wwPDB X-ray Structure Validation Summary Report (i)

Nov 21, 2023 – 03:11 PM JST

PDB ID	:	7V3X
Title	:	Crystal Structure of Cyanobacterial Circadian Clock Protein KaiC
Authors	:	Furuike, Y.; Akiyama, S.
Deposited on	:	2021-08-11
Resolution	:	3.10 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

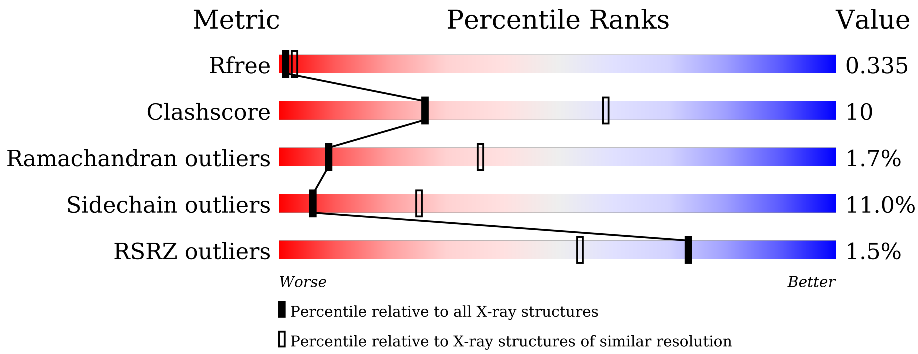
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)

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

Mol	Chain	Length	Quality of chain
1	A	519	64% 21% • • 10%
1	B	519	% / 63% 22% 5% 10%
1	G	519	63% 22% • 10%
1	H	519	% / 63% 22% 5% 10%
1	M	519	3% / 74% 14% • 11%
1	N	519	2% / 74% 12% • 12%

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Mol	Chain	Length	Quality of chain
1	P	519	% 74% 13% • 12%
1	R	519	% 77% 11% • 11%
1	S	519	3% 73% 11% • 14%
1	T	519	3% 68% 11% • 20%
1	V	519	3% 70% 13% • 16%
1	W	519	2% 75% 13% • 11%
1	X	519	% 74% 13% • 11%
2	C	519	69% 18% • 9%
2	D	519	% 62% 22% 7% • 9%
2	E	519	% 69% 18% • • 9%
2	F	519	65% 21% • 10%
2	I	519	% 68% 18% • • 9%
2	J	519	% 62% 22% 6% 10%
2	K	519	67% 21% • • 9%
2	L	519	63% 21% 6% 9%
2	O	519	3% 76% 12% • 11%
2	Q	519	% 71% 17% • 10%
2	U	519	4% 70% 12% • 17%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	ADP	U	702	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 78739 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Circadian clock protein kinase KaiC.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
1	A	468	3506	2208	606	677	1	14	0	0	0
1	B	469	3432	2156	601	662	1	12	0	0	0
1	G	467	3448	2178	590	666	1	13	0	0	0
1	H	468	3476	2183	608	671	1	13	0	0	0
1	N	455	3010	1858	545	594	1	12	0	0	0
1	R	463	3201	1997	572	619	1	12	0	0	0
1	M	463	3123	1935	557	616	1	14	0	0	0
1	P	456	3096	1922	541	620	1	12	0	0	0
1	T	415	2427	1462	473	485	1	6	0	0	0
1	X	461	3074	1907	553	601	1	12	0	0	0
1	S	444	2706	1648	509	541	1	7	0	0	0
1	V	437	2914	1800	522	582	1	9	0	0	0
1	W	464	3126	1926	573	613	1	13	0	0	0

- Molecule 2 is a protein called Circadian clock protein kinase KaiC.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
2	E	470	3424	2159	590	661	2	12	0	0	0

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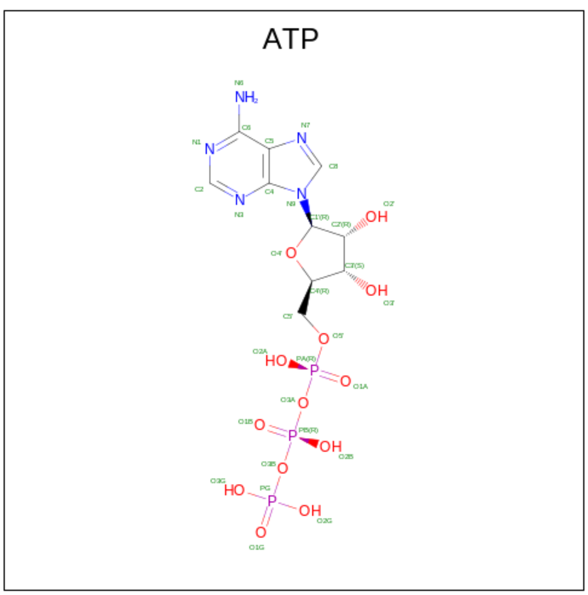
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
2	F	468	Total C N O P S 3436 2156 599 666 2 13	0	0	0
2	C	472	Total C N O P S 3436 2159 595 666 2 14	0	0	0
2	D	471	Total C N O P S 3456 2170 594 676 2 14	0	0	0
2	K	471	Total C N O P S 3444 2171 592 666 2 13	0	0	0
2	L	470	Total C N O P S 3471 2181 598 676 2 14	0	0	0
2	I	473	Total C N O P S 3477 2181 603 678 2 13	0	0	0
2	J	468	Total C N O P S 3442 2161 598 668 2 13	0	0	0
2	O	461	Total C N O P S 3072 1899 552 607 2 12	0	0	0
2	Q	466	Total C N O P S 3303 2057 583 646 2 15	0	0	0
2	U	430	Total C N O P S 2635 1596 500 530 2 7	0	0	0

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O P 31 10 5 13 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O P 31 10 5 13 3	0	0
3	B	1	Total C N O P 31 10 5 13 3	0	0
3	B	1	Total C N O P 31 10 5 13 3	0	0
3	E	1	Total C N O P 31 10 5 13 3	0	0
3	E	1	Total C N O P 31 10 5 13 3	0	0
3	F	1	Total C N O P 31 10 5 13 3	0	0
3	F	1	Total C N O P 31 10 5 13 3	0	0
3	C	1	Total C N O P 31 10 5 13 3	0	0
3	C	1	Total C N O P 31 10 5 13 3	0	0
3	D	1	Total C N O P 31 10 5 13 3	0	0
3	D	1	Total C N O P 31 10 5 13 3	0	0
3	G	1	Total C N O P 31 10 5 13 3	0	0
3	G	1	Total C N O P 31 10 5 13 3	0	0
3	H	1	Total C N O P 31 10 5 13 3	0	0
3	H	1	Total C N O P 31 10 5 13 3	0	0
3	K	1	Total C N O P 31 10 5 13 3	0	0
3	K	1	Total C N O P 31 10 5 13 3	0	0
3	L	1	Total C N O P 31 10 5 13 3	0	0
3	L	1	Total C N O P 31 10 5 13 3	0	0
3	I	1	Total C N O P 31 10 5 13 3	0	0
3	I	1	Total C N O P 31 10 5 13 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	J	1	Total C N O P 31 10 5 13 3	0	0
3	J	1	Total C N O P 31 10 5 13 3	0	0
3	N	1	Total C N O P 31 10 5 13 3	0	0
3	N	1	Total C N O P 31 10 5 13 3	0	0
3	O	1	Total C N O P 31 10 5 13 3	0	0
3	O	1	Total C N O P 31 10 5 13 3	0	0
3	R	1	Total C N O P 31 10 5 13 3	0	0
3	R	1	Total C N O P 31 10 5 13 3	0	0
3	M	1	Total C N O P 31 10 5 13 3	0	0
3	M	1	Total C N O P 31 10 5 13 3	0	0
3	P	1	Total C N O P 31 10 5 13 3	0	0
3	P	1	Total C N O P 31 10 5 13 3	0	0
3	Q	1	Total C N O P 31 10 5 13 3	0	0
3	T	1	Total C N O P 31 10 5 13 3	0	0
3	T	1	Total C N O P 31 10 5 13 3	0	0
3	U	1	Total C N O P 31 10 5 13 3	0	0
3	X	1	Total C N O P 31 10 5 13 3	0	0
3	X	1	Total C N O P 31 10 5 13 3	0	0
3	S	1	Total C N O P 31 10 5 13 3	0	0
3	S	1	Total C N O P 31 10 5 13 3	0	0
3	V	1	Total C N O P 31 10 5 13 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	V	1	Total C N O P 31 10 5 13 3	0	0
3	W	1	Total C N O P 31 10 5 13 3	0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	2	Total Mg 2 2	0	0
4	B	2	Total Mg 2 2	0	0
4	E	2	Total Mg 2 2	0	0
4	F	2	Total Mg 2 2	0	0
4	C	2	Total Mg 2 2	0	0
4	D	2	Total Mg 2 2	0	0
4	G	2	Total Mg 2 2	0	0
4	H	2	Total Mg 2 2	0	0
4	K	2	Total Mg 2 2	0	0
4	L	2	Total Mg 2 2	0	0
4	I	2	Total Mg 2 2	0	0
4	J	2	Total Mg 2 2	0	0
4	N	2	Total Mg 2 2	0	0
4	O	1	Total Mg 1 1	0	0
4	R	2	Total Mg 2 2	0	0
4	M	1	Total Mg 1 1	0	0
4	P	2	Total Mg 2 2	0	0

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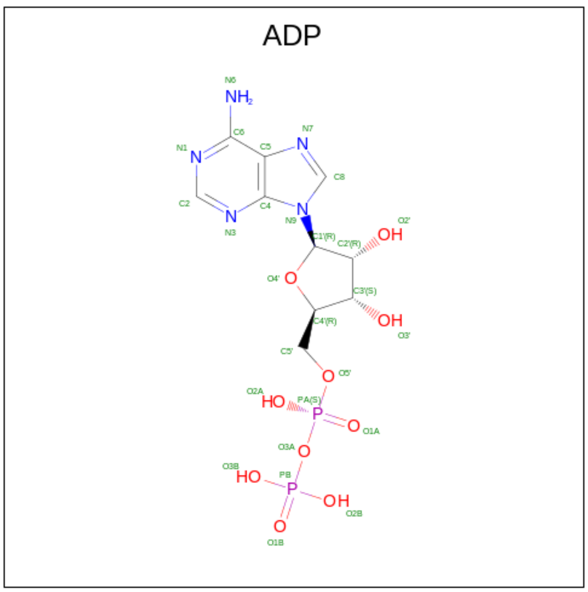
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	Q	1	Total 1	Mg 1	0	0
4	T	1	Total 1	Mg 1	0	0
4	U	1	Total 1	Mg 1	0	0
4	V	1	Total 1	Mg 1	0	0

- Molecule 5 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	Q	1	Total 27	C 10	N 5	O 10	P 2	0	0
5	U	1	Total 27	C 10	N 5	O 10	P 2	0	0
5	W	1	Total 27	C 10	N 5	O 10	P 2	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	6	Total 6	O 6	0	0
6	B	9	Total 9	O 9	0	0

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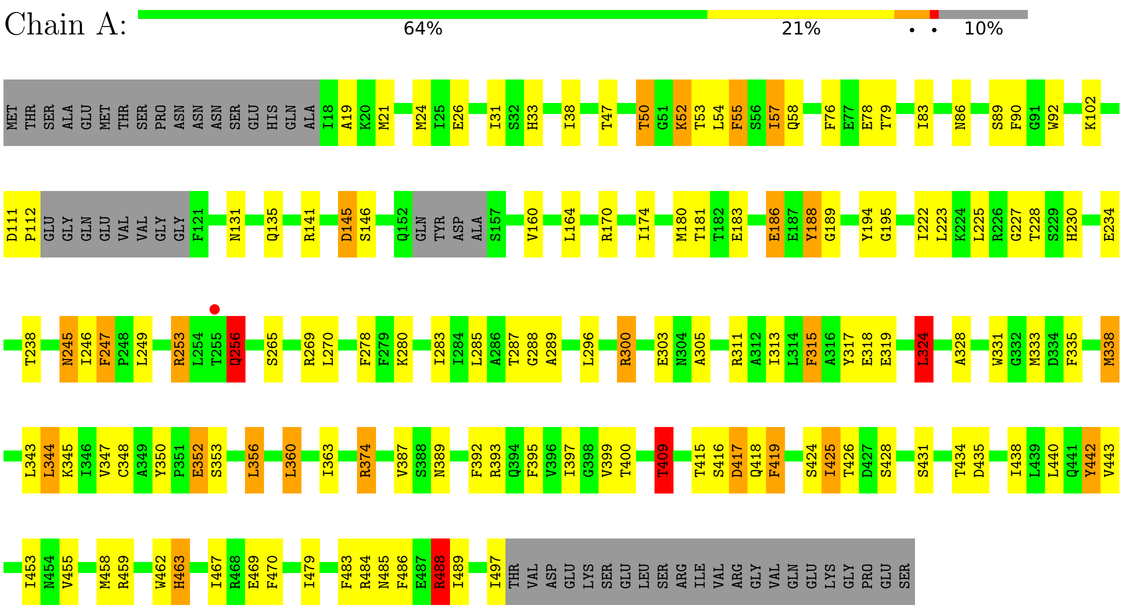
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	E	4	Total O 4 4	0	0
6	F	6	Total O 6 6	0	0
6	C	7	Total O 7 7	0	0
6	D	4	Total O 4 4	0	0
6	G	4	Total O 4 4	0	0
6	H	4	Total O 4 4	0	0
6	K	3	Total O 3 3	0	0
6	L	6	Total O 6 6	0	0
6	I	5	Total O 5 5	0	0
6	J	4	Total O 4 4	0	0
6	N	2	Total O 2 2	0	0
6	O	5	Total O 5 5	0	0
6	R	2	Total O 2 2	0	0
6	M	1	Total O 1 1	0	0
6	P	4	Total O 4 4	0	0
6	Q	5	Total O 5 5	0	0
6	U	2	Total O 2 2	0	0
6	X	2	Total O 2 2	0	0
6	S	2	Total O 2 2	0	0
6	V	2	Total O 2 2	0	0
6	W	3	Total O 3 3	0	0

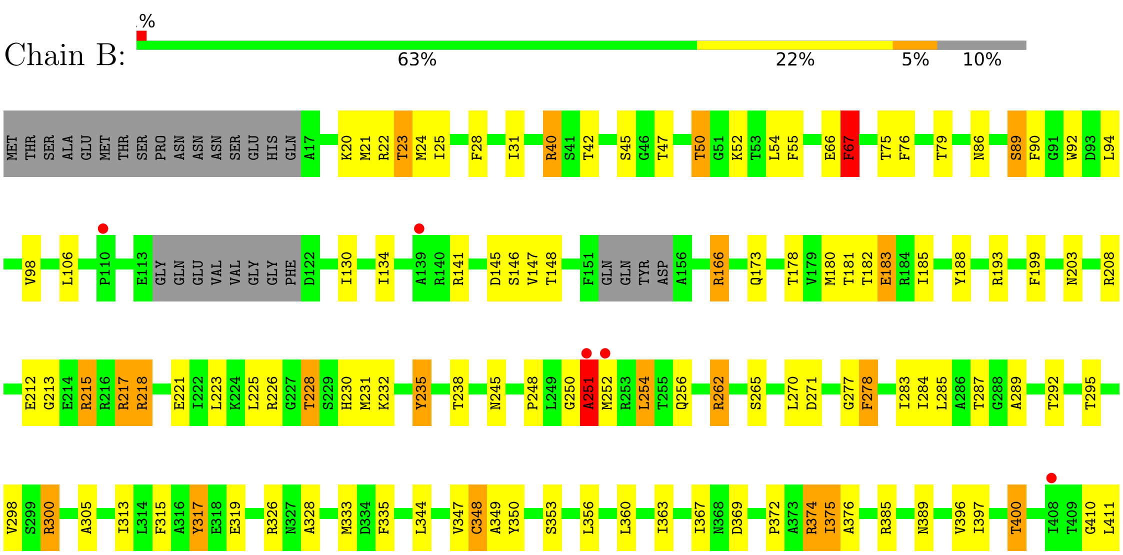
3 Residue-property plots (i)

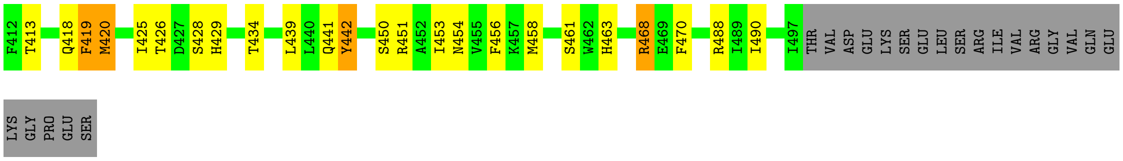
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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 dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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: Circadian clock protein kinase KaiC



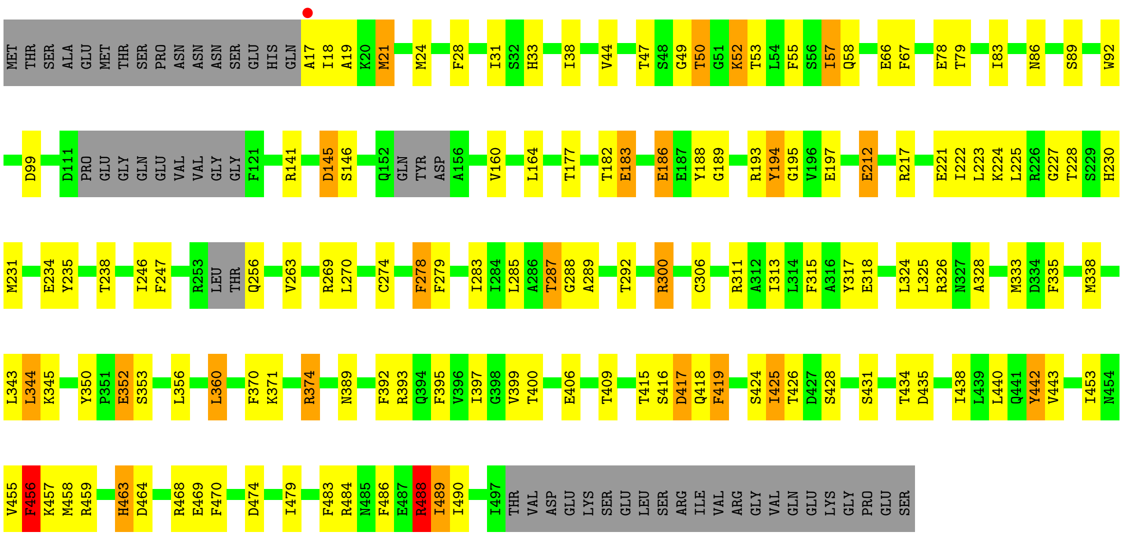
- Molecule 1: Circadian clock protein kinase KaiC





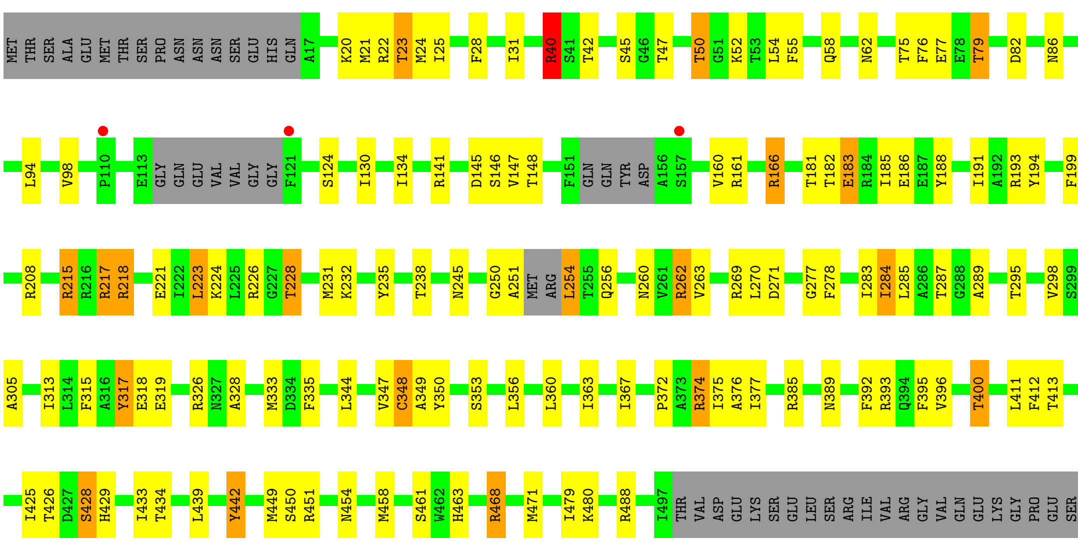
• Molecule 1: Circadian clock protein kinase KaiC

Chain G:



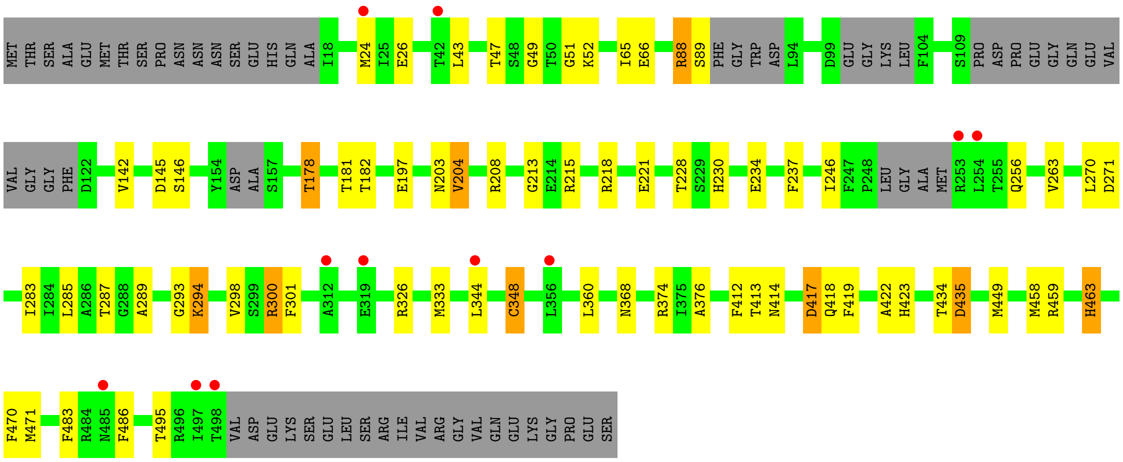
• Molecule 1: Circadian clock protein kinase KaiC

Chain H:



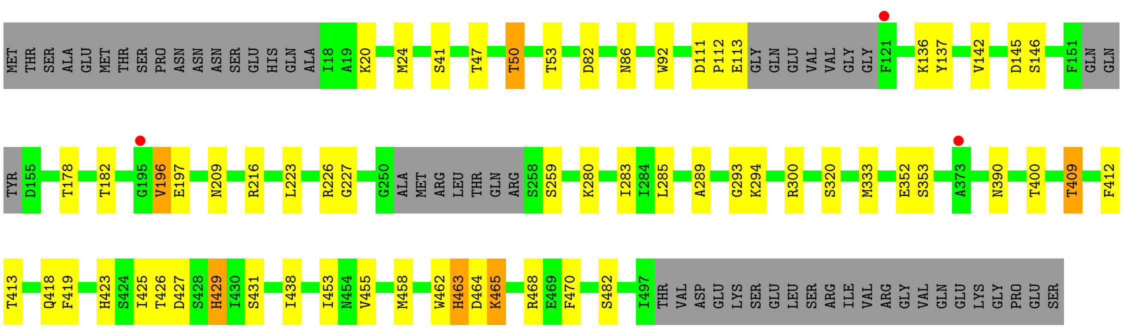
• Molecule 1: Circadian clock protein kinase KaiC

Chain N:



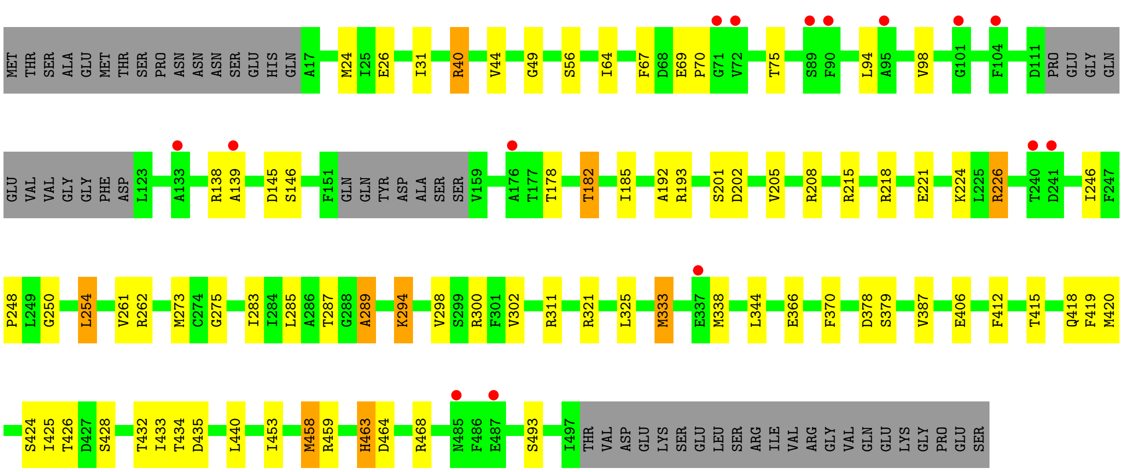
• Molecule 1: Circadian clock protein kinase KaiC

Chain R:



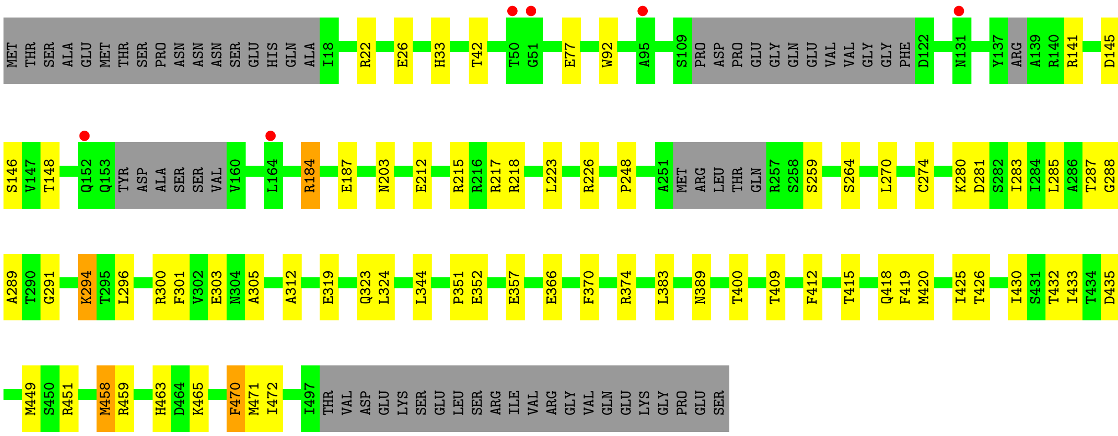
• Molecule 1: Circadian clock protein kinase KaiC

Chain M:



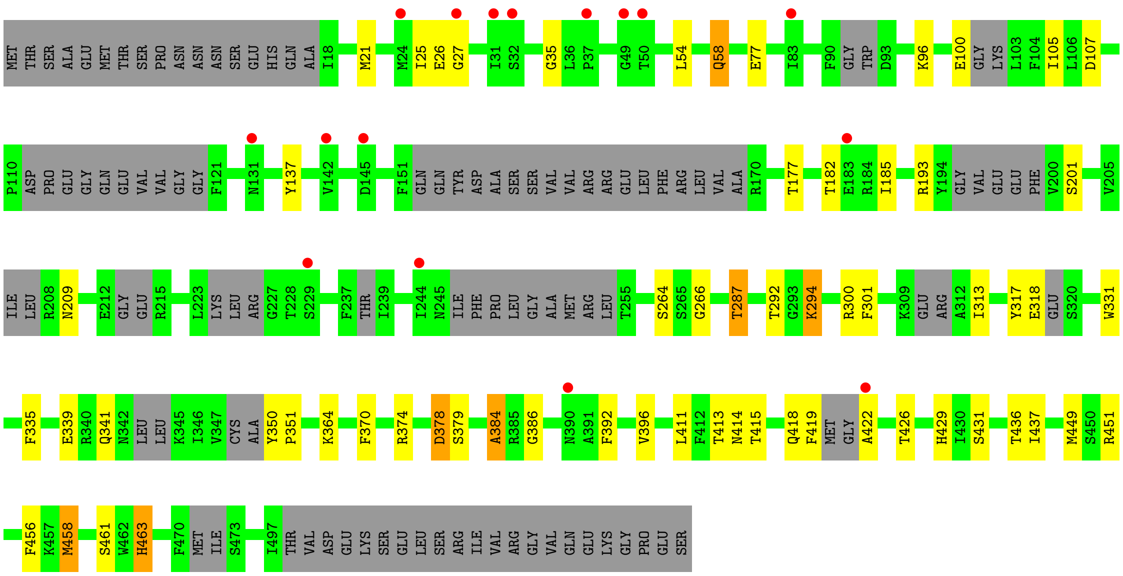
• Molecule 1: Circadian clock protein kinase KaiC

Chain P:



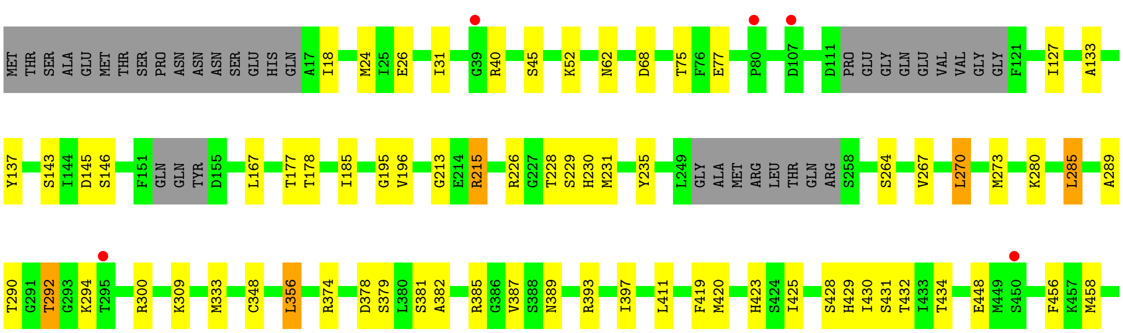
- Molecule 1: Circadian clock protein kinase KaiC

Chain T:



- Molecule 1: Circadian clock protein kinase KaiC

Chain X:



W462 H463 R468 I479 K480 F486 I490 I497 THR VAL ASP GLU LYS SER GLU LEU SER ARG ILE VAL ARG GLY VAL GLN GLU LYS GLY PRO GLU SER

• Molecule 1: Circadian clock protein kinase KaiC

Chain S: 3% 73% 11% • 14%

MET THR SER ALA GLU MET THR SER PRO ASN ASN ASN SER GLU HIS GLN ALA I18 I25 E26 G27 I31 L43 T50 G51 K52 T53 Y61 E69 P70 GLY V72 F73 Q81 S89 D99 GLU GLY LYS L103 F104 I105 P110 ASP PRO GLU GLY GLN GLU VAL

VAL GLY GLY PHE ASP L123 A139 V142 D145 F151 GLN GLN TYR ASP ALA SER S158 G175 T181 T182 A192 E197 E198 F199 N209 K224 M231 K232 G233 F237 THR I239 T240 ASP HIS GLY I244 N245 I246 L249 GLY ALA MET ARG LEU THR Q256

R257 S258 V261 S264 S265 G266 T287 G291 T295 F301 R311 Y317 A328 W331 G332 M338 L344 K345 I346 VAL CYS A349 E352 SER ALA G355 Q361 F370 R374 D378 S379 L380 S381 N389 R393 T409 T415 Q418

F419 M420 G421 A422 I425 T426 H429 I433 T434 D435 R451 A452 I453 M458 A466 M471 D474 I497 THR VAL ASP GLU LYS SER GLU LEU SER ARG ILE VAL ARG GLY VAL GLN GLU LYS GLY PRO GLU SER

• Molecule 1: Circadian clock protein kinase KaiC

Chain V: 3% 70% 13% • 16%

MET THR SER ALA GLU MET THR SER PRO ASN ASN ASN SER GLU HIS GLN ALA I18 M24 I25 E26 T42 T47 K52 T53 Y61 E66 F67 D68 E69 P70 GLY VAL F73 F76 P80 S89 W92 ASP LEU ALA K96 E100 GLY LYS LEU PHE I105

P110 ASP PRO GLU GLY GLN GLU VAL VAL GLY GLY PHE ASP L123 S124 I127 Y137 ARG ALA R140 R141 VAL SER I144 D145 S146 F151 Q152 GLN TYR ASP ALA SER S158 V159 V160 L164 L167 V168 A169 Q173 A176 THR THR VAL M180 T181 T182 E187 Y188 GLY PRO

I191 A192 ARG TYR GLY VAL E197 V200 N203 R208 N209 R215 R216 R217 R218 T219 L225 R226 GLY THR SER HIS M231 E234 Y235 I239 T240 D241 L249 G250 L254 S258 V263 L270 D281 I284 L285 A286 T287 G288 A289 K294 T295 L296 L297

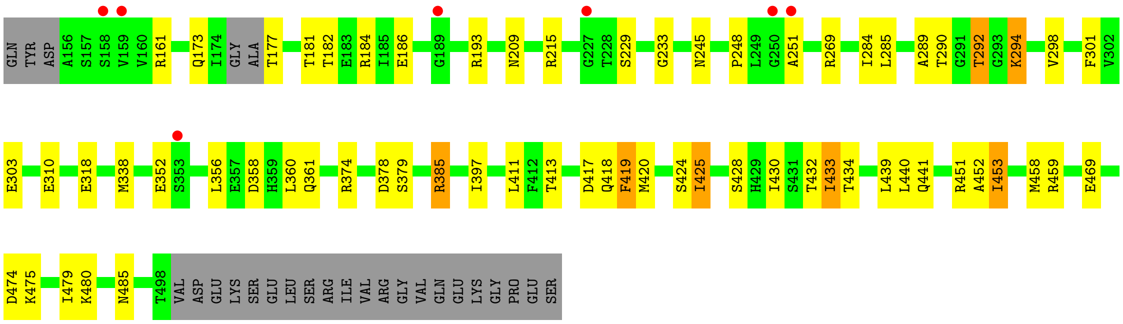
V298 S299 R300 F301 A305 A316 Q323 L324 M333 L343 C348 E366 R374 D378 S379 F392 R393 I397 L411 F412 T413 N414 F419 I425 T426 D427 S428 H429 I430 T434 S450 R451 M458 E469 I490 I497 THR VAL ASP GLU

LYS SER GLU LEU SER ARG ILE VAL ARG GLY VAL GLN GLU LYS GLY PRO GLU SER

• Molecule 1: Circadian clock protein kinase KaiC

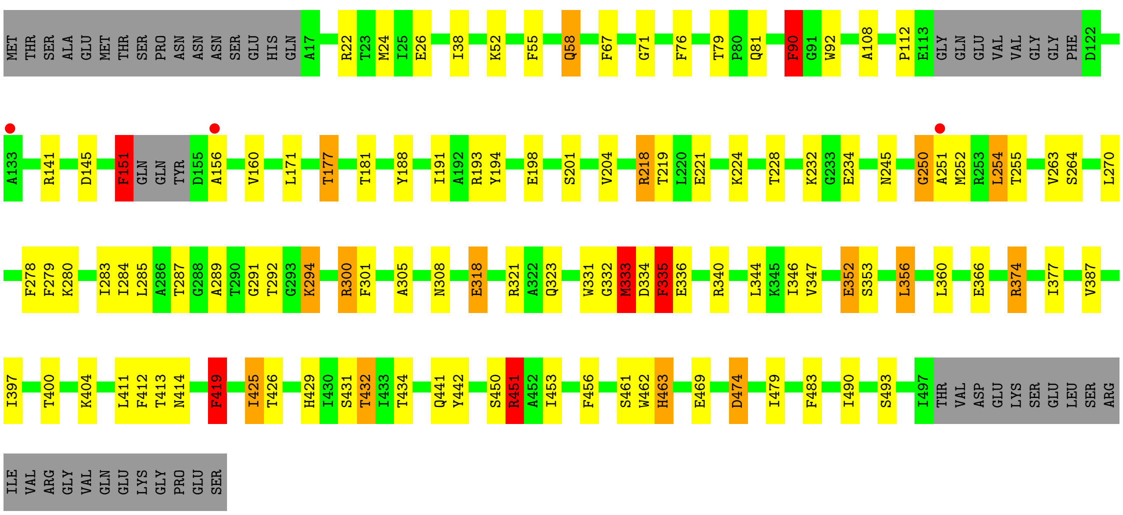
Chain W: 2% 75% 13% • 11%

MET THR SER ALA GLU MET THR SER PRO ASN ASN ASN SER GLU HIS GLN ALA I18 M21 H33 G71 V72 F73 E77 A95 L106 P112 Q115 GLU VAL VAL GLY GLY PHE ASP LEU S124 K136 TYR ARG A139 R140 R141 D145 S146 S149 V150 PHE GLN



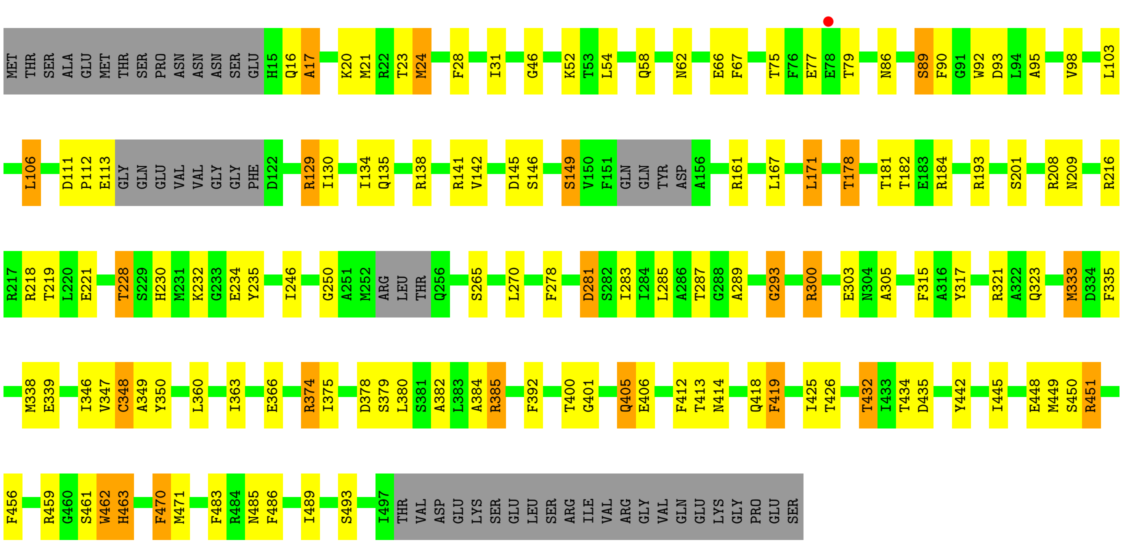
• Molecule 2: Circadian clock protein kinase KaiC

Chain E:

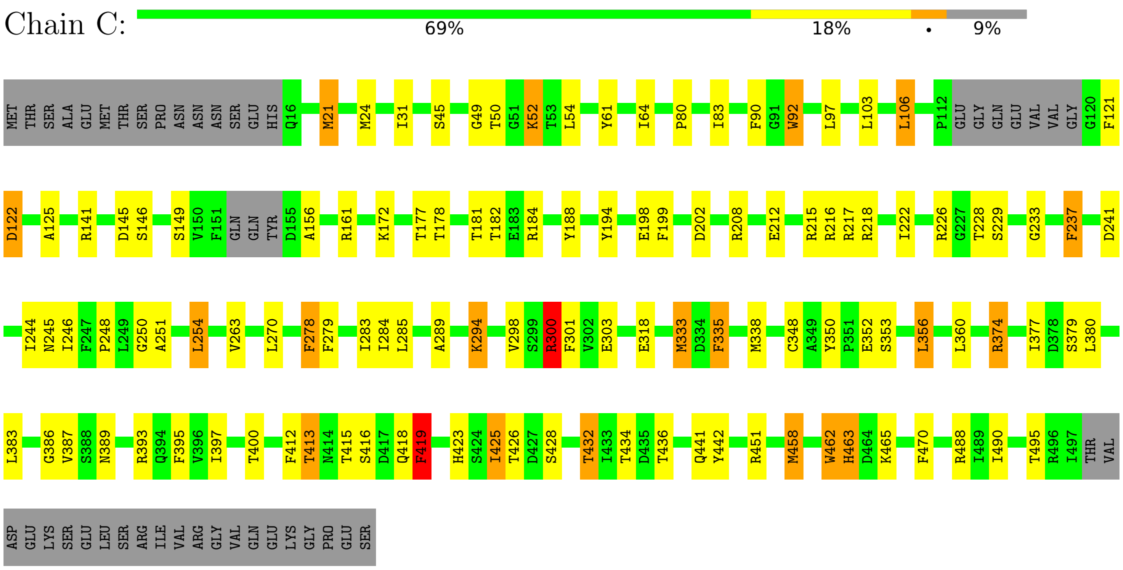


• Molecule 2: Circadian clock protein kinase KaiC

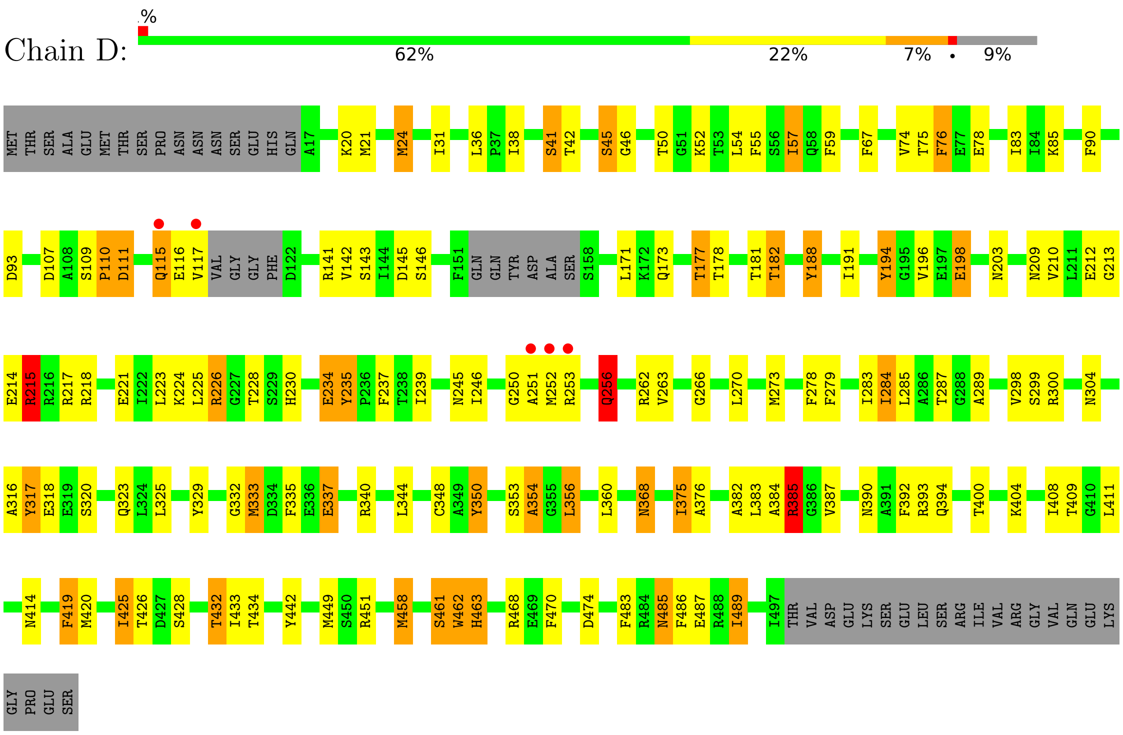
Chain F:



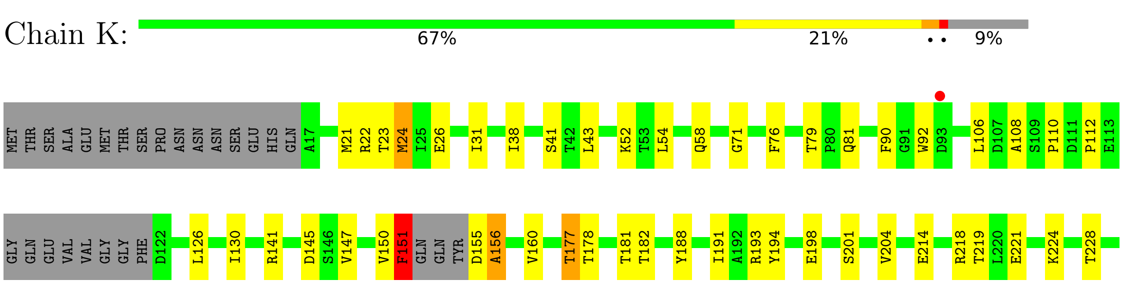
• Molecule 2: Circadian clock protein kinase KaiC

