



wwPDB X-ray Structure Validation Summary Report ⓘ

Aug 21, 2020 – 02:22 AM BST

PDB ID : 3W2K
Title : Structure of Trypanosoma cruzi dihydroorotate dehydrogenase in complex with MII-3-165
Authors : Inaoka, D.K.; Iida, M.; Tabuchi, T.; Lee, N.; Matsuoka, S.; Shiba, T.; Sakamoto, K.; Suzuki, S.; Balogun, E.O.; Nara, T.; Aoki, T.; Inoue, M.; Honma, T.; Tanaka, A.; Harada, S.; Kita, K.
Deposited on : 2012-11-29
Resolution : 1.54 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 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)
Xtriage (Phenix) : 1.13
EDS : 2.13.1
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)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.13.1

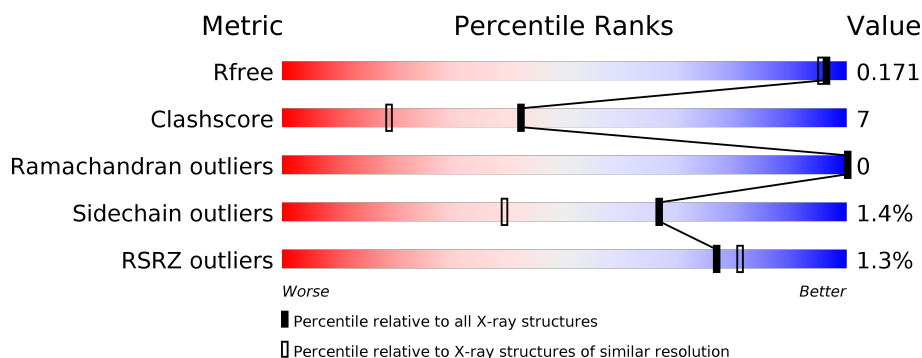
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.54 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	2556 (1.56-1.52)
Clashscore	141614	2634 (1.56-1.52)
Ramachandran outliers	138981	2580 (1.56-1.52)
Sidechain outliers	138945	2577 (1.56-1.52)
RSRZ outliers	127900	2524 (1.56-1.52)

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 on 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	313	<div> <div></div> <div> <div></div> <div>87%</div> <div>12%</div> </div> </div>
1	B	313	<div> <div></div> <div> <div></div> <div>85%</div> <div>13%</div> </div> </div>

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

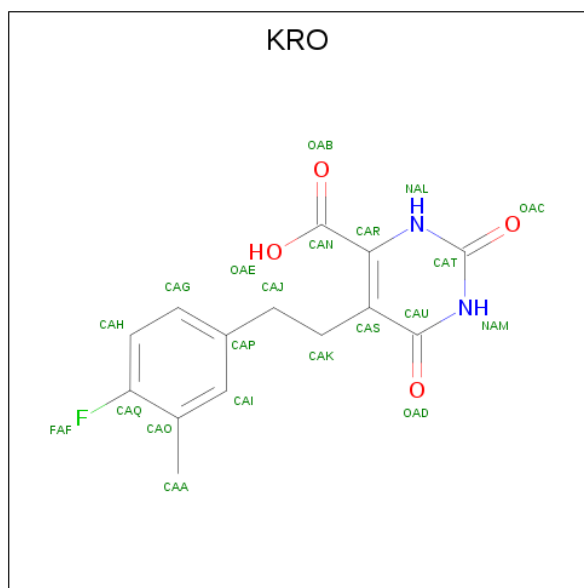
Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GOL	B	410	-	-	X	-

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 Dihydroorotate dehydrogenase (fumarate).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	313	Total 2388	C 1530	N 396	O 444	S 18	0	0	0
1	B	313	Total 2388	C 1530	N 396	O 444	S 18	0	0	0

- Molecule 2 is 5-[2-(4-fluoro-3-methylphenyl)ethyl]-2,6-dioxo-1,2,3,6-tetrahydropyrimidine-4-carboxylic acid (three-letter code: KRO) (formula: $C_{14}H_{13}FN_2O_4$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 21	C 14	F 1	N 2	O 4	0	0
2	B	1	Total 21	C 14	F 1	N 2	O 4	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $\text{C}_3\text{H}_8\text{O}_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		

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[illegible]

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- The image displays the chemical structure of Flavin Mononucleotide (FMN). It features an isoalloxazine ring system, which is a tricyclic aromatic heterocycle consisting of a benzene ring fused to two pyrimidine rings. The ring atoms are labeled with nitrogen (N1, N3, N5, N7, N9) and carbon (C2, C4, C6, C8, C10). The structure is shown in a 3D representation with stereochemistry indicated by wedges and dashes. A ribityl chain is attached to the N10 position of the isoalloxazine ring. The ribityl chain consists of three carbon atoms (C1', C2', C3') and a phosphate group (O1P, O2P, O3P). The phosphate group is shown as a phosphorus atom (P) double-bonded to one oxygen (O1P) and single-bonded to three others (O2P, O3P, O4P). The ribityl chain is shown in a 3D representation with stereochemistry indicated by wedges and dashes. The overall structure is colored in a light blue/purple hue.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 31	C 17	N 4	O 9	P 1	0	0
4	B	1	Total 31	C 17	N 4	O 9	P 1	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	Co	N	0	0
			7	1	6		

