Full wwPDB X-ray Structure Validation Report (i)

Jun 12, 2024 – 10:09 AM EDT

PDB ID	:	8UY1
Title	:	Methylenetetrahydrofolate reductase from Chaetomium thermophilum DSM 1495, Active (R) State
Authors	:	Yamada, K.; Mendoza, J.; Koutmos, M.
Deposited on	:	2023-11-12
Resolution	:	3.49 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

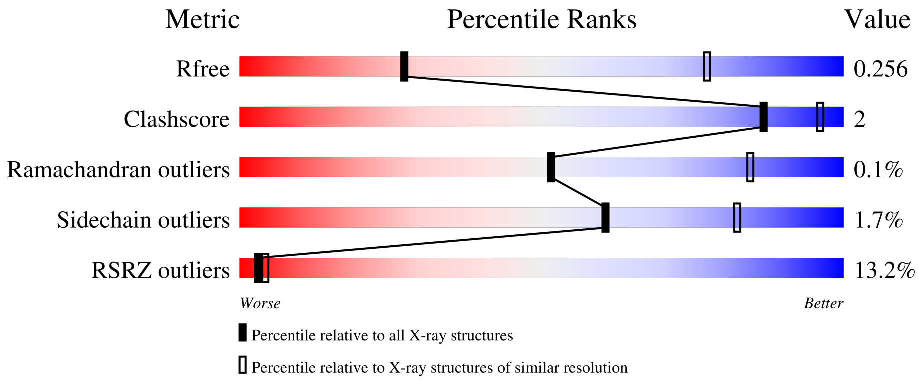
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.49 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	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	617	8% / 88% 8% • •
1	B	617	17% / 85% 7% • 7%
1	C	617	15% / 88% 9% •
1	D	617	11% / 87% 7% • •

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 19297 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 Methylenetetrahydrofolate reductase-like protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	D	592	Total 4769	C 3028	N 836	O 877	S 28	0	0	0
1	A	598	Total 4826	C 3064	N 847	O 887	S 28	0	0	0
1	B	575	Total 4657	C 2966	N 813	O 851	S 27	0	0	0
1	C	598	Total 4829	C 3066	N 848	O 887	S 28	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-2	SER	-	expression tag	UNP G0S5U9
D	-1	ASN	-	expression tag	UNP G0S5U9
D	0	ALA	-	expression tag	UNP G0S5U9
D	21	GLN	GLU	engineered mutation	UNP G0S5U9
D	393	MET	LEU	engineered mutation	UNP G0S5U9
D	516	PHE	VAL	engineered mutation	UNP G0S5U9
A	-2	SER	-	expression tag	UNP G0S5U9
A	-1	ASN	-	expression tag	UNP G0S5U9
A	0	ALA	-	expression tag	UNP G0S5U9
A	21	GLN	GLU	engineered mutation	UNP G0S5U9
A	393	MET	LEU	engineered mutation	UNP G0S5U9
A	516	PHE	VAL	engineered mutation	UNP G0S5U9
B	-2	SER	-	expression tag	UNP G0S5U9
B	-1	ASN	-	expression tag	UNP G0S5U9
B	0	ALA	-	expression tag	UNP G0S5U9
B	21	GLN	GLU	engineered mutation	UNP G0S5U9
B	393	MET	LEU	engineered mutation	UNP G0S5U9
B	516	PHE	VAL	engineered mutation	UNP G0S5U9
C	-2	SER	-	expression tag	UNP G0S5U9
C	-1	ASN	-	expression tag	UNP G0S5U9
C	0	ALA	-	expression tag	UNP G0S5U9

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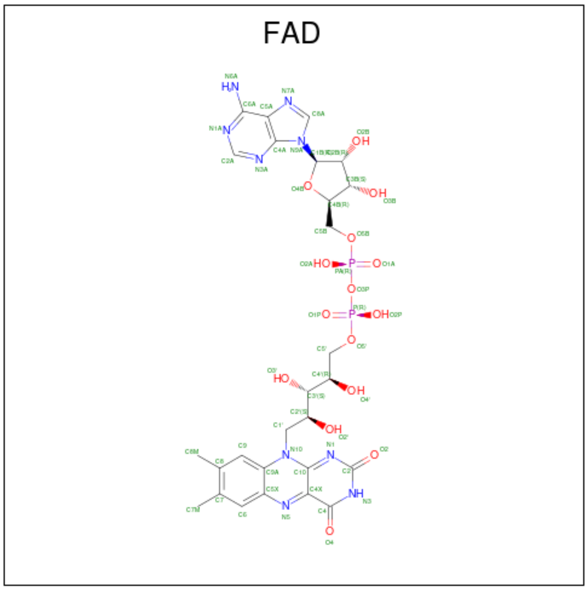
Chain	Residue	Modelled	Actual	Comment	Reference
C	21	GLN	GLU	engineered mutation	UNP G0S5U9
C	393	MET	LEU	engineered mutation	UNP G0S5U9
C	516	PHE	VAL	engineered mutation	UNP G0S5U9

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_{9}O_{15}P_{2}$) (labeled as "Ligand of Interest" by depositor).



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

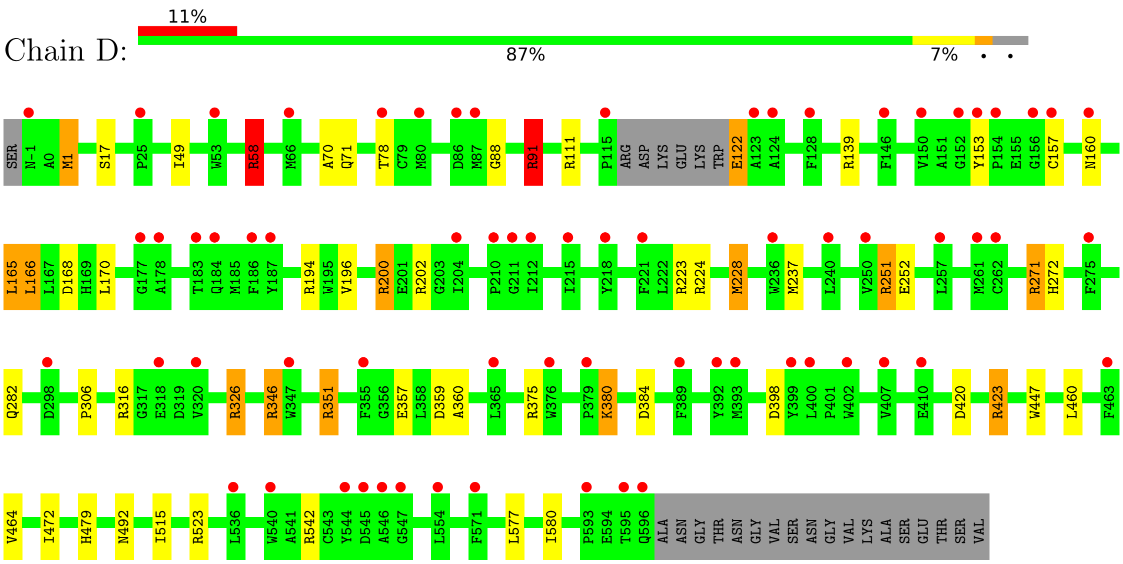
- Molecule 3 is water.

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

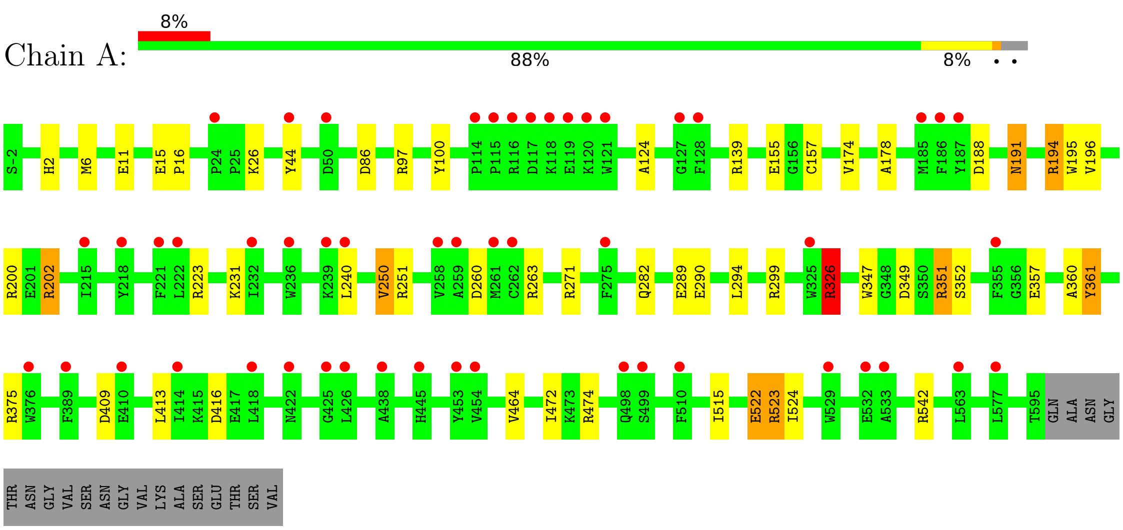
3 Residue-property plots

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.

