Full wwPDB X-ray Structure Validation Report (i)

Mar 31, 2026 – 01:37 pm BST

PDB ID	:	9RC7 / pdb_00009rc7
Title	:	Crystal structure of Gilliamella bombicola lactate deydrogenase (GbLDH)
Authors	:	Rozeboom, H.J.; Fraaije, M.W.
Deposited on	:	2025-05-27
Resolution	:	2.20 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:

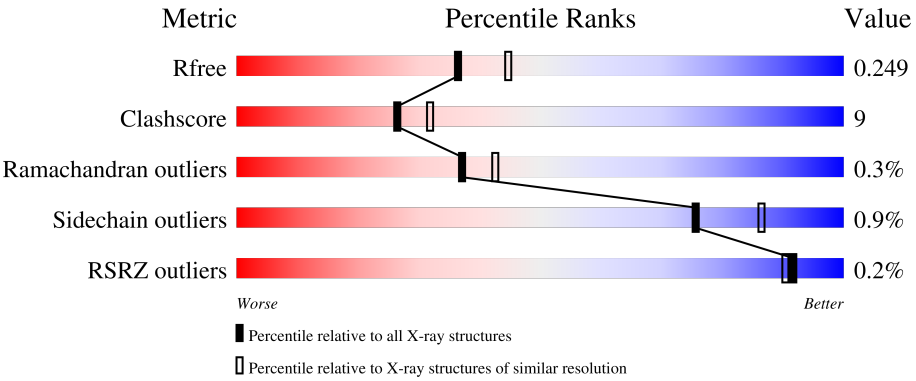
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48.1

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 2.20 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	5791 (2.20-2.20)
Clashscore	180529	6634 (2.20-2.20)
Ramachandran outliers	177936	6560 (2.20-2.20)
Sidechain outliers	177891	6561 (2.20-2.20)
RSRZ outliers	164620	5791 (2.20-2.20)

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	365	79% 19%
1	B	365	79% 19%
1	C	365	82% 17%
1	D	365	78% 21%
1	E	365	80% 18%

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Mol	Chain	Length	Quality of chain
1	F	365	78% 21%
1	G	365	80% 19%
1	H	365	% 79% 19%
1	I	365	79% 20%
1	J	365	77% 22%
1	K	365	78% 21%
1	L	365	79% 19%
1	M	365	83% 17%
1	N	365	79% 21%
1	O	365	78% 21%
1	P	365	% 81% 17%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	FMN	O	401	-	-	X	-

2 Entry composition (i)

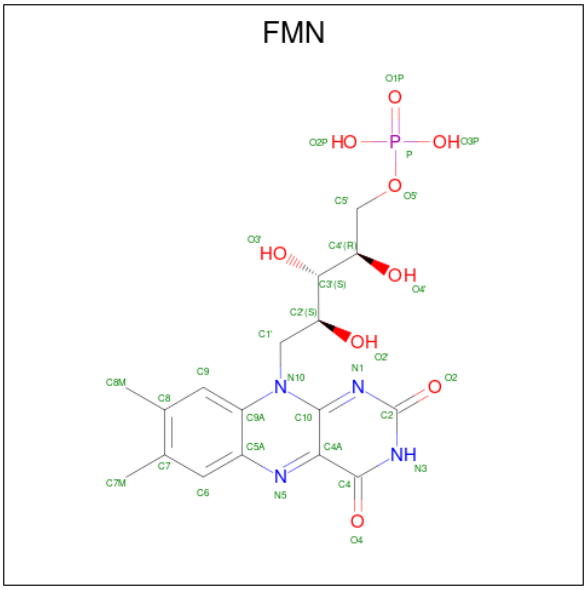
There are 3 unique types of molecules in this entry. The entry contains 44918 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 L-lactate oxidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	B	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	C	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	D	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	E	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	F	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	G	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	H	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	I	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	J	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	K	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	L	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	M	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	N	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	O	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			
1	P	365	Total	C	N	O	S	0	0	0
			2750	1740	471	531	8			

- Molecule 2 is FLAVIN MONONUCLEOTIDE (CCD ID: FMN) (formula: $C_{17}H_{21}N_4O_9P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	B	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	C	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	D	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	E	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	F	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	G	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	H	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	I	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	J	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	K	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	L	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	M	1	Total	C	N	O	P	0	0
			31	17	4	9	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	N	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	O	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
2	P	1	Total	C	N	O	P	0	0
			31	17	4	9	1		

- Molecule 3 is water.

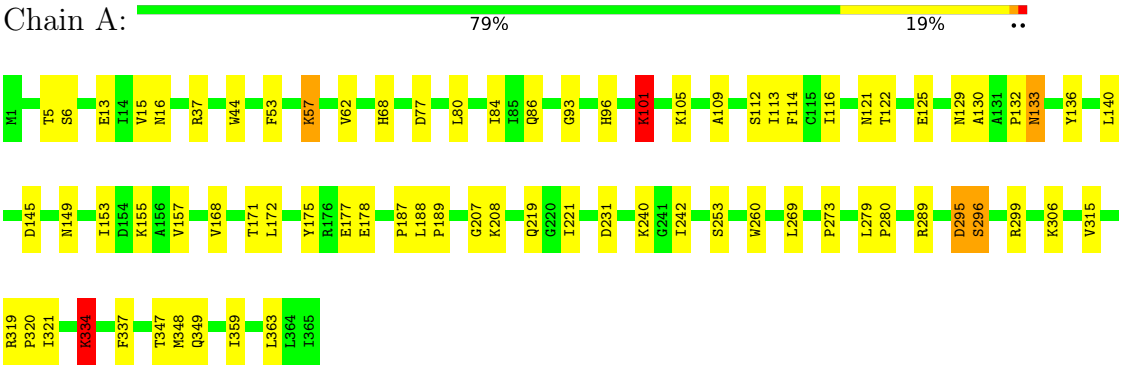
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	34	Total	O	0	0
			34	34		
3	B	28	Total	O	0	0
			28	28		
3	C	26	Total	O	0	0
			26	26		
3	D	33	Total	O	0	0
			33	33		
3	E	16	Total	O	0	0
			16	16		
3	F	23	Total	O	0	0
			23	23		
3	G	27	Total	O	0	0
			27	27		
3	H	16	Total	O	0	0
			16	16		
3	I	29	Total	O	0	0
			29	29		
3	J	49	Total	O	0	0
			49	49		
3	K	36	Total	O	0	0
			36	36		
3	L	26	Total	O	0	0
			26	26		
3	M	22	Total	O	0	0
			22	22		
3	N	26	Total	O	0	0
			26	26		
3	O	13	Total	O	0	0
			13	13		
3	P	18	Total	O	0	0
			18	18		

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.

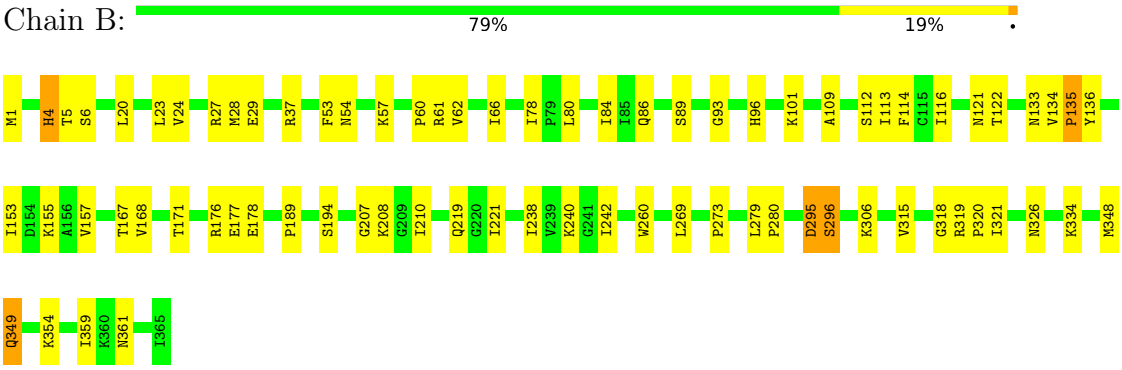
• Molecule 1: L-lactate oxidase

Chain A:



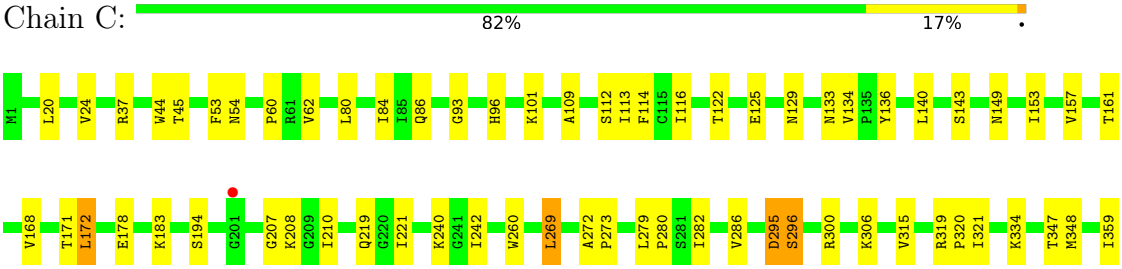
• Molecule 1: L-lactate oxidase

Chain B:

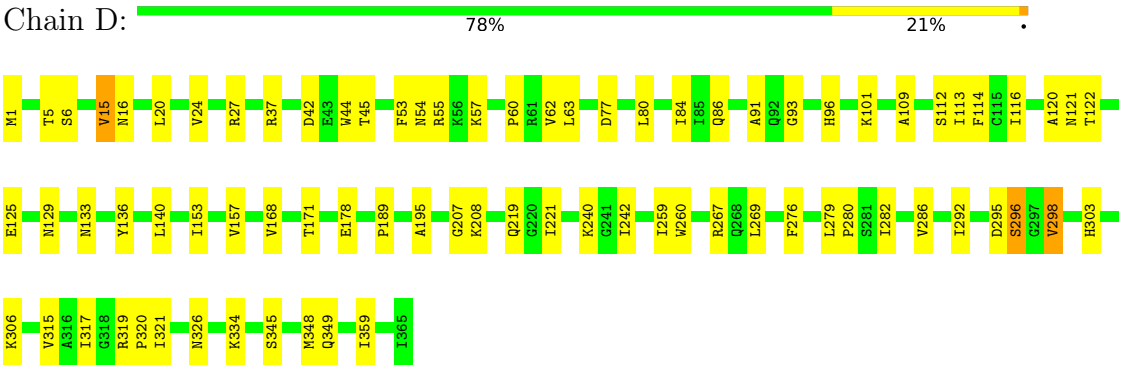


• Molecule 1: L-lactate oxidase

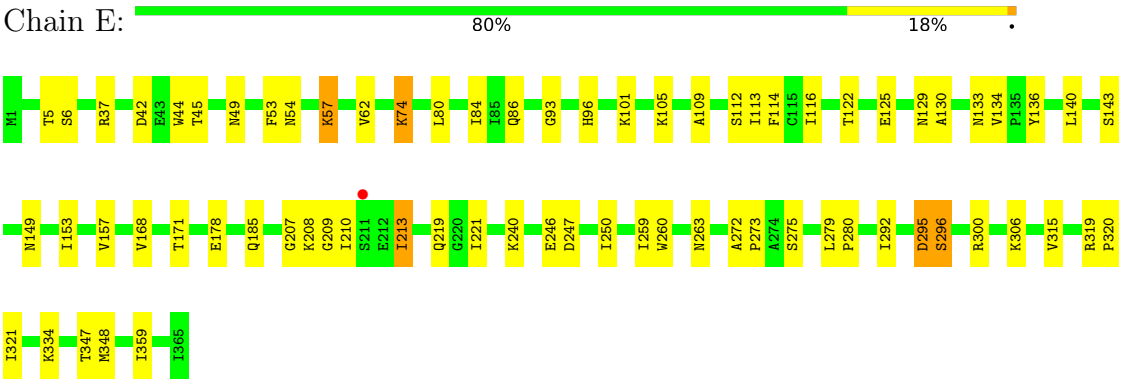
Chain C:



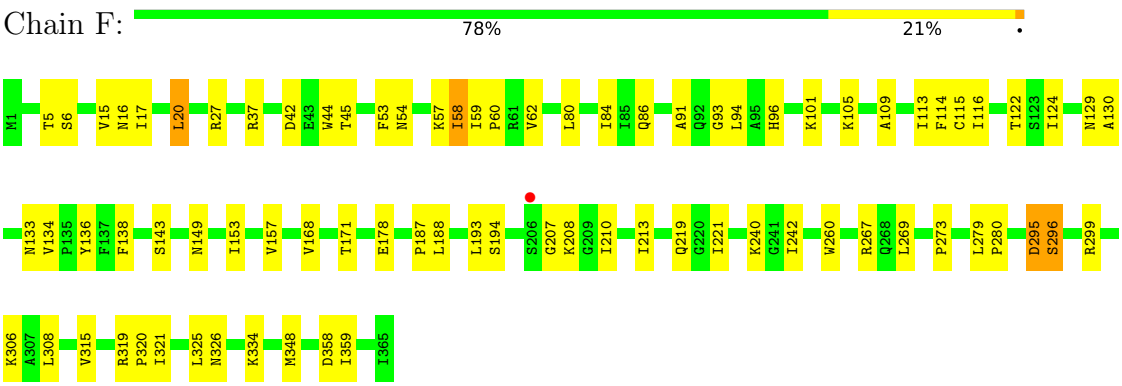
• Molecule 1: L-lactate oxidase



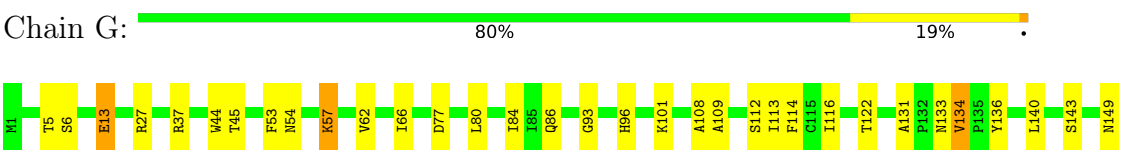
• Molecule 1: L-lactate oxidase



• Molecule 1: L-lactate oxidase

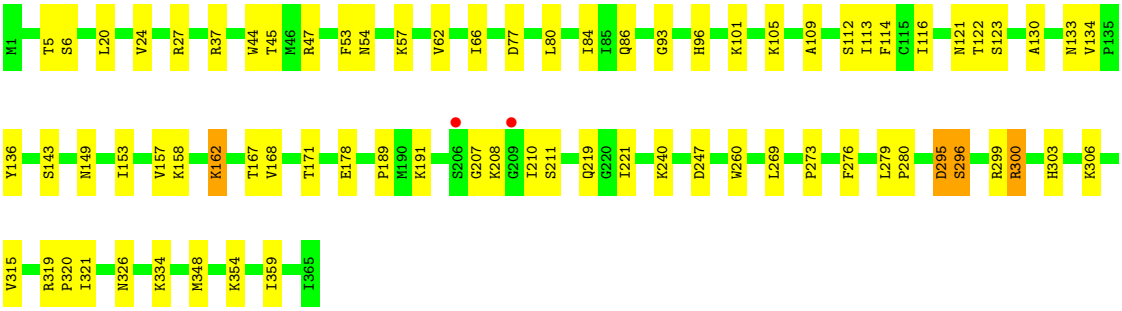


• Molecule 1: L-lactate oxidase



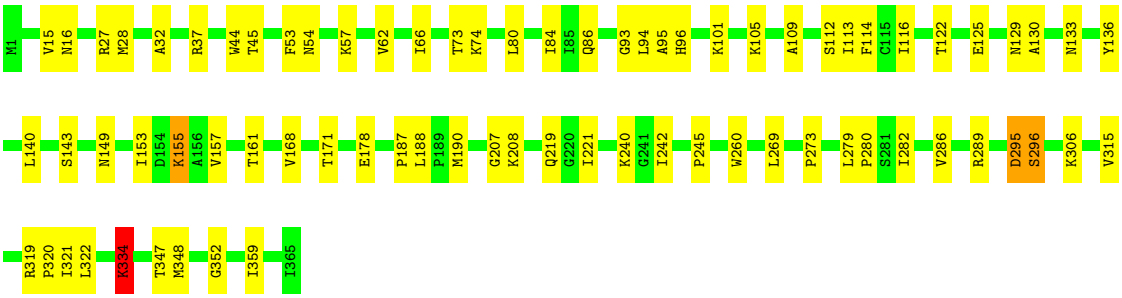
• Molecule 1: L-lactate oxidase

Chain H:



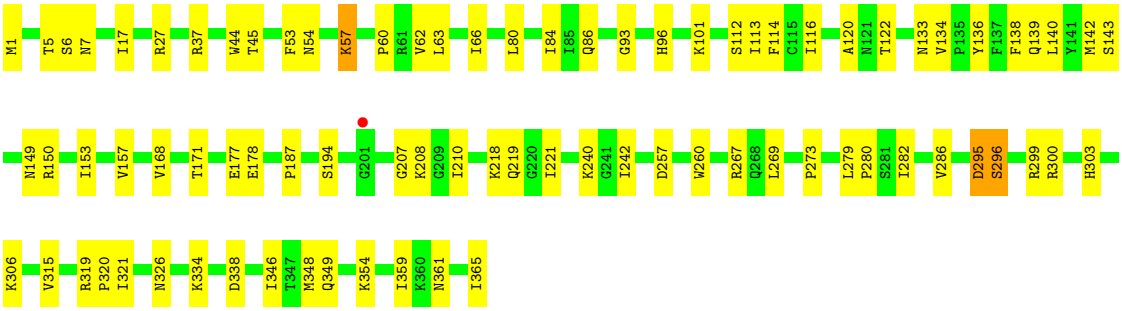
• Molecule 1: L-lactate oxidase

Chain I:



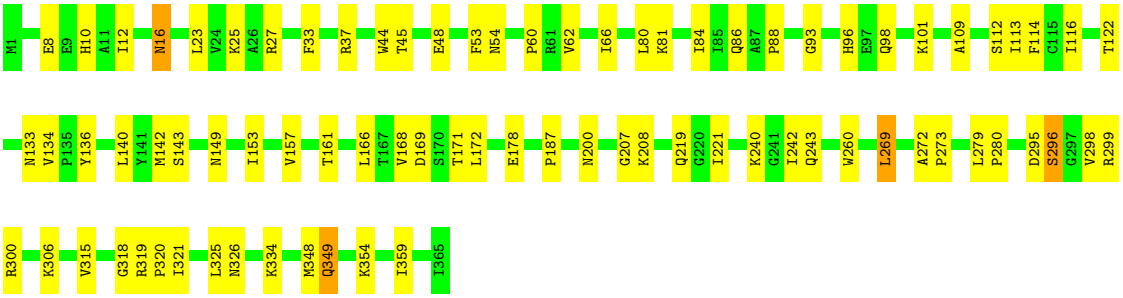
• Molecule 1: L-lactate oxidase

Chain J:



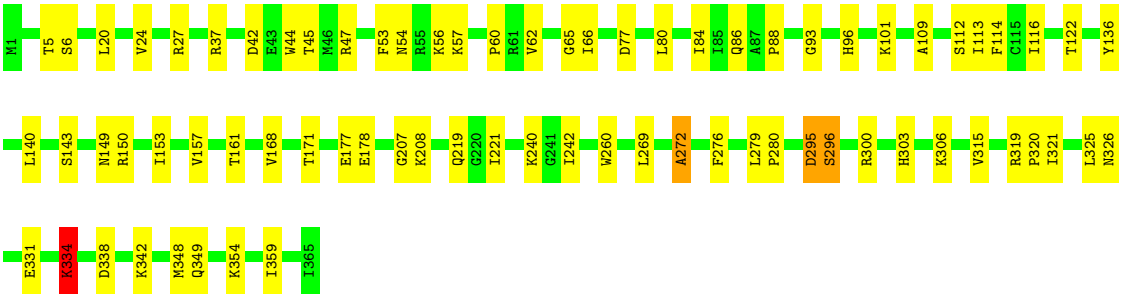
• Molecule 1: L-lactate oxidase

Chain K:



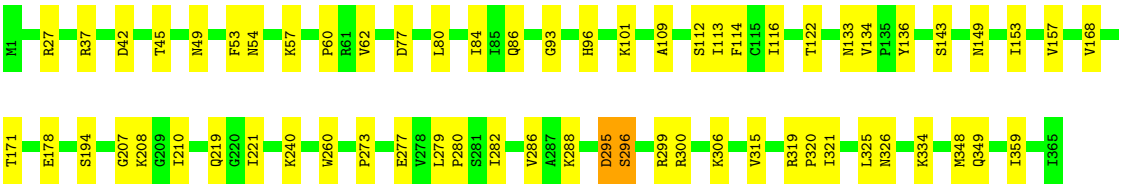
• Molecule 1: L-lactate oxidase

Chain L:



• Molecule 1: L-lactate oxidase

Chain M:

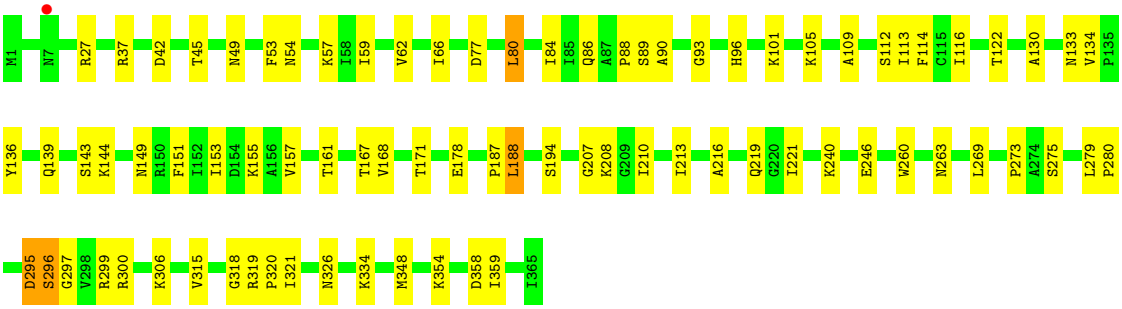


• Molecule 1: L-lactate oxidase

Chain N:

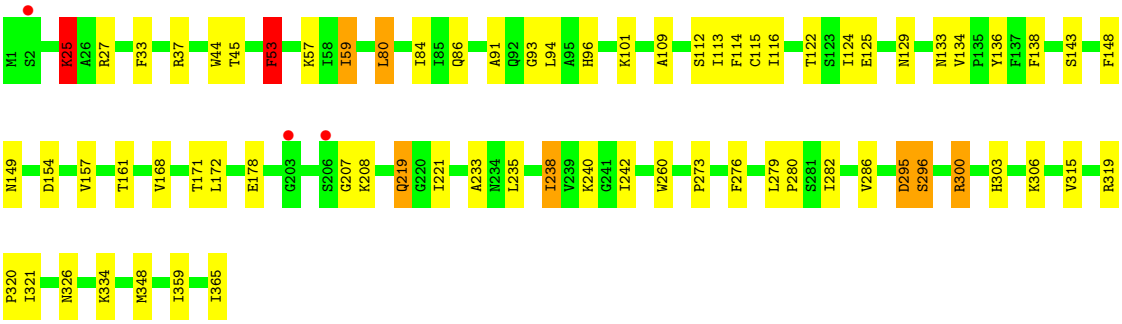
• Molecule 1: L-lactate oxidase

Chain O:



• Molecule 1: L-lactate oxidase

Chain P:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	93.23Å 93.56Å 192.84Å 100.42° 91.82° 90.19°	Depositor
Resolution (Å)	49.24 – 2.20 49.24 – 2.20	Depositor EDS
% Data completeness (in resolution range)	75.2 (49.24-2.20) 75.2 (49.24-2.20)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.47 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.8.0430	Depositor
R, R_{free}	0.230 , 0.248 0.231 , 0.249	Depositor DCC
R_{free} test set	15088 reflections (4.64%)	wwPDB-VP
Wilson B-factor (Å^2)	3.9	Xtriage
Anisotropy	0.234	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 0.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.29$, $< L^2 > = 0.13$	Xtriage
Estimated twinning fraction	0.279 for h,-k,-l	Xtriage
Reported twinning fraction	0.384 for H, K, L 0.221 for h,-k,-l 0.196 for -H, K, -K-L 0.198 for -H, -K, K+L	Depositor
Outliers	0 of 301624 reflections	Xtriage
F_o,F_c correlation	0.65	EDS
Total number of atoms	44918	wwPDB-VP
Average B, all atoms (Å^2)	3.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.52% 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

5.1 Standard geometry

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

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	0.76	2/2799 (0.1%)	1.16	9/3787 (0.2%)
1	B	0.73	0/2799	1.14	5/3787 (0.1%)
1	C	0.72	0/2799	1.11	4/3787 (0.1%)
1	D	0.72	0/2799	1.14	5/3787 (0.1%)
1	E	0.67	0/2799	1.12	4/3787 (0.1%)
1	F	0.68	0/2799	1.12	5/3787 (0.1%)
1	G	0.67	0/2799	1.11	4/3787 (0.1%)
1	H	0.69	0/2799	1.11	6/3787 (0.2%)
1	I	0.73	0/2799	1.13	5/3787 (0.1%)
1	J	0.71	0/2799	1.12	3/3787 (0.1%)
1	K	0.73	0/2799	1.13	3/3787 (0.1%)
1	L	0.74	1/2799 (0.0%)	1.13	6/3787 (0.2%)
1	M	0.70	0/2799	1.11	4/3787 (0.1%)
1	N	0.67	0/2799	1.11	5/3787 (0.1%)
1	O	0.66	0/2799	1.11	6/3787 (0.2%)
1	P	0.66	0/2799	1.10	5/3787 (0.1%)
All	All	0.70	3/44784 (0.0%)	1.12	79/60592 (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	3
1	B	0	1
1	D	0	1
1	E	0	1
1	G	0	1
1	H	0	1
1	J	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	O	0	2
1	P	0	2
All	All	0	13

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	133	ASN	C-N	8.16	1.42	1.33
1	A	132	PRO	C-N	-7.40	1.23	1.33
1	L	272	ALA	CA-CB	-5.33	1.47	1.54

All (79) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	I	334	LYS	CB-CG-CD	10.68	135.87	111.30
1	A	334	LYS	CB-CG-CD	10.68	135.85	111.30
1	A	132	PRO	CA-C-N	9.68	137.13	120.68
1	A	132	PRO	C-N-CA	9.68	137.13	120.68
1	H	162	LYS	CB-CG-CD	7.32	128.13	111.30
1	D	133	ASN	CA-CB-CG	7.05	119.65	112.60
1	A	101	LYS	CB-CG-CD	7.02	127.44	111.30
1	B	4	HIS	CB-CG-CD2	6.97	140.26	131.20
1	A	77	ASP	CA-CB-CG	6.84	119.44	112.60
1	N	144	LYS	CG-CD-CE	6.80	126.94	111.30
1	N	77	ASP	CA-CB-CG	6.65	119.25	112.60
1	O	42	ASP	CA-CB-CG	6.48	119.08	112.60
1	A	132	PRO	O-C-N	-6.44	114.89	122.17
1	K	98	GLN	OE1-CD-NE2	-6.29	116.31	122.60
1	L	334	LYS	CB-CG-CD	6.27	125.72	111.30
1	P	25	LYS	CG-CD-CE	6.27	125.72	111.30
1	J	295	ASP	CA-CB-CG	6.27	118.87	112.60
1	I	155	LYS	CG-CD-CE	6.18	125.53	111.30
1	E	185	GLN	CB-CG-CD	5.99	122.79	112.60
1	D	1	MET	CG-SD-CE	5.94	113.98	100.90
1	O	295	ASP	CA-CB-CG	5.87	118.47	112.60
1	P	45	THR	CA-CB-OG1	-5.86	100.82	109.60
1	K	243	GLN	CG-CD-NE2	5.83	125.15	116.40
1	C	295	ASP	CA-CB-CG	5.82	118.42	112.60
1	D	45	THR	CA-CB-OG1	-5.81	100.89	109.60
1	L	42	ASP	CA-CB-CG	5.80	118.40	112.60
1	F	42	ASP	CA-CB-CG	5.62	118.22	112.60
1	G	45	THR	CA-CB-OG1	-5.59	101.21	109.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	H	295	ASP	CA-CB-CG	5.59	118.19	112.60
1	N	42	ASP	CA-CB-CG	5.59	118.19	112.60
1	B	155	LYS	CG-CD-CE	5.57	124.11	111.30
1	H	45	THR	CA-CB-OG1	-5.57	101.25	109.60
1	M	300	ARG	NE-CZ-NH2	-5.56	114.19	119.20
1	H	167	THR	CA-CB-OG1	-5.56	101.26	109.60
1	P	295	ASP	CA-CB-CG	5.54	118.14	112.60
1	F	45	THR	CA-CB-OG1	-5.54	101.30	109.60
1	M	295	ASP	CA-CB-CG	5.52	118.12	112.60
1	A	295	ASP	CA-CB-CG	5.51	118.11	112.60
1	G	295	ASP	CA-CB-CG	5.50	118.11	112.60
1	B	295	ASP	CA-CB-CG	5.49	118.09	112.60
1	N	295	ASP	CA-CB-CG	5.49	118.09	112.60
1	E	295	ASP	CA-CB-CG	5.47	118.07	112.60
1	I	295	ASP	CA-CB-CG	5.47	118.07	112.60
1	E	42	ASP	CA-CB-CG	5.47	118.07	112.60
1	D	15	VAL	N-CA-C	-5.47	106.37	111.45
1	P	25	LYS	CB-CG-CD	5.45	123.84	111.30
1	I	45	THR	CA-CB-OG1	-5.44	101.43	109.60
1	A	15	VAL	N-CA-C	-5.39	106.44	111.45
1	O	77	ASP	CA-CB-CG	5.35	117.95	112.60
1	B	167	THR	CA-CB-OG1	-5.33	101.61	109.60
1	L	295	ASP	CA-CB-CG	5.32	117.92	112.60
1	A	68	HIS	CB-CG-CD2	5.32	138.11	131.20
1	J	45	THR	CA-CB-OG1	-5.31	101.64	109.60
1	G	288	LYS	CG-CD-CE	5.29	123.48	111.30
1	J	1	MET	CG-SD-CE	-5.29	89.26	100.90
1	F	358	ASP	CA-CB-CG	5.29	117.89	112.60
1	D	77	ASP	CA-CB-CG	5.28	117.88	112.60
1	M	45	THR	CA-CB-OG1	-5.27	101.70	109.60
1	C	45	THR	CA-CB-OG1	-5.23	101.76	109.60
1	L	150	ARG	NE-CZ-NH2	5.20	123.88	119.20
1	L	77	ASP	CA-CB-CG	5.18	117.78	112.60
1	H	47	ARG	CD-NE-CZ	5.18	131.66	124.40
1	I	15	VAL	N-CA-C	-5.17	106.64	111.45
1	L	45	THR	CA-CB-OG1	-5.17	101.85	109.60
1	N	15	VAL	N-CA-C	-5.16	106.65	111.45
1	F	295	ASP	CA-CB-CG	5.16	117.76	112.60
1	B	135	PRO	CB-CA-C	5.15	117.69	111.46
1	O	45	THR	CA-CB-OG1	-5.13	101.90	109.60
1	M	77	ASP	CA-CB-CG	5.12	117.72	112.60
1	O	167	THR	CA-CB-OG1	-5.12	101.93	109.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	P	53	PHE	CA-CB-CG	5.11	118.91	113.80
1	G	77	ASP	CA-CB-CG	5.09	117.69	112.60
1	H	77	ASP	CA-CB-CG	5.08	117.68	112.60
1	F	15	VAL	N-CA-C	-5.07	106.73	111.45
1	O	358	ASP	CA-CB-CG	5.05	117.65	112.60
1	K	45	THR	CA-CB-OG1	-5.04	102.05	109.60
1	E	45	THR	CA-CB-OG1	-5.03	102.05	109.60
1	C	172	LEU	CA-C-N	5.01	125.74	120.43
1	C	172	LEU	C-N-CA	5.01	125.74	120.43

There are no chirality outliers.

