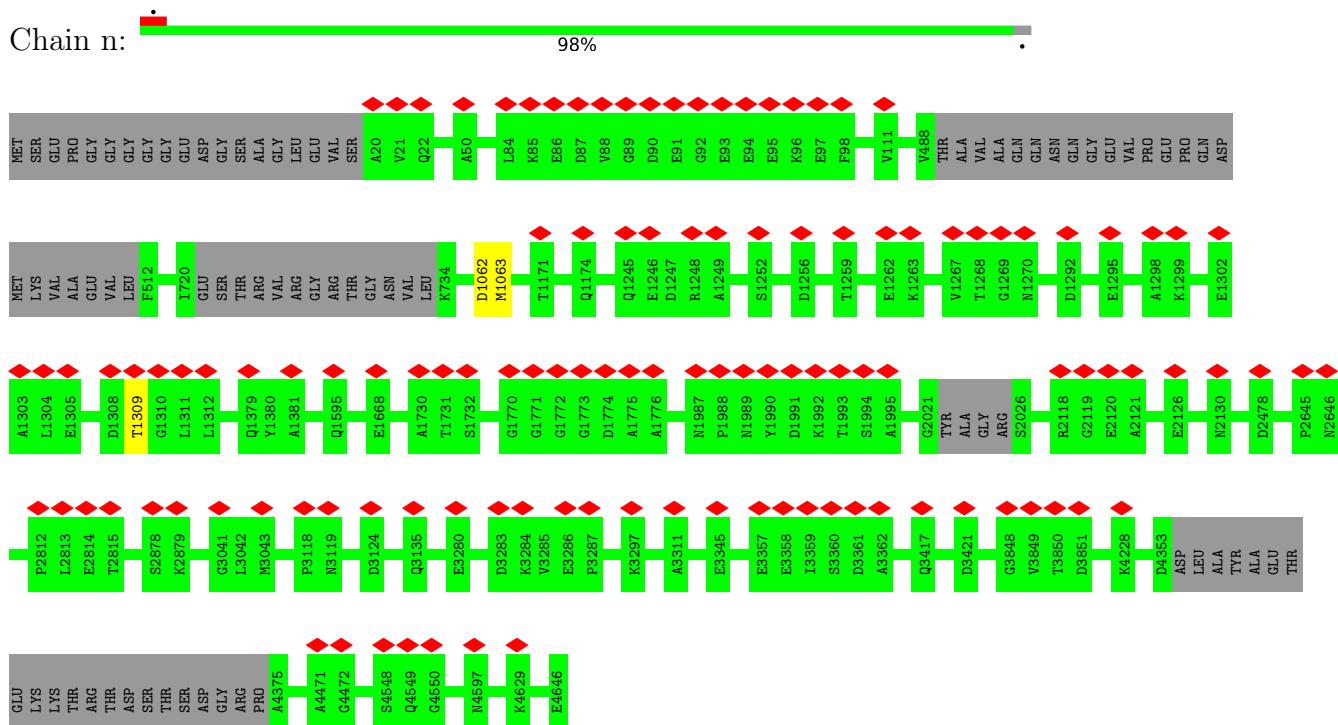
● Molecule 13: Cytoplasmic dynein 1 heavy chain 1



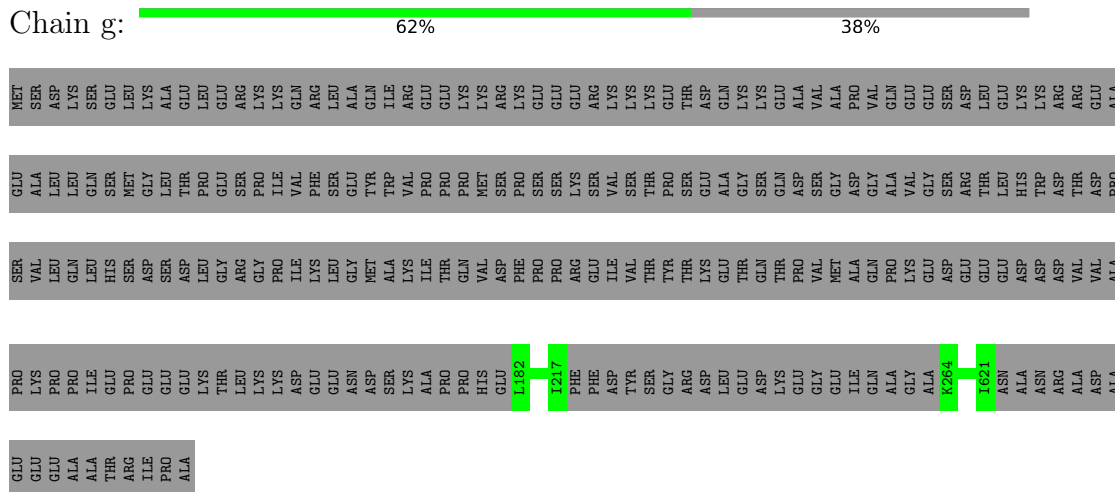
● Molecule 13: Cytoplasmic dynein 1 heavy chain 1



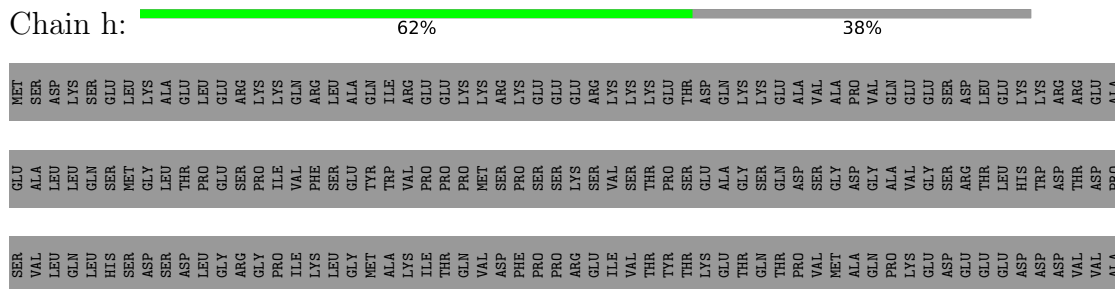
• Molecule 13: Cytoplasmic dynein 1 heavy chain 1



• Molecule 14: Cytoplasmic dynein 1 intermediate chain 2



• Molecule 14: Cytoplasmic dynein 1 intermediate chain 2



PRO	LYS	LEU	PRO	PRO	GLU	PRO	PRO	ASP	LEU	LEU	ASP	GLY	ALA	K264	I621	ASN	ALA	ASN	ARG	ALA	ASP	ALA	GLU
GLU	ALA	ALA	THR	ARG	ILE	PRO	PRO	GLU	GLU	GLU	GLU	GLU	ALA	K187	R224	ASP	LEU	GLU	ASP	LYS	GLY	ALA	GLU

● Molecule 14: Cytoplasmic dynein 1 intermediate chain 2

Chain o:  62% 38%

MET	SER	ASP	LEU	SER	GLU	LEU	LYS	LYS	GLU	GLU	ASP	LEU	GLU	VAL	ASP	ASP	GLN	THR	THR	THR	ASP	GLN	ALA	PRO	LEU	LEU	GLU	LYS	ARG	ARG	ALA																	
GLU	ALA	LEU	GLN	SER	MET	GLY	LYS	LEU	ALA	PRO	GLU	THR	GLY	PRO	ILE	VAL	PHE	GLY	TRP	ILE	ARG	VAL	VAL	PRO	GLU	THR	THR	THR	ASP	GLN	ALA	PRO	LEU	LEU	GLU	GLY	THR	THR	ASP	VAL	PRO							
SER	VAL	LEU	GLN	HIS	SER	ASP	SER	ASP	GLY	GLY	PRO	ILE	ILE	LYS	LEU	PHE	GLY	MET	ALA	ASP	PRO	PHE	ILE	GLY	VAL	THR	THR	THR	THR	VAL	GLY	ASP	GLY	ASP	GLU	GLU	GLU	GLY	THR	THR	ASP	VAL	ALA					
PRO	LYS	PRO	PRO	ILE	GLU	PRO	GLU	GLU	THR	LYS	LYS	ASP	GLY	PRO	ASP	PHE	PHE	ASP	ILE	VAL	THR	THR	THR	THR	THR	LYS	GLY	THR	THR	THR	VAL	GLY	ALA	K264	I621	ASN	ALA	ASN	ARG	ARG	ALA	VAL	VAL	ASP	ALA			
GLU	GLU	GLU	ALA	ALA	THR	ARG	ILE	PRO	ALA	ILE	PRO	PRO	PRO	PRO	GLY	ASP	ASP	GLY	PRO	PRO	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY

● Molecule 14: Cytoplasmic dynein 1 intermediate chain 2

Chain p:  63% 37%

MET	SER	ASP	LEU	SER	GLU	LEU	LYS	LYS	GLU	GLU	ASP	LEU	GLU	VAL	ASP	ASP	GLN	THR	THR	THR	ASP	GLN	ALA	PRO	LEU	LEU	GLU	LYS	ARG	ARG	ALA																			
GLU	ALA	LEU	GLN	SER	MET	GLY	LYS	LEU	ALA	PRO	GLU	THR	GLY	PRO	ILE	VAL	PHE	GLY	TRP	ILE	ARG	VAL	VAL	PRO	GLU	THR	THR	THR	THR	ASP	GLN	ALA	PRO	LEU	LEU	GLU	GLY	THR	THR	ASP	VAL	PRO								
SER	VAL	LEU	GLN	HIS	SER	ASP	SER	ASP	GLY	GLY	PRO	ILE	ILE	LYS	LEU	PHE	GLY	MET	ALA	ASP	PRO	PHE	ILE	GLY	VAL	THR	THR	THR	THR	VAL	GLY	ASP	GLY	ASP	GLU	GLU	GLU	GLY	THR	THR	ASP	VAL	ALA							
PRO	LYS	PRO	PRO	ILE	GLU	PRO	GLU	GLU	THR	LYS	LYS	ASP	GLY	PRO	ASP	PHE	PHE	ASP	ILE	VAL	THR	THR	THR	THR	THR	LYS	GLY	THR	THR	THR	VAL	GLY	ALA	K264	R363	S364	N365	Q393	N394	G442	I621	ASN	ALA	ASN						
ARG	ALA	ASP	GLU	GLU	ALA	ALA	THR	ARG	ILE	PRO	PRO	PRO	PRO	PRO	GLY	ASP	ASP	GLY	PRO	PRO	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY

● Molecule 15: Cytoplasmic dynein 1 light intermediate chain 2

Chain i:  60% 39%

MET	ALA	PRO	PRO	VAL	GLY	GLU	GLU	LYS	LYS	LEU	LEU	LEU	LEU	GLY	GLY	PRO	ASN	ASN	VAL	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR				
GLY	SER	ASP	GLU	VAL	ASN	VAL	ALA	ALA	PRO	GLY	ASP	ASN	ASN	GLY	GLY	PRO	ASN	ASN	VAL	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR

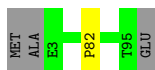
- Molecule 16: Dynein light chain roadblock-type 1

Chain k:  97%



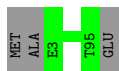
- Molecule 16: Dynein light chain roadblock-type 1

Chain l:  96%



- Molecule 16: Dynein light chain roadblock-type 1

Chain s:  97%



- Molecule 16: Dynein light chain roadblock-type 1

Chain t:  97%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	628033	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	53	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.478	Depositor
Minimum map value	-0.203	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.023	Depositor
Recommended contour level	0.0851	Depositor
Map size (Å)	955.776, 955.776, 955.776	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	2.489, 2.489, 2.489	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: ADP, ZN, ANP, MG, ATP

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.23	0/1479	0.49	0/1847
1	B	0.24	0/1479	0.51	0/1847
1	C	0.24	0/1499	0.51	0/1872
1	D	0.24	0/1479	0.51	0/1847
1	E	0.23	0/1479	0.51	0/1847
1	F	1.08	0/1479	1.10	0/1847
1	G	0.24	0/1475	0.49	0/1842
1	I	0.24	0/1479	0.50	0/1847
2	H	0.24	0/1488	0.49	0/1857
3	J	0.23	0/1515	0.50	0/1892
4	K	0.24	0/1111	0.52	0/1387
5	L	0.24	0/1075	0.50	0/1342
6	M	0.90	0/1355	0.95	0/1685
6	N	0.92	0/1115	0.97	0/1385
6	P	0.89	0/1368	0.96	0/1703
6	Q	0.91	0/1297	0.94	0/1616
7	O	0.87	0/679	0.94	0/847
7	R	0.91	0/715	0.97	0/892
8	S	0.90	0/616	0.97	0/763
8	T	0.92	0/767	0.94	0/957
9	U	0.28	0/711	0.56	0/887
10	V	0.32	0/727	0.60	0/907
11	W	0.77	0/827	0.88	0/1032
11	X	0.65	0/1075	0.72	0/1342
11	w	0.82	0/827	0.82	0/1032
11	x	0.60	0/959	0.73	0/1197
12	Y	0.24	0/1527	0.51	0/1900
13	e	0.44	0/18313	0.57	0/22883
13	f	0.65	1/18313 (0.0%)	0.68	0/22883
13	m	0.46	0/18244	0.58	0/22795
13	n	0.50	1/18260 (0.0%)	0.60	1/22815 (0.0%)
14	g	0.32	0/1574	0.57	0/1964

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
14	h	0.32	0/1582	0.57	0/1974
14	o	0.31	0/1574	0.55	0/1964
14	p	0.34	0/1602	0.56	0/1999
15	i	0.55	1/1194 (0.1%)	0.65	0/1489
15	j	0.95	5/1317 (0.4%)	0.87	1/1641 (0.1%)
15	q	0.87	0/1297	0.87	0/1616
15	r	0.50	0/1194	0.71	2/1489 (0.1%)
16	k	0.72	0/371	0.85	0/462
16	l	0.69	0/371	0.78	0/462
16	s	0.68	0/371	0.67	0/462
16	t	0.67	0/371	0.69	0/462
All	All	0.54	8/117550 (0.0%)	0.65	4/146779 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
15	q	0	1
15	r	0	2
All	All	0	3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	f	1026	MET	C-N	-5.56	1.23	1.34
15	i	63	ASP	C-N	-5.54	1.23	1.33
15	j	141	ARG	C-N	-5.29	1.24	1.34
15	j	95	ASP	C-N	-5.28	1.22	1.34
13	n	1063	MET	C-O	5.28	1.33	1.23
15	j	248	ASP	C-N	-5.27	1.22	1.34
15	j	63	ASP	C-N	-5.22	1.23	1.33
15	j	274	VAL	C-N	-5.03	1.22	1.34

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	r	79	HIS	C-N-CA	-6.43	108.80	122.30
13	n	1062	ASP	C-N-CA	5.97	136.63	121.70
15	j	48	ARG	O-C-N	5.14	130.92	122.70
15	r	79	HIS	CA-C-N	-5.02	106.17	116.20

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
15	q	44	SER	Mainchain
15	r	37	SER	Mainchain
15	r	80	GLY	Mainchain

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	1480	0	406	0	0
1	B	1480	0	406	4	0
1	C	1500	0	411	0	0
1	D	1480	0	406	0	0
1	E	1480	0	406	3	0
1	F	1480	0	406	1	0
1	G	1476	0	405	2	0
1	I	1480	0	406	1	0
2	H	1489	0	408	0	0
3	J	1516	0	408	1	0
4	K	1112	0	291	1	0
5	L	1076	0	295	1	0
6	M	1360	0	346	2	0
6	N	1120	0	277	0	0
6	P	1372	0	341	2	0
6	Q	1300	0	339	3	0
7	O	680	0	176	0	0
7	R	716	0	187	3	0
8	S	620	0	154	2	0
8	T	768	0	196	0	0
9	U	712	0	193	1	0
10	V	728	0	202	1	0
11	W	828	0	216	2	0
11	X	1076	0	280	0	0
11	w	828	0	216	0	0
11	x	960	0	251	0	0
12	Y	1532	0	375	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	e	18317	0	4801	0	0
13	f	18317	0	4801	0	0
13	m	18249	0	4780	0	0
13	n	18265	0	4783	0	0
14	g	1576	0	421	0	0
14	h	1584	0	425	0	0
14	o	1576	0	421	0	0
14	p	1604	0	430	0	0
15	i	1196	0	312	0	0
15	j	1320	0	345	0	0
15	q	1300	0	342	0	0
15	r	1196	0	312	0	0
16	k	372	0	93	0	0
16	l	372	0	93	0	0
16	s	372	0	93	0	0
16	t	372	0	93	0	0
17	A	27	0	12	0	0
17	B	27	0	12	0	0
17	C	27	0	12	0	0
17	D	27	0	12	0	0
17	E	27	0	12	0	0
17	F	27	0	12	0	0
17	G	27	0	12	0	0
17	H	27	0	12	0	0
17	I	27	0	12	0	0
17	e	27	0	12	0	0
17	f	27	0	12	0	0
17	m	27	0	12	0	0
17	n	27	0	12	0	0
18	A	1	0	0	0	0
18	B	1	0	0	0	0
18	C	1	0	0	0	0
18	D	1	0	0	0	0
18	E	1	0	0	0	0
18	F	1	0	0	0	0
18	G	1	0	0	0	0
18	H	1	0	0	0	0
18	I	1	0	0	0	0
18	J	1	0	0	0	0
18	e	1	0	0	0	0
18	f	1	0	0	0	0
18	m	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
18	n	1	0	0	0	0
19	J	31	0	12	0	0
19	e	31	0	12	0	0
19	f	31	0	12	0	0
19	m	31	0	12	0	0
19	n	31	0	12	0	0
20	Y	3	0	0	0	0
21	e	62	0	26	0	0
21	f	62	0	26	0	0
21	m	62	0	26	0	0
21	n	62	0	26	0	0
All	All	118408	0	31268	26	0

