



# Full wwPDB X-ray Structure Validation Report ⓘ

May 29, 2020 – 11:24 pm BST

PDB ID : 3UNC  
Title : Crystal Structure of Bovine Milk Xanthine Dehydrogenase to 1.65Å Resolution  
Authors : Eger, B.T.; Okamoto, K.; Nishino, T.; Pai, E.F.  
Deposited on : 2011-11-15  
Resolution : 1.65 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

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

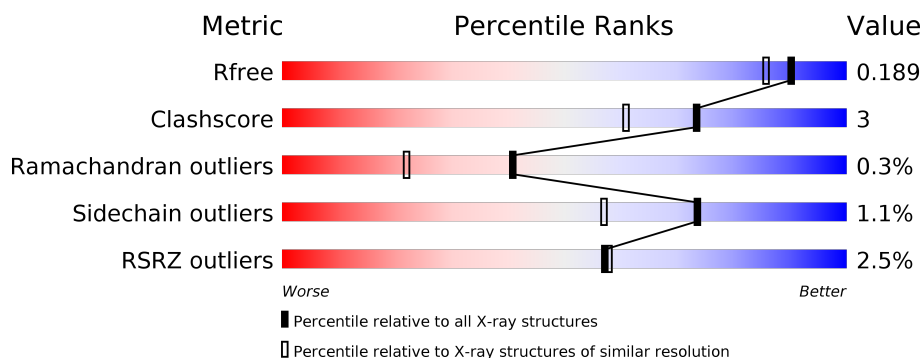
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.65 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	1827 (1.66-1.66)
Clashscore	141614	1931 (1.66-1.66)
Ramachandran outliers	138981	1891 (1.66-1.66)
Sidechain outliers	138945	1891 (1.66-1.66)
RSRZ outliers	127900	1791 (1.66-1.66)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	1332	<div> <div>2%</div> <div> <div></div> <div>89%</div> <div>7%</div> <div>•</div> </div> </div>
1	B	1332	<div> <div>3%</div> <div> <div></div> <div>90%</div> <div>6%</div> <div>••</div> </div> </div>

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	MOS	B	1336	-	-	X	-

## 2 Entry composition [i](#)

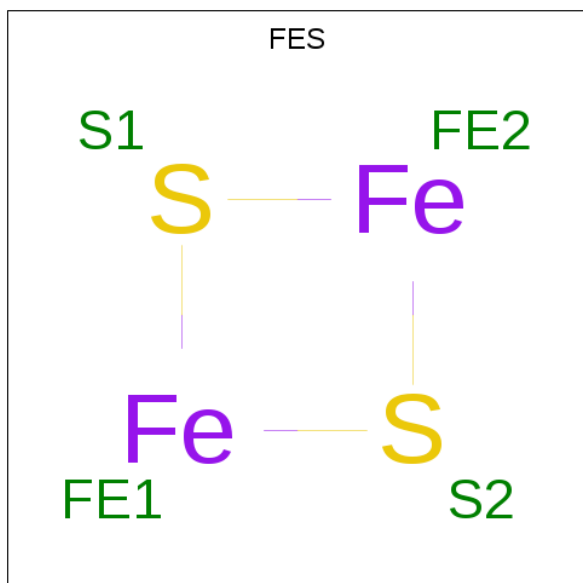
There are 10 unique types of molecules in this entry. The entry contains 22475 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Xanthine dehydrogenase/oxidase.

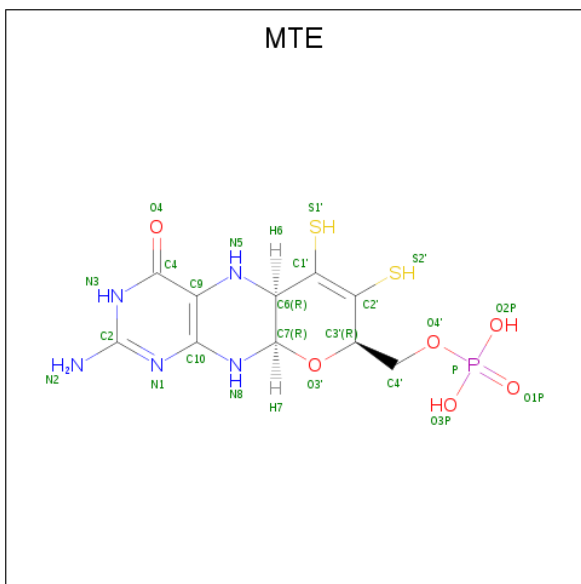
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1286	Total	C	N	O	S	0	13	0
			10084	6408	1726	1884	66			
1	B	1289	Total	C	N	O	S	0	9	0
			10073	6400	1723	1883	67			

- Molecule 2 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula:  $\text{Fe}_2\text{S}_2$ ).



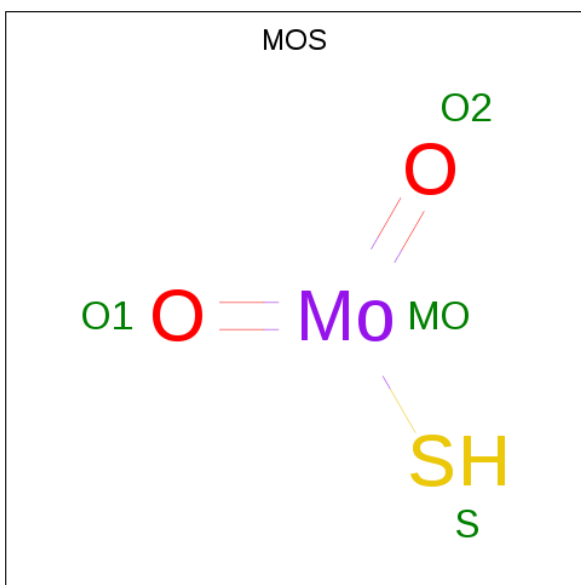
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	Fe	S	0	0
			4	2	2		
2	A	1	Total	Fe	S	0	0
			4	2	2		
2	B	1	Total	Fe	S	0	0
			4	2	2		
2	B	1	Total	Fe	S	0	0
			4	2	2		

- Molecule 3 is PHOSPHONIC ACIDMONO-(2-AMINO-5,6-DIMERCAPTO-4-OXO-3,7,8A, 9,10,10A-HEXAHYDRO-4H-8-OXA-1,3,9,10-TETRAAZA-ANTHRACEN-7-YLMETHYL) ESTER (three-letter code: MTE) (formula:  $C_{10}H_{14}N_5O_6P_2S_2$ ).



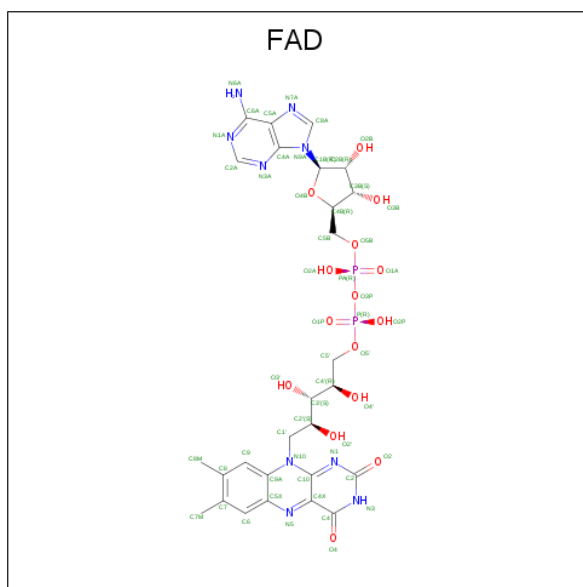
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	S	0	0
			24	10	5	6	1	2		
3	B	1	Total	C	N	O	P	S	0	0
			24	10	5	6	1	2		

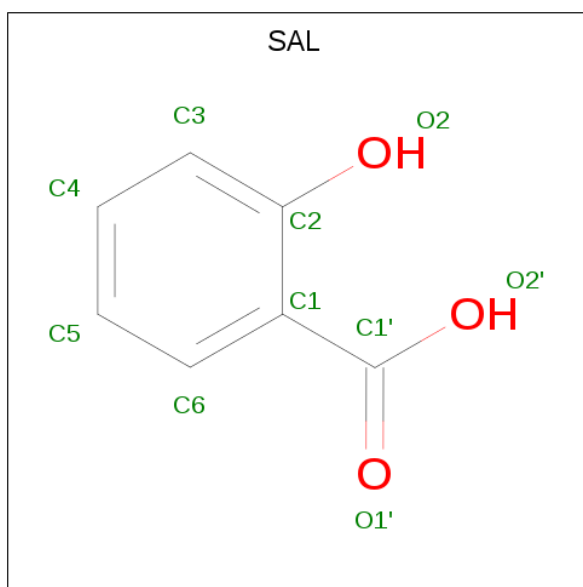
- Molecule 4 is DIOXOTHIOMOLYBDENUM(VI) ION (three-letter code: MOS) (formula:  $HMoO_2S$ ).