All (13) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	133	ASN	Mainchain
1	A	289	ARG	Sidechain
1	A	299	ARG	Sidechain
1	B	61	ARG	Sidechain
1	D	55	ARG	Sidechain
1	E	300	ARG	Sidechain
1	G	289	ARG	Sidechain
1	H	300	ARG	Sidechain
1	J	300	ARG	Sidechain
1	O	299	ARG	Sidechain
1	O	300	ARG	Sidechain
1	P	300	ARG	Sidechain
1	P	53	PHE	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	2750	0	2767	53	0
1	B	2750	0	2767	59	0
1	C	2750	0	2767	48	0
1	D	2750	0	2767	57	0
1	E	2750	0	2767	52	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2750	0	2767	64	0
1	G	2750	0	2767	64	0
1	H	2750	0	2766	46	0
1	I	2750	0	2767	59	0
1	J	2750	0	2767	61	0
1	K	2750	0	2767	76	0
1	L	2750	0	2767	60	0
1	M	2750	0	2767	42	0
1	N	2750	0	2767	51	0
1	O	2750	0	2767	55	0
1	P	2750	0	2767	58	0
2	A	31	0	19	1	0
2	B	31	0	18	4	0
2	C	31	0	19	0	0
2	D	31	0	19	1	0
2	E	31	0	19	1	0
2	F	31	0	19	4	0
2	G	31	0	19	2	0
2	H	31	0	19	2	0
2	I	31	0	19	0	0
2	J	31	0	18	3	0
2	K	31	0	19	2	0
2	L	31	0	19	1	0
2	M	31	0	19	1	0
2	N	31	0	19	2	0
2	O	31	0	19	10	0
2	P	31	0	19	1	0
3	A	34	0	0	5	0
3	B	28	0	0	9	0
3	C	26	0	0	1	0
3	D	33	0	0	4	0
3	E	16	0	0	3	0
3	F	23	0	0	5	0
3	G	27	0	0	4	0
3	H	16	0	0	1	0
3	I	29	0	0	11	0
3	J	49	0	0	10	0
3	K	36	0	0	6	0
3	L	26	0	0	6	0
3	M	22	0	0	3	0
3	N	26	0	0	7	0
3	O	13	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	P	18	0	0	2	0
All	All	44918	0	44573	823	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 (823) 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:E:208:LYS:CB	1:E:213:ILE:HD11	1.74	1.15
1:E:208:LYS:HB3	1:E:213:ILE:HD11	1.15	1.10
1:I:95:ALA:HB2	3:I:528:HOH:O	1.49	1.09
1:K:142:MET:CE	1:K:166:LEU:HD11	1.82	1.08
1:C:300:ARG:NH2	1:D:42:ASP:OD1	1.84	1.07
3:F:511:HOH:O	1:G:272:ALA:HB2	1.59	1.02
1:E:208:LYS:HB3	1:E:213:ILE:CD1	1.91	1.00
1:B:1:MET:HG3	1:K:23:LEU:HD13	1.41	0.98
1:E:209:GLY:O	1:E:213:ILE:HD13	1.64	0.96
1:K:142:MET:HE2	1:K:166:LEU:HD11	1.45	0.96
1:G:108:ALA:HB2	1:G:134:VAL:HG13	1.45	0.96
1:K:269:LEU:CD2	1:K:272:ALA:HB2	1.97	0.94
1:P:53:PHE:HD2	1:P:303:HIS:CG	1.86	0.94
1:B:238:ILE:HG22	3:B:522:HOH:O	1.67	0.93
1:B:113:ILE:HD13	1:B:135:PRO:HG2	1.49	0.92
1:L:269:LEU:CD2	1:L:272:ALA:HB2	2.00	0.91
1:K:298:VAL:O	1:K:299:ARG:NE	2.05	0.90
1:C:269:LEU:HD22	1:C:272:ALA:HB2	1.51	0.90
1:C:269:LEU:CD2	1:C:272:ALA:HB2	2.02	0.88
1:G:108:ALA:HB2	1:G:134:VAL:CG1	2.06	0.85
1:K:142:MET:HE3	1:K:166:LEU:HD11	1.59	0.84
1:N:88:PRO:O	2:N:401:FMN:O2'	1.95	0.84
1:P:91:ALA:HB1	1:P:94:LEU:HD23	1.58	0.83
1:I:73:THR:HA	3:I:510:HOH:O	1.79	0.83
1:K:142:MET:HE2	1:K:166:LEU:CD1	2.08	0.82
1:E:273:PRO:HD3	1:H:57:LYS:HB3	1.62	0.82
1:E:272:ALA:HB1	3:E:516:HOH:O	1.79	0.81
1:H:53:PHE:CE2	1:H:303:HIS:HB3	2.15	0.81
1:A:273:PRO:HD3	1:D:57:LYS:HB3	1.63	0.81
1:B:57:LYS:HB3	1:C:273:PRO:HD3	1.63	0.81
1:G:108:ALA:CB	1:G:134:VAL:HG13	2.11	0.81
1:F:58:ILE:HD12	1:F:59:ILE:N	1.95	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:60:PRO:HG3	1:K:269:LEU:HD13	1.63	0.80
1:B:28:MET:HA	3:B:520:HOH:O	1.81	0.80
1:F:91:ALA:HB1	1:F:94:LEU:HD23	1.62	0.80
1:L:53:PHE:CE2	1:L:303:HIS:HB3	2.16	0.80
1:L:269:LEU:HD22	1:L:272:ALA:HB2	1.65	0.79
1:F:17:ILE:HA	1:F:20:LEU:CD2	2.13	0.78
1:F:20:LEU:HD22	1:F:20:LEU:H	1.49	0.77
1:I:28:MET:HE3	1:I:94:LEU:O	1.85	0.77
1:L:300:ARG:HD3	3:L:504:HOH:O	1.85	0.77
1:J:57:LYS:HB3	1:K:273:PRO:HD3	1.66	0.77
2:E:401:FMN:O2P	2:E:401:FMN:O4'	2.03	0.76
1:D:53:PHE:CE2	1:D:303:HIS:HB3	2.19	0.76
1:N:363:LEU:HG	3:N:519:HOH:O	1.84	0.76
1:B:1:MET:HE1	1:K:12:ILE:HD12	1.68	0.74
1:E:213:ILE:N	1:E:213:ILE:HD12	2.03	0.74
1:B:176:ARG:HD2	3:B:511:HOH:O	1.86	0.74
1:G:165:ILE:HD13	1:G:238:ILE:HB	1.68	0.74
1:P:238:ILE:HD12	1:P:238:ILE:N	2.02	0.74
1:F:17:ILE:HA	1:F:20:LEU:HD21	1.69	0.73
1:E:208:LYS:HB2	1:E:213:ILE:HD11	1.68	0.73
1:I:273:PRO:HD3	1:L:57:LYS:HB3	1.71	0.73
1:L:109:ALA:HB1	1:L:334:LYS:NZ	2.04	0.73
1:G:134:VAL:HA	3:G:516:HOH:O	1.89	0.73
1:I:66:ILE:HD12	1:I:352:GLY:HA2	1.70	0.73
1:D:286:VAL:HG21	1:D:292:ILE:HD11	1.70	0.71
1:F:80:LEU:HD21	1:F:113:ILE:HG13	1.71	0.71
1:G:193:LEU:HB2	1:G:210:ILE:HD12	1.73	0.71
1:N:28:MET:HE2	1:N:32:ALA:C	2.16	0.71
1:B:80:LEU:HD21	1:B:113:ILE:HG12	1.72	0.71
1:P:53:PHE:CD2	1:P:303:HIS:CG	2.74	0.71
1:P:53:PHE:CE2	1:P:303:HIS:HB3	2.27	0.70
1:E:80:LEU:HD21	1:E:113:ILE:HG13	1.72	0.70
1:J:142:MET:HE3	1:J:218:LYS:HD2	1.73	0.70
1:I:187:PRO:HG2	1:I:188:LEU:HD12	1.73	0.70
1:K:80:LEU:HD21	1:K:113:ILE:HG13	1.72	0.70
1:G:193:LEU:HB2	1:G:210:ILE:CD1	2.22	0.70
1:M:60:PRO:HG3	1:N:269:LEU:HD23	1.74	0.69
1:K:142:MET:CE	1:K:166:LEU:CD1	2.66	0.69
1:E:57:LYS:HB3	1:F:273:PRO:HD3	1.75	0.69
1:O:144:LYS:HE3	1:O:216:ALA:HA	1.75	0.69
1:L:109:ALA:HB1	1:L:334:LYS:HZ1	1.57	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:49:ASN:HD21	1:O:263:ASN:HD21	1.41	0.69
1:E:272:ALA:CB	3:E:516:HOH:O	2.37	0.68
1:F:187:PRO:HG2	1:F:188:LEU:HD12	1.75	0.68
1:N:80:LEU:HD21	1:N:113:ILE:HG13	1.75	0.68
1:G:27:ARG:NH2	3:G:502:HOH:O	2.27	0.68
1:P:154:ASP:O	1:P:157:VAL:HG12	1.94	0.67
1:M:80:LEU:HD21	1:M:113:ILE:HG13	1.76	0.67
1:J:133:ASN:ND2	3:J:501:HOH:O	2.15	0.67
1:O:89:SER:HA	2:O:401:FMN:N5	2.10	0.66
1:A:80:LEU:HD21	1:A:113:ILE:HG13	1.75	0.66
3:F:511:HOH:O	1:G:269:LEU:HG	1.95	0.66
1:J:80:LEU:HD21	1:J:113:ILE:HG13	1.76	0.66
1:A:187:PRO:HG2	1:A:188:LEU:HD12	1.77	0.66
1:F:193:LEU:HB2	1:F:210:ILE:CD1	2.26	0.66
1:P:53:PHE:HD2	1:P:303:HIS:CD2	2.12	0.66
1:B:361:ASN:ND2	3:B:503:HOH:O	2.28	0.66
1:E:49:ASN:HD21	1:E:263:ASN:HD21	1.44	0.66
1:A:57:LYS:HB3	1:B:273:PRO:HD3	1.76	0.66
1:J:361:ASN:HD21	1:M:288:LYS:HD2	1.60	0.66
1:O:88:PRO:O	2:O:401:FMN:O2'	2.10	0.66
1:O:187:PRO:HG2	1:O:188:LEU:HD12	1.77	0.65
1:I:66:ILE:CD1	1:I:352:GLY:HA2	2.27	0.65
1:O:89:SER:HA	2:O:401:FMN:C4A	2.27	0.65
1:J:221:ILE:N	3:J:505:HOH:O	2.30	0.65
1:L:80:LEU:HD21	1:L:113:ILE:HG13	1.78	0.65
1:G:80:LEU:HD21	1:G:113:ILE:HG13	1.78	0.65
1:B:89:SER:HA	2:B:401:FMN:N5	2.11	0.65
1:K:48:GLU:OE1	3:K:501:HOH:O	2.15	0.64
1:F:116:ILE:HG23	1:F:138:PHE:HD1	1.62	0.64
1:G:131:ALA:CB	1:G:134:VAL:HG22	2.27	0.64
1:B:1:MET:HG3	1:K:23:LEU:CD1	2.24	0.64
1:K:269:LEU:O	1:K:269:LEU:HD23	1.97	0.64
1:I:27:ARG:NH2	3:I:503:HOH:O	2.31	0.64
1:I:289:ARG:NH1	3:I:504:HOH:O	2.31	0.64
1:N:57:LYS:HB3	1:O:273:PRO:HD3	1.79	0.64
1:I:62:VAL:HG21	1:J:242:ILE:HD13	1.79	0.63
1:A:13:GLU:HG3	3:A:531:HOH:O	1.96	0.63
1:B:121:ASN:ND2	1:B:189:PRO:O	2.32	0.63
1:L:269:LEU:HD22	1:L:272:ALA:CB	2.28	0.63
1:M:57:LYS:HB3	1:N:273:PRO:HD3	1.81	0.63
1:O:57:LYS:HB3	1:P:273:PRO:HD3	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:308:LEU:O	3:F:501:HOH:O	2.16	0.63
1:F:20:LEU:HD22	1:F:20:LEU:N	2.13	0.63
1:P:116:ILE:HG23	1:P:138:PHE:HD1	1.64	0.62
1:F:57:LYS:HB3	1:G:273:PRO:HD3	1.80	0.62
1:F:193:LEU:HB2	1:F:210:ILE:HD12	1.79	0.62
1:K:269:LEU:HD23	1:K:269:LEU:C	2.25	0.62
1:F:17:ILE:O	1:F:20:LEU:CD2	2.48	0.62
1:G:13:GLU:OE1	1:G:13:GLU:N	2.33	0.62
1:I:187:PRO:HG2	1:I:188:LEU:CD1	2.30	0.62
1:K:269:LEU:HD22	1:K:272:ALA:HB2	1.81	0.62
1:J:116:ILE:HG23	1:J:138:PHE:HD1	1.64	0.62
1:D:53:PHE:O	1:D:306:LYS:NZ	2.33	0.62
1:A:347:THR:HG23	1:B:269:LEU:HD11	1.82	0.62
1:B:54:ASN:HB3	1:C:44:TRP:CZ2	2.35	0.61
1:F:187:PRO:HG2	1:F:188:LEU:CD1	2.30	0.61
1:P:53:PHE:O	1:P:306:LYS:NZ	2.34	0.61
1:O:54:ASN:HB3	1:P:44:TRP:CZ2	2.35	0.61
1:C:80:LEU:HD21	1:C:113:ILE:HG13	1.83	0.61
1:I:57:LYS:HB3	1:J:273:PRO:HD3	1.83	0.61
1:D:80:LEU:HD21	1:D:113:ILE:HG13	1.83	0.61
1:I:53:PHE:O	1:I:306:LYS:NZ	2.34	0.61
1:I:80:LEU:HD21	1:I:113:ILE:HG13	1.82	0.61
1:B:318:GLY:HA3	2:B:401:FMN:O4'	2.01	0.61
1:E:171:THR:HB	1:E:219:GLN:HA	1.84	0.60
1:E:213:ILE:CD1	1:E:213:ILE:N	2.64	0.60
1:J:53:PHE:O	1:J:306:LYS:NZ	2.34	0.60
1:A:121:ASN:ND2	1:A:189:PRO:O	2.33	0.60
1:A:187:PRO:HG2	1:A:188:LEU:CD1	2.32	0.60
1:B:53:PHE:O	1:B:306:LYS:NZ	2.34	0.60
1:P:53:PHE:HE1	1:P:276:PHE:HB2	1.65	0.60
1:F:171:THR:HB	1:F:219:GLN:HA	1.83	0.60
1:K:298:VAL:O	1:K:299:ARG:NH2	2.34	0.60
1:L:269:LEU:C	1:L:269:LEU:HD23	2.27	0.60
1:M:171:THR:HB	1:M:219:GLN:HA	1.83	0.60
1:G:131:ALA:HB3	1:G:134:VAL:CG2	2.32	0.60
1:J:142:MET:HE3	1:J:218:LYS:CD	2.31	0.60
1:D:121:ASN:ND2	1:D:189:PRO:O	2.35	0.60
1:H:123:SER:HB3	1:H:191:LYS:HG2	1.83	0.60
1:I:245:PRO:HD2	3:I:508:HOH:O	2.02	0.60
1:M:53:PHE:O	1:M:306:LYS:NZ	2.34	0.59
1:P:53:PHE:CD2	1:P:303:HIS:HB3	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:16:ASN:HB2	3:N:510:HOH:O	2.01	0.59
1:G:171:THR:HB	1:G:219:GLN:HA	1.84	0.59
1:H:121:ASN:ND2	1:H:189:PRO:O	2.36	0.59
1:K:53:PHE:O	1:K:306:LYS:NZ	2.34	0.59
1:C:53:PHE:O	1:C:306:LYS:NZ	2.34	0.59
1:O:171:THR:HB	1:O:219:GLN:HA	1.85	0.59
1:H:53:PHE:O	1:H:306:LYS:NZ	2.34	0.59
1:A:363:LEU:N	1:A:363:LEU:HD12	2.17	0.59
1:B:113:ILE:HD13	1:B:135:PRO:CG	2.27	0.59
1:G:109:ALA:HB1	1:G:334:LYS:HD2	1.85	0.59
1:C:171:THR:HB	1:C:219:GLN:HA	1.85	0.59
1:I:269:LEU:HD23	1:L:60:PRO:HG3	1.85	0.59
1:L:171:THR:HB	1:L:219:GLN:HA	1.85	0.59
1:O:208:LYS:HD2	1:O:213:ILE:HD11	1.85	0.59
1:E:49:ASN:ND2	1:E:275:SER:H	2.02	0.58
1:G:131:ALA:O	1:G:134:VAL:HG22	2.04	0.58
1:H:80:LEU:HD21	1:H:113:ILE:HG13	1.85	0.58
1:J:142:MET:CE	1:J:218:LYS:HD3	2.32	0.58
1:N:123:SER:HB3	1:N:191:LYS:HG2	1.84	0.58
1:A:53:PHE:O	1:A:306:LYS:NZ	2.34	0.58
1:K:298:VAL:O	1:K:299:ARG:CZ	2.51	0.58
1:E:210:ILE:HG21	3:E:503:HOH:O	2.03	0.58
1:D:171:THR:HB	1:D:219:GLN:HA	1.86	0.58
1:H:171:THR:HB	1:H:219:GLN:HA	1.85	0.58
1:A:242:ILE:HD13	1:D:62:VAL:HG21	1.86	0.58
1:B:60:PRO:HG3	1:C:269:LEU:HD13	1.86	0.58
1:K:171:THR:HB	1:K:219:GLN:HA	1.86	0.58
1:I:171:THR:HB	1:I:219:GLN:HA	1.85	0.58
1:B:171:THR:HB	1:B:219:GLN:HA	1.85	0.58
1:O:49:ASN:ND2	1:O:275:SER:H	2.02	0.58
1:O:53:PHE:O	1:O:306:LYS:NZ	2.34	0.58
1:C:269:LEU:HD22	1:C:272:ALA:CB	2.29	0.57
1:J:187:PRO:HG3	3:J:539:HOH:O	2.05	0.57
1:F:53:PHE:O	1:F:306:LYS:NZ	2.33	0.57
1:J:62:VAL:HG21	1:K:242:ILE:HD13	1.87	0.57
1:K:142:MET:HE1	1:K:166:LEU:HD21	1.86	0.57
1:D:120:ALA:HA	3:D:507:HOH:O	2.03	0.57
1:A:171:THR:HB	1:A:219:GLN:HA	1.86	0.57
1:E:53:PHE:O	1:E:306:LYS:NZ	2.33	0.57
1:C:269:LEU:C	1:C:269:LEU:HD23	2.28	0.57
1:P:109:ALA:HB1	1:P:334:LYS:HD2	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:109:ALA:HB1	1:F:334:LYS:HD2	1.87	0.57
1:J:60:PRO:CG	1:K:269:LEU:HD13	2.35	0.57
1:M:109:ALA:HB1	1:M:334:LYS:HD2	1.87	0.57
1:A:44:TRP:CZ2	1:D:54:ASN:HB3	2.40	0.57
1:N:28:MET:HE1	1:N:36:ILE:HD12	1.87	0.56
1:O:105:LYS:HE3	1:O:130:ALA:HB1	1.87	0.56
1:P:171:THR:HB	1:P:219:GLN:HA	1.87	0.56
1:F:299:ARG:NH2	2:F:401:FMN:O1P	2.31	0.56
1:N:53:PHE:O	1:N:306:LYS:NZ	2.33	0.56
1:O:151:PHE:CZ	1:O:155:LYS:HE3	2.40	0.56
1:L:53:PHE:O	1:L:306:LYS:NZ	2.34	0.56
1:G:53:PHE:O	1:G:306:LYS:NZ	2.34	0.56
1:A:101:LYS:HG3	1:A:122:THR:HG21	1.87	0.56
2:G:401:FMN:O2P	2:G:401:FMN:O4'	2.13	0.56
1:C:300:ARG:CZ	1:D:42:ASP:OD1	2.51	0.55
1:M:299:ARG:NH2	2:M:401:FMN:O1P	2.35	0.55
1:B:78:ILE:HG21	1:B:113:ILE:HD11	1.88	0.55
1:N:171:THR:HB	1:N:219:GLN:HA	1.87	0.55
1:J:7:ASN:CG	3:J:515:HOH:O	2.49	0.55
1:I:44:TRP:CZ2	1:L:54:ASN:HB3	2.42	0.55
1:F:153:ILE:O	1:F:157:VAL:HG23	2.07	0.55
1:J:101:LYS:HG3	1:J:122:THR:HG21	1.88	0.55
1:J:153:ILE:O	1:J:157:VAL:HG23	2.06	0.55
1:O:187:PRO:HG2	1:O:188:LEU:CD1	2.35	0.55
1:I:143:SER:H	1:I:149:ASN:HD21	1.55	0.55
1:O:109:ALA:HB1	1:O:334:LYS:HD2	1.89	0.55
1:E:105:LYS:HE3	1:E:130:ALA:HB1	1.88	0.54
1:J:171:THR:HB	1:J:219:GLN:HA	1.87	0.54
1:B:109:ALA:HB1	1:B:334:LYS:HD2	1.90	0.54
1:H:143:SER:H	1:H:149:ASN:HD21	1.54	0.54
1:A:349:GLN:O	3:A:501:HOH:O	2.19	0.54
1:F:16:ASN:O	1:F:20:LEU:HD21	2.08	0.54
1:F:208:LYS:HD2	1:F:213:ILE:HD11	1.90	0.54
1:G:108:ALA:CB	1:G:134:VAL:CG1	2.79	0.54
1:E:44:TRP:CZ2	1:H:54:ASN:HB3	2.43	0.54
1:F:17:ILE:O	1:F:20:LEU:HD22	2.06	0.54
1:P:53:PHE:CE1	1:P:276:PHE:HB2	2.42	0.54
1:C:62:VAL:HG21	1:D:242:ILE:HD13	1.89	0.54
1:E:153:ILE:O	1:E:157:VAL:HG23	2.08	0.54
1:N:109:ALA:HB1	1:N:334:LYS:HD2	1.89	0.54
1:N:153:ILE:O	1:N:157:VAL:HG23	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:238:ILE:CG2	3:B:522:HOH:O	2.39	0.53
1:E:143:SER:H	1:E:149:ASN:HD21	1.56	0.53
1:K:269:LEU:HD21	1:K:272:ALA:HB2	1.88	0.53
1:P:143:SER:H	1:P:149:ASN:HD21	1.56	0.53
1:H:109:ALA:HB1	1:H:334:LYS:HD2	1.91	0.53
1:H:153:ILE:O	1:H:157:VAL:HG23	2.07	0.53
1:F:58:ILE:HG23	3:F:511:HOH:O	2.07	0.53
1:F:143:SER:H	1:F:149:ASN:HD21	1.56	0.53
1:J:142:MET:CE	1:J:218:LYS:CD	2.87	0.53
1:K:153:ILE:O	1:K:157:VAL:HG23	2.09	0.53
1:N:105:LYS:HE3	1:N:130:ALA:HB1	1.90	0.53
1:O:143:SER:H	1:O:149:ASN:HD21	1.56	0.53
1:C:153:ILE:O	1:C:157:VAL:HG23	2.09	0.53
1:J:143:SER:H	1:J:149:ASN:HD21	1.55	0.53
1:J:334:LYS:HE3	1:J:338:ASP:OD2	2.08	0.53
1:C:143:SER:H	1:C:149:ASN:HD21	1.57	0.53
1:F:62:VAL:HG21	1:G:242:ILE:HD13	1.90	0.53
1:M:143:SER:H	1:M:149:ASN:HD21	1.57	0.53
1:E:101:LYS:HG3	1:E:122:THR:HG21	1.91	0.53
1:O:89:SER:HA	2:O:401:FMN:C5A	2.39	0.53
1:F:58:ILE:HD12	1:F:59:ILE:H	1.72	0.53
1:G:143:SER:H	1:G:149:ASN:HD21	1.57	0.53
1:L:334:LYS:HD3	1:L:338:ASP:OD2	2.09	0.53
1:K:109:ALA:HB1	1:K:334:LYS:HD2	1.91	0.53
1:M:153:ILE:O	1:M:157:VAL:HG23	2.09	0.53
1:O:101:LYS:HG3	1:O:122:THR:HG21	1.91	0.53
1:I:28:MET:HE2	1:I:32:ALA:HB1	1.91	0.52
1:J:365:ILE:HD11	1:K:273:PRO:HG3	1.89	0.52
1:L:47:ARG:NH2	3:L:503:HOH:O	2.32	0.52
1:B:101:LYS:HG3	1:B:122:THR:HG21	1.91	0.52
1:F:60:PRO:HG3	1:G:269:LEU:HD23	1.91	0.52
1:I:153:ILE:O	1:I:157:VAL:HG23	2.10	0.52
1:J:361:ASN:ND2	1:M:288:LYS:HD2	2.23	0.52
1:N:143:SER:H	1:N:149:ASN:HD21	1.57	0.52
1:G:101:LYS:HG3	1:G:122:THR:HG21	1.91	0.52
1:P:101:LYS:HG3	1:P:122:THR:HG21	1.92	0.52
1:A:153:ILE:O	1:A:157:VAL:HG23	2.10	0.52
1:L:153:ILE:O	1:L:157:VAL:HG23	2.10	0.52
1:J:240:LYS:HA	1:J:260:TRP:HB3	1.91	0.52
1:M:240:LYS:HA	1:M:260:TRP:HB3	1.92	0.52
1:A:109:ALA:HB1	1:A:334:LYS:HD3	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:101:LYS:HG3	1:M:122:THR:HG21	1.90	0.51
1:N:101:LYS:HG3	1:N:122:THR:HG21	1.90	0.51
1:P:116:ILE:HD13	1:P:124:ILE:HG12	1.92	0.51
1:I:347:THR:HG23	1:J:269:LEU:HD11	1.92	0.51
1:K:143:SER:H	1:K:149:ASN:HD21	1.58	0.51
1:O:153:ILE:O	1:O:157:VAL:HG23	2.10	0.51
1:O:188:LEU:HD12	1:O:188:LEU:N	2.25	0.51
1:C:54:ASN:HB3	1:D:44:TRP:CZ2	2.45	0.51
1:C:60:PRO:HG3	1:D:269:LEU:HD23	1.92	0.51
1:G:57:LYS:HB3	1:H:273:PRO:HD3	1.93	0.51
1:J:349:GLN:NE2	1:K:219:GLN:OE1	2.39	0.51
1:L:143:SER:H	1:L:149:ASN:HD21	1.57	0.51
1:A:62:VAL:HG21	1:B:242:ILE:HD13	1.93	0.51
1:E:246:GLU:O	1:E:250:ILE:HG12	2.11	0.51
1:G:131:ALA:HB3	1:G:134:VAL:HG22	1.92	0.51
1:L:101:LYS:HG3	1:L:122:THR:HG21	1.92	0.51
1:A:105:LYS:HE3	1:A:130:ALA:HB1	1.92	0.51
1:D:153:ILE:O	1:D:157:VAL:HG23	2.10	0.51
1:E:213:ILE:CD1	1:E:213:ILE:H	2.24	0.51
1:H:101:LYS:HG3	1:H:122:THR:HG21	1.93	0.51
1:I:54:ASN:HB3	1:J:44:TRP:CZ2	2.45	0.51
1:J:54:ASN:HB3	1:K:44:TRP:CZ2	2.45	0.51
1:K:101:LYS:HG3	1:K:122:THR:HG21	1.92	0.51
1:D:101:LYS:HG3	1:D:122:THR:HG21	1.92	0.51
1:D:109:ALA:HB1	1:D:334:LYS:HD2	1.92	0.51
1:A:240:LYS:HA	1:A:260:TRP:HB3	1.93	0.51
1:G:153:ILE:O	1:G:157:VAL:HG23	2.11	0.51
1:E:109:ALA:HB1	1:E:334:LYS:HD2	1.92	0.51
1:F:17:ILE:CA	1:F:20:LEU:CD2	2.88	0.51
1:I:240:LYS:HA	1:I:260:TRP:HB3	1.93	0.51
1:N:86:GLN:HE22	1:N:115:CYS:H	1.59	0.51
1:O:240:LYS:HA	1:O:260:TRP:HB3	1.93	0.51
1:P:53:PHE:CD2	1:P:303:HIS:CB	2.93	0.51
1:A:172:LEU:HB2	1:D:349:GLN:NE2	2.25	0.50
1:A:188:LEU:HD12	1:A:188:LEU:N	2.26	0.50
1:B:29:GLU:CG	1:K:8:GLU:OE2	2.59	0.50
1:F:240:LYS:HA	1:F:260:TRP:HB3	1.93	0.50
1:C:101:LYS:HG3	1:C:122:THR:HG21	1.92	0.50
1:F:101:LYS:HG3	1:F:122:THR:HG21	1.92	0.50
1:K:37:ARG:NH2	1:K:178:GLU:OE1	2.44	0.50
1:M:57:LYS:HD2	1:N:273:PRO:HB3	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:153:ILE:O	1:B:157:VAL:HG23	2.11	0.50
1:C:348:MET:HG2	1:C:359:ILE:HD11	1.93	0.50
1:I:101:LYS:HG3	1:I:122:THR:HG21	1.93	0.50
1:K:269:LEU:CD2	1:K:272:ALA:CB	2.82	0.50
1:D:240:LYS:HA	1:D:260:TRP:HB3	1.92	0.50
1:H:37:ARG:NH2	1:H:178:GLU:OE1	2.45	0.50
1:H:53:PHE:CD2	1:H:303:HIS:HB3	2.47	0.50
1:B:240:LYS:HA	1:B:260:TRP:HB3	1.93	0.50
1:H:240:LYS:HA	1:H:260:TRP:HB3	1.94	0.50
1:A:319:ARG:NH1	2:A:401:FMN:O2P	2.45	0.50
1:G:240:LYS:HA	1:G:260:TRP:HB3	1.93	0.50
1:I:37:ARG:NH2	1:I:178:GLU:OE1	2.45	0.50
1:L:240:LYS:HA	1:L:260:TRP:HB3	1.92	0.50
1:C:240:LYS:HA	1:C:260:TRP:HB3	1.94	0.50
1:D:86:GLN:HG3	1:D:321:ILE:HG21	1.93	0.50
1:G:13:GLU:OE1	1:G:13:GLU:CA	2.60	0.50
1:N:86:GLN:HG3	1:N:321:ILE:HG21	1.94	0.50
1:O:62:VAL:HG21	1:P:242:ILE:HD13	1.94	0.50
1:E:37:ARG:NH2	1:E:178:GLU:OE1	2.45	0.49
1:K:66:ILE:HD12	1:K:354:LYS:HB2	1.94	0.49
1:K:240:LYS:HA	1:K:260:TRP:HB3	1.94	0.49
1:F:37:ARG:NH2	1:F:178:GLU:OE1	2.45	0.49
1:N:28:MET:HE2	1:N:32:ALA:CB	2.41	0.49
1:P:37:ARG:NH2	1:P:178:GLU:OE1	2.45	0.49
1:A:37:ARG:NH2	1:A:178:GLU:OE1	2.46	0.49
1:I:109:ALA:HB1	1:I:334:LYS:HD3	1.93	0.49
1:K:348:MET:HG2	1:K:359:ILE:HD11	1.94	0.49
1:N:81:LYS:O	3:N:502:HOH:O	2.19	0.49
1:F:86:GLN:HE22	1:F:115:CYS:H	1.61	0.49
1:A:86:GLN:HG3	1:A:321:ILE:HG21	1.94	0.49
1:D:37:ARG:NH2	1:D:178:GLU:OE1	2.46	0.49
1:J:86:GLN:HG3	1:J:321:ILE:HG21	1.93	0.49
1:L:86:GLN:HG3	1:L:321:ILE:HG21	1.95	0.49
1:B:28:MET:HG3	3:B:520:HOH:O	2.11	0.49
1:F:116:ILE:HD13	1:F:124:ILE:HG12	1.94	0.49
1:G:131:ALA:HB3	1:G:134:VAL:HG21	1.94	0.49
1:G:263:ASN:HA	3:G:510:HOH:O	2.11	0.49
1:P:240:LYS:HA	1:P:260:TRP:HB3	1.94	0.49
1:D:53:PHE:CD2	1:D:303:HIS:HB3	2.47	0.49
1:O:37:ARG:NH2	1:O:178:GLU:OE1	2.46	0.49
1:O:88:PRO:O	2:O:401:FMN:C10	2.60	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:54:ASN:HB3	1:G:44:TRP:CZ2	2.47	0.49
1:P:172:LEU:HG	3:P:513:HOH:O	2.12	0.49
1:C:37:ARG:NH2	1:C:178:GLU:OE1	2.45	0.49
1:K:88:PRO:O	2:K:401:FMN:O2'	2.15	0.49
1:L:319:ARG:N	1:L:320:PRO:CD	2.76	0.49
1:J:150:ARG:HG2	3:J:507:HOH:O	2.13	0.48
1:B:37:ARG:NH2	1:B:178:GLU:OE1	2.46	0.48
1:D:298:VAL:CG2	1:D:317:ILE:HD11	2.43	0.48
1:K:86:GLN:HG3	1:K:321:ILE:HG21	1.94	0.48
1:E:86:GLN:HG3	1:E:321:ILE:HG21	1.95	0.48
1:G:86:GLN:HG3	1:G:321:ILE:HG21	1.96	0.48
1:H:299:ARG:NH2	2:H:401:FMN:O1P	2.33	0.48
1:L:331:GLU:HB3	3:L:505:HOH:O	2.12	0.48
1:D:298:VAL:HG22	1:D:317:ILE:CD1	2.43	0.48
1:D:319:ARG:N	1:D:320:PRO:CD	2.77	0.48
1:J:37:ARG:NH2	1:J:178:GLU:OE1	2.46	0.48
1:L:37:ARG:NH2	1:L:178:GLU:OE1	2.47	0.48
1:L:53:PHE:CD2	1:L:303:HIS:HB3	2.48	0.48
1:N:240:LYS:HA	1:N:260:TRP:HB3	1.95	0.48
1:J:348:MET:HG2	1:J:359:ILE:HD11	1.96	0.48
1:K:269:LEU:HD22	1:K:272:ALA:CB	2.42	0.48
1:L:348:MET:HG2	1:L:359:ILE:HD11	1.96	0.48
1:M:37:ARG:NH2	1:M:178:GLU:OE1	2.46	0.48
1:G:37:ARG:NH2	1:G:178:GLU:OE1	2.47	0.48
1:I:242:ILE:HD13	1:L:62:VAL:HG21	1.96	0.48
1:E:240:LYS:HA	1:E:260:TRP:HB3	1.95	0.48
1:I:109:ALA:CB	1:I:334:LYS:HD3	2.44	0.48
1:M:273:PRO:HD3	1:P:57:LYS:HB3	1.95	0.48
1:A:348:MET:HG2	1:A:359:ILE:HD11	1.95	0.48
1:F:267:ARG:NH2	2:F:401:FMN:C7M	2.76	0.48
1:M:86:GLN:HG3	1:M:321:ILE:HG21	1.96	0.48
1:A:109:ALA:CB	1:A:334:LYS:HD3	2.44	0.47
1:N:37:ARG:NH2	1:N:178:GLU:OE1	2.47	0.47
1:P:348:MET:HG2	1:P:359:ILE:HD11	1.96	0.47
1:B:86:GLN:HG3	1:B:321:ILE:HG21	1.95	0.47
1:C:109:ALA:HB1	1:C:334:LYS:HD2	1.96	0.47
1:M:299:ARG:O	3:M:501:HOH:O	2.20	0.47
1:C:86:GLN:HG3	1:C:321:ILE:HG21	1.96	0.47
