



wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 6, 2025 – 04:55 PM EST

PDB ID : 9AUV
Title : Crystal structure of A. baumannii GuaB dCBS with inhibitor GNE9123
Authors : Harris, S.F.; Wu, P.
Deposited on : 2024-03-01
Resolution : 1.83 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 ⓘ 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 : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.21
EDS : 3.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.004 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.40

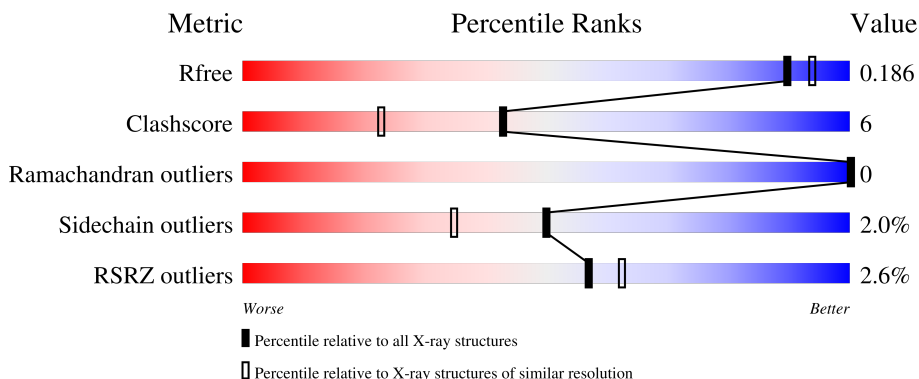
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.83 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.



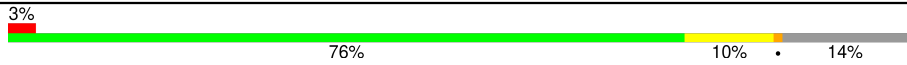

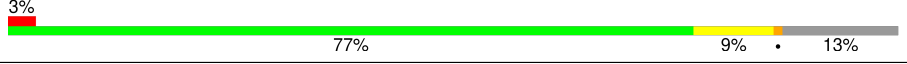
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1150 (1.84-1.84)
Clashscore	180529	1248 (1.84-1.84)
Ramachandran outliers	177936	1240 (1.84-1.84)
Sidechain outliers	177891	1240 (1.84-1.84)
RSRZ outliers	164620	1149 (1.84-1.84)

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	395	 2% 77% 10% • 13%
1	B	395	 2% 74% 12% • 13%
1	C	395	 2% 77% 10% • 13%
1	D	395	 2% 78% 9% • 13%
1	E	395	 3% 74% 12% 14%

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Mol	Chain	Length	Quality of chain
1	F	395	 <p>3% 76% 10% • 14%</p>
1	G	395	 <p>3% 75% 11% • 14%</p>
1	H	395	 <p>3% 77% 9% • 13%</p>

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 22919 atoms, of which 112 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	344	2544	1590	451	486	17	0	6	0
1	B	342	2533	1584	447	485	17	0	7	0
1	C	344	2541	1589	448	486	18	0	6	0
1	D	343	2537	1587	447	485	18	0	6	0
1	E	341	2531	1585	446	483	17	0	7	0
1	F	341	2531	1585	446	483	17	0	7	0
1	G	341	2523	1579	445	482	17	0	6	0
1	H	343	2537	1587	447	485	18	0	6	0

There are 128 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-15	MET	-	initiating methionine	UNP D0CF46
A	-14	HIS	-	expression tag	UNP D0CF46
A	-13	HIS	-	expression tag	UNP D0CF46
A	-12	HIS	-	expression tag	UNP D0CF46
A	-11	HIS	-	expression tag	UNP D0CF46
A	-10	HIS	-	expression tag	UNP D0CF46
A	-9	HIS	-	expression tag	UNP D0CF46
A	-8	GLY	-	expression tag	UNP D0CF46
A	-7	GLU	-	expression tag	UNP D0CF46
A	-6	ASN	-	expression tag	UNP D0CF46
A	-5	LEU	-	expression tag	UNP D0CF46
A	-4	TYR	-	expression tag	UNP D0CF46
A	-3	PHE	-	expression tag	UNP D0CF46

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLN	-	expression tag	UNP D0CF46
A	-1	GLY	-	expression tag	UNP D0CF46
A	0	SER	-	expression tag	UNP D0CF46
B	-15	MET	-	initiating methionine	UNP D0CF46
B	-14	HIS	-	expression tag	UNP D0CF46
B	-13	HIS	-	expression tag	UNP D0CF46
B	-12	HIS	-	expression tag	UNP D0CF46
B	-11	HIS	-	expression tag	UNP D0CF46
B	-10	HIS	-	expression tag	UNP D0CF46
B	-9	HIS	-	expression tag	UNP D0CF46
B	-8	GLY	-	expression tag	UNP D0CF46
B	-7	GLU	-	expression tag	UNP D0CF46
B	-6	ASN	-	expression tag	UNP D0CF46
B	-5	LEU	-	expression tag	UNP D0CF46
B	-4	TYR	-	expression tag	UNP D0CF46
B	-3	PHE	-	expression tag	UNP D0CF46
B	-2	GLN	-	expression tag	UNP D0CF46
B	-1	GLY	-	expression tag	UNP D0CF46
B	0	SER	-	expression tag	UNP D0CF46
C	-15	MET	-	initiating methionine	UNP D0CF46
C	-14	HIS	-	expression tag	UNP D0CF46
C	-13	HIS	-	expression tag	UNP D0CF46
C	-12	HIS	-	expression tag	UNP D0CF46
C	-11	HIS	-	expression tag	UNP D0CF46
C	-10	HIS	-	expression tag	UNP D0CF46
C	-9	HIS	-	expression tag	UNP D0CF46
C	-8	GLY	-	expression tag	UNP D0CF46
C	-7	GLU	-	expression tag	UNP D0CF46
C	-6	ASN	-	expression tag	UNP D0CF46
C	-5	LEU	-	expression tag	UNP D0CF46
C	-4	TYR	-	expression tag	UNP D0CF46
C	-3	PHE	-	expression tag	UNP D0CF46
C	-2	GLN	-	expression tag	UNP D0CF46
C	-1	GLY	-	expression tag	UNP D0CF46
C	0	SER	-	expression tag	UNP D0CF46
D	-15	MET	-	initiating methionine	UNP D0CF46
D	-14	HIS	-	expression tag	UNP D0CF46
D	-13	HIS	-	expression tag	UNP D0CF46
D	-12	HIS	-	expression tag	UNP D0CF46
D	-11	HIS	-	expression tag	UNP D0CF46
D	-10	HIS	-	expression tag	UNP D0CF46
D	-9	HIS	-	expression tag	UNP D0CF46

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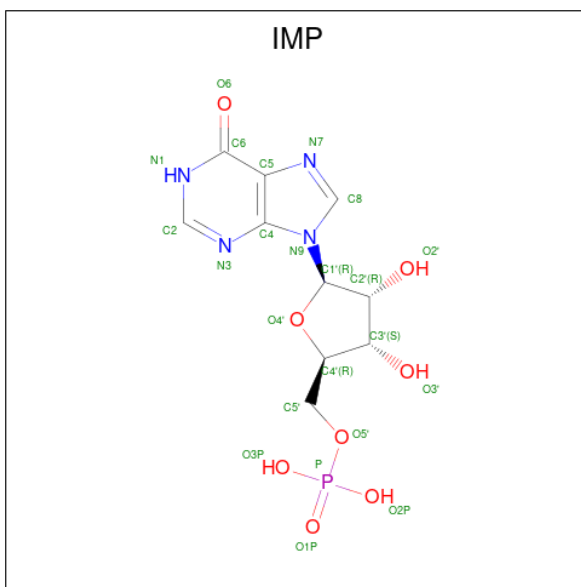
Chain	Residue	Modelled	Actual	Comment	Reference
D	-8	GLY	-	expression tag	UNP D0CF46
D	-7	GLU	-	expression tag	UNP D0CF46
D	-6	ASN	-	expression tag	UNP D0CF46
D	-5	LEU	-	expression tag	UNP D0CF46
D	-4	TYR	-	expression tag	UNP D0CF46
D	-3	PHE	-	expression tag	UNP D0CF46
D	-2	GLN	-	expression tag	UNP D0CF46
D	-1	GLY	-	expression tag	UNP D0CF46
D	0	SER	-	expression tag	UNP D0CF46
E	-15	MET	-	initiating methionine	UNP D0CF46
E	-14	HIS	-	expression tag	UNP D0CF46
E	-13	HIS	-	expression tag	UNP D0CF46
E	-12	HIS	-	expression tag	UNP D0CF46
E	-11	HIS	-	expression tag	UNP D0CF46
E	-10	HIS	-	expression tag	UNP D0CF46
E	-9	HIS	-	expression tag	UNP D0CF46
E	-8	GLY	-	expression tag	UNP D0CF46
E	-7	GLU	-	expression tag	UNP D0CF46
E	-6	ASN	-	expression tag	UNP D0CF46
E	-5	LEU	-	expression tag	UNP D0CF46
E	-4	TYR	-	expression tag	UNP D0CF46
E	-3	PHE	-	expression tag	UNP D0CF46
E	-2	GLN	-	expression tag	UNP D0CF46
E	-1	GLY	-	expression tag	UNP D0CF46
E	0	SER	-	expression tag	UNP D0CF46
F	-15	MET	-	initiating methionine	UNP D0CF46
F	-14	HIS	-	expression tag	UNP D0CF46
F	-13	HIS	-	expression tag	UNP D0CF46
F	-12	HIS	-	expression tag	UNP D0CF46
F	-11	HIS	-	expression tag	UNP D0CF46
F	-10	HIS	-	expression tag	UNP D0CF46
F	-9	HIS	-	expression tag	UNP D0CF46
F	-8	GLY	-	expression tag	UNP D0CF46
F	-7	GLU	-	expression tag	UNP D0CF46
F	-6	ASN	-	expression tag	UNP D0CF46
F	-5	LEU	-	expression tag	UNP D0CF46
F	-4	TYR	-	expression tag	UNP D0CF46
F	-3	PHE	-	expression tag	UNP D0CF46
F	-2	GLN	-	expression tag	UNP D0CF46
F	-1	GLY	-	expression tag	UNP D0CF46
F	0	SER	-	expression tag	UNP D0CF46
G	-15	MET	-	initiating methionine	UNP D0CF46

