



# Full wwPDB X-ray Structure Validation Report ⓘ

Apr 19, 2026 – 01:43 AM UTC

PDB ID : 5UME / pdb\_00005ume  
Title : Crystal Structure of 5,10-Methylenetetrahydrofolate Reductase MetF from Haemophilus influenzae  
Authors : Kim, Y.; Mulligan, R.; Maltseva, N.; Grimshaw, S.; Anderson, W.F.; Joachimiak, A.; Center for Structural Genomics of Infectious Diseases (CS-GID)  
Deposited on : 2017-01-27  
Resolution : 2.70 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](mailto: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>.

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The following versions of software and data (see [references](#) ①) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtrriage (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

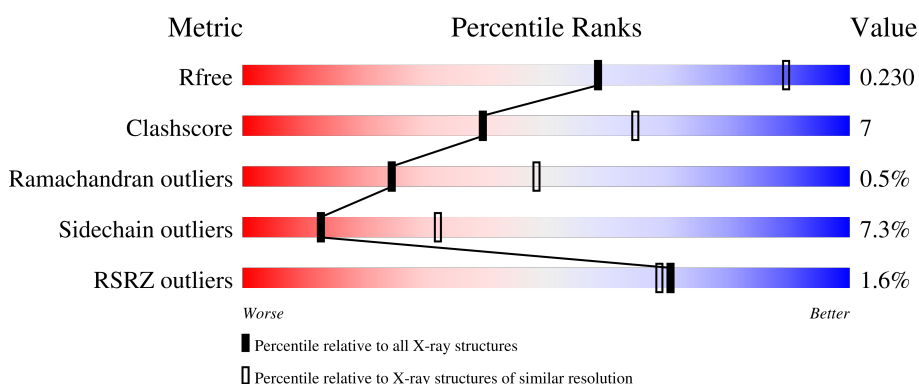
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

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  $\geq 3$ , 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	295	 2% 77% 17% . .
1	B	295	 2% 72% 15% . 11%
1	C	295	 % 81% 14% . .
1	D	295	 2% 75% 20% . .
1	E	295	 2% 79% 18% . .

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Mol	Chain	Length	Quality of chain
1	F	295	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into four segments: a small red segment at the beginning labeled '2%', a large green segment labeled '74%', a yellow segment labeled '19%', and a very small grey segment at the end labeled with two dots '••'.</p>

## 2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 13964 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 5,10-methylenetetrahydrofolate reductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	285	Total 2276	C 1456	N 393	O 420	S 7	0	0	0
1	B	262	Total 2092	C 1341	N 361	O 383	S 7	0	0	0
1	C	286	Total 2286	C 1461	N 396	O 421	S 8	0	1	0
1	D	289	Total 2302	C 1472	N 399	O 424	S 7	0	0	0
1	E	292	Total 2323	C 1484	N 402	O 429	S 8	0	0	0
1	F	282	Total 2253	C 1442	N 391	O 413	S 7	0	1	0

There are 18 discrepancies between the modelled and reference sequences:

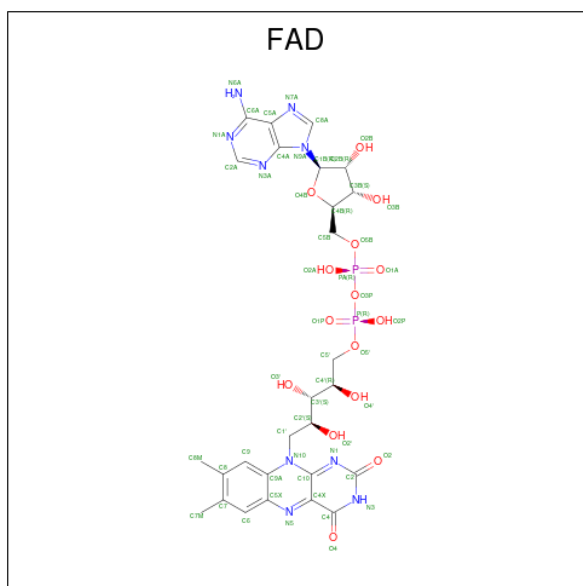
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	expression tag	UNP P45208
A	-1	ASN	-	expression tag	UNP P45208
A	0	ALA	-	expression tag	UNP P45208
B	-2	SER	-	expression tag	UNP P45208
B	-1	ASN	-	expression tag	UNP P45208
B	0	ALA	-	expression tag	UNP P45208
C	-2	SER	-	expression tag	UNP P45208
C	-1	ASN	-	expression tag	UNP P45208
C	0	ALA	-	expression tag	UNP P45208
D	-2	SER	-	expression tag	UNP P45208
D	-1	ASN	-	expression tag	UNP P45208
D	0	ALA	-	expression tag	UNP P45208
E	-2	SER	-	expression tag	UNP P45208
E	-1	ASN	-	expression tag	UNP P45208
E	0	ALA	-	expression tag	UNP P45208
F	-2	SER	-	expression tag	UNP P45208
F	-1	ASN	-	expression tag	UNP P45208

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Chain	Residue	Modelled	Actual	Comment	Reference
F	0	ALA	-	expression tag	UNP P45208

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (CCD ID: FAD) (formula:  $C_{27}H_{33}N_9O_{15}P_2$ ).



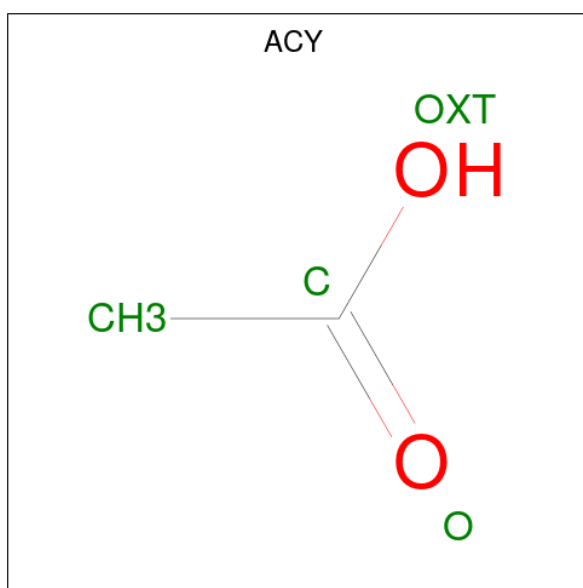
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	N	O			P
2	A	1	53	27	9	15	2	0	0
2	B	1	53	27	9	15	2	0	0
2	C	1	53	27	9	15	2	0	0
2	D	1	53	27	9	15	2	0	0
2	E	1	53	27	9	15	2	0	0
2	F	1	53	27	9	15	2	0	0

- Molecule 3 is SULFATE ION (CCD ID: SO4) (formula:  $O_4S$ ).



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

- Molecule 4 is ACETIC ACID (CCD ID: ACY) (formula: C<sub>2</sub>H<sub>4</sub>O<sub>2</sub>).



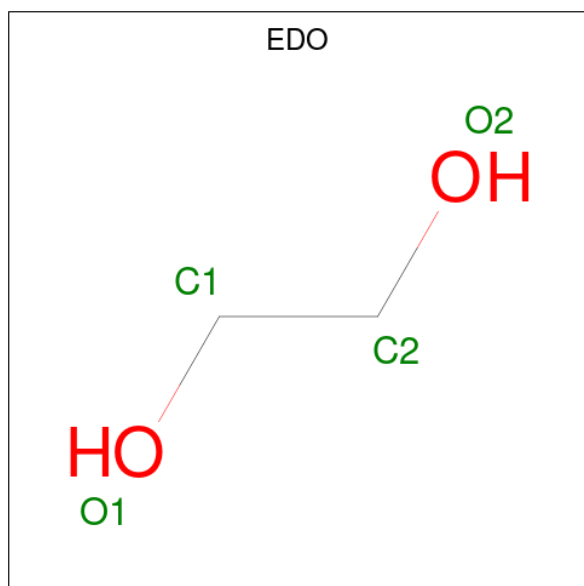
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0

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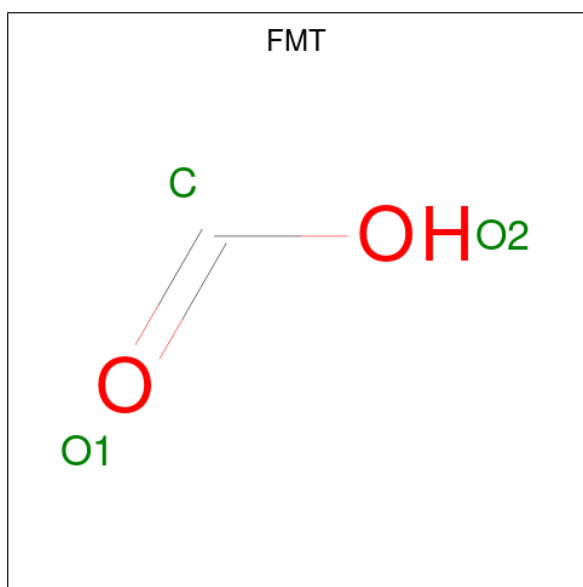
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	F	1	Total C O 4 2 2	0	0
4	F	1	Total C O 4 2 2	0	0

- Molecule 5 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



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

- Molecule 6 is FORMIC ACID (CCD ID: FMT) (formula: CH<sub>2</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total C O 3 1 2	0	0
6	C	1	Total C O 3 1 2	0	0
6	C	1	Total C O 3 1 2	0	0
6	D	1	Total C O 3 1 2	0	0

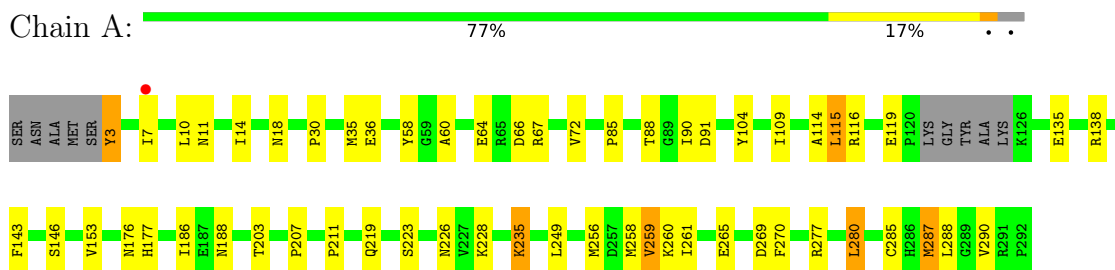
- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	10	Total O 10 10	0	0
7	B	4	Total O 4 4	0	0
7	C	8	Total O 8 8	0	0
7	D	8	Total O 8 8	0	0
7	E	9	Total O 9 9	0	0
7	F	9	Total O 9 9	0	0