1:D:259:ILE:HB	1:D:292:ILE:HD13	1.97	0.47
2:F:401:FMN:N1	2:F:401:FMN:O2'	2.46	0.47
1:H:348:MET:HG2	1:H:359:ILE:HD11	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:84:ILE:HA	1:H:315:VAL:O	2.15	0.47
1:I:86:GLN:HG3	1:I:321:ILE:HG21	1.96	0.47
1:M:101:LYS:HE2	3:M:512:HOH:O	2.15	0.47
1:O:86:GLN:HG3	1:O:321:ILE:HG21	1.95	0.47
1:O:348:MET:HG2	1:O:359:ILE:HD11	1.96	0.47
1:D:195:ALA:HB1	3:D:516:HOH:O	2.14	0.47
1:H:319:ARG:N	1:H:320:PRO:CD	2.78	0.47
1:I:95:ALA:CB	3:I:528:HOH:O	2.30	0.47
1:I:319:ARG:N	1:I:320:PRO:CD	2.78	0.47
1:K:62:VAL:HG21	1:L:242:ILE:HD13	1.97	0.47
1:O:84:ILE:HA	1:O:315:VAL:O	2.15	0.47
1:A:84:ILE:HA	1:A:315:VAL:O	2.15	0.47
1:D:267:ARG:HD2	2:D:401:FMN:HM82	1.96	0.47
1:E:168:VAL:HG12	1:E:221:ILE:HD13	1.97	0.47
1:F:58:ILE:HG13	1:G:269:LEU:HD21	1.95	0.47
1:J:139:GLN:CD	2:J:401:FMN:HN3	2.22	0.47
1:L:84:ILE:HA	1:L:315:VAL:O	2.15	0.47
1:C:269:LEU:HD23	1:C:269:LEU:O	2.15	0.47
1:D:348:MET:HG2	1:D:359:ILE:HD11	1.97	0.47
1:M:49:ASN:ND2	3:M:503:HOH:O	2.27	0.47
1:M:54:ASN:HB3	1:N:44:TRP:CZ2	2.50	0.47
1:M:62:VAL:HG21	1:N:242:ILE:HD13	1.97	0.47
1:P:25:LYS:HD2	1:P:33:PHE:CD2	2.50	0.47
1:P:168:VAL:HG12	1:P:221:ILE:HD13	1.96	0.47
1:P:238:ILE:N	1:P:238:ILE:CD1	2.74	0.47
1:B:348:MET:HG2	1:B:359:ILE:HD11	1.97	0.47
1:F:188:LEU:HD12	1:F:188:LEU:N	2.30	0.47
1:M:348:MET:HG2	1:M:359:ILE:HD11	1.97	0.47
1:O:49:ASN:HD22	1:O:275:SER:H	1.61	0.47
1:P:86:GLN:HG3	1:P:321:ILE:HG21	1.97	0.47
1:P:319:ARG:N	1:P:320:PRO:CD	2.78	0.47
1:F:17:ILE:O	1:F:20:LEU:HD23	2.13	0.47
1:G:168:VAL:HG12	1:G:221:ILE:HD13	1.97	0.47
1:L:269:LEU:HD23	1:L:269:LEU:O	2.15	0.47
1:D:116:ILE:HD12	1:D:136:TYR:CE1	2.50	0.46
1:G:131:ALA:CB	1:G:134:VAL:CG2	2.89	0.46
1:O:66:ILE:HD12	1:O:354:LYS:HB2	1.96	0.46
1:A:231:ASP:OD2	3:A:502:HOH:O	2.21	0.46
1:H:53:PHE:CD2	1:H:303:HIS:CB	2.98	0.46
1:H:300:ARG:HD3	3:H:502:HOH:O	2.16	0.46
1:I:348:MET:HG2	1:I:359:ILE:HD11	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:188:LEU:HD12	1:I:188:LEU:N	2.31	0.46
1:L:168:VAL:HG12	1:L:221:ILE:HD13	1.97	0.46
1:B:319:ARG:N	1:B:320:PRO:CD	2.78	0.46
1:C:319:ARG:N	1:C:320:PRO:CD	2.79	0.46
1:F:86:GLN:HG3	1:F:321:ILE:HG21	1.97	0.46
1:G:131:ALA:HB1	1:G:134:VAL:HG22	1.96	0.46
1:H:86:GLN:HG3	1:H:321:ILE:HG21	1.96	0.46
1:L:53:PHE:CD2	1:L:303:HIS:CB	2.99	0.46
1:M:168:VAL:HG12	1:M:221:ILE:HD13	1.97	0.46
1:N:84:ILE:HA	1:N:315:VAL:O	2.16	0.46
1:N:319:ARG:N	1:N:320:PRO:CD	2.78	0.46
1:F:319:ARG:N	1:F:320:PRO:CD	2.78	0.46
1:I:84:ILE:HA	1:I:315:VAL:O	2.16	0.46
1:O:208:LYS:CD	1:O:213:ILE:HD11	2.45	0.46
1:O:319:ARG:N	1:O:320:PRO:CD	2.79	0.46
1:D:84:ILE:HA	1:D:315:VAL:O	2.16	0.46
1:G:84:ILE:HA	1:G:315:VAL:O	2.16	0.46
1:A:319:ARG:N	1:A:320:PRO:CD	2.79	0.46
1:G:348:MET:HG2	1:G:359:ILE:HD11	1.97	0.46
1:N:81:LYS:HB3	3:N:502:HOH:O	2.14	0.46
1:P:84:ILE:HA	1:P:315:VAL:O	2.15	0.46
1:B:133:ASN:O	1:B:134:VAL:C	2.59	0.46
1:E:84:ILE:HA	1:E:315:VAL:O	2.15	0.46
1:E:259:ILE:HB	1:E:292:ILE:CD1	2.46	0.46
1:P:86:GLN:HE22	1:P:115:CYS:H	1.62	0.46
1:J:84:ILE:HA	1:J:315:VAL:O	2.16	0.46
1:J:120:ALA:HB2	3:J:530:HOH:O	2.16	0.46
1:K:25:LYS:HE2	1:K:33:PHE:CE2	2.51	0.46
1:K:319:ARG:N	1:K:320:PRO:CD	2.79	0.46
1:M:319:ARG:N	1:M:320:PRO:CD	2.78	0.46
1:B:168:VAL:HG12	1:B:221:ILE:HD13	1.98	0.46
1:F:105:LYS:HE3	1:F:130:ALA:HB1	1.97	0.46
1:H:114:PHE:CE2	1:H:116:ILE:HG12	2.51	0.46
1:O:297:GLY:N	2:O:401:FMN:O1P	2.44	0.46
1:D:53:PHE:CD2	1:D:303:HIS:CB	2.99	0.45
1:F:348:MET:HG2	1:F:359:ILE:HD11	1.98	0.45
1:I:114:PHE:CE2	1:I:116:ILE:HG12	2.51	0.45
1:A:337:PHE:HB3	3:A:514:HOH:O	2.16	0.45
1:B:295:ASP:O	1:B:296:SER:HB2	2.16	0.45
1:M:133:ASN:O	1:M:134:VAL:C	2.59	0.45
1:N:348:MET:HG2	1:N:359:ILE:HD11	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:168:VAL:HG12	1:O:221:ILE:HD13	1.98	0.45
1:E:247:ASP:OD2	1:H:62:VAL:HG22	2.17	0.45
1:E:319:ARG:N	1:E:320:PRO:CD	2.79	0.45
1:K:54:ASN:HB3	1:L:44:TRP:CZ2	2.51	0.45
1:K:187:PRO:HD2	3:K:530:HOH:O	2.15	0.45
1:I:73:THR:C	3:I:510:HOH:O	2.59	0.45
1:I:168:VAL:HG12	1:I:221:ILE:HD13	1.99	0.45
1:B:89:SER:HA	2:B:401:FMN:C4A	2.47	0.45
1:E:74:LYS:HB2	1:E:74:LYS:HE2	1.68	0.45
1:H:133:ASN:O	1:H:134:VAL:C	2.60	0.45
1:I:219:GLN:OE1	1:L:349:GLN:NE2	2.37	0.45
1:J:27:ARG:HH11	1:J:326:ASN:ND2	2.15	0.45
1:L:116:ILE:HD12	1:L:136:TYR:CE1	2.52	0.45
1:M:84:ILE:HA	1:M:315:VAL:O	2.16	0.45
1:B:66:ILE:HD12	1:B:354:LYS:HB2	1.99	0.45
1:D:27:ARG:HH11	1:D:326:ASN:ND2	2.15	0.45
1:D:168:VAL:HG12	1:D:221:ILE:HD13	1.98	0.45
1:L:27:ARG:HH11	1:L:326:ASN:ND2	2.15	0.45
1:O:133:ASN:O	1:O:134:VAL:C	2.60	0.45
1:B:27:ARG:HH11	1:B:326:ASN:ND2	2.15	0.45
1:B:84:ILE:HA	1:B:315:VAL:O	2.17	0.45
1:F:133:ASN:O	1:F:134:VAL:C	2.60	0.45
1:G:194:SER:OG	1:G:210:ILE:HD11	2.17	0.45
1:G:319:ARG:N	1:G:320:PRO:CD	2.80	0.45
1:K:295:ASP:O	1:K:296:SER:HB2	2.17	0.45
1:M:116:ILE:HD12	1:M:136:TYR:CE1	2.52	0.45
1:N:168:VAL:HG12	1:N:221:ILE:HD13	1.99	0.45
1:P:154:ASP:C	1:P:157:VAL:HG12	2.40	0.45
1:E:116:ILE:HD12	1:E:136:TYR:CE1	2.52	0.45
1:K:27:ARG:HH11	1:K:326:ASN:ND2	2.15	0.45
1:G:133:ASN:O	1:G:134:VAL:C	2.60	0.45
1:J:319:ARG:N	1:J:320:PRO:CD	2.79	0.45
1:E:133:ASN:O	1:E:134:VAL:C	2.60	0.45
1:K:93:GLY:HA2	1:K:96:HIS:O	2.17	0.45
1:M:349:GLN:NE2	1:N:219:GLN:OE1	2.44	0.45
1:P:295:ASP:O	1:P:296:SER:HB2	2.17	0.45
1:C:168:VAL:HG12	1:C:221:ILE:HD13	1.99	0.44
1:F:168:VAL:HG12	1:F:221:ILE:HD13	1.98	0.44
1:I:93:GLY:HA2	1:I:96:HIS:O	2.17	0.44
1:J:133:ASN:O	1:J:134:VAL:C	2.60	0.44
1:K:140:LEU:HD22	1:K:153:ILE:HD11	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:133:ASN:O	1:N:134:VAL:C	2.60	0.44
1:D:345:SER:HB2	3:D:501:HOH:O	2.16	0.44
1:F:84:ILE:HA	1:F:315:VAL:O	2.16	0.44
1:J:66:ILE:HD12	1:J:354:LYS:HB2	2.00	0.44
1:J:139:GLN:NE2	2:J:401:FMN:HN3	2.14	0.44
1:K:168:VAL:HG12	1:K:221:ILE:HD13	1.99	0.44
1:K:169:ASP:CG	3:K:504:HOH:O	2.60	0.44
1:P:240:LYS:HE3	2:P:401:FMN:O2'	2.18	0.44
1:A:93:GLY:HA2	1:A:96:HIS:O	2.18	0.44
1:A:140:LEU:HD22	1:A:153:ILE:HD11	1.98	0.44
1:B:1:MET:HE1	1:K:12:ILE:CD1	2.44	0.44
1:F:295:ASP:O	1:F:296:SER:HB2	2.17	0.44
1:O:114:PHE:CE2	1:O:116:ILE:HG12	2.53	0.44
1:P:91:ALA:HB1	1:P:94:LEU:CD2	2.38	0.44
1:A:363:LEU:N	1:A:363:LEU:CD1	2.81	0.44
1:E:348:MET:HG2	1:E:359:ILE:HD11	1.99	0.44
1:G:140:LEU:HD22	1:G:153:ILE:HD11	1.99	0.44
1:I:136:TYR:O	1:I:161:THR:OG1	2.35	0.44
1:A:114:PHE:CE2	1:A:116:ILE:HG12	2.52	0.44
1:A:168:VAL:HG12	1:A:221:ILE:HD13	2.00	0.44
1:A:207:GLY:O	1:A:208:LYS:C	2.61	0.44
1:B:89:SER:HA	2:B:401:FMN:C5A	2.46	0.44
1:C:84:ILE:HA	1:C:315:VAL:O	2.16	0.44
1:G:116:ILE:HD12	1:G:136:TYR:CE1	2.53	0.44
1:L:93:GLY:HA2	1:L:96:HIS:O	2.17	0.44
1:M:114:PHE:CE2	1:M:116:ILE:HG12	2.53	0.44
1:P:133:ASN:O	1:P:134:VAL:C	2.60	0.44
1:B:93:GLY:HA2	1:B:96:HIS:O	2.17	0.44
1:B:136:TYR:N	3:B:501:HOH:O	2.28	0.44
1:C:295:ASP:O	1:C:296:SER:HB2	2.18	0.44
1:H:66:ILE:HD12	1:H:354:LYS:HB2	1.99	0.44
1:H:93:GLY:HA2	1:H:96:HIS:O	2.17	0.44
1:I:66:ILE:HD11	1:I:352:GLY:C	2.42	0.44
1:J:257:ASP:CG	3:J:519:HOH:O	2.60	0.44
1:J:295:ASP:O	1:J:296:SER:HB2	2.17	0.44
1:C:93:GLY:HA2	1:C:96:HIS:O	2.18	0.44
1:C:300:ARG:NE	1:D:42:ASP:OD1	2.51	0.44
1:D:93:GLY:HA2	1:D:96:HIS:O	2.17	0.44
1:G:93:GLY:HA2	1:G:96:HIS:O	2.18	0.44
1:H:105:LYS:HE3	1:H:130:ALA:HB1	1.98	0.44
1:K:116:ILE:HD12	1:K:136:TYR:CE1	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:93:GLY:HA2	1:N:96:HIS:O	2.18	0.44
1:O:80:LEU:HD12	1:O:112:SER:HA	1.98	0.44
1:A:295:ASP:O	1:A:296:SER:HB2	2.18	0.44
1:E:49:ASN:HD22	1:E:275:SER:H	1.64	0.44
1:E:93:GLY:HA2	1:E:96:HIS:O	2.18	0.44
1:F:129:ASN:O	3:F:502:HOH:O	2.21	0.44
1:K:16:ASN:HB3	1:L:177:GLU:OE2	2.16	0.44
1:K:84:ILE:HA	1:K:315:VAL:O	2.16	0.44
1:L:269:LEU:CD2	1:L:272:ALA:CB	2.84	0.44
1:C:133:ASN:O	1:C:134:VAL:C	2.60	0.43
1:G:54:ASN:HB3	1:H:44:TRP:CZ2	2.53	0.43
1:L:295:ASP:O	1:L:296:SER:HB2	2.17	0.43
1:P:300:ARG:HD3	3:P:502:HOH:O	2.18	0.43
1:F:194:SER:OG	1:F:210:ILE:HD11	2.18	0.43
1:K:298:VAL:C	1:K:299:ARG:HE	2.17	0.43
1:L:66:ILE:HD12	1:L:354:LYS:HB2	2.00	0.43
1:D:140:LEU:HD22	1:D:153:ILE:HD11	1.99	0.43
1:F:27:ARG:HH11	1:F:326:ASN:ND2	2.17	0.43
1:G:165:ILE:HD12	1:G:260:TRP:CE3	2.53	0.43
1:H:168:VAL:HG12	1:H:221:ILE:HD13	1.99	0.43
1:J:299:ARG:O	3:J:502:HOH:O	2.21	0.43
1:B:349:GLN:OE1	1:C:172:LEU:HB2	2.18	0.43
1:F:16:ASN:HB3	1:G:177:GLU:OE2	2.19	0.43
1:G:66:ILE:HD12	1:G:354:LYS:HB2	2.00	0.43
1:I:207:GLY:O	1:I:208:LYS:C	2.62	0.43
1:I:322:LEU:HD22	3:I:528:HOH:O	2.18	0.43
1:J:93:GLY:HA2	1:J:96:HIS:O	2.18	0.43
1:J:194:SER:OG	1:J:210:ILE:HD11	2.19	0.43
1:M:93:GLY:HA2	1:M:96:HIS:O	2.17	0.43
1:M:277:GLU:OE2	1:P:57:LYS:NZ	2.45	0.43
1:P:93:GLY:HA2	1:P:96:HIS:O	2.18	0.43
1:F:93:GLY:HA2	1:F:96:HIS:O	2.17	0.43
1:G:273:PRO:O	3:G:501:HOH:O	2.21	0.43
1:J:140:LEU:HD22	1:J:153:ILE:HD11	2.01	0.43
1:K:349:GLN:HE21	1:K:349:GLN:HB2	1.63	0.43
1:O:93:GLY:HA2	1:O:96:HIS:O	2.18	0.43
1:O:318:GLY:HA3	2:O:401:FMN:O4'	2.17	0.43
1:C:207:GLY:O	1:C:208:LYS:C	2.62	0.43
1:G:347:THR:HG23	1:H:269:LEU:HD11	2.01	0.43
1:K:133:ASN:O	1:K:134:VAL:C	2.60	0.43
1:L:53:PHE:HE2	1:L:303:HIS:HB3	1.75	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:28:MET:HE2	1:N:32:ALA:HB1	2.00	0.43
1:O:112:SER:OG	1:O:113:ILE:N	2.52	0.43
1:I:16:ASN:HB3	1:J:177:GLU:OE2	2.19	0.43
1:L:53:PHE:CE1	1:L:276:PHE:HB2	2.53	0.43
1:L:207:GLY:O	1:L:208:LYS:C	2.62	0.43
1:O:139:GLN:NE2	2:O:401:FMN:HN3	2.17	0.43
1:O:295:ASP:O	1:O:296:SER:HB2	2.19	0.43
1:P:136:TYR:O	1:P:161:THR:OG1	2.36	0.43
1:C:140:LEU:HD22	1:C:153:ILE:HD11	2.01	0.43
1:G:207:GLY:O	1:G:208:LYS:C	2.62	0.43
1:L:321:ILE:CG2	3:L:522:HOH:O	2.66	0.43
1:M:42:ASP:CG	1:P:300:ARG:HH21	2.26	0.43
1:A:177:GLU:OE2	1:D:16:ASN:HB3	2.18	0.43
1:B:62:VAL:HG21	1:C:242:ILE:HD13	2.00	0.43
1:C:136:TYR:O	1:C:161:THR:OG1	2.36	0.43
1:I:140:LEU:HD22	1:I:153:ILE:HD11	2.01	0.43
1:J:63:LEU:HD21	1:K:168:VAL:HG11	2.00	0.43
1:N:27:ARG:HH11	1:N:326:ASN:ND2	2.17	0.43
1:B:4:HIS:ND1	1:K:10:HIS:CD2	2.86	0.43
1:B:116:ILE:HD12	1:B:136:TYR:CE1	2.54	0.43
1:I:114:PHE:O	1:I:136:TYR:HA	2.19	0.43
1:I:157:VAL:O	1:I:157:VAL:HG12	2.18	0.43
1:K:136:TYR:O	1:K:161:THR:OG1	2.36	0.43
1:B:112:SER:OG	1:B:113:ILE:N	2.52	0.42
1:B:114:PHE:O	1:B:136:TYR:HA	2.19	0.42
1:I:279:LEU:N	1:I:280:PRO:CD	2.82	0.42
1:J:168:VAL:HG12	1:J:221:ILE:HD13	2.01	0.42
1:O:194:SER:OG	1:O:210:ILE:HD11	2.19	0.42
1:P:27:ARG:HH11	1:P:326:ASN:ND2	2.17	0.42
1:A:269:LEU:HD23	1:D:60:PRO:HG3	2.01	0.42
1:F:17:ILE:C	1:F:20:LEU:CD2	2.92	0.42
1:G:295:ASP:O	1:G:296:SER:HB2	2.19	0.42
1:H:207:GLY:O	1:H:208:LYS:C	2.63	0.42
1:N:295:ASP:O	1:N:296:SER:HB2	2.19	0.42
1:J:17:ILE:HG12	3:J:502:HOH:O	2.18	0.42
1:N:114:PHE:CE2	1:N:116:ILE:HG12	2.53	0.42
1:O:114:PHE:O	1:O:136:TYR:HA	2.20	0.42
1:D:207:GLY:O	1:D:208:LYS:C	2.63	0.42
1:D:298:VAL:CG2	1:D:317:ILE:CD1	2.98	0.42
1:K:207:GLY:O	1:K:208:LYS:C	2.63	0.42
1:L:88:PRO:O	2:L:401:FMN:O2'	2.22	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:116:ILE:HD12	1:N:136:TYR:CE1	2.54	0.42
1:N:354:LYS:HB3	3:N:518:HOH:O	2.19	0.42
1:O:27:ARG:HH11	1:O:326:ASN:ND2	2.17	0.42
1:A:16:ASN:HB3	1:B:177:GLU:OE2	2.19	0.42
1:D:295:ASP:O	1:D:296:SER:HB2	2.18	0.42
1:E:279:LEU:N	1:E:280:PRO:CD	2.83	0.42
1:F:207:GLY:O	1:F:208:LYS:C	2.63	0.42
2:G:401:FMN:HM81	2:G:401:FMN:HM73	1.89	0.42
1:M:27:ARG:HH11	1:M:326:ASN:ND2	2.18	0.42
1:M:207:GLY:O	1:M:208:LYS:C	2.63	0.42
1:O:90:ALA:N	2:O:401:FMN:N5	2.52	0.42
1:P:116:ILE:CD1	1:P:124:ILE:HA	2.50	0.42
1:A:112:SER:OG	1:A:113:ILE:N	2.52	0.42
1:B:279:LEU:N	1:B:280:PRO:CD	2.83	0.42
1:C:194:SER:OG	1:C:210:ILE:HD11	2.20	0.42
1:E:140:LEU:HD22	1:E:153:ILE:HD11	2.02	0.42
1:E:295:ASP:O	1:E:296:SER:HB2	2.20	0.42
1:H:112:SER:OG	1:H:113:ILE:N	2.53	0.42
1:H:114:PHE:O	1:H:136:TYR:HA	2.20	0.42
3:I:505:HOH:O	1:O:246:GLU:HG2	2.19	0.42
1:N:90:ALA:HB2	2:N:401:FMN:O4	2.19	0.42
1:P:53:PHE:CD2	1:P:303:HIS:CD2	3.02	0.42
1:B:114:PHE:CE2	1:B:116:ILE:HG12	2.55	0.42
1:C:116:ILE:HD12	1:C:136:TYR:CE1	2.55	0.42
1:G:112:SER:OG	1:G:113:ILE:N	2.52	0.42
1:N:66:ILE:HD12	1:N:354:LYS:HB2	2.02	0.42
1:P:80:LEU:HD12	1:P:112:SER:HA	2.00	0.42
1:C:114:PHE:O	1:C:136:TYR:HA	2.20	0.42
1:C:157:VAL:HG12	1:C:157:VAL:O	2.20	0.42
1:G:114:PHE:CE2	1:G:116:ILE:HG12	2.54	0.42
1:J:112:SER:OG	1:J:113:ILE:N	2.53	0.42
1:J:279:LEU:N	1:J:280:PRO:CD	2.83	0.42
1:K:298:VAL:C	1:K:299:ARG:NE	2.74	0.42
1:L:65:GLY:O	3:L:501:HOH:O	2.22	0.42
1:M:295:ASP:O	1:M:296:SER:HB2	2.19	0.42
1:N:5:THR:OG1	1:N:6:SER:N	2.52	0.42
1:P:279:LEU:N	1:P:280:PRO:CD	2.83	0.42
1:G:193:LEU:CB	1:G:210:ILE:CD1	2.96	0.42
1:H:27:ARG:HH11	1:H:326:ASN:ND2	2.18	0.42
1:M:194:SER:OG	1:M:210:ILE:HD11	2.20	0.42
1:N:230:LYS:NZ	3:N:508:HOH:O	2.48	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:114:PHE:O	1:A:136:TYR:HA	2.20	0.42
1:J:207:GLY:O	1:J:208:LYS:C	2.63	0.42
1:N:114:PHE:O	1:N:136:TYR:HA	2.20	0.42
1:N:279:LEU:N	1:N:280:PRO:CD	2.83	0.42
1:P:238:ILE:HD12	1:P:238:ILE:H	1.83	0.42
1:A:279:LEU:N	1:A:280:PRO:CD	2.83	0.41
1:C:114:PHE:CE2	1:C:116:ILE:HG12	2.55	0.41
1:E:273:PRO:HB3	1:H:57:LYS:HE3	2.02	0.41
1:F:319:ARG:HG3	2:F:401:FMN:O2P	2.20	0.41
1:H:5:THR:OG1	1:H:6:SER:N	2.53	0.41
1:I:295:ASP:O	1:I:296:SER:HB2	2.20	0.41
1:K:142:MET:CE	1:K:166:LEU:HD21	2.49	0.41
1:L:114:PHE:CE2	1:L:116:ILE:HG12	2.54	0.41
1:O:136:TYR:O	1:O:161:THR:OG1	2.36	0.41
1:P:112:SER:OG	1:P:113:ILE:N	2.53	0.41
1:P:233:ALA:O	1:P:235:LEU:CD1	2.68	0.41
1:A:5:THR:OG1	1:A:6:SER:N	2.53	0.41
1:C:282:ILE:O	1:C:286:VAL:HG23	2.19	0.41
1:D:5:THR:OG1	1:D:6:SER:N	2.53	0.41
1:E:114:PHE:CE2	1:E:116:ILE:HG12	2.55	0.41
1:E:114:PHE:O	1:E:136:TYR:HA	2.20	0.41
1:K:112:SER:OG	1:K:113:ILE:N	2.52	0.41
1:M:112:SER:OG	1:M:113:ILE:N	2.52	0.41
1:N:207:GLY:O	1:N:208:LYS:C	2.63	0.41
1:P:207:GLY:O	1:P:208:LYS:C	2.63	0.41
1:B:20:LEU:O	1:B:24:VAL:HG23	2.20	0.41
1:H:279:LEU:N	1:H:280:PRO:CD	2.83	0.41
1:I:73:THR:CA	3:I:510:HOH:O	2.50	0.41
1:I:125:GLU:O	1:I:129:ASN:CG	2.64	0.41
1:N:282:ILE:O	1:N:286:VAL:HG23	2.21	0.41
1:I:112:SER:OG	1:I:113:ILE:N	2.53	0.41
1:I:116:ILE:HD12	1:I:136:TYR:CE1	2.55	0.41
1:J:282:ILE:O	1:J:286:VAL:HG23	2.20	0.41
1:K:114:PHE:CE2	1:K:116:ILE:HG12	2.55	0.41
1:L:112:SER:OG	1:L:113:ILE:N	2.53	0.41
1:L:114:PHE:O	1:L:136:TYR:HA	2.20	0.41
1:M:279:LEU:N	1:M:280:PRO:CD	2.83	0.41
1:P:148:PHE:O	1:P:148:PHE:CD1	2.73	0.41
1:C:20:LEU:O	1:C:24:VAL:HG23	2.20	0.41
1:F:279:LEU:N	1:F:280:PRO:CD	2.84	0.41
1:G:5:THR:OG1	1:G:6:SER:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:105:LYS:HE3	1:I:130:ALA:HB1	2.01	0.41
1:J:114:PHE:O	1:J:136:TYR:HA	2.20	0.41
1:J:267:ARG:HD2	2:J:401:FMN:HM83	2.02	0.41
1:B:194:SER:OG	1:B:210:ILE:HD11	2.21	0.41
1:C:112:SER:OG	1:C:113:ILE:N	2.53	0.41
1:H:114:PHE:CZ	1:H:116:ILE:HG12	2.56	0.41
1:J:346:ILE:HA	1:K:172:LEU:HD23	2.02	0.41
1:K:60:PRO:HG3	1:L:269:LEU:HD13	2.02	0.41
1:K:114:PHE:O	1:K:136:TYR:HA	2.21	0.41
1:L:136:TYR:O	1:L:161:THR:OG1	2.36	0.41
1:P:116:ILE:HG23	1:P:138:PHE:CD1	2.51	0.41
1:B:207:GLY:O	1:B:208:LYS:C	2.63	0.41
1:C:279:LEU:N	1:C:280:PRO:CD	2.84	0.41
1:D:112:SER:OG	1:D:113:ILE:N	2.53	0.41
1:E:5:THR:OG1	1:E:6:SER:N	2.53	0.41
1:G:114:PHE:O	1:G:136:TYR:HA	2.21	0.41
1:H:295:ASP:O	1:H:296:SER:HB2	2.21	0.41
1:L:53:PHE:HD2	1:L:303:HIS:HA	1.84	0.41
1:N:347:THR:HG23	1:O:269:LEU:HD11	2.03	0.41
1:A:116:ILE:HD12	1:A:136:TYR:CE1	2.55	0.41
1:C:347:THR:HG23	1:D:269:LEU:HD11	2.01	0.41
1:D:298:VAL:HG22	1:D:317:ILE:HD11	2.03	0.41
1:E:112:SER:OG	1:E:113:ILE:N	2.54	0.41
1:G:27:ARG:HH11	1:G:326:ASN:ND2	2.19	0.41
1:G:279:LEU:N	1:G:280:PRO:CD	2.84	0.41
1:H:53:PHE:CE1	1:H:276:PHE:HB2	2.56	0.41
1:J:5:THR:OG1	1:J:6:SER:N	2.54	0.41
1:K:318:GLY:HA3	2:K:401:FMN:O4'	2.21	0.41
1:N:20:LEU:O	1:N:24:VAL:HG23	2.21	0.41
1:O:114:PHE:CZ	1:O:116:ILE:HG12	2.56	0.41
1:O:116:ILE:HD12	1:O:136:TYR:CE1	2.55	0.41
1:A:175:TYR:OH	1:D:15:VAL:O	2.33	0.41
1:B:5:THR:OG1	1:B:6:SER:N	2.54	0.41
1:F:114:PHE:O	1:F:136:TYR:HA	2.20	0.41
1:G:62:VAL:HG22	1:H:247:ASP:OD2	2.21	0.41
1:K:200:ASN:HB3	3:K:507:HOH:O	2.20	0.41
1:L:5:THR:OG1	1:L:6:SER:N	2.54	0.41
1:L:321:ILE:HG22	3:L:522:HOH:O	2.20	0.41
1:N:355:THR:HG23	3:N:518:HOH:O	2.21	0.41
1:O:279:LEU:N	1:O:280:PRO:CD	2.84	0.41
1:A:101:LYS:HD3	1:A:122:THR:CG2	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:20:LEU:O	1:D:24:VAL:HG23	2.21	0.41
1:I:74:LYS:N	3:I:510:HOH:O	2.53	0.41
1:I:114:PHE:CZ	1:I:116:ILE:HG12	2.56	0.41
1:I:282:ILE:O	1:I:286:VAL:HG23	2.21	0.41
1:K:279:LEU:N	1:K:280:PRO:CD	2.84	0.41
1:M:325:LEU:O	1:M:326:ASN:C	2.63	0.41
1:P:114:PHE:O	1:P:136:TYR:HA	2.20	0.41
1:P:125:GLU:O	1:P:129:ASN:CG	2.64	0.41
1:A:253:SER:HA	3:A:503:HOH:O	2.21	0.40
1:B:23:LEU:HD11	3:B:512:HOH:O	2.19	0.40
1:B:135:PRO:HA	3:B:501:HOH:O	2.20	0.40
1:D:114:PHE:CE2	1:D:116:ILE:HG12	2.56	0.40
1:D:279:LEU:N	1:D:280:PRO:CD	2.83	0.40
1:E:125:GLU:O	1:E:129:ASN:CG	2.65	0.40
1:E:207:GLY:O	1:E:208:LYS:C	2.64	0.40
1:H:279:LEU:HB3	1:H:280:PRO:HD3	2.03	0.40
1:J:303:HIS:CD2	3:J:516:HOH:O	2.74	0.40
1:K:300:ARG:HD3	3:K:502:HOH:O	2.21	0.40
1:L:56:LYS:O	1:L:306:LYS:NZ	2.53	0.40
1:P:282:ILE:O	1:P:286:VAL:HG23	2.21	0.40
1:C:219:GLN:CD	3:C:518:HOH:O	2.64	0.40
1:D:53:PHE:CE1	1:D:276:PHE:HB2	2.56	0.40
1:D:91:ALA:HA	1:D:121:ASN:OD1	2.22	0.40
1:F:5:THR:OG1	1:F:6:SER:N	2.53	0.40
1:G:108:ALA:HB2	1:G:134:VAL:HG11	1.97	0.40
1:H:20:LEU:O	1:H:24:VAL:HG23	2.21	0.40
1:H:299:ARG:HH22	2:H:401:FMN:P	2.43	0.40
1:K:81:LYS:CB	3:K:506:HOH:O	2.69	0.40
1:L:325:LEU:O	1:L:326:ASN:C	2.63	0.40
1:M:114:PHE:O	1:M:136:TYR:HA	2.21	0.40
1:O:207:GLY:O	1:O:208:LYS:C	2.64	0.40
1:P:59:ILE:HD11	1:P:365:ILE:HG21	2.03	0.40
1:A:125:GLU:O	1:A:129:ASN:CG	2.65	0.40
1:D:125:GLU:O	1:D:129:ASN:CG	2.65	0.40
1:D:282:ILE:O	1:D:286:VAL:HG23	2.21	0.40
1:E:62:VAL:HG21	1:F:242:ILE:HD13	2.04	0.40
1:F:325:LEU:O	1:F:326:ASN:C	2.63	0.40
1:G:108:ALA:CA	1:G:134:VAL:CG1	3.00	0.40
1:K:325:LEU:O	1:K:326:ASN:C	2.63	0.40
1:L:20:LEU:O	1:L:24:VAL:HG23	2.22	0.40
1:L:279:LEU:N	1:L:280:PRO:CD	2.83	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:114:PHE:CZ	1:A:116:ILE:HG12	2.56	0.40
1:A:145:ASP:O	1:A:149:ASN:ND2	2.55	0.40
1:C:125:GLU:O	1:C:129:ASN:CG	2.64	0.40
1:E:54:ASN:HB3	1:F:44:TRP:CZ2	2.56	0.40
1:F:208:LYS:HB2	1:F:213:ILE:HD11	2.03	0.40
1:I:66:ILE:CD1	1:I:352:GLY:CA	2.98	0.40
1:L:140:LEU:HD22	1:L:153:ILE:HD11	2.03	0.40
1:A:125:GLU:OE2	1:A:155:LYS:NZ	2.55	0.40
1:D:63:LEU:HB2	3:D:508:HOH:O	2.21	0.40
1:E:347:THR:HG23	1:F:269:LEU:HD11	2.03	0.40
1:M:282:ILE:O	1:M:286:VAL:HG23	2.22	0.40
1:O:90:ALA:HB2	2:O:401:FMN:O4	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	363/365 (100%)	344 (95%)	18 (5%)	1 (0%)	37	42
1	B	363/365 (100%)	343 (94%)	19 (5%)	1 (0%)	37	42
1	C	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	D	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	E	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	F	363/365 (100%)	344 (95%)	18 (5%)	1 (0%)	37	42
1	G	363/365 (100%)	344 (95%)	18 (5%)	1 (0%)	37	42
1	H	363/365 (100%)	344 (95%)	18 (5%)	1 (0%)	37	42
1	I	363/365 (100%)	343 (94%)	19 (5%)	1 (0%)	37	42
1	J	363/365 (100%)	344 (95%)	18 (5%)	1 (0%)	37	42

