



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2026 – 02:40 AM UTC

PDB ID : 7R0F / pdb_00007r0f
Title : Crystal structure of a flavodiiron protein D52K mutant in the oxidized state from Escherichia coli
Authors : Borges, P.T.; Teixeira, M.; Romao, C.V.; Frazao, C.
Deposited on : 2022-02-02
Resolution : 1.98 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

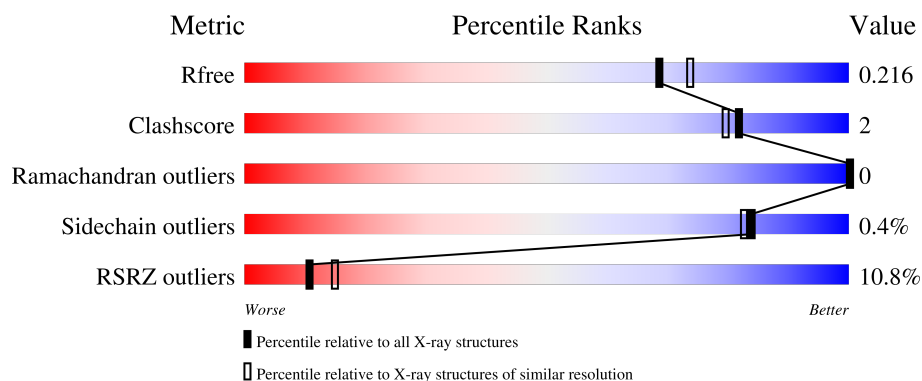
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.98 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}	180053	1506 (1.98-1.98)
Clashscore	190562	1534 (1.98-1.98)
Ramachandran outliers	187476	1518 (1.98-1.98)
Sidechain outliers	187428	1518 (1.98-1.98)
RSRZ outliers	180081	1506 (1.98-1.98)

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	479	
1	B	479	

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 7053 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.

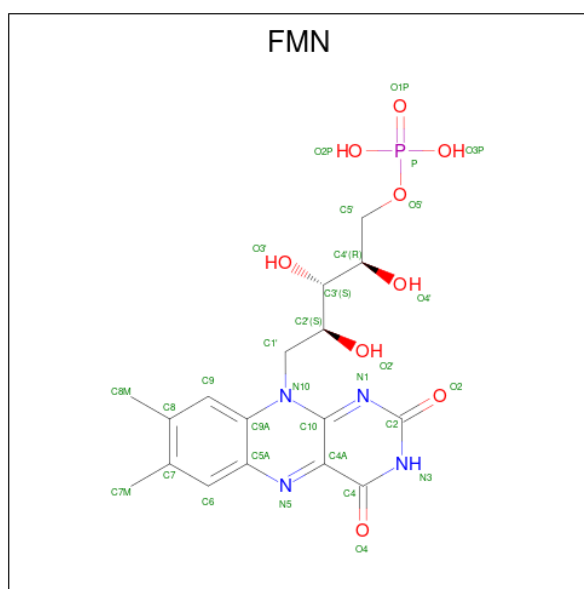
- Molecule 1 is a protein called Anaerobic nitric oxide reductase flavorubredoxin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	401	Total	C	N	O	S	0	1	0
			3234	2040	569	607	18			
1	B	401	Total	C	N	O	S	0	1	0
			3234	2040	569	607	18			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	52	LYS	ASP	engineered mutation	UNP Q46877
B	52	LYS	ASP	engineered mutation	UNP Q46877

- Molecule 2 is FLAVIN MONONUCLEOTIDE (CCD ID: FMN) (formula: $C_{17}H_{21}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).



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

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

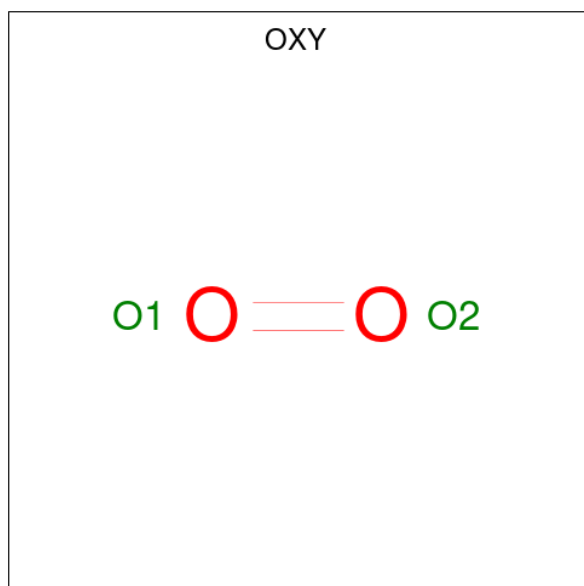
- Molecule 3 is FE (III) ION (CCD ID: FE) (formula: Fe).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total	Fe	0	0
			2	2		
3	B	2	Total	Fe	0	0
			2	2		

