



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 12, 2026 – 05:57 AM UTC

PDB ID : 9E0E / pdb_00009e0e
Title : Structure of proline utilization A complexed with (1H-indol-5-yl)methanol
Authors : Tanner, J.J.; Meeks, K.R.
Deposited on : 2024-10-17
Resolution : 1.37 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

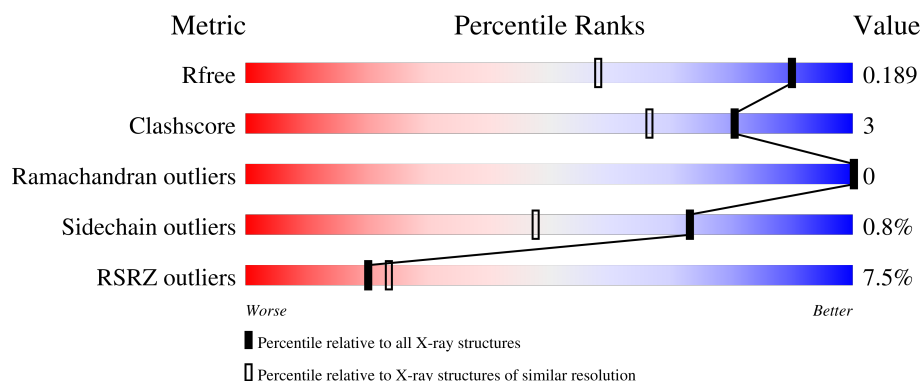
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.37 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	4403 (1.40-1.36)
Clashscore	190562	4528 (1.40-1.36)
Ramachandran outliers	187476	4459 (1.40-1.36)
Sidechain outliers	187428	4458 (1.40-1.36)
RSRZ outliers	180081	4399 (1.40-1.36)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1235	6% 92% 6%
1	B	1235	9% 91% 6%

2 Entry composition ⓘ

There are 11 unique types of molecules in this entry. The entry contains 20482 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.

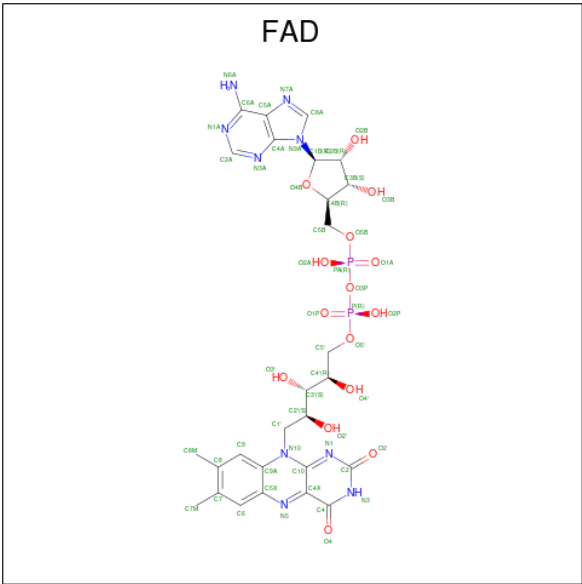
- Molecule 1 is a protein called Bifunctional protein PutA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1214	Total	C	N	O	S	0	17	0
			8991	5674	1607	1675	35			
1	B	1210	Total	C	N	O	S	0	15	0
			8926	5626	1606	1661	33			

There are 4 discrepancies between the modelled and reference sequences:

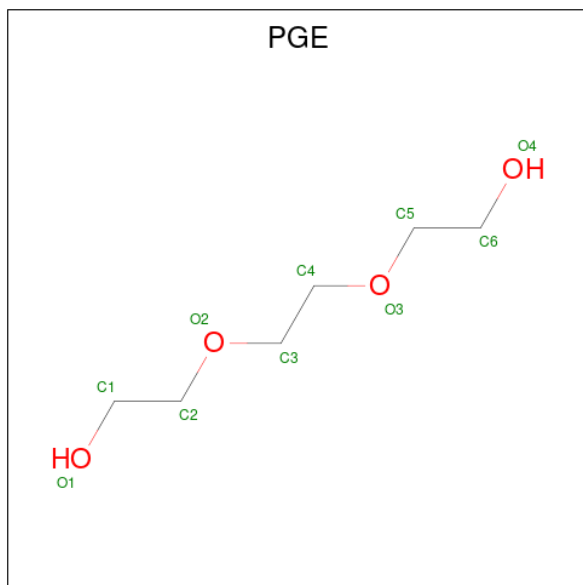
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	SER	-	expression tag	UNP F7X6I3
A	0	MET	-	expression tag	UNP F7X6I3
B	-1	SER	-	expression tag	UNP F7X6I3
B	0	MET	-	expression tag	UNP F7X6I3

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (CCD ID: FAD) (formula: C₂₇H₃₃N₉O₁₅P₂) (labeled as "Ligand of Interest" by depositor).



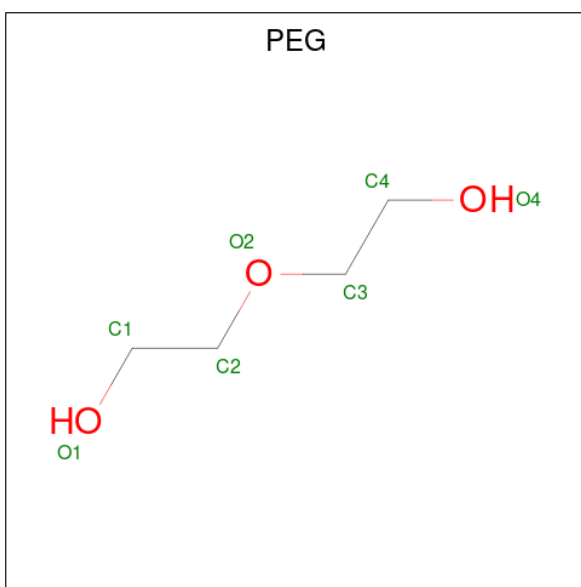
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

- Molecule 3 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: $C_6H_{14}O_4$).



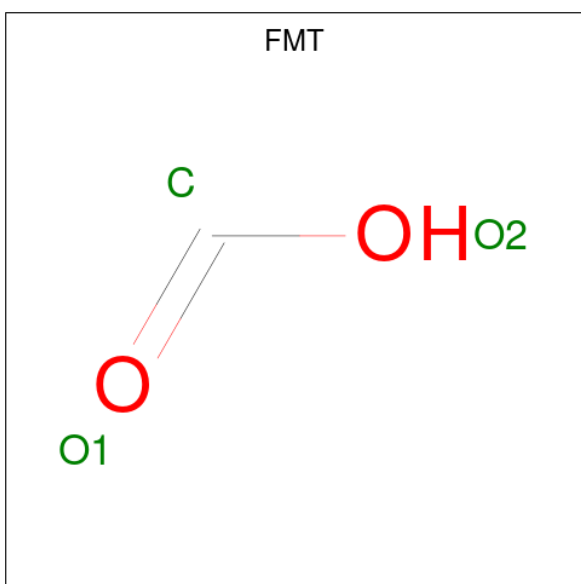
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			10	6	4		
3	B	1	Total	C	O	0	0
			10	6	4		
3	B	1	Total	C	O	0	0
			10	6	4		

- Molecule 4 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).



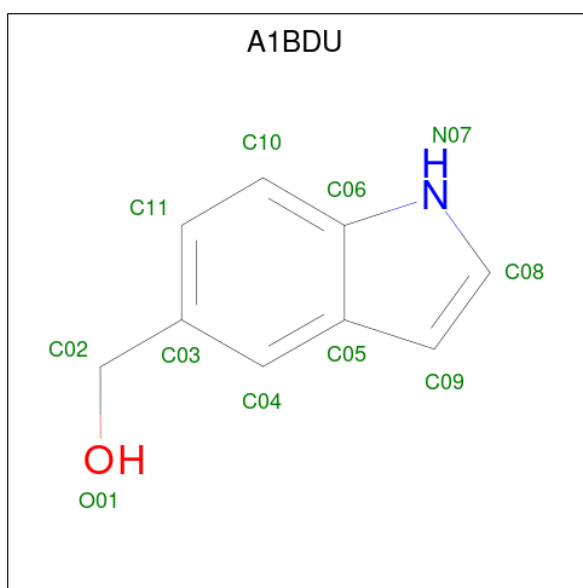
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			7	4	3		
4	A	1	Total	C	O	0	0
			7	4	3		
4	B	1	Total	C	O	0	0
			7	4	3		
4	B	1	Total	C	O	0	0
			7	4	3		
4	B	1	Total	C	O	0	0
			7	4	3		

- Molecule 5 is FORMIC ACID (CCD ID: FMT) (formula: CH_2O_2).



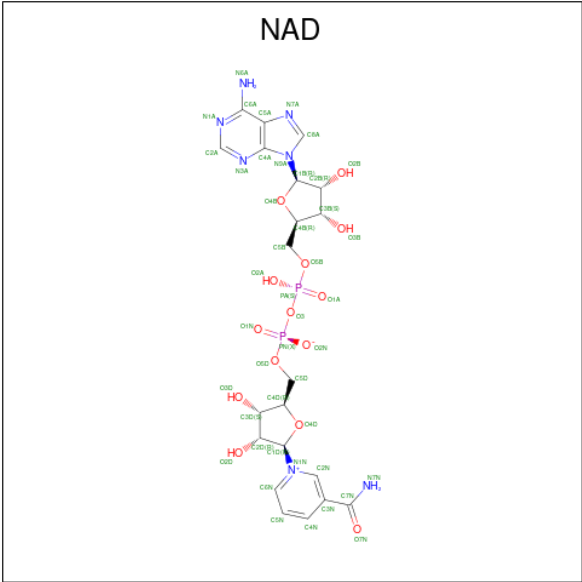
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			3	1	2		
5	A	1	Total	C	O	0	0
			3	1	2		
5	B	1	Total	C	O	0	0
			3	1	2		
5	B	1	Total	C	O	0	0
			3	1	2		
5	B	1	Total	C	O	0	0
			3	1	2		

- Molecule 6 is (1H-indol-5-yl)methanol (CCD ID: A1BDU) (formula: C₉H₉NO) (labeled as "Ligand of Interest" by depositor).