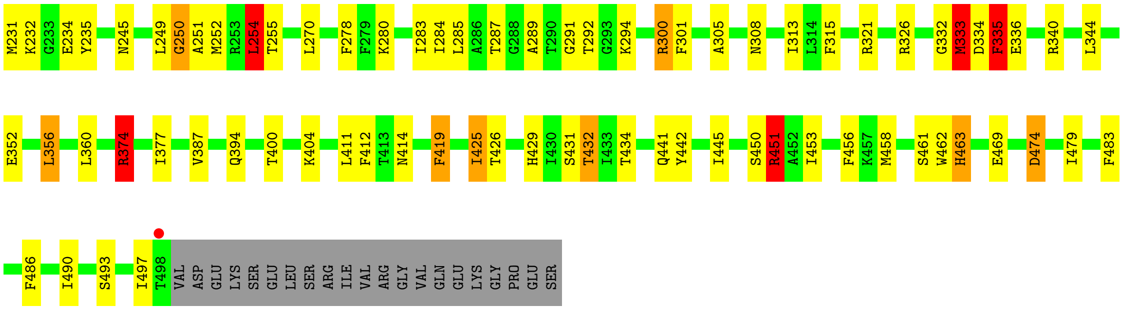


• Molecule 2: Circadian clock protein kinase KaiC

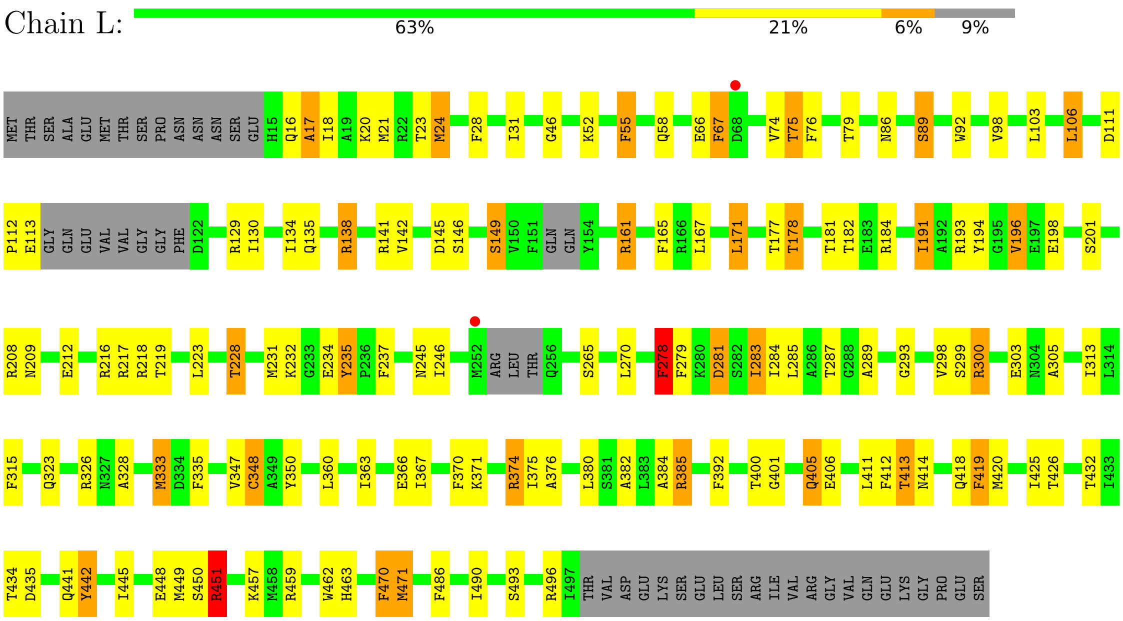


• Molecule 2: Circadian clock protein kinase KaiC

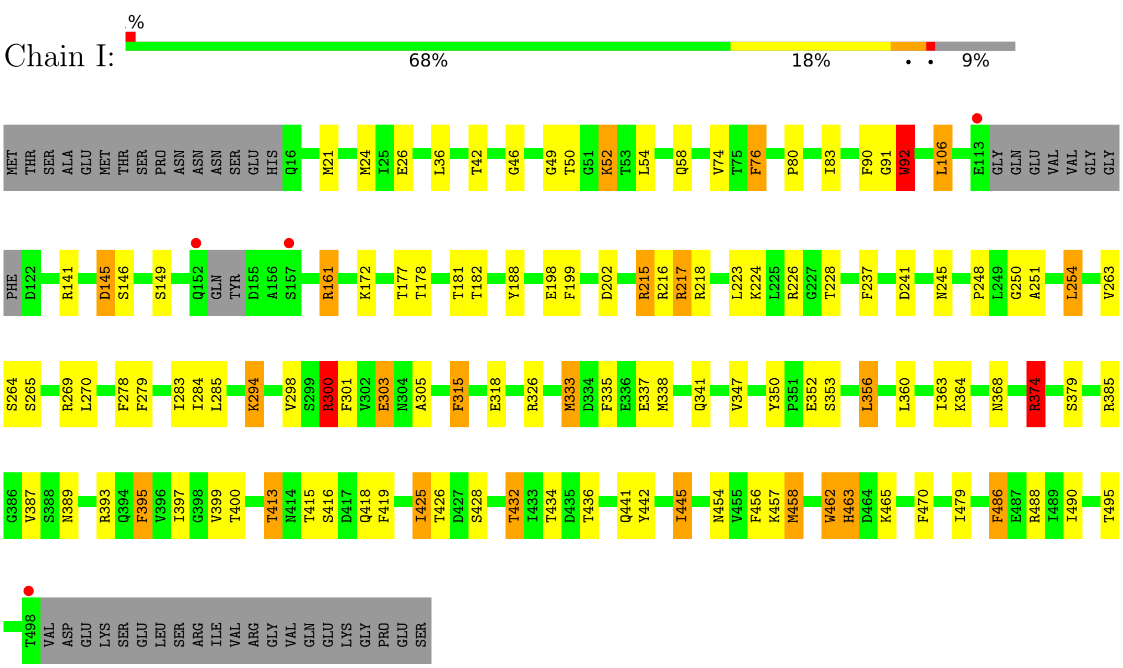




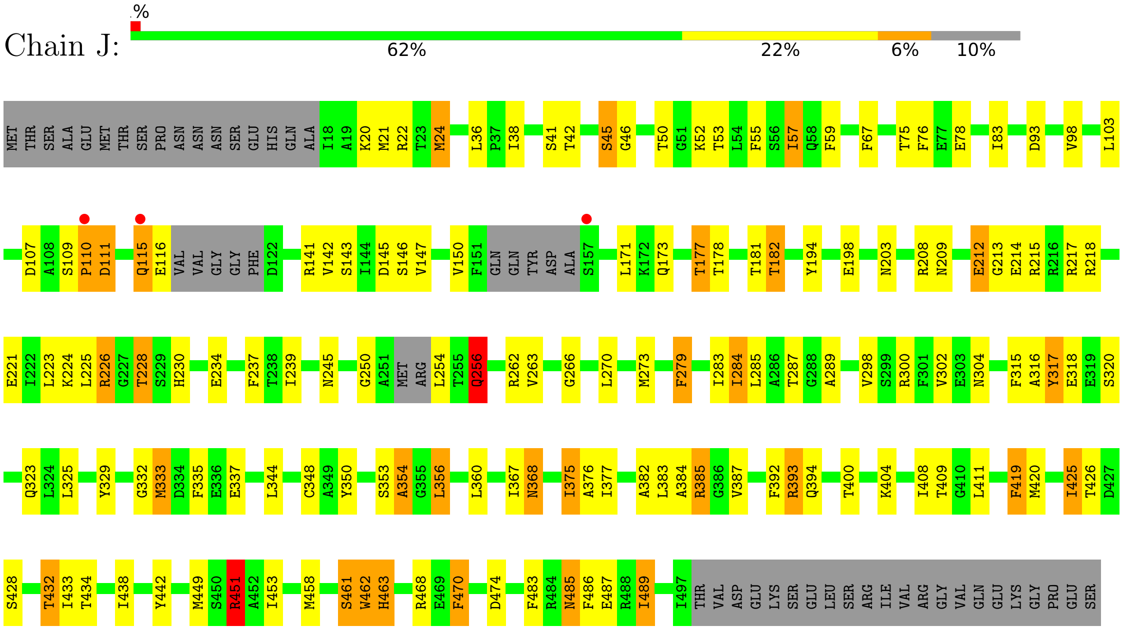
• Molecule 2: Circadian clock protein kinase KaiC



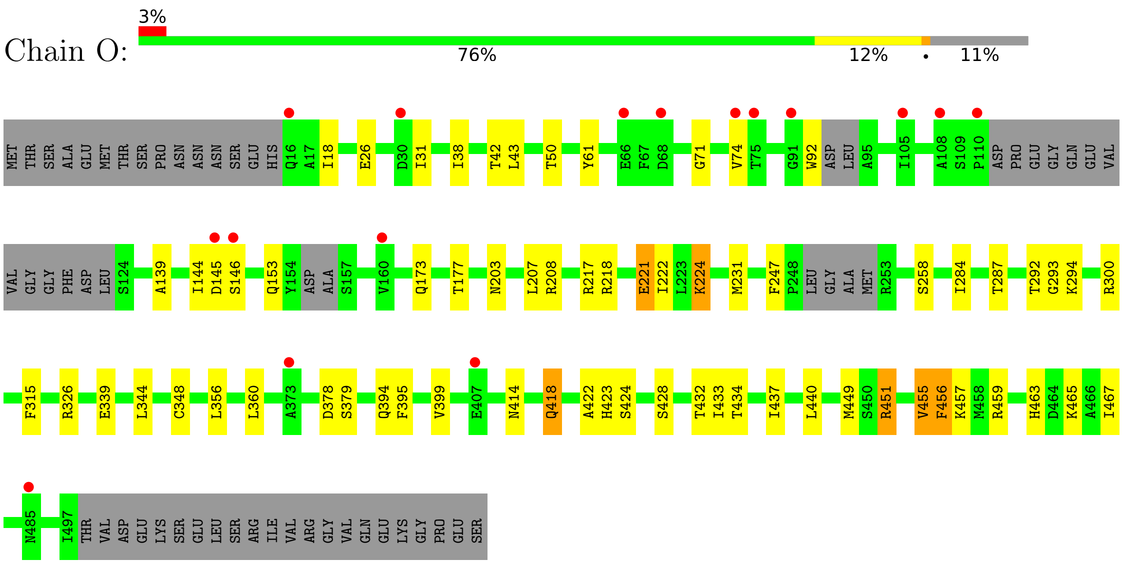
• Molecule 2: Circadian clock protein kinase KaiC



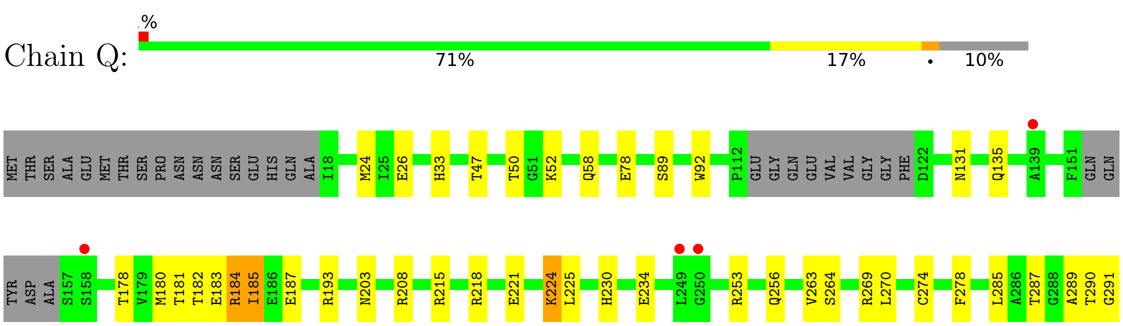
• Molecule 2: Circadian clock protein kinase KaiC

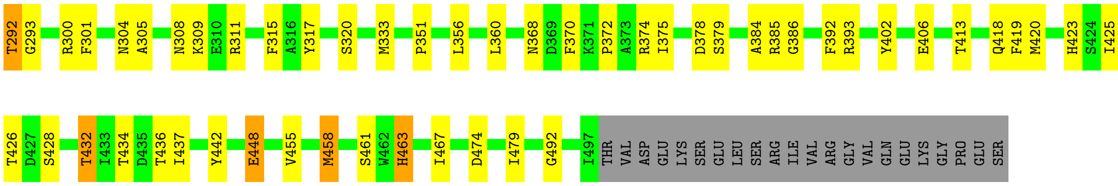


• Molecule 2: Circadian clock protein kinase KaiC



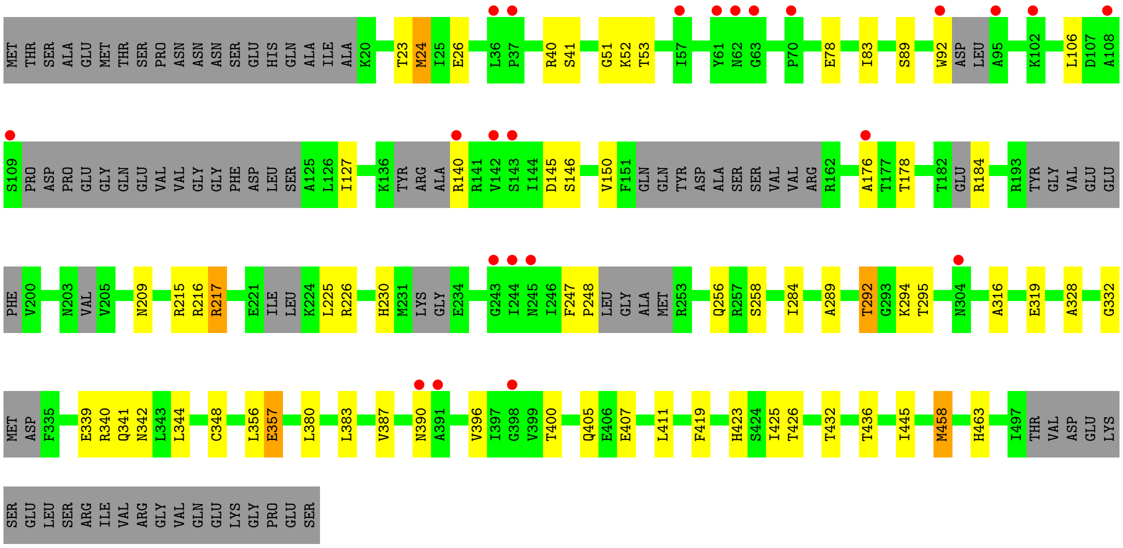
• Molecule 2: Circadian clock protein kinase KaiC





• Molecule 2: Circadian clock protein kinase KaiC

Chain U:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	185.49Å 205.80Å 186.18Å 90.00° 115.14° 90.00°	Depositor
Resolution (Å)	49.22 – 3.10 49.17 – 3.10	Depositor EDS
% Data completeness (in resolution range)	93.7 (49.22-3.10) 93.7 (49.17-3.10)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.00 (at 3.12Å)	Xtriage
Refinement program	REFMAC 5.8.0253	Depositor
R, R_{free}	0.275 , 0.340 0.272 , 0.335	Depositor DCC
R_{free} test set	10614 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å^2)	59.2	Xtriage
Anisotropy	0.100	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.26 , 53.7	EDS
L-test for twinning[2]	$< \|L\| >$ = 0.48, $< L^2 >$ = 0.31	Xtriage
Estimated twinning fraction	0.000 for l,-k,h	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	78739	wwPDB-VP
Average B, all atoms (Å^2)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 74.56 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.4924e-06. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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: SEP, MG, ADP, ATP, TPO

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	0.78	0/3555	1.03	17/4815 (0.4%)
1	B	0.82	2/3479 (0.1%)	1.50	52/4719 (1.1%)
1	G	0.79	0/3494	1.03	20/4734 (0.4%)
1	H	0.81	1/3523 (0.0%)	1.47	50/4770 (1.0%)
1	M	0.71	0/3164	0.76	0/4307
1	N	0.72	0/3041	0.76	0/4142
1	P	0.71	0/3132	0.76	0/4259
1	R	0.69	0/3243	0.77	0/4406
1	S	0.75	0/2725	0.78	0/3730
1	T	0.77	0/2431	0.78	0/3319
1	V	0.72	0/2936	0.76	0/3993
1	W	0.71	0/3160	0.77	0/4293
1	X	0.71	0/3109	0.77	0/4232
2	C	0.83	4/3473 (0.1%)	1.31	35/4710 (0.7%)
2	D	0.80	1/3491 (0.0%)	1.21	34/4732 (0.7%)
2	E	0.79	2/3460 (0.1%)	1.19	25/4695 (0.5%)
2	F	0.78	0/3471	1.16	26/4699 (0.6%)
2	I	0.82	1/3513 (0.0%)	1.30	32/4758 (0.7%)
2	J	0.80	1/3476 (0.0%)	1.22	29/4709 (0.6%)
2	K	0.79	1/3479 (0.0%)	1.17	20/4720 (0.4%)
2	L	0.77	0/3507	1.18	29/4752 (0.6%)
2	O	0.72	0/3096	0.77	0/4219
2	Q	0.68	0/3338	0.76	0/4529
2	U	0.75	0/2638	0.78	0/3600
All	All	0.76	13/77934 (0.0%)	1.05	369/105842 (0.3%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1

The worst 5 of 13 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	K	374	ARG	CZ-NH2	-7.44	1.23	1.33
2	E	374	ARG	CZ-NH2	-7.19	1.23	1.33
1	B	22	ARG	CZ-NH2	-6.29	1.24	1.33
2	C	92	TRP	CD2-CE3	-5.93	1.31	1.40
1	H	22	ARG	CZ-NH2	-5.86	1.25	1.33

The worst 5 of 369 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	374	ARG	NE-CZ-NH1	28.43	134.51	120.30
2	K	374	ARG	NE-CZ-NH1	26.64	133.62	120.30
1	B	22	ARG	NE-CZ-NH1	22.32	131.46	120.30
1	B	262	ARG	NE-CZ-NH1	-19.71	110.44	120.30
1	H	488	ARG	NE-CZ-NH2	-19.45	110.57	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	251	ALA	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3506	0	3303	122	0
1	B	3432	0	3166	100	0
1	G	3448	0	3229	125	0
1	H	3476	0	3247	110	0
1	M	3123	0	2557	36	0
1	N	3010	0	2393	33	0
1	P	3096	0	2554	35	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	R	3201	0	2747	33	0
1	S	2706	0	1911	32	0
1	T	2427	0	1562	31	0
1	V	2914	0	2335	47	0
1	W	3126	0	2564	50	0
1	X	3074	0	2533	39	0
2	C	3436	0	3139	90	0
2	D	3456	0	3185	120	0
2	E	3424	0	3156	88	0
2	F	3436	0	3161	86	0
2	I	3477	0	3211	98	0
2	J	3442	0	3178	117	0
2	K	3444	0	3198	93	0
2	L	3471	0	3211	115	0
2	O	3072	0	2498	24	0
2	Q	3303	0	2875	51	0
2	U	2635	0	1858	42	0
3	A	62	0	24	3	0
3	B	62	0	24	6	0
3	C	62	0	24	6	0
3	D	62	0	24	2	0
3	E	62	0	24	4	0
3	F	62	0	24	3	0
3	G	62	0	24	3	0
3	H	62	0	24	3	0
3	I	62	0	24	6	0
3	J	62	0	24	3	0
3	K	62	0	24	2	0
3	L	62	0	24	6	0
3	M	62	0	24	2	0
3	N	62	0	24	3	0
3	O	62	0	24	1	0
3	P	62	0	24	6	0
3	Q	31	0	12	0	0
3	R	62	0	24	1	0
3	S	62	0	24	2	0
3	T	62	0	24	0	0
3	U	31	0	12	1	0
3	V	62	0	24	3	0
3	W	31	0	12	2	0
3	X	62	0	24	2	0
4	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	2	0	0	0	0
4	C	2	0	0	0	0
4	D	2	0	0	0	0
4	E	2	0	0	0	0
4	F	2	0	0	0	0
4	G	2	0	0	0	0
4	H	2	0	0	0	0
4	I	2	0	0	0	0
4	J	2	0	0	0	0
4	K	2	0	0	0	0
4	L	2	0	0	0	0
4	M	1	0	0	0	0
4	N	2	0	0	0	0
4	O	1	0	0	0	0
4	P	2	0	0	0	0
4	Q	1	0	0	0	0
4	R	2	0	0	0	0
4	T	1	0	0	0	0
4	U	1	0	0	0	0
4	V	1	0	0	0	0
5	Q	27	0	12	0	0
5	U	27	0	12	9	0
5	W	27	0	12	0	0
6	A	6	0	0	0	0
6	B	9	0	0	0	0
6	C	7	0	0	0	0
6	D	4	0	0	0	0
6	E	4	0	0	0	0
6	F	6	0	0	0	0
6	G	4	0	0	0	0
6	H	4	0	0	0	0
6	I	5	0	0	0	0
6	J	4	0	0	0	0
6	K	3	0	0	0	0
6	L	6	0	0	0	0
6	M	1	0	0	0	0
6	N	2	0	0	0	0
6	O	5	0	0	0	0
6	P	4	0	0	0	0
6	Q	5	0	0	0	0
6	R	2	0	0	0	0
6	S	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	U	2	0	0	0	0
6	V	2	0	0	0	0
6	W	3	0	0	0	0
6	X	2	0	0	0	0
All	All	78739	0	67347	1518	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 10.

The worst 5 of 1518 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:V:419:PHE:CD2	1:W:425:ILE:HD13	1.69	1.26
1:G:47:THR:O	1:G:50:THR:OG1	1.61	1.18
2:C:419:PHE:CD1	2:D:425:ILE:HD13	1.85	1.10
1:V:419:PHE:CD2	1:W:425:ILE:CD1	2.35	1.09
2:K:250:GLY:O	2:K:252:MET:N	1.87	1.08

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 X-ray entries followed by that with respect to entries of similar resolution.

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	461/519 (89%)	433 (94%)	22 (5%)	6 (1%)	12	42
1	B	462/519 (89%)	431 (93%)	24 (5%)	7 (2%)	10	39
1	G	458/519 (88%)	433 (94%)	23 (5%)	2 (0%)	34	69
1	H	459/519 (88%)	430 (94%)	26 (6%)	3 (1%)	22	57
1	M	456/519 (88%)	410 (90%)	39 (9%)	7 (2%)	10	39
1	N	442/519 (85%)	387 (88%)	43 (10%)	12 (3%)	5	25

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	P	445/519 (86%)	400 (90%)	39 (9%)	6 (1%)	12	42
1	R	454/519 (88%)	414 (91%)	35 (8%)	5 (1%)	14	46
1	S	423/519 (82%)	360 (85%)	55 (13%)	8 (2%)	8	33
1	T	380/519 (73%)	299 (79%)	67 (18%)	14 (4%)	3	19
1	V	412/519 (79%)	359 (87%)	50 (12%)	3 (1%)	22	57
1	W	453/519 (87%)	386 (85%)	57 (13%)	10 (2%)	6	29
1	X	452/519 (87%)	408 (90%)	31 (7%)	13 (3%)	4	24
2	C	464/519 (89%)	428 (92%)	31 (7%)	5 (1%)	14	46
2	D	463/519 (89%)	419 (90%)	34 (7%)	10 (2%)	6	29
2	E	462/519 (89%)	427 (92%)	26 (6%)	9 (2%)	8	33
2	F	458/519 (88%)	432 (94%)	19 (4%)	7 (2%)	10	39
2	I	465/519 (90%)	430 (92%)	33 (7%)	2 (0%)	34	69
2	J	458/519 (88%)	414 (90%)	36 (8%)	8 (2%)	9	36
2	K	463/519 (89%)	427 (92%)	26 (6%)	10 (2%)	6	29
2	L	460/519 (89%)	431 (94%)	23 (5%)	6 (1%)	12	42
2	O	449/519 (86%)	399 (89%)	40 (9%)	10 (2%)	6	29
2	Q	458/519 (88%)	416 (91%)	38 (8%)	4 (1%)	17	52
2	U	404/519 (78%)	340 (84%)	53 (13%)	11 (3%)	5	25
All	All	10761/12456 (86%)	9713 (90%)	870 (8%)	178 (2%)	9	36

5 of 178 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	253	ARG
1	A	256	GLN
1	B	252	MET
1	B	254	LEU
1	B	348	CYS

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 X-ray entries followed by that with respect to entries of similar resolution.

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	351/443 (79%)	310 (88%)	41 (12%)	5	22
1	B	328/443 (74%)	294 (90%)	34 (10%)	7	27
1	G	338/443 (76%)	299 (88%)	39 (12%)	5	22
1	H	341/443 (77%)	301 (88%)	40 (12%)	5	22
1	M	247/443 (56%)	221 (90%)	26 (10%)	7	26
1	N	222/443 (50%)	198 (89%)	24 (11%)	6	25
1	P	249/443 (56%)	221 (89%)	28 (11%)	6	24
1	R	270/443 (61%)	250 (93%)	20 (7%)	13	42
1	S	155/443 (35%)	138 (89%)	17 (11%)	6	25
1	T	109/443 (25%)	93 (85%)	16 (15%)	3	13
1	V	221/443 (50%)	188 (85%)	33 (15%)	3	13
1	W	242/443 (55%)	212 (88%)	30 (12%)	4	19
1	X	239/443 (54%)	217 (91%)	22 (9%)	9	33
2	C	323/442 (73%)	293 (91%)	30 (9%)	9	32
2	D	332/442 (75%)	291 (88%)	41 (12%)	4	19
2	E	324/442 (73%)	289 (89%)	35 (11%)	6	25
2	F	327/442 (74%)	294 (90%)	33 (10%)	7	28
2	I	334/442 (76%)	299 (90%)	35 (10%)	7	26
2	J	330/442 (75%)	293 (89%)	37 (11%)	6	24
2	K	330/442 (75%)	300 (91%)	30 (9%)	9	33
2	L	336/442 (76%)	295 (88%)	41 (12%)	5	19
2	O	237/442 (54%)	211 (89%)	26 (11%)	6	25
2	Q	289/442 (65%)	257 (89%)	32 (11%)	6	24
2	U	151/442 (34%)	131 (87%)	20 (13%)	4	17
All	All	6625/10621 (62%)	5895 (89%)	730 (11%)	6	25

5 of 730 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	O	207	LEU
2	Q	218	ARG
2	O	360	LEU
2	O	173	GLN

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Mol	Chain	Res	Type
1	M	366	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 92 such sidechains are listed below:

Mol	Chain	Res	Type
2	O	327	ASN
2	Q	418	GLN
1	R	308	ASN
1	P	209	ASN
1	T	414	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

35 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	SEP	K	431	2	8,9,10	0.59	0	8,12,14	0.83	0
2	TPO	E	432	2	8,10,11	1.32	1 (12%)	10,14,16	1.09	0
2	TPO	C	432	2	8,10,11	1.41	2 (25%)	10,14,16	0.78	0
2	TPO	Q	432	2	8,10,11	0.94	1 (12%)	10,14,16	1.08	1 (10%)
2	SEP	L	431	2	8,9,10	0.55	0	8,12,14	0.65	0
2	SEP	E	431	2	8,9,10	0.59	0	8,12,14	0.71	0
2	TPO	L	432	2	8,10,11	1.50	2 (25%)	10,14,16	0.91	0
2	SEP	I	431	2	8,9,10	0.62	0	8,12,14	0.55	0
1	SEP	A	431	1	8,9,10	1.12	1 (12%)	8,12,14	1.01	0
2	SEP	J	431	2	8,9,10	0.68	0	8,12,14	0.57	0
2	TPO	J	432	2	8,10,11	0.87	1 (12%)	10,14,16	0.86	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
1	SEP	R	431	1	8,9,10	0.68	0	8,12,14	0.74	0
1	SEP	X	431	1	8,9,10	0.57	0	8,12,14	0.68	0
2	SEP	U	431	2	8,9,10	0.69	0	8,12,14	0.62	0
1	SEP	M	431	1	8,9,10	0.65	0	8,12,14	0.61	0
2	SEP	F	431	2	8,9,10	0.56	0	8,12,14	0.66	0
1	SEP	S	431	1	8,9,10	0.61	0	8,12,14	0.61	0
2	TPO	D	432	2	8,10,11	0.91	1 (12%)	10,14,16	0.88	0
1	SEP	T	431	1	8,9,10	0.74	0	8,12,14	0.74	0
2	SEP	C	431	2	8,9,10	0.64	0	8,12,14	0.58	0
2	TPO	O	432	2	8,10,11	0.99	1 (12%)	10,14,16	1.03	1 (10%)
2	TPO	I	432	2	8,10,11	1.41	2 (25%)	10,14,16	0.82	0
2	SEP	D	431	2	8,9,10	0.68	0	8,12,14	0.57	0
2	SEP	Q	431	2	8,9,10	0.68	0	8,12,14	0.59	0
1	SEP	P	431	1	8,9,10	0.62	0	8,12,14	0.62	0
2	TPO	K	432	2	8,10,11	1.28	1 (12%)	10,14,16	1.14	0
1	SEP	B	431	1	8,9,10	0.62	0	8,12,14	0.58	0
1	SEP	W	431	1	8,9,10	0.57	0	8,12,14	0.68	0
1	SEP	N	431	1	8,9,10	0.70	0	8,12,14	0.71	0
2	TPO	U	432	2	8,10,11	0.97	1 (12%)	10,14,16	1.04	1 (10%)
2	TPO	F	432	2	8,10,11	1.53	2 (25%)	10,14,16	0.91	0
2	SEP	O	431	2	8,9,10	0.70	0	8,12,14	0.75	0
1	SEP	V	431	1	8,9,10	0.67	0	8,12,14	0.62	0
1	SEP	G	431	1	8,9,10	1.10	1 (12%)	8,12,14	1.07	1 (12%)
1	SEP	H	431	1	8,9,10	0.62	0	8,12,14	0.58	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	SEP	K	431	2	-	4/5/8/10	-
2	TPO	E	432	2	-	2/9/11/13	-
2	TPO	C	432	2	-	3/9/11/13	-
2	TPO	Q	432	2	-	4/9/11/13	-
2	SEP	L	431	2	-	1/5/8/10	-
2	SEP	E	431	2	-	4/5/8/10	-
2	TPO	L	432	2	-	6/9/11/13	-
2	SEP	I	431	2	-	1/5/8/10	-
1	SEP	A	431	1	-	1/5/8/10	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	SEP	J	431	2	-	2/5/8/10	-
2	TPO	J	432	2	-	1/9/11/13	-
1	SEP	R	431	1	-	4/5/8/10	-
1	SEP	X	431	1	-	0/5/8/10	-
2	SEP	U	431	2	-	2/5/8/10	-
1	SEP	M	431	1	-	1/5/8/10	-
2	SEP	F	431	2	-	1/5/8/10	-
1	SEP	S	431	1	-	1/5/8/10	-
2	TPO	D	432	2	-	1/9/11/13	-
1	SEP	T	431	1	-	1/5/8/10	-
2	SEP	C	431	2	-	1/5/8/10	-
2	TPO	O	432	2	-	1/9/11/13	-
2	TPO	I	432	2	-	4/9/11/13	-
2	SEP	D	431	2	-	1/5/8/10	-
2	SEP	Q	431	2	-	1/5/8/10	-
1	SEP	P	431	1	-	3/5/8/10	-
2	TPO	K	432	2	-	3/9/11/13	-
1	SEP	B	431	1	-	1/5/8/10	-
1	SEP	W	431	1	-	0/5/8/10	-
1	SEP	N	431	1	-	1/5/8/10	-
2	TPO	U	432	2	-	1/9/11/13	-
2	TPO	F	432	2	-	4/9/11/13	-
2	SEP	O	431	2	-	1/5/8/10	-
1	SEP	V	431	1	-	1/5/8/10	-
1	SEP	G	431	1	-	3/5/8/10	-
1	SEP	H	431	1	-	1/5/8/10	-

The worst 5 of 17 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	432	TPO	P-O2P	-2.92	1.43	1.54
2	L	432	TPO	P-O2P	-2.88	1.43	1.54
2	E	432	TPO	P-O2P	-2.79	1.44	1.54
2	F	432	TPO	P-OG1	2.64	1.64	1.59
2	L	432	TPO	P-OG1	2.53	1.64	1.59

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	U	432	TPO	O-C-CA	-2.77	117.52	124.78

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	Q	432	TPO	O-C-CA	-2.72	117.65	124.78
2	O	432	TPO	O-C-CA	-2.61	117.93	124.78
1	G	431	SEP	O3P-P-O2P	2.05	115.47	107.64

There are no chirality outliers.

5 of 67 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	431	SEP	N-CA-CB-OG
2	E	431	SEP	N-CA-CB-OG
2	E	431	SEP	CB-OG-P-O1P
2	E	431	SEP	CB-OG-P-O2P
2	E	431	SEP	CB-OG-P-O3P

There are no ring outliers.

13 monomers are involved in 20 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	K	431	SEP	1	0
2	E	432	TPO	1	0
2	C	432	TPO	1	0
2	Q	432	TPO	1	0
2	E	431	SEP	1	0
2	J	432	TPO	3	0
1	R	431	SEP	2	0
1	X	431	SEP	1	0
2	D	432	TPO	3	0
1	T	431	SEP	2	0
2	I	432	TPO	1	0
2	K	432	TPO	1	0
2	F	432	TPO	2	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 84 ligands modelled in this entry, 36 are monoatomic - leaving 48 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	$\#\|Z\| > 2$
3	ATP	J	701	4	26,33,33	0.62	0	31,52,52	0.89	2 (6%)
3	ATP	I	702	4	26,33,33	0.67	0	31,52,52	0.75	1 (3%)
3	ATP	J	702	4	26,33,33	0.68	0	31,52,52	1.02	2 (6%)
3	ATP	A	702	4	26,33,33	0.67	0	31,52,52	0.84	2 (6%)
3	ATP	V	701	4	26,33,33	0.65	0	31,52,52	0.85	1 (3%)
3	ATP	P	702	4	26,33,33	0.68	0	31,52,52	1.03	2 (6%)
3	ATP	B	702	4	26,33,33	0.66	0	31,52,52	0.99	2 (6%)
3	ATP	X	701	-	26,33,33	0.67	0	31,52,52	0.89	2 (6%)
3	ATP	N	702	4	26,33,33	0.67	0	31,52,52	1.01	2 (6%)
3	ATP	M	702	-	26,33,33	0.66	0	31,52,52	0.99	2 (6%)
3	ATP	U	701	4	26,33,33	0.65	0	31,52,52	0.91	2 (6%)
5	ADP	Q	701	-	24,29,29	0.67	0	29,45,45	0.76	1 (3%)
3	ATP	R	701	4	26,33,33	0.67	0	31,52,52	0.78	1 (3%)
3	ATP	W	702	-	26,33,33	0.66	0	31,52,52	1.01	2 (6%)
3	ATP	P	701	4	26,33,33	0.65	0	31,52,52	1.00	2 (6%)
5	ADP	U	702	-	24,29,29	0.68	0	29,45,45	0.77	1 (3%)
3	ATP	T	701	4	26,33,33	0.67	0	31,52,52	1.08	3 (9%)
3	ATP	E	701	4	26,33,33	0.68	0	31,52,52	1.00	2 (6%)
3	ATP	C	701	4	26,33,33	0.64	0	31,52,52	0.94	2 (6%)
3	ATP	E	702	4	26,33,33	0.65	0	31,52,52	0.91	2 (6%)
3	ATP	O	702	-	26,33,33	0.66	0	31,52,52	1.03	2 (6%)
3	ATP	D	702	4	26,33,33	0.67	0	31,52,52	0.98	2 (6%)
3	ATP	D	701	4	26,33,33	0.64	0	31,52,52	0.81	1 (3%)
3	ATP	Q	702	4	26,33,33	0.65	0	31,52,52	1.12	3 (9%)
3	ATP	S	701	-	26,33,33	0.66	0	31,52,52	0.79	1 (3%)
3	ATP	V	702	-	26,33,33	0.67	0	31,52,52	0.72	1 (3%)
3	ATP	G	701	4	26,33,33	0.66	0	31,52,52	1.01	2 (6%)
3	ATP	X	702	-	26,33,33	0.64	0	31,52,52	1.01	2 (6%)
3	ATP	L	701	4	26,33,33	0.64	0	31,52,52	0.99	2 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	ATP	H	701	4	26,33,33	0.67	0	31,52,52	0.86	0
3	ATP	H	702	4	26,33,33	0.65	0	31,52,52	0.93	2 (6%)
3	ATP	L	702	4	26,33,33	0.65	0	31,52,52	1.06	2 (6%)
3	ATP	I	701	4	26,33,33	0.64	0	31,52,52	0.90	1 (3%)
3	ATP	A	701	4	26,33,33	0.65	0	31,52,52	0.97	2 (6%)
3	ATP	M	701	4	26,33,33	0.65	0	31,52,52	0.82	1 (3%)
3	ATP	R	702	4	26,33,33	0.66	0	31,52,52	0.89	2 (6%)
3	ATP	F	702	4	26,33,33	0.66	0	31,52,52	0.91	2 (6%)
3	ATP	C	702	4	26,33,33	0.67	0	31,52,52	0.95	2 (6%)
3	ATP	B	701	4	26,33,33	0.67	0	31,52,52	0.79	1 (3%)
3	ATP	S	702	-	26,33,33	0.66	0	31,52,52	0.85	2 (6%)
3	ATP	F	701	4	26,33,33	0.64	0	31,52,52	0.94	2 (6%)
3	ATP	N	701	4	26,33,33	0.66	0	31,52,52	1.04	2 (6%)
3	ATP	T	702	-	26,33,33	0.64	0	31,52,52	0.93	2 (6%)
3	ATP	O	701	4	26,33,33	0.66	0	31,52,52	1.02	2 (6%)
5	ADP	W	701	-	24,29,29	0.66	0	29,45,45	0.72	1 (3%)
3	ATP	K	701	4	26,33,33	0.65	0	31,52,52	1.00	2 (6%)
3	ATP	K	702	4	26,33,33	0.66	0	31,52,52	0.88	2 (6%)
3	ATP	G	702	4	26,33,33	0.67	0	31,52,52	1.11	3 (9%)

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
3	ATP	J	701	4	-	7/18/38/38	0/3/3/3
3	ATP	I	702	4	-	8/18/38/38	0/3/3/3
3	ATP	J	702	4	-	0/18/38/38	0/3/3/3
3	ATP	A	702	4	-	5/18/38/38	0/3/3/3
3	ATP	V	701	4	-	2/18/38/38	0/3/3/3
3	ATP	P	702	4	-	1/18/38/38	0/3/3/3
3	ATP	B	702	4	-	2/18/38/38	0/3/3/3
3	ATP	X	701	-	-	8/18/38/38	0/3/3/3
3	ATP	N	702	4	-	4/18/38/38	0/3/3/3
3	ATP	M	702	-	-	5/18/38/38	0/3/3/3
3	ATP	U	701	4	-	0/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	ADP	Q	701	-	-	3/12/32/32	0/3/3/3
3	ATP	R	701	4	-	5/18/38/38	0/3/3/3
3	ATP	W	702	-	-	3/18/38/38	0/3/3/3
3	ATP	P	701	4	-	2/18/38/38	0/3/3/3
5	ADP	U	702	-	-	5/12/32/32	0/3/3/3
3	ATP	T	701	4	-	4/18/38/38	0/3/3/3
3	ATP	E	701	4	-	4/18/38/38	0/3/3/3
3	ATP	C	701	4	-	2/18/38/38	0/3/3/3
3	ATP	E	702	4	-	2/18/38/38	0/3/3/3
3	ATP	O	702	-	-	4/18/38/38	0/3/3/3
3	ATP	D	702	4	-	3/18/38/38	0/3/3/3
3	ATP	D	701	4	-	7/18/38/38	0/3/3/3
3	ATP	Q	702	4	-	3/18/38/38	0/3/3/3
3	ATP	S	701	-	-	3/18/38/38	0/3/3/3
3	ATP	V	702	-	-	5/18/38/38	0/3/3/3
3	ATP	G	701	4	-	1/18/38/38	0/3/3/3
3	ATP	X	702	-	-	6/18/38/38	0/3/3/3
3	ATP	L	701	4	-	1/18/38/38	0/3/3/3
3	ATP	H	701	4	-	2/18/38/38	0/3/3/3
3	ATP	H	702	4	-	2/18/38/38	0/3/3/3
3	ATP	L	702	4	-	4/18/38/38	0/3/3/3
3	ATP	I	701	4	-	4/18/38/38	0/3/3/3
3	ATP	A	701	4	-	0/18/38/38	0/3/3/3
3	ATP	M	701	4	-	4/18/38/38	0/3/3/3
3	ATP	R	702	4	-	3/18/38/38	0/3/3/3
3	ATP	F	702	4	-	7/18/38/38	0/3/3/3
3	ATP	C	702	4	-	5/18/38/38	0/3/3/3
3	ATP	B	701	4	-	6/18/38/38	0/3/3/3
3	ATP	S	702	-	-	0/18/38/38	0/3/3/3
3	ATP	F	701	4	-	4/18/38/38	0/3/3/3
3	ATP	N	701	4	-	5/18/38/38	0/3/3/3
3	ATP	T	702	-	-	1/18/38/38	0/3/3/3
3	ATP	O	701	4	-	2/18/38/38	0/3/3/3
5	ADP	W	701	-	-	5/12/32/32	0/3/3/3
3	ATP	K	701	4	-	1/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ATP	K	702	4	-	1/18/38/38	0/3/3/3
3	ATP	G	702	4	-	0/18/38/38	0/3/3/3

There are no bond length outliers.

The worst 5 of 85 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	O	702	ATP	C3'-C2'-C1'	3.13	105.70	100.98
3	W	702	ATP	C3'-C2'-C1'	3.12	105.68	100.98
3	G	702	ATP	C3'-C2'-C1'	3.03	105.55	100.98
3	N	701	ATP	C3'-C2'-C1'	3.01	105.52	100.98
3	P	702	ATP	C3'-C2'-C1'	2.99	105.48	100.98

There are no chirality outliers.

5 of 161 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	702	ATP	C5'-O5'-PA-O1A
3	A	702	ATP	C5'-O5'-PA-O2A
3	B	701	ATP	C5'-O5'-PA-O2A
3	B	701	ATP	C5'-O5'-PA-O3A
3	B	701	ATP	C3'-C4'-C5'-O5'

There are no ring outliers.

38 monomers are involved in 79 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	J	701	ATP	1	0
3	I	702	ATP	4	0
3	J	702	ATP	2	0
3	A	702	ATP	3	0
3	V	701	ATP	1	0
3	P	702	ATP	1	0
3	B	702	ATP	4	0
3	X	701	ATP	1	0
3	N	702	ATP	2	0
3	M	702	ATP	1	0
3	U	701	ATP	1	0
3	W	702	ATP	2	0
3	P	701	ATP	5	0
5	U	702	ADP	9	0

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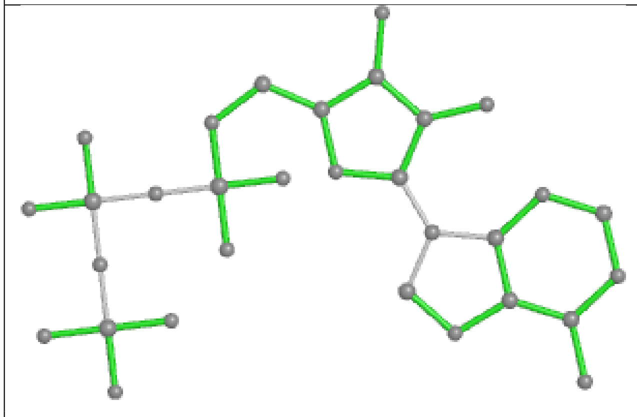
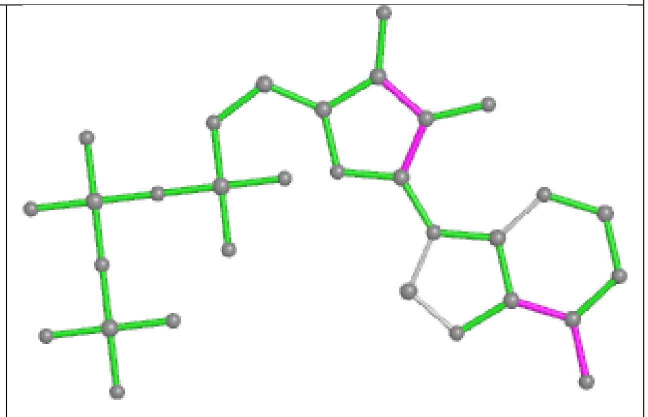
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	701	ATP	3	0
3	C	701	ATP	3	0
3	E	702	ATP	1	0
3	O	702	ATP	1	0
3	D	702	ATP	1	0
3	D	701	ATP	1	0
3	S	701	ATP	2	0
3	V	702	ATP	2	0
3	X	702	ATP	1	0
3	L	701	ATP	2	0
3	H	701	ATP	2	0
3	H	702	ATP	1	0
3	L	702	ATP	4	0
3	I	701	ATP	2	0
3	M	701	ATP	1	0
3	R	702	ATP	1	0
3	F	702	ATP	1	0
3	C	702	ATP	3	0
3	B	701	ATP	2	0
3	F	701	ATP	2	0
3	N	701	ATP	1	0
3	K	701	ATP	1	0
3	K	702	ATP	1	0
3	G	702	ATP	3	0

