Full wwPDB X-ray Structure Validation Report ⓘ

Oct 26, 2023 – 04:52 pm BST

PDB ID	:	8BAP
Title	:	Eugenol Oxidase (EUGO) from Rhodococcus jostii RHA1, eightfold mutant active on propanol syringol
Authors	:	Alvigini, L.; Mattevi, A.
Deposited on	:	2022-10-11
Resolution	:	2.30 Å(reported)

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

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

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

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

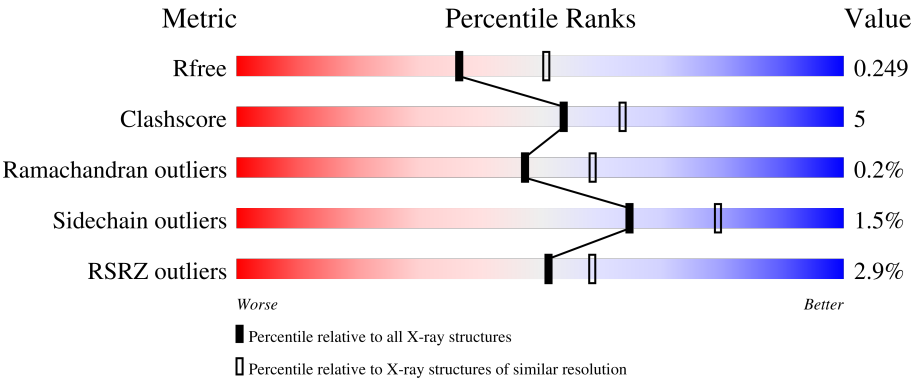
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.30 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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	526	89% 10%
1	B	526	90% 10%
1	C	526	90% 10%
1	D	526	90% 10%
1	E	526	87% 12%

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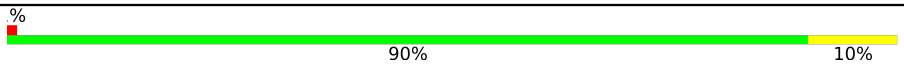
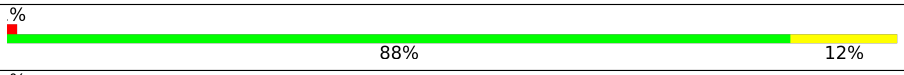
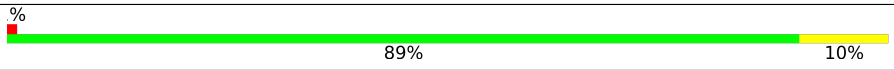
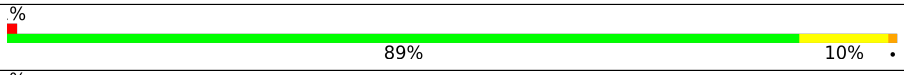
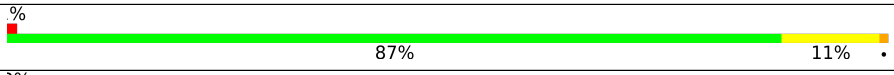
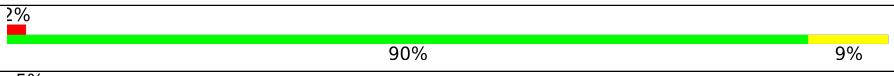
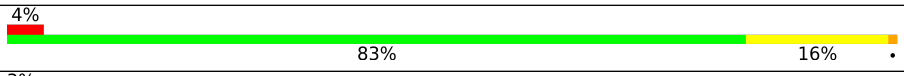
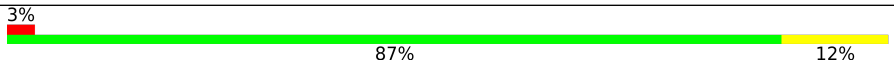
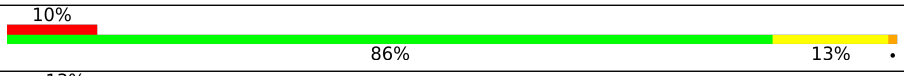
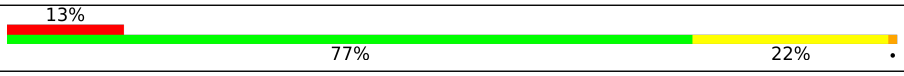
Mol	Chain	Length	Quality of chain
1	F	526	
1	G	526	
1	H	526	
1	I	526	
1	J	526	
1	K	526	
1	L	526	
1	M	526	
1	N	526	
1	O	526	
1	P	526	

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 68547 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 Probable vanillyl-alcohol oxidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	B	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	C	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	D	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	E	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	F	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	G	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	H	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	I	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	J	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	K	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	L	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	M	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	N	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	O	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			
1	P	525	Total	C	N	O	S	0	0	0
			4135	2635	702	774	24			

There are 128 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	81	HIS	SER	engineered mutation	UNP Q0SBK1
A	381	GLN	LEU	engineered mutation	UNP Q0SBK1
A	394	VAL	SER	engineered mutation	UNP Q0SBK1
A	423	MET	ALA	engineered mutation	UNP Q0SBK1
A	427	VAL	ILE	engineered mutation	UNP Q0SBK1
A	434	TYR	HIS	engineered mutation	UNP Q0SBK1
A	445	ASP	ILE	engineered mutation	UNP Q0SBK1
A	518	PRO	SER	engineered mutation	UNP Q0SBK1
B	81	HIS	SER	engineered mutation	UNP Q0SBK1
B	381	GLN	LEU	engineered mutation	UNP Q0SBK1
B	394	VAL	SER	engineered mutation	UNP Q0SBK1
B	423	MET	ALA	engineered mutation	UNP Q0SBK1
B	427	VAL	ILE	engineered mutation	UNP Q0SBK1
B	434	TYR	HIS	engineered mutation	UNP Q0SBK1
B	445	ASP	ILE	engineered mutation	UNP Q0SBK1
B	518	PRO	SER	engineered mutation	UNP Q0SBK1
C	81	HIS	SER	engineered mutation	UNP Q0SBK1
C	381	GLN	LEU	engineered mutation	UNP Q0SBK1
C	394	VAL	SER	engineered mutation	UNP Q0SBK1
C	423	MET	ALA	engineered mutation	UNP Q0SBK1
C	427	VAL	ILE	engineered mutation	UNP Q0SBK1
C	434	TYR	HIS	engineered mutation	UNP Q0SBK1
C	445	ASP	ILE	engineered mutation	UNP Q0SBK1
C	518	PRO	SER	engineered mutation	UNP Q0SBK1
D	81	HIS	SER	engineered mutation	UNP Q0SBK1
D	381	GLN	LEU	engineered mutation	UNP Q0SBK1
D	394	VAL	SER	engineered mutation	UNP Q0SBK1
D	423	MET	ALA	engineered mutation	UNP Q0SBK1
D	427	VAL	ILE	engineered mutation	UNP Q0SBK1
D	434	TYR	HIS	engineered mutation	UNP Q0SBK1
D	445	ASP	ILE	engineered mutation	UNP Q0SBK1
D	518	PRO	SER	engineered mutation	UNP Q0SBK1
E	81	HIS	SER	engineered mutation	UNP Q0SBK1
E	381	GLN	LEU	engineered mutation	UNP Q0SBK1
E	394	VAL	SER	engineered mutation	UNP Q0SBK1
E	423	MET	ALA	engineered mutation	UNP Q0SBK1
E	427	VAL	ILE	engineered mutation	UNP Q0SBK1
E	434	TYR	HIS	engineered mutation	UNP Q0SBK1
E	445	ASP	ILE	engineered mutation	UNP Q0SBK1
E	518	PRO	SER	engineered mutation	UNP Q0SBK1
F	81	HIS	SER	engineered mutation	UNP Q0SBK1
F	381	GLN	LEU	engineered mutation	UNP Q0SBK1

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Chain	Residue	Modelled	Actual	Comment	Reference
F	394	VAL	SER	engineered mutation	UNP Q0SBK1
F	423	MET	ALA	engineered mutation	UNP Q0SBK1
F	427	VAL	ILE	engineered mutation	UNP Q0SBK1
F	434	TYR	HIS	engineered mutation	UNP Q0SBK1
F	445	ASP	ILE	engineered mutation	UNP Q0SBK1
F	518	PRO	SER	engineered mutation	UNP Q0SBK1
G	81	HIS	SER	engineered mutation	UNP Q0SBK1
G	381	GLN	LEU	engineered mutation	UNP Q0SBK1
G	394	VAL	SER	engineered mutation	UNP Q0SBK1
G	423	MET	ALA	engineered mutation	UNP Q0SBK1
G	427	VAL	ILE	engineered mutation	UNP Q0SBK1
G	434	TYR	HIS	engineered mutation	UNP Q0SBK1
G	445	ASP	ILE	engineered mutation	UNP Q0SBK1
G	518	PRO	SER	engineered mutation	UNP Q0SBK1
H	81	HIS	SER	engineered mutation	UNP Q0SBK1
H	381	GLN	LEU	engineered mutation	UNP Q0SBK1
H	394	VAL	SER	engineered mutation	UNP Q0SBK1
H	423	MET	ALA	engineered mutation	UNP Q0SBK1
H	427	VAL	ILE	engineered mutation	UNP Q0SBK1
H	434	TYR	HIS	engineered mutation	UNP Q0SBK1
H	445	ASP	ILE	engineered mutation	UNP Q0SBK1
H	518	PRO	SER	engineered mutation	UNP Q0SBK1
I	81	HIS	SER	engineered mutation	UNP Q0SBK1
I	381	GLN	LEU	engineered mutation	UNP Q0SBK1
I	394	VAL	SER	engineered mutation	UNP Q0SBK1
I	423	MET	ALA	engineered mutation	UNP Q0SBK1
I	427	VAL	ILE	engineered mutation	UNP Q0SBK1
I	434	TYR	HIS	engineered mutation	UNP Q0SBK1
I	445	ASP	ILE	engineered mutation	UNP Q0SBK1
I	518	PRO	SER	engineered mutation	UNP Q0SBK1
J	81	HIS	SER	engineered mutation	UNP Q0SBK1
J	381	GLN	LEU	engineered mutation	UNP Q0SBK1
J	394	VAL	SER	engineered mutation	UNP Q0SBK1
J	423	MET	ALA	engineered mutation	UNP Q0SBK1
J	427	VAL	ILE	engineered mutation	UNP Q0SBK1
J	434	TYR	HIS	engineered mutation	UNP Q0SBK1
J	445	ASP	ILE	engineered mutation	UNP Q0SBK1
J	518	PRO	SER	engineered mutation	UNP Q0SBK1
K	81	HIS	SER	engineered mutation	UNP Q0SBK1
K	381	GLN	LEU	engineered mutation	UNP Q0SBK1
K	394	VAL	SER	engineered mutation	UNP Q0SBK1
K	423	MET	ALA	engineered mutation	UNP Q0SBK1

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Chain	Residue	Modelled	Actual	Comment	Reference
K	427	VAL	ILE	engineered mutation	UNP Q0SBK1
K	434	TYR	HIS	engineered mutation	UNP Q0SBK1
K	445	ASP	ILE	engineered mutation	UNP Q0SBK1
K	518	PRO	SER	engineered mutation	UNP Q0SBK1
L	81	HIS	SER	engineered mutation	UNP Q0SBK1
L	381	GLN	LEU	engineered mutation	UNP Q0SBK1
L	394	VAL	SER	engineered mutation	UNP Q0SBK1
L	423	MET	ALA	engineered mutation	UNP Q0SBK1
L	427	VAL	ILE	engineered mutation	UNP Q0SBK1
L	434	TYR	HIS	engineered mutation	UNP Q0SBK1
L	445	ASP	ILE	engineered mutation	UNP Q0SBK1
L	518	PRO	SER	engineered mutation	UNP Q0SBK1
M	81	HIS	SER	engineered mutation	UNP Q0SBK1
M	381	GLN	LEU	engineered mutation	UNP Q0SBK1
M	394	VAL	SER	engineered mutation	UNP Q0SBK1
M	423	MET	ALA	engineered mutation	UNP Q0SBK1
M	427	VAL	ILE	engineered mutation	UNP Q0SBK1
M	434	TYR	HIS	engineered mutation	UNP Q0SBK1
M	445	ASP	ILE	engineered mutation	UNP Q0SBK1
M	518	PRO	SER	engineered mutation	UNP Q0SBK1
N	81	HIS	SER	engineered mutation	UNP Q0SBK1
N	381	GLN	LEU	engineered mutation	UNP Q0SBK1
N	394	VAL	SER	engineered mutation	UNP Q0SBK1
N	423	MET	ALA	engineered mutation	UNP Q0SBK1
N	427	VAL	ILE	engineered mutation	UNP Q0SBK1
N	434	TYR	HIS	engineered mutation	UNP Q0SBK1
N	445	ASP	ILE	engineered mutation	UNP Q0SBK1
N	518	PRO	SER	engineered mutation	UNP Q0SBK1
O	81	HIS	SER	engineered mutation	UNP Q0SBK1
O	381	GLN	LEU	engineered mutation	UNP Q0SBK1
O	394	VAL	SER	engineered mutation	UNP Q0SBK1
O	423	MET	ALA	engineered mutation	UNP Q0SBK1
O	427	VAL	ILE	engineered mutation	UNP Q0SBK1
O	434	TYR	HIS	engineered mutation	UNP Q0SBK1
O	445	ASP	ILE	engineered mutation	UNP Q0SBK1
O	518	PRO	SER	engineered mutation	UNP Q0SBK1
P	81	HIS	SER	engineered mutation	UNP Q0SBK1
P	381	GLN	LEU	engineered mutation	UNP Q0SBK1
P	394	VAL	SER	engineered mutation	UNP Q0SBK1
P	423	MET	ALA	engineered mutation	UNP Q0SBK1
P	427	VAL	ILE	engineered mutation	UNP Q0SBK1
P	434	TYR	HIS	engineered mutation	UNP Q0SBK1

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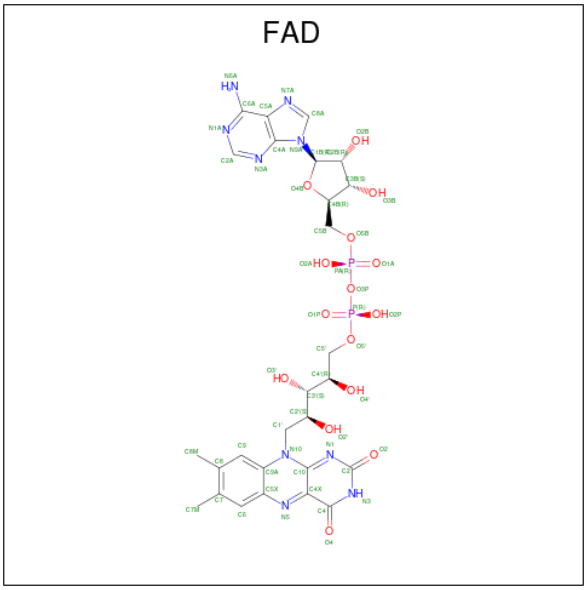
Chain	Residue	Modelled	Actual	Comment	Reference
P	445	ASP	ILE	engineered mutation	UNP Q0SBK1
P	518	PRO	SER	engineered mutation	UNP Q0SBK1

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	C	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	D	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	E	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	F	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	G	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	H	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	I	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	J	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

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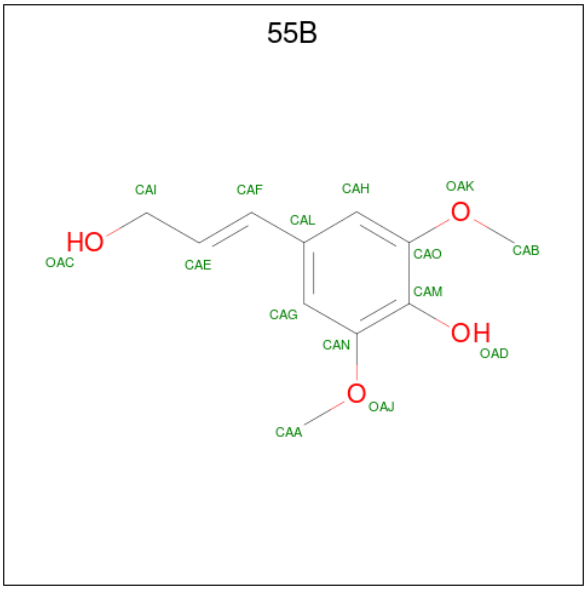
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	K	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	L	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	M	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	N	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	O	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	P	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

- Molecule 3 is 4-[(1E)-3-hydroxyprop-1-en-1-yl]-2,6-dimethoxyphenol (three-letter code: 55B) (formula: $C_{11}H_{14}O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			15	11	4		
3	B	1	Total	C	O	0	0
			15	11	4		
3	C	1	Total	C	O	0	0
			15	11	4		
3	D	1	Total	C	O	0	0
			15	11	4		
3	E	1	Total	C	O	0	0
			15	11	4		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	F	1	Total C O 15 11 4	0	0
3	G	1	Total C O 15 11 4	0	0
3	H	1	Total C O 15 11 4	0	0
3	I	1	Total C O 15 11 4	0	0
3	J	1	Total C O 15 11 4	0	0
3	K	1	Total C O 15 11 4	0	0
3	L	1	Total C O 15 11 4	0	0
3	M	1	Total C O 15 11 4	0	0
3	N	1	Total C O 15 11 4	0	0
3	O	1	Total C O 15 11 4	0	0
3	P	1	Total C O 15 11 4	0	0

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	2	Total Ca 2 2	0	0
4	B	1	Total Ca 1 1	0	0
4	C	1	Total Ca 1 1	0	0
4	D	1	Total Ca 1 1	0	0
4	E	1	Total Ca 1 1	0	0
4	F	1	Total Ca 1 1	0	0
4	J	1	Total Ca 1 1	0	0
4	L	1	Total Ca 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	M	1	Total Ca 1 1	0	0
4	N	1	Total Ca 1 1	0	0
4	O	1	Total Ca 1 1	0	0

- Molecule 5 is water.