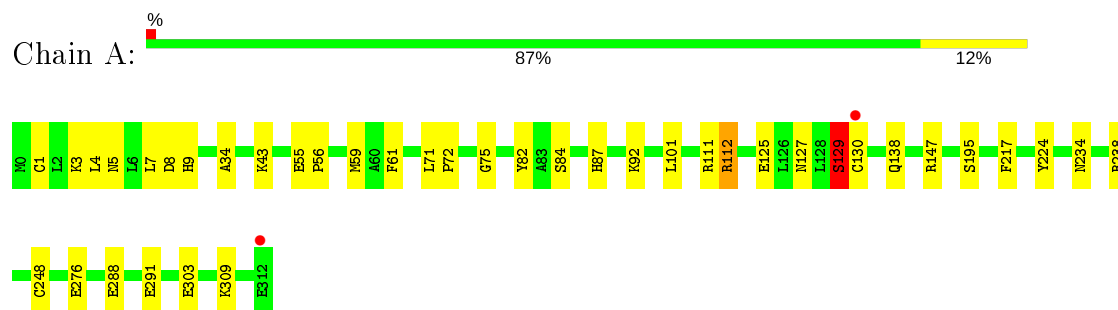
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	364	Total	O	0	0
			364	364		
6	B	344	Total	O	0	0
			344	344		

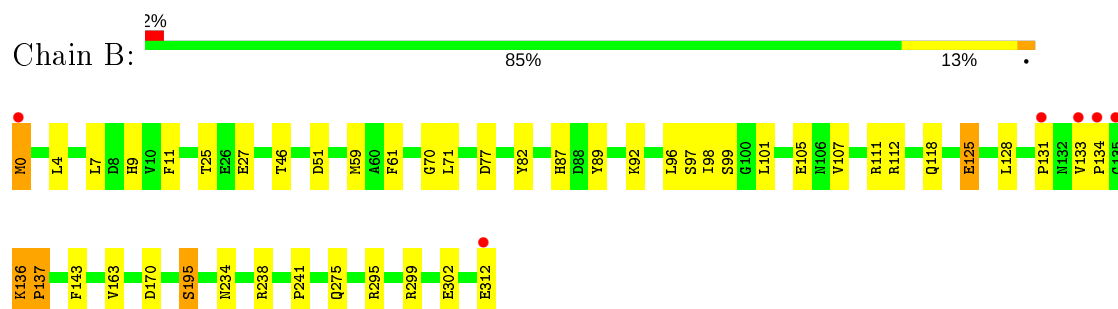
3 Residue-property plots [i](#)

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: Dihydroorotate dehydrogenase (fumarate)



- Molecule 1: Dihydroorotate dehydrogenase (fumarate)



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	68.06Å 71.98Å 128.88Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.66 – 1.54 34.66 – 1.54	Depositor EDS
% Data completeness (in resolution range)	83.2 (34.66-1.54) 83.3 (34.66-1.54)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.12 (at 1.54Å)	Xtriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.136 , 0.169 0.138 , 0.171	Depositor DCC
R_{free} test set	3970 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å ²)	11.9	Xtriage
Anisotropy	0.040	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 49.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	5727	wwPDB-VP
Average B, all atoms (Å ²)	15.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 22.47 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 5.6644e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹ Intensities estimated from amplitudes.

² Theoretical 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: FMN, GOL, KRO, NCO

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	1.38	15/2440 (0.6%)	1.16	5/3305 (0.2%)
1	B	1.30	7/2440 (0.3%)	1.13	10/3305 (0.3%)
All	All	1.34	22/4880 (0.5%)	1.14	15/6610 (0.2%)

The worst 5 of 22 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	303	GLU	CD-OE1	-7.98	1.16	1.25
1	A	129	SER	CB-OG	7.58	1.52	1.42
1	A	56	PRO	N-CD	6.30	1.56	1.47
1	B	134	PRO	N-CD	5.89	1.56	1.47
1	A	75	GLY	C-O	-5.83	1.14	1.23

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	3	LYS	CD-CE-NZ	10.56	135.99	111.70
1	B	295	ARG	NE-CZ-NH1	5.89	123.25	120.30
1	B	4	LEU	CB-CG-CD1	5.80	120.86	111.00
1	A	147	ARG	NE-CZ-NH1	5.74	123.17	120.30
1	B	170	ASP	CB-CG-OD2	5.63	123.37	118.30

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	2388	0	2391	21	0
1	B	2388	0	2391	41	0
2	A	21	0	12	4	0
2	B	21	0	12	6	0
3	A	66	0	86	4	0
3	B	66	0	88	16	0
4	A	31	0	19	0	0
4	B	31	0	19	0	0
5	A	7	0	0	0	0
6	A	364	0	0	8	0
6	B	344	0	0	11	0
All	All	5727	0	5018	69	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 7.