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

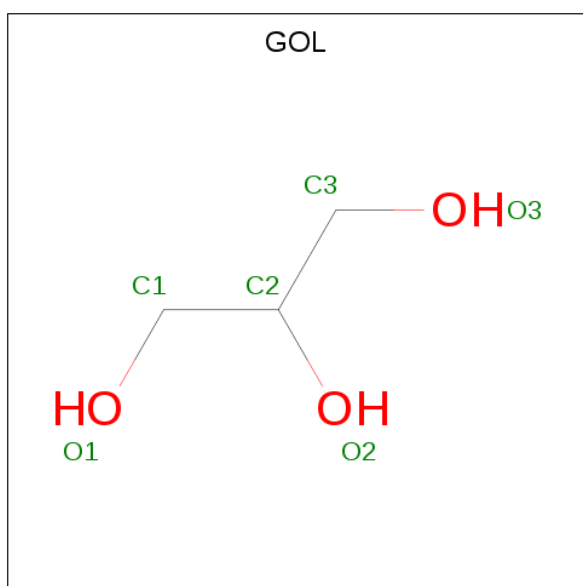
- Molecule 5 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula:  $C_{27}H_{33}N_9O_{15}P_2$ ).





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

- Molecule 7 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			6	3	3		
7	A	1	Total	C	O	0	0
			6	3	3		

*Continued on next page...*

*Continued from previous page...*

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

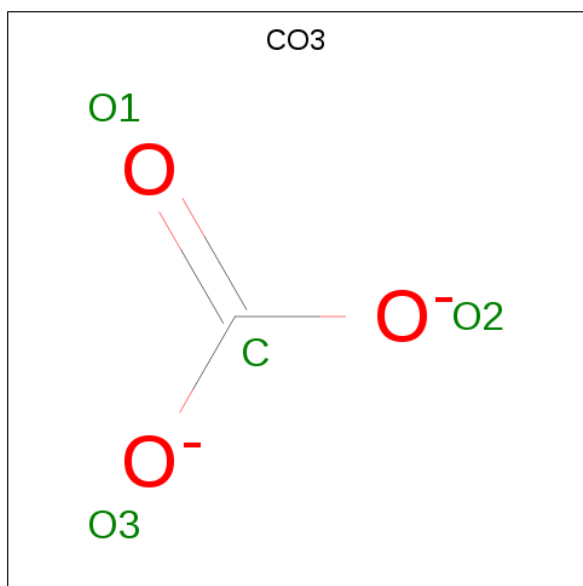
*Continued on next page...*



Continued from previous page...

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

- Molecule 8 is CARBONATE ION (three-letter code: CO3) (formula: CO<sub>3</sub>).



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

- Molecule 9 is CALCIUM ION (three-letter code: CA) (formula: Ca).

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

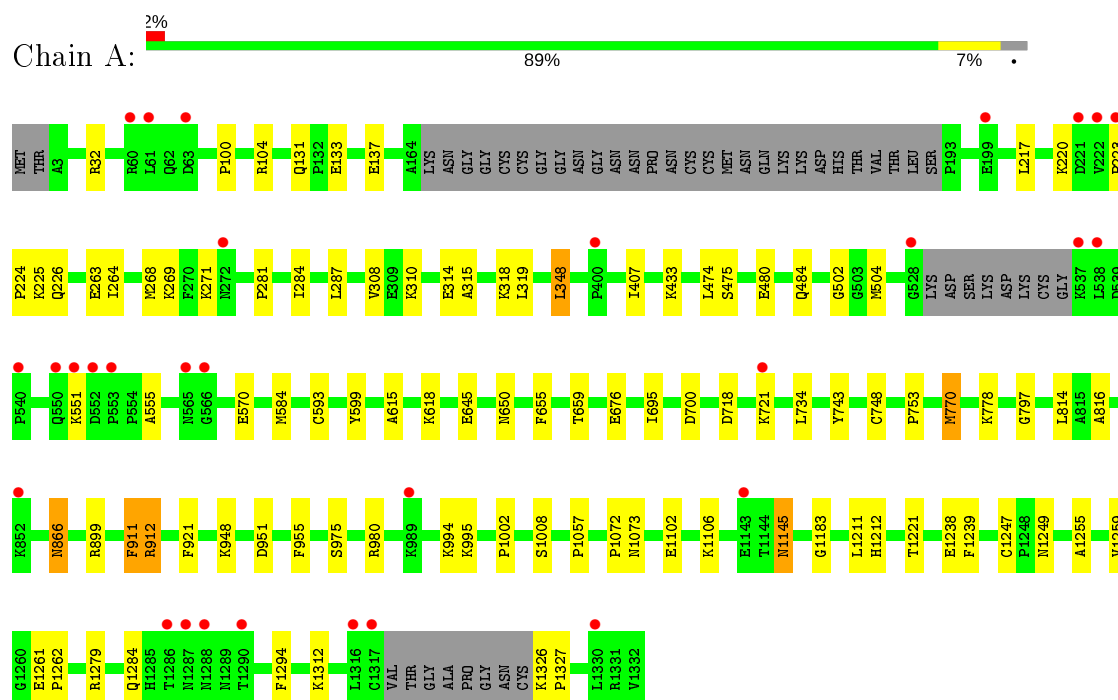
- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	990	Total	O	0	0
			990	990		
10	B	976	Total	O	0	0
			976	976		

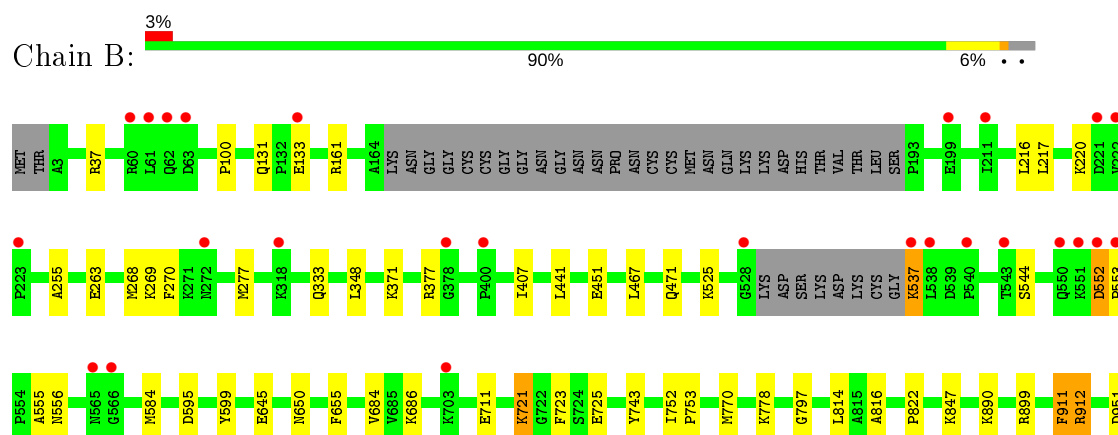
### 3 Residue-property plots [i](#)