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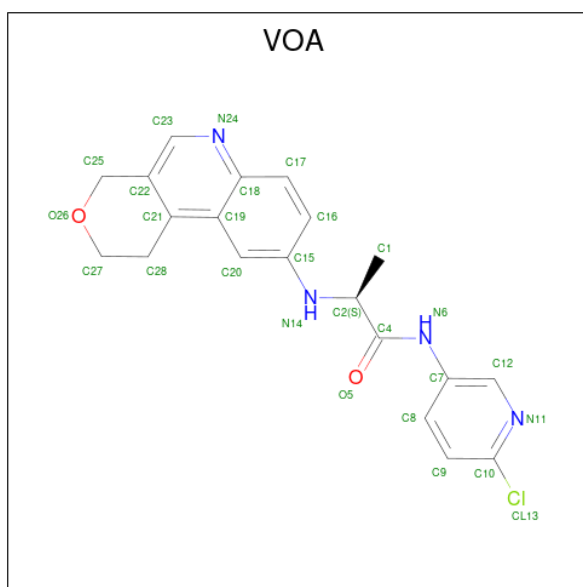
Chain	Residue	Modelled	Actual	Comment	Reference
G	-14	HIS	-	expression tag	UNP D0CF46
G	-13	HIS	-	expression tag	UNP D0CF46
G	-12	HIS	-	expression tag	UNP D0CF46
G	-11	HIS	-	expression tag	UNP D0CF46
G	-10	HIS	-	expression tag	UNP D0CF46
G	-9	HIS	-	expression tag	UNP D0CF46
G	-8	GLY	-	expression tag	UNP D0CF46
G	-7	GLU	-	expression tag	UNP D0CF46
G	-6	ASN	-	expression tag	UNP D0CF46
G	-5	LEU	-	expression tag	UNP D0CF46
G	-4	TYR	-	expression tag	UNP D0CF46
G	-3	PHE	-	expression tag	UNP D0CF46
G	-2	GLN	-	expression tag	UNP D0CF46
G	-1	GLY	-	expression tag	UNP D0CF46
G	0	SER	-	expression tag	UNP D0CF46
H	-15	MET	-	initiating methionine	UNP D0CF46
H	-14	HIS	-	expression tag	UNP D0CF46
H	-13	HIS	-	expression tag	UNP D0CF46
H	-12	HIS	-	expression tag	UNP D0CF46
H	-11	HIS	-	expression tag	UNP D0CF46
H	-10	HIS	-	expression tag	UNP D0CF46
H	-9	HIS	-	expression tag	UNP D0CF46
H	-8	GLY	-	expression tag	UNP D0CF46
H	-7	GLU	-	expression tag	UNP D0CF46
H	-6	ASN	-	expression tag	UNP D0CF46
H	-5	LEU	-	expression tag	UNP D0CF46
H	-4	TYR	-	expression tag	UNP D0CF46
H	-3	PHE	-	expression tag	UNP D0CF46
H	-2	GLN	-	expression tag	UNP D0CF46
H	-1	GLY	-	expression tag	UNP D0CF46
H	0	SER	-	expression tag	UNP D0CF46

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



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	H	N	O			P
2	A	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	B	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	C	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	D	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	E	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	F	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	G	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		
2	H	1	Total	C	H	N	O	P	0	0
			36	10	13	4	8	1		

- Molecule 3 is N-(6-chloropyridin-3-yl)-N 2 -(1,4-dihydro-2H-pyran[3,4-c]quinolin-9-yl) -L-alaninamide (three-letter code: VOA) (formula: C₂₀H₁₉ClN₄O₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Cl	H	N			O
3	A	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	B	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	C	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	D	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	E	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	F	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	G	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0
3	H	1	Total 28	C 20	Cl 1	H 1	N 4	O 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	319	Total 319	O 319	0	0
4	B	295	Total 295	O 295	0	0
4	C	275	Total 275	O 275	0	0
4	D	279	Total 279	O 279	0	0

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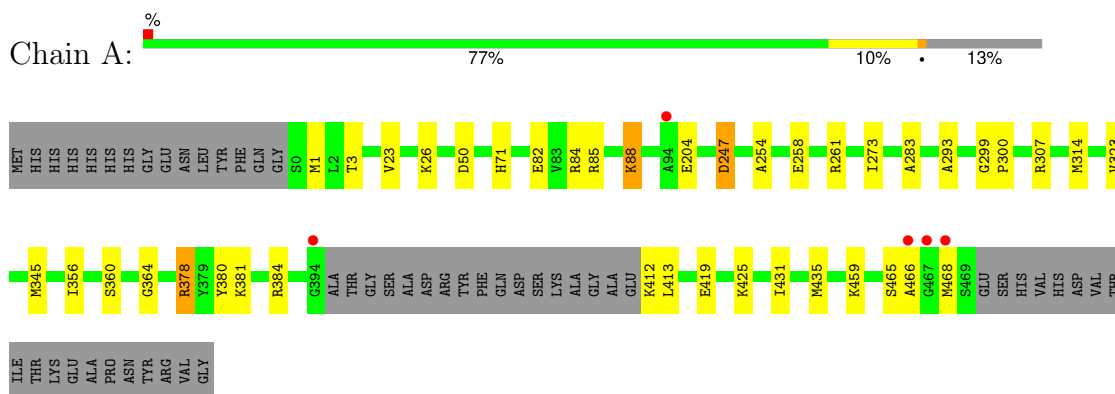
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	E	243	Total 243	O 243	0	0
4	F	253	Total 253	O 253	0	0
4	G	236	Total 236	O 236	0	0
4	H	230	Total 230	O 230	0	0

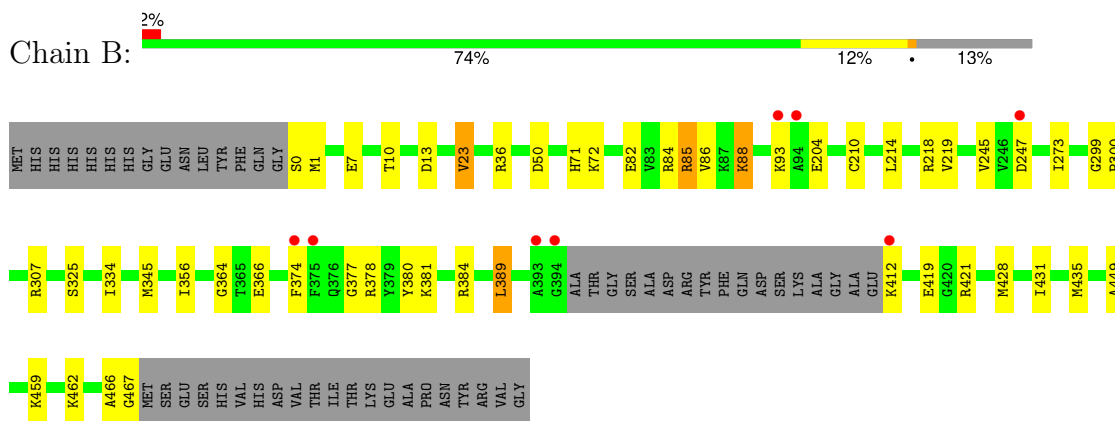
3 Residue-property plots [i](#)

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.

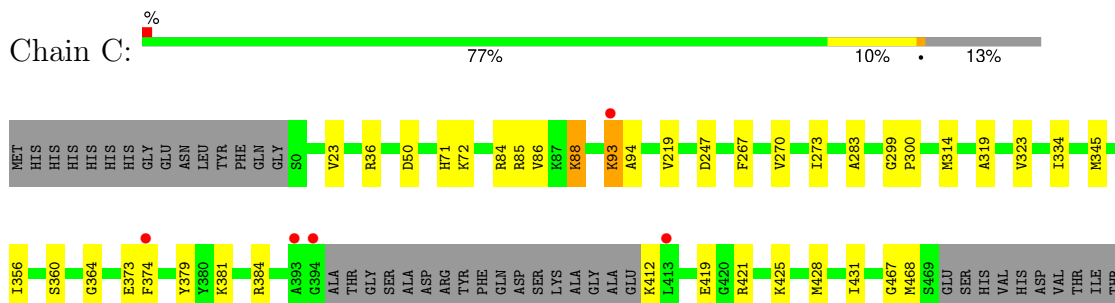
- Molecule 1: Inosine-5'-monophosphate dehydrogenase



- Molecule 1: Inosine-5'-monophosphate dehydrogenase



- Molecule 1: Inosine-5'-monophosphate dehydrogenase



LYS
GLU
ALA
PRO
ASN
TYR
ARG
VAL
GLY

● Molecule 1: Inosine-5'-monophosphate dehydrogenase

Chain D: 2% 78% 9% 13%

MET HIS HIS HIS HIS HIS HIS HIS LEU TYR PHE GLN GLY
M1 D13 V23 R36 D50 E54 H71 R84 R88 V86 K88 K93 A94 C210 R218 V219 D247 D288 G299 P300 M314 M345 I356 S360 P369

F374 F375 F376 F377 R384 S385 M386 L389 A393
GLY THR GLY SER ALA ALA ALA ALA GLY K412 E419 K425 Q434 A449 E452 Q456 G467 M468 S469 GLU SER HIS VAL HIS ASP VAL THR ILE THR LYS GLU

ALA
PRO
ASN
TYR
ARG
VAL
GLY

● Molecule 1: Inosine-5'-monophosphate dehydrogenase

Chain E: 3% 74% 12% 14%

MET HIS HIS HIS HIS HIS HIS HIS LEU TYR PHE GLN GLY
S0 L24 R33 Y39 P43 L44 V45 D50 E54 H71 K72 N73 E82 V83 R84 R87 R88 A91 G92 A93 A94 V245 V246 D247 G299 P300 R307 I308 M314 S325

I339 M345 L356 R357 G364 P369 E373 F374 F375 F376 G377 R378 V379 V380 K381 M386 G387 S388 A393
GLY THR THR GLY SER ASP ARG VAL M393 ALA THR THR GLY SER ASP ARG PHE GLN ASP LYS ILE ALA ALA GLU GLY K412 L413 E419 G420 R421 M428 G429 N430 I431 M436 E452

Q456 A466 C467 MET SER SER SER VAL HIS HIS ASP VAL THR THR THR LYS GLU ALA PRO ASN TYR ARG VAL VAL GLY

● Molecule 1: Inosine-5'-monophosphate dehydrogenase

Chain F: 3% 76% 10% 14%

MET HIS HIS HIS HIS HIS HIS HIS LEU TYR PHE GLN GLY
S0 T3 L24 R33 Y39 P43 D50 H71 R85 V86 G92 K93 A94 Y206 V219 V219 D247 A254 R261 K264 D288 G299 P300 R307 I334 I339

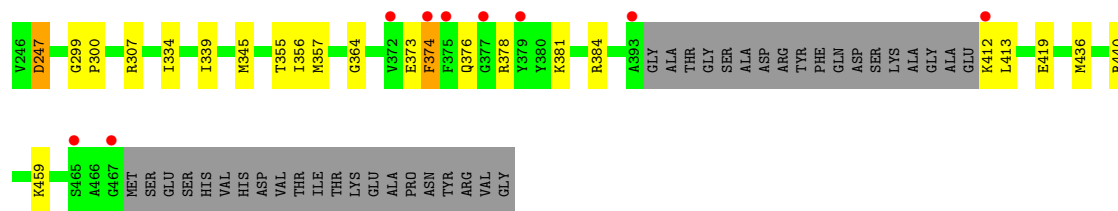
R340 F341 T355 I356 G364 T365 E366 E373 F374 F375 F376 G377 R378 Y379 V380 K381 R384 L389 A393
GLY ALA THR GLY SER ALA ASP ARG TYR PHE GLN ASP SER LYS ALA GLY GLY ALA GLU K412 E419 Y424 M428 I431 K459 S465 A466 C467 SER

