Full wwPDB X-ray Structure Validation Report (i)

Feb 2, 2026 – 06:12 PM JST

PDB ID	:	9LUQ / pdb_00009luq
Title	:	Crystal structure of Pseudoalteromonas sp.L11 Tryptophan halogenase
Authors	:	Arold, S.T.; Hameed, U.F.S.
Deposited on	:	2025-02-09
Resolution	:	2.75 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:

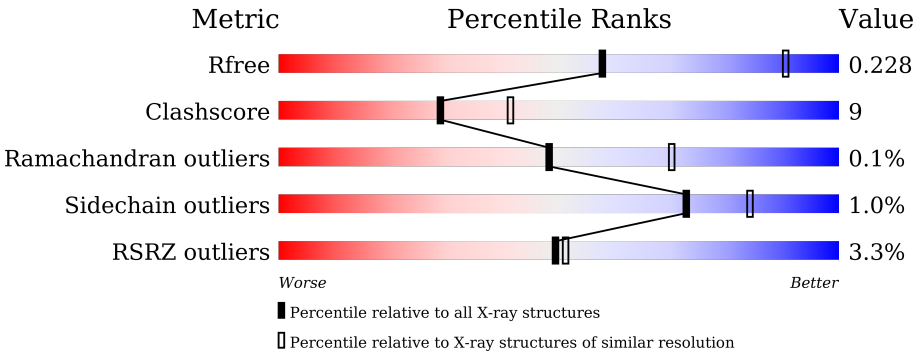
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

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 2.75 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1606 (2.78-2.74)
Clashscore	180529	1689 (2.78-2.74)
Ramachandran outliers	177936	1665 (2.78-2.74)
Sidechain outliers	177891	1665 (2.78-2.74)
RSRZ outliers	164620	1606 (2.78-2.74)

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	497	4% 81% 16%
1	B	497	4% 80% 17%
1	C	497	3% 80% 18%
1	D	497	2% 84% 14%

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	CL	B	501	-	-	X	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 15992 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.

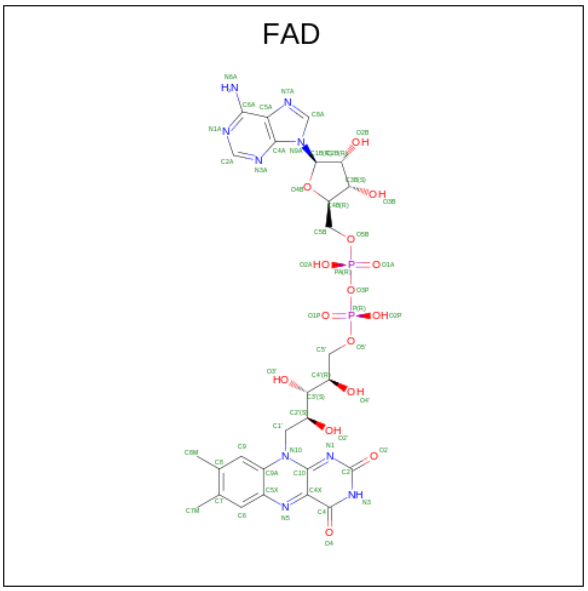
- Molecule 1 is a protein called Tryptophan halogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	489	Total	C	N	O	S	0	0	0
			3893	2481	686	712	14			
1	B	487	Total	C	N	O	S	0	0	0
			3883	2476	684	709	14			
1	C	490	Total	C	N	O	S	0	0	0
			3902	2486	687	715	14			
1	D	489	Total	C	N	O	S	0	0	0
			3893	2481	686	712	14			

- Molecule 2 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Cl	0	0
			1	1		
2	B	1	Total	Cl	0	0
			1	1		
2	D	1	Total	Cl	0	0
			1	1		

- Molecule 3 is FLAVIN-ADENINE DINUCLEOTIDE (CCD ID: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).

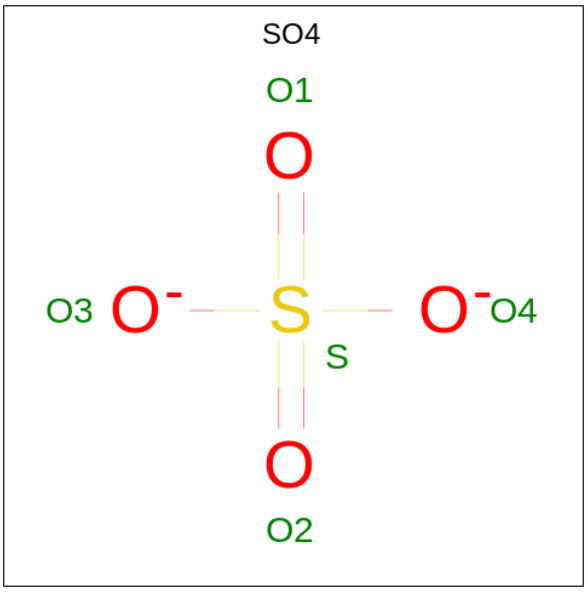


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	D	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

- Molecule 4 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	1	Total	Na	0	0
			1	1		

- Molecule 5 is SULFATE ION (CCD ID: SO4) (formula: O_4S).



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

- Molecule 6 is water.

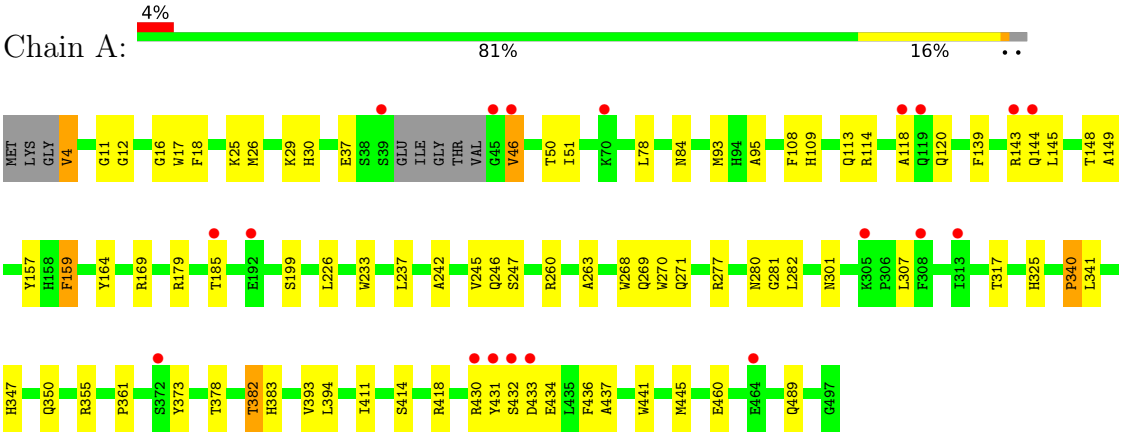
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	70	Total O 70 70	0	0
6	B	72	Total O 72 72	0	0
6	C	48	Total O 48 48	0	0
6	D	63	Total O 63 63	0	0

3 Residue-property plots (i)

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

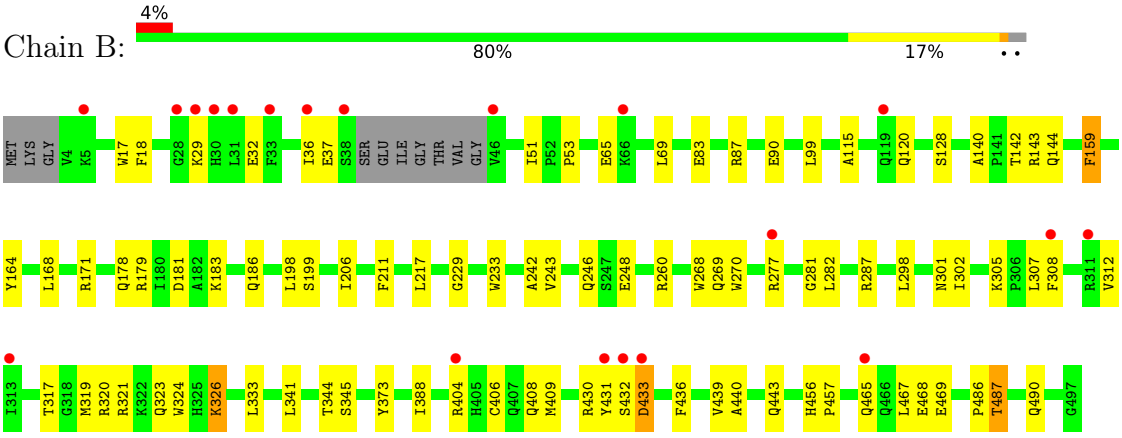
• Molecule 1: Tryptophan halogenase

Chain A:



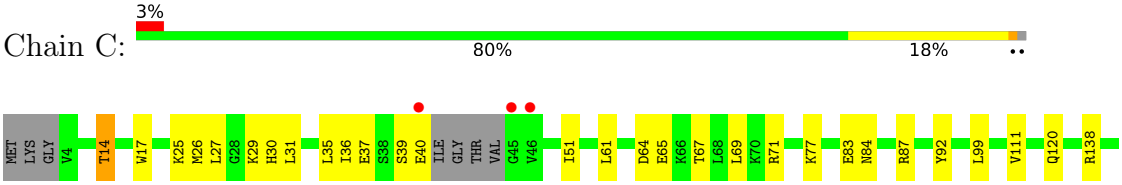
• Molecule 1: Tryptophan halogenase

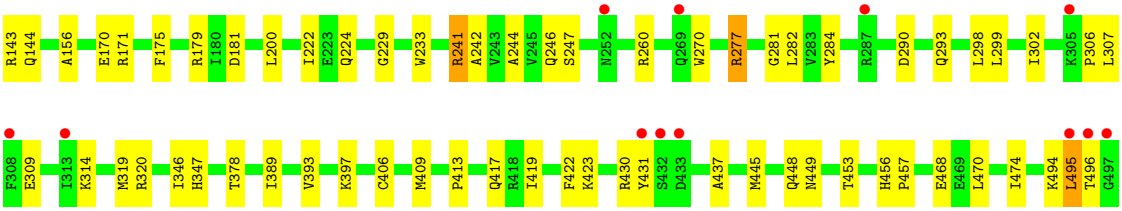
Chain B:



• Molecule 1: Tryptophan halogenase

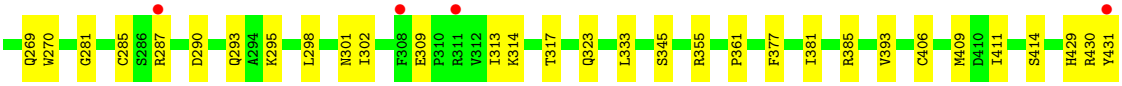
Chain C:

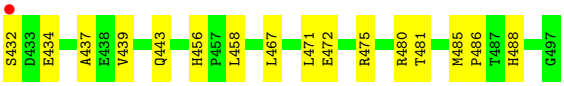




• Molecule 1: Tryptophan halogenase

Chain D:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α, β, γ	183.55Å 183.55Å 190.93Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.26 – 2.75 49.26 – 2.75	Depositor EDS
% Data completeness (in resolution range)	99.8 (49.26-2.75) 99.9 (49.26-2.75)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.55 (at 2.77Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.190 , 0.224 0.196 , 0.228	Depositor DCC
R_{free} test set	1999 reflections (2.07%)	wwPDB-VP
Wilson B-factor (Å^2)	61.9	Xtriage
Anisotropy	0.872	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 49.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.002 for -h,-k,l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	15992	wwPDB-VP
Average B, all atoms (Å^2)	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.97% 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: NA, CL, FAD, SO4

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	0.40	0/3989	0.66	5/5405 (0.1%)
1	B	0.41	0/3979	0.67	4/5392 (0.1%)
1	C	0.37	0/3998	0.62	2/5417 (0.0%)
1	D	0.38	0/3989	0.61	0/5405
All	All	0.39	0/15955	0.64	11/21619 (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	1
1	B	0	1
1	C	0	2
1	D	0	1
All	All	0	5

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	341	LEU	N-CA-C	-9.32	102.04	113.41
1	A	340	PRO	CB-CA-C	-6.73	103.94	113.09
1	B	159	PHE	CA-CB-CG	6.65	120.45	113.80
1	A	159	PHE	CA-CB-CG	6.65	120.45	113.80
1	A	157	TYR	N-CA-C	5.82	118.26	109.41
1	B	436	PHE	CB-CA-C	5.67	118.76	110.26
1	C	449	ASN	CB-CA-C	-5.49	104.79	111.82
1	B	326	LYS	CB-CA-C	-5.40	110.33	116.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	433	ASP	N-CA-CB	-5.36	103.32	111.15
1	A	157	TYR	N-CA-CB	-5.20	103.17	111.43
1	C	495	LEU	N-CA-C	-5.11	106.26	113.20

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	143	ARG	Sidechain
1	B	430	ARG	Sidechain
1	C	241	ARG	Sidechain
1	C	277	ARG	Sidechain
1	D	385	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	3893	0	3822	76	0
1	B	3883	0	3814	81	0
1	C	3902	0	3828	61	0
1	D	3893	0	3822	51	0
2	A	1	0	0	0	0
2	B	1	0	0	2	0
2	D	1	0	0	0	0
3	A	53	0	31	5	0
3	B	53	0	31	2	0
3	D	53	0	31	5	0
4	C	1	0	0	0	0
5	D	5	0	0	1	0
6	A	70	0	0	0	0
6	B	72	0	0	1	0
6	C	48	0	0	0	0
6	D	63	0	0	1	0
All	All	15992	0	15379	269	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 9.