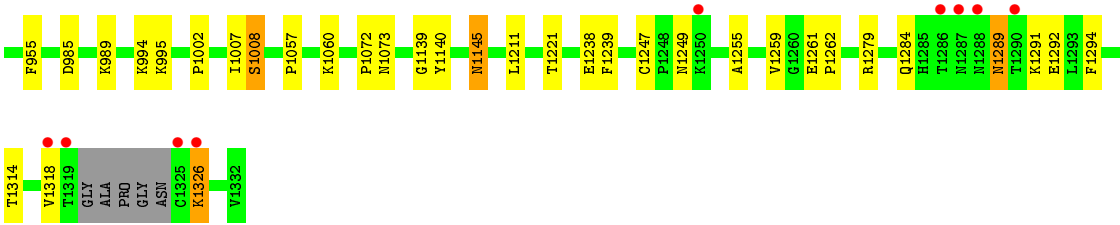
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

#### • Molecule 1: Xanthine dehydrogenase/oxidase



#### • Molecule 1: Xanthine dehydrogenase/oxidase





## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	167.57Å 124.37Å 148.18Å 90.00° 91.02° 90.00°	Depositor
Resolution (Å)	20.00 – 1.65 19.97 – 1.65	Depositor EDS
% Data completeness (in resolution range)	(Not available) (20.00-1.65) 92.8 (19.97-1.65)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.88 (at 1.65Å)	Xtriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.177 , 0.196 0.166 , 0.189	Depositor DCC
$R_{free}$ test set	4755 reflections (1.31%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	17.9	Xtriage
Anisotropy	0.431	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.39 , 52.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.013 for -h,-k,l	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	22475	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.00% 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, CO3, SAL, MOS, CA, FES, FAD, MTE

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	0.49	0/10302	0.71	0/13941
1	B	0.49	0/10291	0.72	0/13927
All	All	0.49	0/20593	0.71	0/27868

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	10084	0	10078	70	0
1	B	10073	0	10064	61	0
2	A	8	0	0	0	0
2	B	8	0	0	0	0
3	A	24	0	10	0	0
3	B	24	0	10	1	0
4	A	4	0	0	1	0
4	B	4	0	0	4	0
5	A	53	0	31	1	0
5	B	53	0	31	1	0
6	A	10	0	4	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	10	0	4	0	0
7	A	66	0	88	3	0
7	B	78	0	104	2	0
8	A	4	0	0	0	0
8	B	4	0	0	0	0
9	A	1	0	0	0	0
9	B	1	0	0	0	0
10	A	990	0	0	8	0
10	B	976	0	0	6	0
All	All	22475	0	20424	135	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 3.

All (135) 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:1211:LEU:HA	1:A:1221[B]:THR:HG21	1.47	0.95
1:A:955:PHE:HA	1:A:1145:ASN:HD21	1.33	0.93
1:B:1211:LEU:HA	1:B:1221[B]:THR:HG21	1.54	0.89
1:A:131:GLN:HE21	1:A:133:GLU:H	1.26	0.82
1:B:131:GLN:HE21	1:B:133:GLU:H	1.28	0.81
1:A:645:GLU:HG2	1:A:650:ASN:HD22	1.46	0.81
1:A:584[B]:MET:SD	10:A:1397:HOH:O	2.37	0.80
1:A:433:LYS:HE2	1:A:504:MET:SD	2.23	0.78
1:A:137:GLU:HG3	1:A:551:LYS:HZ2	1.49	0.77
1:A:137:GLU:HG3	1:A:551:LYS:NZ	2.01	0.75
1:B:1279:ARG:HG2	1:B:1294:PHE:HE2	1.51	0.74
1:A:650:ASN:HD21	1:A:778:LYS:HE3	1.53	0.73
1:B:584[A]:MET:SD	10:B:2259:HOH:O	2.46	0.73
1:B:955:PHE:HA	1:B:1145:ASN:HD21	1.53	0.73
1:A:1279:ARG:HG2	1:A:1294:PHE:HE2	1.56	0.71
1:B:552:ASP:OD2	1:B:553:PRO:HD2	1.91	0.70
1:B:525:LYS:HA	1:B:537:LYS:HE3	1.75	0.67
1:B:537:LYS:N	1:B:537:LYS:HD3	2.09	0.66
4:B:1336:MOS:O2	4:B:1336:MOS:MO	1.67	0.65
1:A:271:LYS:NZ	7:A:1345:GOL:H11	2.12	0.64
1:B:684:VAL:O	1:B:686:LYS:HD2	1.98	0.64
1:A:269:LYS:HE3	10:A:1717:HOH:O	1.96	0.63
1:B:995:LYS:NZ	1:B:1284:GLN:HE21	1.97	0.63
1:B:650:ASN:HD21	1:B:778:LYS:HE3	1.64	0.63

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:1336:MOS:S	4:B:1336:MOS:MO	2.11	0.62
1:B:217:LEU:O	1:B:220:LYS:HG2	2.00	0.62
4:A:1336:MOS:O2	4:A:1336:MOS:MO	1.71	0.61
1:B:269:LYS:HE3	10:B:2138:HOH:O	2.01	0.60
1:B:1326:LYS:H	1:B:1326:LYS:HD3	1.67	0.59
1:A:268[B]:MET:HE1	10:A:1710:HOH:O	2.04	0.57
1:A:264:ILE:O	1:A:268[B]:MET:HG3	2.06	0.56
1:B:1249:ASN:O	1:B:1255:ALA:HA	2.07	0.55
1:B:994:LYS:HD3	7:B:1349:GOL:O1	2.07	0.54
1:B:377:ARG:HG3	1:B:377:ARG:HH11	1.73	0.54
1:A:995:LYS:NZ	1:A:1284:GLN:HE21	2.07	0.52
1:A:474:LEU:O	1:A:475[A]:SER:HB2	2.09	0.52
1:A:570:GLU:OE2	1:A:1057:PRO:HG3	2.10	0.51
1:A:655:PHE:HE1	1:A:814:LEU:HD23	1.74	0.51
1:B:890:LYS:HE3	1:B:951:ASP:OD2	2.10	0.51
1:A:955:PHE:HA	1:A:1145:ASN:ND2	2.16	0.51
1:A:271:LYS:HZ1	7:A:1345:GOL:H11	1.74	0.51
1:A:217:LEU:O	1:A:220:LYS:HG2	2.11	0.51
1:B:348:LEU:HD13	1:B:407:ILE:CD1	2.41	0.51
1:A:502:GLY:HA3	10:A:1868:HOH:O	2.10	0.51
1:B:371:LYS:HE3	10:B:1993:HOH:O	2.11	0.51
1:A:995:LYS:HZ3	1:A:1284:GLN:HE21	1.59	0.50
1:B:268[A]:MET:HE3	10:B:2132:HOH:O	2.10	0.50
1:A:1212:HIS:H	1:A:1221[B]:THR:HG22	1.77	0.50
1:A:263:GLU:HB2	5:A:1337:FAD:H52A	1.94	0.50
1:A:645:GLU:HG2	1:A:650:ASN:ND2	2.22	0.50
1:A:32[A]:ARG:HH12	1:A:676:GLU:CD	2.14	0.50
1:A:593:CYS:HB3	1:A:748[A]:CYS:SG	2.51	0.50
1:B:544:SER:O	1:B:994:LYS:HE2	2.12	0.49
1:A:264:ILE:O	1:A:268[B]:MET:CG	2.60	0.49
1:B:995:LYS:HZ3	1:B:1284:GLN:HE21	1.59	0.49
1:A:645:GLU:CG	1:A:650:ASN:HD22	2.22	0.49
1:A:32[A]:ARG:NH1	1:A:676:GLU:OE2	2.40	0.48
1:B:655:PHE:HE1	1:B:814:LEU:HD23	1.79	0.48
1:B:1221[B]:THR:O	1:B:1221[B]:THR:HG23	2.14	0.48
1:A:948:LYS:HG2	1:A:951:ASP:OD2	2.14	0.47
1:A:1249:ASN:O	1:A:1255:ALA:HA	2.14	0.47
1:B:467:LEU:O	1:B:471:GLN:HG2	2.15	0.47
1:A:618:LYS:HA	1:A:618:LYS:HE2	1.96	0.47
4:B:1336:MOS:S	4:B:1336:MOS:O1	2.73	0.47
1:A:1326:LYS:N	1:A:1327:PRO:HD2	2.30	0.47