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

All (26) 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)
5:L:163:ARG:O	5:L:203:VAL:N	2.25	0.70
7:R:36:GLY:O	7:R:40:VAL:N	2.35	0.59
6:P:298:ALA:O	6:P:300:HIS:N	2.38	0.57
6:M:144:LEU:O	6:M:148:LYS:N	2.41	0.52
11:W:279:ASN:O	11:W:283:GLN:N	2.86	0.50
8:S:1124:MET:O	8:S:1128:LEU:N	2.44	0.50
3:J:378:TYR:O	3:J:382:GLY:N	2.46	0.49
1:E:45:VAL:O	1:G:175:ALA:N	2.37	0.47
12:Y:387:ALA:O	12:Y:391:ASP:N	2.47	0.47
11:W:279:ASN:O	11:W:280:ASP:C	2.48	0.46
1:E:298:ILE:O	1:E:331:SER:N	2.46	0.45
9:U:126:GLY:N	9:U:143:ILE:O	2.48	0.45
1:B:330:ILE:N	6:Q:88:TYR:O	2.48	0.45
4:K:99:ASP:O	4:K:103:LYS:N	2.50	0.44
10:V:27:VAL:N	10:V:46:CYS:O	2.47	0.44
1:B:332:ALA:H	6:Q:86:GLY:HA3	1.82	0.44
1:B:318:VAL:O	1:B:322:ALA:N	2.48	0.44
1:F:200:LYS:O	1:G:117:PRO:CA	2.66	0.44
12:Y:395:ASP:O	12:Y:399:VAL:N	2.48	0.44
1:B:332:ALA:O	6:Q:86:GLY:N	2.52	0.43
6:M:147:LEU:O	6:M:151:LEU:N	2.47	0.42
7:R:85:GLN:O	7:R:89:ALA:N	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:298:ILE:O	1:I:331:SER:N	2.53	0.41
1:E:332:ALA:O	6:P:18:ASP:O	2.39	0.41
7:R:173:CYS:O	7:R:177:ALA:N	2.46	0.40
8:S:1118:VAL:O	8:S:1122:ALA:N	2.55	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	368/376 (98%)	359 (98%)	9 (2%)	0	100	100
1	B	368/376 (98%)	359 (98%)	9 (2%)	0	100	100
1	C	373/376 (99%)	362 (97%)	11 (3%)	0	100	100
1	D	368/376 (98%)	357 (97%)	11 (3%)	0	100	100
1	E	368/376 (98%)	355 (96%)	13 (4%)	0	100	100
1	F	368/376 (98%)	358 (97%)	10 (3%)	0	100	100
1	G	367/376 (98%)	356 (97%)	11 (3%)	0	100	100
1	I	368/376 (98%)	354 (96%)	14 (4%)	0	100	100
2	H	370/375 (99%)	364 (98%)	6 (2%)	0	100	100
3	J	377/417 (90%)	361 (96%)	16 (4%)	0	100	100
4	K	276/286 (96%)	264 (96%)	12 (4%)	0	100	100
5	L	267/272 (98%)	260 (97%)	7 (3%)	0	100	100
6	M	330/405 (82%)	298 (90%)	30 (9%)	2 (1%)	25	66
6	N	270/405 (67%)	258 (96%)	10 (4%)	2 (1%)	22	63
6	P	335/405 (83%)	305 (91%)	28 (8%)	2 (1%)	25	66
6	Q	319/405 (79%)	302 (95%)	17 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	O	168/186 (90%)	154 (92%)	13 (8%)	1 (1%)	25	66
7	R	177/186 (95%)	159 (90%)	15 (8%)	3 (2%)	9	42
8	S	147/1281 (12%)	139 (95%)	7 (5%)	1 (1%)	22	63
8	T	190/1281 (15%)	176 (93%)	13 (7%)	1 (0%)	29	69
9	U	176/190 (93%)	161 (92%)	15 (8%)	0	100	100
10	V	180/182 (99%)	175 (97%)	3 (2%)	2 (1%)	14	52
11	W	205/577 (36%)	205 (100%)	0	0	100	100
11	X	267/577 (46%)	265 (99%)	2 (1%)	0	100	100
11	w	205/577 (36%)	204 (100%)	1 (0%)	0	100	100
11	x	238/577 (41%)	238 (100%)	0	0	100	100
12	Y	373/467 (80%)	352 (94%)	21 (6%)	0	100	100
13	e	4571/4646 (98%)	4476 (98%)	94 (2%)	1 (0%)	100	100
13	f	4571/4646 (98%)	4500 (98%)	65 (1%)	6 (0%)	51	86
13	m	4552/4646 (98%)	4458 (98%)	92 (2%)	2 (0%)	100	100
13	n	4556/4646 (98%)	4464 (98%)	91 (2%)	1 (0%)	100	100
14	g	390/638 (61%)	384 (98%)	6 (2%)	0	100	100
14	h	392/638 (61%)	383 (98%)	9 (2%)	0	100	100
14	o	390/638 (61%)	382 (98%)	8 (2%)	0	100	100
14	p	397/638 (62%)	391 (98%)	6 (2%)	0	100	100
15	i	295/492 (60%)	281 (95%)	13 (4%)	1 (0%)	41	77
15	j	324/492 (66%)	318 (98%)	6 (2%)	0	100	100
15	q	319/492 (65%)	310 (97%)	9 (3%)	0	100	100
15	r	295/492 (60%)	281 (95%)	14 (5%)	0	100	100
16	k	91/96 (95%)	79 (87%)	12 (13%)	0	100	100
16	l	91/96 (95%)	81 (89%)	9 (10%)	1 (1%)	14	52
16	s	91/96 (95%)	84 (92%)	7 (8%)	0	100	100
16	t	91/96 (95%)	86 (94%)	5 (6%)	0	100	100
All	All	29234/35547 (82%)	28458 (97%)	750 (3%)	26 (0%)	54	86

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	M	217	PRO

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Mol	Chain	Res	Type
6	P	204	PRO
7	R	24	PRO
8	S	1142	PRO
10	V	80	VAL
13	f	203	PRO
13	f	1309	THR
13	f	1348	GLU
13	f	3499	GLN
15	i	48	ARG
13	m	1309	THR
13	e	1309	THR
13	f	1314	GLY
13	n	1309	THR
6	P	299	LYS
13	m	976	GLU
6	N	158	LYS
6	N	163	ASP
7	R	61	ILE
7	R	69	ASP
16	l	82	PRO
7	O	69	ASP
13	f	3498	ASN
6	M	166	ILE
8	T	1147	PRO
10	V	79	GLY

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

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 43 ligands modelled in this entry, 17 are monoatomic - leaving 26 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
21	ANP	m	4704	-	29,33,33	1.07	4 (13%)	31,52,52	1.12	2 (6%)
21	ANP	n	4705	-	29,33,33	1.07	4 (13%)	31,52,52	1.17	2 (6%)
19	ATP	f	4702	18	26,33,33	0.85	0	31,52,52	1.01	2 (6%)
17	ADP	I	800	18	24,29,29	0.71	0	29,45,45	0.88	2 (6%)
21	ANP	m	4705	-	29,33,33	1.07	4 (13%)	31,52,52	1.16	2 (6%)
19	ATP	n	4702	18	26,33,33	0.64	0	31,52,52	1.09	1 (3%)
19	ATP	J	800	18	26,33,33	0.73	0	31,52,52	0.86	2 (6%)
17	ADP	e	4701	-	24,29,29	0.96	1 (4%)	29,45,45	1.49	4 (13%)
21	ANP	e	4705	-	29,33,33	1.07	4 (13%)	31,52,52	1.16	2 (6%)
17	ADP	H	800	18	24,29,29	0.72	0	29,45,45	0.84	1 (3%)
21	ANP	n	4704	-	29,33,33	1.07	4 (13%)	31,52,52	1.12	2 (6%)
17	ADP	m	4701	-	24,29,29	0.95	1 (4%)	29,45,45	1.48	5 (17%)
17	ADP	n	4701	-	24,29,29	0.96	1 (4%)	29,45,45	1.49	4 (13%)
17	ADP	A	800	18	24,29,29	0.91	1 (4%)	29,45,45	1.51	4 (13%)
21	ANP	f	4703	-	29,33,33	0.96	2 (6%)	31,52,52	1.25	4 (12%)
17	ADP	f	4701	-	24,29,29	0.95	1 (4%)	29,45,45	1.48	5 (17%)
19	ATP	e	4702	18	26,33,33	0.64	0	31,52,52	1.09	1 (3%)
17	ADP	D	800	18	24,29,29	0.91	1 (4%)	29,45,45	1.51	4 (13%)
17	ADP	G	800	18	24,29,29	0.74	0	29,45,45	0.83	1 (3%)
17	ADP	B	800	18	24,29,29	0.90	1 (4%)	29,45,45	1.51	4 (13%)
21	ANP	e	4704	-	29,33,33	1.06	4 (13%)	31,52,52	1.12	2 (6%)
17	ADP	E	800	18	24,29,29	0.91	1 (4%)	29,45,45	1.47	4 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
17	ADP	C	800	18	24,29,29	0.90	1 (4%)	29,45,45	1.49	4 (13%)
19	ATP	m	4702	18	26,33,33	0.65	0	31,52,52	1.09	1 (3%)
17	ADP	F	802	18	24,29,29	0.74	0	29,45,45	0.83	1 (3%)
21	ANP	f	4705	-	29,33,33	1.06	3 (10%)	31,52,52	1.12	2 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
21	ANP	m	4704	-	-	7/14/38/38	0/3/3/3
21	ANP	n	4705	-	-	5/14/38/38	0/3/3/3
19	ATP	f	4702	18	-	2/18/38/38	0/3/3/3
17	ADP	I	800	18	-	0/12/32/32	0/3/3/3
21	ANP	m	4705	-	-	5/14/38/38	0/3/3/3
19	ATP	n	4702	18	-	2/18/38/38	0/3/3/3
19	ATP	J	800	18	-	2/18/38/38	0/3/3/3
17	ADP	e	4701	-	-	6/12/32/32	0/3/3/3
21	ANP	e	4705	-	-	5/14/38/38	0/3/3/3
17	ADP	H	800	18	-	0/12/32/32	0/3/3/3
21	ANP	n	4704	-	-	7/14/38/38	0/3/3/3
17	ADP	m	4701	-	-	6/12/32/32	0/3/3/3
17	ADP	n	4701	-	-	6/12/32/32	0/3/3/3
17	ADP	A	800	18	-	0/12/32/32	0/3/3/3
21	ANP	f	4703	-	-	5/14/38/38	0/3/3/3
17	ADP	f	4701	-	-	6/12/32/32	0/3/3/3
19	ATP	e	4702	18	-	2/18/38/38	0/3/3/3
17	ADP	D	800	18	-	3/12/32/32	0/3/3/3
17	ADP	G	800	18	-	0/12/32/32	0/3/3/3
17	ADP	B	800	18	-	0/12/32/32	0/3/3/3
21	ANP	e	4704	-	-	7/14/38/38	0/3/3/3
17	ADP	E	800	18	-	3/12/32/32	0/3/3/3
17	ADP	C	800	18	-	3/12/32/32	0/3/3/3
19	ATP	m	4702	18	-	2/18/38/38	0/3/3/3
17	ADP	F	802	18	-	0/12/32/32	0/3/3/3
21	ANP	f	4705	-	-	7/14/38/38	0/3/3/3

All (38) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
21	f	4703	ANP	PG-O1G	2.60	1.50	1.46
21	n	4704	ANP	PB-O3A	-2.57	1.55	1.59
21	m	4704	ANP	PB-O3A	-2.56	1.55	1.59
21	e	4704	ANP	PB-O3A	-2.56	1.55	1.59
21	f	4705	ANP	PB-O3A	-2.53	1.55	1.59
21	f	4705	ANP	PG-O1G	2.43	1.50	1.46
21	e	4705	ANP	PB-O3A	-2.42	1.56	1.59
21	m	4705	ANP	PB-O3A	-2.42	1.56	1.59
21	e	4705	ANP	PG-O1G	2.41	1.50	1.46
21	n	4705	ANP	PB-O3A	-2.40	1.56	1.59
21	n	4704	ANP	PG-O1G	2.40	1.50	1.46
21	m	4704	ANP	PG-O1G	2.40	1.50	1.46
21	m	4705	ANP	PG-O1G	2.40	1.50	1.46
21	n	4705	ANP	PG-O1G	2.38	1.49	1.46
21	e	4704	ANP	PG-O1G	2.38	1.49	1.46
21	e	4704	ANP	PG-N3B	2.36	1.69	1.63
21	n	4704	ANP	PG-N3B	2.33	1.69	1.63
21	m	4704	ANP	PG-N3B	2.33	1.69	1.63
21	f	4705	ANP	PG-N3B	2.32	1.69	1.63
21	f	4703	ANP	PB-O2B	-2.32	1.50	1.56
17	A	800	ADP	C5-C4	2.30	1.47	1.40
21	n	4705	ANP	PG-N3B	2.29	1.69	1.63
17	E	800	ADP	C5-C4	2.29	1.47	1.40
17	C	800	ADP	C5-C4	2.29	1.47	1.40
21	e	4705	ANP	PG-N3B	2.29	1.69	1.63
17	n	4701	ADP	C5-C4	2.28	1.47	1.40
17	B	800	ADP	C5-C4	2.28	1.47	1.40
17	m	4701	ADP	C5-C4	2.28	1.47	1.40
17	f	4701	ADP	C5-C4	2.28	1.47	1.40
21	m	4705	ANP	PG-N3B	2.27	1.69	1.63
17	D	800	ADP	C5-C4	2.27	1.46	1.40
17	e	4701	ADP	C5-C4	2.25	1.46	1.40
21	m	4705	ANP	PB-O1B	2.23	1.49	1.46
21	e	4705	ANP	PB-O1B	2.23	1.49	1.46
21	n	4705	ANP	PB-O1B	2.21	1.49	1.46
21	e	4704	ANP	PB-O1B	2.06	1.49	1.46
21	m	4704	ANP	PB-O1B	2.03	1.49	1.46
21	n	4704	ANP	PB-O1B	2.02	1.49	1.46

All (68) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
21	n	4705	ANP	PB-O3A-PA	-4.02	118.47	132.62
21	m	4705	ANP	PB-O3A-PA	-4.00	118.52	132.62
21	e	4705	ANP	PB-O3A-PA	-3.99	118.55	132.62
21	f	4703	ANP	PB-O3A-PA	-3.93	118.78	132.62
17	n	4701	ADP	N3-C2-N1	-3.66	122.95	128.68
17	e	4701	ADP	N3-C2-N1	-3.65	122.98	128.68
17	f	4701	ADP	N3-C2-N1	-3.63	123.00	128.68
17	m	4701	ADP	N3-C2-N1	-3.63	123.00	128.68
17	D	800	ADP	N3-C2-N1	-3.61	123.04	128.68
17	B	800	ADP	N3-C2-N1	-3.53	123.16	128.68
17	E	800	ADP	N3-C2-N1	-3.47	123.25	128.68
21	e	4704	ANP	PB-O3A-PA	-3.47	120.39	132.62
21	f	4705	ANP	PB-O3A-PA	-3.47	120.40	132.62
21	m	4704	ANP	PB-O3A-PA	-3.47	120.40	132.62
21	n	4704	ANP	PB-O3A-PA	-3.47	120.41	132.62
17	E	800	ADP	PA-O3A-PB	-3.46	120.95	132.83
17	A	800	ADP	N3-C2-N1	-3.44	123.31	128.68
17	C	800	ADP	N3-C2-N1	-3.44	123.31	128.68
17	D	800	ADP	PA-O3A-PB	-3.42	121.08	132.83
17	A	800	ADP	PA-O3A-PB	-3.37	121.26	132.83
17	C	800	ADP	PA-O3A-PB	-3.35	121.34	132.83
17	B	800	ADP	C3'-C2'-C1'	3.32	105.98	100.98
17	e	4701	ADP	C3'-C2'-C1'	3.31	105.96	100.98
17	m	4701	ADP	C3'-C2'-C1'	3.30	105.95	100.98
17	n	4701	ADP	C3'-C2'-C1'	3.30	105.94	100.98
17	f	4701	ADP	C3'-C2'-C1'	3.28	105.92	100.98
17	C	800	ADP	C3'-C2'-C1'	3.23	105.84	100.98
17	D	800	ADP	C3'-C2'-C1'	3.19	105.78	100.98
17	E	800	ADP	C3'-C2'-C1'	3.16	105.73	100.98
17	B	800	ADP	PA-O3A-PB	-3.14	122.05	132.83
17	e	4701	ADP	PA-O3A-PB	-3.05	122.37	132.83
17	m	4701	ADP	PA-O3A-PB	-3.04	122.39	132.83
17	n	4701	ADP	PA-O3A-PB	-3.04	122.39	132.83
17	f	4701	ADP	PA-O3A-PB	-3.04	122.40	132.83
17	A	800	ADP	C3'-C2'-C1'	2.95	105.42	100.98
17	A	800	ADP	C4-C5-N7	-2.81	106.47	109.40
17	D	800	ADP	C4-C5-N7	-2.71	106.58	109.40
17	B	800	ADP	C4-C5-N7	-2.65	106.64	109.40
21	f	4703	ANP	O2G-PG-O1G	-2.62	106.86	113.45
17	C	800	ADP	C4-C5-N7	-2.60	106.69	109.40
17	E	800	ADP	C4-C5-N7	-2.59	106.70	109.40
17	n	4701	ADP	C4-C5-N7	-2.43	106.86	109.40
17	e	4701	ADP	C4-C5-N7	-2.43	106.86	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	m	4701	ADP	C4-C5-N7	-2.43	106.86	109.40
17	f	4701	ADP	C4-C5-N7	-2.41	106.89	109.40
19	f	4702	ATP	C5-C6-N6	2.41	124.01	120.35
21	f	4703	ANP	C5-C6-N6	2.39	123.99	120.35
21	f	4703	ANP	O3G-PG-O1G	-2.35	107.54	113.45
21	e	4704	ANP	C5-C6-N6	2.32	123.87	120.35
19	e	4702	ATP	C5-C6-N6	2.31	123.87	120.35
21	n	4704	ANP	C5-C6-N6	2.31	123.86	120.35
21	m	4704	ANP	C5-C6-N6	2.31	123.86	120.35
19	m	4702	ATP	C5-C6-N6	2.30	123.85	120.35
21	f	4705	ANP	C5-C6-N6	2.29	123.84	120.35
17	F	802	ADP	C5-C6-N6	2.29	123.83	120.35
19	n	4702	ATP	C5-C6-N6	2.28	123.81	120.35
17	I	800	ADP	C5-C6-N6	2.27	123.81	120.35
21	n	4705	ANP	C5-C6-N6	2.26	123.79	120.35
17	H	800	ADP	C5-C6-N6	2.26	123.78	120.35
17	G	800	ADP	C5-C6-N6	2.24	123.76	120.35
21	m	4705	ANP	C5-C6-N6	2.24	123.75	120.35
21	e	4705	ANP	C5-C6-N6	2.22	123.73	120.35
19	J	800	ATP	C5-C6-N6	2.19	123.68	120.35
17	I	800	ADP	O4'-C1'-C2'	-2.14	103.80	106.93
19	f	4702	ATP	PB-O3B-PG	2.04	139.83	132.83
17	f	4701	ADP	C2'-C3'-C4'	2.01	106.55	102.64
19	J	800	ATP	O4'-C1'-C2'	-2.01	103.98	106.93
17	m	4701	ADP	C2'-C3'-C4'	2.01	106.54	102.64

There are no chirality outliers.