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

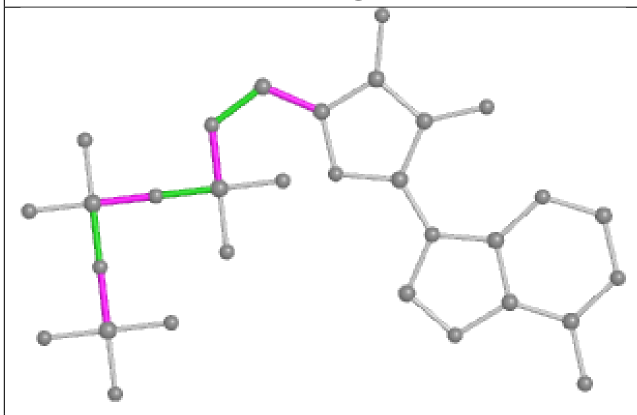
Ligand ATP J 701



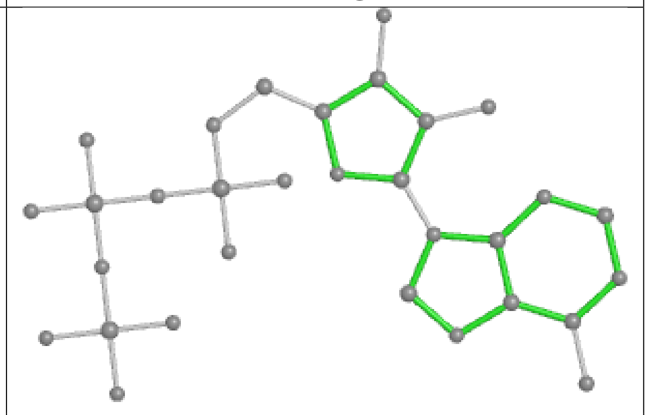
Bond lengths



Bond angles

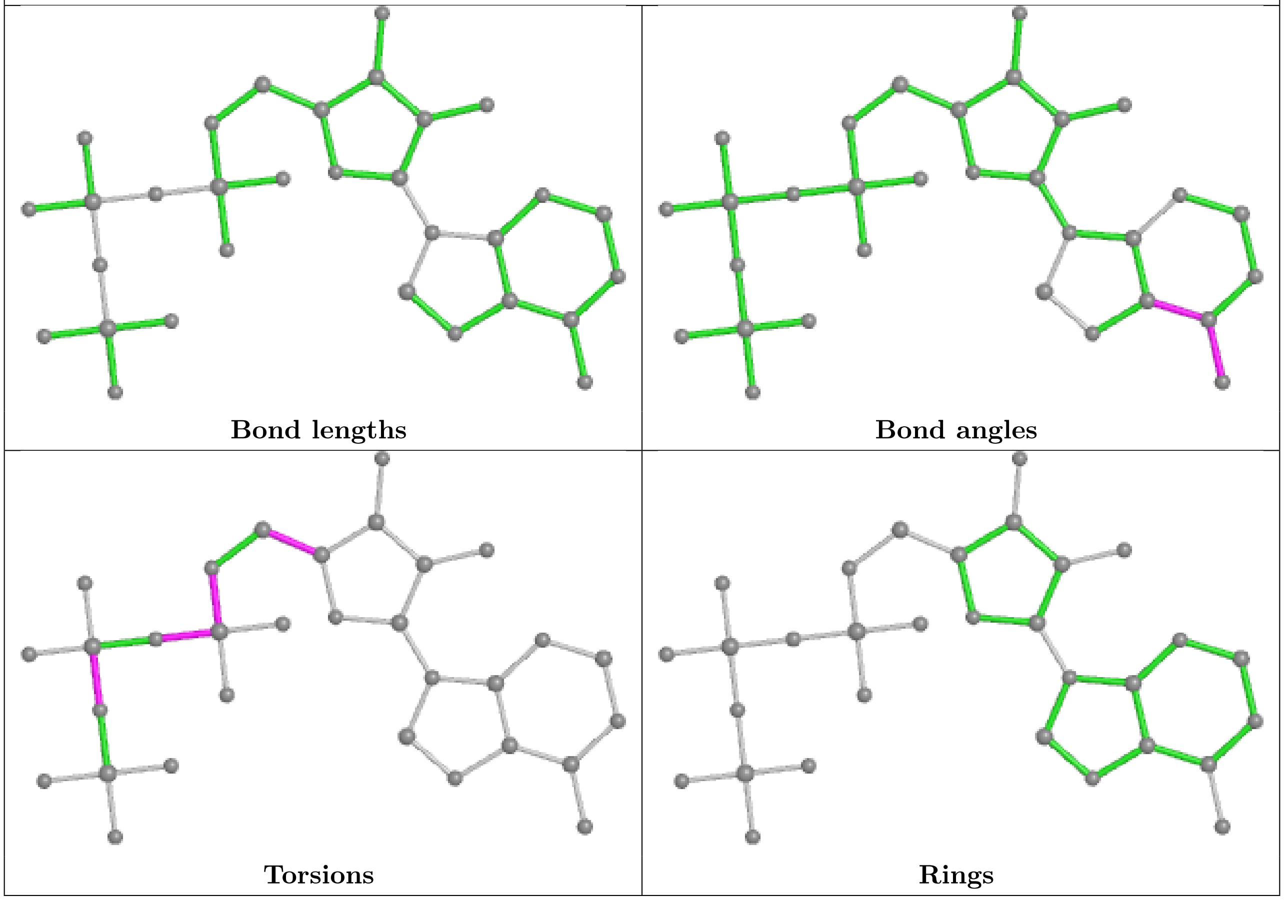


Torsions



Rings

Ligand ATP I 702



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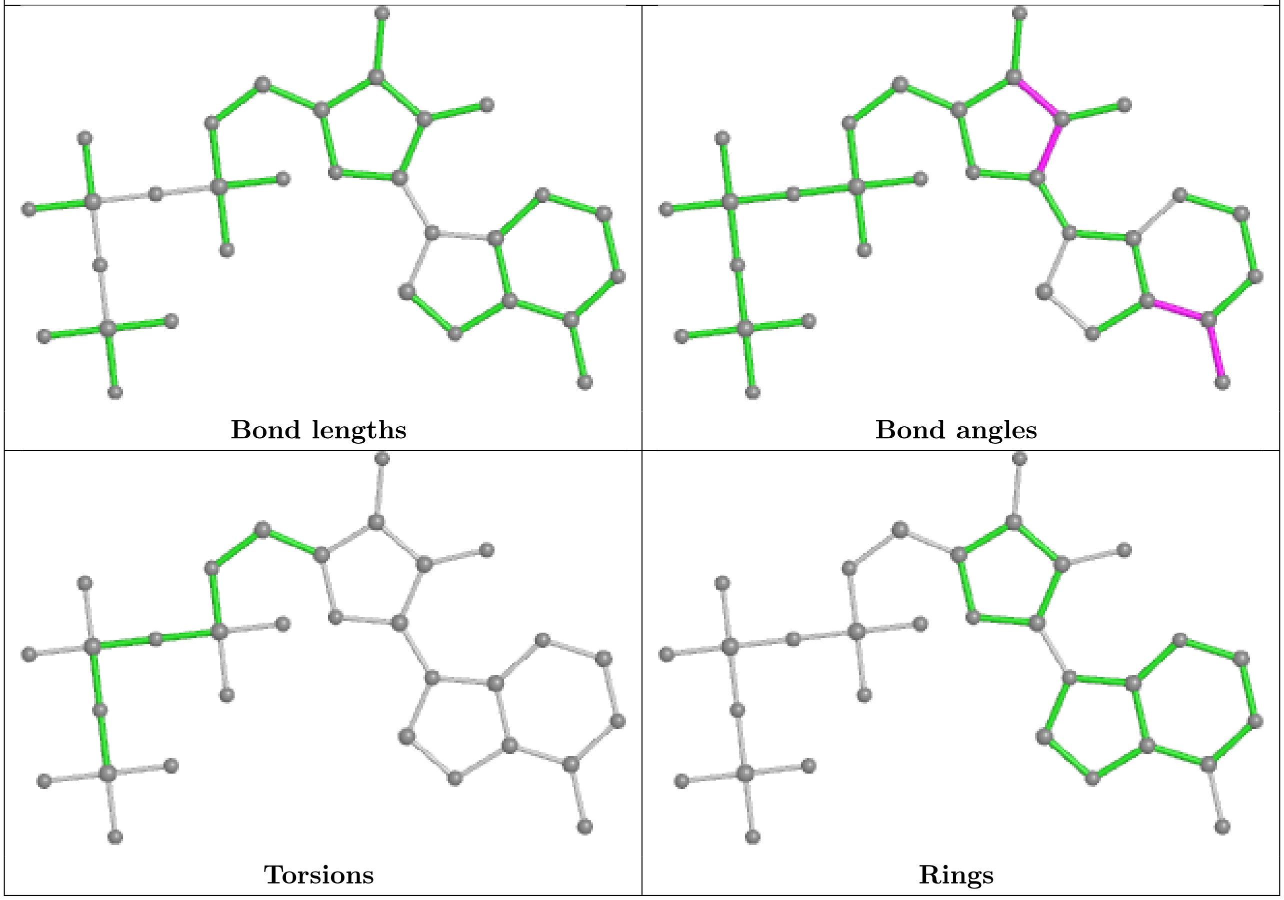
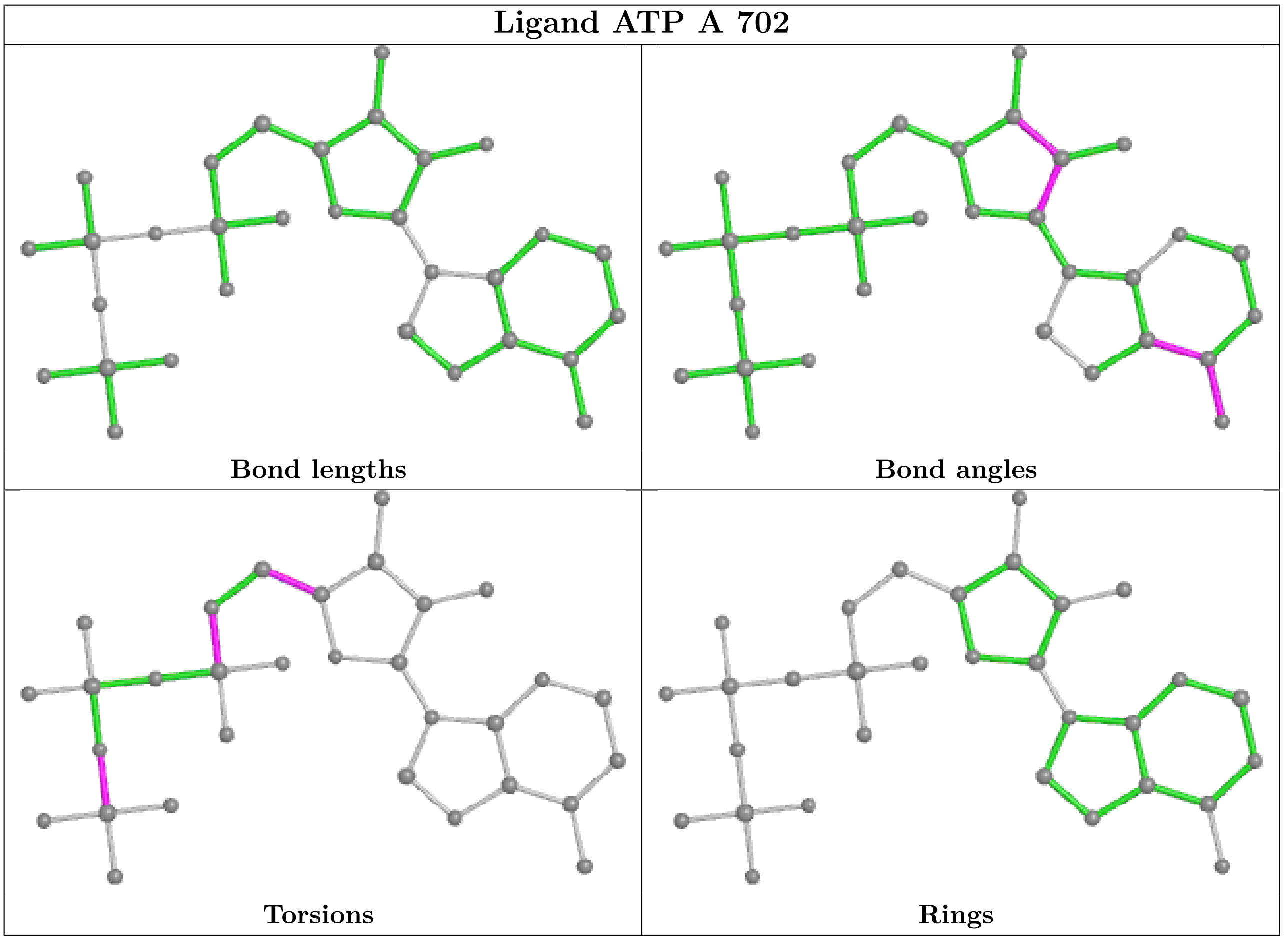
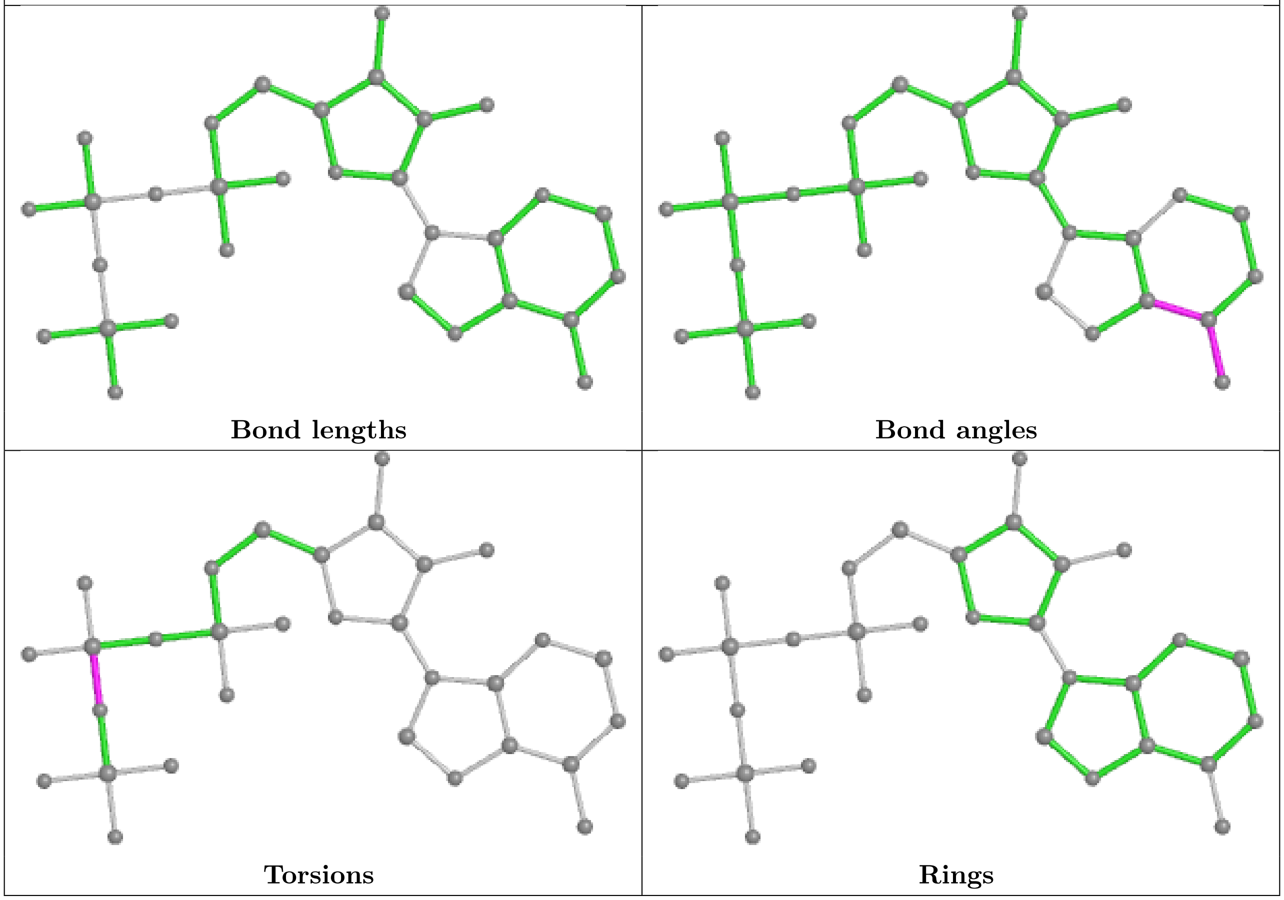



Ligand ATP A 702
Bond lengths
Bond angles
Torsions
Rings

Ligand ATP V 701



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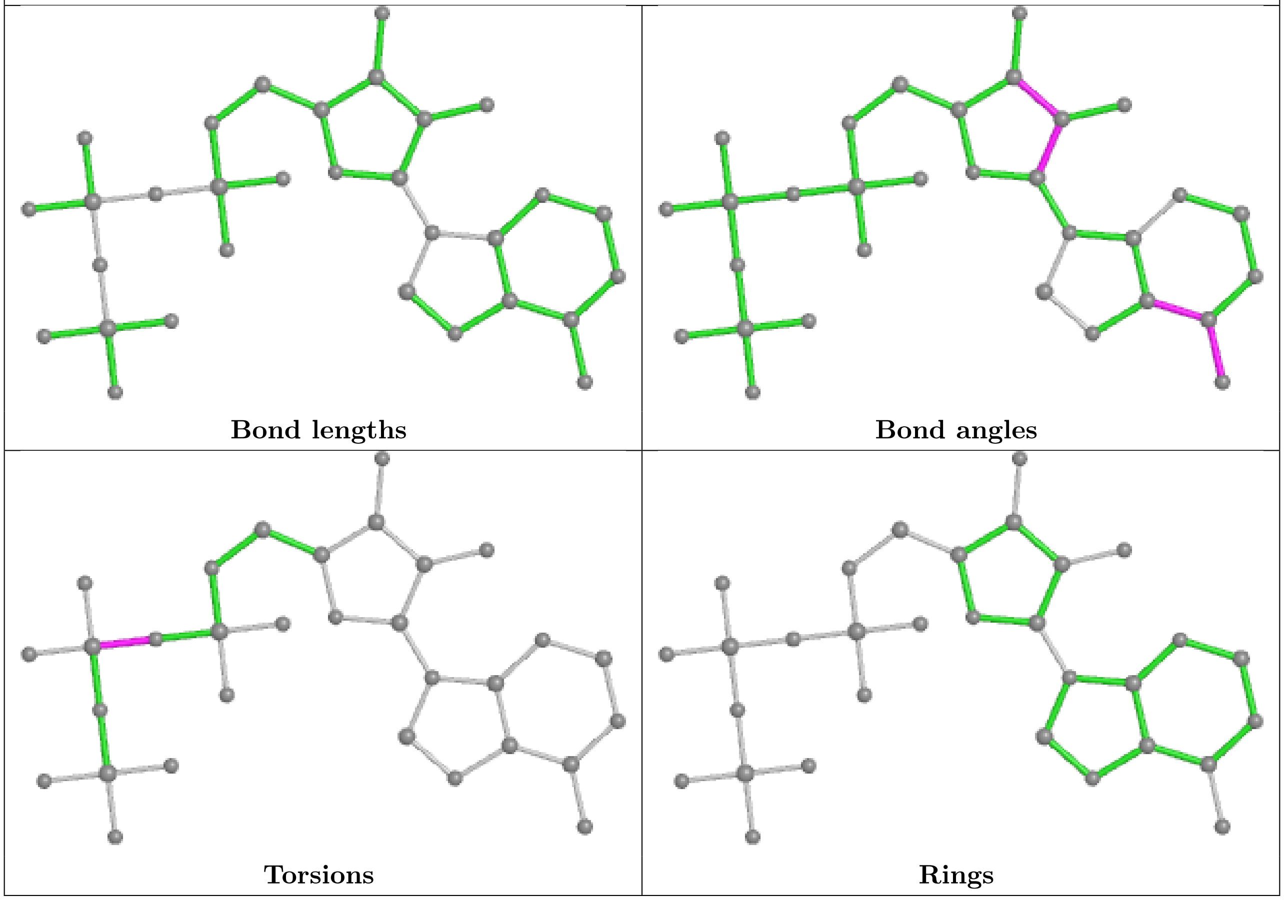

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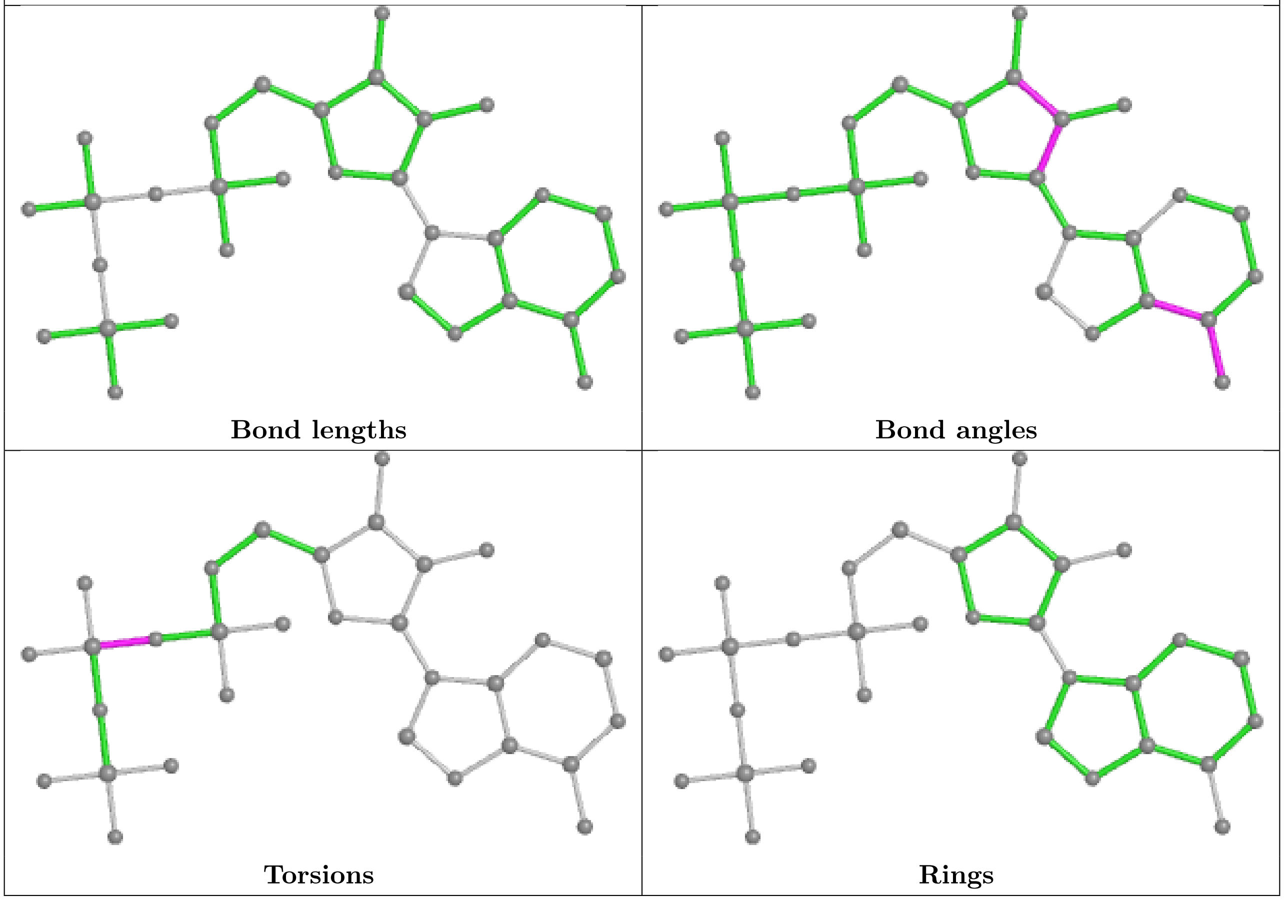

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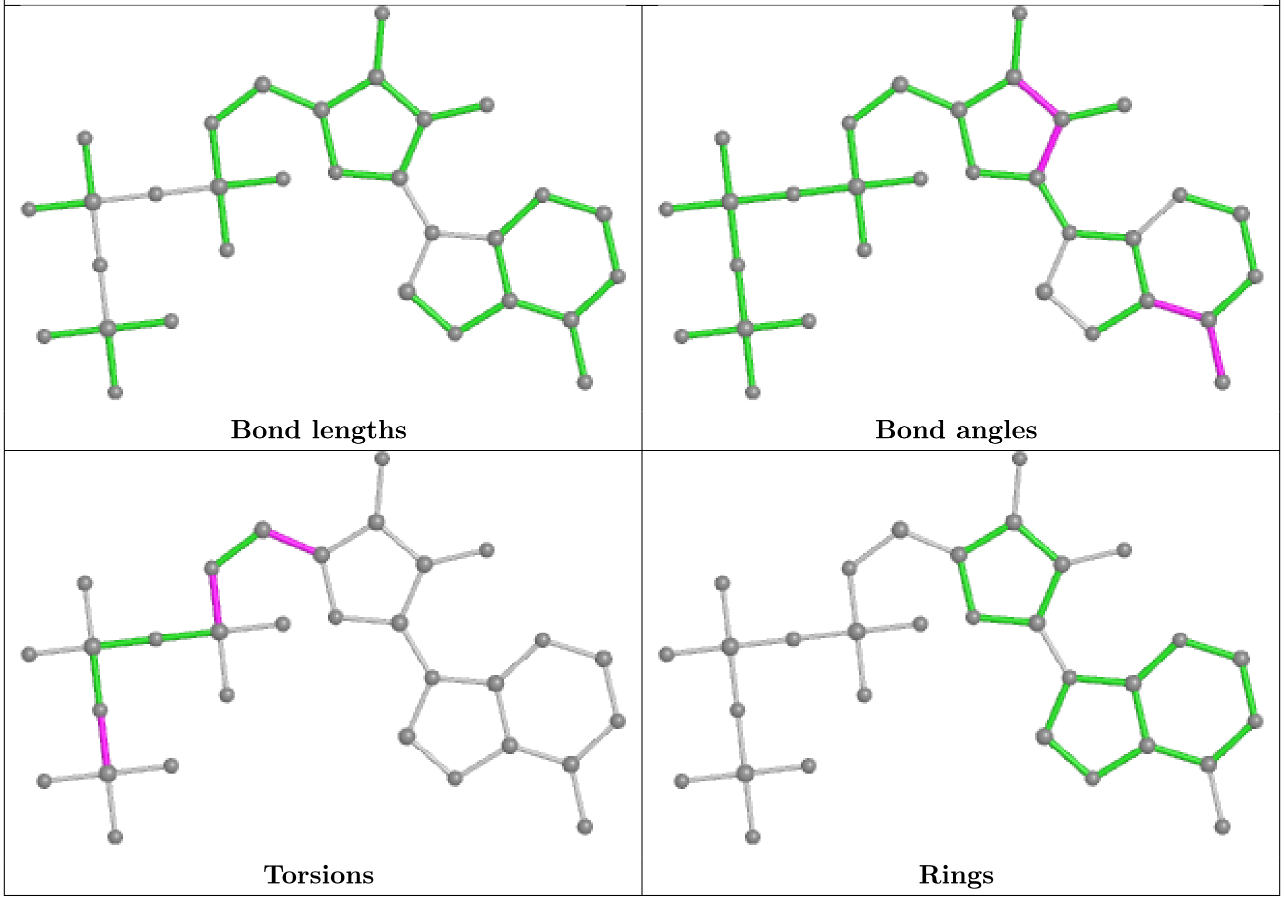

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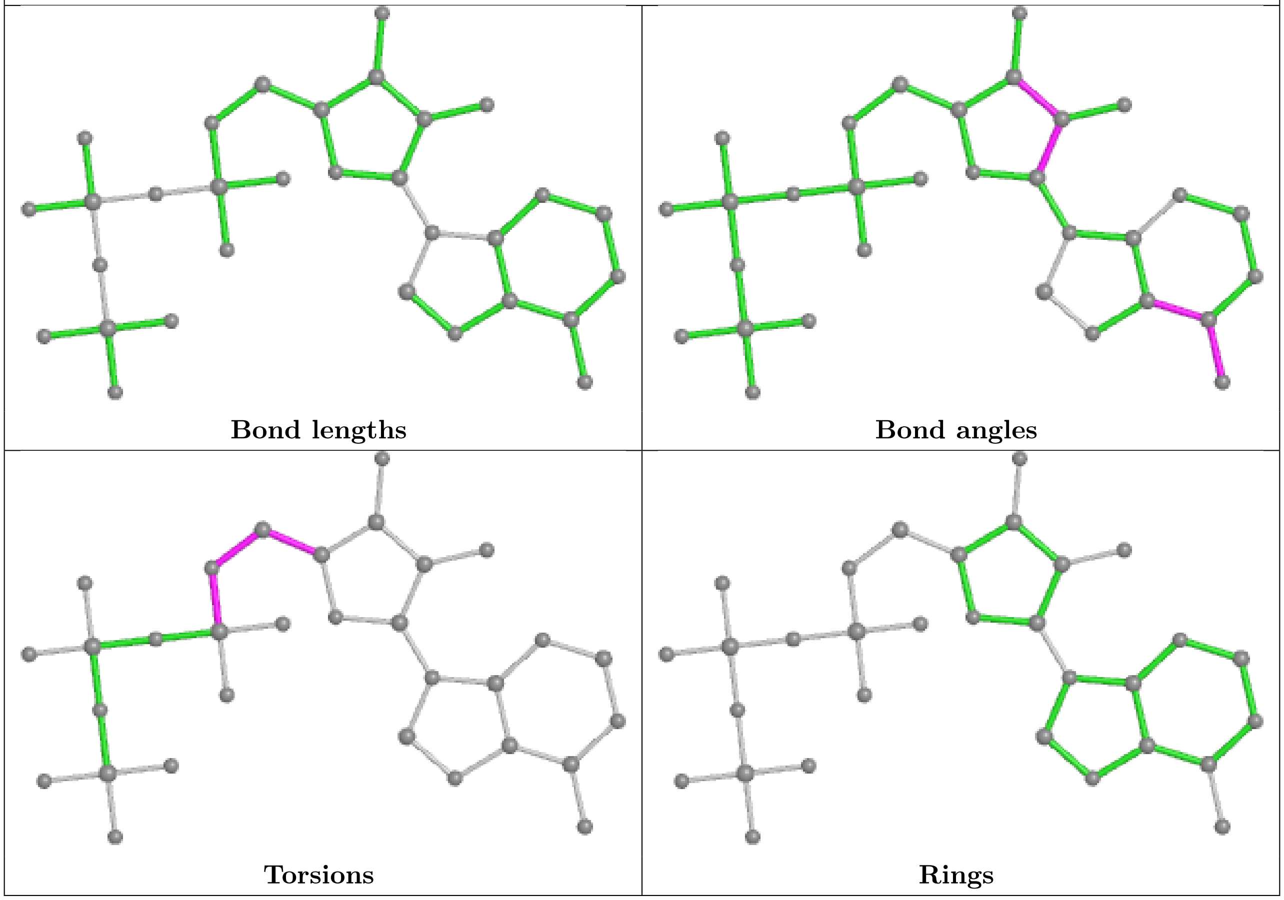

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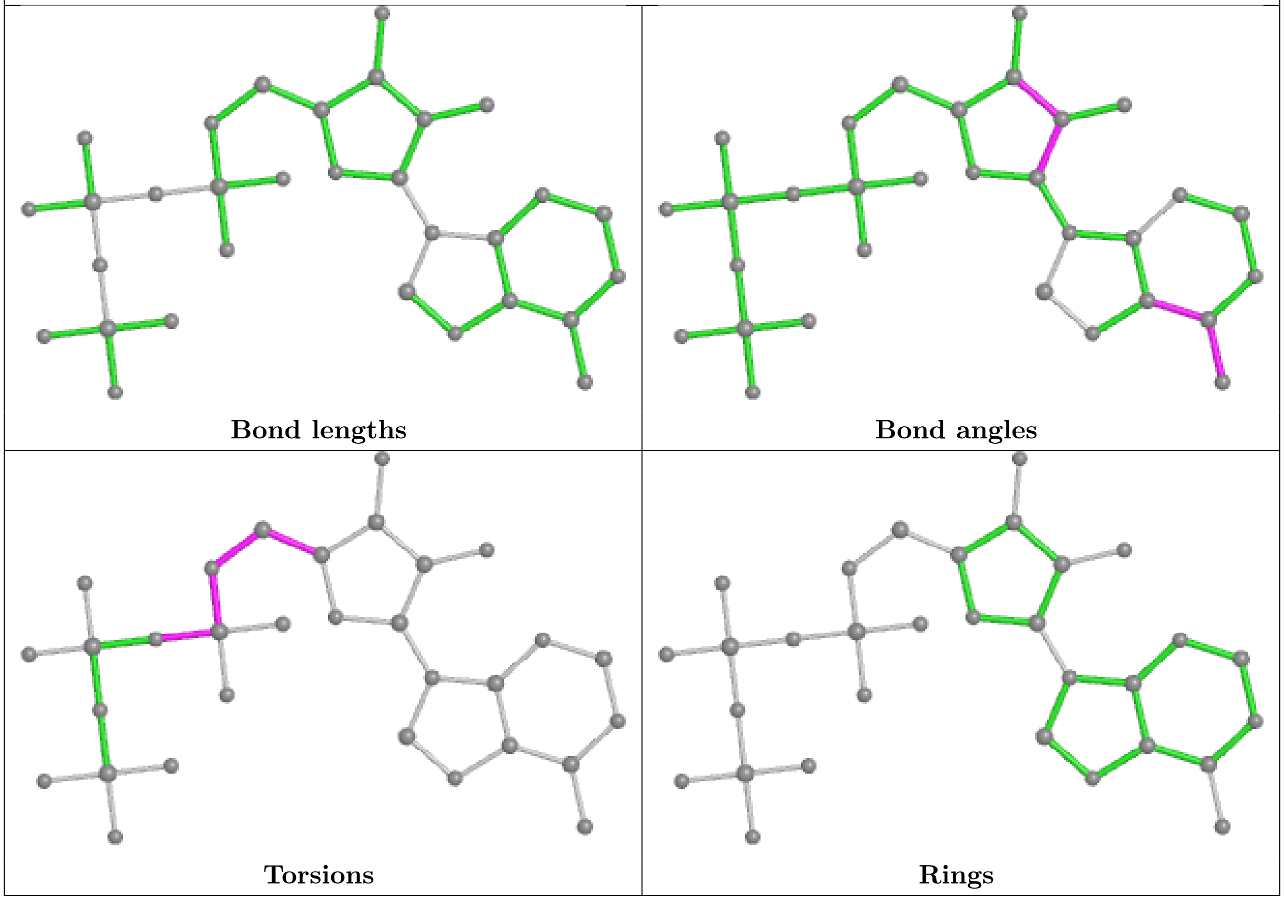
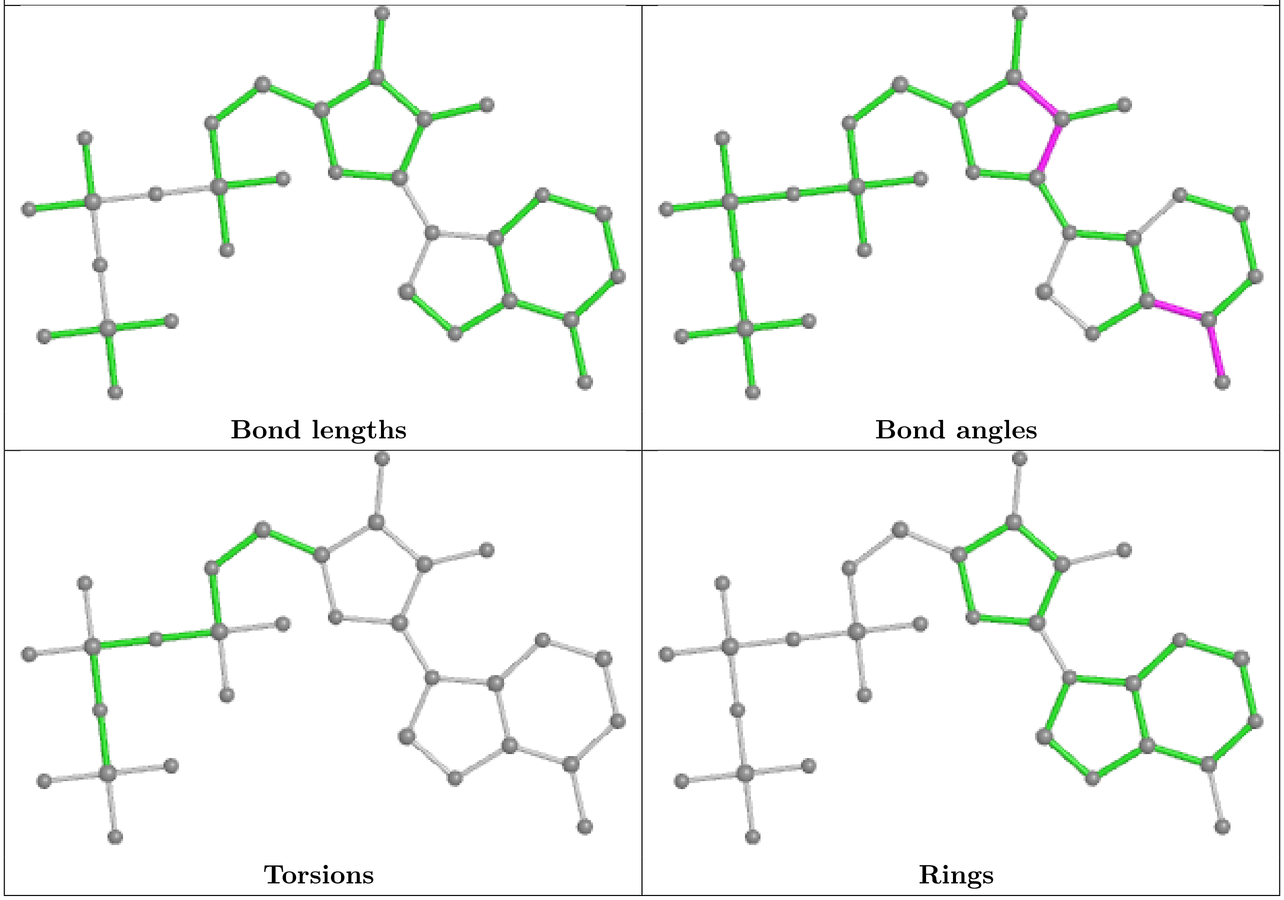


Ligand ATP U 701



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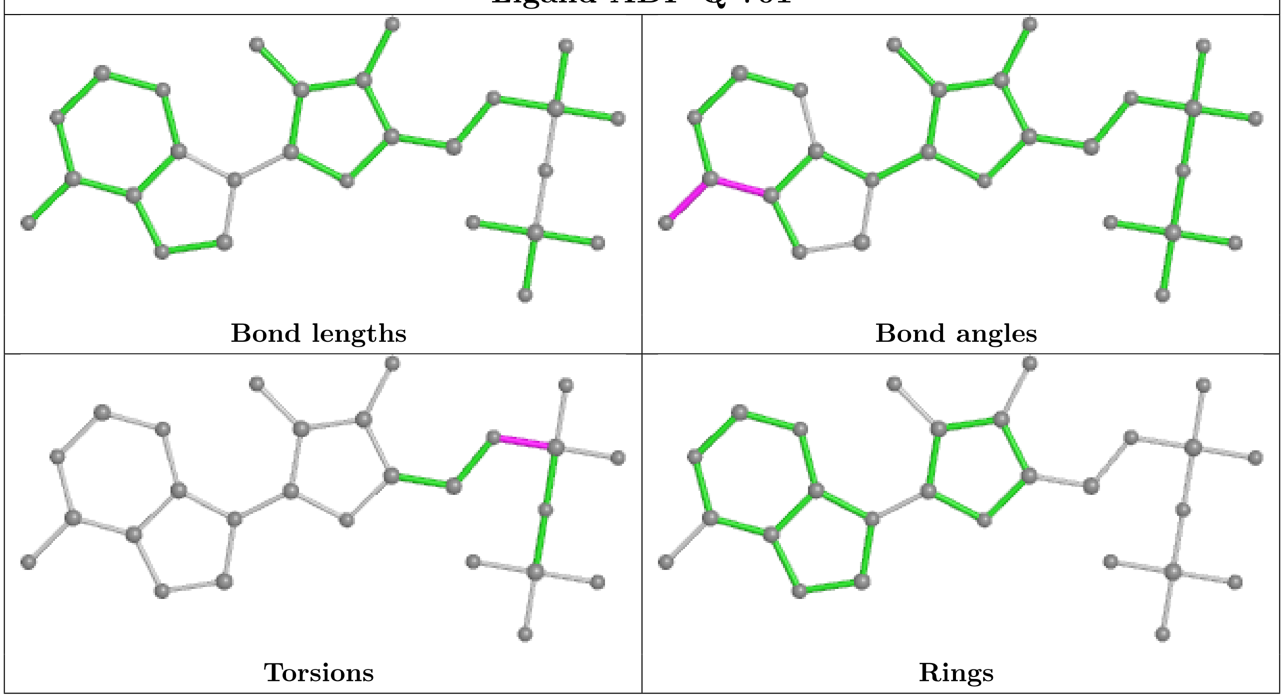

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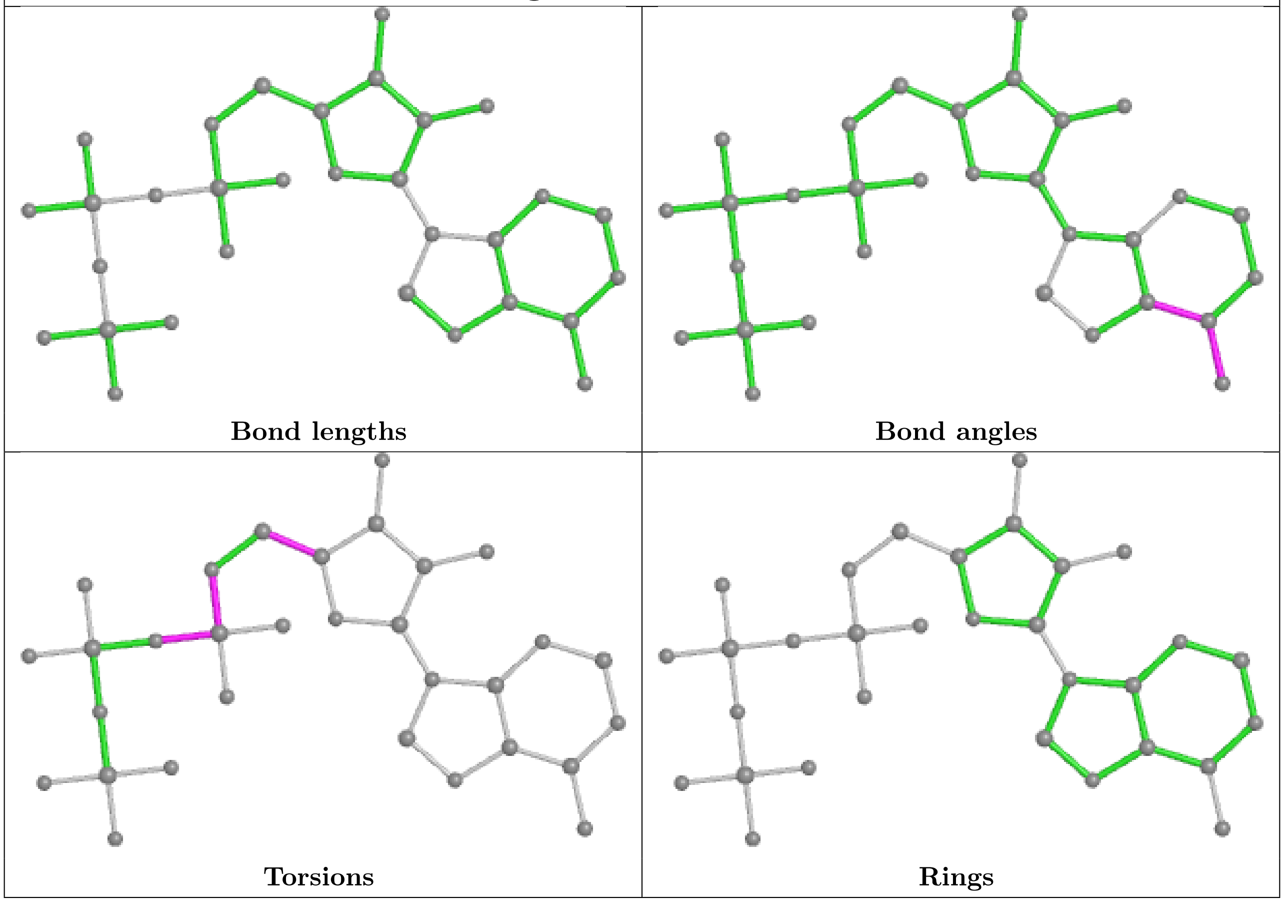

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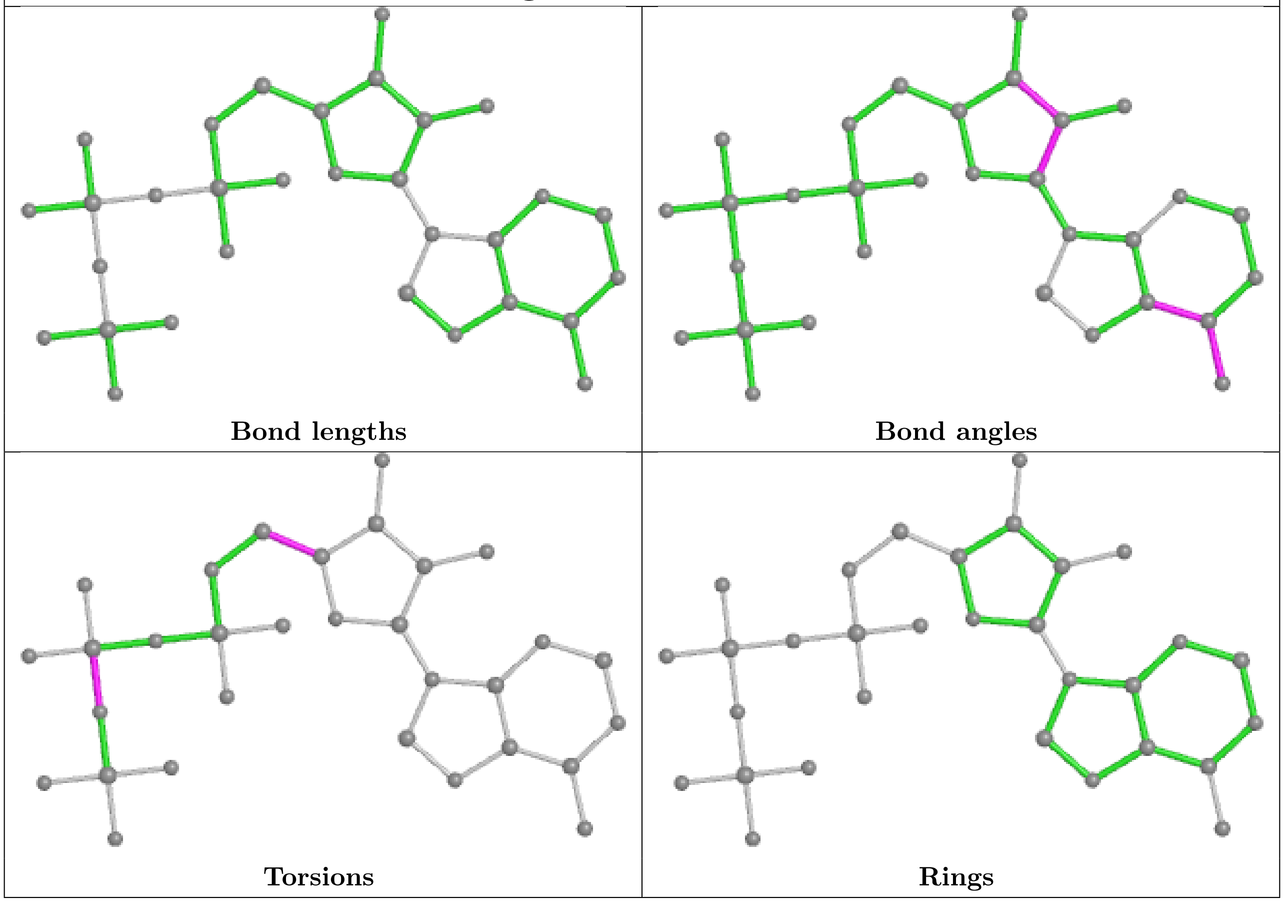

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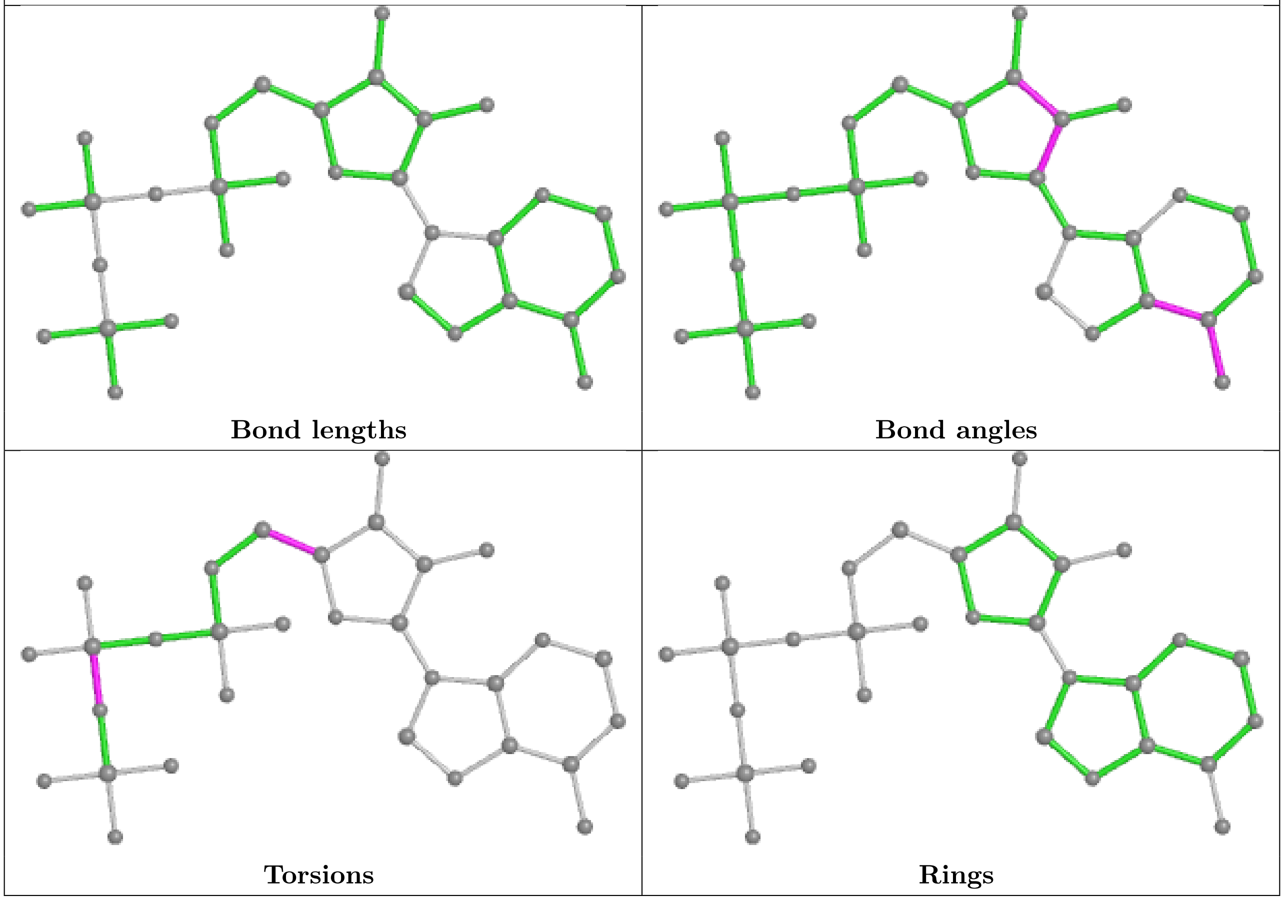

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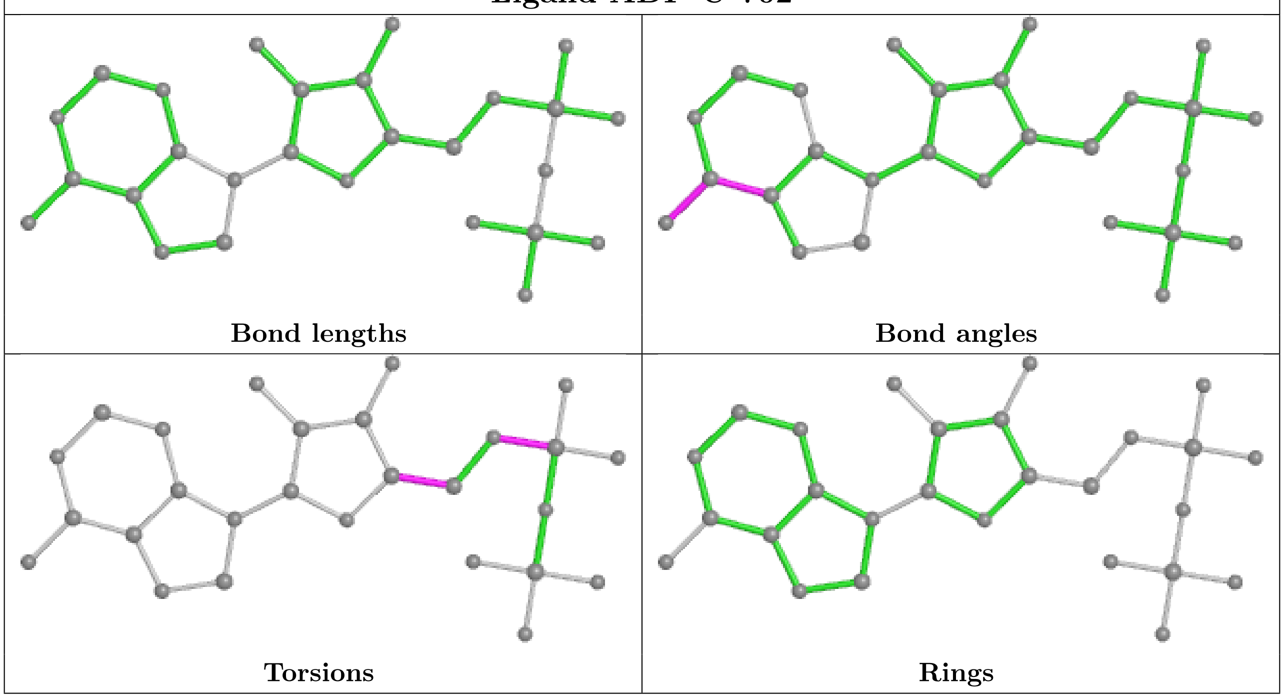