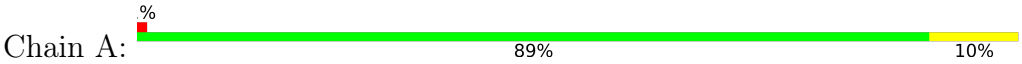
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	90	Total O 90 90	0	0
5	B	118	Total O 118 118	0	0
5	C	110	Total O 110 110	0	0
5	D	108	Total O 108 108	0	0
5	E	68	Total O 68 68	0	0
5	F	111	Total O 111 111	0	0
5	G	87	Total O 87 87	0	0
5	H	105	Total O 105 105	0	0
5	I	95	Total O 95 95	0	0
5	J	72	Total O 72 72	0	0
5	K	71	Total O 71 71	0	0
5	L	72	Total O 72 72	0	0
5	M	51	Total O 51 51	0	0
5	N	61	Total O 61 61	0	0
5	O	41	Total O 41 41	0	0
5	P	27	Total O 27 27	0	0

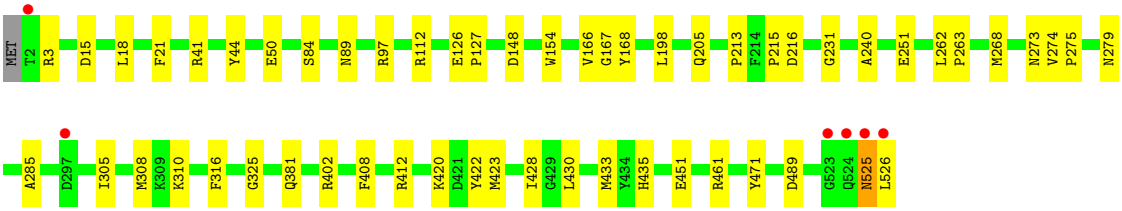
3 Residue-property plots (i)

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

• Molecule 1: Probable vanillyl-alcohol oxidase

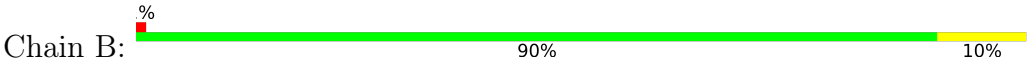
Chain A:

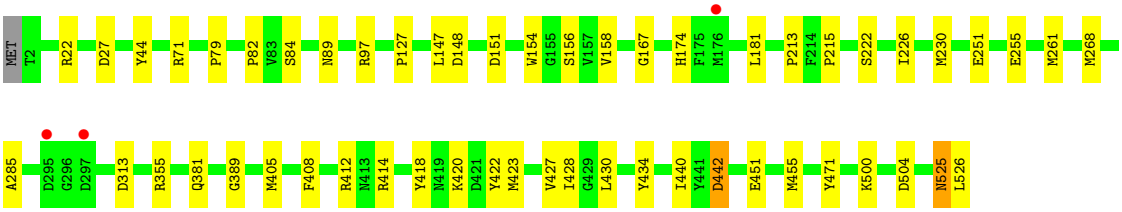




• Molecule 1: Probable vanillyl-alcohol oxidase

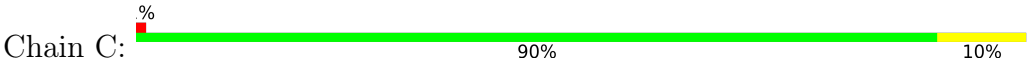
Chain B:

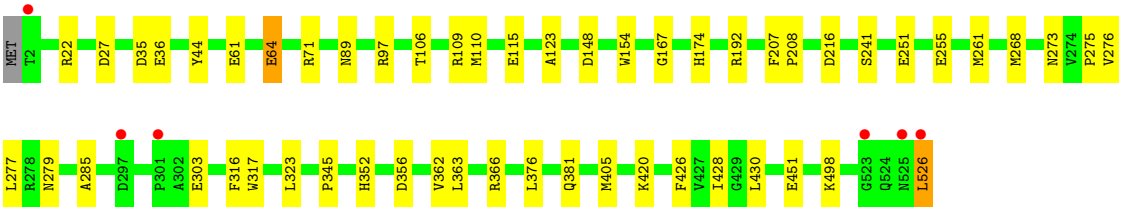




• Molecule 1: Probable vanillyl-alcohol oxidase

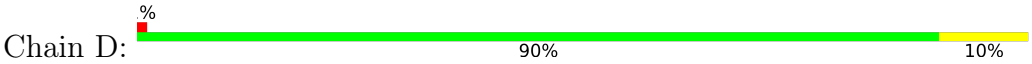
Chain C:

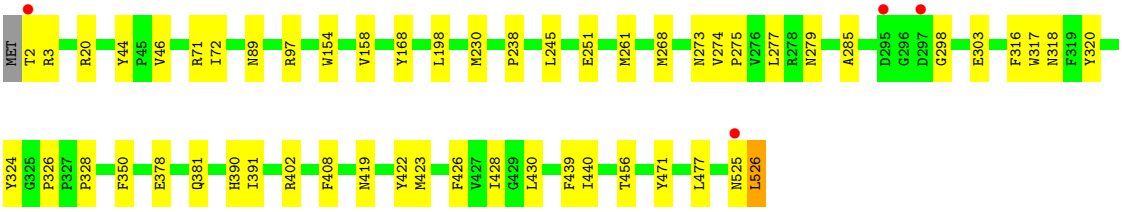




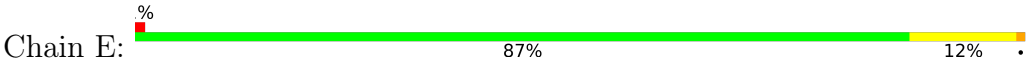
• Molecule 1: Probable vanillyl-alcohol oxidase

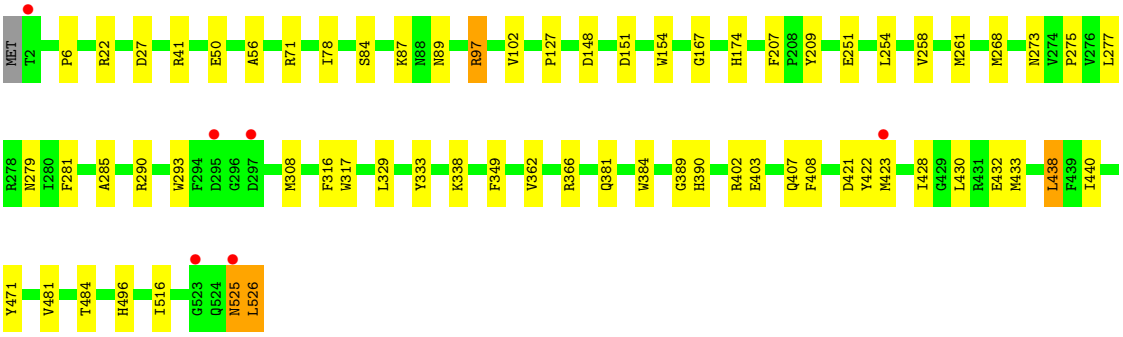
Chain D:



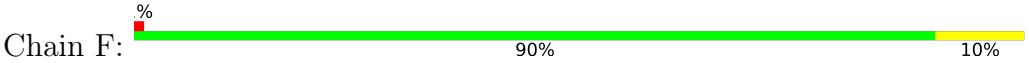


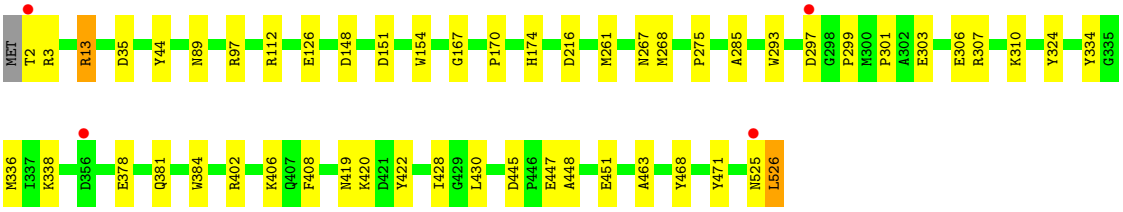
• Molecule 1: Probable vanillyl-alcohol oxidase



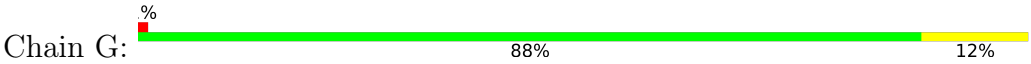


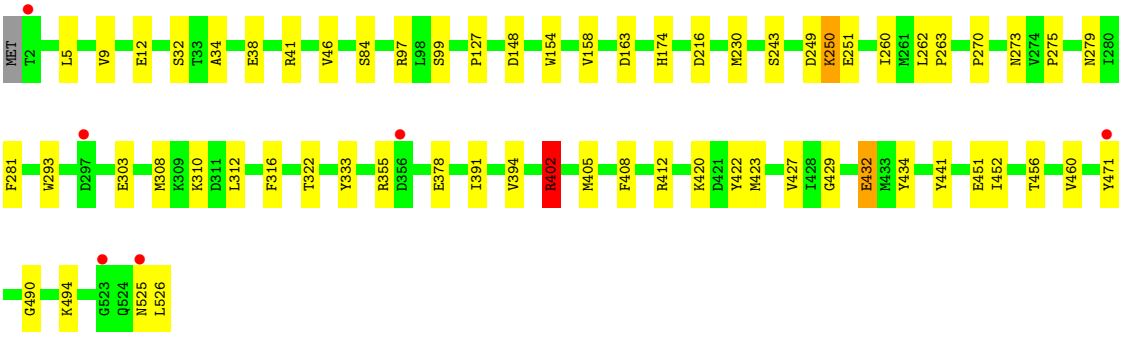
• Molecule 1: Probable vanillyl-alcohol oxidase



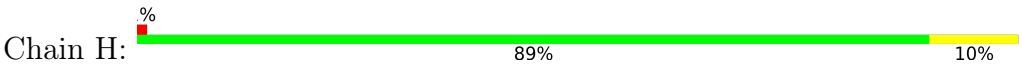


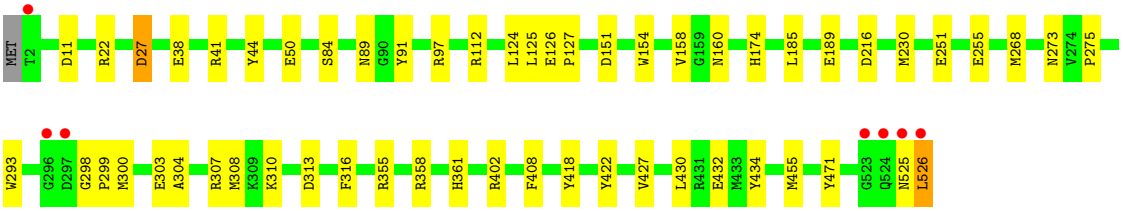
• Molecule 1: Probable vanillyl-alcohol oxidase



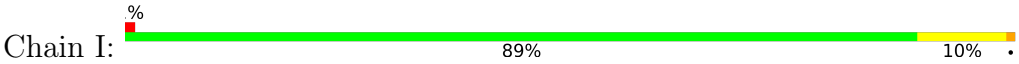


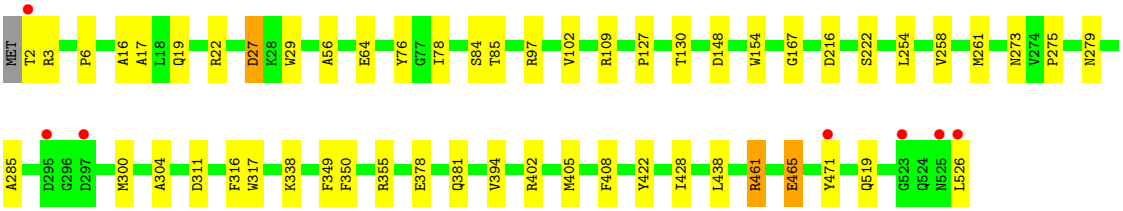
• Molecule 1: Probable vanillyl-alcohol oxidase



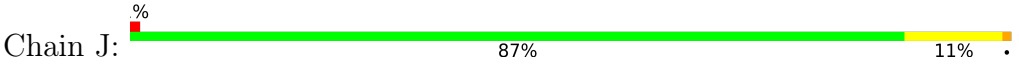


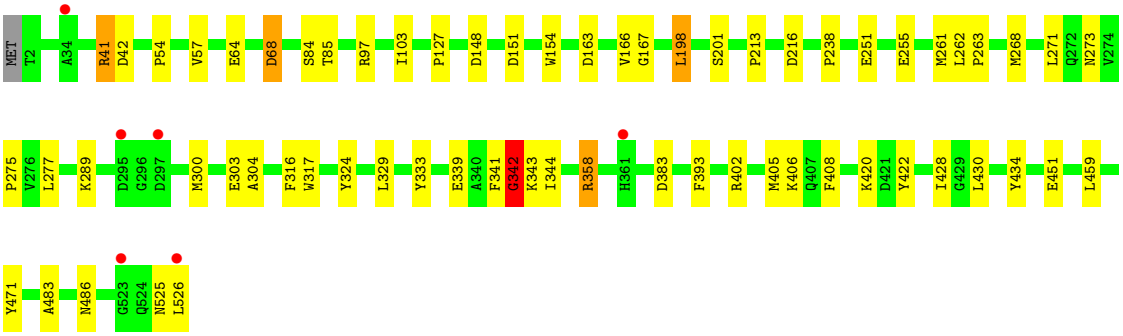
• Molecule 1: Probable vanillyl-alcohol oxidase



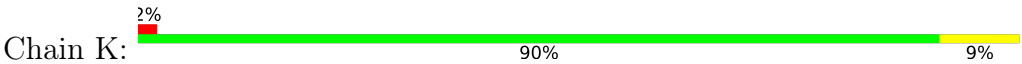


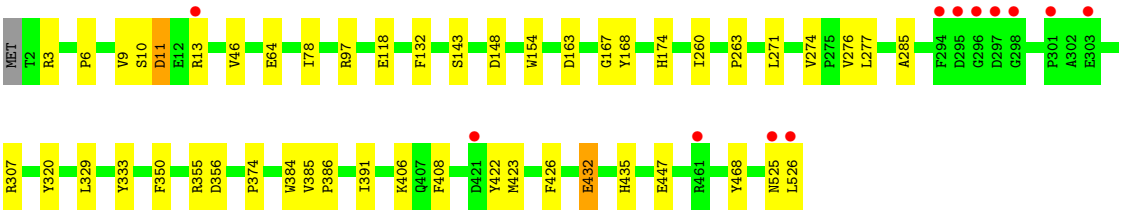
• Molecule 1: Probable vanillyl-alcohol oxidase



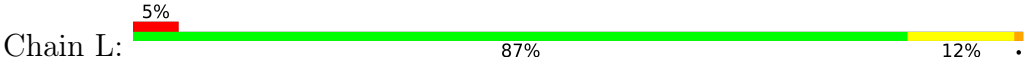


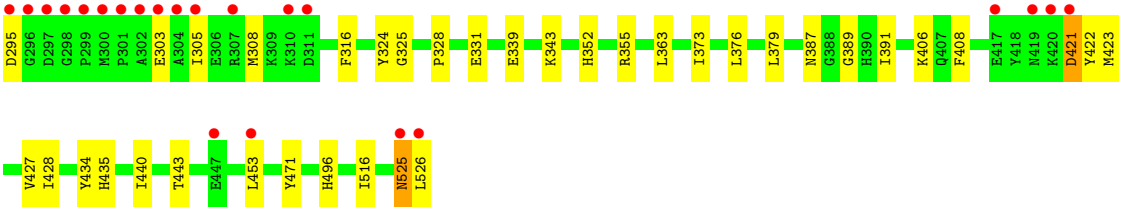
• Molecule 1: Probable vanillyl-alcohol oxidase





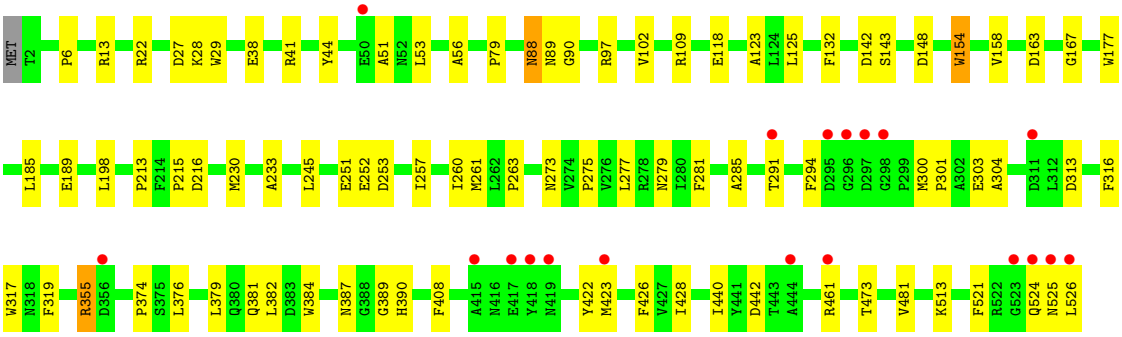
• Molecule 1: Probable vanillyl-alcohol oxidase





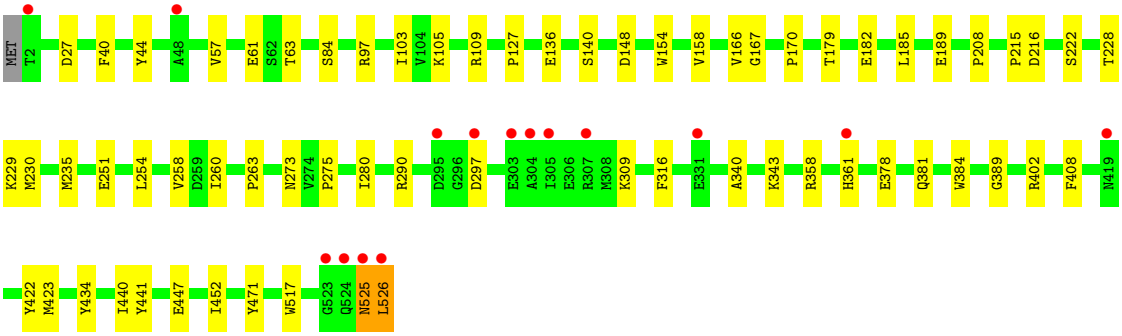
• Molecule 1: Probable vanillyl-alcohol oxidase

Chain M:



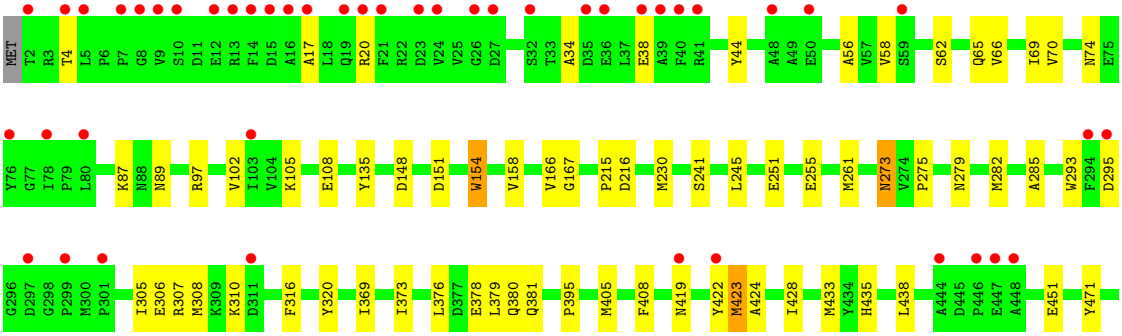
• Molecule 1: Probable vanillyl-alcohol oxidase

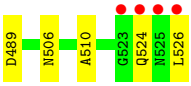
Chain N:



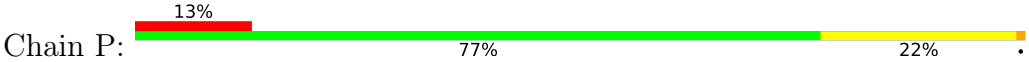
• Molecule 1: Probable vanillyl-alcohol oxidase