GLU SER HIS VAL HIS HIS ASP THR ILE THR GLU ALA PRO ASN TYR ARG VAL VAL GLY

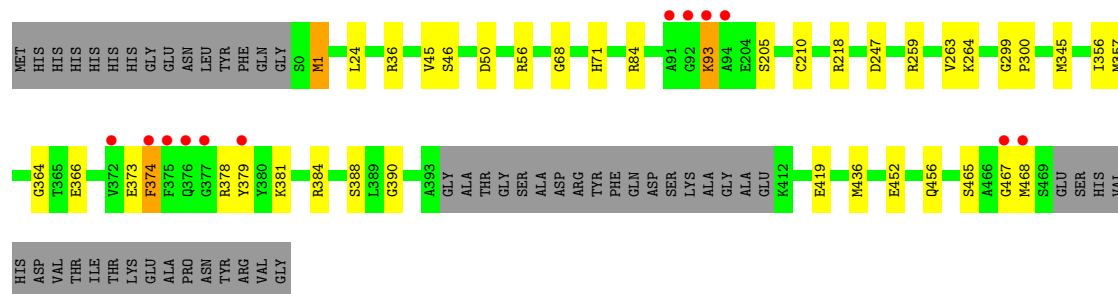
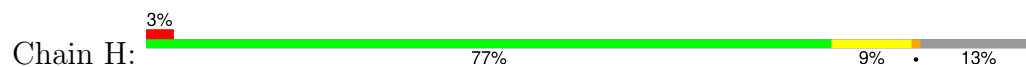
● Molecule 1: Inosine-5'-monophosphate dehydrogenase

Chain G: 3% 75% 11% 14%

MET HIS HIS HIS HIS HIS HIS HIS LEU TYR PHE GLN GLY
S0 E7 T22 V23 L24 V28 R31 T32 R33 Y39 V45 D50 E54 H71 E82 V83 R84 R85 V86 A91 G92 K93 A94 E204 S205 Y206 L214 V219 T225 V245



● Molecule 1: Inosine-5'-monophosphate dehydrogenase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	100.73Å 127.28Å 126.70Å 90.00° 104.78° 90.00°	Depositor
Resolution (Å)	46.54 – 1.83 46.54 – 1.83	Depositor EDS
% Data completeness (in resolution range)	88.3 (46.54-1.83) 91.4 (46.54-1.83)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.67 (at 1.83Å)	Xtrriage
Refinement program	PHENIX 1.18.2-3874_final	Depositor
R, R_{free}	0.135 , 0.186 0.136 , 0.186	Depositor DCC
R_{free} test set	13763 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	23.2	Xtrriage
Anisotropy	0.529	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 52.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	22919	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.95% 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: VOA, 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	0.28	0/2576	0.49	0/3477
1	B	0.28	0/2565	0.48	0/3463
1	C	0.28	0/2573	0.48	0/3473
1	D	0.27	0/2569	0.48	0/3468
1	E	0.27	0/2563	0.48	0/3461
1	F	0.27	0/2563	0.47	0/3461
1	G	0.27	0/2555	0.48	0/3450
1	H	0.27	0/2569	0.48	0/3468
All	All	0.27	0/20533	0.48	0/27721

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	2544	0	2605	37	0
1	B	2533	0	2591	41	0
1	C	2541	0	2601	27	0
1	D	2537	0	2598	26	0
1	E	2531	0	2594	39	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2531	0	2594	34	0
1	G	2523	0	2584	32	1
1	H	2537	0	2598	32	0
2	A	23	13	11	0	0
2	B	23	13	11	0	0
2	C	23	13	11	0	0
2	D	23	13	11	0	0
2	E	23	13	11	0	0
2	F	23	13	11	0	0
2	G	23	13	11	0	0
2	H	23	13	11	0	0
3	A	27	1	0	0	0
3	B	27	1	0	0	0
3	C	27	1	0	0	0
3	D	27	1	0	0	0
3	E	27	1	0	0	0
3	F	27	1	0	0	0
3	G	27	1	0	0	0
3	H	27	1	0	0	0
4	A	319	0	0	12	2
4	B	295	0	0	14	1
4	C	275	0	0	6	1
4	D	279	0	0	6	2
4	E	243	0	0	6	1
4	F	253	0	0	9	2
4	G	236	0	0	8	2
4	H	230	0	0	7	2
All	All	22807	112	20853	253	7

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 6.

The worst 5 of 253 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:345[A]:MET:HG2	1:D:356:ILE:HD13	1.47	0.95
1:C:345[A]:MET:HG2	1:C:356:ILE:HD13	1.48	0.95
1:A:465:SER:HA	1:A:468:MET:HE2	1.47	0.94
1:B:345[A]:MET:HG2	1:B:356:ILE:HD13	1.49	0.94
1:H:345[B]:MET:HG2	1:H:356:ILE:HD13	1.51	0.93

The worst 5 of 7 symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:1088:HOH:O	4:G:1017:HOH:O[2_545]	1.94	0.26
1:G:92:GLY:O	4:F:902:HOH:O[2_555]	1.95	0.25
4:C:1111:HOH:O	4:F:920:HOH:O[2_555]	1.97	0.23
4:A:1054:HOH:O	4:H:1031:HOH:O[2_546]	1.98	0.22
4:D:1088:HOH:O	4:G:1006:HOH:O[2_545]	1.99	0.21

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	346/395 (88%)	337 (97%)	9 (3%)	0	100	100
1	B	345/395 (87%)	338 (98%)	7 (2%)	0	100	100
1	C	346/395 (88%)	338 (98%)	8 (2%)	0	100	100
1	D	345/395 (87%)	338 (98%)	7 (2%)	0	100	100
1	E	344/395 (87%)	336 (98%)	8 (2%)	0	100	100
1	F	344/395 (87%)	335 (97%)	9 (3%)	0	100	100
1	G	343/395 (87%)	333 (97%)	10 (3%)	0	100	100
1	H	345/395 (87%)	337 (98%)	8 (2%)	0	100	100
All	All	2758/3160 (87%)	2692 (98%)	66 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	263/298 (88%)	257 (98%)	6 (2%)	45	29
1	B	262/298 (88%)	255 (97%)	7 (3%)	40	22
1	C	263/298 (88%)	258 (98%)	5 (2%)	52	36
1	D	263/298 (88%)	256 (97%)	7 (3%)	40	22
1	E	262/298 (88%)	260 (99%)	2 (1%)	79	72
1	F	262/298 (88%)	257 (98%)	5 (2%)	52	36
1	G	261/298 (88%)	257 (98%)	4 (2%)	60	47
1	H	263/298 (88%)	258 (98%)	5 (2%)	52	36
All	All	2099/2384 (88%)	2058 (98%)	41 (2%)	50	35

5 of 41 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	374	PHE
1	G	413	LEU
1	F	376	GLN
1	G	7	GLU
1	H	93	LYS

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

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry

16 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	IMP	B	801	-	21,25,25	0.80	0	22,38,38	0.72	0
2	IMP	F	801	-	21,25,25	0.74	0	22,38,38	0.71	0
3	VOA	B	802	-	29,30,30	0.61	0	38,42,42	1.71	7 (18%)
2	IMP	C	801	-	21,25,25	0.78	0	22,38,38	0.73	0
3	VOA	F	802	-	29,30,30	0.64	1 (3%)	38,42,42	1.63	6 (15%)
2	IMP	E	801	-	21,25,25	0.78	0	22,38,38	0.70	0
2	IMP	D	801	-	21,25,25	0.76	0	22,38,38	0.68	0
3	VOA	C	802	-	29,30,30	0.61	0	38,42,42	1.65	6 (15%)
2	IMP	H	801	-	21,25,25	0.82	0	22,38,38	0.74	0
2	IMP	G	801	-	21,25,25	0.78	1 (4%)	22,38,38	0.71	0
3	VOA	E	802	-	29,30,30	0.61	0	38,42,42	1.60	6 (15%)
3	VOA	D	802	-	29,30,30	0.60	0	38,42,42	1.67	7 (18%)
3	VOA	A	802	-	29,30,30	0.61	0	38,42,42	1.71	7 (18%)
2	IMP	A	801	-	21,25,25	0.82	0	22,38,38	0.68	0
3	VOA	G	802	-	29,30,30	0.62	1 (3%)	38,42,42	1.71	7 (18%)
3	VOA	H	802	-	29,30,30	0.63	0	38,42,42	1.60	7 (18%)

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	B	801	-	-	0/6/26/26	0/3/3/3
2	IMP	F	801	-	-	0/6/26/26	0/3/3/3
3	VOA	B	802	-	-	0/12/19/19	0/4/4/4
2	IMP	C	801	-	-	0/6/26/26	0/3/3/3
3	VOA	F	802	-	-	0/12/19/19	0/4/4/4
2	IMP	E	801	-	-	0/6/26/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	IMP	D	801	-	-	0/6/26/26	0/3/3/3
3	VOA	C	802	-	-	0/12/19/19	0/4/4/4
2	IMP	H	801	-	-	0/6/26/26	0/3/3/3
2	IMP	G	801	-	-	0/6/26/26	0/3/3/3
3	VOA	E	802	-	-	0/12/19/19	0/4/4/4
3	VOA	D	802	-	-	0/12/19/19	0/4/4/4
3	VOA	A	802	-	-	0/12/19/19	0/4/4/4
2	IMP	A	801	-	-	0/6/26/26	0/3/3/3
3	VOA	G	802	-	-	0/12/19/19	0/4/4/4
3	VOA	H	802	-	-	0/12/19/19	0/4/4/4

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	802	VOA	C18-N24	-2.15	1.33	1.37
3	G	802	VOA	C18-N24	-2.05	1.34	1.37
2	G	801	IMP	C8-N7	-2.04	1.31	1.34

The worst 5 of 53 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	802	VOA	C12-N11-C10	5.29	122.68	116.33
3	A	802	VOA	C12-N11-C10	5.23	122.61	116.33
3	C	802	VOA	C12-N11-C10	4.92	122.24	116.33
3	D	802	VOA	C12-N11-C10	4.85	122.16	116.33
3	G	802	VOA	C12-N11-C10	4.84	122.14	116.33

There are no chirality outliers.

