Full wwPDB X-ray Structure Validation Report ⓘ

Jun 16, 2025 – 06:08 PM EDT

PDB ID	:	9CCC / pdb_00009ccc
Title	:	Crystal structure of human dihydroorotate dehydrogenase with new alkyne ligand
Authors	:	Purificacao, A.D.; Andrade, C.H.; Emery, F.S.; Nonato, M.C.
Deposited on	:	2024-06-21
Resolution	:	2.00 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:

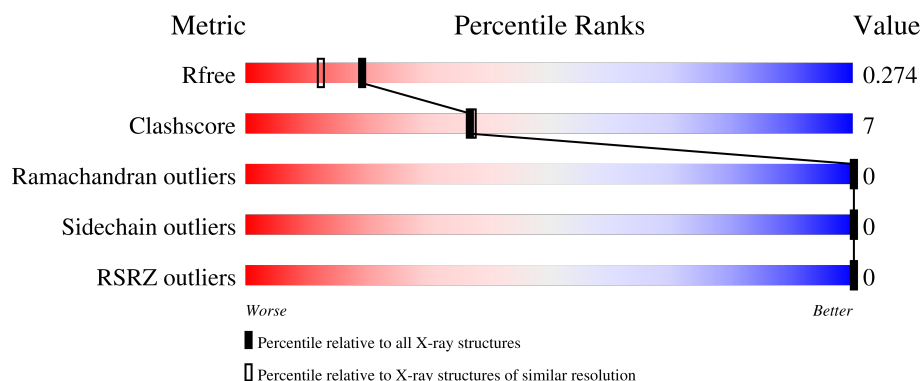|		
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 2.00 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	Percentile Ranks	Value
Rfree		0.274
Clashscore		7
Ramachandran outliers		0
Sidechain outliers		0
RSRZ outliers		0

Worse *Better*

▌ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	9409 (2.00-2.00)
Clashscore	180529	10737 (2.00-2.00)
Ramachandran outliers	177936	10628 (2.00-2.00)
Sidechain outliers	177891	10627 (2.00-2.00)
RSRZ outliers	164620	9409 (2.00-2.00)

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	368	82% 15% •

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 5882 atoms, of which 2799 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 Dihydroorotate dehydrogenase (quinone), mitochondrial.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	355	Total 5441	C 1706	H 2727	N 491	O 513	S 4	0	8	0

There is a discrepancy between the modelled and reference sequences:

| Chain	Residue	Modelled	Actual	Comment	Reference
A	29	SER	-	expression tag	UNP Q02127

- Molecule 2 is OROTIC ACID (CCD ID: ORO) (formula: $C_5H_4N_2O_4$) (labeled as "Ligand of Interest" by depositor).
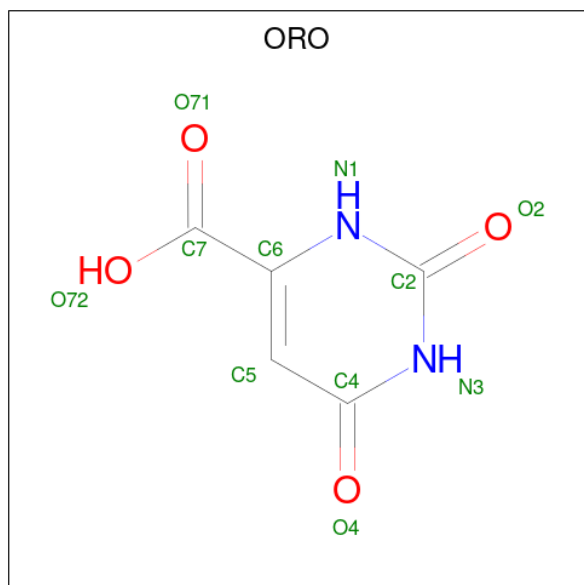
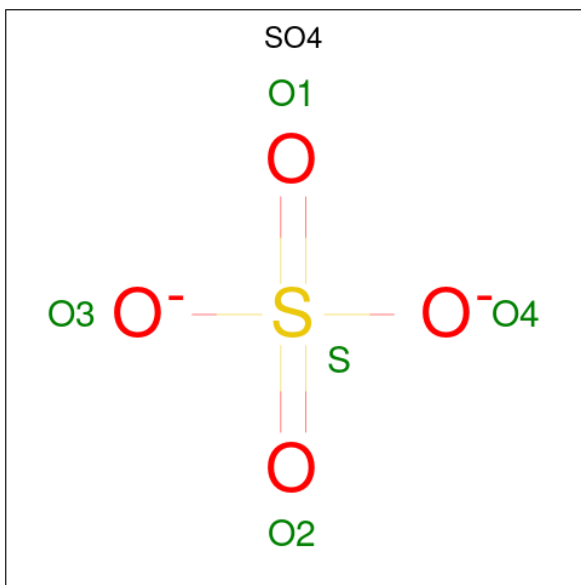| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 14	C 5	H 3	N 2	O 4	0	0

- Molecule 3 is N-{4-[(3-aminophenyl)ethynyl]phenyl}acetamide (CCD ID: A1AVV) (formula:

$C_{16}H_{14}N_2O$) (labeled as "Ligand of Interest" by depositor).
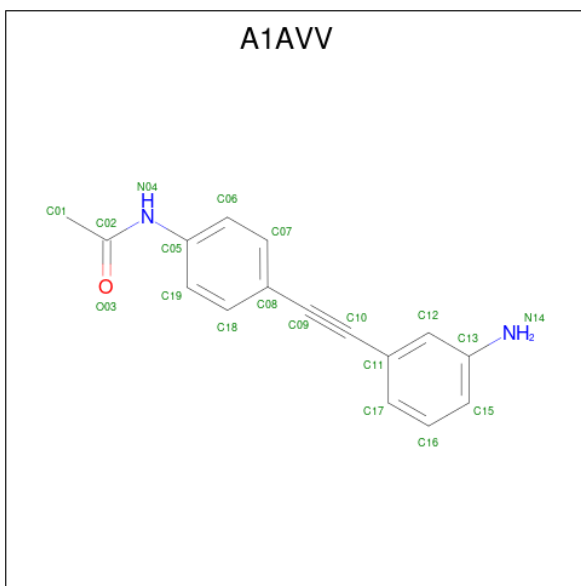
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
3	A	1	66	32	28	4	2	0	1

- Molecule 4 is SULFATE ION (CCD ID: SO4) (formula: O_4S).

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

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total C H O				0	0
			12 3 6 3					
5	A	1	Total C H O				0	0
			14 3 8 3					
5	A	1	Total C H O				0	0
			14 3 8 3					

- Molecule 6 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total Cl		0	0
			1 1			

- Molecule 7 is FLAVIN MONONUCLEOTIDE (CCD ID: FMN) (formula: $C_{17}H_{21}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).

FMN
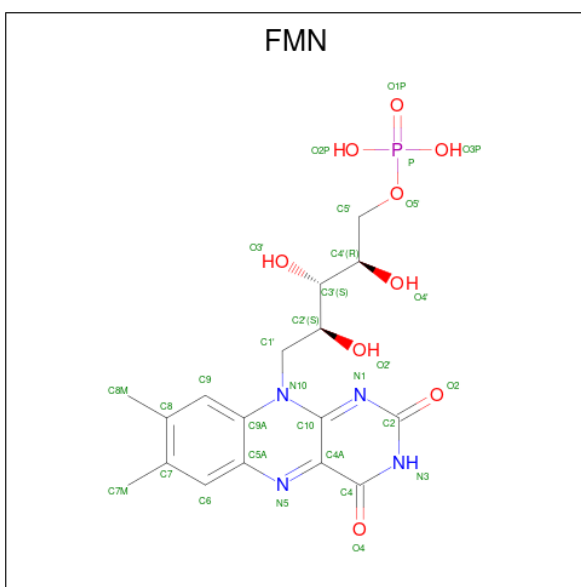
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	C	H	N	O	P		
7	A	1	50	17	19	4	9	1	0	0

• Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
8	A	260	260	260	0	0

3 Residue-property plots ⓘ

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

• Molecule 1: Dihydroorotate dehydrogenase (quinone), mitochondrial

Chain A:
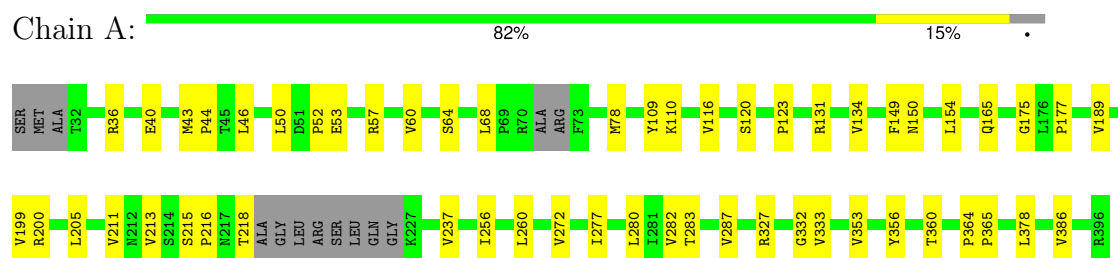
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α, β, γ	91.04Å　　91.04Å　　122.62Å 90.00°　　90.00°　　120.00°	Depositor
Resolution (Å)	48.40　–　2.00 48.40　–　2.00	Depositor EDS
% Data completeness (in resolution range)	91.2 (48.40-2.00) 91.2 (48.40-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.58 (at 2.00Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.240　,　0.273 0.240　,　0.274	Depositor DCC
R_{free} test set	34943 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å^2)	17.3	Xtriage
Anisotropy	0.413	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 33.4	EDS
L-test for twinning[2]	$< |L| > = 0.42, < L^2 > = 0.24$	Xtriage
Estimated twinning fraction	0.055 for -h,-k,l	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	5882	wwPDB-VP
Average B, all atoms (Å^2)	19.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.58% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: FMN, CL, SO4, A1AVV, ORO, GOL