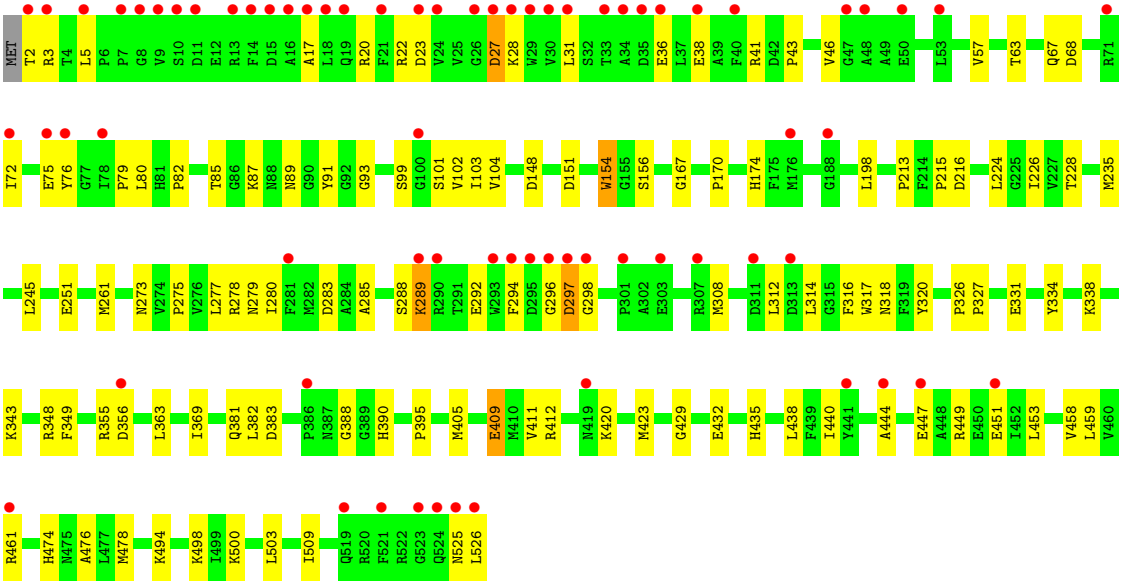
Chain O:





• Molecule 1: Probable vanillyl-alcohol oxidase





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	113.56Å 143.00Å 154.60Å 114.87° 97.00° 93.28°	Depositor
Resolution (Å)	49.04 – 2.30 49.04 – 2.30	Depositor EDS
% Data completeness (in resolution range)	98.2 (49.04-2.30) 98.2 (49.04-2.30)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.32 (at 2.29Å)	Xtriage
Refinement program	PHENIX 1.16_3546	Depositor
R, R_{free}	0.193 , 0.249 0.193 , 0.249	Depositor DCC
R_{free} test set	18986 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	29.9	Xtriage
Anisotropy	0.072	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 39.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	68547	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.44% 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: 55B, FAD, CA

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.49	0/4244	0.60	0/5760
1	B	0.50	0/4244	0.62	2/5760 (0.0%)
1	C	0.52	1/4244 (0.0%)	0.65	6/5760 (0.1%)
1	D	0.50	0/4244	0.62	1/5760 (0.0%)
1	E	0.48	0/4244	0.63	2/5760 (0.0%)
1	F	0.54	4/4244 (0.1%)	0.70	10/5760 (0.2%)
1	G	0.47	1/4244 (0.0%)	0.61	2/5760 (0.0%)
1	H	0.51	0/4244	0.64	2/5760 (0.0%)
1	I	0.48	2/4244 (0.0%)	0.62	0/5760
1	J	0.52	3/4244 (0.1%)	0.63	2/5760 (0.0%)
1	K	0.45	1/4244 (0.0%)	0.59	0/5760
1	L	0.44	0/4244	0.58	0/5760
1	M	0.42	0/4244	0.58	1/5760 (0.0%)
1	N	0.43	0/4244	0.59	2/5760 (0.0%)
1	O	0.39	0/4244	0.55	0/5760
1	P	0.39	0/4244	0.57	0/5760
All	All	0.47	12/67904 (0.0%)	0.61	30/92160 (0.0%)

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	402	ARG	CZ-NH1	-8.87	1.21	1.33
1	F	402	ARG	CG-CD	-8.38	1.31	1.51
1	F	13	ARG	CG-CD	-7.34	1.33	1.51
1	J	358	ARG	CB-CG	7.21	1.72	1.52
1	F	13	ARG	CB-CG	-7.18	1.33	1.52
1	G	250	LYS	CD-CE	6.62	1.67	1.51
1	I	465	GLU	CB-CG	-6.42	1.40	1.52
1	K	64	GLU	CB-CG	-6.21	1.40	1.52
1	J	341	PHE	CB-CG	-5.38	1.42	1.51
1	J	342	GLY	CA-C	-5.37	1.43	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	71	ARG	CG-CD	-5.25	1.38	1.51
1	I	461	ARG	CB-CG	-5.00	1.39	1.52

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	13	ARG	NE-CZ-NH1	14.62	127.61	120.30
1	E	526	LEU	CB-CG-CD2	-11.72	91.08	111.00
1	C	71	ARG	NE-CZ-NH1	-11.10	114.75	120.30
1	F	13	ARG	CB-CG-CD	-10.97	83.09	111.60
1	N	526	LEU	CB-CG-CD2	-10.64	92.91	111.00
1	F	402	ARG	NE-CZ-NH1	-9.13	115.74	120.30
1	F	13	ARG	CG-CD-NE	-8.35	94.26	111.80
1	G	310	LYS	CD-CE-NZ	-7.60	94.22	111.70
1	F	13	ARG	NH1-CZ-NH2	-7.29	111.38	119.40
1	B	442	ASP	CB-CG-OD1	7.28	124.86	118.30
1	G	402	ARG	NE-CZ-NH1	6.87	123.73	120.30
1	F	402	ARG	CB-CG-CD	-6.71	94.16	111.60
1	H	526	LEU	CB-CG-CD1	6.61	122.24	111.00
1	C	64	GLU	CB-CG-CD	-6.50	96.66	114.20
1	M	142	ASP	CB-CG-OD2	-6.46	112.48	118.30
1	H	526	LEU	CA-CB-CG	-6.21	101.01	115.30
1	C	526	LEU	CB-CG-CD2	-5.96	100.88	111.00
1	J	68	ASP	CB-CG-OD2	5.95	123.66	118.30
1	C	71	ARG	CB-CG-CD	-5.79	96.55	111.60
1	J	42	ASP	CB-CG-OD1	5.77	123.49	118.30
1	F	402	ARG	CA-CB-CG	-5.73	100.80	113.40
1	C	71	ARG	CA-CB-CG	-5.56	101.17	113.40
1	B	442	ASP	CB-CG-OD2	-5.56	113.30	118.30
1	N	526	LEU	CA-CB-CG	-5.48	102.69	115.30
1	F	526	LEU	CB-CG-CD2	-5.25	102.08	111.00
1	C	192	ARG	NE-CZ-NH2	-5.21	117.70	120.30
1	E	97	ARG	NE-CZ-NH2	5.14	122.87	120.30
1	F	402	ARG	NH1-CZ-NH2	5.13	125.05	119.40
1	F	336	MET	CG-SD-CE	5.07	108.31	100.20
1	D	526	LEU	CA-CB-CG	-5.01	103.79	115.30

There are no chirality outliers.

There are no planarity outliers.

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	4135	0	4000	38	0
1	B	4135	0	4000	36	1
1	C	4135	0	4000	33	0
1	D	4135	0	4000	38	0
1	E	4135	0	4000	52	0
1	F	4135	0	4000	35	1
1	G	4135	0	4000	45	0
1	H	4135	0	4000	36	0
1	I	4135	0	4000	42	0
1	J	4135	0	4000	40	2
1	K	4135	0	4000	29	0
1	L	4135	0	4000	37	0
1	M	4135	0	4000	53	1
1	N	4135	0	4000	41	1
1	O	4135	0	4000	45	0
1	P	4135	0	4000	99	0
2	A	53	0	29	1	0
2	B	53	0	29	1	0
2	C	53	0	29	1	0
2	D	53	0	29	1	0
2	E	53	0	29	1	0
2	F	53	0	29	1	0
2	G	53	0	29	1	0
2	H	53	0	30	1	0
2	I	53	0	29	1	0
2	J	53	0	30	3	0
2	K	53	0	30	1	0
2	L	53	0	29	1	0
2	M	53	0	30	3	0
2	N	53	0	30	1	0
2	O	53	0	29	0	0
2	P	53	0	31	4	0
3	A	15	0	13	1	0
3	B	15	0	13	1	0
3	C	15	0	14	0	0
3	D	15	0	13	2	0
3	E	15	0	13	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	F	15	0	13	2	0
3	G	15	0	13	3	0
3	H	15	0	13	2	0
3	I	15	0	13	4	0
3	J	15	0	14	0	0
3	K	15	0	14	0	0
3	L	15	0	14	0	0
3	M	15	0	13	0	0
3	N	15	0	14	0	0
3	O	15	0	13	5	0
3	P	15	0	13	1	0
4	A	2	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	J	1	0	0	0	0
4	L	1	0	0	0	0
4	M	1	0	0	0	0
4	N	1	0	0	0	0
4	O	1	0	0	0	0
5	A	90	0	0	2	0
5	B	118	0	0	0	0
5	C	110	0	0	1	0
5	D	108	0	0	0	0
5	E	68	0	0	0	0
5	F	111	0	0	2	0
5	G	87	0	0	0	0
5	H	105	0	0	1	0
5	I	95	0	0	4	0
5	J	72	0	0	4	0
5	K	71	0	0	0	0
5	L	72	0	0	0	0
5	M	51	0	0	1	0
5	N	61	0	0	0	0
5	O	41	0	0	2	0
5	P	27	0	0	0	0
All	All	68547	0	64684	703	3

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 5.