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	K	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	L	363/365 (100%)	344 (95%)	18 (5%)	1 (0%)	37	42
1	M	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	N	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	O	363/365 (100%)	345 (95%)	17 (5%)	1 (0%)	37	42
1	P	363/365 (100%)	343 (94%)	19 (5%)	1 (0%)	37	42
All	All	5808/5840 (100%)	5508 (95%)	284 (5%)	16 (0%)	37	42

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	296	SER
1	B	296	SER
1	C	296	SER
1	D	296	SER
1	E	296	SER
1	F	296	SER
1	G	296	SER
1	H	296	SER
1	I	296	SER
1	J	296	SER
1	K	296	SER
1	L	296	SER
1	M	296	SER
1	N	296	SER
1	O	296	SER
1	P	296	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	288/288 (100%)	285 (99%)	3 (1%)	73	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	B	288/288 (100%)	287 (100%)	1 (0%)	91 96
1	C	288/288 (100%)	286 (99%)	2 (1%)	81 90
1	D	288/288 (100%)	287 (100%)	1 (0%)	91 96
1	E	288/288 (100%)	285 (99%)	3 (1%)	73 84
1	F	288/288 (100%)	286 (99%)	2 (1%)	81 90
1	G	288/288 (100%)	283 (98%)	5 (2%)	56 71
1	H	288/288 (100%)	284 (99%)	4 (1%)	62 77
1	I	288/288 (100%)	284 (99%)	4 (1%)	62 77
1	J	288/288 (100%)	287 (100%)	1 (0%)	91 96
1	K	288/288 (100%)	285 (99%)	3 (1%)	73 84
1	L	288/288 (100%)	286 (99%)	2 (1%)	81 90
1	M	288/288 (100%)	288 (100%)	0	100 100
1	N	288/288 (100%)	287 (100%)	1 (0%)	91 96
1	O	288/288 (100%)	285 (99%)	3 (1%)	73 84
1	P	288/288 (100%)	283 (98%)	5 (2%)	56 71
All	All	4608/4608 (100%)	4568 (99%)	40 (1%)	75 86

All (40) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	57	LYS
1	A	101	LYS
1	A	334	LYS
1	B	349	GLN
1	C	183	LYS
1	C	269	LEU
1	D	298	VAL
1	E	57	LYS
1	E	74	LYS
1	E	213	ILE
1	F	20	LEU
1	F	58	ILE
1	G	13	GLU
1	G	57	LYS
1	G	134	VAL
1	G	150	ARG
1	G	158	LYS

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Mol	Chain	Res	Type
1	H	158	LYS
1	H	162	LYS
1	H	210	ILE
1	H	211	SER
1	I	133	ASN
1	I	155	LYS
1	I	190	MET
1	I	334	LYS
1	J	57	LYS
1	K	16	ASN
1	K	269	LEU
1	K	349	GLN
1	L	334	LYS
1	L	342	LYS
1	N	74	LYS
1	O	59	ILE
1	O	80	LEU
1	O	188	LEU
1	P	25	LYS
1	P	59	ILE
1	P	80	LEU
1	P	219	GLN
1	P	238	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (152) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	16	ASN
1	A	192	ASN
1	A	202	ASN
1	A	361	ASN
1	B	16	ASN
1	B	68	HIS
1	B	192	ASN
1	B	243	GLN
1	B	264	HIS
1	B	326	ASN
1	B	361	ASN
1	C	10	HIS
1	C	16	ASN
1	C	68	HIS
1	C	139	GLN

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Mol	Chain	Res	Type
1	C	149	ASN
1	C	243	GLN
1	C	361	ASN
1	D	10	HIS
1	D	68	HIS
1	D	133	ASN
1	D	139	GLN
1	D	202	ASN
1	D	243	GLN
1	D	326	ASN
1	D	361	ASN
1	E	10	HIS
1	E	16	ASN
1	E	49	ASN
1	E	68	HIS
1	E	98	GLN
1	E	139	GLN
1	E	149	ASN
1	E	227	GLN
1	E	243	GLN
1	E	264	HIS
1	E	326	ASN
1	E	361	ASN
1	F	10	HIS
1	F	16	ASN
1	F	68	HIS
1	F	86	GLN
1	F	98	GLN
1	F	139	GLN
1	F	149	ASN
1	F	202	ASN
1	F	227	GLN
1	F	243	GLN
1	F	268	GLN
1	F	326	ASN
1	F	361	ASN
1	G	10	HIS
1	G	16	ASN
1	G	68	HIS
1	G	139	GLN
1	G	149	ASN
1	G	227	GLN

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Mol	Chain	Res	Type
1	G	243	GLN
1	G	264	HIS
1	G	268	GLN
1	G	326	ASN
1	G	361	ASN
1	H	10	HIS
1	H	16	ASN
1	H	68	HIS
1	H	149	ASN
1	H	202	ASN
1	H	227	GLN
1	H	243	GLN
1	H	268	GLN
1	H	326	ASN
1	H	361	ASN
1	I	10	HIS
1	I	16	ASN
1	I	68	HIS
1	I	139	GLN
1	I	149	ASN
1	I	227	GLN
1	I	243	GLN
1	I	268	GLN
1	I	361	ASN
1	J	10	HIS
1	J	16	ASN
1	J	68	HIS
1	J	98	GLN
1	J	139	GLN
1	J	149	ASN
1	J	227	GLN
1	J	243	GLN
1	J	326	ASN
1	J	361	ASN
1	K	10	HIS
1	K	54	ASN
1	K	68	HIS
1	K	139	GLN
1	K	149	ASN
1	K	326	ASN
1	K	349	GLN
1	K	361	ASN

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Mol	Chain	Res	Type
1	L	10	HIS
1	L	16	ASN
1	L	68	HIS
1	L	139	GLN
1	L	149	ASN
1	L	227	GLN
1	L	243	GLN
1	L	268	GLN
1	L	326	ASN
1	L	361	ASN
1	M	16	ASN
1	M	68	HIS
1	M	139	GLN
1	M	149	ASN
1	M	227	GLN
1	M	243	GLN
1	M	326	ASN
1	M	361	ASN
1	N	10	HIS
1	N	16	ASN
1	N	68	HIS
1	N	86	GLN
1	N	98	GLN
1	N	139	GLN
1	N	149	ASN
1	N	227	GLN
1	N	243	GLN
1	N	264	HIS
1	N	326	ASN
1	N	361	ASN
1	O	10	HIS
1	O	16	ASN
1	O	49	ASN
1	O	68	HIS
1	O	133	ASN
1	O	139	GLN
1	O	149	ASN
1	O	227	GLN
1	O	243	GLN
1	O	326	ASN
1	O	361	ASN
1	P	10	HIS

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Mol	Chain	Res	Type
1	P	16	ASN
1	P	68	HIS
1	P	86	GLN
1	P	139	GLN
1	P	149	ASN
1	P	202	ASN
1	P	219	GLN
1	P	227	GLN
1	P	243	GLN
1	P	326	ASN
1	P	361	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

16 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	FMN	A	401	-	33,33,33	0.86	0	48,50,50	1.03	4 (8%)
2	FMN	B	401	-	33,33,33	1.46	4 (12%)	48,50,50	1.65	10 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	FMN	F	401	-	33,33,33	0.93	1 (3%)	48,50,50	1.12	4 (8%)
2	FMN	J	401	-	33,33,33	1.49	6 (18%)	48,50,50	1.11	3 (6%)
2	FMN	E	401	-	33,33,33	1.29	5 (15%)	48,50,50	1.29	6 (12%)
2	FMN	D	401	-	33,33,33	0.89	2 (6%)	48,50,50	0.98	3 (6%)
2	FMN	G	401	-	33,33,33	0.92	0	48,50,50	1.08	2 (4%)
2	FMN	K	401	-	33,33,33	1.20	5 (15%)	48,50,50	1.37	6 (12%)
2	FMN	N	401	-	33,33,33	0.92	1 (3%)	48,50,50	1.34	8 (16%)
2	FMN	C	401	-	33,33,33	1.05	2 (6%)	48,50,50	1.21	4 (8%)
2	FMN	L	401	-	33,33,33	1.21	3 (9%)	48,50,50	1.14	4 (8%)
2	FMN	P	401	-	33,33,33	0.93	2 (6%)	48,50,50	1.40	7 (14%)
2	FMN	M	401	-	33,33,33	1.15	3 (9%)	48,50,50	1.80	7 (14%)
2	FMN	I	401	-	33,33,33	0.76	0	48,50,50	1.23	6 (12%)
2	FMN	H	401	-	33,33,33	1.09	3 (9%)	48,50,50	1.09	3 (6%)
2	FMN	O	401	-	33,33,33	1.29	4 (12%)	48,50,50	1.20	6 (12%)

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	FMN	A	401	-	-	7/18/18/18	0/3/3/3
2	FMN	B	401	-	-	3/18/18/18	0/3/3/3
2	FMN	F	401	-	-	8/18/18/18	0/3/3/3
2	FMN	J	401	-	-	5/18/18/18	0/3/3/3
2	FMN	E	401	-	-	8/18/18/18	0/3/3/3
2	FMN	D	401	-	-	5/18/18/18	0/3/3/3
2	FMN	G	401	-	-	9/18/18/18	0/3/3/3
2	FMN	K	401	-	-	7/18/18/18	0/3/3/3
2	FMN	N	401	-	-	5/18/18/18	0/3/3/3
2	FMN	C	401	-	-	3/18/18/18	0/3/3/3
2	FMN	L	401	-	-	1/18/18/18	0/3/3/3
2	FMN	P	401	-	-	5/18/18/18	0/3/3/3
2	FMN	M	401	-	-	4/18/18/18	0/3/3/3
2	FMN	I	401	-	-	6/18/18/18	0/3/3/3
2	FMN	H	401	-	-	4/18/18/18	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FMN	O	401	-	-	1/18/18/18	0/3/3/3

All (41) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	401	FMN	C4A-C4	-4.43	1.28	1.44
2	J	401	FMN	P-O1P	4.30	1.64	1.50
2	B	401	FMN	O2'-C2'	-4.19	1.34	1.43
2	L	401	FMN	O2'-C2'	4.13	1.52	1.43
2	J	401	FMN	O3'-C3'	-3.43	1.34	1.43
2	O	401	FMN	C4A-C4	-3.42	1.32	1.44
2	M	401	FMN	C4A-C4	-3.19	1.32	1.44
2	J	401	FMN	C2-N3	-3.14	1.31	1.39
2	O	401	FMN	C2-N3	-2.96	1.32	1.39
2	O	401	FMN	C9-C8	-2.83	1.35	1.39
2	H	401	FMN	C4A-C4	-2.82	1.34	1.44
2	K	401	FMN	C2-N3	-2.79	1.32	1.39
2	E	401	FMN	C1'-C2'	-2.79	1.48	1.52
2	P	401	FMN	C2-N1	-2.73	1.30	1.36
2	O	401	FMN	O2-C2	-2.73	1.19	1.24
2	J	401	FMN	C2-N1	-2.65	1.30	1.36
2	B	401	FMN	O3'-C3'	2.62	1.49	1.43
2	M	401	FMN	P-O2P	-2.61	1.44	1.54
2	E	401	FMN	C2-N3	-2.61	1.32	1.39
2	K	401	FMN	C4A-C4	-2.60	1.35	1.44
2	E	401	FMN	P-O2P	-2.56	1.45	1.54
2	J	401	FMN	C1'-C2'	2.52	1.56	1.52
2	N	401	FMN	C1'-C2'	-2.50	1.49	1.52
2	E	401	FMN	C4A-C4	-2.49	1.35	1.44
2	H	401	FMN	C2-N3	-2.49	1.33	1.39
2	K	401	FMN	C9-C8	-2.49	1.35	1.39
2	H	401	FMN	C1'-C2'	-2.34	1.49	1.52
2	M	401	FMN	C2-N1	-2.33	1.31	1.36
2	L	401	FMN	P-O1P	2.31	1.58	1.50
2	L	401	FMN	O2-C2	-2.31	1.20	1.24
2	D	401	FMN	C1'-C2'	2.28	1.55	1.52
2	C	401	FMN	C9-C8	-2.28	1.36	1.39
2	D	401	FMN	C4A-C4	-2.28	1.36	1.44
2	P	401	FMN	C4A-C4	-2.19	1.36	1.44
2	K	401	FMN	C4A-N5	2.17	1.35	1.30
2	E	401	FMN	P-O3P	2.16	1.63	1.54
2	C	401	FMN	C1'-C2'	-2.15	1.49	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	K	401	FMN	C6-C5A	2.12	1.43	1.40
2	F	401	FMN	O2-C2	-2.10	1.20	1.24
2	J	401	FMN	C4A-C4	-2.10	1.36	1.44
2	B	401	FMN	C5A-N5	-2.05	1.35	1.39

