



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 9, 2023 – 11:05 PM EDT

PDB ID : 7MTX
Title : Crystal Structure of the Catalytic Domain of the Inosine Monophosphate Dehydrogenase from Bacillus anthracis in the complex with IMP and the inhibitor P176
Authors : Kim, Y.; Maltseva, N.; Makowska-Grzyska, M.; Gu, M.; Gollapalli, D.; Hedstrom, L.; Anderson, W.F.; Joachimiak, A.; Center for Structural Genomics of Infectious Diseases; Center for Structural Genomics of Infectious Diseases (CSGID)
Deposited on : 2021-05-13
Resolution : 2.44 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.35.1
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)

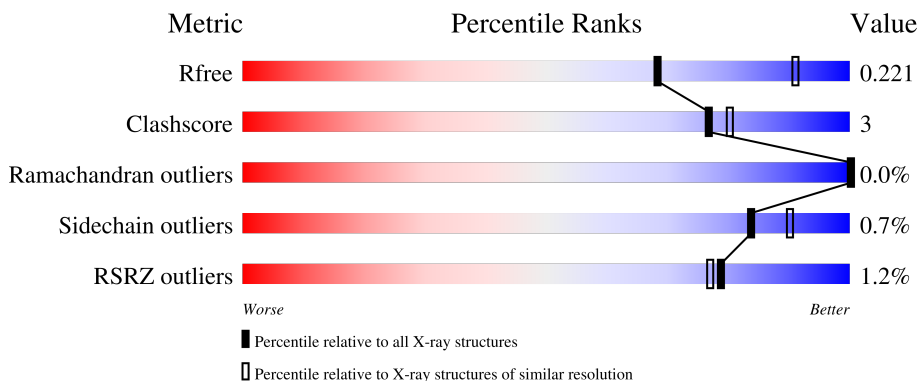
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.44 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	1564 (2.46-2.42)
Clashscore	141614	1631 (2.46-2.42)
Ramachandran outliers	138981	1617 (2.46-2.42)
Sidechain outliers	138945	1617 (2.46-2.42)
RSRZ outliers	127900	1547 (2.46-2.42)

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 $\leq 5\%$. 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	384	
1	B	384	
1	C	384	

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Ideal geometry (proteins) : Engh & Huber (2001)
 Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
 Validation Pipeline (wwPDB-VP) : 2.35.1

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Mol	Chain	Length	Quality of chain
1	D	384	 83% 9% 9%
1	E	384	 % 85% 6% 8%
1	F	384	 3% 83% 9% 8%
1	G	384	 2% 83% 8% 9%
1	H	384	 84% 7% 9%

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 21542 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 Inosine-5'-monophosphate dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	350	2570	1615	451	488	16	0	0	0
1	B	350	2578	1619	453	490	16	0	1	0
1	C	354	2597	1631	455	495	16	0	0	0
1	D	351	2580	1619	453	492	16	0	1	0
1	E	352	2585	1623	454	492	16	0	0	0
1	F	355	2614	1642	458	497	17	0	1	0
1	G	349	2572	1615	453	488	16	0	1	0
1	H	349	2561	1609	449	487	16	0	0	0

There are 208 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
A	-22	HIS	-	expression tag	UNP A0A6H3A7R4
A	-21	HIS	-	expression tag	UNP A0A6H3A7R4
A	-20	HIS	-	expression tag	UNP A0A6H3A7R4
A	-19	HIS	-	expression tag	UNP A0A6H3A7R4
A	-18	HIS	-	expression tag	UNP A0A6H3A7R4
A	-17	HIS	-	expression tag	UNP A0A6H3A7R4
A	-16	SER	-	expression tag	UNP A0A6H3A7R4
A	-15	SER	-	expression tag	UNP A0A6H3A7R4
A	-14	GLY	-	expression tag	UNP A0A6H3A7R4
A	-13	VAL	-	expression tag	UNP A0A6H3A7R4
A	-12	ASP	-	expression tag	UNP A0A6H3A7R4
A	-11	LEU	-	expression tag	UNP A0A6H3A7R4

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-10	GLY	-	expression tag	UNP A0A6H3A7R4
A	-9	THR	-	expression tag	UNP A0A6H3A7R4
A	-8	GLU	-	expression tag	UNP A0A6H3A7R4
A	-7	ASN	-	expression tag	UNP A0A6H3A7R4
A	-6	LEU	-	expression tag	UNP A0A6H3A7R4
A	-5	TYR	-	expression tag	UNP A0A6H3A7R4
A	-4	PHE	-	expression tag	UNP A0A6H3A7R4
A	-3	GLN	-	expression tag	UNP A0A6H3A7R4
A	-2	SER	-	expression tag	UNP A0A6H3A7R4
A	-1	ASN	-	expression tag	UNP A0A6H3A7R4
A	0	ALA	-	expression tag	UNP A0A6H3A7R4
A	92	GLY	-	linker	UNP A0A6H3A7R4
A	220	GLY	-	linker	UNP A0A6H3A7R4
B	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
B	-22	HIS	-	expression tag	UNP A0A6H3A7R4
B	-21	HIS	-	expression tag	UNP A0A6H3A7R4
B	-20	HIS	-	expression tag	UNP A0A6H3A7R4
B	-19	HIS	-	expression tag	UNP A0A6H3A7R4
B	-18	HIS	-	expression tag	UNP A0A6H3A7R4
B	-17	HIS	-	expression tag	UNP A0A6H3A7R4
B	-16	SER	-	expression tag	UNP A0A6H3A7R4
B	-15	SER	-	expression tag	UNP A0A6H3A7R4
B	-14	GLY	-	expression tag	UNP A0A6H3A7R4
B	-13	VAL	-	expression tag	UNP A0A6H3A7R4
B	-12	ASP	-	expression tag	UNP A0A6H3A7R4
B	-11	LEU	-	expression tag	UNP A0A6H3A7R4
B	-10	GLY	-	expression tag	UNP A0A6H3A7R4
B	-9	THR	-	expression tag	UNP A0A6H3A7R4
B	-8	GLU	-	expression tag	UNP A0A6H3A7R4
B	-7	ASN	-	expression tag	UNP A0A6H3A7R4
B	-6	LEU	-	expression tag	UNP A0A6H3A7R4
B	-5	TYR	-	expression tag	UNP A0A6H3A7R4
B	-4	PHE	-	expression tag	UNP A0A6H3A7R4
B	-3	GLN	-	expression tag	UNP A0A6H3A7R4
B	-2	SER	-	expression tag	UNP A0A6H3A7R4
B	-1	ASN	-	expression tag	UNP A0A6H3A7R4
B	0	ALA	-	expression tag	UNP A0A6H3A7R4
B	92	GLY	-	linker	UNP A0A6H3A7R4
B	220	GLY	-	linker	UNP A0A6H3A7R4
C	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
C	-22	HIS	-	expression tag	UNP A0A6H3A7R4
C	-21	HIS	-	expression tag	UNP A0A6H3A7R4

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-20	HIS	-	expression tag	UNP A0A6H3A7R4
C	-19	HIS	-	expression tag	UNP A0A6H3A7R4
C	-18	HIS	-	expression tag	UNP A0A6H3A7R4
C	-17	HIS	-	expression tag	UNP A0A6H3A7R4
C	-16	SER	-	expression tag	UNP A0A6H3A7R4
C	-15	SER	-	expression tag	UNP A0A6H3A7R4
C	-14	GLY	-	expression tag	UNP A0A6H3A7R4
C	-13	VAL	-	expression tag	UNP A0A6H3A7R4
C	-12	ASP	-	expression tag	UNP A0A6H3A7R4
C	-11	LEU	-	expression tag	UNP A0A6H3A7R4
C	-10	GLY	-	expression tag	UNP A0A6H3A7R4
C	-9	THR	-	expression tag	UNP A0A6H3A7R4
C	-8	GLU	-	expression tag	UNP A0A6H3A7R4
C	-7	ASN	-	expression tag	UNP A0A6H3A7R4
C	-6	LEU	-	expression tag	UNP A0A6H3A7R4
C	-5	TYR	-	expression tag	UNP A0A6H3A7R4
C	-4	PHE	-	expression tag	UNP A0A6H3A7R4
C	-3	GLN	-	expression tag	UNP A0A6H3A7R4
C	-2	SER	-	expression tag	UNP A0A6H3A7R4
C	-1	ASN	-	expression tag	UNP A0A6H3A7R4
C	0	ALA	-	expression tag	UNP A0A6H3A7R4
C	92	GLY	-	linker	UNP A0A6H3A7R4
C	220	GLY	-	linker	UNP A0A6H3A7R4
D	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
D	-22	HIS	-	expression tag	UNP A0A6H3A7R4
D	-21	HIS	-	expression tag	UNP A0A6H3A7R4
D	-20	HIS	-	expression tag	UNP A0A6H3A7R4
D	-19	HIS	-	expression tag	UNP A0A6H3A7R4
D	-18	HIS	-	expression tag	UNP A0A6H3A7R4
D	-17	HIS	-	expression tag	UNP A0A6H3A7R4
D	-16	SER	-	expression tag	UNP A0A6H3A7R4
D	-15	SER	-	expression tag	UNP A0A6H3A7R4
D	-14	GLY	-	expression tag	UNP A0A6H3A7R4
D	-13	VAL	-	expression tag	UNP A0A6H3A7R4
D	-12	ASP	-	expression tag	UNP A0A6H3A7R4
D	-11	LEU	-	expression tag	UNP A0A6H3A7R4
D	-10	GLY	-	expression tag	UNP A0A6H3A7R4
D	-9	THR	-	expression tag	UNP A0A6H3A7R4
D	-8	GLU	-	expression tag	UNP A0A6H3A7R4
D	-7	ASN	-	expression tag	UNP A0A6H3A7R4
D	-6	LEU	-	expression tag	UNP A0A6H3A7R4
D	-5	TYR	-	expression tag	UNP A0A6H3A7R4

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-4	PHE	-	expression tag	UNP A0A6H3A7R4
D	-3	GLN	-	expression tag	UNP A0A6H3A7R4
D	-2	SER	-	expression tag	UNP A0A6H3A7R4
D	-1	ASN	-	expression tag	UNP A0A6H3A7R4
D	0	ALA	-	expression tag	UNP A0A6H3A7R4
D	92	GLY	-	linker	UNP A0A6H3A7R4
D	220	GLY	-	linker	UNP A0A6H3A7R4
E	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
E	-22	HIS	-	expression tag	UNP A0A6H3A7R4
E	-21	HIS	-	expression tag	UNP A0A6H3A7R4
E	-20	HIS	-	expression tag	UNP A0A6H3A7R4
E	-19	HIS	-	expression tag	UNP A0A6H3A7R4
E	-18	HIS	-	expression tag	UNP A0A6H3A7R4
E	-17	HIS	-	expression tag	UNP A0A6H3A7R4
E	-16	SER	-	expression tag	UNP A0A6H3A7R4
E	-15	SER	-	expression tag	UNP A0A6H3A7R4
E	-14	GLY	-	expression tag	UNP A0A6H3A7R4
E	-13	VAL	-	expression tag	UNP A0A6H3A7R4
E	-12	ASP	-	expression tag	UNP A0A6H3A7R4
E	-11	LEU	-	expression tag	UNP A0A6H3A7R4
E	-10	GLY	-	expression tag	UNP A0A6H3A7R4
E	-9	THR	-	expression tag	UNP A0A6H3A7R4
E	-8	GLU	-	expression tag	UNP A0A6H3A7R4
E	-7	ASN	-	expression tag	UNP A0A6H3A7R4
E	-6	LEU	-	expression tag	UNP A0A6H3A7R4
E	-5	TYR	-	expression tag	UNP A0A6H3A7R4
E	-4	PHE	-	expression tag	UNP A0A6H3A7R4
E	-3	GLN	-	expression tag	UNP A0A6H3A7R4
E	-2	SER	-	expression tag	UNP A0A6H3A7R4
E	-1	ASN	-	expression tag	UNP A0A6H3A7R4
E	0	ALA	-	expression tag	UNP A0A6H3A7R4
E	92	GLY	-	linker	UNP A0A6H3A7R4
E	220	GLY	-	linker	UNP A0A6H3A7R4
F	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
F	-22	HIS	-	expression tag	UNP A0A6H3A7R4
F	-21	HIS	-	expression tag	UNP A0A6H3A7R4
F	-20	HIS	-	expression tag	UNP A0A6H3A7R4
F	-19	HIS	-	expression tag	UNP A0A6H3A7R4
F	-18	HIS	-	expression tag	UNP A0A6H3A7R4
F	-17	HIS	-	expression tag	UNP A0A6H3A7R4
F	-16	SER	-	expression tag	UNP A0A6H3A7R4
F	-15	SER	-	expression tag	UNP A0A6H3A7R4

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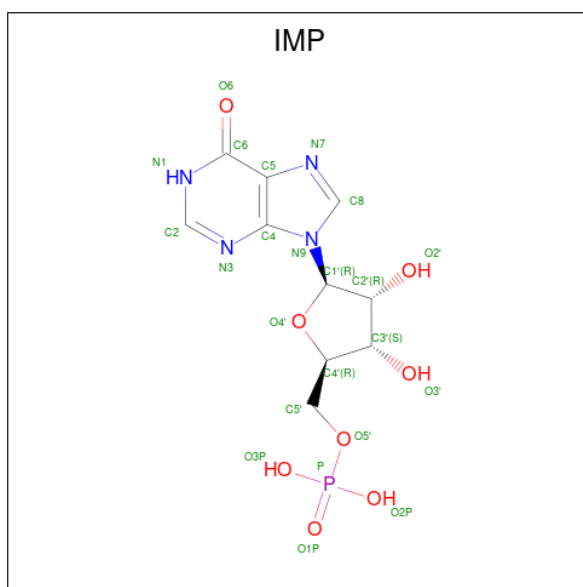
Chain	Residue	Modelled	Actual	Comment	Reference
F	-14	GLY	-	expression tag	UNP A0A6H3A7R4
F	-13	VAL	-	expression tag	UNP A0A6H3A7R4
F	-12	ASP	-	expression tag	UNP A0A6H3A7R4
F	-11	LEU	-	expression tag	UNP A0A6H3A7R4
F	-10	GLY	-	expression tag	UNP A0A6H3A7R4
F	-9	THR	-	expression tag	UNP A0A6H3A7R4
F	-8	GLU	-	expression tag	UNP A0A6H3A7R4
F	-7	ASN	-	expression tag	UNP A0A6H3A7R4
F	-6	LEU	-	expression tag	UNP A0A6H3A7R4
F	-5	TYR	-	expression tag	UNP A0A6H3A7R4
F	-4	PHE	-	expression tag	UNP A0A6H3A7R4
F	-3	GLN	-	expression tag	UNP A0A6H3A7R4
F	-2	SER	-	expression tag	UNP A0A6H3A7R4
F	-1	ASN	-	expression tag	UNP A0A6H3A7R4
F	0	ALA	-	expression tag	UNP A0A6H3A7R4
F	92	GLY	-	linker	UNP A0A6H3A7R4
F	220	GLY	-	linker	UNP A0A6H3A7R4
G	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
G	-22	HIS	-	expression tag	UNP A0A6H3A7R4
G	-21	HIS	-	expression tag	UNP A0A6H3A7R4
G	-20	HIS	-	expression tag	UNP A0A6H3A7R4
G	-19	HIS	-	expression tag	UNP A0A6H3A7R4
G	-18	HIS	-	expression tag	UNP A0A6H3A7R4
G	-17	HIS	-	expression tag	UNP A0A6H3A7R4
G	-16	SER	-	expression tag	UNP A0A6H3A7R4
G	-15	SER	-	expression tag	UNP A0A6H3A7R4
G	-14	GLY	-	expression tag	UNP A0A6H3A7R4
G	-13	VAL	-	expression tag	UNP A0A6H3A7R4
G	-12	ASP	-	expression tag	UNP A0A6H3A7R4
G	-11	LEU	-	expression tag	UNP A0A6H3A7R4
G	-10	GLY	-	expression tag	UNP A0A6H3A7R4
G	-9	THR	-	expression tag	UNP A0A6H3A7R4
G	-8	GLU	-	expression tag	UNP A0A6H3A7R4
G	-7	ASN	-	expression tag	UNP A0A6H3A7R4
G	-6	LEU	-	expression tag	UNP A0A6H3A7R4
G	-5	TYR	-	expression tag	UNP A0A6H3A7R4
G	-4	PHE	-	expression tag	UNP A0A6H3A7R4
G	-3	GLN	-	expression tag	UNP A0A6H3A7R4
G	-2	SER	-	expression tag	UNP A0A6H3A7R4
G	-1	ASN	-	expression tag	UNP A0A6H3A7R4
G	0	ALA	-	expression tag	UNP A0A6H3A7R4
G	92	GLY	-	linker	UNP A0A6H3A7R4