All (269) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:404:ARG:CZ	1:B:408:GLN:HE21	1.20	1.51
1:B:404:ARG:HH12	1:B:408:GLN:CG	1.30	1.42
1:B:404:ARG:CZ	1:B:408:GLN:NE2	1.86	1.39
1:B:404:ARG:NH1	1:B:408:GLN:CG	1.91	1.31
1:B:404:ARG:NH1	1:B:408:GLN:NE2	1.81	1.26
1:B:404:ARG:NH1	1:B:408:GLN:CD	1.99	1.20
1:B:404:ARG:NH1	1:B:408:GLN:HG3	1.54	1.15
1:B:404:ARG:NH2	1:B:408:GLN:HE21	1.47	1.12
1:A:144:GLN:NE2	1:A:148:THR:O	1.86	1.08
1:B:404:ARG:NH1	1:B:408:GLN:HE21	1.47	1.03
1:A:430:ARG:HH11	1:A:437:ALA:HA	1.27	0.98
1:B:404:ARG:HH12	1:B:408:GLN:HG2	1.27	0.96
1:A:430:ARG:HH11	1:A:437:ALA:CA	1.81	0.93
1:A:144:GLN:NE2	1:A:149:ALA:HA	1.86	0.90
1:A:430:ARG:NH1	1:A:437:ALA:CA	2.36	0.89
1:B:487:THR:HG22	1:B:490:GLN:H	1.37	0.89
1:D:429:HIS:CD2	1:D:431:TYR:CE1	2.64	0.85
1:B:345:SER:OG	3:B:502:FAD:N1	2.09	0.84
1:B:439:VAL:HG22	1:B:443:GLN:HE21	1.42	0.84
1:A:246:GLN:HE22	1:A:277:ARG:NH1	1.76	0.83
1:B:243:VAL:HG12	1:B:298:LEU:HD22	1.64	0.80
1:B:243:VAL:HG12	1:B:298:LEU:CD2	2.12	0.79
1:C:120:GLN:NE2	1:C:468:GLU:OE2	2.15	0.79
1:B:404:ARG:HH12	1:B:408:GLN:HG3	1.17	0.78
1:A:430:ARG:NH1	1:A:437:ALA:HA	1.96	0.78
1:C:241:ARG:HH21	1:C:314:LYS:HA	1.50	0.76
1:A:144:GLN:HE21	1:A:149:ALA:HA	1.48	0.75
1:B:37:GLU:HG3	1:B:183:LYS:HE2	1.67	0.75
1:B:404:ARG:HH11	1:B:408:GLN:HG3	1.49	0.74
1:A:430:ARG:NH1	1:A:437:ALA:HB2	2.01	0.74
1:A:269:GLN:HE22	1:A:301:ASN:HB3	1.52	0.74
1:D:323:GLN:OE1	1:D:355:ARG:NH2	2.20	0.74
1:D:430:ARG:HG2	1:D:432:SER:H	1.52	0.73
1:C:406:CYS:HA	1:C:409:MET:HE3	1.71	0.71
1:A:430:ARG:HD2	1:A:437:ALA:HA	1.72	0.71
1:A:430:ARG:NH1	1:A:437:ALA:CB	2.55	0.69
1:C:77:LYS:N	1:C:156:ALA:O	2.25	0.69
1:C:413:PRO:O	1:C:417:GLN:HG3	1.93	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:429:HIS:NE2	1:D:431:TYR:CE1	2.61	0.68
1:A:383:HIS:HE1	1:A:436:PHE:H	1.41	0.68
1:D:75:THR:HG23	1:D:488:HIS:CE1	2.28	0.68
1:C:496:THR:O	1:C:496:THR:HG22	1.95	0.67
1:B:465:GLN:NE2	1:B:469:GLU:OE2	2.29	0.66
1:A:11:GLY:HA2	3:A:502:FAD:H1B	1.78	0.66
1:A:246:GLN:HE22	1:A:277:ARG:HH11	1.41	0.66
1:D:127:TYR:CZ	1:D:471:LEU:HD23	2.31	0.65
1:C:319:MET:HE1	1:C:378:THR:HG23	1.78	0.65
1:C:389:ILE:O	1:C:393:VAL:HG23	1.95	0.65
1:D:75:THR:HG23	1:D:488:HIS:HE1	1.61	0.65
1:D:4:VAL:HG11	1:D:361:PRO:HG2	1.80	0.64
1:A:46:VAL:HG21	3:A:502:FAD:H6	1.78	0.64
1:B:217:LEU:HD23	1:B:333:LEU:HB3	1.79	0.64
1:A:393:VAL:HG21	1:A:411:ILE:HG21	1.80	0.63
1:A:430:ARG:HH11	1:A:437:ALA:CB	2.11	0.63
1:A:144:GLN:HE21	1:A:148:THR:C	2.02	0.63
1:D:429:HIS:NE2	1:D:431:TYR:CD1	2.67	0.63
1:D:29:LYS:HD3	1:D:30:HIS:CE1	2.34	0.62
1:C:51:ILE:HD11	1:C:347:HIS:CG	2.35	0.62
1:D:467:LEU:O	1:D:471:LEU:HD12	1.98	0.62
1:D:51:ILE:HG13	1:D:53:PRO:HD2	1.81	0.62
1:A:430:ARG:HH12	1:A:437:ALA:HB2	1.65	0.61
1:B:277:ARG:HD3	1:B:307:LEU:HD12	1.80	0.61
1:B:439:VAL:HG22	1:B:443:GLN:NE2	2.14	0.61
1:A:431:TYR:HE1	1:A:433:ASP:HB2	1.63	0.61
1:B:345:SER:N	2:B:501:CL:CL	2.69	0.61
1:A:159:PHE:CE1	1:A:164:TYR:CB	2.85	0.60
1:C:77:LYS:HB3	1:C:156:ALA:O	2.02	0.59
1:A:430:ARG:NH1	1:A:437:ALA:N	2.51	0.59
1:D:250:ALA:O	1:D:253:SER:OG	2.21	0.58
1:C:233:TRP:HZ2	1:C:319:MET:HE2	1.68	0.58
1:D:345:SER:HB3	3:D:502:FAD:N1	2.18	0.58
1:B:17:TRP:CZ2	1:B:36:ILE:HD11	2.38	0.58
1:B:159:PHE:CE1	1:B:164:TYR:CG	2.92	0.58
1:B:243:VAL:HG22	1:B:312:VAL:HG22	1.86	0.57
1:D:393:VAL:HG21	1:D:411:ILE:HG21	1.85	0.57
1:A:159:PHE:CE1	1:A:164:TYR:CG	2.93	0.57
1:B:29:LYS:HG3	6:B:611:HOH:O	2.03	0.57
1:A:233:TRP:HB2	1:A:317:THR:HG22	1.85	0.57
1:C:65:GLU:O	1:C:69:LEU:HD12	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:51:ILE:HG13	1:B:53:PRO:HD2	1.88	0.56
1:A:118:ALA:HB3	1:A:120:GLN:HE21	1.71	0.55
1:B:344:THR:N	2:B:501:CL:CL	2.76	0.55
1:D:269:GLN:HE22	1:D:301:ASN:HB3	1.72	0.55
1:C:29:LYS:HD3	1:C:30:HIS:CE1	2.41	0.55
1:A:430:ARG:NH2	1:A:434:GLU:O	2.41	0.54
1:C:430:ARG:HD2	1:C:437:ALA:HA	1.90	0.54
1:B:159:PHE:CE1	1:B:164:TYR:CD2	2.96	0.54
1:D:429:HIS:CD2	1:D:431:TYR:CD1	2.95	0.54
1:C:422:PHE:HB3	1:C:445:MET:HE1	1.90	0.54
1:B:198:LEU:HD11	1:B:211:PHE:CE2	2.43	0.53
1:B:487:THR:HG22	1:B:490:GLN:N	2.14	0.53
1:B:439:VAL:HG13	1:B:440:ALA:N	2.23	0.53
1:D:77:LYS:N	1:D:156:ALA:O	2.34	0.53
1:D:140:ALA:HB2	1:D:486:PRO:HD2	1.91	0.53
1:D:430:ARG:HD2	1:D:437:ALA:HA	1.89	0.53
1:B:269:GLN:HE22	1:B:301:ASN:HB2	1.73	0.53
1:A:144:GLN:HE21	1:A:149:ALA:CA	2.20	0.52
1:A:145:LEU:HB3	1:A:148:THR:OG1	2.10	0.52
1:A:431:TYR:CE1	1:A:433:ASP:HB2	2.42	0.52
1:D:429:HIS:HE2	1:D:431:TYR:HD1	1.58	0.52
1:A:159:PHE:CE1	1:A:164:TYR:HB2	2.45	0.52
1:B:229:GLY:C	1:B:321:ARG:HG3	2.35	0.51
1:C:495:LEU:O	1:C:496:THR:C	2.53	0.51
1:B:243:VAL:CG1	1:B:298:LEU:HD22	2.37	0.51
1:D:48:GLU:HG3	3:D:502:FAD:N3	2.25	0.51
1:C:84:ASN:HA	1:C:87:ARG:O	2.11	0.51
1:D:439:VAL:HG22	1:D:443:GLN:HE21	1.75	0.51
1:B:324:TRP:NE1	1:B:326:LYS:O	2.42	0.51
1:B:65:GLU:O	1:B:69:LEU:HD23	2.11	0.50
1:D:241:ARG:NH1	1:D:314:LYS:HG2	2.26	0.50
1:D:377:PHE:O	1:D:381:ILE:HG22	2.12	0.50
1:D:429:HIS:HD2	1:D:431:TYR:CE1	2.25	0.50
1:B:233:TRP:CZ2	1:B:319:MET:HG2	2.46	0.50
1:D:66:LYS:NZ	5:D:503:SO4:S	2.85	0.50
1:A:340:PRO:HG3	3:A:502:FAD:C2	2.42	0.49
1:B:404:ARG:NH2	1:B:408:GLN:NE2	2.28	0.49
1:C:143:ARG:HG2	1:C:144:GLN:HG3	1.94	0.49
1:A:12:GLY:HA3	1:A:37:GLU:OE2	2.13	0.49
1:A:17:TRP:HZ2	1:A:179:ARG:HD2	1.77	0.49
1:A:25:LYS:HD3	1:A:26:MET:HE2	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:423:LYS:HE3	1:C:453:THR:HG23	1.95	0.49
1:B:87:ARG:NH1	1:B:90:GLU:OE2	2.46	0.49
1:C:299:LEU:HD22	1:C:306:PRO:HG3	1.95	0.49
1:A:185:THR:HG22	1:A:199:SER:C	2.37	0.48
1:C:242:ALA:HA	1:C:282:LEU:O	2.13	0.48
1:D:406:CYS:HA	1:D:409:MET:HE3	1.96	0.48
1:A:17:TRP:CZ2	1:A:169:ARG:HG3	2.48	0.48
1:A:93:MET:HG2	1:A:95:ALA:HB2	1.95	0.48
1:C:470:LEU:O	1:C:474:ILE:HG12	2.13	0.48
1:B:99:LEU:HD21	1:B:128:SER:HB2	1.93	0.48
1:A:441:TRP:HB3	1:A:445:MET:HE2	1.96	0.48
1:C:247:SER:HA	1:C:307:LEU:HD13	1.94	0.48
1:C:36:ILE:HD13	1:C:200:LEU:HD21	1.95	0.48
1:A:114:ARG:HH11	1:A:460:GLU:HA	1.78	0.48
1:B:487:THR:HB	1:B:490:GLN:CD	2.38	0.47
1:A:159:PHE:CD1	1:A:164:TYR:HB2	2.49	0.47
1:C:171:ARG:HB3	1:C:175:PHE:HE2	1.79	0.47