- Molecule 4 is OXYGEN ATOM (CCD ID: O) (formula: O).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	O	0	0
			1	1		
4	B	1	Total	O	0	0
			1	1		

- Molecule 5 is OXYGEN MOLECULE (CCD ID: OXY) (formula: O₂).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	O	0	0
			2	2		
5	B	1	Total	O	0	0
			2	2		

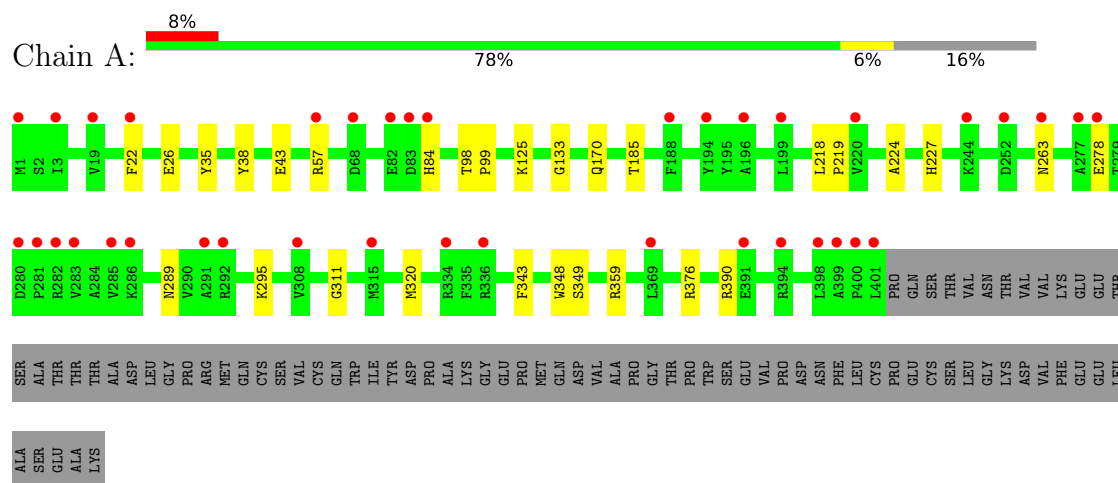
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	263	Total 263	O 263	0	0
6	B	250	Total 250	O 250	0	0

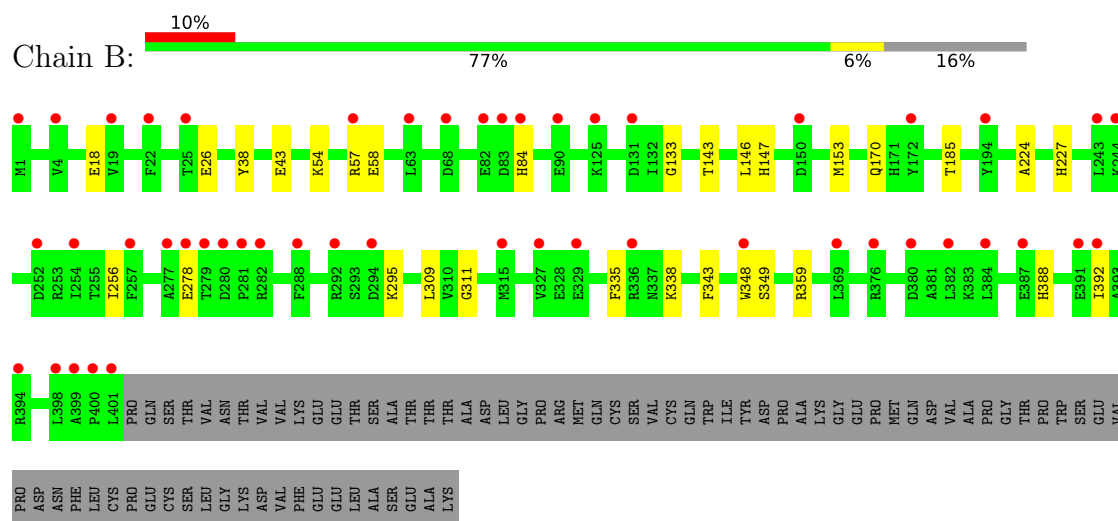
3 Residue-property plots [i](#)