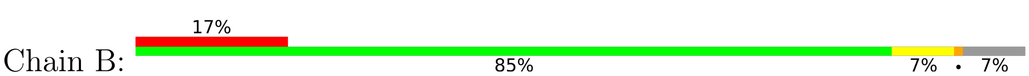
- Molecule 1: Methylenetetrahydrofolate reductase-like protein

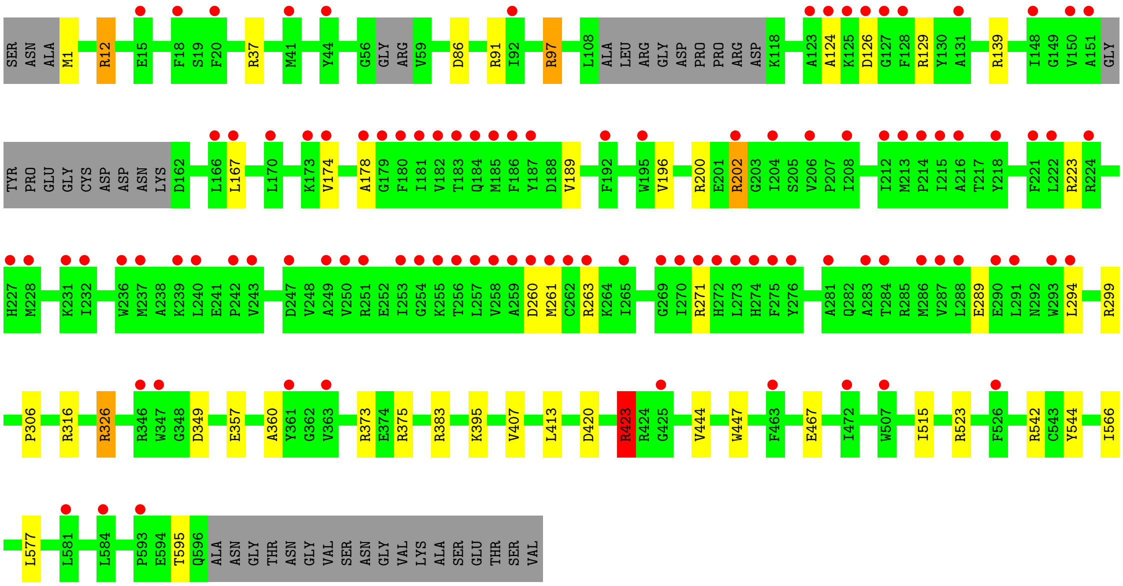


- Molecule 1: Methylenetetrahydrofolate reductase-like protein

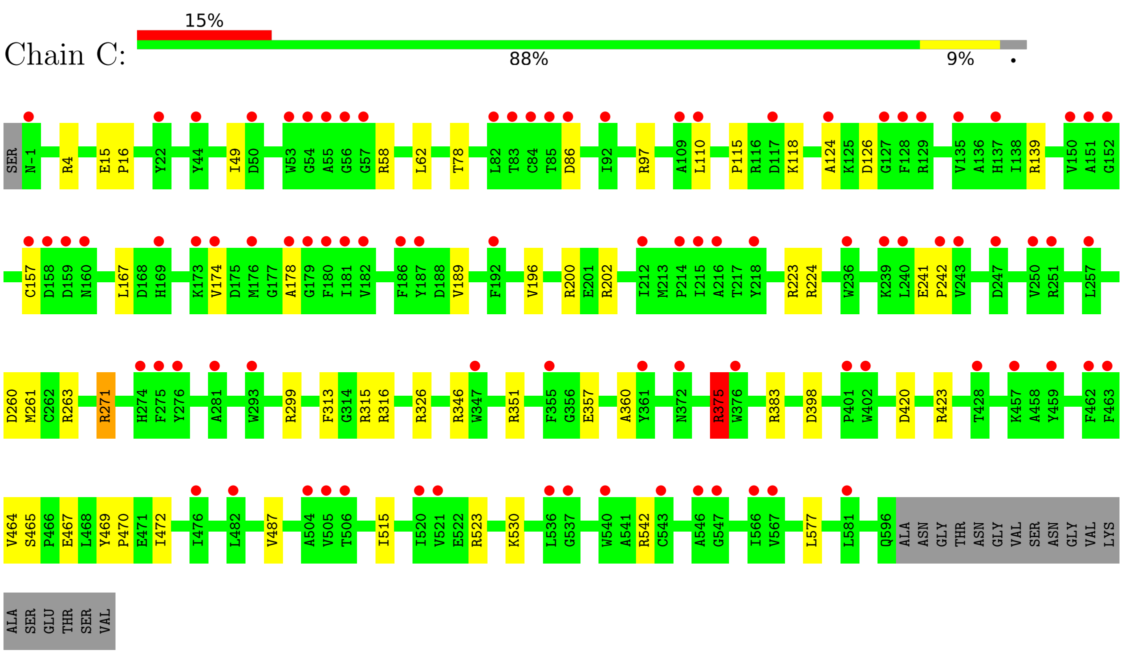


- Molecule 1: Methylenetetrahydrofolate reductase-like protein





- Molecule 1: Methylenetetrahydrofolate reductase-like protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	117.97Å 151.38Å 188.05Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	52.04 – 3.49 51.99 – 3.49	Depositor EDS
% Data completeness (in resolution range)	99.4 (52.04-3.49) 99.5 (51.99-3.49)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.51 (at 3.48Å)	Xtriage
Refinement program	REFMAC 5.8.0419	Depositor
R, R_{free}	0.216 , 0.256 0.219 , 0.256	Depositor DCC
R_{free} test set	2181 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	131.2	Xtriage
Anisotropy	0.307	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 128.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	19297	wwPDB-VP
Average B, all atoms (Å^2)	159.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.46% of the height of the origin peak. No significant pseudotranslation is detected.*

[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: FAD

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	0.61	2/4953 (0.0%)	0.99	13/6713 (0.2%)
1	B	0.61	1/4777 (0.0%)	1.00	13/6470 (0.2%)
1	C	0.60	0/4956	0.98	13/6717 (0.2%)
1	D	0.60	2/4893 (0.0%)	1.02	21/6632 (0.3%)
All	All	0.60	5/19579 (0.0%)	1.00	60/26532 (0.2%)

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	8
1	B	0	8
1	C	0	5
1	D	0	10
All	All	0	31

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	122	GLU	CD-OE1	-6.61	1.18	1.25
1	D	326	ARG	NE-CZ	5.65	1.40	1.33
1	B	326	ARG	NE-CZ	5.47	1.40	1.33
1	A	352	SER	CA-CB	-5.35	1.45	1.52
1	A	522	GLU	CD-OE2	-5.09	1.20	1.25

All (60) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	1	MET	CG-SD-CE	12.93	120.88	100.20
1	A	326	ARG	NE-CZ-NH2	10.66	125.63	120.30
1	D	228	MET	CG-SD-CE	10.49	116.99	100.20
1	B	1	MET	CG-SD-CE	9.65	115.65	100.20
1	A	413	LEU	CB-CG-CD2	9.17	126.59	111.00
1	D	326	ARG	NE-CZ-NH1	8.30	124.45	120.30
1	A	361	TYR	N-CA-CB	7.84	124.71	110.60
1	D	271	ARG	NE-CZ-NH1	7.40	124.00	120.30
1	C	542	ARG	NE-CZ-NH1	7.23	123.91	120.30
1	C	326	ARG	CD-NE-CZ	7.20	133.68	123.60
1	C	4	ARG	NE-CZ-NH1	7.17	123.89	120.30
1	D	316	ARG	NE-CZ-NH1	7.16	123.88	120.30
1	B	126	ASP	CB-CA-C	7.02	124.44	110.40
1	D	251	ARG	NE-CZ-NH2	-7.01	116.80	120.30
1	A	542	ARG	NE-CZ-NH1	6.91	123.76	120.30
1	A	271	ARG	NE-CZ-NH1	6.84	123.72	120.30
1	D	223	ARG	NE-CZ-NH1	6.75	123.67	120.30
1	D	542	ARG	NE-CZ-NH1	6.66	123.63	120.30
1	B	423	ARG	NE-CZ-NH2	6.63	123.62	120.30
1	A	326	ARG	CD-NE-CZ	6.58	132.82	123.60
1	D	326	ARG	CD-NE-CZ	6.50	132.69	123.60
1	B	542	ARG	NE-CZ-NH1	6.41	123.50	120.30
1	B	326	ARG	CD-NE-CZ	6.41	132.57	123.60
1	D	351	ARG	CD-NE-CZ	6.35	132.49	123.60
1	C	15	GLU	OE1-CD-OE2	-6.22	115.83	123.30
1	C	326	ARG	NE-CZ-NH1	6.18	123.39	120.30
1	B	223	ARG	NE-CZ-NH1	6.18	123.39	120.30
1	B	423	ARG	NE-CZ-NH1	6.17	123.38	120.30
1	D	237	MET	CG-SD-CE	6.05	109.88	100.20
1	C	351	ARG	CD-NE-CZ	5.99	131.98	123.60
1	C	316	ARG	NE-CZ-NH2	-5.97	117.32	120.30
1	A	6	MET	CG-SD-CE	5.94	109.71	100.20
1	C	523	ARG	NE-CZ-NH1	5.94	123.27	120.30
1	C	313	PHE	CB-CG-CD1	-5.92	116.66	120.80
1	B	37	ARG	NE-CZ-NH1	5.90	123.25	120.30
1	B	423	ARG	NH1-CZ-NH2	-5.85	112.96	119.40
1	C	315	ARG	NE-CZ-NH1	5.85	123.22	120.30
1	C	223	ARG	NE-CZ-NH1	5.83	123.22	120.30
1	B	202	ARG	NE-CZ-NH1	5.70	123.15	120.30
1	D	194	ARG	NE-CZ-NH2	-5.68	117.46	120.30
1	D	165	LEU	CB-CG-CD1	5.64	120.59	111.00
1	D	91	ARG	NE-CZ-NH1	-5.54	117.53	120.30
1	D	122	GLU	CB-CA-C	5.50	121.40	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	223	ARG	NE-CZ-NH1	5.49	123.05	120.30
1	A	474	ARG	NE-CZ-NH2	5.49	123.04	120.30
1	B	326	ARG	NE-CZ-NH1	5.34	122.97	120.30
1	A	231	LYS	CB-CA-C	5.31	121.03	110.40
1	D	351	ARG	NE-CZ-NH1	-5.28	117.66	120.30
1	A	100	TYR	CB-CG-CD1	-5.25	117.85	121.00
1	B	299	ARG	CB-CG-CD	5.23	125.20	111.60
1	A	44	TYR	CB-CG-CD1	5.23	124.14	121.00
1	C	313	PHE	CB-CG-CD2	5.21	124.45	120.80
1	C	224	ARG	NE-CZ-NH1	5.16	122.88	120.30
1	D	316	ARG	NE-CZ-NH2	-5.15	117.72	120.30
1	D	91	ARG	CD-NE-CZ	5.14	130.80	123.60
1	D	58	ARG	CG-CD-NE	5.13	122.57	111.80
1	A	11	GLU	CB-CG-CD	5.13	128.05	114.20
1	D	346	ARG	CG-CD-NE	5.12	122.56	111.80
1	D	542	ARG	NE-CZ-NH2	-5.07	117.77	120.30
1	B	467	GLU	CG-CD-OE1	5.03	128.35	118.30