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	0.62	0/2784	0.81	3/3767 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	150	ASN	N-CA-C	-5.43	102.01	110.10
1	A	282	VAL	CA-C-N	5.07	130.83	121.70
1	A	282	VAL	C-N-CA	5.07	130.83	121.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	120[B]	SER	Mainchain
1	A	131	ARG	Sidechain

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	2714	2727	2710	39	0
2	A	11	3	3	0	0
3	A	38	28	0	2	0
4	A	10	0	0	0	0
5	A	18	22	24	1	0
6	A	1	0	0	0	0
7	A	31	19	19	0	0
8	A	260	0	0	5	4
All	All	3083	2799	2756	39	4

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (39) 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:218:THR:HG21	8:A:649:HOH:O	1.74	0.87
1:A:149:PHE:HZ	1:A:215:SER:HB2	1.52	0.73
1:A:149:PHE:CZ	1:A:215:SER:HB2	2.23	0.73
1:A:149:PHE:CZ	1:A:215:SER:CB	2.72	0.73
1:A:272:VAL:HG13	1:A:277:ILE:HB	1.72	0.72
1:A:53:GLU:O	1:A:57:ARG:HG2	1.90	0.72
1:A:213:VAL:HA	5:A:409:GOL:O2	1.93	0.69
1:A:200:ARG:HG2	8:A:595:HOH:O	1.94	0.68
1:A:199:VAL:HG21	1:A:237:VAL:HG13	1.77	0.66
1:A:149:PHE:HZ	1:A:215:SER:CB	2.08	0.65
1:A:189:VAL:HG12	1:A:189:VAL:O	2.01	0.59
1:A:283:THR:O	1:A:333:VAL:HG13	2.05	0.57
1:A:360:THR:HG22	3:A:402[B]:A1AVV:C06	2.35	0.57
1:A:64:SER:HB3	8:A:504:HOH:O	2.05	0.56
1:A:165:GLN:OE1	1:A:205:LEU:HD23	2.08	0.53
1:A:327:ARG:HD2	8:A:561:HOH:O	2.08	0.52
1:A:123:PRO:HA	1:A:154:LEU:HG	1.93	0.51
1:A:175:GLY:C	1:A:177:PRO:HD3	2.36	0.51
1:A:149:PHE:CE2	1:A:215:SER:CB	2.96	0.49
1:A:378:LEU:HD11	1:A:386:VAL:HG22	1.96	0.48
1:A:364:PRO:N	1:A:365:PRO:CD	2.78	0.47
1:A:216:PRO:CB	1:A:287:VAL:CG1	2.92	0.47
1:A:272:VAL:HG21	1:A:280:LEU:HD21	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:211:VAL:HG12	1:A:213:VAL:HG13	1.97	0.46
1:A:109:TYR:CE1	1:A:116:VAL:HG23	2.50	0.46
1:A:256:ILE:HB	1:A:260:LEU:HD11	1.98	0.45
1:A:60:VAL:HG12	8:A:504:HOH:O	2.17	0.44
1:A:43:MET:HB2	1:A:44:PRO:HD3	2.00	0.43
1:A:165:GLN:CD	1:A:205:LEU:CD2	2.92	0.43
1:A:52:PRO:HB2	1:A:134:VAL:HG12	2.00	0.43
1:A:216:PRO:HB2	1:A:287:VAL:CG1	2.50	0.42
1:A:78:MET:HE2	1:A:78:MET:HB3	1.97	0.42
1:A:216:PRO:HB3	1:A:287:VAL:CG1	2.50	0.42
1:A:332:GLY:O	1:A:353:VAL:HA	2.20	0.42
1:A:36:ARG:HB3	1:A:40:GLU:OE1	2.19	0.41
1:A:46:LEU:HG	1:A:50:LEU:HD12	2.02	0.41
1:A:68:LEU:HD12	1:A:110:LYS:HD3	2.01	0.41
1:A:360:THR:HG22	3:A:402[B]:A1AVV:C05	2.51	0.41
1:A:356:TYR:C	1:A:356:TYR:CD1	3.00	0.40

All (4) 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)
8:A:511:HOH:O	8:A:674:HOH:O[2_664]	1.62	0.58
8:A:505:HOH:O	8:A:686:HOH:O[3_565]	1.92	0.28
8:A:723:HOH:O	8:A:738:HOH:O[4_555]	2.04	0.16
8:A:586:HOH:O	8:A:593:HOH:O[2_664]	2.11	0.09

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	357/368 (97%)	346 (97%)	11 (3%)	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	287/297 (97%)	287 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