All (703) 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:P:87:LYS:NZ	1:P:154:TRP:CZ2	1.94	1.35
1:D:525:ASN:O	1:D:526:LEU:HD12	1.38	1.20
1:I:394:VAL:HG11	1:I:471:TYR:CE1	1.79	1.18
1:P:87:LYS:HE3	1:P:154:TRP:CE2	1.80	1.15
1:G:394:VAL:HG11	1:G:471:TYR:HE1	1.05	1.13
1:I:394:VAL:HG11	1:I:471:TYR:HE1	1.12	1.09
1:A:461:ARG:NH1	5:A:701:HOH:O	1.86	1.09
1:D:2:THR:HG22	1:D:3:ARG:H	1.18	1.09
1:P:87:LYS:CE	1:P:154:TRP:CE2	2.35	1.09
1:G:394:VAL:HG11	1:G:471:TYR:CE1	1.86	1.08
1:D:97:ARG:HH12	1:D:526:LEU:HD21	1.14	1.07
1:J:525:ASN:O	1:J:526:LEU:HD12	1.55	1.06
1:P:245:LEU:HD13	1:P:320:TYR:CE2	1.90	1.05
1:M:376:LEU:O	1:M:379:LEU:HD12	1.53	1.05
1:P:87:LYS:HE3	1:P:154:TRP:NE1	1.73	1.03
1:N:358:ARG:HA	1:N:361:HIS:CE1	1.94	1.02
1:I:394:VAL:CG1	1:I:471:TYR:HE1	1.73	1.01
1:I:394:VAL:CG1	1:I:471:TYR:CE1	2.47	0.96
1:G:394:VAL:CG1	1:G:471:TYR:HE1	1.79	0.95
1:E:281:PHE:HB3	1:E:423:MET:SD	2.05	0.95
1:I:471:TYR:OH	3:I:602:55B:OAD	1.86	0.94
1:M:281:PHE:HB3	1:M:423:MET:SD	2.08	0.93
1:M:525:ASN:C	1:M:526:LEU:HD12	1.89	0.92
1:G:41:ARG:HH11	1:G:41:ARG:HB3	1.32	0.92
1:P:22:ARG:HD3	1:P:27:ASP:HB3	1.48	0.92
1:P:3:ARG:O	1:P:5:LEU:HD12	1.69	0.92
1:G:525:ASN:O	1:G:526:LEU:HD12	1.71	0.89
1:P:87:LYS:HZ2	1:P:154:TRP:HZ2	1.14	0.89
1:D:2:THR:HG22	1:D:3:ARG:N	1.89	0.88
1:P:474:HIS:HD2	1:P:476:ALA:H	1.22	0.87
1:G:41:ARG:HB3	1:G:41:ARG:NH1	1.88	0.86
1:G:394:VAL:CG1	1:G:471:TYR:CE1	2.55	0.86
1:G:429:GLY:HA3	1:G:432:GLU:OE2	1.77	0.84
1:F:13:ARG:HD2	1:F:13:ARG:N	1.93	0.82
1:H:97:ARG:HH22	1:H:526:LEU:HD21	1.44	0.82
1:M:252:GLU:O	5:M:701:HOH:O	1.97	0.82
1:K:6:PRO:HG2	1:K:78:ILE:HD12	1.62	0.81
1:F:525:ASN:O	1:F:526:LEU:HD12	1.80	0.80
1:K:525:ASN:O	1:K:526:LEU:HD12	1.82	0.80
1:M:376:LEU:HB3	1:M:379:LEU:CD1	2.12	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:2:THR:CG2	1:D:3:ARG:H	1.95	0.79
1:K:432:GLU:C	1:K:432:GLU:OE1	2.22	0.79
1:P:3:ARG:O	1:P:5:LEU:CD1	2.31	0.78
1:P:87:LYS:CE	1:P:154:TRP:CZ2	2.66	0.78
1:N:97:ARG:NH2	1:N:526:LEU:HD21	1.99	0.77
1:D:97:ARG:HH22	1:D:526:LEU:HD11	1.50	0.77
1:L:525:ASN:O	1:L:526:LEU:HD12	1.84	0.77
1:N:358:ARG:HA	1:N:361:HIS:HE1	1.48	0.77
1:K:9:VAL:HA	1:K:13:ARG:HH21	1.49	0.77
1:M:376:LEU:O	1:M:379:LEU:CD1	2.31	0.76
1:H:97:ARG:HH12	1:H:526:LEU:HD22	1.49	0.75
1:A:525:ASN:ND2	5:A:702:HOH:O	2.19	0.75
1:I:394:VAL:CB	1:I:471:TYR:HE1	2.00	0.75
1:O:97:ARG:HH12	1:O:526:LEU:HD23	1.52	0.75
1:I:64:GLU:OE2	5:I:701:HOH:O	2.04	0.74
1:G:97:ARG:HH12	1:G:526:LEU:HD21	1.52	0.74
1:N:185:LEU:HB2	1:N:189:GLU:HG2	1.69	0.74
1:C:255:GLU:HB2	1:C:405:MET:HE2	1.70	0.73
1:P:87:LYS:NZ	1:P:154:TRP:CH2	2.55	0.73
1:P:390:HIS:CE1	2:P:601:FAD:C8M	2.72	0.73
1:L:97:ARG:HH12	1:L:526:LEU:HD21	1.53	0.73
1:G:471:TYR:OH	3:G:602:55B:OAD	2.06	0.72
1:D:97:ARG:NH1	1:D:526:LEU:HD21	1.97	0.72
1:M:185:LEU:HB2	1:M:189:GLU:HG2	1.71	0.72
1:O:105:LYS:HG2	1:O:108:GLU:HB2	1.70	0.71
1:P:294:PHE:HZ	1:P:297:ASP:HB3	1.56	0.71
1:N:358:ARG:O	1:N:361:HIS:ND1	2.24	0.70
1:F:97:ARG:HH12	1:F:526:LEU:HD21	1.56	0.70
1:M:277:LEU:HD11	1:M:317:TRP:HB3	1.73	0.70
1:F:408:PHE:CD1	1:F:422:TYR:HE2	2.10	0.70
1:G:41:ARG:HH11	1:G:41:ARG:CB	2.03	0.70
1:C:97:ARG:HH12	1:C:526:LEU:HD23	1.58	0.69
1:B:255:GLU:HB2	1:B:405:MET:HE2	1.74	0.68
1:H:408:PHE:CD1	1:H:422:TYR:HE2	2.11	0.68
1:P:245:LEU:HD13	1:P:320:TYR:CZ	2.29	0.68
1:J:358:ARG:HA	5:J:746:HOH:O	1.94	0.67
1:N:517:TRP:CH2	1:N:526:LEU:HD23	2.29	0.67
1:C:97:ARG:HH12	1:C:526:LEU:CD2	2.07	0.67
1:O:87:LYS:HE3	1:O:154:TRP:CD2	2.30	0.67
1:P:224:LEU:HD22	1:P:503:LEU:HD12	1.77	0.67
1:O:65:GLN:O	1:O:69:ILE:HG13	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:ARG:HH12	1:A:526:LEU:HD23	1.59	0.67
1:K:432:GLU:OE1	1:K:432:GLU:O	2.13	0.67
1:P:151:ASP:HA	1:P:369:ILE:HD13	1.76	0.66
1:J:358:ARG:HG3	5:J:746:HOH:O	1.94	0.66
1:B:408:PHE:CD1	1:B:422:TYR:HE2	2.14	0.66
1:J:342:GLY:O	1:J:344:ILE:N	2.28	0.66
1:I:394:VAL:CB	1:I:471:TYR:CE1	2.78	0.66
1:A:97:ARG:HH12	1:A:526:LEU:CD2	2.09	0.65
1:K:6:PRO:HG2	1:K:78:ILE:CD1	2.26	0.65
1:N:148:ASP:OD1	1:N:167:GLY:HA3	1.96	0.65
1:B:285:ALA:HB2	1:B:423:MET:CE	2.27	0.65
1:G:38:GLU:OE2	1:G:41:ARG:HD2	1.96	0.65
1:H:22:ARG:HD3	1:H:27:ASP:HB2	1.79	0.65
1:F:297:ASP:OD2	5:F:701:HOH:O	2.14	0.65
1:P:22:ARG:HD3	1:P:27:ASP:CB	2.26	0.65
1:M:148:ASP:OD1	1:M:167:GLY:HA3	1.97	0.64
1:E:421:ASP:CB	1:E:423:MET:CE	2.76	0.64
1:P:390:HIS:CE1	2:P:601:FAD:HM81	2.31	0.64
1:P:390:HIS:CE1	2:P:601:FAD:HM82	2.32	0.64
1:E:421:ASP:HB2	1:E:423:MET:CE	2.28	0.64
2:L:601:FAD:H8A	2:L:601:FAD:O5B	1.97	0.64
1:K:97:ARG:HH12	1:K:526:LEU:HD21	1.63	0.64
1:O:135:TYR:CE1	1:O:373:ILE:HD13	2.32	0.64
1:P:458:VAL:HG13	1:P:461:ARG:HH21	1.63	0.64
1:P:312:LEU:HB3	1:P:314:LEU:HG	1.79	0.63
1:F:13:ARG:HD2	1:F:13:ARG:H	1.61	0.63
1:M:525:ASN:O	1:M:526:LEU:HD12	1.99	0.63
1:E:525:ASN:C	1:E:526:LEU:HD12	2.19	0.62
1:A:402:ARG:HD3	1:B:71:ARG:NH2	2.13	0.62
1:D:471:TYR:OH	3:D:602:55B:OAD	2.17	0.62
1:A:489:ASP:HB2	1:J:406:LYS:HE2	1.81	0.62
1:F:268:MET:HG2	1:F:430:LEU:HD21	1.80	0.62
1:G:420:LYS:NZ	1:G:451:GLU:OE1	2.32	0.62
1:C:148:ASP:OD1	1:C:174:HIS:NE2	2.30	0.61
1:K:277:LEU:HB3	1:K:426:PHE:HB2	1.82	0.61
1:L:38:GLU:HA	1:L:41:ARG:HD2	1.82	0.61
1:J:358:ARG:HB3	5:J:742:HOH:O	2.00	0.61
1:F:408:PHE:HD1	1:F:422:TYR:HE2	1.47	0.61
1:B:22:ARG:HD3	1:B:27:ASP:HB3	1.82	0.61
1:I:461:ARG:NH1	1:I:465:GLU:OE1	2.32	0.61
1:L:46:VAL:HG21	1:L:391:ILE:HD12	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:408:PHE:HD1	1:A:422:TYR:HE2	1.48	0.61
1:G:408:PHE:CD1	1:G:422:TYR:HE2	2.19	0.61
1:M:376:LEU:HB3	1:M:379:LEU:HD13	1.83	0.61
1:A:525:ASN:HB3	1:A:526:LEU:HD12	1.82	0.61
1:F:299:PRO:HD3	1:F:419:ASN:ND2	2.16	0.60
1:F:471:TYR:OH	3:F:602:55B:OAD	2.17	0.60
1:I:97:ARG:HH12	1:I:526:LEU:HD23	1.67	0.60
1:P:245:LEU:HD13	1:P:320:TYR:CD2	2.36	0.60
1:L:376:LEU:HB3	1:L:379:LEU:HD12	1.82	0.60
1:H:97:ARG:HH22	1:H:526:LEU:CD2	2.13	0.60
1:P:494:LYS:O	1:P:498:LYS:HG3	2.02	0.60
1:A:408:PHE:CD1	1:A:422:TYR:HE2	2.20	0.60
1:G:402:ARG:NH2	1:G:405:MET:HG2	2.17	0.60
1:H:525:ASN:C	1:H:526:LEU:HG	2.21	0.59
1:I:461:ARG:NH2	1:I:465:GLU:OE2	2.35	0.59
1:N:158:VAL:HG22	1:N:230:MET:HB3	1.85	0.59
1:C:64:GLU:OE2	5:C:701:HOH:O	2.16	0.59
1:B:251:GLU:OE1	1:B:412:ARG:NH1	2.36	0.59
1:P:46:VAL:CG1	1:P:453:LEU:HD23	2.33	0.59
1:J:408:PHE:CD1	1:J:422:TYR:HE2	2.21	0.58
1:E:97:ARG:HH12	1:E:526:LEU:HD21	1.67	0.58
1:M:123:ALA:HB1	1:M:125:LEU:HD21	1.85	0.58
1:P:87:LYS:NZ	1:P:154:TRP:CE2	2.49	0.58
1:P:474:HIS:CD2	1:P:476:ALA:H	2.13	0.58
1:I:97:ARG:HH12	1:I:526:LEU:CD2	2.15	0.58
2:I:601:FAD:H8A	2:I:601:FAD:O5B	2.03	0.58
1:P:420:LYS:NZ	1:P:451:GLU:OE1	2.28	0.58
1:L:422:TYR:HH	1:L:435:HIS:HE2	1.52	0.58
1:G:249:ASP:OD2	1:G:250:LYS:NZ	2.35	0.57
1:B:97:ARG:HH12	1:B:526:LEU:CD2	2.17	0.57
1:I:22:ARG:HD3	1:I:27:ASP:HB2	1.86	0.57
1:P:87:LYS:HE3	1:P:154:TRP:CD1	2.37	0.57
1:D:158:VAL:HG22	1:D:230:MET:HB3	1.87	0.57
1:P:63:THR:HG23	1:P:228:THR:HG21	1.86	0.57
1:N:166:VAL:HG11	1:N:434:TYR:HE2	1.70	0.57
1:G:251:GLU:OE1	1:G:412:ARG:NH1	2.37	0.56
2:N:601:FAD:H8A	2:N:601:FAD:O5B	2.04	0.56
1:B:97:ARG:HH12	1:B:526:LEU:HD23	1.70	0.56
1:K:406:LYS:HD3	1:K:468:TYR:OH	2.05	0.56
1:P:474:HIS:O	1:P:478:MET:HG3	2.05	0.56
1:E:428:ILE:HG23	1:E:433:MET:HG2	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:64:GLU:OE1	5:I:701:HOH:O	2.18	0.56
1:J:166:VAL:HG11	1:J:434:TYR:HE2	1.70	0.56
1:E:71:ARG:HD2	1:H:402:ARG:HH21	1.70	0.56
1:F:293:TRP:O	1:F:307:ARG:NH2	2.39	0.56
1:I:394:VAL:HB	1:I:471:TYR:CE1	2.38	0.56
1:O:34:ALA:O	1:O:38:GLU:HG2	2.05	0.56
1:E:22:ARG:HB3	1:E:27:ASP:OD1	2.06	0.56
1:H:268:MET:HG2	1:H:430:LEU:HD21	1.87	0.56
1:P:405:MET:HG3	1:P:409:GLU:OE2	2.06	0.56
2:F:601:FAD:H8A	2:F:601:FAD:O5B	2.06	0.56
1:H:300:MET:HG2	1:H:304:ALA:HB3	1.88	0.55
1:P:245:LEU:HD11	1:P:318:ASN:HB3	1.87	0.55
1:A:112:ARG:NH2	1:A:126:GLU:OE2	2.38	0.55
1:E:421:ASP:HB3	1:E:423:MET:CE	2.35	0.55
1:G:281:PHE:HB3	1:G:423:MET:SD	2.46	0.55
2:C:601:FAD:H8A	2:C:601:FAD:O5B	2.06	0.55
1:O:310:LYS:NZ	5:O:701:HOH:O	2.33	0.55
1:O:423:MET:HB2	1:O:438:LEU:O	2.07	0.55
1:D:168:TYR:HA	1:D:274:VAL:HB	1.89	0.55
1:N:170:PRO:HD2	1:N:235:MET:HE1	1.88	0.55
1:P:390:HIS:HD2	1:P:438:LEU:HD22	1.71	0.55
1:B:285:ALA:HB2	1:B:423:MET:HE1	1.89	0.55
1:A:3:ARG:NH2	1:A:15:ASP:OD1	2.30	0.55
1:D:303:GLU:CD	1:D:303:GLU:H	2.10	0.55
1:E:97:ARG:HH12	1:E:526:LEU:CD2	2.19	0.55
1:G:471:TYR:OH	3:G:602:55B:OAJ	2.24	0.55
1:I:6:PRO:HG2	1:I:78:ILE:HD12	1.89	0.55
1:I:438:LEU:HD11	3:I:602:55B:H12	1.88	0.55
1:P:390:HIS:HE1	2:P:601:FAD:HM81	1.71	0.55
1:A:402:ARG:HD3	1:B:71:ARG:HH22	1.72	0.55
1:P:525:ASN:O	1:P:526:LEU:HD12	2.08	0.54
1:P:423:MET:HE3	1:P:440:ILE:H	1.72	0.54
1:I:64:GLU:CD	5:I:701:HOH:O	2.42	0.54
1:P:277:LEU:HD11	1:P:317:TRP:HB3	1.89	0.54
1:C:268:MET:HG2	1:C:430:LEU:HD21	1.88	0.54
1:P:251:GLU:OE1	1:P:412:ARG:NH1	2.40	0.54
1:G:46:VAL:HG21	1:G:391:ILE:HD12	1.89	0.54
1:K:307:ARG:HG3	1:K:307:ARG:HH11	1.73	0.54
1:M:387:ASN:HB2	1:M:442:ASP:OD2	2.07	0.54
1:O:4:THR:HA	5:O:719:HOH:O	2.07	0.54
1:B:408:PHE:CE1	1:B:422:TYR:HE2	2.25	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:273:ASN:O	1:D:275:PRO:HD3	2.08	0.54
1:D:298:GLY:HA2	1:D:419:ASN:OD1	2.08	0.53
1:O:295:ASP:N	1:O:295:ASP:OD1	2.41	0.53
1:N:408:PHE:CD1	1:N:422:TYR:HE2	2.26	0.53
1:A:251:GLU:OE1	1:A:412:ARG:NH1	2.41	0.53
1:D:423:MET:SD	1:D:440:ILE:HD12	2.49	0.53
1:F:420:LYS:NZ	1:F:451:GLU:OE1	2.40	0.53
1:O:255:GLU:H	1:O:405:MET:HE1	1.73	0.53
1:C:22:ARG:HD3	1:C:27:ASP:HB3	1.90	0.53
1:H:307:ARG:HA	1:H:310:LYS:HG2	1.90	0.53
1:O:245:LEU:HD13	1:O:320:TYR:CE2	2.44	0.53
1:B:82:PRO:HB3	1:B:226:ILE:HG12	1.90	0.53
1:J:277:LEU:HD11	1:J:317:TRP:HB3	1.90	0.53
1:M:303:GLU:CD	1:M:303:GLU:H	2.11	0.53
1:G:402:ARG:NH2	1:G:405:MET:CG	2.72	0.52
1:H:408:PHE:HD1	1:H:422:TYR:HE2	1.58	0.52
1:M:132:PHE:CE1	1:M:374:PRO:HB2	2.44	0.52
1:M:313:ASP:HB3	1:M:355:ARG:HH22	1.75	0.52
1:J:97:ARG:HH12	1:J:526:LEU:HD21	1.74	0.52
1:O:97:ARG:HH12	1:O:526:LEU:CD2	2.22	0.52
1:P:38:GLU:HA	1:P:41:ARG:HH11	1.72	0.52
1:E:254:LEU:O	1:E:258:VAL:HG23	2.09	0.52
1:F:267:ASN:ND2	5:F:704:HOH:O	2.42	0.52
1:L:97:ARG:HH22	1:L:526:LEU:HD11	1.75	0.52
1:P:17:ALA:HB2	1:P:76:TYR:HD2	1.73	0.52
1:E:421:ASP:CB	1:E:423:MET:HE1	2.40	0.52
1:N:251:GLU:HG2	1:N:316:PHE:CZ	2.44	0.52
1:P:2:THR:HG22	1:P:3:ARG:H	1.75	0.52
1:P:85:THR:HG23	1:P:156:SER:HB2	1.92	0.52
1:C:97:ARG:HH22	1:C:526:LEU:HG	1.75	0.52
1:P:458:VAL:HG13	1:P:461:ARG:NH2	2.23	0.52
2:J:601:FAD:H8A	2:J:601:FAD:O5B	2.10	0.51
1:E:338:LYS:HG2	1:E:349:PHE:CD2	2.46	0.51
1:H:160:ASN:OD1	1:H:174:HIS:ND1	2.40	0.51
1:N:280:ILE:HD13	1:N:309:LYS:HG2	1.92	0.51
1:O:44:TYR:CE2	1:O:89:ASN:HB3	2.45	0.51
1:I:408:PHE:CD1	1:I:422:TYR:HE2	2.28	0.51
1:K:9:VAL:HA	1:K:13:ARG:NH2	2.22	0.51
1:B:148:ASP:OD1	1:B:174:HIS:NE2	2.43	0.51
1:H:251:GLU:HG2	1:H:316:PHE:CZ	2.46	0.51
1:P:334:TYR:CE2	1:P:338:LYS:HD3	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:255:GLU:HB2	1:C:405:MET:CE	2.40	0.51
1:B:500:LYS:NZ	1:B:504:ASP:OD2	2.41	0.51
1:K:285:ALA:HA	1:K:384:TRP:CE3	2.46	0.51
1:L:422:TYR:OH	1:L:435:HIS:NE2	2.40	0.51
1:P:17:ALA:HB2	1:P:76:TYR:CD2	2.45	0.51
1:B:213:PRO:O	1:B:215:PRO:HD3	2.10	0.51
1:D:525:ASN:C	1:D:526:LEU:HD12	2.23	0.51
1:O:17:ALA:O	1:O:20:ARG:HB2	2.11	0.51
1:A:408:PHE:HD1	1:A:422:TYR:CE2	2.27	0.51
1:G:394:VAL:CB	1:G:471:TYR:CE1	2.93	0.51
1:M:513:LYS:HE2	2:M:601:FAD:O2B	2.11	0.51
1:P:87:LYS:CE	1:P:154:TRP:CD2	2.93	0.51
1:D:268:MET:HG2	1:D:430:LEU:HD21	1.92	0.51
1:I:56:ALA:HB3	1:I:102:VAL:HG22	1.92	0.51
1:J:408:PHE:HD1	1:J:422:TYR:HE2	1.60	0.50
1:P:423:MET:HE1	1:P:438:LEU:O	2.12	0.50
1:F:445:ASP:OD1	1:F:447:GLU:HG2	2.11	0.50
1:G:34:ALA:O	1:G:38:GLU:HG2	2.10	0.50
1:M:22:ARG:HB3	1:M:27:ASP:OD1	2.10	0.50
1:A:422:TYR:OH	1:A:435:HIS:NE2	2.42	0.50
1:E:408:PHE:CD1	1:E:422:TYR:HE2	2.29	0.50
1:H:427:VAL:HB	1:H:434:TYR:HB2	1.93	0.50
1:P:338:LYS:HA	1:P:349:PHE:CE2	2.47	0.50
1:P:79:PRO:HB2	1:P:101:SER:OG	2.11	0.50
1:E:41:ARG:NH2	1:E:50:GLU:OE1	2.34	0.50
1:E:277:LEU:HD11	1:E:317:TRP:HB3	1.93	0.50
1:A:402:ARG:CZ	1:B:71:ARG:HH12	2.25	0.50
1:C:356:ASP:HB2	1:L:373:ILE:HD11	1.92	0.50
1:H:97:ARG:NH1	1:H:526:LEU:HD22	2.22	0.50
1:L:387:ASN:O	1:L:443:THR:OG1	2.26	0.50
1:C:35:ASP:OD1	1:C:36:GLU:HG3	2.11	0.50
1:E:525:ASN:O	1:E:526:LEU:HD12	2.10	0.50
1:N:84:SER:OG	1:N:127:PRO:HB3	2.11	0.50
1:B:222:SER:HB2	1:J:213:PRO:HG3	1.93	0.50
1:G:97:ARG:NH1	1:G:526:LEU:HD21	2.24	0.50
1:N:525:ASN:O	1:N:526:LEU:HG	2.12	0.50
1:G:273:ASN:O	1:G:275:PRO:HD3	2.12	0.50
1:G:158:VAL:HG22	1:G:230:MET:HB3	1.94	0.49
1:L:279:ASN:HA	1:L:316:PHE:O	2.12	0.49
1:M:213:PRO:O	1:M:215:PRO:HD3	2.11	0.49
1:P:278:ARG:NE	1:P:283:ASP:OD1	2.38	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:285:ALA:O	1:C:381:GLN:HA	2.12	0.49
1:M:313:ASP:HB3	1:M:355:ARG:NH2	2.27	0.49
1:E:251:GLU:HG2	1:E:316:PHE:CE1	2.47	0.49
1:I:394:VAL:CG1	1:I:471:TYR:CD1	2.96	0.49
1:N:280:ILE:HD13	1:N:309:LYS:CG	2.41	0.49
1:O:279:ASN:HA	1:O:316:PHE:O	2.13	0.49
1:P:148:ASP:OD1	1:P:167:GLY:HA3	2.12	0.49
1:G:5:LEU:HD23	1:G:9:VAL:O	2.12	0.49
2:M:601:FAD:H8A	2:M:601:FAD:O5B	2.13	0.49
1:F:148:ASP:OD1	1:F:174:HIS:NE2	2.45	0.49
1:K:408:PHE:CD1	1:K:422:TYR:HE2	2.31	0.49
1:N:358:ARG:HA	1:N:361:HIS:ND1	2.24	0.49
1:P:411:VAL:HG22	1:P:459:LEU:HD22	1.94	0.49
2:D:601:FAD:H8A	2:D:601:FAD:O5B	2.12	0.49
1:O:74:ASN:OD1	1:O:506:ASN:ND2	2.38	0.49
1:M:90:GLY:HA2	1:M:390:HIS:O	2.12	0.49
1:N:273:ASN:O	1:N:275:PRO:HD3	2.13	0.49
1:P:283:ASP:OD2	1:P:320:TYR:OH	2.17	0.49
1:K:132:PHE:CE1	1:K:374:PRO:HB2	2.48	0.49
1:L:293:TRP:CD2	1:L:308:MET:HG2	2.46	0.49
1:O:408:PHE:CD1	1:O:422:TYR:HE2	2.31	0.49
1:P:46:VAL:HG11	1:P:453:LEU:HD23	1.95	0.49
1:D:20:ARG:HB3	1:D:72:ILE:HD13	1.95	0.49
1:E:148:ASP:OD1	1:E:167:GLY:HA3	2.13	0.49
1:I:350:PHE:CD1	1:I:355:ARG:HD2	2.48	0.49
1:C:61:GLU:HB2	1:C:109:ARG:CZ	2.42	0.48
1:H:151:ASP:OD2	3:H:602:55B:H15	2.14	0.48
1:J:84:SER:OG	1:J:127:PRO:HB3	2.13	0.48
1:M:261:MET:SD	1:M:428:ILE:HG21	2.53	0.48
1:L:238:PRO:HG2	1:L:324:TYR:HB3	1.95	0.48
1:M:273:ASN:O	1:M:275:PRO:HD3	2.13	0.48
1:G:394:VAL:CG1	1:G:471:TYR:CD1	2.97	0.48
1:L:496:HIS:HB3	1:L:516:ILE:HD13	1.95	0.48
1:P:382:LEU:O	1:P:388:GLY:HA3	2.13	0.48
1:C:273:ASN:O	1:C:275:PRO:HD3	2.13	0.48
1:D:326:PRO:HB2	1:D:328:PRO:HD2	1.95	0.48
1:E:273:ASN:O	1:E:275:PRO:HD3	2.13	0.48
1:M:118:GLU:OE2	1:M:143:SER:OG	2.22	0.48
1:B:151:ASP:OD2	3:B:602:55B:H15	2.13	0.48
1:G:394:VAL:CB	1:G:471:TYR:HE1	2.24	0.48
1:J:420:LYS:NZ	1:J:451:GLU:OE1	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:376:LEU:HD22	1:O:379:LEU:HD11	1.95	0.48
1:A:41:ARG:NH2	1:A:50:GLU:OE1	2.46	0.48
1:D:261:MET:SD	1:D:428:ILE:HG21	2.53	0.48
1:H:313:ASP:HB3	1:H:355:ARG:NH2	2.29	0.48
1:M:44:TYR:CE2	1:M:89:ASN:HB3	2.49	0.48
1:N:517:TRP:CH2	1:N:526:LEU:CD2	2.95	0.48
1:M:382:LEU:N	1:M:382:LEU:HD22	2.29	0.48
1:N:260:ILE:O	1:N:263:PRO:HD2	2.14	0.48
1:M:154:TRP:CH2	1:M:379:LEU:HD21	2.49	0.48
1:D:2:THR:HG22	1:D:3:ARG:O	2.14	0.48
1:C:345:PRO:HG3	1:F:35:ASP:HB3	1.96	0.48
1:J:329:LEU:HD11	1:J:333:TYR:CZ	2.49	0.48
1:O:58:VAL:HG11	1:O:69:ILE:HD13	1.96	0.48
1:E:362:VAL:O	1:E:366:ARG:HG2	2.14	0.47
1:P:289:LYS:HB3	1:P:383:ASP:O	2.13	0.47
1:B:313:ASP:HB3	1:B:355:ARG:NH2	2.29	0.47
1:E:71:ARG:CD	1:H:402:ARG:HH21	2.27	0.47
1:L:281:PHE:HB3	1:L:423:MET:HG3	1.96	0.47
1:N:447:GLU:OE1	1:N:447:GLU:HA	2.13	0.47
1:E:97:ARG:HH22	1:E:526:LEU:HD21	1.79	0.47
1:M:97:ARG:O	1:M:97:ARG:NH1	2.40	0.47
1:O:285:ALA:O	1:O:381:GLN:HA	2.15	0.47
2:B:601:FAD:H8A	2:B:601:FAD:O5B	2.14	0.47
1:H:41:ARG:NH2	1:H:50:GLU:OE1	2.40	0.47
1:K:168:TYR:HA	1:K:274:VAL:HB	1.95	0.47
1:K:422:TYR:OH	1:K:435:HIS:NE2	2.38	0.47
1:O:293:TRP:O	1:O:307:ARG:NH2	2.48	0.47
1:P:63:THR:O	1:P:67:GLN:HG3	2.13	0.47
1:P:279:ASN:HA	1:P:316:PHE:O	2.13	0.47
1:D:456:THR:HB	1:D:477:LEU:HD11	1.96	0.47
1:J:148:ASP:OD1	1:J:167:GLY:HA3	2.14	0.47
1:M:473:THR:HG21	1:M:481:VAL:HG21	1.95	0.47
1:C:251:GLU:HG2	1:C:316:PHE:CZ	2.49	0.47
1:K:46:VAL:HG21	1:K:391:ILE:HD12	1.96	0.47
1:L:421:ASP:N	1:L:421:ASP:OD1	2.46	0.47
1:A:262:LEU:HB3	1:A:263:PRO:HD3	1.97	0.47
1:D:408:PHE:CD1	1:D:422:TYR:CE2	3.03	0.47
1:H:185:LEU:HD12	1:H:189:GLU:HG2	1.95	0.47
2:H:601:FAD:H8A	2:H:601:FAD:O5B	2.14	0.47
1:I:16:ALA:O	1:I:19:GLN:N	2.46	0.47
1:I:338:LYS:HG2	1:I:349:PHE:CD2	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:291:THR:HA	1:M:294:PHE:O	2.15	0.47
1:P:68:ASP:O	1:P:72:ILE:HG12	2.14	0.47
1:P:80:LEU:HD23	1:P:102:VAL:HB	1.96	0.47
1:P:280:ILE:HB	1:P:316:PHE:HA	1.97	0.47
1:P:395:PRO:HD2	1:P:435:HIS:O	2.13	0.47
1:J:273:ASN:O	1:J:275:PRO:HD3	2.15	0.47
1:L:389:GLY:O	1:L:440:ILE:HA	2.15	0.47
1:P:288:SER:HB2	1:P:292:GLU:OE1	2.15	0.47
1:A:305:ILE:HA	1:A:308:MET:HE2	1.95	0.47
2:A:601:FAD:H8A	2:A:601:FAD:O5B	2.15	0.47
1:C:277:LEU:HB3	1:C:426:PHE:HB2	1.96	0.47
1:D:423:MET:H	1:D:423:MET:HG2	1.62	0.47
1:J:238:PRO:HG2	1:J:324:TYR:HB3	1.96	0.47
1:M:29:TRP:CZ2	1:M:109:ARG:HD3	2.50	0.47
1:P:170:PRO:HD2	1:P:235:MET:HE1	1.97	0.47
1:A:273:ASN:O	1:A:275:PRO:HD3	2.15	0.46
1:D:279:ASN:HA	1:D:316:PHE:O	2.15	0.46
1:E:207:PHE:CZ	1:E:209:TYR:HB2	2.50	0.46
1:A:18:LEU:HD23	1:A:21:PHE:HD2	1.79	0.46
1:A:402:ARG:NH1	1:B:71:ARG:HH12	2.13	0.46
1:O:422:TYR:CZ	1:O:424:ALA:HB2	2.50	0.46
1:I:378:GLU:OE1	3:I:602:55B:H15	2.16	0.46
1:O:87:LYS:HE3	1:O:154:TRP:CE3	2.49	0.46
1:P:72:ILE:O	1:P:75:GLU:HB2	2.15	0.46
1:P:312:LEU:O	1:P:355:ARG:NH2	2.45	0.46
1:E:338:LYS:HA	1:E:349:PHE:CE2	2.50	0.46
1:E:481:VAL:O	1:E:484:THR:OG1	2.24	0.46
1:D:44:TYR:CE2	1:D:89:ASN:HB3	2.51	0.46
1:H:273:ASN:O	1:H:275:PRO:HD3	2.16	0.46
2:K:601:FAD:H8A	2:K:601:FAD:O5B	2.16	0.46
1:N:63:THR:HG23	1:N:228:THR:HG21	1.97	0.46
1:P:82:PRO:HB3	1:P:226:ILE:HG12	1.98	0.46
1:G:260:ILE:O	1:G:263:PRO:HD2	2.16	0.46
1:N:44:TYR:CD1	1:N:389:GLY:HA2	2.51	0.46
1:P:308:MET:O	1:P:312:LEU:HD13	2.16	0.46
1:O:56:ALA:HB3	1:O:102:VAL:HG13	1.98	0.46
1:A:44:TYR:CE2	1:A:89:ASN:HB3	2.50	0.46
1:B:261:MET:SD	1:B:428:ILE:HG21	2.56	0.46
1:K:148:ASP:OD1	1:K:167:GLY:HA3	2.15	0.46
1:M:300:MET:HG2	1:M:304:ALA:HB3	1.98	0.46
1:E:151:ASP:OD2	3:E:602:55B:H15	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:463:ALA:HB1	1:F:468:TYR:HB2	1.96	0.46
1:G:312:LEU:O	1:G:355:ARG:NH2	2.49	0.46
1:J:303:GLU:HG3	1:J:304:ALA:N	2.31	0.46
1:M:277:LEU:HB3	1:M:426:PHE:HB2	1.98	0.46
1:D:46:VAL:HG21	1:D:391:ILE:HD12	1.98	0.46
1:D:525:ASN:O	1:D:526:LEU:CD1	2.34	0.46
1:F:97:ARG:HH12	1:F:526:LEU:CD2	2.26	0.46
1:F:275:PRO:HD2	1:F:428:ILE:HB	1.98	0.46
1:G:279:ASN:HA	1:G:316:PHE:O	2.16	0.46
1:J:255:GLU:HB2	1:J:405:MET:HE2	1.97	0.46
1:M:251:GLU:HG2	1:M:316:PHE:CZ	2.51	0.46
1:E:421:ASP:HB3	1:E:423:MET:HE1	1.96	0.45
1:H:293:TRP:CD2	1:H:308:MET:HG2	2.51	0.45
1:M:408:PHE:CD1	1:M:422:TYR:HE2	2.33	0.45
1:B:148:ASP:OD1	1:B:167:GLY:HA3	2.16	0.45
1:B:268:MET:HG2	1:B:430:LEU:HD21	1.98	0.45
1:E:279:ASN:HA	1:E:316:PHE:O	2.16	0.45
1:E:389:GLY:O	1:E:440:ILE:HA	2.17	0.45
1:H:418:TYR:CG	1:H:455:MET:HB2	2.51	0.45
1:I:29:TRP:CE2	1:I:109:ARG:HD3	2.50	0.45
1:L:406:LYS:HD2	1:L:406:LYS:HA	1.70	0.45
1:O:293:TRP:CD2	1:O:308:MET:HG2	2.51	0.45
1:P:43:PRO:HD2	1:P:93:GLY:HA3	1.98	0.45
1:A:305:ILE:HA	1:A:308:MET:CE	2.46	0.45
1:C:207:PHE:CD1	1:C:208:PRO:HD2	2.51	0.45
1:M:177:TRP:HB3	1:M:233:ALA:HB3	1.98	0.45
1:P:148:ASP:OD1	1:P:174:HIS:NE2	2.49	0.45
1:A:268:MET:HG2	1:A:430:LEU:HD21	1.99	0.45
1:J:57:VAL:HG22	1:J:103:ILE:HB	1.98	0.45
1:L:119:LYS:HD3	1:L:120:TYR:CZ	2.51	0.45
1:P:80:LEU:HD22	1:P:104:VAL:CG2	2.46	0.45
1:G:270:PRO:HB3	1:G:333:TYR:CD1	2.52	0.45
1:G:378:GLU:OE1	3:G:602:55B:OAC	2.23	0.45
1:P:444:ALA:O	1:P:449:ARG:NH1	2.50	0.45
1:D:251:GLU:HG2	1:D:316:PHE:CZ	2.51	0.45
1:M:260:ILE:O	1:M:263:PRO:HD2	2.15	0.45
1:C:352:HIS:HA	1:C:363:LEU:HD21	1.99	0.45
1:E:251:GLU:HG2	1:E:316:PHE:CZ	2.51	0.45
1:I:461:ARG:NH1	1:I:465:GLU:CD	2.70	0.45
1:L:29:TRP:CE2	1:L:109:ARG:HD3	2.51	0.45
1:L:328:PRO:HA	1:L:331:GLU:HG2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:72:ILE:O	1:P:75:GLU:N	2.49	0.45
1:F:151:ASP:OD2	3:F:602:55B:H15	2.17	0.45
1:J:393:PHE:CZ	1:J:459:LEU:HB3	2.52	0.45
1:C:22:ARG:HD3	1:C:27:ASP:CB	2.47	0.45
1:C:420:LYS:NZ	1:C:451:GLU:OE1	2.45	0.45
1:D:277:LEU:HB3	1:D:426:PHE:HB2	1.98	0.45
1:K:260:ILE:O	1:K:263:PRO:HD2	2.17	0.45
1:H:84:SER:OG	1:H:127:PRO:HB3	2.17	0.44
1:J:251:GLU:HG2	1:J:316:PHE:CZ	2.51	0.44
1:L:97:ARG:NH1	1:L:526:LEU:HD21	2.26	0.44
1:B:158:VAL:HG22	1:B:230:MET:HB3	1.99	0.44
1:I:85:THR:HG21	1:I:130:THR:HG22	1.99	0.44
1:M:158:VAL:HG22	1:M:230:MET:HB3	2.00	0.44
1:N:251:GLU:HG2	1:N:316:PHE:CE1	2.52	0.44
1:C:115:GLU:O	1:C:123:ALA:HA	2.17	0.44
1:F:112:ARG:NH2	1:F:126:GLU:OE2	2.51	0.44
1:J:408:PHE:HD1	1:J:422:TYR:CE2	2.35	0.44
1:O:451:GLU:OE2	1:O:451:GLU:HA	2.17	0.44
1:P:423:MET:CE	1:P:440:ILE:H	2.30	0.44
1:P:500:LYS:NZ	1:P:509:ILE:O	2.39	0.44
1:A:97:ARG:NH1	1:A:526:LEU:HD23	2.27	0.44
1:E:408:PHE:CD1	1:E:422:TYR:CE2	3.06	0.44
1:J:268:MET:HG2	1:J:430:LEU:HD21	1.99	0.44
1:L:251:GLU:HG2	1:L:316:PHE:CE1	2.53	0.44
1:N:61:GLU:HB2	1:N:109:ARG:CZ	2.47	0.44
1:D:245:LEU:HD11	1:D:318:ASN:HB3	1.99	0.44
1:G:427:VAL:HB	1:G:434:TYR:HB2	2.00	0.44
1:H:255:GLU:OE2	1:H:402:ARG:NH1	2.51	0.44
1:J:85:THR:OG1	2:J:601:FAD:O1P	2.33	0.44
1:E:421:ASP:CB	1:E:423:MET:HE2	2.48	0.44
1:G:148:ASP:OD1	1:G:174:HIS:NE2	2.51	0.44
1:L:352:HIS:HA	1:L:363:LEU:HD21	1.99	0.44
1:M:28:LYS:HE3	1:M:29:TRP:CH2	2.53	0.44
1:A:240:ALA:HB3	1:A:325:GLY:O	2.18	0.44
1:N:97:ARG:CZ	1:N:526:LEU:HD21	2.47	0.44
1:I:471:TYR:OH	3:I:602:55B:OAJ	2.36	0.44
1:M:51:ALA:O	1:M:53:LEU:HD23	2.18	0.44
1:O:251:GLU:HG2	1:O:316:PHE:CZ	2.53	0.44
1:O:310:LYS:HD2	1:O:310:LYS:HA	1.58	0.44
1:P:429:GLY:HA3	1:P:432:GLU:OE2	2.18	0.44
1:I:27:ASP:HB3	5:I:780:HOH:O	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:285:ALA:O	1:M:381:GLN:HA	2.18	0.44
1:A:279:ASN:HA	1:A:316:PHE:O	2.18	0.43
1:L:273:ASN:O	1:L:275:PRO:HD3	2.18	0.43
1:L:427:VAL:HB	1:L:434:TYR:HB2	1.98	0.43
1:K:10:SER:H	1:K:13:ARG:NH2	2.16	0.43
1:P:20:ARG:O	1:P:23:ASP:HB2	2.18	0.43
1:E:285:ALA:O	1:E:381:GLN:HA	2.19	0.43
1:E:421:ASP:HB3	1:E:423:MET:HE2	1.99	0.43
2:E:601:FAD:H8A	2:E:601:FAD:O5B	2.18	0.43
1:K:271:LEU:HD23	1:K:271:LEU:HA	1.86	0.43
1:P:273:ASN:O	1:P:275:PRO:HD3	2.17	0.43
1:O:261:MET:SD	1:O:428:ILE:HG21	2.59	0.43
1:B:423:MET:SD	1:B:440:ILE:HD12	2.59	0.43
1:F:301:PRO:HB2	1:F:303:GLU:HG3	2.00	0.43
1:G:394:VAL:HB	1:G:471:TYR:CE1	2.54	0.43
1:J:151:ASP:HB2	2:J:601:FAD:N5	2.34	0.43
1:K:148:ASP:OD1	1:K:174:HIS:NE2	2.51	0.43
1:L:38:GLU:HA	1:L:41:ARG:HH11	1.83	0.43
1:N:57:VAL:HG22	1:N:103:ILE:HB	2.00	0.43
1:N:290:ARG:HG3	1:N:384:TRP:CZ2	2.54	0.43
1:I:17:ALA:HB2	1:I:76:TYR:CD2	2.54	0.43
1:I:279:ASN:HA	1:I:316:PHE:O	2.19	0.43
1:J:41:ARG:HD3	1:J:54:PRO:HD2	2.01	0.43
1:L:281:PHE:CZ	1:L:305:ILE:HD11	2.53	0.43
1:M:38:GLU:OE1	1:M:41:ARG:HD3	2.18	0.43
1:O:428:ILE:HG23	1:O:433:MET:HG2	2.00	0.43
1:A:310:LYS:HA	1:A:310:LYS:HD2	1.65	0.43
1:B:181:LEU:C	1:B:181:LEU:HD12	2.39	0.43
1:E:56:ALA:HB3	1:E:102:VAL:HG22	1.99	0.43
1:K:3:ARG:NH1	1:K:11:ASP:OD1	2.42	0.43
1:M:6:PRO:HB3	1:M:79:PRO:HD2	1.99	0.43
1:N:254:LEU:O	1:N:258:VAL:HG23	2.19	0.43
1:O:273:ASN:O	1:O:275:PRO:HD3	2.19	0.43
1:P:57:VAL:HG22	1:P:103:ILE:HB	1.99	0.43
1:A:428:ILE:HG12	1:A:433:MET:HG2	2.01	0.43
1:B:285:ALA:O	1:B:381:GLN:HA	2.19	0.43
1:D:285:ALA:O	1:D:381:GLN:HA	2.19	0.43
1:D:378:GLU:OE1	3:D:602:55B:H15	2.19	0.43
1:E:408:PHE:HD1	1:E:422:TYR:CE2	2.37	0.43
1:E:408:PHE:CE1	1:E:422:TYR:HE2	2.37	0.43
1:J:198:LEU:HD23	1:J:201:SER:HB2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:88:ASN:HB2	2:M:601:FAD:O1A	2.19	0.43
1:N:97:ARG:HH22	1:N:526:LEU:HD21	1.80	0.43
1:O:395:PRO:HD2	1:O:435:HIS:O	2.19	0.43
1:F:44:TYR:CE2	1:F:89:ASN:HB3	2.53	0.43
1:G:441:TYR:CG	1:G:452:ILE:HG13	2.54	0.43
1:G:490:GLY:O	1:G:494:LYS:HD2	2.19	0.43
1:H:408:PHE:CE1	1:H:422:TYR:HE2	2.36	0.43
1:L:84:SER:OG	1:L:127:PRO:HB3	2.19	0.43
1:N:182:GLU:HB3	1:N:229:LYS:HB2	2.01	0.43
1:A:285:ALA:O	1:A:381:GLN:HA	2.18	0.43
1:C:44:TYR:CE2	1:C:89:ASN:HB3	2.54	0.43
1:I:285:ALA:O	1:I:381:GLN:HA	2.19	0.43
1:J:262:LEU:HB3	1:J:263:PRO:HD3	2.01	0.43
1:A:205:GLN:HG3	1:A:231:GLY:HA3	2.01	0.42
1:D:238:PRO:HG2	1:D:324:TYR:HB3	2.00	0.42
1:D:408:PHE:HD1	1:D:422:TYR:CE2	2.37	0.42
1:E:281:PHE:CB	1:E:423:MET:SD	2.94	0.42
1:I:148:ASP:OD1	1:I:167:GLY:HA3	2.18	0.42
1:P:91:TYR:HA	1:P:474:HIS:HA	2.00	0.42
1:F:2:THR:OG1	1:F:3:ARG:N	2.52	0.42
1:F:378:GLU:OE2	1:F:381:GLN:NE2	2.52	0.42
1:J:271:LEU:HD23	1:J:271:LEU:HA	1.89	0.42
1:K:329:LEU:HD11	1:K:333:TYR:CZ	2.54	0.42
1:F:408:PHE:HD1	1:F:422:TYR:CE2	2.32	0.42
1:G:262:LEU:HB3	1:G:263:PRO:HD3	2.02	0.42
1:G:456:THR:O	1:G:460:VAL:HG23	2.20	0.42
1:I:84:SER:OG	1:I:127:PRO:HB3	2.20	0.42
1:I:261:MET:SD	1:I:428:ILE:HG21	2.60	0.42
1:P:235:MET:HE3	1:P:235:MET:HB3	1.94	0.42
1:B:418:TYR:CG	1:B:455:MET:HB2	2.54	0.42
1:C:303:GLU:CD	1:C:303:GLU:H	2.22	0.42
1:F:334:TYR:CE2	1:F:338:LYS:HE2	2.54	0.42
1:L:408:PHE:CD1	1:L:422:TYR:HE2	2.37	0.42
1:N:378:GLU:O	1:N:381:GLN:HG3	2.18	0.42
1:N:389:GLY:O	1:N:440:ILE:HA	2.19	0.42
1:O:166:VAL:HG21	3:O:602:55B:H1	2.00	0.42
1:K:118:GLU:OE2	1:K:143:SER:OG	2.27	0.42
1:M:389:GLY:O	1:M:440:ILE:HA	2.18	0.42
1:N:179:THR:HG23	1:N:208:PRO:HB3	2.01	0.42
1:P:38:GLU:HA	1:P:41:ARG:NH1	2.34	0.42
1:A:166:VAL:CG2	3:A:602:55B:H1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:106:THR:O	1:C:110:MET:HB2	2.19	0.42
1:E:329:LEU:HD11	1:E:333:TYR:CZ	2.55	0.42
1:E:438:LEU:HD11	3:E:602:55B:CAE	2.50	0.42
1:P:22:ARG:CD	1:P:27:ASP:HB3	2.34	0.42
1:P:245:LEU:HB2	1:P:363:LEU:HD13	2.00	0.42
1:F:445:ASP:HB3	1:F:448:ALA:HB3	2.01	0.42
1:H:358:ARG:HA	1:H:361:HIS:CE1	2.54	0.42
1:O:148:ASP:OD1	1:O:167:GLY:HA3	2.19	0.42
1:P:28:LYS:HD3	1:P:28:LYS:HA	1.85	0.42
1:B:147:LEU:C	1:B:147:LEU:HD12	2.40	0.42
1:D:277:LEU:HD11	1:D:317:TRP:HB3	2.02	0.42
1:M:245:LEU:HA	1:M:319:PHE:O	2.20	0.42
1:B:427:VAL:HB	1:B:434:TYR:HB2	2.02	0.42
1:C:261:MET:SD	1:C:428:ILE:HG21	2.60	0.42
1:O:158:VAL:HG22	1:O:230:MET:HB3	2.02	0.42
1:B:420:LYS:NZ	1:B:451:GLU:OE1	2.49	0.42
1:L:278:ARG:HG2	1:L:282:MET:HG2	2.01	0.42
1:M:382:LEU:HD22	1:M:382:LEU:H	1.84	0.42
1:P:91:TYR:OH	3:P:602:55B:OAD	2.33	0.42
1:P:213:PRO:O	1:P:215:PRO:HD3	2.19	0.42
1:C:276:VAL:HA	1:C:426:PHE:O	2.20	0.41
1:C:498:LYS:HB2	1:C:498:LYS:HE3	1.85	0.41
1:E:261:MET:SD	1:E:428:ILE:HG21	2.60	0.41
1:F:148:ASP:OD1	1:F:167:GLY:HA3	2.20	0.41
1:L:260:ILE:O	1:L:263:PRO:HD2	2.20	0.41
1:M:279:ASN:HA	1:M:316:PHE:O	2.20	0.41
1:B:84:SER:OG	1:B:127:PRO:HB3	2.20	0.41
1:E:403:GLU:O	1:E:407:GLN:HG3	2.20	0.41
1:G:293:TRP:CD2	1:G:308:MET:HG2	2.54	0.41
1:N:408:PHE:HD1	1:N:422:TYR:HE2	1.68	0.41
1:B:414:ARG:HA	1:B:414:ARG:HD3	1.83	0.41
1:F:261:MET:SD	1:F:428:ILE:HG21	2.61	0.41
1:H:158:VAL:HG22	1:H:230:MET:HB3	2.02	0.41
1:K:350:PHE:CD1	1:K:355:ARG:HD2	2.55	0.41
1:K:432:GLU:O	1:K:432:GLU:CD	2.59	0.41
1:F:301:PRO:HB2	1:F:303:GLU:CG	2.51	0.41
1:D:245:LEU:HD13	1:D:320:TYR:CE2	2.56	0.41
1:F:299:PRO:HD3	1:F:419:ASN:HD21	1.85	0.41
1:F:306:GLU:O	1:F:310:LYS:HG2	2.20	0.41
1:H:112:ARG:NH2	1:H:126:GLU:OE2	2.51	0.41
1:J:251:GLU:HG2	1:J:316:PHE:CE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:62:SER:O	1:O:66:VAL:HG23	2.20	0.41
1:O:166:VAL:CG2	3:O:602:55B:H1	2.51	0.41
1:O:378:GLU:OE2	3:O:602:55B:H15	2.19	0.41
1:P:343:LYS:HE3	1:P:343:LYS:HB2	1.89	0.41
1:A:84:SER:OG	1:A:127:PRO:HB3	2.20	0.41
1:C:241:SER:HA	1:C:323:LEU:O	2.21	0.41
1:G:243:SER:OG	1:G:322:THR:OG1	2.29	0.41
1:H:27:ASP:HB3	5:H:797:HOH:O	2.20	0.41
1:H:124:LEU:O	1:H:125:LEU:HD23	2.20	0.41
1:I:2:THR:OG1	1:I:3:ARG:N	2.54	0.41
1:I:254:LEU:HB3	1:I:405:MET:HE1	2.03	0.41
1:P:395:PRO:HG2	1:P:435:HIS:HB3	2.01	0.41
1:C:148:ASP:OD1	1:C:167:GLY:HA3	2.21	0.41
1:G:84:SER:OG	1:G:127:PRO:HB3	2.20	0.41
1:J:64:GLU:OE1	5:J:701:HOH:O	2.21	0.41
1:L:240:ALA:HB3	1:L:325:GLY:O	2.21	0.41
1:L:274:VAL:HG13	1:L:428:ILE:O	2.21	0.41
1:M:521:PHE:HA	1:M:524:GLN:NE2	2.36	0.41
1:N:408:PHE:CE1	1:N:422:TYR:HE2	2.38	0.41
1:B:44:TYR:CE2	1:B:89:ASN:HB3	2.56	0.41
1:F:285:ALA:HA	1:F:384:TRP:CE3	2.56	0.41
1:L:46:VAL:HG12	1:L:453:LEU:HB2	2.02	0.41
1:M:56:ALA:HB3	1:M:102:VAL:HG22	2.02	0.41
1:O:422:TYR:OH	1:O:435:HIS:NE2	2.52	0.41
1:C:376:LEU:HD23	1:C:376:LEU:HA	1.91	0.41
1:D:71:ARG:HH12	1:J:402:ARG:CZ	2.33	0.41
1:E:290:ARG:HG3	1:E:384:TRP:CZ2	2.55	0.41
1:F:170:PRO:HD3	1:F:324:TYR:CE2	2.56	0.41
1:I:254:LEU:O	1:I:258:VAL:HG23	2.21	0.41
1:I:300:MET:HG2	1:I:304:ALA:HB3	2.03	0.41
1:J:198:LEU:CD2	1:J:201:SER:HB2	2.50	0.41
1:K:276:VAL:CG2	1:K:320:TYR:HB2	2.50	0.41
1:K:385:VAL:HB	1:K:386:PRO:HD2	2.02	0.41
1:L:376:LEU:HB3	1:L:379:LEU:CD1	2.49	0.41
1:N:40:PHE:HE2	1:N:105:LYS:HD2	1.86	0.41
1:N:441:TYR:CD1	1:N:452:ILE:HG13	2.56	0.41
1:O:66:VAL:O	1:O:70:VAL:HG23	2.21	0.41
1:O:282:MET:SD	3:O:602:55B:OAC	2.79	0.41
1:P:87:LYS:HE3	1:P:154:TRP:CD2	2.47	0.41
1:C:279:ASN:HB3	1:C:317:TRP:CZ3	2.56	0.41
1:E:6:PRO:HG2	1:E:78:ILE:CD1	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:268:MET:HG2	1:E:430:LEU:HD21	2.02	0.41
1:N:170:PRO:CD	1:N:235:MET:HE1	2.50	0.41
1:O:305:ILE:HA	1:O:308:MET:HE2	2.03	0.41
1:P:82:PRO:HG3	1:P:226:ILE:HG12	2.03	0.41
1:A:148:ASP:OD1	1:A:167:GLY:HA3	2.20	0.40
1:B:408:PHE:HD1	1:B:422:TYR:HE2	1.63	0.40
1:C:362:VAL:O	1:C:366:ARG:HG2	2.20	0.40
1:D:390:HIS:HA	1:D:439:PHE:O	2.21	0.40
1:E:496:HIS:HB3	1:E:516:ILE:HD13	2.03	0.40
1:H:298:GLY:HA3	1:H:299:PRO:HD3	1.91	0.40
1:H:303:GLU:CD	1:H:303:GLU:H	2.24	0.40
1:I:273:ASN:O	1:I:275:PRO:HD3	2.20	0.40
1:J:261:MET:SD	1:J:428:ILE:HG21	2.61	0.40
1:J:300:MET:HG2	1:J:304:ALA:HB3	2.02	0.40
1:L:63:THR:HG23	1:L:228:THR:HG21	2.03	0.40
1:O:97:ARG:HH22	1:O:526:LEU:CD2	2.34	0.40
1:P:89:ASN:O	1:P:390:HIS:HE1	2.04	0.40
1:P:338:LYS:HB2	1:P:338:LYS:HE2	1.88	0.40
1:A:420:LYS:NZ	1:A:451:GLU:OE1	2.52	0.40
1:J:459:LEU:HD23	1:J:459:LEU:HA	1.88	0.40
1:P:356:ASP:OD2	1:P:356:ASP:N	2.53	0.40
1:E:87:LYS:O	1:E:89:ASN:N	2.50	0.40
1:E:293:TRP:CD2	1:E:308:MET:HG2	2.56	0.40
1:I:254:LEU:HD22	1:I:317:TRP:CZ2	2.56	0.40
1:J:289:LYS:HE3	1:J:383:ASP:HB3	2.03	0.40
1:M:253:ASP:O	1:M:257:ILE:HG13	2.21	0.40
1:M:300:MET:HA	1:M:301:PRO:HD3	1.91	0.40
1:O:151:ASP:HA	1:O:369:ILE:HD13	2.04	0.40
3:O:602:55B:H2	3:O:602:55B:H4	1.63	0.40
1:P:261:MET:C	1:P:261:MET:SD	3.00	0.40
1:P:326:PRO:HA	1:P:327:PRO:HD3	1.97	0.40
1:E:84:SER:OG	1:E:127:PRO:HB3	2.21	0.40
1:E:148:ASP:OD1	1:E:174:HIS:NE2	2.46	0.40
1:H:91:TYR:OH	3:H:602:55B:OAD	2.30	0.40
1:M:285:ALA:HA	1:M:384:TRP:CE3	2.56	0.40
1:P:31:LEU:HD22	1:P:36:GLU:OE2	2.21	0.40
1:P:285:ALA:O	1:P:381:GLN:HA	2.22	0.40
1:A:168:TYR:HA	1:A:274:VAL:HB	2.02	0.40
1:A:213:PRO:O	1:A:215:PRO:HD3	2.21	0.40
1:B:389:GLY:O	1:B:440:ILE:HA	2.20	0.40
1:E:390:HIS:ND1	1:E:438:LEU:HD23	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:303:GLU:CD	1:G:303:GLU:H	2.24	0.40
2:G:601:FAD:H8A	2:G:601:FAD:O5B	2.21	0.40
1:H:44:TYR:CE2	1:H:89:ASN:HB3	2.57	0.40
1:H:525:ASN:O	1:H:526:LEU:HG	2.22	0.40
1:J:483:ALA:O	1:J:486:ASN:HB3	2.21	0.40
1:N:340:ALA:O	1:N:343:LYS:HG2	2.22	0.40
1:N:408:PHE:HD1	1:N:422:TYR:CE2	2.39	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:442:ASP:OD2	1:M:13:ARG:NH2[1_544]	1.85	0.35
1:J:68:ASP:OD1	1:N:402:ARG:NH2[1_455]	1.95	0.25
1:F:13:ARG:NH2	1:J:342:GLY:O[1_565]	2.02	0.18