All (91) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
17	C	800	ADP	C5'-O5'-PA-O1A
17	D	800	ADP	C5'-O5'-PA-O1A
17	E	800	ADP	C5'-O5'-PA-O1A
17	E	800	ADP	C5'-O5'-PA-O2A
17	e	4701	ADP	PA-O3A-PB-O2B
17	e	4701	ADP	C5'-O5'-PA-O2A
17	f	4701	ADP	PA-O3A-PB-O2B
17	f	4701	ADP	C5'-O5'-PA-O2A
17	m	4701	ADP	PA-O3A-PB-O2B
17	m	4701	ADP	C5'-O5'-PA-O2A
17	n	4701	ADP	PA-O3A-PB-O2B
17	n	4701	ADP	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
19	e	4702	ATP	PB-O3B-PG-O2G
19	f	4702	ATP	PB-O3B-PG-O2G
19	f	4702	ATP	PB-O3B-PG-O3G
19	m	4702	ATP	PB-O3B-PG-O2G
19	n	4702	ATP	PB-O3B-PG-O2G
21	e	4704	ANP	PG-N3B-PB-O1B
21	e	4704	ANP	PG-N3B-PB-O3A
21	e	4704	ANP	C5'-O5'-PA-O3A
21	e	4705	ANP	PB-N3B-PG-O1G
21	e	4705	ANP	PG-N3B-PB-O1B
21	e	4705	ANP	C5'-O5'-PA-O1A
21	e	4705	ANP	C5'-O5'-PA-O3A
21	f	4703	ANP	PB-N3B-PG-O1G
21	f	4703	ANP	PG-N3B-PB-O1B
21	f	4703	ANP	C5'-O5'-PA-O1A
21	f	4703	ANP	C5'-O5'-PA-O3A
21	f	4705	ANP	PG-N3B-PB-O1B
21	f	4705	ANP	PG-N3B-PB-O3A
21	f	4705	ANP	C5'-O5'-PA-O3A
21	m	4704	ANP	PG-N3B-PB-O1B
21	m	4704	ANP	PG-N3B-PB-O3A
21	m	4704	ANP	C5'-O5'-PA-O3A
21	m	4705	ANP	PB-N3B-PG-O1G
21	m	4705	ANP	PG-N3B-PB-O1B
21	m	4705	ANP	C5'-O5'-PA-O1A
21	m	4705	ANP	C5'-O5'-PA-O3A
21	n	4704	ANP	PG-N3B-PB-O1B
21	n	4704	ANP	PG-N3B-PB-O3A
21	n	4704	ANP	C5'-O5'-PA-O3A
21	n	4705	ANP	PB-N3B-PG-O1G
21	n	4705	ANP	PG-N3B-PB-O1B
21	n	4705	ANP	C5'-O5'-PA-O1A
21	n	4705	ANP	C5'-O5'-PA-O3A
21	e	4704	ANP	O4'-C4'-C5'-O5'
21	f	4705	ANP	O4'-C4'-C5'-O5'
21	m	4704	ANP	O4'-C4'-C5'-O5'
21	n	4704	ANP	O4'-C4'-C5'-O5'
19	J	800	ATP	PB-O3B-PG-O1G
19	J	800	ATP	PB-O3B-PG-O2G
19	e	4702	ATP	PB-O3B-PG-O3G
19	m	4702	ATP	PB-O3B-PG-O3G
19	n	4702	ATP	PB-O3B-PG-O3G

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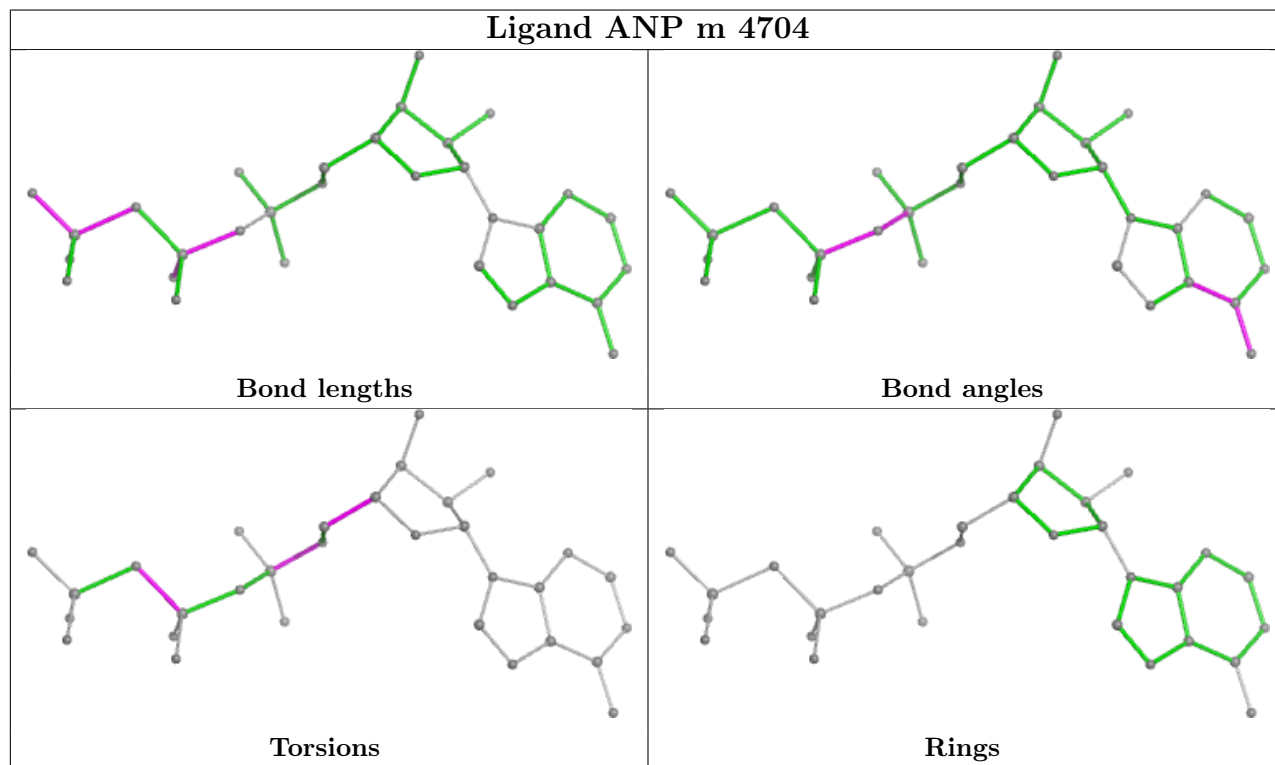
Mol	Chain	Res	Type	Atoms
17	C	800	ADP	C5'-O5'-PA-O3A
17	D	800	ADP	C5'-O5'-PA-O3A
17	e	4701	ADP	C5'-O5'-PA-O3A
17	f	4701	ADP	C5'-O5'-PA-O3A
17	m	4701	ADP	C5'-O5'-PA-O3A
17	n	4701	ADP	C5'-O5'-PA-O3A
17	C	800	ADP	C5'-O5'-PA-O2A
17	D	800	ADP	C5'-O5'-PA-O2A
17	e	4701	ADP	C5'-O5'-PA-O1A
17	f	4701	ADP	C5'-O5'-PA-O1A
17	m	4701	ADP	C5'-O5'-PA-O1A
17	n	4701	ADP	C5'-O5'-PA-O1A
21	e	4704	ANP	C5'-O5'-PA-O1A
21	e	4704	ANP	C5'-O5'-PA-O2A
21	e	4705	ANP	C5'-O5'-PA-O2A
21	f	4703	ANP	C5'-O5'-PA-O2A
21	f	4705	ANP	C5'-O5'-PA-O1A
21	f	4705	ANP	C5'-O5'-PA-O2A
21	m	4704	ANP	C5'-O5'-PA-O1A
21	m	4704	ANP	C5'-O5'-PA-O2A
21	m	4705	ANP	C5'-O5'-PA-O2A
21	n	4704	ANP	C5'-O5'-PA-O1A
21	n	4704	ANP	C5'-O5'-PA-O2A
21	n	4705	ANP	C5'-O5'-PA-O2A
21	e	4704	ANP	C3'-C4'-C5'-O5'
21	f	4705	ANP	C3'-C4'-C5'-O5'
21	m	4704	ANP	C3'-C4'-C5'-O5'
21	n	4704	ANP	C3'-C4'-C5'-O5'
17	e	4701	ADP	PA-O3A-PB-O1B
17	f	4701	ADP	PA-O3A-PB-O1B
17	m	4701	ADP	PA-O3A-PB-O1B
17	n	4701	ADP	PA-O3A-PB-O1B
17	E	800	ADP	C5'-O5'-PA-O3A
17	e	4701	ADP	O4'-C4'-C5'-O5'
17	f	4701	ADP	O4'-C4'-C5'-O5'
17	m	4701	ADP	O4'-C4'-C5'-O5'
17	n	4701	ADP	O4'-C4'-C5'-O5'

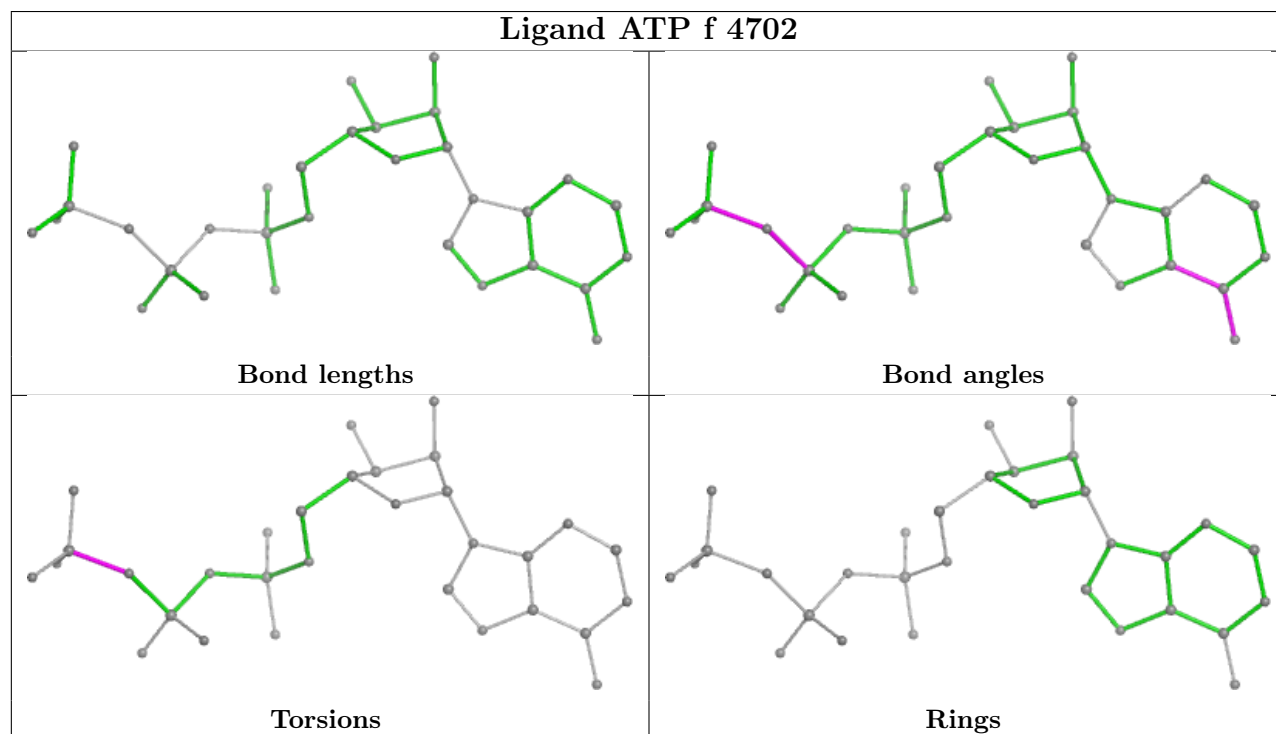
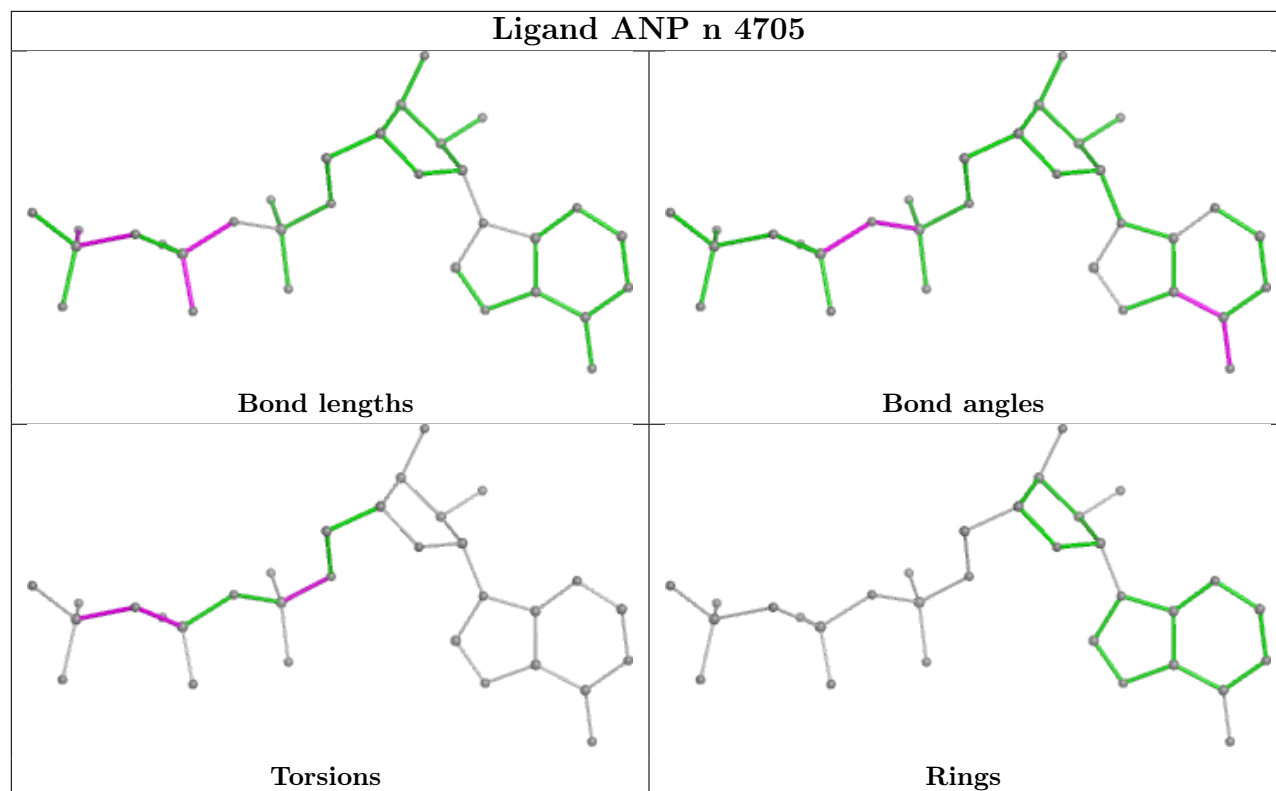
There are no ring outliers.

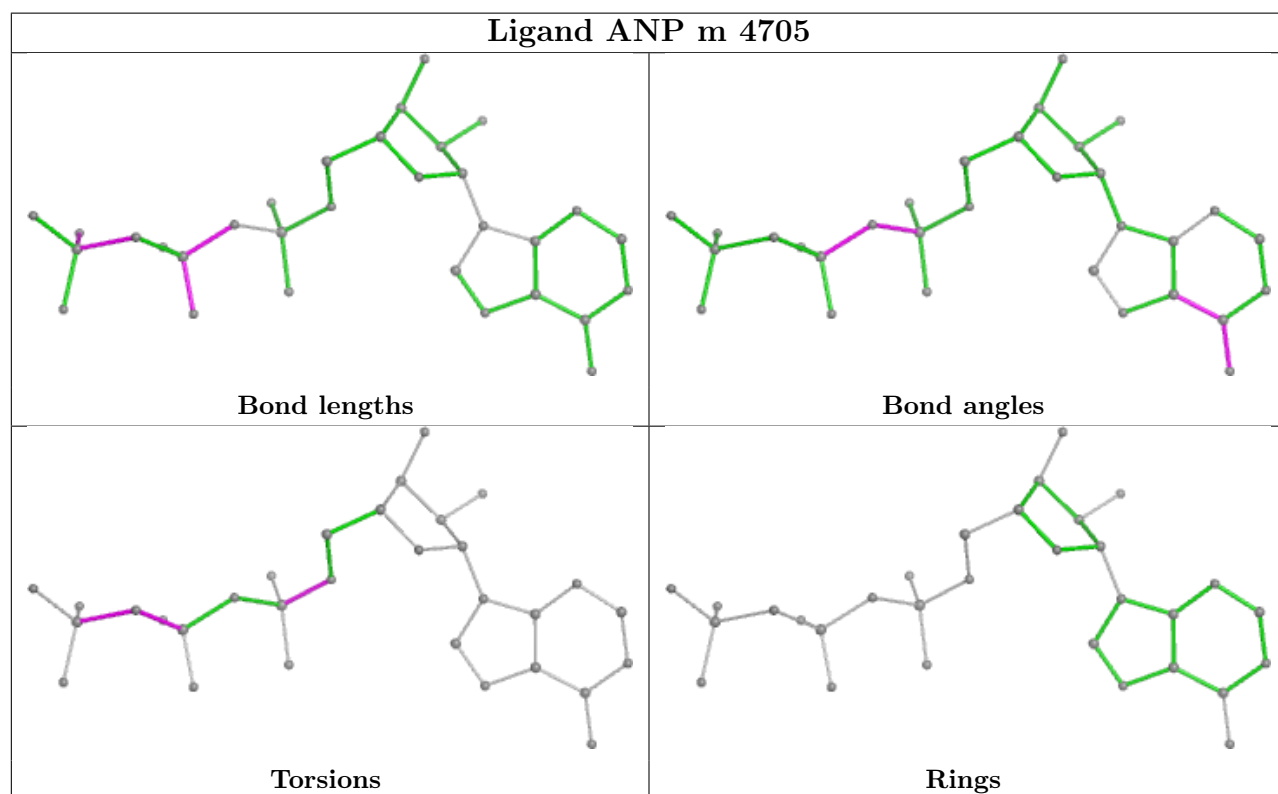
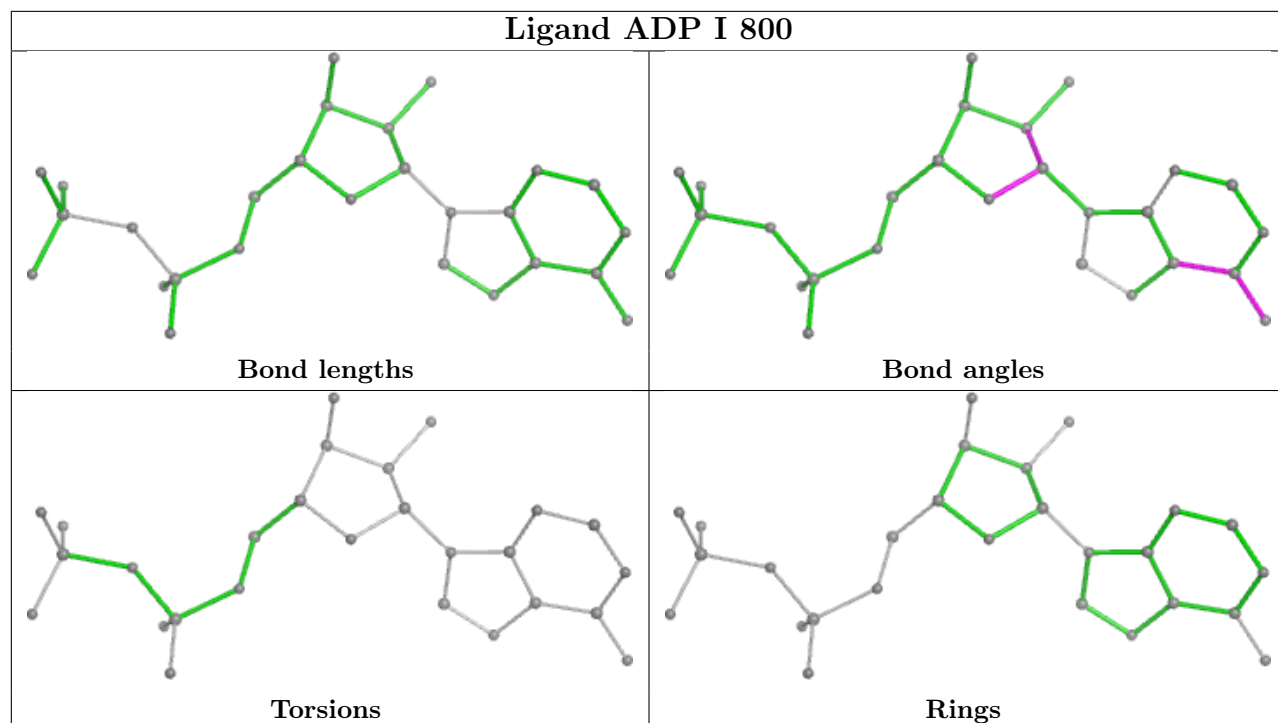
No monomer is involved in short contacts.