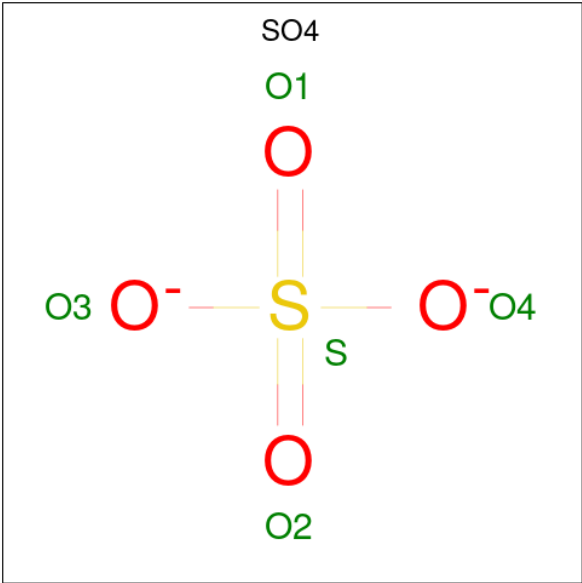
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	N	O	0	0
			11	9	1	1		
6	B	1	Total	C	N	O	0	0
			11	9	1	1		

- Molecule 7 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (CCD ID: NAD) (formula: C₂₁H₂₇N₇O₁₄P₂) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 8 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



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

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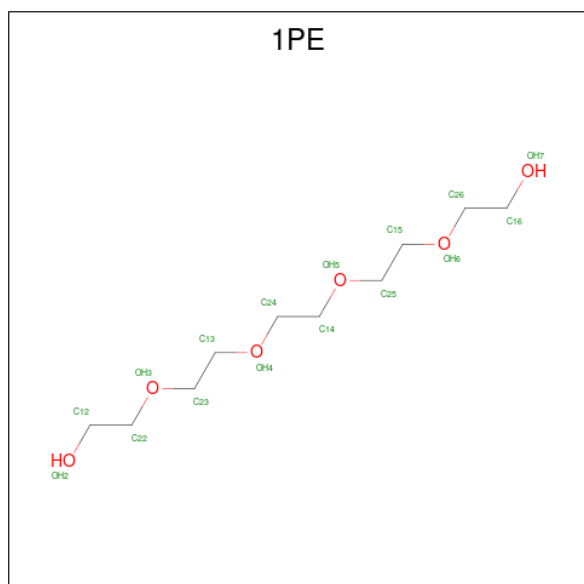
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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	A	1	Total	O	S	0	0
			5	4	1		
8	A	1	Total	O	S	0	0
			5	4	1		
8	B	1	Total	O	S	0	0
			5	4	1		
8	B	1	Total	O	S	0	0
			5	4	1		
8	B	1	Total	O	S	0	0
			5	4	1		

- Molecule 9 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

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

- Molecule 10 is PENTAETHYLENE GLYCOL (CCD ID: 1PE) (formula: C₁₀H₂₂O₆).



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

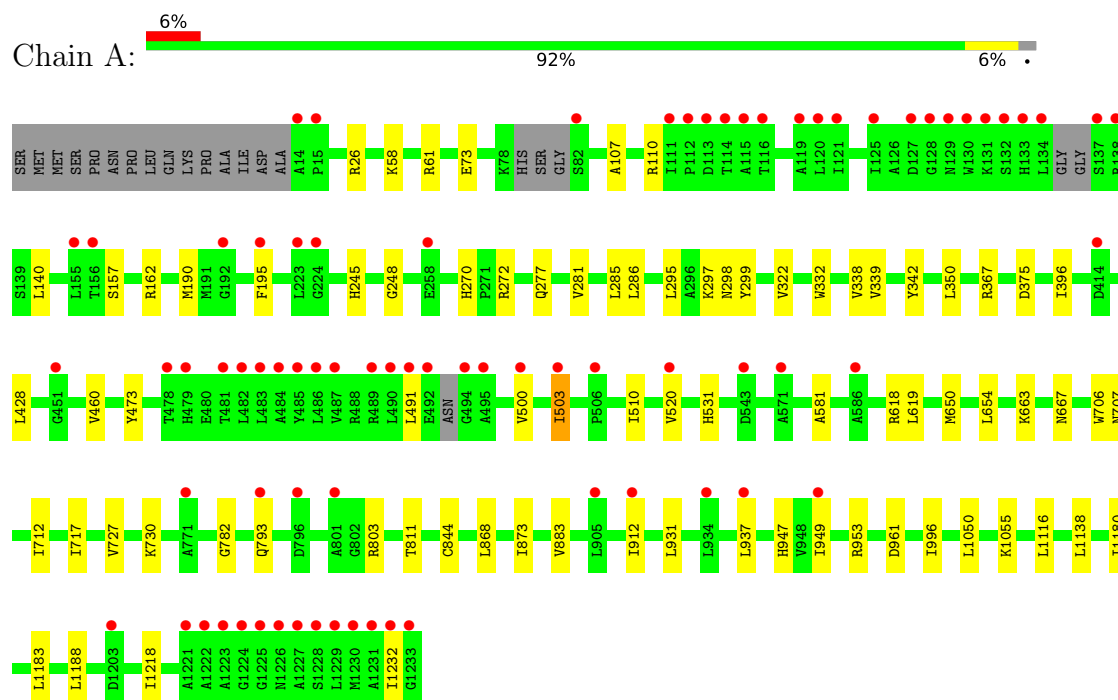
- Molecule 11 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	A	1115	Total 1115	O 1115	0	0
11	B	1096	Total 1096	O 1096	0	3

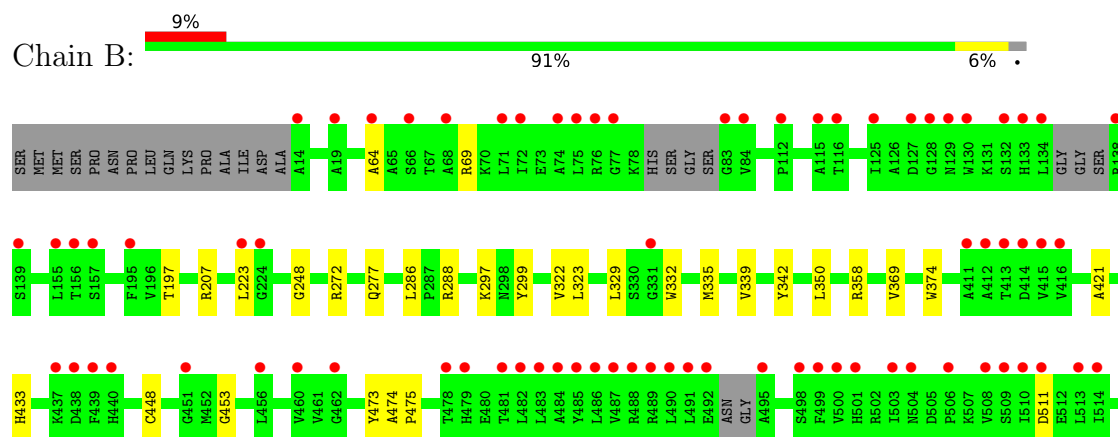
3 Residue-property plots [i](#)

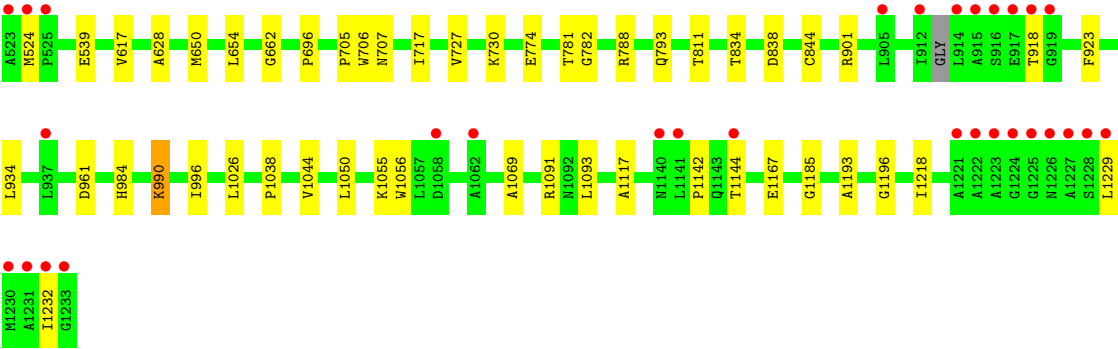
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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



• Molecule 1: Bifunctional protein PutA





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	100.46Å 101.50Å 125.33Å 90.00° 106.51° 90.00°	Depositor
Resolution (Å)	46.75 – 1.37 46.75 – 1.37	Depositor EDS
% Data completeness (in resolution range)	97.0 (46.75-1.37) 97.7 (46.75-1.37)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.20 (at 1.37Å)	Xtriage
Refinement program	PHENIX 1.21rc1_5156	Depositor
R, R_{free}	0.173 , 0.192 0.170 , 0.189	Depositor DCC
R_{free} test set	24811 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å ²)	18.1	Xtriage
Anisotropy	0.254	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 36.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	20482	wwPDB-VP
Average B, all atoms (Å ²)	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.42% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 1PE, FAD, PEG, A1BDU, FMT, PGE, SO4, NAD, MG

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	0.26	0/9200	0.46	0/12528
1	B	0.28	0/9131	0.48	0/12435
All	All	0.27	0/18331	0.47	0/24963