There are no chirality outliers.

All (31) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	139	ARG	Sidechain
1	A	194	ARG	Sidechain
1	A	202	ARG	Sidechain
1	A	299	ARG	Sidechain
1	A	326	ARG	Sidechain
1	A	375	ARG	Sidechain
1	A	523	ARG	Sidechain
1	A	97	ARG	Sidechain
1	B	12	ARG	Sidechain
1	B	129	ARG	Sidechain
1	B	271	ARG	Sidechain
1	B	316	ARG	Sidechain
1	B	375	ARG	Sidechain
1	B	523	ARG	Sidechain
1	B	91	ARG	Sidechain
1	B	97	ARG	Sidechain
1	C	139	ARG	Sidechain
1	C	271	ARG	Sidechain
1	C	346	ARG	Sidechain
1	C	375	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	C	97	ARG	Sidechain
1	D	139	ARG	Sidechain
1	D	200	ARG	Sidechain
1	D	271	ARG	Sidechain
1	D	346	ARG	Sidechain
1	D	351	ARG	Sidechain
1	D	375	ARG	Sidechain
1	D	423	ARG	Sidechain
1	D	523	ARG	Sidechain
1	D	58	ARG	Sidechain
1	D	91	ARG	Sidechain

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	4826	0	4695	18	0
1	B	4657	0	4541	16	0
1	C	4829	0	4698	24	0
1	D	4769	0	4638	23	0
2	A	53	0	31	0	0
2	B	53	0	31	1	0
2	C	53	0	31	2	0
2	D	53	0	31	2	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
All	All	19297	0	18696	79	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 2.

All (79) 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:240:LEU:HD22	1:A:250:VAL:HG22	1.72	0.71
1:A:155:GLU:HG2	1:A:191:ASN:HD21	1.57	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:168:ASP:OD1	1:D:202:ARG:NH1	2.25	0.69
1:A:522:GLU:OE2	1:A:524:ILE:HD12	1.92	0.68
1:D:111:ARG:NH2	1:D:122:GLU:OE1	2.27	0.67
1:A:515:ILE:HG21	1:B:515:ILE:HG21	1.80	0.63
1:D:17:SER:HG	1:D:272:HIS:HD1	1.44	0.62
1:B:420:ASP:OD1	1:B:423:ARG:NH2	2.34	0.61
1:A:251:ARG:NH1	1:A:282:GLN:OE1	2.35	0.60
1:D:160:ASN:HB3	1:D:166:LEU:HD11	1.86	0.57
1:B:289:GLU:HG3	1:B:294:LEU:HD12	1.88	0.56
2:B:701:FAD:H3'	2:B:701:FAD:N1	2.20	0.56
1:C:16:PRO:HG3	1:C:299:ARG:HH21	1.71	0.56
1:A:464:VAL:HG21	1:A:472:ILE:HD12	1.88	0.55
1:B:357:GLU:HB2	1:B:360:ALA:HB3	1.89	0.54
1:D:160:ASN:ND2	2:D:701:FAD:O3B	2.41	0.54
1:C:420:ASP:OD1	1:C:423:ARG:NH2	2.43	0.52
1:D:196:VAL:O	1:D:200:ARG:HG2	2.11	0.51
1:C:58:ARG:NH2	1:C:62:LEU:HD11	2.24	0.51
1:C:86:ASP:HA	1:C:124:ALA:HB2	1.92	0.51
1:D:464:VAL:HG21	1:D:472:ILE:HD12	1.92	0.51
1:A:196:VAL:O	1:A:200:ARG:HG2	2.11	0.50
1:C:469:TYR:N	1:C:470:PRO:HD2	2.26	0.50
1:B:167:LEU:HB3	1:B:202:ARG:HD2	1.94	0.49
1:D:153:TYR:OH	2:D:701:FAD:H5'2	2.12	0.49
1:C:115:PRO:HD2	1:C:118:LYS:HB2	1.94	0.49
1:B:196:VAL:O	1:B:200:ARG:HG2	2.13	0.49
1:C:58:ARG:HH21	1:C:62:LEU:HD11	1.78	0.48
1:B:373:ARG:HG2	1:B:544:TYR:CE1	2.48	0.48
1:C:375:ARG:NH2	1:C:398:ASP:HB2	2.28	0.48
1:D:251:ARG:HH22	1:D:282:GLN:HG2	1.80	0.47
1:C:196:VAL:O	1:C:200:ARG:HG2	2.13	0.47
1:D:492:ASN:OD1	1:A:523:ARG:NH2	2.47	0.47
1:D:515:ILE:HG21	1:C:515:ILE:HG21	1.96	0.47
1:B:383:ARG:HH11	1:B:383:ARG:HG3	1.80	0.47
1:A:260:ASP:OD1	1:A:263:ARG:NH1	2.48	0.46
1:C:260:ASP:OD1	1:C:263:ARG:NH1	2.47	0.46
1:D:460:LEU:HB3	1:D:577:LEU:HD21	1.98	0.46
1:A:347:TRP:CE2	1:A:351:ARG:HD3	2.51	0.46
1:C:464:VAL:HG21	1:C:472:ILE:HD12	1.98	0.46
1:D:420:ASP:HA	1:D:423:ARG:HG2	1.98	0.45
1:B:260:ASP:OD1	1:B:263:ARG:NH1	2.48	0.45
1:D:479:HIS:CE1	1:D:580:ILE:HG21	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:86:ASP:HA	1:A:124:ALA:HB2	1.98	0.45
1:C:487:VAL:HG21	1:C:530:LYS:HD3	1.99	0.45
1:D:357:GLU:HB2	1:D:360:ALA:HB3	1.99	0.44
1:C:357:GLU:HG2	1:C:360:ALA:HB3	1.99	0.44
1:D:70:ALA:HB3	1:D:78:THR:HG21	2.00	0.44
1:A:188:ASP:CG	1:A:191:ASN:HB3	2.38	0.44
1:C:167:LEU:HB3	1:C:202:ARG:HD2	1.99	0.43
1:C:110:LEU:HD13	2:C:701:FAD:C10	2.48	0.43
1:C:110:LEU:HD13	2:C:701:FAD:C4X	2.49	0.43
1:C:420:ASP:HA	1:C:423:ARG:HG2	1.99	0.43
1:B:413:LEU:CD1	1:B:444:VAL:HG11	2.49	0.43
1:D:71:GLN:HE21	1:D:78:THR:H	1.67	0.43
1:C:241:GLU:HB3	1:C:242:PRO:HD3	2.01	0.42
1:B:566:ILE:HG21	1:B:577:LEU:HD21	2.00	0.42
1:A:194:ARG:HH21	1:A:195:TRP:HB2	1.84	0.42
1:C:49:ILE:CG1	1:C:78:THR:HG22	2.49	0.42
1:C:465:SER:OG	1:C:467:GLU:OE1	2.36	0.42
1:D:88:GLY:H	1:D:91:ARG:HD3	1.85	0.41
1:A:464:VAL:HG21	1:A:472:ILE:CD1	2.49	0.41
1:C:49:ILE:HD11	1:C:78:THR:HG22	2.02	0.41
1:C:189:VAL:HG22	1:C:261:MET:SD	2.61	0.41
1:A:263:ARG:HH22	1:A:290:GLU:HG3	1.86	0.41
1:B:86:ASP:HA	1:B:124:ALA:HB2	2.03	0.41
1:A:15:GLU:HB3	1:A:16:PRO:HD2	2.03	0.41
1:B:306:PRO:HD3	1:B:447:TRP:CD2	2.56	0.41
1:D:49:ILE:CG1	1:D:78:THR:HG22	2.51	0.41
1:A:174:VAL:HA	1:A:178:ALA:HB3	2.03	0.41
1:A:289:GLU:HG3	1:A:294:LEU:HD12	2.03	0.41
1:B:395:LYS:HG2	1:B:407:VAL:CG1	2.50	0.41
1:B:174:VAL:HA	1:B:178:ALA:HB3	2.03	0.41
1:D:380:LYS:HG2	1:D:384:ASP:OD2	2.22	0.40
1:C:174:VAL:HA	1:C:178:ALA:HB3	2.03	0.40
1:D:306:PRO:HD3	1:D:447:TRP:CD2	2.56	0.40
1:D:224:ARG:O	1:D:228:MET:HG2	2.21	0.40
1:D:251:ARG:HH22	1:D:282:GLN:CG	2.34	0.40
1:B:189:VAL:HG22	1:B:261:MET:SD	2.62	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	596/617 (97%)	576 (97%)	17 (3%)	3 (0%)	29	68
1	B	567/617 (92%)	551 (97%)	16 (3%)	0	100	100
1	C	596/617 (97%)	576 (97%)	20 (3%)	0	100	100
1	D	588/617 (95%)	569 (97%)	19 (3%)	0	100	100
All	All	2347/2468 (95%)	2272 (97%)	72 (3%)	3 (0%)	51	84