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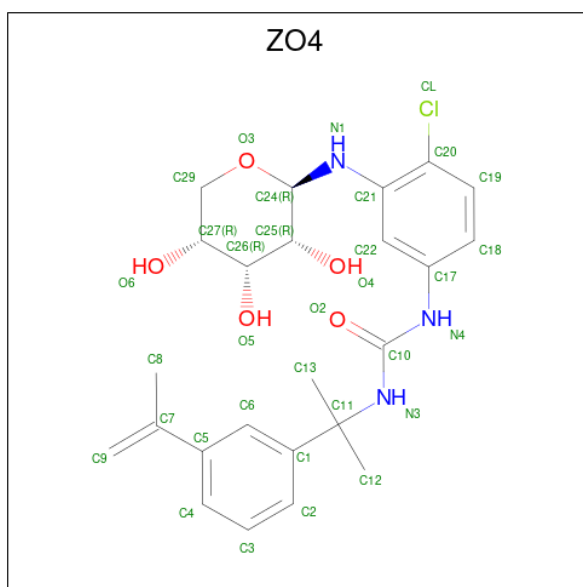
Chain	Residue	Modelled	Actual	Comment	Reference
G	220	GLY	-	linker	UNP A0A6H3A7R4
H	-23	MET	-	initiating methionine	UNP A0A6H3A7R4
H	-22	HIS	-	expression tag	UNP A0A6H3A7R4
H	-21	HIS	-	expression tag	UNP A0A6H3A7R4
H	-20	HIS	-	expression tag	UNP A0A6H3A7R4
H	-19	HIS	-	expression tag	UNP A0A6H3A7R4
H	-18	HIS	-	expression tag	UNP A0A6H3A7R4
H	-17	HIS	-	expression tag	UNP A0A6H3A7R4
H	-16	SER	-	expression tag	UNP A0A6H3A7R4
H	-15	SER	-	expression tag	UNP A0A6H3A7R4
H	-14	GLY	-	expression tag	UNP A0A6H3A7R4
H	-13	VAL	-	expression tag	UNP A0A6H3A7R4
H	-12	ASP	-	expression tag	UNP A0A6H3A7R4
H	-11	LEU	-	expression tag	UNP A0A6H3A7R4
H	-10	GLY	-	expression tag	UNP A0A6H3A7R4
H	-9	THR	-	expression tag	UNP A0A6H3A7R4
H	-8	GLU	-	expression tag	UNP A0A6H3A7R4
H	-7	ASN	-	expression tag	UNP A0A6H3A7R4
H	-6	LEU	-	expression tag	UNP A0A6H3A7R4
H	-5	TYR	-	expression tag	UNP A0A6H3A7R4
H	-4	PHE	-	expression tag	UNP A0A6H3A7R4
H	-3	GLN	-	expression tag	UNP A0A6H3A7R4
H	-2	SER	-	expression tag	UNP A0A6H3A7R4
H	-1	ASN	-	expression tag	UNP A0A6H3A7R4
H	0	ALA	-	expression tag	UNP A0A6H3A7R4
H	92	GLY	-	linker	UNP A0A6H3A7R4
H	220	GLY	-	linker	UNP A0A6H3A7R4

- Molecule 2 is INOSINIC ACID (three-letter code: IMP) (formula: C₁₀H₁₃N₄O₈P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total 23	10	4	8	1	0	0
2	B	1	Total 23	10	4	8	1	0	0
2	C	1	Total 23	10	4	8	1	0	0
2	D	1	Total 23	10	4	8	1	0	0
2	E	1	Total 23	10	4	8	1	0	0
2	F	1	Total 23	10	4	8	1	0	0
2	G	1	Total 23	10	4	8	1	0	0
2	H	1	Total 23	10	4	8	1	0	0

- Molecule 3 is N-{2-chloro-5-[(2-[3-(prop-1-en-2-yl)phenyl]propan-2-yl)carbamoyl]amino]phenyl}-beta-D-ribosepyranosylamine (three-letter code: ZO4) (formula: C₂₄H₃₀ClN₃O₅) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	Cl	N			O
3	A	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	B	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	C	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	D	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	E	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	F	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	G	1	Total 33	C 24	Cl 1	N 3	O 5	0	0
3	H	1	Total 33	C 24	Cl 1	N 3	O 5	0	0

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total K 1	0	0
4	B	1	Total K 1	0	0
4	C	1	Total K 1	0	0
4	D	1	Total K 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	E	1	Total K 1 1	0	0
4	F	1	Total K 1 1	0	0
4	G	1	Total K 1 1	0	0
4	H	1	Total K 1 1	0	0

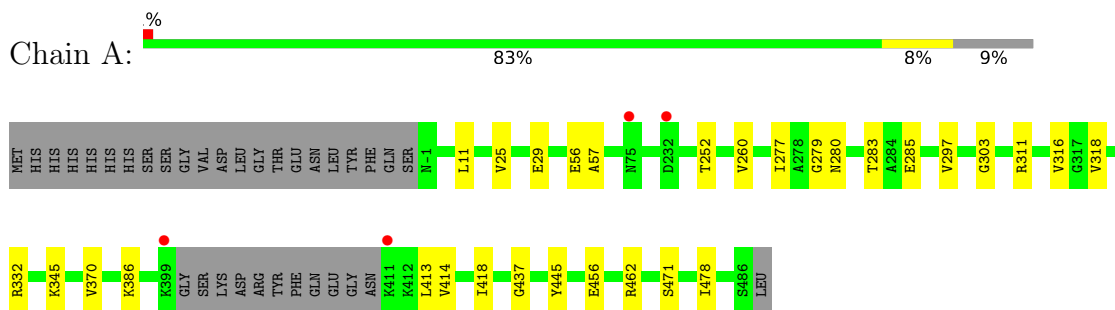
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	59	Total O 59 59	0	0
5	B	65	Total O 65 65	0	0
5	C	67	Total O 67 67	0	0
5	D	58	Total O 58 58	0	0
5	E	50	Total O 50 50	0	0
5	F	44	Total O 44 44	0	0
5	G	52	Total O 52 52	0	0
5	H	34	Total O 34 34	0	0

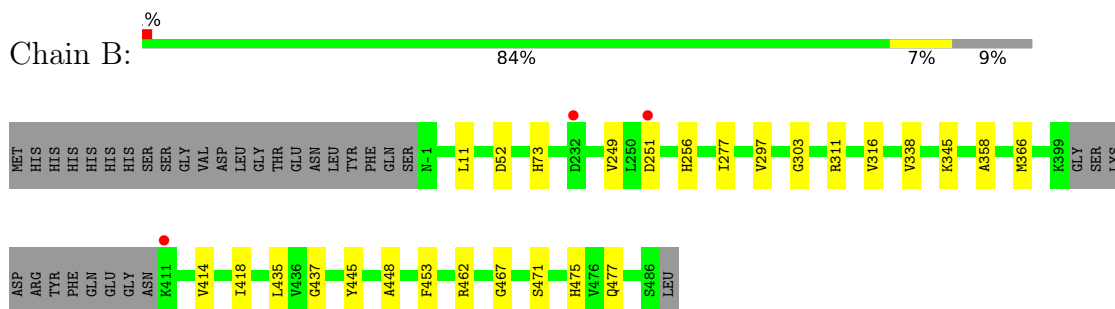
3 Residue-property plots [i](#)

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.

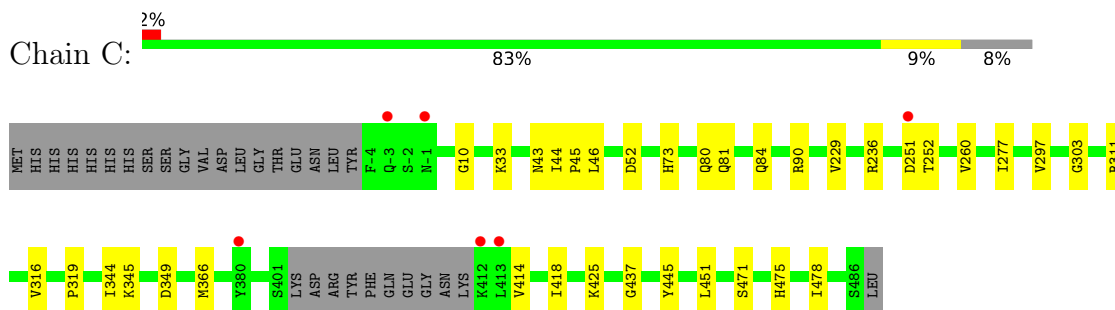
- Molecule 1: Inosine-5'-monophosphate dehydrogenase



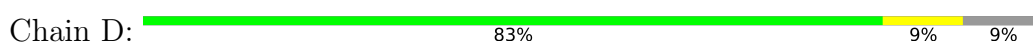
- Molecule 1: Inosine-5'-monophosphate dehydrogenase



- Molecule 1: Inosine-5'-monophosphate dehydrogenase

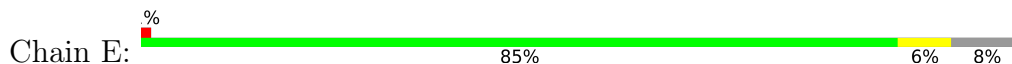


- Molecule 1: Inosine-5'-monophosphate dehydrogenase

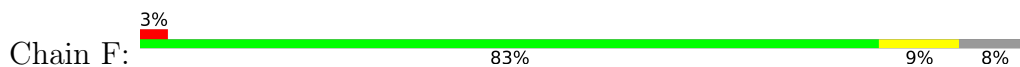




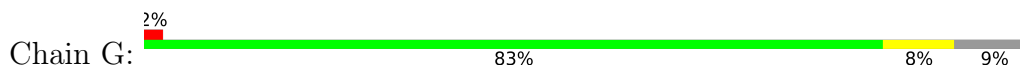
● Molecule 1: Inosine-5'-monophosphate dehydrogenase



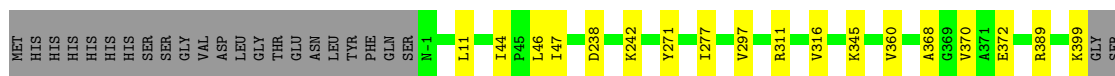
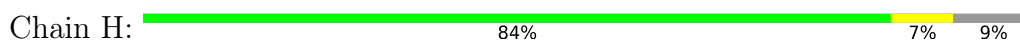
● Molecule 1: Inosine-5'-monophosphate dehydrogenase



● Molecule 1: Inosine-5'-monophosphate dehydrogenase



● Molecule 1: Inosine-5'-monophosphate dehydrogenase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	85.39Å 89.92Å 104.86Å 81.41° 90.03° 83.44°	Depositor
Resolution (Å)	40.08 – 2.44 48.33 – 2.44	Depositor EDS
% Data completeness (in resolution range)	91.2 (40.08-2.44) 91.2 (48.33-2.44)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.43 (at 2.42Å)	Xtrriage
Refinement program	PHENIX 1.19_4092	Depositor
R, R_{free}	0.178 , 0.222 0.178 , 0.221	Depositor DCC
R_{free} test set	5155 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å ²)	35.4	Xtrriage
Anisotropy	0.020	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 36.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	21542	wwPDB-VP
Average B, all atoms (Å ²)	42.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.52% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: K, ZO4, IMP

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	0.24	0/2606	0.45	0/3521
1	B	0.24	0/2614	0.46	0/3532
1	C	0.24	0/2634	0.46	0/3559
1	D	0.24	0/2616	0.45	0/3535
1	E	0.24	0/2621	0.45	0/3541
1	F	0.24	0/2651	0.45	0/3580
1	G	0.24	0/2608	0.46	0/3524
1	H	0.23	0/2597	0.46	0/3510
All	All	0.24	0/20947	0.45	0/28302

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	2570	0	2634	21	0
1	B	2578	0	2639	18	0
1	C	2597	0	2651	23	0
1	D	2580	0	2636	24	0
1	E	2585	0	2647	16	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2614	0	2672	23	0
1	G	2572	0	2633	22	0
1	H	2561	0	2621	18	0
2	A	23	0	11	0	0
2	B	23	0	11	0	0
2	C	23	0	11	0	0
2	D	23	0	11	0	0
2	E	23	0	11	0	0
2	F	23	0	11	0	0
2	G	23	0	11	1	0
2	H	23	0	11	0	0
3	A	33	0	0	0	0
3	B	33	0	0	0	0
3	C	33	0	0	0	0
3	D	33	0	0	0	0
3	E	33	0	0	0	0
3	F	33	0	0	0	0
3	G	33	0	0	0	0
3	H	33	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	0	0
5	A	59	0	0	0	0
5	B	65	0	0	0	0
5	C	67	0	0	0	0
5	D	58	0	0	0	0
5	E	50	0	0	0	0
5	F	44	0	0	0	0
5	G	52	0	0	0	0
5	H	34	0	0	0	0
All	All	21542	0	21221	128	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 3.

All (128) 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:C:414:VAL:HG21	1:D:437:GLY:HA3	1.71	0.72
1:E:437:GLY:HA3	1:F:414:VAL:HG21	1.77	0.66
1:F:437:GLY:HA3	1:H:414:VAL:HG21	1.77	0.66
1:D:332:ARG:NH2	1:D:456:GLU:OE2	2.31	0.62
1:A:418:ILE:HD13	1:C:478:ILE:HG12	1.83	0.61
1:C:252:THR:HG21	1:C:260:VAL:HG21	1.81	0.60
1:C:316:VAL:HG11	1:D:445:TYR:HB3	1.84	0.59
1:C:345:LYS:HD2	1:D:475:HIS:CE1	2.38	0.58
1:H:44:ILE:HD12	1:H:46:LEU:HD12	1.83	0.58
1:G:280:ASN:OD1	1:G:299:LYS:NZ	2.32	0.57
1:E:229:VAL:HG21	1:E:260:VAL:HG22	1.85	0.57
1:A:414:VAL:HG21	1:C:437:GLY:HA3	1.86	0.57
1:E:344:ILE:HG23	1:E:349:ASP:HB2	1.87	0.56
1:E:345:LYS:HD2	1:G:475:HIS:CE1	2.41	0.56
1:E:414:VAL:HG21	1:G:437:GLY:HA3	1.87	0.56
1:A:252:THR:HG21	1:A:260:VAL:HG21	1.88	0.55
1:A:316:VAL:HG11	1:C:445:TYR:HB3	1.89	0.54
1:A:445:TYR:HB3	1:B:316:VAL:HG11	1.89	0.54
1:E:445:TYR:HB3	1:F:316:VAL:HG11	1.90	0.54
1:F:248:ILE:HD12	1:F:274:LEU:HD21	1.88	0.54
1:A:345:LYS:HD2	1:C:475:HIS:CE1	2.43	0.54
1:A:283:THR:HG22	1:A:285:GLU:H	1.72	0.54
1:E:252:THR:HG21	1:E:260:VAL:HG21	1.89	0.54
1:G:277:ILE:HG12	1:G:297:VAL:HB	1.90	0.54
1:F:445:TYR:HB3	1:H:316:VAL:HG11	1.89	0.54
1:G:252:THR:HG21	1:G:260:VAL:HG21	1.88	0.54
1:G:316:VAL:HG11	1:H:445:TYR:HB3	1.90	0.53
1:A:471:SER:HA	1:B:311:ARG:HD2	1.91	0.53
1:C:344:ILE:HG23	1:C:349:ASP:HB2	1.91	0.52
1:F:237:ILE:HG12	1:F:248:ILE:HD13	1.90	0.52
1:F:375:GLY:O	1:F:386:LYS:NZ	2.39	0.52
1:F:478:ILE:HG12	1:H:418:ILE:HD13	1.92	0.52
1:C:418:ILE:HD13	1:D:478:ILE:HG12	1.92	0.52
1:G:344:ILE:HG23	1:G:349:ASP:HB2	1.91	0.51
1:B:11:LEU:HD11	1:B:462:ARG:HD3	1.91	0.51
1:E:311:ARG:NH2	1:E:318:VAL:O	2.44	0.50
1:D:257:SER:HB2	1:D:260:VAL:HG23	1.94	0.50
1:D:45:PRO:HG3	1:D:451:LEU:HD11	1.93	0.50
1:A:437:GLY:HA3	1:B:414:VAL:HG21	1.94	0.50
1:B:475:HIS:CE1	1:D:345:LYS:HD2	2.47	0.50
1:C:45:PRO:HG3	1:C:451:LEU:HD11	1.94	0.50
1:E:11:LEU:HD11	1:E:462:ARG:HD3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:345:LYS:HD2	1:H:475:HIS:CE1	2.47	0.49
1:H:277:ILE:HG12	1:H:297:VAL:HB	1.94	0.49
1:H:11:LEU:HD11	1:H:462:ARG:HD3	1.95	0.49
1:F:344:ILE:HG23	1:F:349:ASP:HB2	1.95	0.49
1:G:338:VAL:HG23	1:G:358:ALA:HA	1.95	0.49
1:F:311:ARG:NH2	1:F:318:VAL:O	2.46	0.49
1:G:341:ASP:OD2	2:G:502:IMP:O2'	2.31	0.49
1:A:11:LEU:HD11	1:A:462:ARG:HD3	1.95	0.48
1:B:277:ILE:HG12	1:B:297:VAL:HB	1.94	0.48
1:E:311:ARG:HD2	1:G:471:SER:HA	1.95	0.48
1:E:418:ILE:HD13	1:G:478:ILE:HG12	1.95	0.48
1:F:397[B]:MET:HE3	1:F:413:LEU:HD13	1.94	0.48
1:A:370:VAL:O	1:A:386:LYS:NZ	2.46	0.48
1:D:25:VAL:HG11	1:D:449:GLN:HG2	1.95	0.48
1:F:277:ILE:HG12	1:F:297:VAL:HB	1.95	0.48
1:C:33:LYS:HG2	1:C:43:ASN:HA	1.95	0.48
1:H:47:ILE:HG13	1:H:360:VAL:HG11	1.96	0.48
1:C:229:VAL:HG21	1:C:260:VAL:HG22	1.96	0.47
1:E:475:HIS:CD2	1:F:345:LYS:HD2	2.49	0.47
1:B:445:TYR:HB3	1:D:316:VAL:HG11	1.96	0.47
1:G:350:MET:HE1	1:G:435:LEU:HB3	1.95	0.47
1:B:366:MET:SD	1:B:435:LEU:HD21	2.55	0.47
1:D:252:THR:HG21	1:D:260:VAL:HG21	1.97	0.47
1:B:471:SER:HA	1:D:311:ARG:HD2	1.96	0.47
1:F:389:ARG:HH12	1:F:399:LYS:NZ	2.14	0.47
1:F:471:SER:HA	1:H:311:ARG:HD2	1.97	0.47
1:G:350:MET:HG3	1:G:361:VAL:HG21	1.96	0.47
1:D:275:ASN:HA	1:D:296:ASN:HD21	1.80	0.46
1:A:311:ARG:HD2	1:C:471:SER:HA	1.97	0.46
1:B:52:ASP:HA	1:B:73:HIS:CD2	2.51	0.46
1:A:277:ILE:HG12	1:A:297:VAL:HB	1.98	0.46
1:C:52:ASP:HA	1:C:73:HIS:CD2	2.51	0.46
1:A:311:ARG:NH2	1:A:318:VAL:O	2.49	0.46
1:A:478:ILE:HG12	1:B:418:ILE:HD13	1.98	0.46
1:B:477:GLN:OE1	1:D:421:ARG:NH1	2.45	0.46
1:E:277:ILE:HG12	1:E:297:VAL:HB	1.97	0.46
1:D:11:LEU:HD11	1:D:462:ARG:HD3	1.98	0.45
1:A:303:GLY:HA3	1:A:311:ARG:HE	1.81	0.45
1:G:311:ARG:HD2	1:H:471:SER:HA	1.98	0.45
1:F:297:VAL:HG22	1:F:337:PRO:HG2	1.98	0.45
1:D:52:ASP:HA	1:D:73:HIS:CD2	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:26:LEU:O	1:F:29:GLU:HG2	2.17	0.45
1:H:370:VAL:HG12	1:H:372:GLU:H	1.81	0.45
1:H:389:ARG:HH22	1:H:399:LYS:HD2	1.80	0.45
1:B:467:GLY:HA2	1:D:12:THR:HG21	1.99	0.45
1:C:277:ILE:HG12	1:C:297:VAL:HB	1.98	0.45
1:B:437:GLY:HA3	1:D:414:VAL:HG21	1.98	0.45
1:D:277:ILE:HG12	1:D:297:VAL:HB	1.99	0.44
1:A:25:VAL:HG23	1:A:29:GLU:HG3	1.98	0.44
1:C:80:GLN:O	1:C:84:GLN:HG2	2.18	0.44
1:G:89:LYS:HE3	1:G:221:LEU:O	2.17	0.44
1:H:238:ASP:OD1	1:H:271:TYR:OH	2.25	0.44
1:G:303:GLY:HA3	1:G:311:ARG:HE	1.83	0.44
1:C:311:ARG:HD2	1:D:471:SER:HA	1.98	0.43
1:F:52:ASP:HA	1:F:73:HIS:CD2	2.54	0.43
1:E:303:GLY:HA3	1:E:311:ARG:NE	2.33	0.43
1:G:25:VAL:HG23	1:G:29:GLU:HG3	2.01	0.43
1:C:10:GLY:HA3	1:C:319:PRO:HG2	2.00	0.43
1:F:257:SER:HB2	1:F:260:VAL:HG23	1.99	0.43
1:C:366:MET:O	1:C:425:LYS:NZ	2.48	0.43
1:F:475:HIS:CE1	1:H:345:LYS:HD2	2.54	0.43
1:G:418:ILE:HD13	1:H:478:ILE:HG12	2.01	0.43
1:B:303:GLY:HA3	1:B:311:ARG:HE	1.83	0.43
1:C:44:ILE:HD12	1:C:46:LEU:HD12	2.02	0.42
1:A:332:ARG:NH2	1:A:456:GLU:OE1	2.52	0.42
1:B:249:VAL:HG12	1:B:251:ASP:HB2	2.01	0.42
1:E:10:GLY:HA3	1:E:319:PRO:HG2	2.02	0.42
1:A:279:GLY:HA3	1:A:280:ASN:HA	1.92	0.41
1:H:242:LYS:HB3	1:H:242:LYS:HE2	1.83	0.41
1:B:448:ALA:HA	1:B:453:PHE:CD1	2.56	0.41
1:D:303:GLY:HA3	1:D:311:ARG:HE	1.85	0.41
1:G:238:ASP:O	1:G:242:LYS:HG3	2.21	0.41
1:D:296:ASN:OD1	1:D:296:ASN:N	2.51	0.41
1:E:471:SER:HA	1:F:311:ARG:HD2	2.02	0.41
1:H:368:ALA:HB3	1:H:422:VAL:HG21	2.02	0.41
1:C:303:GLY:HA3	1:C:311:ARG:HE	1.84	0.41
1:F:303:GLY:N	1:F:304:PRO:CD	2.84	0.41
1:G:52:ASP:HA	1:G:73:HIS:CD2	2.56	0.40
1:B:338:VAL:HG23	1:B:358:ALA:HA	2.02	0.40
1:A:56:GLU:HB3	1:A:57:ALA:H	1.74	0.40
1:A:303:GLY:HA3	1:A:311:ARG:NE	2.36	0.40
1:C:81:GLN:OE1	1:C:236:ARG:NH1	2.44	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:345:LYS:HG2	1:G:349:ASP:OD2	2.21	0.40
1:D:354:LEU:O	1:D:455:ARG:HG2	2.21	0.40
1:D:372:GLU:OE1	1:D:372:GLU:N	2.54	0.40
1:F:345:LYS:HE2	1:F:345:LYS:HB2	1.96	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	346/384 (90%)	336 (97%)	10 (3%)	0	100	100
1	B	347/384 (90%)	340 (98%)	7 (2%)	0	100	100
1	C	350/384 (91%)	341 (97%)	9 (3%)	0	100	100
1	D	348/384 (91%)	338 (97%)	10 (3%)	0	100	100
1	E	348/384 (91%)	336 (97%)	11 (3%)	1 (0%)	41	49
1	F	352/384 (92%)	342 (97%)	10 (3%)	0	100	100
1	G	346/384 (90%)	337 (97%)	9 (3%)	0	100	100
1	H	345/384 (90%)	338 (98%)	7 (2%)	0	100	100
All	All	2782/3072 (91%)	2708 (97%)	73 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	364	GLY