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 [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8991	0	8990	45	0
1	B	8926	0	8898	52	0
2	A	53	0	30	3	0
2	B	53	0	31	1	0
3	A	10	0	14	0	0
3	B	20	0	28	0	0
4	A	14	0	20	0	0
4	B	21	0	30	1	0
5	A	6	0	2	0	0
5	B	9	0	3	0	0
6	A	11	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	11	0	0	0	0
7	A	44	0	26	2	0
7	B	44	0	26	2	0
8	A	20	0	0	0	0
8	B	20	0	0	0	0
9	A	1	0	0	0	0
9	B	1	0	0	0	0
10	B	16	0	22	0	0
11	A	1115	0	0	8	1
11	B	1096	0	0	8	1
All	All	20482	0	18120	96	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 (96) 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:286:LEU:HD21	1:A:322:VAL:HG11	1.68	0.74
1:B:793:GLN:OE1	11:B:1401:HOH:O	2.04	0.74
1:B:901[B]:ARG:NH2	11:B:1403:HOH:O	2.21	0.73
1:B:844:CYS:SG	7:B:1312:NAD:C4N	2.76	0.73
1:A:793:GLN:OE1	11:A:1401:HOH:O	2.06	0.72
1:A:961:ASP:OD2	1:B:1055:LYS:NZ	2.23	0.68
1:B:297:LYS:HD2	1:B:329:LEU:HA	1.77	0.66
1:A:844:CYS:SG	7:A:1308:NAD:C4N	2.85	0.65
1:B:339[A]:VAL:HG21	1:B:350:LEU:HD21	1.79	0.64
1:B:197[B]:THR:HG21	1:B:474:ALA:HB1	1.80	0.63
1:B:332:TRP:HZ3	1:B:335:MET:HE2	1.63	0.63
1:B:996[A]:ILE:HD12	1:B:1218:ILE:HG12	1.82	0.62
1:A:873:ILE:HG13	1:A:883:VAL:HB	1.83	0.61
1:A:281:VAL:HG13	1:A:285[B]:LEU:HD23	1.84	0.60
1:A:473:TYR:HB2	2:A:1301:FAD:HM72	1.83	0.59
1:A:996[B]:ILE:HD12	1:A:1218:ILE:HG12	1.85	0.59
1:B:286:LEU:HD21	1:B:322:VAL:HG11	1.85	0.58
1:B:297:LYS:HG3	1:B:332:TRP:HB2	1.87	0.56
1:B:358[B]:ARG:NH1	11:B:1413:HOH:O	2.38	0.56
1:A:339[A]:VAL:HG21	1:A:350:LEU:HD21	1.87	0.55
1:A:375[B]:ASP:OD1	11:A:1402:HOH:O	2.18	0.55
1:A:298:ASN:ND2	11:A:1405:HOH:O	2.21	0.55
1:A:618:ARG:NH2	11:A:1418:HOH:O	2.38	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:288:ARG:NE	11:B:1415:HOH:O	2.39	0.55
1:B:473:TYR:HB2	2:B:1301:FAD:HM72	1.88	0.55
1:B:332:TRP:CZ3	1:B:335:MET:HE2	2.42	0.54
1:B:1196:GLY:HA3	4:B:1306:PEG:H22	1.89	0.53
1:B:374:TRP:HZ3	1:B:1229:LEU:HB3	1.72	0.53
1:B:788:ARG:NH1	1:B:1185:GLY:O	2.36	0.53
1:B:650:MET:O	1:B:654:LEU:HG	2.08	0.52
1:A:953:ARG:HD3	11:A:1444:HOH:O	2.10	0.52
1:A:663:LYS:HB3	1:A:667:ASN:HB2	1.93	0.51
1:A:1183:LEU:O	11:A:1403:HOH:O	2.20	0.50
1:B:834:THR:O	1:B:838:ASP:HB3	2.11	0.50
1:B:323:LEU:HB3	1:B:335:MET:HE3	1.94	0.49
1:B:1056:TRP:CD1	1:B:1142:PRO:HD3	2.46	0.49
1:B:1026:LEU:HD23	1:B:1038:PRO:HG2	1.95	0.49
1:B:844:CYS:SG	7:B:1312:NAD:C3N	3.00	0.49
1:A:1180:ILE:HG23	1:A:1188:LEU:HD12	1.96	0.48
1:A:706:TRP:CE3	1:A:707:ASN:HA	2.48	0.48
1:A:26:ARG:HH22	1:A:322:VAL:HG23	1.78	0.48
1:B:448:CYS:HB2	1:B:453:GLY:HA3	1.95	0.48
1:B:539:GLU:OE1	11:B:1402:HOH:O	2.20	0.48
1:A:272:ARG:HB3	1:A:277:GLN:HG3	1.95	0.47
1:B:706:TRP:CE3	1:B:707:ASN:HA	2.49	0.47
1:B:782:GLY:O	1:B:811:THR:HA	2.13	0.47
1:A:844:CYS:SG	7:A:1308:NAD:C3N	3.03	0.47
1:B:1091[A]:ARG:HG2	1:B:1093:LEU:HD21	1.97	0.47
1:A:1055:LYS:NZ	1:B:961:ASP:OD2	2.41	0.46
1:A:190:MET:HE2	1:A:195:PHE:CZ	2.51	0.46
1:A:650:MET:O	1:A:654:LEU:HG	2.16	0.46
1:B:197[B]:THR:HG22	1:B:475:PRO:O	2.15	0.46
1:B:717:ILE:HG12	1:B:727:VAL:HG11	1.98	0.45
1:A:937:LEU:HD21	1:A:947:HIS:CD2	2.52	0.45
1:B:662:GLY:HA2	11:B:1494:HOH:O	2.16	0.45
1:A:270:HIS:HB2	1:A:285[A]:LEU:HG	1.97	0.45
1:A:782:GLY:O	1:A:811:THR:HA	2.17	0.45
1:A:931:LEU:HB2	1:A:949:ILE:HG22	1.99	0.45
1:A:868:LEU:O	1:A:912:ILE:HD11	2.17	0.45
1:A:803:ARG:NH1	11:A:1436:HOH:O	2.51	0.44
1:A:581:ALA:HB3	1:A:619:LEU:HD13	1.99	0.44
1:B:248:GLY:HA3	1:B:299:TYR:CG	2.53	0.44
1:A:107:ALA:HA	1:A:110:ARG:HD3	2.01	0.43
1:A:248:GLY:HA3	1:A:299:TYR:CG	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:272:ARG:HB3	1:B:277:GLN:HG3	2.01	0.43
1:A:245:HIS:CE1	1:A:295:LEU:HD11	2.53	0.43
1:B:197[B]:THR:CG2	1:B:474:ALA:HB1	2.47	0.43
1:B:984:HIS:C	1:B:984:HIS:CD2	2.97	0.43
1:A:531:HIS:CE1	1:A:1232:ILE:HG23	2.54	0.42
1:B:69:ARG:NH2	1:B:511:ASP:OD1	2.52	0.42
1:B:705:PRO:HD3	1:B:781:THR:HB	2.01	0.42
1:A:500:VAL:O	1:A:503:ILE:HG22	2.20	0.42
1:A:58:LYS:HD3	1:A:61:ARG:NH2	2.34	0.42
1:A:396:ILE:HD11	1:A:520:VAL:HB	2.01	0.42
1:B:918:THR:HB	1:B:923:PHE:CD1	2.55	0.42
1:A:338:VAL:HG22	1:A:367:ARG:HB3	2.02	0.41
1:A:1116:LEU:HD11	1:A:1138:LEU:HD11	2.03	0.41
2:A:1301:FAD:H8A	11:A:2020:HOH:O	2.20	0.41
1:B:288:ARG:NH2	11:B:1445:HOH:O	2.52	0.41
1:A:162[B]:ARG:HG3	1:B:1044:VAL:HA	2.03	0.41
1:B:617:VAL:HG12	1:B:774:GLU:HB2	2.03	0.41
1:A:428:LEU:HD11	1:A:460:VAL:HG21	2.02	0.41
1:A:717:ILE:HG12	1:A:727:VAL:HG11	2.03	0.41
1:B:369:VAL:HG12	1:B:421:ALA:HB3	2.01	0.41
1:B:990:LYS:NZ	11:B:1418:HOH:O	2.42	0.41
1:A:73:GLU:HG3	1:A:510:ILE:HD13	2.03	0.40
1:A:1050:LEU:C	1:A:1050:LEU:HD13	2.46	0.40
1:B:1069:ALA:HA	1:B:1117:ALA:HB1	2.03	0.40
1:B:64:ALA:HA	1:B:433:HIS:CD2	2.55	0.40
1:B:1167:GLU:HA	1:B:1193:ALA:O	2.22	0.40
1:A:297:LYS:HA	1:A:332:TRP:CD1	2.56	0.40
2:A:1301:FAD:H9	2:A:1301:FAD:H1'2	1.83	0.40
1:B:223:LEU:HD21	1:B:475:PRO:HB3	2.03	0.40
1:B:628:ALA:HB2	1:B:696:PRO:HG3	2.03	0.40
1:B:1050:LEU:C	1:B:1050:LEU:HD13	2.47	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:1435:HOH:O	11:B:1440:HOH:O[2_657]	2.16	0.04

5.3 Torsion angles

5.3.1 Protein backbone

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	1223/1235 (99%)	1201 (98%)	22 (2%)	0	100	100
1	B	1217/1235 (98%)	1197 (98%)	20 (2%)	0	100	100
All	All	2440/2470 (99%)	2398 (98%)	42 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	895/951 (94%)	888 (99%)	7 (1%)	73	48
1	B	881/951 (93%)	874 (99%)	7 (1%)	73	48
All	All	1776/1902 (93%)	1762 (99%)	14 (1%)	73	48

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	140	LEU
1	A	157	SER
1	A	342	TYR
1	A	491	LEU
1	A	503	ILE
1	A	712	ILE
1	A	730	LYS
1	B	342	TYR

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Mol	Chain	Res	Type
1	B	524	MET
1	B	730	LYS
1	B	934	LEU
1	B	990	LYS
1	B	1144	THR
1	B	1232	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	827	GLN
1	A	1040	GLN
1	B	304	ASN
1	B	793	GLN
1	B	872	HIS
1	B	1040	GLN
1	B	1114	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](#)

Of 30 ligands modelled in this entry, 2 are monoatomic - leaving 28 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	$\# Z > 2$
8	SO4	A	1311	-	4,4,4	0.66	0	6,6,6	0.22	0
6	A1BDU	A	1307	-	12,12,12	1.24	2 (16%)	16,16,16	1.33	2 (12%)
10	1PE	B	1305	-	15,15,15	0.27	0	14,14,14	0.30	0
4	PEG	B	1306	-	6,6,6	0.25	0	5,5,5	0.29	0
8	SO4	A	1312	-	4,4,4	0.66	0	6,6,6	0.17	0
3	PGE	B	1309	-	9,9,9	0.31	0	8,8,8	0.53	0
3	PGE	B	1303	-	9,9,9	0.32	0	8,8,8	0.50	0
5	FMT	A	1304	-	2,2,2	0.61	0	1,1,1	0.20	0
7	NAD	A	1308	9	46,48,48	2.15	10 (21%)	64,73,73	1.60	12 (18%)
4	PEG	B	1308	-	6,6,6	0.25	0	5,5,5	0.21	0
6	A1BDU	B	1310	-	12,12,12	1.24	2 (16%)	16,16,16	1.31	2 (12%)
8	SO4	B	1313	-	4,4,4	0.50	0	6,6,6	0.26	0
2	FAD	A	1301	-	58,58,58	2.18	13 (22%)	85,89,89	1.67	16 (18%)
5	FMT	B	1302	-	2,2,2	0.86	0	1,1,1	0.27	0
4	PEG	B	1304	-	6,6,6	0.25	0	5,5,5	0.31	0
5	FMT	B	1311	-	2,2,2	0.63	0	1,1,1	0.15	0
8	SO4	B	1315	-	4,4,4	0.68	0	6,6,6	0.11	0
8	SO4	B	1314	-	4,4,4	0.66	0	6,6,6	0.13	0
8	SO4	A	1309	-	4,4,4	0.52	0	6,6,6	0.22	0
5	FMT	A	1306	-	2,2,2	0.53	0	1,1,1	0.27	0
2	FAD	B	1301	-	58,58,58	2.23	12 (20%)	85,89,89	1.53	17 (20%)
5	FMT	B	1307	-	2,2,2	0.61	0	1,1,1	0.14	0
8	SO4	A	1310	-	4,4,4	0.69	0	6,6,6	0.16	0
3	PGE	A	1302	-	9,9,9	0.32	0	8,8,8	0.49	0
4	PEG	A	1303	-	6,6,6	0.27	0	5,5,5	0.37	0
4	PEG	A	1305	-	6,6,6	0.25	0	5,5,5	0.17	0
7	NAD	B	1312	9	46,48,48	2.06	6 (13%)	64,73,73	1.75	12 (18%)
8	SO4	B	1316	-	4,4,4	0.68	0	6,6,6	0.13	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
6	A1BDU	B	1310	-	-	0/2/2/2	0/2/2/2
4	PEG	B	1304	-	-	1/4/4/4	-
2	FAD	B	1301	-	-	7/34/50/50	0/6/6/6