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2	HIS
1	A	361	TYR
1	A	360	ALA

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	509/523 (97%)	498 (98%)	11 (2%)	52	78
1	B	492/523 (94%)	485 (99%)	7 (1%)	67	85
1	C	509/523 (97%)	503 (99%)	6 (1%)	71	87
1	D	503/523 (96%)	492 (98%)	11 (2%)	52	78
All	All	2013/2092 (96%)	1978 (98%)	35 (2%)	60	82

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	1	MET
1	D	58	ARG
1	D	157	CYS
1	D	165	LEU
1	D	166	LEU
1	D	170	LEU
1	D	252	GLU
1	D	326	ARG
1	D	359	ASP
1	D	380	LYS
1	D	398	ASP
1	A	26	LYS
1	A	157	CYS
1	A	191	ASN
1	A	202	ARG
1	A	250	VAL
1	A	326	ARG
1	A	349	ASP
1	A	351	ARG
1	A	357	GLU
1	A	409	ASP
1	A	416	ASP
1	B	12	ARG
1	B	97	ARG
1	B	139	ARG
1	B	326	ARG
1	B	349	ASP
1	B	423	ARG
1	B	595	THR
1	C	126	ASP
1	C	157	CYS
1	C	271	ARG
1	C	375	ARG
1	C	383	ARG
1	C	577	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	29	GLN
1	D	71	GLN
1	D	160	ASN
1	A	-1	ASN

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Mol	Chain	Res	Type
1	A	29	GLN
1	A	344	ASN
1	A	568	ASN
1	B	29	GLN
1	C	169	HIS

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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

4 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	FAD	B	701	-	53,58,58	0.86	1 (1%)	68,89,89	1.46	9 (13%)
2	FAD	C	701	-	53,58,58	0.82	1 (1%)	68,89,89	1.24	7 (10%)
2	FAD	A	701	-	53,58,58	0.77	2 (3%)	68,89,89	1.09	6 (8%)
2	FAD	D	701	-	53,58,58	0.85	2 (3%)	68,89,89	0.99	1 (1%)

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
2	FAD	B	701	-	-	13/30/50/50	0/6/6/6
2	FAD	C	701	-	-	16/30/50/50	0/6/6/6
2	FAD	A	701	-	-	4/30/50/50	0/6/6/6
2	FAD	D	701	-	-	10/30/50/50	0/6/6/6

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	701	FAD	C8A-N7A	-2.25	1.30	1.34
2	C	701	FAD	C8A-N7A	-2.22	1.30	1.34
2	A	701	FAD	C8A-N7A	-2.10	1.31	1.34
2	D	701	FAD	C8-C7	2.02	1.45	1.40
2	A	701	FAD	C8-C7	2.02	1.45	1.40
2	D	701	FAD	O5'-C5'	-2.01	1.37	1.44

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	701	FAD	O5'-C5'-C4'	5.52	124.10	109.36
2	B	701	FAD	C1'-C2'-C3'	4.30	121.80	109.79
2	B	701	FAD	P-O3P-PA	4.12	146.96	132.83
2	C	701	FAD	P-O3P-PA	3.73	145.63	132.83
2	C	701	FAD	C5'-C4'-C3'	3.45	118.87	112.20
2	B	701	FAD	C4'-C3'-C2'	3.10	119.80	113.36
2	A	701	FAD	C5'-C4'-C3'	3.09	118.17	112.20
2	B	701	FAD	C9-C9A-N10	2.89	125.74	121.84
2	D	701	FAD	C5A-C6A-N6A	2.49	124.14	120.35
2	A	701	FAD	O4'-C4'-C3'	-2.45	103.14	109.10
2	B	701	FAD	C1'-N10-C9A	2.41	124.53	120.51
2	B	701	FAD	O2'-C2'-C1'	-2.36	104.09	109.80
2	A	701	FAD	O5'-C5'-C4'	2.35	115.64	109.36
2	C	701	FAD	C9-C9A-N10	2.35	125.01	121.84
2	A	701	FAD	O2'-C2'-C1'	-2.28	104.29	109.80
2	B	701	FAD	P-O5'-C5'	2.17	134.42	121.68
2	A	701	FAD	P-O3P-PA	-2.16	125.42	132.83
2	C	701	FAD	C1'-C2'-C3'	2.12	115.71	109.79
2	B	701	FAD	C5'-C4'-C3'	2.12	116.29	112.20
2	C	701	FAD	O2'-C2'-C1'	2.11	114.91	109.80
2	C	701	FAD	O5'-C5'-C4'	2.09	114.94	109.36
2	C	701	FAD	O4'-C4'-C3'	-2.09	104.03	109.10
2	A	701	FAD	O5'-P-O1P	2.03	117.00	109.07

There are no chirality outliers.

All (43) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	701	FAD	C5B-O5B-PA-O1A
2	D	701	FAD	O3’-C3’-C4’-C5’
2	B	701	FAD	C5B-O5B-PA-O3P
2	B	701	FAD	N10-C1’-C2’-O2’
2	B	701	FAD	N10-C1’-C2’-C3’
2	B	701	FAD	C3’-C4’-C5’-O5’
2	B	701	FAD	O4’-C4’-C5’-O5’
2	B	701	FAD	C4’-C5’-O5’-P
2	B	701	FAD	C5’-O5’-P-O1P
2	B	701	FAD	C5’-O5’-P-O2P
2	C	701	FAD	C5B-O5B-PA-O1A
2	C	701	FAD	C5B-O5B-PA-O3P
2	C	701	FAD	N10-C1’-C2’-O2’
2	C	701	FAD	C2’-C3’-C4’-O4’
2	C	701	FAD	C2’-C3’-C4’-C5’
2	C	701	FAD	O3’-C3’-C4’-O4’
2	C	701	FAD	O3’-C3’-C4’-C5’
2	D	701	FAD	C2’-C3’-C4’-C5’
2	D	701	FAD	C2’-C3’-C4’-O4’
2	D	701	FAD	O3’-C3’-C4’-O4’
2	A	701	FAD	O4B-C4B-C5B-O5B
2	B	701	FAD	C4B-C5B-O5B-PA
2	A	701	FAD	C3B-C4B-C5B-O5B
2	C	701	FAD	C2’-C1’-N10-C10
2	D	701	FAD	P-O3P-PA-O5B
2	D	701	FAD	PA-O3P-P-O5’
2	B	701	FAD	P-O3P-PA-O5B
2	D	701	FAD	C4’-C5’-O5’-P
2	B	701	FAD	C5B-O5B-PA-O2A
2	C	701	FAD	C4’-C5’-O5’-P
2	C	701	FAD	C3’-C4’-C5’-O5’
2	A	701	FAD	P-O3P-PA-O1A
2	C	701	FAD	O2’-C2’-C3’-C4’
2	C	701	FAD	O4B-C4B-C5B-O5B
2	C	701	FAD	C3B-C4B-C5B-O5B
2	D	701	FAD	O4B-C4B-C5B-O5B
2	B	701	FAD	C5’-O5’-P-O3P
2	A	701	FAD	P-O3P-PA-O2A
2	B	701	FAD	P-O3P-PA-O2A
2	C	701	FAD	PA-O3P-P-O1P