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

Mol	Chain	Res	Type
1	A	217	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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 10 ligands modelled in this entry, 1 is monoatomic - leaving 9 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	#$|Z| > 2$
3	A1AVV	A	402[B]	-	20,20,20	1.79	4 (20%)	26,26,26	1.41	4 (15%)
5	GOL	A	405	-	5,5,5	0.10	0	5,5,5	0.27	0
4	SO4	A	403	-	4,4,4	0.25	0	6,6,6	0.14	0
5	GOL	A	409	-	5,5,5	0.25	0	5,5,5	0.45	0
2	ORO	A	401	-	10,11,11	2.22	3 (30%)	10,15,15	6.22	4 (40%)
7	FMN	A	408	-	33,33,33	2.09	12 (36%)	48,50,50	1.51	6 (12%)
5	GOL	A	404	-	5,5,5	1.08	0	5,5,5	1.26	1 (20%)
3	A1AVV	A	402[A]	-	20,20,20	1.79	4 (20%)	26,26,26	1.14	2 (7%)
4	SO4	A	407	-	4,4,4	0.26	0	6,6,6	0.12	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	A1AVV	A	402[B]	-	-	0/9/9/9	0/2/2/2
5	GOL	A	405	-	-	2/4/4/4	-
5	GOL	A	409	-	-	3/4/4/4	-
2	ORO	A	401	-	-	4/4/4/4	0/1/1/1
7	FMN	A	408	-	-	5/18/18/18	0/3/3/3
5	GOL	A	404	-	-	2/4/4/4	-
3	A1AVV	A	402[A]	-	-	1/9/9/9	0/2/2/2

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	ORO	C5-C4	5.26	1.42	1.37
3	A	402[A]	A1AVV	C02-N04	5.04	1.45	1.36
3	A	402[B]	A1AVV	C02-N04	4.95	1.45	1.36
7	A	408	FMN	C9A-C5A	4.09	1.47	1.41
7	A	408	FMN	C4-N3	-3.74	1.31	1.38
7	A	408	FMN	C2-N3	-3.59	1.31	1.39
7	A	408	FMN	P-O1P	-3.39	1.39	1.50
7	A	408	FMN	P-O2P	-3.37	1.42	1.54
7	A	408	FMN	P-O3P	-3.37	1.42	1.54
2	A	401	ORO	C4-N3	3.28	1.38	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	402[B]	A1AVV	C11-C10	3.08	1.51	1.44
3	A	402[B]	A1AVV	C08-C09	3.07	1.51	1.44
3	A	402[A]	A1AVV	C11-C10	3.06	1.51	1.44
3	A	402[A]	A1AVV	C08-C09	3.03	1.51	1.44
7	A	408	FMN	C5A-N5	-2.77	1.34	1.39
2	A	401	ORO	C6-N1	2.58	1.38	1.34
3	A	402[A]	A1AVV	O03-C02	-2.47	1.17	1.23
3	A	402[B]	A1AVV	O03-C02	-2.41	1.17	1.23
7	A	408	FMN	O5'-C5'	-2.36	1.35	1.44
7	A	408	FMN	C8-C7	2.25	1.46	1.40
7	A	408	FMN	O2-C2	-2.23	1.20	1.24
7	A	408	FMN	C6-C5A	-2.11	1.36	1.40
7	A	408	FMN	C9-C8	-2.02	1.36	1.39

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	401	ORO	C2-N3-C4	17.21	125.94	114.49
2	A	401	ORO	C5-C4-N3	-7.34	115.58	124.16
7	A	408	FMN	C4-C4A-N5	4.82	124.87	118.21
2	A	401	ORO	C6-C5-C4	4.33	119.52	116.73
3	A	402[B]	A1AVV	C01-C02-N04	3.31	119.93	114.95
2	A	401	ORO	N1-C2-N3	-3.16	115.70	121.62
3	A	402[A]	A1AVV	C01-C02-N04	3.03	119.51	114.95
3	A	402[B]	A1AVV	C05-N04-C02	-3.02	122.35	127.98
7	A	408	FMN	O4'-C4'-C3'	2.68	115.53	109.25
7	A	408	FMN	C10-N1-C2	2.68	122.65	116.85
3	A	402[B]	A1AVV	C13-C12-C11	-2.64	118.05	120.36
3	A	402[A]	A1AVV	C05-N04-C02	-2.42	123.45	127.98
7	A	408	FMN	C4A-C10-N1	-2.38	118.75	124.59
3	A	402[B]	A1AVV	C15-C13-C12	2.19	121.43	118.62
7	A	408	FMN	C4A-C4-N3	2.18	118.81	113.25
5	A	404	GOL	C3-C2-C1	-2.16	103.89	111.80
7	A	408	FMN	O2-C2-N1	-2.04	118.41	121.80

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	ORO	N1-C6-C7-O71
2	A	401	ORO	N1-C6-C7-O72
2	A	401	ORO	C5-C6-C7-O71

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	401	ORO	C5-C6-C7-O72
5	A	405	GOL	O1-C1-C2-C3
7	A	408	FMN	C2'-C3'-C4'-O4'
7	A	408	FMN	O3'-C3'-C4'-O4'
5	A	404	GOL	C1-C2-C3-O3
5	A	409	GOL	C1-C2-C3-O3
5	A	404	GOL	O2-C2-C3-O3
3	A	402[A]	A1AVV	C08-C09-C10-C11
5	A	405	GOL	O1-C1-C2-O2
7	A	408	FMN	C4'-C5'-O5'-P
5	A	409	GOL	O1-C1-C2-C3
7	A	408	FMN	O3'-C3'-C4'-C5'
5	A	409	GOL	O2-C2-C3-O3
7	A	408	FMN	C2'-C3'-C4'-C5'

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	402[B]	A1AVV	2	0
5	A	409	GOL	1	0