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	A1BDU	A	1307	-	-	0/2/2/2	0/2/2/2
3	PGE	A	1302	-	-	3/7/7/7	-
10	1PE	B	1305	-	-	3/13/13/13	-
2	FAD	A	1301	-	-	7/34/50/50	0/6/6/6
4	PEG	B	1306	-	-	3/4/4/4	-
3	PGE	B	1309	-	-	2/7/7/7	-
3	PGE	B	1303	-	-	2/7/7/7	-
4	PEG	A	1303	-	-	2/4/4/4	-
4	PEG	A	1305	-	-	0/4/4/4	-
7	NAD	A	1308	9	-	3/30/62/62	0/5/5/5
7	NAD	B	1312	9	-	4/30/62/62	0/5/5/5
4	PEG	B	1308	-	-	3/4/4/4	-

All (45) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1301	FAD	PA-O3P	-10.77	1.47	1.59
2	A	1301	FAD	PA-O3P	-9.78	1.48	1.59
7	A	1308	NAD	PA-O3	-7.68	1.51	1.59
7	B	1312	NAD	PA-O3	-6.84	1.52	1.59
7	B	1312	NAD	C2N-N1N	6.40	1.42	1.35
7	A	1308	NAD	C2N-N1N	6.20	1.41	1.35
2	B	1301	FAD	O4-C4	5.91	1.34	1.23
2	A	1301	FAD	O4-C4	5.74	1.34	1.23
7	A	1308	NAD	C7N-N7N	5.26	1.42	1.33
7	B	1312	NAD	C7N-N7N	4.87	1.41	1.33
2	B	1301	FAD	O2-C2	4.84	1.33	1.24
2	A	1301	FAD	C6A-N6A	3.93	1.44	1.34
2	A	1301	FAD	O2-C2	3.91	1.32	1.24
2	A	1301	FAD	C4X-N5	3.88	1.39	1.30
2	B	1301	FAD	C4X-N5	3.81	1.39	1.30
7	B	1312	NAD	C6A-N6A	3.80	1.43	1.34
2	B	1301	FAD	C6A-N6A	3.77	1.43	1.34
2	A	1301	FAD	P-O3P	3.69	1.63	1.59
7	A	1308	NAD	C6A-N6A	3.66	1.43	1.34
2	A	1301	FAD	O2'-C2'	-3.64	1.35	1.43
2	B	1301	FAD	C2-N1	2.95	1.43	1.36
2	A	1301	FAD	PA-O5B	-2.88	1.48	1.59
2	B	1301	FAD	O2'-C2'	-2.84	1.37	1.43
7	A	1308	NAD	PA-O5B	-2.79	1.48	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1307	A1BDU	C08-N07	-2.73	1.33	1.38
6	B	1310	A1BDU	C08-N07	-2.57	1.33	1.38
2	A	1301	FAD	C1'-C2'	-2.52	1.49	1.52
2	B	1301	FAD	O4'-C4'	-2.44	1.38	1.43
2	A	1301	FAD	O4'-C4'	-2.40	1.38	1.43
2	B	1301	FAD	O4B-C4B	-2.36	1.39	1.45
2	A	1301	FAD	C2-N1	2.33	1.41	1.36
2	A	1301	FAD	PA-O2A	-2.32	1.44	1.55
2	A	1301	FAD	O4B-C4B	-2.30	1.39	1.45
7	B	1312	NAD	C6N-N1N	2.30	1.40	1.35
7	A	1308	NAD	C6N-N1N	2.29	1.40	1.35
6	B	1310	A1BDU	C05-C06	-2.26	1.37	1.41
2	B	1301	FAD	PA-O2A	-2.26	1.44	1.55
7	B	1312	NAD	PA-O5B	-2.25	1.50	1.59
7	A	1308	NAD	O3D-C3D	-2.21	1.37	1.43
7	A	1308	NAD	C2D-C3D	-2.19	1.47	1.53
6	A	1307	A1BDU	C05-C06	-2.11	1.37	1.41
2	B	1301	FAD	PA-O5B	-2.09	1.51	1.59
7	A	1308	NAD	O4D-C4D	-2.09	1.40	1.45
7	A	1308	NAD	PA-O2A	-2.06	1.45	1.55
2	B	1301	FAD	C1'-C2'	-2.02	1.49	1.52

All (61) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	B	1312	NAD	N3A-C2A-N1A	-6.50	118.75	128.58
7	A	1308	NAD	N3A-C2A-N1A	-5.77	119.85	128.58
2	A	1301	FAD	N3A-C2A-N1A	-5.45	120.34	128.58
2	B	1301	FAD	N3A-C2A-N1A	-5.01	121.00	128.58
2	A	1301	FAD	C5A-C4A-N3A	-4.36	120.72	126.72
7	B	1312	NAD	C5A-C4A-N3A	-4.26	120.85	126.72
2	A	1301	FAD	C5A-N7A-C8A	3.97	109.68	103.45
7	B	1312	NAD	C5A-N7A-C8A	3.86	109.52	103.45
2	A	1301	FAD	C4-C4X-N5	3.74	123.38	118.21
7	A	1308	NAD	C5A-C4A-N3A	-3.69	121.64	126.72
7	B	1312	NAD	C2A-N3A-C4A	3.69	120.84	111.83
7	B	1312	NAD	N9A-C8A-N7A	-3.67	108.73	113.94
7	A	1308	NAD	C5A-N7A-C8A	3.61	109.13	103.45
2	B	1301	FAD	C5A-C4A-N3A	-3.58	121.78	126.72
2	A	1301	FAD	N9A-C8A-N7A	-3.56	108.88	113.94
7	B	1312	NAD	N3A-C4A-N9A	3.41	132.97	127.17
2	A	1301	FAD	C2A-N3A-C4A	3.29	119.87	111.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1301	FAD	C4A-C5A-N7A	-3.28	106.83	110.58
2	A	1301	FAD	N3A-C4A-N9A	3.27	132.72	127.17
2	B	1301	FAD	C5A-N7A-C8A	3.26	108.58	103.45
7	A	1308	NAD	C4D-O4D-C1D	-3.25	106.95	109.92
7	A	1308	NAD	N3A-C4A-N9A	3.20	132.61	127.17
7	A	1308	NAD	N9A-C8A-N7A	-3.13	109.50	113.94
7	B	1312	NAD	C4A-C5A-N7A	-3.02	107.13	110.58
2	A	1301	FAD	C9-C9A-N10	-2.93	117.91	121.85
2	A	1301	FAD	C4X-C4-N3	2.91	120.66	113.25
2	B	1301	FAD	C4A-C5A-N7A	-2.87	107.30	110.58
2	A	1301	FAD	C5X-C9A-N10	2.86	120.55	117.97
2	A	1301	FAD	C4-N3-C2	-2.84	120.59	125.64
2	B	1301	FAD	C9-C9A-N10	-2.84	118.04	121.85
7	A	1308	NAD	C2A-N3A-C4A	2.84	118.76	111.83
7	A	1308	NAD	C2A-N1A-C6A	2.77	123.28	118.73
2	B	1301	FAD	C2A-N3A-C4A	2.74	118.52	111.83
2	B	1301	FAD	C4-N3-C2	-2.71	120.83	125.64
6	B	1310	A1BDU	C10-C06-C05	-2.69	119.70	122.13
6	A	1307	A1BDU	C10-C06-C05	-2.67	119.71	122.13
2	B	1301	FAD	N3A-C4A-N9A	2.64	131.65	127.17
2	B	1301	FAD	C4X-C10-N10	2.63	120.25	116.48
7	B	1312	NAD	C3N-C7N-N7N	2.62	120.97	117.74
2	B	1301	FAD	C4-C4X-N5	2.57	121.75	118.21
7	B	1312	NAD	C4A-N9A-C8A	2.55	108.41	105.74
7	A	1308	NAD	C4A-C5A-N7A	-2.53	107.69	110.58
7	B	1312	NAD	C4D-O4D-C1D	-2.49	107.65	109.92
2	B	1301	FAD	O2-C2-N1	-2.49	117.67	121.80
2	B	1301	FAD	N9A-C8A-N7A	-2.40	110.53	113.94
2	B	1301	FAD	O4-C4-C4X	-2.33	120.38	126.53
2	B	1301	FAD	C5'-C4'-C3'	-2.30	107.88	112.22
2	A	1301	FAD	C5'-C4'-C3'	-2.29	107.90	112.22
7	B	1312	NAD	C6A-C5A-N7A	2.28	136.49	132.09
2	A	1301	FAD	O4-C4-C4X	-2.26	120.57	126.53
2	A	1301	FAD	C4A-N9A-C8A	2.20	108.05	105.74
2	B	1301	FAD	C4X-C4-N3	2.18	118.81	113.25
6	A	1307	A1BDU	C09-C08-N07	-2.18	107.73	110.25
2	B	1301	FAD	C2A-N1A-C6A	2.15	122.25	118.73
7	B	1312	NAD	C2A-N1A-C6A	2.14	122.24	118.73
7	A	1308	NAD	O5B-PA-O1A	2.07	117.14	108.94
7	A	1308	NAD	C3N-C7N-N7N	2.07	120.28	117.74
7	A	1308	NAD	C4A-N9A-C8A	2.06	107.91	105.74
6	B	1310	A1BDU	C09-C08-N07	-2.06	107.87	110.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1301	FAD	C10-C4X-N5	-2.05	120.61	124.81
2	A	1301	FAD	C4'-C3'-C2'	2.02	116.94	113.57