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	523/526 (99%)	510 (98%)	13 (2%)	0	100 100
1	B	523/526 (99%)	511 (98%)	11 (2%)	1 (0%)	47 58
1	C	523/526 (99%)	511 (98%)	12 (2%)	0	100 100
1	D	523/526 (99%)	509 (97%)	14 (3%)	0	100 100
1	E	523/526 (99%)	507 (97%)	16 (3%)	0	100 100
1	F	523/526 (99%)	508 (97%)	15 (3%)	0	100 100
1	G	523/526 (99%)	505 (97%)	17 (3%)	1 (0%)	47 58
1	H	523/526 (99%)	510 (98%)	13 (2%)	0	100 100
1	I	523/526 (99%)	505 (97%)	18 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	J	523/526 (99%)	504 (96%)	17 (3%)	2 (0%)	34 42
1	K	523/526 (99%)	500 (96%)	23 (4%)	0	100 100
1	L	523/526 (99%)	507 (97%)	14 (3%)	2 (0%)	34 42
1	M	523/526 (99%)	507 (97%)	15 (3%)	1 (0%)	47 58
1	N	523/526 (99%)	504 (96%)	17 (3%)	2 (0%)	34 42
1	O	523/526 (99%)	494 (94%)	25 (5%)	4 (1%)	19 23
1	P	523/526 (99%)	488 (93%)	32 (6%)	3 (1%)	25 31
All	All	8368/8416 (99%)	8080 (97%)	272 (3%)	16 (0%)	47 58