1:D:48:GLU:HG3	3:D:502:FAD:C4	2.44	0.47
1:D:456:HIS:CE1	1:D:458:LEU:HD12	2.50	0.47
1:A:242:ALA:HA	1:A:282:LEU:O	2.15	0.47
1:B:140:ALA:HB2	1:B:486:PRO:HD2	1.96	0.47
1:B:243:VAL:CG1	1:B:298:LEU:CD2	2.90	0.47
1:D:243:VAL:HG13	1:D:298:LEU:HD22	1.97	0.47
1:B:159:PHE:HE1	1:B:164:TYR:CD2	2.33	0.47
1:B:198:LEU:HD11	1:B:211:PHE:HE2	1.80	0.47
1:D:80:ILE:HG12	1:D:259:THR:HB	1.97	0.47
1:D:290:ASP:OD1	1:D:293:GLN:HG3	2.15	0.47
1:C:77:LYS:CB	1:C:156:ALA:O	2.63	0.46
1:A:246:GLN:NE2	1:A:277:ARG:HH11	2.11	0.46
1:A:50:THR:HG21	1:A:159:PHE:CE2	2.50	0.46
1:B:323:GLN:HG2	1:B:373:TYR:HE1	1.80	0.46
1:C:309:GLU:HA	1:C:309:GLU:OE1	2.14	0.46
1:B:248:GLU:HG3	1:B:307:LEU:HD21	1.98	0.46
1:A:260:ARG:HB2	1:A:271:GLN:HB2	1.98	0.46
1:C:17:TRP:CZ2	1:C:35:LEU:HD22	2.50	0.46
1:A:246:GLN:CD	1:A:277:ARG:HD3	2.41	0.46
1:A:4:VAL:HG11	1:A:361:PRO:HB2	1.97	0.46
1:C:138:ARG:HG3	1:C:138:ARG:HH11	1.81	0.45
1:A:108:PHE:O	1:A:109:HIS:C	2.58	0.45
1:D:270:TRP:CZ2	1:D:281:GLY:HA3	2.52	0.45
1:A:17:TRP:CZ2	1:A:179:ARG:HD2	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:268:TRP:HH2	1:A:340:PRO:O	2.00	0.45
1:A:418:ARG:NH2	1:A:434:GLU:OE1	2.49	0.45
1:C:246:GLN:OE1	1:C:277:ARG:HD3	2.17	0.45
1:A:394:LEU:HD11	1:A:445:MET:HG2	1.98	0.45
1:B:29:LYS:HE3	6:D:649:HOH:O	2.17	0.45
1:B:99:LEU:CD2	1:B:128:SER:HB2	2.47	0.45
1:A:237:LEU:HB2	1:A:317:THR:HG21	1.99	0.45
1:B:345:SER:OG	3:B:502:FAD:C2	2.62	0.45
1:B:406:CYS:HA	1:B:409:MET:HE3	1.99	0.44
1:D:71:ARG:HG3	1:D:167:LEU:HD21	1.99	0.44
1:A:159:PHE:HE1	1:A:164:TYR:CB	2.31	0.44
1:A:355:ARG:HB3	1:A:373:TYR:CE2	2.53	0.44
1:D:138:ARG:NH1	1:D:485:MET:O	2.50	0.44
1:A:51:ILE:HD11	1:A:347:HIS:CG	2.53	0.44
1:B:186:GLN:HG2	1:B:199:SER:HB2	1.99	0.44
1:C:298:LEU:O	1:C:302:ILE:HG23	2.17	0.44
1:D:298:LEU:O	1:D:302:ILE:HG23	2.17	0.44
1:B:456:HIS:ND1	1:B:457:PRO:HD2	2.33	0.44
1:C:39:SER:O	1:C:40:GLU:HG3	2.18	0.44
1:B:36:ILE:O	1:B:181:ASP:HA	2.18	0.44
1:B:36:ILE:HD12	1:B:179:ARG:HE	1.82	0.44
1:C:244:ALA:HA	1:C:281:GLY:HA2	1.99	0.44
1:D:248:GLU:OE1	1:D:248:GLU:HA	2.18	0.44
1:B:159:PHE:CE1	1:B:164:TYR:CB	3.00	0.43
1:C:27:LEU:HB3	1:C:31:LEU:HD22	1.99	0.43
1:A:378:THR:O	1:A:382:THR:HB	2.18	0.43
1:C:17:TRP:CZ2	1:C:179:ARG:HD2	2.53	0.43
1:C:456:HIS:ND1	1:C:457:PRO:HD2	2.33	0.43
1:B:270:TRP:CZ2	1:B:281:GLY:HA3	2.53	0.43
1:B:305:LYS:HE2	1:B:305:LYS:HA	2.00	0.43
1:B:18:PHE:HB2	1:B:168:LEU:HD13	2.00	0.43
1:C:171:ARG:HA	1:C:171:ARG:HD2	1.79	0.43
1:A:50:THR:HG21	1:A:159:PHE:HE2	1.84	0.43
1:A:430:ARG:HG2	1:A:432:SER:H	1.84	0.43
1:C:64:ASP:OD1	1:C:67:THR:OG1	2.30	0.43
1:C:233:TRP:CZ2	1:C:319:MET:HE2	2.50	0.43
1:D:212:ILE:HG22	1:D:214:CYS:SG	2.59	0.43
1:D:295:LYS:NZ	1:D:309:GLU:OE1	2.52	0.43
1:D:434:GLU:H	1:D:434:GLU:HG3	1.70	0.43
1:D:481:THR:HG22	1:D:485:MET:HE3	2.01	0.43
3:D:502:FAD:H9	3:D:502:FAD:H1'1	1.81	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:159:PHE:CE1	1:A:164:TYR:CD2	3.07	0.43
1:C:241:ARG:HB2	1:C:284:TYR:CE1	2.54	0.43
1:A:245:VAL:O	1:A:280:ASN:HB2	2.19	0.43
1:A:383:HIS:NE2	1:A:434:GLU:HB3	2.33	0.43
1:B:277:ARG:HD3	1:B:307:LEU:CD1	2.48	0.43
1:C:69:LEU:HD13	1:C:495:LEU:HD12	2.01	0.43
1:C:92:TYR:CE2	1:C:448:GLN:HG3	2.54	0.43
1:B:115:ALA:HB2	1:B:467:LEU:HD21	2.00	0.42
1:D:313:ILE:HD13	1:D:313:ILE:HA	1.95	0.42
3:A:502:FAD:H9	3:A:502:FAD:H1'1	1.84	0.42
1:B:120:GLN:HE21	1:B:468:GLU:CD	2.27	0.42
1:B:242:ALA:HA	1:B:282:LEU:O	2.19	0.42
1:C:83:GLU:CD	1:C:260:ARG:HH21	2.27	0.42
1:C:270:TRP:CZ2	1:C:281:GLY:HA3	2.54	0.42
1:A:226:LEU:HD13	1:A:325:HIS:HD2	1.85	0.42
1:B:159:PHE:CD1	1:B:164:TYR:HB2	2.54	0.42
1:C:14:THR:HG21	1:C:346:ILE:HD12	2.01	0.42
1:C:25:LYS:HD2	1:C:26:MET:HE2	2.02	0.42
1:C:229:GLY:O	1:C:320:ARG:HD3	2.19	0.42
1:B:298:LEU:O	1:B:302:ILE:HG23	2.19	0.42
1:C:61:LEU:O	1:C:171:ARG:NE	2.45	0.42
1:A:270:TRP:CH2	1:A:281:GLY:HA3	2.55	0.42
1:B:178:GLN:NE2	1:B:178:GLN:HA	2.34	0.42
1:B:246:GLN:HB2	1:B:308:PHE:HE2	1.85	0.42
1:A:489:GLN:OE1	1:A:489:GLN:HA	2.20	0.42
1:B:268:TRP:CE2	1:B:341:LEU:HD13	2.54	0.42
1:C:494:LYS:C	1:C:496:THR:H	2.28	0.42
1:D:472:GLU:HG3	1:D:475:ARG:HH22	1.84	0.42
1:B:171:ARG:HD2	1:B:171:ARG:HA	1.74	0.42
1:C:17:TRP:HZ2	1:C:179:ARG:HD2	1.85	0.42
1:C:474:ILE:HG12	1:C:474:ILE:H	1.72	0.42
1:B:233:TRP:HB2	1:B:317:THR:HG22	2.02	0.42
1:C:290:ASP:OD2	1:C:293:GLN:HG3	2.20	0.42
1:B:159:PHE:CE1	1:B:164:TYR:HB2	2.55	0.42
1:D:285:CYS:SG	1:D:287:ARG:HB2	2.60	0.41
1:A:145:LEU:HD12	1:A:145:LEU:HA	1.88	0.41
1:C:419:ILE:HA	1:C:445:MET:HE1	2.02	0.41
1:D:480:ARG:HG3	1:D:480:ARG:HH11	1.86	0.41
1:B:388:ILE:HD12	1:B:388:ILE:H	1.85	0.41
1:A:114:ARG:NH1	1:A:460:GLU:HA	2.34	0.41
1:C:37:GLU:O	1:C:181:ASP:HA	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:84:ASN:HB2	1:A:263:ALA:HB3	2.01	0.41
1:A:247:SER:HA	1:A:307:LEU:HG	2.02	0.41
1:B:17:TRP:CZ2	1:B:179:ARG:HD2	2.55	0.41
1:B:143:ARG:HG2	1:B:144:GLN:HG3	2.02	0.41
1:B:287:ARG:HD2	1:C:224:GLN:O	2.21	0.41
1:D:480:ARG:HG3	1:D:480:ARG:NH1	2.35	0.41
1:A:383:HIS:CE1	1:A:436:PHE:H	2.28	0.41
1:A:433:ASP:OD2	1:C:431:TYR:HA	2.21	0.41
1:B:83:GLU:OE2	1:B:260:ARG:NE	2.47	0.41
1:B:206:ILE:HD13	1:B:206:ILE:HA	1.88	0.41
1:A:18:PHE:CZ	1:A:350:GLN:HG2	2.56	0.41
1:C:71:ARG:HH22	1:C:170:GLU:CD	2.28	0.41
1:C:299:LEU:HD23	1:C:299:LEU:HA	1.81	0.41
1:D:233:TRP:HB2	1:D:317:THR:HG22	2.02	0.41
1:D:269:GLN:HE22	1:D:301:ASN:CB	2.33	0.41
1:D:406:CYS:HA	1:D:409:MET:HG2	2.03	0.41
1:C:246:GLN:OE1	1:C:277:ARG:CD	2.69	0.41
1:A:11:GLY:O	1:A:16:GLY:HA3	2.22	0.40
1:A:29:LYS:HE2	1:A:30:HIS:CE1	2.56	0.40
1:B:17:TRP:CE2	1:B:36:ILE:HD11	2.55	0.40
1:C:422:PHE:HB3	1:C:445:MET:CE	2.51	0.40
1:A:78:LEU:HD21	1:A:139:PHE:CD1	2.56	0.40
1:A:340:PRO:HG3	3:A:502:FAD:O2	2.20	0.40
1:B:140:ALA:O	1:B:142:THR:HG23	2.22	0.40
1:C:222:ILE:HD12	1:C:222:ILE:HA	1.90	0.40
1:D:345:SER:OG	3:D:502:FAD:H1'2	2.21	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	485/497 (98%)	468 (96%)	17 (4%)	0	100	100
1	B	483/497 (97%)	469 (97%)	13 (3%)	1 (0%)	44	63
1	C	486/497 (98%)	471 (97%)	15 (3%)	0	100	100
1	D	485/497 (98%)	474 (98%)	11 (2%)	0	100	100
All	All	1939/1988 (98%)	1882 (97%)	56 (3%)	1 (0%)	48	70

