Full wwPDB X-ray Structure Validation Report (i)

Nov 19, 2024 – 04:38 PM EST

PDB ID	:	9E0D
Title	:	Structure of proline utilization A complexed with piperonyl alcohol
Authors	:	Tanner, J.J.; Meeks, K.R.
Deposited on	:	2024-10-17
Resolution	:	1.33 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 (i) 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 (i)) were used in the production of this report:

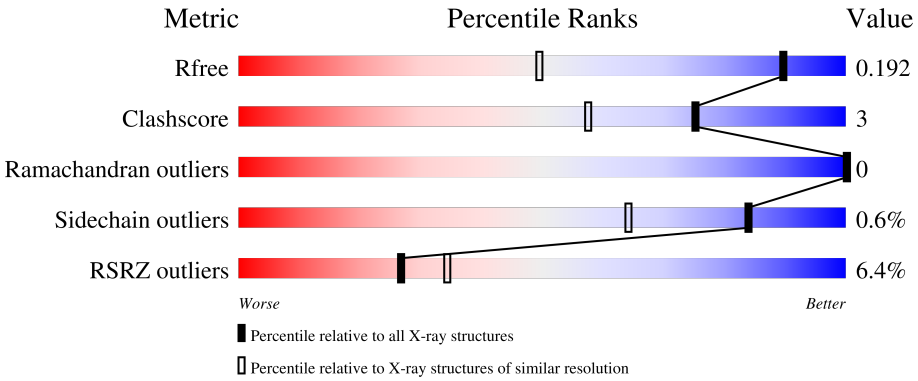
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 1.33 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1904 (1.36-1.32)
Clashscore	180529	2038 (1.36-1.32)
Ramachandran outliers	177936	2016 (1.36-1.32)
Sidechain outliers	177891	2016 (1.36-1.32)
RSRZ outliers	164620	1903 (1.36-1.32)

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 <=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	1235	5% 92% 7%
1	B	1235	7% 91% 7%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	FMT	B	1302	-	-	X	-

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 20684 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.

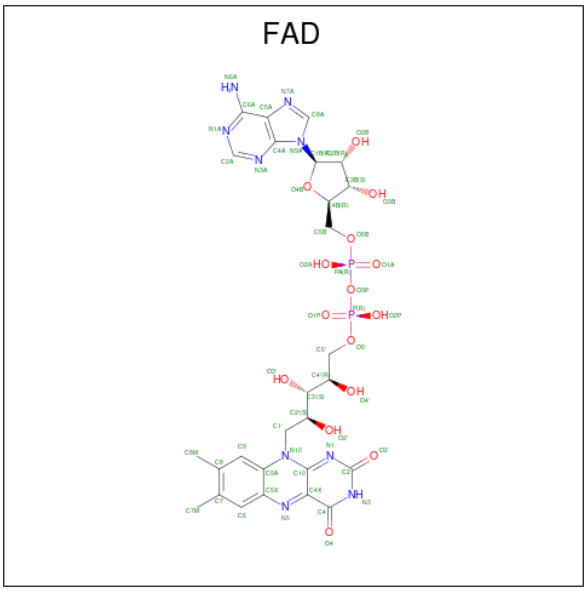
- Molecule 1 is a protein called Bifunctional protein PutA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1214	Total	C	N	O	S	0	23	0
			9032	5698	1607	1692	35			
1	B	1207	Total	C	N	O	S	0	21	0
			8955	5645	1606	1669	35			

There are 4 discrepancies between the modelled and reference sequences:

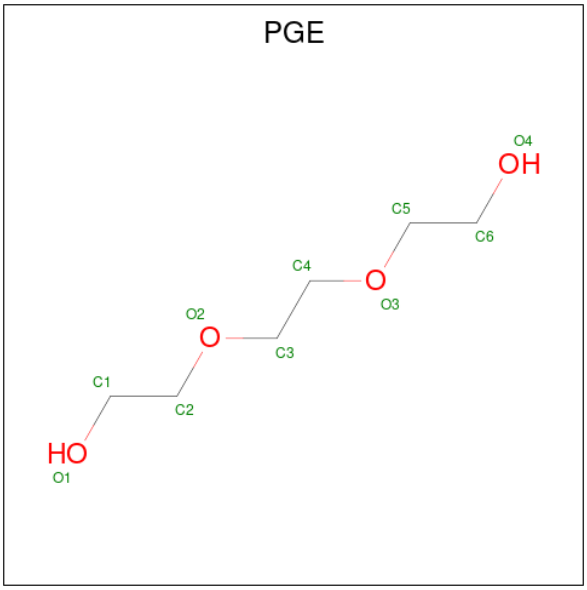
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	SER	-	expression tag	UNP F7X6I3
A	0	MET	-	expression tag	UNP F7X6I3
B	-1	SER	-	expression tag	UNP F7X6I3
B	0	MET	-	expression tag	UNP F7X6I3

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).



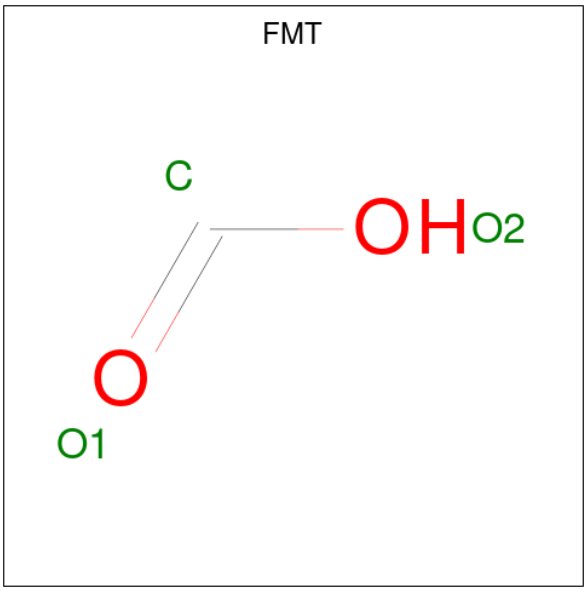
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

- Molecule 3 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).



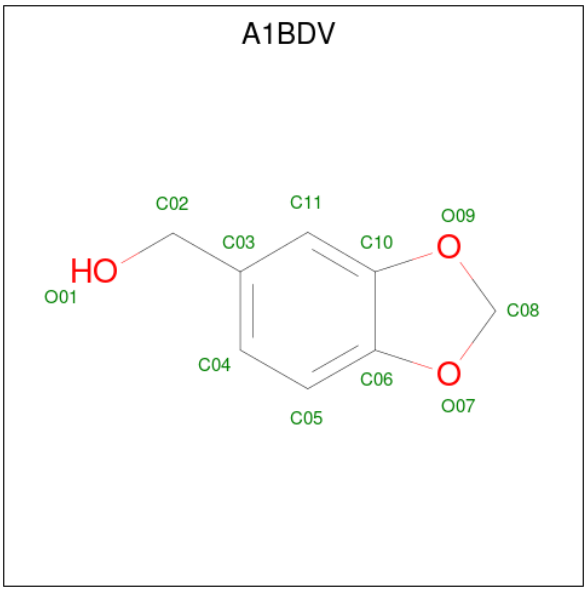
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	O		0	0
			10	6	4			
3	B	1	Total	C	O		0	0
			10	6	4			

- Molecule 4 is FORMIC ACID (three-letter code: FMT) (formula: CH_2O_2).



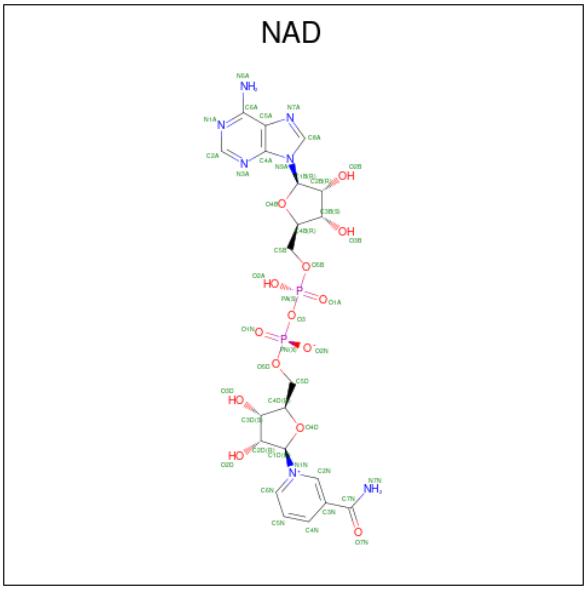
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 3 1 2	0	0
4	A	1	Total C O 3 1 2	0	0
4	B	1	Total C O 3 1 2	0	0
4	B	1	Total C O 3 1 2	0	0

- Molecule 5 is (2H-1,3-benzodioxol-5-yl)methanol (three-letter code: A1BDV) (formula: $C_8H_8O_3$) (labeled as "Ligand of Interest" by depositor).



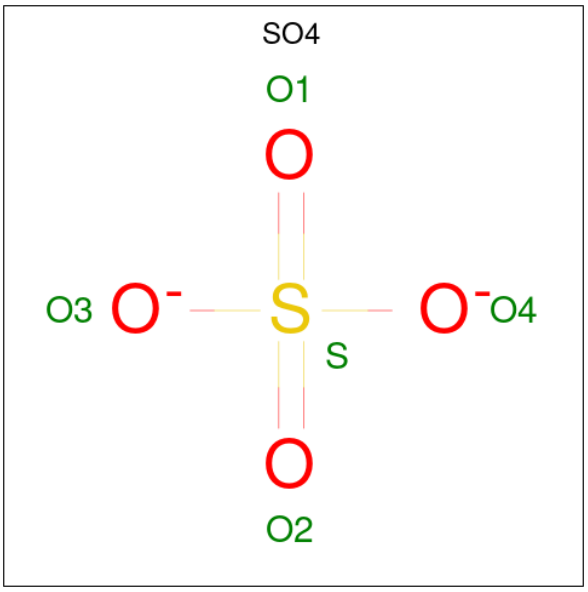
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			11	8	3		
5	B	1	Total	C	O	0	0
			11	8	3		

- Molecule 6 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	A	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
6	B	1	Total	C	N	O	P	0	0
			44	21	7	14	2		

- Molecule 7 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

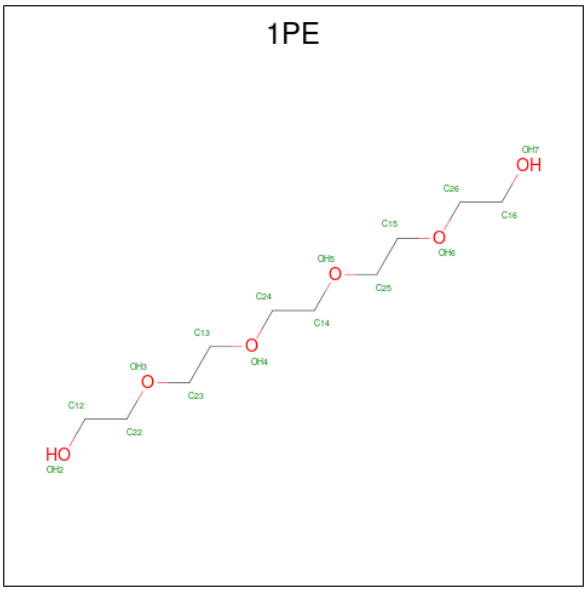


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total O S 5 4 1	0	0
7	A	1	Total O S 5 4 1	0	0
7	A	1	Total O S 5 4 1	0	0
7	A	1	Total O S 5 4 1	0	0
7	A	1	Total O S 5 4 1	0	0
7	B	1	Total O S 5 4 1	0	0

- Molecule 8 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

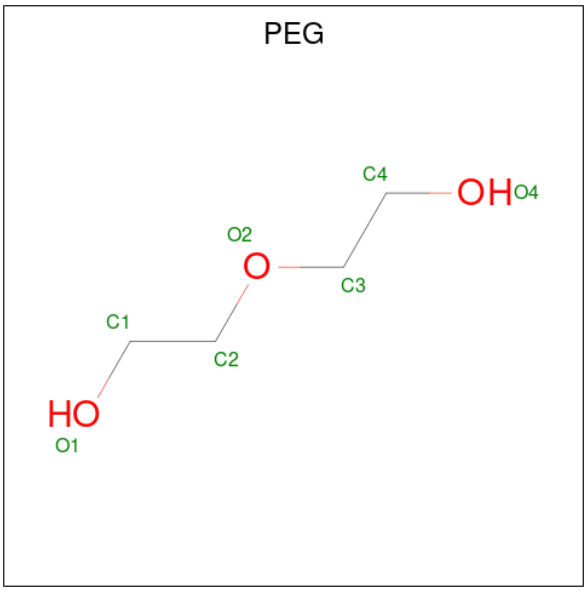
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total Mg 1 1	0	0
8	B	1	Total Mg 1 1	0	0

- Molecule 9 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula: $C_{10}H_{22}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	B	1	Total C O 16 10 6	0	0

- Molecule 10 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	B	1	Total C O 7 4 3	0	0
10	B	1	Total C O 7 4 3	0	0

- Molecule 11 is water.