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:161:ARG:HB2	10:B:1791:HOH:O	2.15	0.47
1:B:985:ASP:O	1:B:989:LYS:HG3	2.16	0.46
1:A:318:LYS:HG3	1:A:319:LEU:HG	1.97	0.46
1:B:1279:ARG:HG2	1:B:1294:PHE:CE2	2.41	0.46
1:A:659[A]:THR:HG21	10:A:1845:HOH:O	2.15	0.46
1:A:555:ALA:O	1:A:1238:GLU:HA	2.16	0.46
1:A:223:PRO:HA	1:A:224:PRO:HD3	1.82	0.46
1:A:271:LYS:HZ3	7:A:1345:GOL:H11	1.81	0.45
1:B:1289:ASN:ND2	1:B:1291:LYS:H	2.14	0.45
1:B:753:PRO:HD3	1:B:816:ALA:HB1	1.99	0.45
1:B:655:PHE:CE1	1:B:814:LEU:HD23	2.52	0.45
3:B:1335:MTE:S1'	4:B:1336:MOS:S	3.15	0.45
1:A:225:LYS:HE3	1:A:226:GLN:O	2.17	0.45
1:B:1314:THR:O	1:B:1318:VAL:HG13	2.16	0.45
1:A:407[A]:ILE:HD12	1:A:407[A]:ILE:N	2.32	0.45
1:B:407:ILE:HG13	1:B:407:ILE:O	2.16	0.45
1:B:711:GLU:HA	1:B:899:ARG:HD2	1.98	0.45
1:A:1212:HIS:H	1:A:1221[B]:THR:CG2	2.30	0.45
1:A:480:GLU:O	1:A:484:GLN:HG3	2.17	0.45
1:A:599:TYR:HA	1:B:599:TYR:HA	1.98	0.45
1:B:37:ARG:HD3	1:B:595:ASP:O	2.16	0.45
1:A:348:LEU:HD13	1:A:407[B]:ILE:CD1	2.47	0.45
1:A:911:PHE:O	1:A:912:ARG:C	2.55	0.44
1:B:770[B]:MET:HG3	1:B:1073:ASN:HA	1.99	0.44
1:A:308:VAL:HG21	1:A:348:LEU:HG	2.00	0.43
1:A:753:PRO:HD3	1:A:816:ALA:HB1	2.00	0.43
1:A:695:ILE:HG23	1:A:700:ASP:HB3	2.00	0.43
1:B:723:PHE:CZ	1:B:847:LYS:HE2	2.54	0.43
1:B:255:ALA:HB2	1:B:277:MET:HG2	2.01	0.43
1:A:1259:VAL:O	1:A:1259:VAL:HG22	2.19	0.43
1:A:1312:LYS:HG2	10:A:1880:HOH:O	2.19	0.43
1:B:377:ARG:HG3	1:B:377:ARG:NH1	2.34	0.42
1:A:284:ILE:CG2	1:A:287[A]:LEU:HD23	2.49	0.42
1:B:1007:ILE:O	1:B:1008:SER:CB	2.67	0.42
1:B:1057:PRO:HD2	1:B:1060:LYS:HD2	2.01	0.42
1:B:955:PHE:HA	1:B:1145:ASN:ND2	2.29	0.42
1:A:1261:GLU:N	1:A:1262:PRO:CD	2.83	0.42
1:B:1259:VAL:O	1:B:1259:VAL:HG22	2.19	0.42
1:B:556:ASN:ND2	10:B:1792:HOH:O	2.45	0.42
1:A:718:ASP:HB3	1:A:721:LYS:HE3	2.01	0.42
1:B:1261:GLU:N	1:B:1262:PRO:CD	2.82	0.42

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1183:GLY:HA2	1:A:1247[A]:CYS:O	2.20	0.42
1:A:899:ARG:HD3	10:A:2207:HOH:O	2.19	0.41
1:B:911:PHE:O	1:B:912:ARG:C	2.58	0.41
1:A:1102:GLU:OE2	1:A:1106:LYS:HE3	2.20	0.41
1:B:270:PHE:CD2	7:B:1345:GOL:H32	2.55	0.41
1:B:721:LYS:O	1:B:725:GLU:HG3	2.20	0.41
1:B:525:LYS:HG3	1:B:537:LYS:CE	2.50	0.41
1:A:866:ASN:C	1:A:866:ASN:HD22	2.23	0.41
1:A:310:LYS:O	1:A:314:GLU:HG3	2.20	0.41
1:B:555:ALA:O	1:B:1238:GLU:HA	2.20	0.41
1:A:734:LEU:HD21	1:A:921:PHE:CE2	2.56	0.41
1:A:994:LYS:HE3	10:A:1886:HOH:O	2.20	0.41
1:B:1140:TYR:OH	1:B:1145:ASN:ND2	2.54	0.41
1:B:752:ILE:CD1	1:B:822:PRO:HB3	2.49	0.41
1:A:615:ALA:O	1:A:659[A]:THR:HG23	2.20	0.41
1:B:263:GLU:HB2	5:B:1337:FAD:H52A	2.02	0.41
1:A:770[A]:MET:HG3	1:A:1073:ASN:HA	2.03	0.41
1:B:216:LEU:HD23	1:B:216:LEU:HA	1.93	0.41
1:B:645:GLU:HG2	1:B:650:ASN:HD22	1.85	0.41
1:A:100:PRO:O	1:A:104:ARG:HG3	2.21	0.41
1:A:315:ALA:HA	1:A:318:LYS:HG2	2.03	0.41
1:A:407[B]:ILE:HG13	1:A:407[B]:ILE:O	2.21	0.40
1:A:975:SER:O	1:A:980:ARG:HD3	2.21	0.40
1:B:1326:LYS:N	1:B:1326:LYS:HD3	2.34	0.40
1:B:723:PHE:CE2	1:B:847:LYS:HE2	2.56	0.40
1:A:318:LYS:HG3	1:A:319:LEU:N	2.34	0.40
1:B:441:LEU:HB3	1:B:451:GLU:HB2	2.03	0.40
1:A:217:LEU:HA	1:A:217:LEU:HD12	1.97	0.40
1:B:333[B]:GLN:HE21	1:B:333[B]:GLN:HA	1.86	0.40

There are no symmetry-related clashes.

## 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	1291/1332 (97%)	1254 (97%)	34 (3%)	3 (0%)	47	28
1	B	1290/1332 (97%)	1259 (98%)	27 (2%)	4 (0%)	41	22
All	All	2581/2664 (97%)	2513 (97%)	61 (2%)	7 (0%)	41	22

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1008	SER
1	B	1008	SER
1	A	912	ARG
1	B	912	ARG
1	A	797	GLY
1	B	797	GLY
1	B	1139	GLY

### 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	1104/1128 (98%)	1093 (99%)	11 (1%)	76	62
1	B	1103/1128 (98%)	1088 (99%)	15 (1%)	67	46
All	All	2207/2256 (98%)	2181 (99%)	26 (1%)	73	53

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	281	PRO
1	A	348	LEU
1	A	743	TYR
1	A	770[A]	MET
1	A	770[B]	MET
1	A	866	ASN
1	A	911	PHE
1	A	1002	PRO
1	A	1072	PRO