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	P	297	ASP
1	J	342	GLY
1	J	343	LYS
1	B	525	ASN
1	L	525	ASN
1	N	525	ASN
1	O	524	GLN
1	G	32	SER
1	M	88	ASN
1	O	380	GLN
1	L	215	PRO
1	O	510	ALA
1	O	215	PRO
1	P	296	GLY
1	P	298	GLY
1	N	215	PRO

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	434/435 (100%)	428 (99%)	6 (1%)	67 81
1	B	434/435 (100%)	429 (99%)	5 (1%)	71 84
1	C	434/435 (100%)	432 (100%)	2 (0%)	88 95
1	D	434/435 (100%)	430 (99%)	4 (1%)	78 89
1	E	434/435 (100%)	428 (99%)	6 (1%)	67 81
1	F	434/435 (100%)	431 (99%)	3 (1%)	84 92
1	G	434/435 (100%)	427 (98%)	7 (2%)	62 78
1	H	434/435 (100%)	427 (98%)	7 (2%)	62 78
1	I	434/435 (100%)	427 (98%)	7 (2%)	62 78
1	J	434/435 (100%)	427 (98%)	7 (2%)	62 78
1	K	434/435 (100%)	427 (98%)	7 (2%)	62 78
1	L	434/435 (100%)	422 (97%)	12 (3%)	43 60
1	M	434/435 (100%)	428 (99%)	6 (1%)	67 81
1	N	434/435 (100%)	425 (98%)	9 (2%)	53 70
1	O	434/435 (100%)	425 (98%)	9 (2%)	53 70
1	P	434/435 (100%)	424 (98%)	10 (2%)	50 67
All	All	6944/6960 (100%)	6837 (98%)	107 (2%)	65 79

All (107) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	154	TRP
1	A	198	LEU
1	A	216	ASP
1	A	423	MET
1	A	471	TYR
1	A	525	ASN
1	B	79	PRO
1	B	154	TRP
1	B	156	SER
1	B	471	TYR
1	B	525	ASN
1	C	154	TRP
1	C	216	ASP
1	D	154	TRP
1	D	198	LEU
1	D	350	PHE

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Mol	Chain	Res	Type
1	D	402	ARG
1	E	154	TRP
1	E	402	ARG
1	E	432	GLU
1	E	438	LEU
1	E	471	TYR
1	E	525	ASN
1	F	154	TRP
1	F	216	ASP
1	F	406	LYS
1	G	12	GLU
1	G	99	SER
1	G	154	TRP
1	G	163	ASP
1	G	216	ASP
1	G	402	ARG
1	G	432	GLU
1	H	11	ASP
1	H	27	ASP
1	H	38	GLU
1	H	154	TRP
1	H	216	ASP
1	H	432	GLU
1	H	471	TYR
1	I	27	ASP
1	I	154	TRP
1	I	216	ASP
1	I	222	SER
1	I	311	ASP
1	I	402	ARG
1	I	519	GLN
1	J	41	ARG
1	J	154	TRP
1	J	163	ASP
1	J	198	LEU
1	J	216	ASP
1	J	339	GLU
1	J	471	TYR
1	K	11	ASP
1	K	154	TRP
1	K	163	ASP
1	K	356	ASP

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Mol	Chain	Res	Type
1	K	423	MET
1	K	432	GLU
1	K	447	GLU
1	L	11	ASP
1	L	154	TRP
1	L	198	LEU
1	L	216	ASP
1	L	273	ASN
1	L	295	ASP
1	L	303	GLU
1	L	339	GLU
1	L	343	LYS
1	L	355	ARG
1	L	421	ASP
1	L	471	TYR
1	M	154	TRP
1	M	163	ASP
1	M	198	LEU
1	M	216	ASP
1	M	355	ARG
1	M	461	ARG
1	N	27	ASP
1	N	136	GLU
1	N	140	SER
1	N	154	TRP
1	N	216	ASP
1	N	222	SER
1	N	297	ASP
1	N	423	MET
1	N	471	TYR
1	O	154	TRP
1	O	216	ASP
1	O	241	SER
1	O	273	ASN
1	O	306	GLU
1	O	419	ASN
1	O	423	MET
1	O	471	TYR
1	O	489	ASP
1	P	27	ASP
1	P	99	SER
1	P	154	TRP

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Mol	Chain	Res	Type
1	P	198	LEU
1	P	216	ASP
1	P	289	LYS
1	P	331	GLU
1	P	348	ARG
1	P	409	GLU
1	P	447	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	525	ASN
1	B	361	HIS
1	B	381	GLN
1	D	361	HIS
1	E	381	GLN
1	E	519	GLN
1	E	525	ASN
1	F	267	ASN
1	F	419	ASN
1	H	380	GLN
1	I	519	GLN
1	I	524	GLN
1	J	524	GLN
1	K	416	ASN
1	K	519	GLN
1	L	380	GLN
1	L	419	ASN
1	M	205	GLN
1	M	419	ASN
1	M	524	GLN
1	N	364	GLN
1	O	413	ASN
1	O	519	GLN
1	P	419	ASN
1	P	474	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 44 ligands modelled in this entry, 12 are monoatomic - leaving 32 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	55B	A	602	-	15,15,15	2.01	2 (13%)	19,19,19	2.42	7 (36%)
2	FAD	F	601	-	53,58,58	0.55	0	68,89,89	0.65	1 (1%)
2	FAD	C	601	-	53,58,58	0.70	1 (1%)	68,89,89	0.55	1 (1%)
3	55B	G	602	-	15,15,15	2.08	4 (26%)	19,19,19	2.48	6 (31%)
2	FAD	L	601	-	53,58,58	0.55	0	68,89,89	0.59	2 (2%)
2	FAD	N	601	-	53,58,58	0.59	1 (1%)	68,89,89	0.55	1 (1%)
2	FAD	K	601	-	53,58,58	0.50	0	68,89,89	0.64	1 (1%)
3	55B	D	602	-	15,15,15	2.07	3 (20%)	19,19,19	2.18	5 (26%)
3	55B	E	602	-	15,15,15	1.93	2 (13%)	19,19,19	2.84	7 (36%)
3	55B	M	602	-	15,15,15	1.97	3 (20%)	19,19,19	2.83	6 (31%)
3	55B	F	602	-	15,15,15	1.93	2 (13%)	19,19,19	2.86	7 (36%)
2	FAD	J	601	-	53,58,58	0.60	0	68,89,89	0.70	2 (2%)
2	FAD	E	601	-	53,58,58	0.59	2 (3%)	68,89,89	0.70	3 (4%)
3	55B	I	602	-	15,15,15	2.02	3 (20%)	19,19,19	2.13	3 (15%)
3	55B	C	602	-	15,15,15	2.11	4 (26%)	19,19,19	2.33	4 (21%)
2	FAD	D	601	-	53,58,58	0.63	0	68,89,89	0.72	2 (2%)
2	FAD	I	601	-	53,58,58	0.58	0	68,89,89	0.73	4 (5%)
2	FAD	M	601	-	53,58,58	0.54	0	68,89,89	0.62	1 (1%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	FAD	H	601	-	53,58,58	0.55	0	68,89,89	0.66	1 (1%)
2	FAD	P	601	-	53,58,58	0.54	0	68,89,89	0.70	2 (2%)
3	55B	J	602	-	15,15,15	2.01	3 (20%)	19,19,19	2.34	5 (26%)
3	55B	K	602	-	15,15,15	1.95	2 (13%)	19,19,19	2.26	6 (31%)
3	55B	O	602	-	15,15,15	1.94	2 (13%)	19,19,19	3.21	6 (31%)
2	FAD	B	601	-	53,58,58	0.60	0	68,89,89	0.59	1 (1%)
2	FAD	O	601	-	53,58,58	0.55	0	68,89,89	0.65	2 (2%)
3	55B	P	602	-	15,15,15	2.03	2 (13%)	19,19,19	2.45	6 (31%)
2	FAD	A	601	-	53,58,58	0.60	0	68,89,89	0.70	1 (1%)
2	FAD	G	601	-	53,58,58	0.56	0	68,89,89	0.61	1 (1%)
3	55B	B	602	-	15,15,15	2.05	3 (20%)	19,19,19	2.54	7 (36%)
3	55B	N	602	-	15,15,15	1.93	2 (13%)	19,19,19	2.75	4 (21%)
3	55B	L	602	-	15,15,15	1.95	2 (13%)	19,19,19	2.46	5 (26%)
3	55B	H	602	-	15,15,15	1.85	2 (13%)	19,19,19	2.44	5 (26%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	55B	A	602	-	-	0/8/8/8	0/1/1/1
2	FAD	F	601	-	-	6/30/50/50	0/6/6/6
2	FAD	C	601	-	-	8/30/50/50	0/6/6/6
3	55B	G	602	-	-	0/8/8/8	0/1/1/1
2	FAD	L	601	-	-	8/30/50/50	0/6/6/6
2	FAD	N	601	-	-	6/30/50/50	0/6/6/6
2	FAD	K	601	-	-	7/30/50/50	0/6/6/6
3	55B	D	602	-	-	0/8/8/8	0/1/1/1
3	55B	E	602	-	-	1/8/8/8	0/1/1/1
3	55B	M	602	-	-	0/8/8/8	0/1/1/1
3	55B	F	602	-	-	1/8/8/8	0/1/1/1
2	FAD	J	601	-	-	5/30/50/50	0/6/6/6
2	FAD	E	601	-	-	5/30/50/50	0/6/6/6
3	55B	I	602	-	-	0/8/8/8	0/1/1/1
3	55B	C	602	-	-	1/8/8/8	0/1/1/1
2	FAD	D	601	-	-	7/30/50/50	0/6/6/6