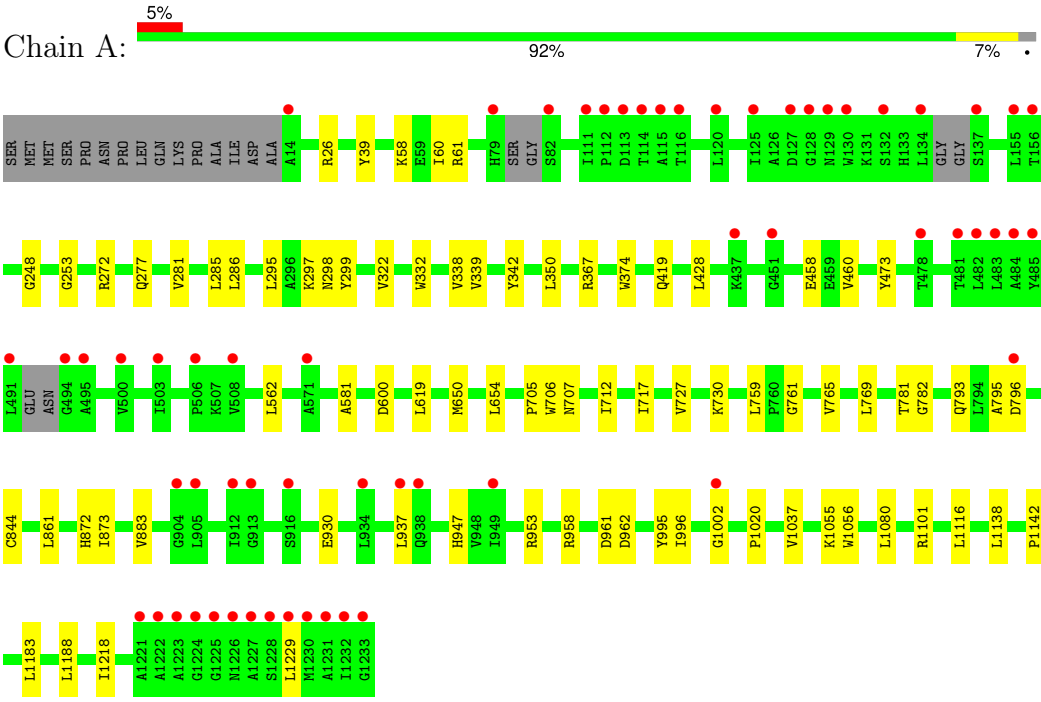
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	1200	Total O 1200 1200	0	0
11	B	1187	Total O 1187 1187	0	3

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.

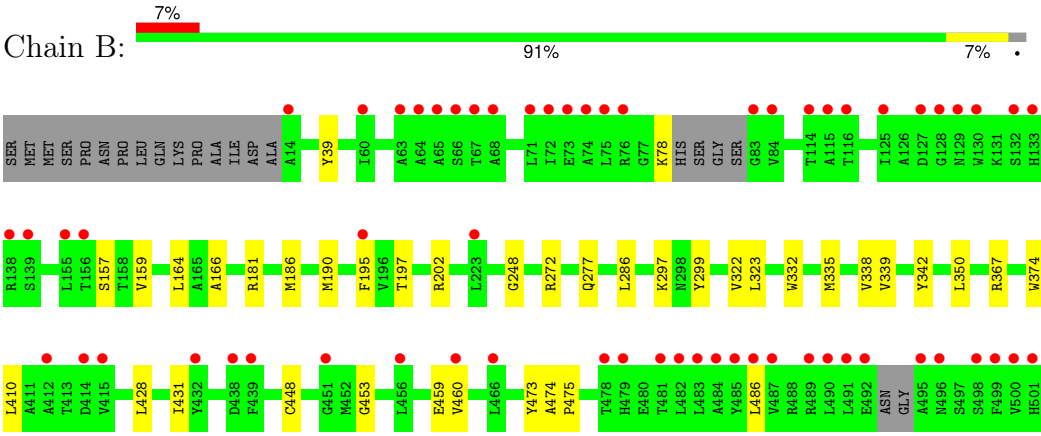
• Molecule 1: Bifunctional protein PutA

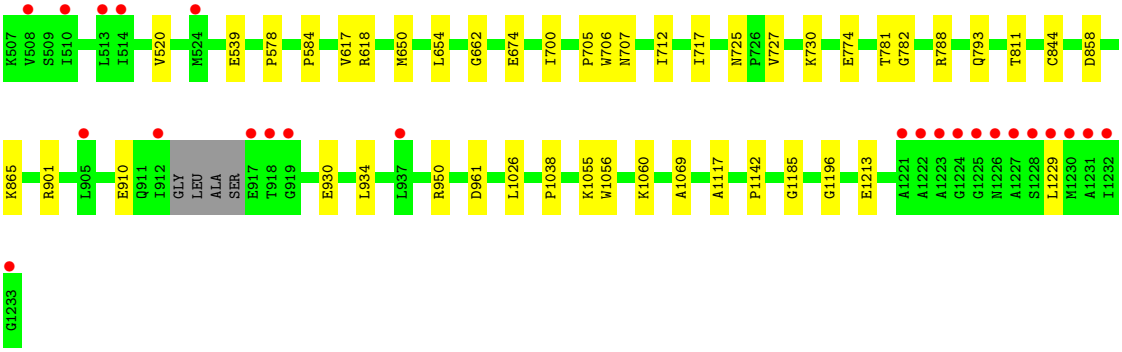
Chain A:



• Molecule 1: Bifunctional protein PutA

Chain B:




K507
V508
S509
I510
L513
I514
V520
M524
E539
P578
P584
V617
R618
M650
L654
G662
E674
I700
P705
W706
N707
I712
I717
N725
P726
V727
K730
E774
T781
G782
R788
Q793
T811
C844
D858

K865
R901
L905
E910
Q911
I912
GLY
LEU
ALA
SER
E917
T918
G919
E930
L934
L937
R950
D961
L1026
P1038
K1055
W1056
K1060
A1069
A1117
P1142
G1185
G1196
E1213
A1221
A1222
A1223
G1224
G1225
N1226
A1227
S1228
L1229
M1230
A1231
I1232

G1233

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	100.29Å 101.52Å 125.58Å 90.00° 106.38° 90.00°	Depositor
Resolution (Å)	46.78 – 1.33 46.78 – 1.33	Depositor EDS
% Data completeness (in resolution range)	93.2 (46.78-1.33) 93.8 (46.78-1.33)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.22 (at 1.33Å)	Xtriage
Refinement program	PHENIX 1.21rc1_5156	Depositor
R, R_{free}	0.175 , 0.193 0.173 , 0.192	Depositor DCC
R_{free} test set	27515 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å^2)	18.2	Xtriage
Anisotropy	0.339	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 35.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	20684	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.49% 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: 1PE, A1BDV, MG, FAD, FMT, NAD, PGE, SO4, PEG

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	0.33	0/9246	0.61	0/12590
1	B	0.34	0/9180	0.62	0/12498
All	All	0.34	0/18426	0.61	0/25088

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	9032	0	9031	53	0
1	B	8955	0	8942	54	0
2	A	53	0	31	3	0
2	B	53	0	31	2	0
3	A	10	0	14	0	0
3	B	10	0	14	0	0
4	A	6	0	2	1	0
4	B	6	0	2	4	0
5	A	11	0	0	0	0
5	B	11	0	0	0	0
6	A	44	0	26	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	44	0	26	2	0
7	A	25	0	0	0	0
7	B	5	0	0	0	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
9	B	16	0	22	0	0
10	B	14	0	20	2	0
11	A	1200	0	0	11	1
11	B	1187	0	0	7	1
All	All	20684	0	18161	107	1

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 3.