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	432	SER

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	408/414 (99%)	403 (99%)	5 (1%)	67	81
1	B	407/414 (98%)	402 (99%)	5 (1%)	67	81
1	C	409/414 (99%)	405 (99%)	4 (1%)	73	84
1	D	408/414 (99%)	405 (99%)	3 (1%)	81	89
All	All	1632/1656 (99%)	1615 (99%)	17 (1%)	73	84

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	VAL
1	A	46	VAL
1	A	113	GLN
1	A	382	THR
1	A	414	SER
1	B	32	GLU
1	B	320	ARG
1	B	431	TYR
1	B	433	ASP
1	B	487	THR

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Mol	Chain	Res	Type
1	C	14	THR
1	C	99	LEU
1	C	111	VAL
1	C	397	LYS
1	D	4	VAL
1	D	333	LEU
1	D	414	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	30	HIS
1	A	120	GLN
1	A	144	GLN
1	A	246	GLN
1	A	325	HIS
1	A	376	GLN
1	A	383	HIS
1	A	408	GLN
1	B	109	HIS
1	B	120	GLN
1	B	144	GLN
1	B	178	GLN
1	B	224	GLN
1	B	408	GLN
1	B	417	GLN
1	C	30	HIS
1	C	102	GLN
1	C	163	GLN
1	C	166	GLN
1	C	186	GLN
1	C	264	HIS
1	C	280	ASN
1	C	405	HIS
1	C	484	GLN
1	D	30	HIS
1	D	189	GLN
1	D	252	ASN
1	D	293	GLN
1	D	301	ASN
1	D	376	GLN
1	D	465	GLN

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Mol	Chain	Res	Type
1	D	489	GLN

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 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	FAD	D	502	-	53,58,58	0.52	0	68,89,89	0.60	1 (1%)
5	SO4	D	503	-	4,4,4	0.42	0	6,6,6	0.05	0
3	FAD	B	502	-	53,58,58	0.47	0	68,89,89	0.49	1 (1%)
3	FAD	A	502	-	53,58,58	0.50	0	68,89,89	0.58	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
3	FAD	D	502	-	-	13/30/50/50	0/6/6/6
3	FAD	B	502	-	-	11/30/50/50	0/6/6/6
3	FAD	A	502	-	-	9/30/50/50	0/6/6/6

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	502	FAD	C5A-C6A-N6A	2.40	124.00	120.35
3	D	502	FAD	C5A-C6A-N6A	2.31	123.87	120.35
3	A	502	FAD	C5A-C6A-N6A	2.20	123.70	120.35

There are no chirality outliers.