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Mol	Chain	Res	Type	Atoms
2	C	701	FAD	PA-O3P-P-O2P
2	D	701	FAD	C5'-O5'-P-O1P
2	C	701	FAD	C5'-O5'-P-O1P

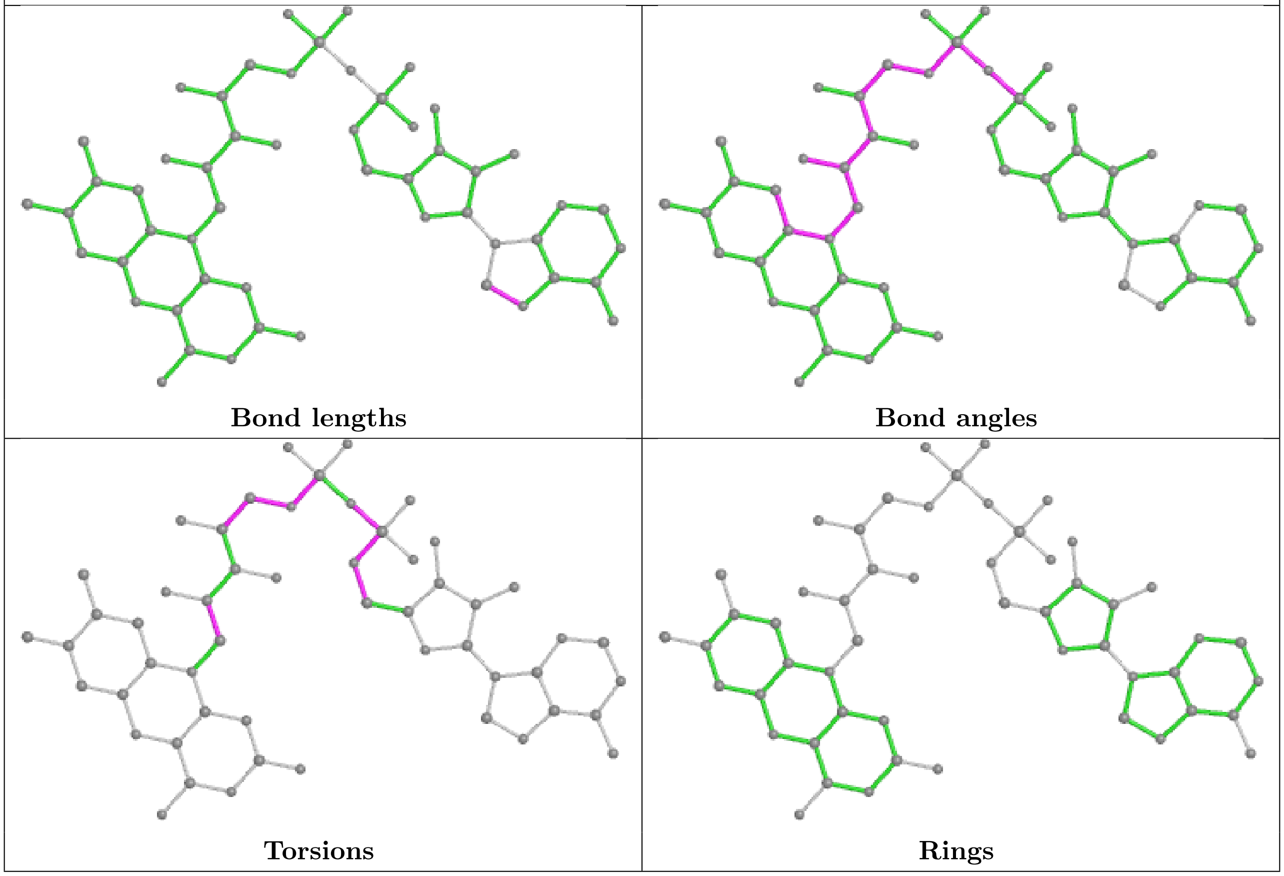
There are no ring outliers.

3 monomers are involved in 5 short contacts:

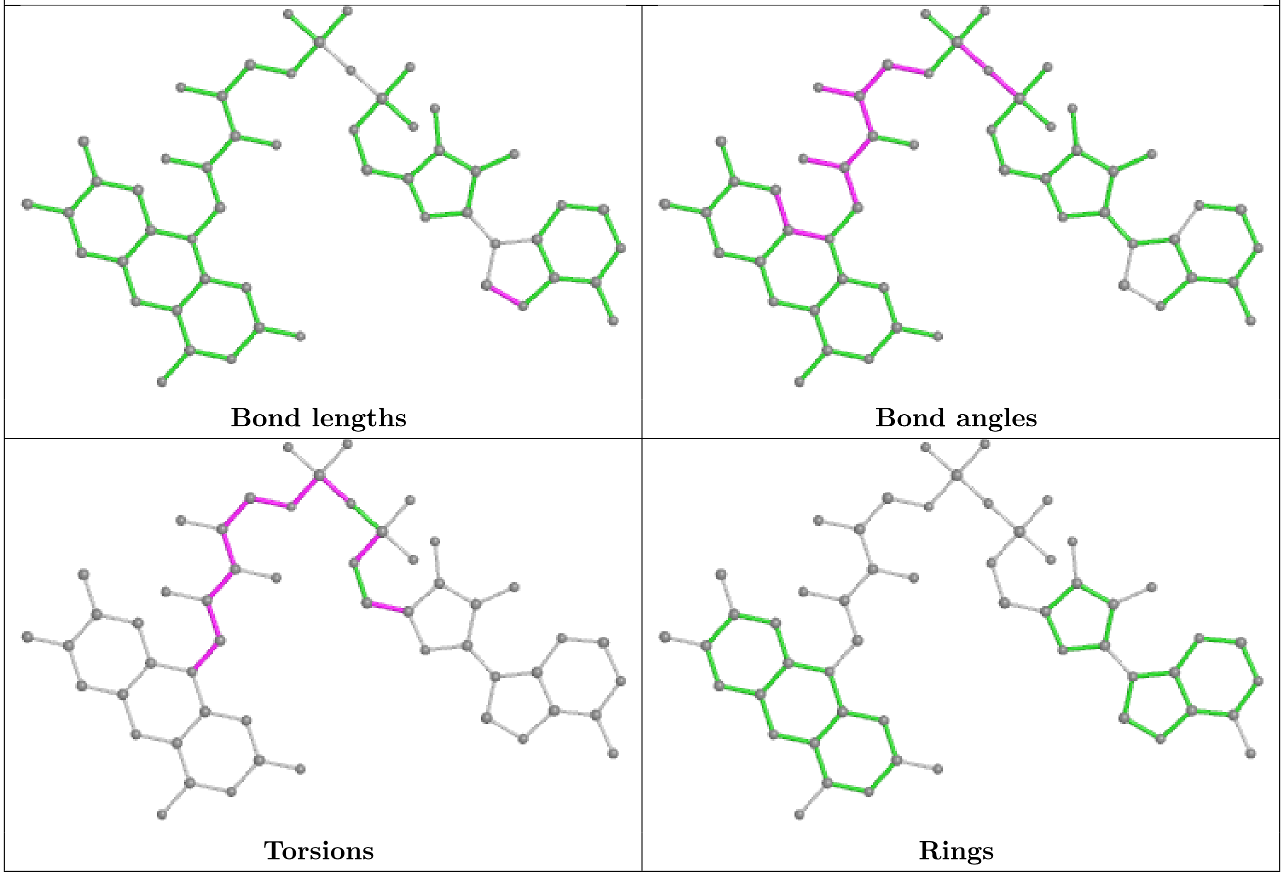
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	701	FAD	1	0
2	C	701	FAD	2	0
2	D	701	FAD	2	0