All (107) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:793:GLN:OE1	11:B:1401:HOH:O	2.04	0.76
1:A:473:TYR:HB2	2:A:1301:FAD:HM72	1.69	0.75
1:B:844:CYS:SG	6:B:1308:NAD:C4N	2.78	0.71
1:A:796:ASP:OD1	11:A:1401:HOH:O	2.08	0.71
1:B:1213:GLU:HG3	4:B:1302:FMT:H	1.72	0.70
1:A:281:VAL:HG13	1:A:285[B]:LEU:HD23	1.74	0.70
1:B:473:TYR:HB2	2:B:1301:FAD:HM72	1.75	0.69
1:A:793:GLN:OE1	11:A:1402:HOH:O	2.11	0.68
1:B:674[A]:GLU:OE1	11:B:1402:HOH:O	2.12	0.67
1:A:339[A]:VAL:HG21	1:A:350:LEU:HD21	1.77	0.66
1:A:844:CYS:SG	6:A:1306:NAD:C4N	2.83	0.65
1:B:339:VAL:HG21	1:B:350:LEU:HD21	1.79	0.64
1:A:286:LEU:HD21	1:A:322:VAL:HG11	1.80	0.64
1:B:1213:GLU:H	4:B:1302:FMT:H	1.62	0.63
1:A:873:ILE:HG13	1:A:883:VAL:HB	1.81	0.62
1:B:297:LYS:HG3	1:B:332:TRP:HB2	1.82	0.62
1:A:996[B]:ILE:HD12	1:A:1218:ILE:HG12	1.82	0.62
1:B:323:LEU:HD13	1:B:335[B]:MET:HE3	1.82	0.61
1:B:1196:GLY:HA3	10:B:1305:PEG:H22	1.82	0.61
1:B:650:MET:O	1:B:654:LEU:HG	2.02	0.58
1:B:618:ARG:NH2	11:B:1412:HOH:O	2.36	0.58
1:B:78:LYS:NZ	1:B:459:GLU:OE2	2.34	0.57
1:B:197[B]:THR:HG21	1:B:474:ALA:HB1	1.87	0.57
1:B:286:LEU:HD21	1:B:322:VAL:HG11	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:759[A]:LEU:HD13	1:A:769:LEU:HD21	1.88	0.55
1:B:1213:GLU:H	4:B:1302:FMT:C	2.18	0.55
1:B:930:GLU:OE1	1:B:950[B]:ARG:NH1	2.39	0.55
1:B:1213:GLU:CG	4:B:1302:FMT:H	2.37	0.55
1:B:901[A]:ARG:NH2	11:B:1418:HOH:O	2.39	0.54
1:A:458:GLU:OE1	11:A:1403:HOH:O	2.18	0.52
1:B:1056:TRP:CD1	1:B:1142:PRO:HD3	2.44	0.52
1:A:995:TYR:OH	1:A:1002[A]:GLY:O	2.21	0.51
1:A:650:MET:O	1:A:654:LEU:HG	2.10	0.51
1:B:448:CYS:HB2	1:B:453:GLY:HA3	1.93	0.51
1:A:961:ASP:OD2	1:B:1055:LYS:NZ	2.36	0.50
1:B:858:ASP:OD1	1:B:950[B]:ARG:NH2	2.42	0.50
1:A:298:ASN:ND2	11:A:1414:HOH:O	2.30	0.50
1:B:782:GLY:O	1:B:811:THR:HA	2.11	0.49
1:B:844:CYS:SG	6:B:1308:NAD:C3N	3.00	0.49
1:A:958:ARG:NH1	1:A:962:ASP:OD2	2.34	0.48
1:B:195:PHE:CD2	1:B:486:LEU:HD11	2.48	0.48
1:A:844:CYS:SG	6:A:1306:NAD:C3N	3.02	0.48
1:A:1020:PRO:HA	11:A:1822:HOH:O	2.15	0.47
1:B:374:TRP:HZ3	1:B:1229:LEU:HB3	1.79	0.47
1:B:662:GLY:HA2	11:B:1445:HOH:O	2.15	0.47
1:A:1183:LEU:O	11:A:1405:HOH:O	2.21	0.46
1:A:1180:ILE:HG23	1:A:1188:LEU:HD12	1.97	0.46
1:A:473:TYR:CB	2:A:1301:FAD:HM72	2.42	0.46
1:A:706:TRP:CE3	1:A:707:ASN:HA	2.51	0.46
1:B:428:LEU:HD11	1:B:460:VAL:HG21	1.97	0.46
1:A:581:ALA:HB3	1:A:619:LEU:HD13	1.98	0.46
1:B:197[B]:THR:HG22	1:B:475:PRO:O	2.15	0.46
1:A:562:LEU:HD11	1:A:654:LEU:HD12	1.97	0.45
1:A:1116[B]:LEU:HD11	1:A:1138:LEU:HD11	1.98	0.45
1:B:539:GLU:OE1	11:B:1403:HOH:O	2.21	0.45
1:B:865:LYS:NZ	1:B:910:GLU:OE2	2.46	0.45
1:B:706:TRP:CE3	1:B:707:ASN:HA	2.52	0.45
1:B:712:ILE:HD13	1:B:781:THR:HG21	1.97	0.45
1:A:953:ARG:HD3	11:A:1619:HOH:O	2.17	0.45
1:A:1101:ARG:NH1	11:A:1442:HOH:O	2.47	0.45
2:B:1301:FAD:H9	2:B:1301:FAD:H1'1	1.76	0.45
1:B:396:ILE:HD11	1:B:520:VAL:HB	1.98	0.45
1:A:1056:TRP:CD1	1:A:1142:PRO:HD3	2.52	0.44
1:A:367:ARG:HA	1:A:419:GLN:HB2	2.00	0.44
1:A:374:TRP:HZ3	1:A:1229:LEU:HB3	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1056:TRP:CZ2	1:B:1060:LYS:HD2	2.53	0.44
1:A:248:GLY:HA3	1:A:299:TYR:CG	2.52	0.44
1:B:186:MET:O	1:B:190:MET:HG3	2.18	0.44
1:B:788:ARG:NH2	1:B:1185:GLY:O	2.45	0.44
1:A:1055:LYS:NZ	1:B:961:ASP:OD2	2.47	0.43
1:B:202:ARG:HB2	11:B:2175:HOH:O	2.18	0.43
1:A:245:HIS:CE1	1:A:295:LEU:HD21	2.53	0.43
1:B:1069:ALA:HA	1:B:1117:ALA:HB1	2.00	0.43
1:A:26:ARG:HH22	1:A:322:VAL:HG23	1.84	0.43
1:A:937:LEU:HD21	1:A:947:HIS:CD2	2.54	0.43
2:A:1301:FAD:H1'1	2:A:1301:FAD:H9	1.68	0.43
1:B:159:VAL:HG13	1:B:164:LEU:HD12	1.99	0.43
1:B:578:PRO:O	1:B:584:PRO:HA	2.19	0.43
10:B:1305:PEG:H11	10:B:1305:PEG:H31	1.50	0.43
1:A:272:ARG:HB3	1:A:277:GLN:HG3	2.00	0.43
1:B:617:VAL:HG12	1:B:774:GLU:HB2	2.00	0.43
1:B:248:GLY:HA3	1:B:299:TYR:CG	2.54	0.42
1:B:272:ARG:HB3	1:B:277:GLN:HG3	2.01	0.42
1:B:705:PRO:HD3	1:B:781:THR:HB	2.01	0.42
1:A:782:GLY:O	1:A:811:THR:HA	2.20	0.42
1:A:60:ILE:HD12	11:A:2193:HOH:O	2.18	0.42
1:A:1037:VAL:HG11	1:B:166:ALA:HB1	2.01	0.42
1:B:338:VAL:HG22	1:B:367:ARG:HB3	2.01	0.42
1:B:700[B]:ILE:HG12	1:B:725:ASN:HB3	2.01	0.42
1:A:253:GLY:HA2	11:A:2316:HOH:O	2.19	0.42
1:A:428:LEU:HD11	1:A:460:VAL:HG21	2.01	0.42
1:A:58:LYS:HD3	1:A:61:ARG:HH22	1.85	0.42
1:B:717:ILE:HG12	1:B:727:VAL:HG11	2.02	0.41
1:B:410:LEU:HD11	1:B:431:ILE:HG23	2.01	0.41
1:B:323:LEU:HB3	1:B:335[B]:MET:HE3	2.03	0.41
1:A:338:VAL:HG22	1:A:367:ARG:HB3	2.03	0.41
1:A:717:ILE:HG12	1:A:727:VAL:HG11	2.03	0.41
1:B:1026:LEU:HD23	1:B:1038:PRO:HG2	2.02	0.41
1:A:600:ASP:HA	4:A:1303:FMT:H	2.02	0.41
1:A:795:ALA:HB1	1:A:1178:LYS:HA	2.03	0.41
1:A:861:LEU:HD21	1:A:930:GLU:CD	2.41	0.41
1:A:297[B]:LYS:HG3	1:A:332:TRP:HB2	2.02	0.40
1:A:705:PRO:HD3	1:A:781:THR:HB	2.02	0.40
1:A:58:LYS:HD3	1:A:61:ARG:NH2	2.36	0.40
1:A:712:ILE:HD13	1:A:781:THR:HG21	2.02	0.40
1:A:1080[A]:LEU:HD12	11:A:2181:HOH:O	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:761:GLY:HA3	1:A:765:VAL:HG21	2.04	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:A:1404:HOH:O	11:B:2250:HOH:O[2_556]	2.19	0.01

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	1229/1235 (100%)	1208 (98%)	21 (2%)	0	100	100
1	B	1220/1235 (99%)	1196 (98%)	24 (2%)	0	100	100
All	All	2449/2470 (99%)	2404 (98%)	45 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	902/951 (95%)	898 (100%)	4 (0%)	89	76
1	B	891/951 (94%)	884 (99%)	7 (1%)	79	54

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1793/1902 (94%)	1782 (99%)	11 (1%)	84 64

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	TYR
1	A	342	TYR
1	A	730	LYS
1	A	872	HIS
1	B	39	TYR
1	B	157[A]	SER
1	B	157[B]	SER
1	B	181	ARG
1	B	342	TYR
1	B	730	LYS
1	B	934	LEU

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

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 23 ligands modelled in this entry, 2 are monoatomic - leaving 21 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	$\#\|Z\| > 2$
7	SO4	A	1309	-	4,4,4	0.67	0	6,6,6	0.14	0
10	PEG	B	1305	-	6,6,6	0.23	0	5,5,5	0.24	0
4	FMT	A	1303	-	2,2,2	0.64	0	1,1,1	0.23	0
7	SO4	A	1311	-	4,4,4	0.67	0	6,6,6	0.12	0
3	PGE	A	1302	-	9,9,9	0.32	0	8,8,8	0.44	0
7	SO4	A	1307	-	4,4,4	0.61	0	6,6,6	0.36	0
7	SO4	B	1309	-	4,4,4	0.62	0	6,6,6	0.28	0
9	1PE	B	1304	-	15,15,15	0.28	0	14,14,14	0.35	0
4	FMT	A	1304	-	2,2,2	0.48	0	1,1,1	0.30	0
7	SO4	A	1308	-	4,4,4	0.67	0	6,6,6	0.11	0
3	PGE	B	1303	-	9,9,9	0.33	0	8,8,8	0.44	0
2	FAD	A	1301	-	54,58,58	2.30	16 (29%)	71,89,89	1.54	12 (16%)
5	A1BDV	A	1305	-	12,12,12	1.39	3 (25%)	16,16,16	1.34	1 (6%)
5	A1BDV	B	1307	-	12,12,12	1.26	3 (25%)	16,16,16	1.21	1 (6%)
10	PEG	B	1311	-	6,6,6	0.26	0	5,5,5	0.34	0
7	SO4	A	1310	-	4,4,4	0.63	0	6,6,6	0.17	0
4	FMT	B	1302	-	2,2,2	0.61	0	1,1,1	0.53	0
4	FMT	B	1306	-	2,2,2	0.82	0	1,1,1	0.30	0
6	NAD	A	1306	8	42,48,48	2.20	11 (26%)	50,73,73	1.60	4 (8%)
2	FAD	B	1301	-	54,58,58	2.29	14 (25%)	71,89,89	1.48	10 (14%)
6	NAD	B	1308	8	42,48,48	2.10	8 (19%)	50,73,73	1.69	6 (12%)

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	PGE	B	1303	-	-	2/7/7/7	-
10	PEG	B	1305	-	-	3/4/4/4	-
3	PGE	A	1302	-	-	4/7/7/7	-
9	1PE	B	1304	-	-	3/13/13/13	-
2	FAD	A	1301	-	-	4/30/50/50	0/6/6/6
5	A1BDV	A	1305	-	-	0/2/8/8	0/2/2/2
5	A1BDV	B	1307	-	-	0/2/8/8	0/2/2/2
6	NAD	B	1308	8	-	1/26/62/62	0/5/5/5

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FAD	B	1301	-	-	3/30/50/50	0/6/6/6
10	PEG	B	1311	-	-	4/4/4/4	-
6	NAD	A	1306	8	-	1/26/62/62	0/5/5/5