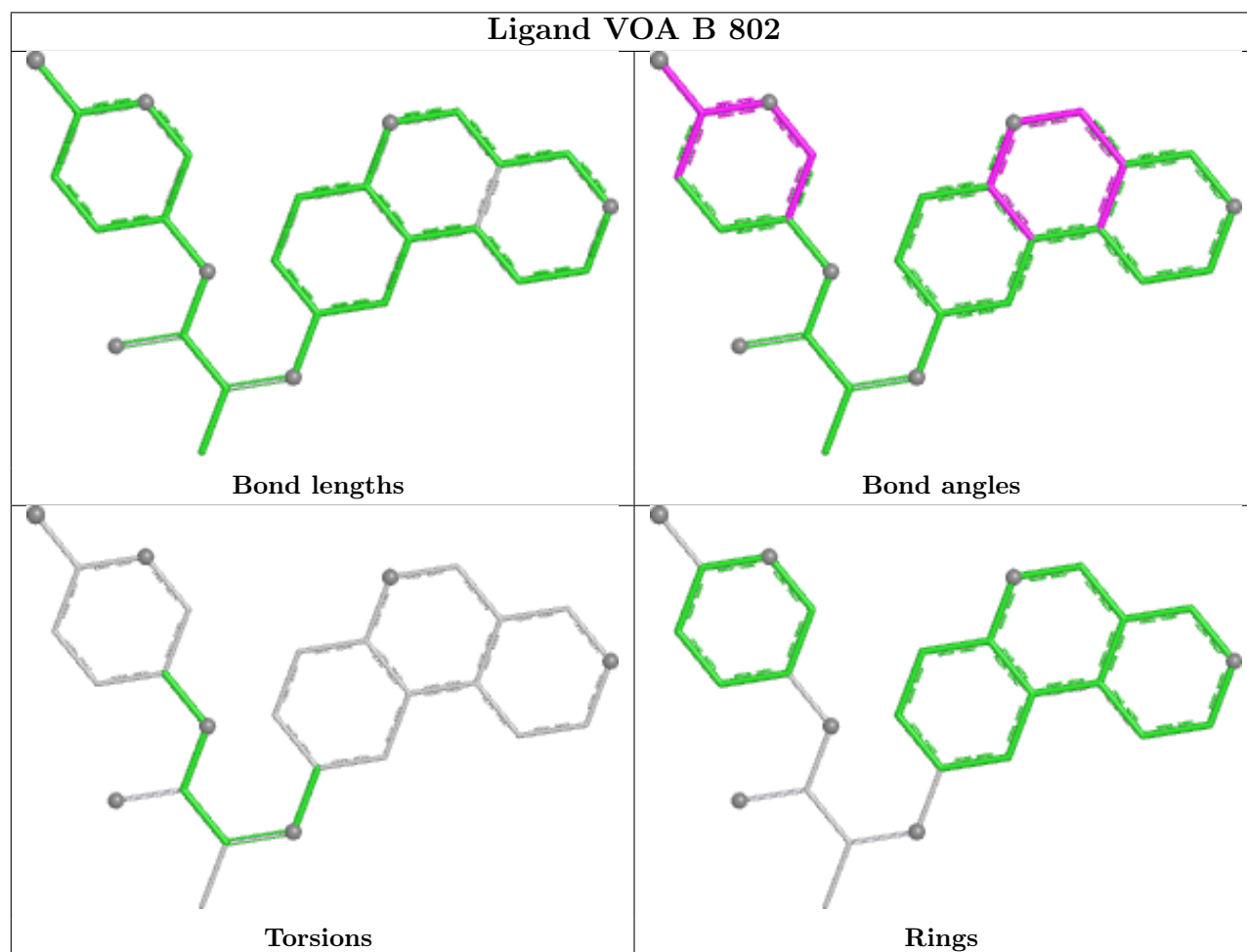
There are no torsion outliers.

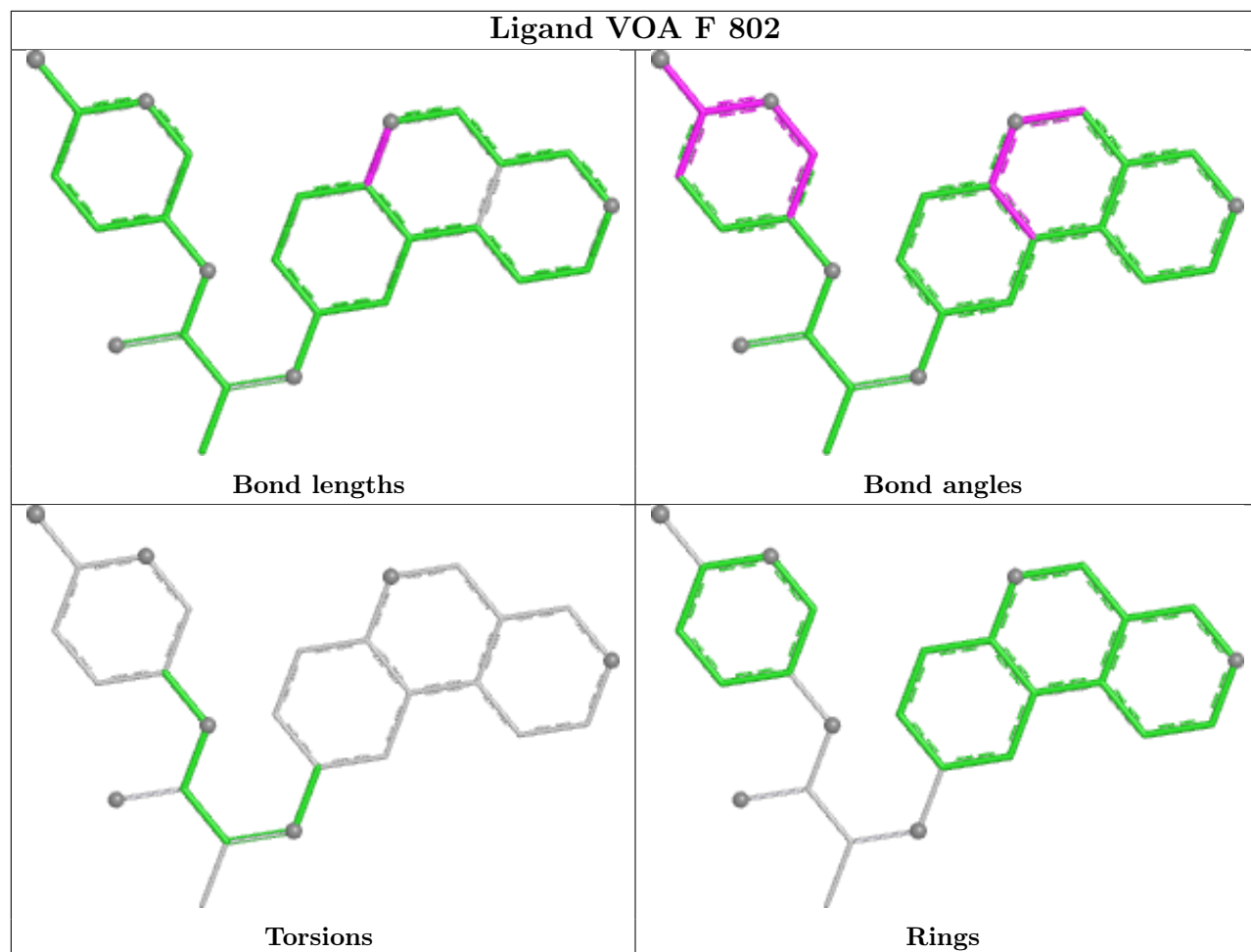
There are no ring outliers.

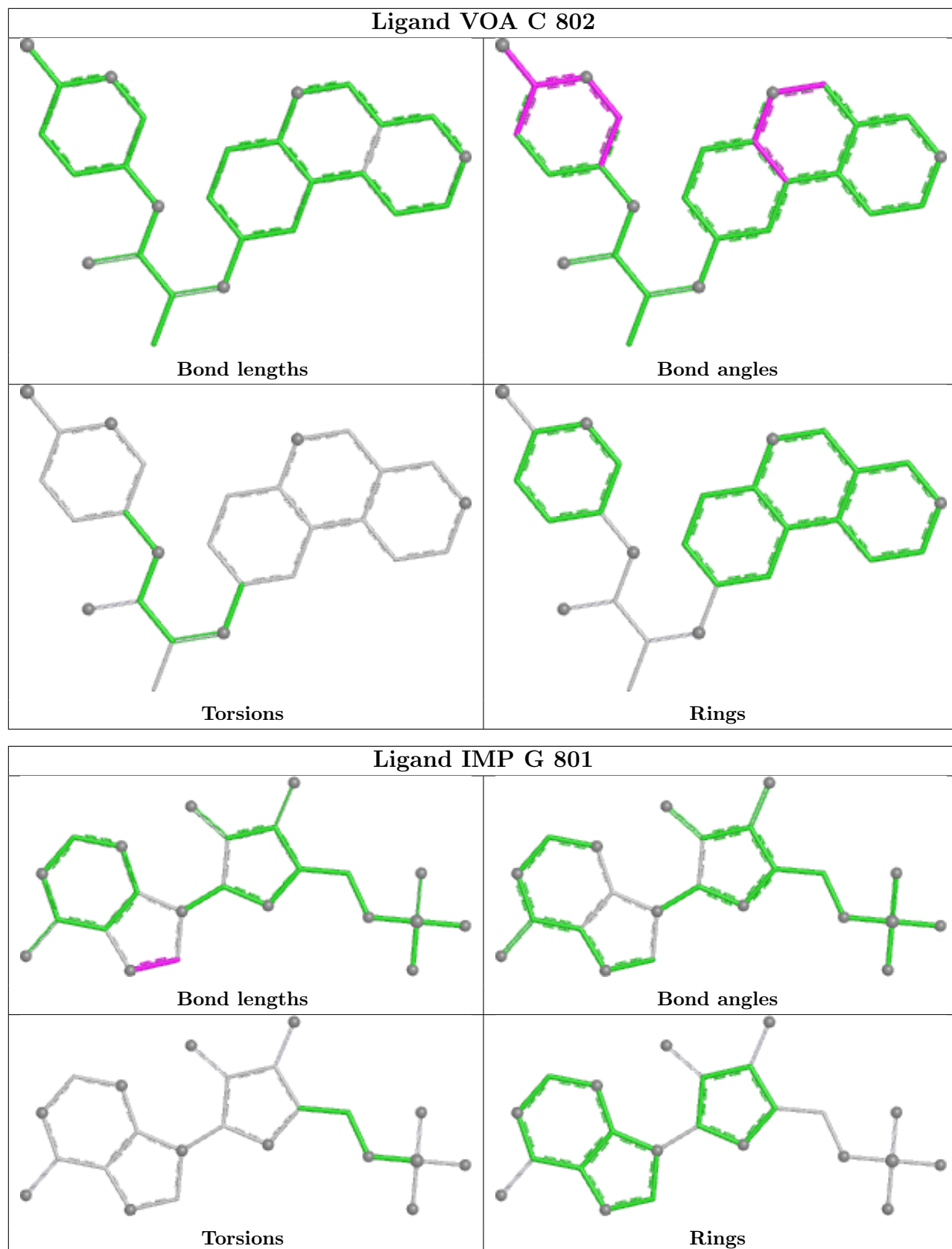
No monomer is involved in short contacts.