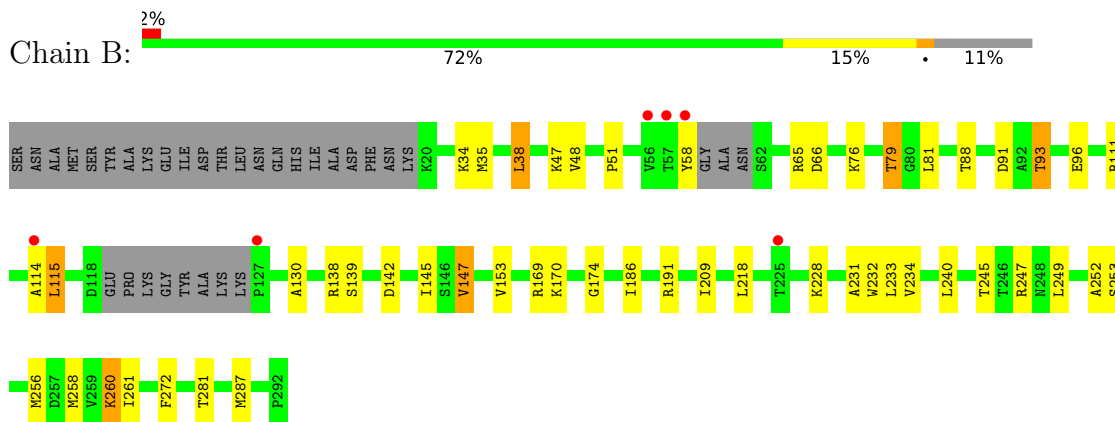
### 3 Residue-property plots

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.

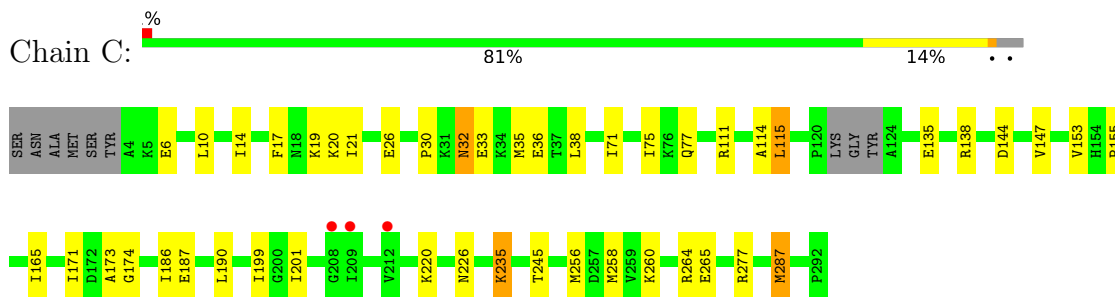
- Molecule 1: 5,10-methylenetetrahydrofolate reductase



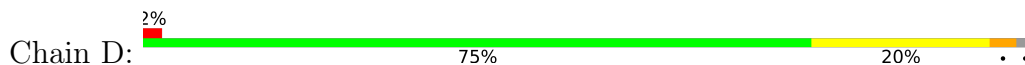
- Molecule 1: 5,10-methylenetetrahydrofolate reductase

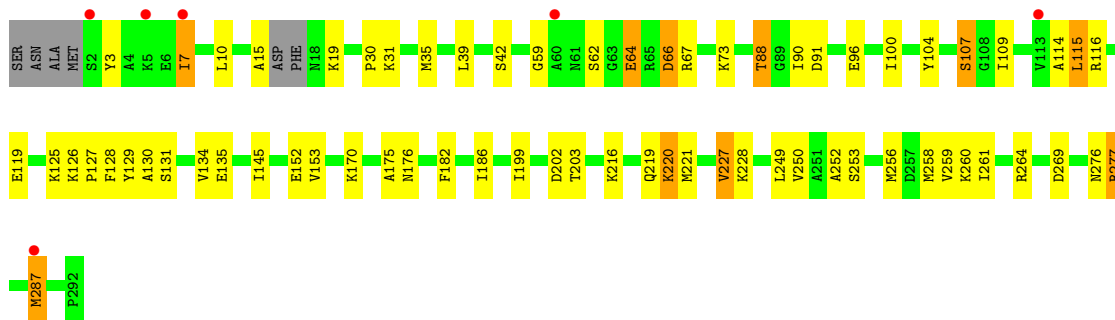


- Molecule 1: 5,10-methylenetetrahydrofolate reductase

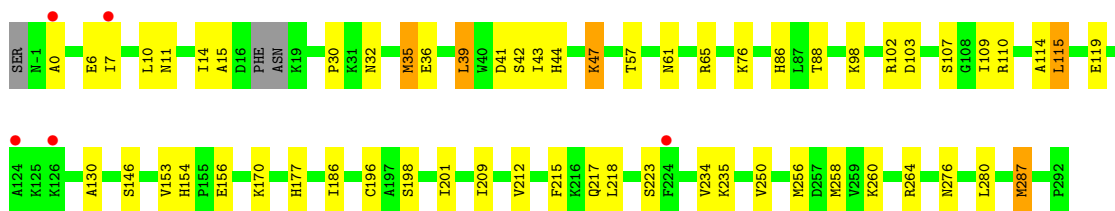
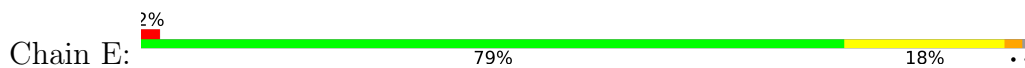


- Molecule 1: 5,10-methylenetetrahydrofolate reductase

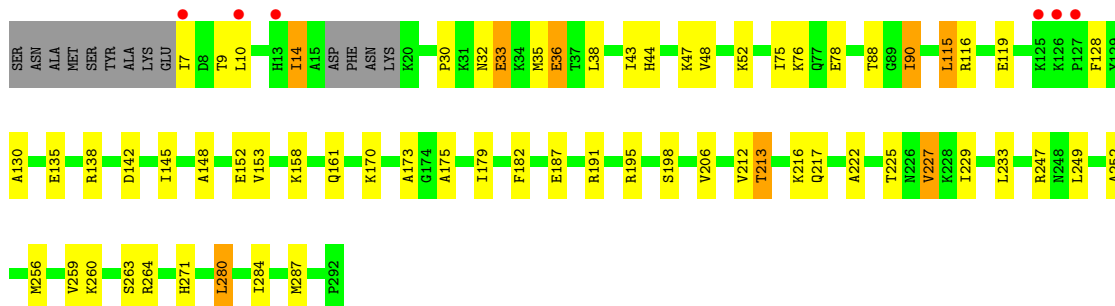
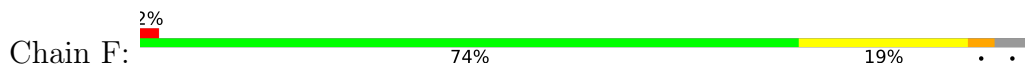




● Molecule 1: 5,10-methylenetetrahydrofolate reductase



● Molecule 1: 5,10-methylenetetrahydrofolate reductase



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	90.06Å 134.96Å 182.99Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	43.73 – 2.70 43.73 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.5 (43.73-2.70) 98.5 (43.73-2.70)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.12	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.87 (at 2.69Å)	Xtrriage
Refinement program	PHENIX 1.11.1_2575	Depositor
R, $R_{free}$	0.169 , 0.228 0.174 , 0.230	Depositor DCC
$R_{free}$ test set	3031 reflections (4.30%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	74.8	Xtrriage
Anisotropy	0.354	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 49.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	13964	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	89.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.91% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>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: SO4, ACY, EDO, FAD, FMT

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	0.37	0/2326	0.59	0/3151
1	B	0.36	0/2137	0.54	0/2893
1	C	0.40	0/2335	0.59	0/3161
1	D	0.38	0/2352	0.60	1/3184 (0.0%)
1	E	0.36	0/2373	0.54	0/3212
1	F	0.38	0/2302	0.57	0/3117
All	All	0.38	0/13825	0.57	1/18718 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	64	GLU	N-CA-C	-5.58	107.05	112.97

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	143	PHE	Peptide

## 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	2276	0	2277	35	0
1	B	2092	0	2102	25	0
1	C	2286	0	2294	27	0
1	D	2302	0	2312	45	0
1	E	2323	0	2333	36	0
1	F	2253	0	2267	34	0
2	A	53	0	31	2	0
2	B	53	0	31	1	0
2	C	53	0	31	2	0
2	D	53	0	31	2	0
2	E	53	0	31	4	0
2	F	53	0	31	3	0
3	A	5	0	0	0	0
3	B	5	0	0	0	0
4	A	4	0	3	0	0
4	B	4	0	3	0	0
4	C	4	0	3	1	0
4	D	12	0	9	0	0
4	E	4	0	3	0	0
4	F	8	0	6	0	0
5	A	4	0	6	0	0
5	F	4	0	6	1	0
6	B	3	0	1	0	0
6	C	6	0	2	0	0
6	D	3	0	1	1	0
7	A	10	0	0	1	0
7	B	4	0	0	0	0
7	C	8	0	0	2	0
7	D	8	0	0	0	0
7	E	9	0	0	1	0
7	F	9	0	0	0	0
All	All	13964	0	13814	187	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.