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1301	FAD	P-O3P-PA-O5B
2	A	1301	FAD	C2'-C3'-C4'-O4'
2	B	1301	FAD	C2'-C3'-C4'-O4'
2	B	1301	FAD	C2'-C3'-C4'-C5'
4	B	1306	PEG	C1-C2-O2-C3
2	A	1301	FAD	O3'-C3'-C4'-O4'
2	B	1301	FAD	O3'-C3'-C4'-O4'
3	B	1303	PGE	O1-C1-C2-O2
2	A	1301	FAD	O3'-C3'-C4'-C5'
2	B	1301	FAD	O3'-C3'-C4'-C5'
2	A	1301	FAD	C2'-C3'-C4'-C5'
4	B	1306	PEG	O1-C1-C2-O2
4	B	1308	PEG	O2-C3-C4-O4
3	A	1302	PGE	O3-C5-C6-O4
4	B	1308	PEG	O1-C1-C2-O2
10	B	1305	1PE	OH5-C14-C24-OH4
4	B	1306	PEG	O2-C3-C4-O4
3	A	1302	PGE	O2-C3-C4-O3
2	A	1301	FAD	P-O3P-PA-O5B
4	A	1303	PEG	C1-C2-O2-C3
4	B	1308	PEG	C1-C2-O2-C3
10	B	1305	1PE	C15-C25-OH5-C14
3	A	1302	PGE	C4-C3-O2-C2
7	A	1308	NAD	C2B-C1B-N9A-C8A
7	B	1312	NAD	C2B-C1B-N9A-C8A
10	B	1305	1PE	OH7-C16-C26-OH6
7	A	1308	NAD	C4D-C5D-O5D-PN
7	B	1312	NAD	C4D-C5D-O5D-PN
4	B	1304	PEG	C4-C3-O2-C2
2	B	1301	FAD	C3B-C4B-C5B-O5B
3	B	1303	PGE	C4-C3-O2-C2
3	B	1309	PGE	C4-C3-O2-C2
2	A	1301	FAD	C3B-C4B-C5B-O5B
2	A	1301	FAD	C4'-C5'-O5'-P
7	A	1308	NAD	O4B-C1B-N9A-C8A

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Mol	Chain	Res	Type	Atoms
7	B	1312	NAD	O4B-C1B-N9A-C8A
2	B	1301	FAD	C4'-C5'-O5'-P
7	B	1312	NAD	C2B-C1B-N9A-C4A
3	B	1309	PGE	O1-C1-C2-O2
4	A	1303	PEG	C4-C3-O2-C2

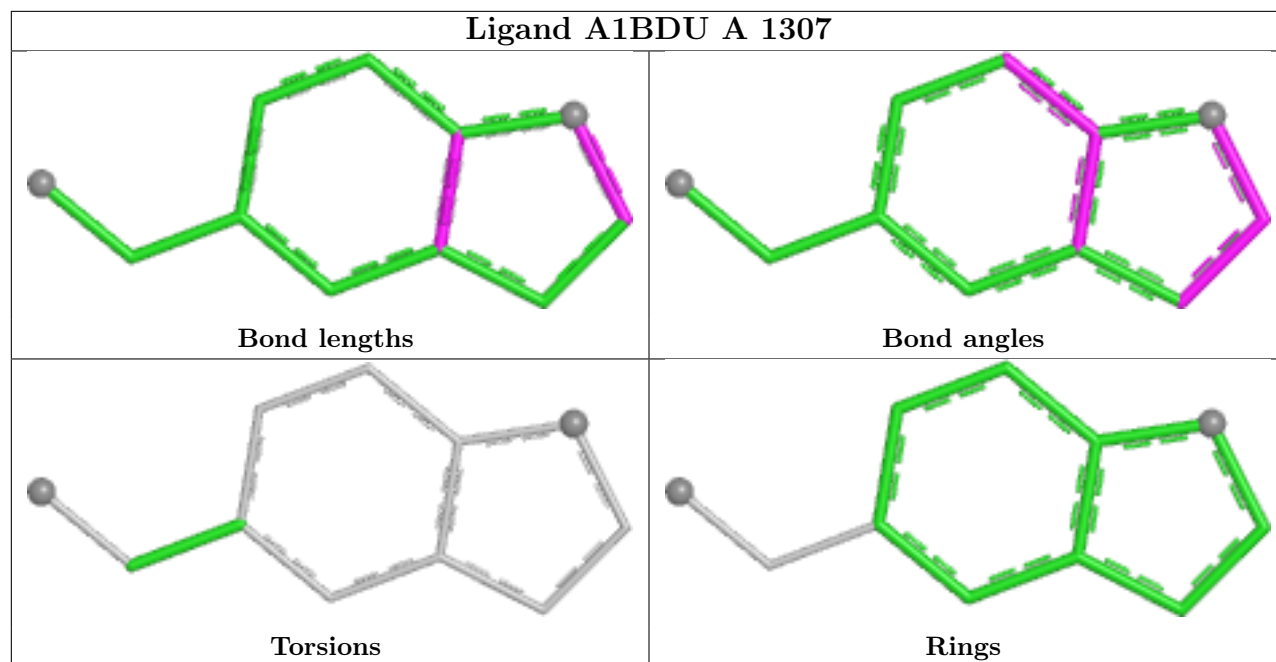
There are no ring outliers.

5 monomers are involved in 9 short contacts:

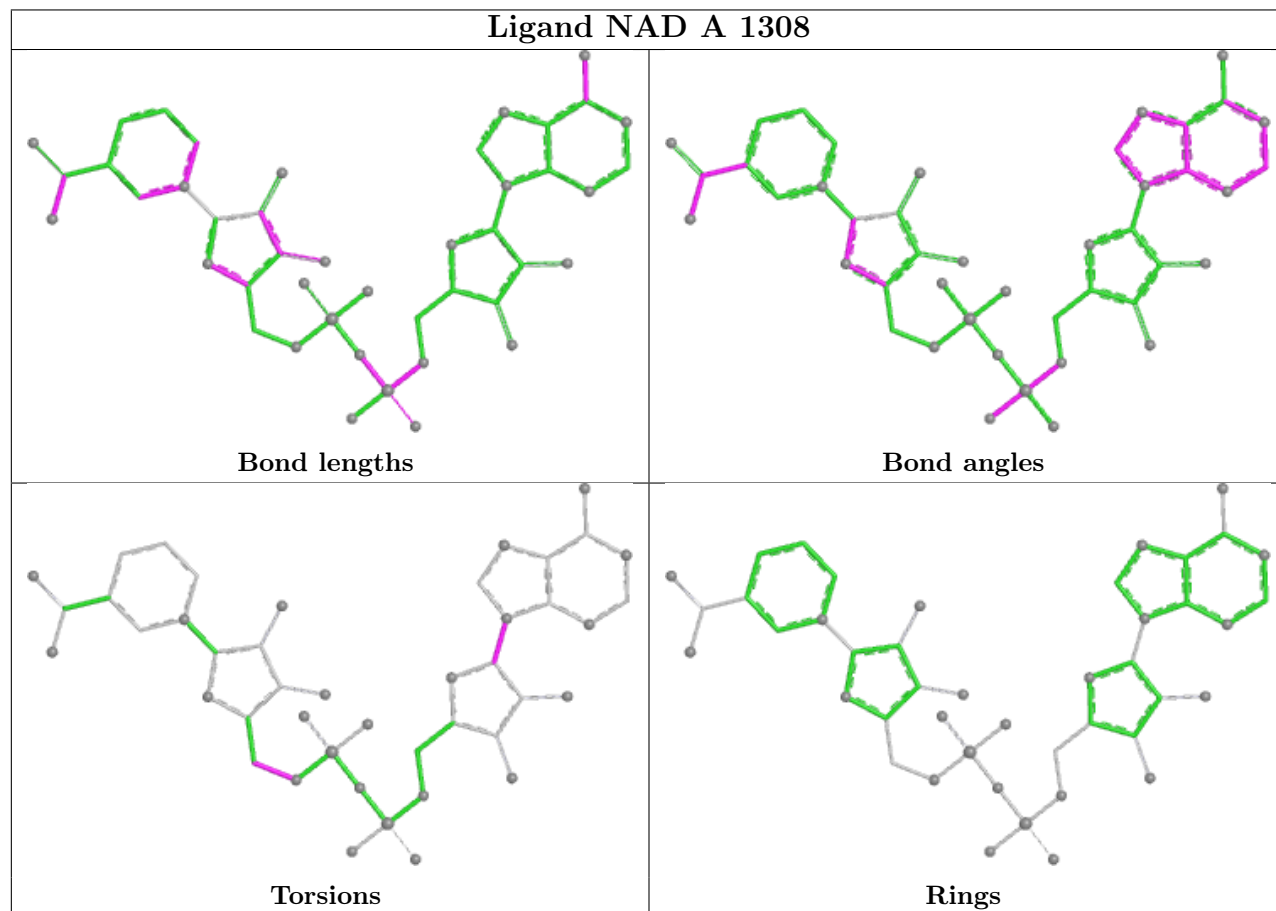
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	1306	PEG	1	0
7	A	1308	NAD	2	0
2	A	1301	FAD	3	0
2	B	1301	FAD	1	0
7	B	1312	NAD	2	0

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 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.