All (33) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	502	FAD	C3B-C4B-C5B-O5B
3	B	502	FAD	C2'-C3'-C4'-O4'
3	B	502	FAD	O3'-C3'-C4'-O4'
3	B	502	FAD	C5'-O5'-P-O1P
3	D	502	FAD	P-O3P-PA-O5B
3	D	502	FAD	N10-C1'-C2'-O2'
3	D	502	FAD	C2'-C3'-C4'-O4'
3	D	502	FAD	C2'-C3'-C4'-C5'
3	D	502	FAD	O3'-C3'-C4'-O4'
3	D	502	FAD	O3'-C3'-C4'-C5'
3	D	502	FAD	C5'-O5'-P-O2P
3	A	502	FAD	O4B-C4B-C5B-O5B
3	B	502	FAD	O3'-C3'-C4'-C5'
3	B	502	FAD	C2'-C3'-C4'-C5'
3	A	502	FAD	C3B-C4B-C5B-O5B
3	B	502	FAD	O4B-C4B-C5B-O5B
3	D	502	FAD	PA-O3P-P-O1P
3	A	502	FAD	O2'-C2'-C3'-C4'
3	A	502	FAD	PA-O3P-P-O5'
3	B	502	FAD	C5'-O5'-P-O3P
3	D	502	FAD	C5'-O5'-P-O3P
3	A	502	FAD	C5B-O5B-PA-O2A
3	B	502	FAD	C5'-O5'-P-O2P
3	D	502	FAD	C5'-O5'-P-O1P
3	B	502	FAD	C4B-C5B-O5B-PA

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Mol	Chain	Res	Type	Atoms
3	D	502	FAD	C2'-C1'-N10-C10
3	B	502	FAD	PA-O3P-P-O1P
3	A	502	FAD	O3'-C3'-C4'-C5'
3	A	502	FAD	O4'-C4'-C5'-O5'
3	A	502	FAD	C5B-O5B-PA-O3P
3	D	502	FAD	PA-O3P-P-O2P
3	A	502	FAD	C5'-O5'-P-O1P
3	D	502	FAD	C3B-C4B-C5B-O5B

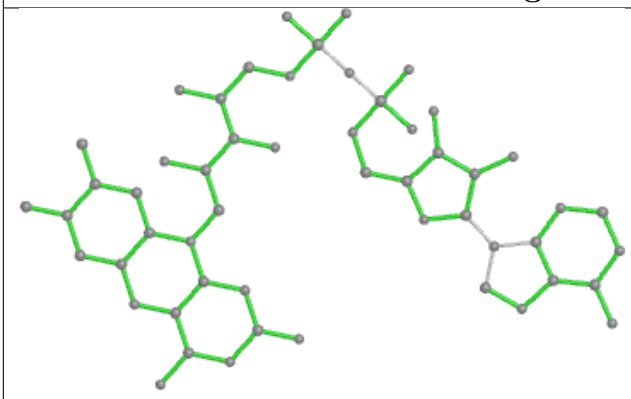
There are no ring outliers.

4 monomers are involved in 13 short contacts:

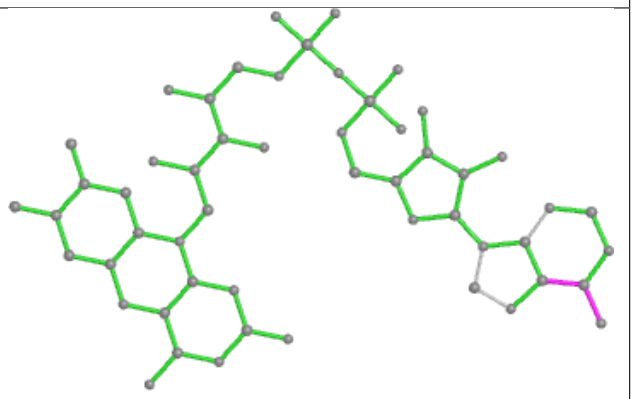
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	502	FAD	5	0
5	D	503	SO4	1	0
3	B	502	FAD	2	0
3	A	502	FAD	5	0

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.