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: Anaerobic nitric oxide reductase flavorubredoxin



- Molecule 1: Anaerobic nitric oxide reductase flavorubredoxin



4 Data and refinement statistics

Property	Value	Source
Space group	I 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	88.96Å 64.05Å 146.48Å 90.00° 91.14° 90.00°	Depositor
Resolution (Å)	73.32 – 1.98 73.32 – 1.98	Depositor EDS
% Data completeness (in resolution range)	94.7 (73.32-1.98) 92.0 (73.32-1.98)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.68 (at 1.98Å)	Xtriage
Refinement program	PHENIX dev_1436	Depositor
R, R_{free}	0.205 , 0.205 0.230 , 0.216	Depositor DCC
R_{free} test set	818 reflections (1.48%)	wwPDB-VP
Wilson B-factor (Å ²)	23.4	Xtriage
Anisotropy	0.353	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 41.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.000 for h,-k,-l	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7053	wwPDB-VP
Average B, all atoms (Å ²)	28.0	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 20.46 % 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 8.6471e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: O, OXY, FMN, FE

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	0.27	0/3308	0.68	2/4488 (0.0%)
1	B	0.27	0/3308	0.68	0/4488
All	All	0.27	0/6616	0.68	2/8976 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	320	MET	CA-C-N	5.07	124.68	119.05
1	A	320	MET	C-N-CA	5.07	124.68	119.05

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	3234	0	3144	16	0
1	B	3234	0	3144	19	0
2	A	31	0	19	0	0
2	B	31	0	19	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
4	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	1	0	0	0	0
5	A	2	0	0	0	0
5	B	2	0	0	0	0
6	A	263	0	0	3	0
6	B	250	0	0	3	0
All	All	7053	0	6326	32	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 2.

All (32) 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:A:185:THR:HG21	1:B:185:THR:HG21	1.66	0.76
1:B:278:GLU:OE1	6:B:601:HOH:O	2.15	0.65
1:A:125:LYS:NZ	6:A:607:HOH:O	2.36	0.59
1:B:84:HIS:HE1	1:B:227:HIS:NE2	2.04	0.54
1:B:359:ARG:NH1	6:B:609:HOH:O	2.41	0.53
1:B:54:LYS:O	1:B:57:ARG:NH1	2.42	0.53
1:A:26:GLU:OE1	1:A:295:LYS:NZ	2.43	0.52
1:B:43:GLU:HB2	1:B:133:GLY:HA3	1.91	0.52
1:A:43:GLU:HB2	1:A:133:GLY:HA3	1.91	0.51
1:A:348:TRP:CD1	1:A:349:SER:H	2.29	0.51
1:B:26:GLU:OE1	1:B:295:LYS:NZ	2.42	0.51
1:A:359:ARG:NH1	6:A:618:HOH:O	2.43	0.50
1:B:348:TRP:CD1	1:B:349:SER:H	2.29	0.49
1:A:263:ASN:ND2	6:A:623:HOH:O	2.47	0.47
1:B:335:PHE:HB3	1:B:338:LYS:HD2	1.98	0.46
1:B:57:ARG:HG2	1:B:58:GLU:N	2.30	0.46
1:A:84:HIS:HE1	1:A:227:HIS:NE2	2.15	0.44
1:B:143:THR:HG21	1:B:153:MET:HE3	1.99	0.44
1:B:338:LYS:HD3	6:B:666:HOH:O	2.17	0.44
1:A:38:TYR:CZ	1:A:224:ALA:HB1	2.53	0.44
1:B:38:TYR:CZ	1:B:224:ALA:HB1	2.54	0.43
1:B:388:HIS:O	1:B:392:ILE:HG12	2.19	0.42
1:B:146:LEU:HA	1:B:147:HIS:HA	1.83	0.42
1:A:289:ASN:HD22	1:B:18:GLU:CD	2.27	0.42
1:A:218:LEU:HA	1:A:219:PRO:HD3	1.91	0.42
1:B:256:ILE:HG12	1:B:309:LEU:HB2	2.02	0.42
1:A:311:GLY:HA2	1:A:343:PHE:O	2.20	0.42
1:A:22:PHE:HZ	1:A:35:TYR:HE1	1.67	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:311:GLY:HA2	1:B:343:PHE:O	2.20	0.41
1:A:98:THR:HA	1:A:99:PRO:HD3	1.90	0.41
1:A:278:GLU:OE2	1:A:390:ARG:NH2	2.53	0.41
1:A:376[A]:ARG:HH12	1:B:57:ARG:HH21	1.68	0.41