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	268/298 (90%)	267 (100%)	1 (0%)	91	94
1	B	269/298 (90%)	267 (99%)	2 (1%)	84	90
1	C	271/298 (91%)	269 (99%)	2 (1%)	84	90
1	D	269/298 (90%)	267 (99%)	2 (1%)	84	90
1	E	270/298 (91%)	268 (99%)	2 (1%)	84	90
1	F	273/298 (92%)	269 (98%)	4 (2%)	65	76
1	G	268/298 (90%)	267 (100%)	1 (0%)	91	94
1	H	267/298 (90%)	267 (100%)	0	100	100
All	All	2155/2384 (90%)	2141 (99%)	14 (1%)	84	91

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	413	LEU
1	B	256	HIS
1	B	345	LYS
1	C	90	ARG
1	C	251	ASP
1	D	251	ASP
1	D	378	GLU
1	E	28	ARG
1	E	397	MET
1	F	-2	SER
1	F	41	GLN
1	F	242	LYS
1	F	421	ARG
1	G	366	MET

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

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 24 ligands modelled in this entry, 8 are monoatomic - leaving 16 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	IMP	F	501	-	21,25,25	1.46	2 (9%)	24,38,38	1.33	5 (20%)
3	ZO4	A	502	-	35,35,35	1.13	5 (14%)	50,51,51	3.10	6 (12%)
3	ZO4	F	502	-	35,35,35	1.04	4 (11%)	50,51,51	1.70	3 (6%)
3	ZO4	H	503	-	35,35,35	1.05	5 (14%)	50,51,51	1.24	4 (8%)
3	ZO4	C	503	-	35,35,35	1.14	5 (14%)	50,51,51	3.26	6 (12%)
3	ZO4	B	502	-	35,35,35	1.03	4 (11%)	50,51,51	1.80	4 (8%)
2	IMP	D	502	-	21,25,25	1.46	2 (9%)	24,38,38	1.33	5 (20%)
2	IMP	B	501	-	21,25,25	1.46	2 (9%)	24,38,38	1.30	4 (16%)
2	IMP	E	501	-	21,25,25	1.46	2 (9%)	24,38,38	1.34	5 (20%)
2	IMP	A	501	-	21,25,25	1.46	2 (9%)	24,38,38	1.33	5 (20%)
3	ZO4	E	502	-	35,35,35	1.03	4 (11%)	50,51,51	1.44	5 (10%)
3	ZO4	G	503	-	35,35,35	1.04	4 (11%)	50,51,51	1.64	3 (6%)
2	IMP	H	502	-	21,25,25	1.45	2 (9%)	24,38,38	1.35	5 (20%)
2	IMP	C	502	-	21,25,25	1.45	2 (9%)	24,38,38	1.30	5 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	ZO4	D	503	-	35,35,35	1.04	4 (11%)	50,51,51	1.75	4 (8%)
2	IMP	G	502	-	21,25,25	1.47	2 (9%)	24,38,38	1.33	4 (16%)

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	IMP	F	501	-	-	5/6/26/26	0/3/3/3
3	ZO4	A	502	-	-	4/23/40/40	0/3/3/3
3	ZO4	F	502	-	-	2/23/40/40	0/3/3/3
3	ZO4	H	503	-	-	3/23/40/40	0/3/3/3
3	ZO4	C	503	-	-	4/23/40/40	0/3/3/3
3	ZO4	B	502	-	-	2/23/40/40	0/3/3/3
2	IMP	D	502	-	-	4/6/26/26	0/3/3/3
2	IMP	B	501	-	-	5/6/26/26	0/3/3/3
2	IMP	E	501	-	-	3/6/26/26	0/3/3/3
2	IMP	A	501	-	-	5/6/26/26	0/3/3/3
3	ZO4	E	502	-	-	2/23/40/40	0/3/3/3
3	ZO4	G	503	-	-	2/23/40/40	0/3/3/3
2	IMP	H	502	-	-	4/6/26/26	0/3/3/3
2	IMP	C	502	-	-	5/6/26/26	0/3/3/3
3	ZO4	D	503	-	-	2/23/40/40	0/3/3/3
2	IMP	G	502	-	-	4/6/26/26	0/3/3/3

All (51) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	G	502	IMP	C2-N3	4.78	1.38	1.29
2	D	502	IMP	C2-N3	4.75	1.38	1.29
2	E	501	IMP	C2-N3	4.75	1.38	1.29
2	B	501	IMP	C2-N3	4.74	1.38	1.29
2	C	502	IMP	C2-N3	4.73	1.38	1.29
2	F	501	IMP	C2-N3	4.73	1.38	1.29
2	H	502	IMP	C2-N3	4.73	1.38	1.29
2	A	501	IMP	C2-N3	4.70	1.38	1.29
2	A	501	IMP	C5-C6	-3.85	1.39	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	501	IMP	C5-C6	-3.85	1.39	1.47
2	G	502	IMP	C5-C6	-3.84	1.39	1.47
2	E	501	IMP	C5-C6	-3.84	1.39	1.47
2	D	502	IMP	C5-C6	-3.81	1.39	1.47
2	B	501	IMP	C5-C6	-3.81	1.39	1.47
2	C	502	IMP	C5-C6	-3.80	1.39	1.47
2	H	502	IMP	C5-C6	-3.79	1.39	1.47
3	A	502	ZO4	C24-N1	3.41	1.47	1.42
3	C	503	ZO4	C24-N1	3.29	1.47	1.42
3	C	503	ZO4	C8-C7	-2.86	1.32	1.46
3	E	502	ZO4	C8-C7	-2.86	1.32	1.46
3	A	502	ZO4	C8-C7	-2.86	1.32	1.46
3	H	503	ZO4	C8-C7	-2.85	1.32	1.46
3	G	503	ZO4	C8-C7	-2.85	1.32	1.46
3	D	503	ZO4	C8-C7	-2.85	1.32	1.46
3	F	502	ZO4	C8-C7	-2.85	1.32	1.46
3	B	502	ZO4	C8-C7	-2.85	1.32	1.46
3	C	503	ZO4	C20-CL	2.68	1.80	1.73
3	H	503	ZO4	C20-CL	2.68	1.80	1.73
3	A	502	ZO4	C20-CL	2.68	1.80	1.73
3	G	503	ZO4	C20-CL	2.67	1.80	1.73
3	F	502	ZO4	C20-CL	2.64	1.79	1.73
3	D	503	ZO4	C20-CL	2.63	1.79	1.73
3	E	502	ZO4	C20-CL	2.60	1.79	1.73
3	H	503	ZO4	C11-C1	-2.59	1.50	1.53
3	C	503	ZO4	C11-C1	-2.59	1.50	1.53
3	D	503	ZO4	C11-C1	-2.59	1.50	1.53
3	B	502	ZO4	C20-CL	2.56	1.79	1.73
3	A	502	ZO4	C11-C1	-2.55	1.50	1.53
3	E	502	ZO4	C11-C1	-2.53	1.50	1.53
3	B	502	ZO4	C11-C1	-2.52	1.50	1.53
3	F	502	ZO4	C11-C1	-2.51	1.50	1.53
3	G	503	ZO4	C11-C1	-2.49	1.50	1.53
3	B	502	ZO4	C17-N4	-2.45	1.36	1.41
3	D	503	ZO4	C17-N4	-2.38	1.36	1.41
3	G	503	ZO4	C17-N4	-2.38	1.36	1.41
3	E	502	ZO4	C17-N4	-2.36	1.36	1.41
3	C	503	ZO4	C17-N4	-2.35	1.36	1.41
3	F	502	ZO4	C17-N4	-2.35	1.36	1.41
3	H	503	ZO4	C17-N4	-2.33	1.36	1.41
3	A	502	ZO4	C17-N4	-2.28	1.37	1.41
3	H	503	ZO4	C24-N1	2.25	1.46	1.42

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	503	ZO4	C20-C21-N1	-16.96	112.36	120.43
3	A	502	ZO4	C20-C21-N1	-15.73	112.95	120.43
3	C	503	ZO4	C21-N1-C24	13.10	136.58	123.16
3	A	502	ZO4	C21-N1-C24	13.04	136.51	123.16
3	B	502	ZO4	C25-C24-N1	-8.89	102.65	110.71
3	F	502	ZO4	C25-C24-N1	-8.37	103.12	110.71
3	D	503	ZO4	C25-C24-N1	-8.30	103.18	110.71
3	G	503	ZO4	C25-C24-N1	-8.07	103.39	110.71
3	B	502	ZO4	C20-C21-N1	-7.19	117.01	120.43
3	E	502	ZO4	C25-C24-N1	-7.01	104.35	110.71
3	D	503	ZO4	C20-C21-N1	-6.98	117.11	120.43
3	F	502	ZO4	C20-C21-N1	-6.61	117.28	120.43
3	G	503	ZO4	C20-C21-N1	-6.17	117.49	120.43
3	H	503	ZO4	C25-C24-N1	-5.21	105.98	110.71
3	E	502	ZO4	C20-C21-N1	-4.50	118.29	120.43
3	C	503	ZO4	C22-C21-N1	4.46	128.50	121.81
3	A	502	ZO4	C22-C21-N1	4.31	128.27	121.81
3	C	503	ZO4	C25-C24-N1	4.09	114.41	110.71
3	A	502	ZO4	C25-C24-N1	3.61	113.98	110.71
3	H	503	ZO4	C21-N1-C24	-3.14	119.95	123.16
2	H	502	IMP	C8-N7-C5	3.10	108.89	102.99
2	B	501	IMP	C8-N7-C5	3.10	108.89	102.99
2	F	501	IMP	C8-N7-C5	3.09	108.88	102.99
2	C	502	IMP	C8-N7-C5	3.09	108.88	102.99
2	E	501	IMP	C8-N7-C5	3.09	108.88	102.99
2	D	502	IMP	C8-N7-C5	3.08	108.86	102.99
2	G	502	IMP	C8-N7-C5	3.08	108.86	102.99
2	A	501	IMP	C8-N7-C5	3.06	108.83	102.99
2	B	501	IMP	C5-C6-N1	3.02	119.28	113.95
2	C	502	IMP	C5-C6-N1	3.01	119.28	113.95
2	D	502	IMP	C5-C6-N1	3.00	119.25	113.95
2	G	502	IMP	C5-C6-N1	2.97	119.19	113.95
2	E	501	IMP	C5-C6-N1	2.95	119.17	113.95
2	A	501	IMP	C5-C6-N1	2.95	119.16	113.95
2	H	502	IMP	C5-C6-N1	2.91	119.09	113.95
2	F	501	IMP	C5-C6-N1	2.88	119.04	113.95
2	H	502	IMP	O6-C6-C5	-2.64	119.22	124.37
2	E	501	IMP	O6-C6-C5	-2.63	119.23	124.37
2	G	502	IMP	O6-C6-C5	-2.63	119.23	124.37
2	F	501	IMP	O6-C6-C5	-2.61	119.28	124.37
2	D	502	IMP	O6-C6-C5	-2.55	119.40	124.37
2	A	501	IMP	O6-C6-C5	-2.51	119.47	124.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	503	ZO4	C11-N3-C10	2.37	129.19	124.17
3	C	503	ZO4	C11-N3-C10	2.35	129.14	124.17
2	B	501	IMP	O6-C6-C5	-2.34	119.80	124.37
3	H	503	ZO4	C12-C11-N3	2.34	114.17	107.89
3	B	502	ZO4	C22-C21-C20	2.31	120.57	118.17
3	A	502	ZO4	C11-N3-C10	2.29	129.02	124.17
3	F	502	ZO4	C22-C21-C20	2.27	120.53	118.17
3	D	503	ZO4	C22-C21-C20	2.24	120.50	118.17
2	C	502	IMP	O6-C6-C5	-2.22	120.03	124.37
3	G	503	ZO4	C22-C21-C20	2.21	120.46	118.17
2	A	501	IMP	N1-C2-N3	-2.15	120.26	125.87
2	D	502	IMP	N1-C2-N3	-2.15	120.26	125.87
3	E	502	ZO4	C11-N3-C10	2.14	128.71	124.17
3	E	502	ZO4	C12-C11-N3	2.12	113.58	107.89
3	D	503	ZO4	C11-N3-C10	2.11	128.64	124.17
2	H	502	IMP	N1-C2-N3	-2.09	120.41	125.87
2	F	501	IMP	N1-C2-N3	-2.09	120.43	125.87
2	G	502	IMP	N1-C2-N3	-2.08	120.43	125.87
2	A	501	IMP	O2P-P-O1P	2.07	118.79	110.68
2	H	502	IMP	O2P-P-O1P	2.06	118.73	110.68
3	E	502	ZO4	C22-C21-C20	2.05	120.30	118.17
3	A	502	ZO4	C12-C11-N3	2.05	113.40	107.89
2	F	501	IMP	O2P-P-O1P	2.05	118.70	110.68
2	E	501	IMP	N1-C2-N3	-2.05	120.53	125.87
2	C	502	IMP	O2P-P-O1P	2.05	118.69	110.68
2	C	502	IMP	N1-C2-N3	-2.03	120.56	125.87
2	B	501	IMP	N1-C2-N3	-2.02	120.59	125.87
3	C	503	ZO4	C17-N4-C10	2.01	130.73	126.61
3	B	502	ZO4	C11-N3-C10	2.01	128.43	124.17
2	E	501	IMP	O2P-P-O1P	2.01	118.55	110.68
2	D	502	IMP	O2P-P-O1P	2.01	118.55	110.68

There are no chirality outliers.