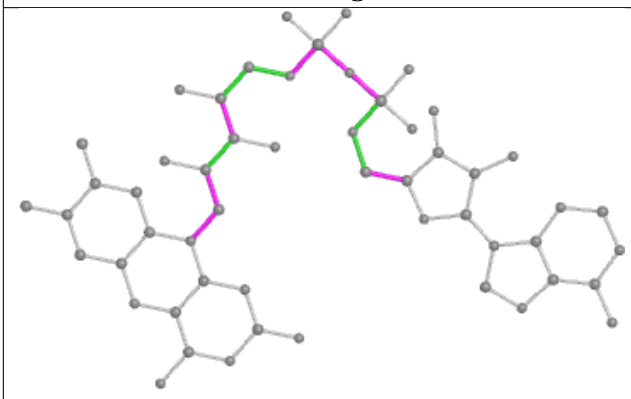
Ligand FAD D 502



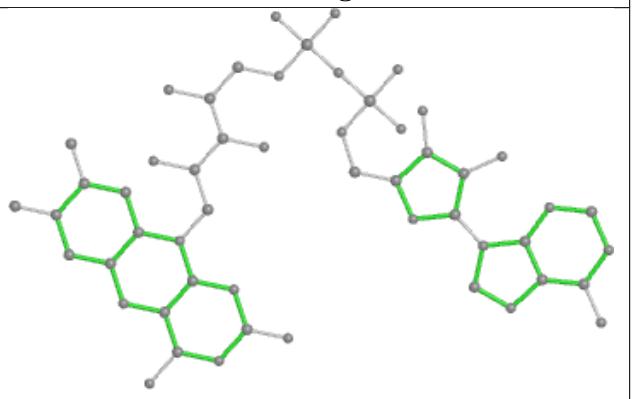
Bond lengths



Bond angles

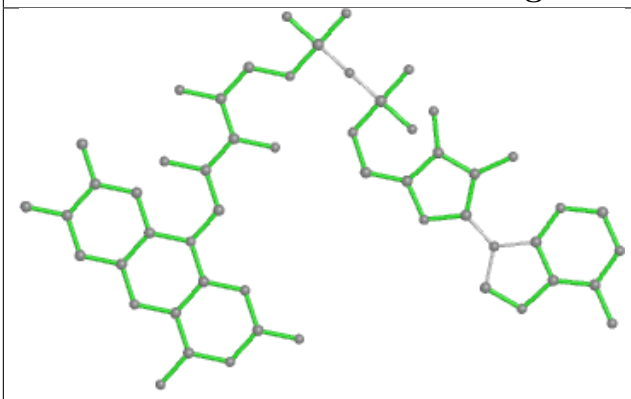


Torsions

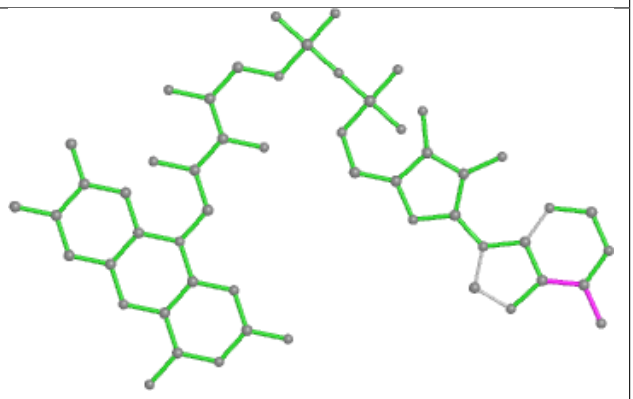


Rings

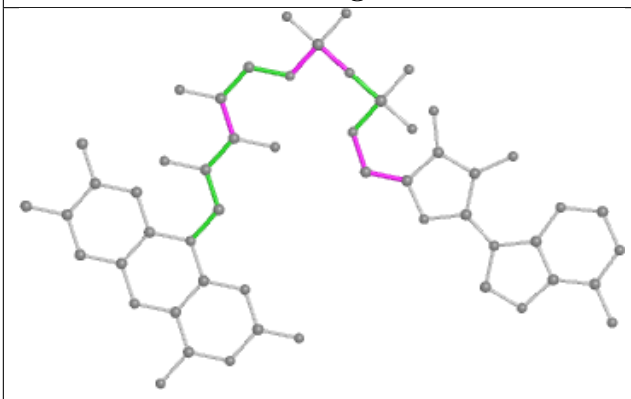
Ligand FAD B 502



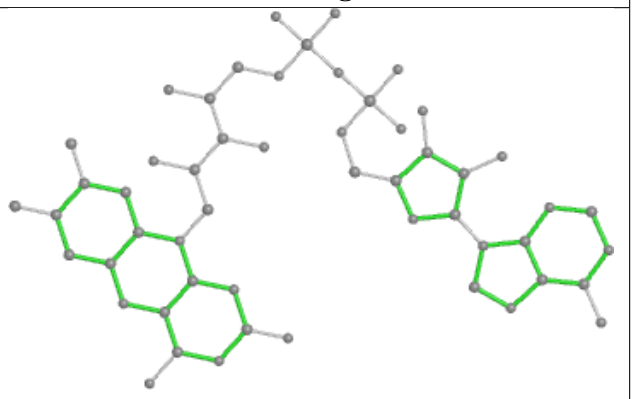
Bond lengths



Bond angles

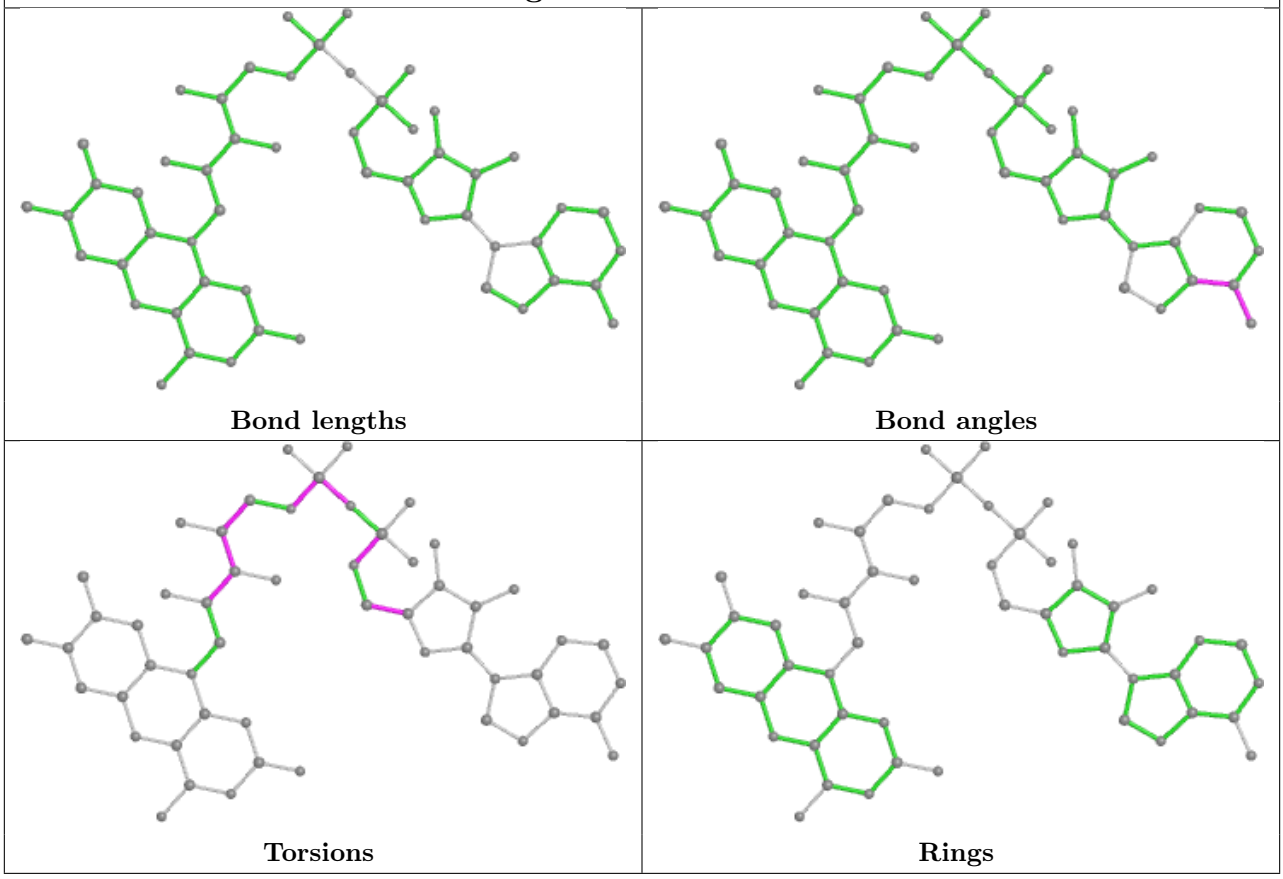


Torsions



Rings

Ligand FAD A 502



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	489/497 (98%)	-0.14	19 (3%)	44	45	46, 57, 87, 141	0
1	B	487/497 (97%)	-0.01	20 (4%)	42	44	30, 62, 88, 111	0
1	C	490/497 (98%)	-0.03	15 (3%)	51	53	52, 70, 99, 139	0
1	D	489/497 (98%)	-0.21	10 (2%)	64	65	45, 61, 86, 117	0
All	All	1955/1988 (98%)	-0.10	64 (3%)	49	51	30, 62, 91, 141	0

All (64) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	431	TYR	6.4
1	A	431	TYR	5.9
1	B	433	ASP	5.4
1	B	33	PHE	4.7
1	B	431	TYR	4.4
1	A	430	ARG	4.2
1	C	431	TYR	4.1
1	A	432	SER	4.1
1	C	45	GLY	4.0
1	A	45	GLY	4.0
1	C	46	VAL	3.9
1	A	308	PHE	3.9
1	D	46	VAL	3.7
1	A	433	ASP	3.6
1	B	28	GLY	3.4
1	D	311	ARG	3.3
1	B	432	SER	3.3
1	C	496	THR	3.2
1	C	433	ASP	3.2
1	D	45	GLY	3.2
1	A	372	SER	3.1

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Mol	Chain	Res	Type	RSRZ
1	B	404	ARG	3.1
1	B	29	LYS	3.1
1	A	46	VAL	3.1
1	B	31	LEU	3.0
1	A	192	GLU	2.9
1	C	308	PHE	2.9
1	B	313	ILE	2.9
1	B	119	GLN	2.8
1	B	46	VAL	2.8
1	C	40	GLU	2.8
1	B	36	ILE	2.7
1	C	432	SER	2.7
1	C	313	ILE	2.7
1	A	70	LYS	2.6
1	B	277	ARG	2.6
1	B	308	PHE	2.5
1	A	313	ILE	2.5
1	A	464	GLU	2.5
1	A	143	ARG	2.5
1	A	39	SER	2.5
1	C	495	LEU	2.4
1	D	248	GLU	2.4
1	C	252	ASN	2.3
1	B	465	GLN	2.3
1	D	432	SER	2.3
1	B	66	LYS	2.3
1	A	119	GLN	2.3
1	A	305	LYS	2.2
1	C	497	GLY	2.2
1	D	39	SER	2.2
1	B	30	HIS	2.2
1	C	269	GLN	2.2
1	B	5	LYS	2.2
1	C	305	LYS	2.2
1	B	311	ARG	2.2
1	A	118	ALA	2.1
1	D	287	ARG	2.1
1	B	38	SER	2.1
1	D	308	PHE	2.1
1	C	287	ARG	2.1
1	D	48	GLU	2.1
1	A	185	THR	2.0

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Mol	Chain	Res	Type	RSRZ
1	A	144	GLN	2.0

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

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

6.3 Carbohydrates (i)

There are no oligosaccharides in this entry.