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
1	A	1145	ASN
1	A	1239	PHE
1	B	100	PRO
1	B	537	LYS
1	B	552	ASP
1	B	721	LYS
1	B	743	TYR
1	B	911	PHE
1	B	1002	PRO
1	B	1072	PRO
1	B	1145	ASN
1	B	1239	PHE
1	B	1247[A]	CYS
1	B	1247[B]	CYS
1	B	1289	ASN
1	B	1292	GLU
1	B	1326	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	131	GLN
1	A	272	ASN
1	A	471	GLN
1	A	473	GLN
1	A	650	ASN
1	A	683	HIS
1	A	866	ASN
1	A	1145	ASN
1	A	1284	GLN
1	B	131	GLN
1	B	471	GLN
1	B	565	ASN
1	B	626	GLN
1	B	650	ASN
1	B	1088	GLN
1	B	1145	ASN
1	B	1284	GLN
1	B	1288	ASN
1	B	1289	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 40 ligands modelled in this entry, 2 are monoatomic - leaving 38 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	GOL	A	1342	-	5,5,5	0.44	0	5,5,5	0.31	0
7	GOL	A	1349	-	5,5,5	0.44	0	5,5,5	0.31	0
7	GOL	B	1347	-	5,5,5	0.43	0	5,5,5	0.29	0
7	GOL	B	1350	-	5,5,5	0.53	0	5,5,5	0.52	0
7	GOL	B	1345	-	5,5,5	0.38	0	5,5,5	0.30	0
3	MTE	A	1335	4	21,26,26	1.91	5 (23%)	21,40,40	3.14	8 (38%)
7	GOL	A	1345	-	5,5,5	0.48	0	5,5,5	0.43	0
7	GOL	A	1348	-	5,5,5	0.51	0	5,5,5	0.25	0
7	GOL	A	1341	-	5,5,5	0.40	0	5,5,5	0.37	0
7	GOL	B	1340	-	5,5,5	0.36	0	5,5,5	0.25	0
2	FES	A	1334	1	0,4,4	0.00	-	-	-	-
7	GOL	A	1347	-	5,5,5	0.45	0	5,5,5	0.28	0
7	GOL	A	1344	-	5,5,5	0.42	0	5,5,5	0.43	0
7	GOL	A	1343	-	5,5,5	0.29	0	5,5,5	0.16	0
2	FES	A	1333	1	0,4,4	0.00	-	-	-	-
7	GOL	B	1351	-	5,5,5	0.50	0	5,5,5	0.22	0
7	GOL	B	1342	-	5,5,5	0.44	0	5,5,5	0.32	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
7	GOL	A	1346	-	5,5,5	0.44	0	5,5,5	0.28	0
7	GOL	B	1343	-	5,5,5	0.27	0	5,5,5	0.21	0
4	MOS	B	1336	3	0,3,3	0.00	-	-		
5	FAD	A	1337	-	51,58,58	3.03	19 (37%)	60,89,89	2.71	18 (30%)
7	GOL	B	1346	-	5,5,5	0.38	0	5,5,5	0.29	0
7	GOL	A	1340	-	5,5,5	0.29	0	5,5,5	0.19	0
6	SAL	A	1338	-	8,10,10	2.37	4 (50%)	9,13,13	1.14	1 (11%)
7	GOL	A	1339	-	5,5,5	0.34	0	5,5,5	0.21	0
7	GOL	B	1339	-	5,5,5	0.30	0	5,5,5	0.17	0
7	GOL	B	1341	-	5,5,5	0.40	0	5,5,5	0.35	0
5	FAD	B	1337	-	51,58,58	2.96	16 (31%)	60,89,89	2.64	18 (30%)
7	GOL	B	1348	-	5,5,5	0.56	0	5,5,5	0.33	0
6	SAL	B	1338	-	8,10,10	2.44	4 (50%)	9,13,13	1.21	1 (11%)
7	GOL	B	1344	-	5,5,5	0.46	0	5,5,5	0.39	0
2	FES	B	1333	1	0,4,4	0.00	-	-		
2	FES	B	1334	1	0,4,4	0.00	-	-		
8	CO3	B	1352	-	0,3,3	0.00	-	0,3,3	0.00	-
7	GOL	B	1349	-	5,5,5	0.23	0	5,5,5	0.27	0
3	MTE	B	1335	4	21,26,26	2.08	7 (33%)	21,40,40	3.17	7 (33%)
8	CO3	A	1350	-	0,3,3	0.00	-	0,3,3	0.00	-
4	MOS	A	1336	3	0,3,3	0.00	-	-		

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
7	GOL	A	1342	-	-	0/4/4/4	-
7	GOL	A	1349	-	-	4/4/4/4	-
7	GOL	B	1347	-	-	0/4/4/4	-
7	GOL	B	1350	-	-	2/4/4/4	-
7	GOL	B	1345	-	-	4/4/4/4	-
3	MTE	A	1335	4	-	1/6/34/34	0/3/3/3
7	GOL	A	1345	-	-	1/4/4/4	-
7	GOL	A	1348	-	-	0/4/4/4	-
7	GOL	A	1341	-	-	0/4/4/4	-
7	GOL	B	1340	-	-	0/4/4/4	-
2	FES	A	1334	1	-	-	0/1/1/1
7	GOL	A	1347	-	-	0/4/4/4	-
7	GOL	A	1344	-	-	3/4/4/4	-

Continued on next page...

*Continued from previous page...*

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	GOL	A	1343	-	-	0/4/4/4	-
2	FES	A	1333	1	-	-	0/1/1/1
7	GOL	B	1351	-	-	0/4/4/4	-
7	GOL	B	1342	-	-	0/4/4/4	-
7	GOL	A	1346	-	-	0/4/4/4	-
7	GOL	B	1343	-	-	0/4/4/4	-
5	FAD	A	1337	-	-	6/30/50/50	0/6/6/6
7	GOL	B	1346	-	-	0/4/4/4	-
7	GOL	A	1340	-	-	0/4/4/4	-
6	SAL	A	1338	-	-	0/0/4/4	0/1/1/1
7	GOL	A	1339	-	-	0/4/4/4	-
7	GOL	B	1339	-	-	0/4/4/4	-
7	GOL	B	1341	-	-	0/4/4/4	-
5	FAD	B	1337	-	-	6/30/50/50	0/6/6/6
7	GOL	B	1348	-	-	0/4/4/4	-
6	SAL	B	1338	-	-	0/0/4/4	0/1/1/1
7	GOL	B	1344	-	-	2/4/4/4	-
2	FES	B	1333	1	-	-	0/1/1/1
2	FES	B	1334	1	-	-	0/1/1/1
7	GOL	B	1349	-	-	2/4/4/4	-
3	MTE	B	1335	4	-	1/6/34/34	0/3/3/3

All (55) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1337	FAD	C4X-C10	12.24	1.51	1.38
5	B	1337	FAD	C4X-C10	11.48	1.50	1.38
5	B	1337	FAD	C9A-N10	7.75	1.49	1.38
5	B	1337	FAD	O4B-C1B	7.38	1.51	1.41
5	A	1337	FAD	O4B-C1B	7.36	1.51	1.41
5	A	1337	FAD	C9A-N10	7.30	1.48	1.38
6	A	1338	SAL	C1-C1'	-4.97	1.42	1.47
6	B	1338	SAL	C1-C1'	-4.94	1.42	1.47
5	B	1337	FAD	C4-N3	4.62	1.41	1.33
3	B	1335	MTE	O3'-C3'	4.51	1.49	1.43
5	A	1337	FAD	C4A-N3A	4.48	1.41	1.35
5	A	1337	FAD	C4-N3	4.46	1.40	1.33
3	B	1335	MTE	C9-N5	4.44	1.47	1.38
5	B	1337	FAD	C4A-N3A	4.43	1.41	1.35
5	A	1337	FAD	C10-N1	4.28	1.38	1.33
3	A	1335	MTE	C9-N5	4.24	1.46	1.38