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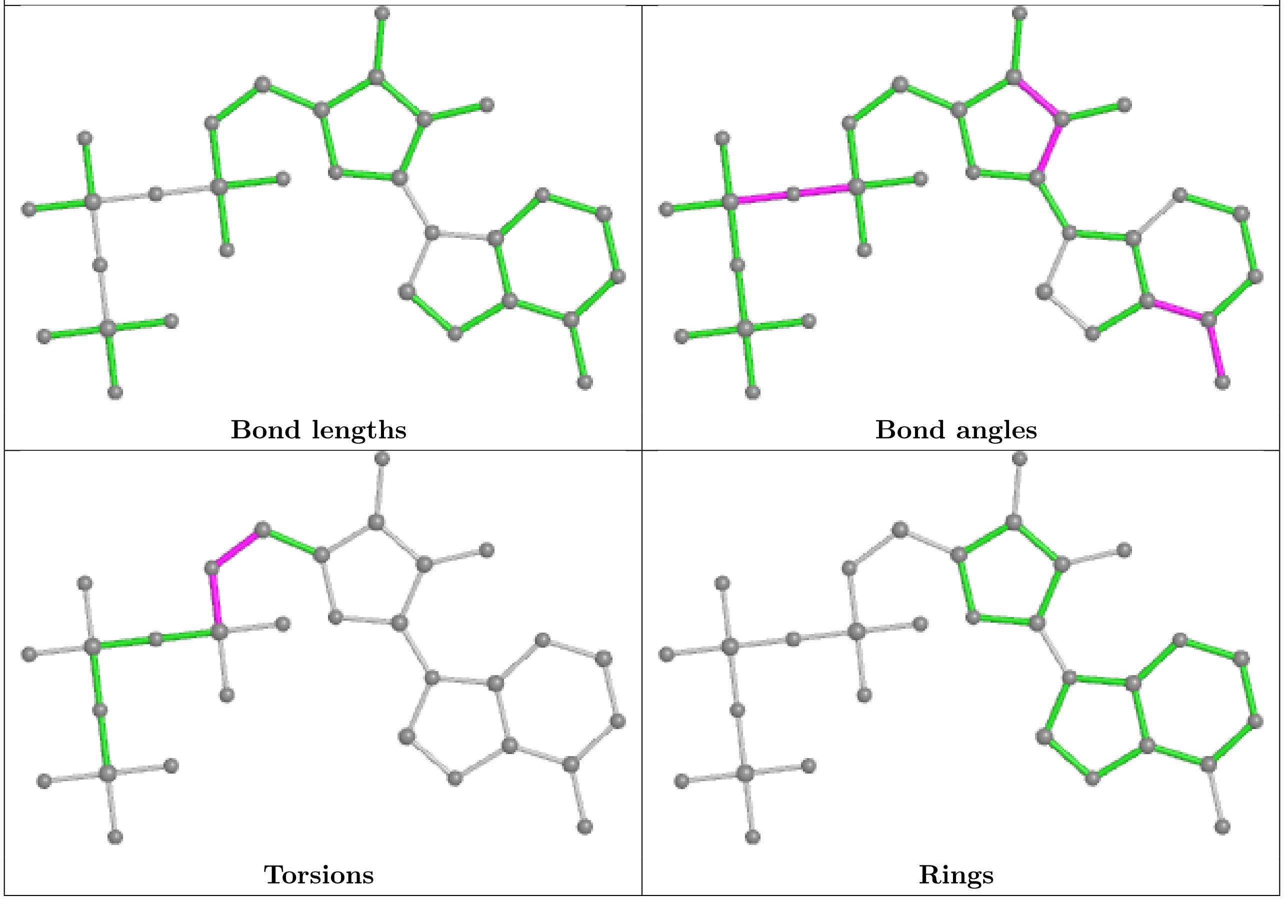
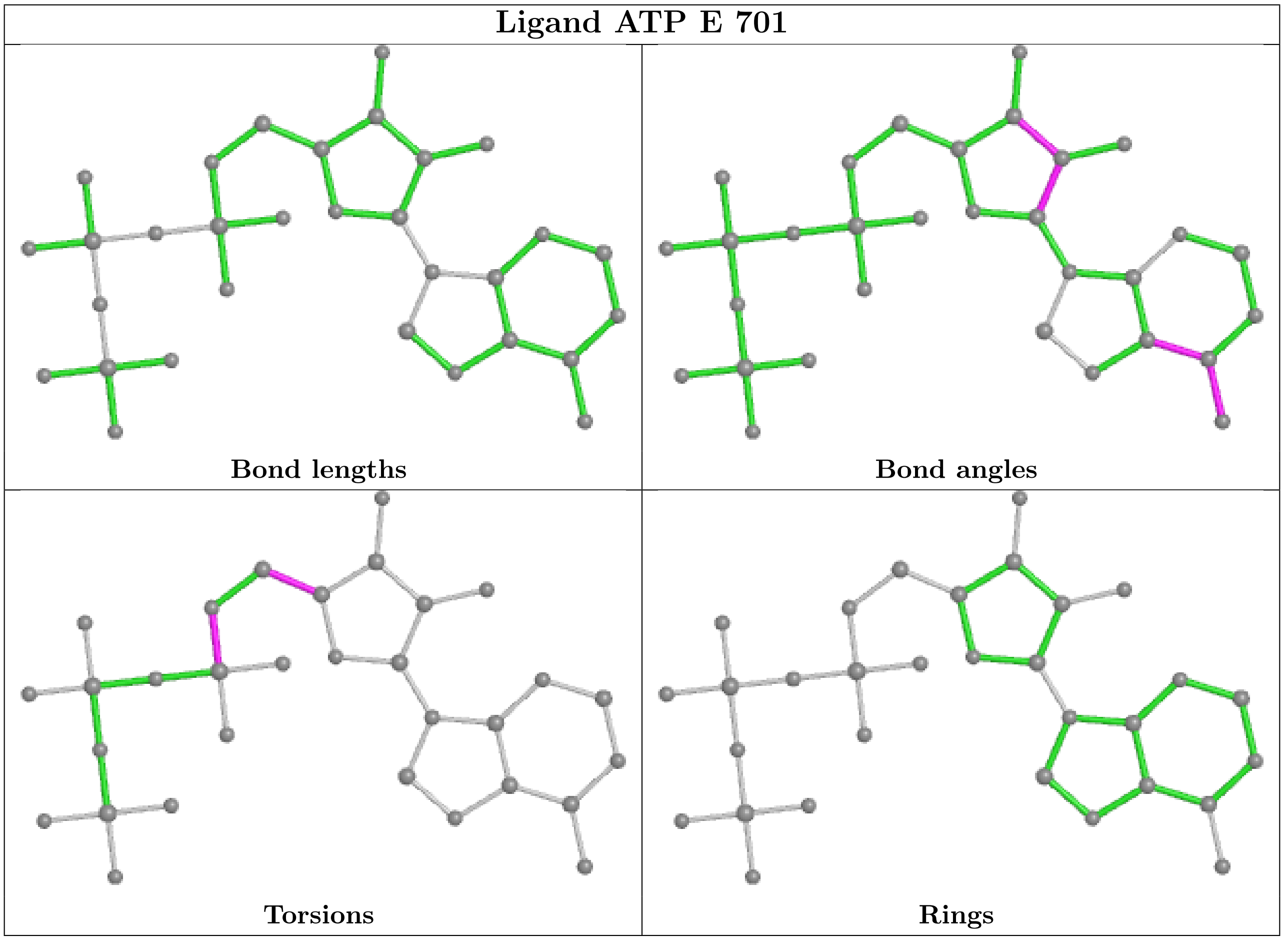
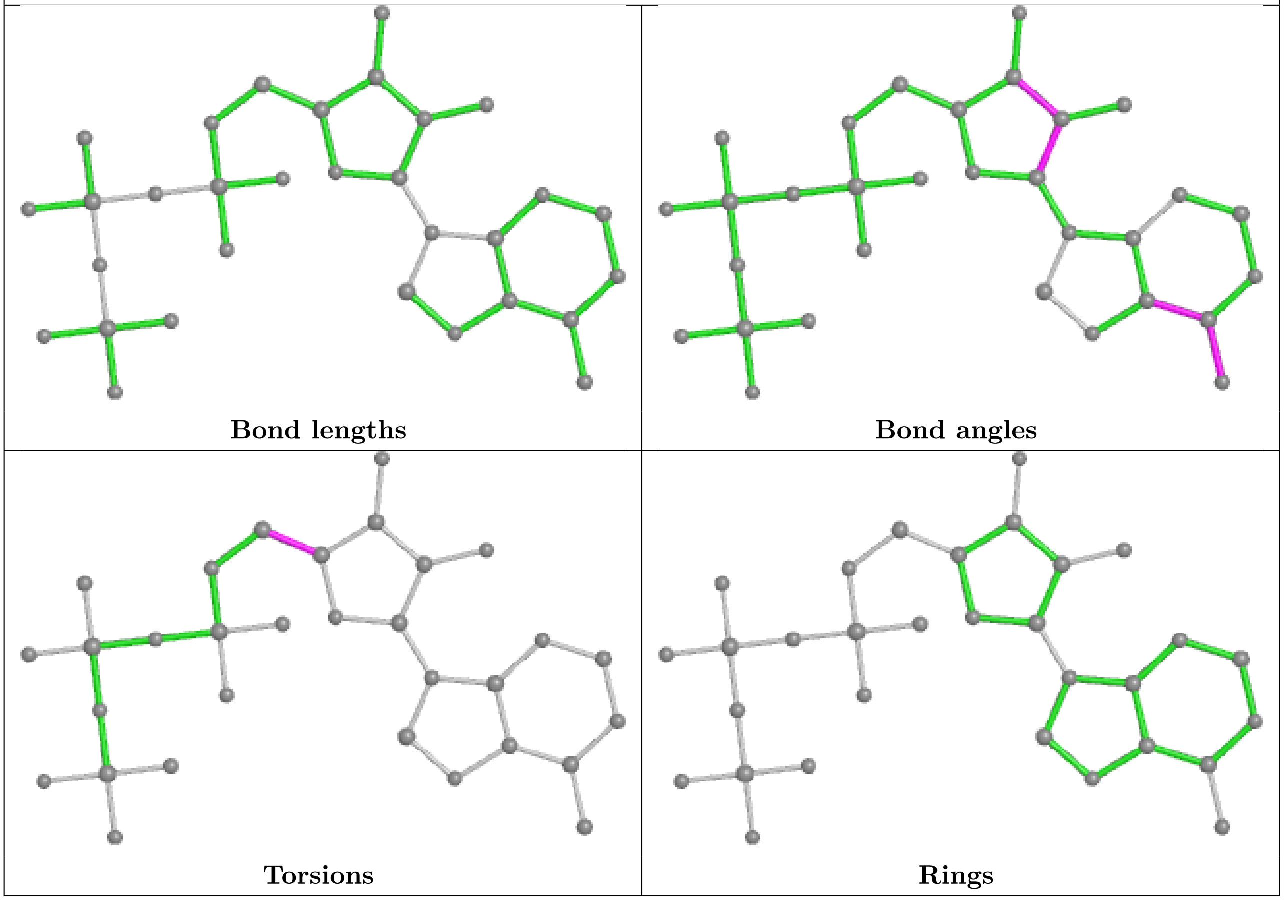



Ligand ATP E 701
Bond lengths
Bond angles
Torsions
Rings

Ligand ATP C 701



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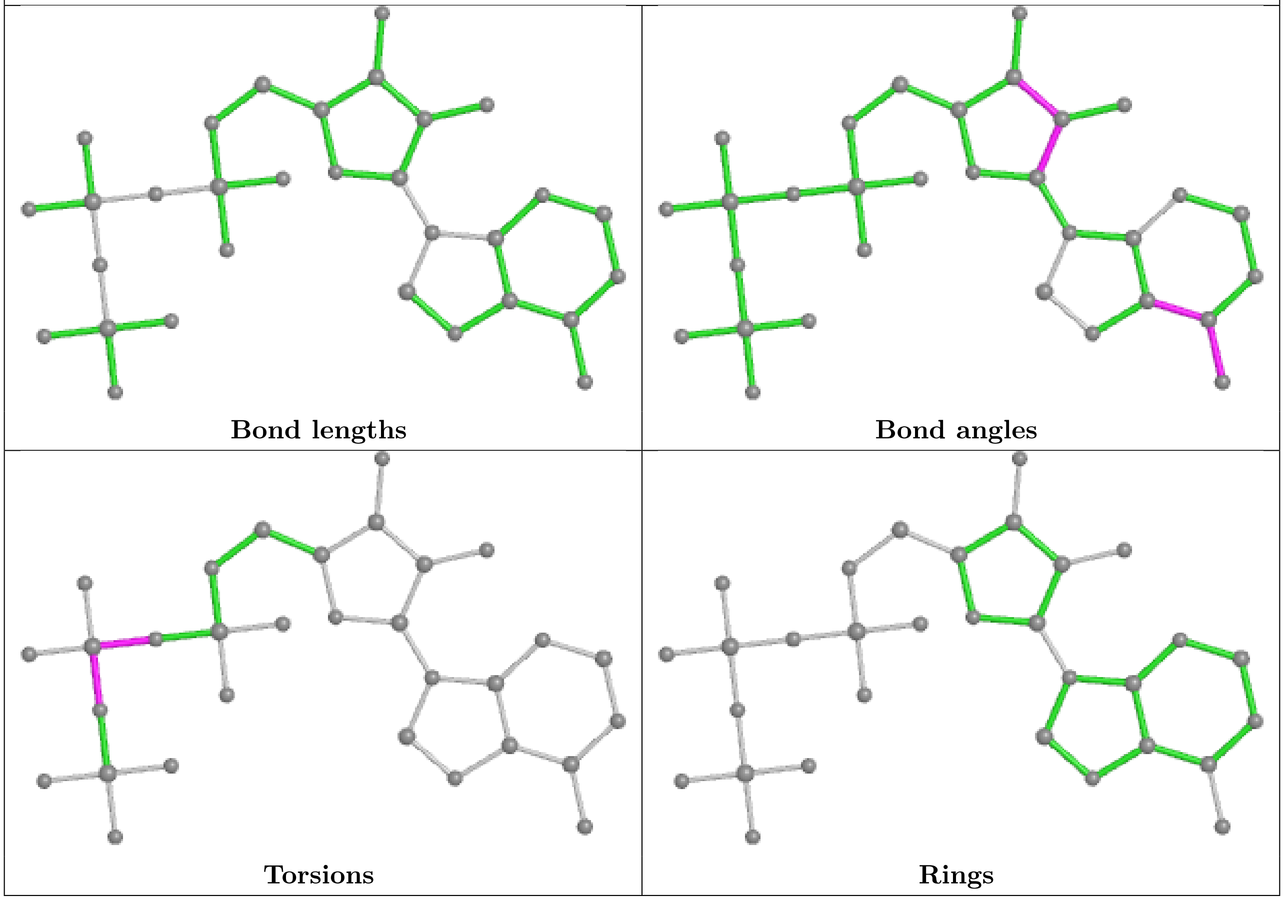
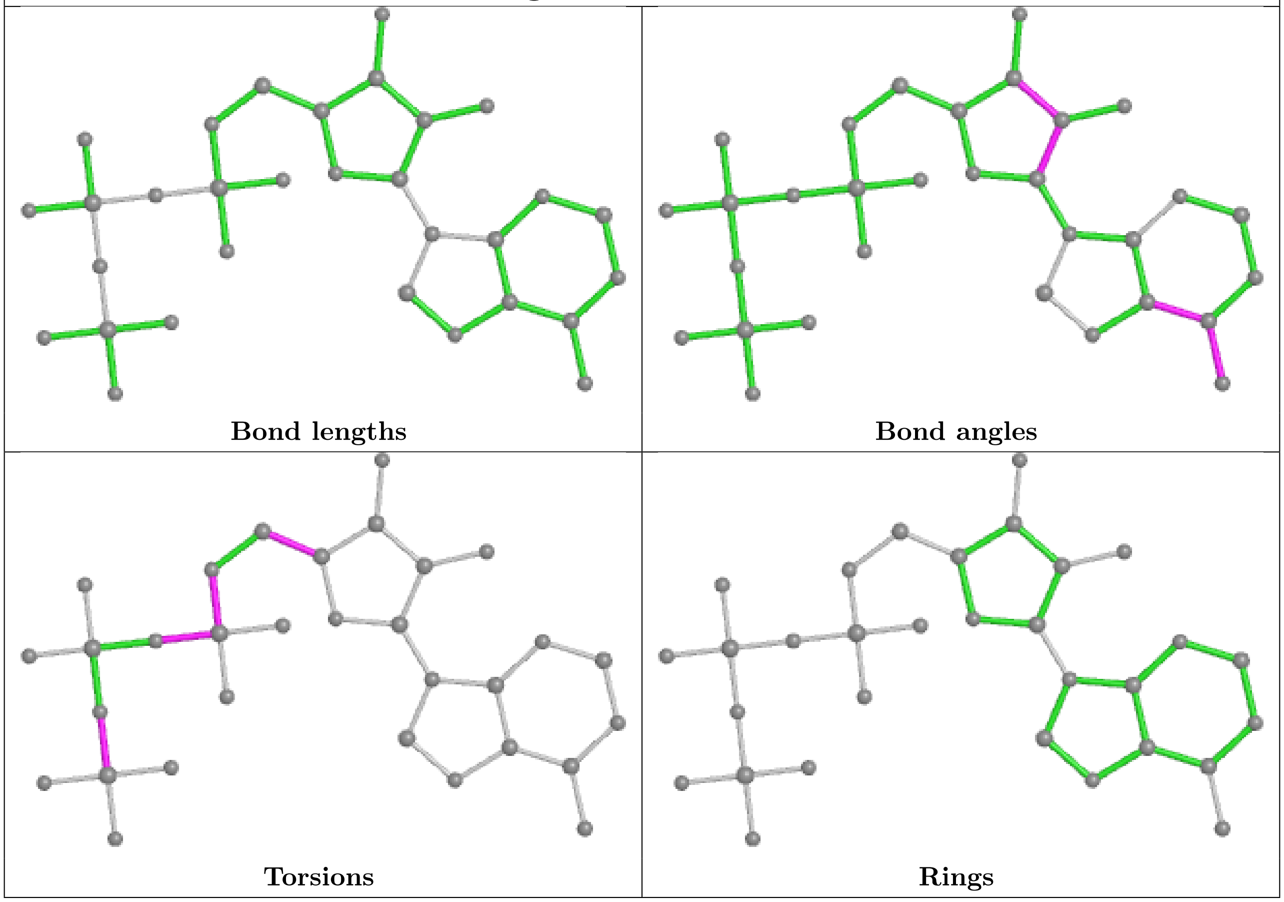
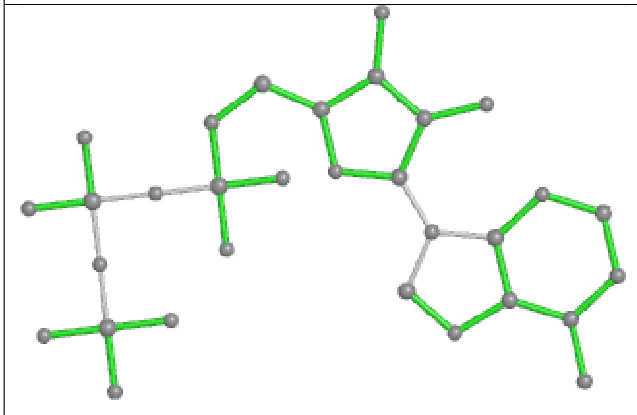
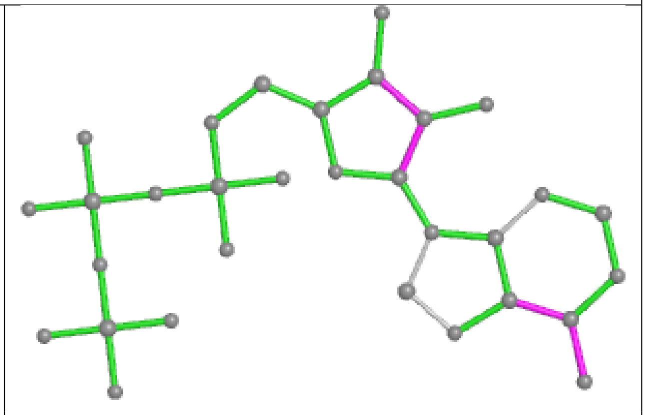
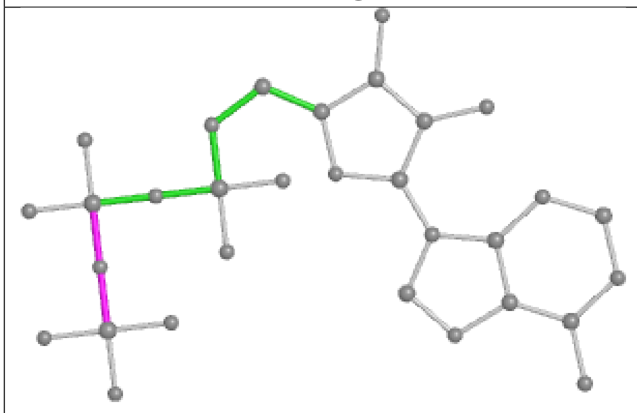
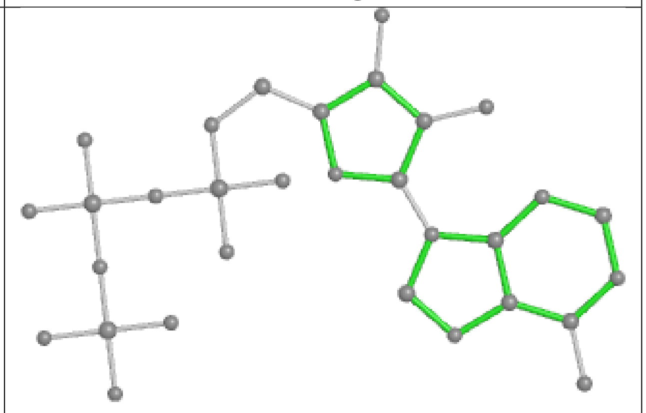
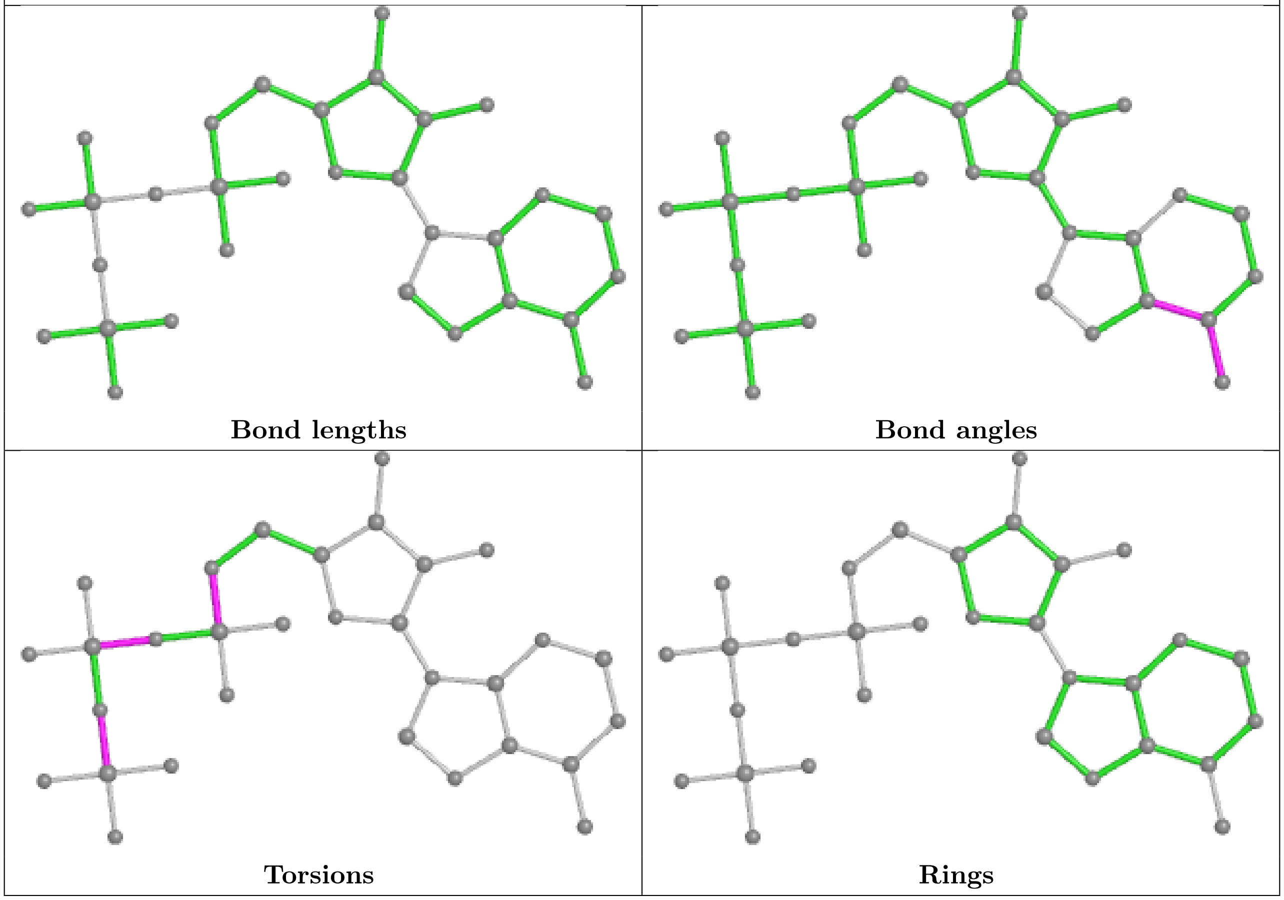


Ligand ATP O 702

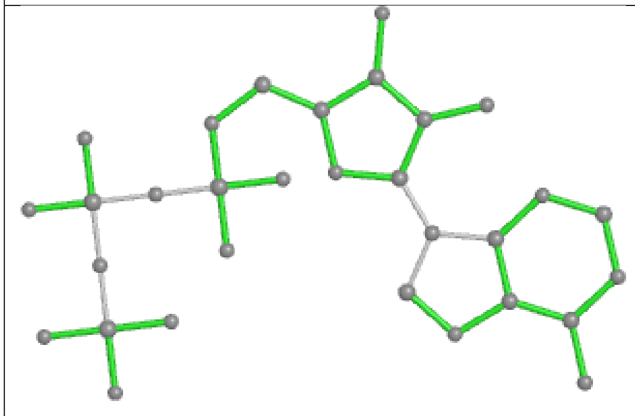


Ligand ATP D 702	
 Bond lengths	 Bond angles
 Torsions	 Rings

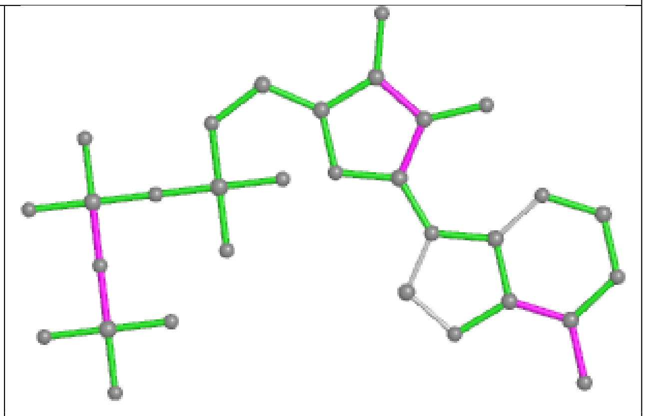
Ligand ATP D 701



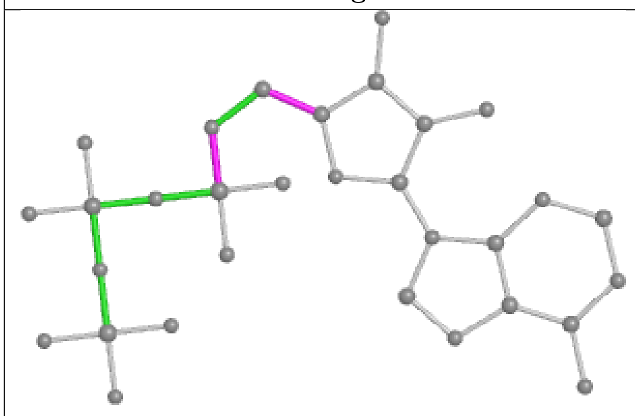
Ligand ATP Q 702



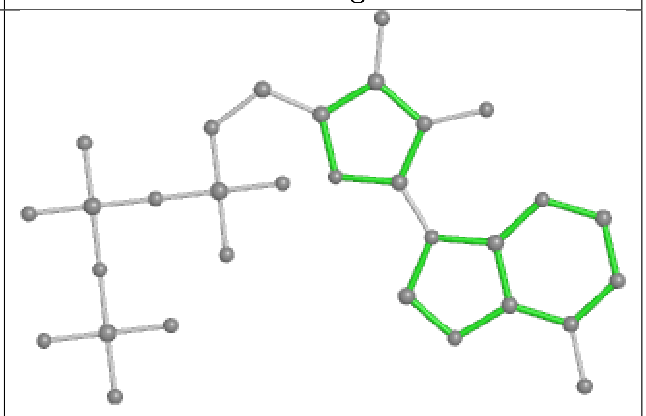
Bond lengths



Bond angles

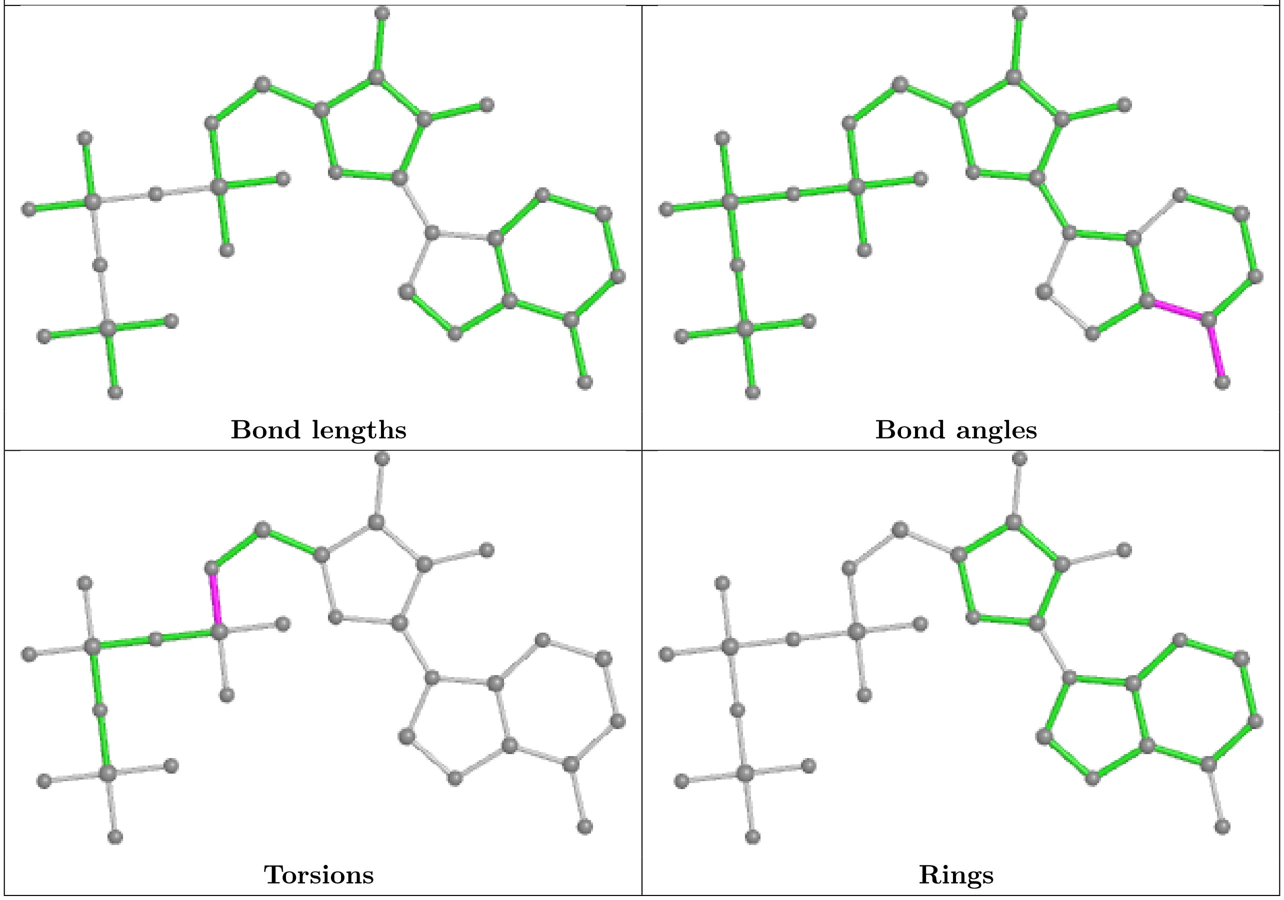


Torsions

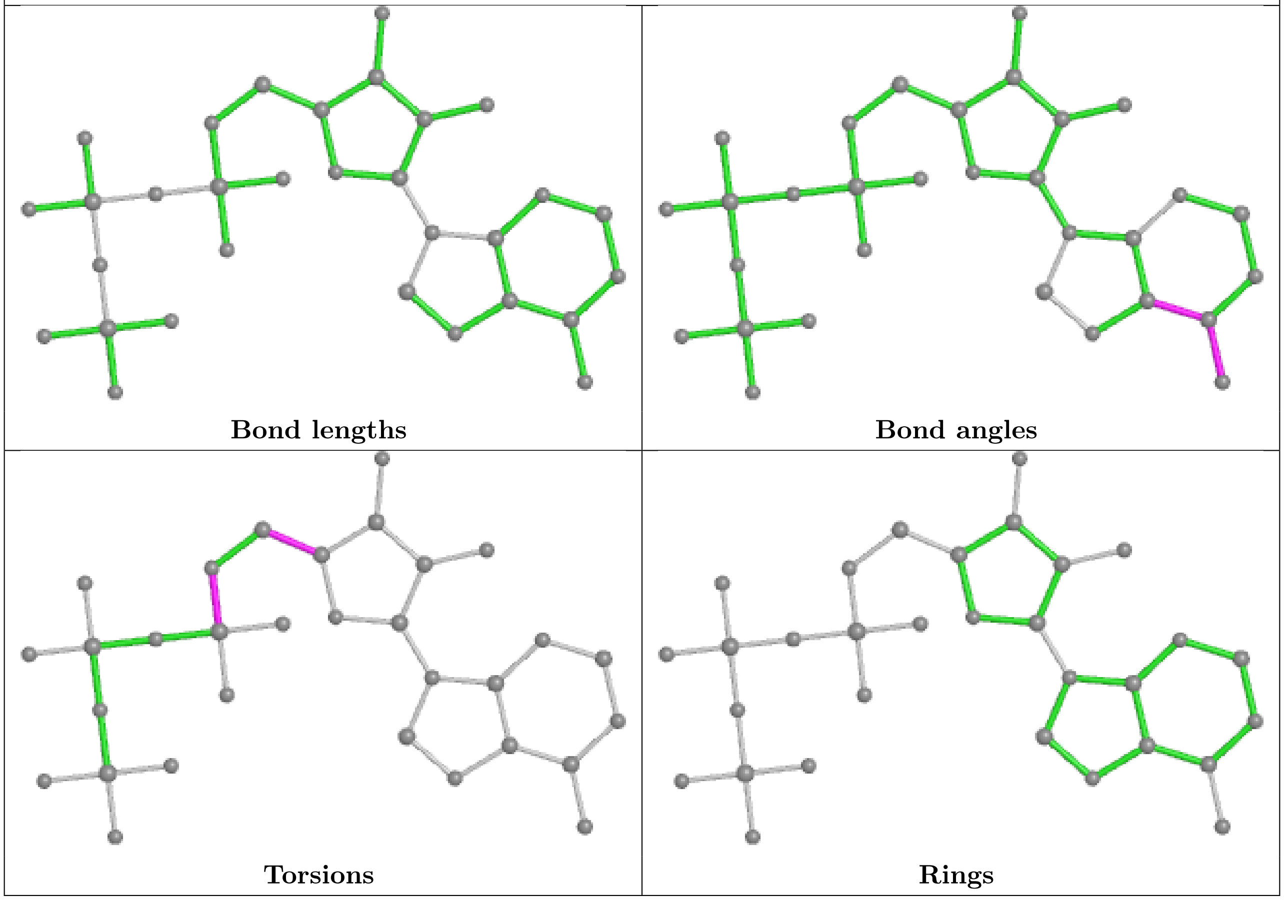


Rings

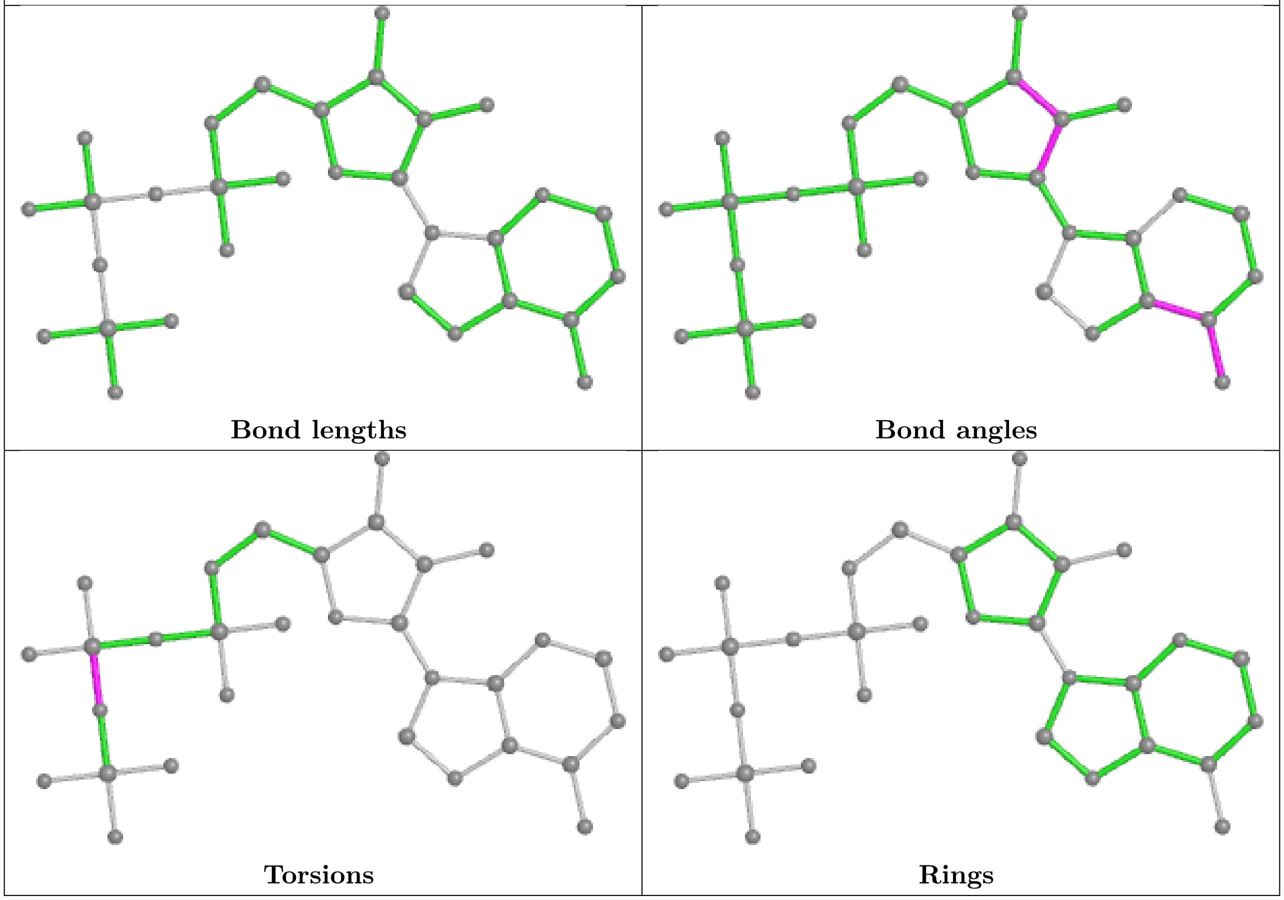
Ligand ATP S 701

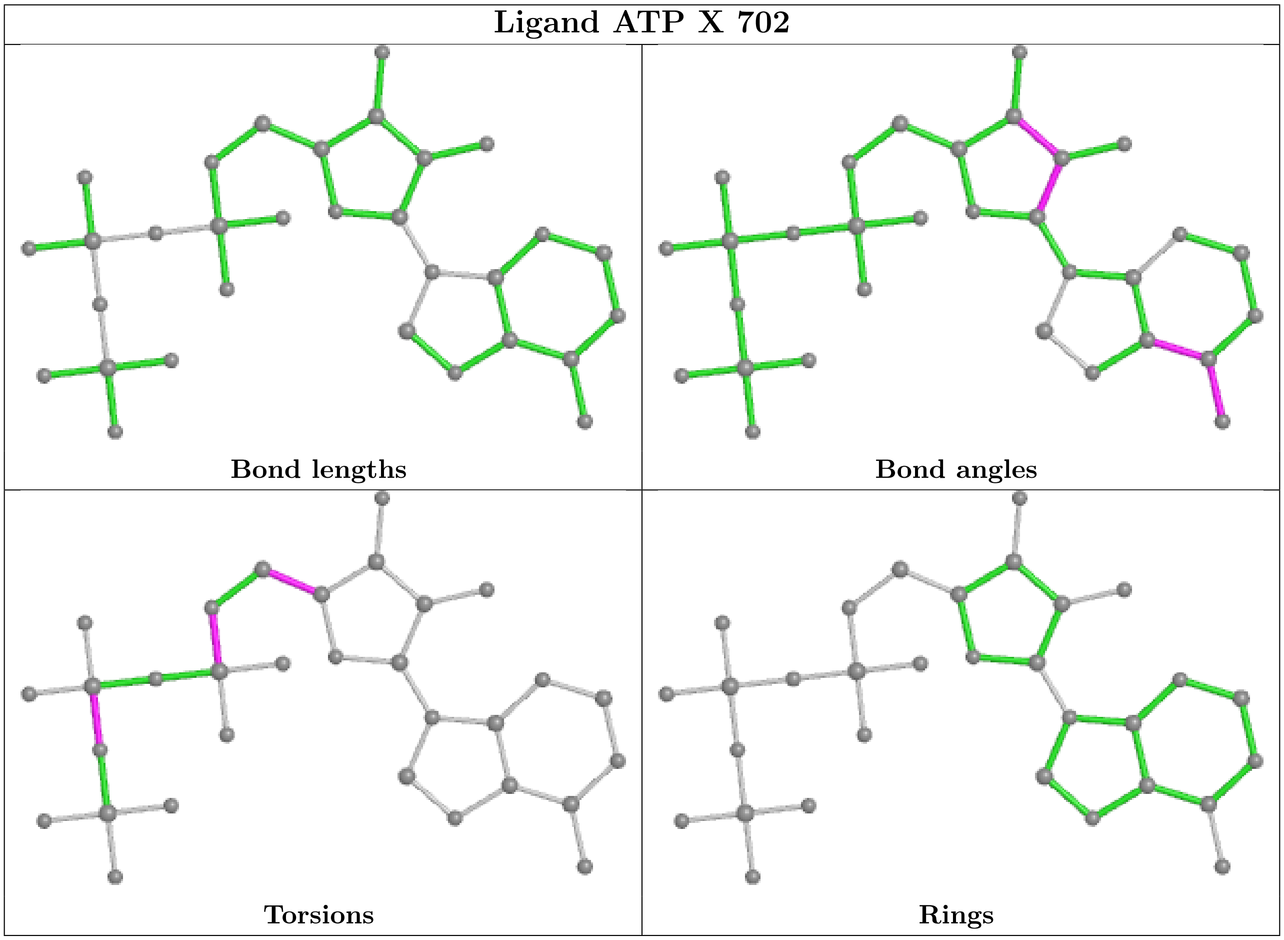


Ligand ATP V 702

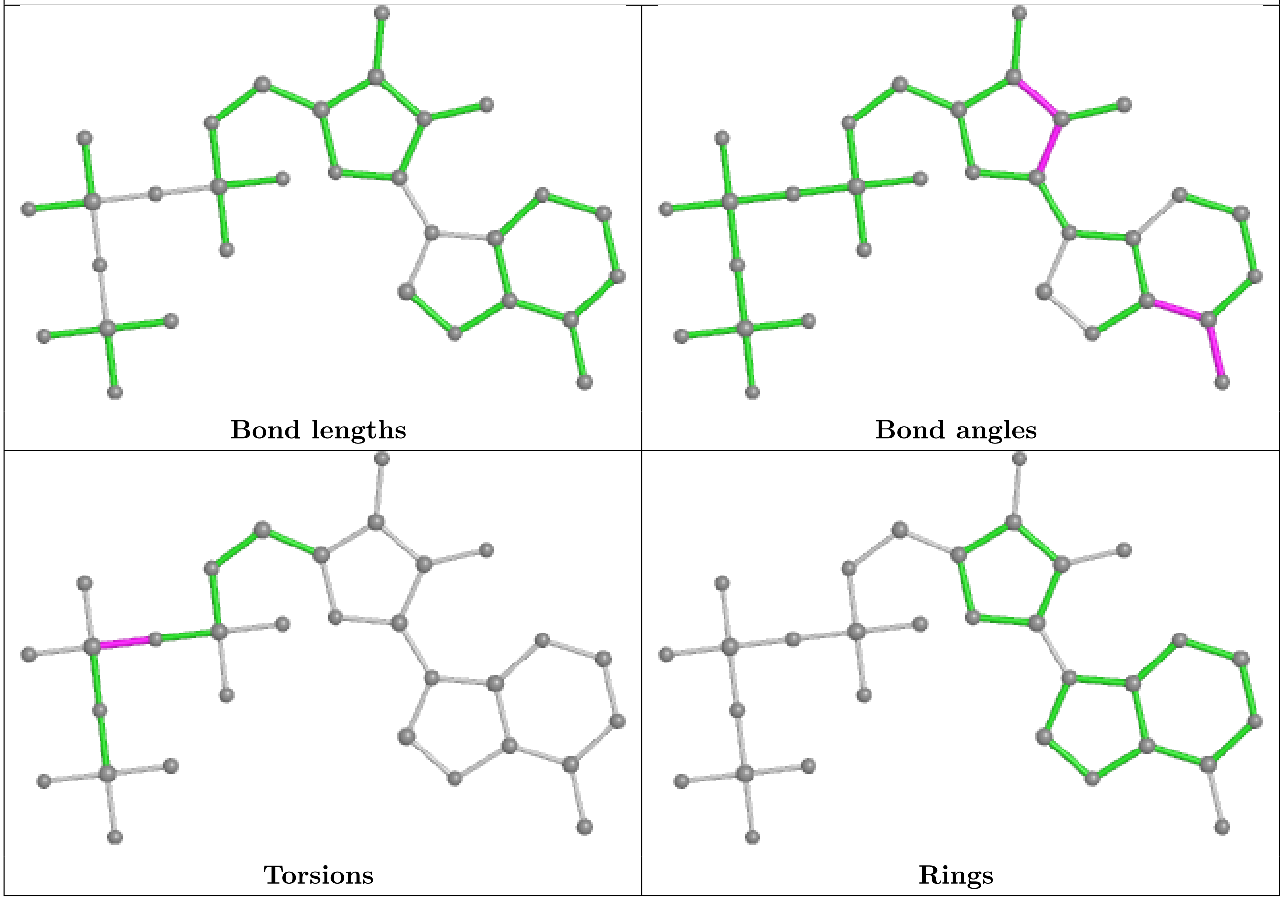


Ligand ATP G 701




Ligand ATP X 702
Bond lengths
Bond angles
Torsions
Rings

Ligand ATP L 701



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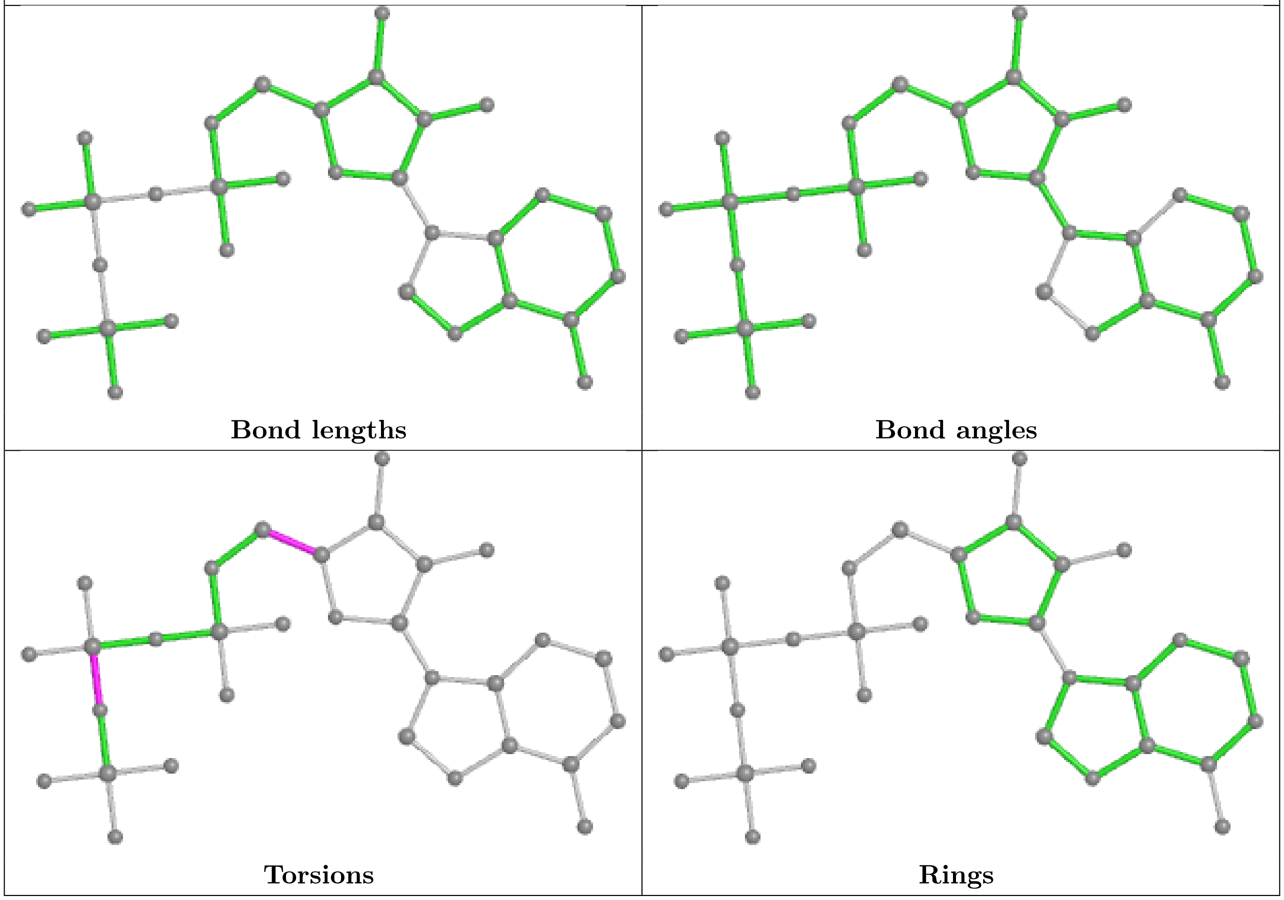