All (55) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1301	FAD	PA-O3P	-10.91	1.47	1.59
2	A	1301	FAD	PA-O3P	-10.47	1.48	1.59
6	B	1308	NAD	PA-O3	-7.74	1.51	1.59
6	A	1306	NAD	PA-O3	-7.52	1.51	1.59
2	A	1301	FAD	O4-C4	6.41	1.35	1.23
6	A	1306	NAD	C2N-N1N	6.38	1.42	1.35
2	B	1301	FAD	O4-C4	6.12	1.35	1.23
6	B	1308	NAD	C2N-N1N	5.54	1.41	1.35
6	A	1306	NAD	C7N-N7N	5.08	1.42	1.33
6	B	1308	NAD	C7N-N7N	4.76	1.41	1.33
2	B	1301	FAD	O2-C2	4.56	1.33	1.24
2	A	1301	FAD	O2-C2	3.70	1.31	1.24
2	B	1301	FAD	C4X-N5	3.65	1.38	1.30
2	A	1301	FAD	P-O3P	3.65	1.63	1.59
2	A	1301	FAD	C4X-N5	3.42	1.38	1.30
2	A	1301	FAD	PA-O5B	-3.07	1.47	1.59
2	A	1301	FAD	O2'-C2'	-3.05	1.36	1.43
2	B	1301	FAD	C2A-N3A	2.89	1.36	1.32
2	A	1301	FAD	C6A-N6A	2.84	1.44	1.34
6	B	1308	NAD	C6A-N6A	2.84	1.44	1.34
2	B	1301	FAD	C6A-N6A	2.81	1.44	1.34
2	B	1301	FAD	O2'-C2'	-2.80	1.37	1.43
6	A	1306	NAD	C6A-N6A	2.69	1.43	1.34
6	A	1306	NAD	C2A-N3A	2.68	1.36	1.32
5	A	1305	A1BDV	O09-C10	2.62	1.42	1.38
2	A	1301	FAD	C1'-C2'	-2.52	1.49	1.52
2	A	1301	FAD	C2A-N3A	2.50	1.36	1.32
6	A	1306	NAD	C6N-N1N	2.50	1.41	1.35
2	A	1301	FAD	O4B-C4B	-2.47	1.39	1.45
6	A	1306	NAD	PA-O5B	-2.45	1.49	1.59
5	B	1307	A1BDV	O09-C10	2.39	1.42	1.38
2	A	1301	FAD	C2-N1	2.35	1.42	1.36
6	A	1306	NAD	O3D-C3D	-2.35	1.37	1.43
5	A	1305	A1BDV	O07-C06	2.33	1.41	1.38
2	B	1301	FAD	C2-N1	2.32	1.41	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1301	FAD	O2B-C2B	-2.28	1.37	1.43
2	B	1301	FAD	C1B-N9A	-2.25	1.44	1.49
6	B	1308	NAD	PA-O5B	-2.22	1.50	1.59
2	A	1301	FAD	C1B-N9A	-2.22	1.44	1.49
2	A	1301	FAD	O4'-C4'	-2.20	1.38	1.43
2	A	1301	FAD	O3'-C3'	-2.19	1.37	1.43
5	A	1305	A1BDV	C11-C10	2.18	1.42	1.38
2	B	1301	FAD	PA-O5B	-2.16	1.50	1.59
6	B	1308	NAD	C1B-N9A	-2.16	1.44	1.49
2	B	1301	FAD	O4B-C4B	-2.16	1.40	1.45
6	A	1306	NAD	C2D-C3D	-2.15	1.47	1.53
2	B	1301	FAD	P-O1P	2.14	1.58	1.50
6	B	1308	NAD	C2A-N3A	2.13	1.35	1.32
6	B	1308	NAD	C6N-N1N	2.08	1.40	1.35
5	B	1307	A1BDV	C11-C10	2.07	1.42	1.38
2	A	1301	FAD	PA-O2A	-2.04	1.45	1.55
2	B	1301	FAD	PA-O2A	-2.04	1.45	1.55
6	A	1306	NAD	PA-O2A	-2.01	1.46	1.55
6	A	1306	NAD	O4D-C4D	-2.01	1.40	1.45
5	B	1307	A1BDV	O07-C06	2.01	1.41	1.38

All (34) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	B	1308	NAD	N3A-C2A-N1A	-7.66	118.28	128.67
6	A	1306	NAD	N3A-C2A-N1A	-6.99	119.19	128.67
2	B	1301	FAD	N3A-C2A-N1A	-6.48	119.88	128.67
2	A	1301	FAD	N3A-C2A-N1A	-6.05	120.47	128.67
6	B	1308	NAD	C4B-O4B-C1B	-5.26	105.11	109.92
6	A	1306	NAD	C4B-O4B-C1B	-4.41	105.89	109.92
2	A	1301	FAD	C4-C4X-N5	3.80	123.46	118.21
6	A	1306	NAD	C4D-O4D-C1D	-3.44	106.77	109.92
5	A	1305	A1BDV	O09-C10-C11	3.34	132.31	127.86
2	A	1301	FAD	C4X-C4-N3	2.99	120.88	113.25
2	B	1301	FAD	O2-C2-N1	-2.94	116.91	121.80
2	B	1301	FAD	C5X-C9A-N10	2.87	120.56	117.97
5	B	1307	A1BDV	O09-C10-C11	2.83	131.62	127.86
2	A	1301	FAD	C4-N3-C2	-2.75	120.75	125.64
2	B	1301	FAD	C9-C9A-N10	-2.72	118.20	121.85
2	B	1301	FAD	C4-N3-C2	-2.71	120.82	125.64
2	A	1301	FAD	C9-C9A-N10	-2.71	118.20	121.85
2	B	1301	FAD	C2'-C1'-N10	2.71	123.00	110.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1301	FAD	C1'-C2'-C3'	-2.70	102.34	109.66
2	A	1301	FAD	C2'-C1'-N10	2.65	122.74	110.20
2	B	1301	FAD	C4X-C10-N10	2.54	120.12	116.48
6	B	1308	NAD	C4D-O4D-C1D	-2.54	107.60	109.92
2	A	1301	FAD	C4A-C5A-N7A	-2.52	106.67	109.34
6	B	1308	NAD	C3N-C7N-N7N	2.51	120.83	117.74
6	A	1306	NAD	C1B-N9A-C4A	-2.50	122.25	126.64
2	B	1301	FAD	C4-C4X-N5	2.28	121.36	118.21
2	A	1301	FAD	C5X-C9A-N10	2.28	120.03	117.97
2	A	1301	FAD	O4-C4-C4X	-2.26	120.55	126.53
2	B	1301	FAD	C4X-C4-N3	2.22	118.91	113.25
6	B	1308	NAD	C4A-C5A-N7A	-2.18	107.04	109.34
6	B	1308	NAD	C1B-N9A-C4A	-2.13	122.90	126.64
2	A	1301	FAD	C4X-C10-N10	2.06	119.43	116.48
2	A	1301	FAD	C10-C4X-N5	-2.05	120.63	124.81
2	B	1301	FAD	C4B-O4B-C1B	-2.01	108.08	109.92

There are no chirality outliers.

All (25) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1301	FAD	P-O3P-PA-O5B
2	A	1301	FAD	N10-C1'-C2'-O2'
2	A	1301	FAD	N10-C1'-C2'-C3'
2	B	1301	FAD	P-O3P-PA-O5B
2	B	1301	FAD	N10-C1'-C2'-O2'
2	B	1301	FAD	N10-C1'-C2'-C3'
10	B	1305	PEG	C1-C2-O2-C3
3	A	1302	PGE	O3-C5-C6-O4
10	B	1305	PEG	O1-C1-C2-O2
10	B	1311	PEG	O1-C1-C2-O2
10	B	1305	PEG	O2-C3-C4-O4
9	B	1304	1PE	OH5-C14-C24-OH4
3	A	1302	PGE	C3-C4-O3-C5
3	A	1302	PGE	C1-C2-O2-C3
10	B	1311	PEG	C1-C2-O2-C3
9	B	1304	1PE	C15-C25-OH5-C14
6	A	1306	NAD	C4D-C5D-O5D-PN
6	B	1308	NAD	C4D-C5D-O5D-PN
9	B	1304	1PE	OH7-C16-C26-OH6
3	B	1303	PGE	O1-C1-C2-O2
3	B	1303	PGE	C6-C5-O3-C4

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Mol	Chain	Res	Type	Atoms
10	B	1311	PEG	O2-C3-C4-O4
10	B	1311	PEG	C4-C3-O2-C2
2	A	1301	FAD	C3B-C4B-C5B-O5B
3	A	1302	PGE	O2-C3-C4-O3

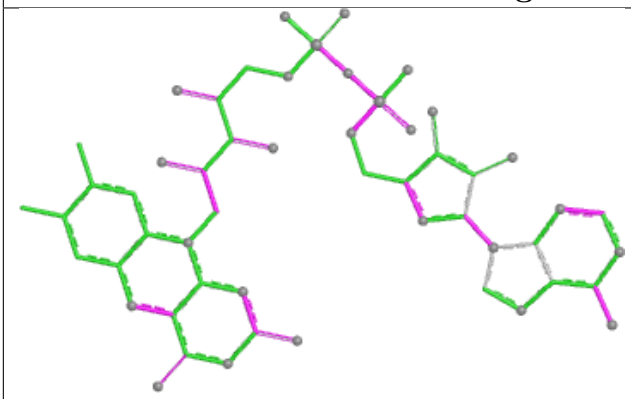
There are no ring outliers.

7 monomers are involved in 16 short contacts:

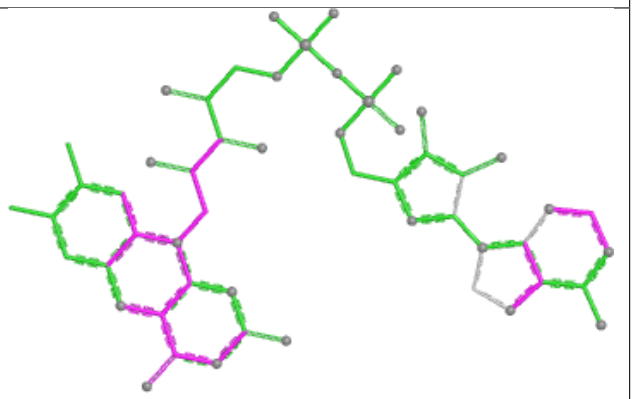
Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	B	1305	PEG	2	0
4	A	1303	FMT	1	0
2	A	1301	FAD	3	0
4	B	1302	FMT	4	0
6	A	1306	NAD	2	0
2	B	1301	FAD	2	0
6	B	1308	NAD	2	0

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.