All (187) 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:116:ARG:HH22	1:D:125:LYS:HD3	1.50	0.75
1:F:161:GLN:OE1	1:F:195:ARG:NH2	2.22	0.72
1:C:26:GLU:OE2	7:C:401:HOH:O	2.10	0.69
1:E:11:ASN:HD21	1:E:260:LYS:HE3	1.60	0.67
1:C:138:ARG:HD3	1:C:174:GLY:HA3	1.78	0.66
4:C:303:ACY:O	7:C:401:HOH:O	2.14	0.66
1:A:10:LEU:HD13	1:D:3:TYR:HE2	1.64	0.63
1:B:249:LEU:HD22	1:F:252:ALA:HB2	1.82	0.62
1:A:235:LYS:HE2	1:D:15:ALA:HB1	1.82	0.61
1:A:176:ASN:O	1:A:203:THR:HG21	2.01	0.61
1:D:30:PRO:HB3	1:D:35:MET:HG3	1.81	0.61
1:A:14:ILE:HG13	1:A:260:LYS:HG2	1.83	0.60
1:B:261:ILE:HD11	1:F:7:ILE:HG12	1.84	0.60
1:A:10:LEU:HD13	1:D:3:TYR:CE2	2.37	0.59
1:F:52:LYS:HD2	5:F:303:EDO:H11	1.83	0.59
1:A:226:ASN:O	1:A:226:ASN:ND2	2.36	0.59
1:B:58:TYR:CD2	1:B:88:THR:HG22	2.37	0.59
1:A:104:TYR:CD1	1:A:109:ILE:HD12	2.38	0.58
1:F:10:LEU:HD11	1:F:260:LYS:HB3	1.86	0.58
1:D:88:THR:HG22	1:D:91:ASP:OD2	2.04	0.57
1:D:115:LEU:HD13	2:D:300:FAD:C4X	2.34	0.57
1:F:33:GLU:H	1:F:33:GLU:CD	2.11	0.57
1:D:216:LYS:HA	1:D:219:GLN:HE21	1.70	0.57
1:A:207:PRO:HD2	1:A:269:ASP:O	2.04	0.57
1:D:66:ASP:OD1	1:D:66:ASP:N	2.39	0.56
1:E:11:ASN:ND2	1:E:260:LYS:HE3	2.21	0.56
1:E:88:THR:HA	1:E:115:LEU:O	2.05	0.56
1:A:115:LEU:HD13	2:A:300:FAD:C4X	2.36	0.56
1:E:98:LYS:O	1:E:102:ARG:HG2	2.05	0.56
1:D:90:ILE:HG12	1:D:116:ARG:O	2.06	0.55
1:F:256:MET:SD	1:F:287:MET:HG3	2.47	0.55
1:B:252:ALA:HB2	1:F:249:LEU:HD22	1.87	0.55
1:C:190:LEU:HD22	1:C:265:GLU:HG2	1.89	0.55
1:B:35:MET:HA	1:B:38:LEU:HD23	1.89	0.54
1:B:138:ARG:NH2	1:B:142:ASP:OD1	2.38	0.54
1:D:107:SER:HB3	1:D:109:ILE:HD12	1.90	0.54
1:F:138:ARG:HH12	1:F:142:ASP:HA	1.73	0.54
1:E:39:LEU:HD22	1:E:43:ILE:HD11	1.90	0.53
1:C:14:ILE:HG13	1:C:260:LYS:HG2	1.89	0.53
1:C:35:MET:HE3	1:C:38:LEU:HB3	1.89	0.53
1:F:90:ILE:HB	1:F:116:ARG:O	2.09	0.53
1:E:61:ASN:O	1:E:61:ASN:ND2	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:176:ASN:O	1:D:203:THR:HG21	2.09	0.53
1:A:138:ARG:NH1	7:A:402:HOH:O	2.41	0.52
1:D:90:ILE:HG21	1:D:119:GLU:HG3	1.91	0.52
1:D:114:ALA:C	1:D:115:LEU:HG	2.34	0.52
1:D:186:ILE:HD11	1:D:258:MET:HA	1.90	0.52
1:D:10:LEU:HD21	1:D:260:LYS:HB3	1.92	0.52
1:D:96:GLU:O	1:D:100:ILE:HG12	2.09	0.52
1:A:249:LEU:HD23	1:D:249:LEU:HD23	1.91	0.52
1:B:115:LEU:HD13	2:B:300:FAD:C4X	2.40	0.52
1:C:115:LEU:HD22	2:C:300:FAD:C9A	2.40	0.52
1:F:213:THR:O	1:F:247:ARG:HD2	2.09	0.52
1:A:211:PRO:HB3	1:A:280:LEU:HD12	1.92	0.52
1:C:10:LEU:O	1:C:14:ILE:HG12	2.09	0.52
2:E:300:FAD:O1P	7:E:401:HOH:O	2.18	0.51
1:B:186:ILE:HD11	1:B:258:MET:HG2	1.93	0.51
1:D:130:ALA:HB3	1:D:170:LYS:HD3	1.92	0.51
1:C:135:GLU:HG3	1:C:173:ALA:HB1	1.92	0.50
1:F:130:ALA:HB3	1:F:170:LYS:HD3	1.93	0.50
1:A:11:ASN:ND2	1:A:260:LYS:HD3	2.27	0.50
1:A:249:LEU:HD22	1:D:252:ALA:HB2	1.92	0.50
1:B:58:TYR:HD2	1:B:88:THR:HG22	1.76	0.50
1:E:57:THR:HA	1:E:86:HIS:CG	2.47	0.50
1:C:165:ILE:HD13	1:C:199:ILE:HD11	1.93	0.50
1:D:126:LYS:O	1:D:128:PHE:N	2.40	0.50
1:E:154:HIS:CE1	1:E:156:GLU:HB2	2.47	0.49
1:B:240:LEU:O	1:B:247:ARG:NH1	2.42	0.49
1:E:115:LEU:HD22	2:E:300:FAD:C9A	2.42	0.49
1:F:148:ALA:HB1	2:F:300:FAD:HM81	1.93	0.49
1:E:196:CYS:HB3	1:E:201:ILE:HD12	1.94	0.49
1:C:186:ILE:HD11	1:C:258:MET:HG2	1.95	0.49
1:F:30:PRO:HG2	1:F:36:GLU:HG2	1.94	0.49
1:D:256:MET:HE2	1:D:287:MET:HG3	1.95	0.49
1:F:116:ARG:HD2	1:F:128:PHE:O	2.13	0.49
1:B:147:VAL:HG22	1:B:170:LYS:HE2	1.95	0.48
1:B:66:ASP:OD1	1:B:66:ASP:N	2.45	0.48
1:E:114:ALA:C	1:E:115:LEU:HG	2.38	0.48
1:B:138:ARG:HD2	1:B:174:GLY:HA3	1.94	0.48
1:E:30:PRO:HG2	1:E:36:GLU:HG2	1.96	0.48
1:C:115:LEU:HD13	2:C:300:FAD:C4X	2.45	0.47
1:E:215:PHE:HZ	1:E:234:VAL:HG22	1.79	0.47
1:E:76:LYS:H	1:E:76:LYS:HG2	1.55	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:85:PRO:HD3	1:A:109:ILE:HD13	1.97	0.47
1:D:126:LYS:C	1:D:128:PHE:H	2.22	0.47
1:D:59:GLY:HA3	1:D:62:SER:OG	2.15	0.47
1:A:91:ASP:OD2	1:A:91:ASP:N	2.48	0.47
1:A:285:CYS:HB3	1:A:290:VAL:HB	1.96	0.47
1:A:114:ALA:C	1:A:115:LEU:HG	2.40	0.46
1:C:30:PRO:HB3	1:C:35:MET:HG3	1.97	0.46
1:B:114:ALA:C	1:B:115:LEU:HG	2.40	0.46
1:A:259:VAL:HG13	1:A:288:LEU:HD21	1.97	0.46
1:B:191:ARG:HD2	1:C:265:GLU:OE1	2.15	0.46
1:B:232:TRP:CZ3	1:B:233:LEU:HD13	2.50	0.46
1:C:17:PHE:HD1	1:C:21:ILE:HD11	1.80	0.46
1:A:256:MET:SD	1:A:287:MET:SD	3.14	0.46
1:B:191:ARG:HH22	1:C:264:ARG:NH1	2.13	0.46
1:F:229:ILE:HG23	1:F:233:LEU:HD23	1.96	0.46
1:C:17:PHE:CD1	1:C:21:ILE:HD11	2.50	0.46
1:C:32:ASN:N	1:C:32:ASN:OD1	2.49	0.46
1:F:216:LYS:HE3	1:F:216:LYS:HB3	1.78	0.46
1:D:62:SER:C	1:D:64:GLU:H	2.24	0.45
1:E:32:ASN:OD1	1:E:35:MET:HB2	2.16	0.45
1:E:109:ILE:O	1:E:110:ARG:NH2	2.48	0.45
1:F:145:ILE:HB	1:F:175:ALA:HA	1.98	0.45
1:E:115:LEU:HD13	2:E:300:FAD:C4X	2.46	0.45
1:A:258:MET:HE3	1:A:258:MET:HB2	1.60	0.45
1:C:111:ARG:HA	1:C:144:ASP:O	2.16	0.45
1:A:3:TYR:CE2	1:D:264:ARG:HG2	2.52	0.45
1:B:231:ALA:O	1:B:234:VAL:HG12	2.16	0.45
1:C:287[B]:MET:SD	1:E:250:VAL:HG22	2.57	0.45
1:E:10:LEU:O	1:E:14:ILE:HG12	2.16	0.45
1:A:287:MET:SD	1:D:250:VAL:HG22	2.56	0.45
1:F:10:LEU:HD22	1:F:264:ARG:NH1	2.31	0.45
1:B:272:PHE:CD2	1:B:281:THR:HG23	2.51	0.45
1:C:114:ALA:C	1:C:115:LEU:HG	2.41	0.45
1:D:42:SER:OG	1:D:276:ASN:O	2.34	0.45
1:D:269:ASP:HB3	6:D:304:FMT:H	1.98	0.45
1:E:10:LEU:HD11	1:E:260:LYS:O	2.17	0.44
1:B:93:THR:HG23	1:B:96:GLU:OE2	2.18	0.44
1:F:187:GLU:OE2	1:F:191:ARG:NH1	2.50	0.44
1:A:259:VAL:HG22	1:A:270:PHE:CE1	2.52	0.44
1:A:261:ILE:CD1	1:D:7:ILE:HG12	2.47	0.44
1:E:130:ALA:HB3	1:E:170:LYS:HD3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:235:LYS:O	1:E:235:LYS:HG3	2.17	0.44
1:F:30:PRO:HB3	1:F:35:MET:HG3	2.00	0.44
1:A:88:THR:HA	1:A:115:LEU:O	2.18	0.44
1:B:130:ALA:HB3	1:B:170:LYS:HE3	2.00	0.44
1:D:152:GLU:OE2	1:D:228:LYS:HE3	2.18	0.44
1:D:277:ARG:HE	1:D:277:ARG:HB3	1.26	0.44
1:E:186:ILE:HD11	1:E:258:MET:HG2	2.00	0.44
1:F:179:ILE:HG21	1:F:271:HIS:CD2	2.52	0.44
1:C:265:GLU:OE1	1:E:0:ALA:HB3	2.18	0.44
1:A:90:ILE:HB	1:A:116:ARG:O	2.17	0.43
1:D:104:TYR:HD1	1:D:109:ILE:HD13	1.82	0.43
1:A:72:VAL:HG11	1:A:109:ILE:HD11	2.00	0.43
1:A:90:ILE:HD12	1:A:90:ILE:HA	1.88	0.43
1:F:32:ASN:HB2	1:F:33:GLU:OE1	2.19	0.43
1:C:71:ILE:O	1:C:75:ILE:HG13	2.19	0.43
1:D:73:LYS:HB2	1:D:73:LYS:HE2	1.70	0.43
1:A:228:LYS:HB2	1:A:228:LYS:HE3	1.72	0.43
1:C:171:ILE:HG13	1:C:201:ILE:HG23	2.00	0.43
1:D:115:LEU:HD13	2:D:300:FAD:N5	2.34	0.43
1:D:131:SER:O	1:D:135:GLU:HG3	2.19	0.43
1:C:256:MET:SD	1:C:287[B]:MET:SD	3.17	0.42
1:F:43:ILE:HD13	1:F:75:ILE:HG12	2.00	0.42
1:E:103:ASP:O	1:E:107:SER:HB2	2.18	0.42
1:E:146:SER:HA	1:E:177:HIS:O	2.18	0.42
1:F:88:THR:HA	1:F:115:LEU:O	2.19	0.42
1:F:135:GLU:HG2	1:F:173:ALA:HB1	2.00	0.42
1:B:51:PRO:HD2	1:B:81:LEU:HD21	2.00	0.42
1:E:258:MET:HE2	1:E:258:MET:HB3	1.56	0.42
1:E:256:MET:HE2	1:E:287:MET:HG3	2.01	0.42
1:D:220:LYS:HG2	1:D:221:MET:N	2.35	0.42
1:F:280:LEU:O	1:F:284:ILE:HG13	2.20	0.42
1:A:146:SER:HA	1:A:177:HIS:HB3	2.02	0.42
1:C:33:GLU:HA	1:C:36:GLU:HB2	2.01	0.42
1:D:116:ARG:HD2	1:D:129:TYR:HA	2.01	0.42
1:F:222:ALA:HA	1:F:225:THR:OG1	2.20	0.42
1:D:10:LEU:HD13	1:D:264:ARG:HB2	2.01	0.41
1:F:44:HIS:HA	1:F:47:LYS:HD3	2.02	0.41
1:A:7:ILE:HG13	1:D:261:ILE:HD11	2.01	0.41
1:D:130:ALA:O	1:D:134:VAL:HG23	2.19	0.41
1:E:42:SER:OG	1:E:276:ASN:O	2.34	0.41
1:F:14:ILE:HD11	1:F:260:LYS:HG2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:115:LEU:HD22	2:F:300:FAD:C9A	2.50	0.41
1:B:88:THR:HG23	1:B:91:ASP:OD2	2.20	0.41
1:F:182:PHE:CE1	1:F:227:VAL:HG11	2.54	0.41
1:E:30:PRO:HB2	1:E:35:MET:HB3	2.03	0.41
1:A:64:GLU:O	1:A:67:ARG:HB3	2.20	0.41
1:F:115:LEU:HD13	2:F:300:FAD:C4X	2.50	0.41
1:C:235:LYS:NZ	1:E:15:ALA:O	2.53	0.41
1:E:39:LEU:HG	1:E:276:ASN:CG	2.46	0.41
1:E:264:ARG:HA	1:E:264:ARG:HD2	1.77	0.41
1:D:30:PRO:HD3	1:D:39:LEU:HD22	2.03	0.41
1:D:104:TYR:CD1	1:D:109:ILE:HD13	2.56	0.41
1:E:44:HIS:HA	1:E:47:LYS:HE2	2.03	0.41
1:F:90:ILE:HD13	1:F:90:ILE:HA	1.77	0.41
1:A:30:PRO:HG2	1:A:67:ARG:NH2	2.35	0.40
1:D:182:PHE:CE1	1:D:227:VAL:HG11	2.57	0.40
1:A:115:LEU:HD13	2:A:300:FAD:N5	2.35	0.40
1:B:47:LYS:HD3	1:B:79:THR:HB	2.02	0.40
1:C:155:PRO:HG3	1:C:226:ASN:HB2	2.04	0.40
1:D:145:ILE:HB	1:D:175:ALA:HA	2.03	0.40
1:B:256:MET:O	1:B:260:LYS:HB2	2.21	0.40
1:E:10:LEU:HD21	1:E:260:LYS:HB3	2.03	0.40
1:E:115:LEU:HD13	2:E:300:FAD:N5	2.37	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	281/295 (95%)	274 (98%)	5 (2%)	2 (1%)	18 41
1	B	256/295 (87%)	246 (96%)	9 (4%)	1 (0%)	30 54
1	C	283/295 (96%)	272 (96%)	10 (4%)	1 (0%)	30 54

