Full wwPDB X-ray Structure Validation Report ⓘ

May 16, 2020 – 02:25 pm BST

PDB ID	:	5TUF
Title	:	Crystal structure of tetracycline destructase Tet(50) in complex with anhydrotetracycline
Authors	:	Park, J.; Tolia, N.H.
Deposited on	:	2016-11-06
Resolution	:	2.25 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 following versions of software and data (see references ⓘ) were used in the production of this report:

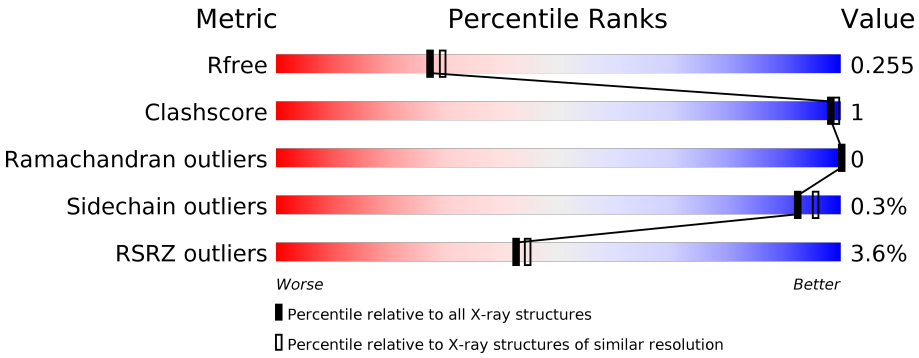
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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 2.25 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	1377 (2.26-2.26)
Clashscore	141614	1487 (2.26-2.26)
Ramachandran outliers	138981	1449 (2.26-2.26)
Sidechain outliers	138945	1450 (2.26-2.26)
RSRZ outliers	127900	1356 (2.26-2.26)

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 <=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	409	2% 93% • 5%
1	B	409	4% 89% • 9%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 12525 atoms, of which 6013 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 Tetracycline destructase Tet(50).

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	388	Total	C	H	N	O	S	0	1	0
			6111	1956	3037	521	581	16			
1	B	371	Total	C	H	N	O	S	0	0	0
			5823	1866	2894	498	550	15			

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-20	MET	-	expression tag	UNP A0A059WYP6
A	-19	GLY	-	expression tag	UNP A0A059WYP6
A	-18	SER	-	expression tag	UNP A0A059WYP6
A	-17	SER	-	expression tag	UNP A0A059WYP6
A	-16	HIS	-	expression tag	UNP A0A059WYP6
A	-15	HIS	-	expression tag	UNP A0A059WYP6
A	-14	HIS	-	expression tag	UNP A0A059WYP6
A	-13	HIS	-	expression tag	UNP A0A059WYP6
A	-12	HIS	-	expression tag	UNP A0A059WYP6
A	-11	HIS	-	expression tag	UNP A0A059WYP6
A	-10	SER	-	expression tag	UNP A0A059WYP6
A	-9	SER	-	expression tag	UNP A0A059WYP6
A	-8	GLY	-	expression tag	UNP A0A059WYP6
A	-7	LEU	-	expression tag	UNP A0A059WYP6
A	-6	VAL	-	expression tag	UNP A0A059WYP6
A	-5	PRO	-	expression tag	UNP A0A059WYP6
A	-4	ARG	-	expression tag	UNP A0A059WYP6
A	-3	GLY	-	expression tag	UNP A0A059WYP6
A	-2	SER	-	expression tag	UNP A0A059WYP6
A	-1	HIS	-	expression tag	UNP A0A059WYP6
A	0	MET	-	expression tag	UNP A0A059WYP6
B	-20	MET	-	expression tag	UNP A0A059WYP6
B	-19	GLY	-	expression tag	UNP A0A059WYP6
B	-18	SER	-	expression tag	UNP A0A059WYP6
B	-17	SER	-	expression tag	UNP A0A059WYP6