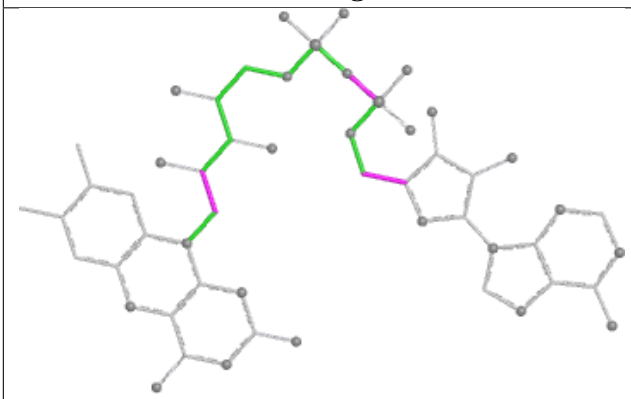
Ligand FAD A 1301



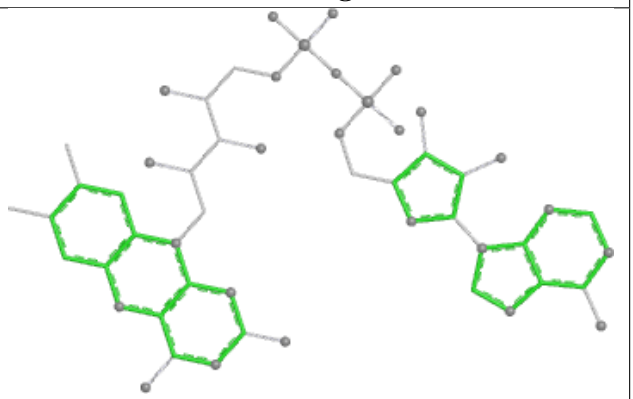
Bond lengths



Bond angles

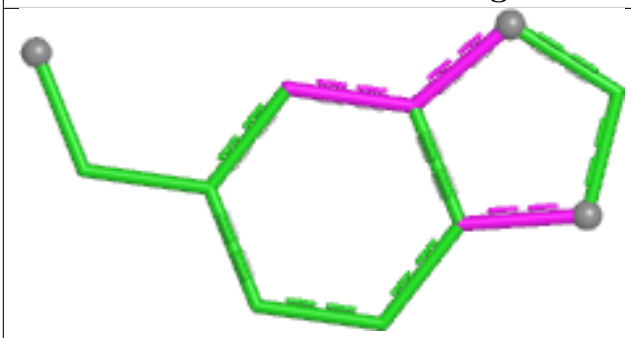


Torsions

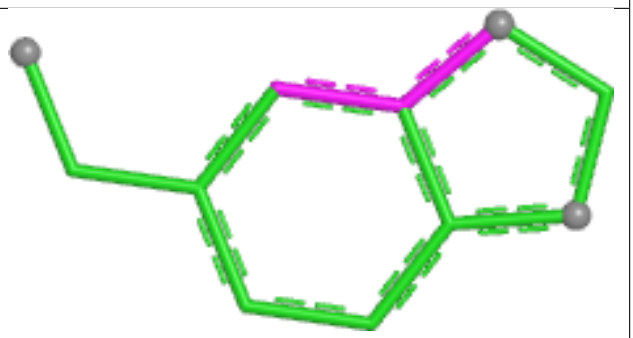


Rings

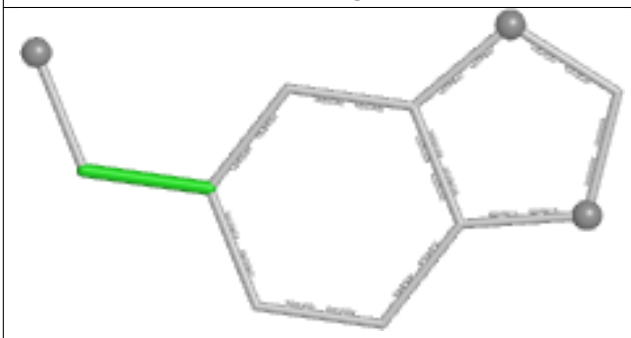
Ligand A1BDV A 1305



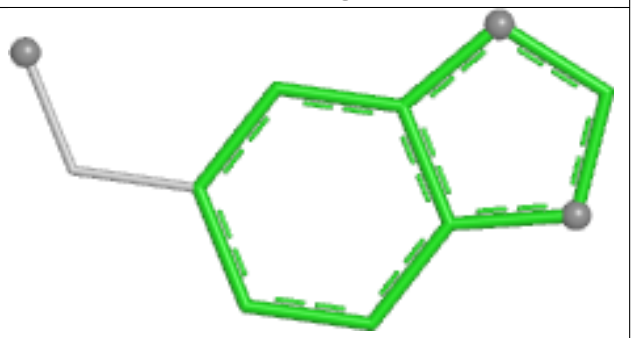
Bond lengths



Bond angles

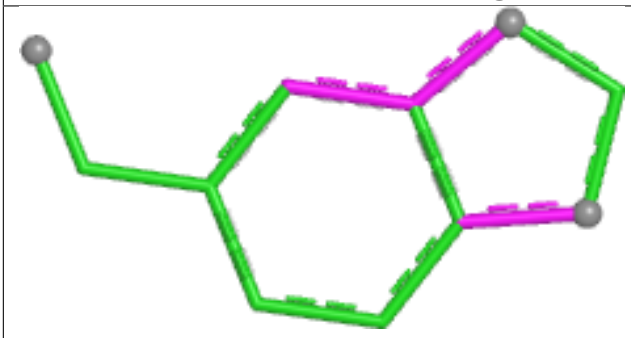


Torsions

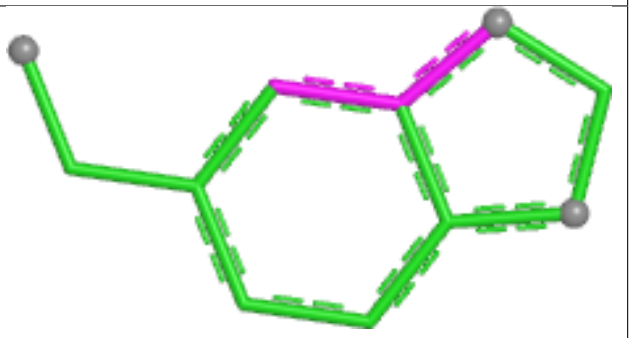


Rings

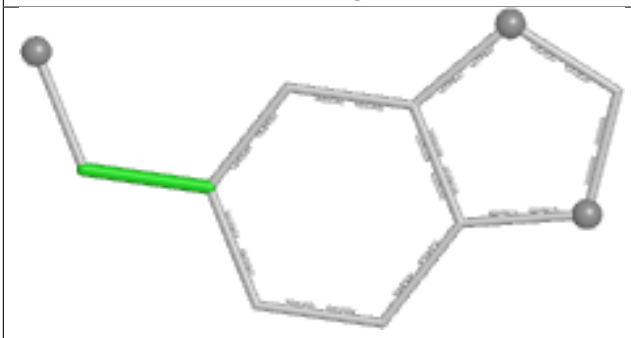
Ligand A1BDV B 1307



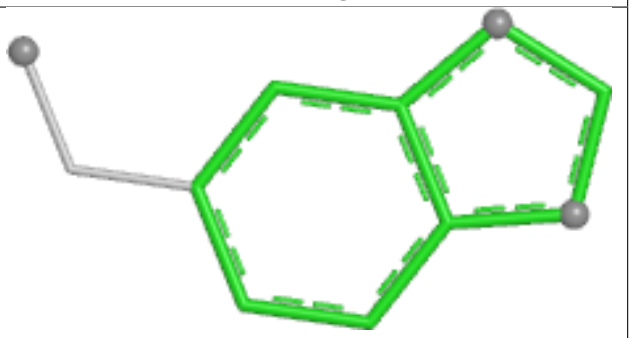
Bond lengths



Bond angles

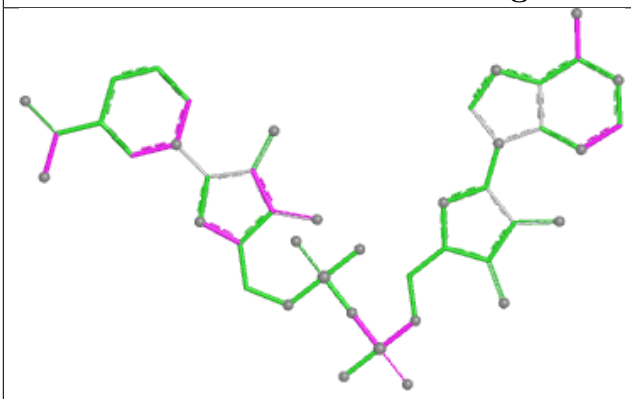


Torsions

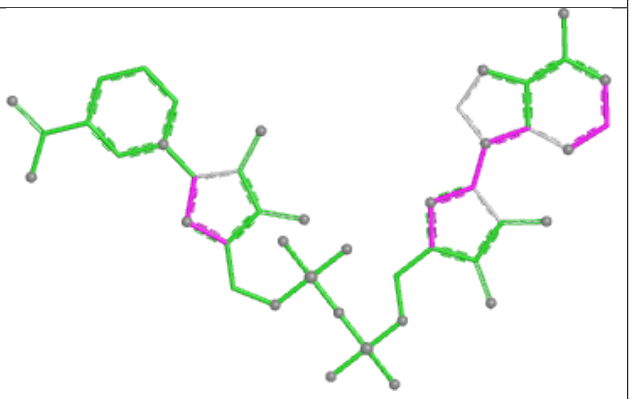


Rings

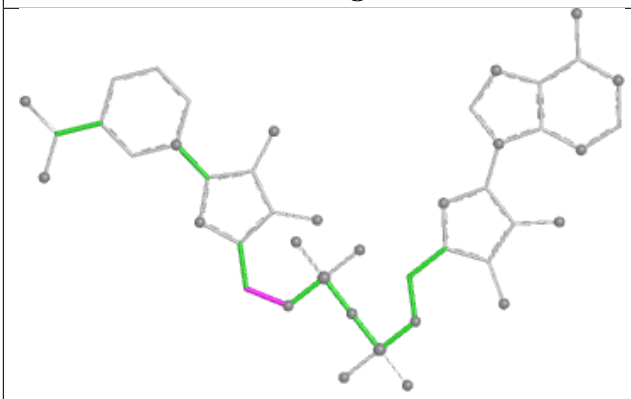
Ligand NAD A 1306



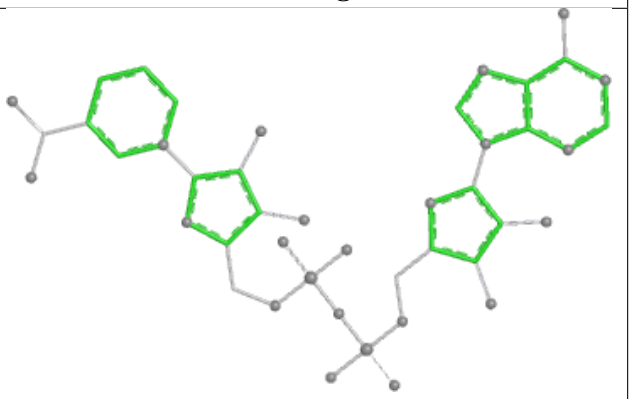
Bond lengths



Bond angles

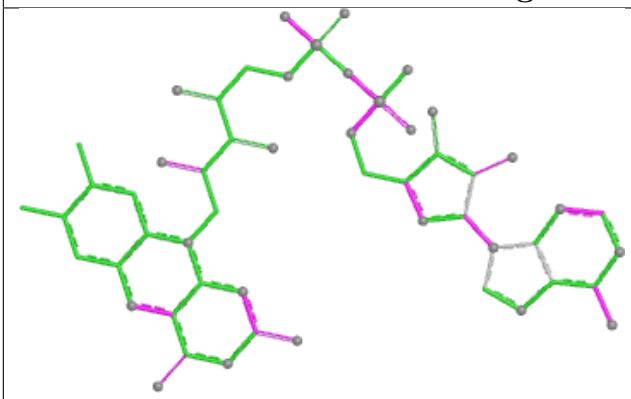


Torsions

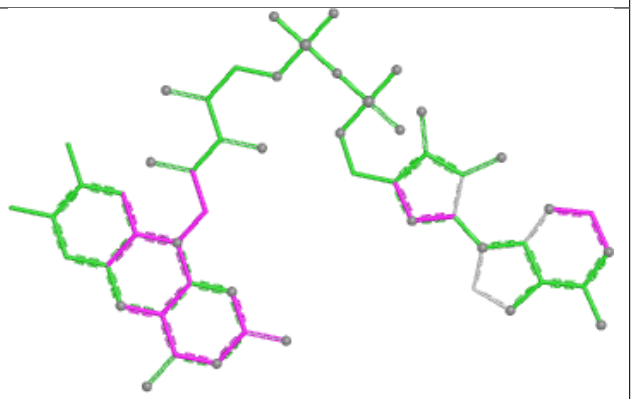


Rings

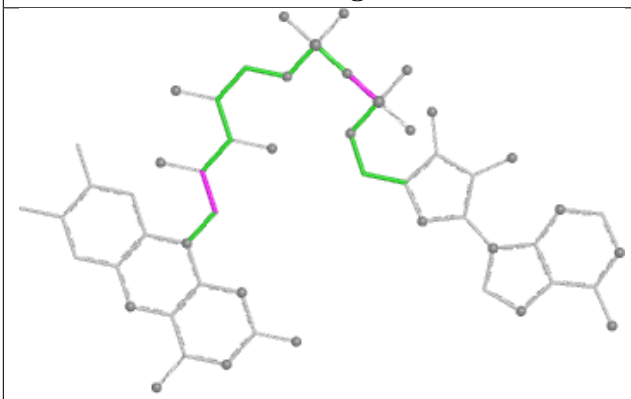
Ligand FAD B 1301



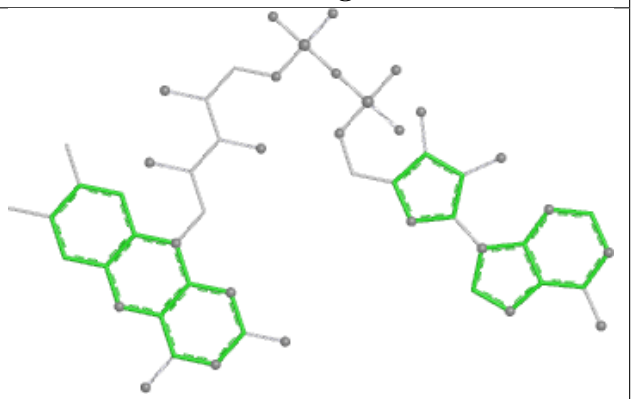
Bond lengths



Bond angles

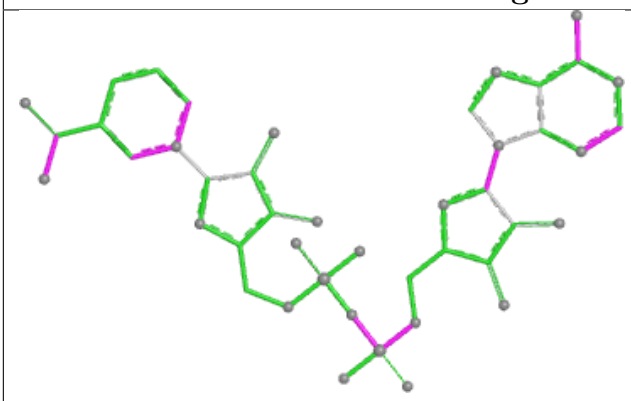


Torsions

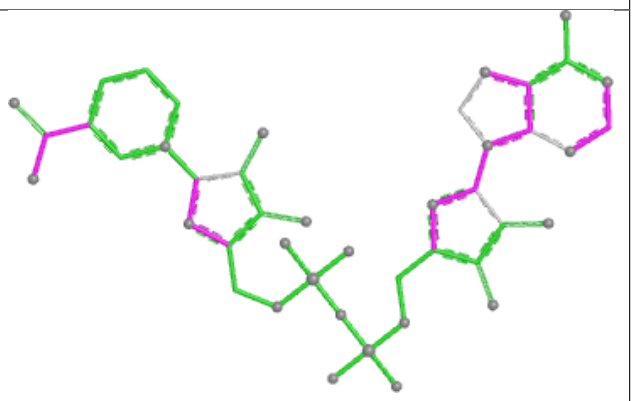


Rings

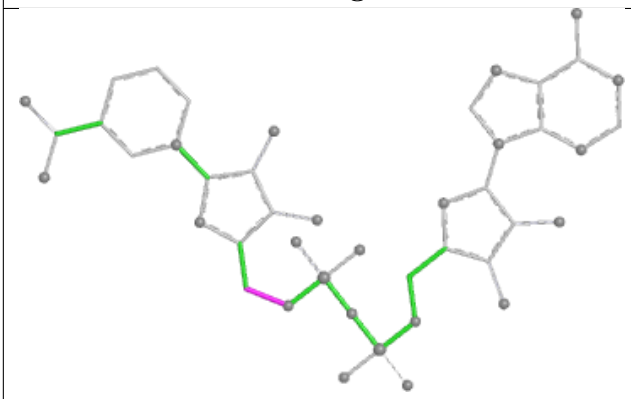
Ligand NAD B 1308



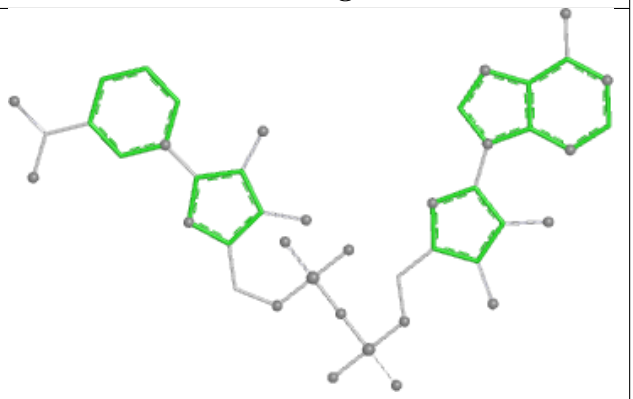
Bond lengths



Bond angles



Torsions



Rings

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^{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	1214/1235 (98%)	0.42	65 (5%)	32	42	9, 23, 40, 62	23 (1%)
1	B	1207/1235 (97%)	0.44	89 (7%)	22	28	9, 22, 43, 67	21 (1%)
All	All	2421/2470 (98%)	0.43	154 (6%)	27	34	9, 22, 42, 67	44 (1%)

All (154) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	486	LEU	8.1
1	B	487	VAL	7.9
1	B	490	LEU	7.1
1	B	491	LEU	6.6
1	B	1223	ALA	6.3
1	B	1222	ALA	6.3
1	B	1229	LEU	6.2
1	B	1232	ILE	5.9
1	A	490	LEU	5.6
1	A	156	THR	5.5
1	A	1223	ALA	5.3
1	A	491	LEU	5.3
1	B	1230	MET	5.2
1	B	918	THR	5.0
1	B	1231	ALA	5.0
1	B	500	VAL	4.9
1	B	481	THR	4.7
1	A	1222	ALA	4.7
1	B	484	ALA	4.6
1	B	485	TYR	4.6
1	B	495	ALA	4.5
1	A	494	GLY	4.5
1	B	478	THR	4.4
1	A	1225	GLY	4.4

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Mol	Chain	Res	Type	RSRZ
1	A	1231	ALA	4.4
1	A	500	VAL	4.4
1	B	510	ILE	4.3
1	B	1227	ALA	4.3
1	B	482	LEU	4.3
1	B	508	VAL	4.2
1	A	134	LEU	4.2
1	A	1230	MET	4.1
1	A	1227	ALA	4.1
1	B	134	LEU	4.0
1	A	82	SER	4.0
1	A	137	SER	4.0
1	A	485	TYR	4.0
1	B	14	ALA	3.9
1	B	1225	GLY	3.9
1	A	484	ALA	3.9
1	A	1232	ILE	3.9
1	B	503	ILE	3.8
1	B	1233	GLY	3.8
1	B	483	LEU	3.7
1	B	479	HIS	3.7
1	A	14	ALA	3.7
1	B	66	SER	3.6
1	B	75	LEU	3.6
1	A	79	HIS	3.6
1	B	1226	ASN	3.6
1	A	495	ALA	3.5
1	B	514	ILE	3.5
1	A	130	TRP	3.5
1	A	486	LEU	3.5
1	B	115	ALA	3.4
1	B	128	GLY	3.4