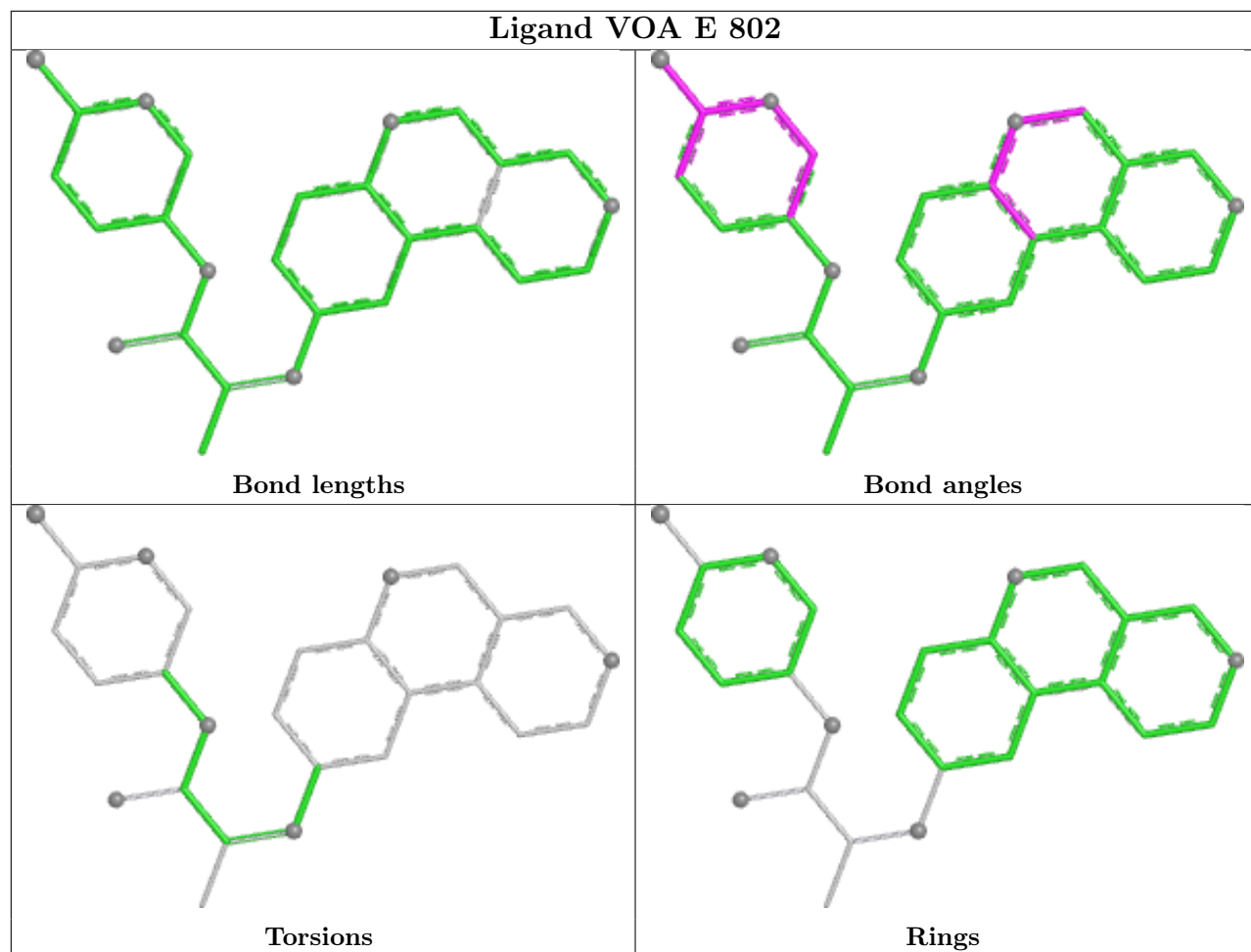
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier.

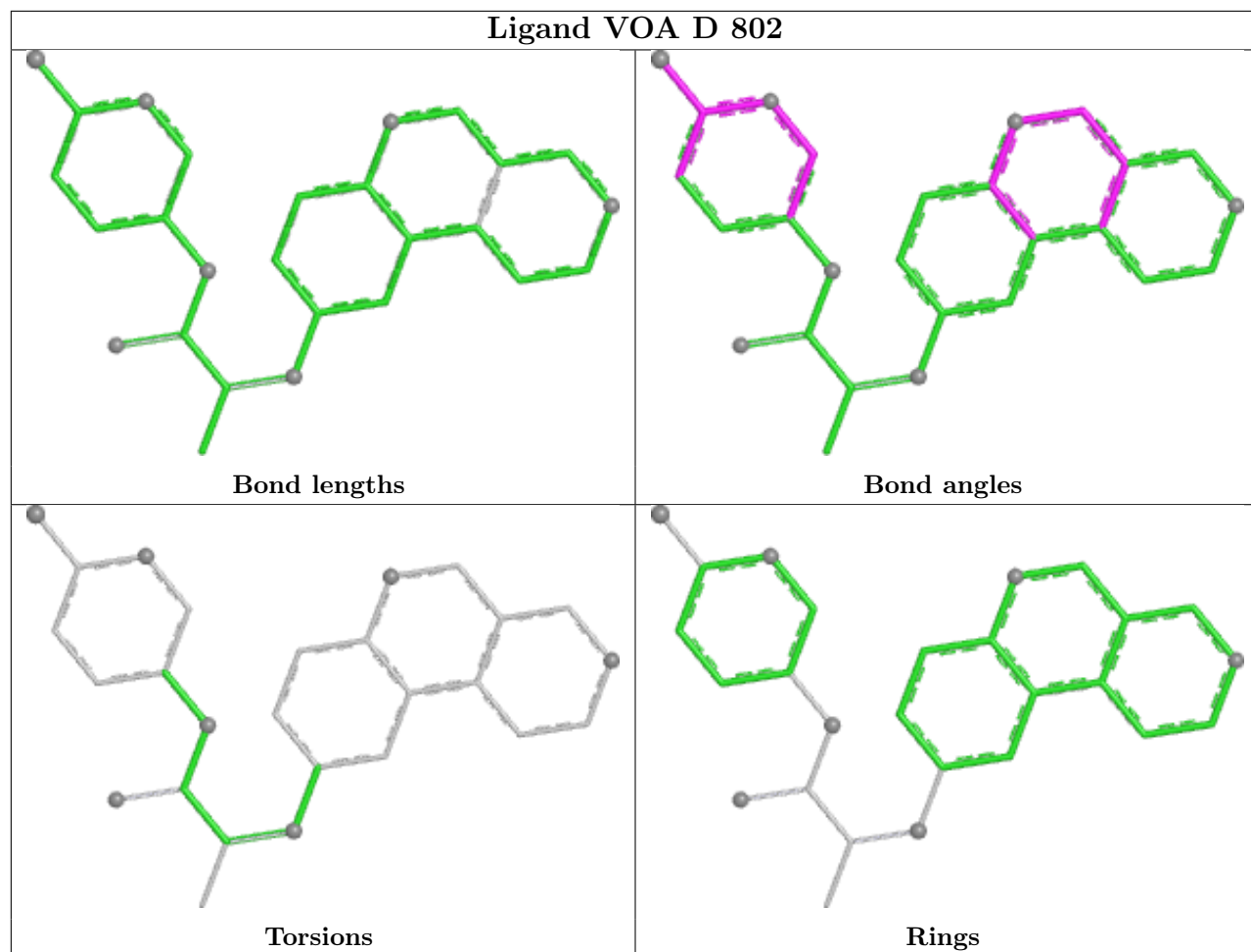
The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