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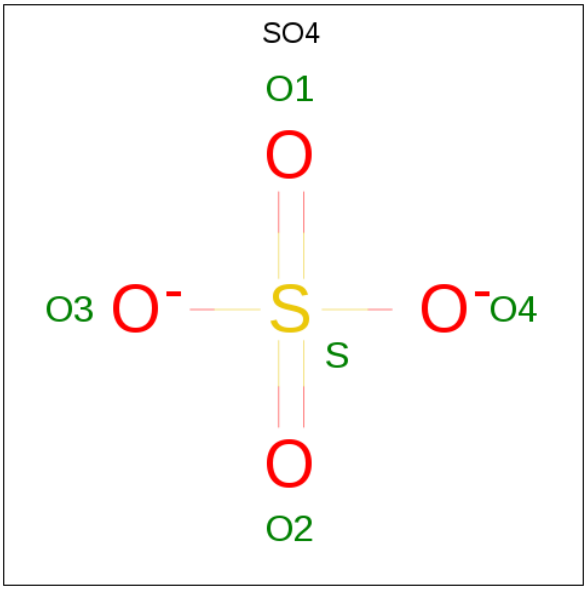
Chain	Residue	Modelled	Actual	Comment	Reference
B	-16	HIS	-	expression tag	UNP A0A059WYP6
B	-15	HIS	-	expression tag	UNP A0A059WYP6
B	-14	HIS	-	expression tag	UNP A0A059WYP6
B	-13	HIS	-	expression tag	UNP A0A059WYP6
B	-12	HIS	-	expression tag	UNP A0A059WYP6
B	-11	HIS	-	expression tag	UNP A0A059WYP6
B	-10	SER	-	expression tag	UNP A0A059WYP6
B	-9	SER	-	expression tag	UNP A0A059WYP6
B	-8	GLY	-	expression tag	UNP A0A059WYP6
B	-7	LEU	-	expression tag	UNP A0A059WYP6
B	-6	VAL	-	expression tag	UNP A0A059WYP6
B	-5	PRO	-	expression tag	UNP A0A059WYP6
B	-4	ARG	-	expression tag	UNP A0A059WYP6
B	-3	GLY	-	expression tag	UNP A0A059WYP6
B	-2	SER	-	expression tag	UNP A0A059WYP6
B	-1	HIS	-	expression tag	UNP A0A059WYP6
B	0	MET	-	expression tag	UNP A0A059WYP6

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0

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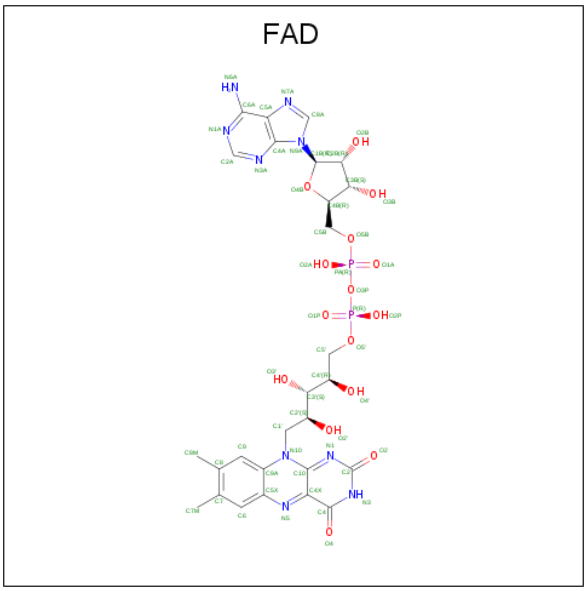
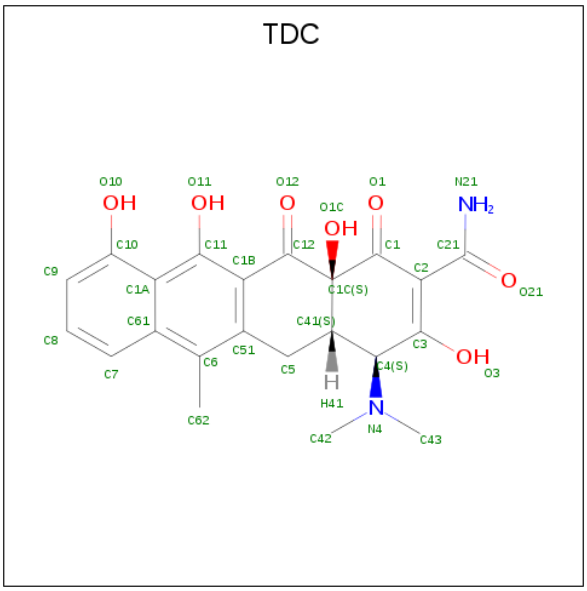
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0

- Molecule 3 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C H N O P 84 27 31 9 15 2	0	0
3	B	1	Total C H N O P 84 27 31 9 15 2	0	0

- Molecule 4 is 5A,6-ANHYDROTETRACYCLINE (three-letter code: TDC) (formula: $C_{22}H_{22}N_2O_7$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	B	1	Total	C	H	N	O	0	0
			51	22	20	2	7		

- Molecule 5 is water.

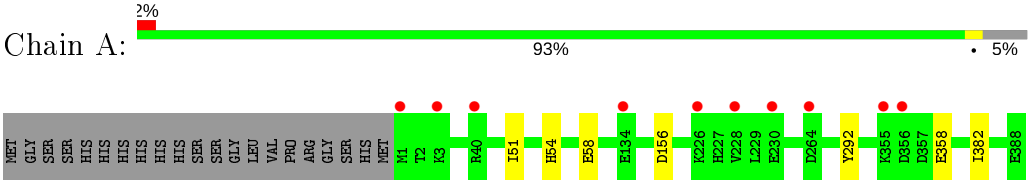
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	204	Total	O	0	0
			204	204		
5	B	133	Total	O	0	0
			133	133		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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.