1	B	133	HIS	3.4
1	B	132	SER	3.4
1	B	155	LEU	3.3
1	A	127	ASP	3.3
1	A	1233	GLY	3.3
1	A	1228	SER	3.2
1	B	1224	GLY	3.1
1	A	1224	GLY	3.1
1	A	1002[A]	GLY	3.1
1	A	1226	ASN	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	223	LEU	3.0
1	B	68	ALA	3.0
1	B	1228	SER	3.0
1	A	487	VAL	3.0
1	A	116	THR	2.9
1	A	132	SER	2.9
1	A	1229	LEU	2.9
1	B	129	ASN	2.9
1	A	114	THR	2.8
1	B	76	ARG	2.8
1	B	83	GLY	2.8
1	B	456	LEU	2.8
1	B	466	LEU	2.8
1	A	125	ILE	2.8
1	A	503	ILE	2.8
1	B	74	ALA	2.8
1	B	414	ASP	2.7
1	A	506	PRO	2.7
1	B	919	GLY	2.7
1	B	415	VAL	2.7
1	B	64	ALA	2.7
1	A	111	ILE	2.7
1	B	506	PRO	2.7
1	B	63	ALA	2.7
1	B	439	PHE	2.6
1	B	156	THR	2.6
1	B	1221	ALA	2.6
1	B	130	TRP	2.6
1	B	460	VAL	2.6
1	B	72	ILE	2.6
1	B	451	GLY	2.6
1	A	483	LEU	2.6
1	B	912	ILE	2.6
1	A	905	LEU	2.5
1	B	71	LEU	2.5
1	B	84	VAL	2.5
1	B	195	PHE	2.5
1	B	127	ASP	2.5
1	A	934	LEU	2.5
1	A	129	ASN	2.5
1	A	904	GLY	2.4
1	B	116	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	73	GLU	2.4
1	A	115	ALA	2.4
1	A	112	PRO	2.4
1	B	492	GLU	2.4
1	B	65	ALA	2.4
1	B	499	PHE	2.4
1	A	128	GLY	2.4
1	B	513	LEU	2.4
1	B	438	ASP	2.4
1	B	412	ALA	2.3
1	A	437	LYS	2.3
1	A	120	LEU	2.3
1	B	432	TYR	2.3
1	B	905	LEU	2.3
1	A	113	ASP	2.3
1	B	138	ARG	2.3
1	A	451	GLY	2.3
1	A	938	GLN	2.3
1	A	481	THR	2.3
1	A	912	ILE	2.3
1	A	937	LEU	2.3
1	B	223	LEU	2.3
1	B	496	ASN	2.3
1	A	482	LEU	2.2
1	B	125	ILE	2.2
1	B	114	THR	2.2
1	A	155	LEU	2.2
1	B	409	LEU	2.2
1	A	949	ILE	2.2
1	B	60	ILE	2.2
1	A	913	GLY	2.2
1	B	139	SER	2.2
1	B	489	ARG	2.1
1	A	478	THR	2.1
1	A	571	ALA	2.1
1	A	916	SER	2.1
1	B	524[A]	MET	2.1
1	B	67	THR	2.1
1	B	917	GLU	2.1
1	A	508	VAL	2.1
1	B	498	SER	2.0
1	A	1221	ALA	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	937	LEU	2.0
1	A	796	ASP	2.0
1	A	801	ALA	2.0
1	B	501	HIS	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 monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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
7	SO4	A	1311	5/5	0.80	0.14	41,42,45,55	5
10	PEG	B	1305	7/7	0.82	0.15	32,37,45,45	0
10	PEG	B	1311	7/7	0.82	0.15	32,35,40,41	0
4	FMT	A	1303	3/3	0.86	0.12	34,34,35,38	3
3	PGE	A	1302	10/10	0.87	0.12	28,36,45,45	0
4	FMT	B	1302	3/3	0.88	0.14	16,16,20,21	3
7	SO4	A	1308	5/5	0.89	0.11	34,36,40,46	5
9	1PE	B	1304	16/16	0.91	0.11	27,34,36,40	0
3	PGE	B	1303	10/10	0.91	0.10	29,35,40,41	0
5	A1BDV	A	1305	11/11	0.91	0.10	18,20,23,26	11
4	FMT	A	1304	3/3	0.93	0.09	22,22,33,35	0
7	SO4	A	1309	5/5	0.93	0.09	42,43,43,45	5
8	MG	B	1310	1/1	0.94	0.08	22,22,22,22	1
2	FAD	A	1301	53/53	0.95	0.08	15,19,27,29	0
4	FMT	B	1306	3/3	0.95	0.12	11,11,31,33	0
7	SO4	A	1310	5/5	0.95	0.10	23,28,34,35	5
2	FAD	B	1301	53/53	0.95	0.08	16,20,27,28	0
5	A1BDV	B	1307	11/11	0.96	0.07	20,21,25,30	11
6	NAD	A	1306	44/44	0.96	0.08	17,21,25,32	0