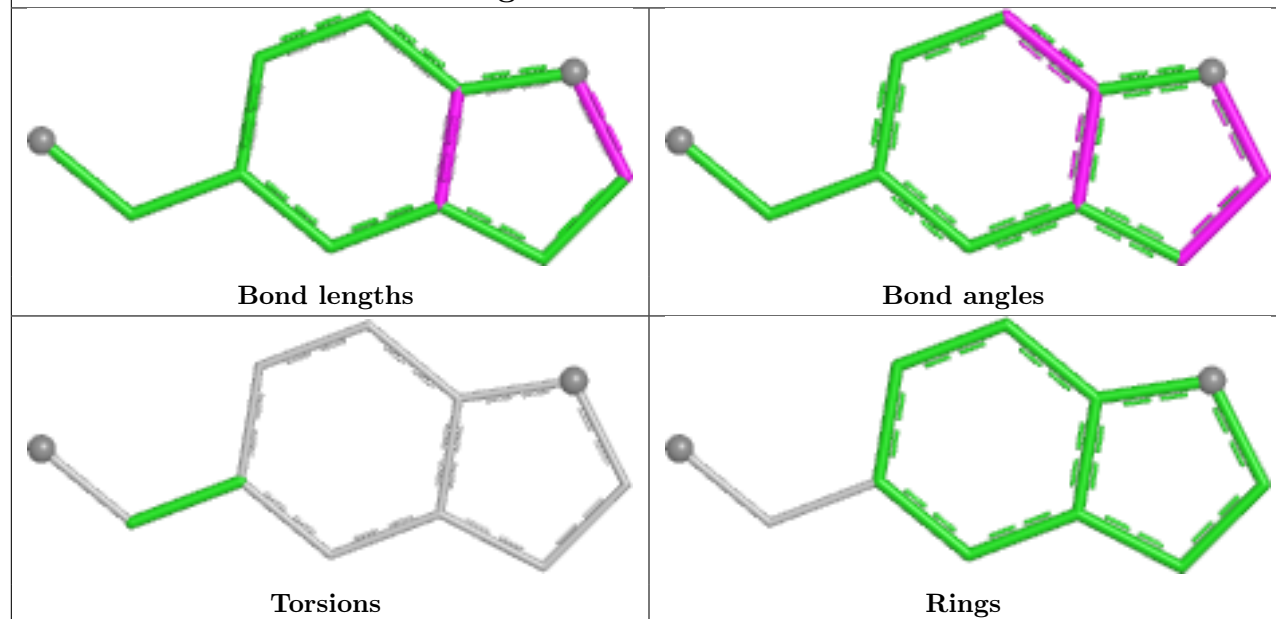
Ligand A1BDU A 1307



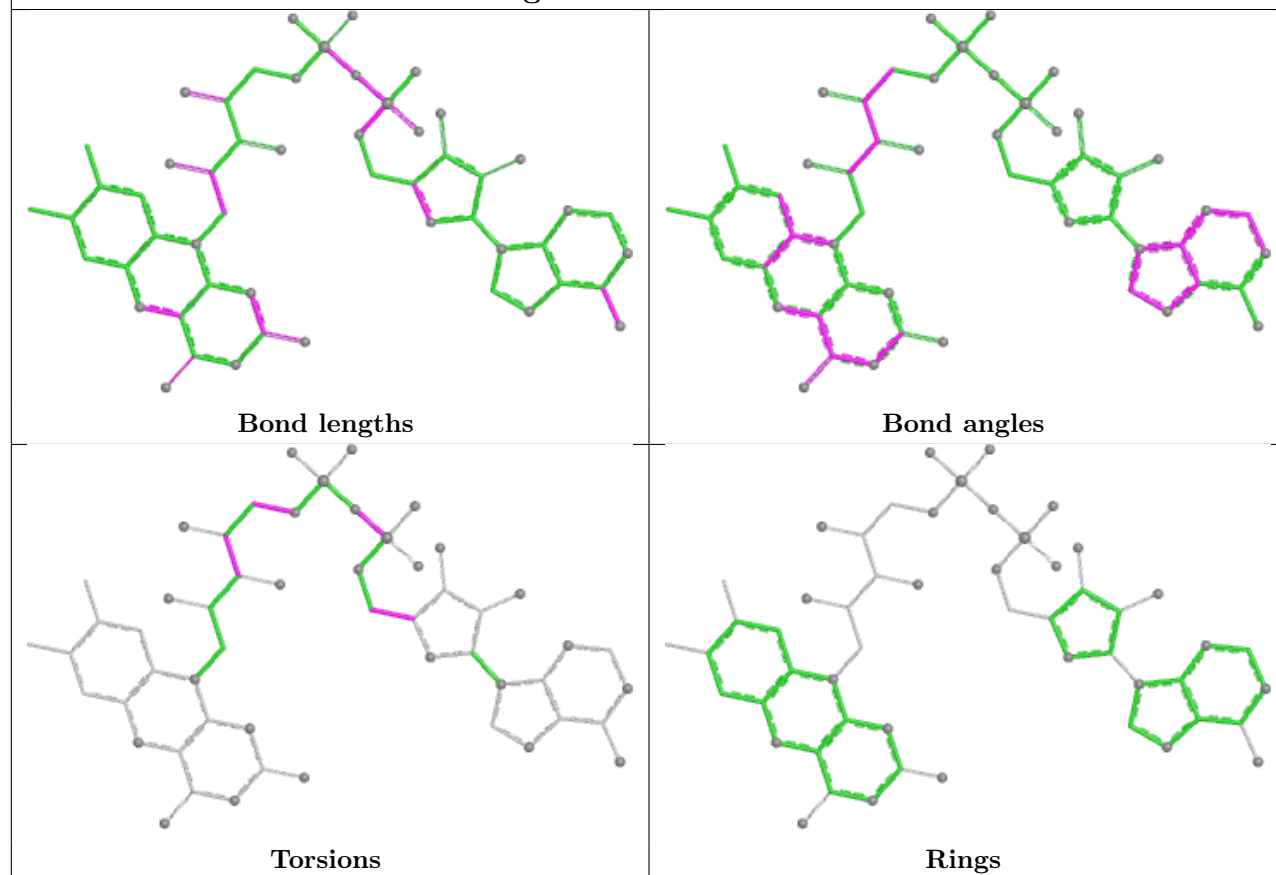
Ligand NAD A 1308

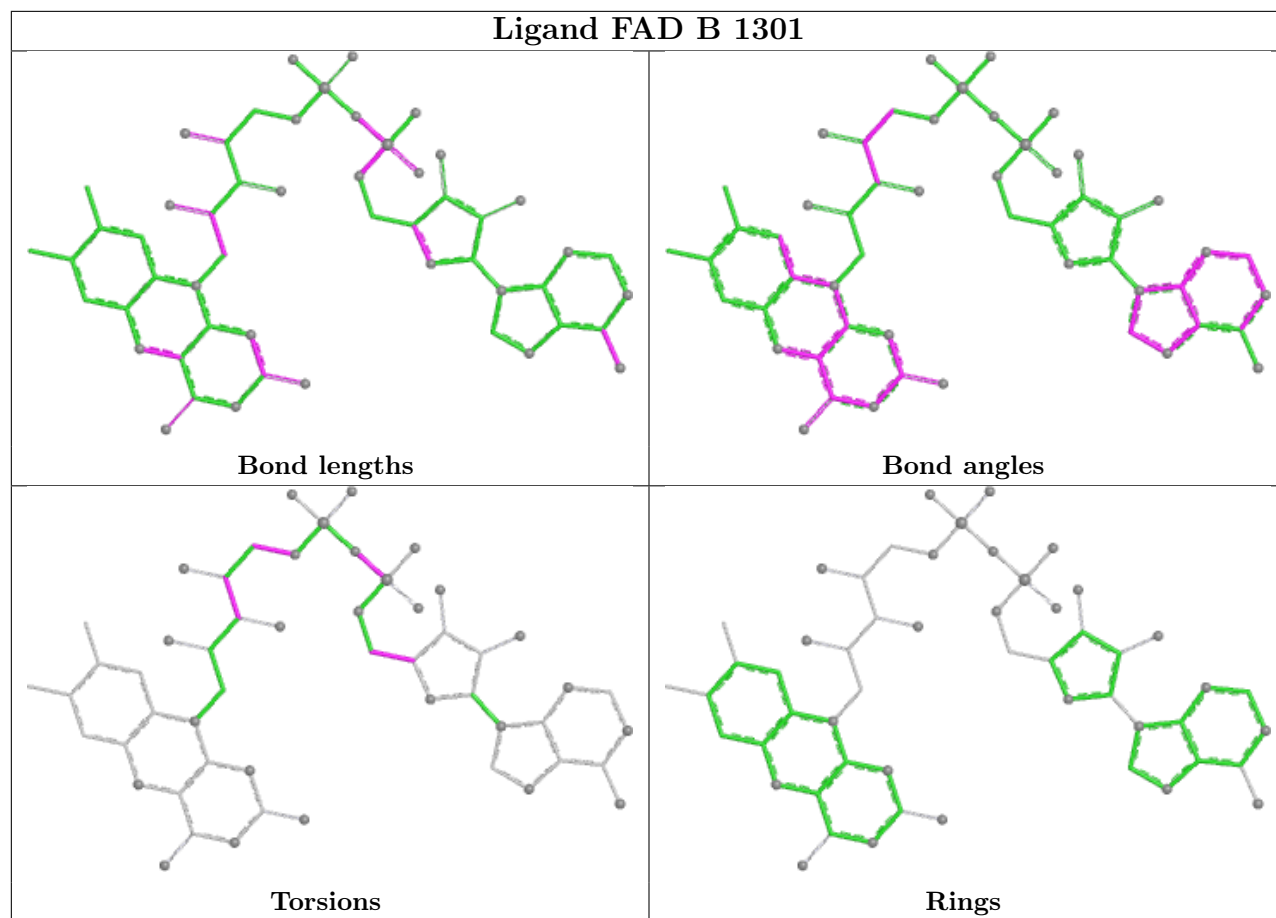


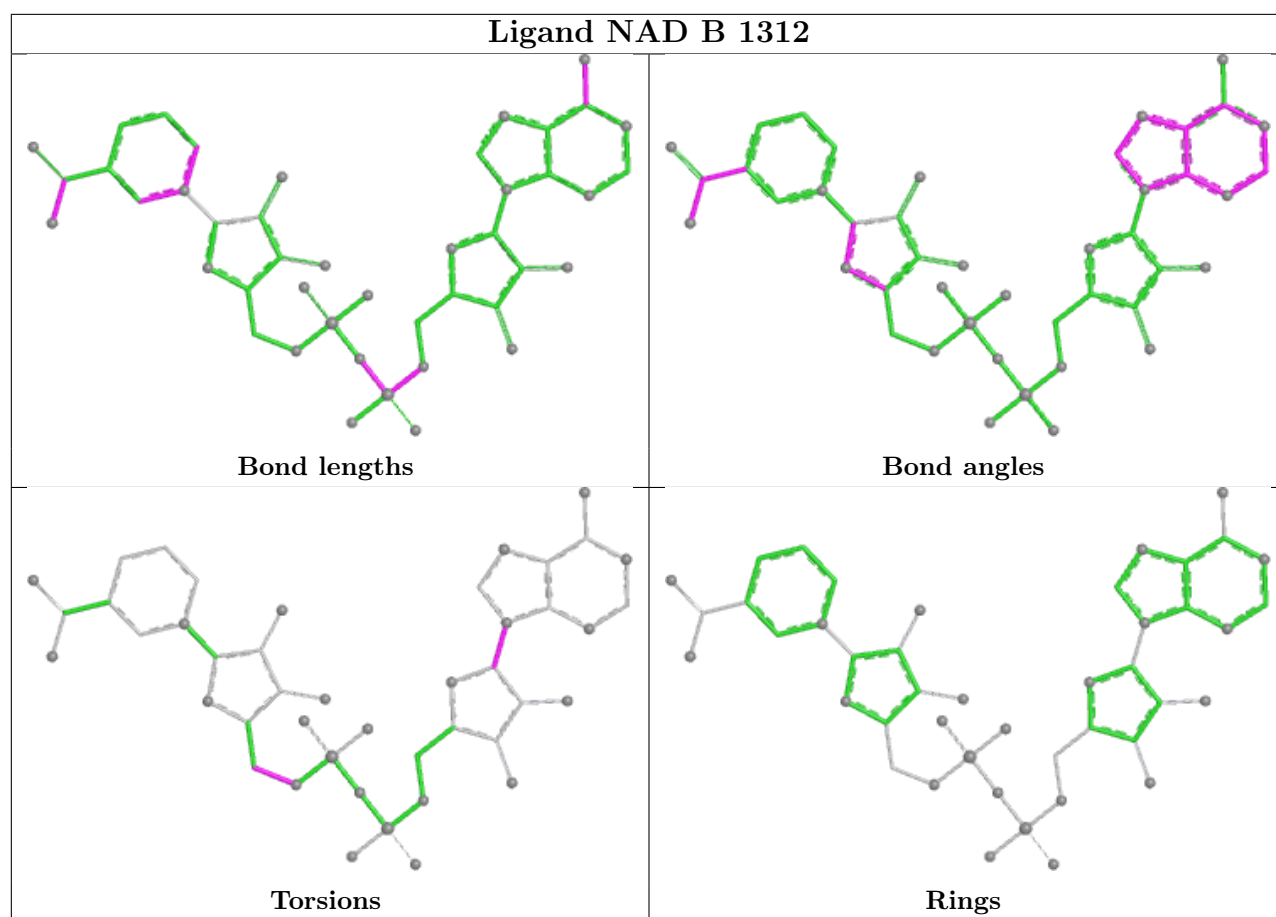
Ligand A1BDU B 1310



Ligand FAD A 1301







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	1214/1235 (98%)	0.42	77 (6%) 26 30	9, 22, 40, 64	17 (1%)
1	B	1210/1235 (97%)	0.50	105 (8%) 16 18	9, 21, 43, 63	15 (1%)
All	All	2424/2470 (98%)	0.46	182 (7%) 20 23	9, 22, 41, 64	32 (1%)

All (182) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1232	ILE	7.6
1	B	1229	LEU	6.7
1	B	491	LEU	6.6
1	B	486	LEU	6.4
1	B	1222	ALA	6.3
1	B	487	VAL	6.2
1	B	490	LEU	6.2
1	A	1222	ALA	6.1
1	B	1223	ALA	6.0
1	B	1230	MET	5.9
1	B	482	LEU	5.8
1	B	484	ALA	5.5
1	B	495	ALA	5.3
1	B	481	THR	5.3
1	B	510	ILE	5.3
1	A	134	LEU	5.3
1	B	483	LEU	5.3
1	A	156	THR	5.2
1	B	1231	ALA	5.2
1	B	500	VAL	5.1
1	A	1223	ALA	5.0
1	B	918	THR	4.9
1	B	485	TYR	4.8
1	A	490	LEU	4.8

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Mol	Chain	Res	Type	RSRZ
1	A	82	SER	4.8
1	B	1227	ALA	4.7
1	A	1225	GLY	4.7
1	A	1230	MET	4.6
1	B	223	LEU	4.6
1	B	915	ALA	4.5
1	B	1225	GLY	4.5
1	A	485	TYR	4.5
1	A	484	ALA	4.5
1	A	481	THR	4.5
1	B	508	VAL	4.4
1	B	415	VAL	4.3
1	B	134	LEU	4.2
1	A	1232	ILE	4.2
1	A	494	GLY	4.1
1	B	478	THR	4.1
1	B	914	LEU	4.1
1	B	503	ILE	4.0
1	A	1227	ALA	3.9
1	A	491	LEU	3.9
1	A	1228	SER	3.9
1	A	487	VAL	3.9
1	B	1228	SER	3.8
1	A	482	LEU	3.7
1	A	1226	ASN	3.7
1	B	14	ALA	3.7
1	A	130	TRP	3.6
1	A	137	SER	3.6
1	B	1233	GLY	3.6
1	B	439	PHE	3.5
1	A	14	ALA	3.5
1	A	223	LEU	3.5
1	B	912	ILE	3.5
1	A	796	ASP	3.5
1	A	129	ASN	3.5
1	A	486	LEU	3.5
1	B	129	ASN	3.5
1	A	116	THR	3.4
1	B	128	GLY	3.4
1	A	451	GLY	3.4
1	B	414	ASP	3.4
1	B	479	HIS	3.4

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Mol	Chain	Res	Type	RSRZ
1	B	132	SER	3.4
1	B	84	VAL	3.3
1	A	483	LEU	3.2
1	A	1229	LEU	3.2
1	B	1226	ASN	3.2
1	B	506	PRO	3.2
1	A	500	VAL	3.1
1	B	74	ALA	3.1
1	A	125	ILE	3.1
1	B	127	ASP	3.1
1	A	492	GLU	3.1
1	B	492	GLU	3.1
1	B	331	GLY	3.1
1	A	120	LEU	3.0
1	B	83	GLY	3.0
1	A	111	ILE	3.0
1	A	115	ALA	3.0
1	B	66	SER	3.0
1	A	127	ASP	3.0
1	A	192	GLY	3.0
1	A	1231	ALA	3.0
1	B	115	ALA	3.0
1	B	488	ARG	2.9
1	B	116	THR	2.9
1	B	195	PHE	2.9
1	A	128	GLY	2.9
1	A	1233	GLY	2.8
1	B	499	PHE	2.8
1	B	513	LEU	2.8
1	B	133	HIS	2.8
1	B	412	ALA	2.8
1	B	156	THR	2.8
1	B	75	LEU	2.8
1	A	195	PHE	2.8
1	A	586	ALA	2.8
1	A	1221	ALA	2.8
1	B	489	ARG	2.7
1	B	511	ASP	2.7
1	B	224	GLY	2.7
1	A	912	ILE	2.7
1	B	1224	GLY	2.7
1	B	456	LEU	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	571	ALA	2.7
1	B	77	GLY	2.7
1	A	113	ASP	2.7
1	A	905	LEU	2.7
1	B	71	LEU	2.7
1	A	114	THR	2.6
1	B	155	LEU	2.6