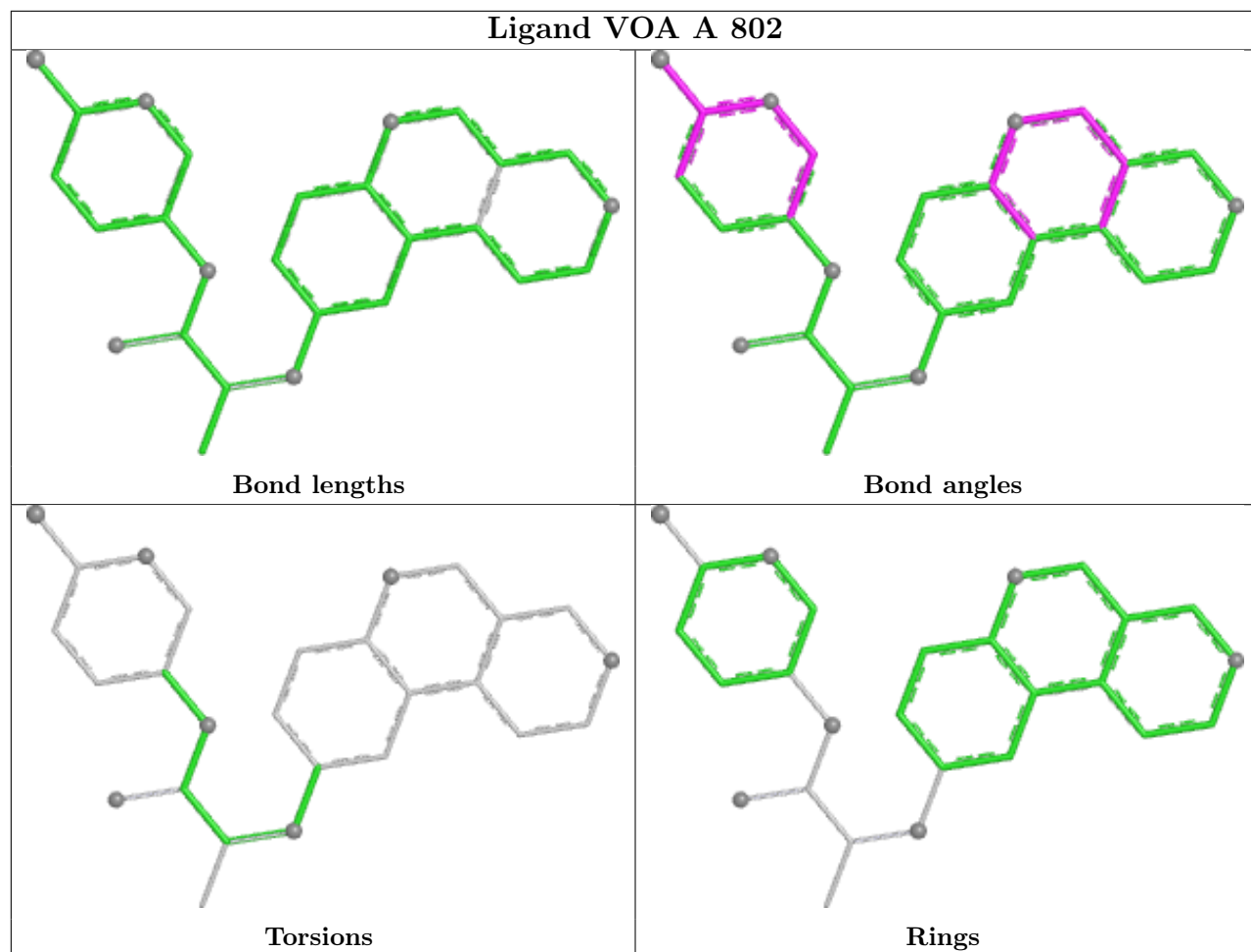


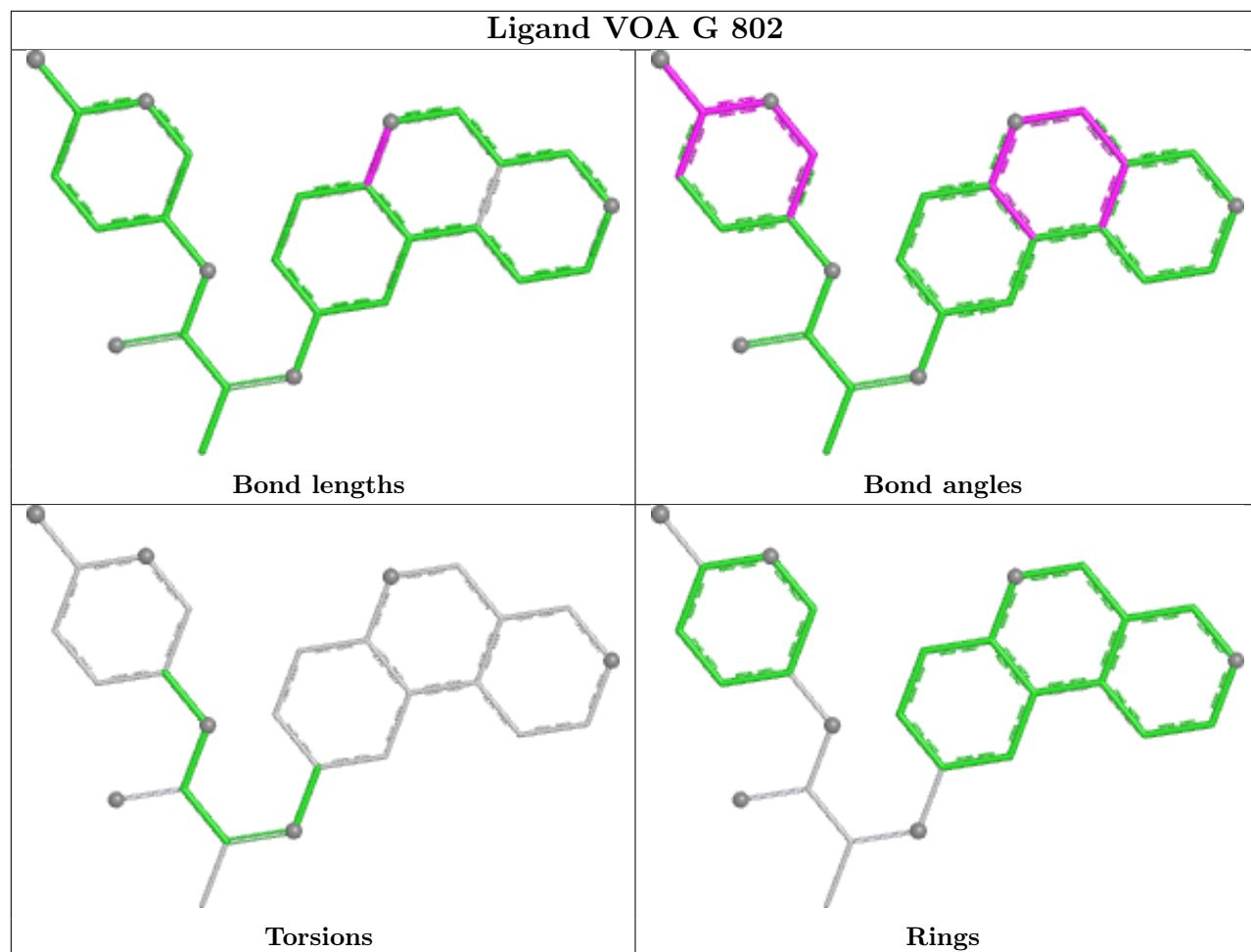


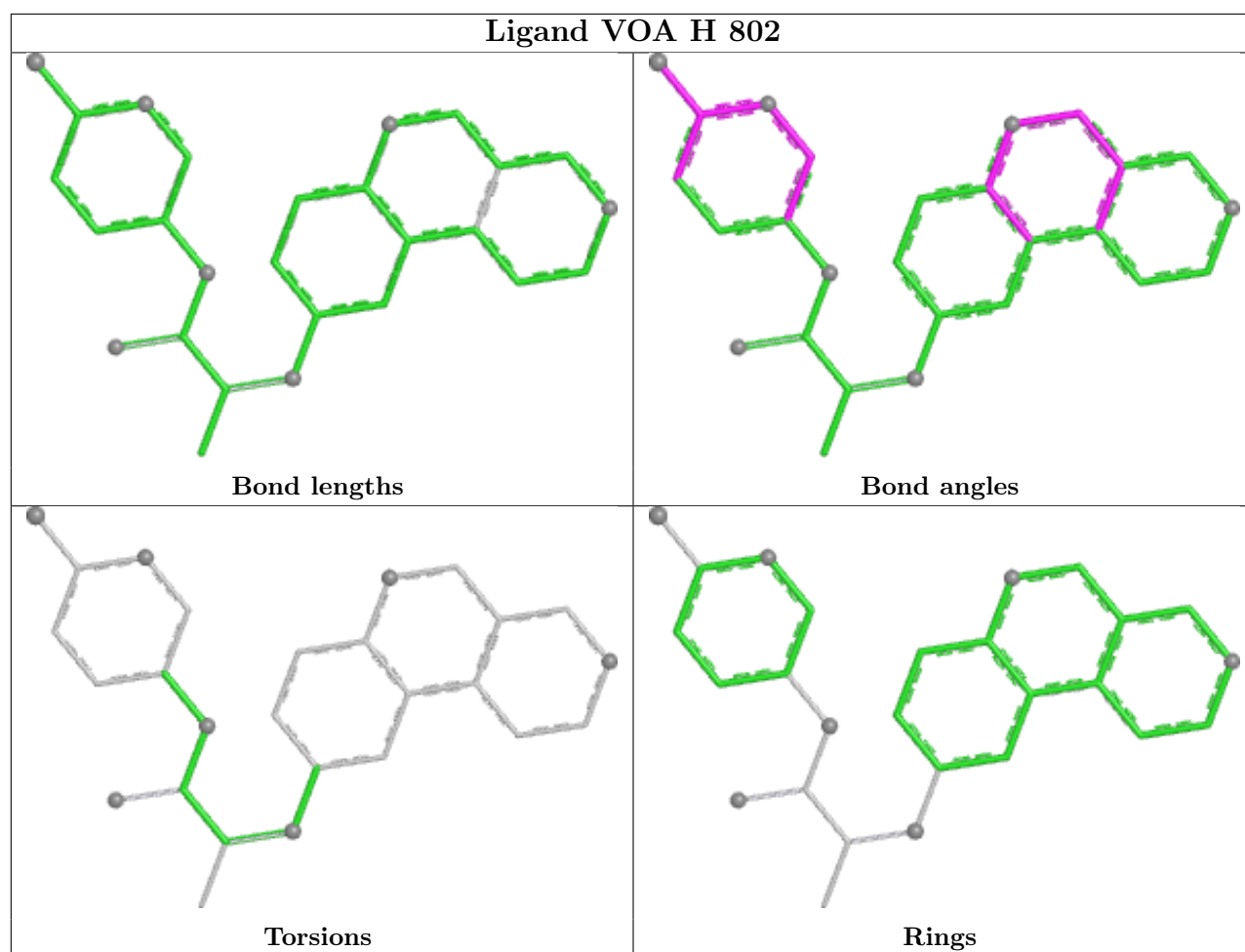












5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	344/395 (87%)	-0.56	5 (1%) 71 79	10, 24, 60, 90	6 (1%)
1	B	342/395 (86%)	-0.56	8 (2%) 61 66	10, 23, 56, 92	7 (2%)
1	C	344/395 (87%)	-0.47	5 (1%) 71 79	10, 26, 62, 100	6 (1%)
1	D	343/395 (86%)	-0.48	8 (2%) 61 66	11, 27, 60, 95	6 (1%)
1	E	341/395 (86%)	-0.43	10 (2%) 54 58	10, 27, 66, 105	7 (2%)
1	F	341/395 (86%)	-0.40	11 (3%) 50 54	11, 29, 62, 106	7 (2%)
1	G	341/395 (86%)	-0.39	11 (3%) 50 54	10, 28, 66, 105	6 (1%)
1	H	343/395 (86%)	-0.42	12 (3%) 47 50	10, 28, 71, 103	6 (1%)
All	All	2739/3160 (86%)	-0.46	70 (2%) 57 62	10, 26, 64, 106	51 (1%)

The worst 5 of 70 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	374	PHE	5.0
1	C	394	GLY	4.9
1	G	374	PHE	4.5
1	H	94	ALA	4.4
1	F	374	PHE	4.2

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

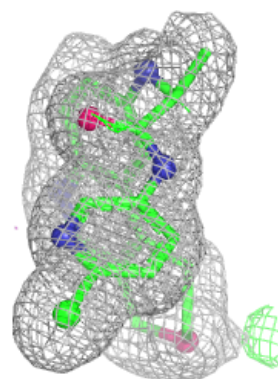
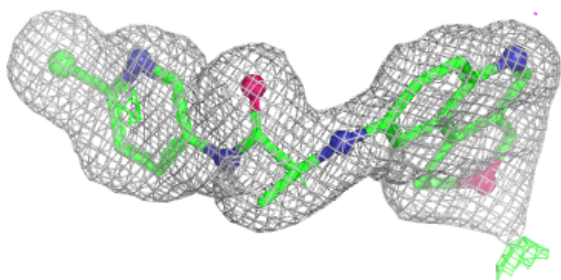
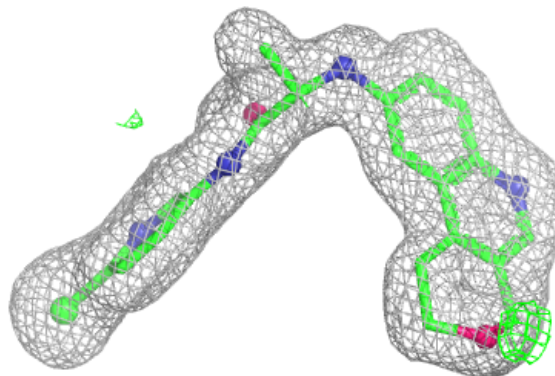
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	IMP	D	801	23/23	0.98	0.04	19,22,28,35	0
3	VOA	A	802	27/27	0.98	0.04	21,23,26,29	0
3	VOA	B	802	27/27	0.98	0.05	21,23,24,27	0
3	VOA	C	802	27/27	0.98	0.05	22,25,28,30	0
3	VOA	D	802	27/27	0.98	0.05	22,25,27,29	0
3	VOA	E	802	27/27	0.98	0.04	23,25,28,32	0
3	VOA	F	802	27/27	0.98	0.04	22,24,26,30	0
3	VOA	G	802	27/27	0.98	0.04	21,24,26,30	0
3	VOA	H	802	27/27	0.98	0.05	22,24,26,31	0
2	IMP	C	801	23/23	0.99	0.04	19,21,26,27	0
2	IMP	A	801	23/23	0.99	0.03	18,21,24,25	0
2	IMP	E	801	23/23	0.99	0.03	20,22,27,27	0
2	IMP	F	801	23/23	0.99	0.03	20,24,29,31	0
2	IMP	G	801	23/23	0.99	0.03	19,22,26,28	0
2	IMP	H	801	23/23	0.99	0.03	20,23,27,28	0
2	IMP	B	801	23/23	0.99	0.04	18,22,27,28	0