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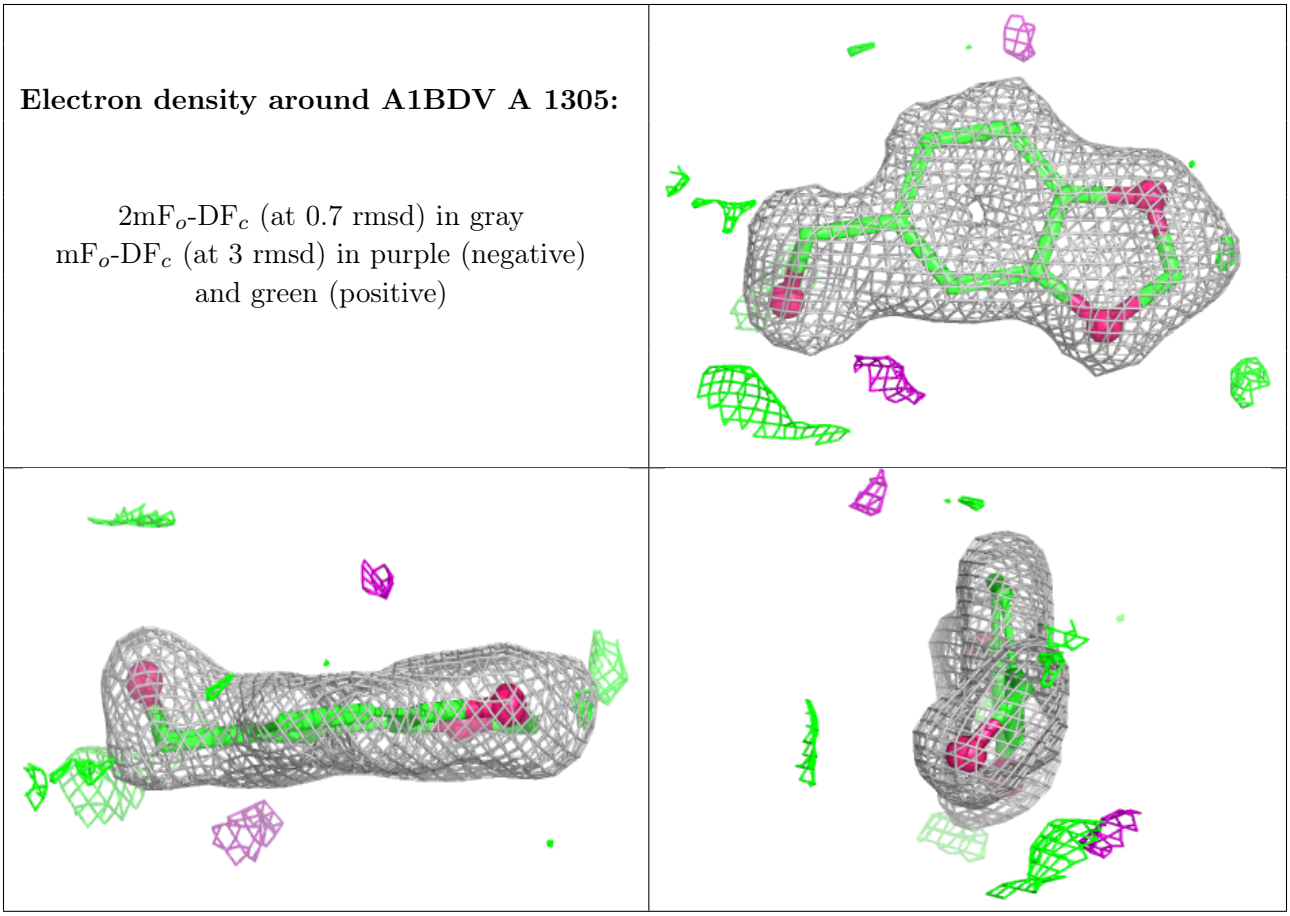
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	NAD	B	1308	44/44	0.97	0.06	14,16,19,29	0
7	SO4	B	1309	5/5	0.98	0.05	17,18,21,21	0
8	MG	A	1312	1/1	0.98	0.04	22,22,22,22	1
7	SO4	A	1307	5/5	0.99	0.05	19,20,24,24	0

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.

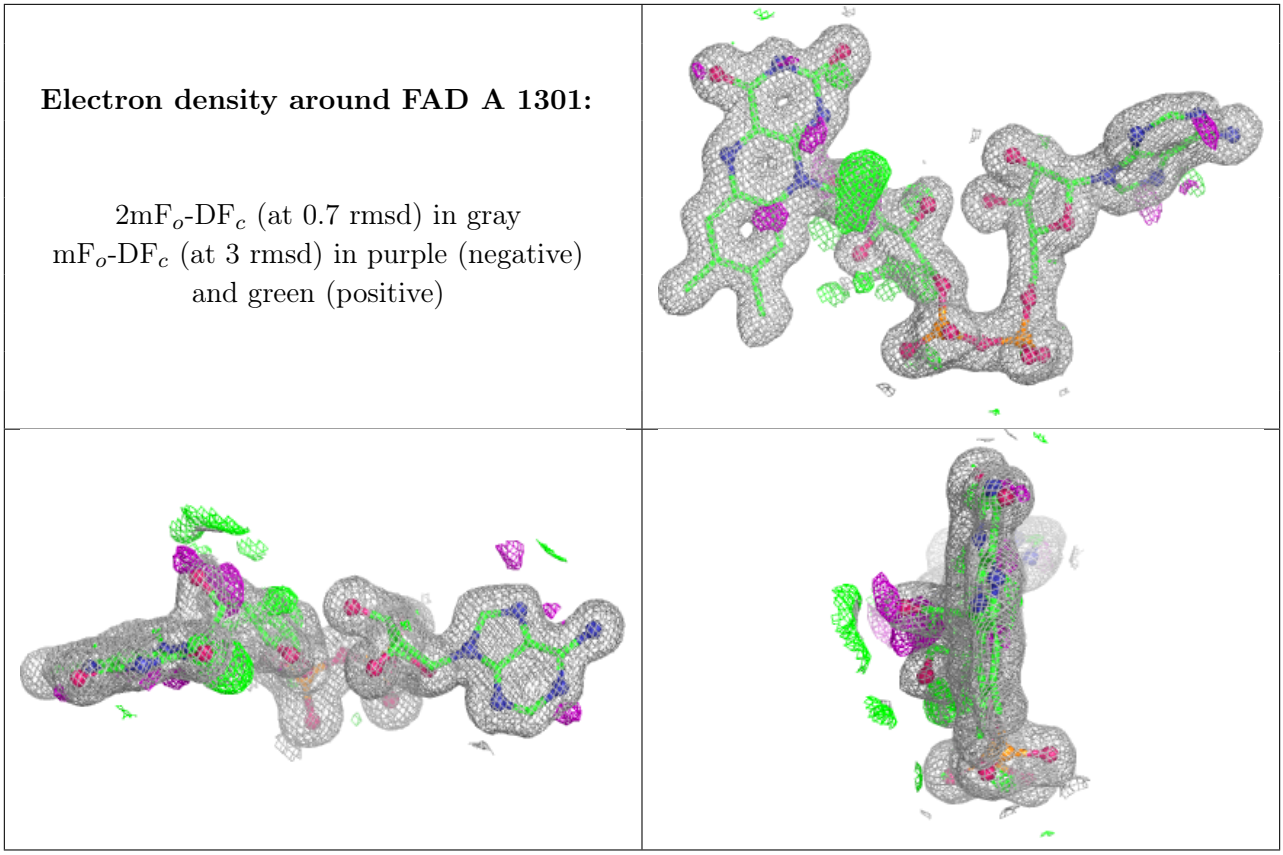
Electron density around A1BDV A 1305:

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



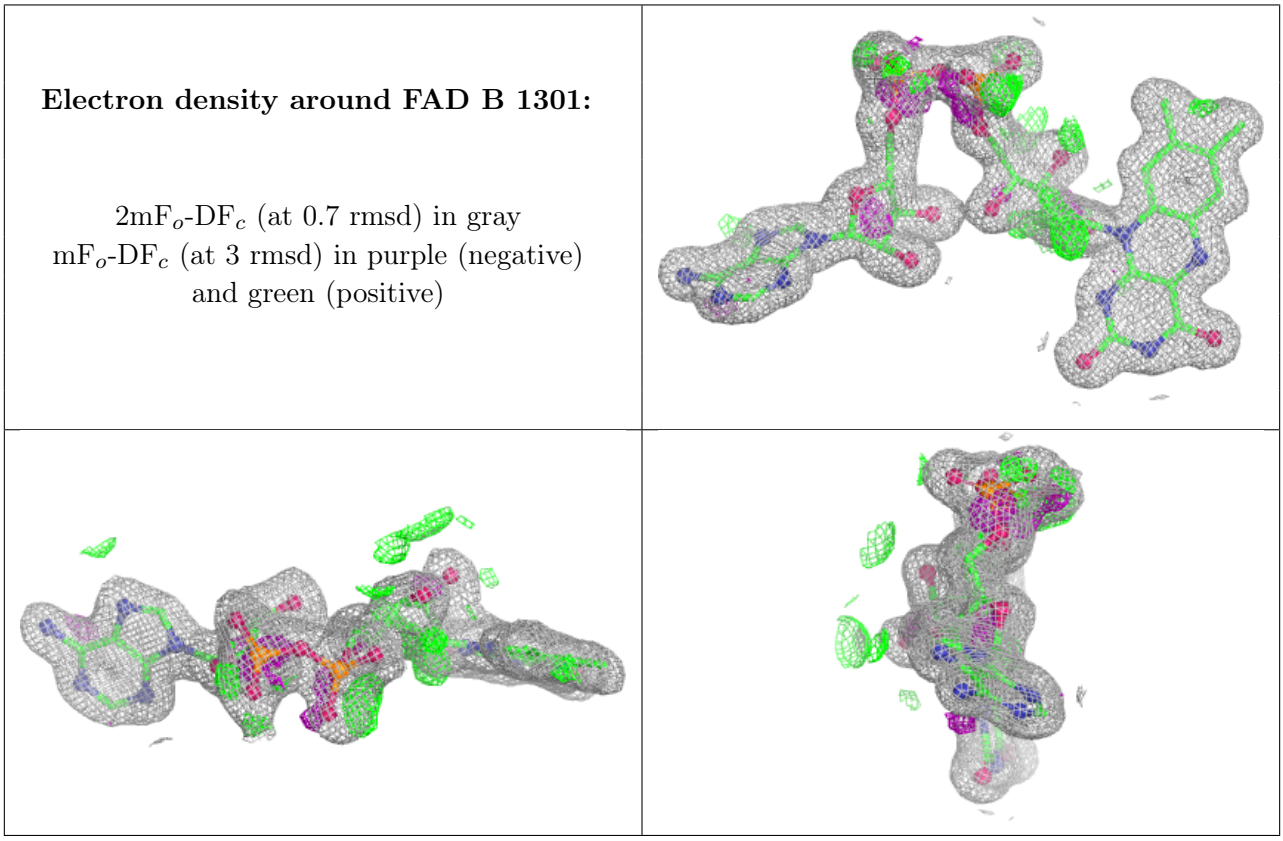
Electron density around FAD A 1301:

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



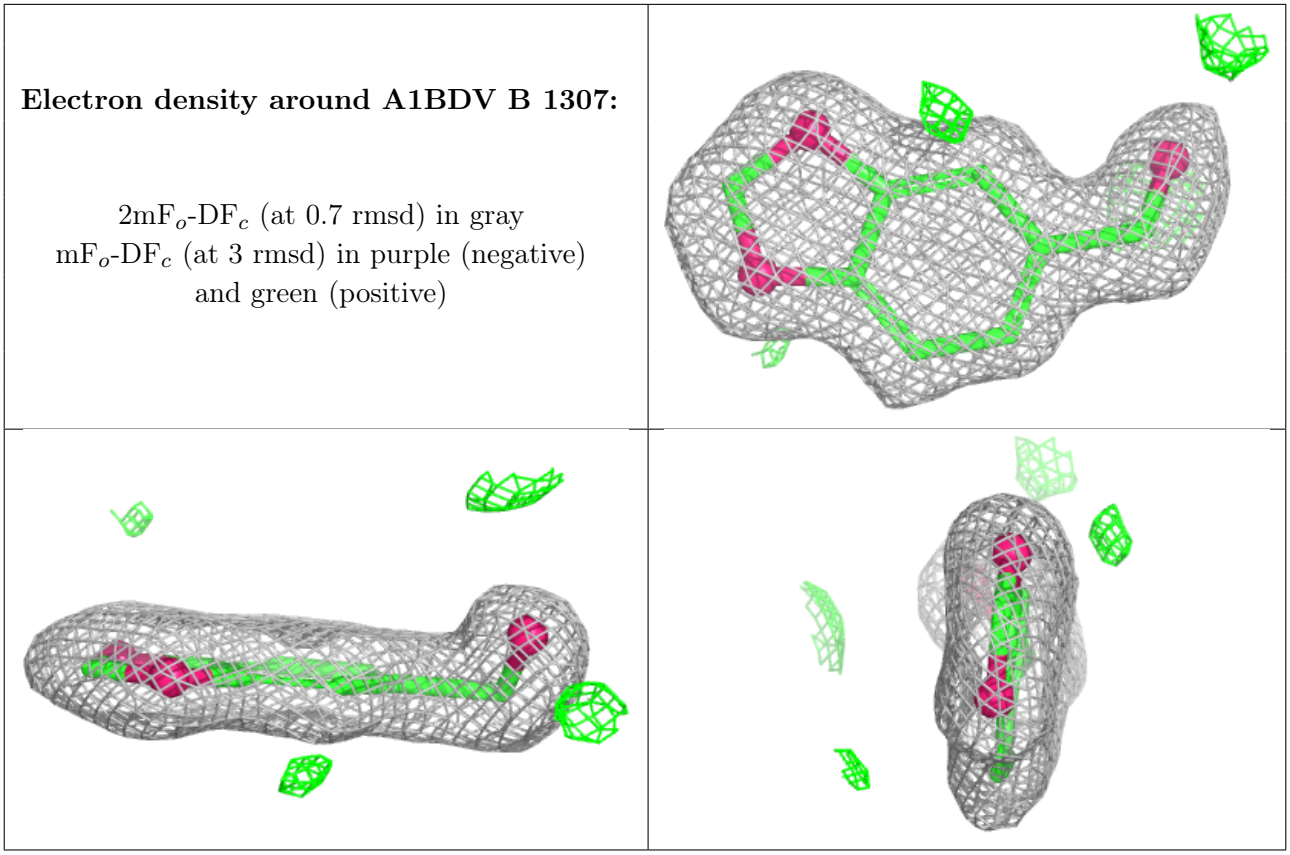
Electron density around FAD B 1301:

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



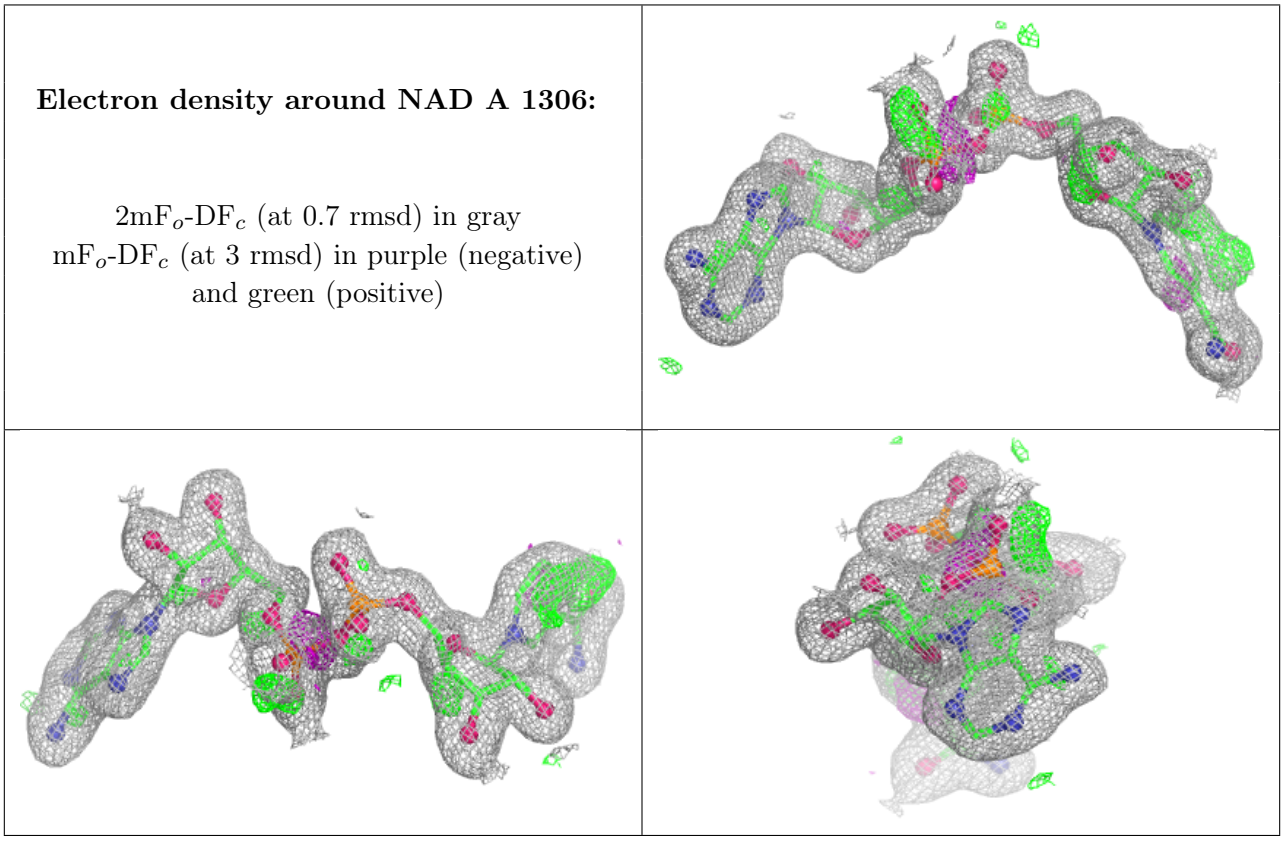
Electron density around A1BDV B 1307:

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



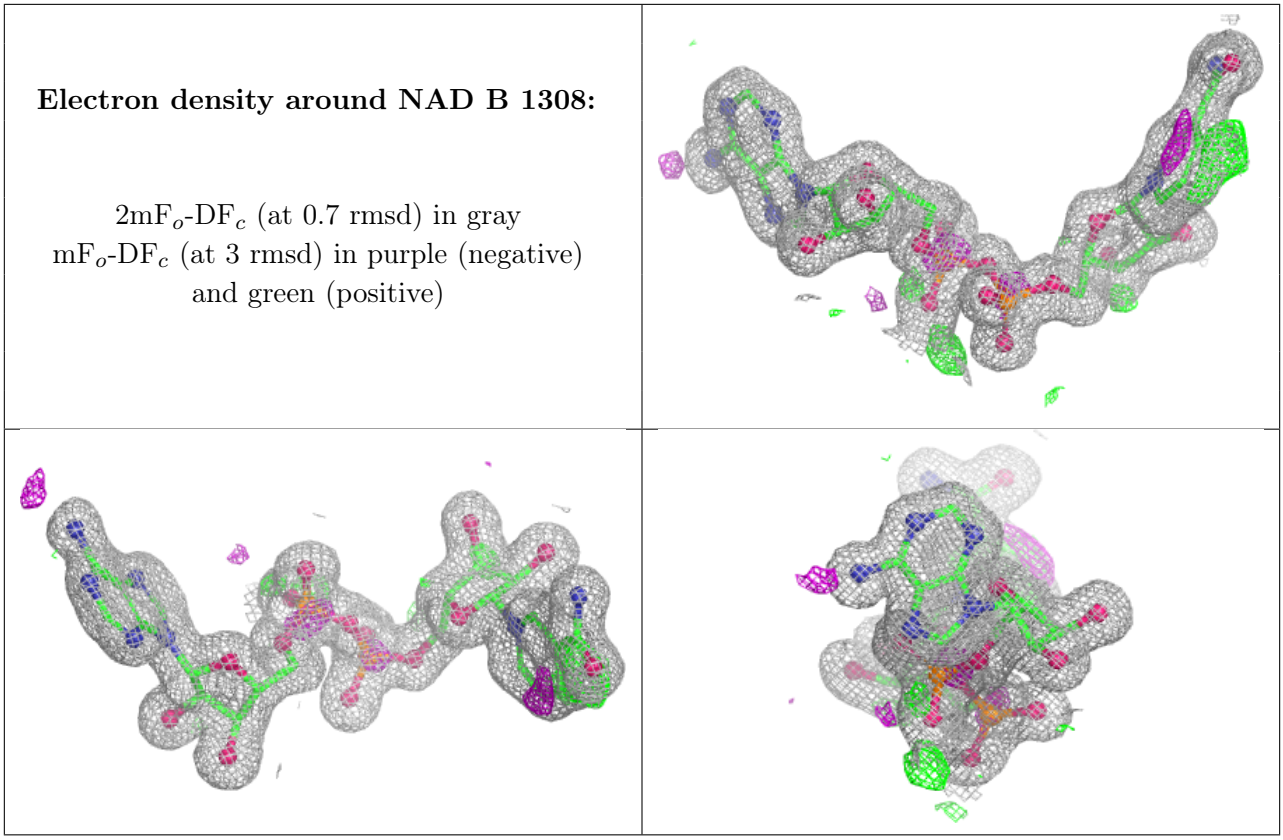
Electron density around NAD A 1306:

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



Electron density around NAD B 1308:

$2mF_o$-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.