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	400/479 (84%)	382 (96%)	18 (4%)	0	100	100
1	B	400/479 (84%)	383 (96%)	17 (4%)	0	100	100
All	All	800/958 (84%)	765 (96%)	35 (4%)	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	350/417 (84%)	348 (99%)	2 (1%)	78	76
1	B	350/417 (84%)	349 (100%)	1 (0%)	86	86
All	All	700/834 (84%)	697 (100%)	3 (0%)	84	82

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	57	ARG
1	A	170	GLN
1	B	170	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	45	ASN
1	A	122	ASN
1	A	190	GLN
1	A	263	ASN
1	B	61	GLN
1	B	79	HIS
1	B	122	ASN
1	B	190	GLN
1	B	250	GLN
1	B	263	ASN

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 10 ligands modelled in this entry, 6 are monoatomic - leaving 4 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	$\# Z > 2$
5	OXY	A	505	-	1,1,1	0.17	0	-		
2	FMN	A	501	-	33,33,33	1.04	2 (6%)	48,50,50	1.19	8 (16%)
5	OXY	B	505	-	1,1,1	0.16	0	-		
2	FMN	B	501	-	33,33,33	1.05	2 (6%)	48,50,50	1.18	7 (14%)

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	FMN	A	501	-	-	9/18/18/18	0/3/3/3
2	FMN	B	501	-	-	0/18/18/18	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501	FMN	C4A-N5	3.62	1.38	1.30
2	A	501	FMN	C4A-N5	3.52	1.38	1.30
2	B	501	FMN	C10-N1	2.58	1.38	1.33
2	A	501	FMN	C10-N1	2.55	1.38	1.33

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	FMN	C4-N3-C2	-3.19	119.97	125.64
2	B	501	FMN	C4-N3-C2	-3.00	120.31	125.64
2	A	501	FMN	C4A-C4-N3	2.63	119.94	113.25
2	B	501	FMN	C4A-C10-N10	2.59	120.20	116.48
2	B	501	FMN	C4A-C4-N3	2.58	119.83	113.25
2	A	501	FMN	C4A-C10-N10	2.53	120.10	116.48
2	B	501	FMN	C10-C4A-N5	-2.41	119.89	124.81
2	A	501	FMN	C10-C4A-N5	-2.38	119.95	124.81
2	A	501	FMN	O4-C4-C4A	-2.37	120.28	126.53
2	B	501	FMN	O4-C4-C4A	-2.29	120.48	126.53
2	B	501	FMN	C9A-C5A-N5	-2.22	120.10	122.45
2	A	501	FMN	C9A-C5A-N5	-2.21	120.11	122.45
2	A	501	FMN	C5A-C9A-N10	2.08	119.85	117.97

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	FMN	C5A-C9A-N10	2.04	119.82	117.97
2	A	501	FMN	C4A-C10-N1	-2.04	119.60	124.59

There are no chirality outliers.