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1335	MTE	O3'-C3'	4.01	1.49	1.43
5	B	1337	FAD	C2B-C1B	-3.91	1.47	1.53
5	A	1337	FAD	C2A-N3A	3.88	1.38	1.32
5	B	1337	FAD	C2A-N1A	3.78	1.40	1.33
5	B	1337	FAD	O4B-C4B	3.70	1.53	1.45
5	B	1337	FAD	C9A-C5X	3.63	1.49	1.42
5	A	1337	FAD	C2A-N1A	3.62	1.40	1.33
5	A	1337	FAD	C5X-N5	3.62	1.41	1.35
5	A	1337	FAD	C2B-C1B	-3.62	1.48	1.53
5	B	1337	FAD	C2A-N3A	3.61	1.37	1.32
5	A	1337	FAD	O4B-C4B	3.53	1.52	1.45
5	B	1337	FAD	C2-N3	3.49	1.45	1.38
3	A	1335	MTE	O4-C4	3.44	1.33	1.24
5	A	1337	FAD	C2-N3	3.43	1.45	1.38
5	B	1337	FAD	C10-N1	3.31	1.37	1.33
5	A	1337	FAD	C9A-C5X	3.25	1.49	1.42
5	A	1337	FAD	C8-C7	3.20	1.48	1.40
3	B	1335	MTE	C9-C10	3.15	1.47	1.41
3	B	1335	MTE	O4-C4	3.08	1.32	1.24
5	B	1337	FAD	C5X-N5	3.08	1.40	1.35
5	B	1337	FAD	C4X-N5	3.06	1.37	1.33
3	A	1335	MTE	C9-C10	2.97	1.47	1.41
5	B	1337	FAD	C8-C7	2.90	1.48	1.40
6	B	1338	SAL	C6-C1	2.88	1.44	1.40
3	B	1335	MTE	O3'-C7	2.75	1.47	1.43
6	A	1338	SAL	C6-C1	2.62	1.44	1.40
3	B	1335	MTE	C4-N3	2.57	1.37	1.33
5	A	1337	FAD	C9-C9A	2.55	1.45	1.40
6	B	1338	SAL	C5-C6	2.40	1.44	1.38
3	A	1335	MTE	O3'-C7	2.38	1.47	1.43
5	A	1337	FAD	C4X-N5	2.36	1.36	1.33
6	A	1338	SAL	C5-C6	2.33	1.43	1.38
5	A	1337	FAD	C4-C4X	2.32	1.45	1.41
6	B	1338	SAL	C3-C2	2.31	1.43	1.39
3	B	1335	MTE	C2-N3	-2.25	1.31	1.35
5	B	1337	FAD	C4-C4X	2.19	1.45	1.41
6	A	1338	SAL	C3-C2	2.13	1.43	1.39
5	A	1337	FAD	C6-C5X	2.05	1.45	1.41
5	A	1337	FAD	C2-N1	-2.04	1.34	1.38

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1337	FAD	C4-N3-C2	11.69	125.02	115.14
5	B	1337	FAD	C4-N3-C2	10.58	124.07	115.14
3	B	1335	MTE	C4-C9-N5	8.99	126.66	119.12
3	A	1335	MTE	C4-C9-N5	8.49	126.24	119.12
5	B	1337	FAD	C5X-C9A-N10	-7.96	111.95	117.72
5	A	1337	FAD	C5X-C9A-N10	-7.34	112.39	117.72
5	A	1337	FAD	C4-C4X-C10	-6.70	115.52	119.95
5	B	1337	FAD	C4-C4X-C10	-6.32	115.77	119.95
3	A	1335	MTE	N3-C2-N1	-5.28	117.14	125.42
3	B	1335	MTE	N3-C2-N1	-4.94	117.67	125.42
3	B	1335	MTE	O3'-C7-C6	-4.88	105.71	108.96
3	A	1335	MTE	O3'-C7-C6	-4.80	105.76	108.96
3	B	1335	MTE	C4-N3-C2	4.71	123.41	115.93
5	A	1337	FAD	C4-C4X-N5	4.70	123.97	118.60
5	A	1337	FAD	N3A-C2A-N1A	-4.70	121.33	128.68
3	A	1335	MTE	N2-C2-N3	4.67	124.52	117.25
5	B	1337	FAD	C4-C4X-N5	4.63	123.89	118.60
3	A	1335	MTE	C2-N1-C10	4.50	124.63	114.54
3	B	1335	MTE	C2-N1-C10	4.48	124.58	114.54
3	A	1335	MTE	C4-N3-C2	4.47	123.03	115.93
3	B	1335	MTE	N2-C2-N3	4.37	124.05	117.25
5	B	1337	FAD	N3A-C2A-N1A	-4.34	121.89	128.68
5	B	1337	FAD	C4X-N5-C5X	4.30	121.07	116.77
5	A	1337	FAD	C4X-N5-C5X	4.07	120.84	116.77
5	A	1337	FAD	C4X-C4-N3	-4.01	117.94	123.43
5	A	1337	FAD	C1'-N10-C9A	-3.82	115.29	118.29
5	B	1337	FAD	C4X-C4-N3	-3.81	118.22	123.43
5	B	1337	FAD	C8M-C8-C7	3.52	127.94	120.74
5	B	1337	FAD	C1'-N10-C9A	-3.30	115.70	118.29
5	A	1337	FAD	C8M-C8-C7	3.26	127.41	120.74
5	A	1337	FAD	C4X-C10-N10	-3.23	116.98	120.30
5	B	1337	FAD	C4X-C10-N10	-3.06	117.15	120.30
5	B	1337	FAD	C9A-N10-C10	2.86	125.65	121.91
5	A	1337	FAD	O2'-C2'-C3'	2.75	115.79	109.10
5	B	1337	FAD	C4'-C3'-C2'	-2.66	107.83	113.36
5	B	1337	FAD	C8M-C8-C9	-2.64	114.03	120.34
5	A	1337	FAD	C4'-C3'-C2'	-2.58	107.99	113.36
5	A	1337	FAD	O3B-C3B-C4B	-2.58	103.58	111.05
5	A	1337	FAD	C9A-N10-C10	2.58	125.28	121.91
5	B	1337	FAD	O3B-C3B-C4B	-2.55	103.67	111.05
5	A	1337	FAD	C8M-C8-C9	-2.50	114.35	120.34
3	A	1335	MTE	C4-C9-C10	2.47	116.76	114.57
5	B	1337	FAD	O2'-C2'-C3'	2.46	115.08	109.10

Continued on next page...



*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	1337	FAD	O3'-C3'-C4'	2.45	114.73	108.81
5	A	1337	FAD	C4A-C5A-N7A	2.37	111.87	109.40
3	B	1335	MTE	C9-C10-N8	2.26	120.20	118.13
6	A	1338	SAL	C3-C2-C1	2.21	123.78	120.37
5	A	1337	FAD	O3'-C3'-C4'	2.20	114.14	108.81
5	B	1337	FAD	C4A-C5A-N7A	2.19	111.69	109.40
6	B	1338	SAL	C3-C2-C1	2.19	123.76	120.37
5	A	1337	FAD	C6-C5X-N5	-2.15	116.67	119.05
5	B	1337	FAD	C6-C5X-N5	-2.15	116.68	119.05
3	A	1335	MTE	P-O4'-C4'	2.05	123.94	118.30

There are no chirality outliers.

All (32) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	A	1349	GOL	O1-C1-C2-C3
7	A	1349	GOL	C1-C2-C3-O3
7	B	1350	GOL	O1-C1-C2-C3
7	B	1345	GOL	O1-C1-C2-C3
7	B	1345	GOL	C1-C2-C3-O3
5	A	1337	FAD	N10-C1'-C2'-O2'
5	A	1337	FAD	N10-C1'-C2'-C3'
5	B	1337	FAD	N10-C1'-C2'-O2'
5	B	1337	FAD	N10-C1'-C2'-C3'
3	B	1335	MTE	C3'-C4'-O4'-P
5	A	1337	FAD	C2'-C3'-C4'-C5'
5	B	1337	FAD	C2'-C3'-C4'-C5'
7	A	1349	GOL	O1-C1-C2-O2
3	A	1335	MTE	C3'-C4'-O4'-P
5	A	1337	FAD	O3'-C3'-C4'-O4'
5	B	1337	FAD	O3'-C3'-C4'-O4'
5	A	1337	FAD	C2'-C3'-C4'-O4'
5	B	1337	FAD	C2'-C3'-C4'-O4'
7	A	1345	GOL	C1-C2-C3-O3
7	A	1344	GOL	O1-C1-C2-C3
7	A	1344	GOL	C1-C2-C3-O3
7	B	1344	GOL	C1-C2-C3-O3
7	B	1349	GOL	C1-C2-C3-O3
5	A	1337	FAD	O3'-C3'-C4'-C5'
5	B	1337	FAD	O3'-C3'-C4'-C5'
7	B	1350	GOL	O1-C1-C2-O2
7	B	1345	GOL	O1-C1-C2-O2

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms
7	B	1345	GOL	O2-C2-C3-O3
7	A	1349	GOL	O2-C2-C3-O3
7	A	1344	GOL	O1-C1-C2-O2
7	B	1344	GOL	O2-C2-C3-O3
7	B	1349	GOL	O2-C2-C3-O3

There are no ring outliers.