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

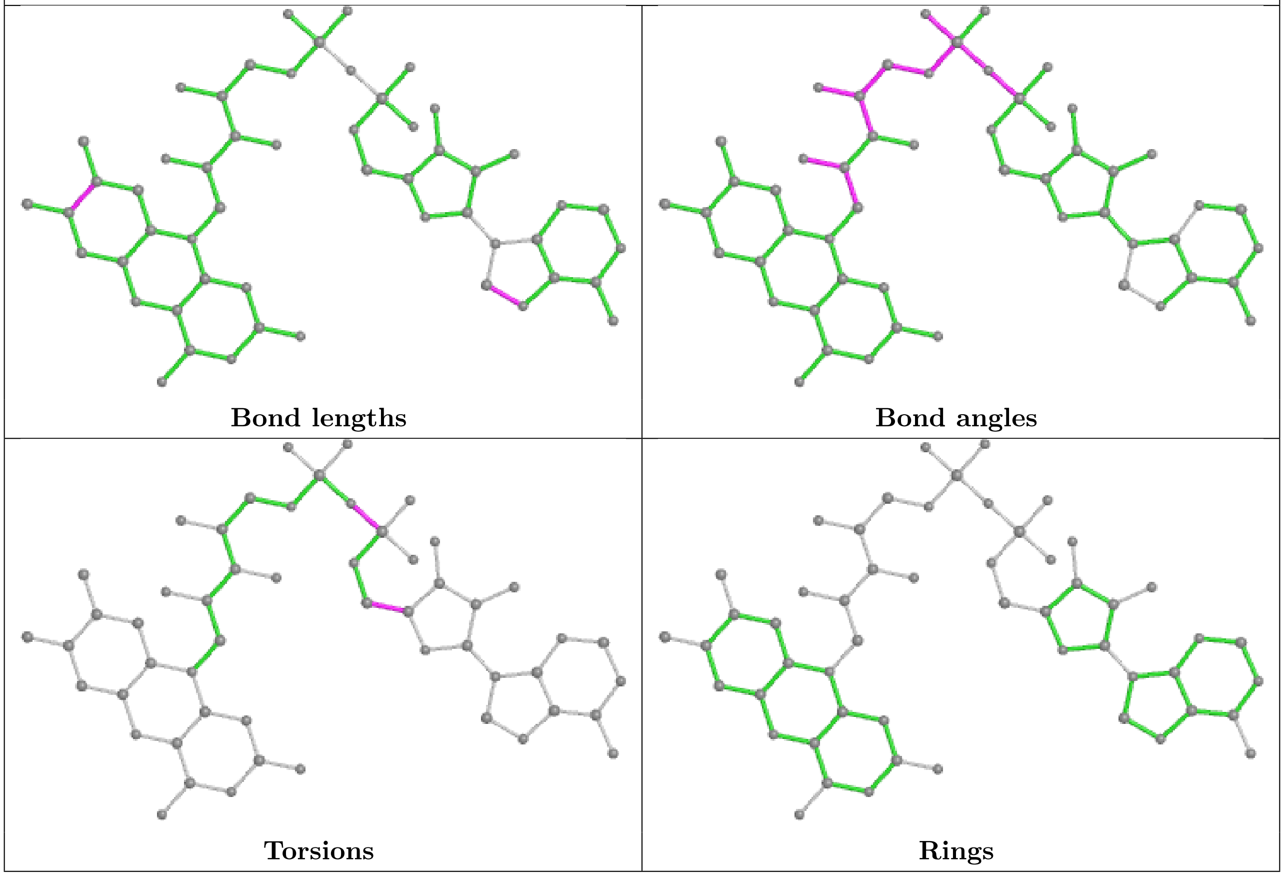
Ligand FAD B 701



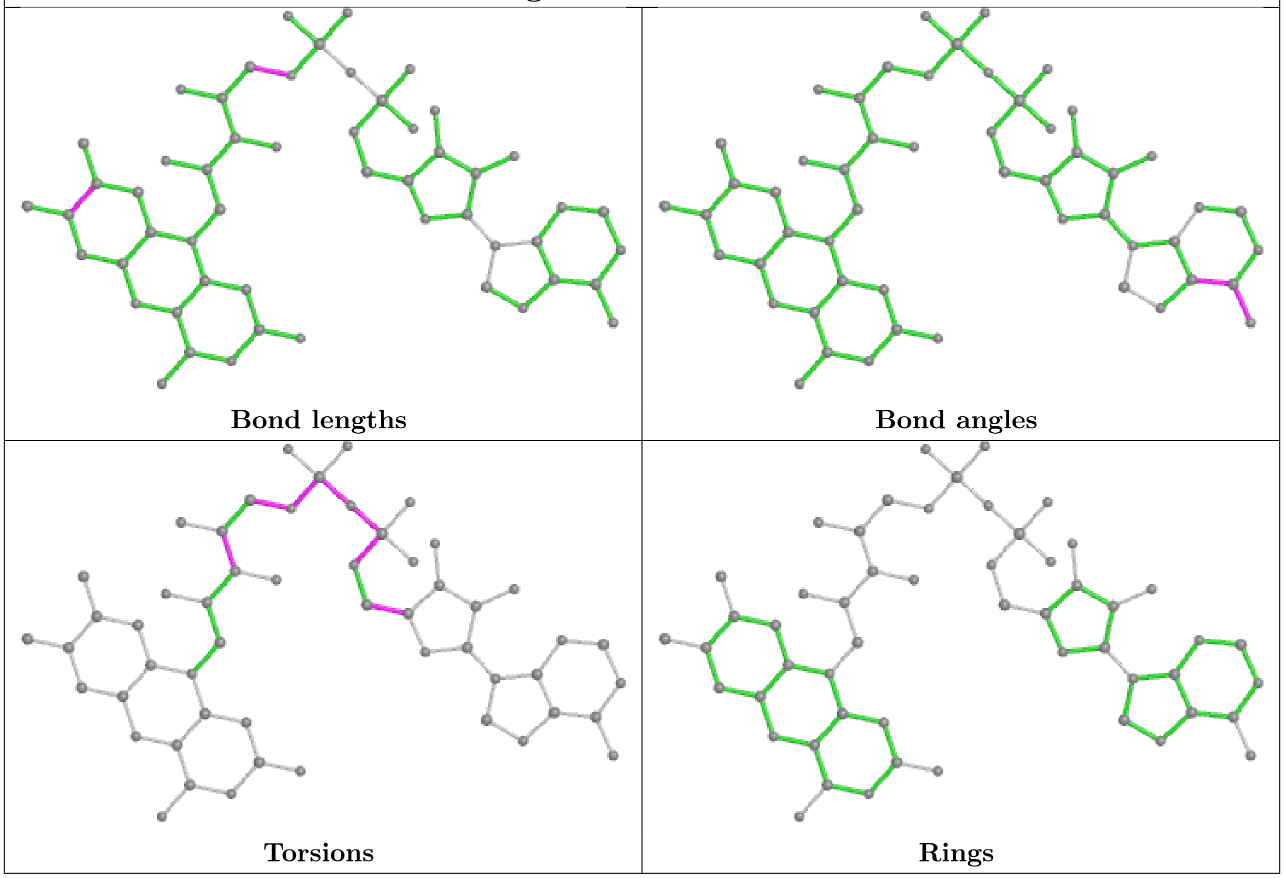
Ligand FAD C 701



Ligand FAD A 701



Ligand FAD D 701



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 (i)

6.1 Protein, DNA and RNA chains (i)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	598/617 (96%)	0.49	51 (8%)	10	11	91, 132, 201, 237	0
1	B	575/617 (93%)	0.88	102 (17%)	1	1	83, 150, 264, 299	0
1	C	598/617 (96%)	0.74	90 (15%)	2	3	87, 168, 244, 301	0
1	D	592/617 (95%)	0.61	68 (11%)	4	5	108, 155, 214, 278	0
All	All	2363/2468 (95%)	0.68	311 (13%)	3	4	83, 152, 236, 301	0

All (311) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	595	THR	9.2
1	B	262	CYS	8.8
1	B	240	LEU	8.6
1	C	83	THR	8.5
1	C	55	ALA	8.0
1	B	236	TRP	7.6
1	B	187	TYR	7.3
1	C	84	CYS	7.2
1	C	186	PHE	6.8
1	B	215	ILE	6.7
1	B	126	ASP	6.7
1	B	254	GLY	6.3
1	C	240	LEU	6.3
1	B	250	VAL	6.2
1	B	259	ALA	6.2
1	B	293	TRP	6.1
1	B	170	LEU	6.0
1	C	160	ASN	5.9
1	D	152	GLY	5.8
1	C	54	GLY	5.8
1	B	258	VAL	5.8

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Mol	Chain	Res	Type	RSRZ
1	C	158	ASP	5.7
1	D	596	GLN	5.7
1	B	288	LEU	5.7
1	A	187	TYR	5.5
1	C	56	GLY	5.4
1	C	109	ALA	5.4
1	C	178	ALA	5.4
1	B	281	ALA	5.2
1	B	287	VAL	5.1
1	C	82	LEU	5.0
1	A	240	LEU	5.0
1	C	157	CYS	4.9
1	A	498	GLN	4.9
1	B	181	ILE	4.9
1	B	284	THR	4.8
1	A	376	TRP	4.8
1	D	544	TYR	4.8
1	B	186	PHE	4.8
1	C	215	ILE	4.7
1	B	128	PHE	4.7
1	B	218	TYR	4.7
1	A	186	PHE	4.7
1	B	361	TYR	4.7
1	D	545	ASP	4.7
1	C	128	PHE	4.5
1	B	257	LEU	4.5
1	B	185	MET	4.5
1	B	283	ALA	4.5
1	C	372	ASN	4.5
1	B	178	ALA	4.5
1	D	187	TYR	4.5
1	B	195	TRP	4.5
1	B	208	ILE	4.4
1	B	260	ASP	4.4
1	D	215	ILE	4.4
1	A	120	LYS	4.4
1	C	361	TYR	4.4
1	C	540	TRP	4.3
1	C	117	ASP	4.3
1	A	115	PRO	4.3
1	D	236	TRP	4.3
1	B	253	ILE	4.3