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

Ligand A1AVV A 402 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand ORO A 401

Bond lengths

Bond angles

Torsions

Rings

Ligand FMN A 408

Bond lengths

Bond angles

Torsions

Rings

Ligand A1AVV A 402 (A)

Bond lengths

Bond angles

Torsions

Rings
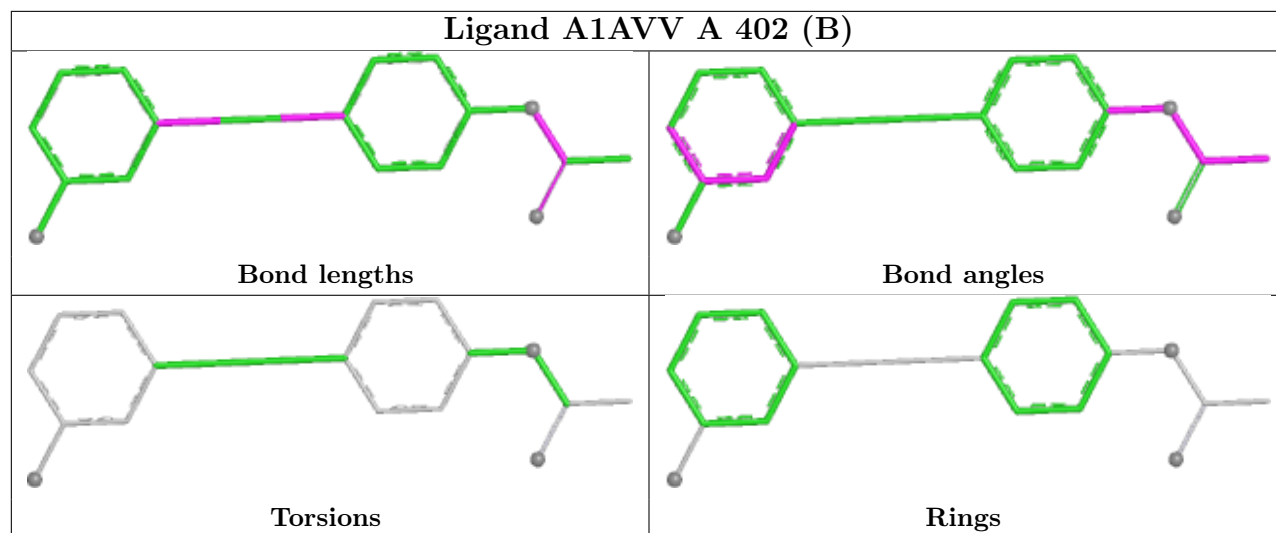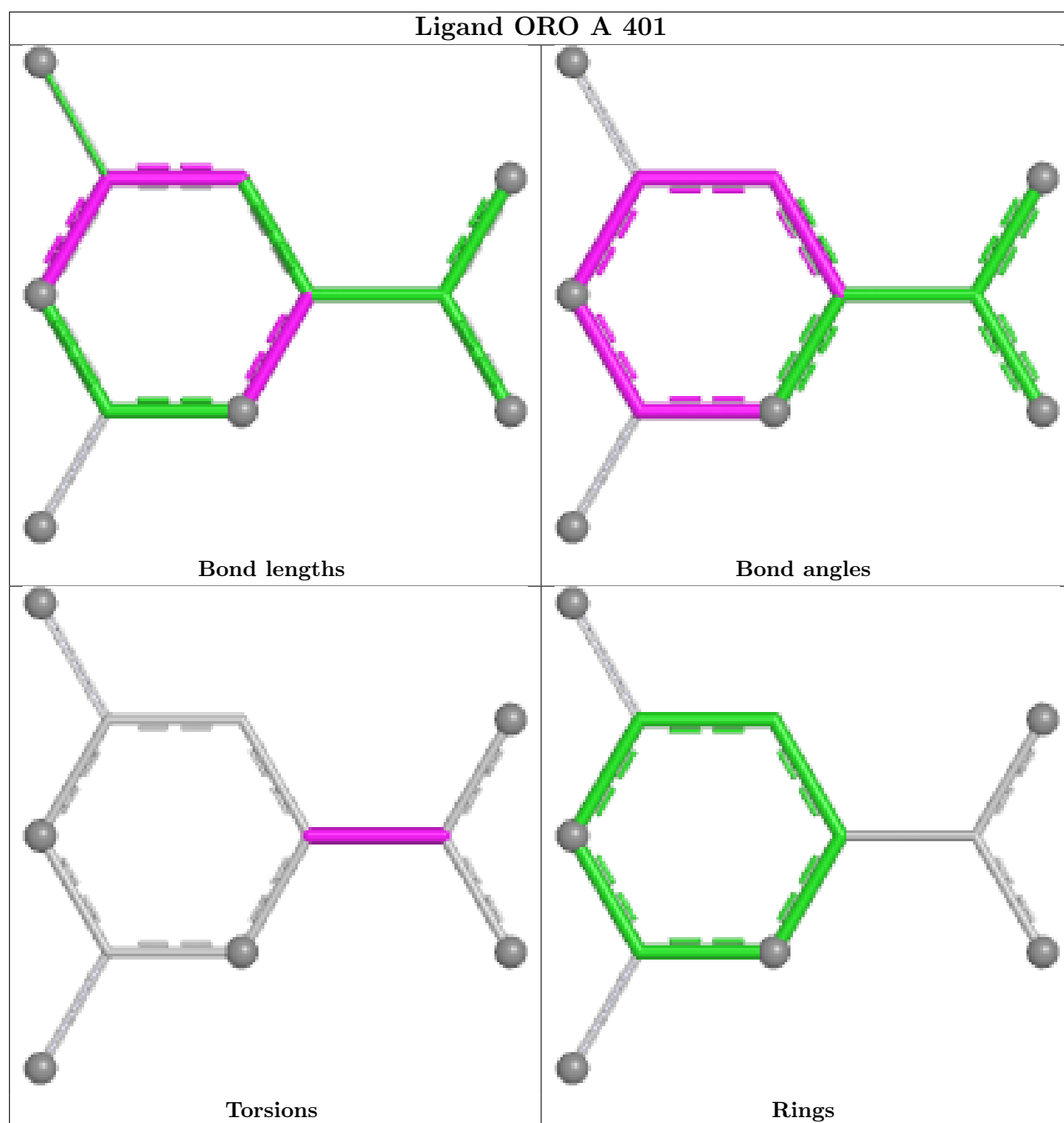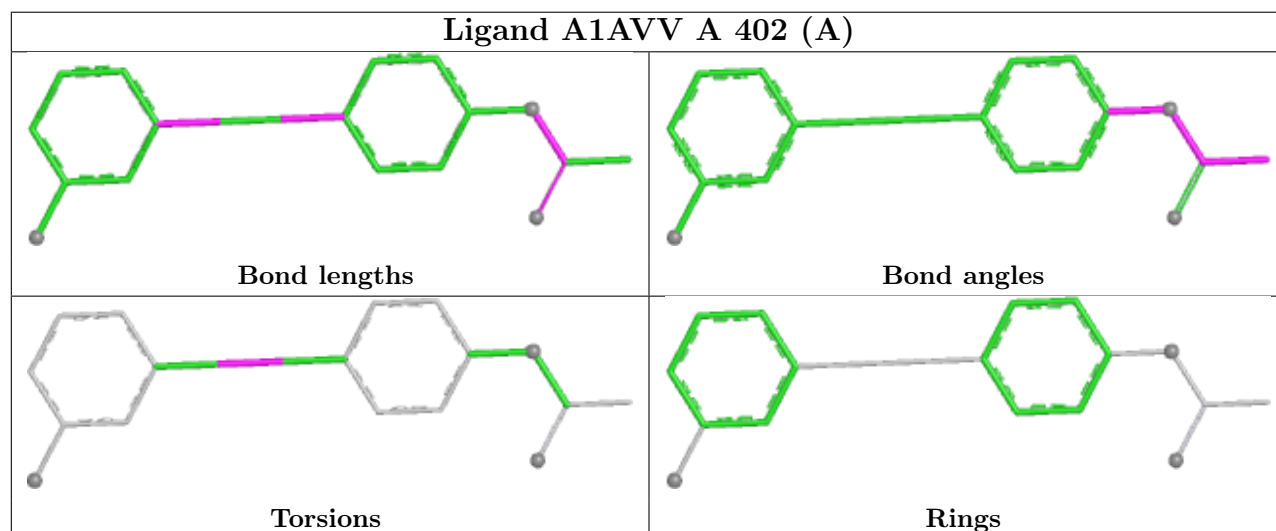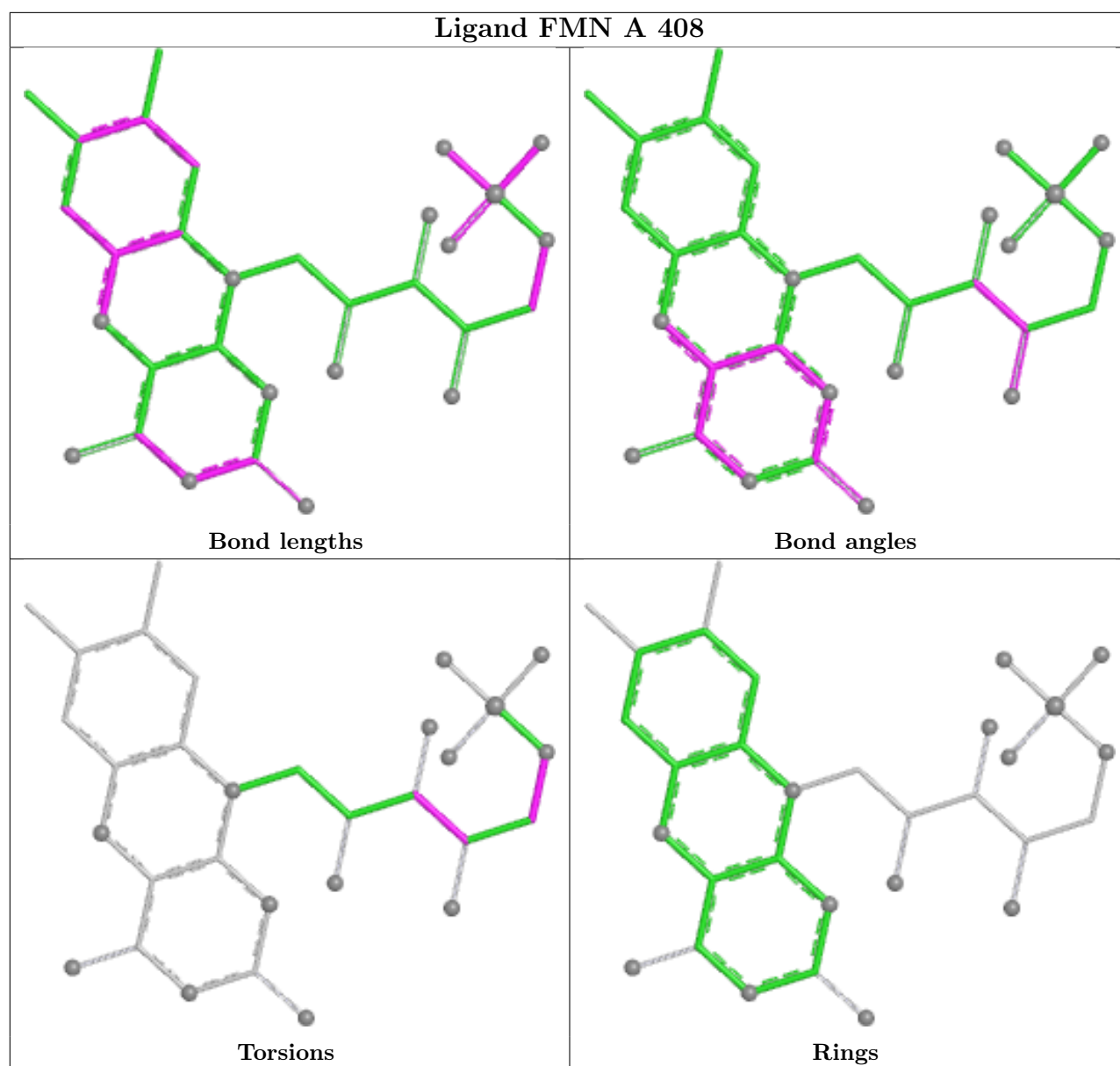
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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(Å²)	Q<0.9
1	A	355/368 (96%)	-1.74	0	100	100	6, 16, 35, 54	6 (1%)