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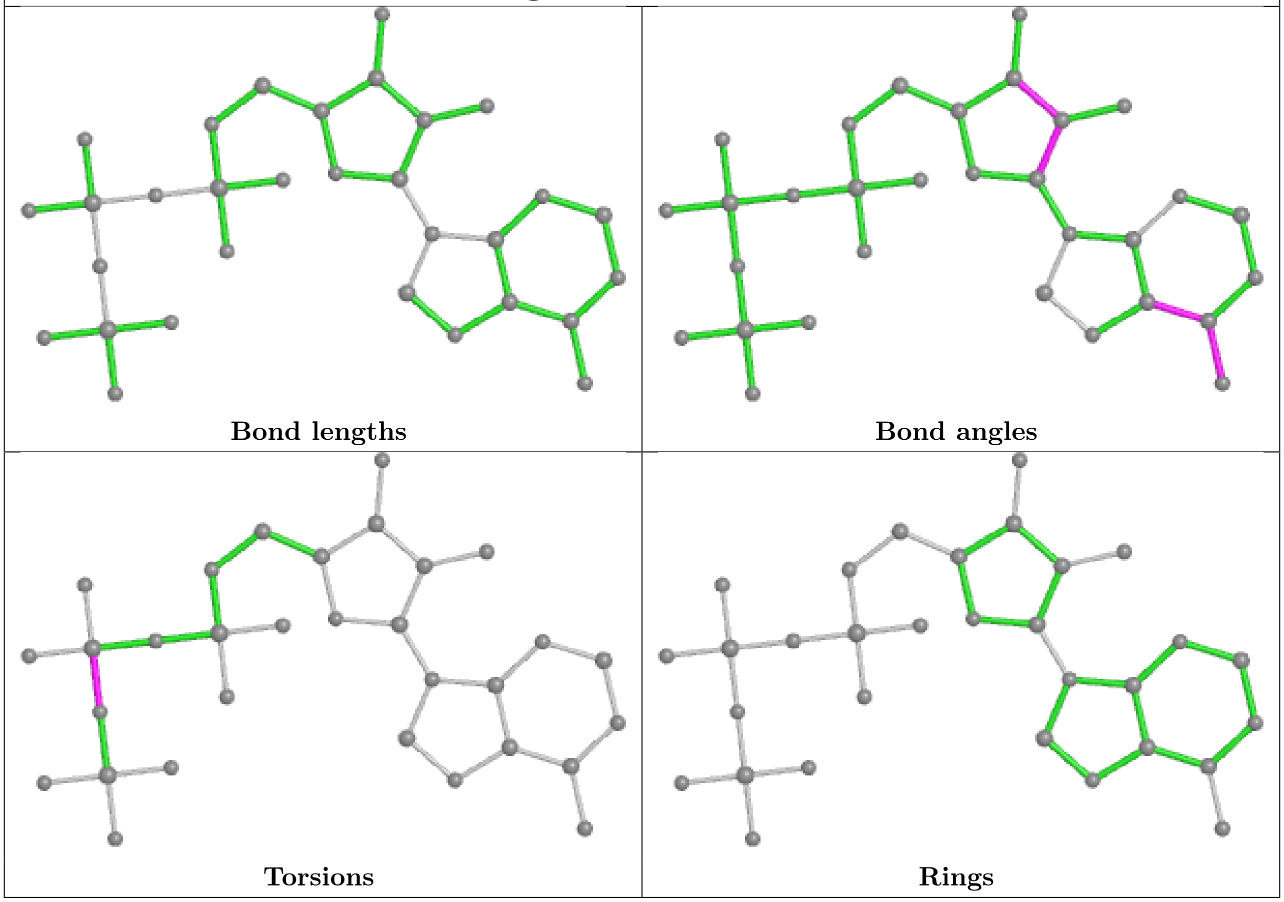
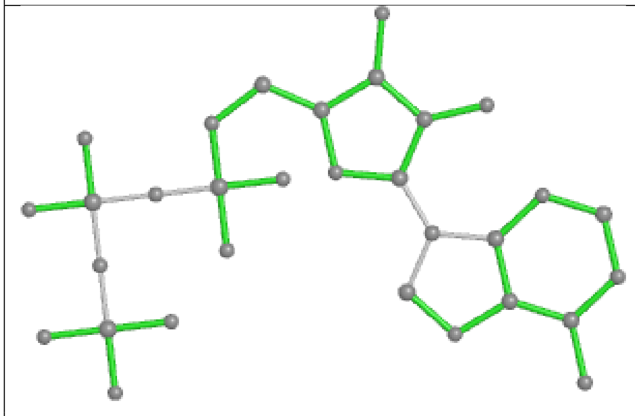
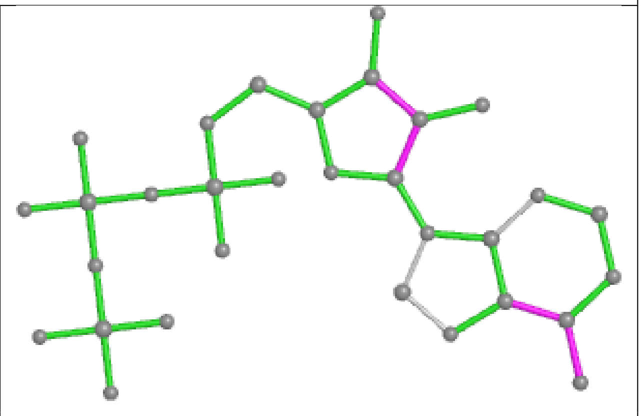
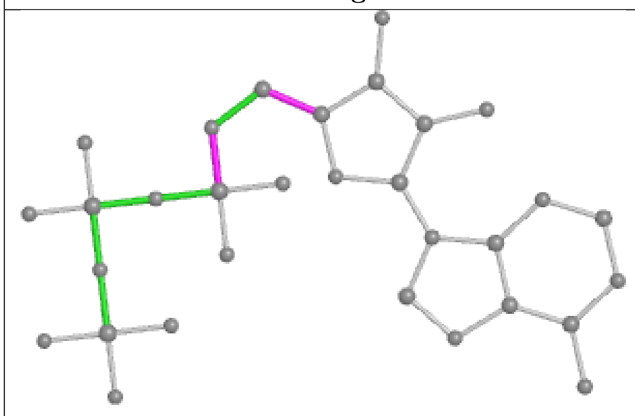
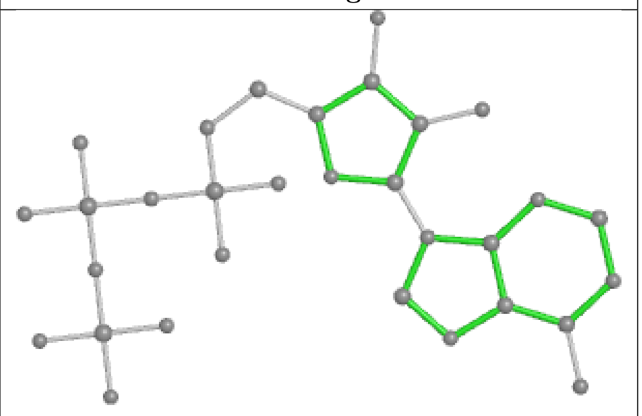
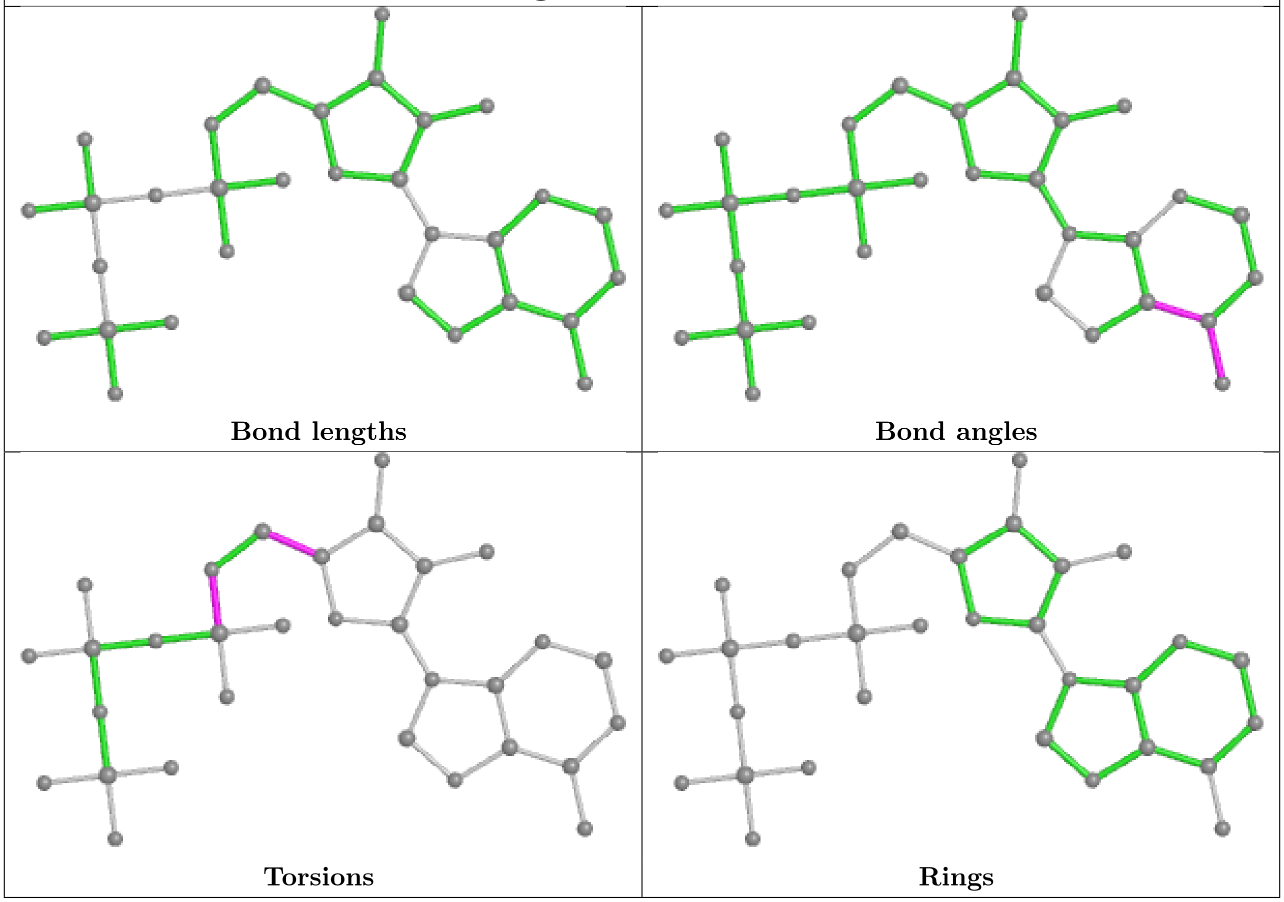
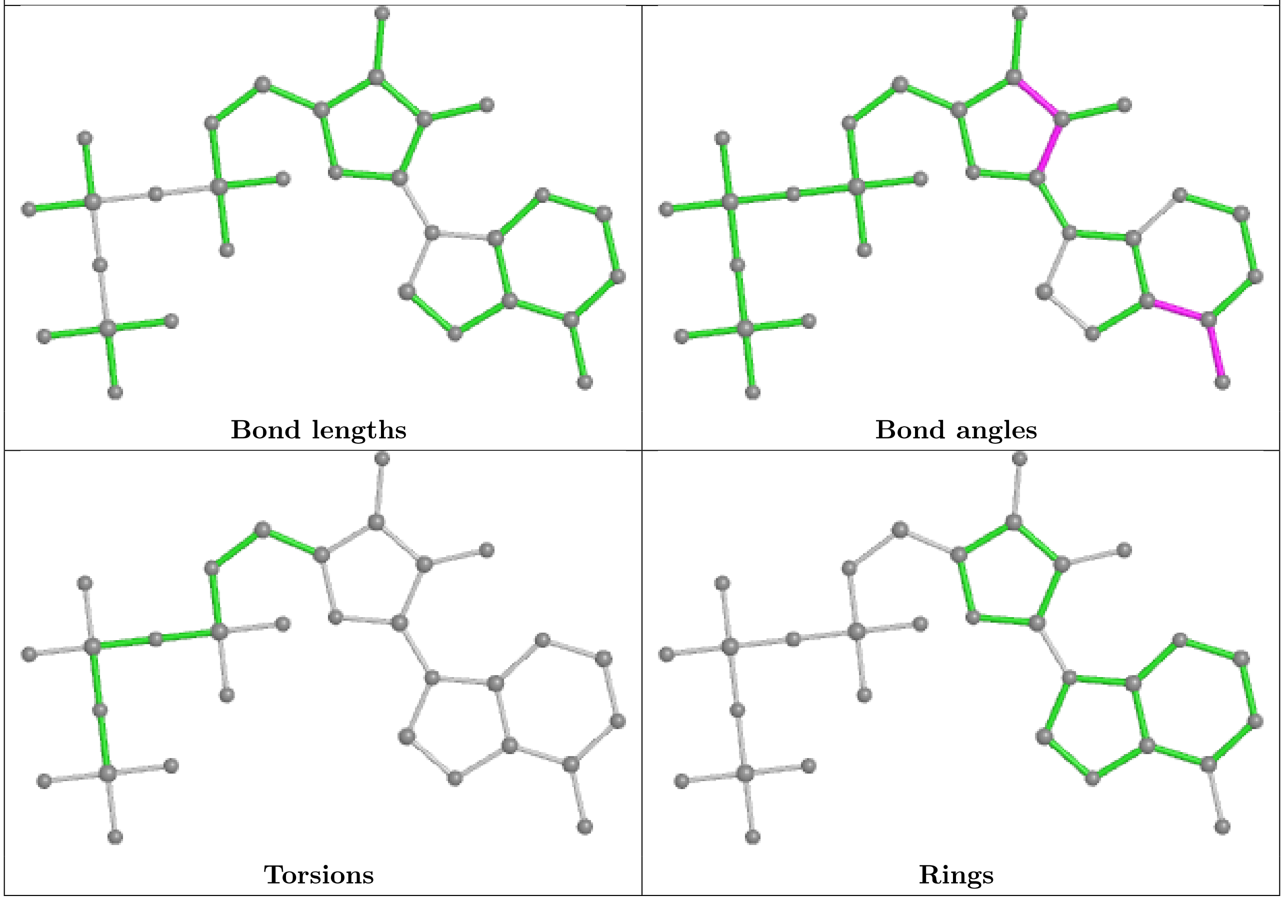


Ligand ATP L 702	
 Bond lengths	 Bond angles
 Torsions	 Rings

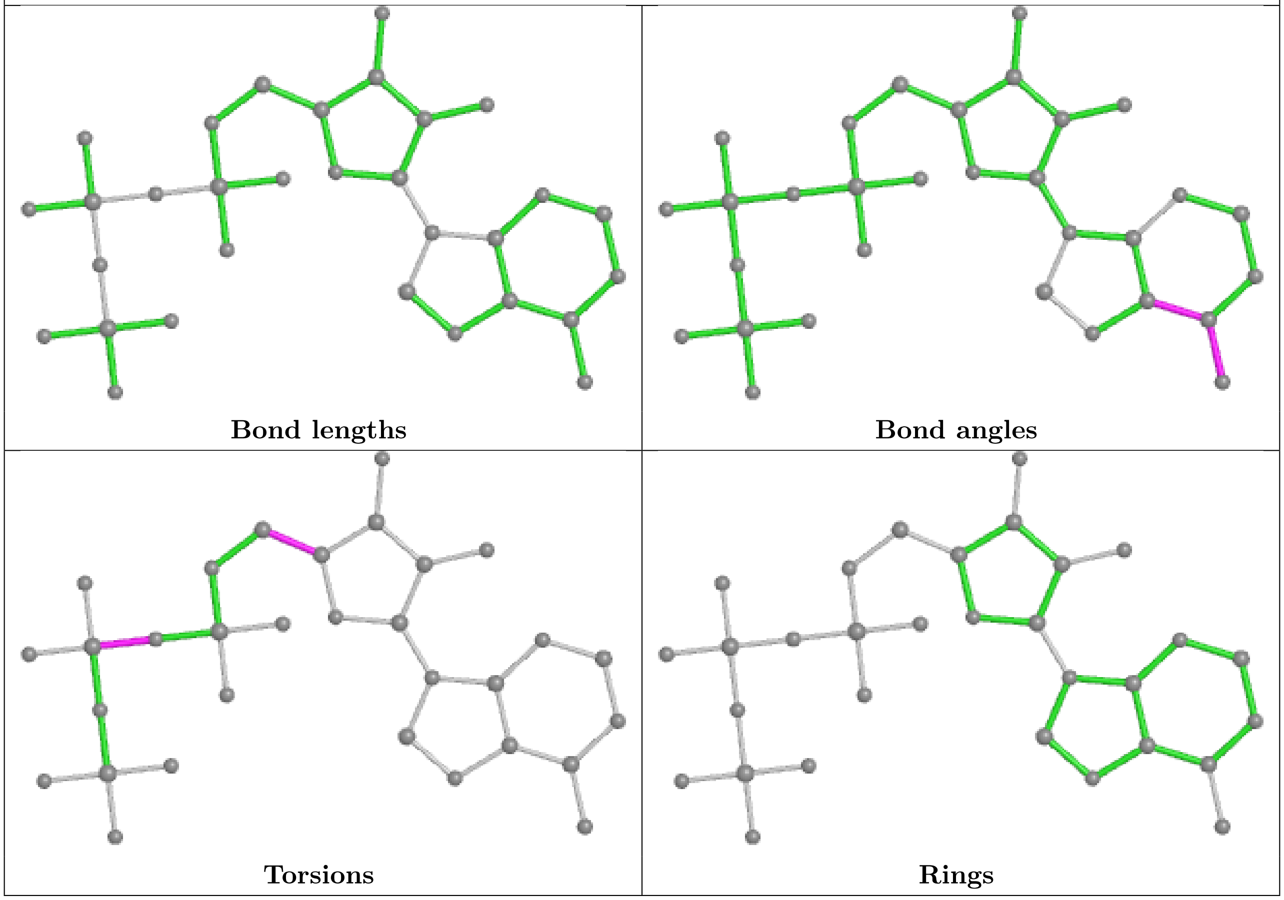
Ligand ATP I 701



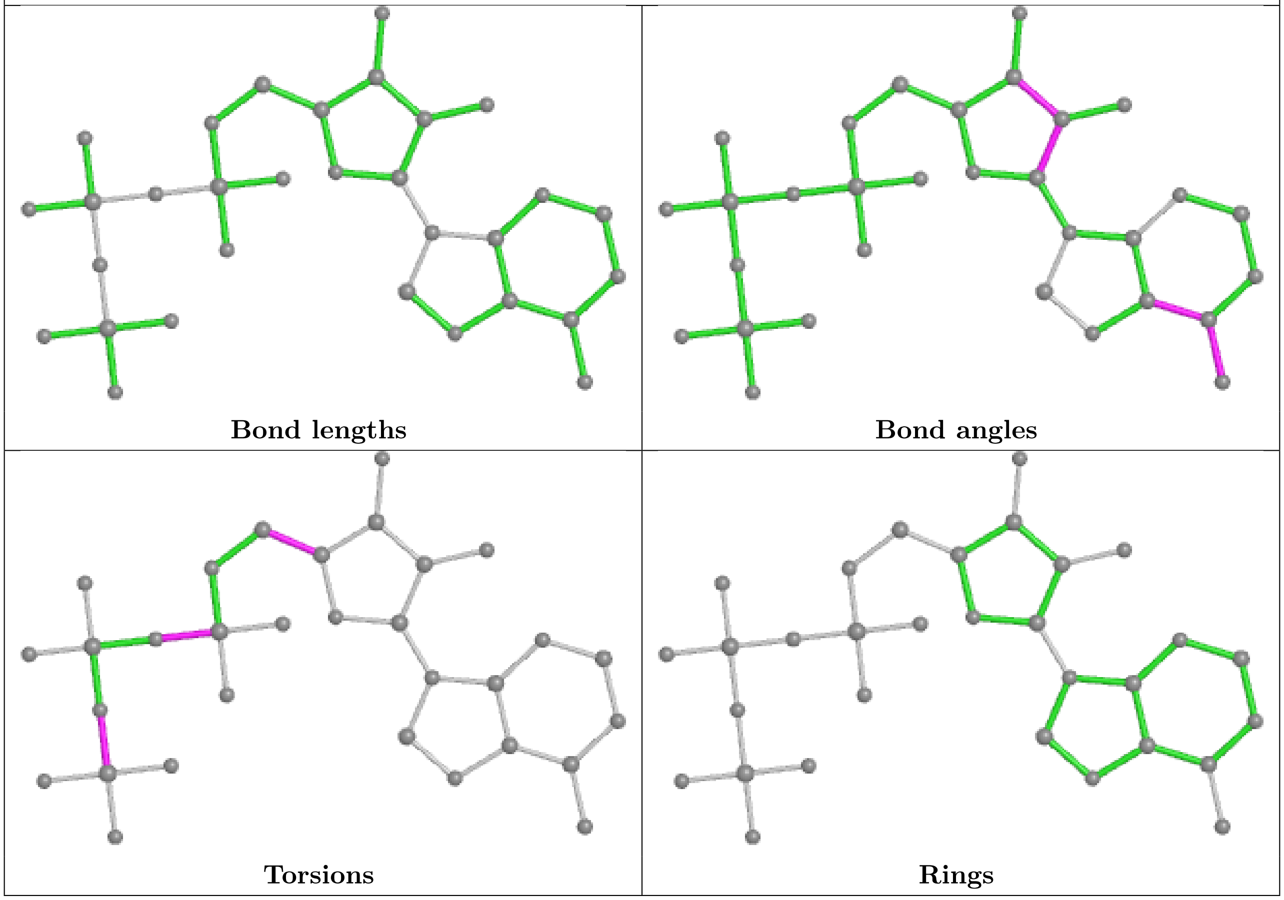
Ligand ATP A 701



Ligand ATP M 701



Ligand ATP R 702



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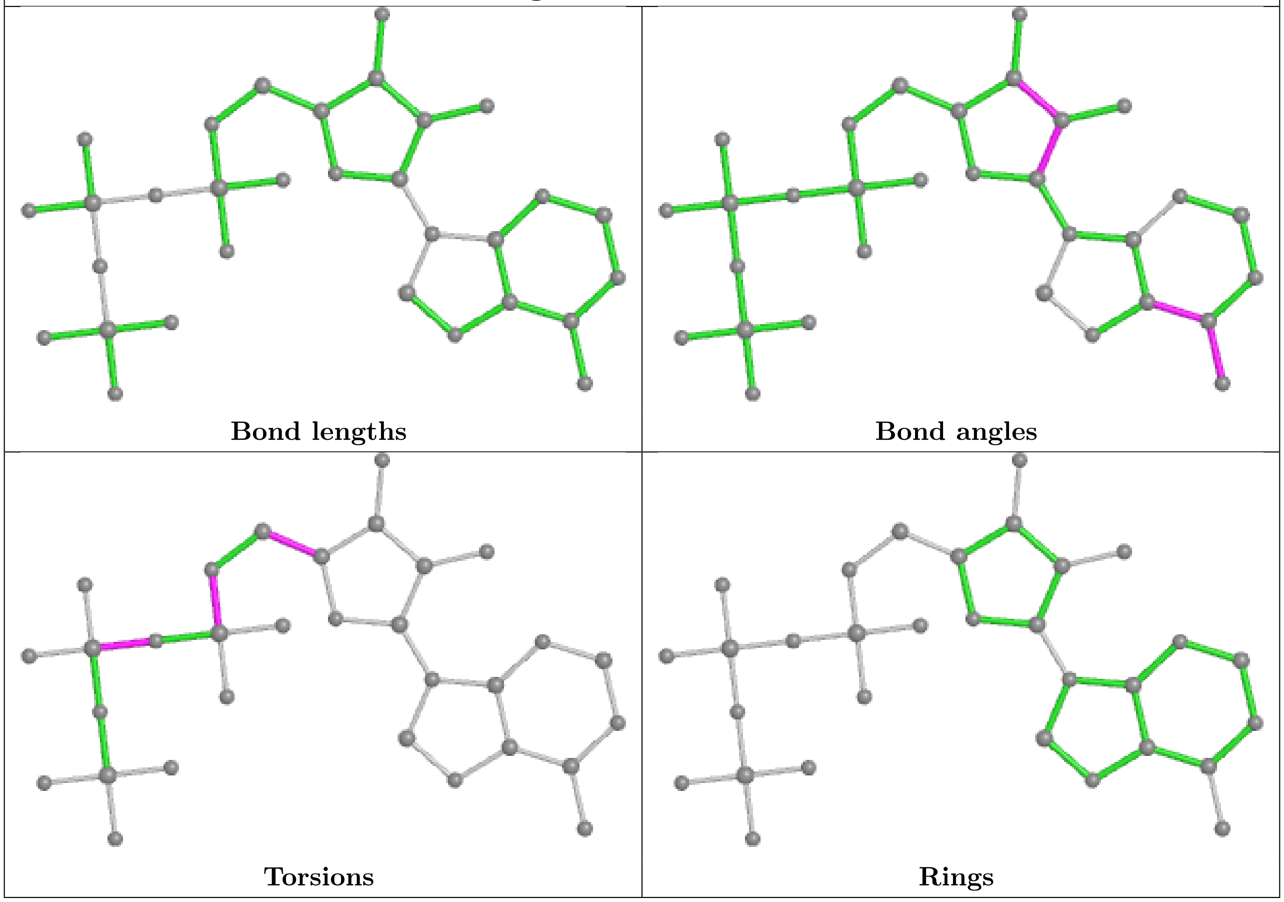

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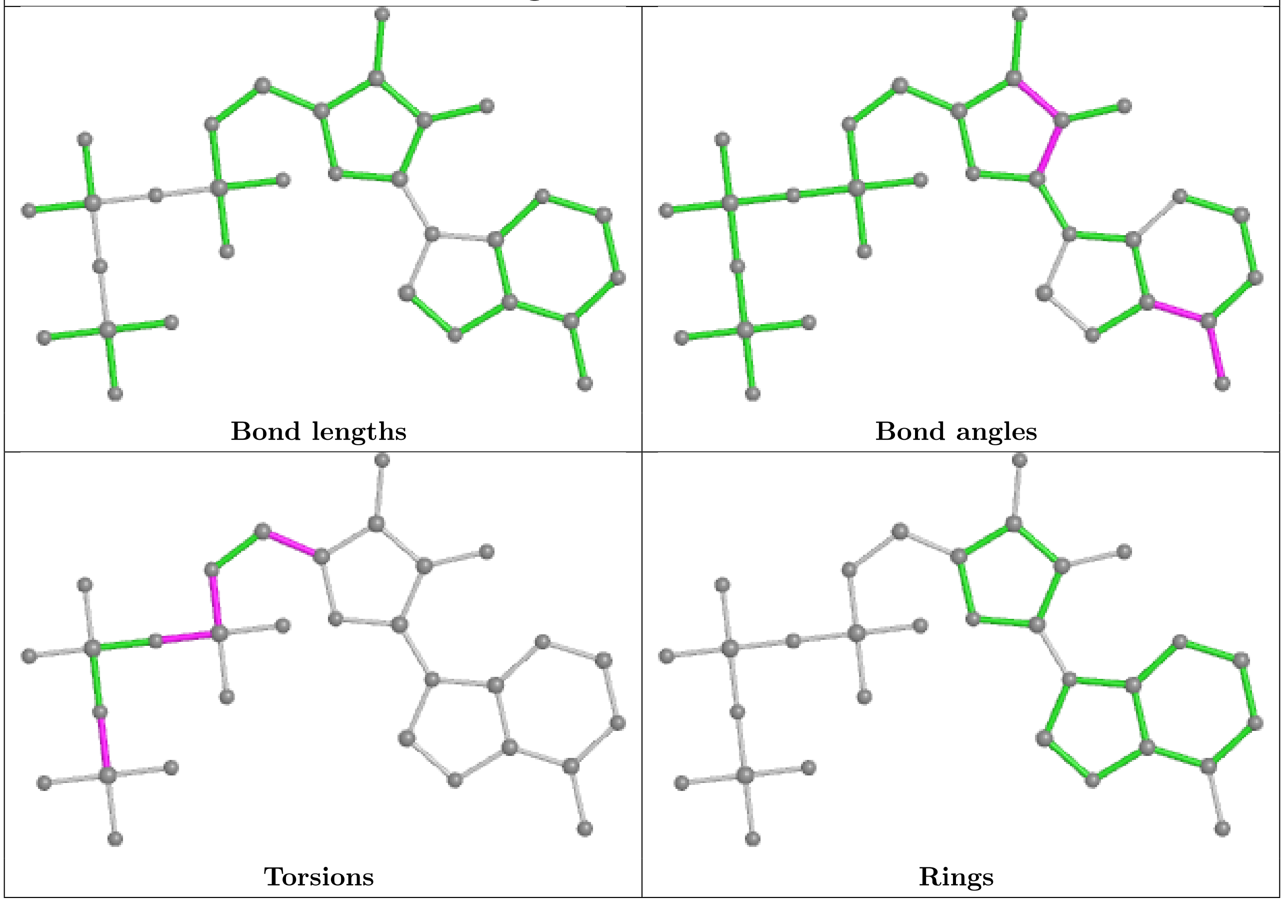
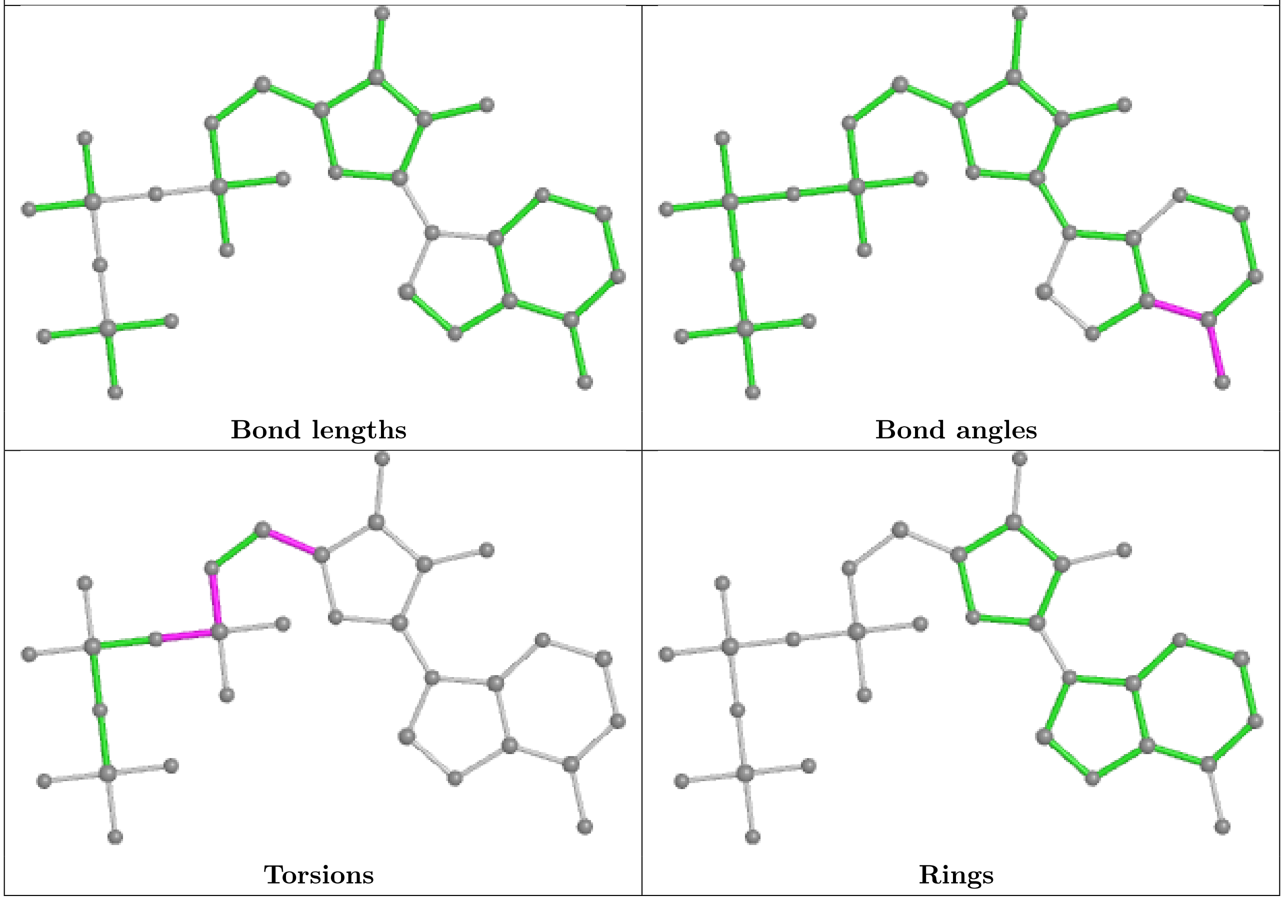


Ligand ATP B 701



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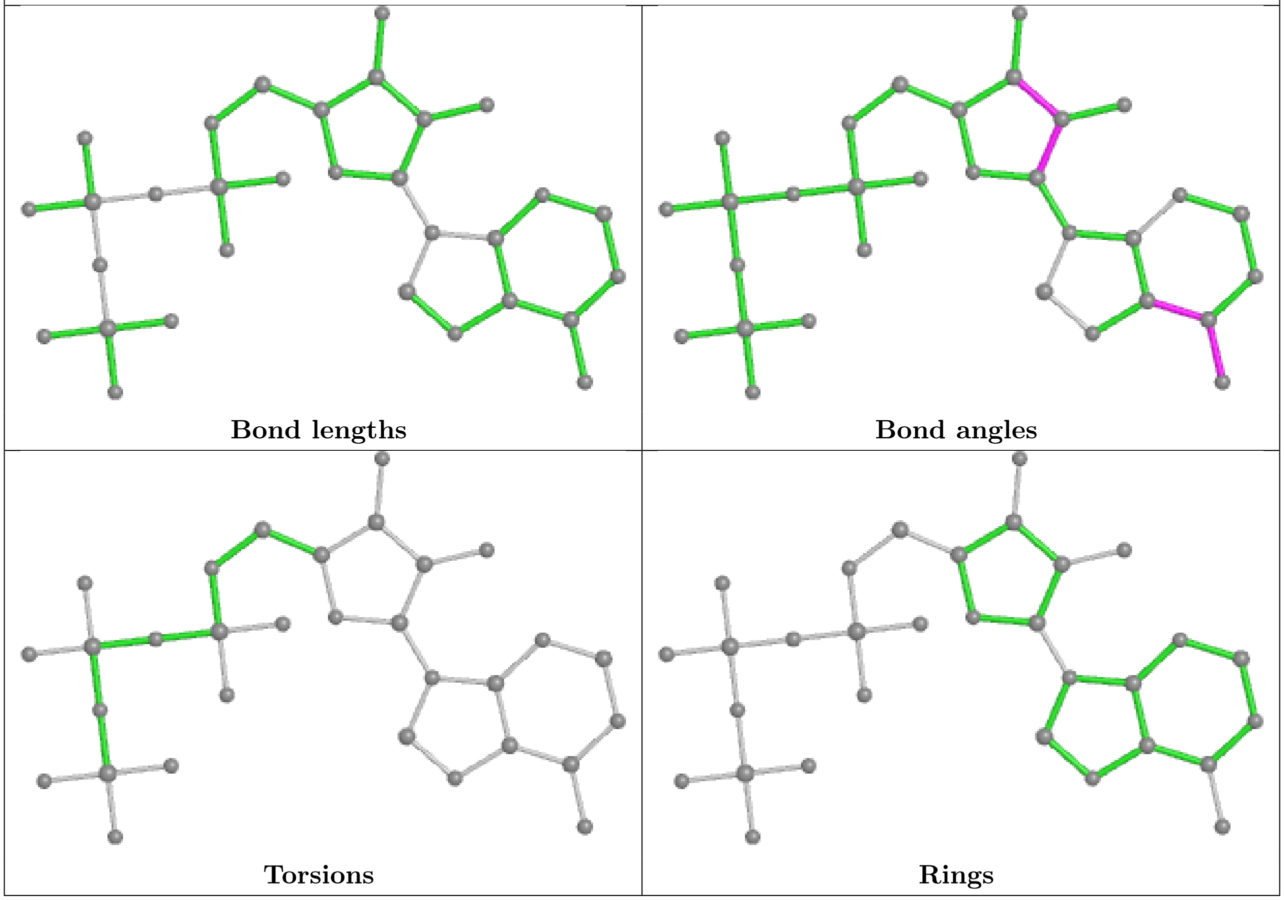

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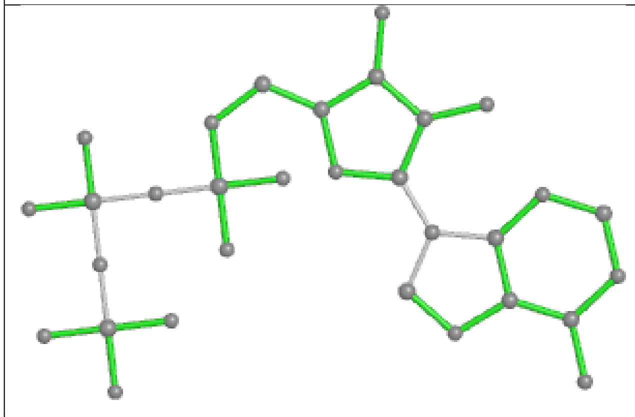
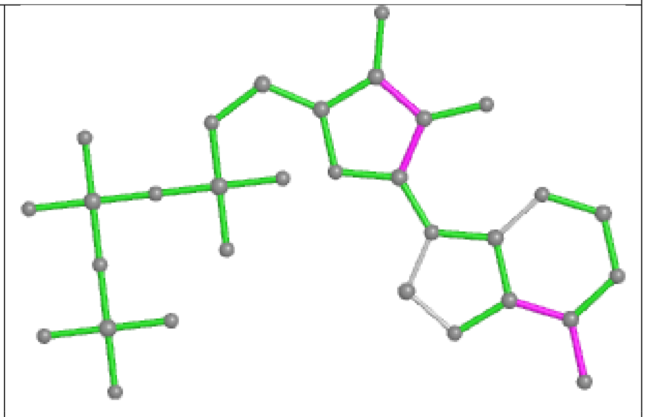
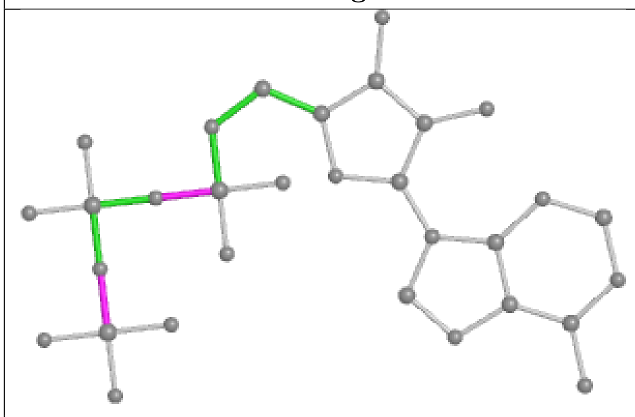