The worst 5 of 69 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:B:118:GLN:HG3	6:B:837:HOH:O	1.48	1.09
1:A:61:PHE:CE1	3:A:407:GOL:H32	2.14	0.81
2:B:401:KRO:CAH	3:B:403:GOL:O3	2.30	0.80
1:B:136:LYS:HG3	1:B:137:PRO:HD2	1.66	0.75
1:B:9:HIS:CE1	3:B:410:GOL:H11	2.23	0.74

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	311/313 (99%)	304 (98%)	7 (2%)	0	100	100
1	B	311/313 (99%)	304 (98%)	7 (2%)	0	100	100
All	All	622/626 (99%)	608 (98%)	14 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	258/258 (100%)	255 (99%)	3 (1%)	71	47
1	B	258/258 (100%)	254 (98%)	4 (2%)	62	33
All	All	516/516 (100%)	509 (99%)	7 (1%)	67	39

5 of 7 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	0	MET
1	B	312	GLU
1	B	99	SER
1	A	5	ASN
1	B	302	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 12 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	275	GLN
1	B	9	HIS
1	B	215	GLN
1	A	234	ASN
1	B	152	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

27 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	GOL	A	407	-	5,5,5	1.55	1 (20%)	5,5,5	1.89	1 (20%)
3	GOL	A	410	-	5,5,5	0.26	0	5,5,5	0.95	0
3	GOL	B	404	-	5,5,5	0.57	0	5,5,5	0.72	0
3	GOL	B	409	-	5,5,5	0.79	0	5,5,5	1.82	2 (40%)
3	GOL	B	412	-	5,5,5	0.79	0	5,5,5	0.48	0
4	FMN	A	413	-	31,33,33	1.90	3 (9%)	40,50,50	2.40	10 (25%)
2	KRO	A	401	-	18,22,22	3.62	9 (50%)	18,31,31	3.18	6 (33%)
3	GOL	B	410	-	5,5,5	0.40	0	5,5,5	0.85	0
2	KRO	B	401	-	18,22,22	3.30	7 (38%)	18,31,31	3.36	7 (38%)
3	GOL	A	411	-	5,5,5	0.72	0	5,5,5	0.36	0
3	GOL	B	411	-	5,5,5	0.38	0	5,5,5	0.65	0
3	GOL	B	407	-	5,5,5	0.57	0	5,5,5	1.05	0
3	GOL	A	403	-	5,5,5	0.75	0	5,5,5	0.49	0
3	GOL	A	408	-	5,5,5	0.50	0	5,5,5	0.95	0
3	GOL	A	412	-	5,5,5	0.36	0	5,5,5	0.68	0
3	GOL	B	405	-	5,5,5	0.54	0	5,5,5	0.86	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	GOL	A	404	-	5,5,5	0.47	0	5,5,5	0.45	0
3	GOL	A	409	-	5,5,5	0.84	0	5,5,5	0.49	0
3	GOL	B	403	-	5,5,5	0.66	0	5,5,5	1.53	2 (40%)
5	NCO	A	414	-	6,6,6	3.34	6 (100%)	-		
3	GOL	B	408	-	5,5,5	1.30	1 (20%)	5,5,5	1.22	1 (20%)
4	FMN	B	413	-	31,33,33	1.71	4 (12%)	40,50,50	2.74	10 (25%)
3	GOL	A	406	-	5,5,5	0.95	0	5,5,5	1.30	1 (20%)
3	GOL	A	405	-	5,5,5	1.32	1 (20%)	5,5,5	1.02	0
3	GOL	A	402	-	5,5,5	0.91	0	5,5,5	2.35	3 (60%)
3	GOL	B	406	-	5,5,5	0.69	0	5,5,5	0.64	0
3	GOL	B	402	-	5,5,5	1.06	0	5,5,5	1.22	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	407	-	-	2/4/4/4	-
3	GOL	A	410	-	-	2/4/4/4	-
3	GOL	B	404	-	-	4/4/4/4	-
3	GOL	B	409	-	-	0/4/4/4	-
3	GOL	B	412	-	-	0/4/4/4	-
4	FMN	A	413	-	-	1/18/18/18	0/3/3/3
2	KRO	A	401	-	-	1/5/9/9	0/2/2/2
3	GOL	B	410	-	-	2/4/4/4	-
2	KRO	B	401	-	-	0/5/9/9	0/2/2/2
3	GOL	A	411	-	-	0/4/4/4	-
3	GOL	B	411	-	-	0/4/4/4	-
3	GOL	B	407	-	-	2/4/4/4	-
3	GOL	A	403	-	-	0/4/4/4	-
3	GOL	A	408	-	-	0/4/4/4	-
3	GOL	A	412	-	-	4/4/4/4	-
3	GOL	B	405	-	-	0/4/4/4	-
3	GOL	A	404	-	-	3/4/4/4	-
3	GOL	A	409	-	-	2/4/4/4	-
3	GOL	B	403	-	-	0/4/4/4	-
3	GOL	B	408	-	-	0/4/4/4	-
4	FMN	B	413	-	-	1/18/18/18	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	406	-	-	0/4/4/4	-
3	GOL	A	405	-	-	2/4/4/4	-
3	GOL	A	402	-	-	1/4/4/4	-
3	GOL	B	406	-	-	0/4/4/4	-
3	GOL	B	402	-	-	0/4/4/4	-

The worst 5 of 32 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	KRO	CAJ-CAP	-8.36	1.27	1.51
2	B	401	KRO	CAJ-CAP	-7.92	1.28	1.51
4	A	413	FMN	C4A-C10	7.69	1.46	1.38
2	B	401	KRO	CAR-NAL	7.62	1.46	1.34
2	A	401	KRO	CAR-NAL	6.88	1.45	1.34

The worst 5 of 43 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	413	FMN	C4-N3-C2	10.83	124.29	115.14
2	A	401	KRO	CAU-NAM-CAT	10.38	123.90	115.14
4	A	413	FMN	C4-N3-C2	9.23	122.94	115.14
2	B	401	KRO	CAU-NAM-CAT	9.05	122.79	115.14
2	B	401	KRO	CAI-CAO-CAQ	8.48	121.46	116.06

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	407	GOL	C1-C2-C3-O3
3	B	404	GOL	O1-C1-C2-C3
3	B	404	GOL	C1-C2-C3-O3
3	B	410	GOL	C1-C2-C3-O3
3	B	410	GOL	O2-C2-C3-O3

There are no ring outliers.