All (83) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	M	401	FMN	O3P-P-O5'	-7.31	87.29	106.73
2	M	401	FMN	O5'-P-O1P	5.31	121.38	106.47
2	B	401	FMN	O5'-P-O1P	5.13	120.87	106.47
2	M	401	FMN	O3P-P-O2P	4.81	126.03	107.64
2	B	401	FMN	O4-C4-C4A	-3.69	116.81	126.60
2	E	401	FMN	O3'-C3'-C4'	-3.64	100.03	108.81
2	O	401	FMN	O3P-P-O5'	-3.53	97.35	106.73
2	B	401	FMN	C5'-C4'-C3'	3.44	118.85	112.20
2	H	401	FMN	O3P-P-O5'	-3.41	97.65	106.73
2	K	401	FMN	O2P-P-O5'	-3.33	97.88	106.73
2	B	401	FMN	C4'-C3'-C2'	-3.18	106.74	113.36
2	I	401	FMN	O3P-P-O2P	3.12	119.58	107.64
2	L	401	FMN	O2'-C2'-C3'	3.09	116.61	109.10
2	P	401	FMN	O4-C4-C4A	-3.09	118.41	126.60
2	P	401	FMN	C4-N3-C2	-3.08	119.95	125.64
2	N	401	FMN	O5'-P-O1P	-3.05	97.92	106.47
2	J	401	FMN	O3P-P-O2P	3.02	119.17	107.64
2	N	401	FMN	O2'-C2'-C1'	3.00	117.05	109.80
2	B	401	FMN	O4'-C4'-C3'	-2.99	101.84	109.10
2	P	401	FMN	C9-C9A-N10	2.88	125.73	121.84
2	A	401	FMN	O3'-C3'-C4'	2.87	115.73	108.81
2	N	401	FMN	O4-C4-C4A	-2.84	119.06	126.60
2	C	401	FMN	C1'-C2'-C3'	2.80	117.60	109.79
2	C	401	FMN	O2'-C2'-C1'	-2.79	103.06	109.80
2	P	401	FMN	O2'-C2'-C3'	-2.76	102.38	109.10
2	O	401	FMN	O2'-C2'-C3'	-2.76	102.39	109.10
2	N	401	FMN	C4-N3-C2	-2.75	120.56	125.64
2	C	401	FMN	O3'-C3'-C4'	-2.73	102.23	108.81
2	F	401	FMN	O3P-P-O5'	2.67	113.85	106.73
2	G	401	FMN	C4-N3-C2	-2.67	120.71	125.64
2	F	401	FMN	C5'-C4'-C3'	-2.63	107.13	112.20
2	J	401	FMN	O2'-C2'-C1'	-2.60	103.52	109.80
2	D	401	FMN	O5'-C5'-C4'	2.59	116.27	109.36
2	M	401	FMN	C4'-C3'-C2'	2.55	118.66	113.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	L	401	FMN	C4-N3-C2	-2.54	120.95	125.64
2	I	401	FMN	O3P-P-O5'	-2.53	100.01	106.73
2	F	401	FMN	N3-C2-N1	2.49	124.27	119.38
2	K	401	FMN	C4A-C4-N3	2.49	119.50	113.19
2	F	401	FMN	C4-N3-C2	-2.47	121.08	125.64
2	K	401	FMN	O5'-P-O1P	2.46	113.38	106.47
2	E	401	FMN	C4A-C4-N3	2.45	119.42	113.19
2	M	401	FMN	C1'-C2'-C3'	2.45	116.63	109.79
2	I	401	FMN	O3'-C3'-C4'	2.44	114.72	108.81
2	B	401	FMN	O2P-P-O5'	-2.42	100.28	106.73
2	E	401	FMN	C5'-C4'-C3'	-2.41	107.54	112.20
2	L	401	FMN	O4'-C4'-C5'	-2.41	104.50	109.92
2	D	401	FMN	O4-C4-C4A	-2.39	120.25	126.60
2	K	401	FMN	O4-C4-C4A	-2.39	120.26	126.60
2	P	401	FMN	O2-C2-N1	-2.38	117.88	121.83
2	B	401	FMN	C4A-C4-N3	2.37	119.21	113.19
2	A	401	FMN	O4-C4-C4A	-2.37	120.31	126.60
2	E	401	FMN	O4-C4-C4A	-2.36	120.34	126.60
2	E	401	FMN	O3'-C3'-C2'	2.35	114.49	108.81
2	J	401	FMN	C1'-C2'-C3'	2.34	116.33	109.79
2	C	401	FMN	C4A-C4-N3	2.34	119.13	113.19
2	E	401	FMN	C4-N3-C2	-2.33	121.33	125.64
2	N	401	FMN	C9-C9A-N10	2.32	124.97	121.84
2	D	401	FMN	P-O5'-C5'	2.32	124.67	118.30
2	N	401	FMN	C1'-C2'-C3'	-2.30	103.35	109.79
2	P	401	FMN	C4'-C3'-C2'	2.29	118.14	113.36
2	O	401	FMN	C4'-C3'-C2'	2.26	118.06	113.36
2	A	401	FMN	O2'-C2'-C1'	2.22	115.16	109.80
2	K	401	FMN	C5A-C9A-N10	2.20	120.22	117.95
2	N	401	FMN	O3P-P-O2P	2.18	115.98	107.64
2	O	401	FMN	C4A-C4-N3	2.18	118.73	113.19
2	M	401	FMN	O4-C4-C4A	-2.17	120.84	126.60
2	I	401	FMN	C4-N3-C2	-2.16	121.65	125.64
2	A	401	FMN	C4-N3-C2	-2.16	121.66	125.64
2	I	401	FMN	O2'-C2'-C1'	2.15	115.00	109.80
2	I	401	FMN	O4'-C4'-C3'	2.14	114.31	109.10
2	O	401	FMN	O5'-C5'-C4'	2.14	115.07	109.36
2	B	401	FMN	O2'-C2'-C1'	-2.13	104.65	109.80
2	L	401	FMN	O3'-C3'-C2'	2.09	113.85	108.81
2	G	401	FMN	N3-C2-N1	2.08	123.46	119.38
2	B	401	FMN	C4-N3-C2	-2.07	121.81	125.64
2	H	401	FMN	O4-C4-C4A	-2.04	121.18	126.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	N	401	FMN	C4A-C4-N3	2.04	118.36	113.19
2	O	401	FMN	C1'-C2'-C3'	2.04	115.48	109.79
2	P	401	FMN	C4A-C4-N3	2.03	118.34	113.19
2	M	401	FMN	O4'-C4'-C5'	-2.02	105.39	109.92
2	H	401	FMN	O3P-P-O2P	2.00	115.30	107.64
2	K	401	FMN	O3'-C3'-C4'	-2.00	103.97	108.81
2	B	401	FMN	O4-C4-N3	2.00	123.96	120.12

There are no chirality outliers.

All (81) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	FMN	C5'-O5'-P-O2P
2	B	401	FMN	C5'-O5'-P-O1P
2	B	401	FMN	C5'-O5'-P-O2P
2	B	401	FMN	C5'-O5'-P-O3P
2	D	401	FMN	C1'-C2'-C3'-C4'
2	F	401	FMN	C5'-O5'-P-O2P
2	G	401	FMN	C1'-C2'-C3'-C4'
2	G	401	FMN	O3'-C3'-C4'-C5'
2	G	401	FMN	C4'-C5'-O5'-P
2	H	401	FMN	C5'-O5'-P-O1P
2	H	401	FMN	C5'-O5'-P-O2P
2	H	401	FMN	C5'-O5'-P-O3P
2	J	401	FMN	O4'-C4'-C5'-O5'
2	J	401	FMN	C5'-O5'-P-O2P
2	J	401	FMN	C5'-O5'-P-O3P
2	K	401	FMN	O3'-C3'-C4'-C5'
2	P	401	FMN	C2'-C3'-C4'-O4'
2	P	401	FMN	C2'-C3'-C4'-C5'
2	P	401	FMN	O3'-C3'-C4'-O4'
2	P	401	FMN	O3'-C3'-C4'-C5'
2	G	401	FMN	O3'-C3'-C4'-O4'
2	K	401	FMN	O3'-C3'-C4'-O4'
2	N	401	FMN	O3'-C3'-C4'-O4'
2	E	401	FMN	C2'-C3'-C4'-O4'
2	G	401	FMN	C2'-C3'-C4'-O4'
2	K	401	FMN	C2'-C3'-C4'-O4'
2	N	401	FMN	O3'-C3'-C4'-C5'
2	G	401	FMN	C2'-C3'-C4'-C5'
2	K	401	FMN	C2'-C3'-C4'-C5'
2	C	401	FMN	C4'-C5'-O5'-P

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Mol	Chain	Res	Type	Atoms
2	F	401	FMN	C2'-C3'-C4'-C5'
2	M	401	FMN	C2'-C3'-C4'-C5'
2	N	401	FMN	C2'-C3'-C4'-C5'
2	G	401	FMN	O2'-C2'-C3'-O3'
2	D	401	FMN	O2'-C2'-C3'-C4'
2	F	401	FMN	C2'-C3'-C4'-O4'
2	G	401	FMN	O2'-C2'-C3'-C4'
2	M	401	FMN	C2'-C3'-C4'-O4'
2	E	401	FMN	C4'-C5'-O5'-P
2	E	401	FMN	C2'-C3'-C4'-C5'
2	I	401	FMN	C2'-C3'-C4'-C5'
2	D	401	FMN	O2'-C2'-C3'-O3'
2	E	401	FMN	O3'-C3'-C4'-O4'
2	I	401	FMN	O2'-C2'-C3'-C4'
2	I	401	FMN	C2'-C3'-C4'-O4'
2	N	401	FMN	C2'-C3'-C4'-O4'
2	F	401	FMN	O3'-C3'-C4'-C5'
2	I	401	FMN	O3'-C3'-C4'-C5'
2	J	401	FMN	C3'-C4'-C5'-O5'
2	J	401	FMN	C5'-O5'-P-O1P
2	D	401	FMN	C4'-C5'-O5'-P
2	H	401	FMN	C4'-C5'-O5'-P
2	P	401	FMN	C4'-C5'-O5'-P
2	A	401	FMN	C2'-C3'-C4'-C5'
2	A	401	FMN	C5'-O5'-P-O3P
2	F	401	FMN	C5'-O5'-P-O3P
2	F	401	FMN	C4'-C5'-O5'-P
2	O	401	FMN	C4'-C5'-O5'-P
2	E	401	FMN	O2'-C2'-C3'-O3'
2	A	401	FMN	C4'-C5'-O5'-P
2	I	401	FMN	O3'-C3'-C4'-O4'
2	A	401	FMN	C2'-C3'-C4'-O4'
2	L	401	FMN	C4'-C5'-O5'-P
2	M	401	FMN	O3'-C3'-C4'-C5'
2	A	401	FMN	C5'-O5'-P-O1P
2	F	401	FMN	C5'-O5'-P-O1P
2	K	401	FMN	C4'-C5'-O5'-P
2	K	401	FMN	O2'-C2'-C3'-O3'
2	C	401	FMN	O4'-C4'-C5'-O5'
2	E	401	FMN	O3'-C3'-C4'-C5'
2	E	401	FMN	O2'-C2'-C3'-C4'
2	I	401	FMN	C4'-C5'-O5'-P

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Mol	Chain	Res	Type	Atoms
2	C	401	FMN	C5'-O5'-P-O3P
2	F	401	FMN	O3'-C3'-C4'-O4'
2	M	401	FMN	O3'-C3'-C4'-O4'
2	N	401	FMN	C4'-C5'-O5'-P
2	D	401	FMN	C1'-C2'-C3'-O3'
2	E	401	FMN	C1'-C2'-C3'-O3'
2	G	401	FMN	C1'-C2'-C3'-O3'
2	K	401	FMN	C1'-C2'-C3'-O3'
2	A	401	FMN	O3'-C3'-C4'-C5'

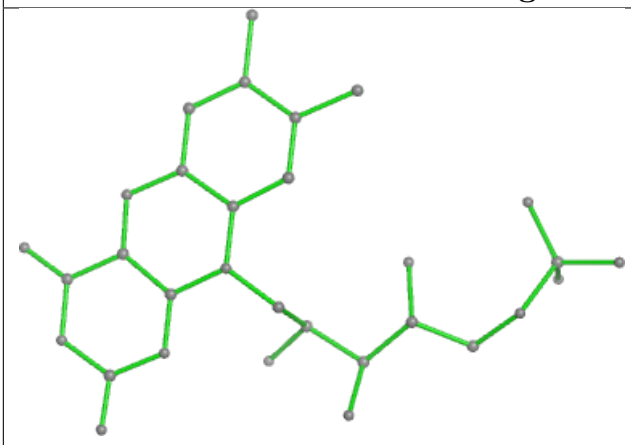
There are no ring outliers.

14 monomers are involved in 35 short contacts:

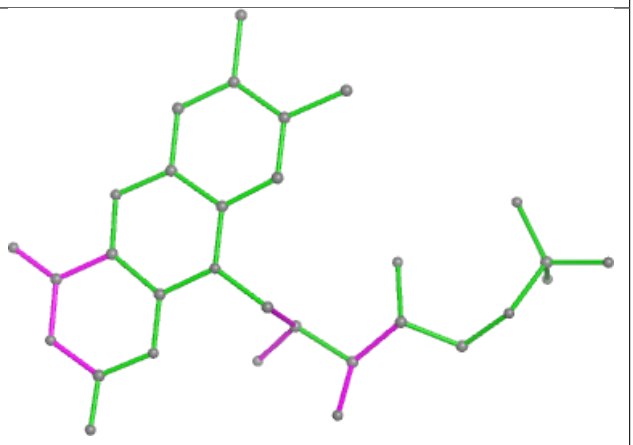
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	FMN	1	0
2	B	401	FMN	4	0
2	F	401	FMN	4	0
2	J	401	FMN	3	0
2	E	401	FMN	1	0
2	D	401	FMN	1	0
2	G	401	FMN	2	0
2	K	401	FMN	2	0
2	N	401	FMN	2	0
2	L	401	FMN	1	0
2	P	401	FMN	1	0
2	M	401	FMN	1	0
2	H	401	FMN	2	0
2	O	401	FMN	10	0

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.

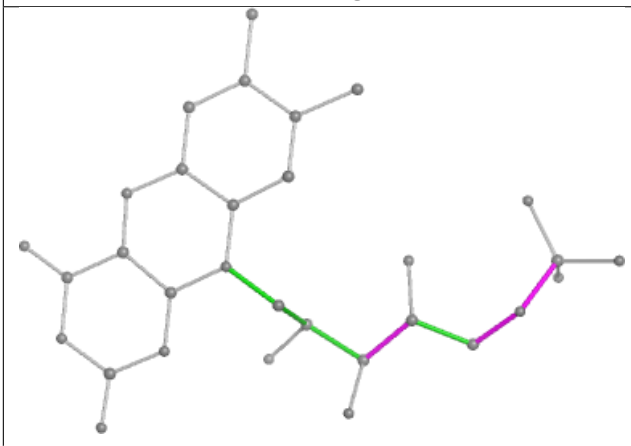
Ligand FMN A 401



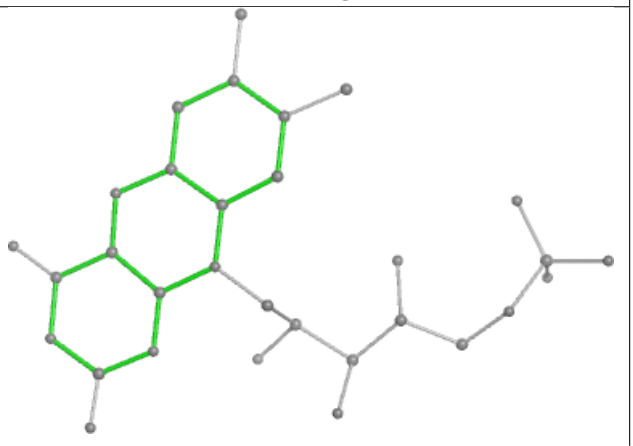
Bond lengths



Bond angles

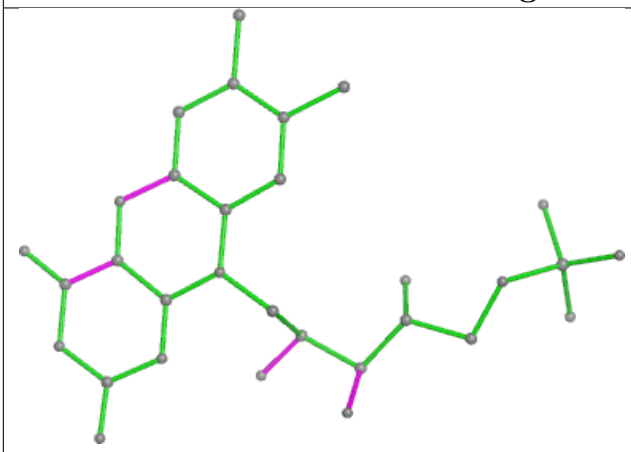


Torsions

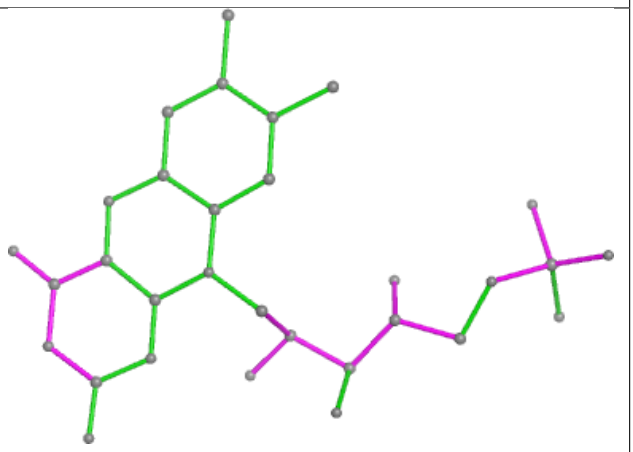


Rings

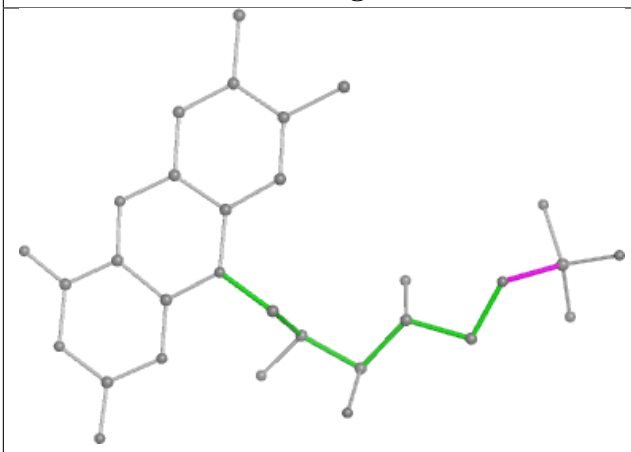
Ligand FMN B 401



Bond lengths



Bond angles



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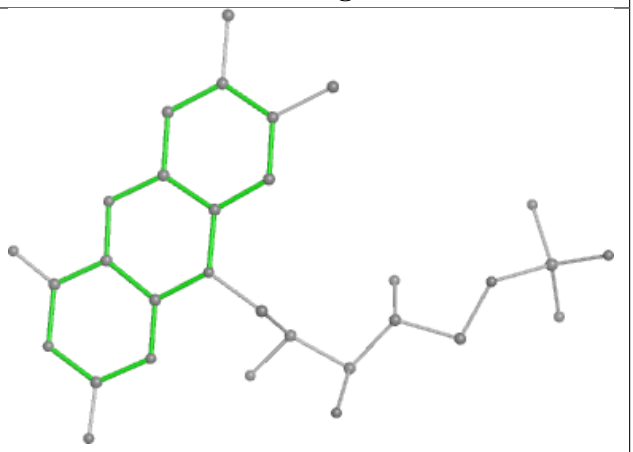
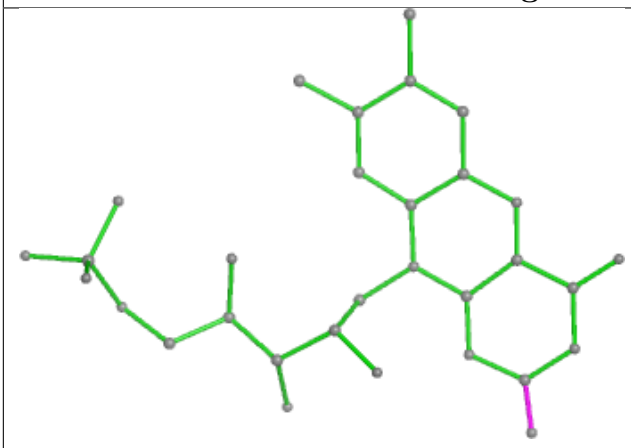


Rings

Ligand FMN F 401



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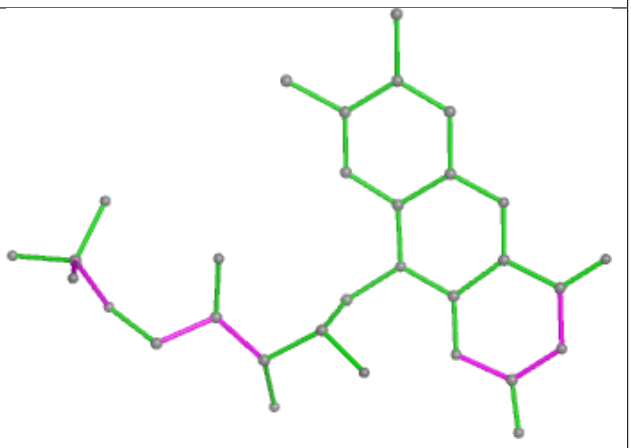
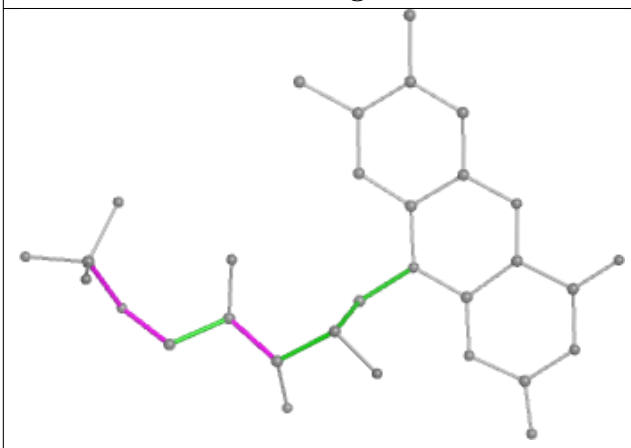
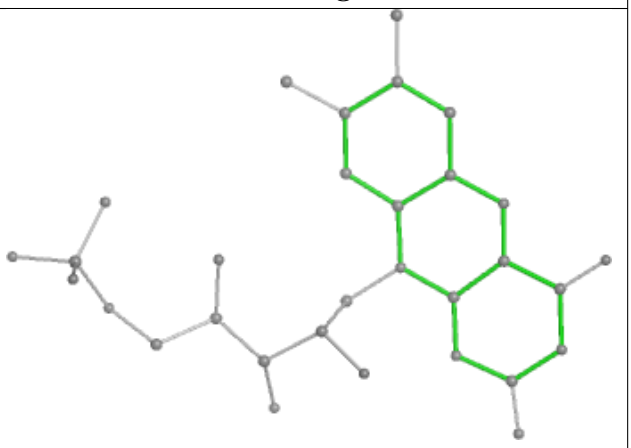


Bond angles

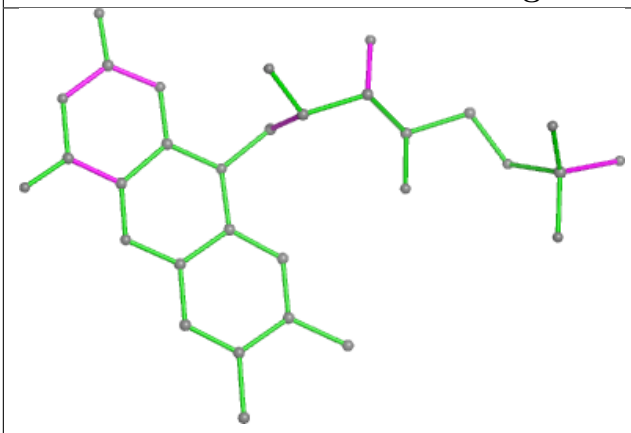


Torsions



Rings

Ligand FMN J 401



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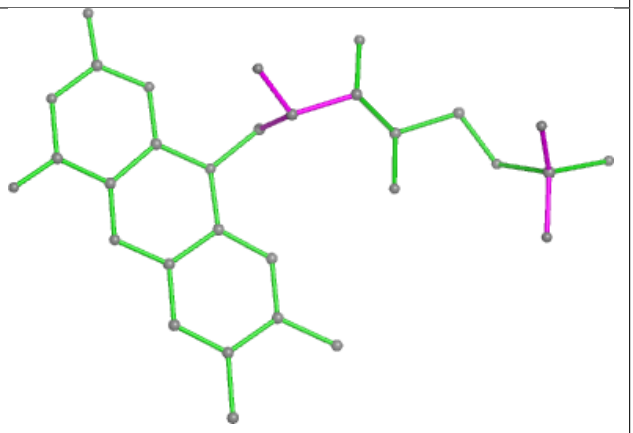

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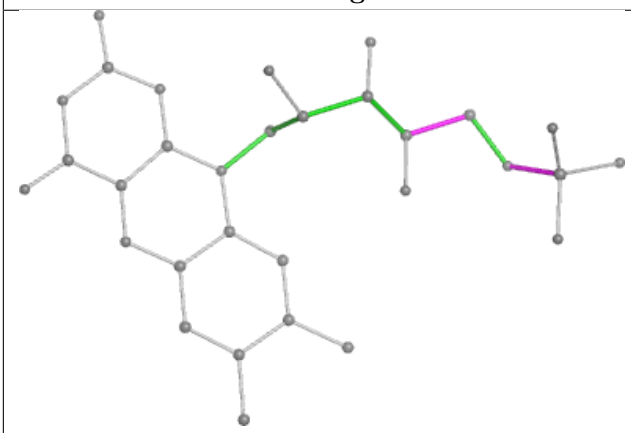

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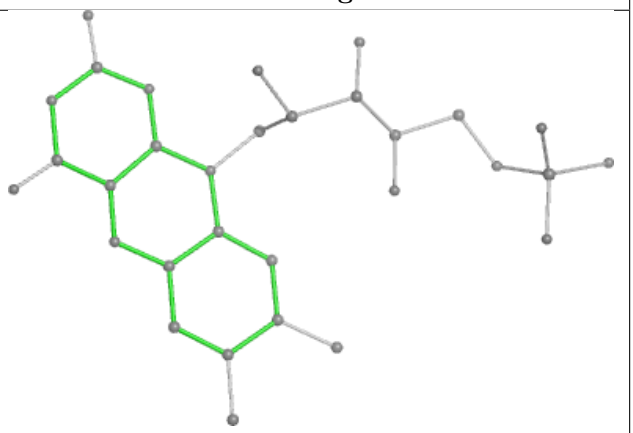
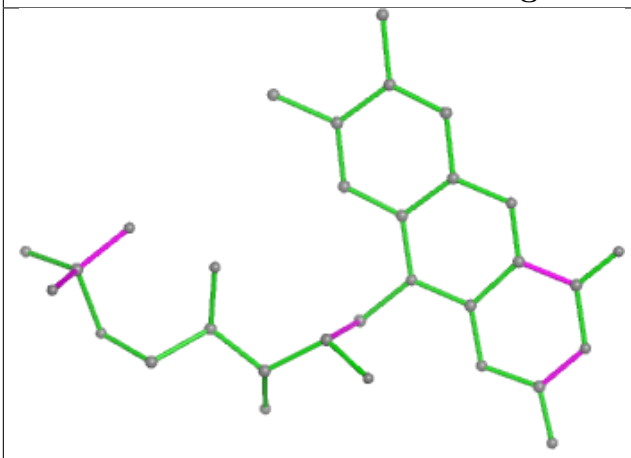


Rings

Ligand FMN E 401



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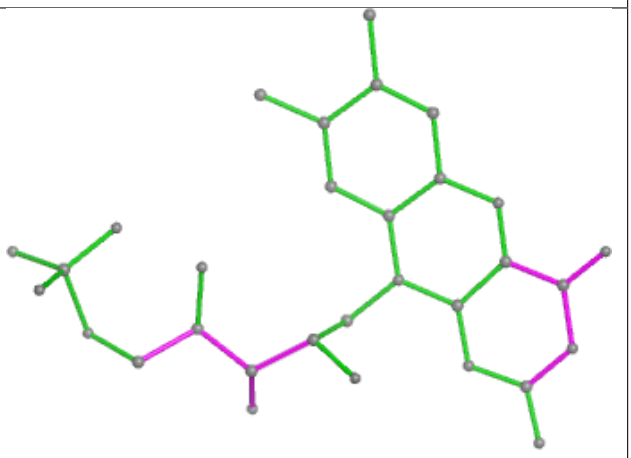

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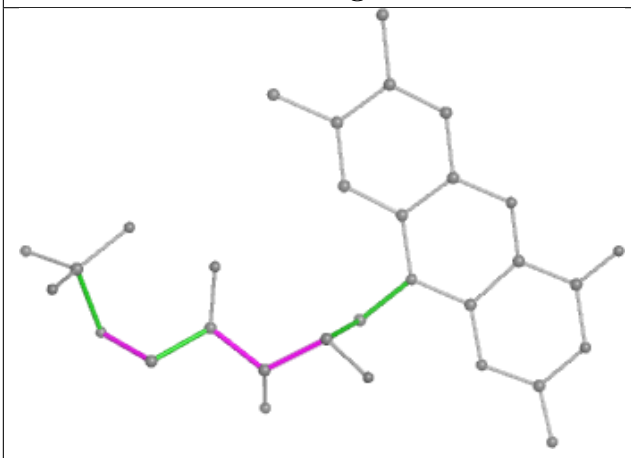

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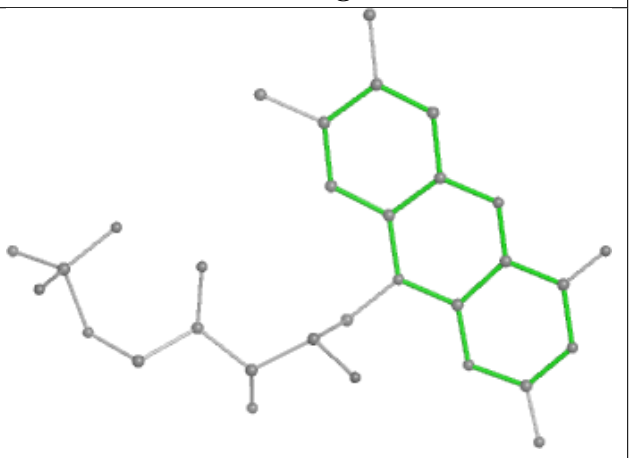
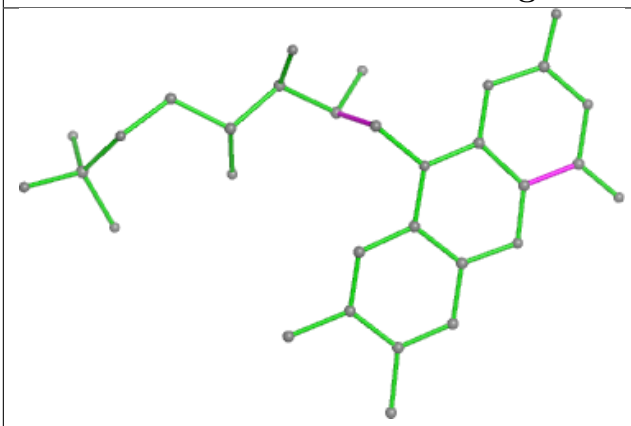