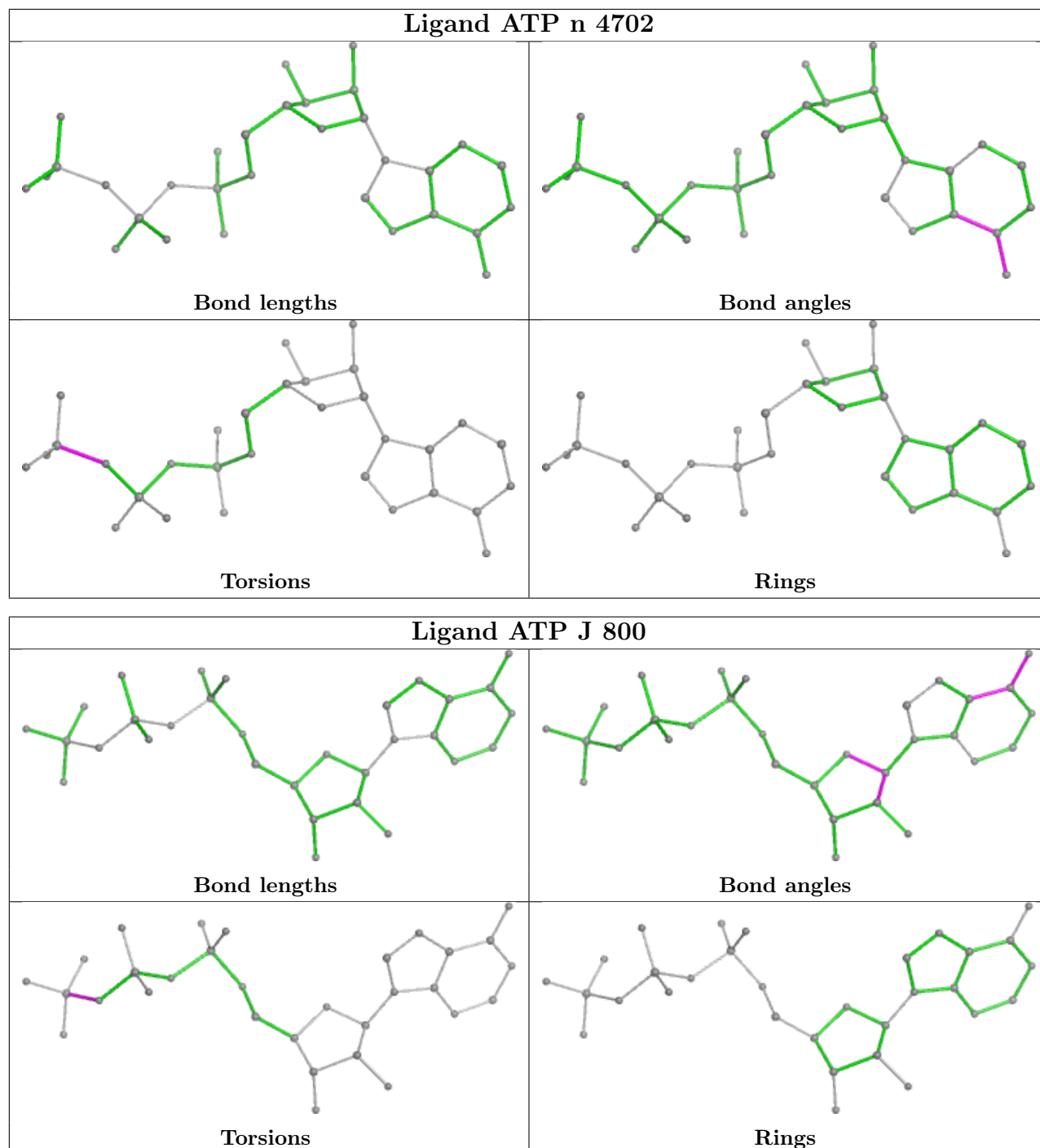
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

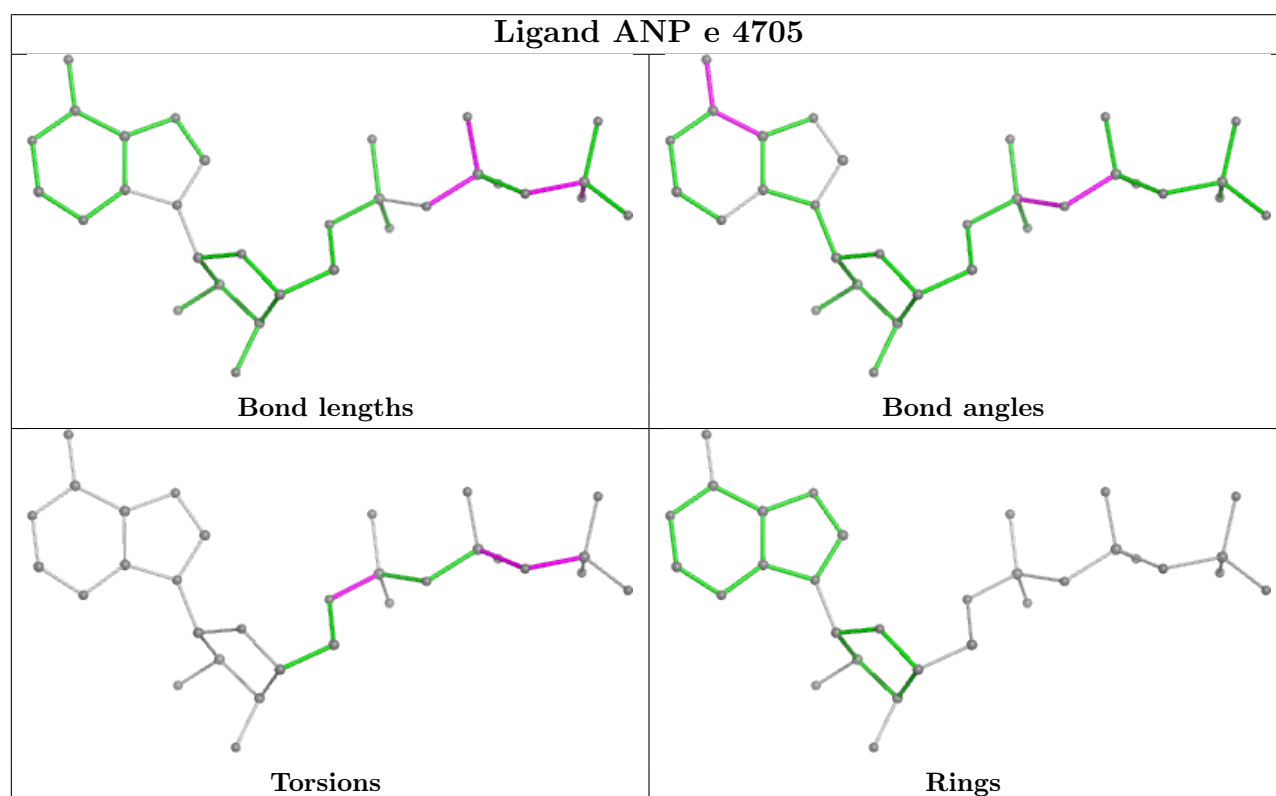
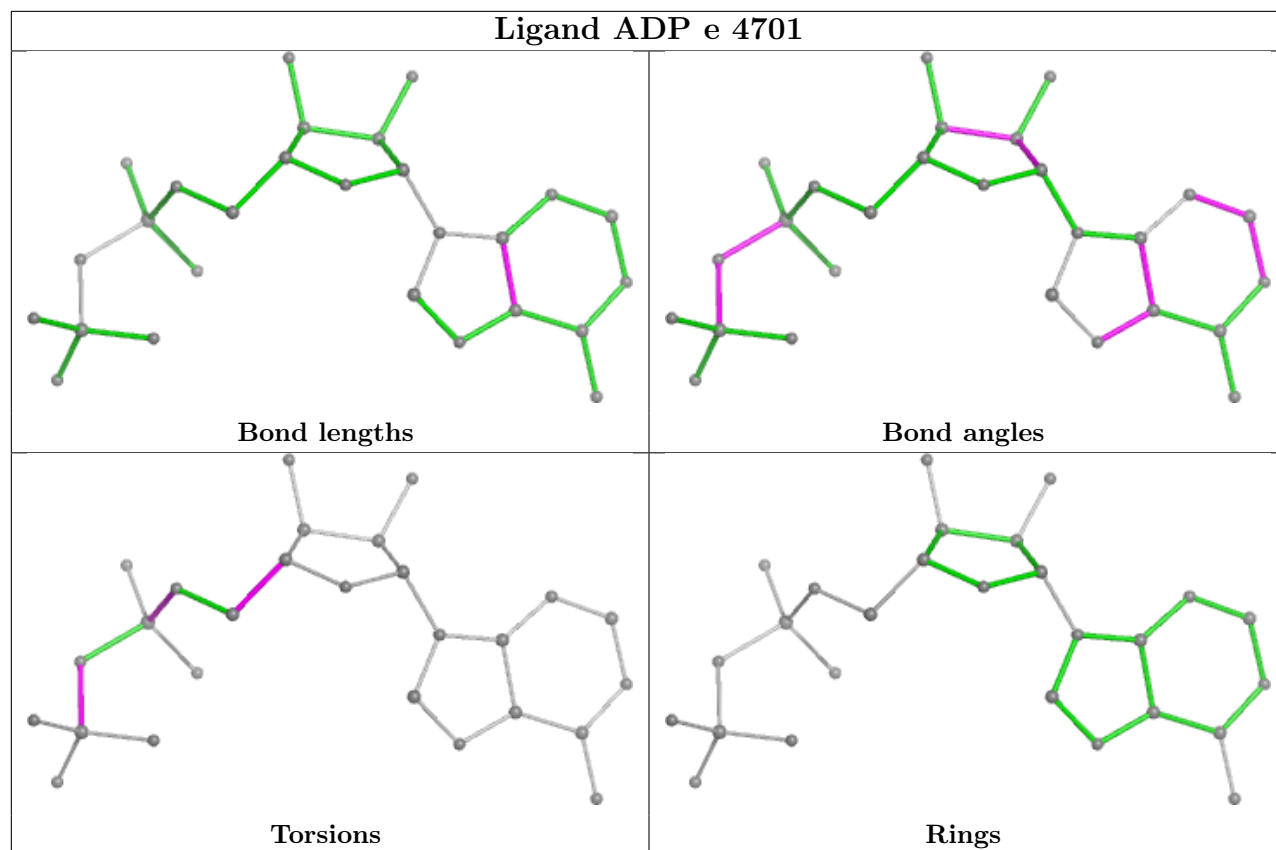
addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier.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

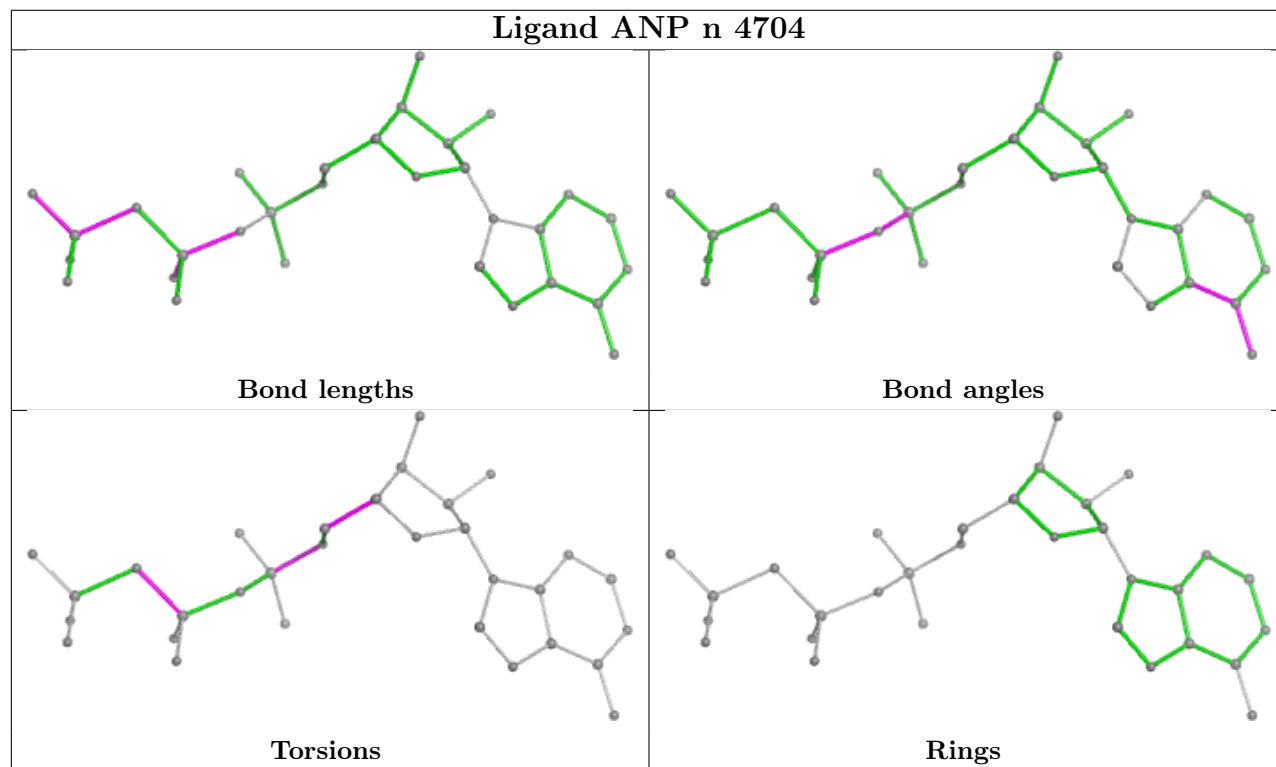
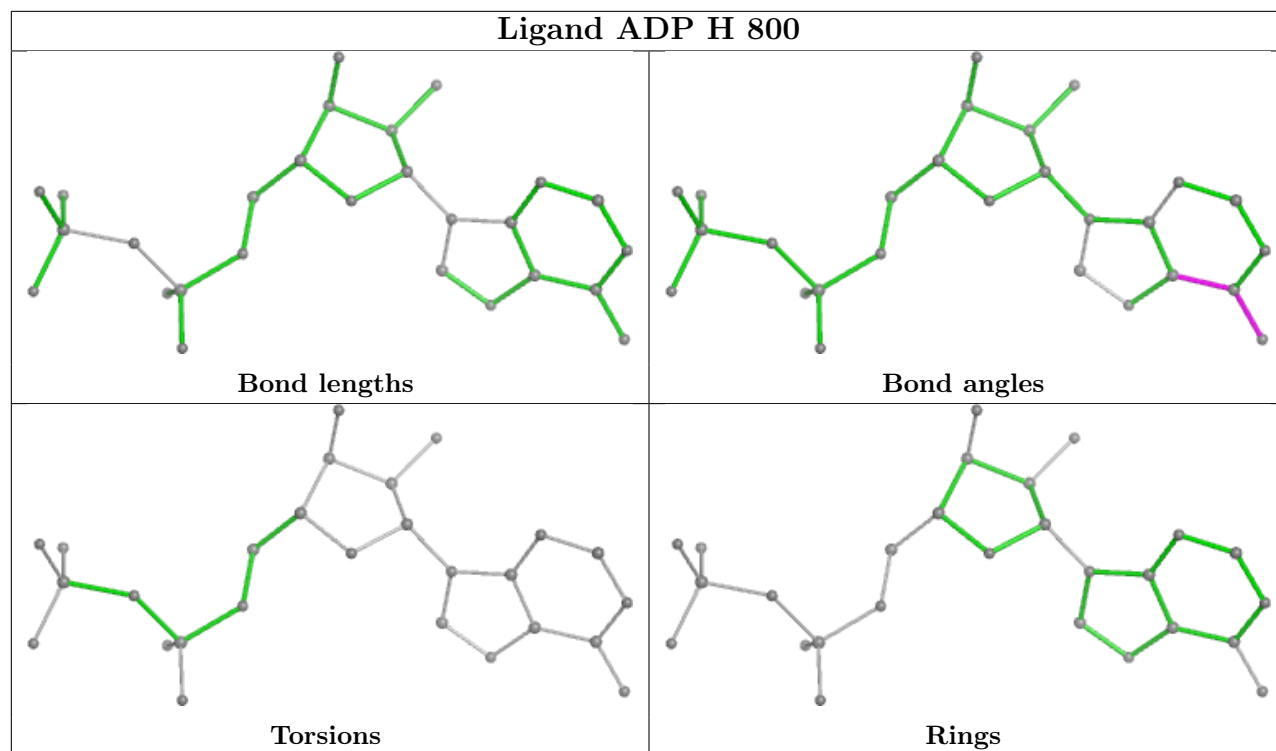