All (56) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	IMP	C5'-O5'-P-O1P
2	A	501	IMP	C5'-O5'-P-O2P
2	A	501	IMP	C5'-O5'-P-O3P
2	B	501	IMP	C5'-O5'-P-O1P
2	B	501	IMP	C5'-O5'-P-O2P
2	B	501	IMP	C5'-O5'-P-O3P

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Mol	Chain	Res	Type	Atoms
2	C	502	IMP	C5'-O5'-P-O1P
2	C	502	IMP	C5'-O5'-P-O2P
2	C	502	IMP	C5'-O5'-P-O3P
2	D	502	IMP	C5'-O5'-P-O3P
2	E	501	IMP	C5'-O5'-P-O2P
2	E	501	IMP	C5'-O5'-P-O3P
2	F	501	IMP	C5'-O5'-P-O1P
2	F	501	IMP	C5'-O5'-P-O2P
2	F	501	IMP	C5'-O5'-P-O3P
2	G	502	IMP	C5'-O5'-P-O1P
2	G	502	IMP	C5'-O5'-P-O2P
2	G	502	IMP	C5'-O5'-P-O3P
2	H	502	IMP	C5'-O5'-P-O2P
2	H	502	IMP	C5'-O5'-P-O3P
3	A	502	ZO4	C25-C24-N1-C21
3	C	503	ZO4	C25-C24-N1-C21
2	D	502	IMP	C5'-O5'-P-O1P
2	E	501	IMP	C5'-O5'-P-O1P
2	H	502	IMP	C5'-O5'-P-O1P
2	B	501	IMP	C3'-C4'-C5'-O5'
2	C	502	IMP	C3'-C4'-C5'-O5'
3	A	502	ZO4	O3-C24-N1-C21
3	C	503	ZO4	O3-C24-N1-C21
2	D	502	IMP	C5'-O5'-P-O2P
2	A	501	IMP	C3'-C4'-C5'-O5'
2	C	502	IMP	O4'-C4'-C5'-O5'
2	F	501	IMP	C3'-C4'-C5'-O5'
2	G	502	IMP	C3'-C4'-C5'-O5'
3	H	503	ZO4	C4-C5-C7-C8
3	F	502	ZO4	C4-C5-C7-C8
2	H	502	IMP	C3'-C4'-C5'-O5'
3	A	502	ZO4	C4-C5-C7-C8
3	C	503	ZO4	C4-C5-C7-C8
3	F	502	ZO4	C6-C5-C7-C8
3	G	503	ZO4	C4-C5-C7-C8
3	H	503	ZO4	C6-C5-C7-C8
2	A	501	IMP	O4'-C4'-C5'-O5'
2	B	501	IMP	O4'-C4'-C5'-O5'
3	B	502	ZO4	C4-C5-C7-C8
3	D	503	ZO4	C6-C5-C7-C8
3	E	502	ZO4	C4-C5-C7-C8
3	A	502	ZO4	C6-C5-C7-C8

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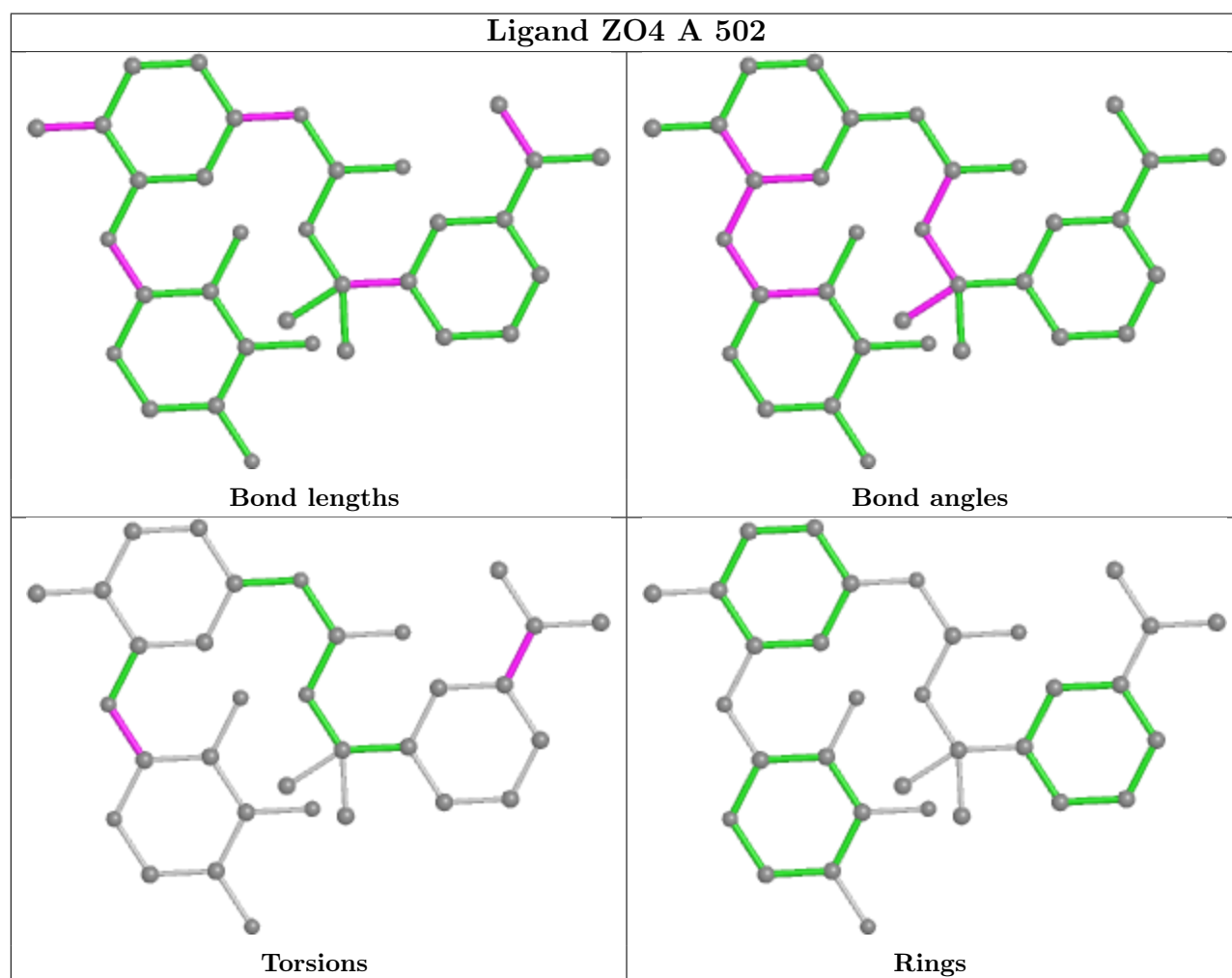
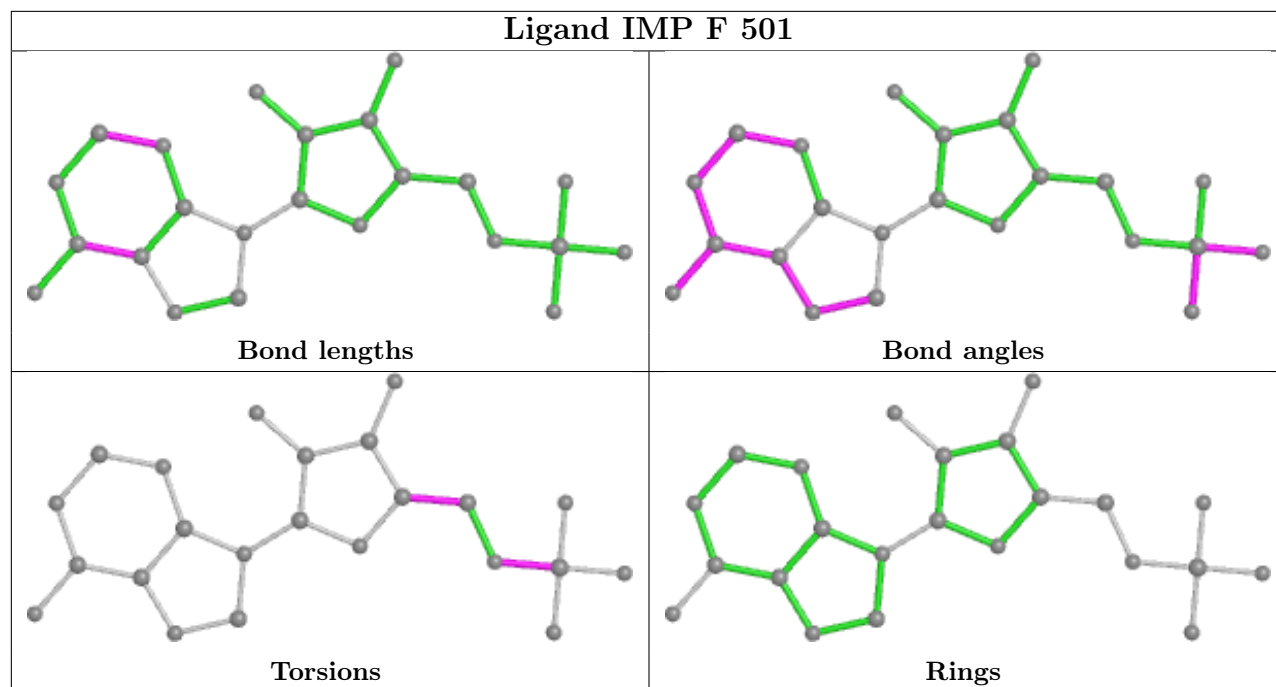
Mol	Chain	Res	Type	Atoms
3	C	503	ZO4	C6-C5-C7-C8
2	D	502	IMP	C3'-C4'-C5'-O5'
3	B	502	ZO4	C6-C5-C7-C8
3	D	503	ZO4	C4-C5-C7-C8
3	E	502	ZO4	C6-C5-C7-C8
3	G	503	ZO4	C6-C5-C7-C8
2	F	501	IMP	O4'-C4'-C5'-O5'
3	H	503	ZO4	C12-C11-N3-C10

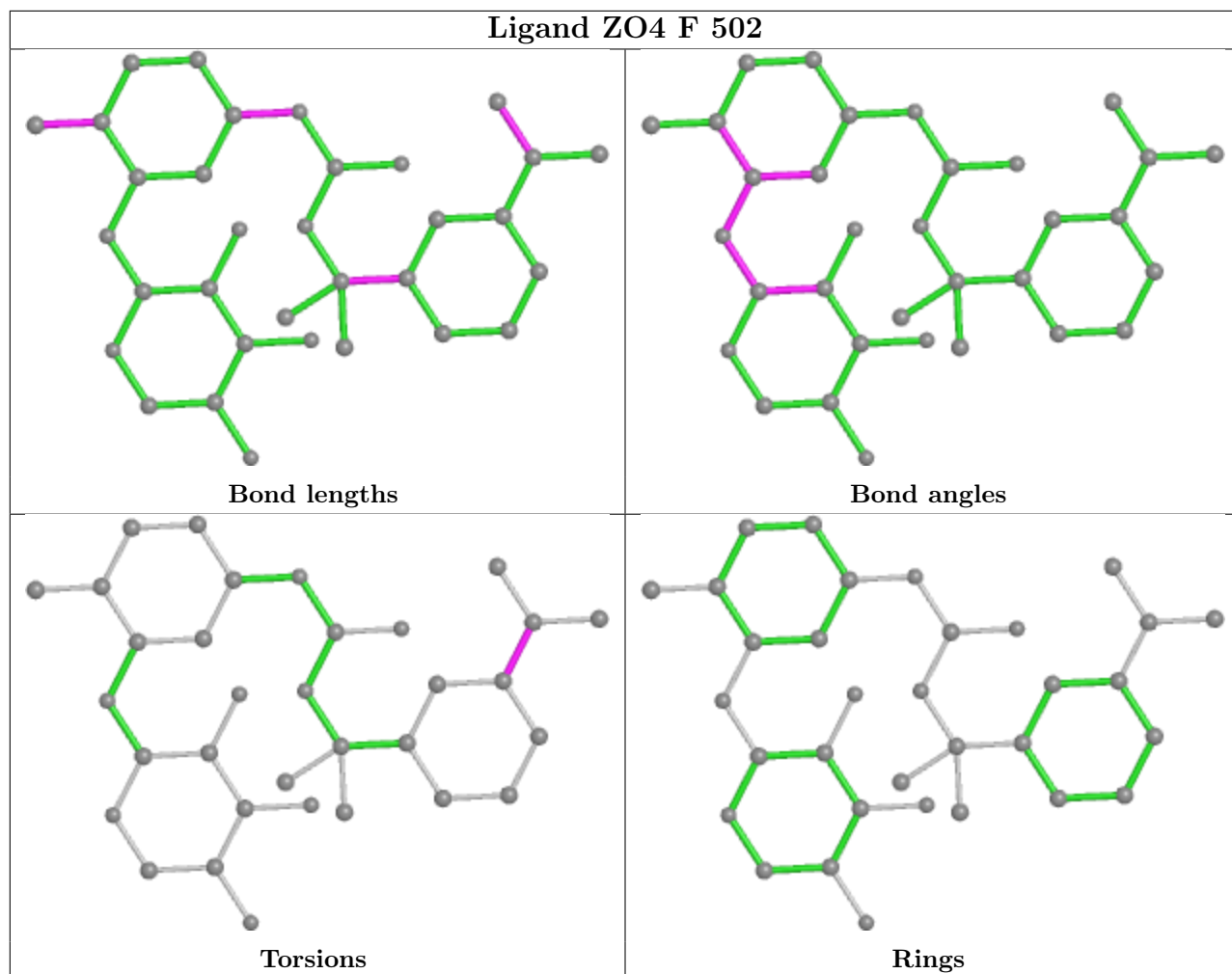
There are no ring outliers.

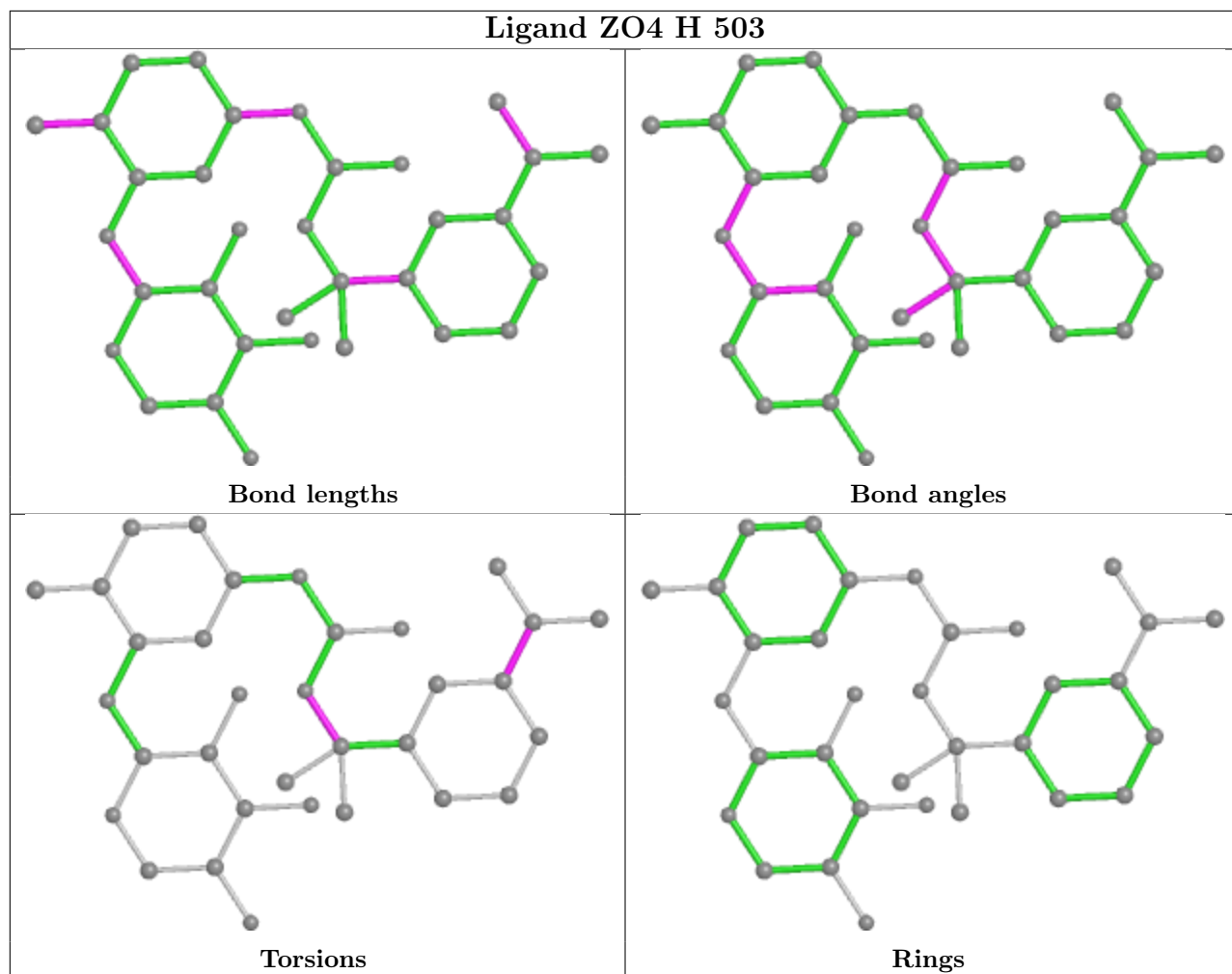
1 monomer is involved in 1 short contact:

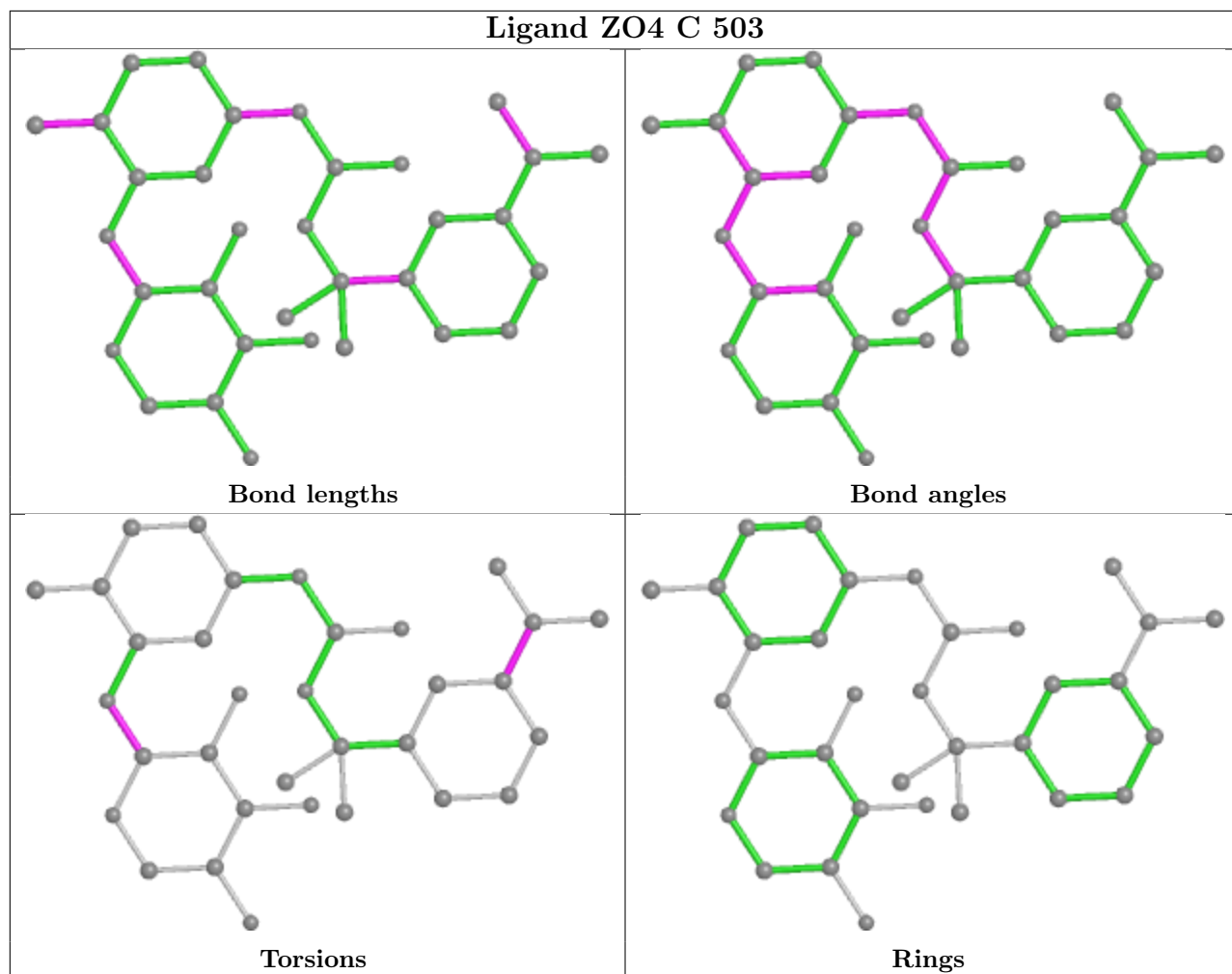
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	502	IMP	1	0

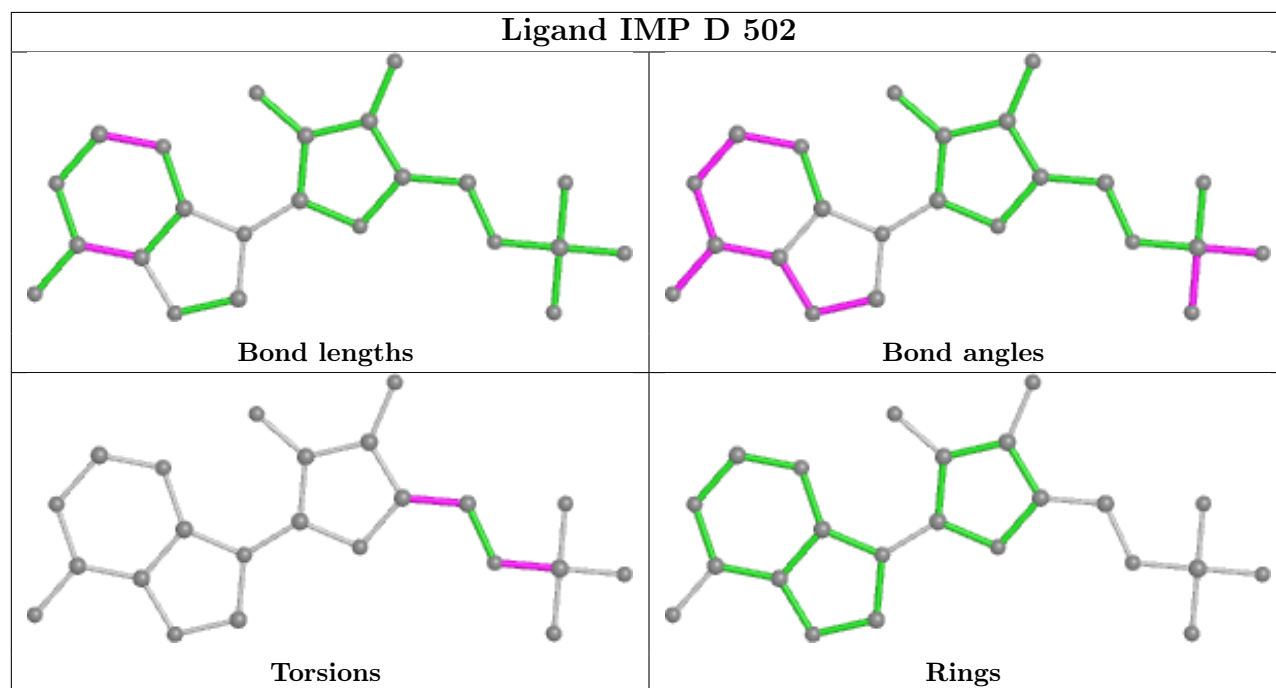
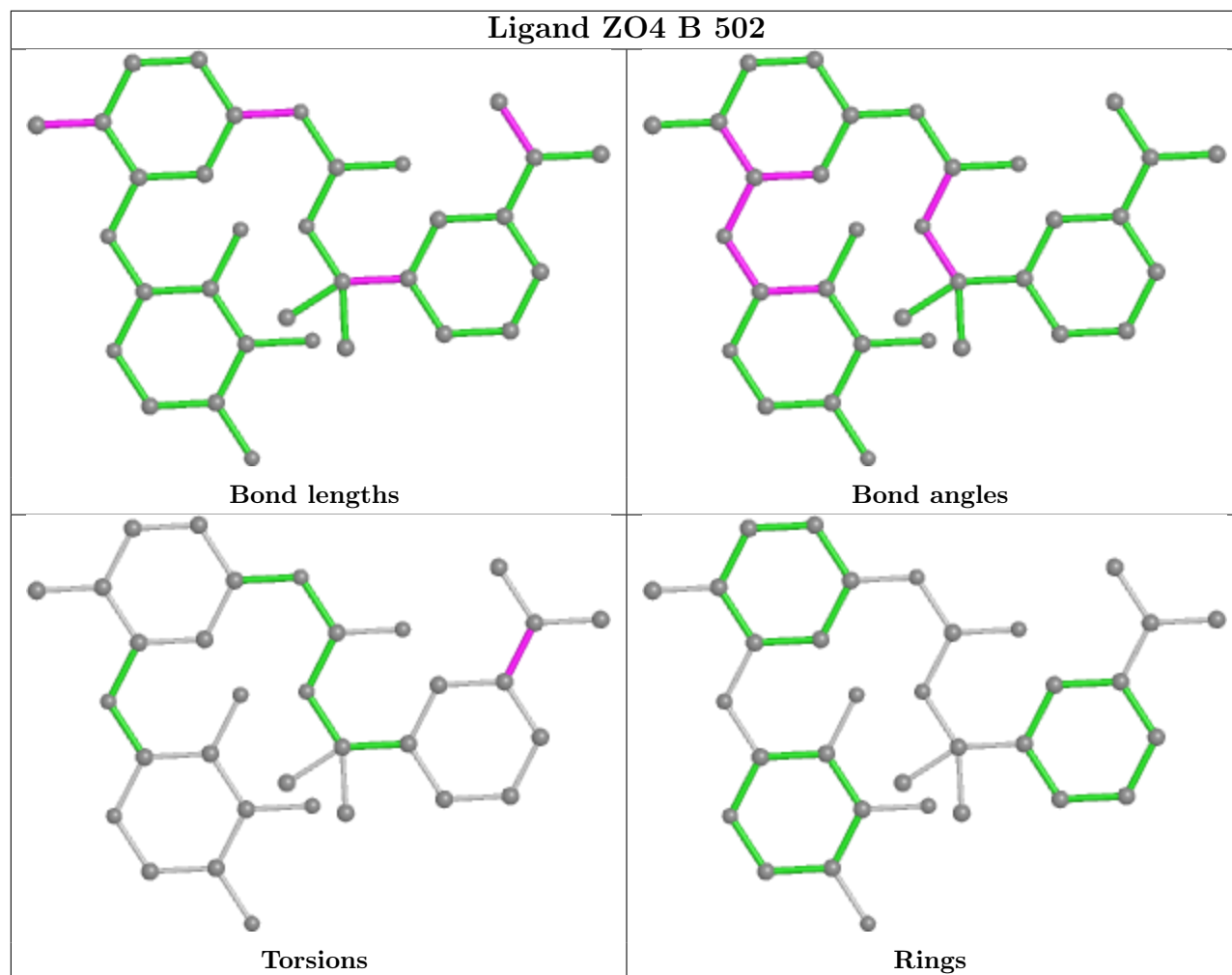
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

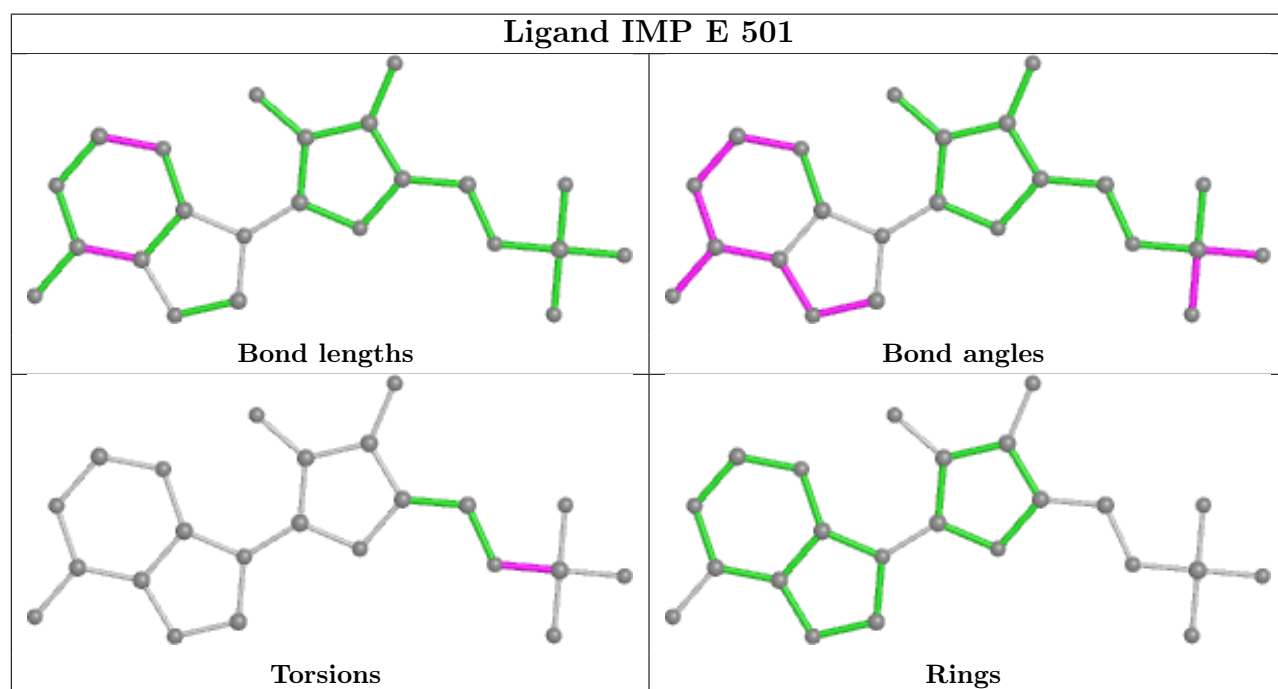
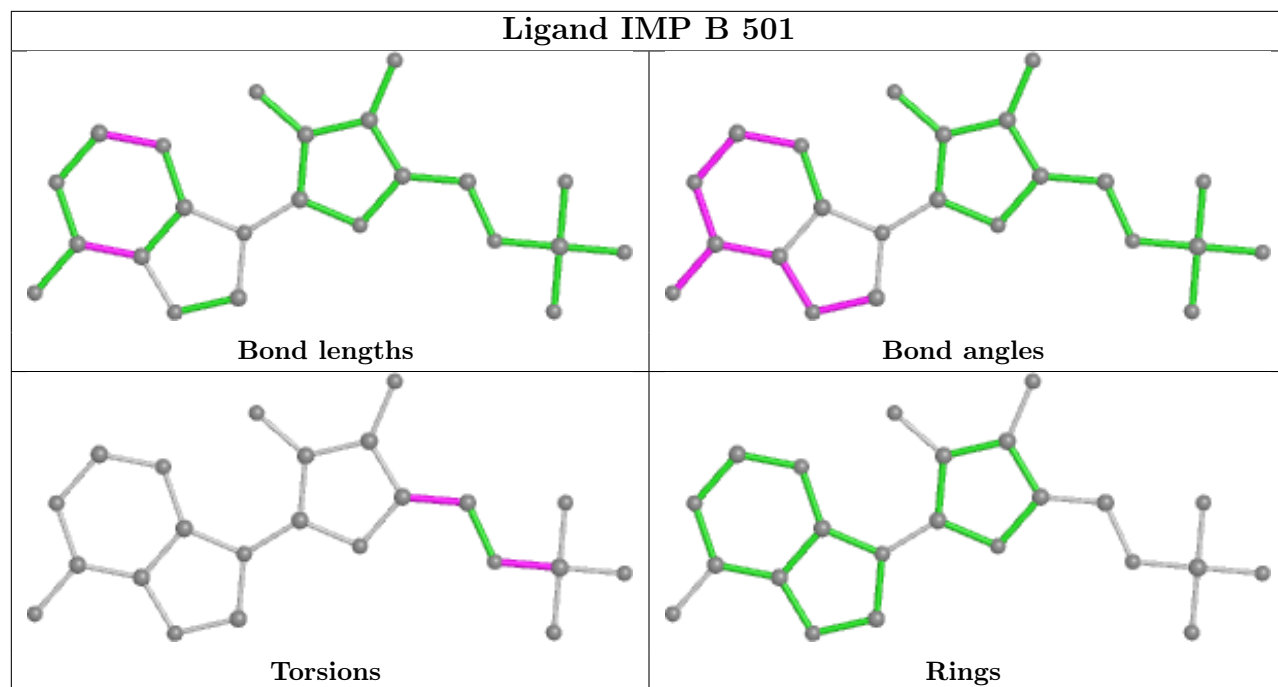