11 monomers are involved in 27 short contacts:

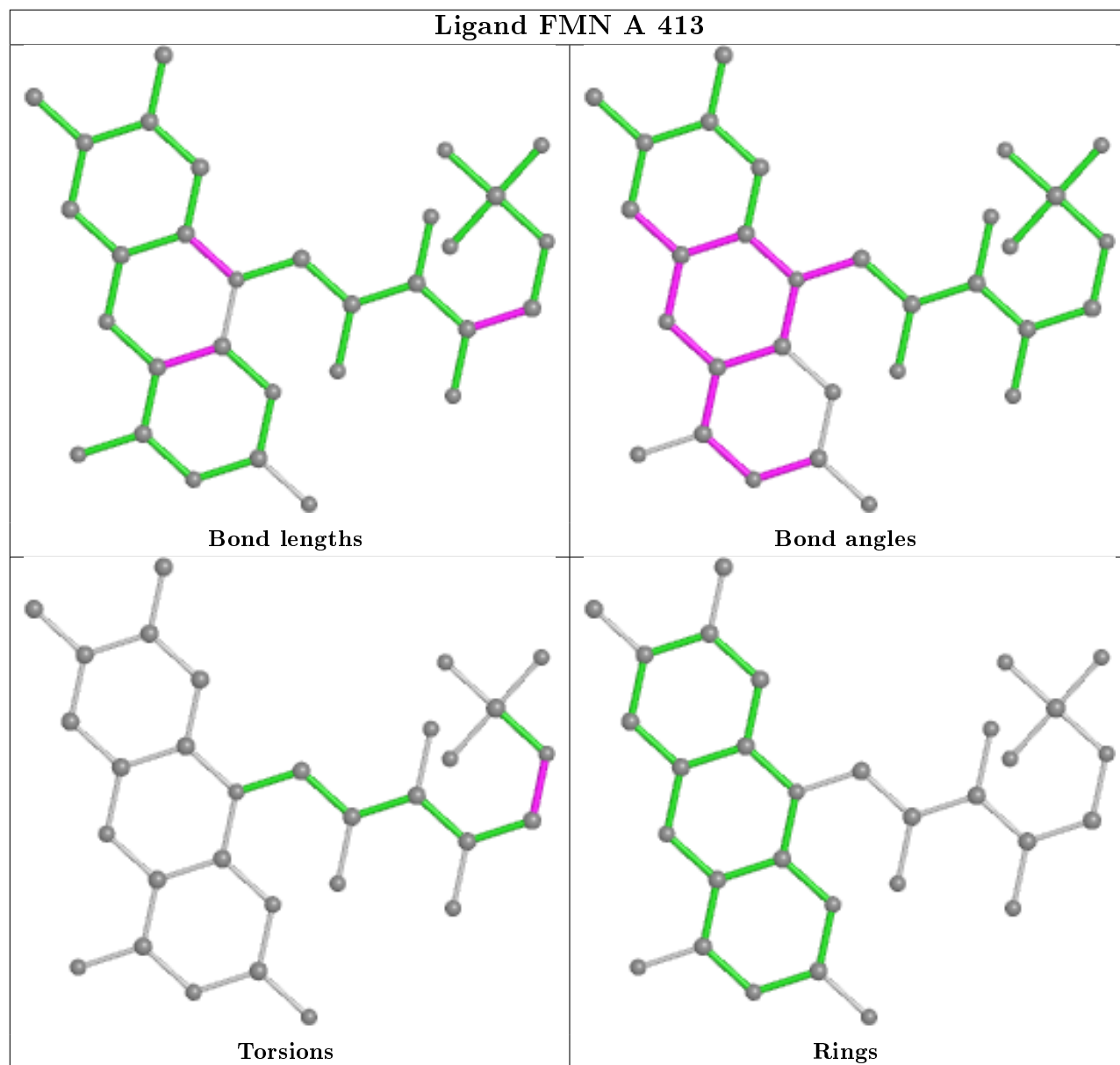
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	407	GOL	2	0
3	B	404	GOL	1	0
3	B	412	GOL	2	0