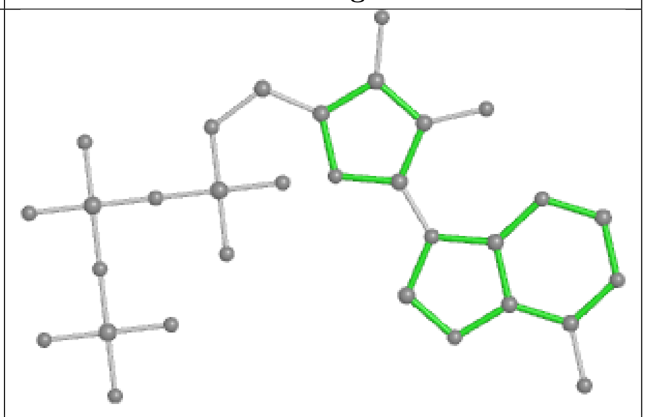
Bond lengths



Bond angles

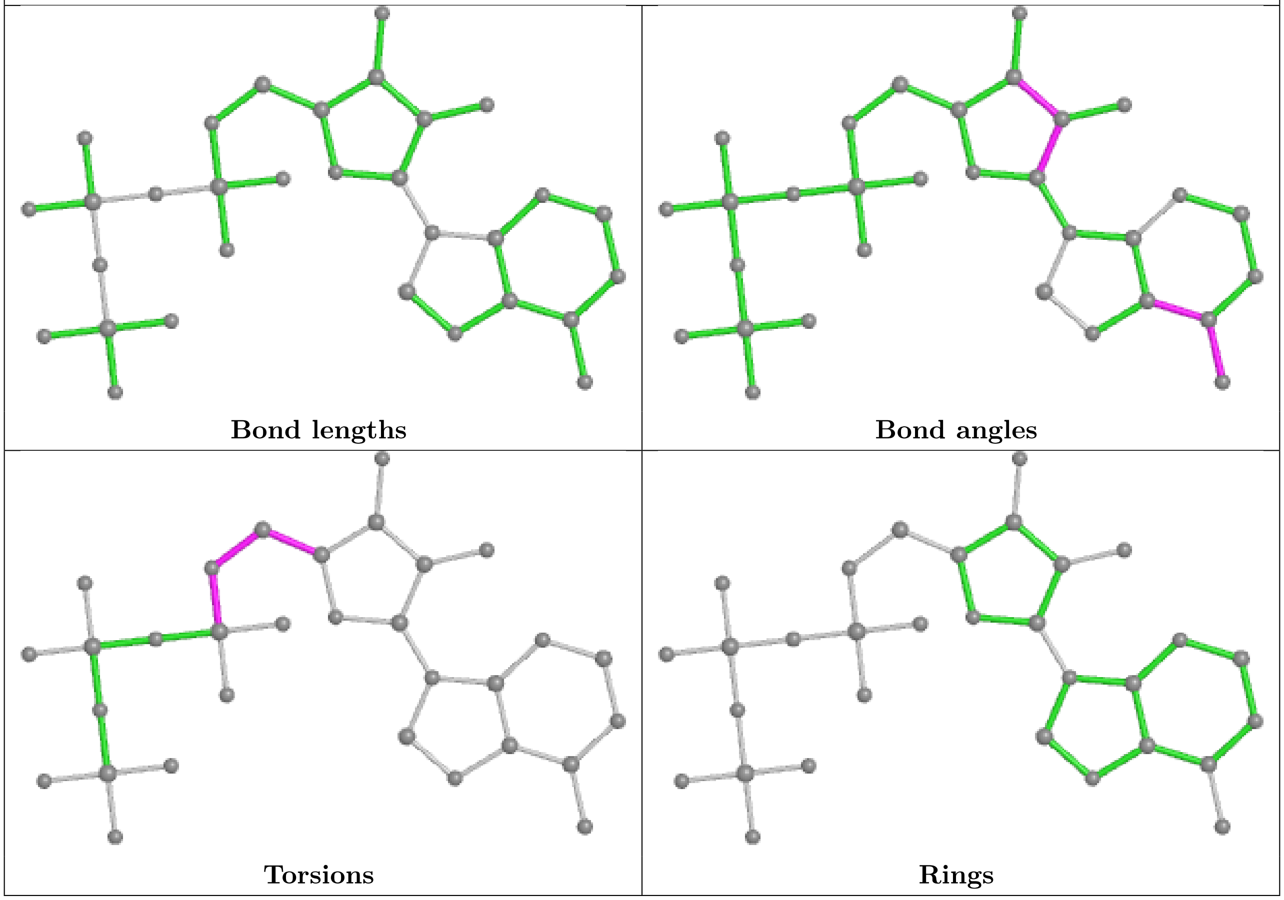


Torsions

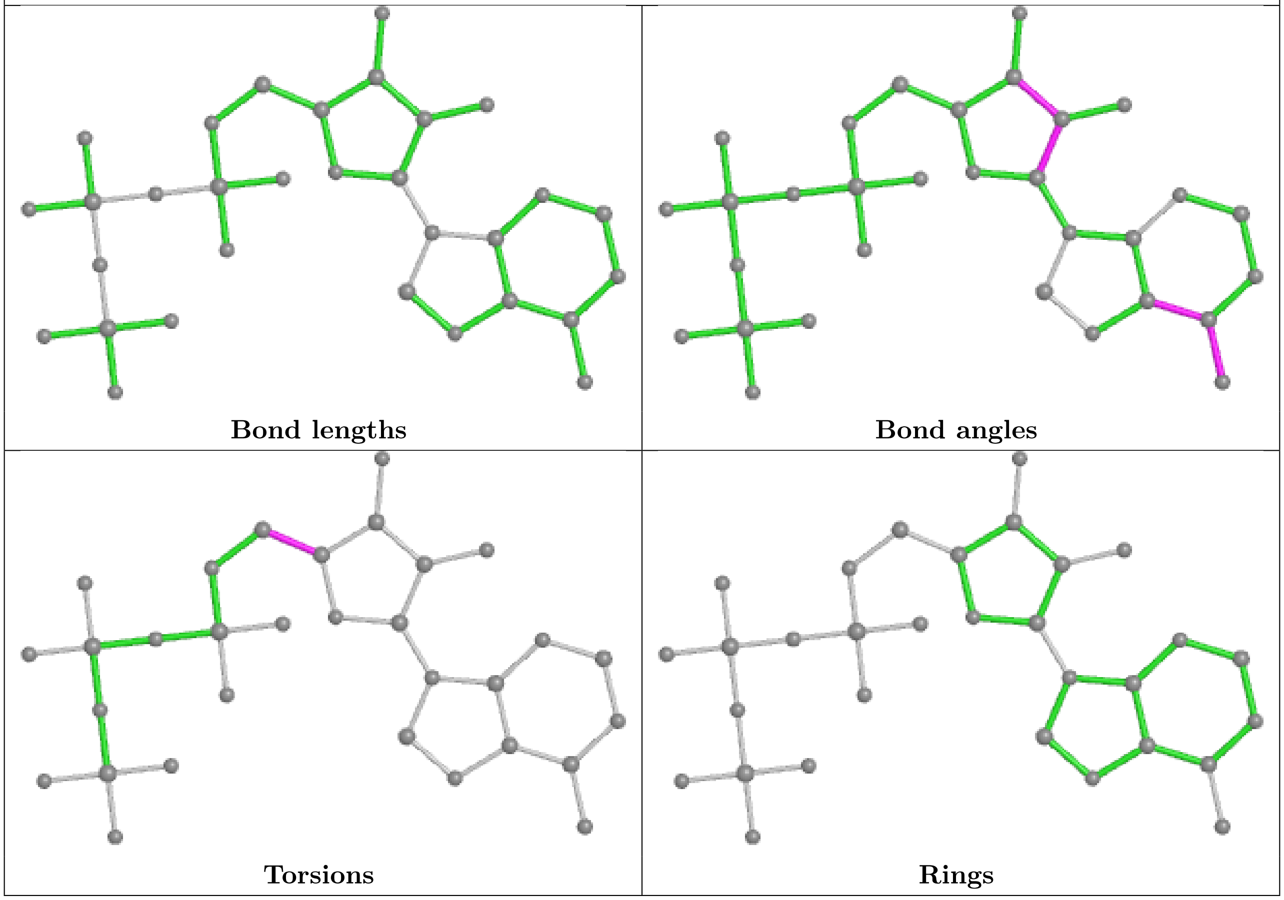


Rings

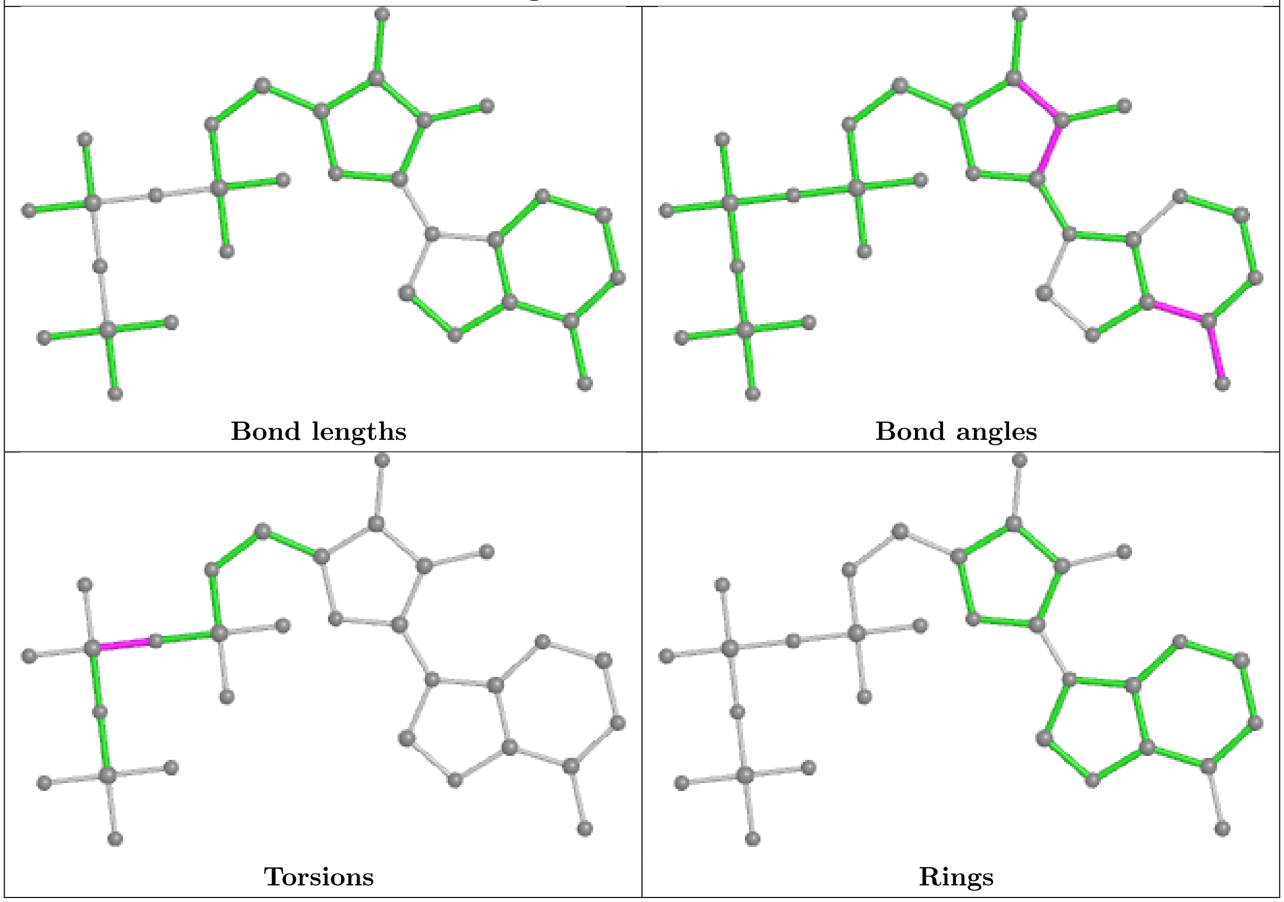
Ligand ATP N 701



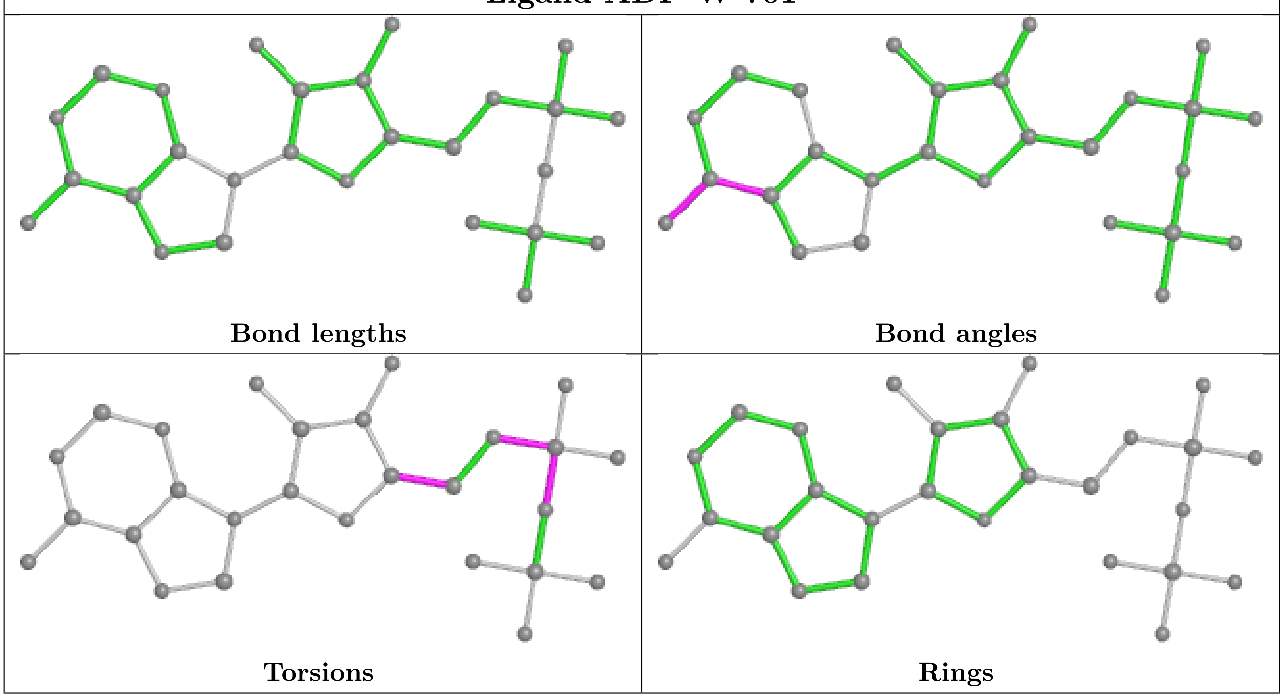
Ligand ATP T 702



Ligand ATP O 701



Ligand ADP W 701



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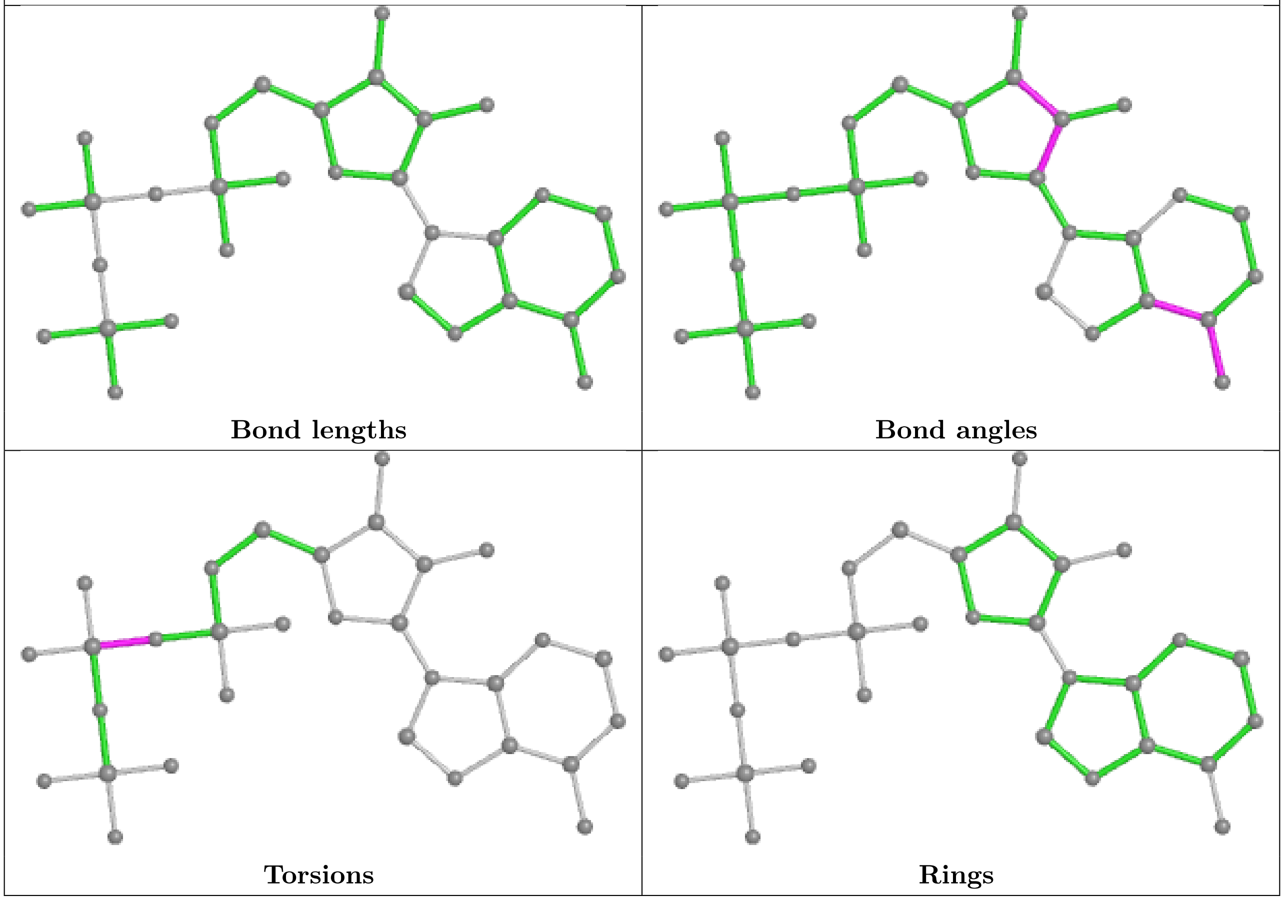

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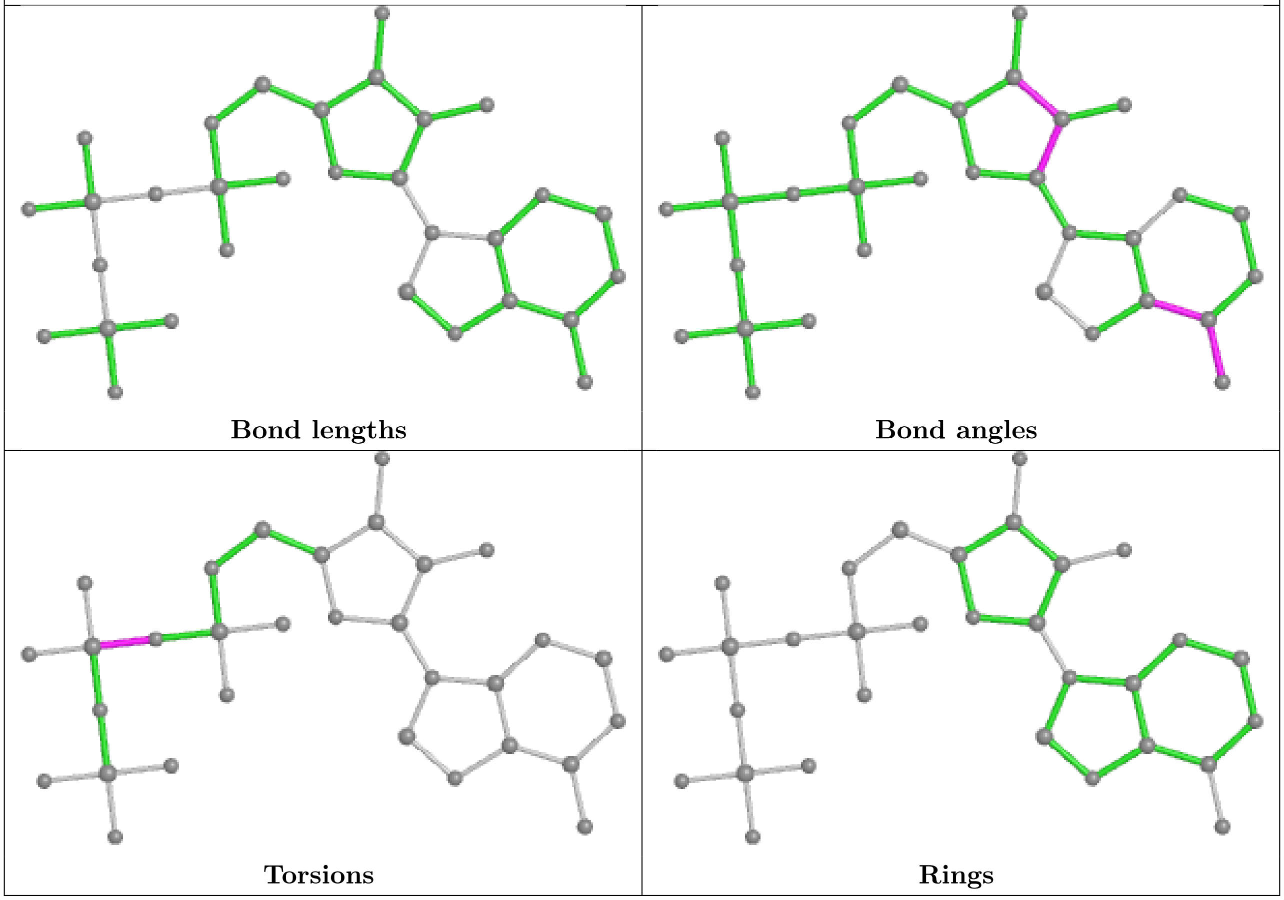
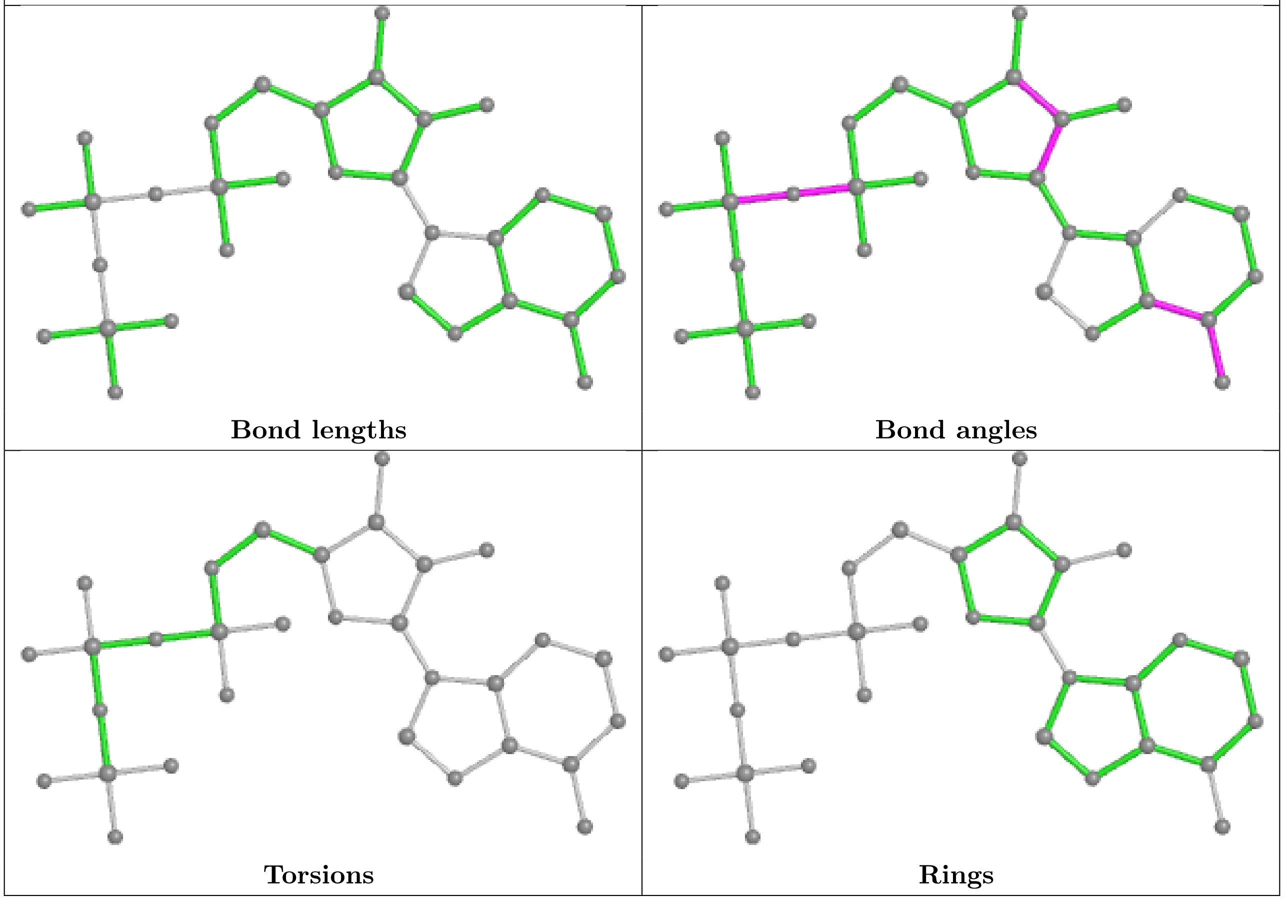


Bond lengths | Bond angles | Torsions | Rings

Ligand ATP G 702



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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	467/519 (89%)	-0.31	1 (0%)	95	90	23, 46, 74, 115	0
1	B	468/519 (90%)	-0.29	5 (1%)	80	64	25, 48, 69, 106	0
1	G	466/519 (89%)	-0.38	1 (0%)	95	90	23, 43, 63, 98	0
1	H	467/519 (89%)	-0.28	3 (0%)	89	78	26, 45, 69, 105	0
1	M	462/519 (89%)	0.08	15 (3%)	47	25	43, 68, 102, 130	0
1	N	454/519 (87%)	0.03	11 (2%)	59	37	48, 70, 99, 120	0
1	P	455/519 (87%)	-0.11	6 (1%)	77	59	39, 62, 96, 129	0
1	R	462/519 (89%)	-0.11	3 (0%)	89	78	37, 61, 84, 142	0
1	S	443/519 (85%)	0.19	15 (3%)	45	24	56, 89, 118, 132	0
1	T	414/519 (79%)	0.17	16 (3%)	39	20	57, 96, 121, 131	0
1	V	436/519 (84%)	0.12	13 (2%)	50	27	41, 68, 119, 132	0
1	W	463/519 (89%)	-0.08	9 (1%)	66	46	37, 63, 99, 137	0
1	X	460/519 (88%)	0.00	6 (1%)	77	59	42, 68, 94, 118	0
2	C	470/519 (90%)	-0.30	0	100	100	26, 46, 75, 122	0
2	D	469/519 (90%)	-0.26	5 (1%)	80	64	22, 47, 77, 124	0
2	E	468/519 (90%)	-0.33	3 (0%)	89	78	20, 40, 71, 113	0
2	F	466/519 (89%)	-0.28	1 (0%)	95	90	21, 45, 72, 88	0
2	I	471/519 (90%)	-0.26	4 (0%)	86	72	22, 43, 78, 121	0
2	J	466/519 (89%)	-0.27	3 (0%)	89	78	20, 45, 75, 108	0
2	K	469/519 (90%)	-0.34	2 (0%)	92	84	20, 40, 72, 119	0
2	L	468/519 (90%)	-0.29	2 (0%)	92	84	23, 44, 72, 105	0
2	O	459/519 (88%)	0.14	16 (3%)	44	23	47, 70, 101, 125	0
2	Q	464/519 (89%)	-0.20	4 (0%)	84	69	36, 56, 83, 125	0
2	U	428/519 (82%)	0.22	23 (5%)	25	12	51, 82, 120, 129	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
All	All	11015/12456 (88%)	-0.14	167 (1%)	73	54	20, 56, 104, 142	0

The worst 5 of 167 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	V	76	PHE	5.3
2	Q	250	GLY	5.2
2	U	63	GLY	5.1
2	U	95	ALA	5.0
1	T	183	GLU	4.9

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	TPO	C	432	11/12	0.86	0.24	52,56,61,61	4
1	SEP	S	431	10/11	0.86	0.21	71,75,82,82	0
1	SEP	T	431	10/11	0.87	0.21	82,84,87,87	0
2	TPO	O	432	11/12	0.87	0.18	71,74,80,80	0
2	TPO	I	432	11/12	0.88	0.25	46,50,54,54	4
2	TPO	U	432	11/12	0.88	0.19	72,76,79,79	4
1	SEP	M	431	10/11	0.88	0.21	65,68,72,72	0
2	SEP	O	431	10/11	0.89	0.26	70,71,71,71	4
2	TPO	L	432	11/12	0.89	0.22	46,51,56,56	4
2	TPO	F	432	11/12	0.89	0.19	41,45,50,50	4
1	SEP	V	431	10/11	0.89	0.22	55,58,61,62	4
2	TPO	J	432	11/12	0.90	0.21	41,44,48,48	4
1	SEP	N	431	10/11	0.90	0.19	65,66,69,70	0
2	SEP	C	431	10/11	0.90	0.20	55,57,62,62	0
2	SEP	U	431	10/11	0.91	0.23	75,78,82,83	0
1	SEP	R	431	10/11	0.91	0.18	58,60,61,61	0
1	SEP	H	431	10/11	0.91	0.21	41,43,46,46	4
2	TPO	K	432	11/12	0.91	0.19	40,43,45,45	4
1	SEP	P	431	10/11	0.92	0.19	52,53,53,54	4
2	SEP	Q	431	10/11	0.93	0.19	53,55,57,58	0
2	TPO	Q	432	11/12	0.93	0.22	58,61,63,64	4
2	SEP	D	431	10/11	0.93	0.20	42,43,44,44	4

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	SEP	I	431	10/11	0.93	0.18	48,50,54,54	0
2	TPO	D	432	11/12	0.93	0.19	40,43,45,45	4
1	SEP	X	431	10/11	0.93	0.16	52,56,60,60	0
2	TPO	E	432	11/12	0.93	0.16	39,42,44,44	4
1	SEP	A	431	10/11	0.93	0.17	46,46,47,47	4
1	SEP	W	431	10/11	0.93	0.18	51,52,53,53	4
2	SEP	K	431	10/11	0.94	0.17	42,43,45,46	0
2	SEP	J	431	10/11	0.94	0.15	42,43,44,44	4
2	SEP	L	431	10/11	0.94	0.16	46,46,46,47	4
2	SEP	F	431	10/11	0.95	0.15	41,42,42,42	4
2	SEP	E	431	10/11	0.95	0.17	38,39,41,41	0
1	SEP	B	431	10/11	0.95	0.17	42,43,44,44	4
1	SEP	G	431	10/11	0.95	0.15	48,49,50,51	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	MG	P	704	1/1	0.82	0.16	44,44,44,44	0
3	ATP	S	702	31/31	0.85	0.25	94,95,99,99	0
3	ATP	M	702	31/31	0.88	0.28	76,79,81,81	0
5	ADP	U	702	27/27	0.89	0.18	92,104,112,112	0
3	ATP	T	702	31/31	0.90	0.16	85,88,90,91	0
3	ATP	W	702	31/31	0.91	0.17	71,74,76,77	0
4	MG	G	703	1/1	0.91	0.19	43,43,43,43	0
3	ATP	S	701	31/31	0.91	0.19	77,78,83,83	0
3	ATP	X	701	31/31	0.91	0.22	59,63,70,70	0
4	MG	G	704	1/1	0.92	0.11	48,48,48,48	0
4	MG	F	704	1/1	0.92	0.09	39,39,39,39	0
4	MG	Q	703	1/1	0.92	0.11	51,51,51,51	0
3	ATP	Q	702	31/31	0.92	0.20	59,62,73,73	0
4	MG	H	704	1/1	0.93	0.17	46,46,46,46	0
4	MG	C	704	1/1	0.93	0.10	48,48,48,48	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	ATP	O	702	31/31	0.93	0.22	84,98,105,105	0
3	ATP	T	701	31/31	0.93	0.19	69,71,74,75	0
3	ATP	F	702	31/31	0.94	0.20	40,41,44,44	0
4	MG	B	704	1/1	0.94	0.17	58,58,58,58	0
4	MG	E	704	1/1	0.94	0.22	22,22,22,22	0
3	ATP	N	701	31/31	0.94	0.16	56,60,64,64	0
3	ATP	N	702	31/31	0.94	0.18	61,64,69,70	0
3	ATP	O	701	31/31	0.94	0.16	60,62,64,65	0
3	ATP	B	701	31/31	0.94	0.15	39,39,40,40	0
3	ATP	X	702	31/31	0.94	0.17	66,70,74,75	0
4	MG	L	704	1/1	0.94	0.09	36,36,36,36	0
4	MG	R	704	1/1	0.94	0.13	44,44,44,44	0
3	ATP	R	701	31/31	0.94	0.17	48,55,59,59	0
3	ATP	M	701	31/31	0.94	0.14	54,56,58,58	0
3	ATP	V	702	31/31	0.94	0.15	83,85,89,90	0
5	ADP	W	701	27/27	0.94	0.17	45,49,52,52	0
3	ATP	K	702	31/31	0.95	0.15	39,42,46,47	0
3	ATP	L	702	31/31	0.95	0.17	38,39,43,43	0
3	ATP	I	702	31/31	0.95	0.14	41,42,45,45	0
3	ATP	P	702	31/31	0.95	0.14	55,56,60,62	0
4	MG	I	704	1/1	0.95	0.14	47,47,47,47	0
4	MG	O	703	1/1	0.95	0.13	38,38,38,38	0
4	MG	R	703	1/1	0.95	0.18	33,33,33,33	0
3	ATP	E	702	31/31	0.95	0.16	43,44,47,48	0
3	ATP	C	702	31/31	0.95	0.14	41,42,46,47	0
3	ATP	D	702	31/31	0.95	0.16	43,46,47,48	0
5	ADP	Q	701	27/27	0.95	0.16	45,49,51,51	0
3	ATP	U	701	31/31	0.95	0.16	60,62,62,62	0
3	ATP	H	701	31/31	0.95	0.16	36,37,38,38	0
3	ATP	J	702	31/31	0.96	0.15	42,45,46,47	0
3	ATP	G	701	31/31	0.96	0.18	37,40,44,45	0
3	ATP	G	702	31/31	0.96	0.14	37,40,42,42	0
3	ATP	F	701	31/31	0.96	0.16	39,40,44,44	0
4	MG	L	703	1/1	0.96	0.05	35,35,35,35	0
3	ATP	H	702	31/31	0.96	0.15	44,46,49,50	0
4	MG	I	703	1/1	0.96	0.07	36,36,36,36	0
3	ATP	K	701	31/31	0.96	0.13	29,31,33,33	0
4	MG	J	704	1/1	0.96	0.15	23,23,23,23	0
3	ATP	R	702	31/31	0.96	0.14	58,59,63,63	0
3	ATP	V	701	31/31	0.96	0.15	44,49,54,55	0
3	ATP	A	701	31/31	0.96	0.15	41,45,50,50	0
4	MG	M	703	1/1	0.96	0.32	27,27,27,27	0

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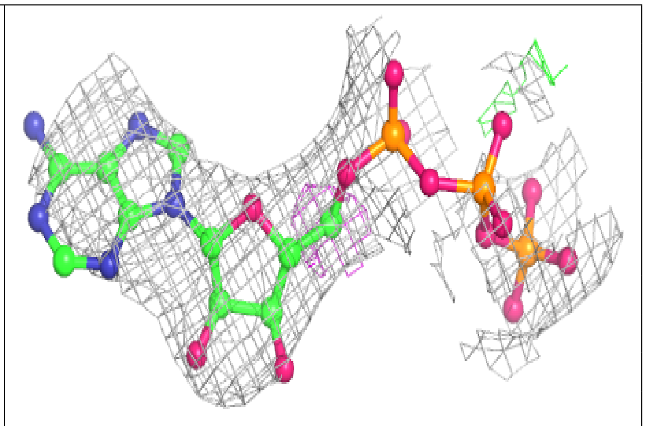
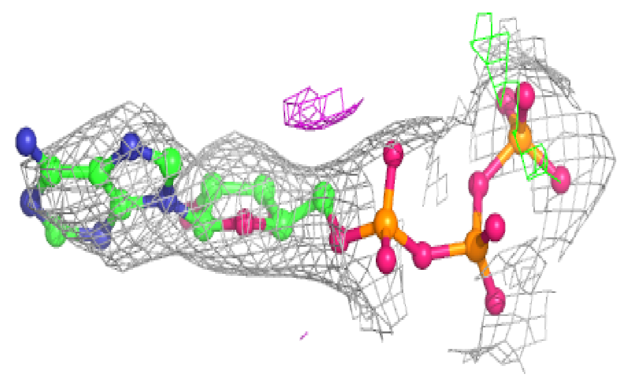
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	MG	P	703	1/1	0.96	0.10	43,43,43,43	0
3	ATP	L	701	31/31	0.96	0.14	37,38,42,42	0
4	MG	A	704	1/1	0.96	0.08	27,27,27,27	0
4	MG	U	703	1/1	0.96	0.18	51,51,51,51	0
3	ATP	P	701	31/31	0.96	0.17	52,56,65,66	0
3	ATP	B	702	31/31	0.96	0.17	44,46,49,50	0
3	ATP	A	702	31/31	0.96	0.17	40,41,45,45	0
4	MG	J	703	1/1	0.97	0.23	18,18,18,18	0
4	MG	C	703	1/1	0.97	0.13	43,43,43,43	0
4	MG	N	704	1/1	0.97	0.11	47,47,47,47	0
4	MG	A	703	1/1	0.97	0.16	34,34,34,34	0
4	MG	D	703	1/1	0.97	0.11	26,26,26,26	0
4	MG	D	704	1/1	0.97	0.14	41,41,41,41	0
3	ATP	E	701	31/31	0.97	0.13	30,32,35,35	0
4	MG	B	703	1/1	0.97	0.10	31,31,31,31	0
3	ATP	J	701	31/31	0.97	0.14	27,29,31,32	0
4	MG	K	704	1/1	0.97	0.16	20,20,20,20	0
4	MG	E	703	1/1	0.97	0.10	21,21,21,21	0
4	MG	V	703	1/1	0.97	0.07	36,36,36,36	0
3	ATP	C	701	31/31	0.97	0.12	33,34,34,35	0
4	MG	F	703	1/1	0.97	0.11	40,40,40,40	0
3	ATP	I	701	31/31	0.97	0.13	29,30,31,31	0
4	MG	K	703	1/1	0.98	0.11	23,23,23,23	0
4	MG	H	703	1/1	0.98	0.22	25,25,25,25	0
3	ATP	D	701	31/31	0.98	0.14	28,29,30,30	0
4	MG	T	703	1/1	0.99	0.18	50,50,50,50	0
4	MG	N	703	1/1	0.99	0.13	37,37,37,37	0

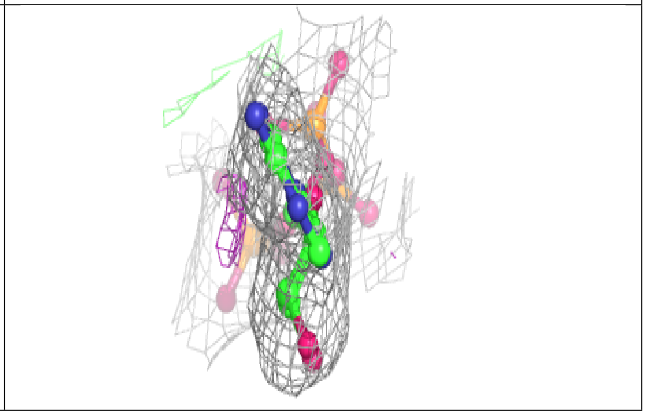
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around ATP S 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

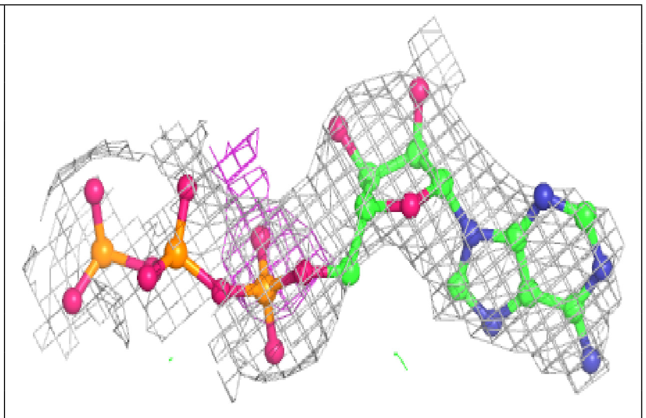


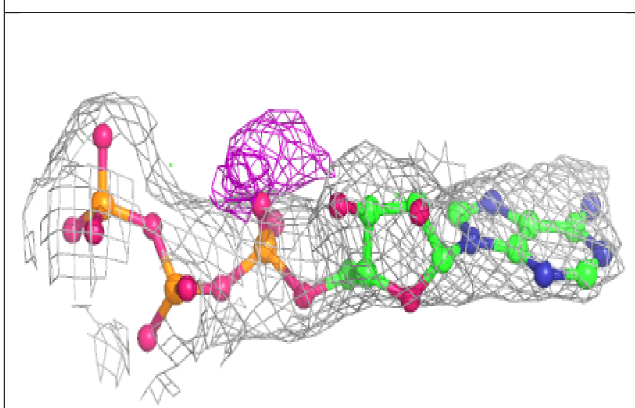


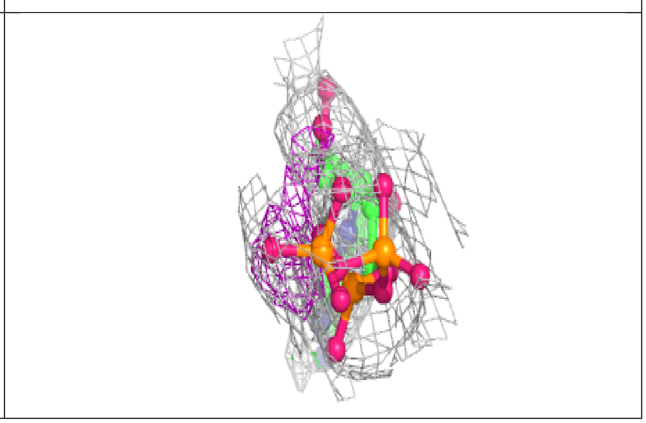


Electron density around ATP M 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

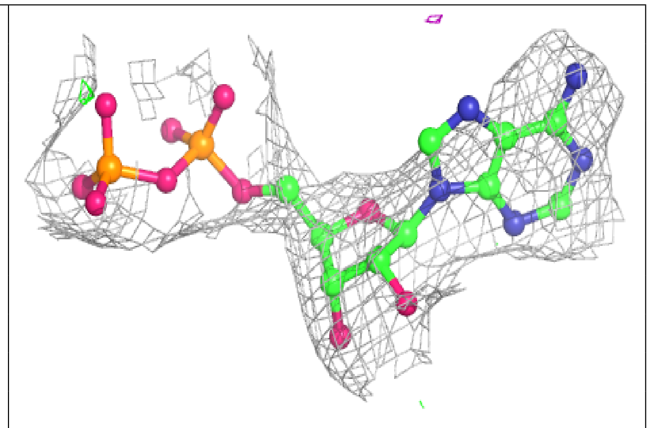


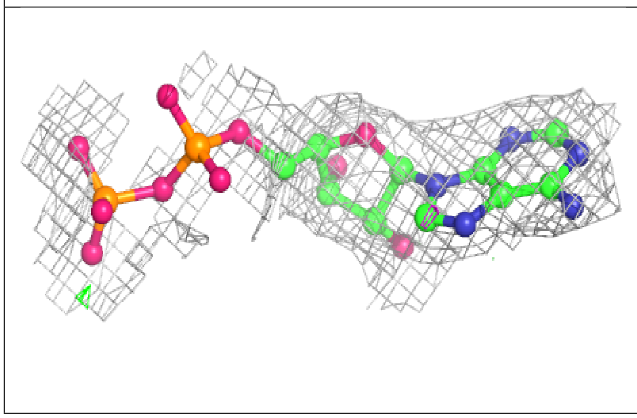


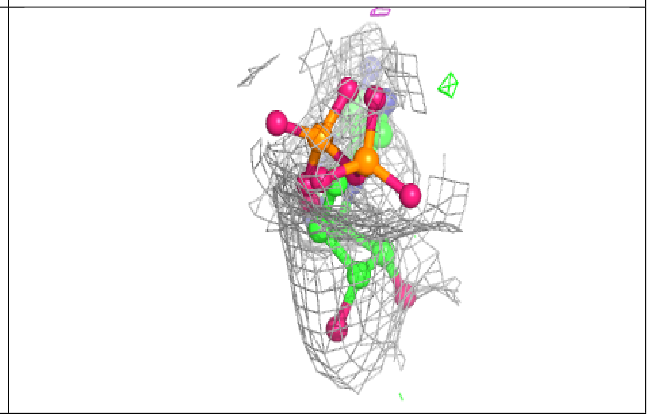


Electron density around ADP U 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

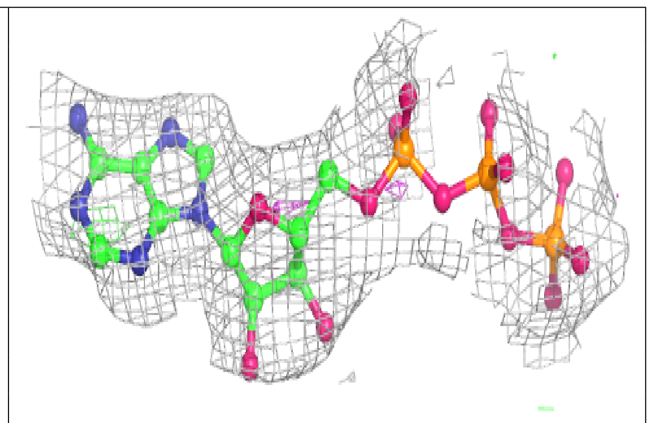


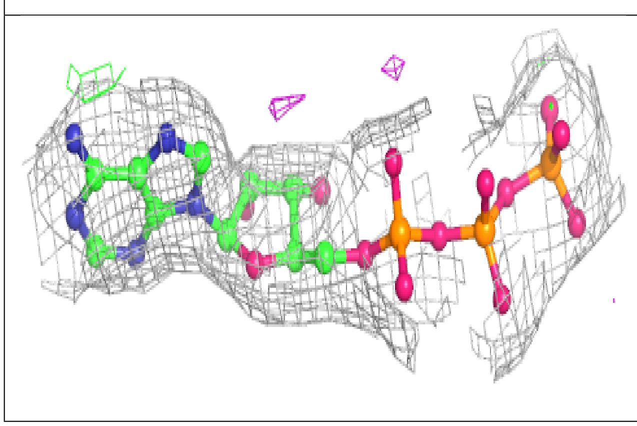


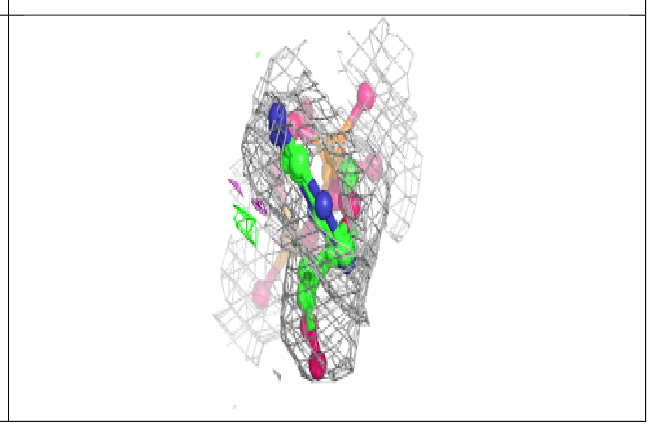


Electron density around ATP T 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

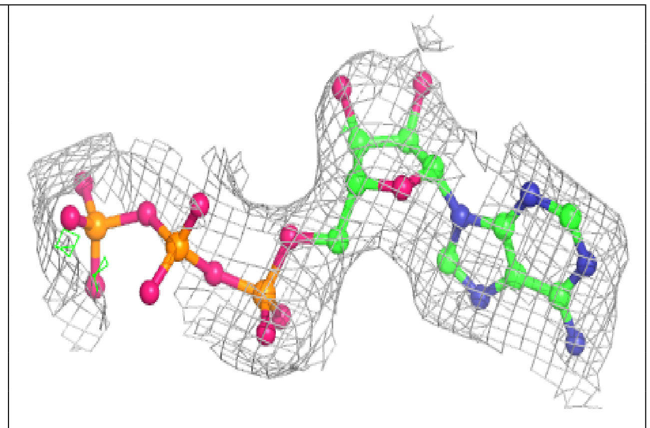


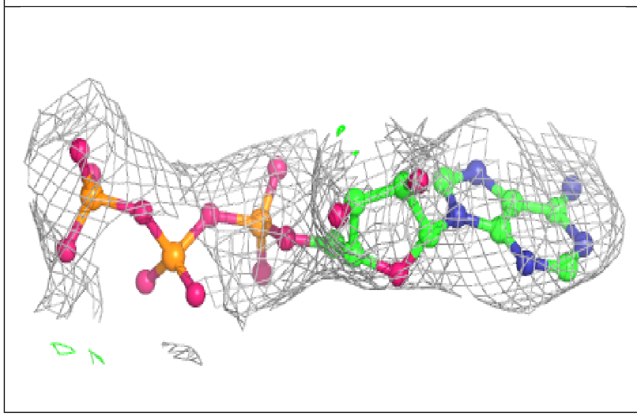


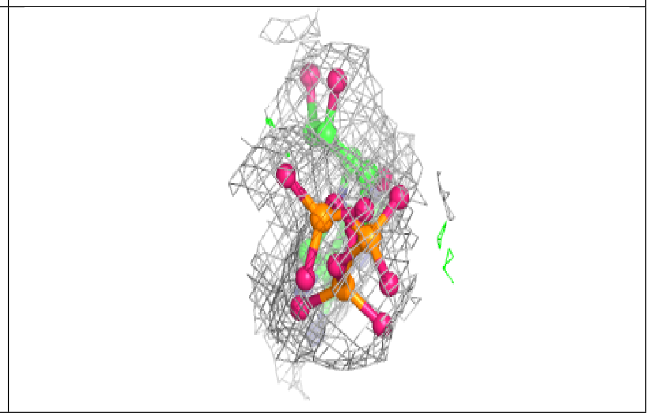


Electron density around ATP W 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

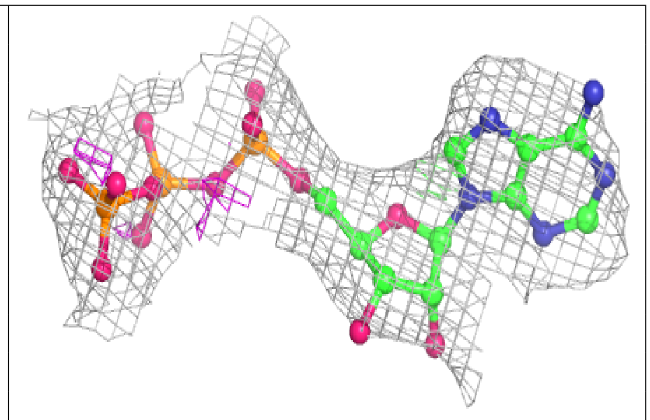


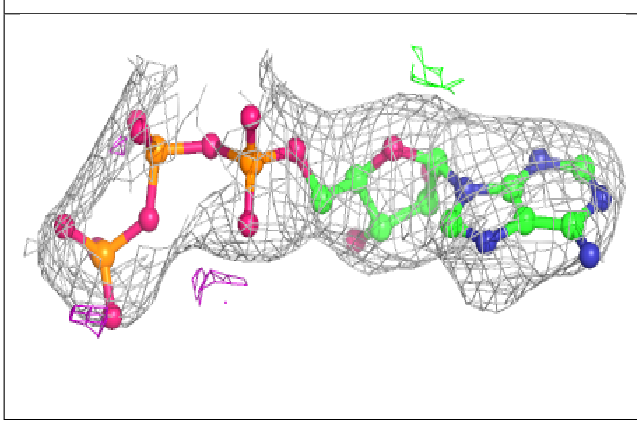


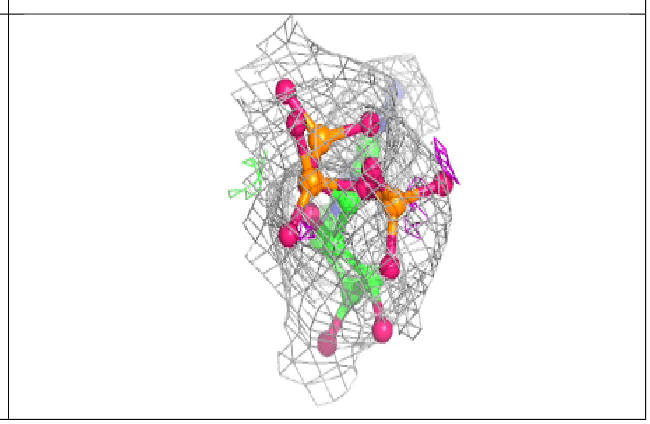


Electron density around ATP S 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