8 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	B	1345	GOL	1	0
7	A	1345	GOL	3	0
4	B	1336	MOS	4	0
5	A	1337	FAD	1	0
5	B	1337	FAD	1	0
7	B	1349	GOL	1	0
3	B	1335	MTE	1	0
4	A	1336	MOS	1	0

## 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	1286/1332 (96%)	-0.25	30 (2%) 60 61	13, 21, 36, 61	0
1	B	1289/1332 (96%)	-0.19	35 (2%) 54 55	13, 21, 36, 57	0
All	All	2575/2664 (96%)	-0.22	65 (2%) 57 58	13, 21, 36, 61	0

All (65) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1325	CYS	8.6
1	A	61	LEU	7.4
1	A	1288	ASN	7.2
1	B	1318	VAL	6.8
1	B	1288	ASN	6.6
1	B	565	ASN	6.3
1	A	221	ASP	5.8
1	A	565	ASN	5.4
1	A	537	LYS	5.3
1	B	566	GLY	5.1
1	B	552	ASP	5.0
1	B	553	PRO	4.9
1	B	61	LEU	4.7
1	B	1319	THR	4.6
1	B	537	LYS	4.5
1	B	63	ASP	4.5
1	A	553	PRO	4.3
1	A	1286	THR	4.3
1	B	221	ASP	4.2
1	B	528	GLY	4.2
1	A	552	ASP	3.7
1	B	540	PRO	3.6
1	A	63	ASP	3.6
1	B	222	VAL	3.5

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	RSRZ
1	B	378	GLY	3.5
1	A	540	PRO	3.5
1	B	1326	LYS	3.5
1	A	223	PRO	3.4
1	A	538	LEU	3.1
1	B	272	ASN	3.0
1	B	538	LEU	3.0
1	A	60	ARG	2.9
1	A	272	ASN	2.9
1	B	550	GLN	2.9
1	B	223	PRO	2.9
1	A	551	LYS	2.9
1	A	1317	CYS	2.8
1	A	1287	ASN	2.8
1	A	1316	LEU	2.8
1	A	566	GLY	2.8
1	A	222	VAL	2.8
1	B	1286	THR	2.8
1	B	211	ILE	2.7
1	A	1290	THR	2.6
1	A	989	LYS	2.6
1	A	550	GLN	2.6
1	A	199	GLU	2.6
1	A	1143	GLU	2.5
1	B	60	ARG	2.5
1	B	62	GLN	2.4
1	A	528	GLY	2.4
1	A	400	PRO	2.3
1	A	852	LYS	2.2
1	B	199	GLU	2.2
1	A	1330	LEU	2.2
1	B	1287	ASN	2.2
1	B	133	GLU	2.2
1	B	551	LYS	2.2
1	B	1250	LYS	2.2
1	B	1290	THR	2.2
1	B	703	LYS	2.1
1	A	721	LYS	2.0
1	B	543	THR	2.0
1	B	318	LYS	2.0
1	B	400	PRO	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<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.

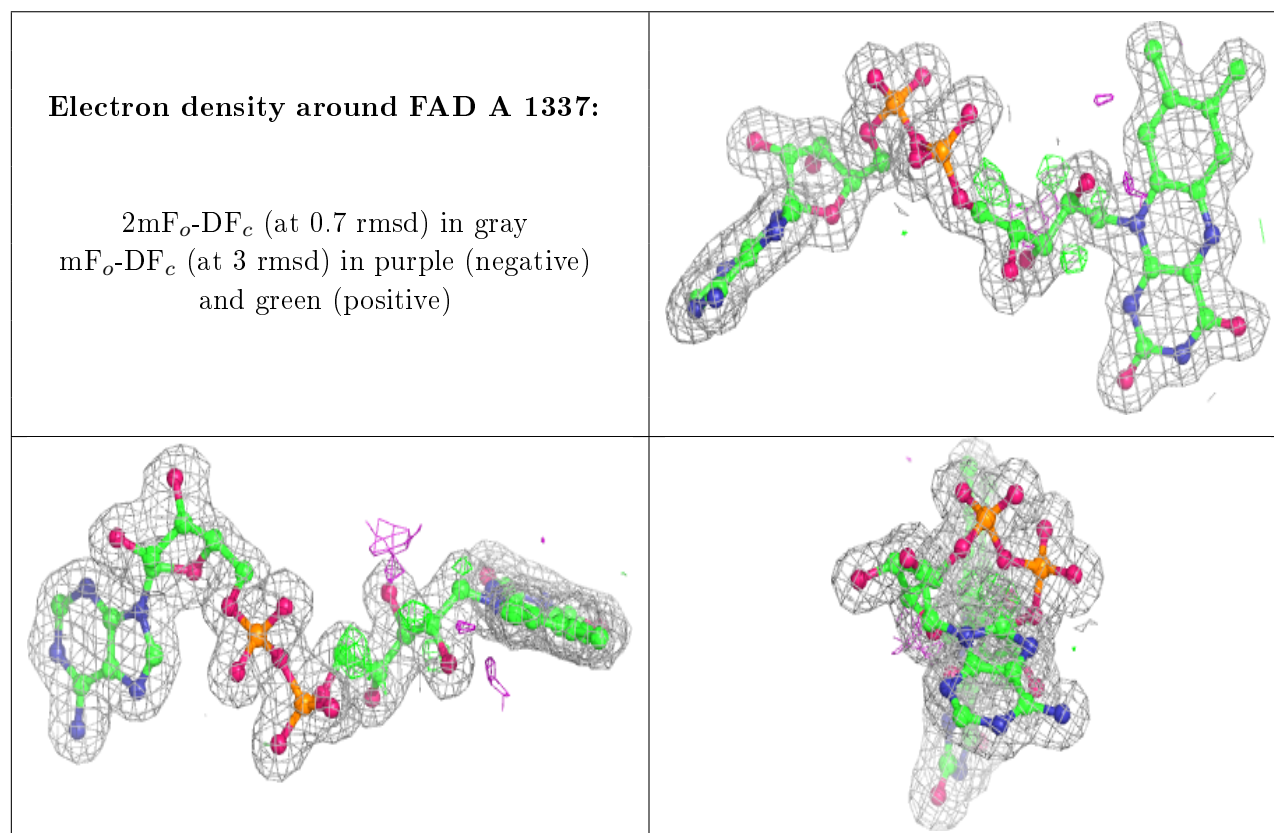
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
7	GOL	A	1345	6/6	0.59	0.21	41,49,50,52	0
7	GOL	A	1349	6/6	0.71	0.20	31,41,43,43	0
7	GOL	B	1351	6/6	0.76	0.17	41,45,45,46	0
7	GOL	A	1347	6/6	0.81	0.17	36,38,40,42	0
7	GOL	A	1344	6/6	0.83	0.16	39,40,40,42	0
7	GOL	A	1342	6/6	0.83	0.13	45,45,46,47	0
7	GOL	B	1342	6/6	0.84	0.21	54,54,54,54	0
7	GOL	A	1340	6/6	0.84	0.13	31,32,33,34	0
7	GOL	B	1344	6/6	0.84	0.17	40,41,42,43	0
7	GOL	B	1340	6/6	0.85	0.14	31,34,36,38	0
7	GOL	B	1348	6/6	0.87	0.12	32,35,35,36	0
7	GOL	B	1345	6/6	0.87	0.12	36,40,43,45	0
7	GOL	B	1349	6/6	0.88	0.20	48,51,52,52	0
7	GOL	A	1343	6/6	0.89	0.13	20,27,29,32	0
7	GOL	B	1350	6/6	0.90	0.13	43,44,45,46	0
7	GOL	A	1341	6/6	0.91	0.11	24,29,30,31	0
7	GOL	B	1343	6/6	0.91	0.12	22,28,29,32	0
7	GOL	A	1348	6/6	0.93	0.09	31,34,35,38	0
7	GOL	B	1347	6/6	0.94	0.08	32,34,35,36	0
6	SAL	B	1338	10/10	0.94	0.07	23,24,25,26	0
7	GOL	B	1346	6/6	0.94	0.11	23,26,26,28	0
7	GOL	A	1346	6/6	0.94	0.09	23,25,26,29	0
7	GOL	B	1341	6/6	0.95	0.09	23,29,31,34	0
7	GOL	A	1339	6/6	0.96	0.07	19,20,20,22	0
6	SAL	A	1338	10/10	0.96	0.06	22,23,24,24	0
5	FAD	A	1337	53/53	0.98	0.06	15,18,22,24	0
7	GOL	B	1339	6/6	0.98	0.06	20,21,22,22	0