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	285/295 (97%)	275 (96%)	8 (3%)	2 (1%)	18	41
1	E	288/295 (98%)	277 (96%)	10 (4%)	1 (0%)	36	60
1	F	279/295 (95%)	269 (96%)	9 (3%)	1 (0%)	30	54
All	All	1672/1770 (94%)	1613 (96%)	51 (3%)	8 (0%)	24	48

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	153	VAL
1	B	153	VAL
1	D	153	VAL
1	F	153	VAL
1	C	153	VAL
1	E	153	VAL
1	A	60	ALA
1	D	127	PRO

### 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	246/253 (97%)	227 (92%)	19 (8%)	12	30
1	B	227/253 (90%)	207 (91%)	20 (9%)	9	23
1	C	247/253 (98%)	233 (94%)	14 (6%)	18	43
1	D	248/253 (98%)	232 (94%)	16 (6%)	15	37
1	E	250/253 (99%)	233 (93%)	17 (7%)	14	35
1	F	243/253 (96%)	221 (91%)	22 (9%)	9	22
All	All	1461/1518 (96%)	1353 (93%)	108 (7%)	13	32

All (108) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	TYR
1	A	18	ASN
1	A	35	MET
1	A	36	GLU
1	A	58	TYR
1	A	66	ASP
1	A	115	LEU
1	A	119	GLU
1	A	135	GLU
1	A	186	ILE
1	A	188	ASN
1	A	219	GLN
1	A	223	SER
1	A	235	LYS
1	A	259	VAL
1	A	265	GLU
1	A	277	ARG
1	A	280	LEU
1	A	287	MET
1	B	34	LYS
1	B	38	LEU
1	B	48	VAL
1	B	65	ARG
1	B	76	LYS
1	B	79	THR
1	B	93	THR
1	B	111	ARG
1	B	115	LEU
1	B	139	SER
1	B	145	ILE
1	B	147	VAL
1	B	169	ARG
1	B	209	ILE
1	B	218	LEU
1	B	228	LYS
1	B	245	THR
1	B	253	SER
1	B	260	LYS
1	B	287	MET
1	C	6	GLU
1	C	19	LYS
1	C	20	LYS
1	C	32	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	77	GLN
1	C	115	LEU
1	C	147	VAL
1	C	187	GLU
1	C	220	LYS
1	C	235	LYS
1	C	245	THR
1	C	277	ARG
1	C	287[A]	MET
1	C	287[B]	MET
1	D	7	ILE
1	D	19	LYS
1	D	31	LYS
1	D	66	ASP
1	D	67	ARG
1	D	88	THR
1	D	107	SER
1	D	115	LEU
1	D	199	ILE
1	D	202	ASP
1	D	220	LYS
1	D	227	VAL
1	D	253	SER
1	D	259	VAL
1	D	277	ARG
1	D	287	MET
1	E	6	GLU
1	E	7	ILE
1	E	35	MET
1	E	39	LEU
1	E	41	ASP
1	E	47	LYS
1	E	65	ARG
1	E	115	LEU
1	E	119	GLU
1	E	198	SER
1	E	209	ILE
1	E	212	VAL
1	E	217	GLN
1	E	218	LEU
1	E	223	SER
1	E	280	LEU

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Mol	Chain	Res	Type
1	E	287	MET
1	F	9	THR
1	F	14	ILE
1	F	33	GLU
1	F	36	GLU
1	F	38	LEU
1	F	48	VAL
1	F	76	LYS
1	F	78	GLU
1	F	90	ILE
1	F	115	LEU
1	F	119	GLU
1	F	152	GLU
1	F	158	LYS
1	F	198	SER
1	F	206	VAL
1	F	212	VAL
1	F	213	THR
1	F	217	GLN
1	F	227	VAL
1	F	259	VAL
1	F	263	SER
1	F	280	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	11	ASN
1	A	18	ASN
1	A	77	GLN
1	A	219	GLN
1	B	181	GLN
1	B	217	GLN
1	C	44	HIS
1	C	61	ASN
1	C	248	ASN
1	D	188	ASN
1	D	219	GLN
1	D	268	ASN
1	E	11	ASN
1	E	12	GLN
1	E	61	ASN

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Mol	Chain	Res	Type
1	E	69	HIS
1	E	217	GLN
1	E	219	GLN
1	E	248	ASN
1	F	32	ASN
1	F	44	HIS

### 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 [i](#)

23 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	FAD	C	300	-	58,58,58	0.34	0	85,89,89	0.46	0
5	EDO	A	303	-	3,3,3	0.68	0	2,2,2	0.72	0
3	SO4	B	301	-	4,4,4	0.64	0	6,6,6	1.13	0
4	ACY	F	301	-	3,3,3	0.83	0	3,3,3	0.95	0
6	FMT	B	303	-	2,2,2	0.58	0	1,1,1	0.25	0
4	ACY	A	302	-	3,3,3	0.82	0	3,3,3	0.74	0
6	FMT	D	304	-	2,2,2	0.60	0	1,1,1	0.25	0
4	ACY	F	302	-	3,3,3	0.76	0	3,3,3	0.94	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	FAD	F	300	-	58,58,58	0.34	0	85,89,89	0.56	0
2	FAD	A	300	-	58,58,58	0.43	1 (1%)	85,89,89	0.50	0
2	FAD	D	300	-	58,58,58	0.62	1 (1%)	85,89,89	0.55	1 (1%)
4	ACY	B	302	-	3,3,3	0.79	0	3,3,3	0.98	0
6	FMT	C	302	-	2,2,2	0.44	0	1,1,1	0.11	0
2	FAD	E	300	-	58,58,58	0.59	1 (1%)	85,89,89	0.56	1 (1%)
5	EDO	F	303	-	3,3,3	0.55	0	2,2,2	0.33	0
6	FMT	C	301	-	2,2,2	0.63	0	1,1,1	0.25	0
4	ACY	D	301	-	3,3,3	0.86	0	3,3,3	0.83	0
4	ACY	E	301	-	3,3,3	0.84	0	3,3,3	0.83	0
4	ACY	D	303	-	3,3,3	0.76	0	3,3,3	0.96	0
3	SO4	A	301	-	4,4,4	0.40	0	6,6,6	0.90	0
4	ACY	C	303	-	3,3,3	0.84	0	3,3,3	0.66	0
2	FAD	B	300	-	58,58,58	0.33	0	85,89,89	0.47	0
4	ACY	D	302	-	3,3,3	0.83	0	3,3,3	0.84	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FAD	C	300	-	-	5/34/50/50	0/6/6/6
2	FAD	F	300	-	-	1/34/50/50	0/6/6/6
5	EDO	A	303	-	-	1/1/1/1	-
2	FAD	A	300	-	-	8/34/50/50	0/6/6/6
2	FAD	D	300	-	-	5/34/50/50	0/6/6/6
2	FAD	E	300	-	-	5/34/50/50	0/6/6/6
5	EDO	F	303	-	-	1/1/1/1	-
2	FAD	B	300	-	-	6/34/50/50	0/6/6/6

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	300	FAD	P-O3P	4.06	1.63	1.59
2	E	300	FAD	P-O3P	3.63	1.63	1.59
2	A	300	FAD	P-O3P	2.35	1.62	1.59

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	300	FAD	C4'-C3'-C2'	2.57	117.84	113.57
2	E	300	FAD	O4'-C4'-C3'	-2.11	104.30	109.25

There are no chirality outliers.