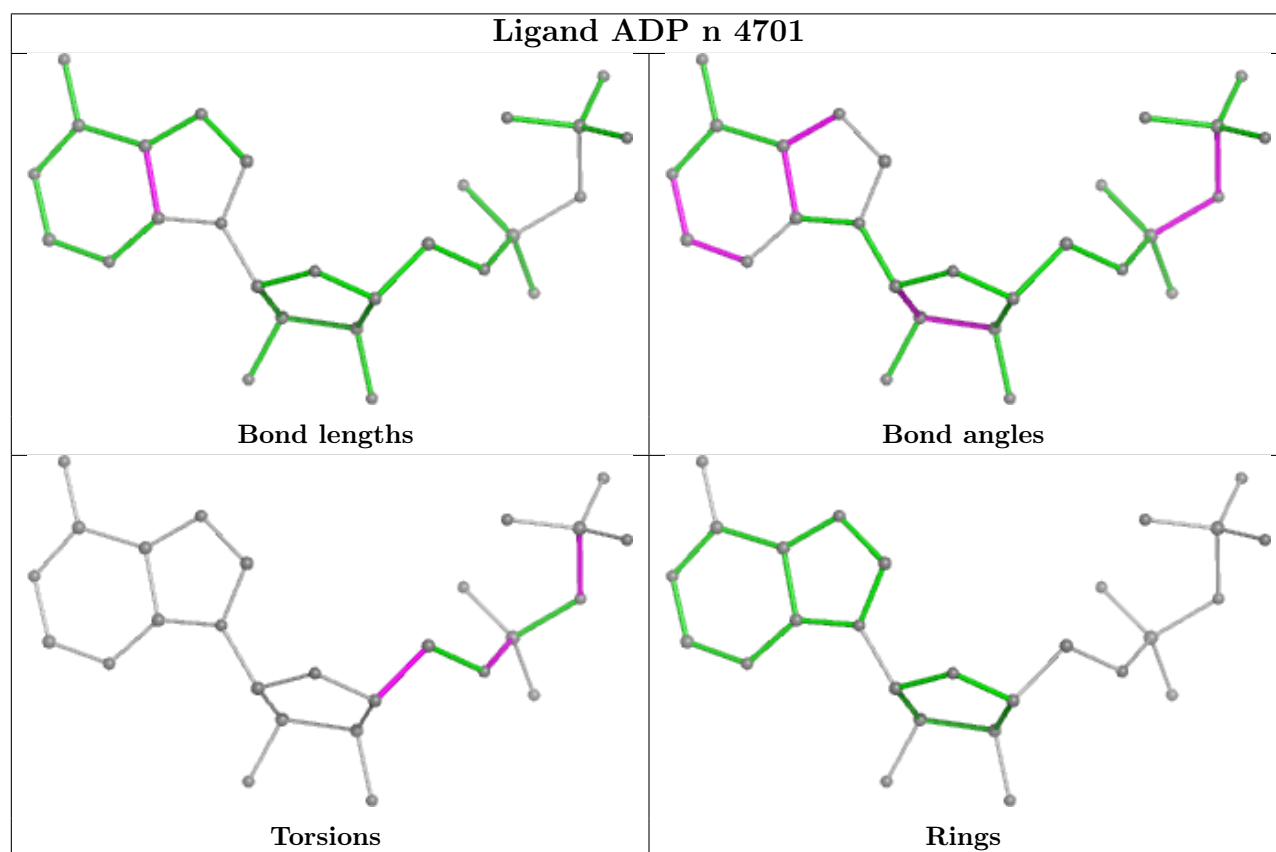
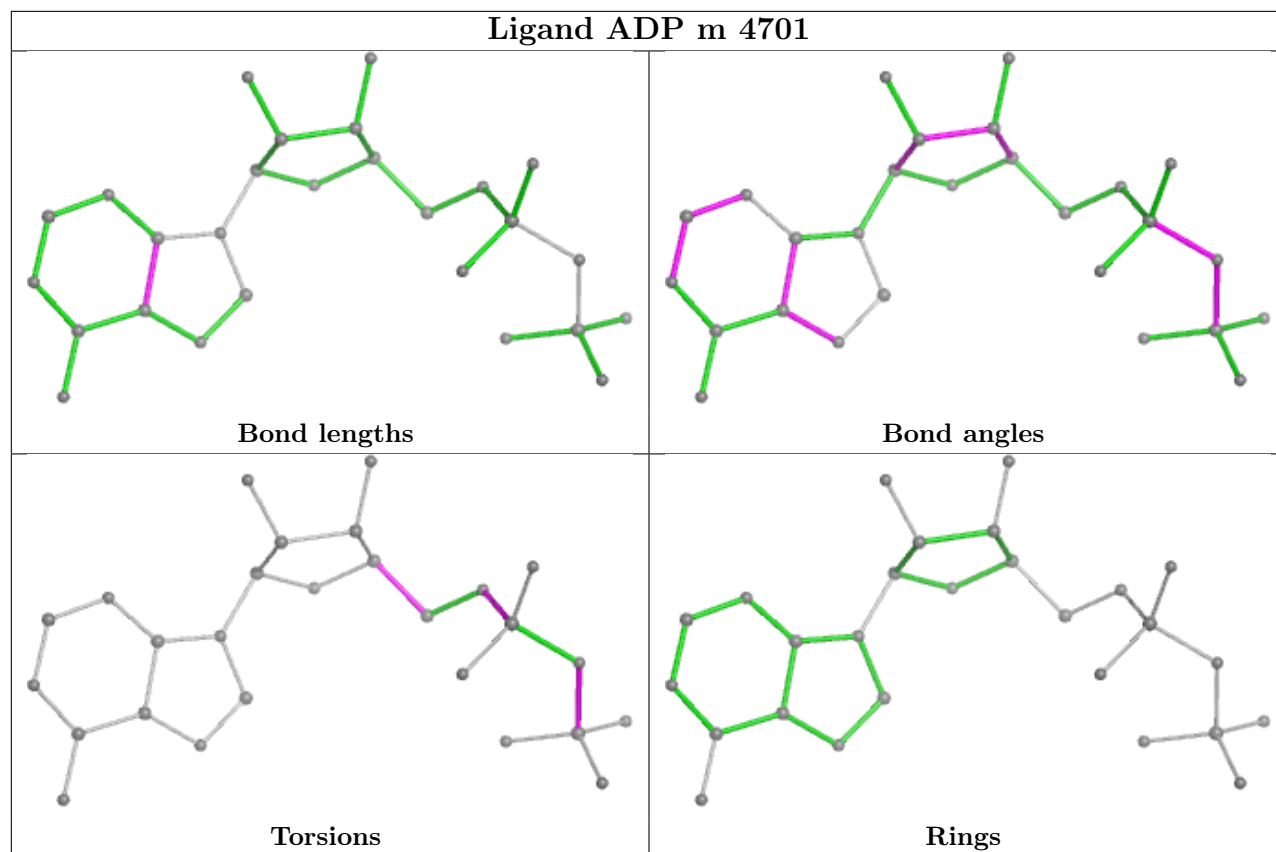


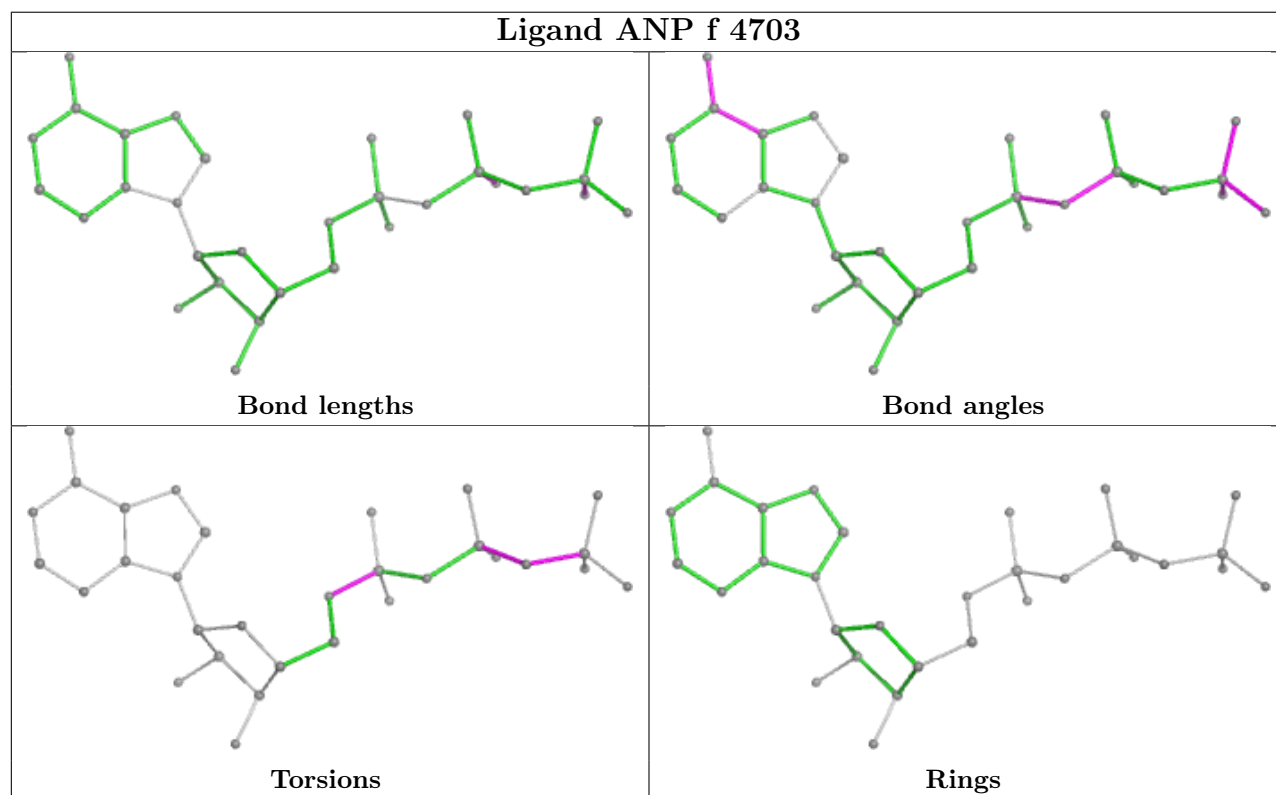
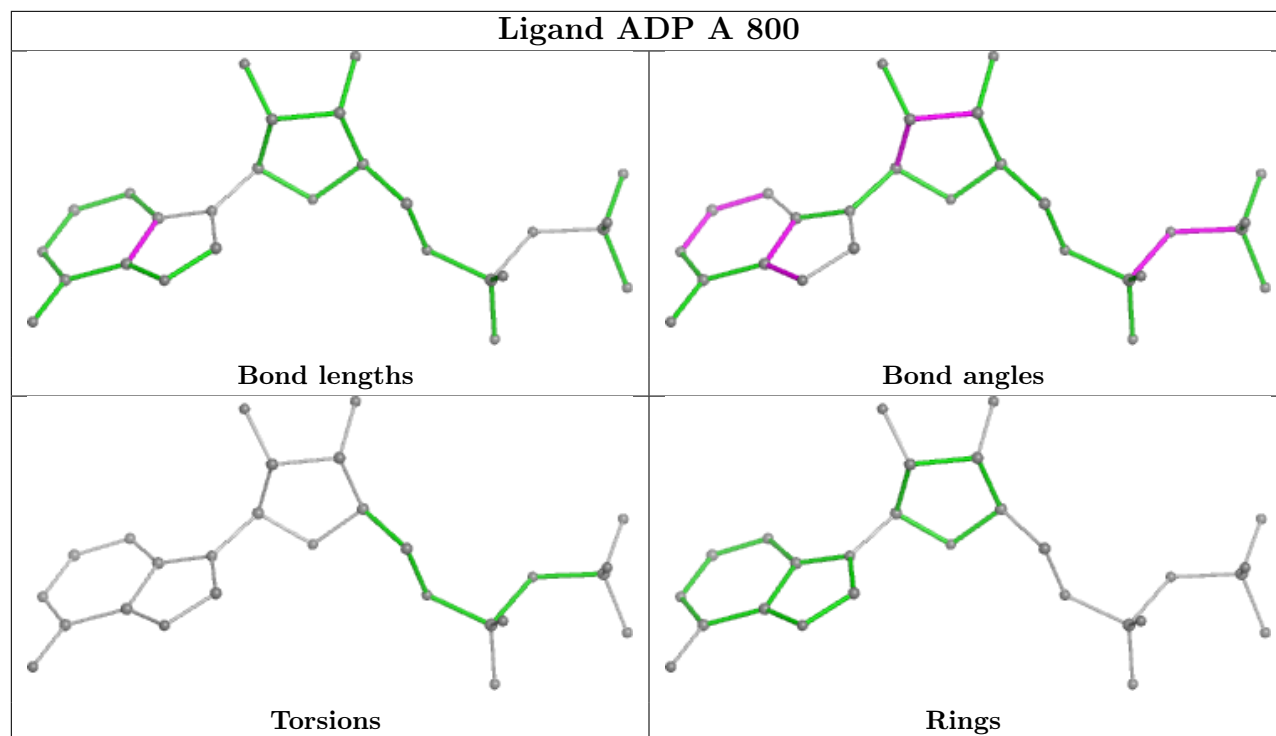


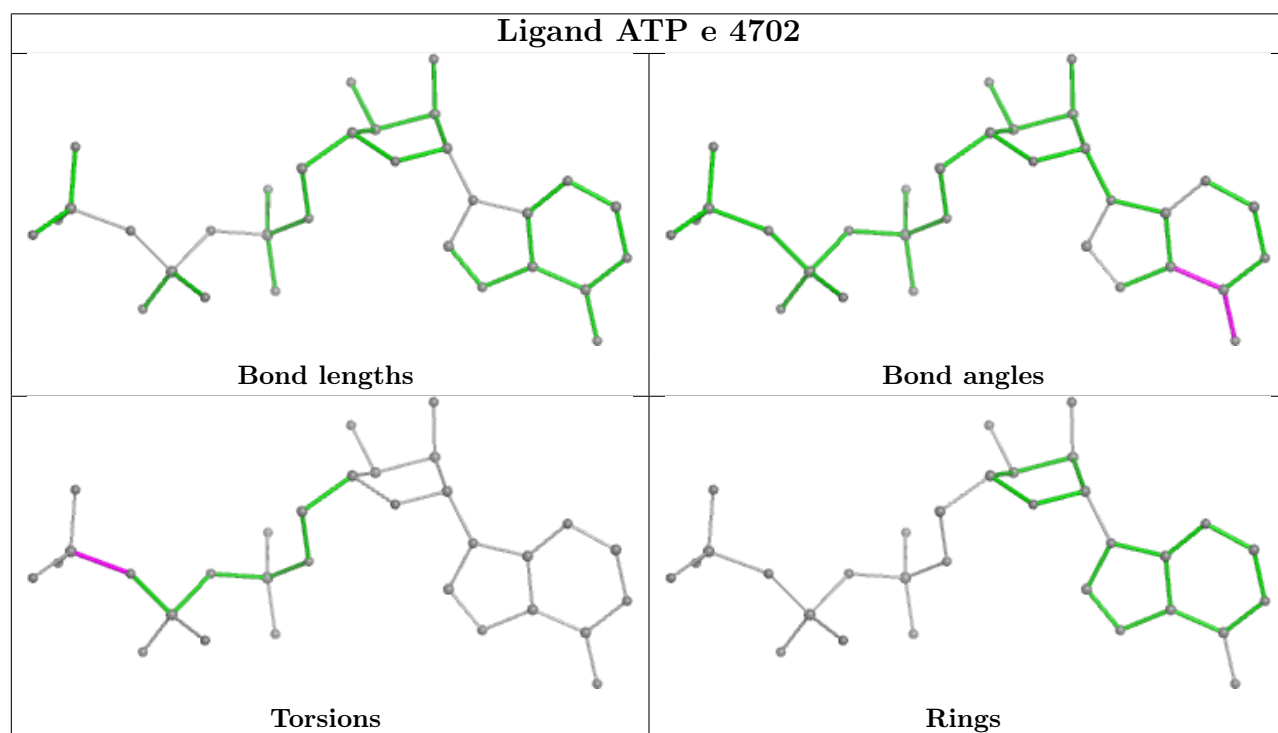
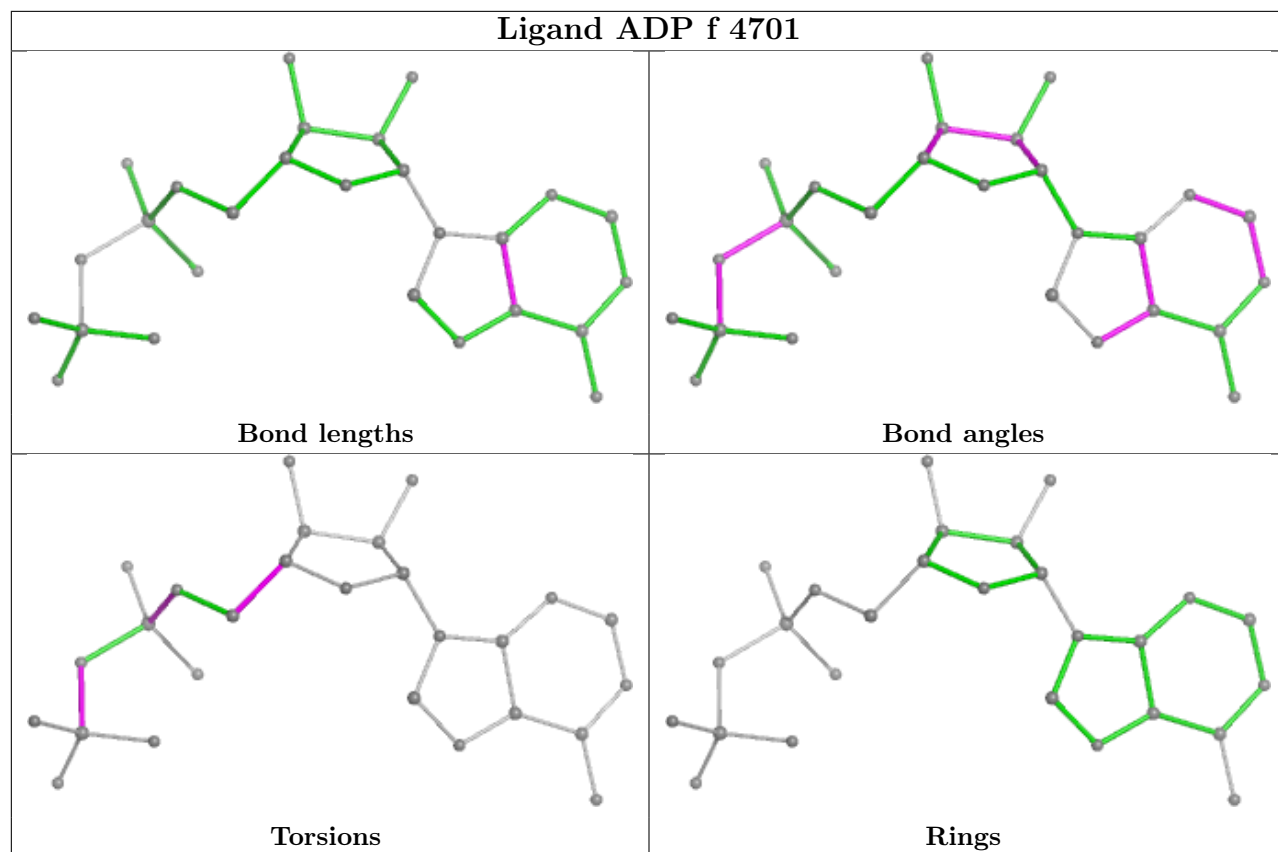