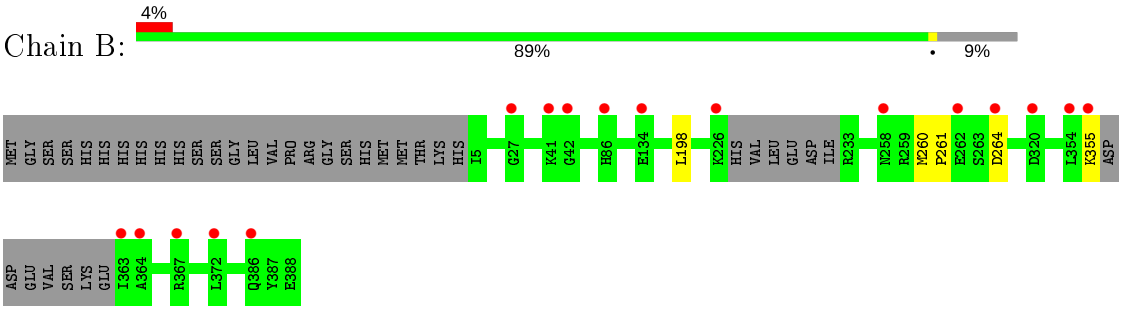
- Molecule 1: Tetracycline destructase Tet(50)

Chain A:



- Molecule 1: Tetracycline destructase Tet(50)

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	50.99Å 107.37Å 152.81Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.79 – 2.25 19.79 – 2.25	Depositor EDS
% Data completeness (in resolution range)	97.9 (19.79-2.25) 98.0 (19.79-2.25)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	5.15 (at 2.26Å)	Xtriage
Refinement program	PHENIX dev_1616	Depositor
R, R_{free}	0.207 , 0.255 0.208 , 0.255	Depositor DCC
R_{free} test set	1402 reflections (3.52%)	wwPDB-VP
Wilson B-factor (Å^2)	25.0	Xtriage
Anisotropy	0.496	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.41 , 36.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	12525	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.42% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: TDC, SO4, FAD

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	0.23	0/3136	0.38	0/4230
1	B	0.22	0/2984	0.38	0/4022
All	All	0.22	0/6120	0.38	0/8252

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

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	3074	3037	3049	4	0
1	B	2929	2894	2902	3	0
2	A	20	0	0	0	0
2	B	15	0	0	0	0
3	A	53	31	31	0	0
3	B	53	31	31	0	0
4	B	31	20	19	1	0
5	A	204	0	0	1	0
5	B	133	0	0	0	0
All	All	6512	6013	6032	7	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 1.

All (7) 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:54:HIS:NE2	1:A:58:GLU:OE1	2.43	0.51
1:A:156:ASP:OD1	1:A:156:ASP:N	2.49	0.43
1:A:51[B]:ILE:HD13	1:A:382:ILE:CG2	2.50	0.42
1:A:358:GLU:OE1	5:A:501:HOH:O	2.21	0.42
1:B:198:LEU:CD2	4:B:405:TDC:H422	2.50	0.42
1:B:260:MET:N	1:B:261:PRO:CD	2.84	0.41
1:B:264:ASP:N	1:B:264:ASP:OD1	2.54	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	387/409 (95%)	370 (96%)	17 (4%)	0	100	100
1	B	365/409 (89%)	349 (96%)	16 (4%)	0	100	100
All	All	752/818 (92%)	719 (96%)	33 (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	330/347 (95%)	329 (100%)	1 (0%)	92 95
1	B	312/347 (90%)	311 (100%)	1 (0%)	92 95
All	All	642/694 (92%)	640 (100%)	2 (0%)	92 95

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	292	TYR
1	B	355	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	83	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no carbohydrates in this entry.

5.6 Ligand geometry (i)

10 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	SO4	B	403	-	4,4,4	0.14	0	6,6,6	0.05	0
2	SO4	A	401	-	4,4,4	0.15	0	6,6,6	0.05	0
3	FAD	B	404	-	51,58,58	1.83	6 (11%)	60,89,89	2.25	13 (21%)
2	SO4	A	404	-	4,4,4	0.16	0	6,6,6	0.05	0
2	SO4	B	402	-	4,4,4	0.15	0	6,6,6	0.05	0
3	FAD	A	405	-	51,58,58	1.90	6 (11%)	60,89,89	2.09	11 (18%)
2	SO4	B	401	-	4,4,4	0.16	0	6,6,6	0.07	0
4	TDC	B	405	-	33,34,34	2.39	9 (27%)	44,55,55	1.59	7 (15%)
2	SO4	A	402	-	4,4,4	0.14	0	6,6,6	0.04	0
2	SO4	A	403	-	4,4,4	0.14	0	6,6,6	0.10	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	FAD	B	404	-	-	9/30/50/50	0/6/6/6
4	TDC	B	405	-	-	3/8/50/50	0/4/4/4
3	FAD	A	405	-	-	4/30/50/50	0/6/6/6