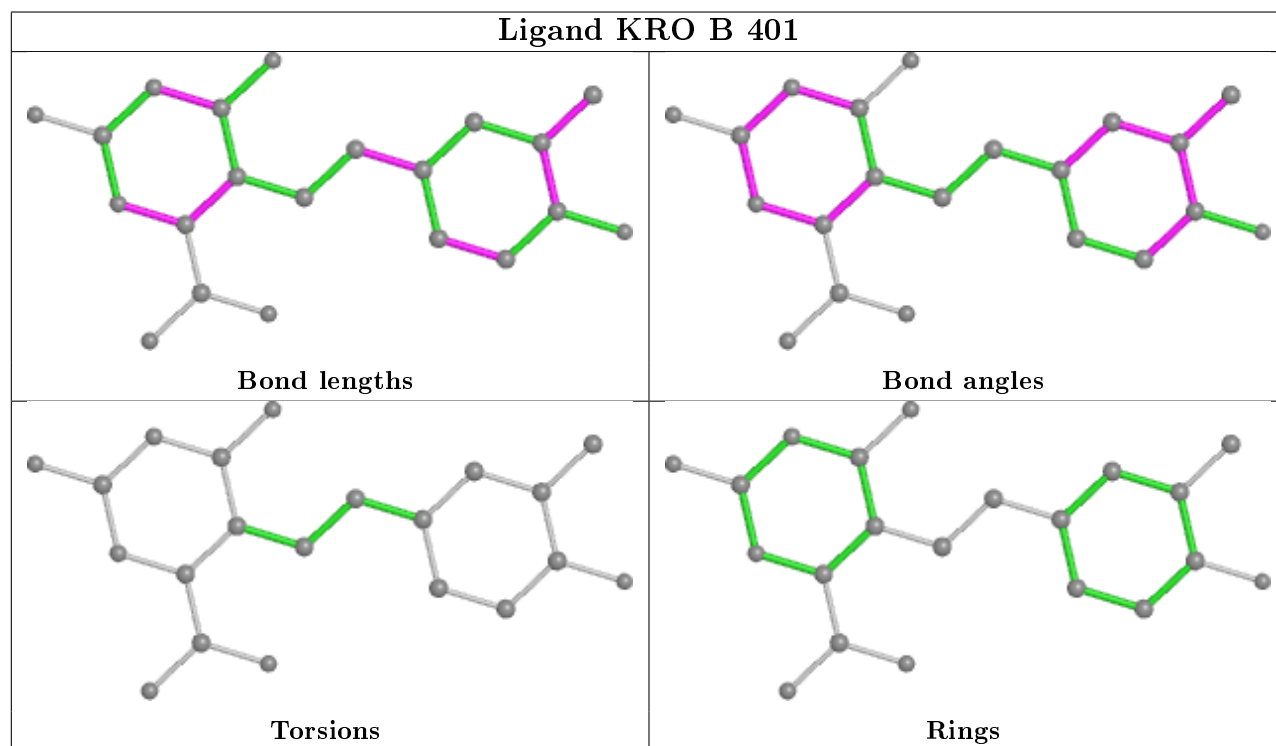
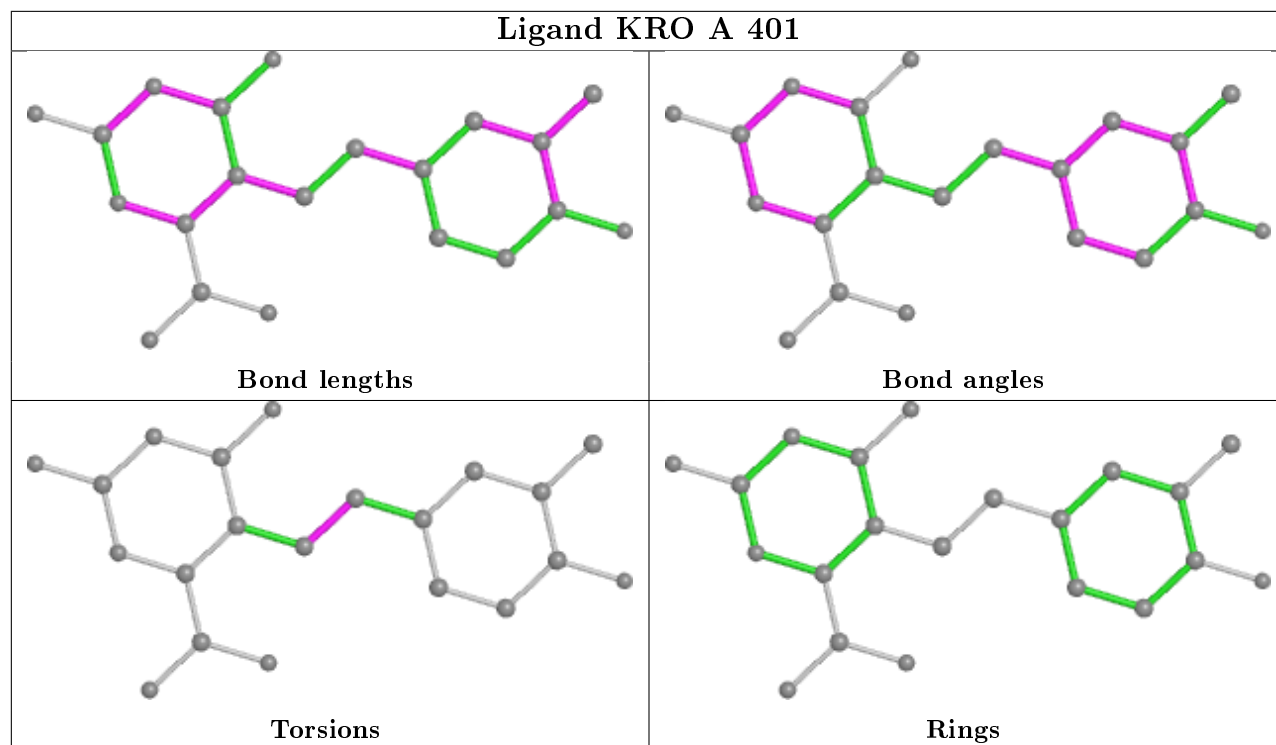
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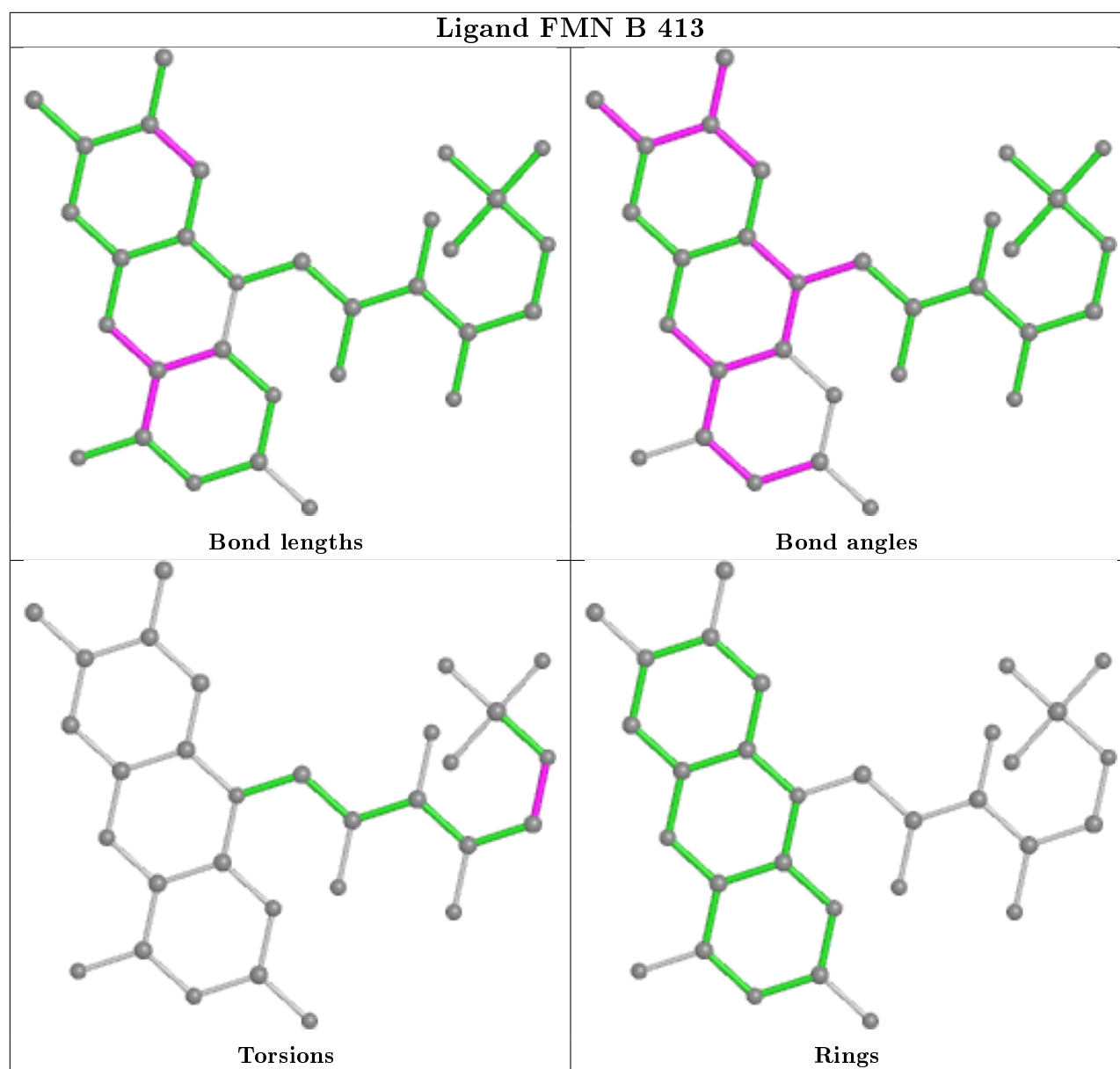
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	KRO	4	0
3	B	410	GOL	8	0
2	B	401	KRO	6	0
3	A	404	GOL	1	0
3	B	403	GOL	3	0
3	A	402	GOL	1	0
3	B	406	GOL	1	0
3	B	402	GOL	1	0