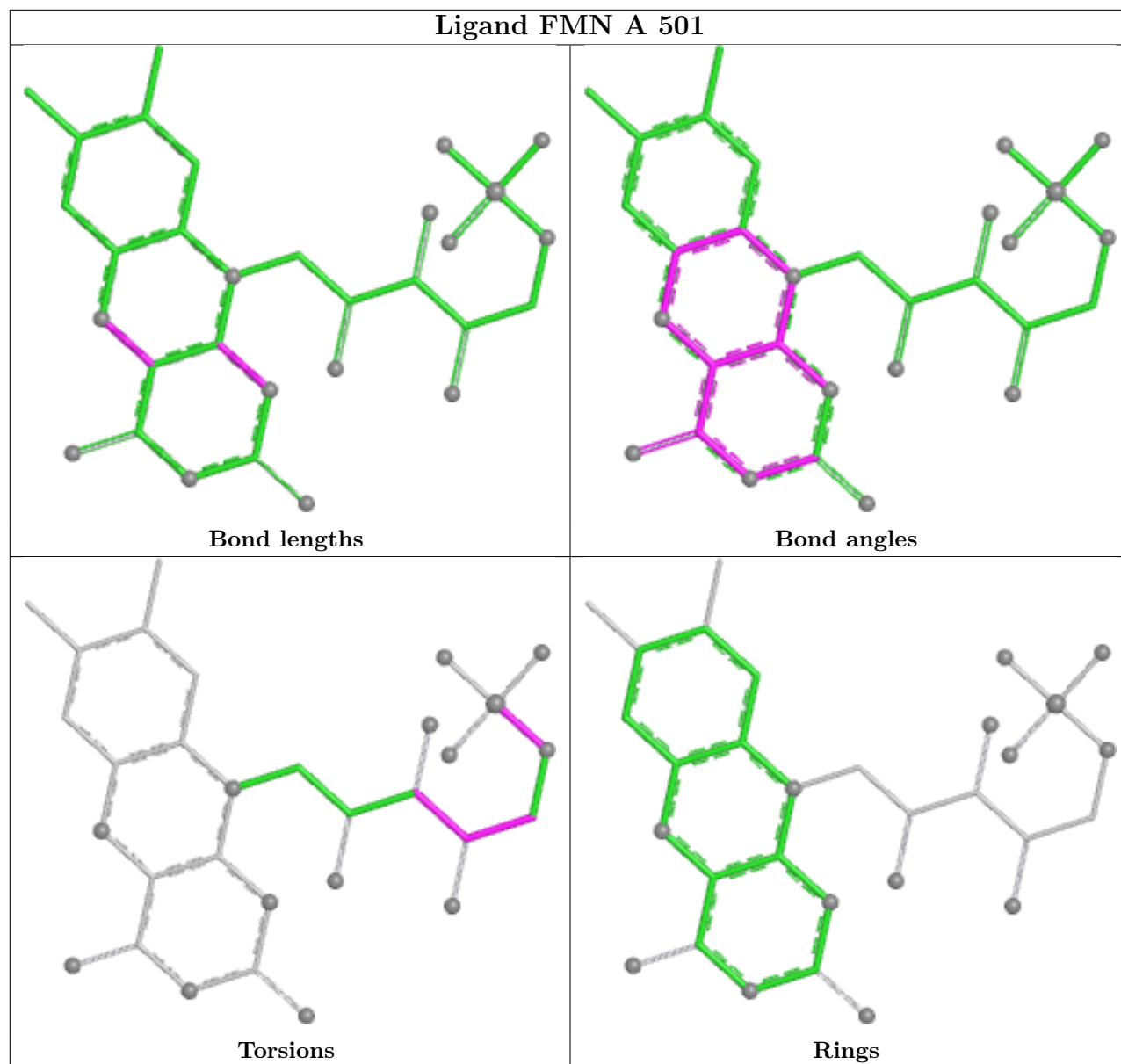
All (9) torsion outliers are listed below:

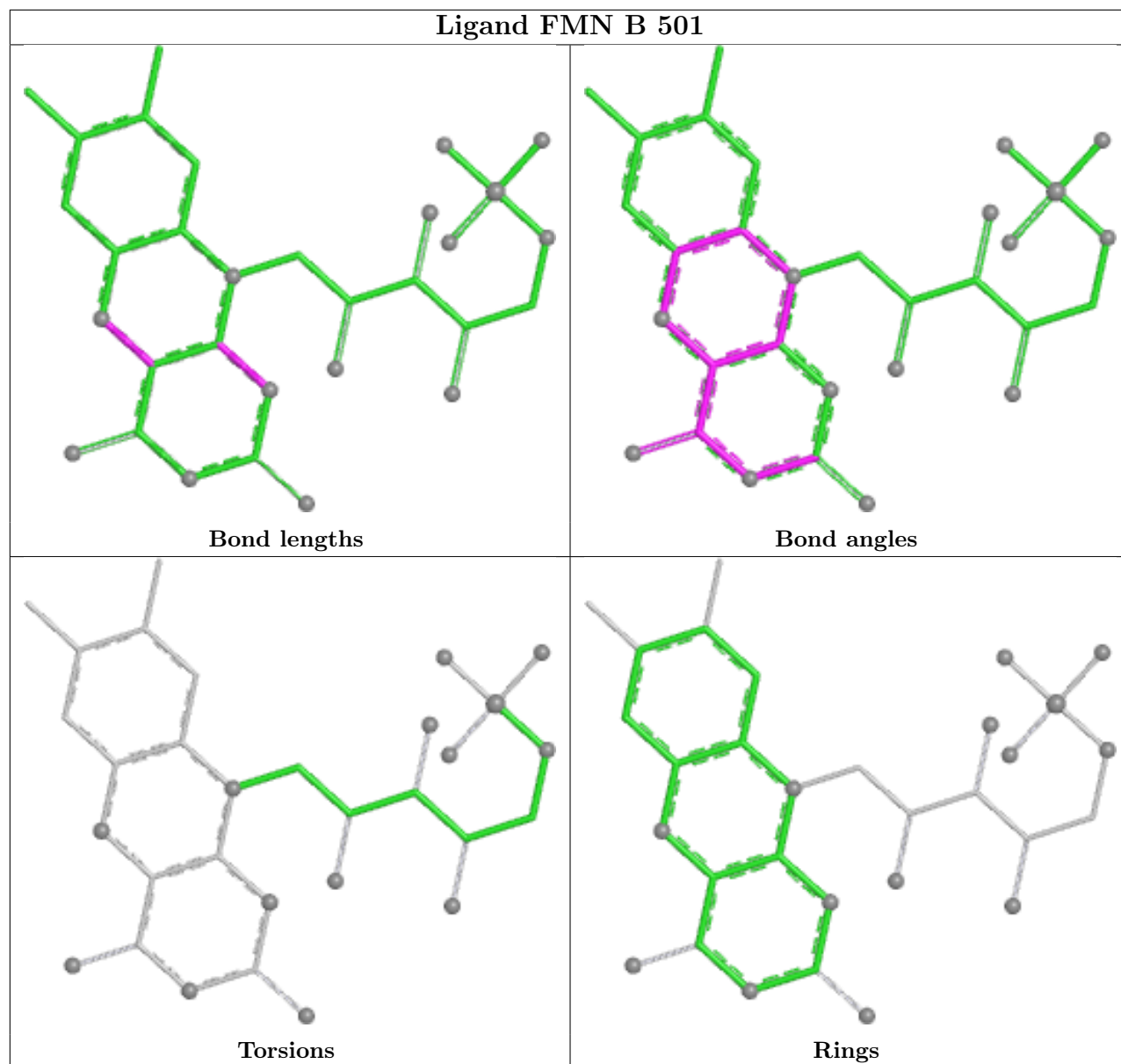
Mol	Chain	Res	Type	Atoms
2	A	501	FMN	C2'-C3'-C4'-O4'
2	A	501	FMN	C2'-C3'-C4'-C5'
2	A	501	FMN	O3'-C3'-C4'-O4'
2	A	501	FMN	C5'-O5'-P-O2P
2	A	501	FMN	O3'-C3'-C4'-C5'
2	A	501	FMN	C3'-C4'-C5'-O5'
2	A	501	FMN	O4'-C4'-C5'-O5'
2	A	501	FMN	C5'-O5'-P-O1P
2	A	501	FMN	C5'-O5'-P-O3P

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

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	401/479 (83%)	1.03	38 (9%) 14 19	12, 25, 41, 65	1 (0%)
1	B	401/479 (83%)	1.11	49 (12%) 8 11	13, 27, 43, 67	1 (0%)
All	All	802/958 (83%)	1.07	87 (10%) 11 15	12, 26, 42, 67	2 (0%)