All (21) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	405	FAD	C4X-C10	9.64	1.48	1.38
3	B	404	FAD	C4X-C10	9.27	1.48	1.38
4	B	405	TDC	C51-C6	8.02	1.50	1.38
4	B	405	TDC	C1B-C11	5.76	1.48	1.39
4	B	405	TDC	C1B-C51	4.64	1.49	1.40
3	A	405	FAD	C4-C4X	4.28	1.48	1.41
4	B	405	TDC	C1C-C1	-3.86	1.50	1.55
3	A	405	FAD	C9A-C5X	3.82	1.50	1.42
3	B	404	FAD	C9A-C5X	3.73	1.50	1.42
3	B	404	FAD	C4-C4X	3.68	1.47	1.41
3	B	404	FAD	C8-C7	3.45	1.49	1.40
3	A	405	FAD	C8-C7	3.41	1.49	1.40
3	B	404	FAD	C9A-N10	3.24	1.42	1.38
4	B	405	TDC	C1C-C12	-3.18	1.50	1.54
3	A	405	FAD	C9A-N10	3.14	1.42	1.38
4	B	405	TDC	C61-C1A	2.98	1.48	1.42
4	B	405	TDC	C10-C1A	2.71	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	405	TDC	C2-C3	-2.63	1.33	1.40
4	B	405	TDC	C6-C61	2.58	1.49	1.42
3	A	405	FAD	C5A-C4A	2.43	1.47	1.40
3	B	404	FAD	C5A-C4A	2.29	1.47	1.40

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	404	FAD	C1'-N10-C9A	9.24	125.56	118.29
3	B	404	FAD	C4-N3-C2	8.77	122.55	115.14
3	A	405	FAD	C1'-N10-C9A	7.89	124.50	118.29
3	A	405	FAD	C4-N3-C2	7.83	121.75	115.14
4	B	405	TDC	O1C-C1C-C41	5.26	116.56	110.09
3	A	405	FAD	C4-C4X-C10	-4.93	116.69	119.95
3	B	404	FAD	C4-C4X-C10	-4.53	116.95	119.95
3	A	405	FAD	C4X-N5-C5X	3.96	120.73	116.77
3	B	404	FAD	N3A-C2A-N1A	-3.80	122.74	128.68
3	B	404	FAD	P-O3P-PA	-3.79	119.81	132.83
3	A	405	FAD	N3A-C2A-N1A	-3.76	122.80	128.68
3	B	404	FAD	C4X-C4-N3	-3.71	118.36	123.43
3	B	404	FAD	C4X-N5-C5X	3.55	120.32	116.77
4	B	405	TDC	C11-C1A-C61	3.37	121.62	117.30
3	A	405	FAD	C4X-C4-N3	-3.36	118.83	123.43
3	A	405	FAD	P-O3P-PA	-3.35	121.32	132.83
4	B	405	TDC	C41-C1C-C1	-3.17	107.41	111.05
3	A	405	FAD	C4-C4X-N5	3.10	122.14	118.60
3	A	405	FAD	C9A-N10-C10	-3.03	117.94	121.91
3	B	404	FAD	C9A-N10-C10	-2.99	117.99	121.91
4	B	405	TDC	C21-C2-C1	2.91	124.41	120.97
4	B	405	TDC	C1B-C11-C1A	-2.72	118.94	121.09
3	A	405	FAD	C4A-C5A-N7A	-2.59	106.69	109.40
3	B	404	FAD	C4A-C5A-N7A	-2.54	106.75	109.40
4	B	405	TDC	O21-C21-C2	-2.35	116.64	120.67
3	B	404	FAD	C4-C4X-N5	2.21	121.12	118.60
3	B	404	FAD	C1'-N10-C10	-2.20	116.44	118.41
3	B	404	FAD	C1B-N9A-C4A	-2.07	123.00	126.64
4	B	405	TDC	C10-C1A-C11	-2.07	119.85	123.60
3	B	404	FAD	C2A-N1A-C6A	2.05	122.26	118.75
3	A	405	FAD	C2A-N1A-C6A	2.01	122.20	118.75

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	404	FAD	C5'-O5'-P-O1P
3	B	404	FAD	C5'-O5'-P-O2P
3	A	405	FAD	PA-O3P-P-O5'
3	B	404	FAD	O3'-C3'-C4'-C5'
3	B	404	FAD	C2'-C3'-C4'-C5'
3	B	404	FAD	P-O3P-PA-O1A
3	A	405	FAD	P-O3P-PA-O2A
4	B	405	TDC	C3-C2-C21-N21
4	B	405	TDC	C3-C2-C21-O21
3	B	404	FAD	O3'-C3'-C4'-O4'
4	B	405	TDC	C1-C2-C21-N21
3	A	405	FAD	P-O3P-PA-O1A
3	B	404	FAD	O4B-C4B-C5B-O5B
3	B	404	FAD	P-O3P-PA-O2A
3	B	404	FAD	C5'-O5'-P-O3P
3	A	405	FAD	O4B-C4B-C5B-O5B