1	B	451	GLY	2.6
1	B	438	ASP	2.6
1	A	112	PRO	2.6
1	A	478	THR	2.6
1	B	509	SER	2.6
1	B	130	TRP	2.5
1	A	801	ALA	2.5
1	B	524	MET	2.5
1	B	514	ILE	2.5
1	A	132	SER	2.5
1	B	916	SER	2.5
1	B	1221	ALA	2.5
1	A	479	HIS	2.5
1	B	440	HIS	2.5
1	A	503	ILE	2.5
1	A	138	ARG	2.4
1	B	523	ALA	2.4
1	B	157	SER	2.4
1	A	1224	GLY	2.4
1	A	119	ALA	2.4
1	B	917	GLU	2.3
1	A	543	ASP	2.3
1	A	155	LEU	2.3
1	B	462	GLY	2.3
1	B	919	GLY	2.3
1	A	495	ALA	2.3
1	B	1062	ALA	2.3
1	B	905	LEU	2.3
1	A	506	PRO	2.3
1	B	501	HIS	2.3
1	A	489	ARG	2.2
1	A	131	LYS	2.2
1	A	934	LEU	2.2
1	B	138	ARG	2.2
1	A	258	GLU	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	133	HIS	2.2
1	A	520	VAL	2.2
1	B	68	ALA	2.2
1	B	1144	THR	2.2
1	A	224	GLY	2.2
1	B	498	SER	2.2
1	A	937	LEU	2.1
1	B	937	LEU	2.1
1	B	525	PRO	2.1
1	B	139	SER	2.1
1	B	504	ASN	2.1
1	A	949	ILE	2.1
1	B	19	ALA	2.1
1	B	64	ALA	2.1
1	B	125	ILE	2.1
1	B	411	ALA	2.1
1	B	76	ARG	2.1
1	B	1140	ASN	2.1
1	B	1141	LEU	2.1
1	A	793	GLN	2.1
1	A	414	ASP	2.1
1	B	72	ILE	2.1
1	B	460	VAL	2.1
1	B	437	LYS	2.1
1	A	1203	ASP	2.0
1	A	771	ALA	2.0
1	A	15	PRO	2.0
1	B	112	PRO	2.0
1	A	121	ILE	2.0
1	B	416	VAL	2.0
1	B	1058	ASP	2.0
1	B	413	THR	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 ⓘ

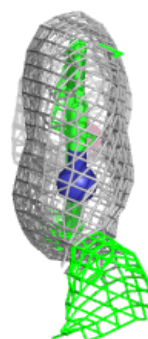
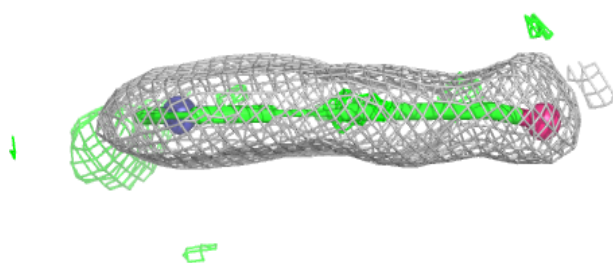
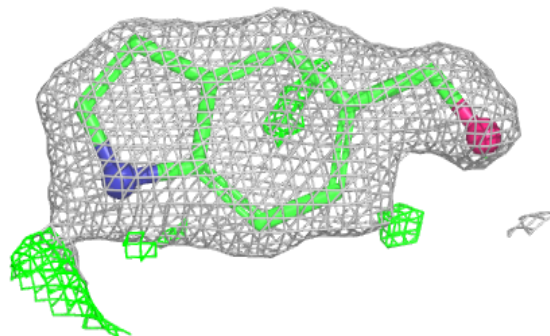
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
8	SO4	B	1316	5/5	0.50	0.18	51,52,56,57	5
5	FMT	B	1311	3/3	0.78	0.20	24,24,24,26	3
4	PEG	B	1306	7/7	0.79	0.16	31,39,45,48	0
5	FMT	B	1307	3/3	0.81	0.13	19,19,23,27	3
5	FMT	A	1304	3/3	0.83	0.13	40,40,43,46	0
8	SO4	A	1312	5/5	0.83	0.14	37,37,42,50	5
3	PGE	B	1309	10/10	0.83	0.19	18,33,37,37	10
4	PEG	A	1305	7/7	0.85	0.13	27,31,39,41	0
3	PGE	A	1302	10/10	0.86	0.13	30,32,46,47	0
4	PEG	B	1308	7/7	0.87	0.12	34,35,40,41	0
6	A1BDU	A	1307	11/11	0.88	0.14	19,23,25,29	11
6	A1BDU	B	1310	11/11	0.89	0.13	21,25,28,30	11
10	1PE	B	1305	16/16	0.89	0.12	28,34,38,40	0
4	PEG	A	1303	7/7	0.90	0.11	26,27,30,31	0
4	PEG	B	1304	7/7	0.91	0.11	23,25,29,36	0
5	FMT	A	1306	3/3	0.91	0.17	28,28,29,29	0
8	SO4	A	1310	5/5	0.91	0.11	30,31,35,44	5
3	PGE	B	1303	10/10	0.92	0.09	26,33,38,39	0
8	SO4	B	1315	5/5	0.92	0.10	28,28,32,37	5
8	SO4	B	1314	5/5	0.94	0.09	35,38,41,42	5
9	MG	B	1317	1/1	0.94	0.06	20,20,20,20	1
2	FAD	B	1301	53/53	0.94	0.09	16,19,29,34	0
5	FMT	B	1302	3/3	0.95	0.09	14,14,29,32	0
7	NAD	A	1308	44/44	0.96	0.07	17,21,24,33	0
2	FAD	A	1301	53/53	0.96	0.07	14,18,25,30	0
8	SO4	A	1311	5/5	0.96	0.09	22,26,33,35	5
7	NAD	B	1312	44/44	0.98	0.05	13,15,17,26	0
9	MG	A	1313	1/1	0.98	0.04	20,20,20,20	1
8	SO4	A	1309	5/5	0.99	0.05	18,18,22,22	0
8	SO4	B	1313	5/5	0.99	0.04	16,17,21,21	0