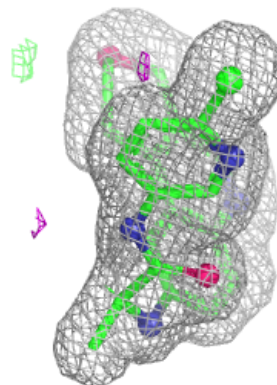
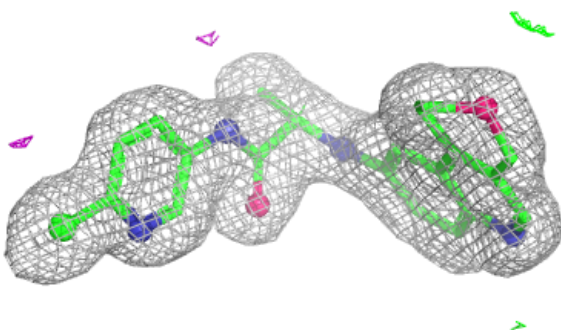
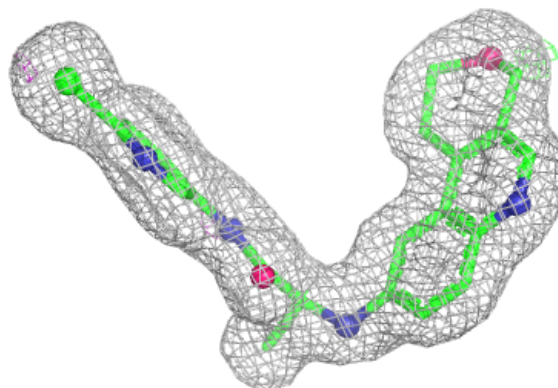
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around VOA A 802:

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

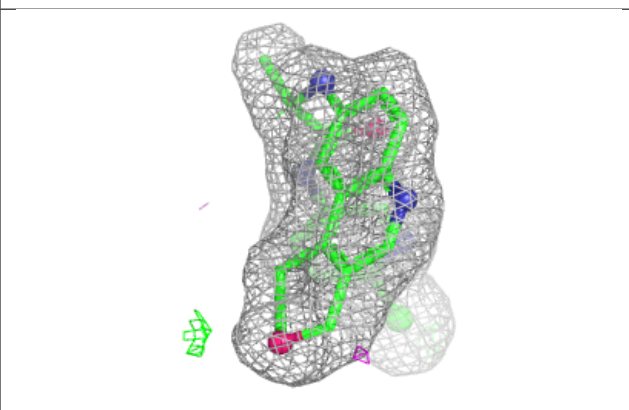
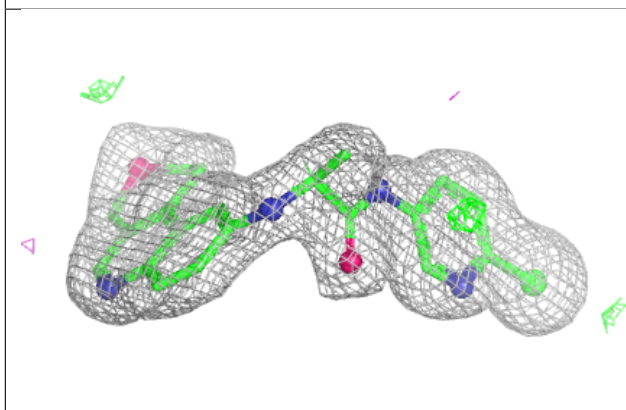
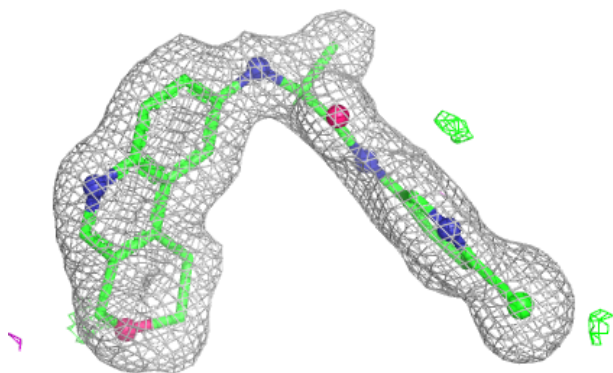
**Electron density around VOA B 802:**

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

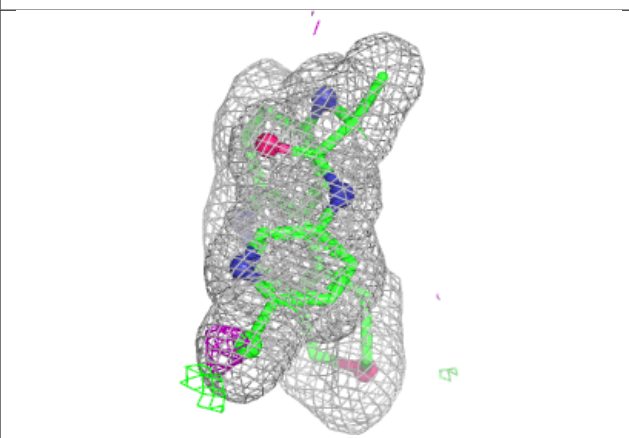
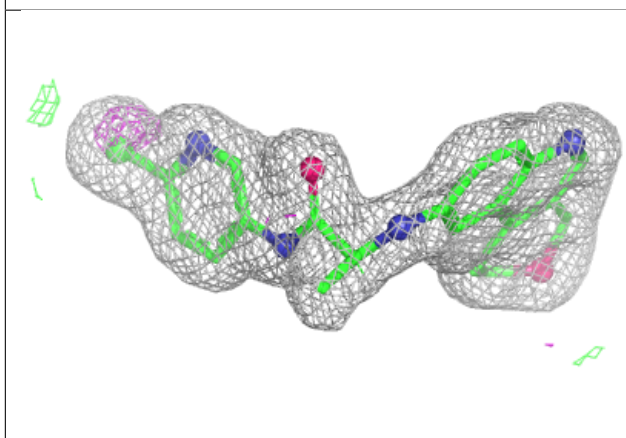
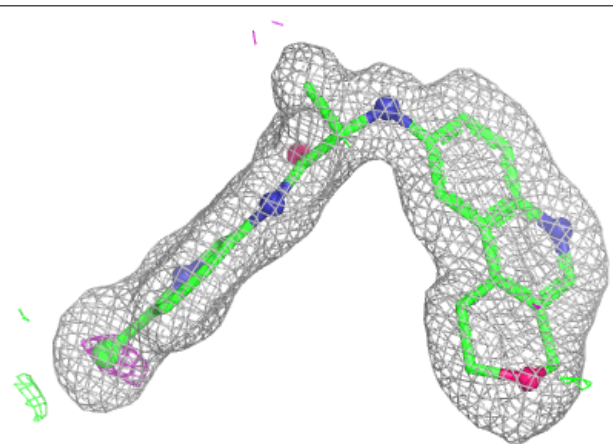


Electron density around VOA C 802:

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

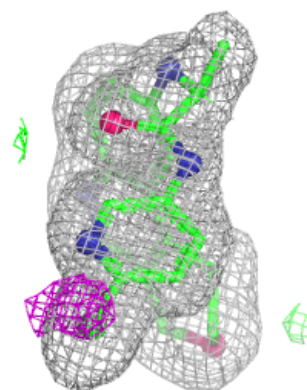
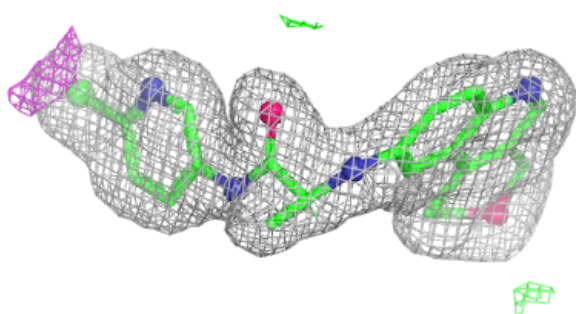
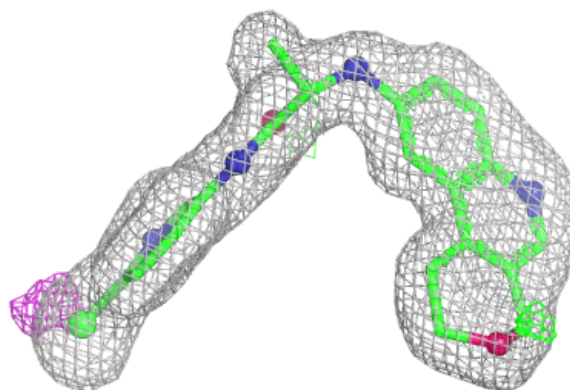
**Electron density around VOA D 802:**

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

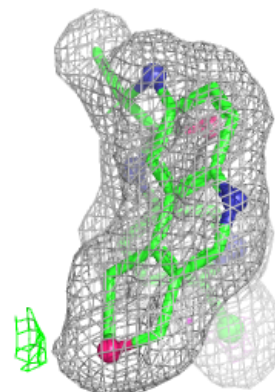
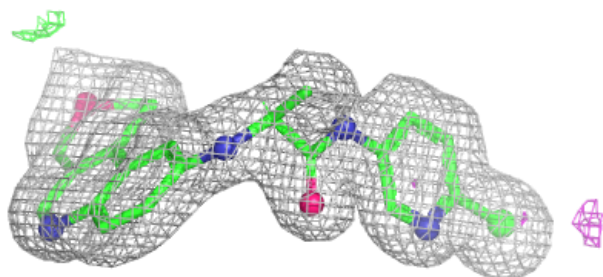
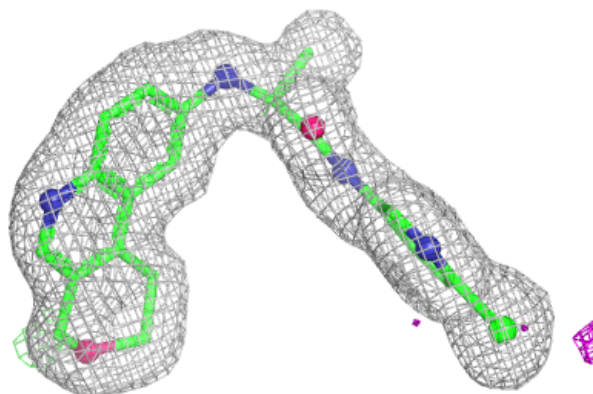