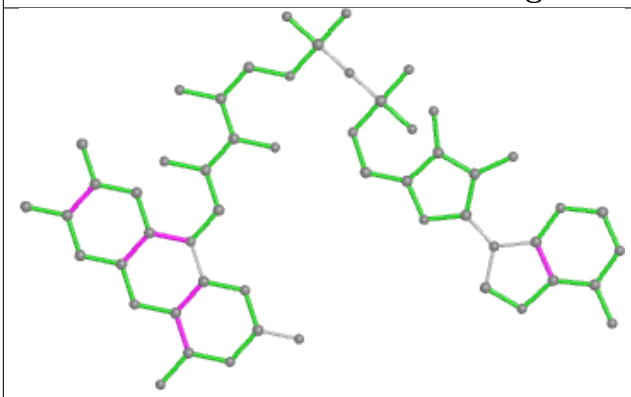
There are no ring outliers.

1 monomer is involved in 1 short contact:

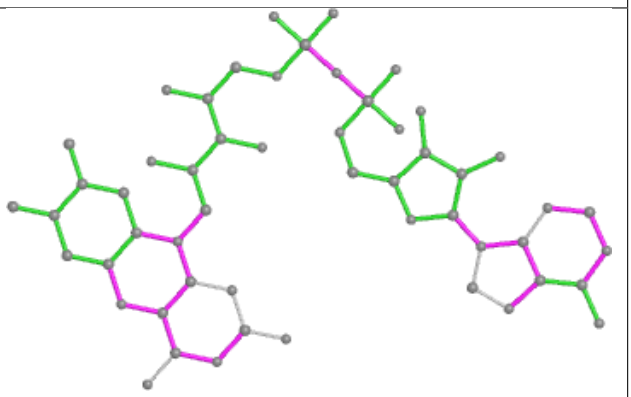
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	405	TDC	1	0

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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