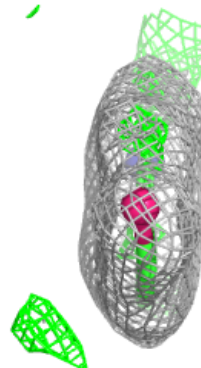
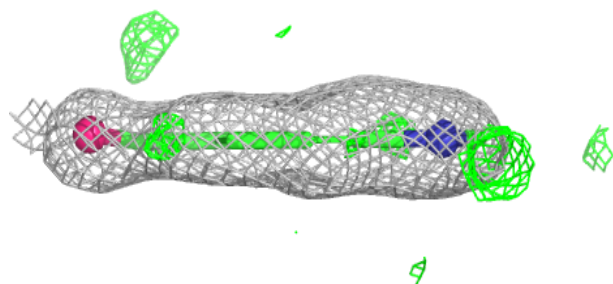
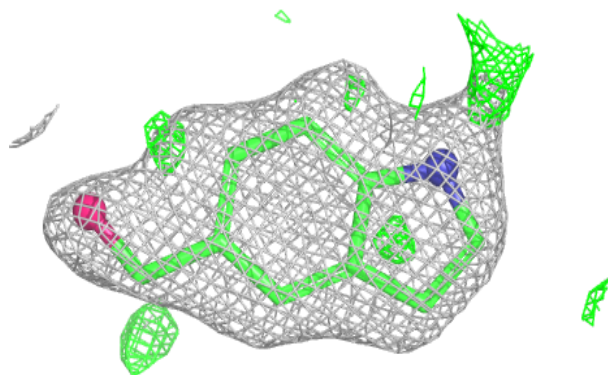
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1BDU A 1307:

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

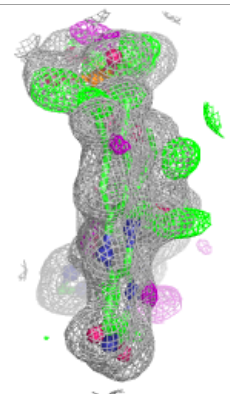
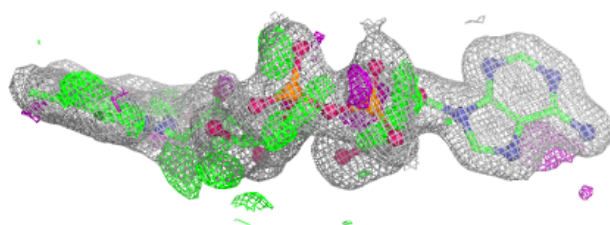
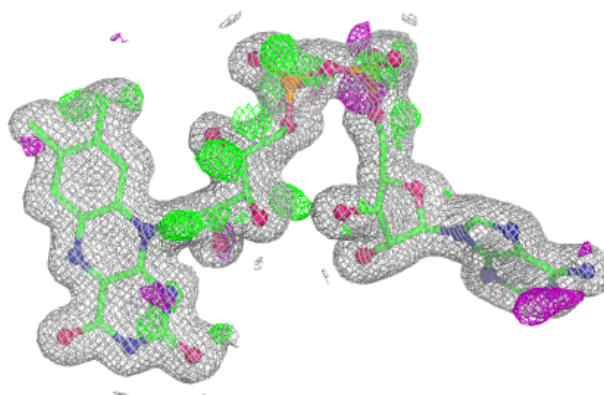
**Electron density around A1BDU B 1310:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

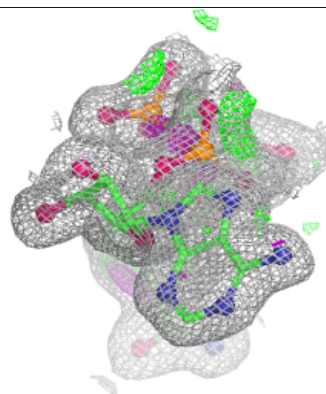
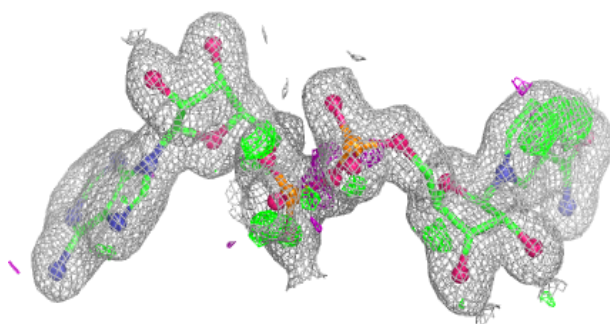
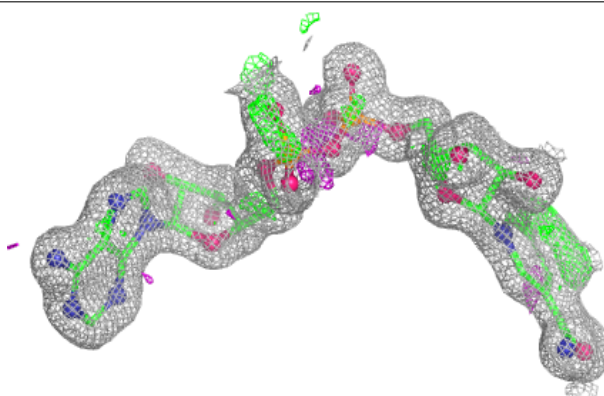


Electron density around FAD B 1301:

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

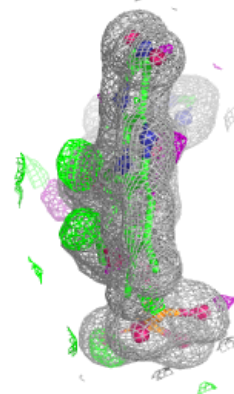
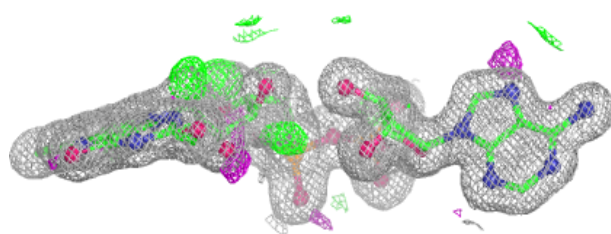
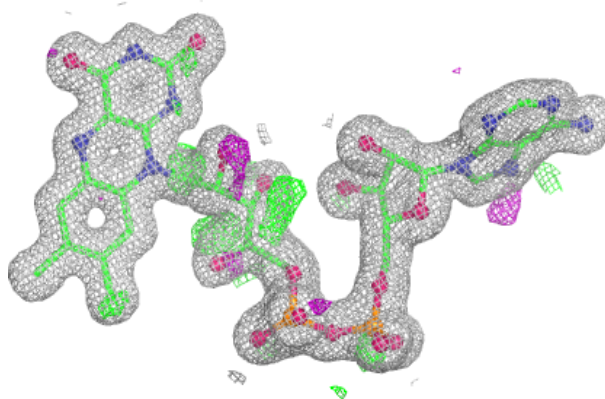
**Electron density around NAD A 1308:**

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

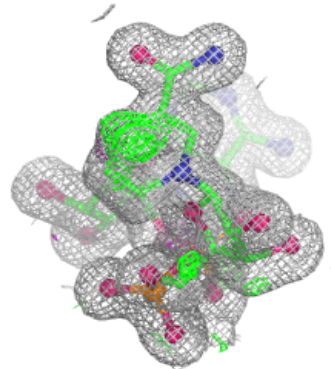
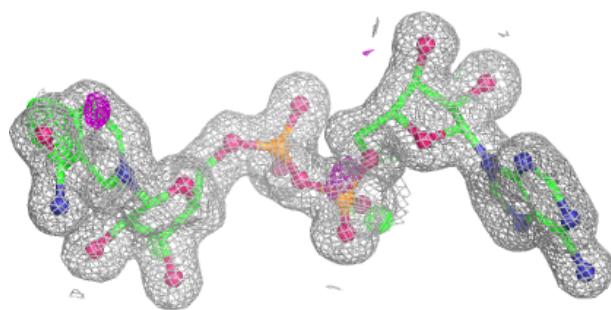
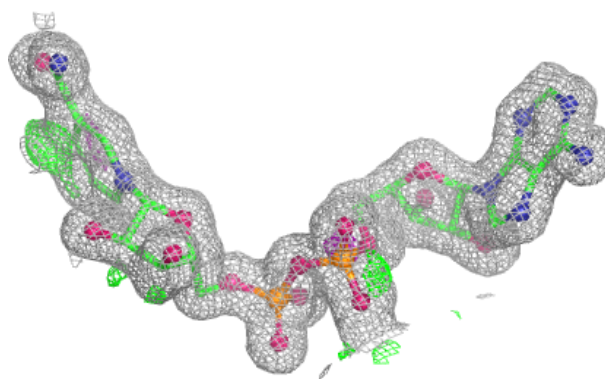


Electron density around FAD A 1301:

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

**Electron density around NAD B 1312:**

$2mF_o - DF_c$ (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.