6.4 Ligands (i)

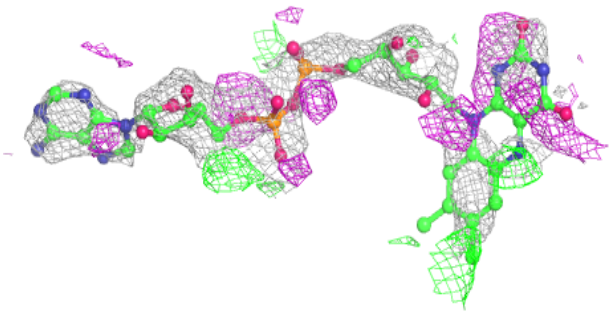
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

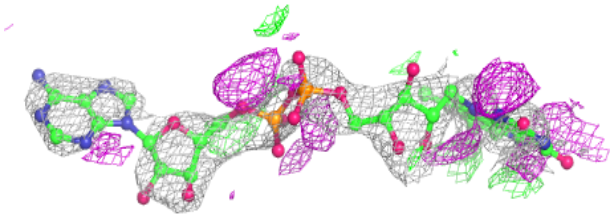
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	FAD	B	502	53/53	0.76	0.27	111,154,201,227	0
3	FAD	D	502	53/53	0.78	0.29	118,155,210,255	0
3	FAD	A	502	53/53	0.79	0.24	97,165,221,233	0
4	NA	C	501	1/1	0.81	0.46	30,30,30,30	0
2	CL	B	501	1/1	0.86	0.31	133,133,133,133	0
2	CL	D	501	1/1	0.86	0.28	127,127,127,127	0
2	CL	A	501	1/1	0.89	0.21	118,118,118,118	0
5	SO4	D	503	5/5	0.90	0.46	30,30,30,30	0

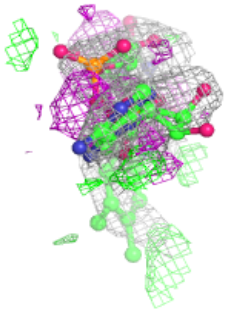
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around FAD B 502:

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

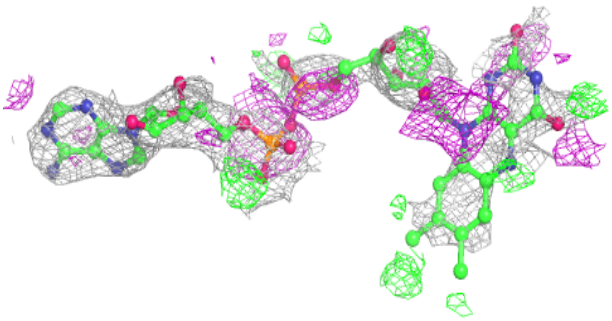


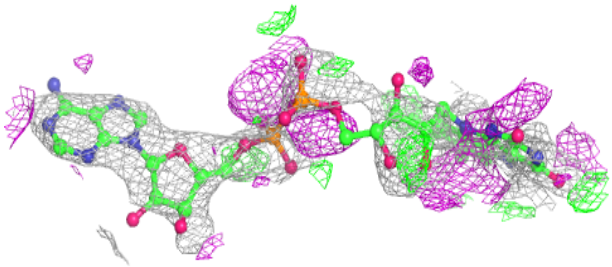


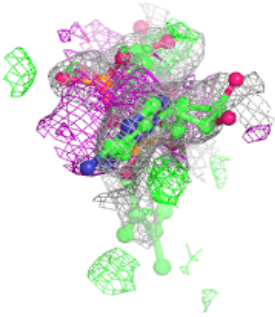


Electron density around FAD D 502:

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

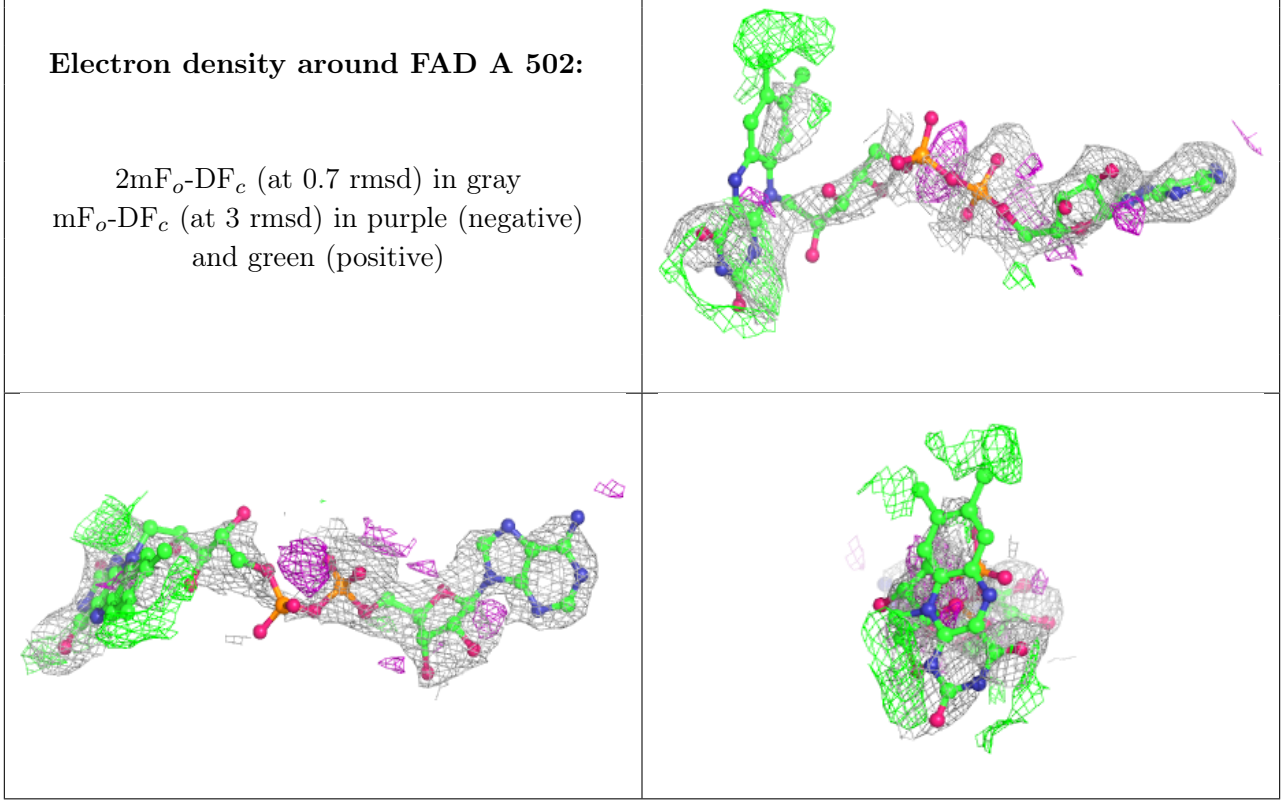






Electron density around FAD A 502:

$2mF_o$-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.