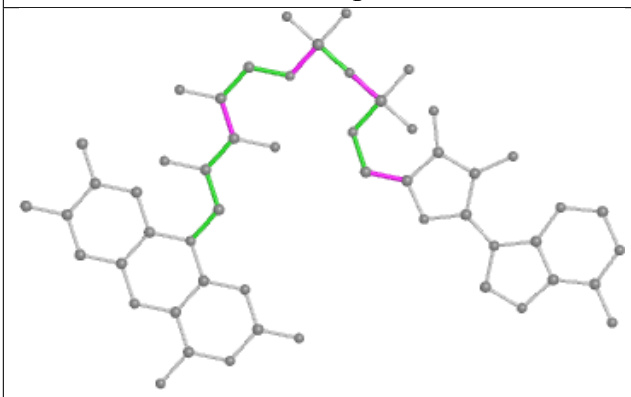
Ligand FAD B 404



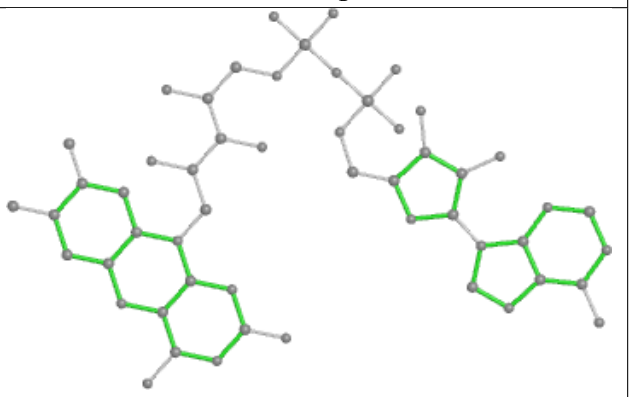
Bond lengths



Bond angles

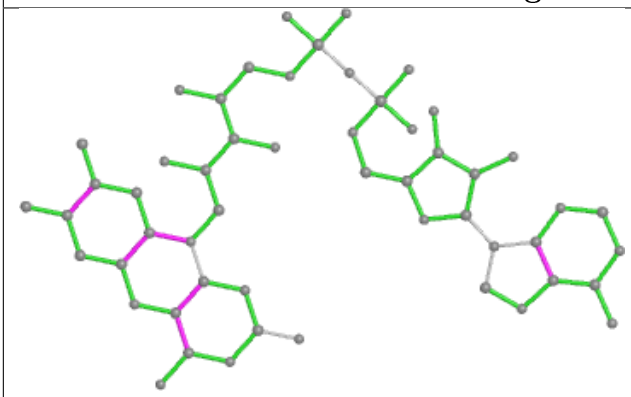


Torsions

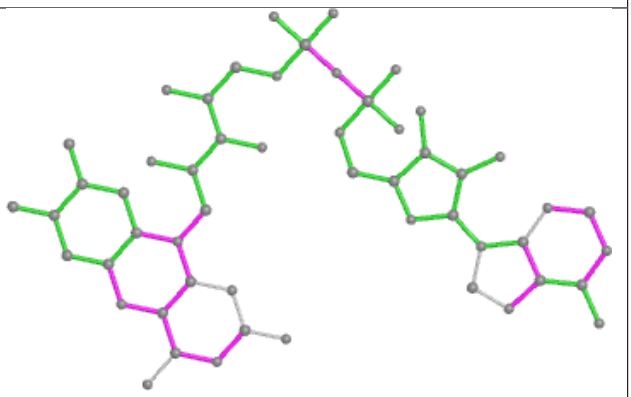


Rings

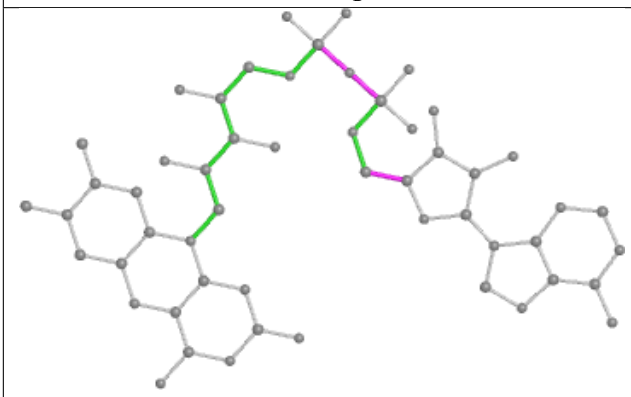
Ligand FAD A 405



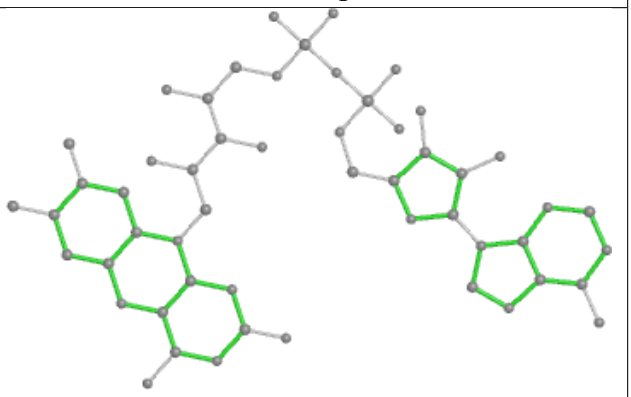
Bond lengths



Bond angles

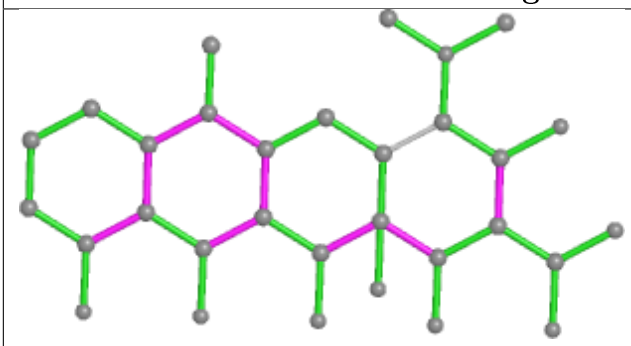


Torsions

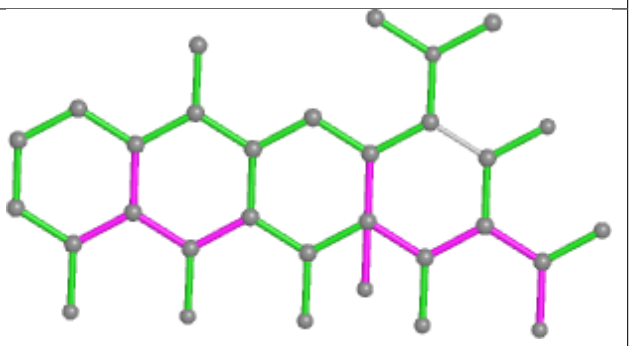


Rings

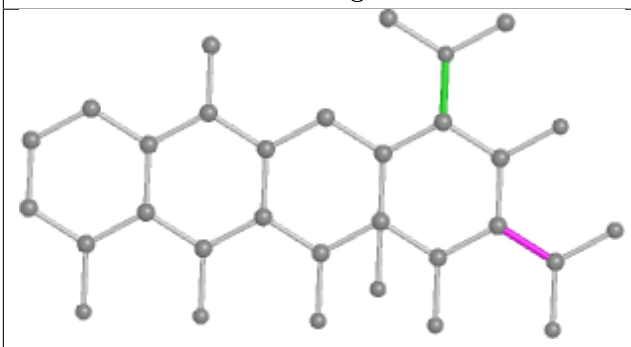
Ligand TDC B 405



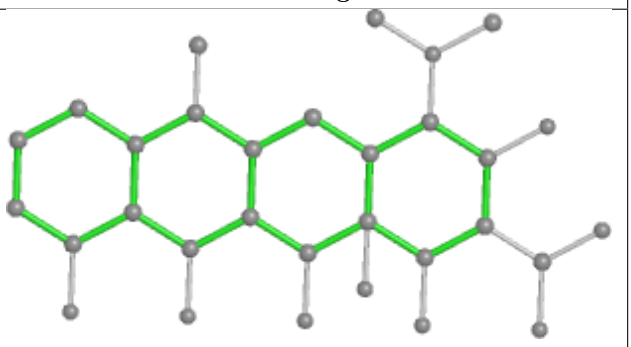
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	388/409 (94%)	0.02	10 (2%) 56 59	18, 25, 45, 92	0
1	B	371/409 (90%)	0.11	17 (4%) 32 35	18, 30, 48, 75	0
All	All	759/818 (92%)	0.06	27 (3%) 42 44	18, 27, 47, 92	0