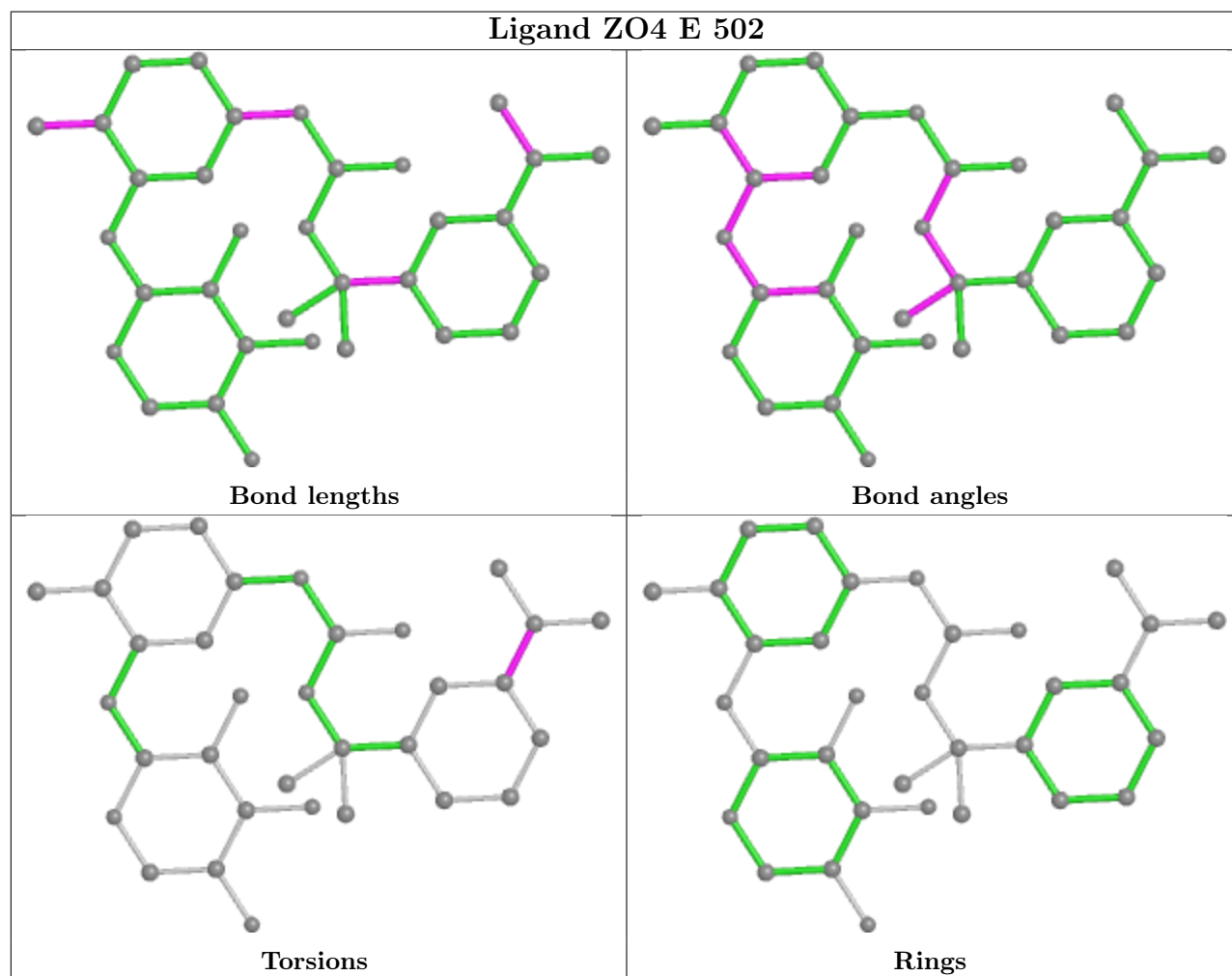
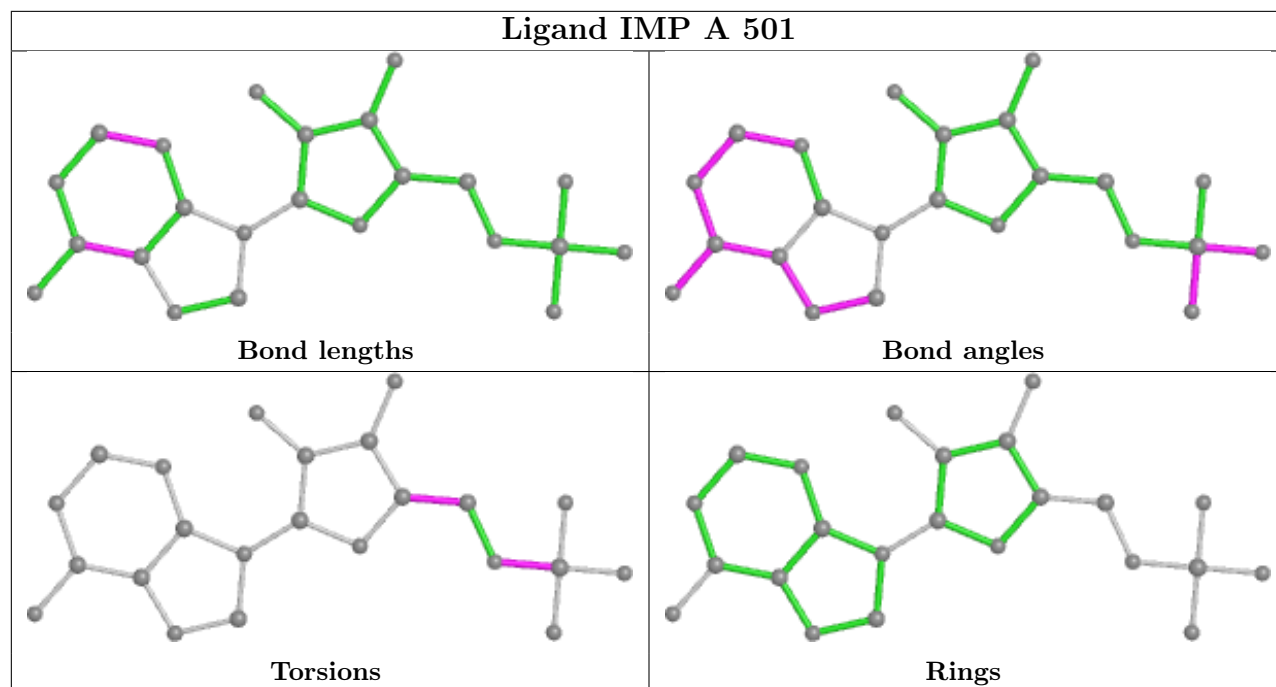


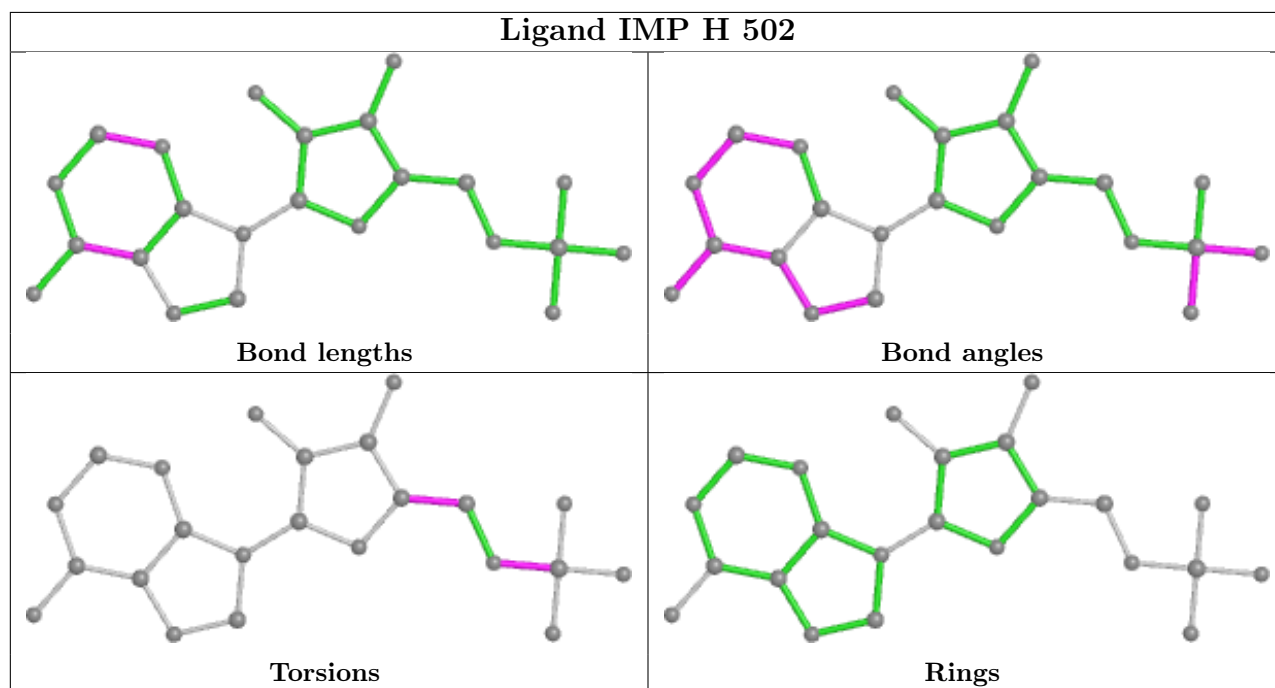
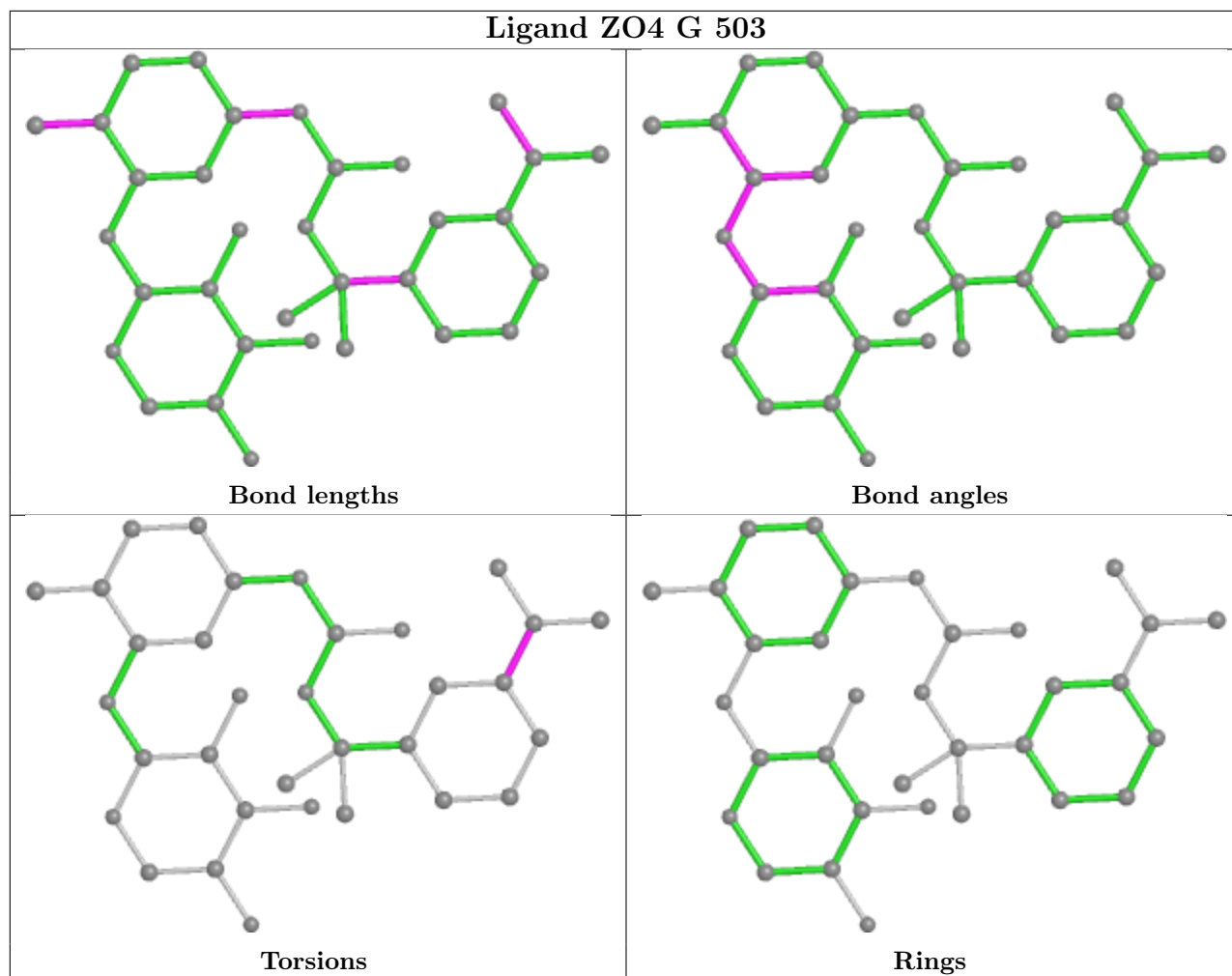


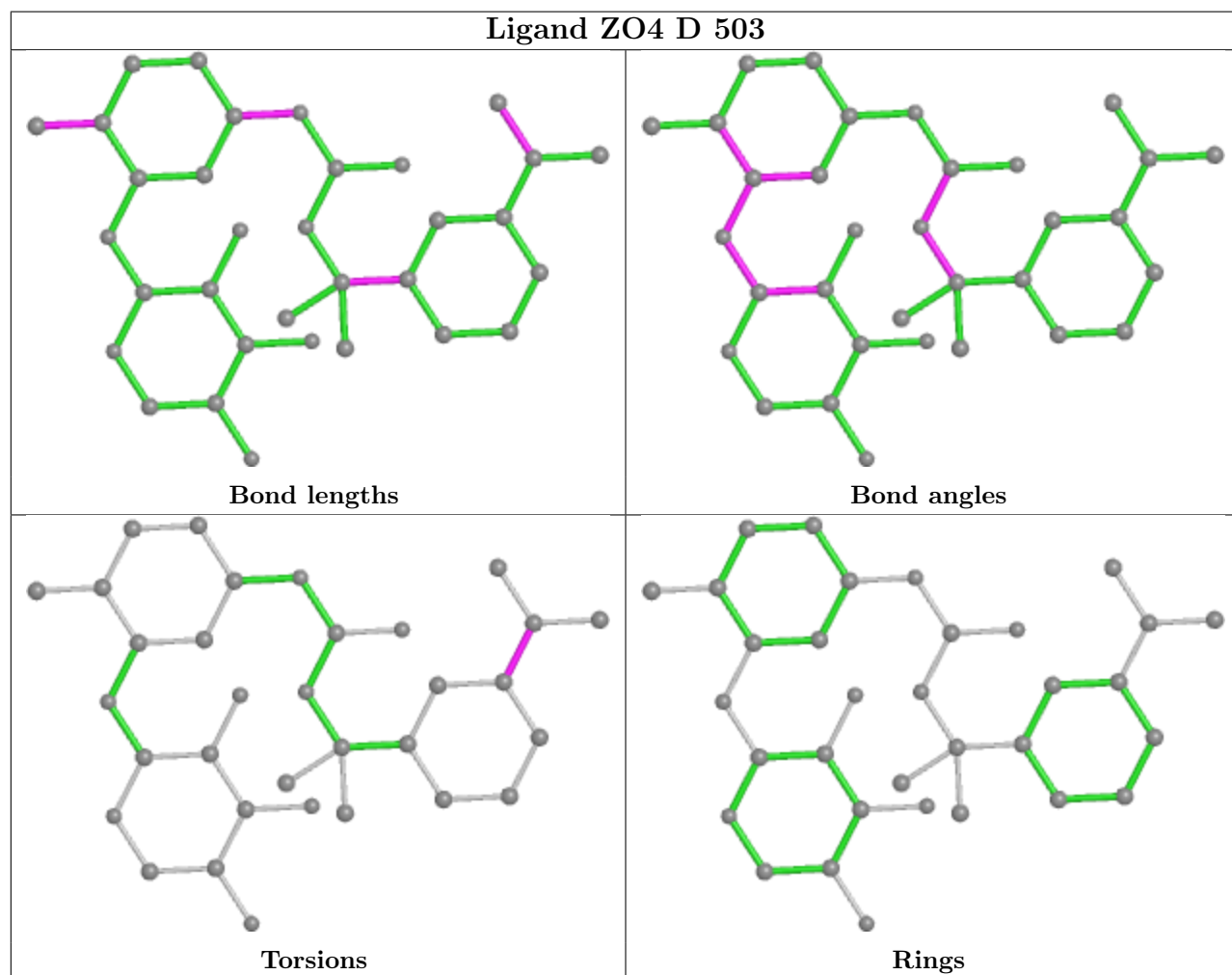
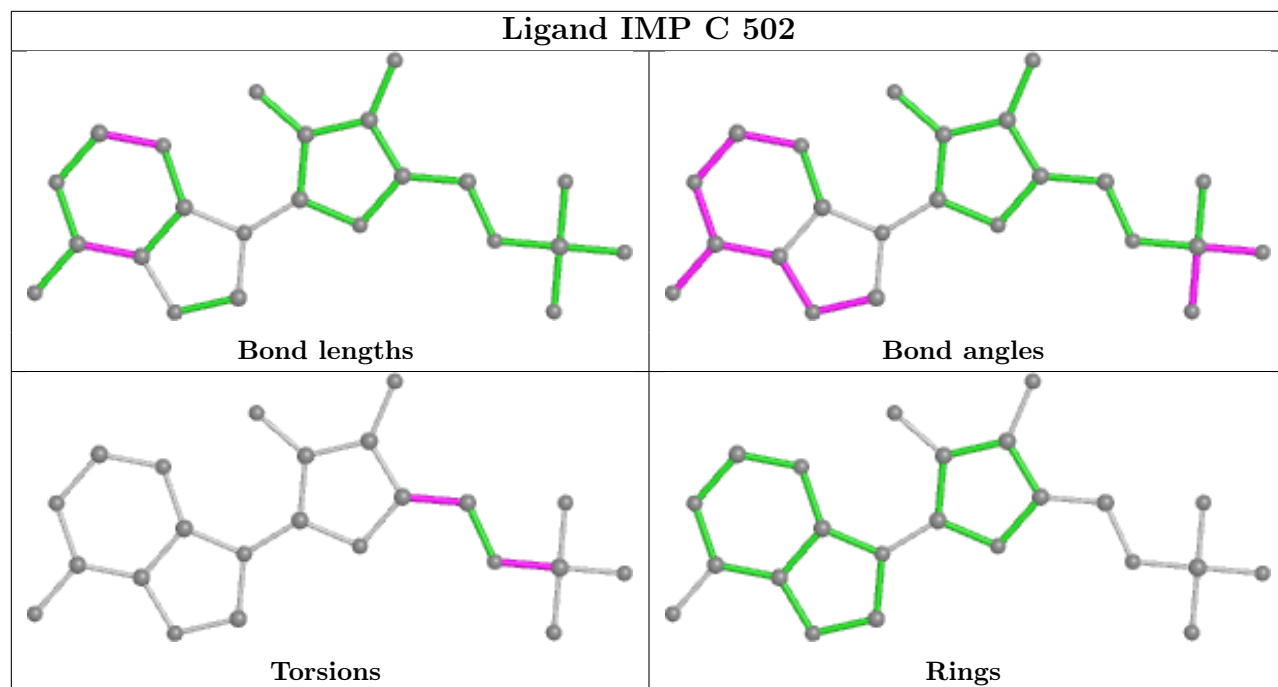