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Mol	Chain	Res	Type	RSRZ
1	B	184	GLN	4.2
1	D	-1	ASN	4.1
1	D	407	VAL	4.1
1	B	214	PRO	4.1
1	B	213	MET	4.1
1	B	274	HIS	4.1
1	B	242	PRO	4.0
1	D	376	TRP	4.0
1	C	236	TRP	4.0
1	B	192	PHE	4.0
1	C	250	VAL	3.9
1	C	179	GLY	3.9
1	B	256	THR	3.9
1	A	236	TRP	3.9
1	C	376	TRP	3.9
1	C	92	ILE	3.9
1	B	150	VAL	3.9
1	A	116	ARG	3.9
1	A	425	GLY	3.9
1	C	57	GLY	3.8
1	C	53	TRP	3.8
1	B	363	VAL	3.8
1	C	187	TYR	3.8
1	D	178	ALA	3.8
1	B	167	LEU	3.8
1	B	273	LEU	3.8
1	D	221	PHE	3.8
1	A	119	GLU	3.8
1	A	114	PRO	3.8
1	A	218	TYR	3.8
1	C	347	TRP	3.8
1	C	402	TRP	3.8
1	D	186	PHE	3.8
1	D	128	PHE	3.7
1	B	291	LEU	3.7
1	D	86	ASP	3.7
1	D	540	TRP	3.7
1	D	402	TRP	3.6
1	C	536	LEU	3.6
1	C	537	GLY	3.6
1	D	546	ALA	3.6
1	D	547	GLY	3.6

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Mol	Chain	Res	Type	RSRZ
1	B	221	PHE	3.6
1	A	117	ASP	3.5
1	B	216	ALA	3.5
1	B	212	ILE	3.5
1	B	44	TYR	3.5
1	B	272	HIS	3.5
1	D	211	GLY	3.5
1	D	160	ASN	3.5
1	B	255	LYS	3.5
1	B	127	GLY	3.5
1	C	543	CYS	3.4
1	B	206	VAL	3.4
1	C	546	ALA	3.4
1	A	215	ILE	3.4
1	C	181	ILE	3.4
1	C	463	PHE	3.4
1	D	157	CYS	3.4
1	A	118	LYS	3.4
1	D	261	MET	3.4
1	C	243	VAL	3.4
1	D	153	TYR	3.4
1	C	173	LYS	3.4
1	C	110	LEU	3.3
1	C	520	ILE	3.3
1	C	274	HIS	3.3
1	D	184	GLN	3.3
1	D	156	GLY	3.3
1	B	148	ILE	3.2
1	B	265	ILE	3.2
1	A	259	ALA	3.2
1	B	294	LEU	3.2
1	C	275	PHE	3.2
1	B	180	PHE	3.2
1	D	379	PRO	3.2
1	B	251	ARG	3.2
1	D	183	THR	3.2
1	B	232	ILE	3.1
1	B	463	PHE	3.1
1	C	-1	ASN	3.1
1	D	347	TRP	3.1
1	C	127	GLY	3.1
1	B	166	LEU	3.1

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Mol	Chain	Res	Type	RSRZ
1	B	151	ALA	3.1
1	C	180	PHE	3.1
1	C	547	GLY	3.1
1	D	389	PHE	3.1
1	D	210	PRO	3.1
1	C	151	ALA	3.1
1	B	243	VAL	3.1
1	D	392	TYR	3.1
1	D	393	MET	3.0
1	B	222	LEU	3.0
1	B	275	PHE	3.0
1	A	185	MET	3.0
1	C	159	ASP	3.0
1	A	127	GLY	3.0
1	A	355	PHE	3.0
1	C	85	THR	2.9
1	A	222	LEU	2.9
1	D	554	LEU	2.9
1	A	258	VAL	2.9
1	D	115	PRO	2.9
1	B	227	HIS	2.9
1	A	577	LEU	2.8
1	A	445	HIS	2.8
1	C	218	TYR	2.8
1	C	182	VAL	2.8
1	B	124	ALA	2.8
1	C	505	VAL	2.8
1	C	239	LYS	2.8
1	A	426	LEU	2.8
1	D	275	PHE	2.8
1	B	228	MET	2.8
1	C	124	ALA	2.8
1	A	532	GLU	2.8
1	D	87	MET	2.8
1	B	270	ILE	2.7
1	D	257	LEU	2.7
1	C	152	GLY	2.7
1	A	24	PRO	2.7
1	C	521	VAL	2.7
1	B	224	ARG	2.7
1	A	44	TYR	2.7
1	D	593	PRO	2.7

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Mol	Chain	Res	Type	RSRZ
1	D	536	LEU	2.7
1	C	506	THR	2.7
1	C	504	ALA	2.7
1	B	269	GLY	2.7
1	B	182	VAL	2.7
1	C	567	VAL	2.7
1	B	276	TYR	2.7
1	B	584	LEU	2.7
1	D	318	GLU	2.7
1	B	202	ARG	2.6
1	A	453	TYR	2.6
1	A	563	LEU	2.6
1	C	401	PRO	2.6
1	B	261	MET	2.6
1	B	286	MET	2.6
1	A	389	PHE	2.6
1	B	231	LYS	2.6
1	B	18	PHE	2.6
1	A	410	GLU	2.6
1	C	276	TYR	2.6
1	C	251	ARG	2.6
1	D	124	ALA	2.5
1	C	247	ASP	2.5
1	C	242	PRO	2.5
1	B	183	THR	2.5
1	C	150	VAL	2.5
1	D	400	LEU	2.5
1	D	154	PRO	2.5
1	C	476	ILE	2.5
1	B	173	LYS	2.5
1	C	22	TYR	2.5
1	B	15	GLU	2.5
1	A	533	ALA	2.5
1	B	593	PRO	2.5
1	B	247	ASP	2.4
1	A	275	PHE	2.4
1	A	262	CYS	2.4
1	B	41	MET	2.4
1	D	250	VAL	2.4
1	C	50	ASP	2.4
1	B	92	ILE	2.4
1	C	428	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	D	25	PRO	2.4
1	C	137	HIS	2.4
1	C	462	PHE	2.4
1	D	410	GLU	2.4
1	B	347	TRP	2.4
1	A	128	PHE	2.4
1	D	262	CYS	2.4
1	D	204	ILE	2.4
1	A	221	PHE	2.3
1	B	20	PHE	2.3
1	B	179	GLY	2.3
1	A	499	SER	2.3
1	B	472	ILE	2.3
1	C	281	ALA	2.3
1	C	169	HIS	2.3
1	B	237	MET	2.3
1	B	526	PHE	2.3
1	C	174	VAL	2.3
1	A	261	MET	2.3
1	D	399	TYR	2.3
1	A	454	VAL	2.3
1	D	177	GLY	2.3
1	D	320	VAL	2.3
1	B	271	ARG	2.3
1	C	214	PRO	2.3
1	C	457	LYS	2.3
1	C	482	LEU	2.3
1	D	355	PHE	2.3
1	D	80	MET	2.2
1	A	50	ASP	2.2
1	D	150	VAL	2.2
1	D	218	TYR	2.2
1	B	581	LEU	2.2
1	C	581	LEU	2.2
1	C	459	TYR	2.2
1	B	125	LYS	2.2
1	C	212	ILE	2.2
1	D	365	LEU	2.2
1	B	425	GLY	2.2
1	C	44	TYR	2.2
1	B	239	LYS	2.2
1	B	174	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	438	ALA	2.2
1	A	239	LYS	2.2
1	B	507	TRP	2.1
1	C	192	PHE	2.1
1	C	129	ARG	2.1
1	C	257	LEU	2.1
1	B	263	ARG	2.1
1	D	298	ASP	2.1
1	B	346	ARG	2.1
1	A	414	ILE	2.1
1	D	123	ALA	2.1
1	C	216	ALA	2.1
1	A	529	TRP	2.1
1	C	293	TRP	2.1
1	D	66	MET	2.1
1	A	422	ASN	2.1
1	C	176	MET	2.1
1	A	510	PHE	2.1
1	B	249	ALA	2.1
1	A	121	TRP	2.1
1	D	146	PHE	2.1
1	C	355	PHE	2.0
1	D	78	THR	2.0
1	A	325	TRP	2.0
1	B	131	ALA	2.0
1	D	212	ILE	2.0
1	A	418	LEU	2.0
1	D	53	TRP	2.0
1	B	290	GLU	2.0
1	B	123	ALA	2.0
1	C	566	ILE	2.0
1	D	463	PHE	2.0
1	D	571	PHE	2.0
1	C	86	ASP	2.0
1	C	135	VAL	2.0
1	D	240	LEU	2.0
1	A	232	ILE	2.0
1	B	204	ILE	2.0

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 (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

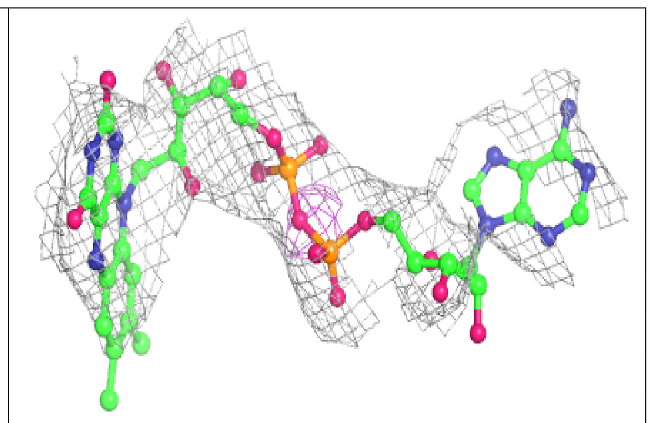
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