All (32) torsion outliers are listed below:

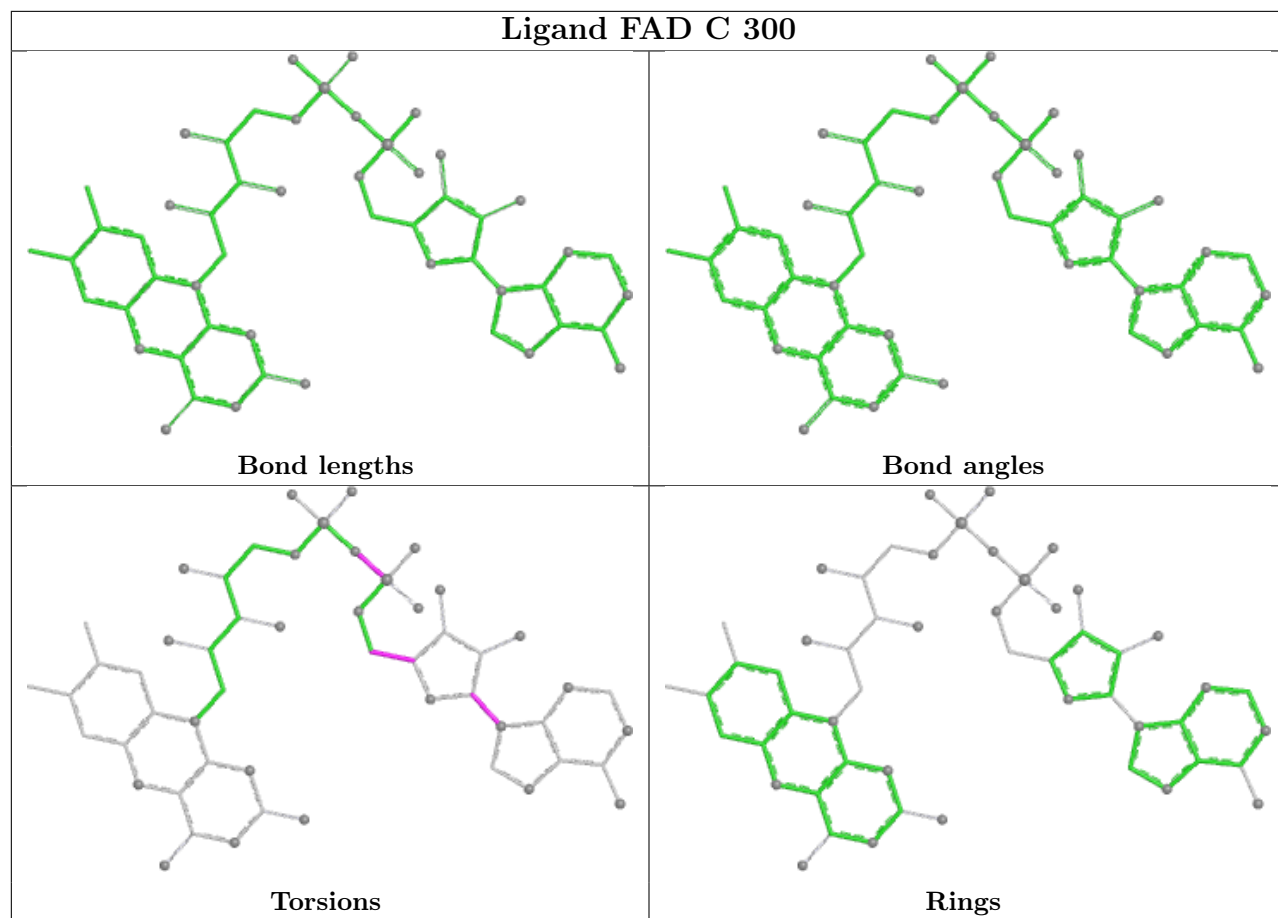
Mol	Chain	Res	Type	Atoms
2	A	300	FAD	C1'-C2'-C3'-C4'
2	B	300	FAD	C5B-O5B-PA-O1A
2	B	300	FAD	C5B-O5B-PA-O3P
2	B	300	FAD	C3'-C4'-C5'-O5'
2	D	300	FAD	C5B-O5B-PA-O1A
2	D	300	FAD	C5B-O5B-PA-O3P
2	A	300	FAD	O2'-C2'-C3'-C4'
5	A	303	EDO	O1-C1-C2-O2
2	C	300	FAD	O4B-C4B-C5B-O5B
2	B	300	FAD	P-O3P-PA-O1A
2	C	300	FAD	P-O3P-PA-O1A
2	E	300	FAD	P-O3P-PA-O1A
2	B	300	FAD	O4'-C4'-C5'-O5'
2	C	300	FAD	C3B-C4B-C5B-O5B
2	A	300	FAD	C1'-C2'-C3'-O3'
2	A	300	FAD	P-O3P-PA-O1A
2	A	300	FAD	O2'-C2'-C3'-O3'
2	D	300	FAD	C5B-O5B-PA-O2A
2	E	300	FAD	C5B-O5B-PA-O1A
2	E	300	FAD	C5B-O5B-PA-O2A
2	E	300	FAD	C5B-O5B-PA-O3P
2	C	300	FAD	C2B-C1B-N9A-C8A
2	A	300	FAD	O4B-C4B-C5B-O5B
2	E	300	FAD	P-O3P-PA-O2A
5	F	303	EDO	O1-C1-C2-O2
2	C	300	FAD	P-O3P-PA-O2A
2	D	300	FAD	P-O3P-PA-O1A
2	A	300	FAD	C3B-C4B-C5B-O5B
2	B	300	FAD	P-O3P-PA-O2A
2	D	300	FAD	P-O3P-PA-O2A
2	F	300	FAD	P-O3P-PA-O2A
2	A	300	FAD	C2B-C1B-N9A-C8A

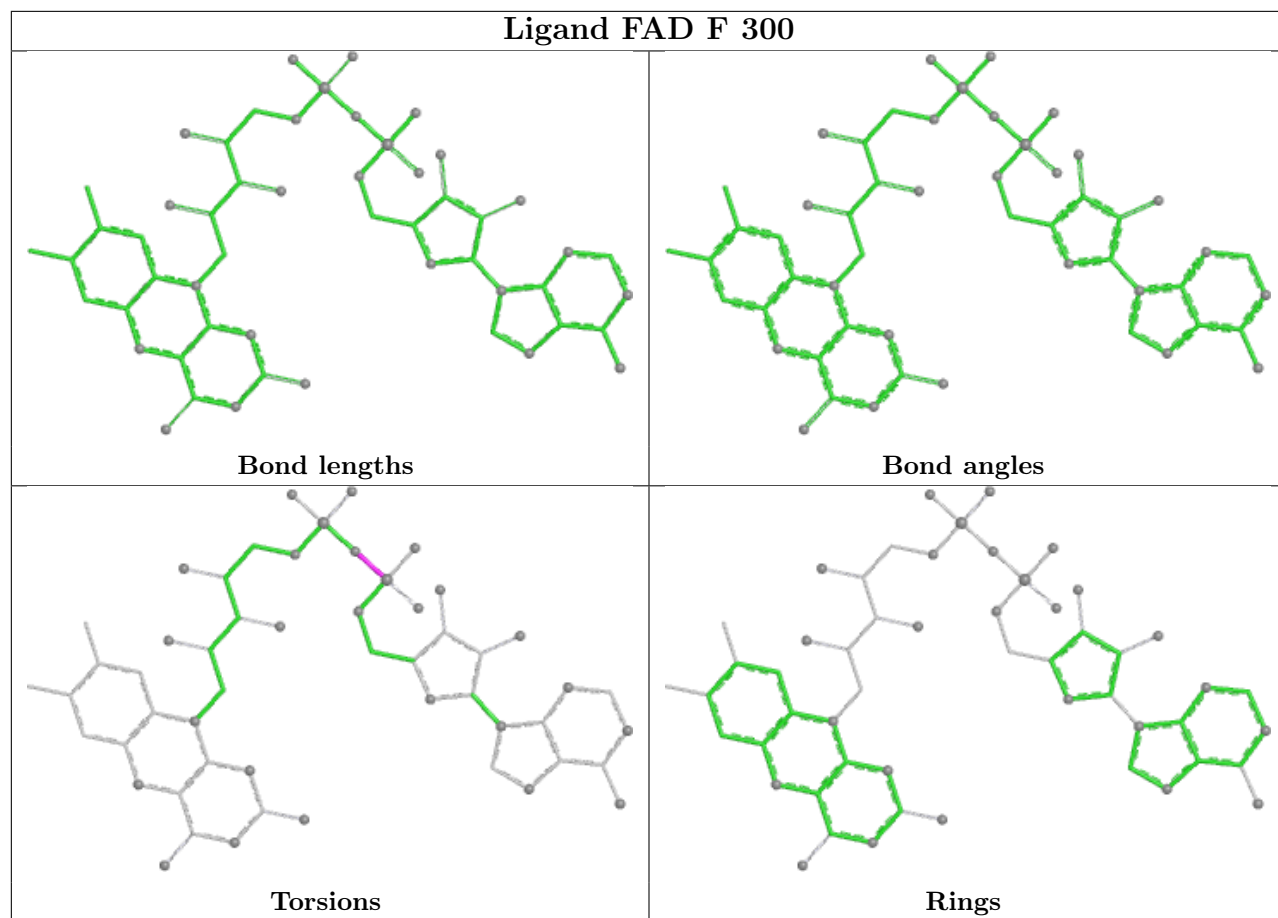
There are no ring outliers.