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1	MET	6.7
1	A	356	ASP	6.0
1	A	355	LYS	5.2
1	B	363	ILE	4.6
1	B	367	ARG	4.2
1	A	264	ASP	4.2
1	A	230	GLU	3.8
1	A	40	ARG	3.8
1	B	372	LEU	3.8
1	A	3	LYS	3.3
1	B	262	GLU	3.1
1	B	226	LYS	3.0
1	A	226	LYS	3.0
1	B	264	ASP	2.9
1	B	41	LYS	2.7
1	B	355	LYS	2.7
1	B	364	ALA	2.6
1	B	386	GLN	2.5
1	B	86	HIS	2.5
1	A	228	VAL	2.5
1	B	42	GLY	2.5
1	B	134	GLU	2.4
1	B	354	LEU	2.4
1	A	134	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	258	ASN	2.2
1	B	27	GLY	2.0
1	B	320	ASP	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 carbohydrates in this entry.

6.4 Ligands (i)

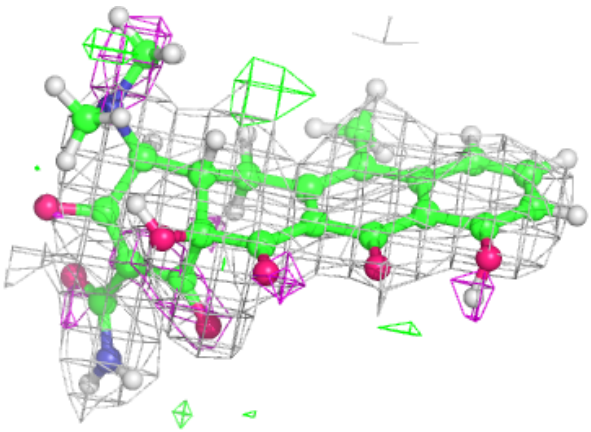
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

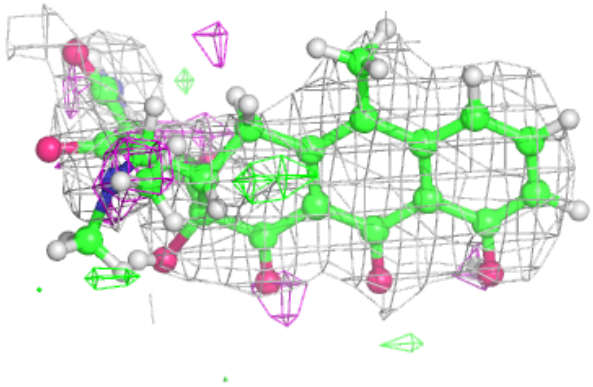
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	TDC	B	405	31/31	0.72	0.27	30,36,44,47	0
2	SO4	B	403	5/5	0.83	0.39	70,71,81,86	0
2	SO4	A	402	5/5	0.87	0.30	53,54,61,61	0
2	SO4	B	401	5/5	0.88	0.27	50,54,61,72	0
3	FAD	A	405	53/53	0.88	0.23	23,36,47,51	0
2	SO4	A	403	5/5	0.88	0.25	54,57,61,64	0
3	FAD	B	404	53/53	0.93	0.15	22,35,45,51	0
2	SO4	A	404	5/5	0.95	0.24	42,44,49,53	0
2	SO4	B	402	5/5	0.96	0.21	37,41,43,51	0
2	SO4	A	401	5/5	0.96	0.23	40,44,51,57	0

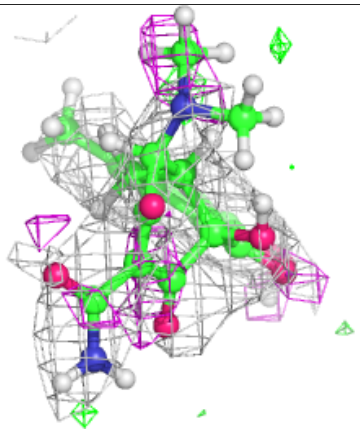
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around TDC B 405:

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

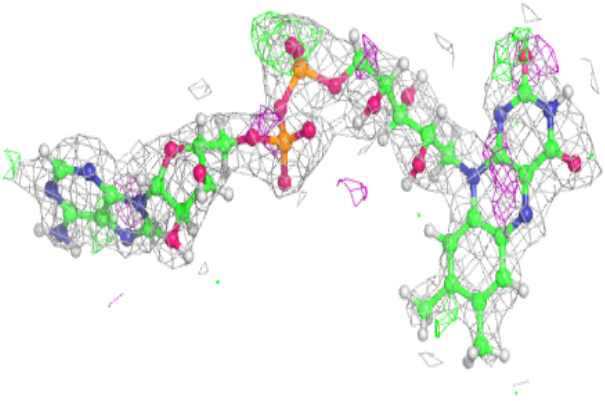


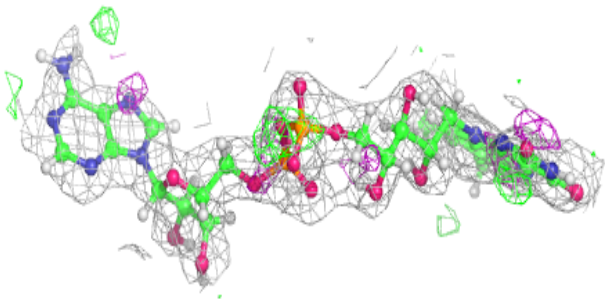


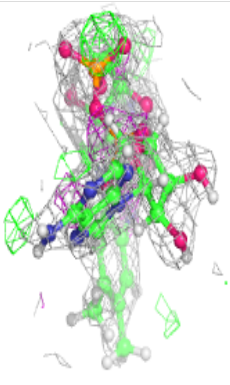


Electron density around FAD A 405:

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

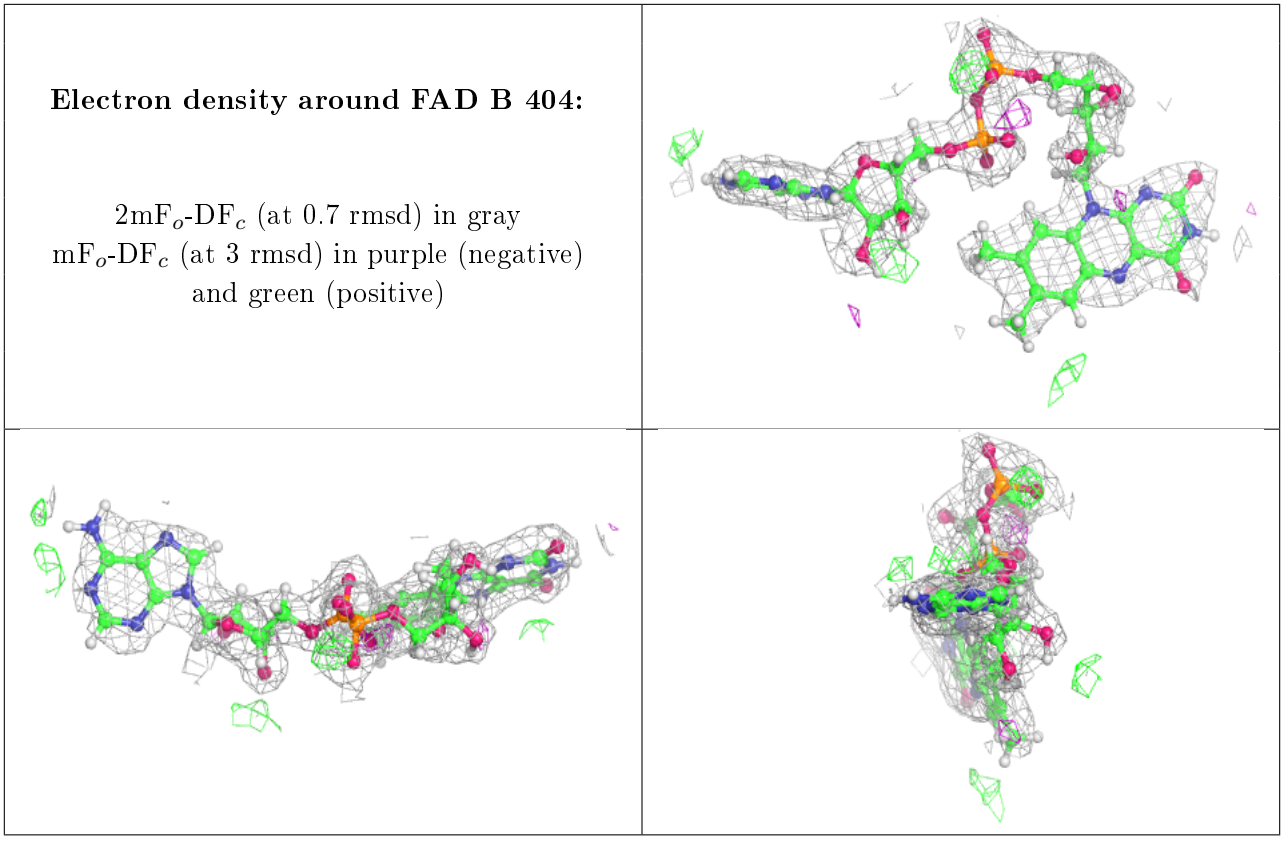






Electron density around FAD B 404:

$2mF_o$-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

There are no such residues in this entry.