All (87) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	401	LEU	6.6
1	B	401	LEU	5.2
1	B	22	PHE	4.8
1	B	1	MET	4.4
1	A	400	PRO	4.4
1	A	22	PHE	4.4
1	A	278	GLU	4.2
1	A	277	ALA	4.0
1	B	400	PRO	4.0
1	A	281	PRO	3.8
1	B	278	GLU	3.6
1	B	19	VAL	3.5
1	B	380	ASP	3.5
1	A	1	MET	3.3
1	A	315	MET	3.3
1	B	399	ALA	3.2
1	A	398	LEU	3.1
1	A	82	GLU	3.1
1	B	57	ARG	3.0
1	B	82	GLU	3.0
1	B	244	LYS	2.9
1	B	194	TYR	2.9
1	B	394	ARG	2.9
1	A	19	VAL	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	282	ARG	2.8
1	A	336	ARG	2.8
1	B	336	ARG	2.8
1	A	68	ASP	2.8
1	A	252	ASP	2.8
1	B	398	LEU	2.8
1	A	57	ARG	2.7
1	B	125	LYS	2.7
1	A	291	ALA	2.7
1	A	399	ALA	2.7
1	B	292	ARG	2.6
1	B	282	ARG	2.6
1	A	194	TYR	2.6
1	A	369	LEU	2.6
1	B	83	ASP	2.5
1	B	281	PRO	2.5
1	B	257	PHE	2.5
1	A	84	HIS	2.5
1	B	387	GLU	2.5
1	B	392	ILE	2.5
1	A	280	ASP	2.4
1	B	252	ASP	2.4
1	B	348	TRP	2.4
1	A	199	LEU	2.4
1	B	369	LEU	2.4
1	B	4	VAL	2.3
1	B	280	ASP	2.3
1	A	391	GLU	2.3
1	B	90	GLU	2.3
1	B	384	LEU	2.3
1	A	286	LYS	2.3
1	B	315	MET	2.3
1	B	172	TYR	2.3
1	A	292	ARG	2.3
1	A	83	ASP	2.3
1	A	3	ILE	2.2
1	B	254	ILE	2.2
1	A	283	VAL	2.2
1	A	244	LYS	2.2
1	B	376[A]	ARG	2.2
1	B	382	LEU	2.2
1	B	68	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	308	VAL	2.2
1	B	25	THR	2.2
1	B	243	LEU	2.2
1	A	188	PHE	2.2
1	A	394	ARG	2.2
1	B	329	GLU	2.2
1	A	285	VAL	2.2
1	B	150	ASP	2.2
1	B	391	GLU	2.1
1	B	294	ASP	2.1
1	A	220	VAL	2.1
1	B	288	PHE	2.1
1	B	279	THR	2.1
1	B	84	HIS	2.1
1	A	196	ALA	2.1
1	B	277	ALA	2.1
1	B	63	LEU	2.1
1	A	334	ARG	2.0
1	B	131	ASP	2.0
1	A	263	ASN	2.0
1	B	327	VAL	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 oligosaccharides 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.

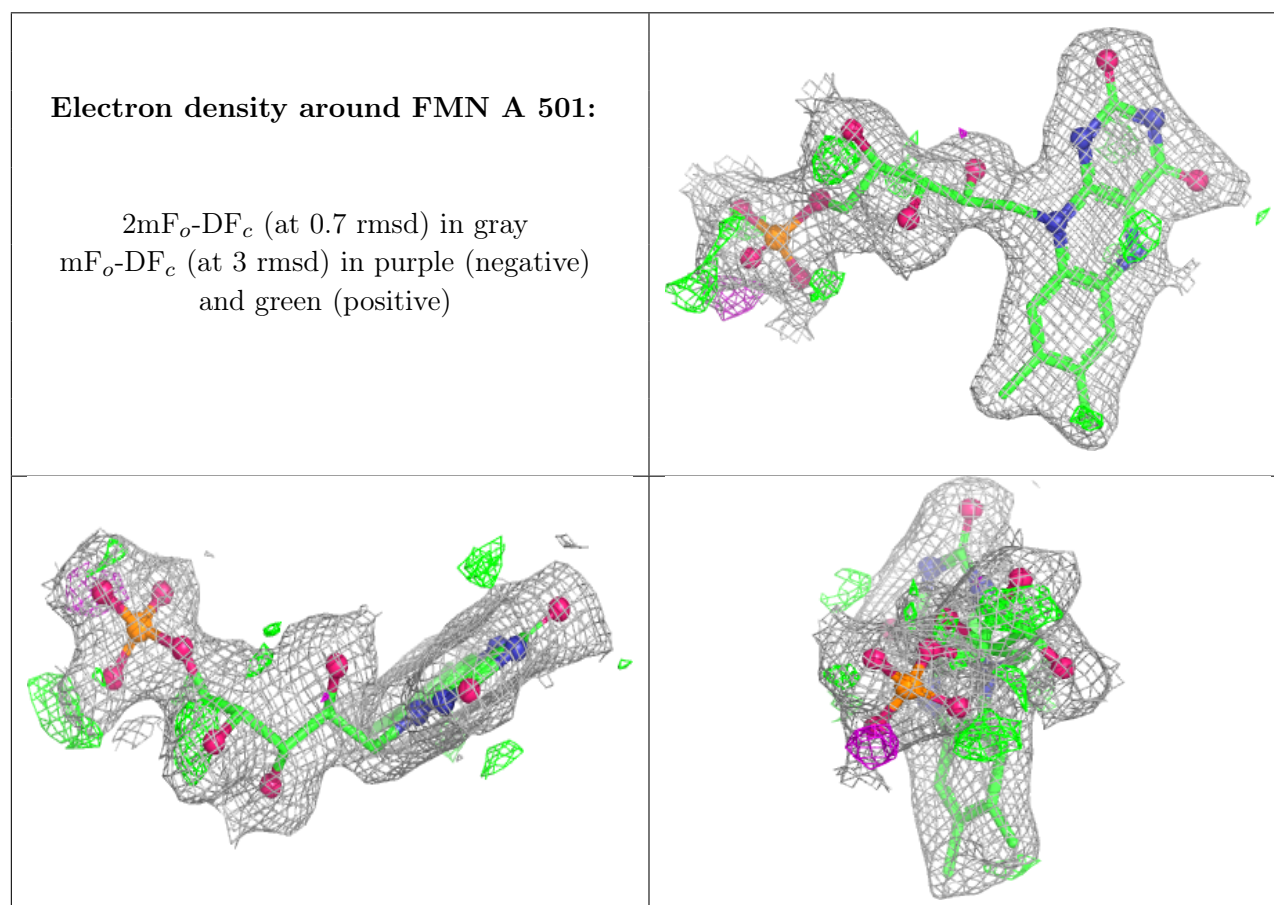
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	OXY	B	505	2/2	0.65	0.20	35,35,35,35	0
5	OXY	A	505	2/2	0.70	0.23	22,22,22,22	0