There are no RSRZ outliers to report.

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

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(Å²)	Q<0.9
4	SO4	A	403	5/5	0.98	0.03	52,53,60,71	0
5	GOL	A	404	6/6	0.98	0.04	38,46,51,54	0
4	SO4	A	407	5/5	0.99	0.04	26,28,32,39	0
5	GOL	A	405	6/6	0.99	0.05	38,51,62,69	0
5	GOL	A	409	6/6	0.99	0.05	20,20,20,20	0
6	CL	A	406	1/1	0.99	0.04	42,42,42,42	0
2	ORO	A	401	11/11	1.00	0.02	10,13,19,22	0
3	A1AVV	A	402[A]	19/19	1.00	0.02	14,21,26,28	33
3	A1AVV	A	402[B]	19/19	1.00	0.02	14,20,30,36	33
7	FMN	A	408	31/31	1.00	0.02	20,20,20,20	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.
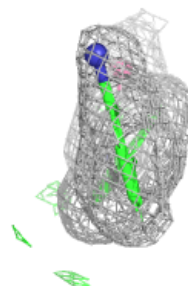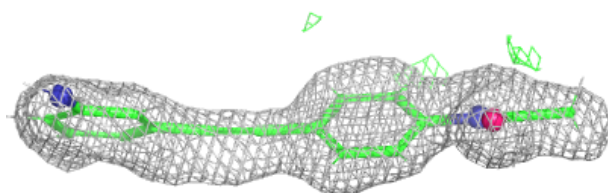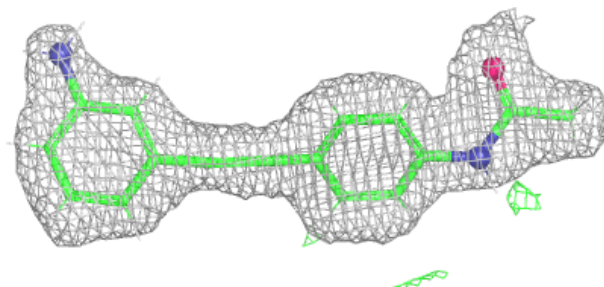
Electron density around ORO A 401:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
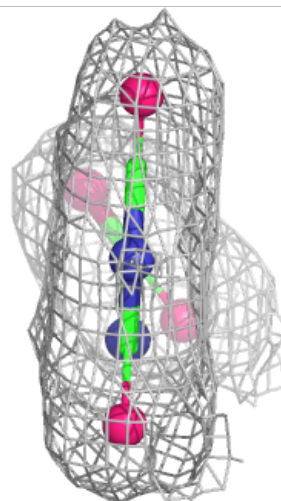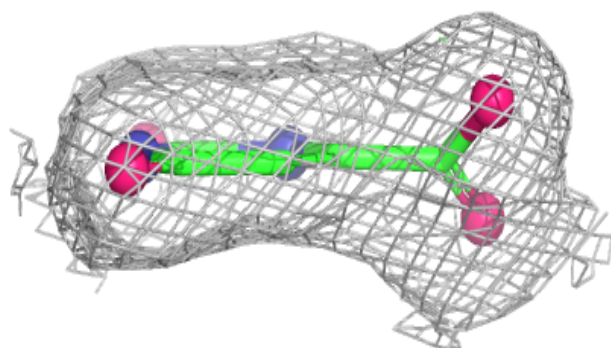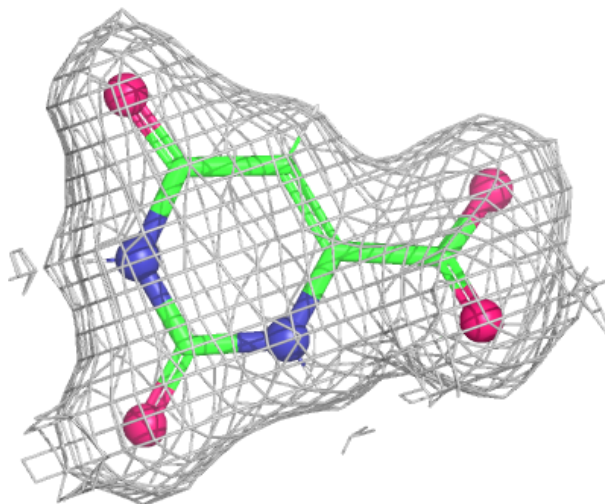
Electron density around A1AVV A 402 (A):