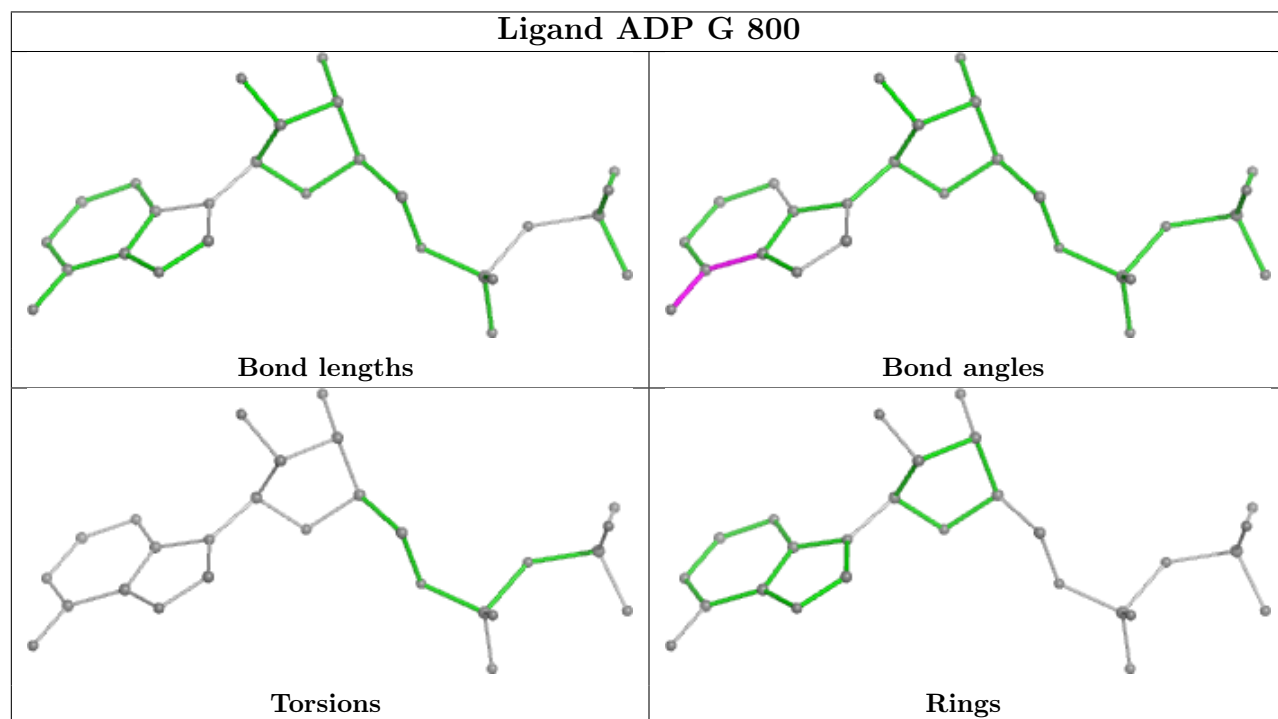
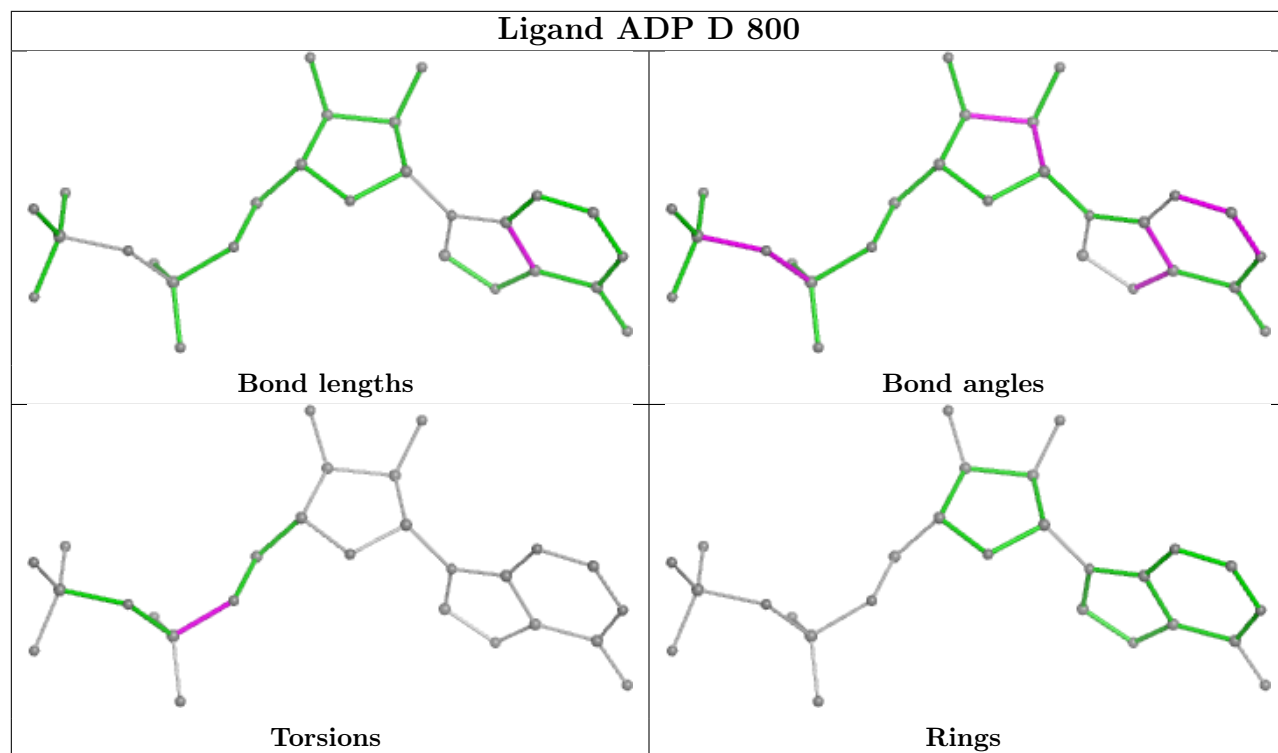


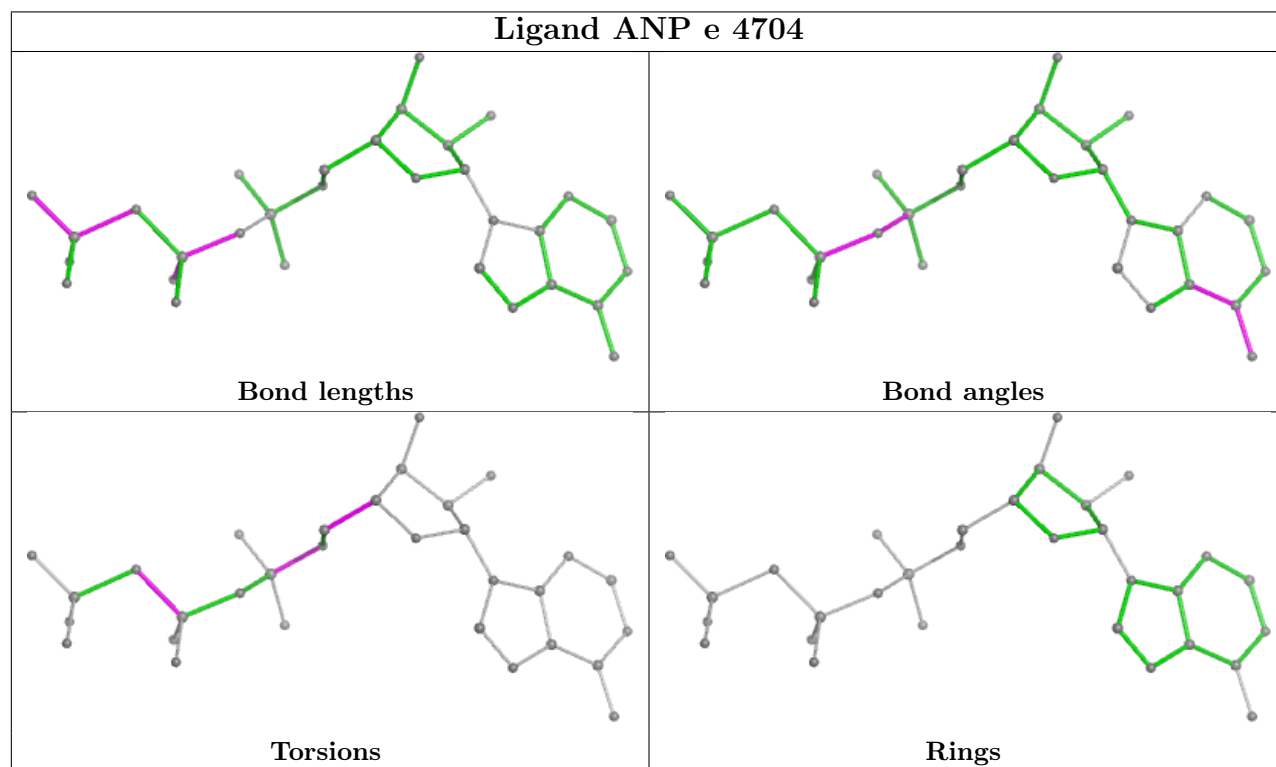
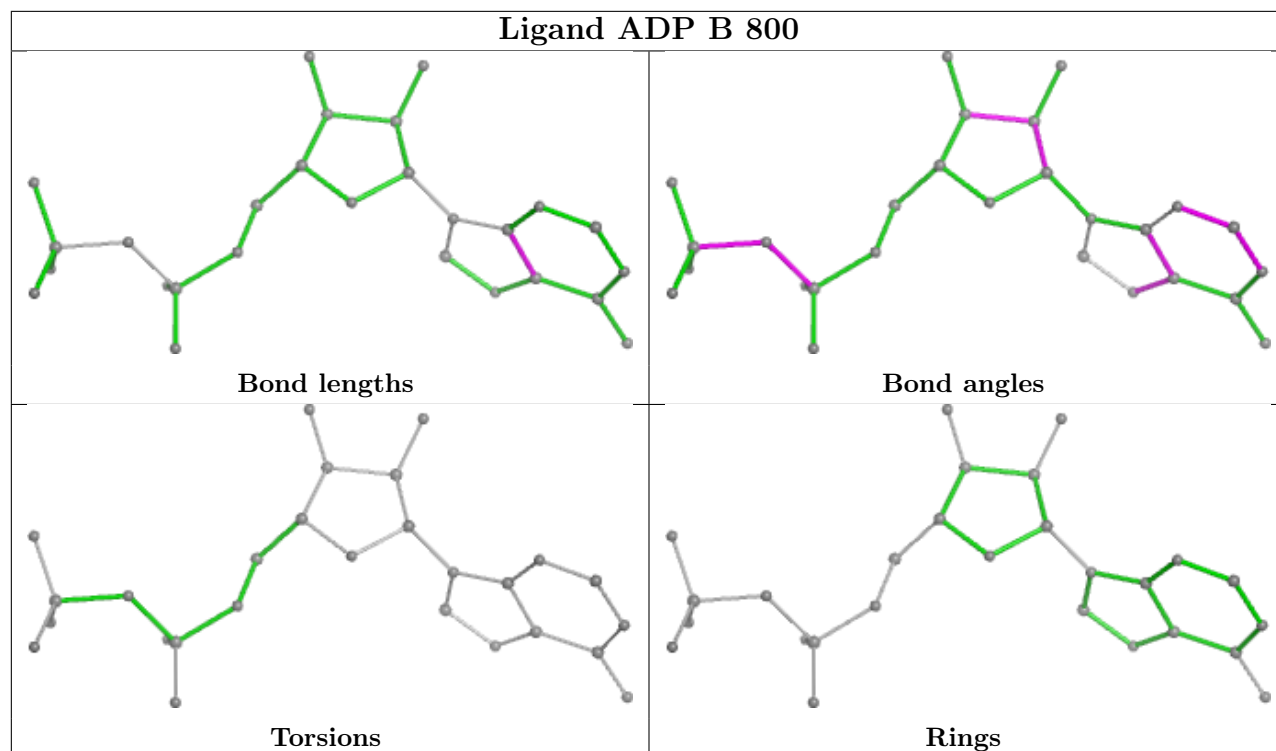


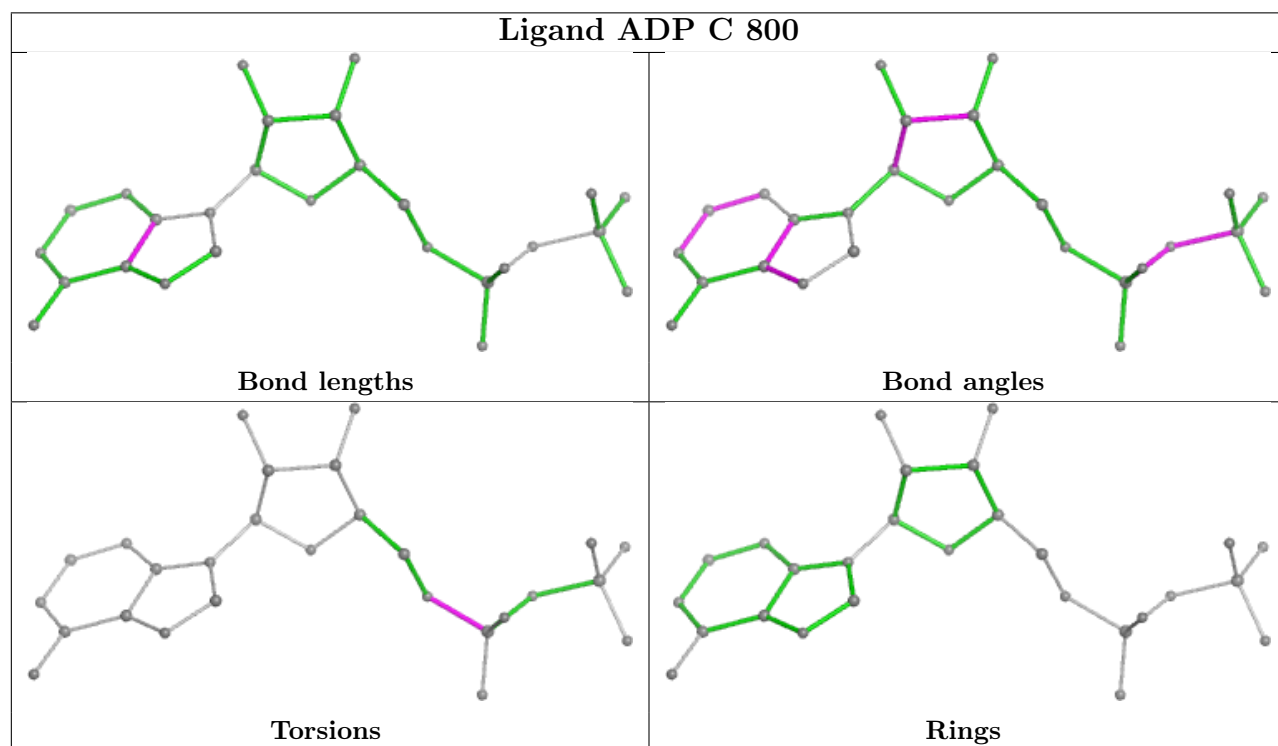
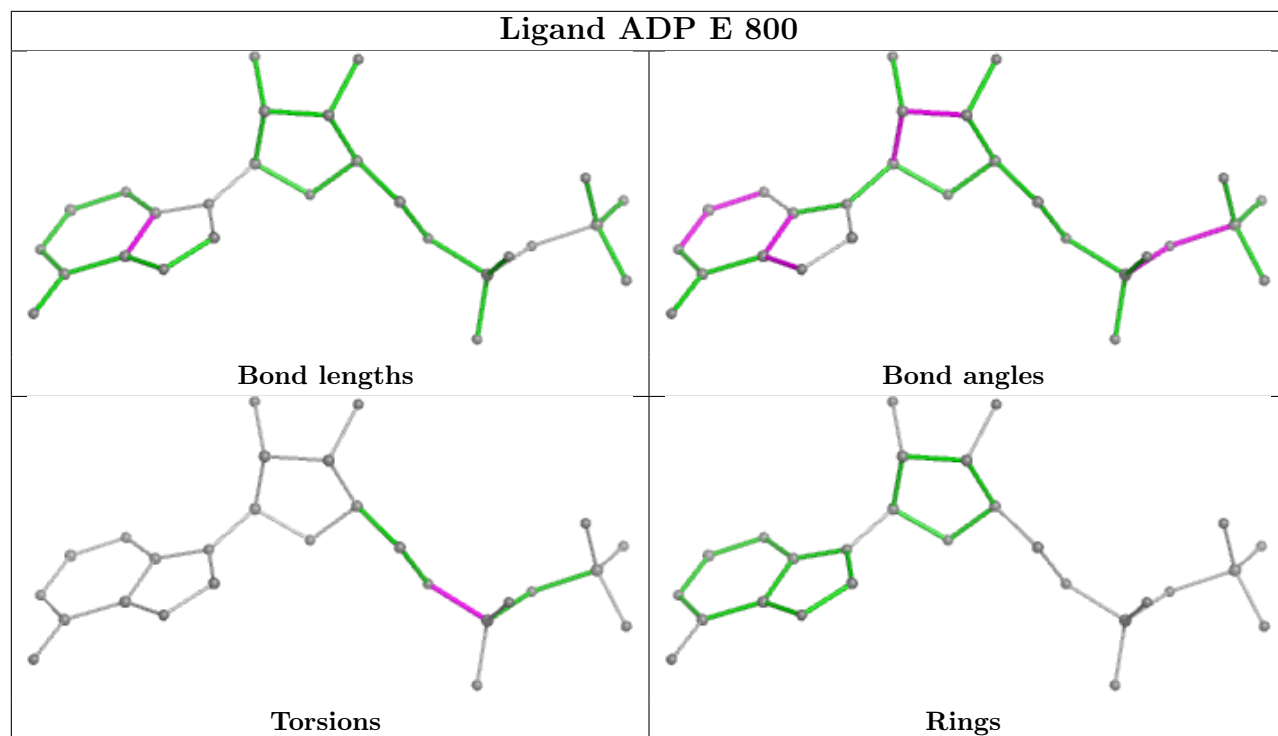