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FAD	I	601	-	-	6/30/50/50	0/6/6/6
2	FAD	M	601	-	-	9/30/50/50	0/6/6/6
2	FAD	H	601	-	-	5/30/50/50	0/6/6/6
2	FAD	P	601	-	-	9/30/50/50	0/6/6/6
3	55B	J	602	-	-	1/8/8/8	0/1/1/1
3	55B	K	602	-	-	0/8/8/8	0/1/1/1
3	55B	O	602	-	-	0/8/8/8	0/1/1/1
2	FAD	B	601	-	-	4/30/50/50	0/6/6/6
2	FAD	O	601	-	-	10/30/50/50	0/6/6/6
3	55B	P	602	-	-	1/8/8/8	0/1/1/1
2	FAD	A	601	-	-	5/30/50/50	0/6/6/6
2	FAD	G	601	-	-	8/30/50/50	0/6/6/6
3	55B	B	602	-	-	1/8/8/8	0/1/1/1
3	55B	N	602	-	-	0/8/8/8	0/1/1/1
3	55B	L	602	-	-	1/8/8/8	0/1/1/1
3	55B	H	602	-	-	1/8/8/8	0/1/1/1

All (45) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	55B	CAF-CAE	6.90	1.53	1.31
3	P	602	55B	CAF-CAE	6.75	1.53	1.31
3	B	602	55B	CAF-CAE	6.75	1.53	1.31
3	C	602	55B	CAF-CAE	6.69	1.52	1.31
3	J	602	55B	CAF-CAE	6.65	1.52	1.31
3	D	602	55B	CAF-CAE	6.61	1.52	1.31
3	M	602	55B	CAF-CAE	6.60	1.52	1.31
3	E	602	55B	CAF-CAE	6.57	1.52	1.31
3	N	602	55B	CAF-CAE	6.56	1.52	1.31
3	G	602	55B	CAF-CAE	6.55	1.52	1.31
3	K	602	55B	CAF-CAE	6.53	1.52	1.31
3	L	602	55B	CAF-CAE	6.52	1.52	1.31
3	F	602	55B	CAF-CAE	6.43	1.52	1.31
3	I	602	55B	CAF-CAE	6.34	1.51	1.31
3	O	602	55B	CAF-CAE	6.33	1.51	1.31
3	H	602	55B	CAF-CAE	6.19	1.51	1.31
3	O	602	55B	CAL-CAF	-3.39	1.37	1.47
3	F	602	55B	CAL-CAF	-2.96	1.38	1.47
3	G	602	55B	CAL-CAF	-2.92	1.39	1.47
3	C	602	55B	CAL-CAF	-2.90	1.39	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	601	FAD	P-O2P	-2.90	1.41	1.55
3	L	602	55B	CAL-CAF	-2.83	1.39	1.47
3	M	602	55B	CAL-CAF	-2.82	1.39	1.47
3	P	602	55B	CAL-CAF	-2.80	1.39	1.47
3	N	602	55B	CAL-CAF	-2.79	1.39	1.47
3	D	602	55B	CAL-CAF	-2.71	1.39	1.47
3	H	602	55B	CAL-CAF	-2.71	1.39	1.47
3	B	602	55B	CAL-CAF	-2.69	1.39	1.47
3	J	602	55B	CAL-CAF	-2.65	1.39	1.47
3	I	602	55B	CAI-CAE	2.64	1.55	1.49
3	K	602	55B	CAL-CAF	-2.58	1.40	1.47
3	I	602	55B	CAL-CAF	-2.50	1.40	1.47
3	D	602	55B	CAI-CAE	2.48	1.55	1.49
3	A	602	55B	CAL-CAF	-2.46	1.40	1.47
3	E	602	55B	CAL-CAF	-2.46	1.40	1.47
2	N	601	FAD	P-O2P	-2.38	1.44	1.55
3	C	602	55B	CAI-CAE	2.35	1.54	1.49
3	G	602	55B	CAN-CAM	-2.30	1.37	1.40
3	B	602	55B	CAI-CAE	2.26	1.54	1.49
3	G	602	55B	CAI-CAE	2.19	1.54	1.49
3	C	602	55B	CAN-CAM	-2.14	1.37	1.40
2	E	601	FAD	C1'-C2'	2.06	1.55	1.52
3	M	602	55B	CAI-CAE	2.04	1.54	1.49
3	J	602	55B	CAI-CAE	2.01	1.54	1.49
2	E	601	FAD	C8A-N7A	-2.01	1.31	1.34

All (115) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	O	602	55B	CAA-OAJ-CAN	-9.10	103.79	117.53
3	M	602	55B	CAA-OAJ-CAN	-8.07	105.35	117.53
3	N	602	55B	CAA-OAJ-CAN	-7.86	105.67	117.53
3	E	602	55B	CAA-OAJ-CAN	-7.50	106.20	117.53
3	F	602	55B	CAA-OAJ-CAN	-6.84	107.20	117.53
3	P	602	55B	CAA-OAJ-CAN	-6.77	107.31	117.53
3	G	602	55B	CAA-OAJ-CAN	-6.62	107.54	117.53
3	H	602	55B	CAA-OAJ-CAN	-6.39	107.89	117.53
3	F	602	55B	CAI-CAE-CAF	-6.29	111.26	124.61
3	A	602	55B	CAA-OAJ-CAN	-6.28	108.05	117.53
3	C	602	55B	CAA-OAJ-CAN	-6.19	108.19	117.53
3	J	602	55B	CAI-CAE-CAF	-6.17	111.51	124.61
3	O	602	55B	CAI-CAE-CAF	-6.17	111.52	124.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	602	55B	CAI-CAE-CAF	-6.13	111.59	124.61
3	L	602	55B	CAA-OAJ-CAN	-6.00	108.47	117.53
3	J	602	55B	CAA-OAJ-CAN	-5.92	108.60	117.53
3	N	602	55B	CAI-CAE-CAF	-5.89	112.10	124.61
3	L	602	55B	CAI-CAE-CAF	-5.84	112.21	124.61
3	C	602	55B	CAI-CAE-CAF	-5.72	112.46	124.61
3	I	602	55B	CAA-OAJ-CAN	-5.67	108.97	117.53
3	H	602	55B	CAI-CAE-CAF	-5.66	112.59	124.61
3	G	602	55B	CAI-CAE-CAF	-5.55	112.83	124.61
3	O	602	55B	OAJ-CAN-CAM	5.49	120.08	114.54
3	M	602	55B	CAI-CAE-CAF	-5.48	112.98	124.61
3	E	602	55B	CAI-CAE-CAF	-5.47	112.99	124.61
3	P	602	55B	CAI-CAE-CAF	-5.42	113.10	124.61
3	K	602	55B	CAA-OAJ-CAN	-5.36	109.43	117.53
3	K	602	55B	CAI-CAE-CAF	-5.28	113.41	124.61
3	B	602	55B	CAA-OAJ-CAN	-5.22	109.65	117.53
3	D	602	55B	CAI-CAE-CAF	-5.14	113.70	124.61
3	A	602	55B	CAI-CAE-CAF	-5.12	113.73	124.61
3	I	602	55B	CAI-CAE-CAF	-4.97	114.06	124.61
3	E	602	55B	OAJ-CAN-CAM	4.66	119.24	114.54
3	D	602	55B	CAA-OAJ-CAN	-4.60	110.59	117.53
3	F	602	55B	OAJ-CAN-CAM	4.55	119.13	114.54
3	M	602	55B	OAJ-CAN-CAM	4.22	118.80	114.54
3	O	602	55B	CAL-CAF-CAE	-4.11	116.73	126.99
2	P	601	FAD	P-O3P-PA	-3.86	119.57	132.83
3	N	602	55B	CAL-CAF-CAE	-3.71	117.72	126.99
3	P	602	55B	CAL-CAF-CAE	-3.70	117.74	126.99
3	F	602	55B	CAL-CAF-CAE	-3.66	117.84	126.99
3	B	602	55B	OAJ-CAN-CAM	3.62	118.19	114.54
3	N	602	55B	OAJ-CAN-CAM	3.62	118.19	114.54
3	I	602	55B	CAL-CAF-CAE	-3.48	118.29	126.99
3	D	602	55B	CAL-CAF-CAE	-3.43	118.42	126.99
3	E	602	55B	CAB-OAK-CAO	-3.41	112.38	117.53
3	K	602	55B	CAL-CAF-CAE	-3.39	118.51	126.99
3	G	602	55B	CAL-CAF-CAE	-3.38	118.55	126.99
3	L	602	55B	CAL-CAF-CAE	-3.36	118.58	126.99
3	E	602	55B	CAL-CAF-CAE	-3.30	118.74	126.99
3	A	602	55B	CAL-CAF-CAE	-3.27	118.81	126.99
3	B	602	55B	CAO-CAM-CAN	3.25	123.11	118.70
3	B	602	55B	CAG-CAN-CAM	-3.16	117.48	120.60
3	M	602	55B	CAL-CAF-CAE	-3.16	119.10	126.99
3	C	602	55B	CAL-CAF-CAE	-3.13	119.17	126.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	H	602	55B	CAL-CAF-CAE	-3.08	119.28	126.99
2	E	601	FAD	P-O3P-PA	-3.07	122.28	132.83
3	K	602	55B	OAJ-CAN-CAM	3.03	117.60	114.54
3	M	602	55B	CAB-OAK-CAO	-3.03	112.95	117.53
3	O	602	55B	CAB-OAK-CAO	-2.88	113.19	117.53
3	L	602	55B	OAJ-CAN-CAM	2.83	117.39	114.54
3	J	602	55B	OAJ-CAN-CAM	2.75	117.32	114.54
3	D	602	55B	CAO-CAM-CAN	2.64	122.28	118.70
3	F	602	55B	CAO-CAM-CAN	2.64	122.27	118.70
3	H	602	55B	OAJ-CAN-CAM	2.58	117.15	114.54
3	A	602	55B	OAK-CAO-CAM	2.58	117.15	114.54
2	O	601	FAD	P-O3P-PA	-2.58	123.99	132.83
3	B	602	55B	CAL-CAF-CAE	-2.56	120.59	126.99
3	G	602	55B	CAO-CAM-CAN	2.52	122.11	118.70
3	J	602	55B	CAL-CAF-CAE	-2.51	120.72	126.99
3	O	602	55B	OAJ-CAN-CAG	-2.47	119.86	124.12
2	I	601	FAD	P-O3P-PA	-2.46	124.37	132.83
2	D	601	FAD	C5A-C6A-N6A	2.46	124.09	120.35
3	K	602	55B	CAG-CAN-CAM	-2.45	118.18	120.60
3	P	602	55B	OAJ-CAN-CAM	2.44	117.00	114.54
3	A	602	55B	CAO-CAM-CAN	2.44	122.00	118.70
2	J	601	FAD	C5A-C6A-N6A	2.40	124.01	120.35
3	E	602	55B	CAG-CAN-CAM	-2.40	118.23	120.60
2	I	601	FAD	C5A-C6A-N6A	2.39	123.99	120.35
2	K	601	FAD	C5A-C6A-N6A	2.37	123.95	120.35
2	D	601	FAD	O3'-C3'-C2'	2.37	114.53	108.81
2	H	601	FAD	C5A-C6A-N6A	2.35	123.93	120.35
3	F	602	55B	CAG-CAN-CAM	-2.35	118.28	120.60
2	O	601	FAD	C5A-C6A-N6A	2.32	123.88	120.35
2	B	601	FAD	C5A-C6A-N6A	2.31	123.87	120.35
3	A	602	55B	OAJ-CAN-CAM	2.31	116.87	114.54
2	C	601	FAD	C5A-C6A-N6A	2.31	123.86	120.35
2	A	601	FAD	C5A-C6A-N6A	2.31	123.86	120.35
2	F	601	FAD	C5A-C6A-N6A	2.28	123.81	120.35
2	I	601	FAD	O2'-C2'-C3'	-2.26	103.60	109.10
2	J	601	FAD	O3'-C3'-C2'	2.25	114.26	108.81
3	L	602	55B	CAB-OAK-CAO	-2.24	114.15	117.53
2	E	601	FAD	O2'-C2'-C1'	2.23	115.20	109.80
3	B	602	55B	CAG-CAL-CAF	-2.22	113.98	120.60
2	N	601	FAD	C5A-C6A-N6A	2.22	123.73	120.35
3	P	602	55B	CAO-CAM-CAN	2.22	121.70	118.70
3	A	602	55B	CAH-CAO-CAM	-2.19	118.44	120.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	602	55B	CAH-CAL-CAG	2.19	122.09	119.12
2	G	601	FAD	C5A-C6A-N6A	2.19	123.68	120.35
3	K	602	55B	CAO-CAM-CAN	2.18	121.66	118.70
3	G	602	55B	CAB-OAK-CAO	-2.17	114.25	117.53
2	E	601	FAD	C5A-C6A-N6A	2.16	123.64	120.35
3	M	602	55B	CAO-CAM-CAN	2.16	121.63	118.70
2	M	601	FAD	C5A-C6A-N6A	2.15	123.62	120.35
2	P	601	FAD	C5A-C6A-N6A	2.13	123.58	120.35
2	I	601	FAD	O3'-C3'-C2'	2.12	113.92	108.81
3	G	602	55B	CAG-CAL-CAF	-2.12	114.30	120.60
3	F	602	55B	CAB-OAK-CAO	-2.11	114.34	117.53
3	J	602	55B	CAG-CAL-CAF	-2.05	114.48	120.60
3	P	602	55B	CAG-CAN-CAM	-2.05	118.58	120.60
2	L	601	FAD	C5A-C6A-N6A	2.04	123.46	120.35
3	C	602	55B	CAO-CAM-CAN	2.03	121.46	118.70
2	L	601	FAD	O5'-P-O1P	-2.03	101.14	109.07
3	E	602	55B	CAG-CAL-CAF	-2.01	114.62	120.60
3	H	602	55B	CAO-CAM-CAN	2.01	121.42	118.70

There are no chirality outliers.

All (116) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	M	601	FAD	N10-C1'-C2'-O2'
2	M	601	FAD	N10-C1'-C2'-C3'
2	O	601	FAD	C2'-C3'-C4'-C5'
2	O	601	FAD	O3'-C3'-C4'-O4'
2	O	601	FAD	O3'-C3'-C4'-C5'
2	O	601	FAD	C3'-C4'-C5'-O5'
2	O	601	FAD	O4'-C4'-C5'-O5'
3	C	602	55B	CAF-CAE-CAI-OAC
3	J	602	55B	CAF-CAE-CAI-OAC
3	L	602	55B	CAF-CAE-CAI-OAC
2	O	601	FAD	C2'-C3'-C4'-O4'
2	P	601	FAD	C2'-C3'-C4'-O4'
2	P	601	FAD	C2'-C3'-C4'-C5'
2	P	601	FAD	O3'-C3'-C4'-O4'
2	C	601	FAD	C2'-C3'-C4'-O4'
2	G	601	FAD	C2'-C3'-C4'-O4'
2	I	601	FAD	C2'-C3'-C4'-O4'
2	M	601	FAD	C2'-C3'-C4'-O4'
2	B	601	FAD	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
2	C	601	FAD	O4'-C4'-C5'-O5'
2	F	601	FAD	O4'-C4'-C5'-O5'
2	J	601	FAD	O4'-C4'-C5'-O5'
2	L	601	FAD	O4'-C4'-C5'-O5'
2	N	601	FAD	O4'-C4'-C5'-O5'
2	C	601	FAD	C2'-C3'-C4'-C5'
2	M	601	FAD	C2'-C3'-C4'-C5'
2	G	601	FAD	O3'-C3'-C4'-O4'
2	K	601	FAD	O3'-C3'-C4'-O4'
2	M	601	FAD	O3'-C3'-C4'-O4'
2	D	601	FAD	C2'-C3'-C4'-O4'
2	H	601	FAD	C2'-C3'-C4'-O4'
2	J	601	FAD	C2'-C3'-C4'-O4'
2	K	601	FAD	C2'-C3'-C4'-O4'
2	L	601	FAD	C2'-C3'-C4'-O4'
2	C	601	FAD	O3'-C3'-C4'-O4'
2	L	601	FAD	O3'-C3'-C4'-O4'
2	P	601	FAD	O3'-C3'-C4'-C5'
2	L	601	FAD	C2'-C3'-C4'-C5'
2	F	601	FAD	C2'-C3'-C4'-O4'
2	N	601	FAD	C2'-C3'-C4'-O4'
2	A	601	FAD	C3'-C4'-C5'-O5'
2	B	601	FAD	C3'-C4'-C5'-O5'
2	C	601	FAD	C3'-C4'-C5'-O5'
2	D	601	FAD	C3'-C4'-C5'-O5'
2	E	601	FAD	C3'-C4'-C5'-O5'
2	F	601	FAD	C3'-C4'-C5'-O5'
2	G	601	FAD	C3'-C4'-C5'-O5'
2	I	601	FAD	C3'-C4'-C5'-O5'
2	J	601	FAD	C3'-C4'-C5'-O5'
2	L	601	FAD	C3'-C4'-C5'-O5'
2	M	601	FAD	C3'-C4'-C5'-O5'
2	N	601	FAD	C3'-C4'-C5'-O5'
2	D	601	FAD	C2'-C3'-C4'-C5'
2	G	601	FAD	C2'-C3'-C4'-C5'
2	I	601	FAD	C2'-C3'-C4'-C5'
2	K	601	FAD	C2'-C3'-C4'-C5'
2	P	601	FAD	C4'-C5'-O5'-P
2	G	601	FAD	O4'-C4'-C5'-O5'
2	L	601	FAD	O3'-C3'-C4'-C5'
2	F	601	FAD	C2'-C3'-C4'-C5'
2	H	601	FAD	C2'-C3'-C4'-C5'