Rings

Ligand FMN D 401



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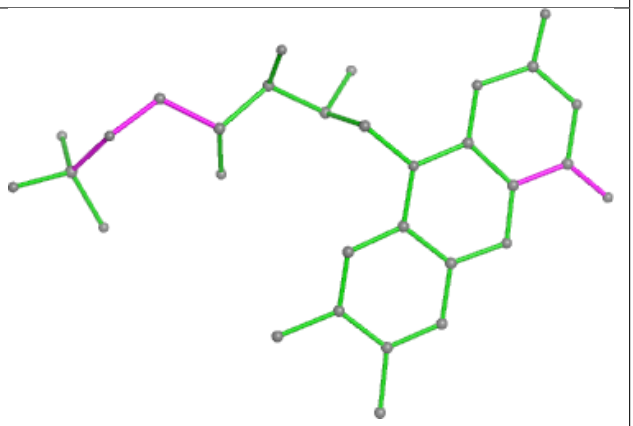

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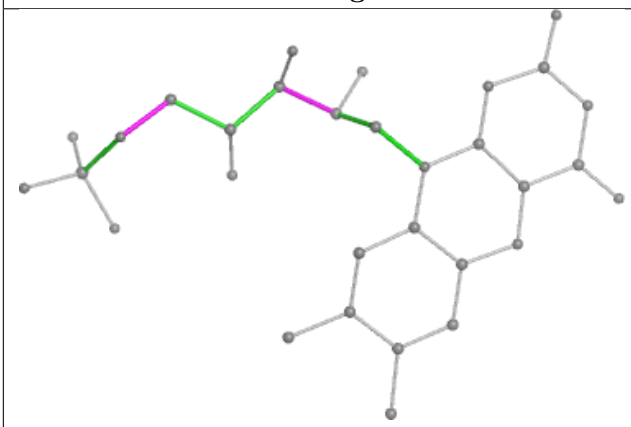

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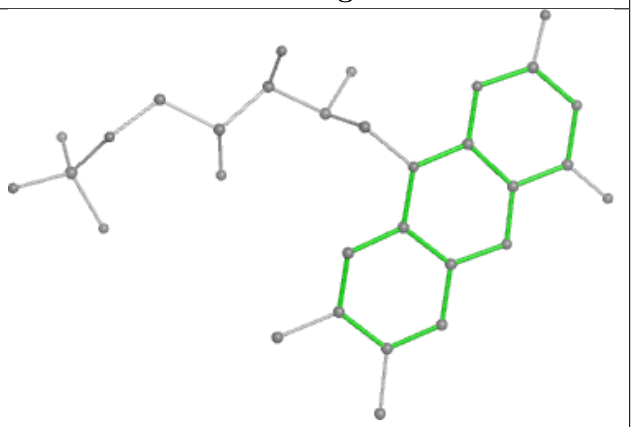

Rings

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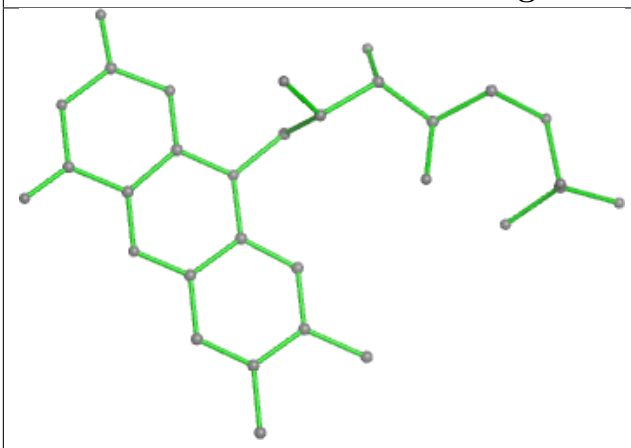

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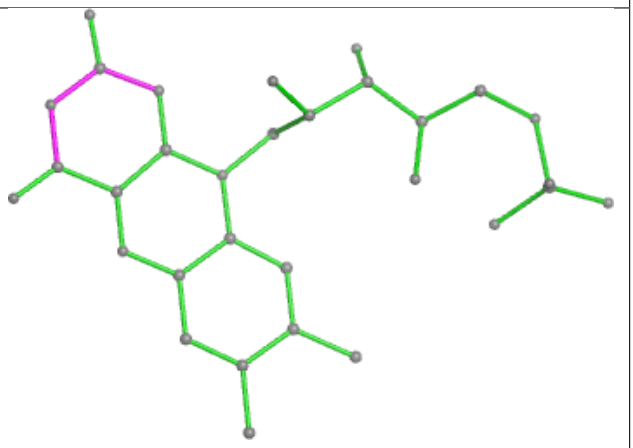

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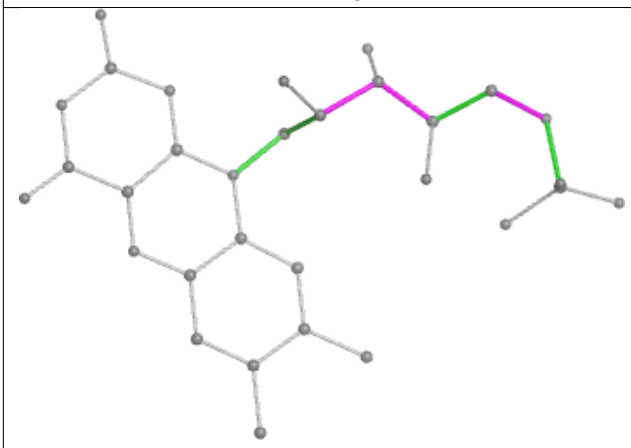

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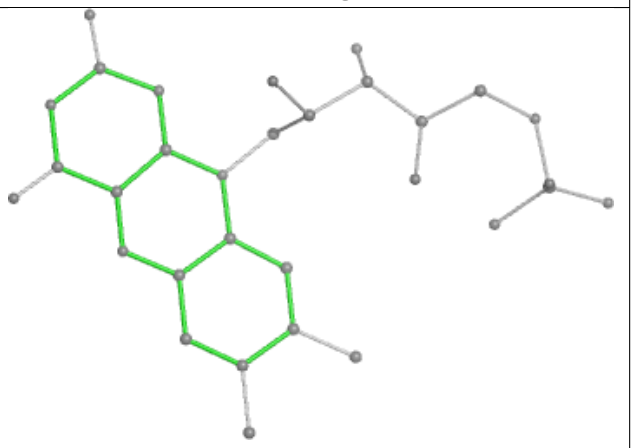

Rings

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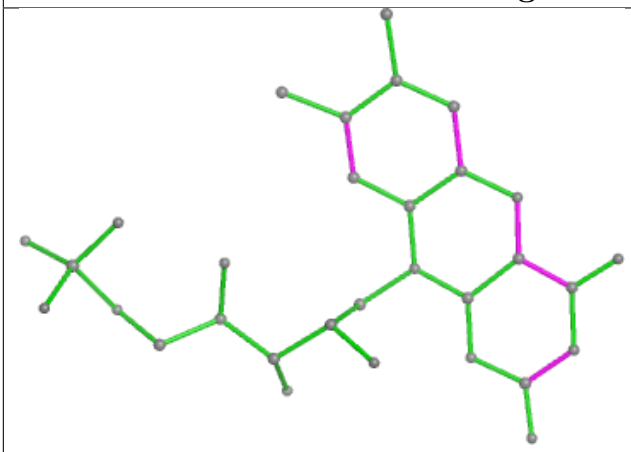

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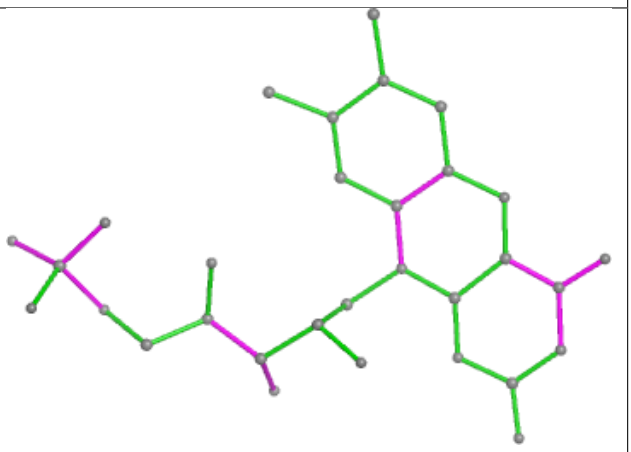

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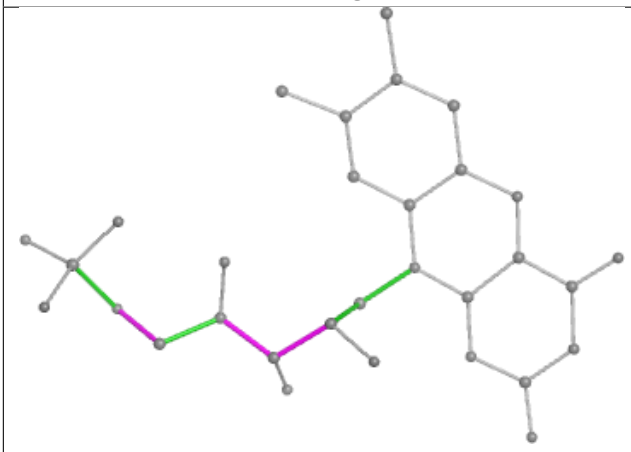

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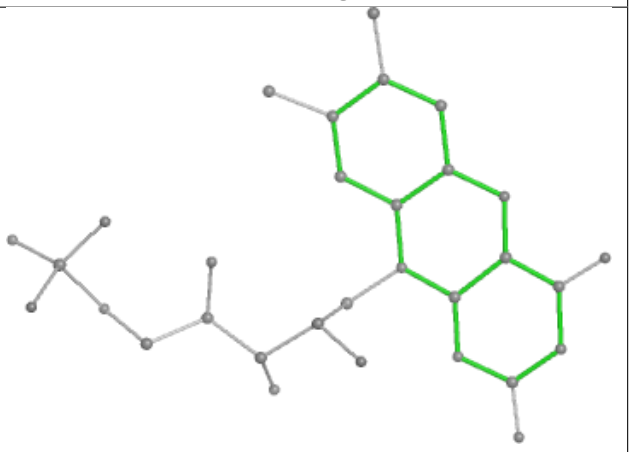
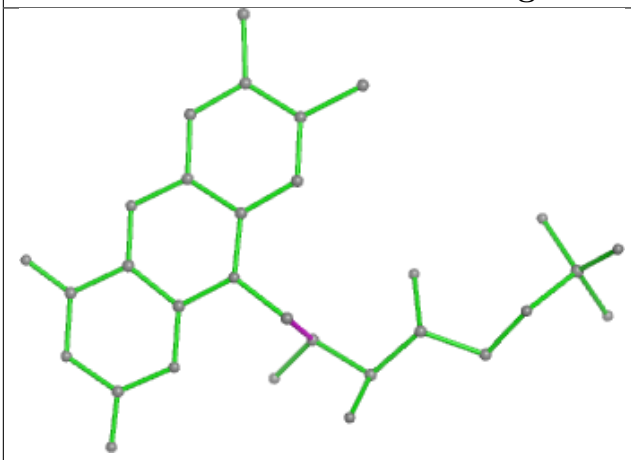


Rings

Ligand FMN N 401



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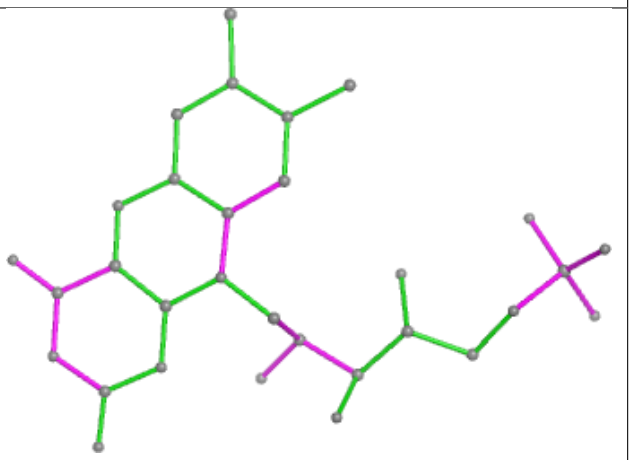

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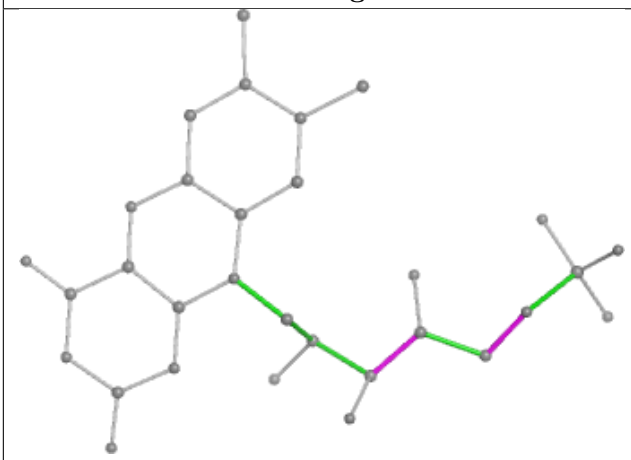

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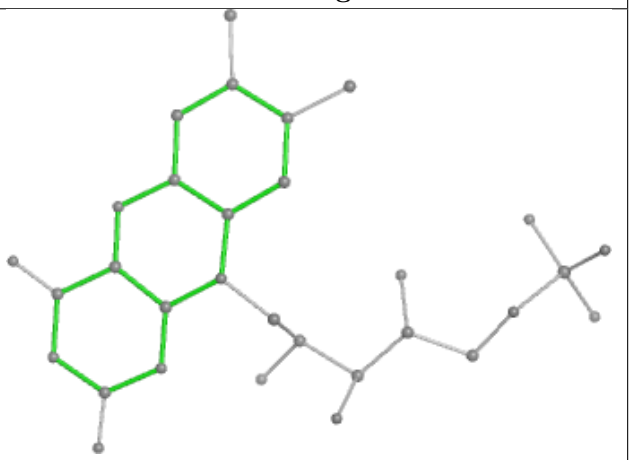

Rings

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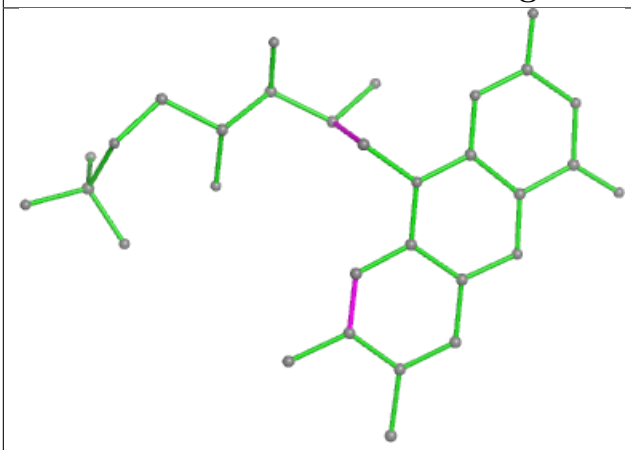

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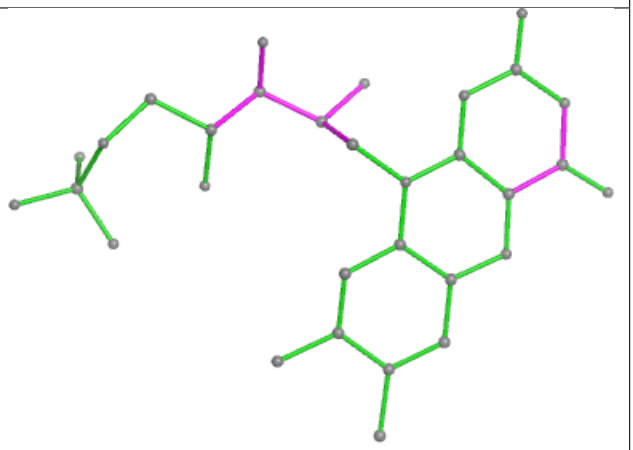

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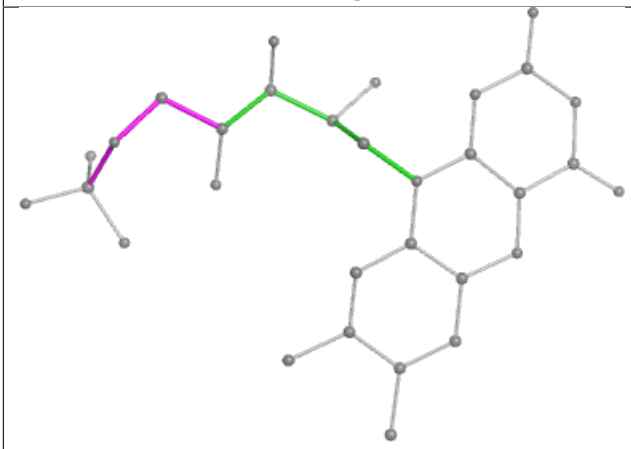

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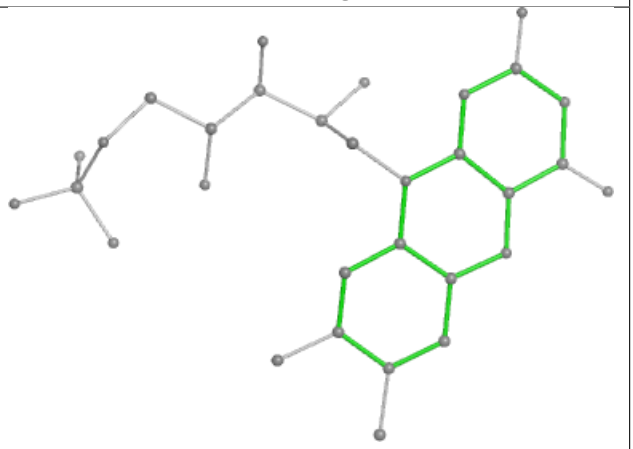
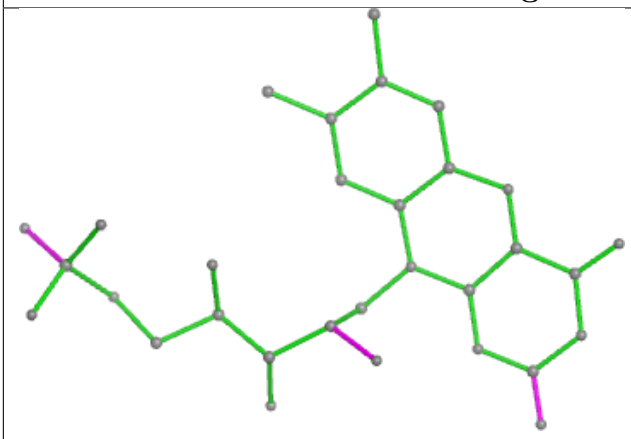


Rings

Ligand FMN L 401



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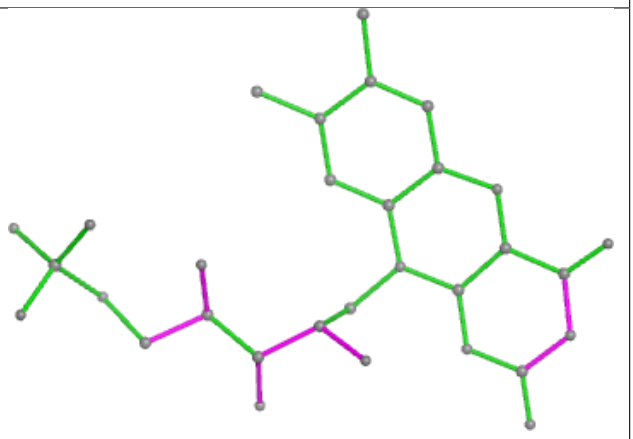

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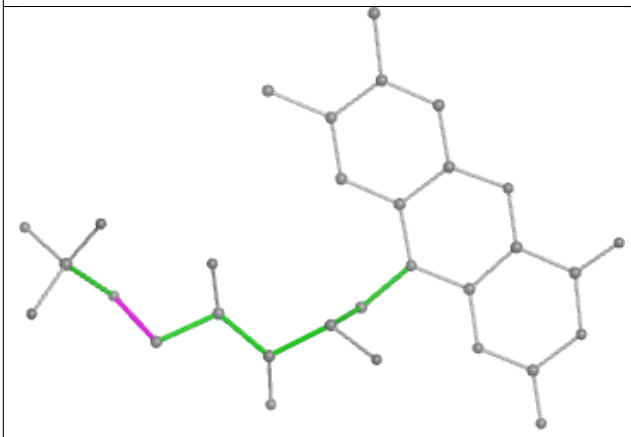

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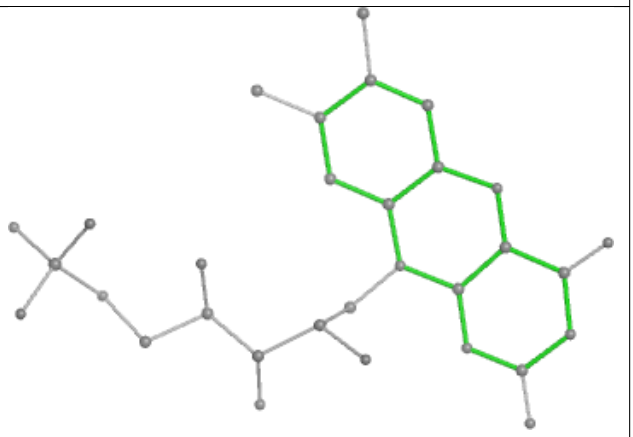

Rings

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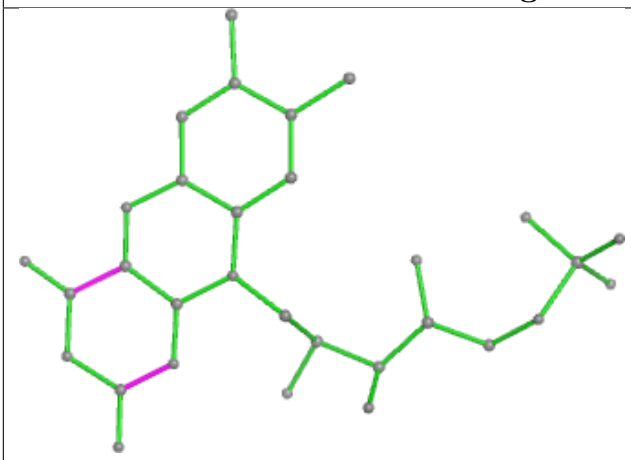

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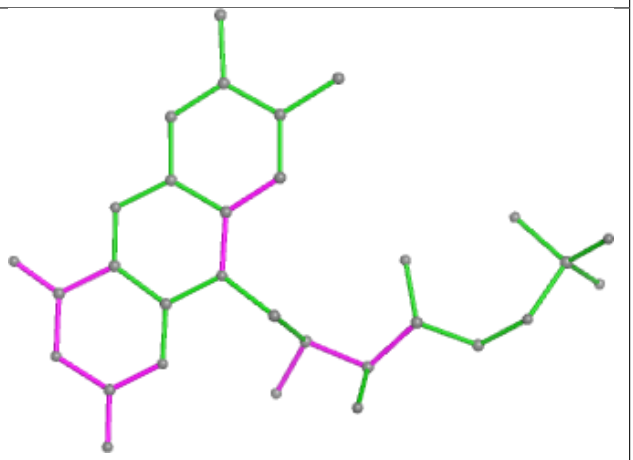
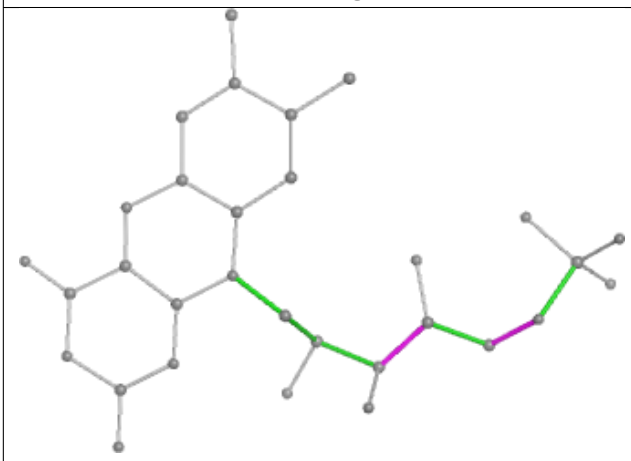


Bond angles



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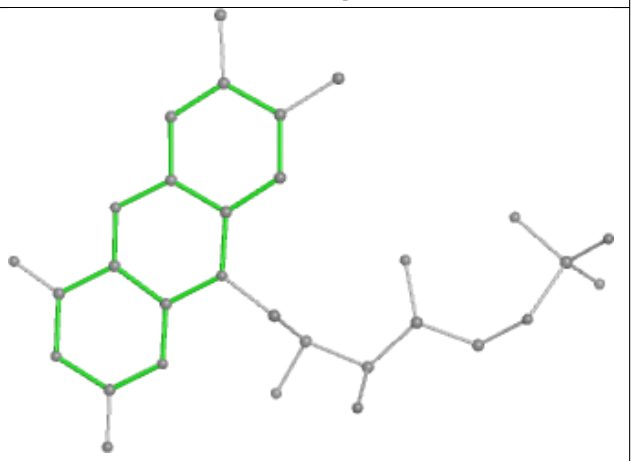
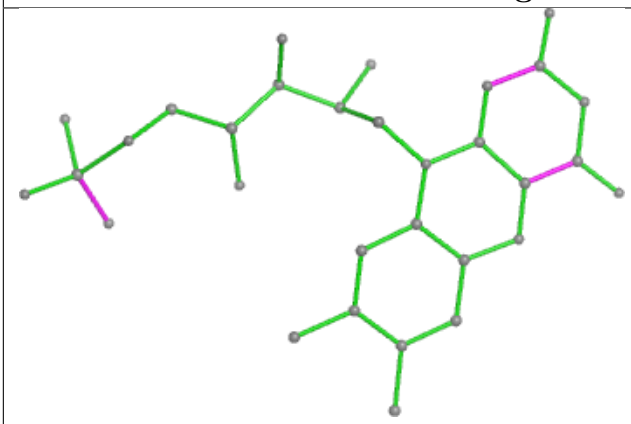
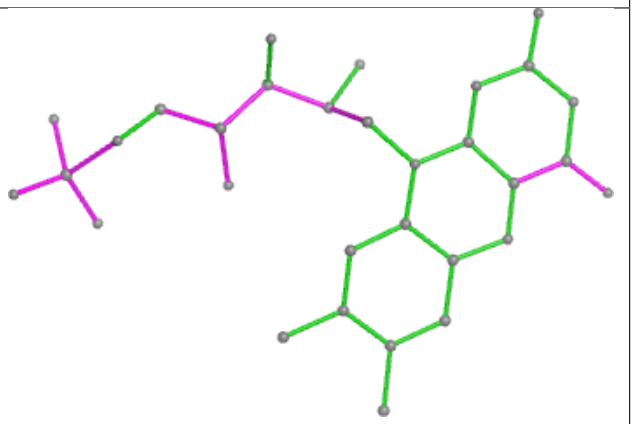