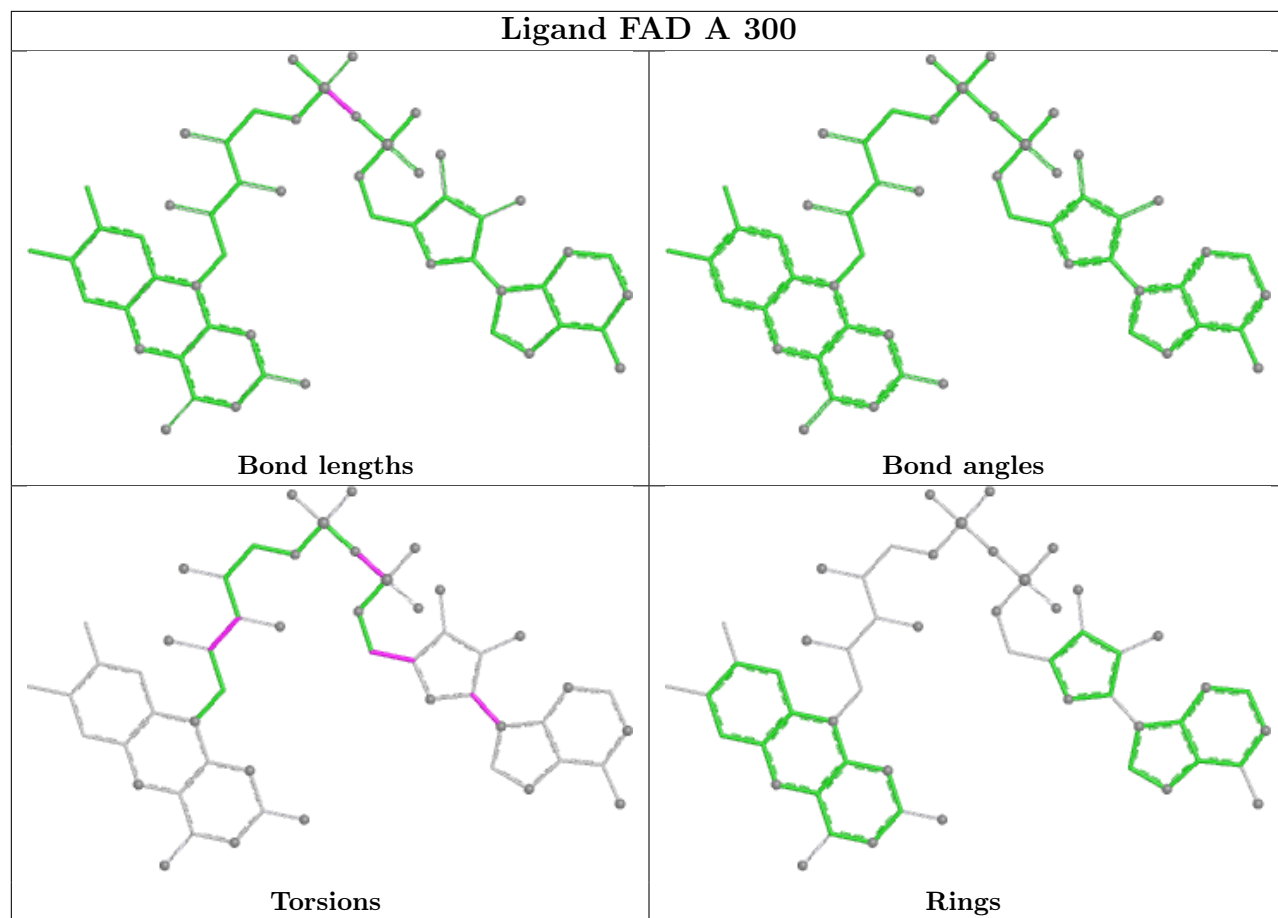
9 monomers are involved in 17 short contacts:

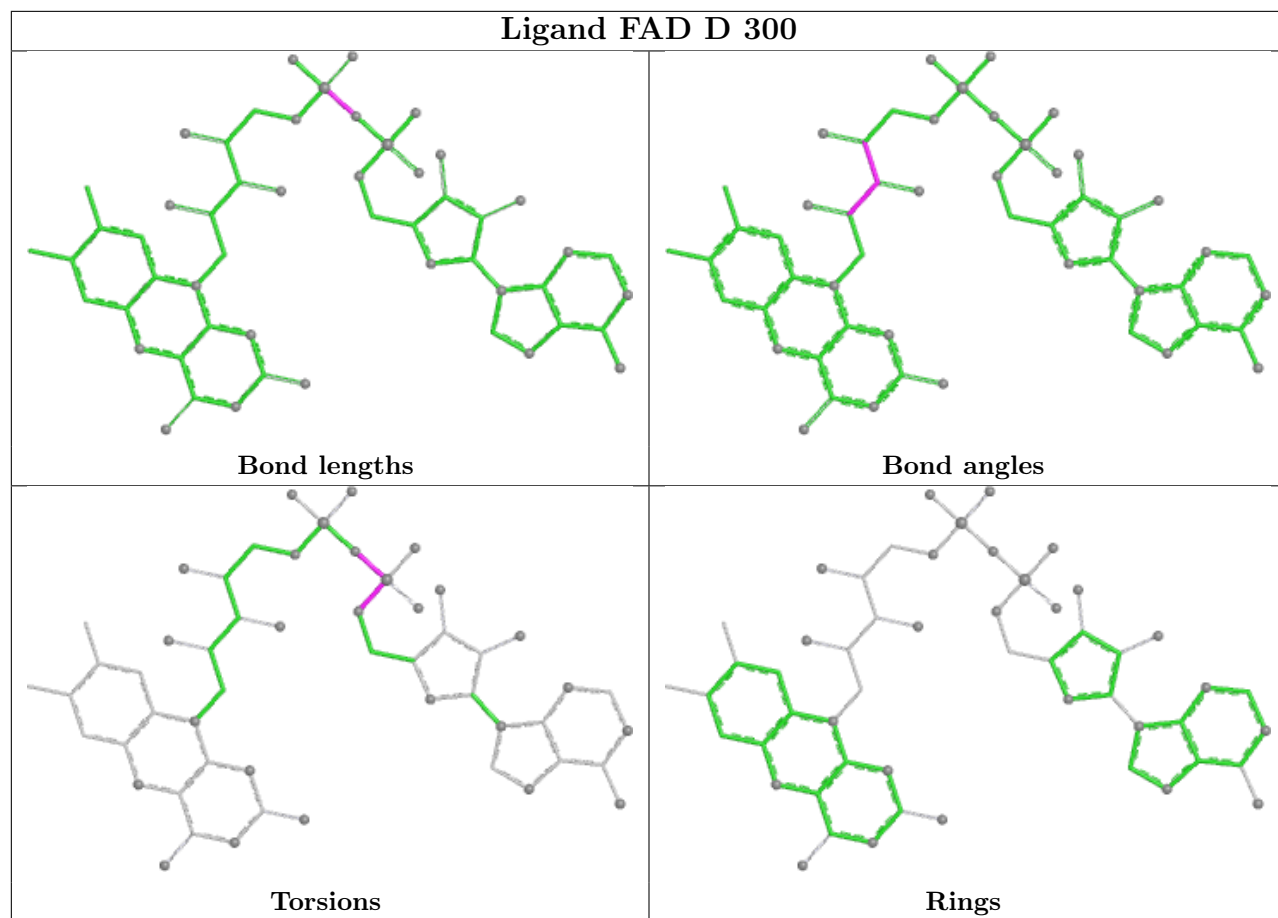
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	300	FAD	2	0
6	D	304	FMT	1	0
2	F	300	FAD	3	0
2	A	300	FAD	2	0
2	D	300	FAD	2	0
2	E	300	FAD	4	0
5	F	303	EDO	1	0
4	C	303	ACY	1	0
2	B	300	FAD	1	0

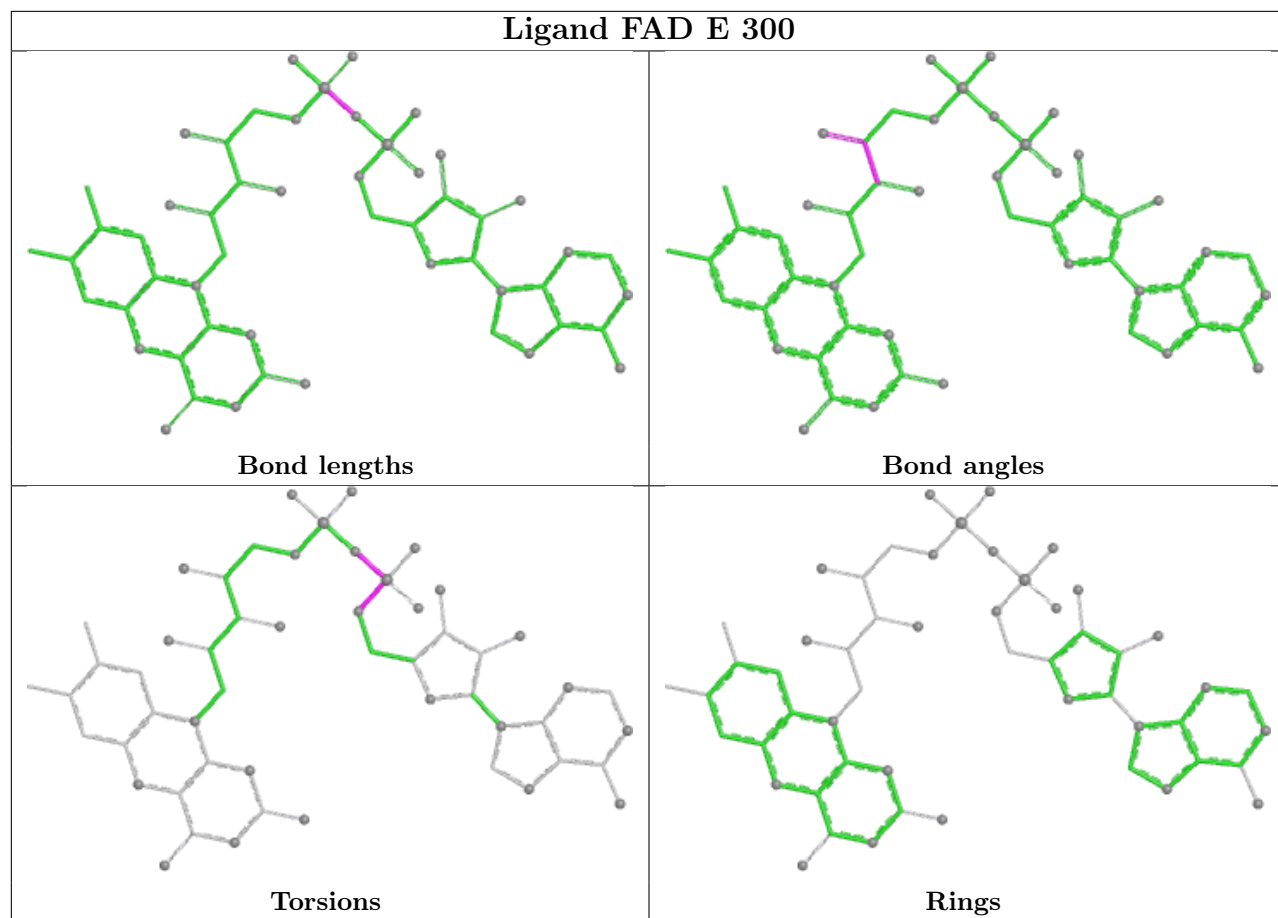
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