*Continued on next page...*

*Continued from previous page...*

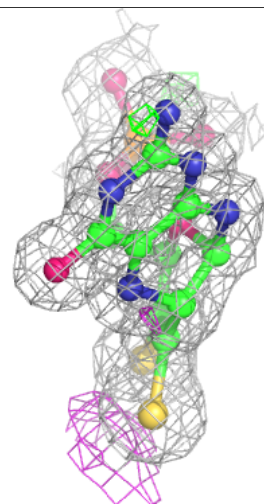
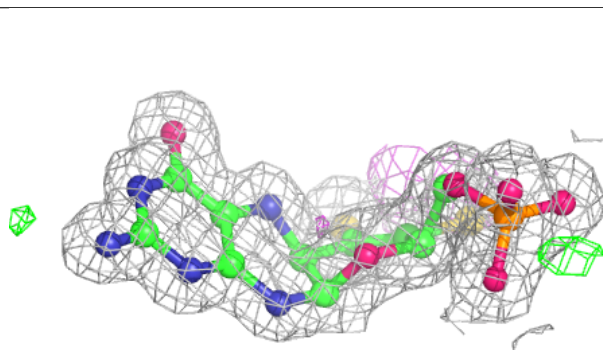
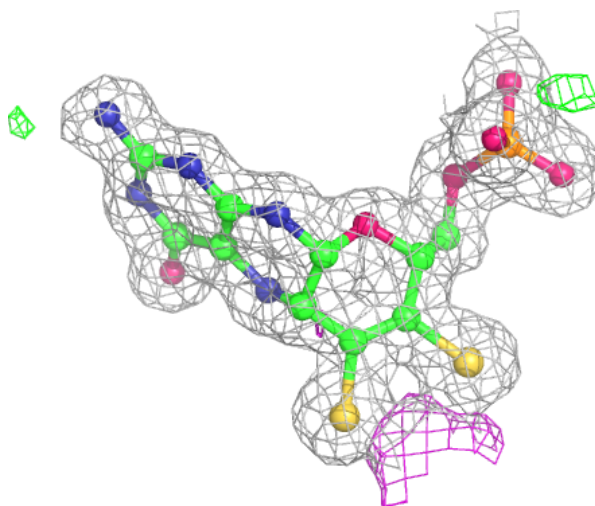
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	MTE	A	1335	24/24	0.98	0.05	16,17,20,21	0
8	CO3	B	1352	4/4	0.98	0.04	16,17,17,17	0
5	FAD	B	1337	53/53	0.98	0.07	15,17,21,23	0
3	MTE	B	1335	24/24	0.98	0.06	15,17,20,22	0
8	CO3	A	1350	4/4	0.98	0.08	14,15,16,16	0
9	CA	B	1353	1/1	0.99	0.04	18,18,18,18	0
4	MOS	B	1336	4/4	0.99	0.07	19,20,20,28	0
2	FES	B	1334	4/4	1.00	0.04	13,14,14,15	0
2	FES	A	1333	4/4	1.00	0.04	14,14,15,15	0
2	FES	A	1334	4/4	1.00	0.04	14,14,14,15	0
9	CA	A	1351	1/1	1.00	0.06	17,17,17,17	0
2	FES	B	1333	4/4	1.00	0.04	13,14,14,14	0
4	MOS	A	1336	4/4	1.00	0.07	20,20,21,29	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.



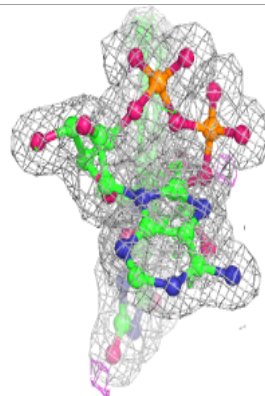
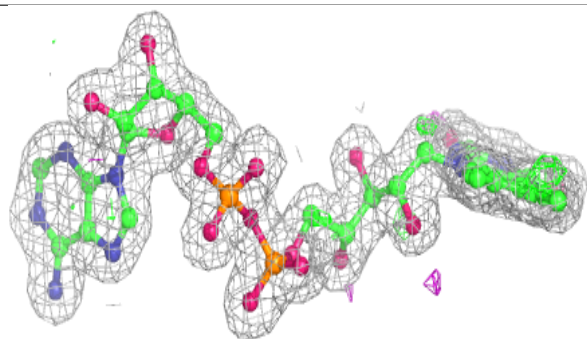
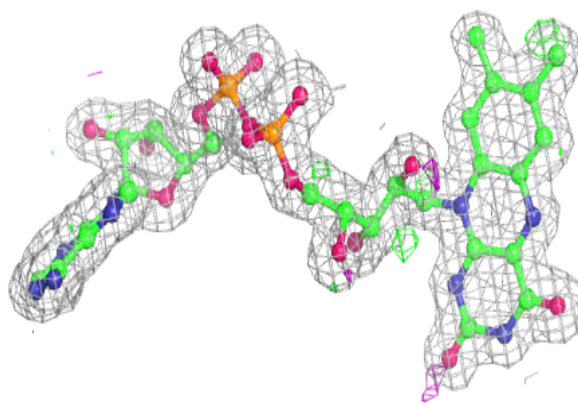
**Electron density around MTE A 1335:**

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



**Electron density around FAD B 1337:**

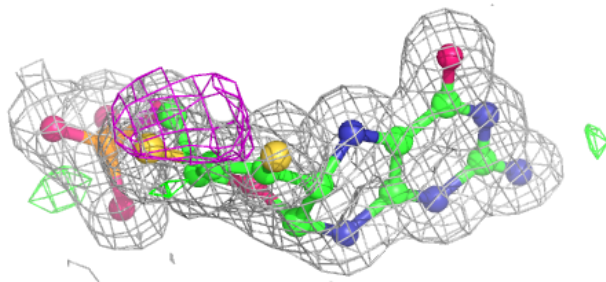
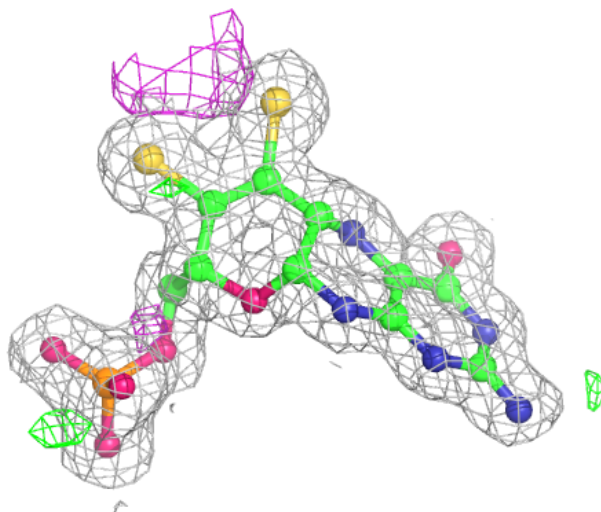
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





**Electron density around MTE B 1335:**

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



## 6.5 Other polymers ⓘ

There are no such residues in this entry.