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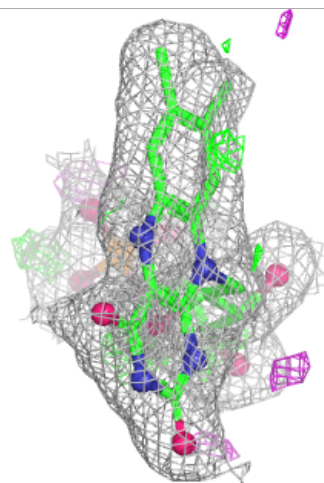
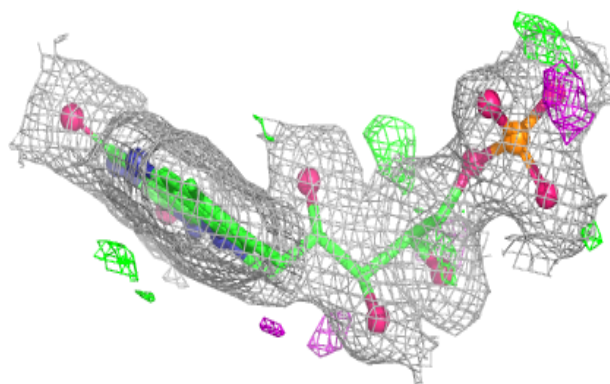
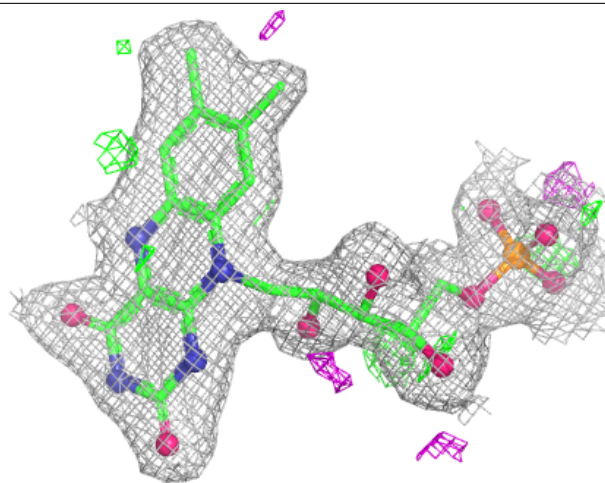
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	O	A	504	1/1	0.88	0.20	28,28,28,28	0
4	O	B	504	1/1	0.91	0.19	25,25,25,25	0
2	FMN	A	501	31/31	0.92	0.09	11,19,25,29	0
2	FMN	B	501	31/31	0.92	0.09	13,19,23,26	0
3	FE	A	502	1/1	0.96	0.11	27,27,27,27	0
3	FE	A	503	1/1	0.97	0.06	31,31,31,31	0
3	FE	B	502	1/1	0.97	0.08	30,30,30,30	0
3	FE	B	503	1/1	0.98	0.06	32,32,32,32	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 FMN B 501:

$2mF_o-DF_c$ (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.