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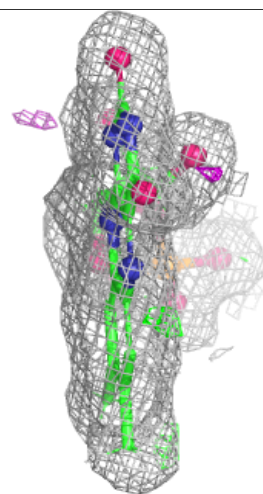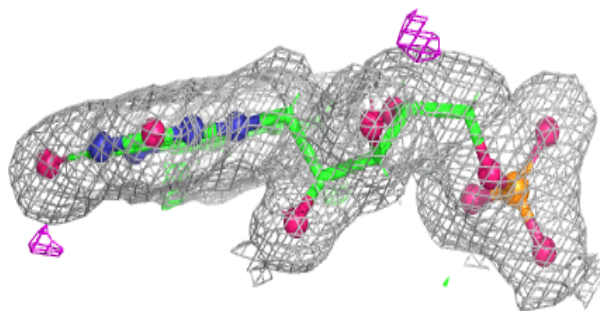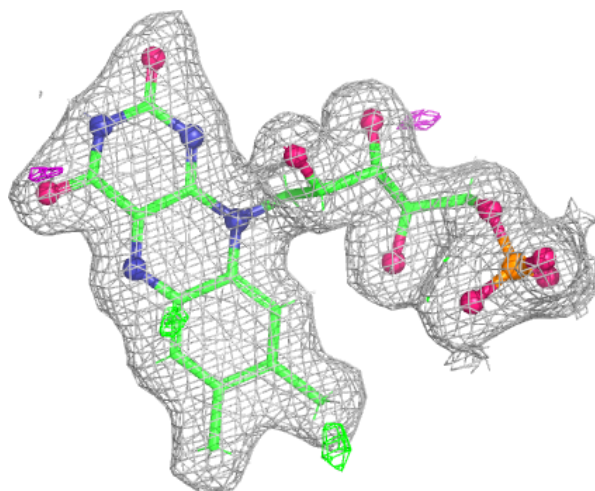and green (positive)

Electron density around A1AVV A 402 (B):

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
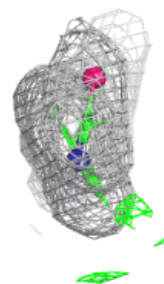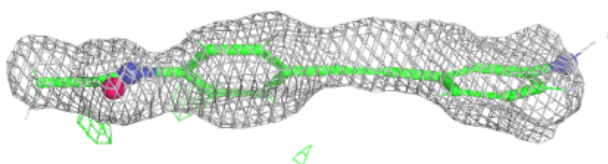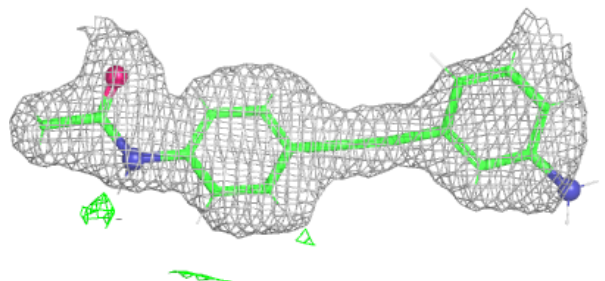
Electron density around FMN A 408:

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.