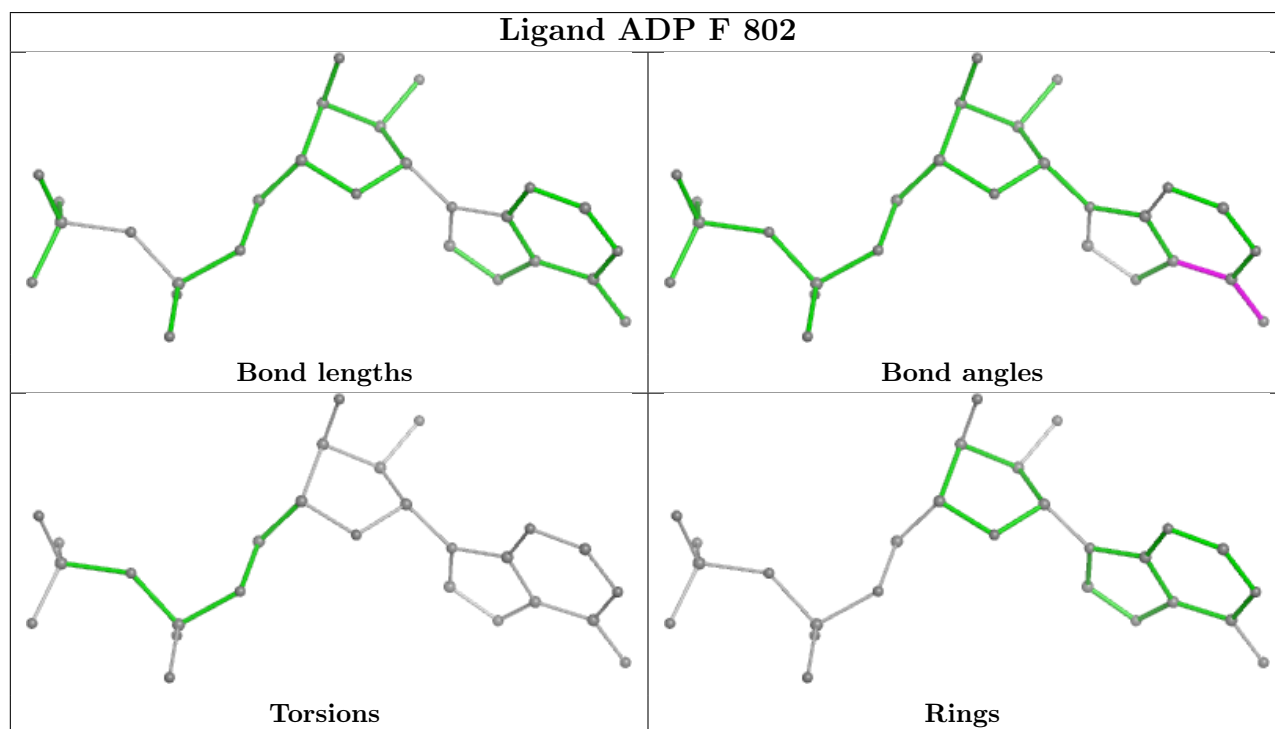
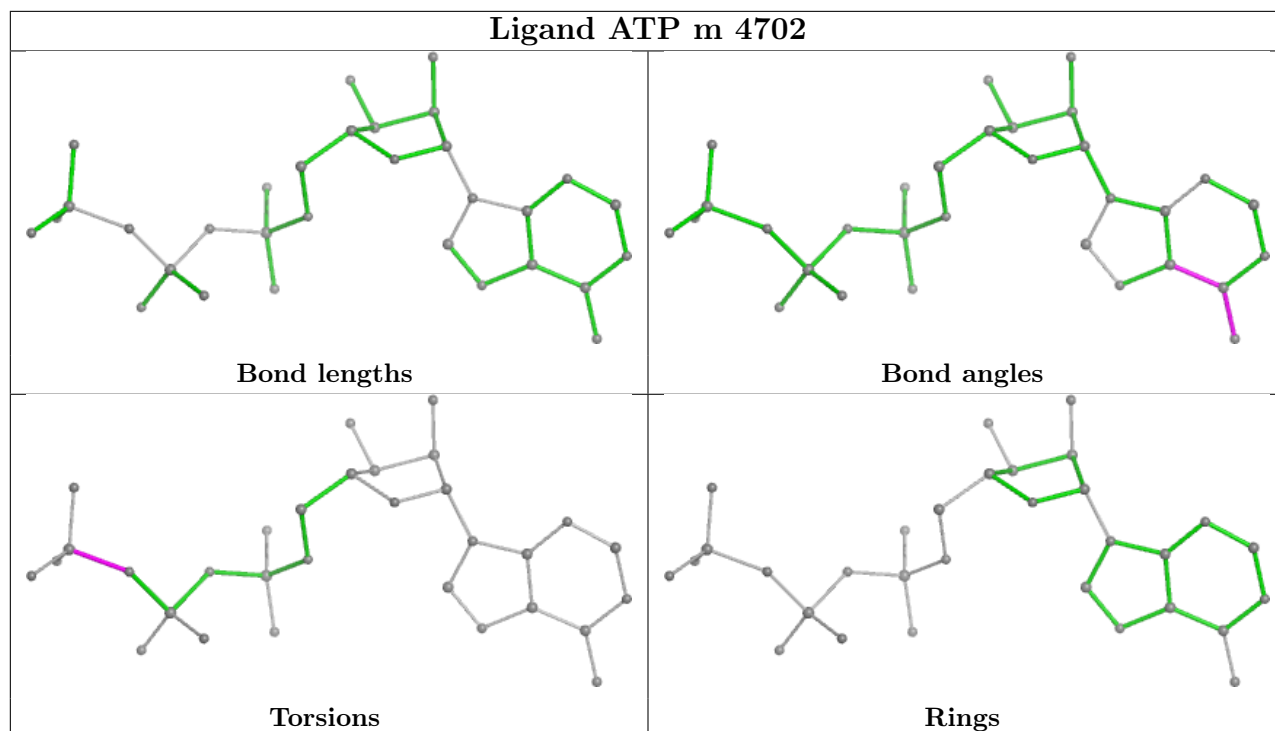


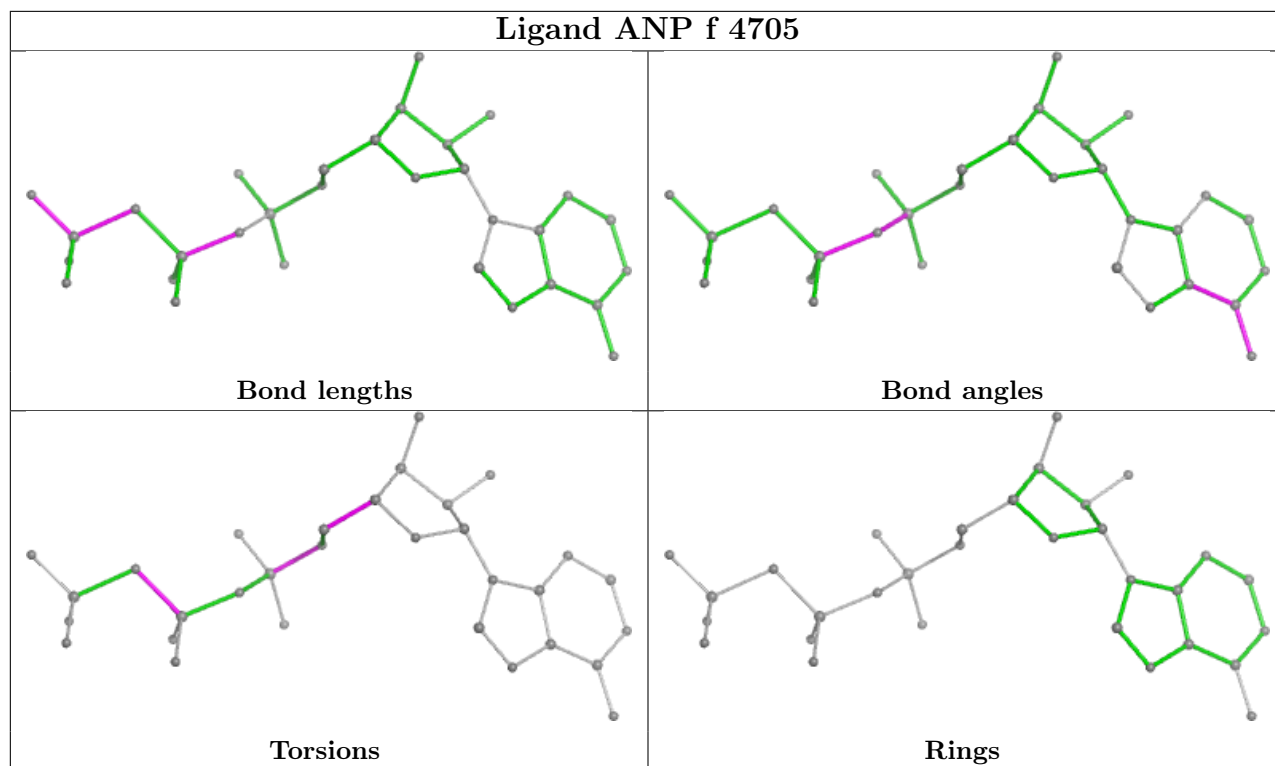












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
8	S	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	S	1220:VAL	C	1252:TYR	N	34.20

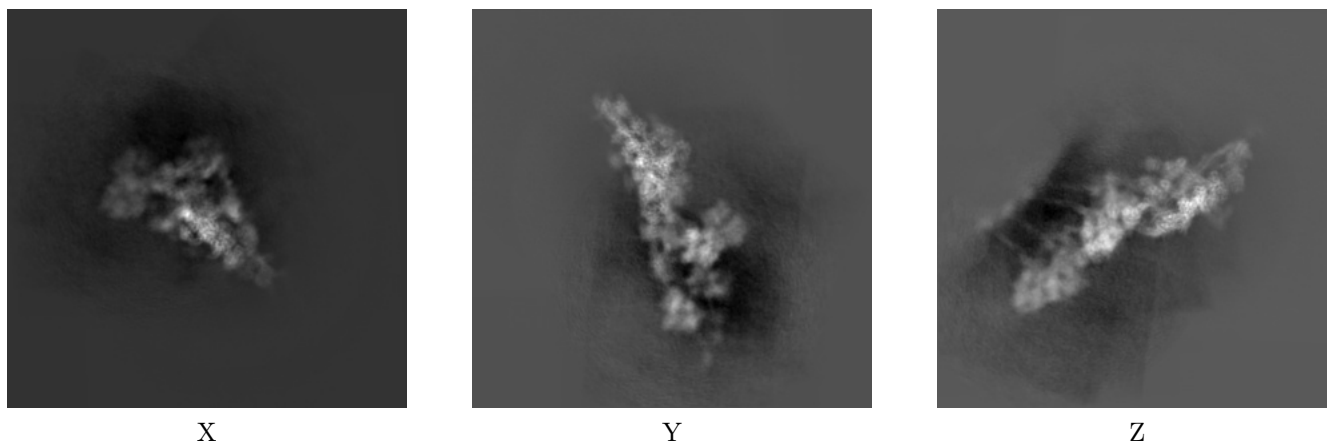
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-14549. 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](#)

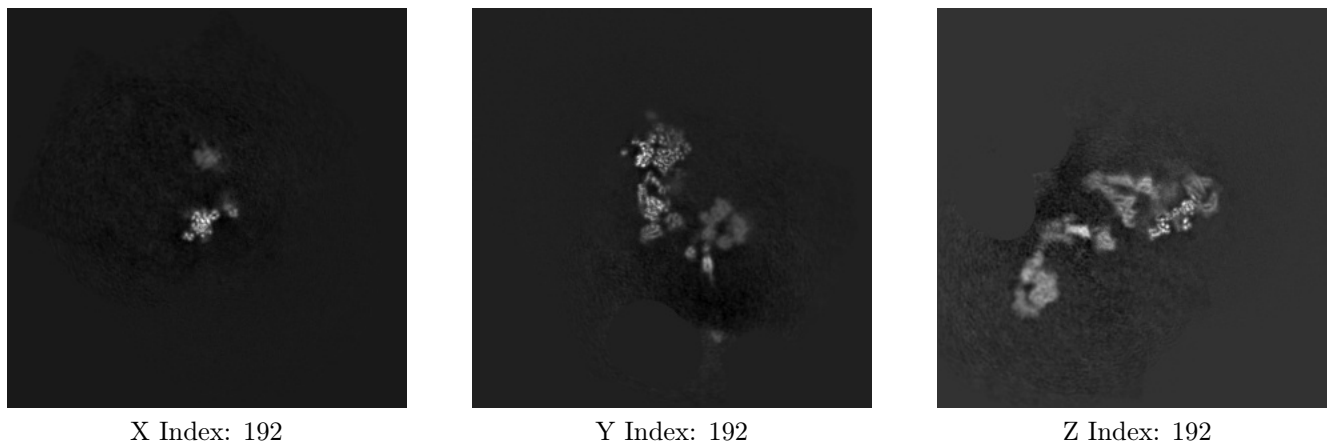
6.1.1 Primary map



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

6.2 Central slices [i](#)

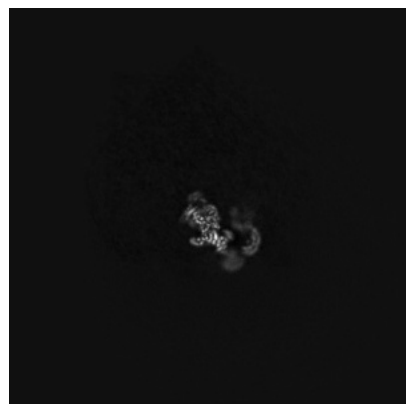
6.2.1 Primary map



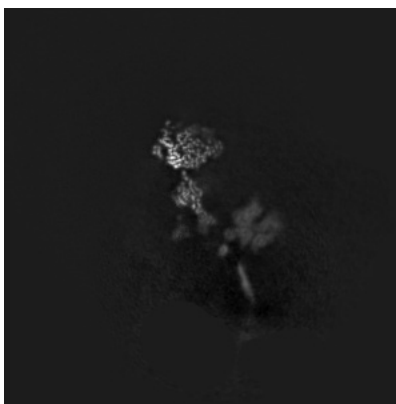
The images above show central slices of the map in three orthogonal directions.

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

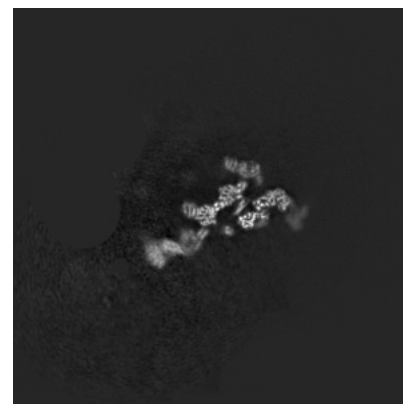
6.3.1 Primary map



X Index: 236



Y Index: 197

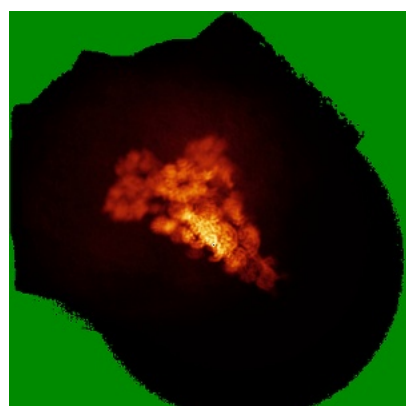


Z Index: 175

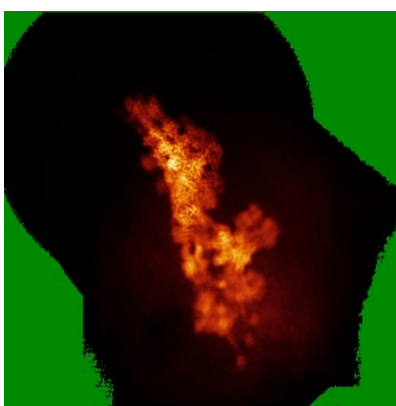
The images above show the largest variance slices of the map in three orthogonal directions.