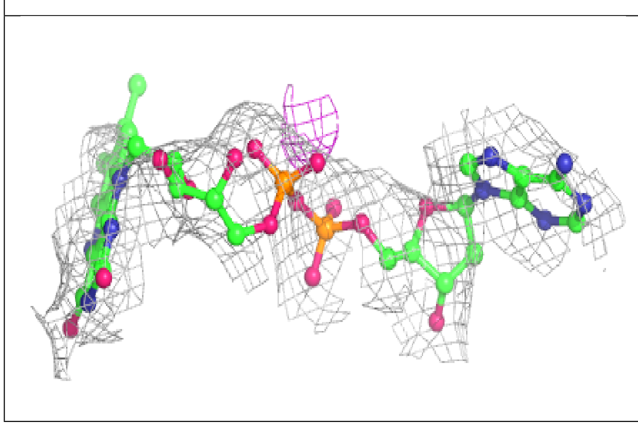
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FAD	B	701	53/53	0.75	0.34	174,211,241,250	0
2	FAD	C	701	53/53	0.84	0.38	156,200,254,259	0
2	FAD	D	701	53/53	0.89	0.21	142,175,193,194	0
2	FAD	A	701	53/53	0.95	0.20	104,141,161,195	0

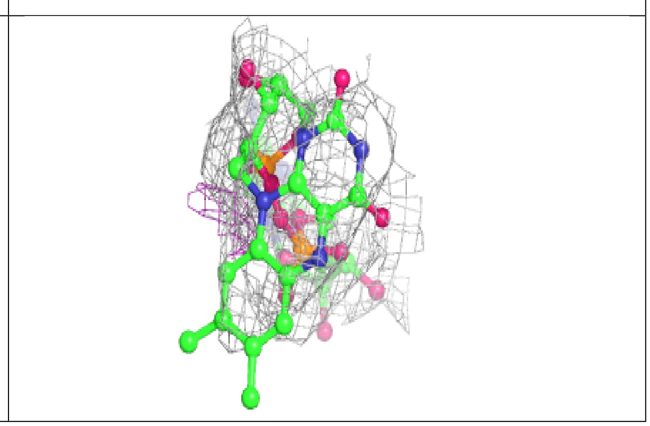
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around FAD B 701:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

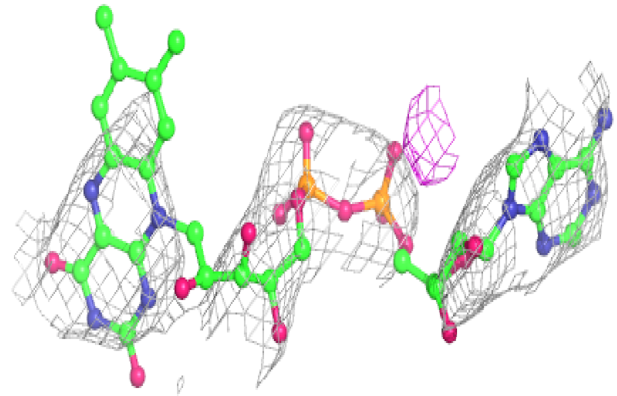


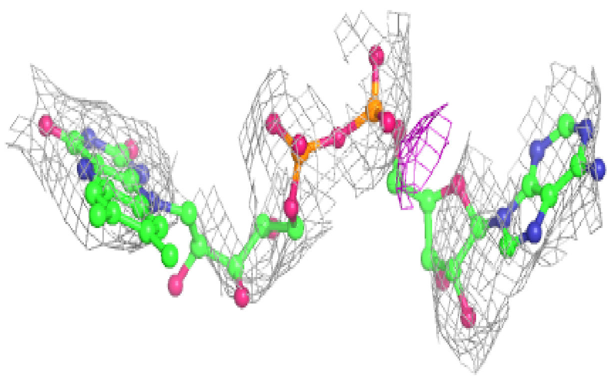


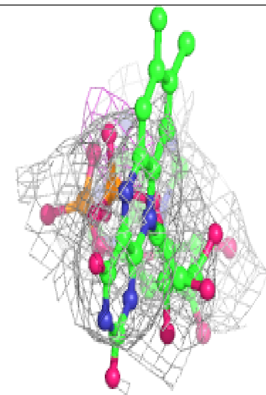


Electron density around FAD C 701:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

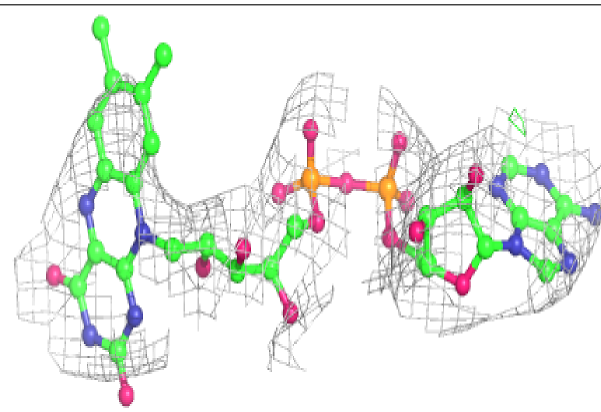


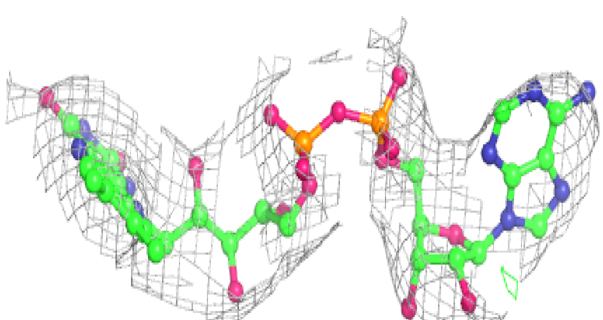


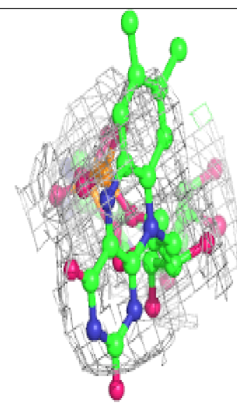


Electron density around FAD D 701:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

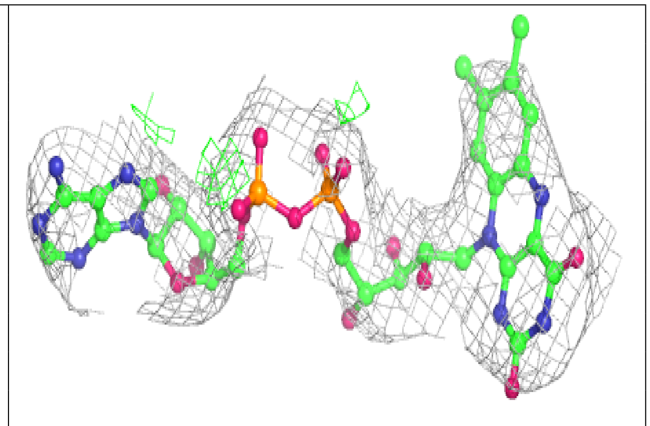


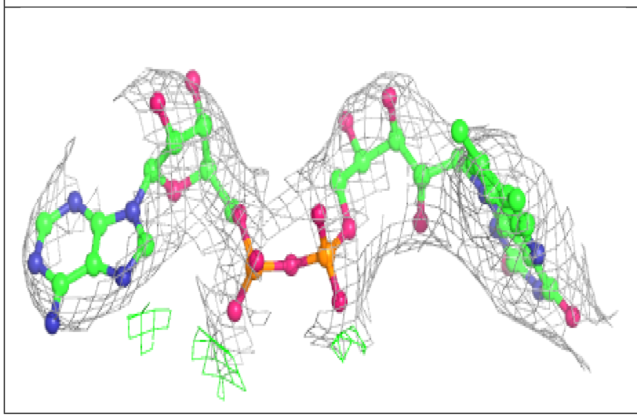


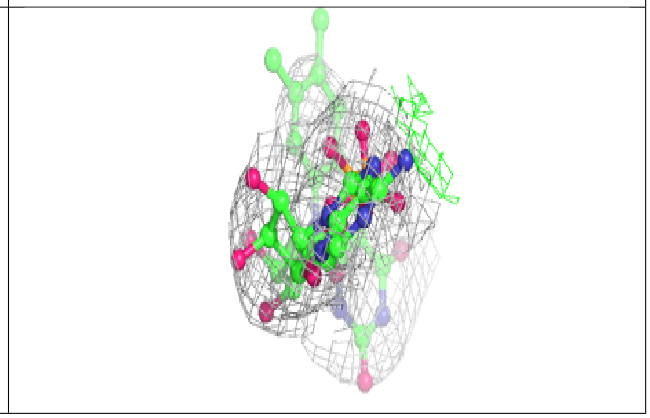


Electron density around FAD A 701:

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.