Rings

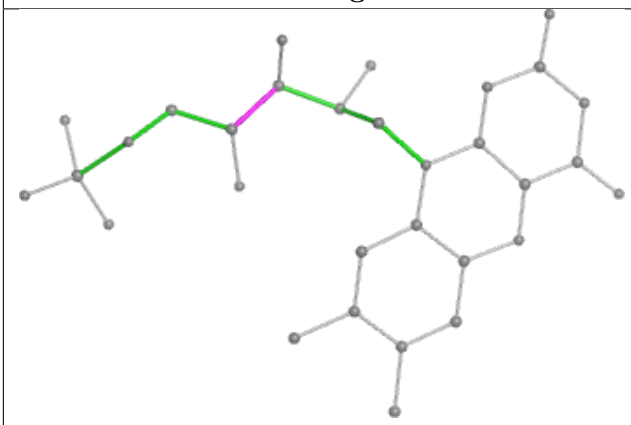
Ligand FMN M 401



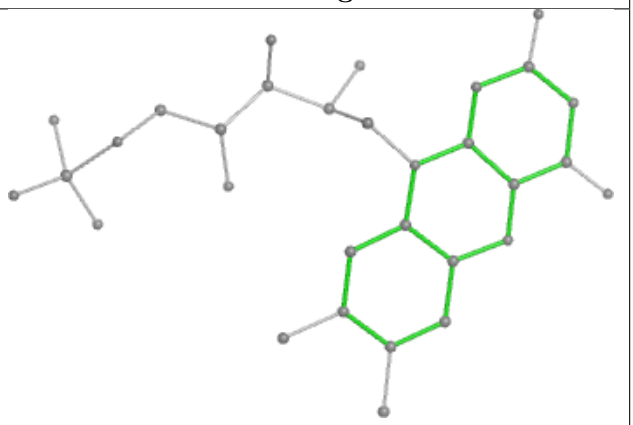
Bond lengths



Bond angles

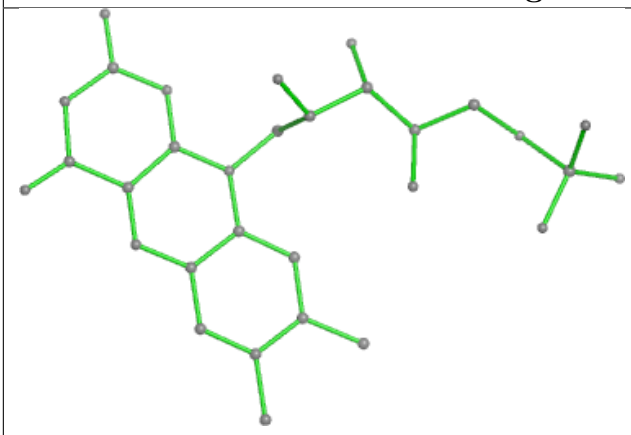


Torsions



Rings

Ligand FMN I 401



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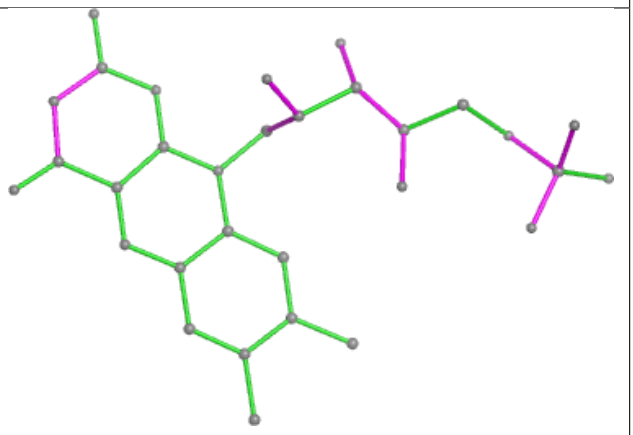
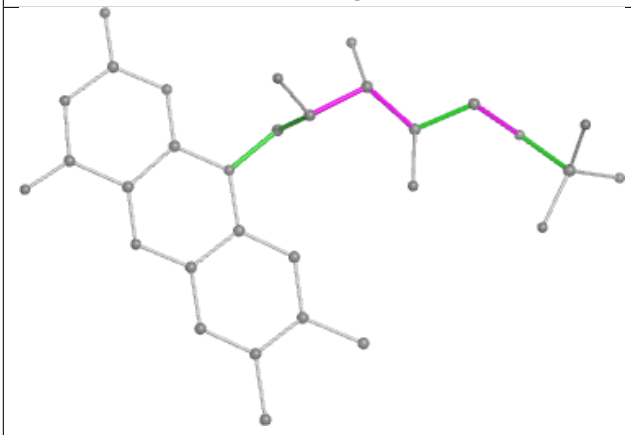
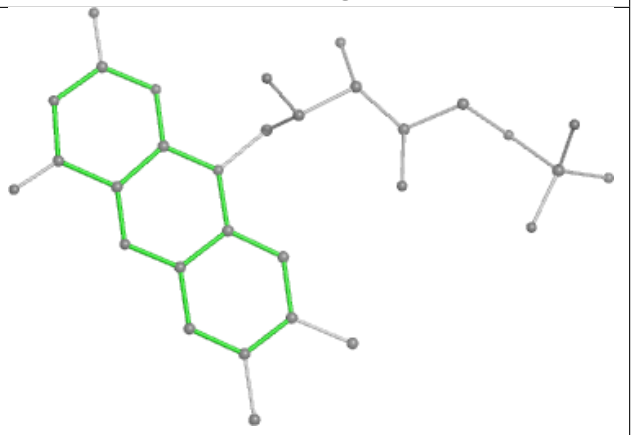


Bond angles

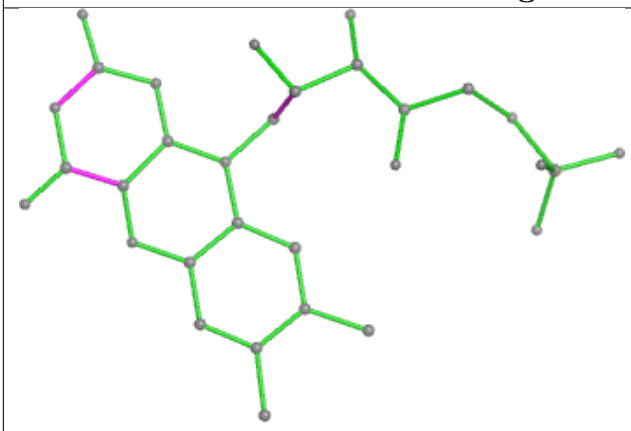


Torsions

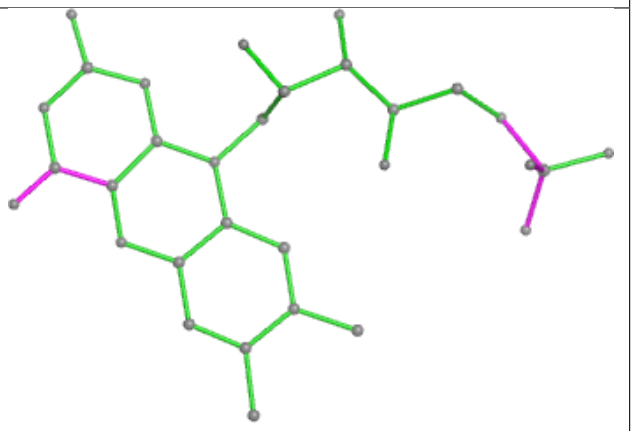


Rings

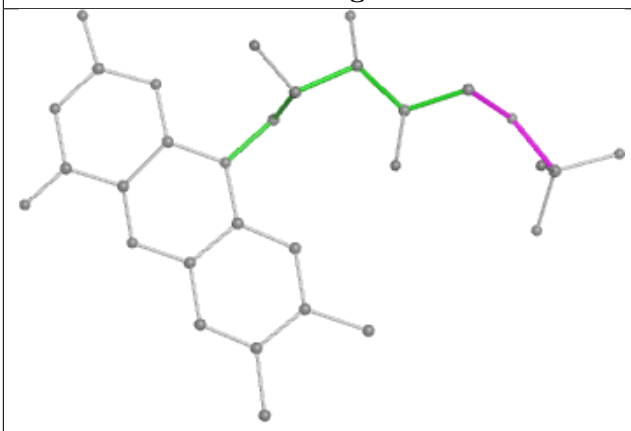
Ligand FMN H 401



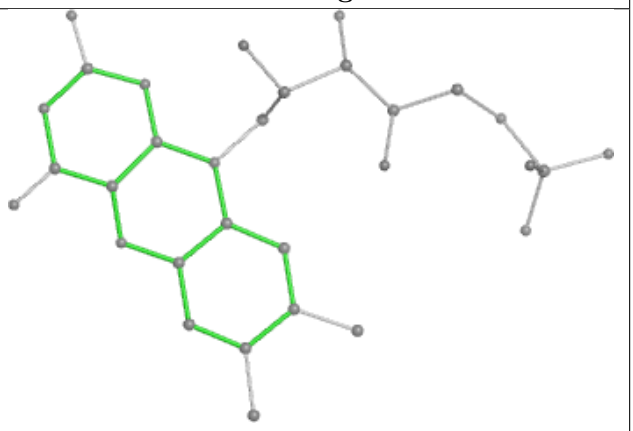
Bond lengths



Bond angles

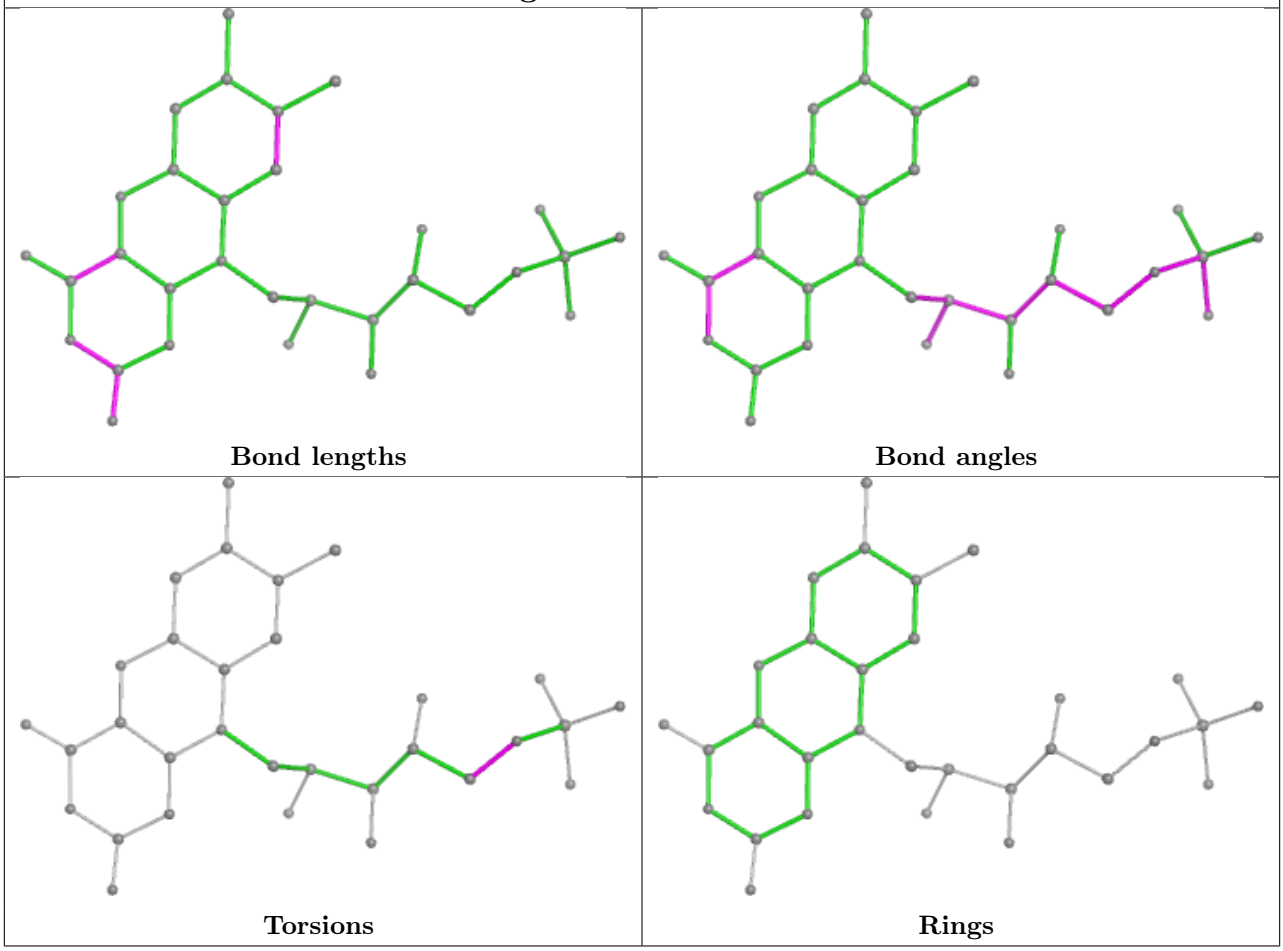


Torsions



Rings

Ligand FMN O 401



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	365/365 (100%)	-0.90	0 100 100	0, 0, 8, 13	0
1	B	365/365 (100%)	-0.90	0 100 100	0, 0, 7, 12	0
1	C	365/365 (100%)	-0.92	1 (0%) 90 89	0, 0, 10, 13	0
1	D	365/365 (100%)	-0.94	0 100 100	0, 0, 6, 10	0
1	E	365/365 (100%)	-0.77	1 (0%) 90 89	0, 3, 15, 42	0
1	F	365/365 (100%)	-0.76	1 (0%) 90 89	0, 4, 13, 38	0
1	G	365/365 (100%)	-0.74	1 (0%) 90 89	0, 3, 23, 40	0
1	H	365/365 (100%)	-0.74	2 (0%) 87 85	0, 4, 26, 59	0
1	I	365/365 (100%)	-0.91	0 100 100	0, 0, 7, 16	0
1	J	365/365 (100%)	-0.92	1 (0%) 90 89	0, 0, 9, 20	0
1	K	365/365 (100%)	-0.93	0 100 100	0, 0, 7, 13	0
1	L	365/365 (100%)	-0.89	0 100 100	0, 0, 7, 14	0
1	M	365/365 (100%)	-0.79	0 100 100	0, 3, 13, 36	0
1	N	365/365 (100%)	-0.77	0 100 100	0, 4, 14, 27	0
1	O	365/365 (100%)	-0.66	1 (0%) 90 89	1, 6, 21, 37	0
1	P	365/365 (100%)	-0.69	3 (0%) 82 80	0, 6, 28, 60	0
All	All	5840/5840 (100%)	-0.83	11 (0%) 92 90	0, 2, 12, 60	0

All (11) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	P	206	SER	3.7
1	H	209	GLY	3.2
1	P	2	SER	2.9
1	C	201	GLY	2.7
1	F	206	SER	2.2

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Mol	Chain	Res	Type	RSRZ
1	E	211	SER	2.2
1	O	7	ASN	2.2
1	J	201	GLY	2.1
1	P	203	GLY	2.1
1	G	205	GLY	2.0
1	H	206	SER	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)

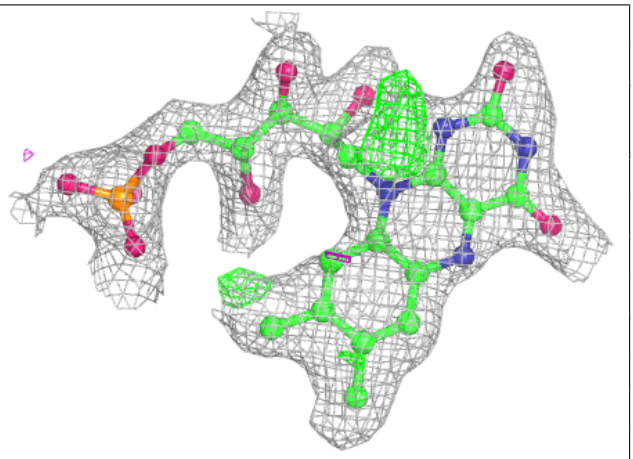
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

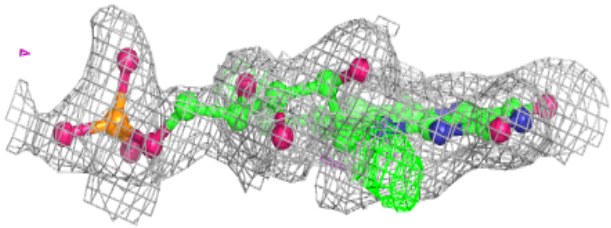
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FMN	H	401	31/31	0.96	0.06	0,0,0,0	0
2	FMN	B	401	31/31	0.98	0.06	0,0,0,0	0
2	FMN	C	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	D	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	E	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	F	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	G	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	A	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	I	401	31/31	0.98	0.04	0,0,0,0	0
2	FMN	J	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	K	401	31/31	0.98	0.04	0,0,0,0	0
2	FMN	L	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	M	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	N	401	31/31	0.98	0.05	0,0,0,0	0
2	FMN	O	401	31/31	0.98	0.04	0,0,0,0	0
2	FMN	P	401	31/31	0.98	0.05	0,0,0,0	0

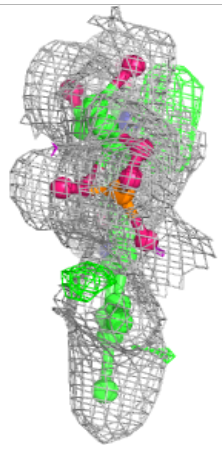
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around FMN H 401:

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

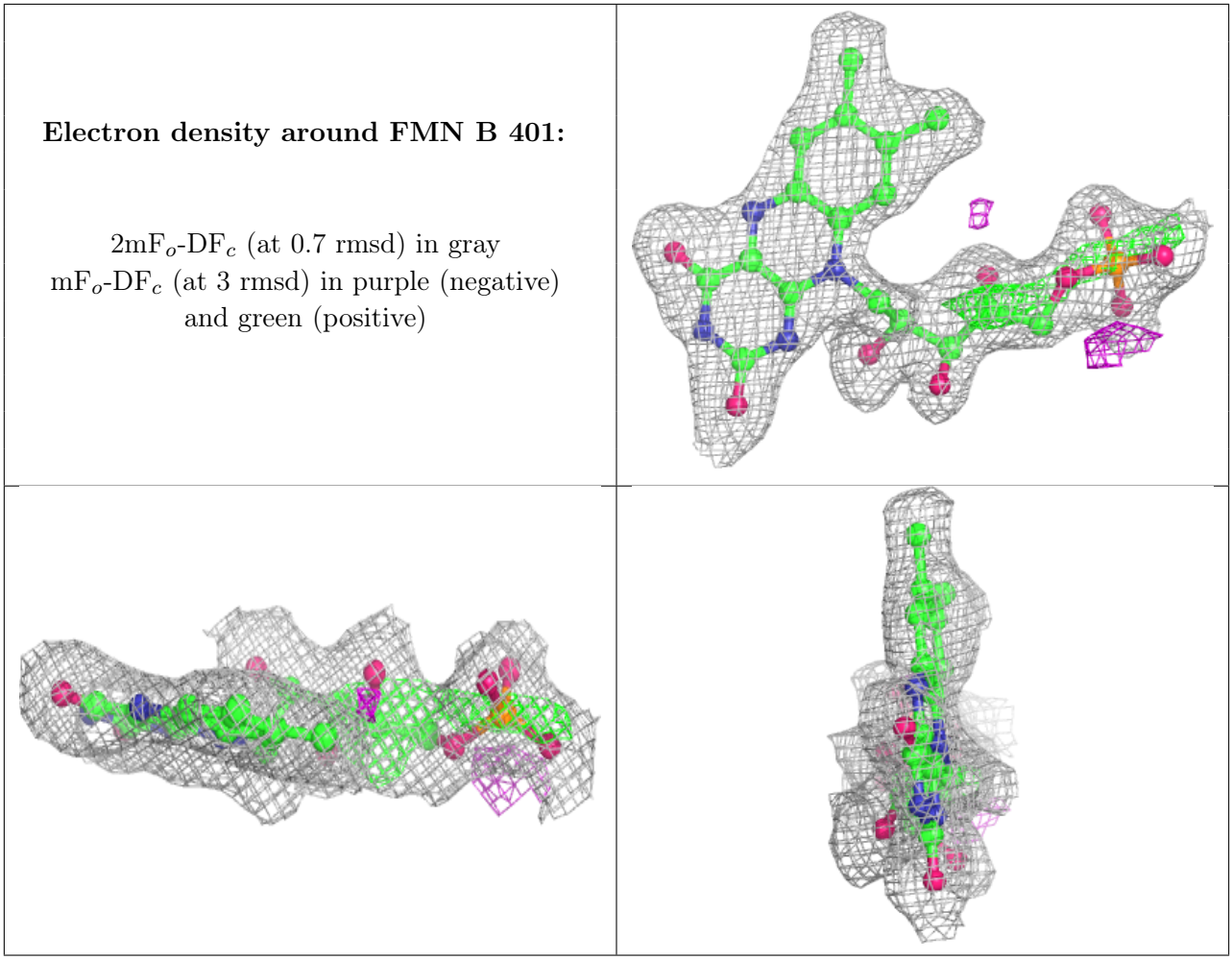






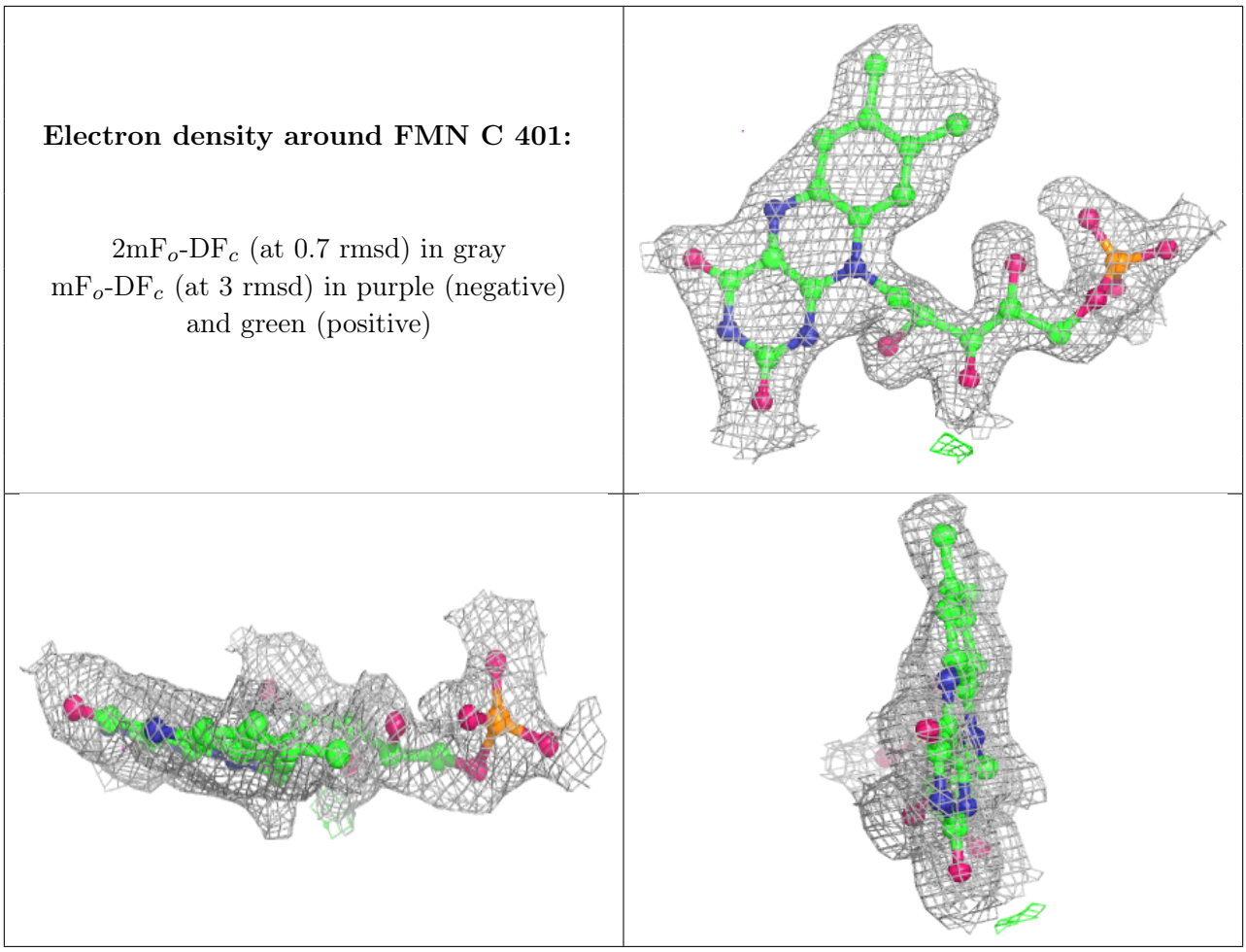
Electron density around FMN B 401:

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



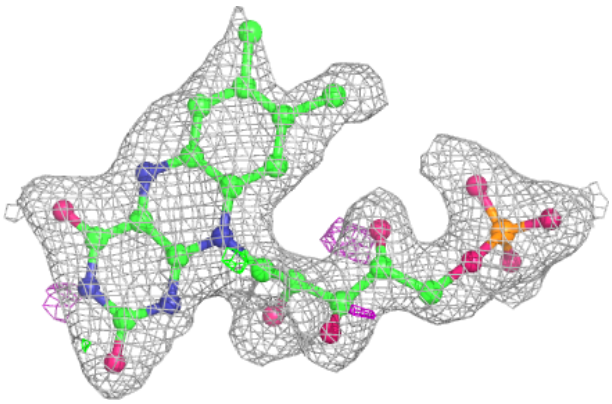
Electron density around FMN C 401:

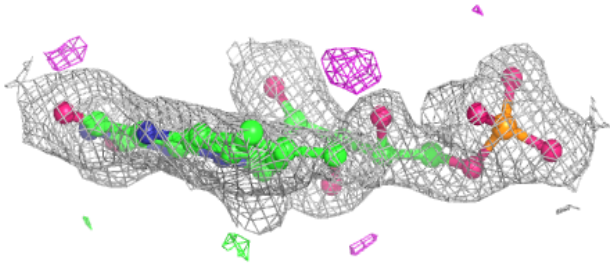
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

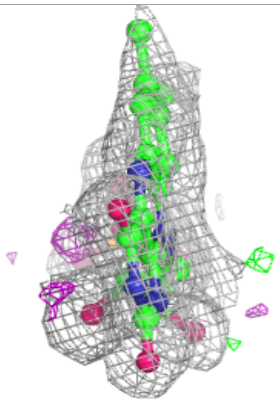


Electron density around FMN D 401:

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

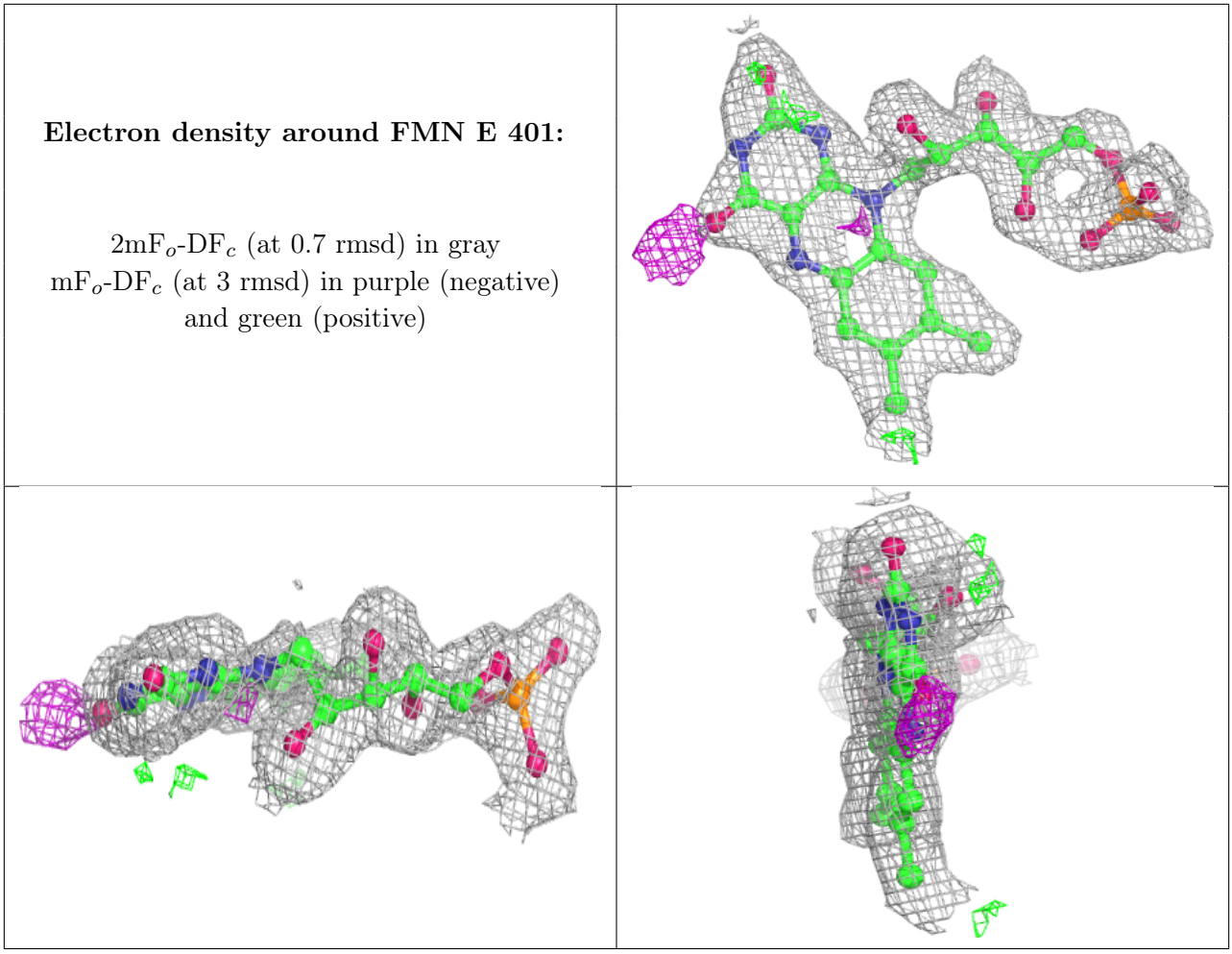






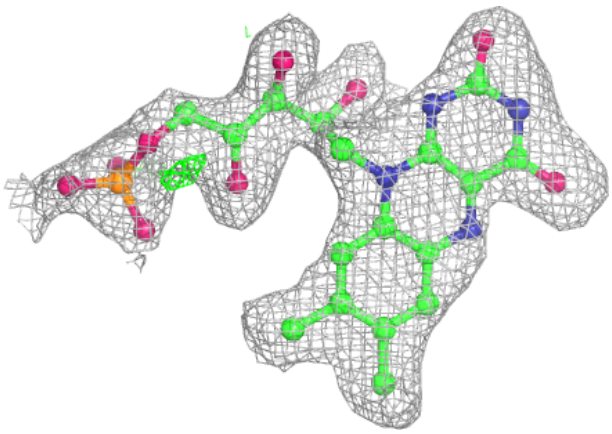
Electron density around FMN E 401:

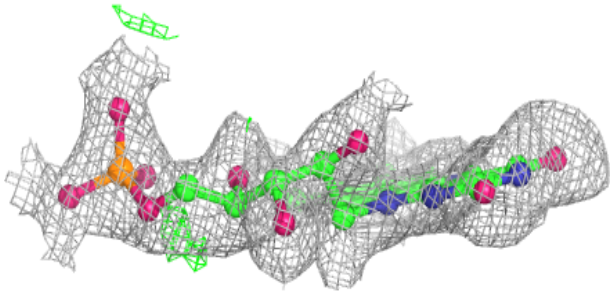
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

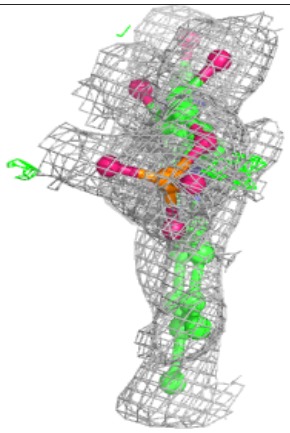


Electron density around FMN F 401:

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

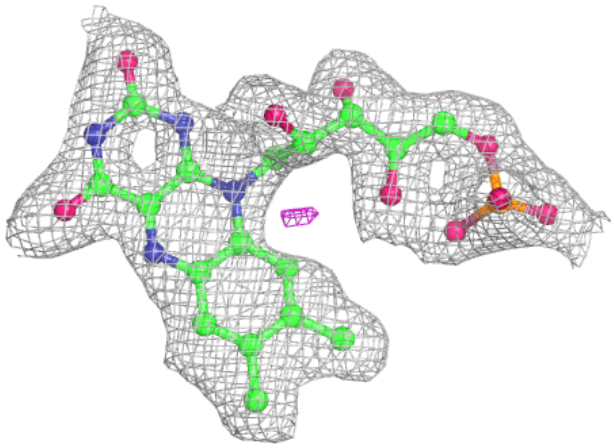


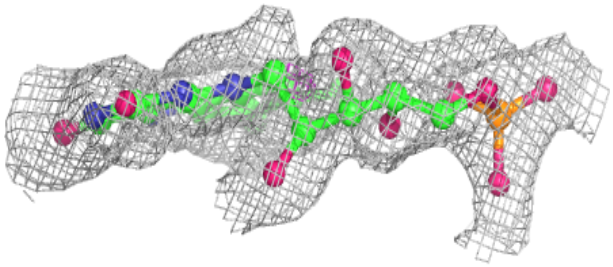


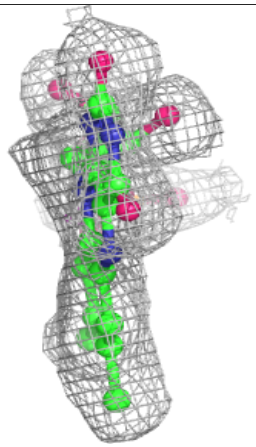


Electron density around FMN G 401:

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

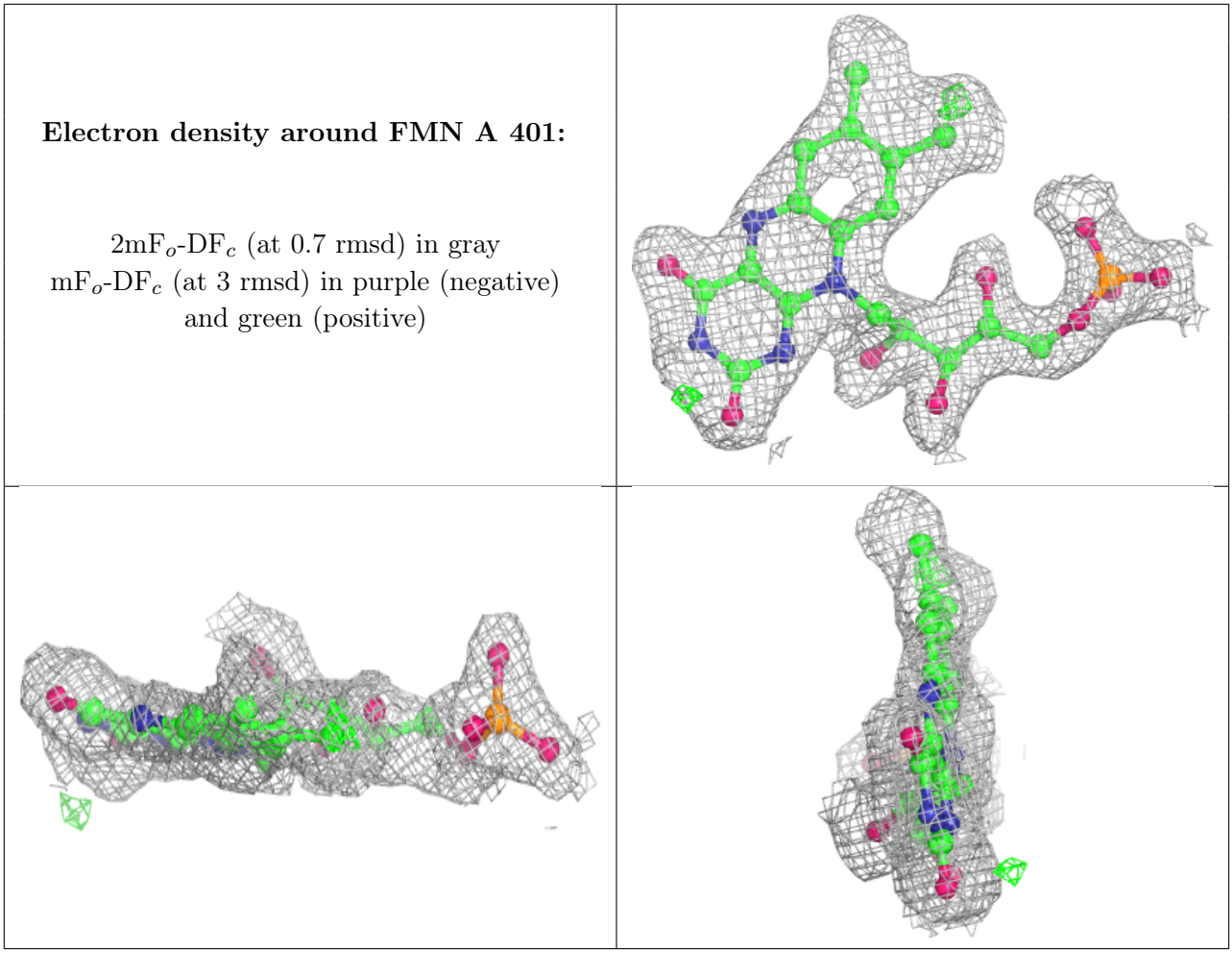






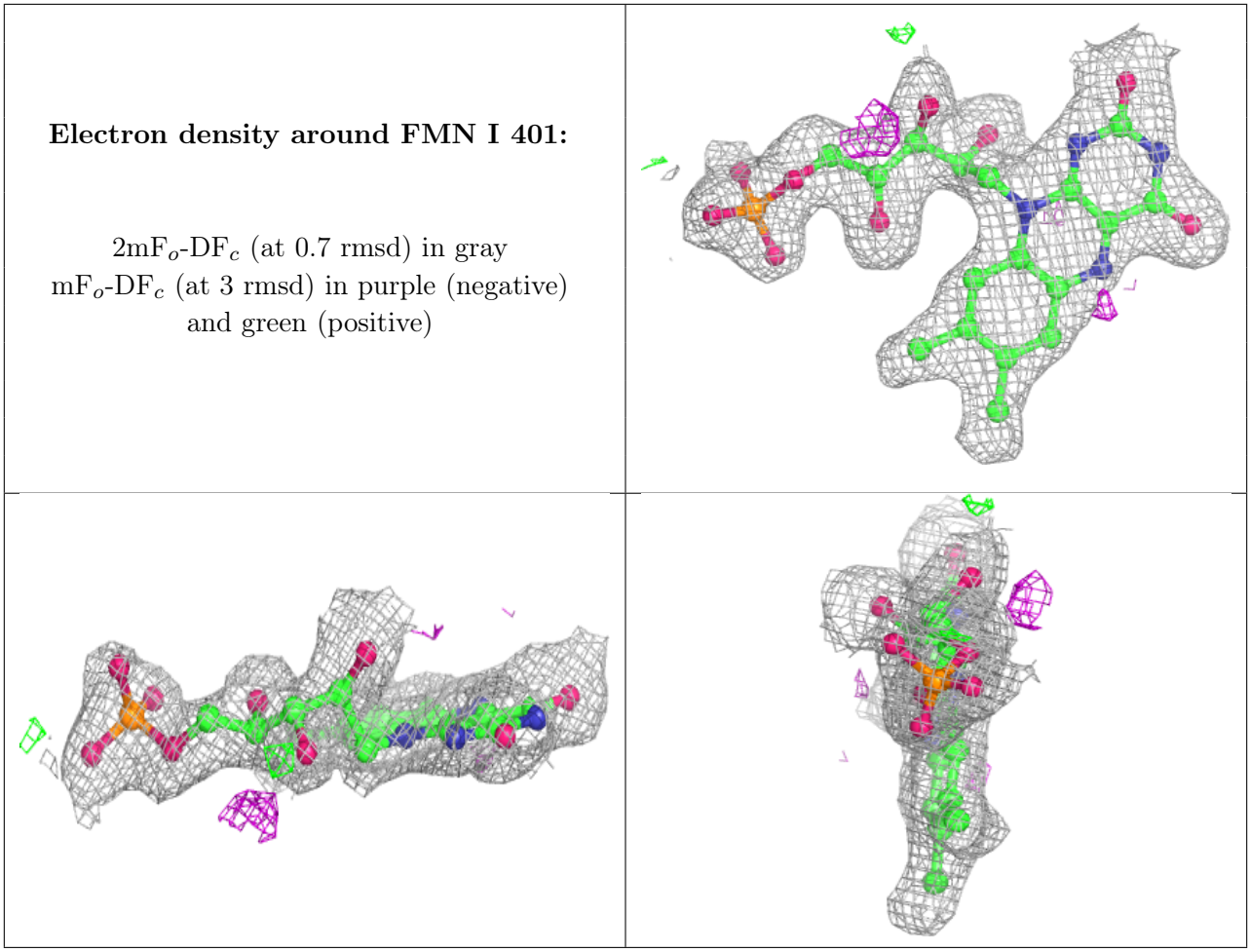
Electron density around FMN A 401:

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



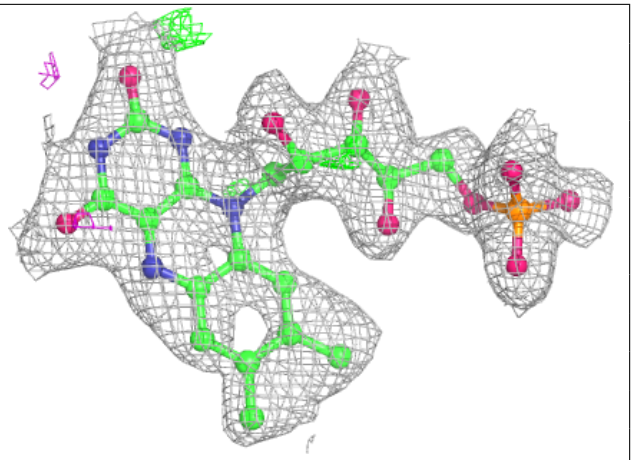
Electron density around FMN I 401:

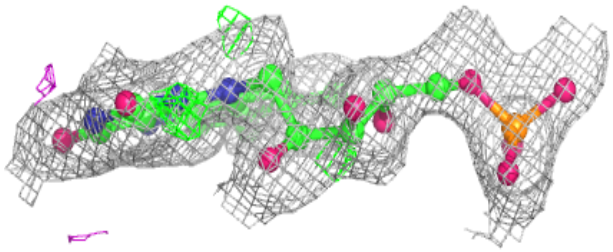
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

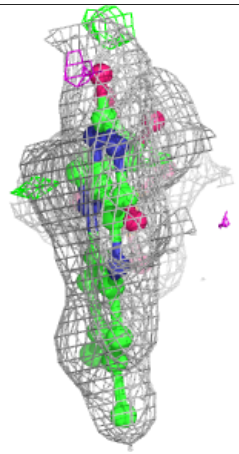


Electron density around FMN J 401:

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

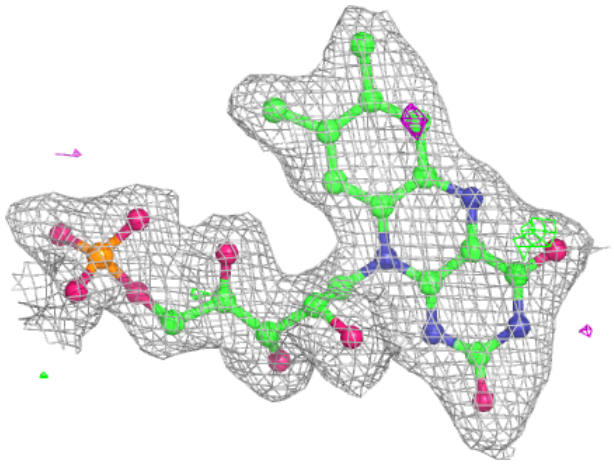


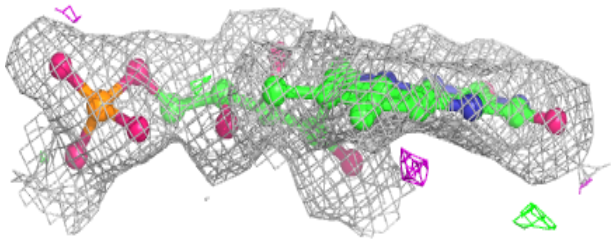


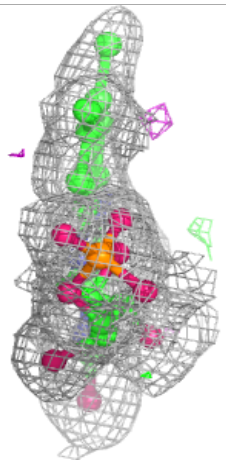


Electron density around FMN K 401:

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

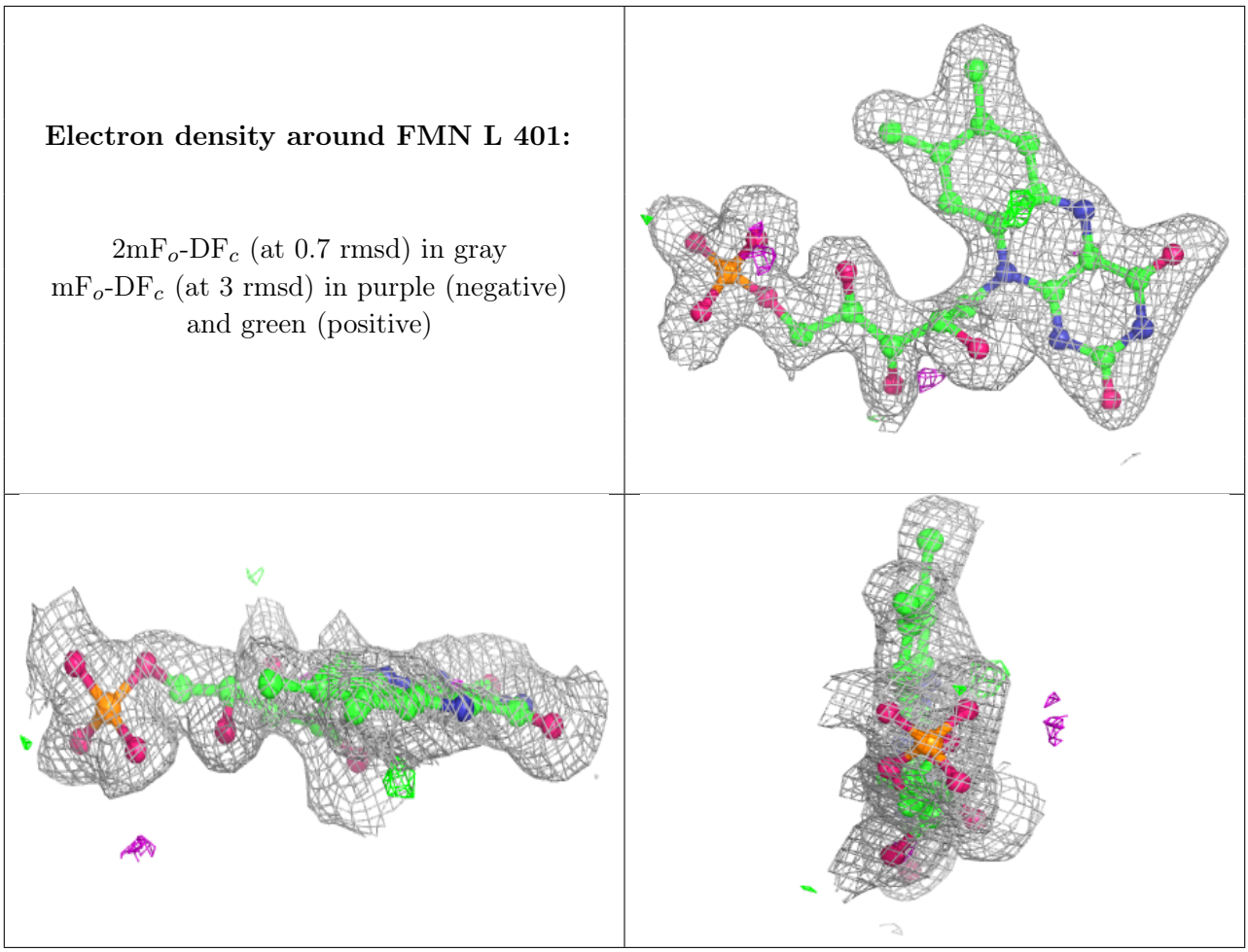






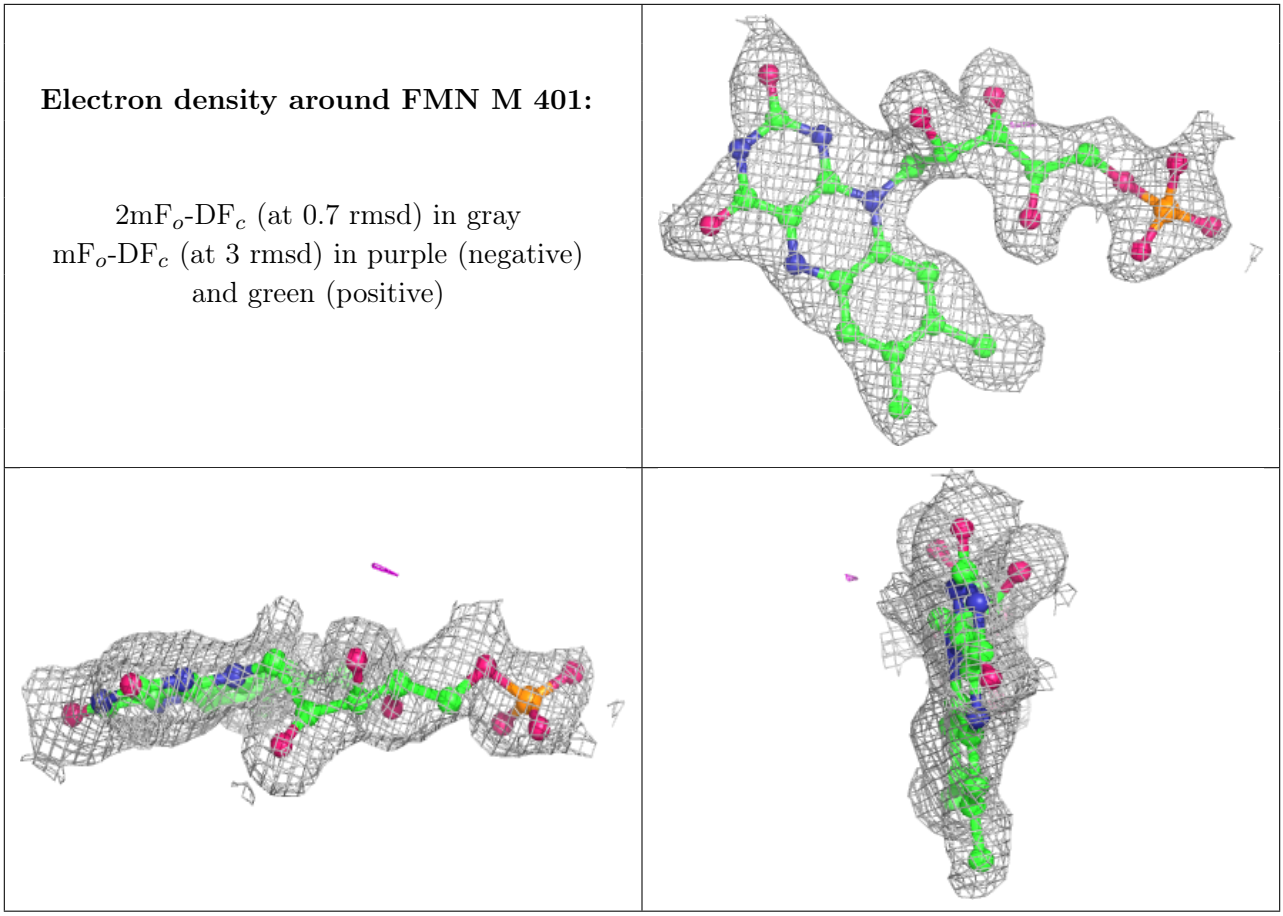
Electron density around FMN L 401:

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



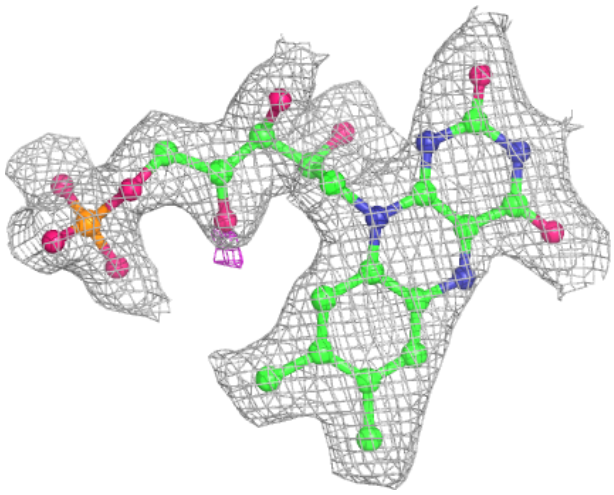
Electron density around FMN M 401:

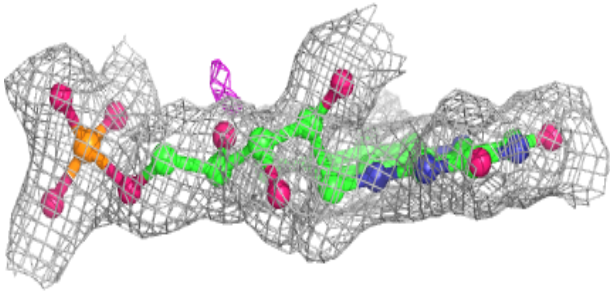
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

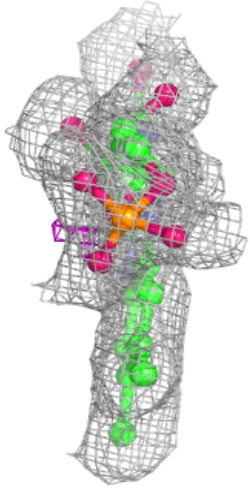


Electron density around FMN N 401:

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

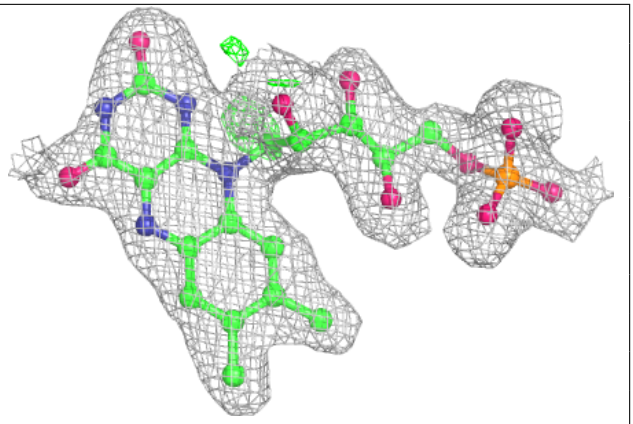


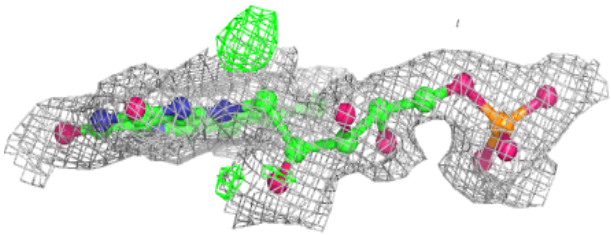


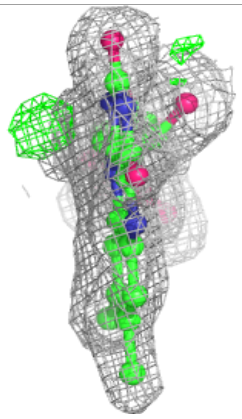


Electron density around FMN O 401:

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

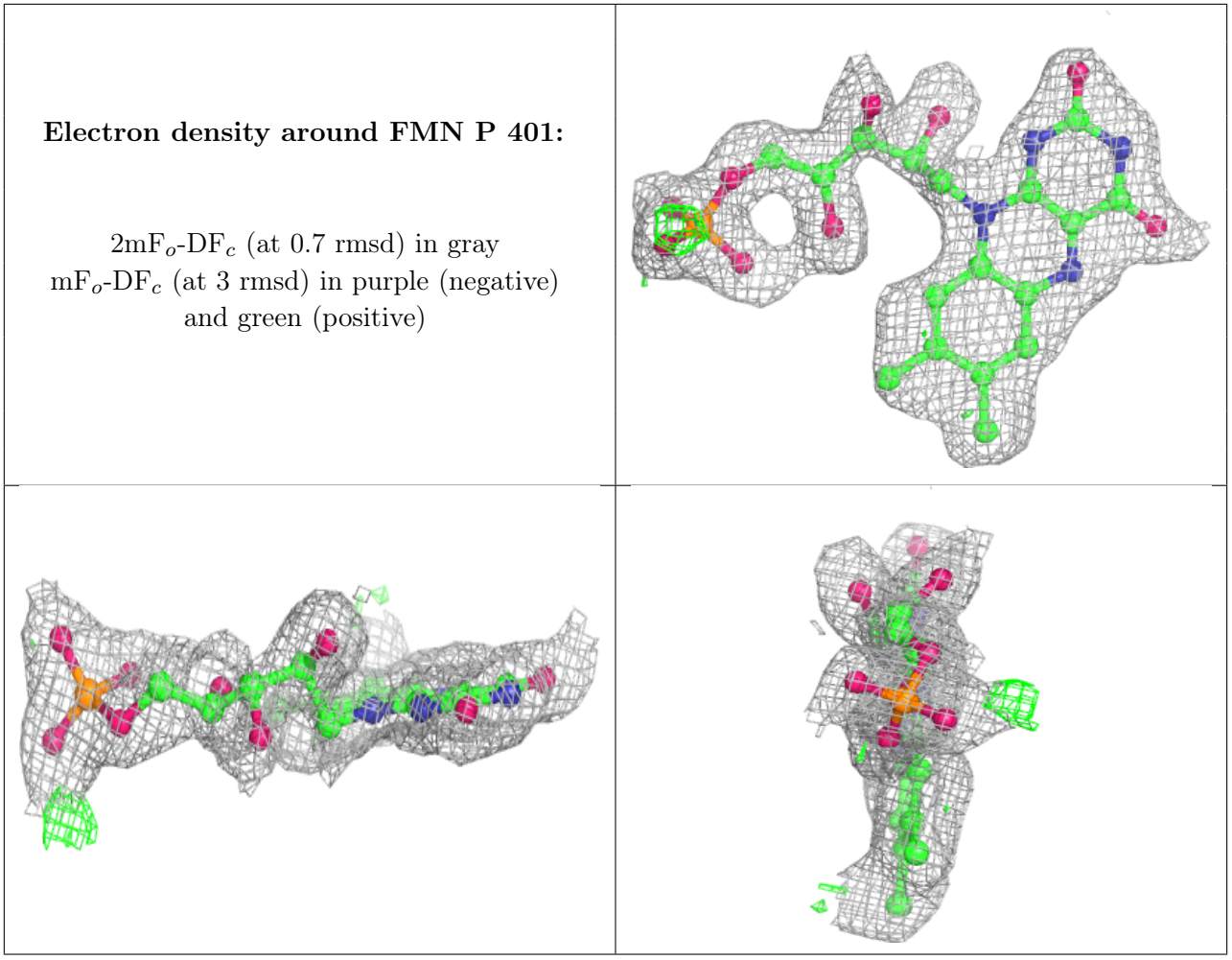






Electron density around FMN P 401:

$2mF_o$-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.