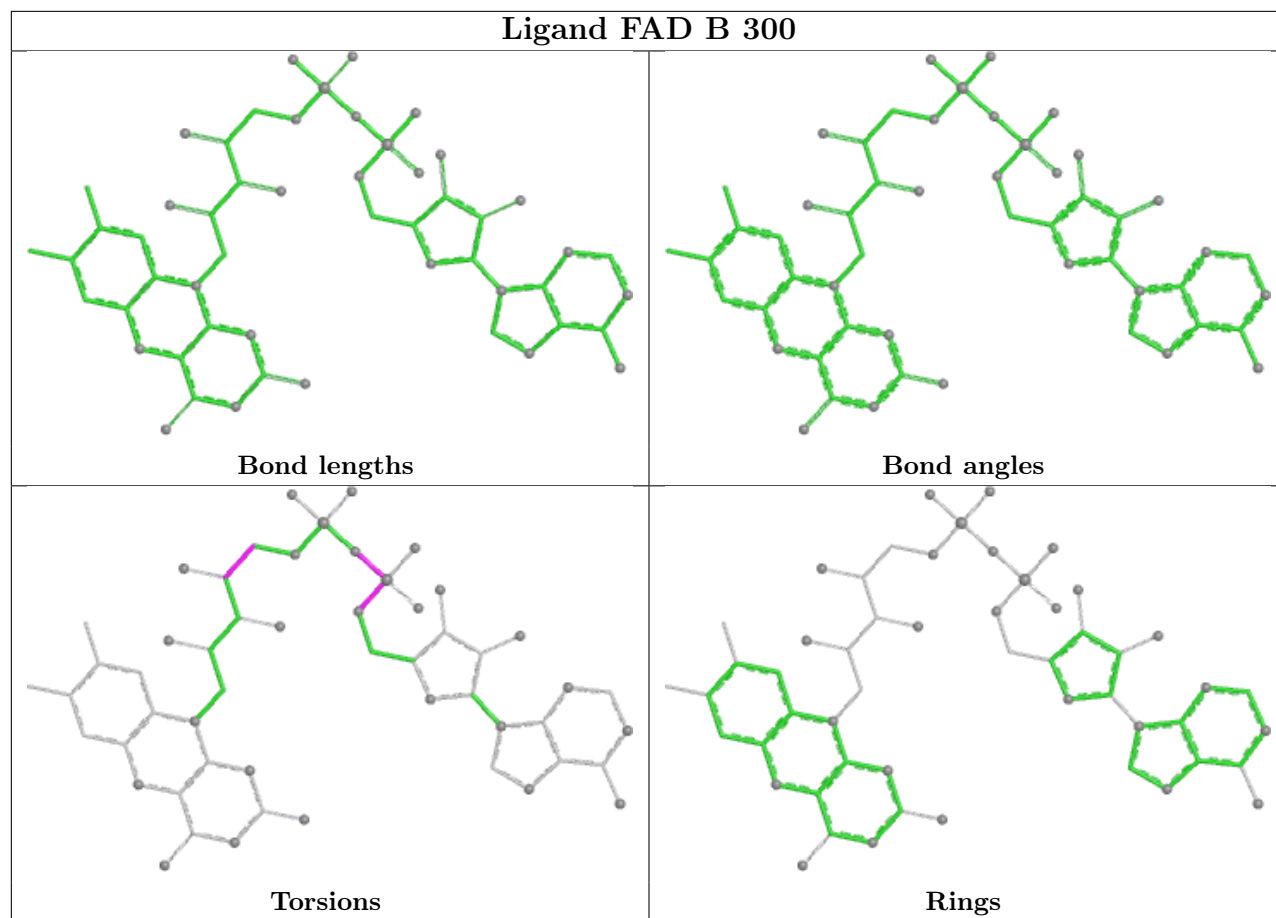












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	285/295 (96%)	-0.47	1 (0%) 88 87	56, 80, 141, 182	0
1	B	262/295 (88%)	-0.15	6 (2%) 61 58	56, 91, 133, 159	0
1	C	286/295 (96%)	-0.29	3 (1%) 79 78	41, 75, 133, 164	1 (0%)
1	D	289/295 (97%)	-0.37	6 (2%) 63 61	56, 82, 138, 193	0
1	E	292/295 (98%)	-0.33	5 (1%) 69 67	58, 91, 155, 192	0
1	F	282/295 (95%)	-0.37	6 (2%) 63 61	31, 79, 121, 221	1 (0%)
All	All	1696/1770 (95%)	-0.33	27 (1%) 70 68	31, 82, 141, 221	2 (0%)

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	127	PRO	4.5
1	C	209	ILE	3.7
1	B	56	VAL	3.4
1	B	114	ALA	3.0
1	A	7	ILE	2.9
1	F	10	LEU	2.8
1	D	113	VAL	2.7
1	E	0	ALA	2.7
1	F	126	LYS	2.6
1	D	7	ILE	2.6
1	C	208	GLY	2.6
1	D	5	LYS	2.5
1	D	60	ALA	2.5
1	B	225	THR	2.5
1	E	124	ALA	2.5
1	D	287	MET	2.4
1	D	2	SER	2.4
1	C	212	VAL	2.4
1	B	58	TYR	2.4

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Mol	Chain	Res	Type	RSRZ
1	E	7	ILE	2.4
1	B	57	THR	2.3
1	E	126	LYS	2.3
1	F	127	PRO	2.2
1	E	224	PHE	2.2
1	F	7	ILE	2.1
1	F	13	HIS	2.1
1	F	125	LYS	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, 95<sup>th</sup> 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.

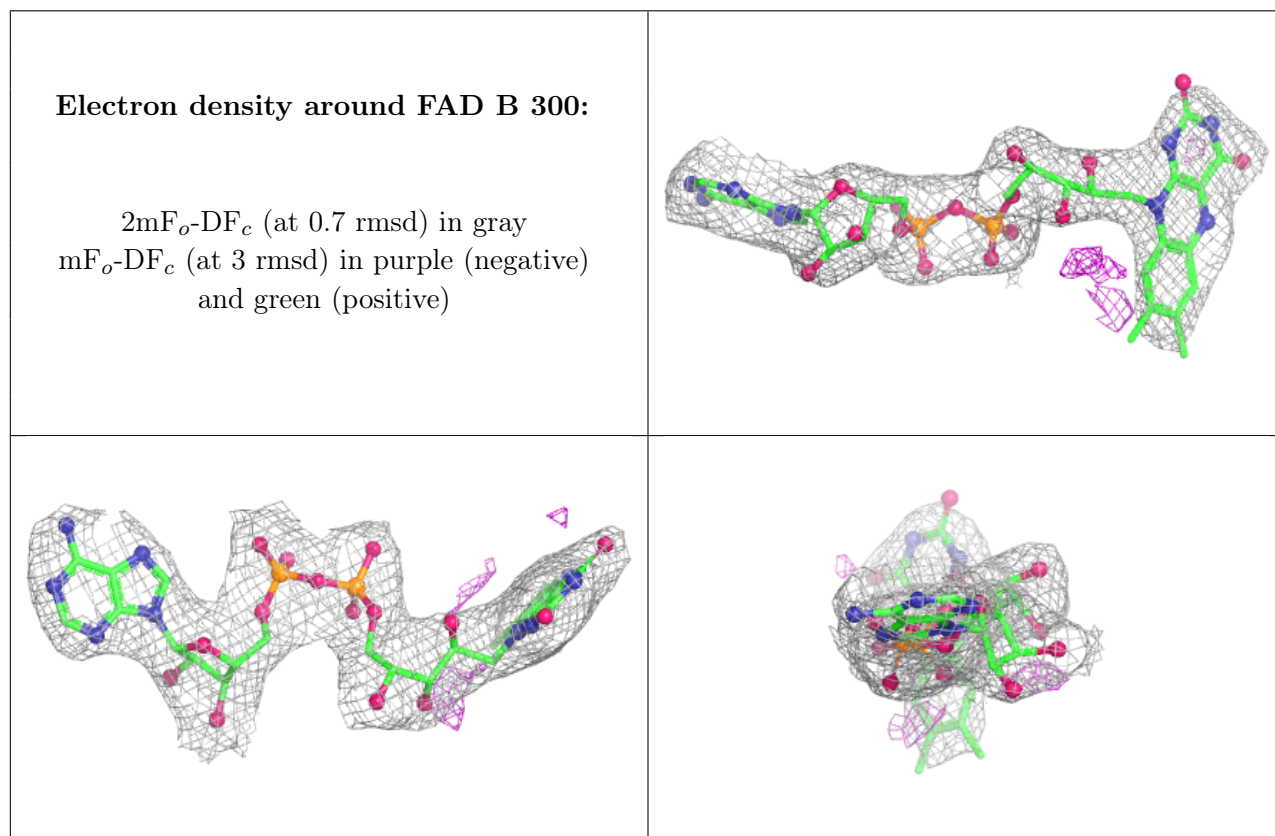
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	ACY	F	302	4/4	0.62	0.14	114,116,118,120	0
3	SO4	B	301	5/5	0.63	0.09	157,161,164,167	0
4	ACY	E	301	4/4	0.79	0.13	89,89,90,91	0
4	ACY	D	303	4/4	0.79	0.13	58,75,76,81	0
5	EDO	A	303	4/4	0.79	0.19	100,102,106,111	0
4	ACY	C	303	4/4	0.85	0.11	96,99,103,104	0
4	ACY	D	302	4/4	0.85	0.18	110,112,114,114	0
4	ACY	D	301	4/4	0.86	0.12	90,102,102,105	0
3	SO4	A	301	5/5	0.89	0.06	144,144,146,146	0
4	ACY	A	302	4/4	0.91	0.11	87,97,99,101	0
4	ACY	F	301	4/4	0.91	0.13	84,85,86,87	0
4	ACY	B	302	4/4	0.92	0.10	93,96,98,100	0
5	EDO	F	303	4/4	0.94	0.20	82,84,91,95	0
6	FMT	C	301	3/3	0.94	0.17	85,85,90,100	0
2	FAD	B	300	53/53	0.95	0.07	72,87,105,107	0