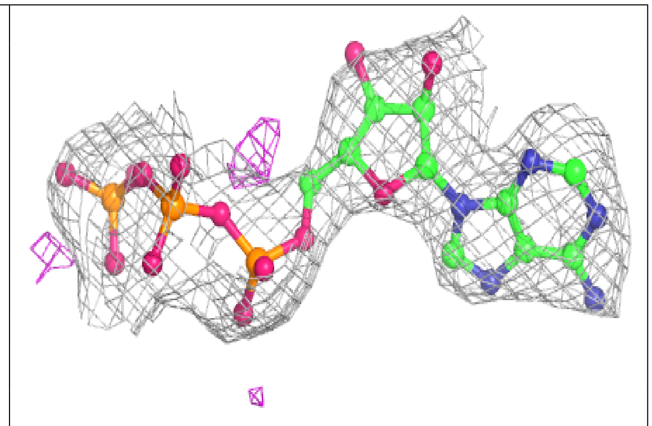


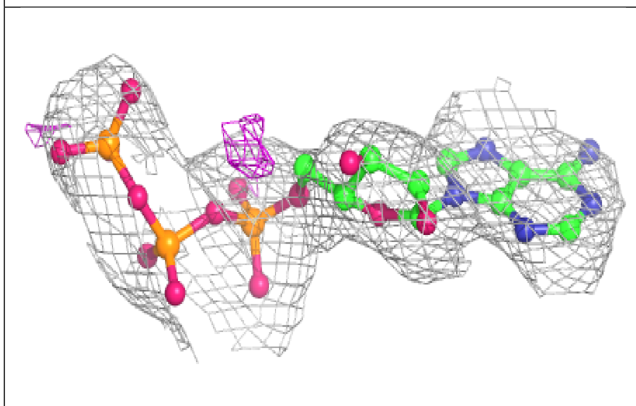


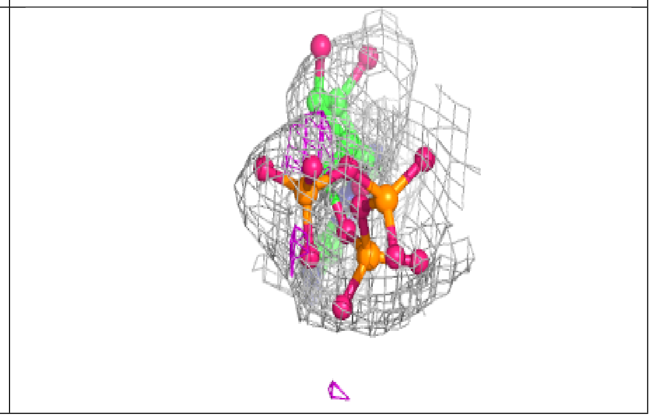


Electron density around ATP X 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

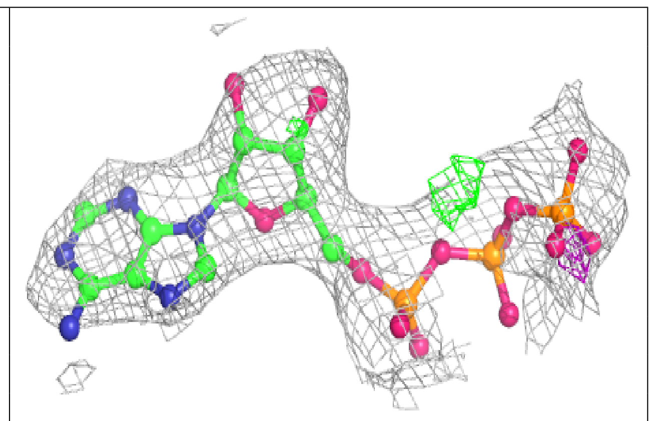


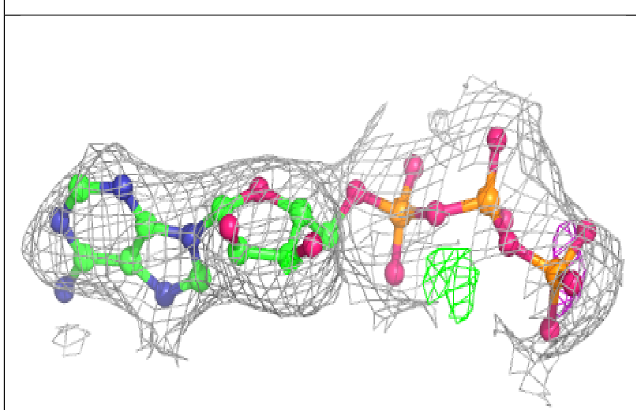


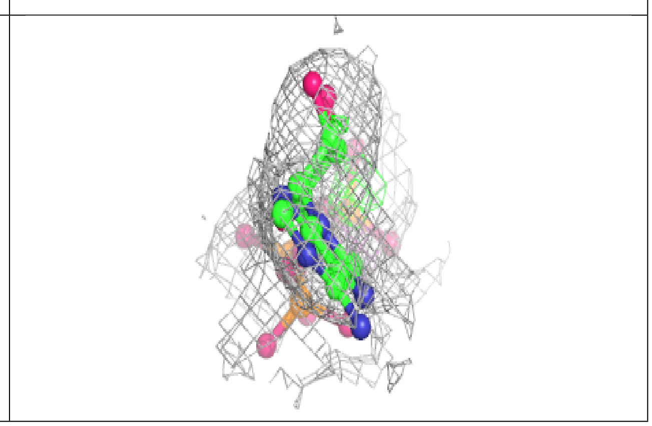


Electron density around ATP Q 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

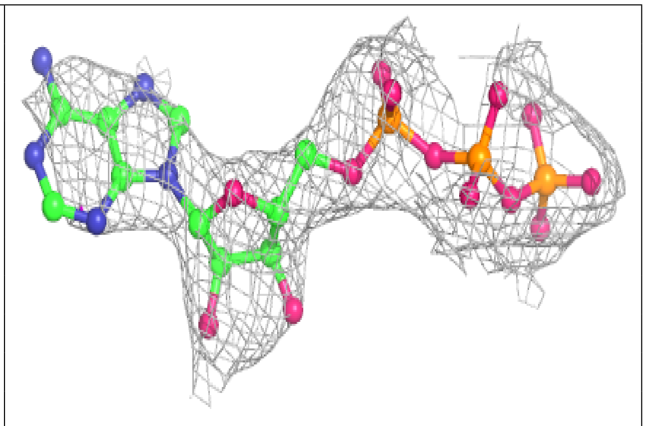


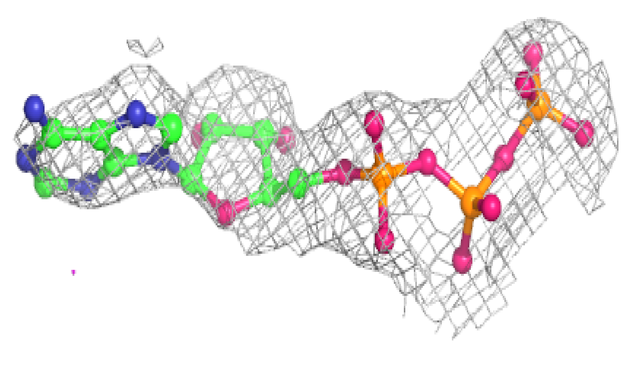


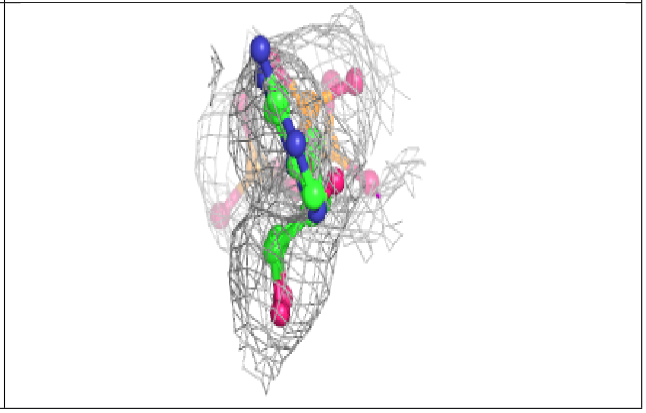


Electron density around ATP O 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

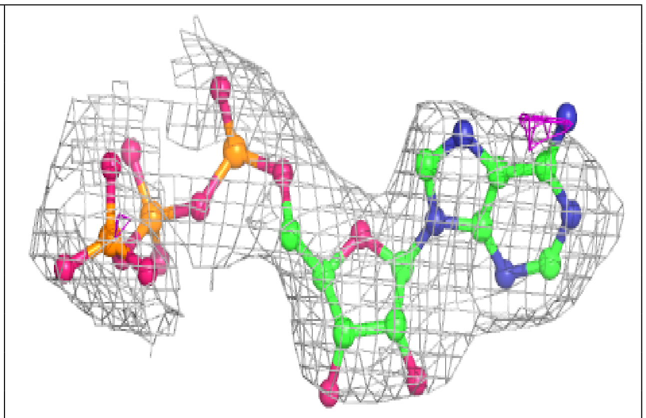


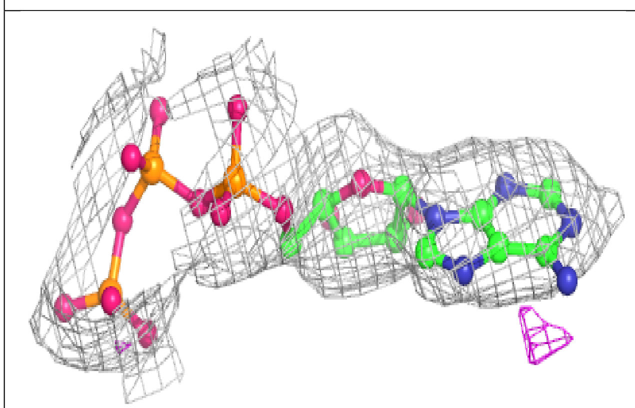


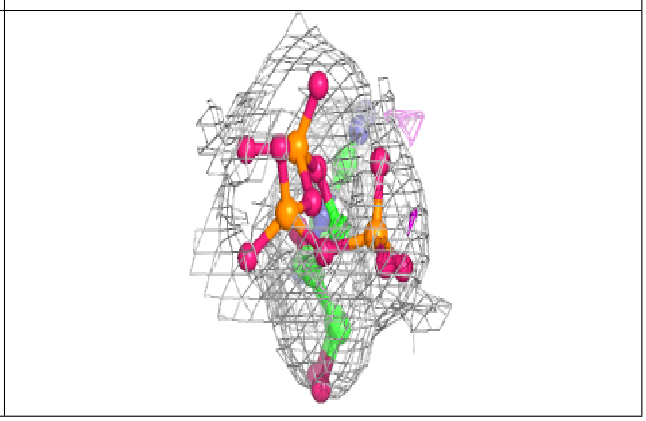


Electron density around ATP T 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

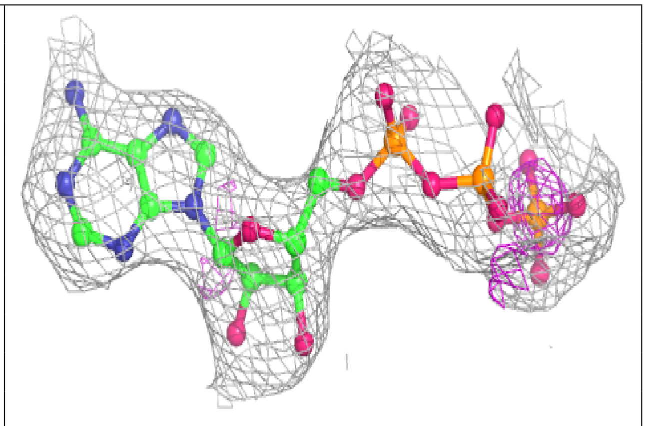


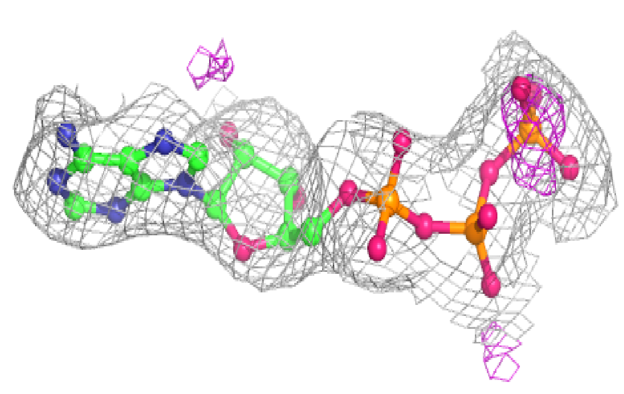


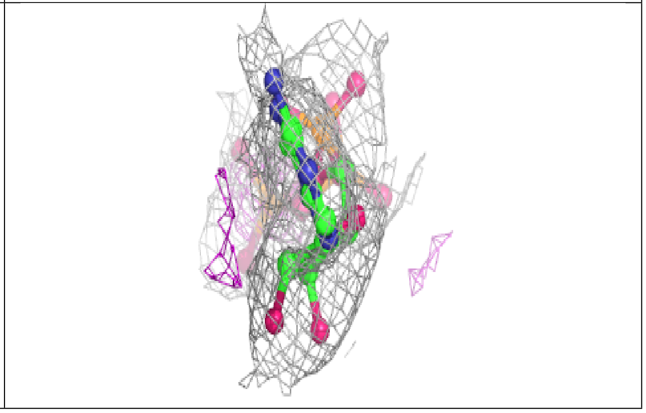


Electron density around ATP F 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)







Electron density around ATP N 701:

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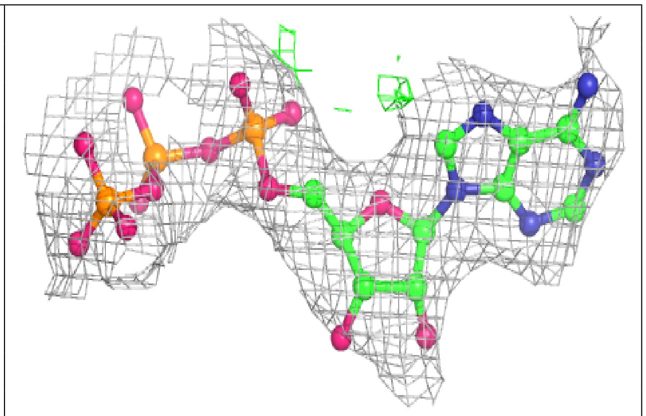
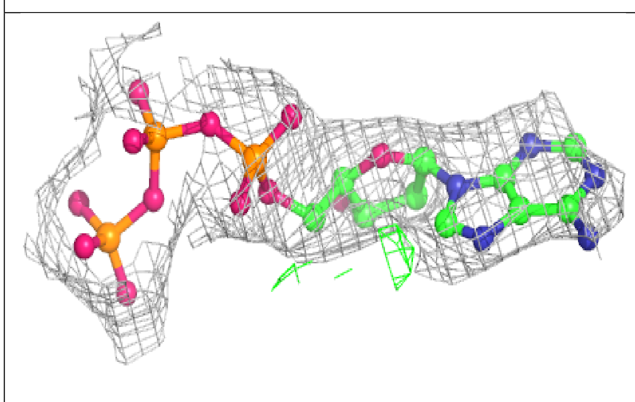
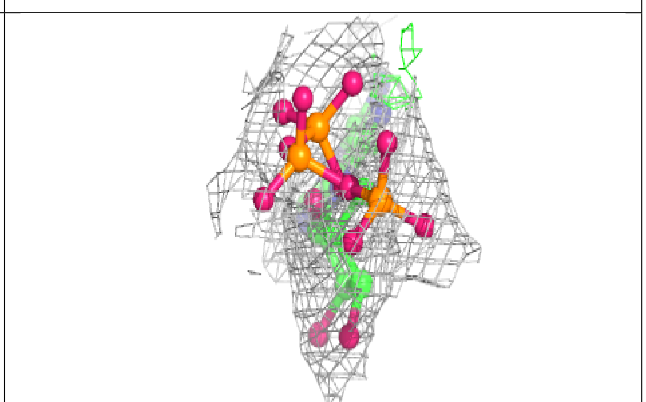
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

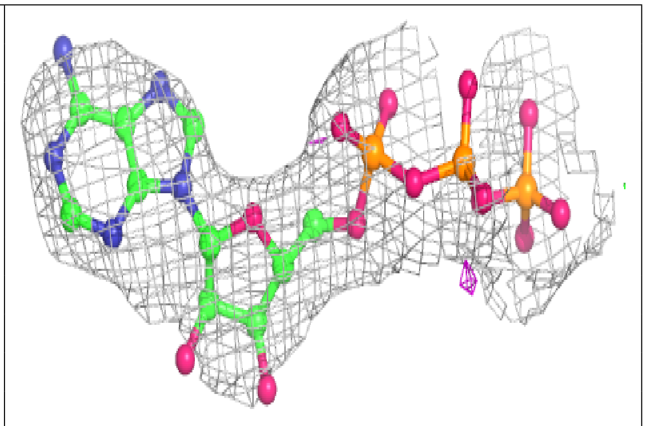


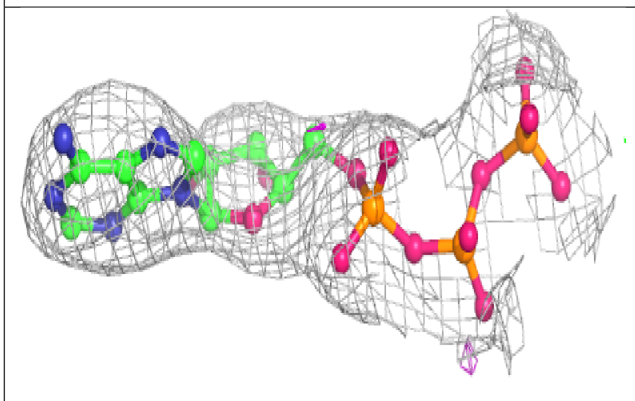


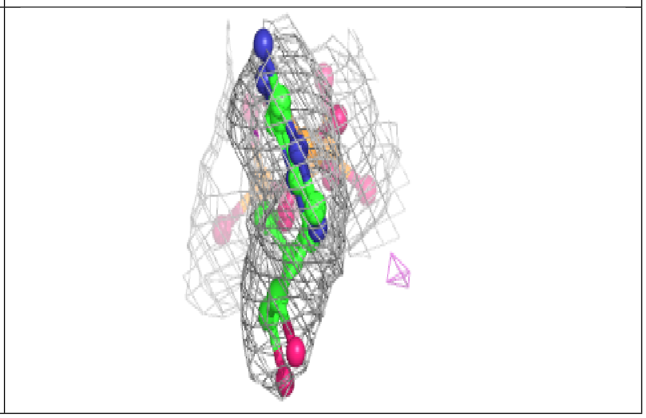


Electron density around ATP N 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)







Electron density around ATP O 701:

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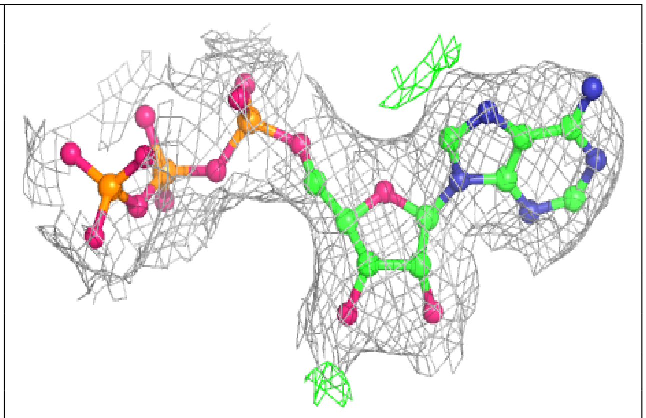
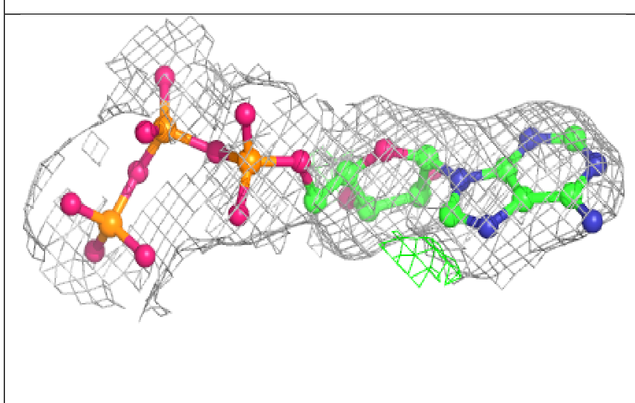
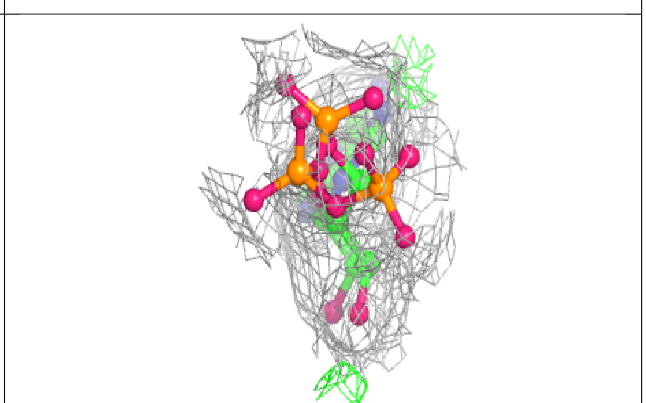
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

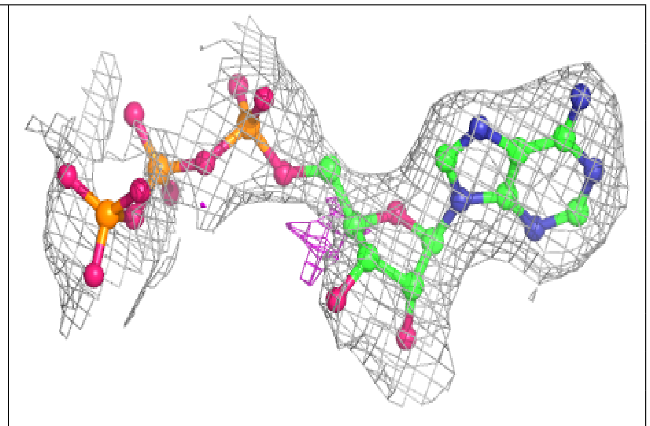


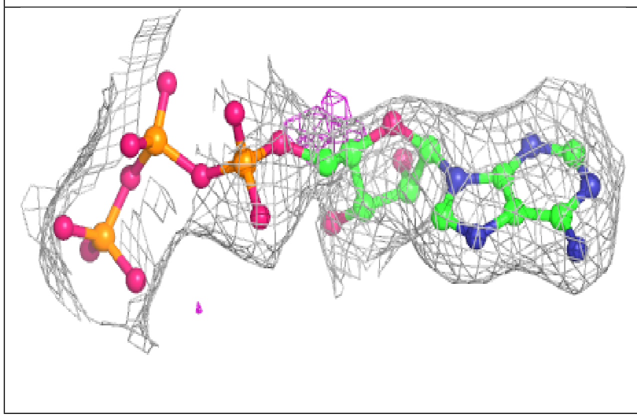


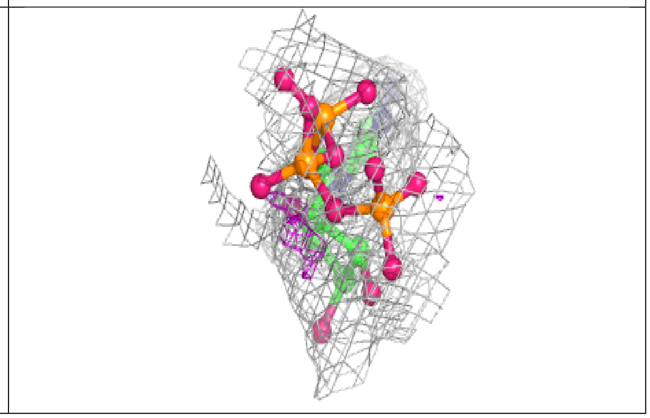


Electron density around ATP B 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

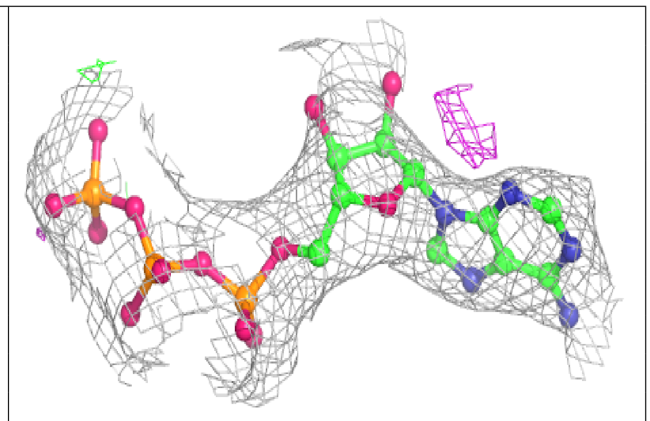


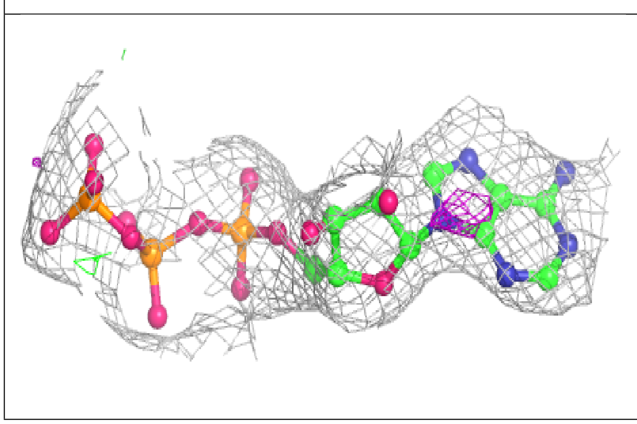


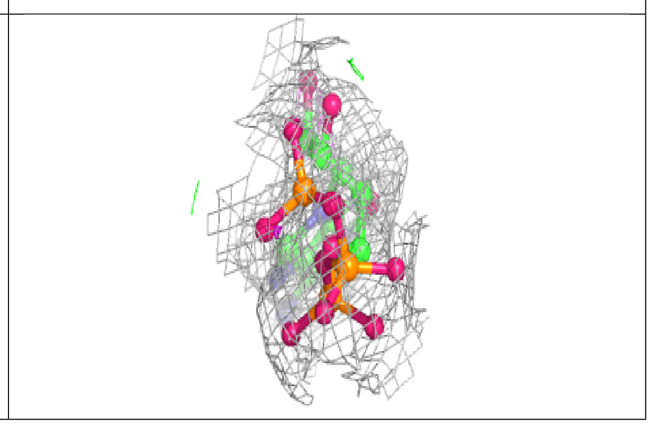


Electron density around ATP X 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

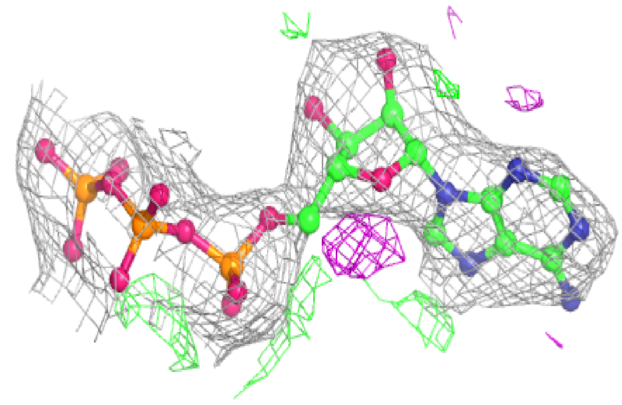


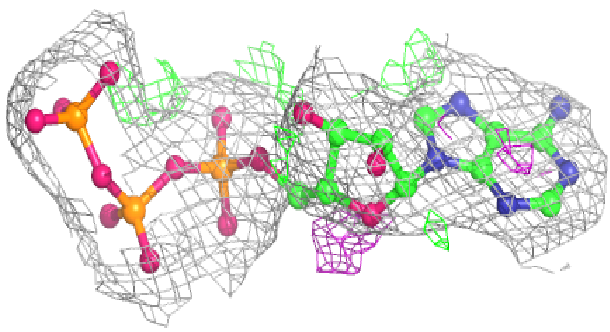


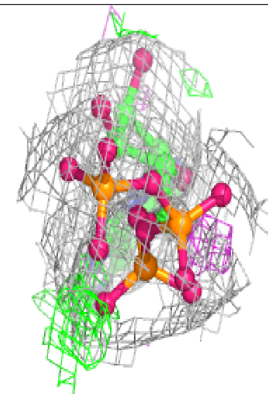


Electron density around ATP R 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

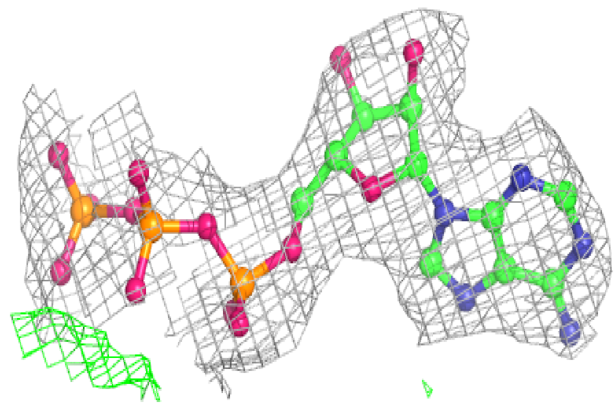


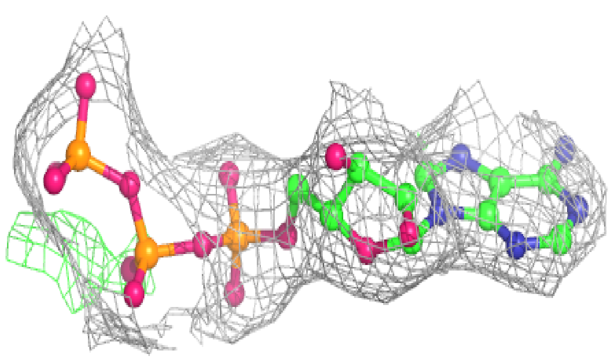


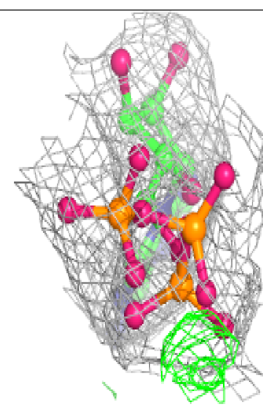


Electron density around ATP M 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

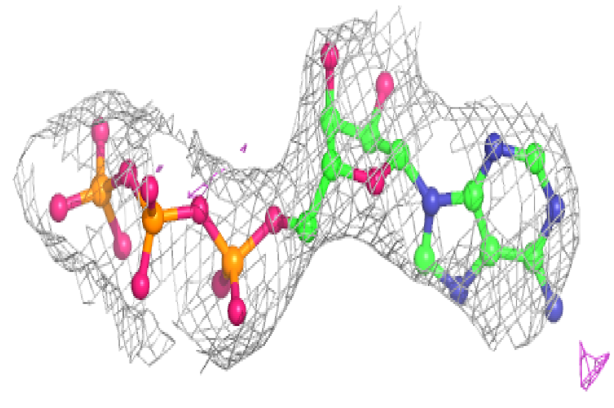


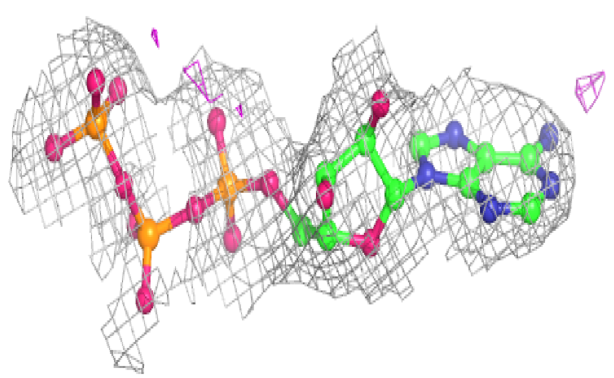


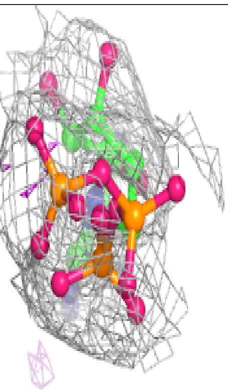


Electron density around ATP V 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

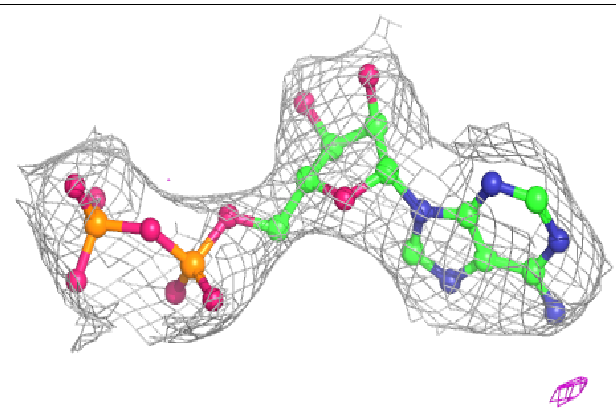


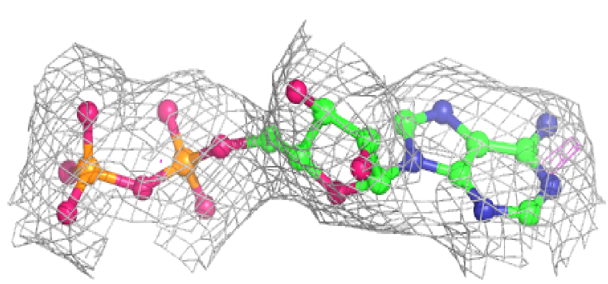


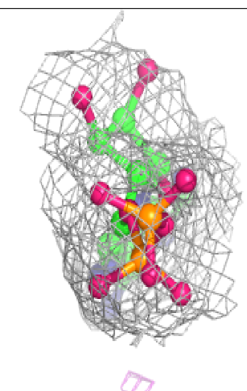


Electron density around ADP W 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

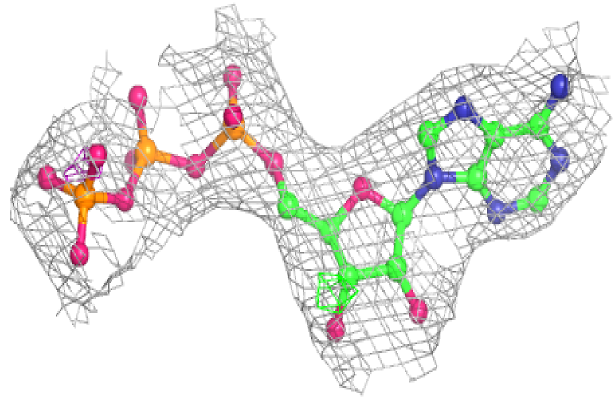


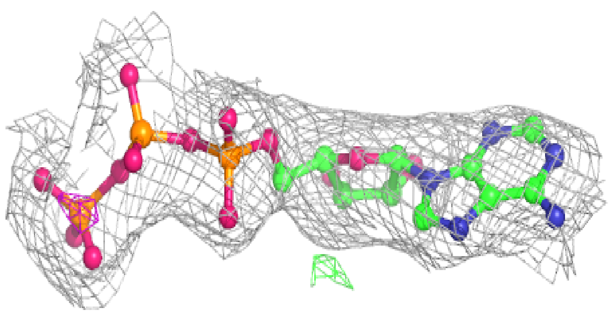


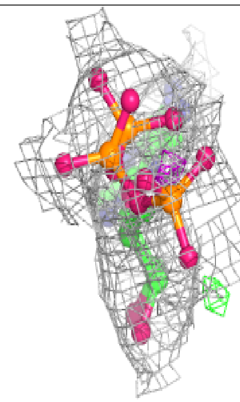


Electron density around ATP K 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

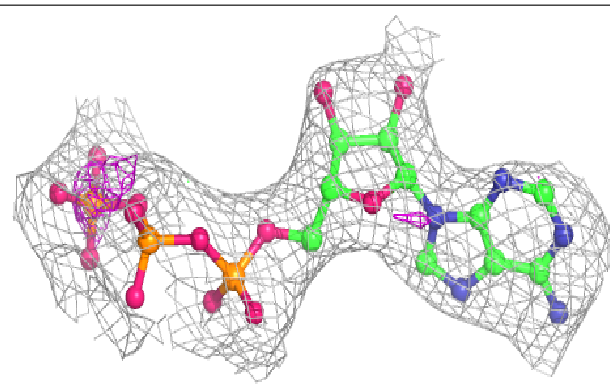


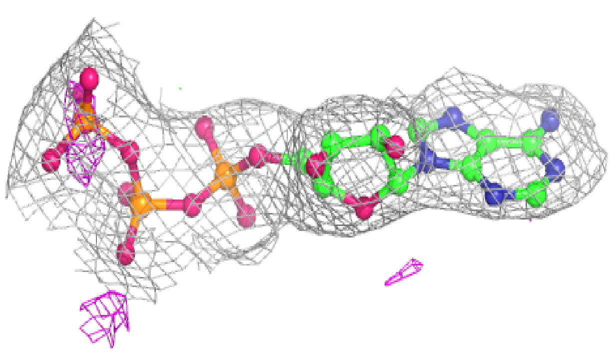


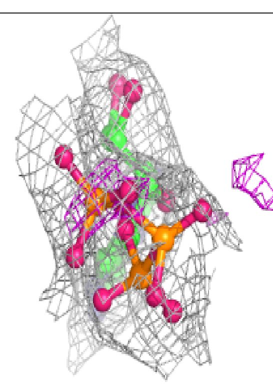


Electron density around ATP L 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

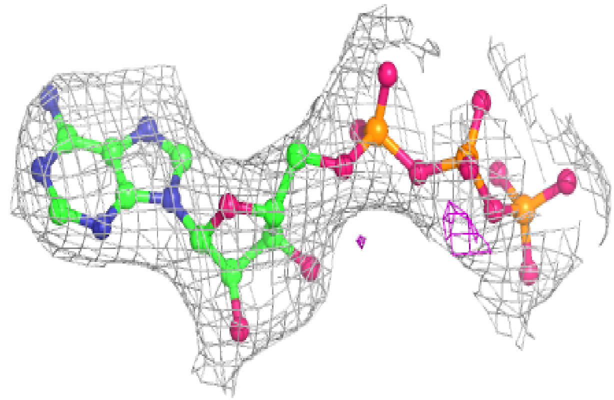


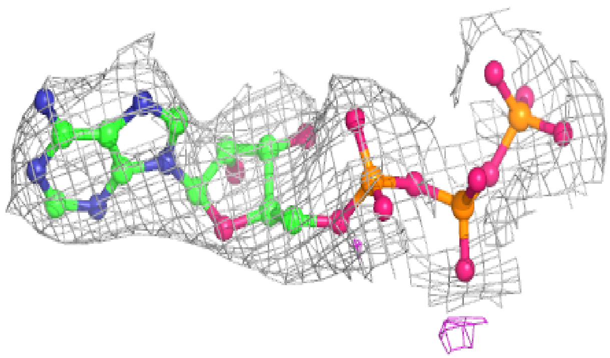


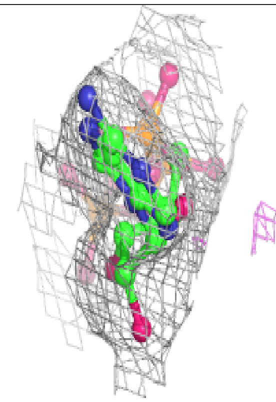


Electron density around ATP I 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

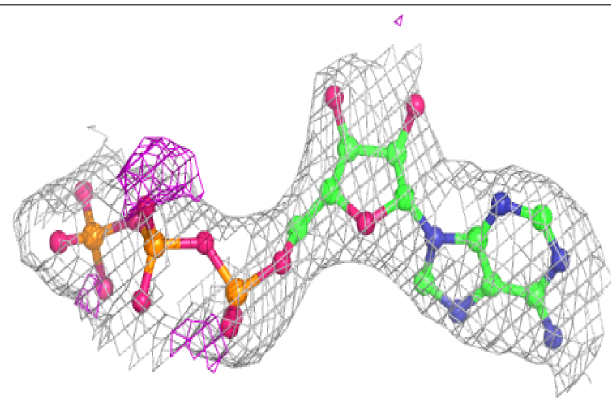


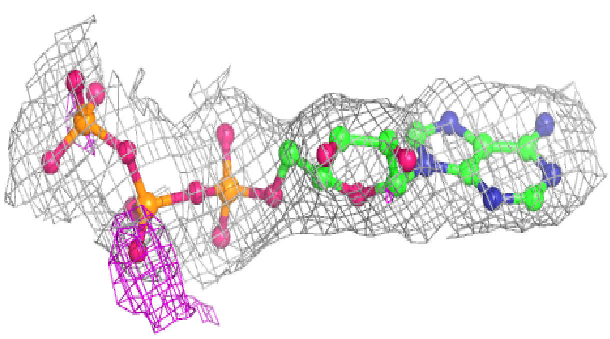


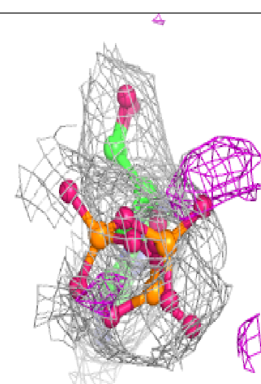


Electron density around ATP P 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

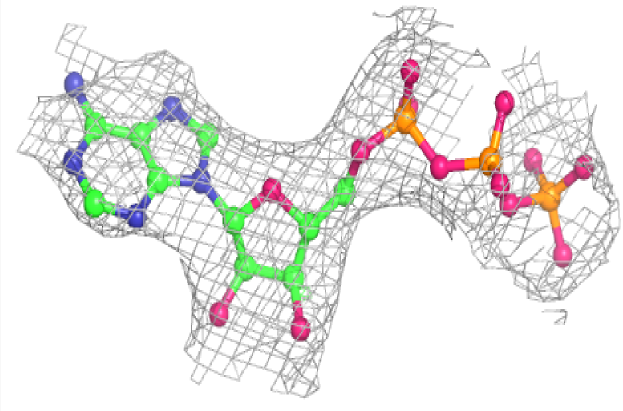


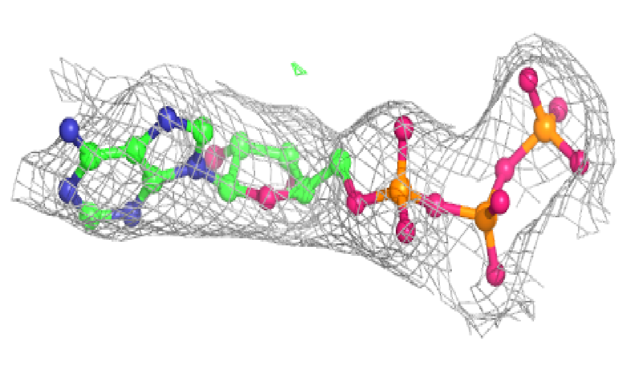


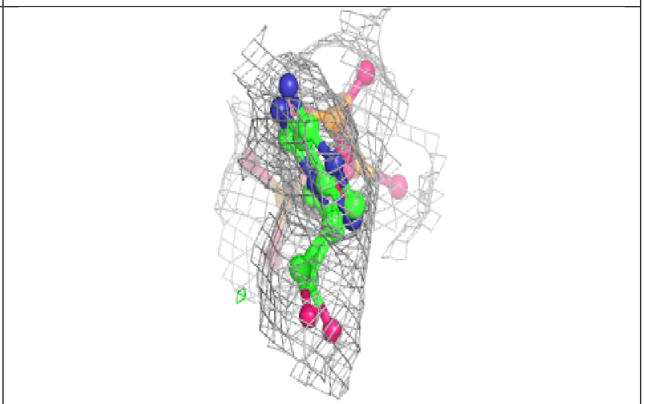


Electron density around ATP E 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

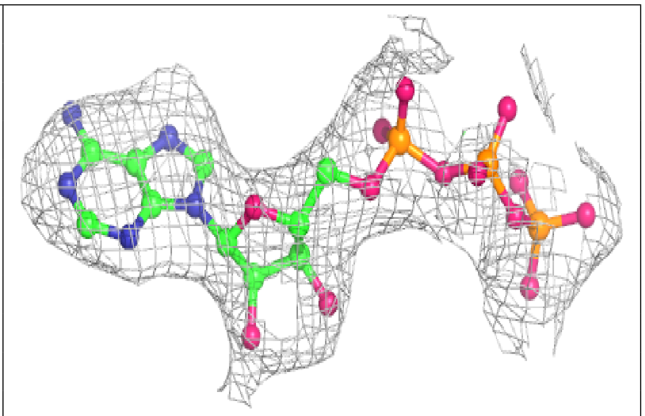


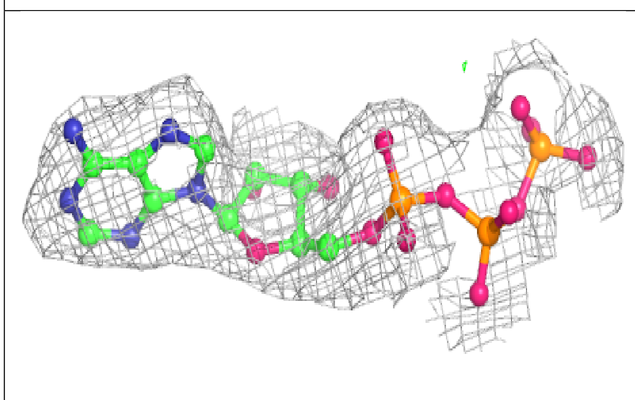


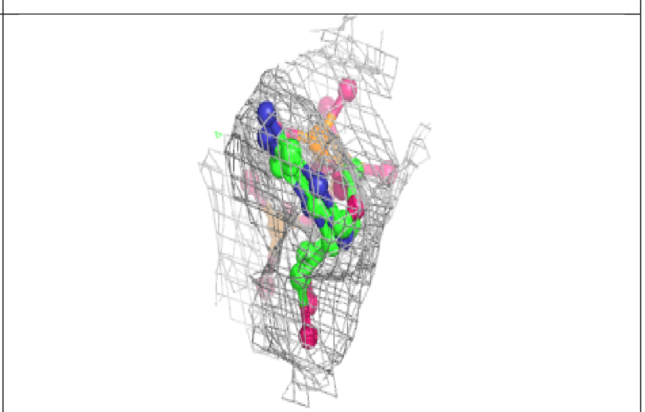


Electron density around ATP C 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

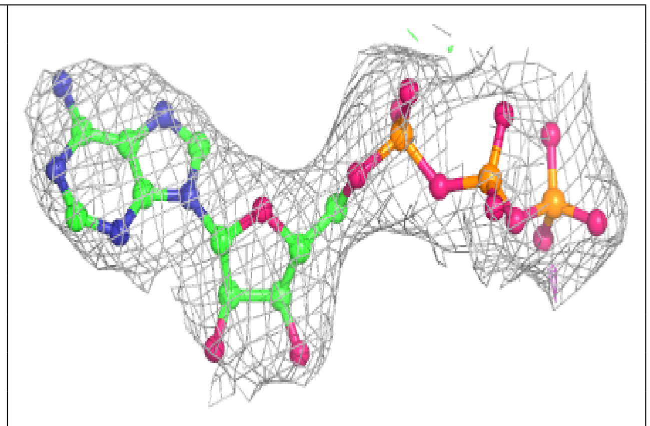


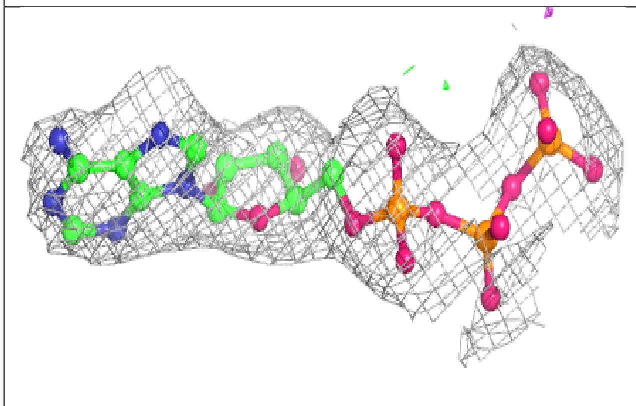


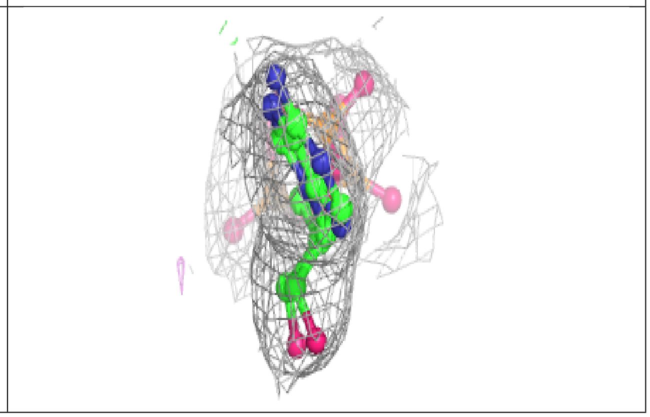


Electron density around ATP D 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