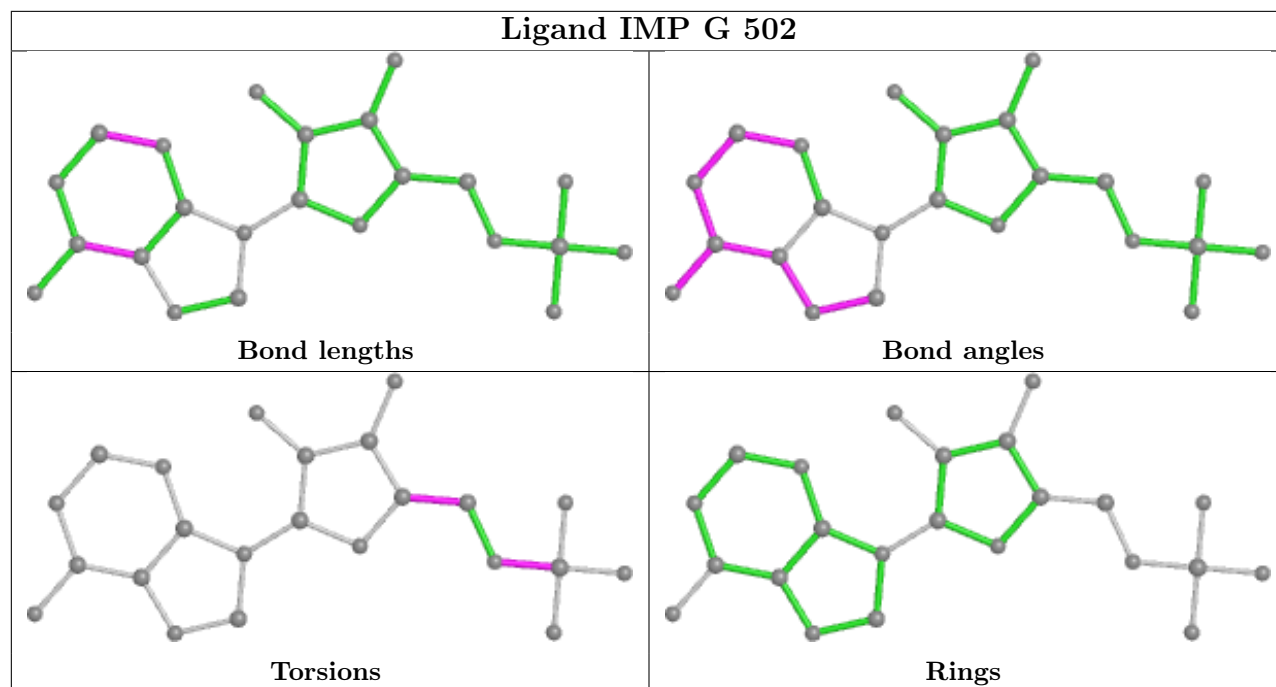












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 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, 95th 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	350/384 (91%)	-0.07	4 (1%) 80 79	24, 37, 60, 89	0
1	B	350/384 (91%)	-0.13	3 (0%) 84 83	23, 35, 60, 80	0
1	C	354/384 (92%)	-0.10	6 (1%) 70 66	25, 35, 63, 104	0
1	D	351/384 (91%)	-0.20	1 (0%) 94 94	24, 37, 63, 95	0
1	E	352/384 (91%)	-0.17	2 (0%) 89 89	27, 38, 66, 90	0
1	F	355/384 (92%)	-0.00	11 (3%) 49 45	29, 40, 65, 101	0
1	G	349/384 (90%)	0.08	6 (1%) 70 66	29, 42, 67, 93	0
1	H	349/384 (90%)	-0.08	1 (0%) 94 94	30, 43, 64, 91	0
All	All	2810/3072 (91%)	-0.09	34 (1%) 79 77	23, 39, 64, 104	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	411	LYS	4.5
1	G	230	THR	4.2
1	F	401	SER	3.8
1	F	-4	PHE	3.7
1	G	232	ASP	3.2
1	F	413	LEU	3.2
1	C	-3	GLN	3.1
1	A	399	LYS	2.9
1	D	400	GLY	2.9
1	A	232	ASP	2.9
1	G	380	TYR	2.8
1	H	413	LEU	2.8
1	B	232	ASP	2.7
1	G	251	ASP	2.6
1	F	-3	GLN	2.6
1	F	271	TYR	2.6

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Mol	Chain	Res	Type	RSRZ
1	C	380	TYR	2.6
1	E	-3	GLN	2.5
1	F	231	ALA	2.5
1	F	-1	ASN	2.4
1	C	412	LYS	2.4
1	F	399	LYS	2.4
1	F	411	LYS	2.4
1	C	413	LEU	2.3
1	B	251	ASP	2.3
1	F	251	ASP	2.3
1	C	-1	ASN	2.3
1	C	251	ASP	2.1
1	A	75	ASN	2.1
1	E	399	LYS	2.1
1	G	243	ALA	2.1
1	F	380	TYR	2.1
1	A	411	LYS	2.1
1	G	79	GLU	2.0

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

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

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, 95th 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
3	ZO4	H	503	33/33	0.87	0.25	30,44,80,82	0
3	ZO4	D	503	33/33	0.88	0.23	24,34,65,68	33
3	ZO4	A	502	33/33	0.88	0.23	27,35,65,72	33
3	ZO4	G	503	33/33	0.89	0.20	31,42,70,75	0
3	ZO4	F	502	33/33	0.89	0.21	26,40,64,68	33

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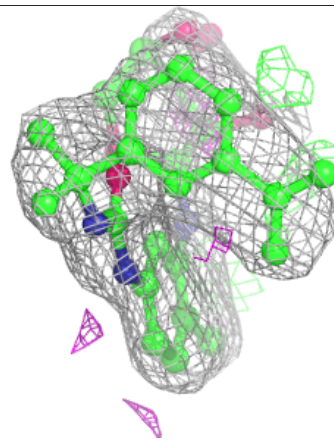
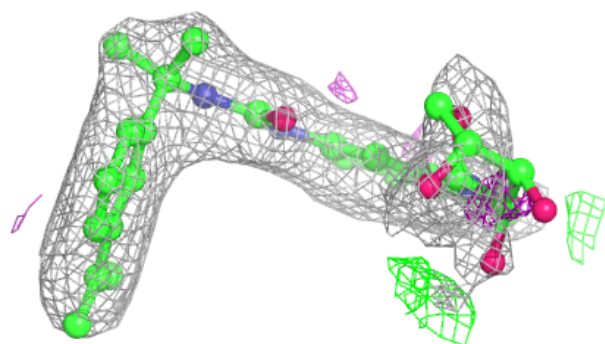
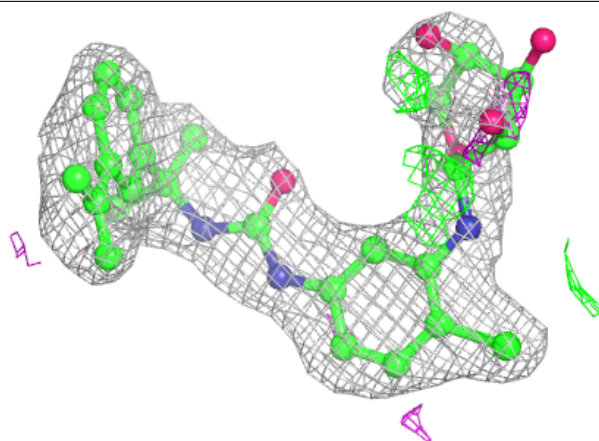
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	ZO4	B	502	33/33	0.90	0.22	27,34,69,70	33
3	ZO4	E	502	33/33	0.92	0.17	26,37,66,76	0
3	ZO4	C	503	33/33	0.93	0.19	23,33,61,65	33
2	IMP	F	501	23/23	0.95	0.15	31,35,38,45	0
2	IMP	H	502	23/23	0.96	0.16	29,37,40,41	0
2	IMP	C	502	23/23	0.96	0.14	23,28,33,37	0
2	IMP	G	502	23/23	0.96	0.13	29,34,38,42	0
2	IMP	E	501	23/23	0.97	0.14	27,32,36,41	0
2	IMP	B	501	23/23	0.97	0.15	23,31,35,35	0
2	IMP	A	501	23/23	0.97	0.14	25,33,36,38	0
2	IMP	D	502	23/23	0.97	0.14	24,32,35,36	0
4	K	A	503	1/1	0.98	0.13	34,34,34,34	0
4	K	C	501	1/1	0.98	0.05	37,37,37,37	0
4	K	E	503	1/1	0.98	0.12	35,35,35,35	0
4	K	D	501	1/1	0.99	0.12	30,30,30,30	0
4	K	B	503	1/1	0.99	0.07	31,31,31,31	0
4	K	F	503	1/1	0.99	0.07	37,37,37,37	0
4	K	G	501	1/1	0.99	0.13	30,30,30,30	0
4	K	H	501	1/1	0.99	0.09	33,33,33,33	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.

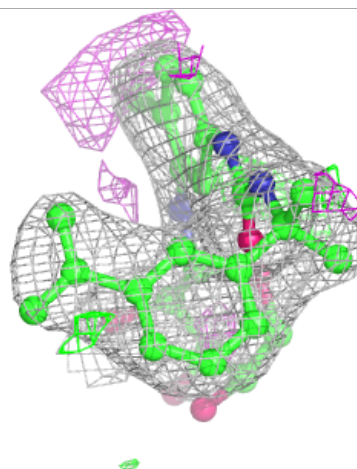
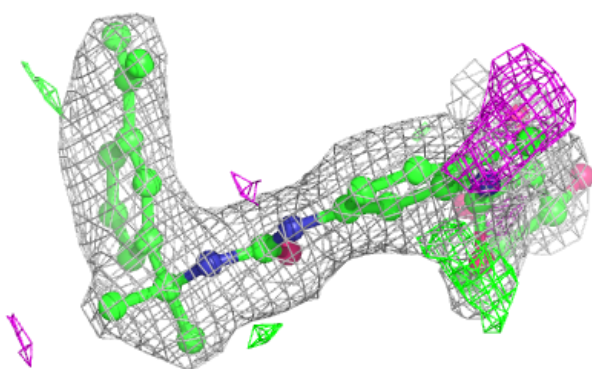
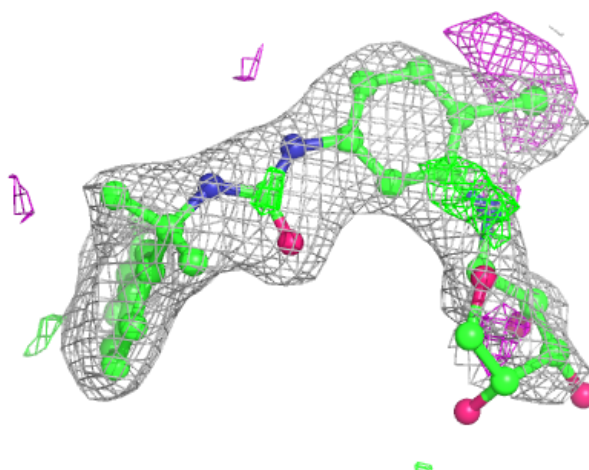
Electron density around ZO4 H 503:

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



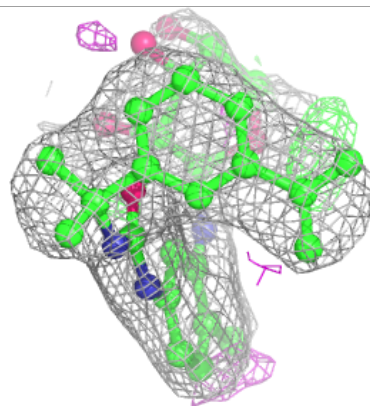
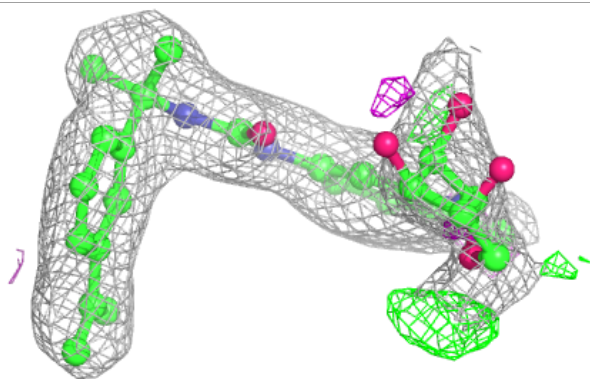
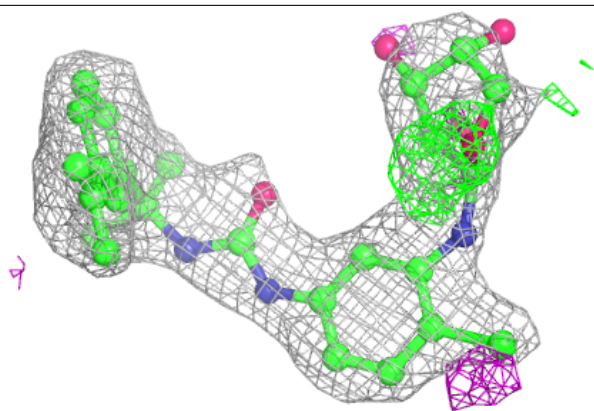
Electron density around ZO4 D 503:

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



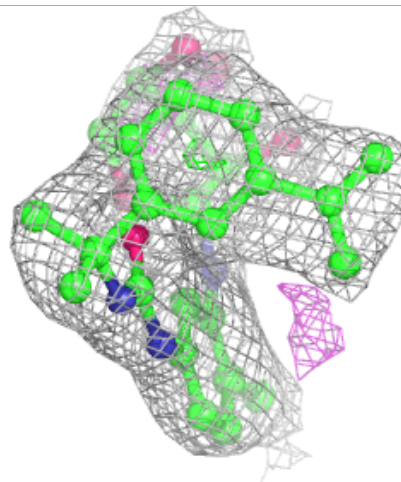
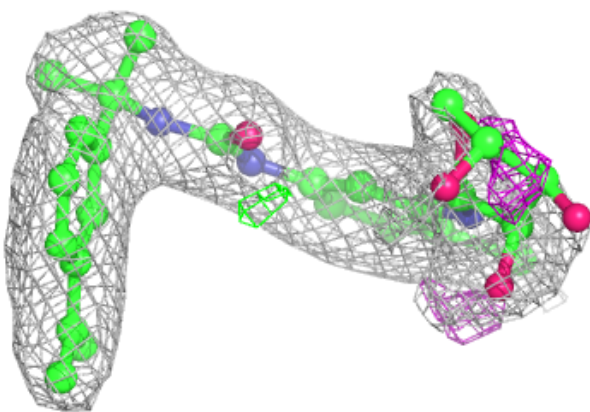
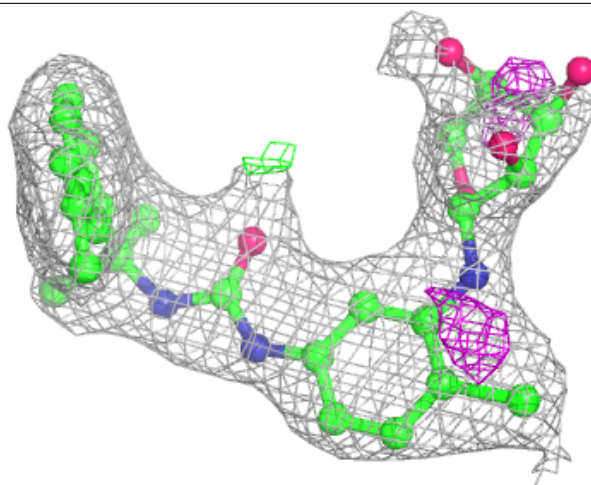
Electron density around ZO4 A 502:

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



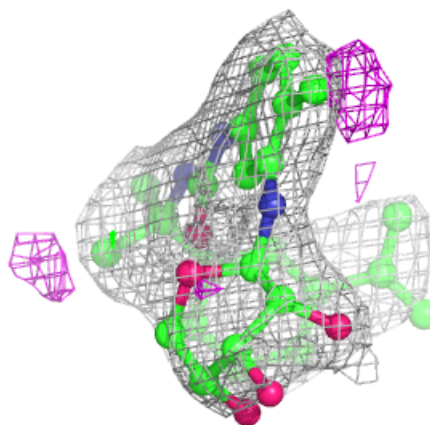
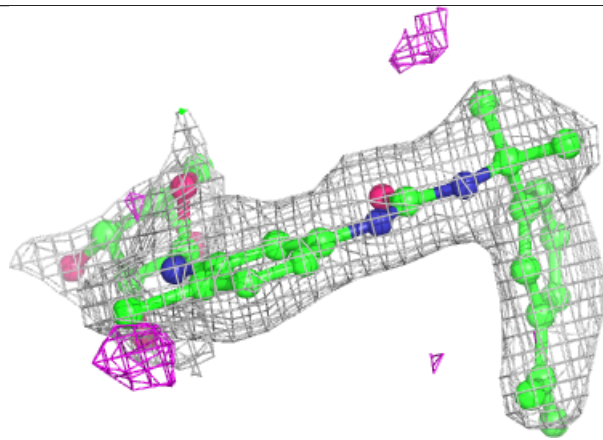
Electron density around ZO4 G 503:

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



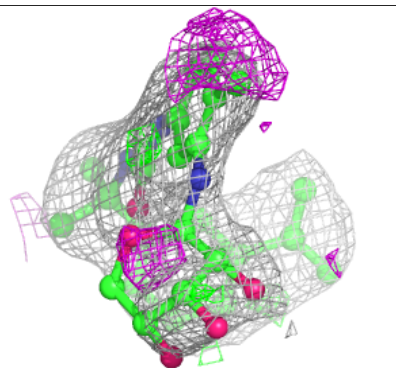
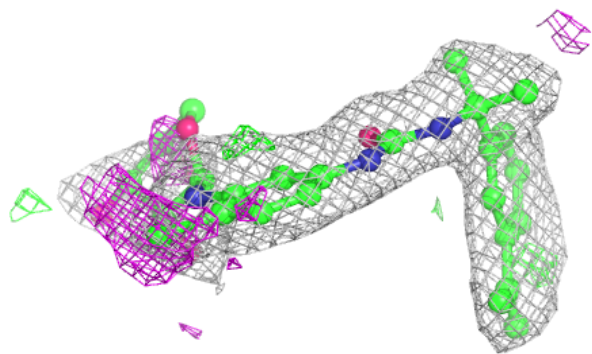
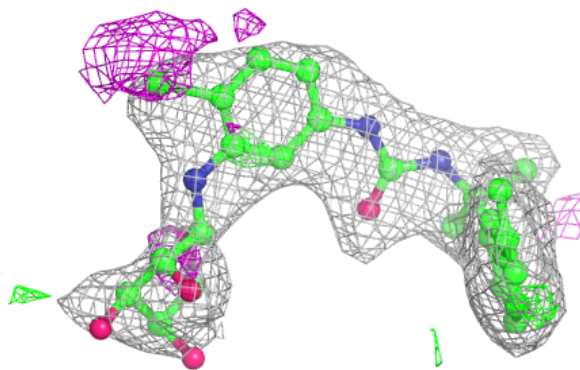
Electron density around ZO4 F 502:

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



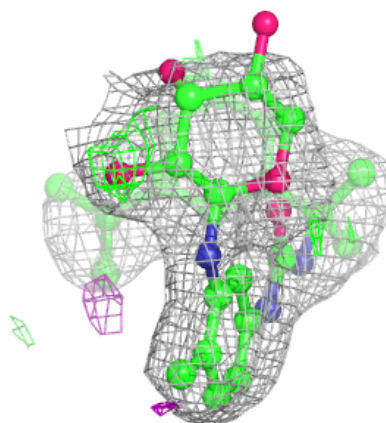
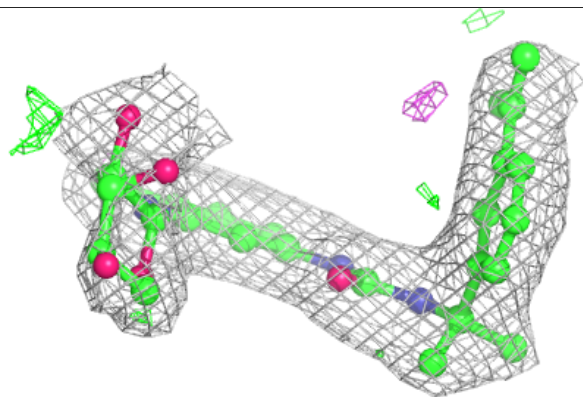
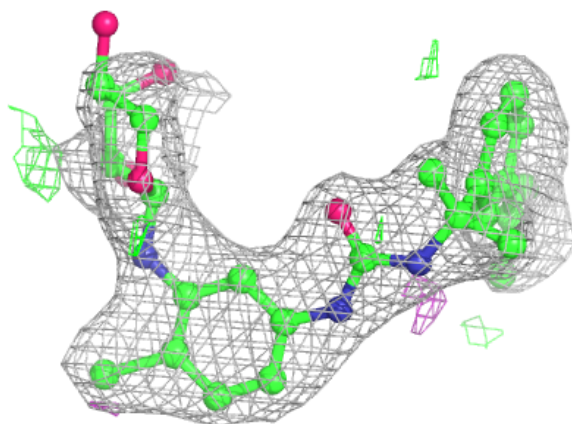
Electron density around ZO4 B 502:

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



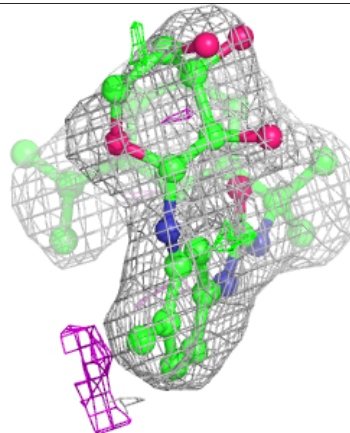
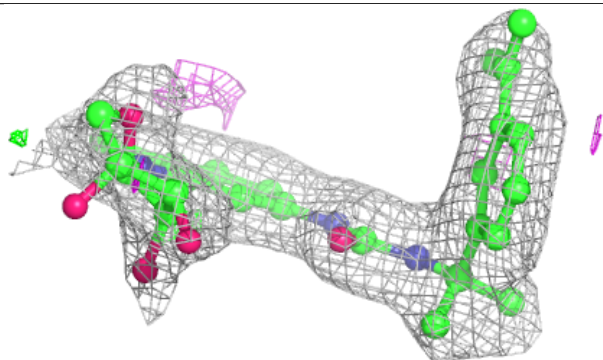
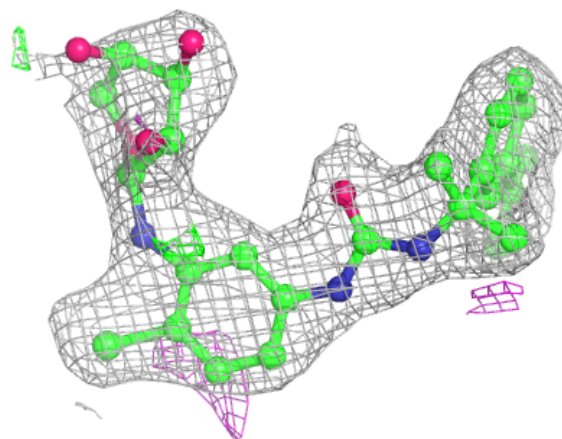
Electron density around ZO4 E 502:

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



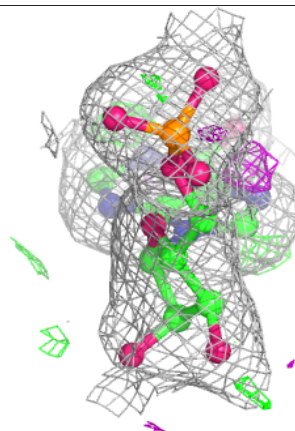
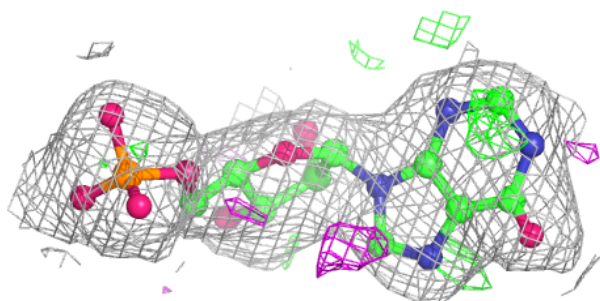
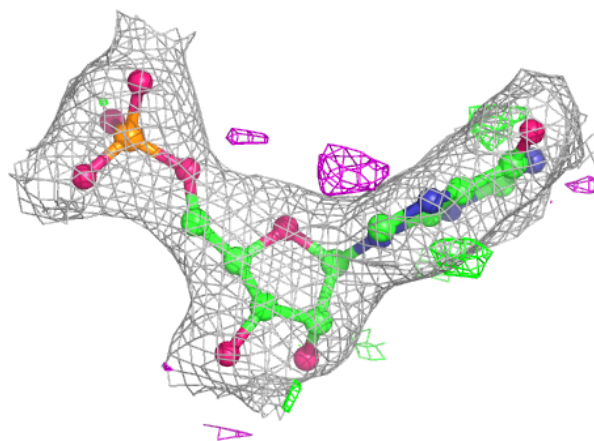
Electron density around ZO4 C 503:

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

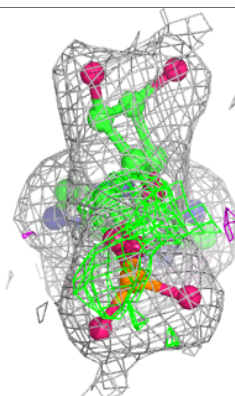
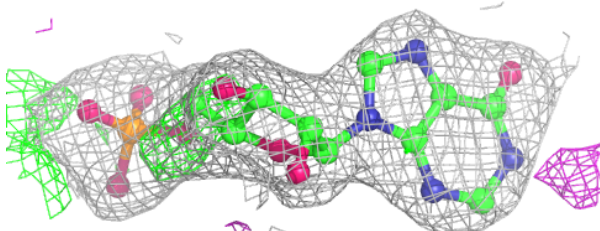
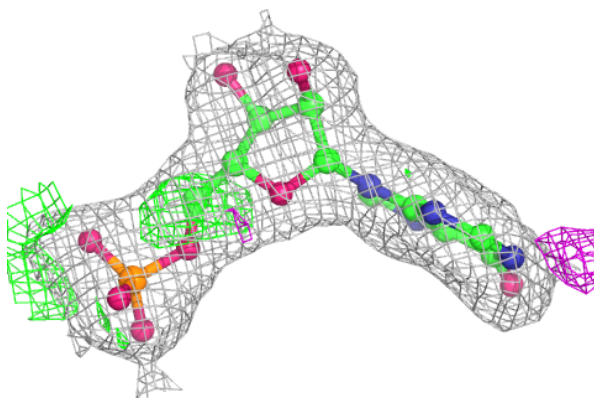


Electron density around IMP F 501:

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

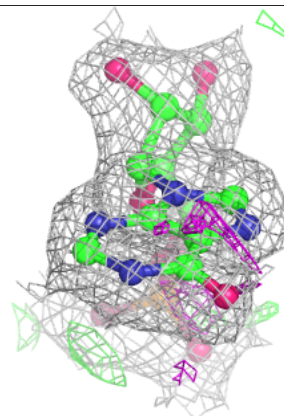
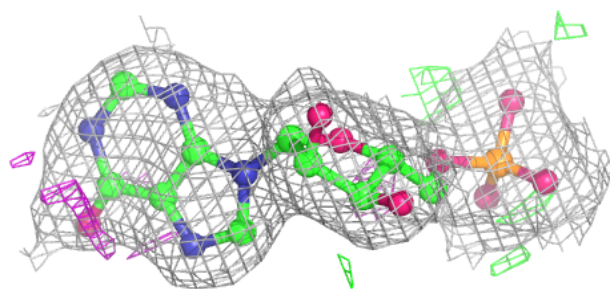
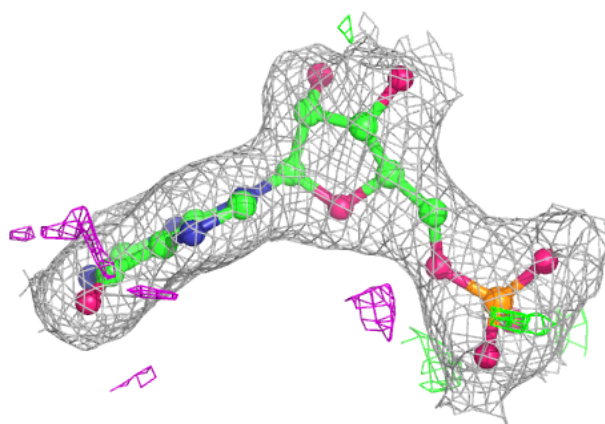
**Electron density around IMP H 502:**

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



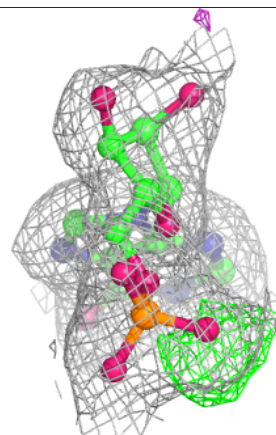
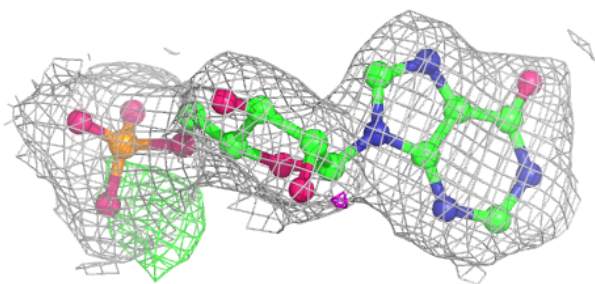
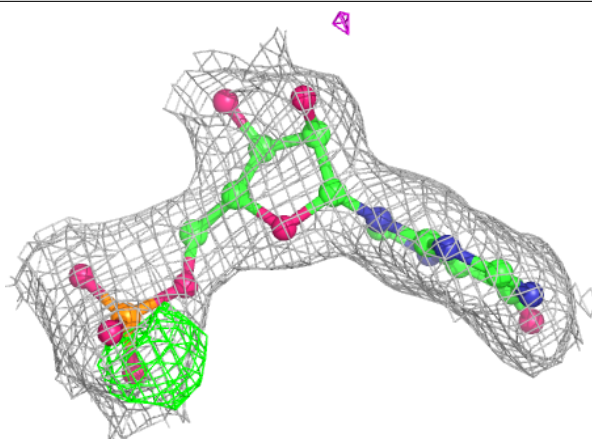
Electron density around IMP C 502:

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



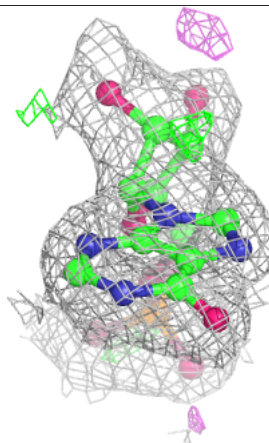
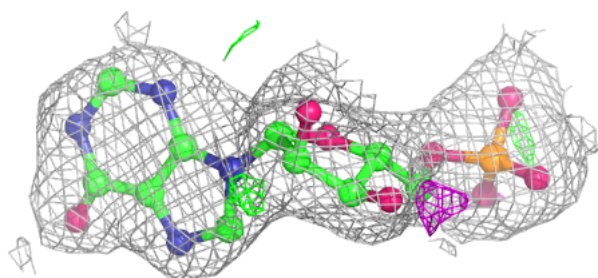
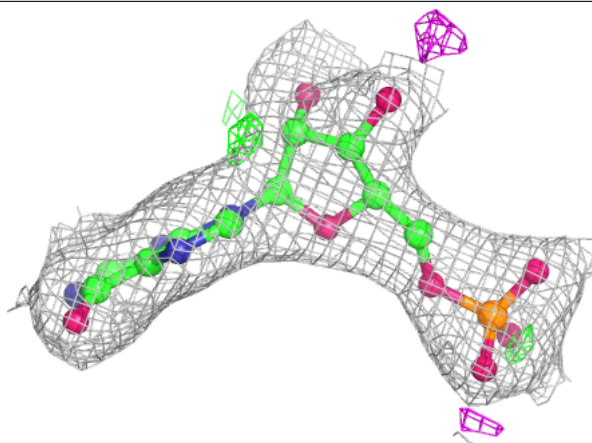
Electron density around IMP G 502:

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



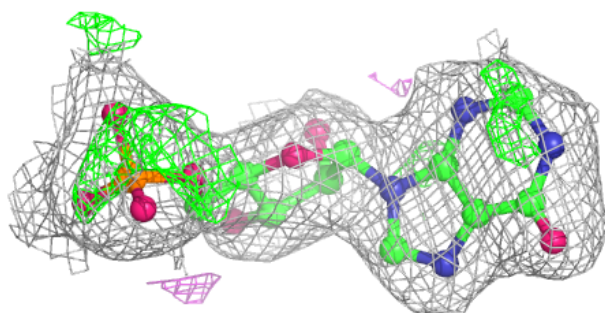
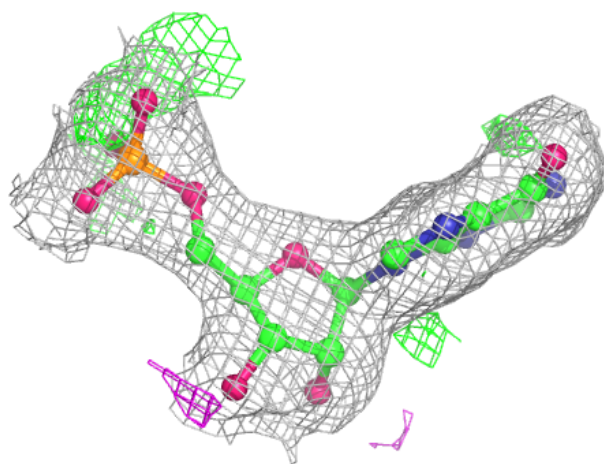
Electron density around IMP E 501:

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



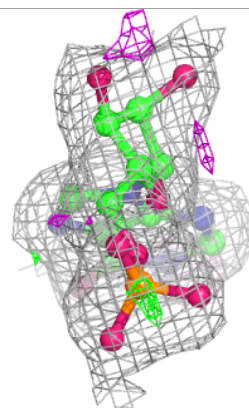
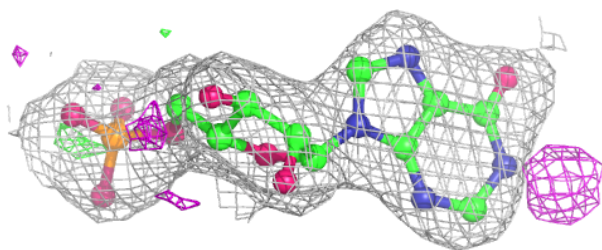
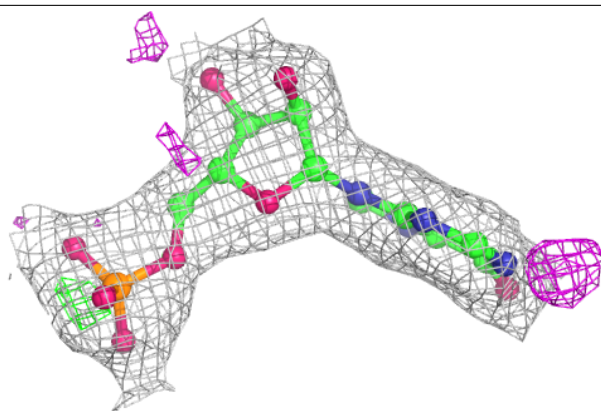
Electron density around IMP B 501:

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and green (positive)

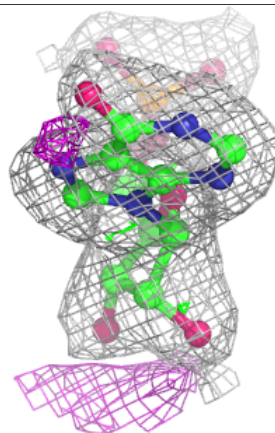
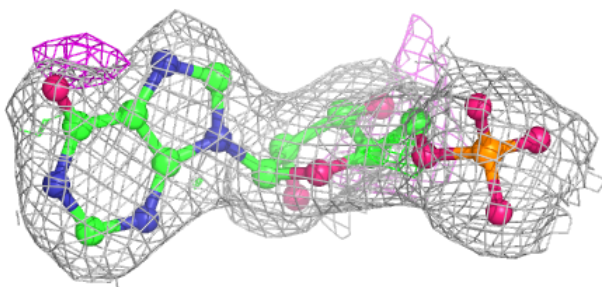
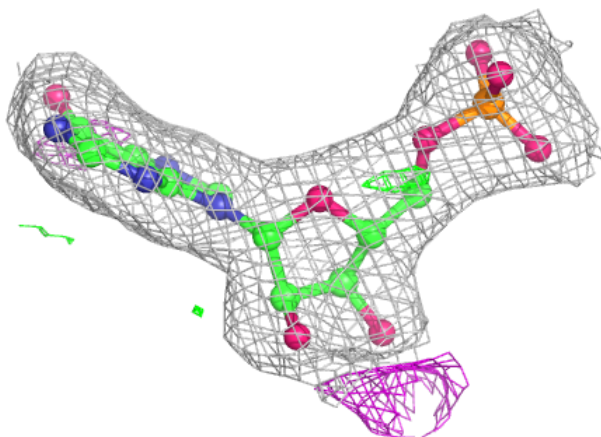


Electron density around IMP A 501:

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

**Electron density around IMP D 502:**

$2mF_o-DF_c$ (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.