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 [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	313/313 (100%)	-0.32	2 (0%) 89 91	6, 11, 22, 51	0
1	B	313/313 (100%)	-0.25	6 (1%) 66 72	7, 12, 27, 53	0
All	All	626/626 (100%)	-0.28	8 (1%) 77 81	6, 11, 24, 53	0

The worst 5 of 8 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	133	VAL	4.8
1	B	312	GLU	4.2
1	A	312	GLU	4.1
1	B	134	PRO	3.5
1	B	131	PRO	3.2

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 [i](#)

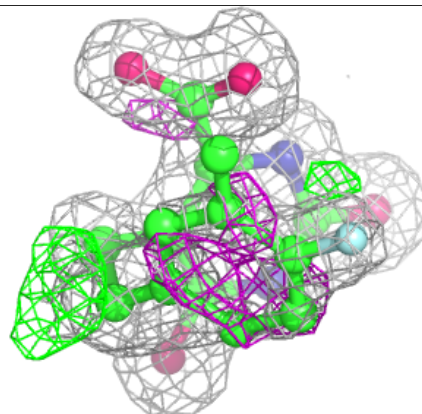
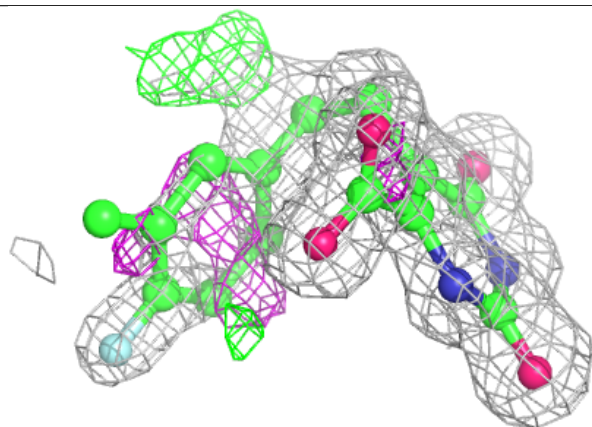
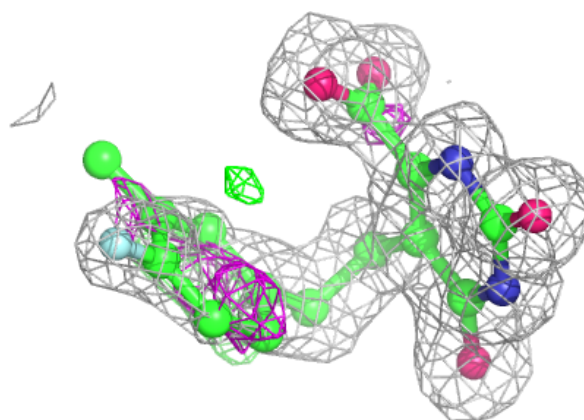
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	GOL	B	405	6/6	0.70	0.20	34,43,44,45	0
3	GOL	B	407	6/6	0.80	0.31	40,45,50,51	0
3	GOL	A	408	6/6	0.80	0.13	37,41,44,46	0
3	GOL	B	404	6/6	0.80	0.13	38,40,43,51	0
3	GOL	A	409	6/6	0.80	0.27	33,49,52,56	0
3	GOL	B	408	6/6	0.82	0.14	27,30,34,40	0
3	GOL	A	412	6/6	0.83	0.20	39,43,46,55	0
3	GOL	A	410	6/6	0.83	0.18	38,50,54,66	0
3	GOL	B	406	6/6	0.83	0.15	28,37,37,40	0
3	GOL	B	409	6/6	0.84	0.15	28,36,36,42	0
3	GOL	A	404	6/6	0.85	0.12	34,47,51,58	0
3	GOL	A	406	6/6	0.87	0.19	24,29,31,32	0
3	GOL	B	411	6/6	0.87	0.15	42,46,46,49	0
3	GOL	A	405	6/6	0.88	0.16	18,25,32,38	0
3	GOL	B	403	6/6	0.89	0.14	21,23,34,40	0
3	GOL	A	411	6/6	0.90	0.12	28,30,33,33	0
3	GOL	B	412	6/6	0.91	0.11	30,31,33,35	0
3	GOL	B	410	6/6	0.91	0.26	24,41,42,52	0
3	GOL	A	407	6/6	0.91	0.15	25,32,33,33	0
3	GOL	B	402	6/6	0.92	0.08	19,20,22,26	0
3	GOL	A	402	6/6	0.94	0.08	15,19,20,21	0
2	KRO	B	401	21/21	0.95	0.13	8,12,32,38	0
2	KRO	A	401	21/21	0.95	0.10	8,13,38,52	0
3	GOL	A	403	6/6	0.96	0.06	16,17,18,21	0
4	FMN	A	413	31/31	0.98	0.09	6,7,9,10	0
5	NCO	A	414	7/7	0.99	0.10	10,11,12,13	0
4	FMN	B	413	31/31	0.99	0.07	6,7,10,11	0

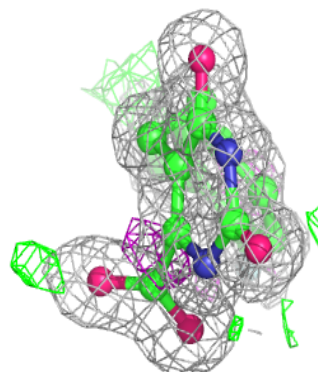
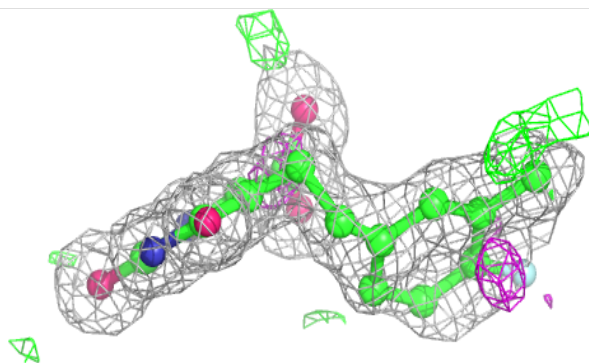
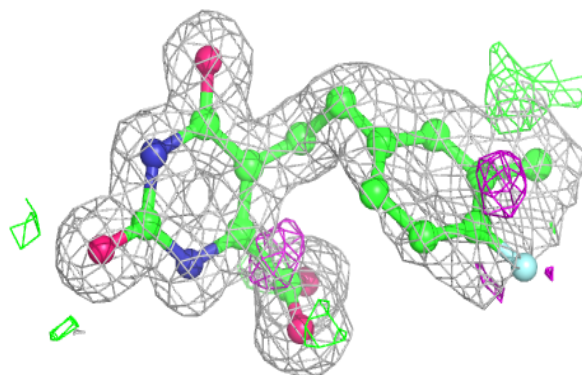
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around KRO B 401:

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

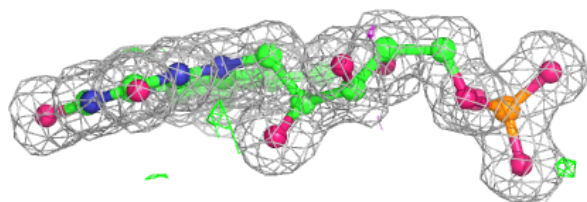
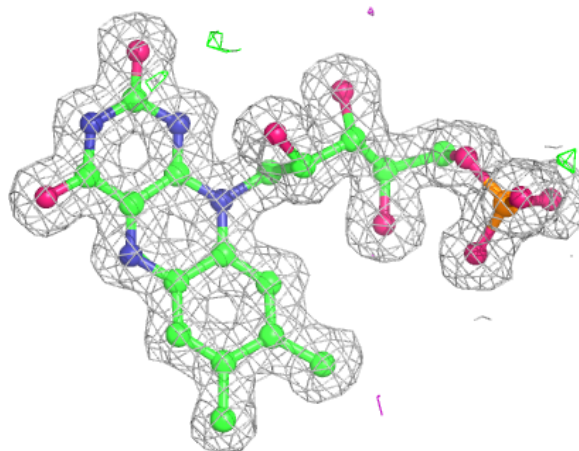
**Electron density around KRO A 401:**

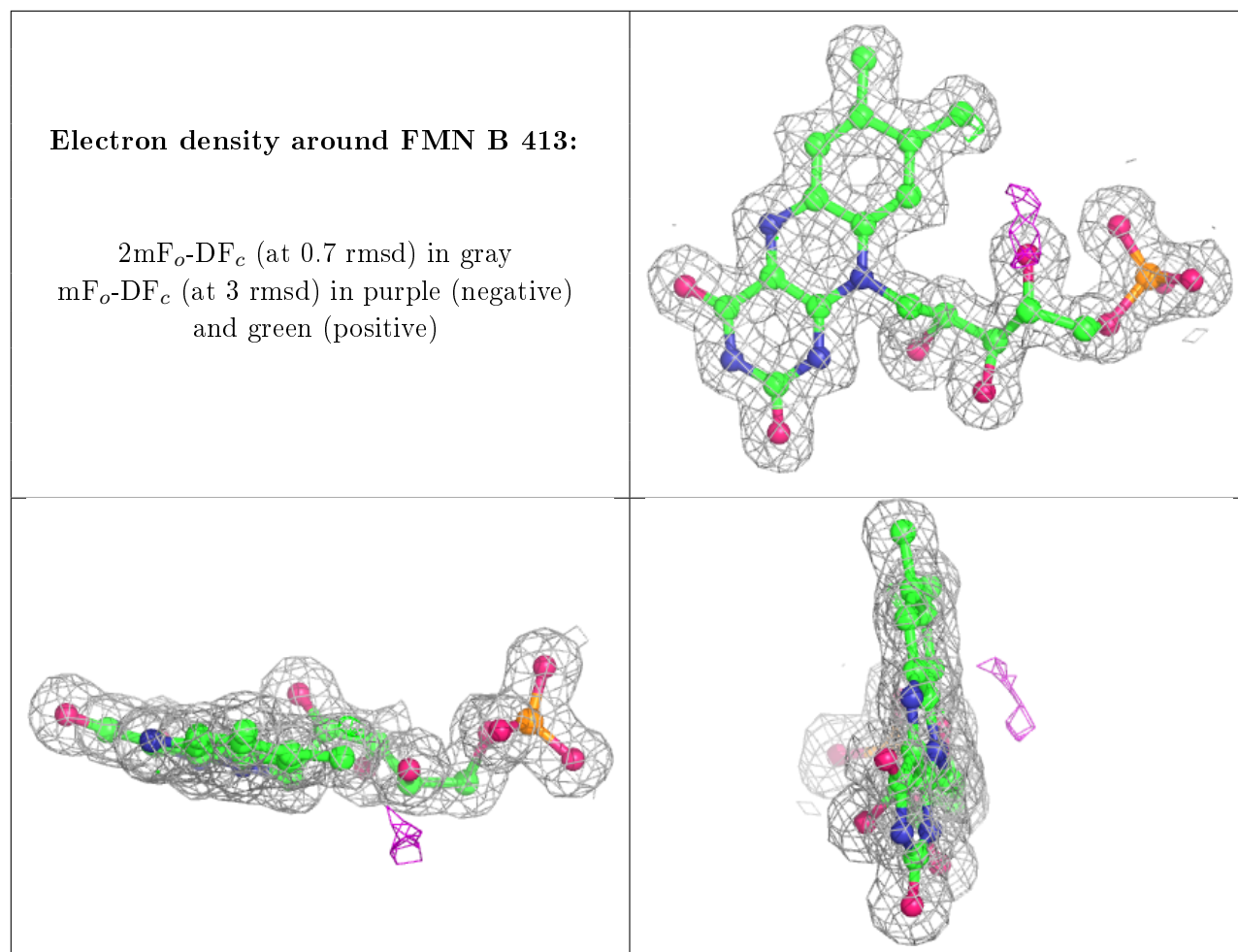
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around FMN A 413:

$2mF_o-DF_c$ (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.