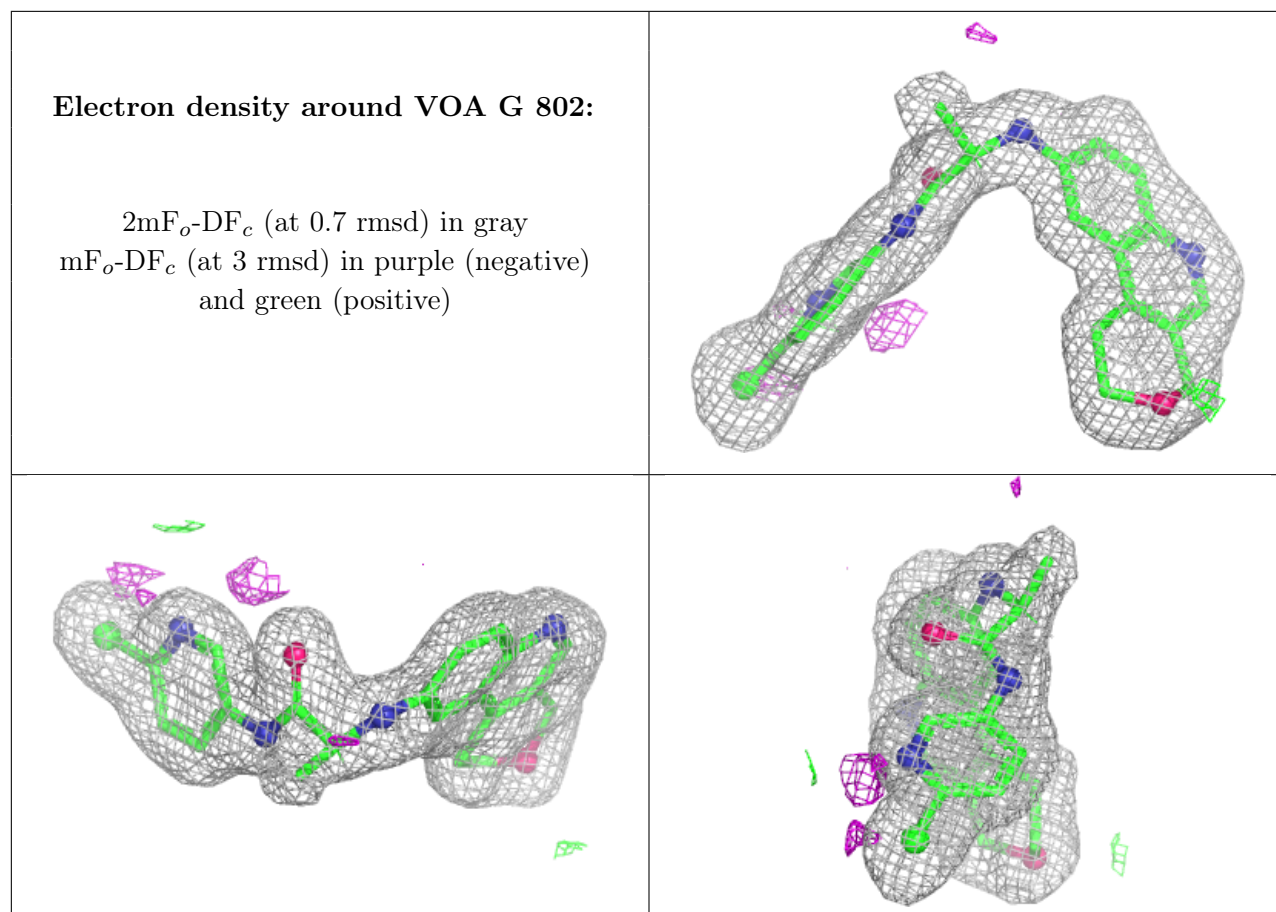
Electron density around VOA E 802:

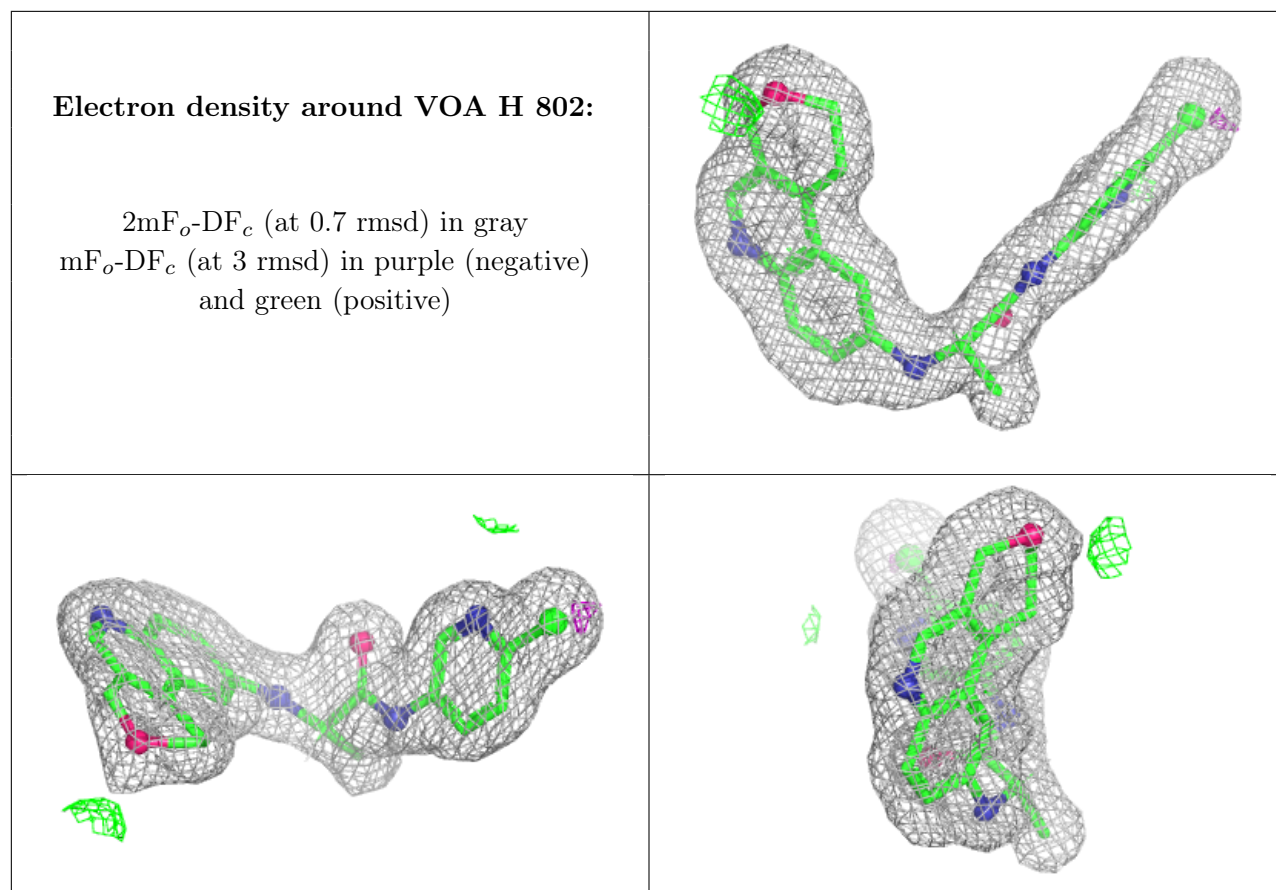
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

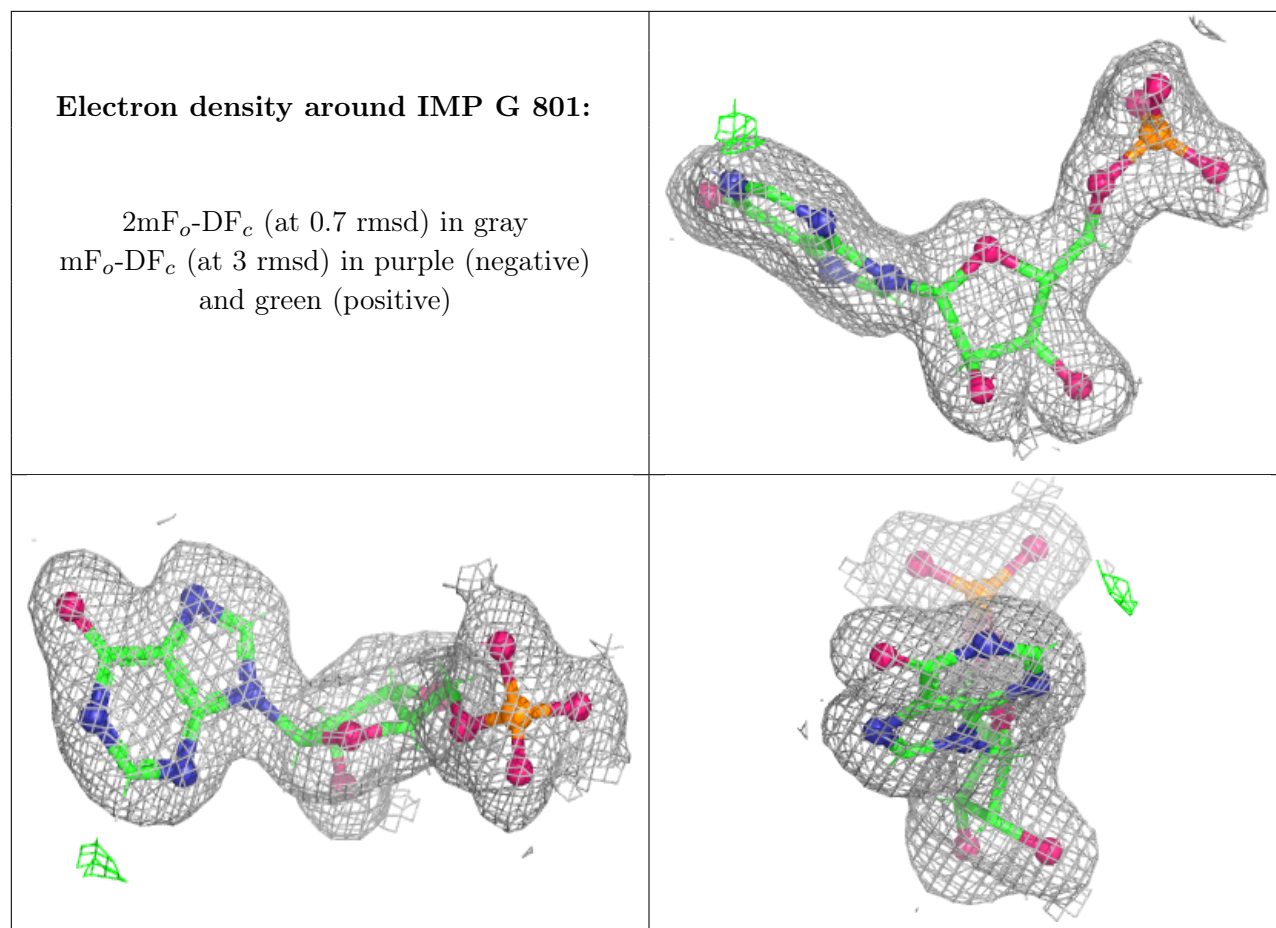
**Electron density around VOA F 802:**

$2mF_o-DF_c$ (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.