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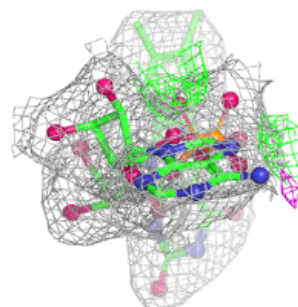
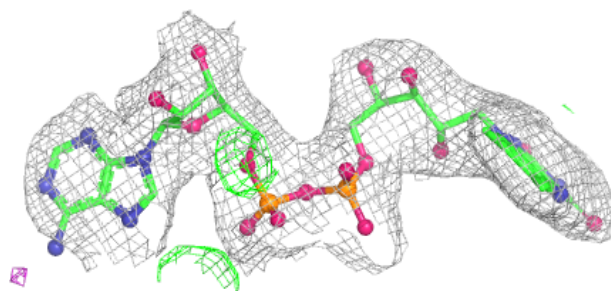
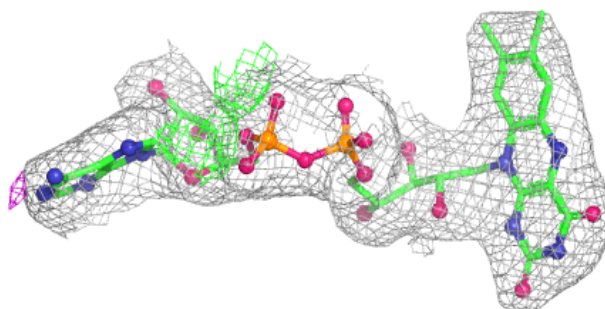
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
6	FMT	C	302	3/3	0.95	0.21	115,115,120,121	0
6	FMT	B	303	3/3	0.96	0.12	95,95,98,98	0
2	FAD	E	300	53/53	0.96	0.06	44,64,89,94	0
2	FAD	A	300	53/53	0.96	0.05	60,77,106,109	0
6	FMT	D	304	3/3	0.96	0.22	90,90,95,101	0
2	FAD	C	300	53/53	0.97	0.05	50,72,86,90	0
2	FAD	D	300	53/53	0.97	0.06	48,63,90,97	0
2	FAD	F	300	53/53	0.98	0.05	57,65,83,90	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.

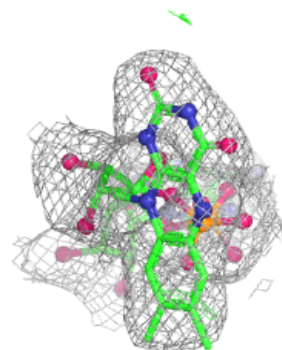
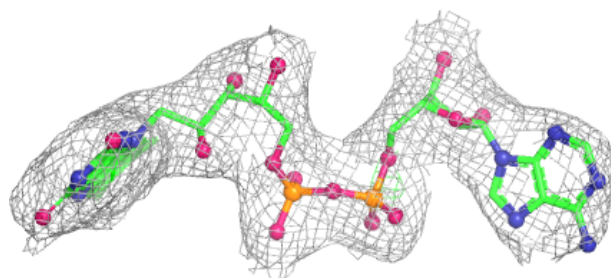
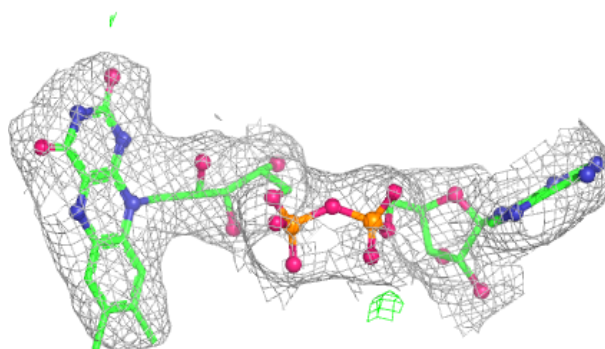


**Electron density around FAD E 300:**

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

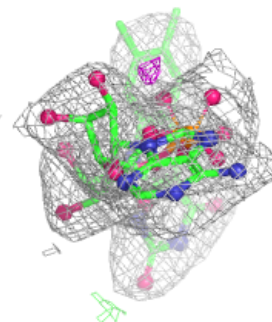
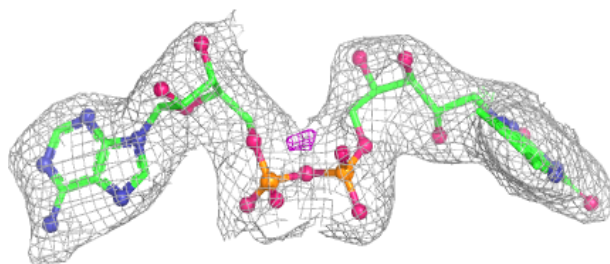
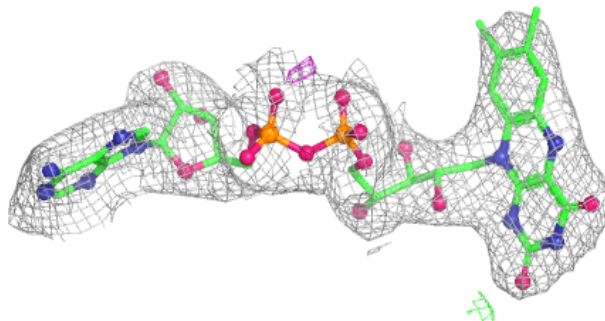
**Electron density around FAD A 300:**

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

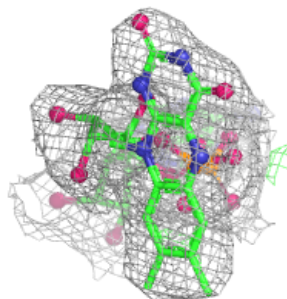
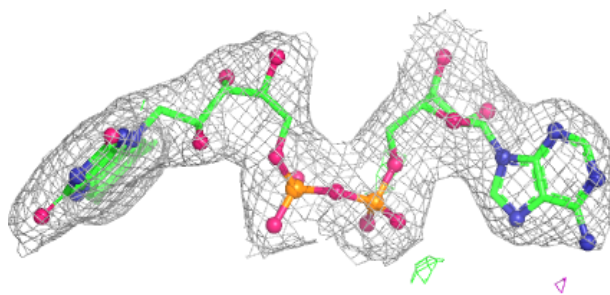
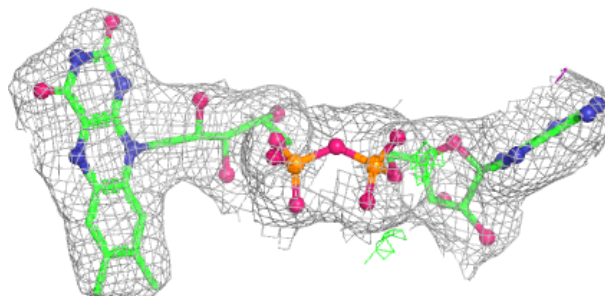


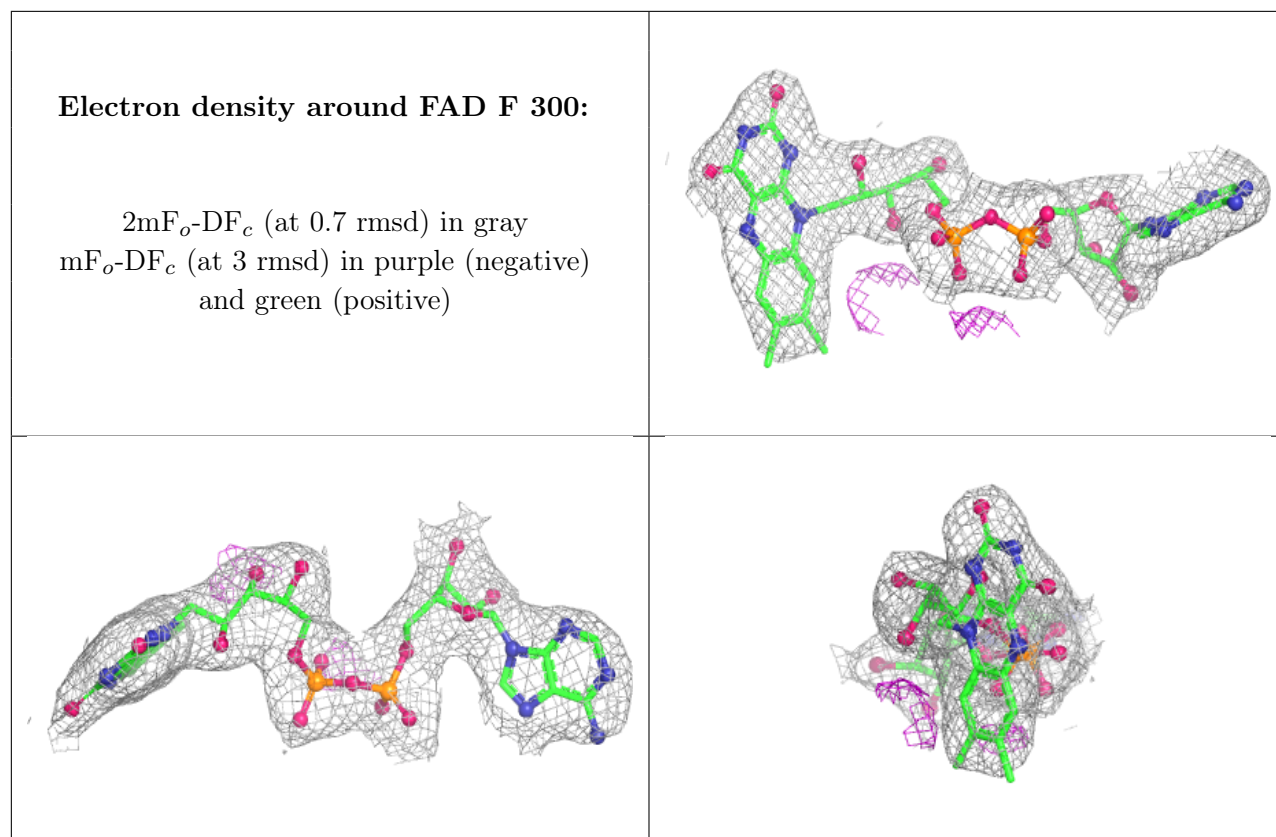
**Electron density around FAD C 300:**

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

**Electron density around FAD D 300:**

$2mF_o-DF_c$  (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.