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

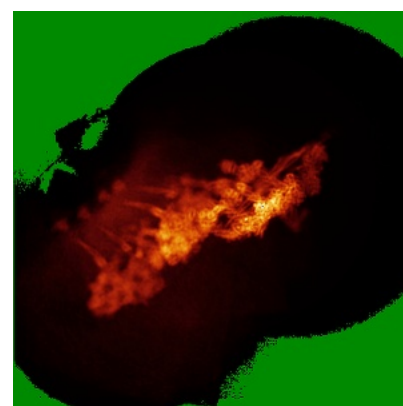
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0851. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

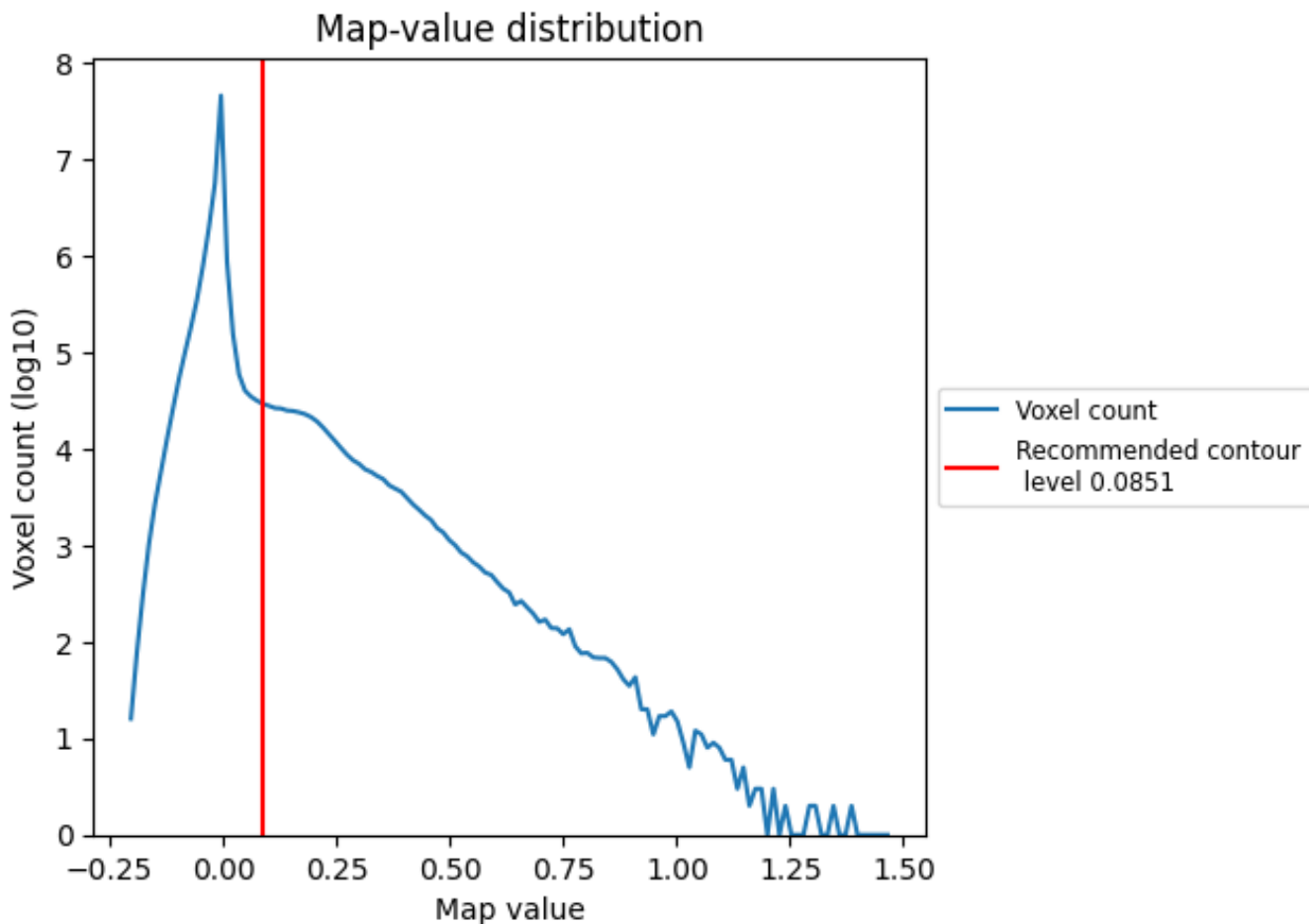
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

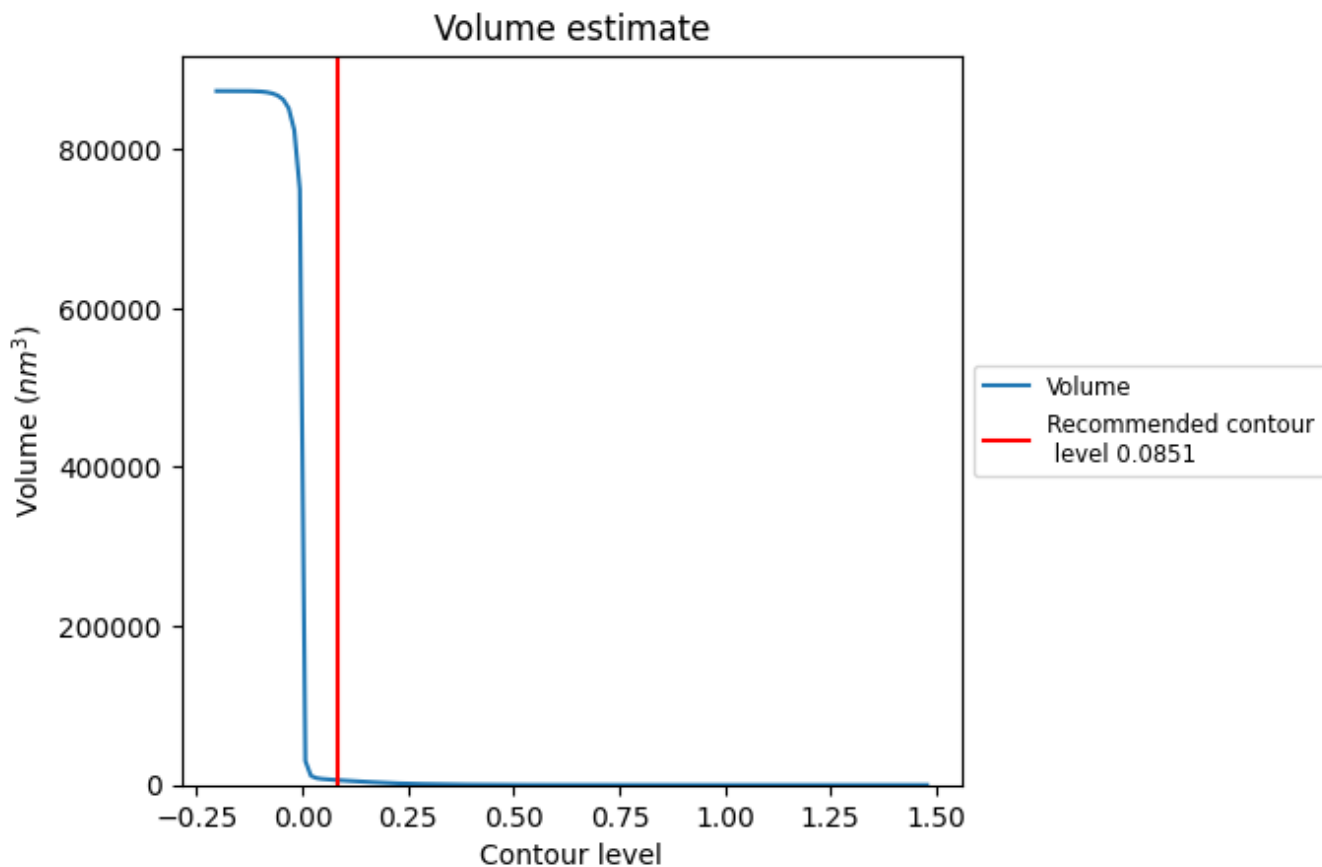
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

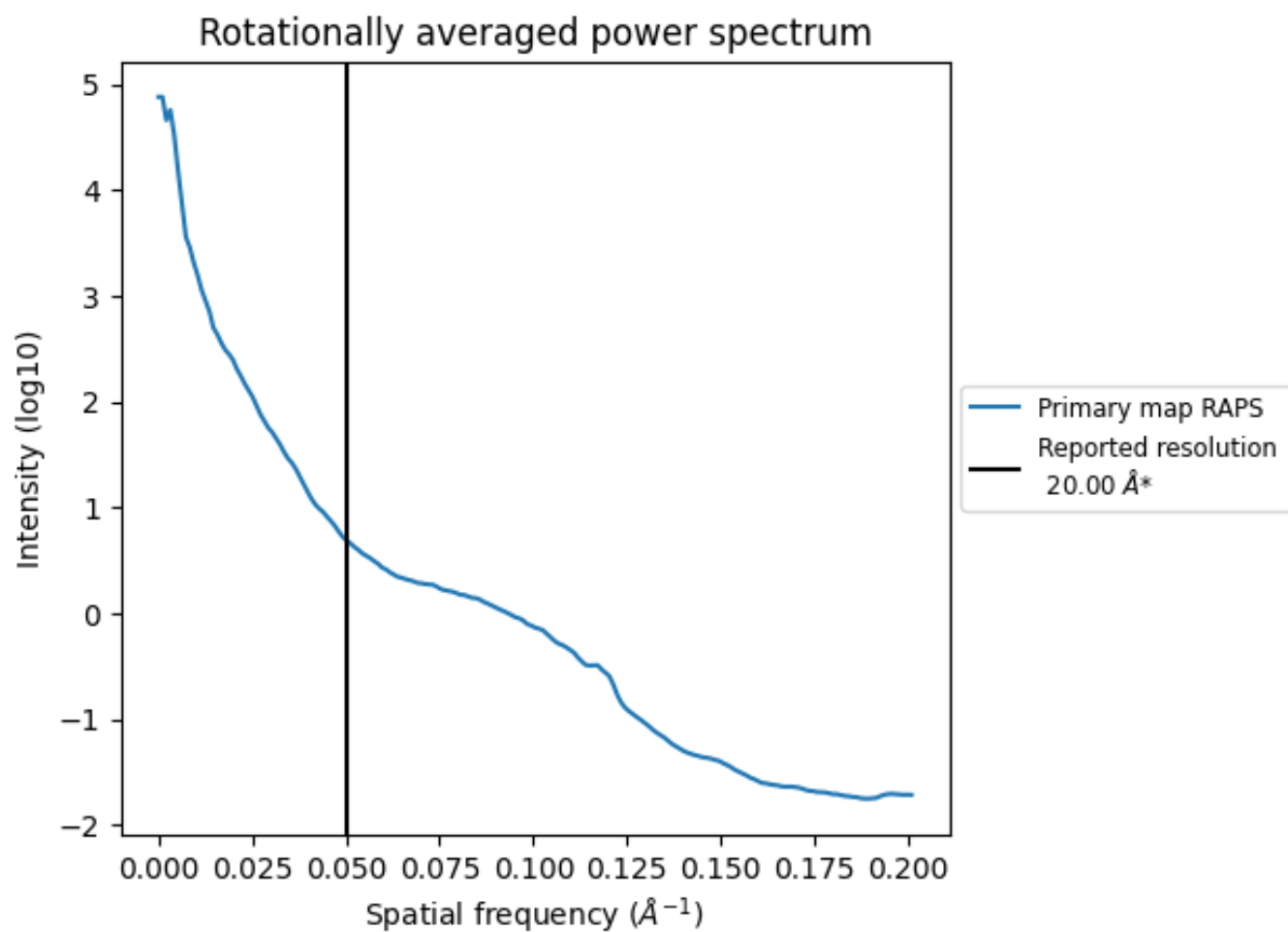
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 5991 nm^3 ; this corresponds to an approximate mass of 5412 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 0.050 Å⁻¹

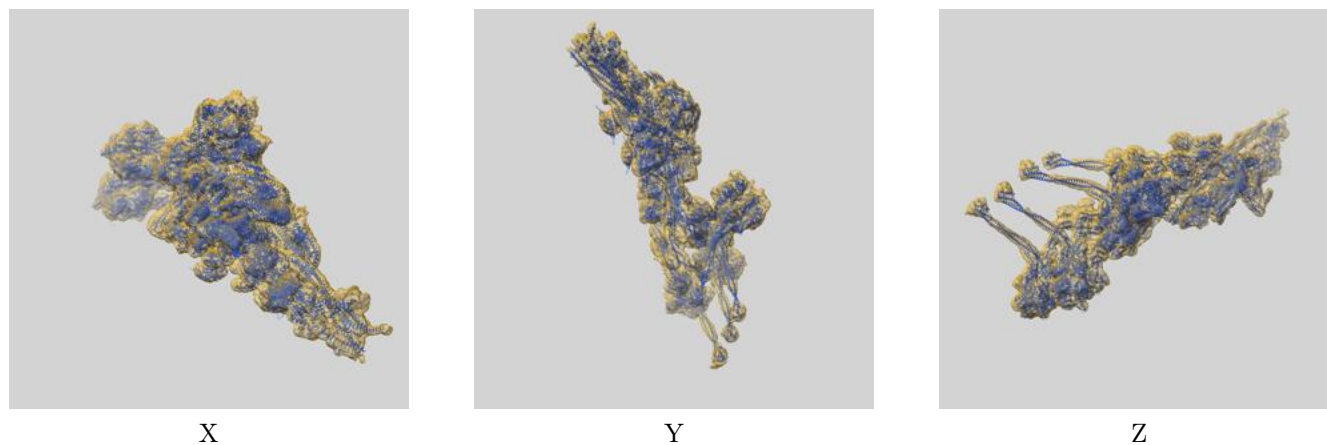
8 Fourier-Shell correlation

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-14549 and PDB model 7Z8F. Per-residue inclusion information can be found in section 3 on page 13.

9.1 Map-model overlay [i](#)



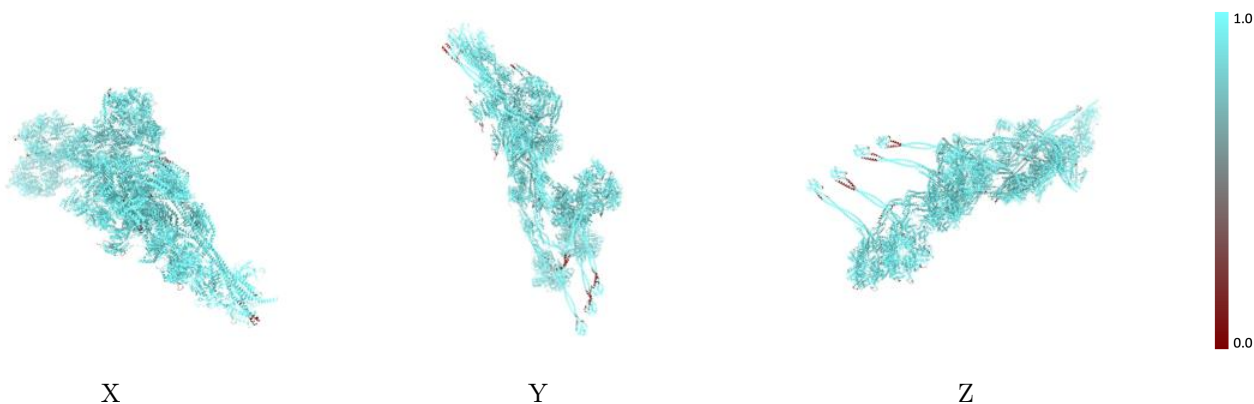
The images above show the 3D surface view of the map at the recommended contour level 0.0851 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



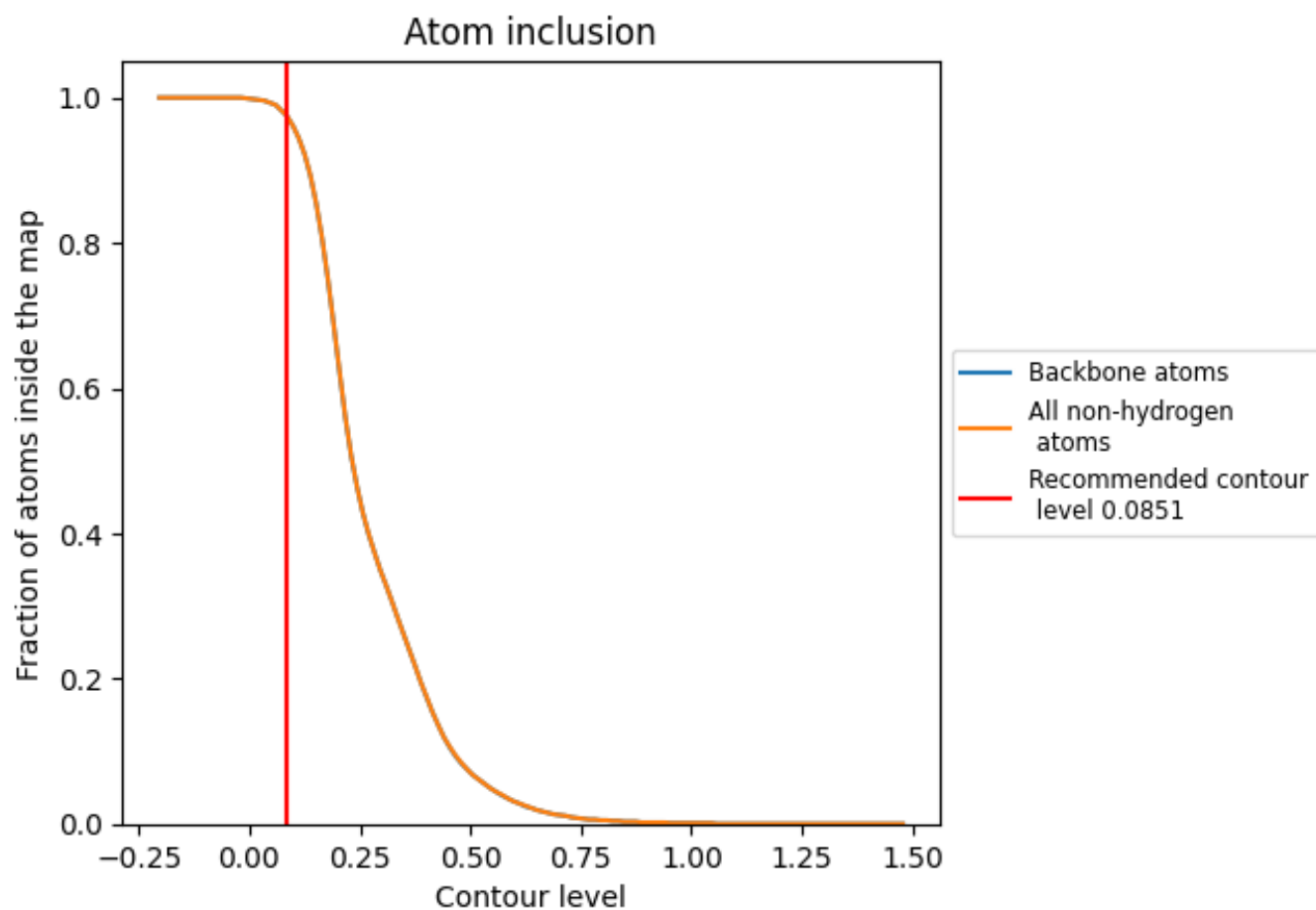
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0851).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 98% 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 (0.0851) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9750	 0.2150
A	 0.9970	 0.3320
B	 1.0000	 0.3610
C	 1.0000	 0.3660
D	 1.0000	 0.3570
E	 1.0000	 0.3460
F	 0.9990	 0.3370
G	 0.9990	 0.3310
H	 1.0000	 0.3300
I	 0.9820	 0.3350
J	 0.9960	 0.3520
K	 0.9990	 0.3250
L	 1.0000	 0.3360
M	 0.9740	 0.2620
N	 0.9290	 0.2250
O	 0.9910	 0.2500
P	 0.9800	 0.2830
Q	 0.9950	 0.2850
R	 1.0000	 0.2690
S	 0.9760	 0.2410
T	 0.9950	 0.3050
U	 0.9640	 0.3190
V	 0.9890	 0.3350
W	 0.9120	 0.2270
X	 0.9800	 0.2620
Y	 0.9960	 0.3200
e	 0.9630	 0.1650
f	 0.9770	 0.2590
g	 1.0000	 0.2600
h	 1.0000	 0.2840
i	 1.0000	 0.2370
j	 0.9800	 0.2030
k	 1.0000	 0.1580
l	 1.0000	 0.1940
m	 0.9570	 0.1370



Continued on next page...

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Chain	Atom inclusion	Q-score
n	 0.9690	 0.1260
o	 1.0000	 0.3580
p	 0.9790	 0.1810
q	 0.9910	 0.1620
r	 0.9980	 0.0950
s	 0.9950	 0.2170
t	 1.0000	 0.2590
w	 0.9370	 0.2010
x	 0.9730	 0.2600