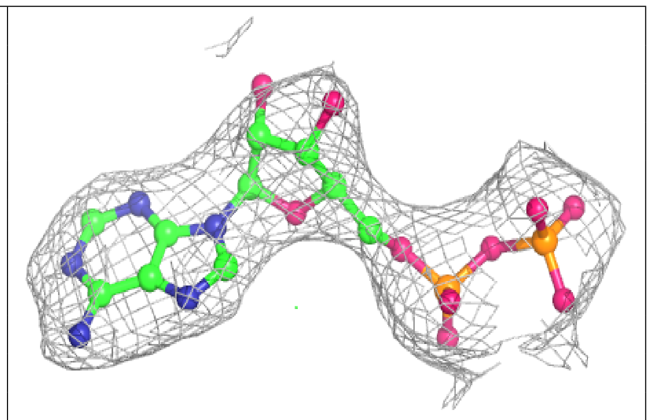


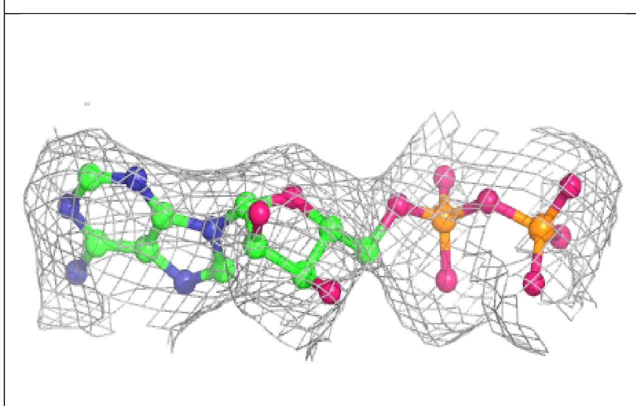


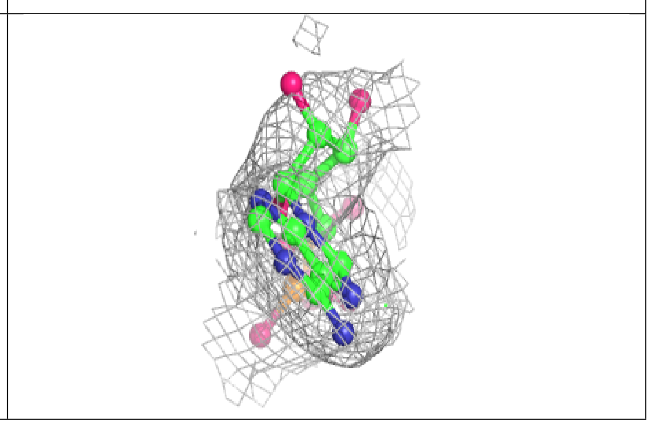


Electron density around ADP Q 701:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

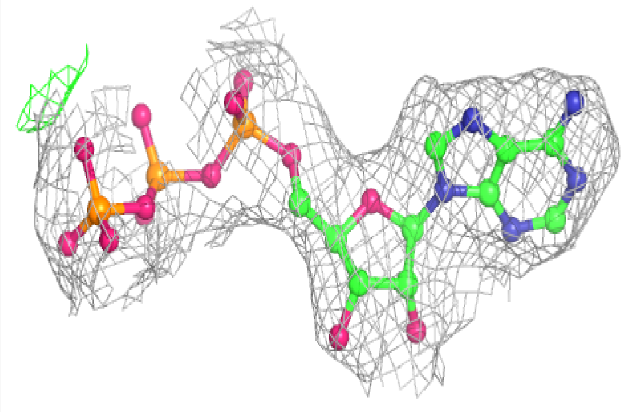


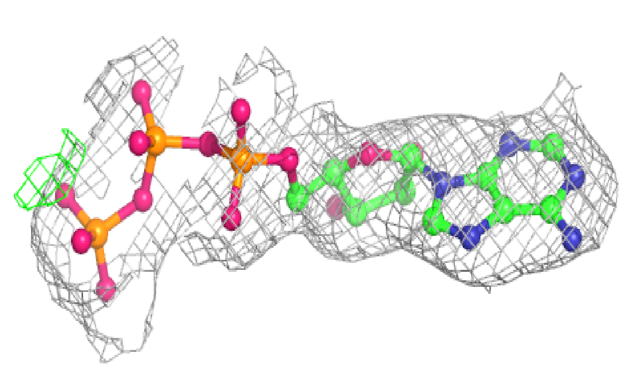


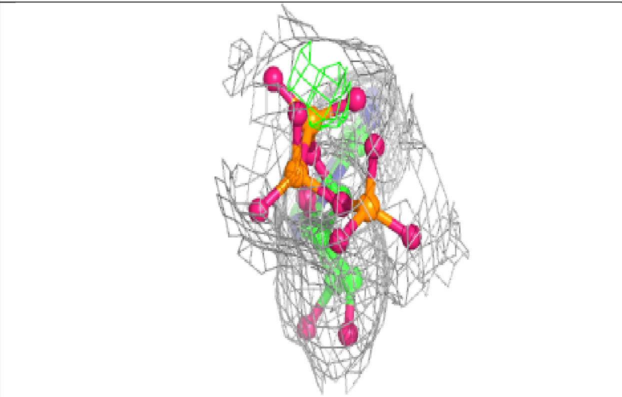


Electron density around ATP U 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

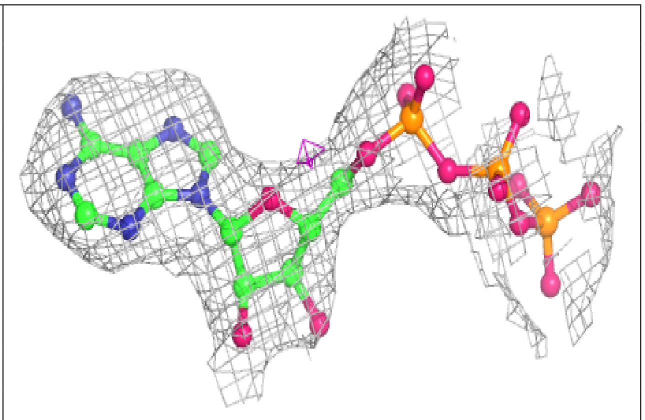


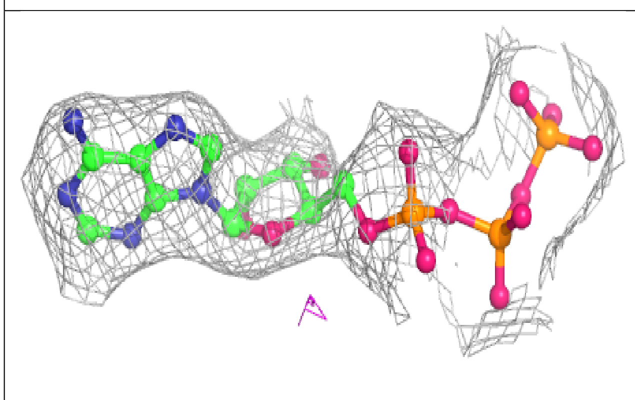


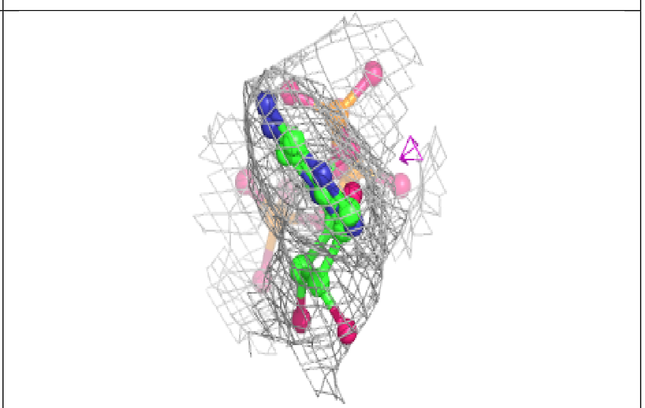


Electron density around ATP H 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

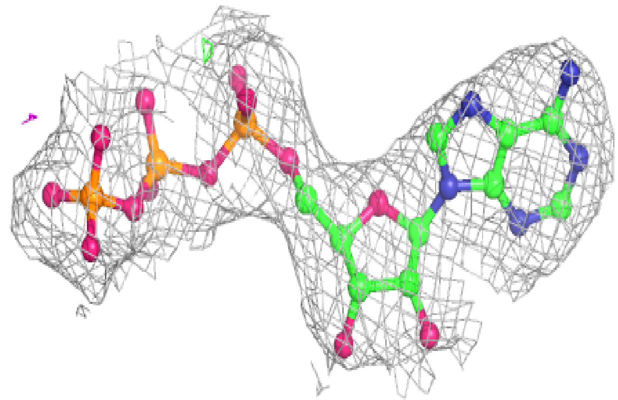


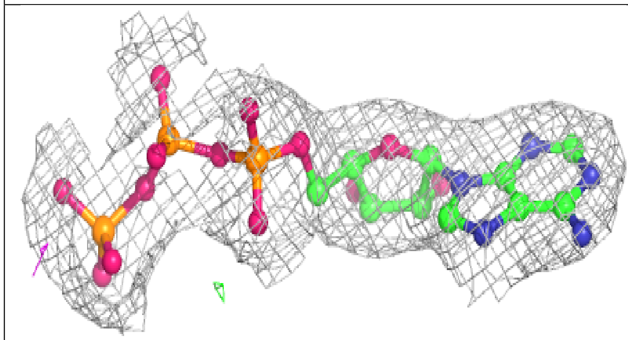


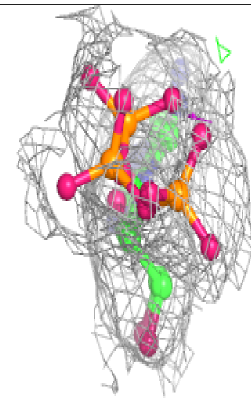


Electron density around ATP J 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

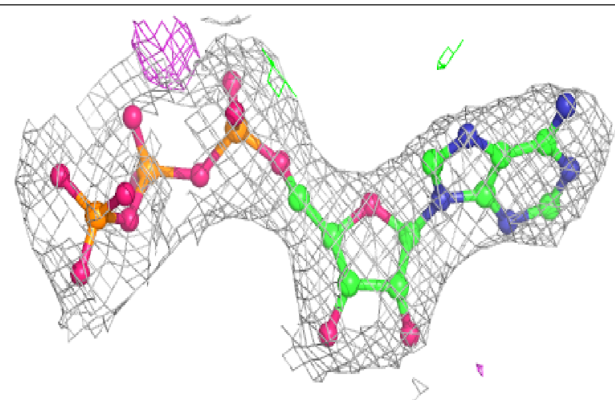


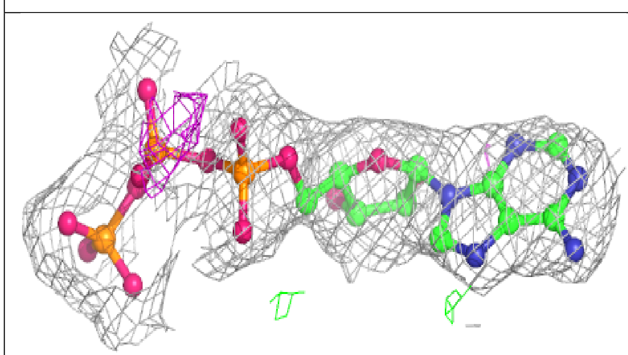


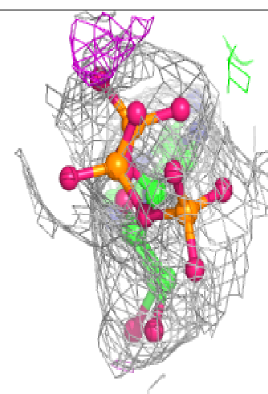


Electron density around ATP G 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

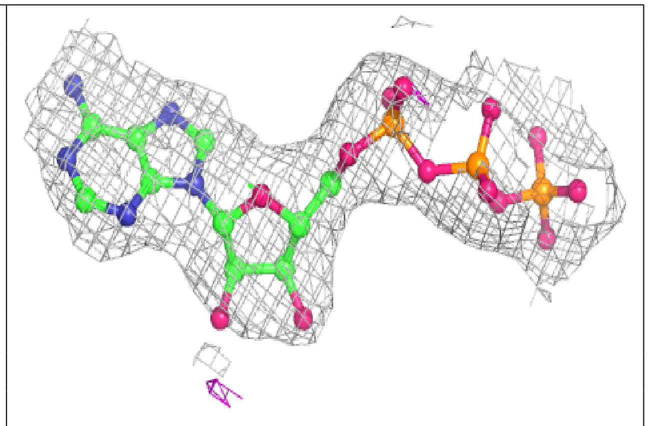


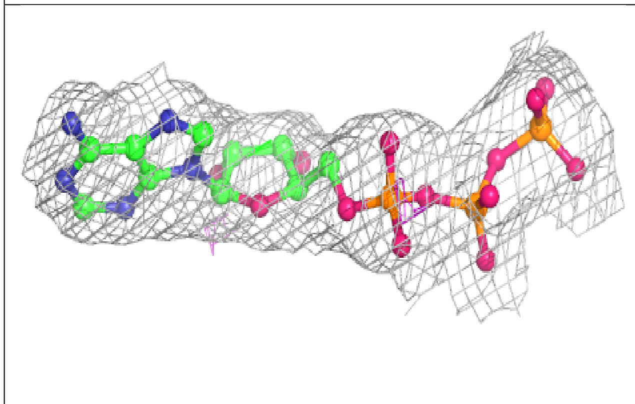


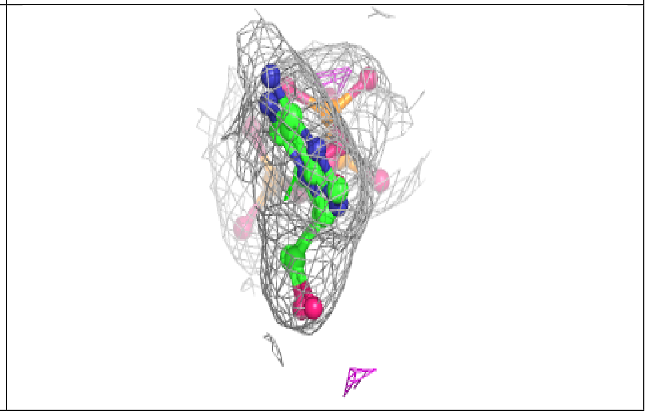


Electron density around ATP G 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

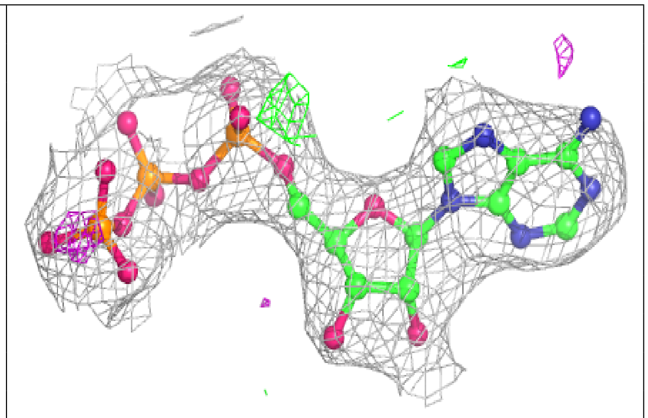


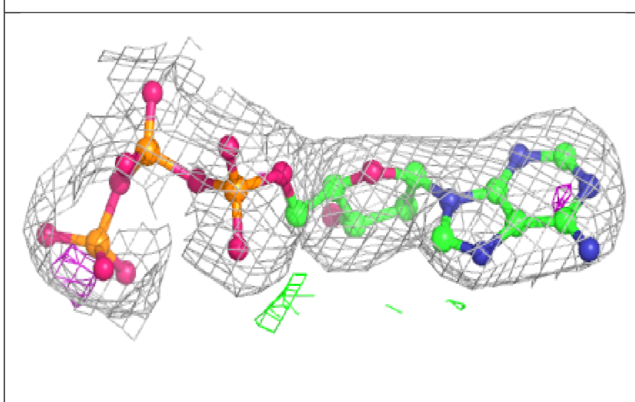


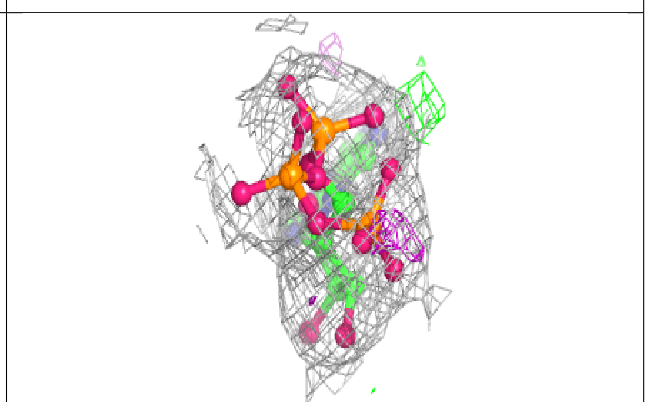


Electron density around ATP F 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

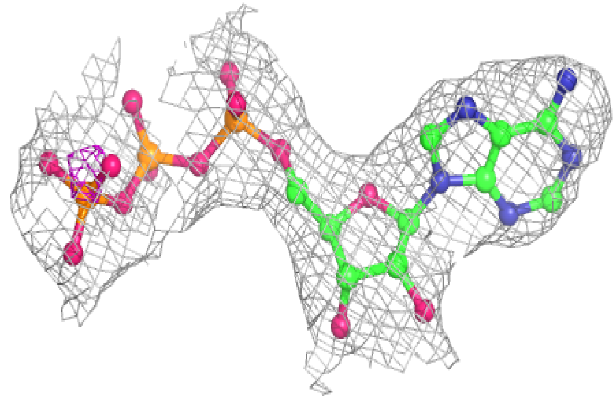


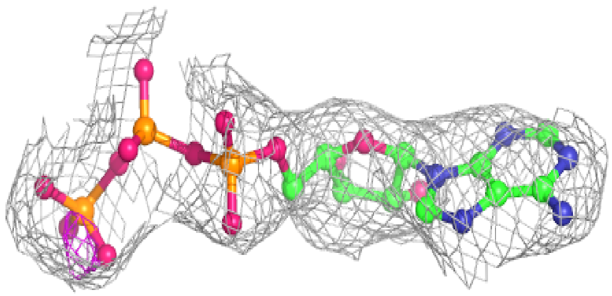


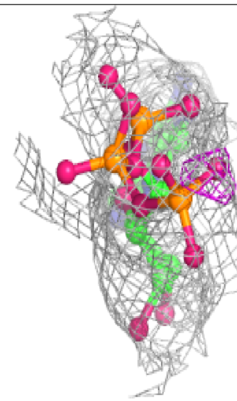


Electron density around ATP H 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

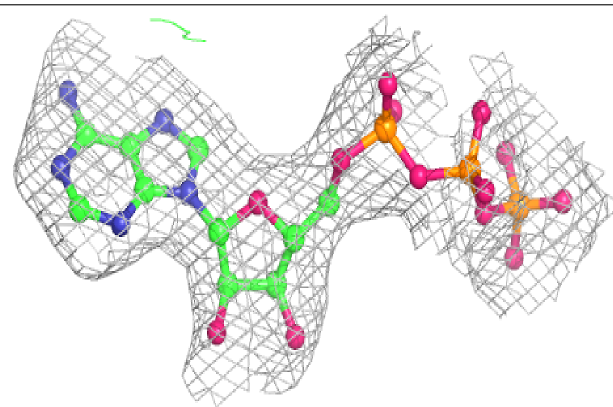


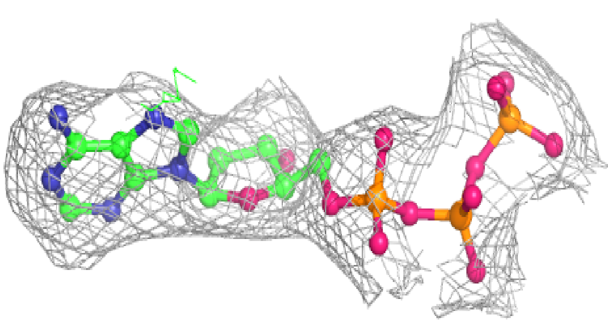


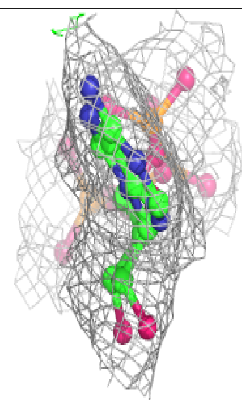


Electron density around ATP K 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

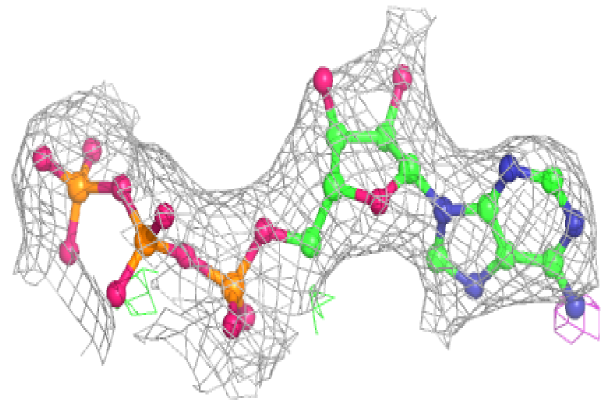


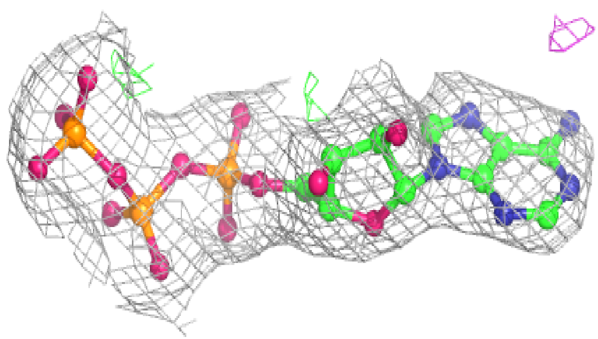


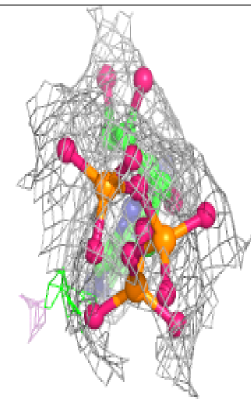


Electron density around ATP R 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

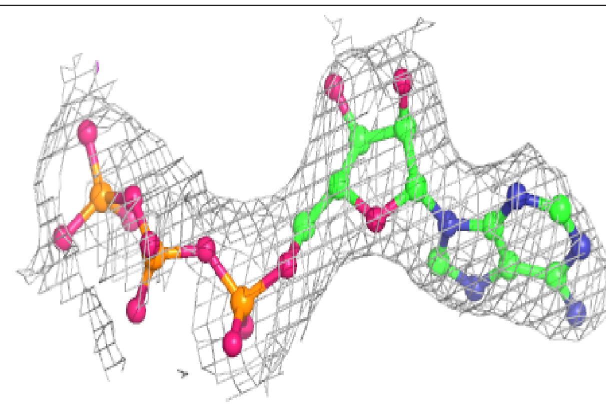


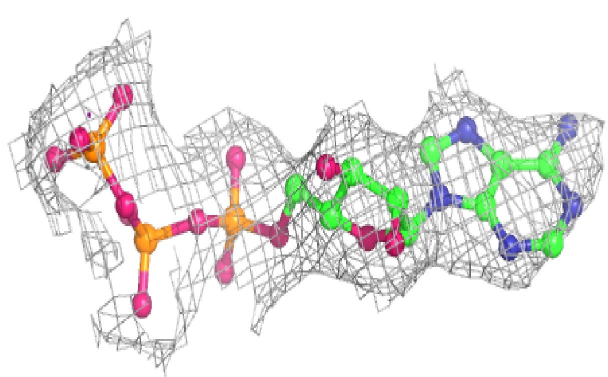


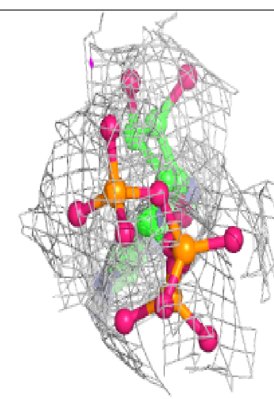


Electron density around ATP V 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

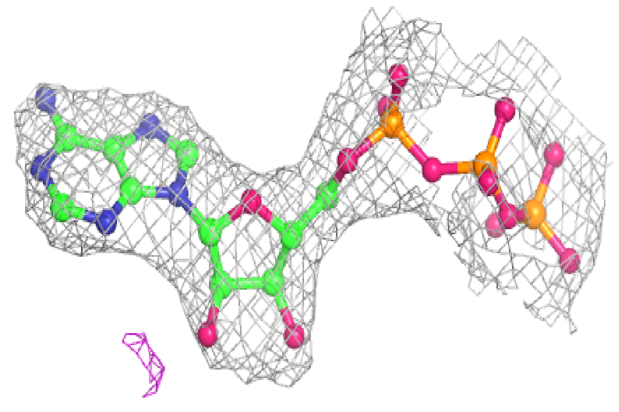


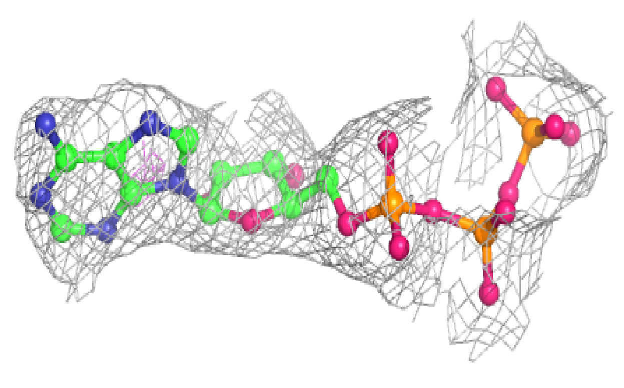


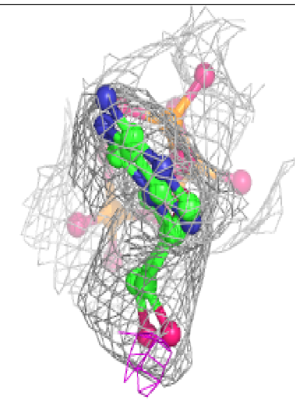


Electron density around ATP A 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

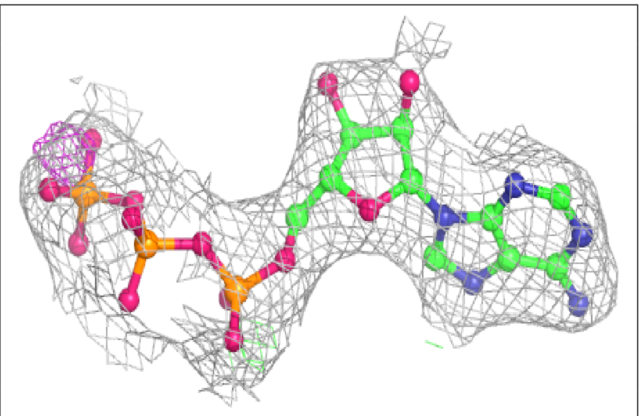


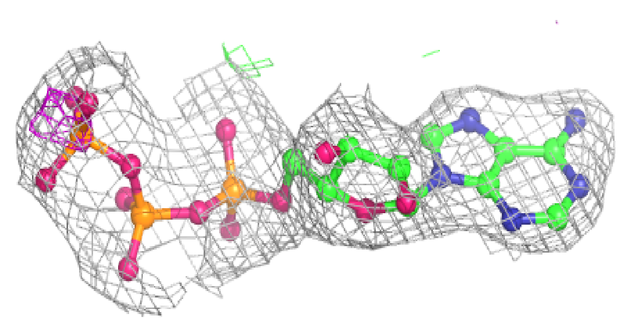


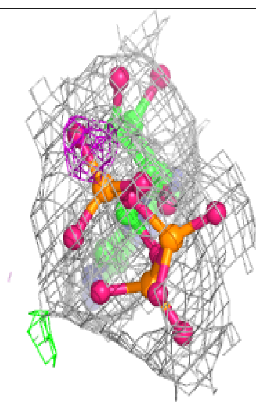


Electron density around ATP L 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

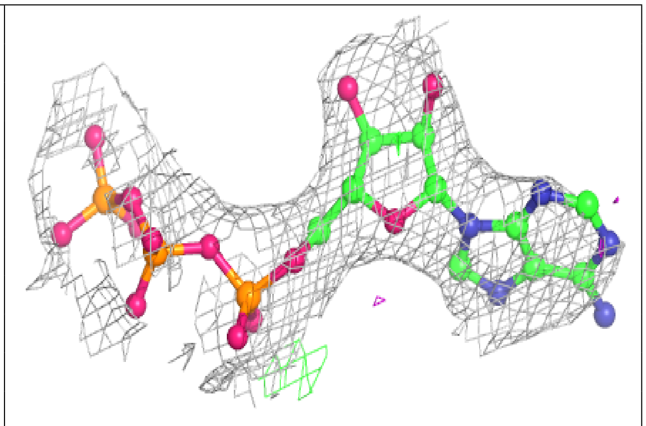


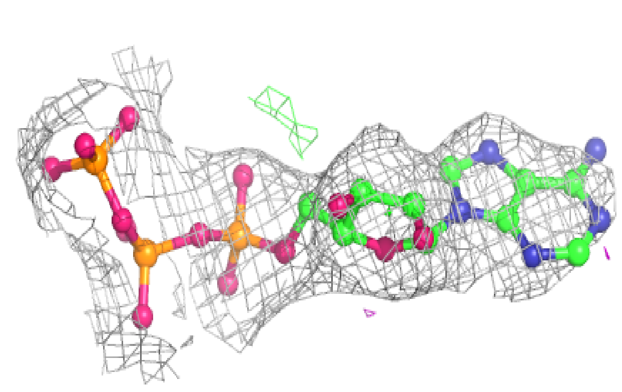


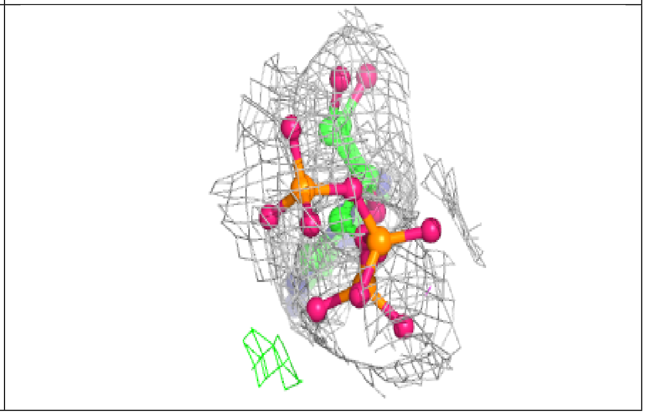


Electron density around ATP P 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

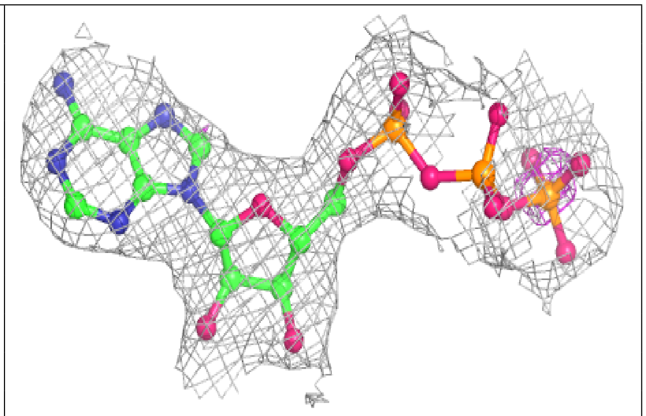


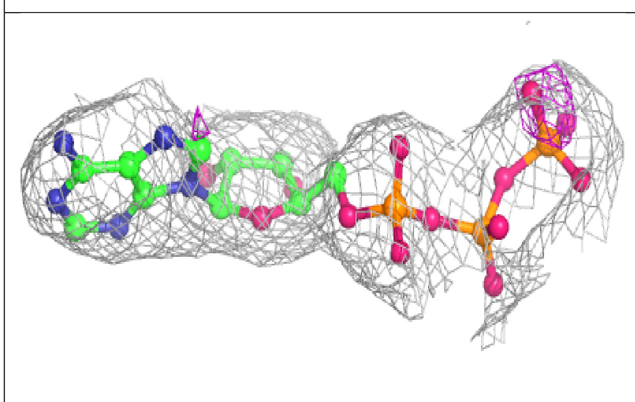


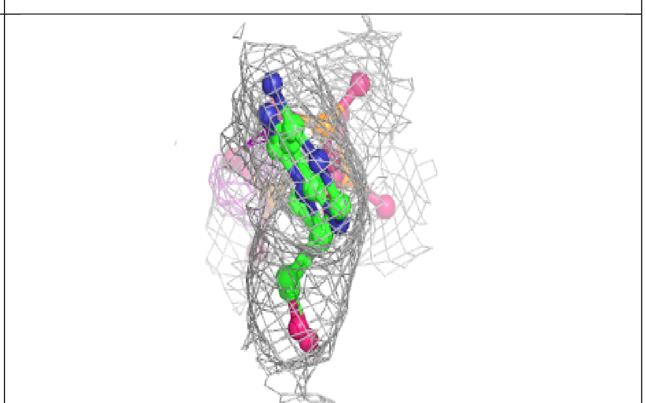


Electron density around ATP B 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

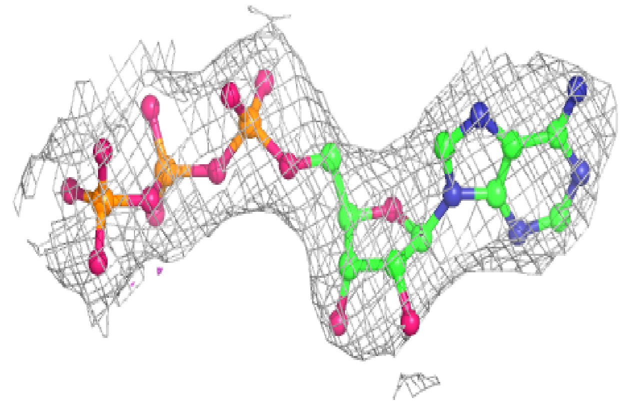


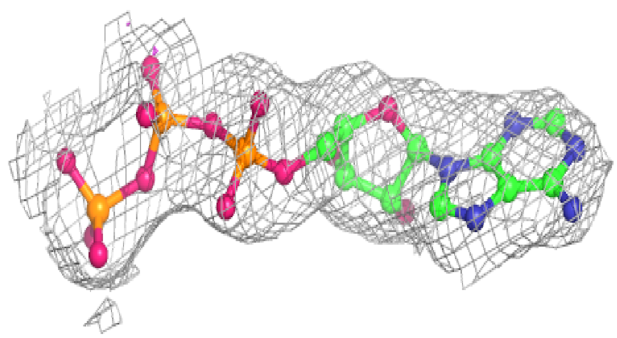


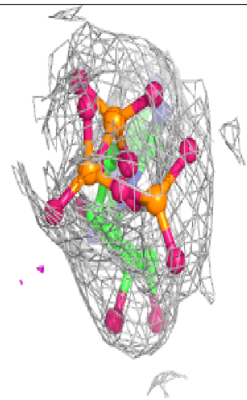


Electron density around ATP A 702:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

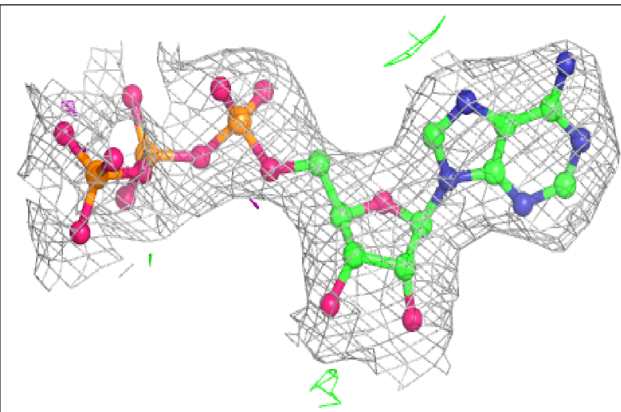


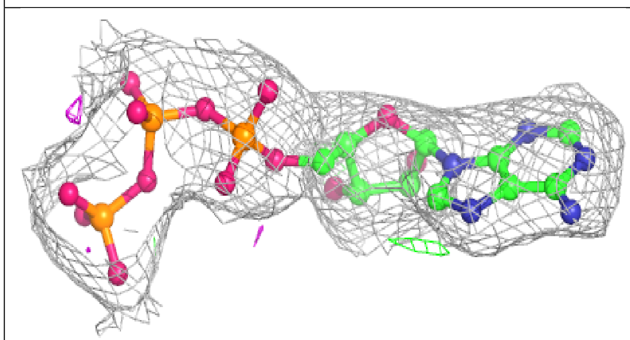


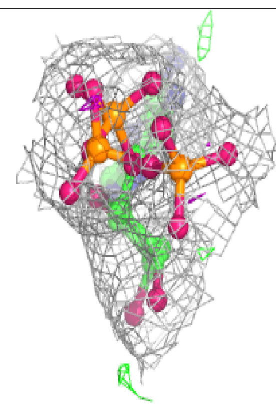


Electron density around ATP E 701:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

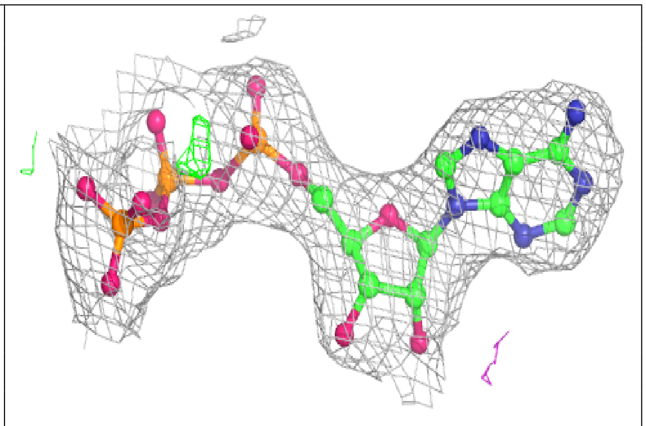


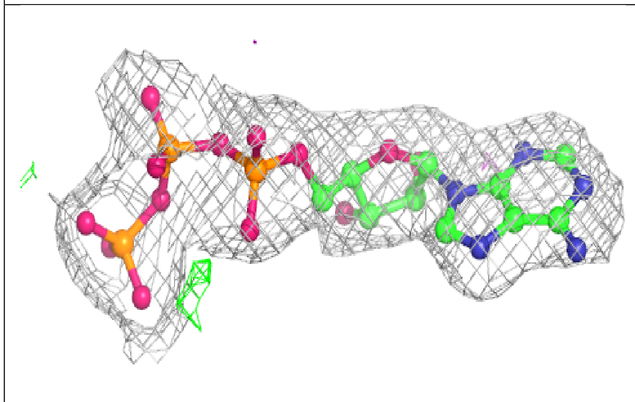


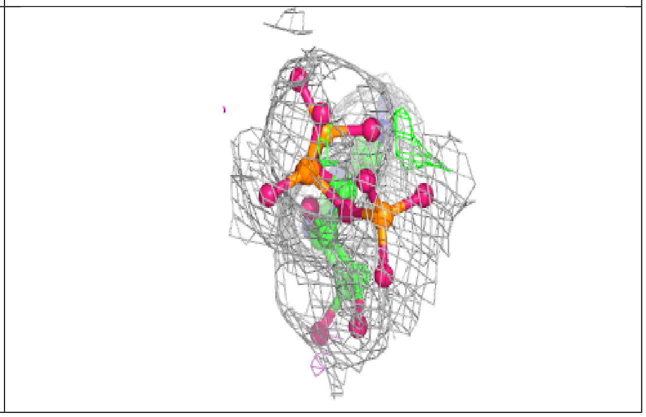


Electron density around ATP J 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

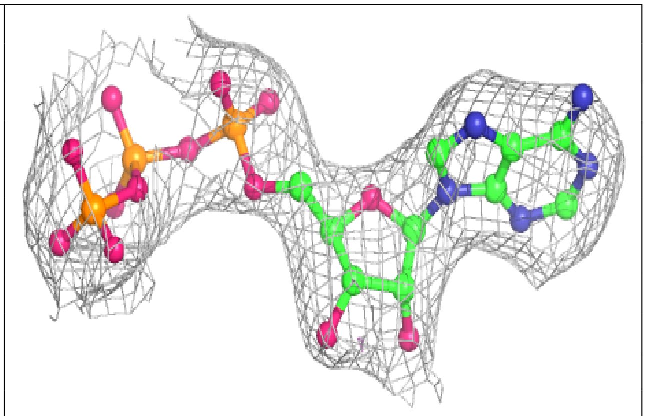


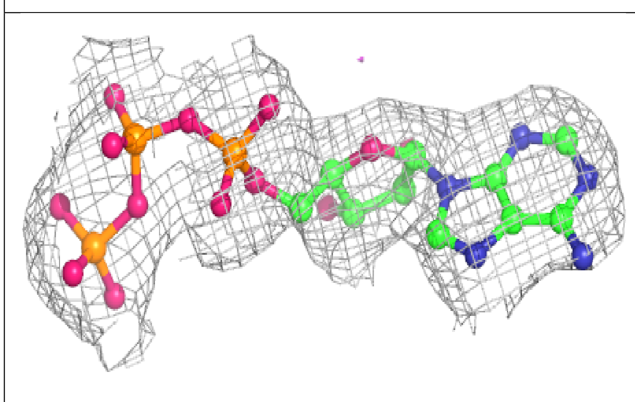


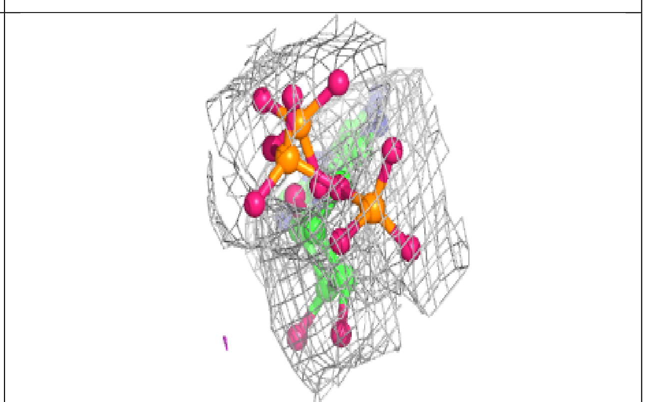


Electron density around ATP C 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

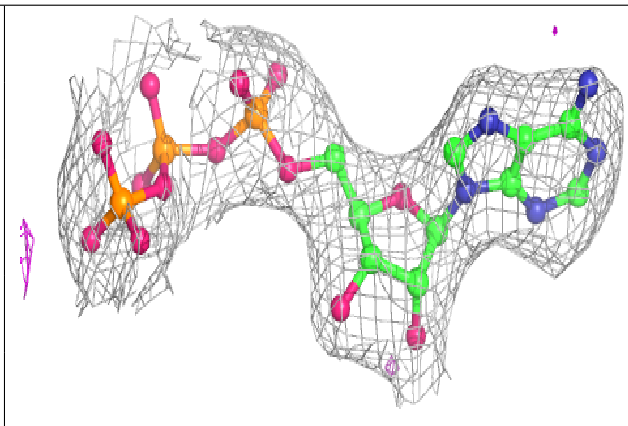


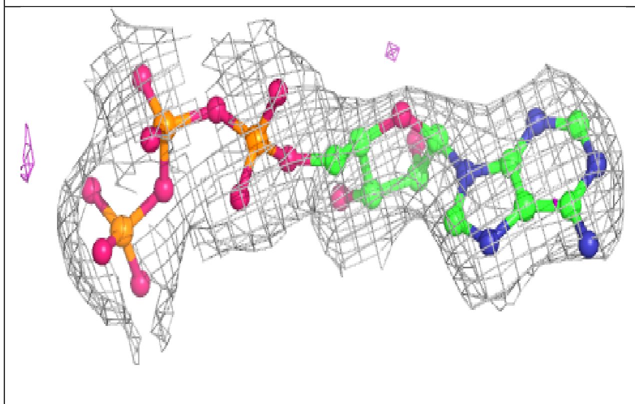


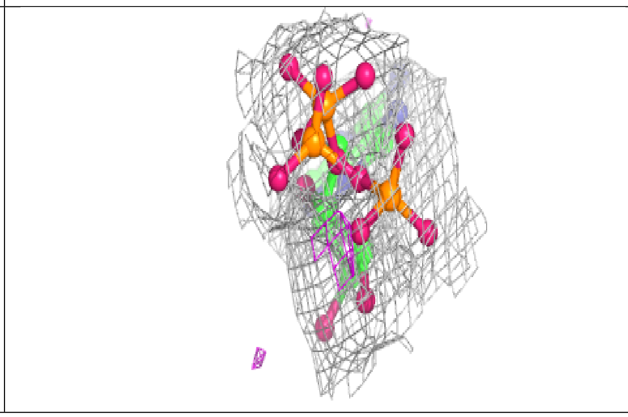


Electron density around ATP I 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

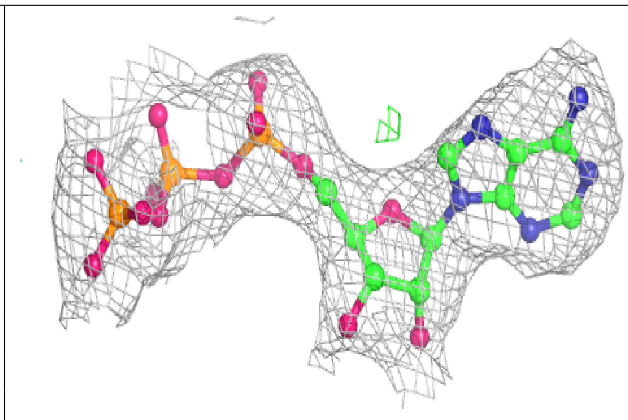


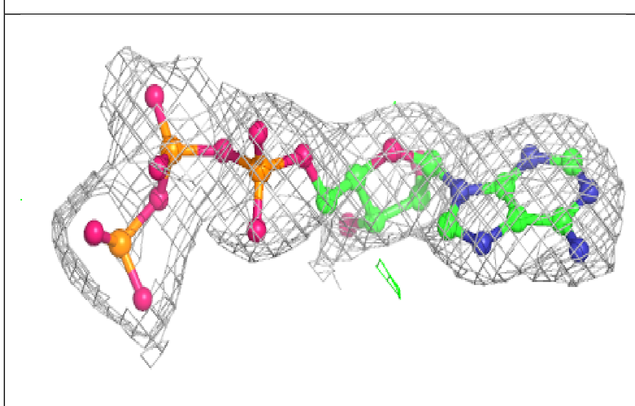


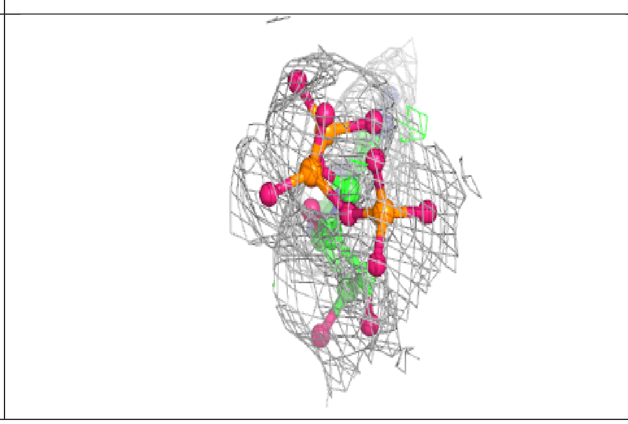


Electron density around ATP D 701:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)







6.5 Other polymers (i)

There are no such residues in this entry.