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Mol	Chain	Res	Type	Atoms
2	J	601	FAD	C2'-C3'-C4'-C5'
2	H	601	FAD	C4'-C5'-O5'-P
2	J	601	FAD	C4'-C5'-O5'-P
2	K	601	FAD	C4'-C5'-O5'-P
2	M	601	FAD	O3'-C3'-C4'-C5'
2	I	601	FAD	O3'-C3'-C4'-O4'
2	A	601	FAD	C2'-C3'-C4'-O4'
2	B	601	FAD	C2'-C3'-C4'-O4'
2	C	601	FAD	C4'-C5'-O5'-P
2	D	601	FAD	C4'-C5'-O5'-P
2	E	601	FAD	C4'-C5'-O5'-P
2	F	601	FAD	C4'-C5'-O5'-P
2	G	601	FAD	C4'-C5'-O5'-P
2	L	601	FAD	C4'-C5'-O5'-P
2	O	601	FAD	C5'-O5'-P-O3P
2	P	601	FAD	C5'-O5'-P-O3P
2	N	601	FAD	C2'-C3'-C4'-C5'
2	A	601	FAD	C4'-C5'-O5'-P
2	B	601	FAD	C4'-C5'-O5'-P
2	I	601	FAD	C4'-C5'-O5'-P
2	M	601	FAD	C4'-C5'-O5'-P
2	N	601	FAD	C4'-C5'-O5'-P
2	H	601	FAD	C3'-C4'-C5'-O5'
2	O	601	FAD	C5'-O5'-P-O1P
2	P	601	FAD	C5'-O5'-P-O1P
2	P	601	FAD	C5'-O5'-P-O2P
3	E	602	55B	CAF-CAE-CAI-OAC
3	P	602	55B	CAF-CAE-CAI-OAC
2	D	601	FAD	O4'-C4'-C5'-O5'
2	M	601	FAD	O4'-C4'-C5'-O5'
2	A	601	FAD	C2'-C3'-C4'-C5'
2	O	601	FAD	C4'-C5'-O5'-P
2	E	601	FAD	C2'-C3'-C4'-O4'
2	D	601	FAD	O3'-C3'-C4'-O4'
2	H	601	FAD	O3'-C3'-C4'-O4'
2	N	601	FAD	O3'-C3'-C4'-O4'
2	C	601	FAD	O3'-C3'-C4'-C5'
2	K	601	FAD	O3'-C3'-C4'-C5'
2	A	601	FAD	O4'-C4'-C5'-O5'
2	I	601	FAD	O4'-C4'-C5'-O5'
2	G	601	FAD	O3'-C3'-C4'-C5'
2	F	601	FAD	O3'-C3'-C4'-O4'

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Mol	Chain	Res	Type	Atoms
2	L	601	FAD	C5'-O5'-P-O3P
2	E	601	FAD	O3'-C3'-C4'-O4'
2	C	601	FAD	C5'-O5'-P-O1P
2	G	601	FAD	C5'-O5'-P-O1P
2	K	601	FAD	C3'-C4'-C5'-O5'
2	O	601	FAD	C5'-O5'-P-O2P
2	P	601	FAD	C3'-C4'-C5'-O5'
3	B	602	55B	CAF-CAE-CAI-OAC
3	F	602	55B	CAF-CAE-CAI-OAC
3	H	602	55B	CAF-CAE-CAI-OAC
2	D	601	FAD	N10-C1'-C2'-C3'
2	K	601	FAD	N10-C1'-C2'-C3'
2	E	601	FAD	O4'-C4'-C5'-O5'

There are no ring outliers.

25 monomers are involved in 45 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	602	55B	1	0
2	F	601	FAD	1	0
2	C	601	FAD	1	0
3	G	602	55B	3	0
2	L	601	FAD	1	0
2	N	601	FAD	1	0
2	K	601	FAD	1	0
3	D	602	55B	2	0
3	E	602	55B	2	0
3	F	602	55B	2	0
2	J	601	FAD	3	0
2	E	601	FAD	1	0
3	I	602	55B	4	0
2	D	601	FAD	1	0
2	I	601	FAD	1	0
2	M	601	FAD	3	0
2	H	601	FAD	1	0
2	P	601	FAD	4	0
3	O	602	55B	5	0
2	B	601	FAD	1	0
3	P	602	55B	1	0
2	A	601	FAD	1	0
2	G	601	FAD	1	0
3	B	602	55B	1	0

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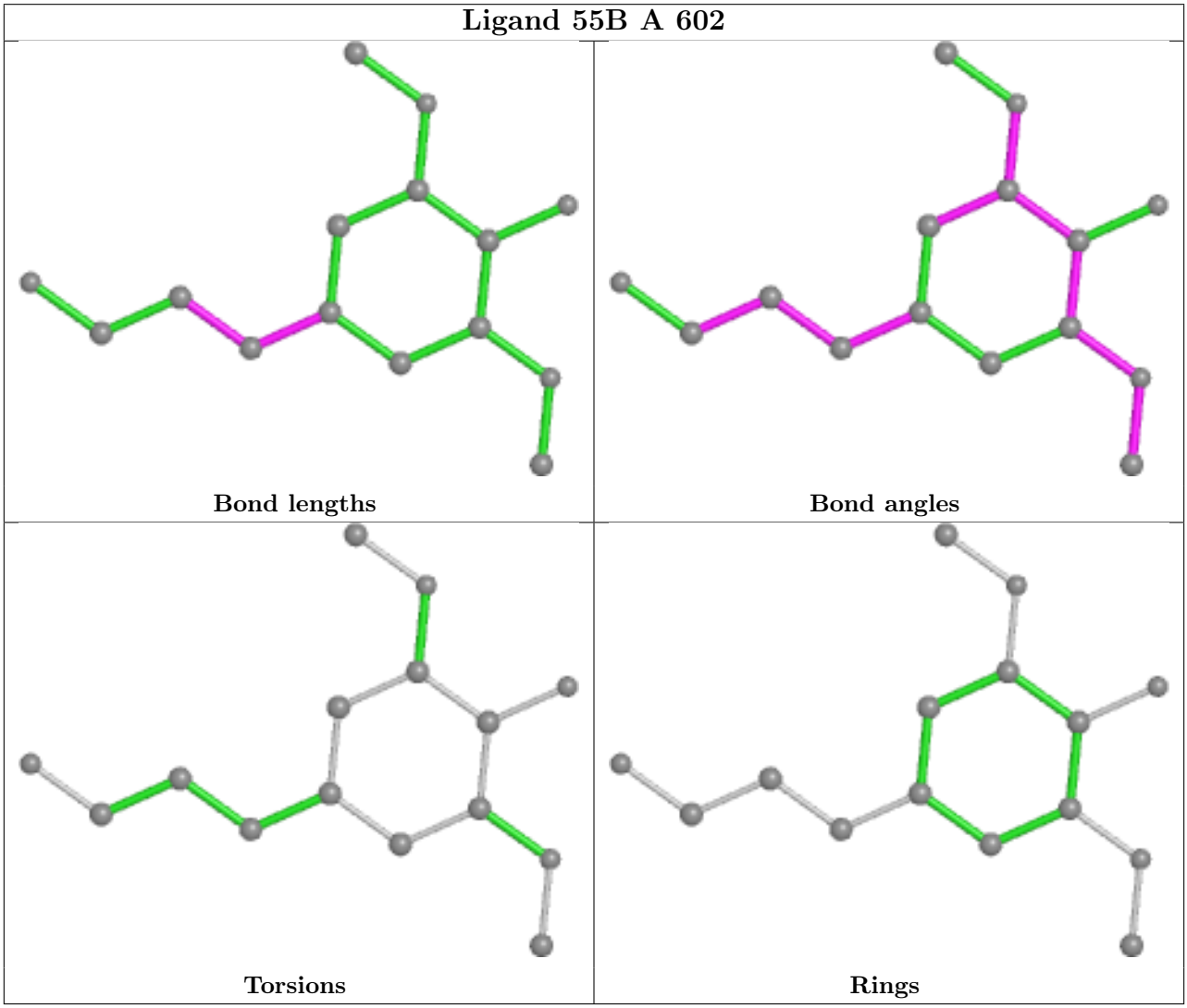
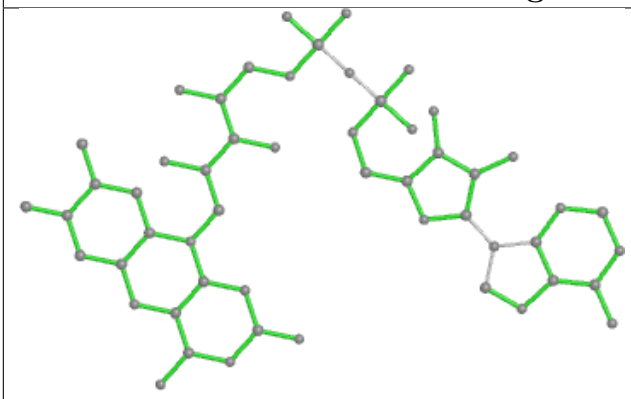
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	H	602	55B	2	0

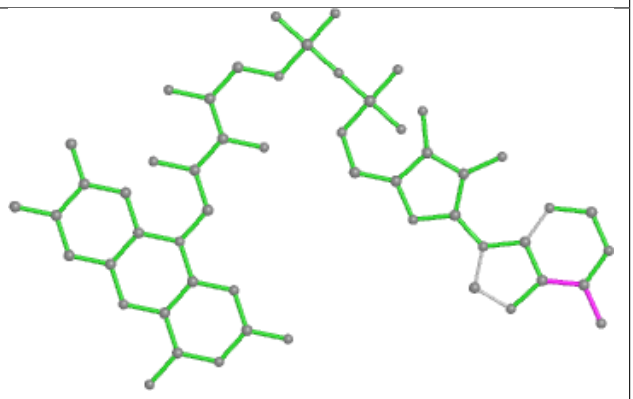
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



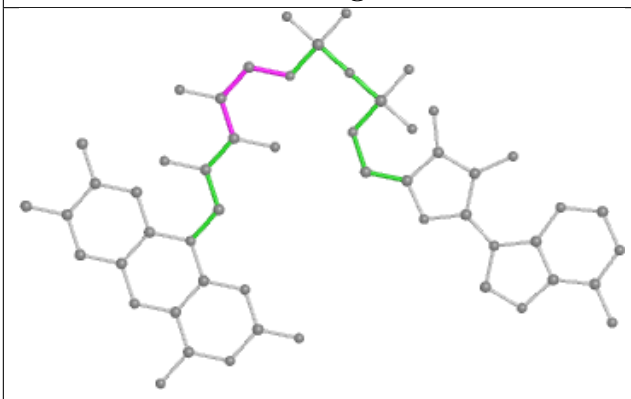
Ligand FAD F 601



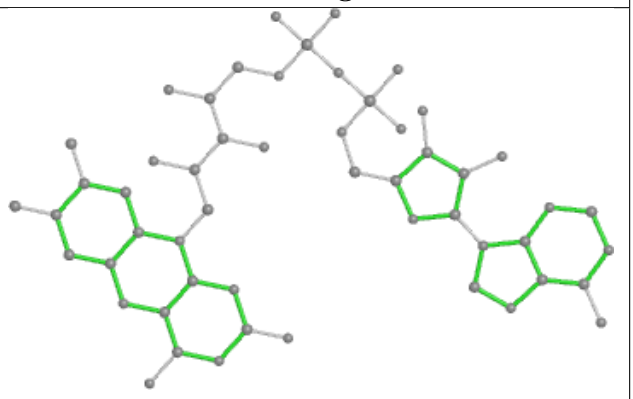
Bond lengths



Bond angles

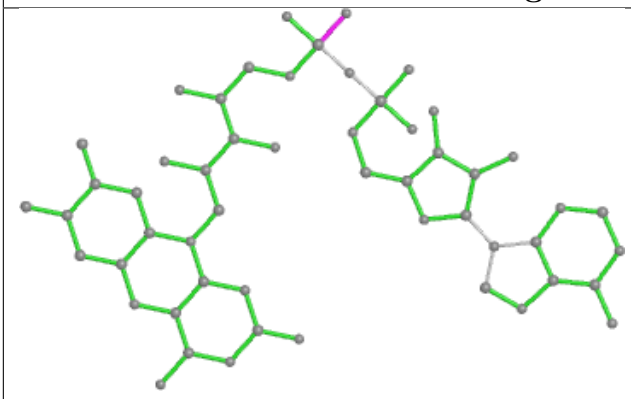


Torsions

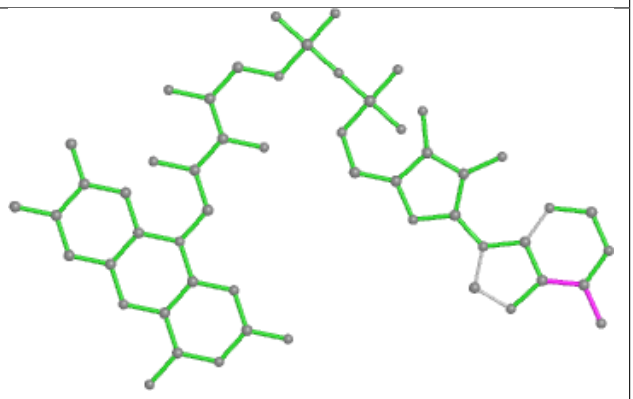


Rings

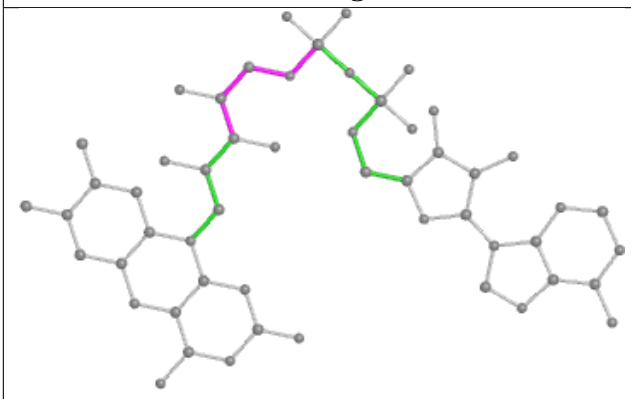
Ligand FAD C 601



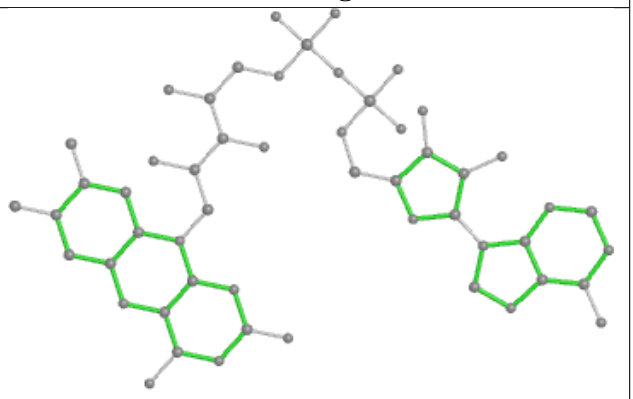
Bond lengths



Bond angles

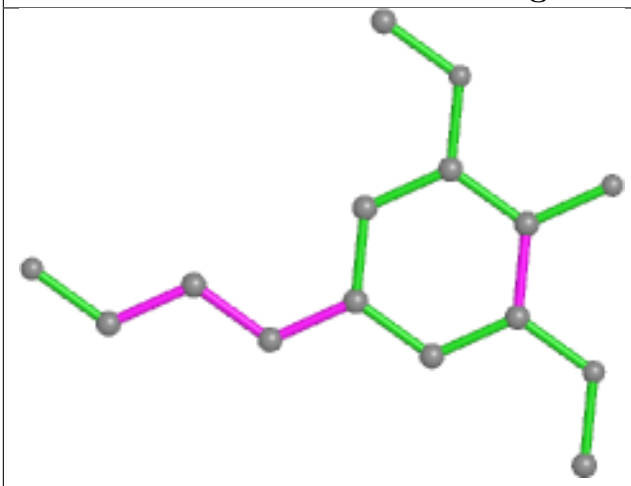


Torsions

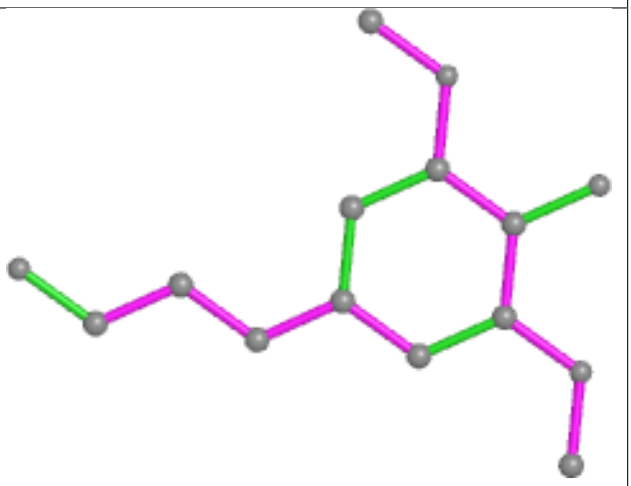


Rings

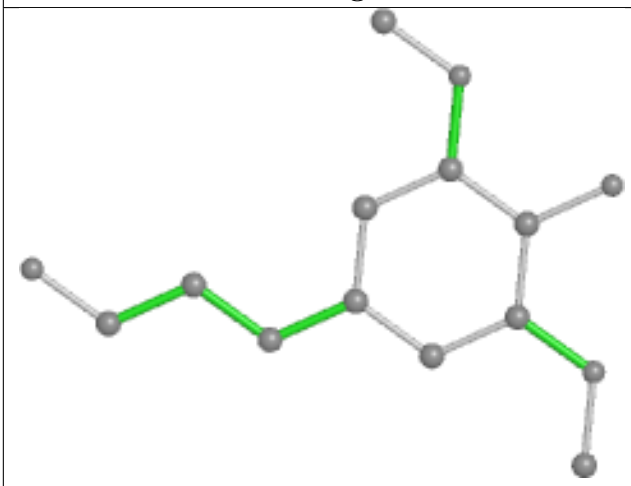
Ligand 55B G 602



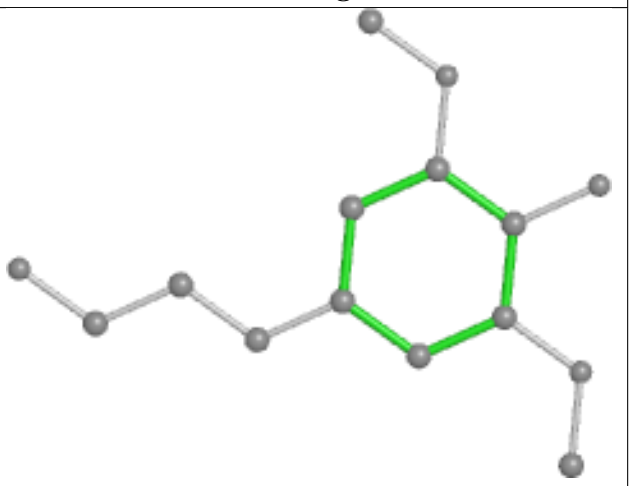
Bond lengths



Bond angles

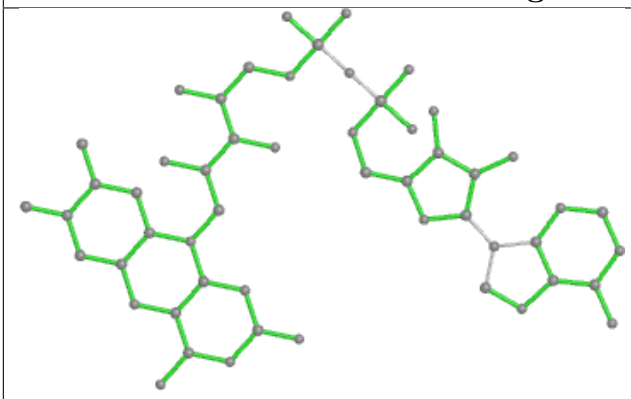


Torsions

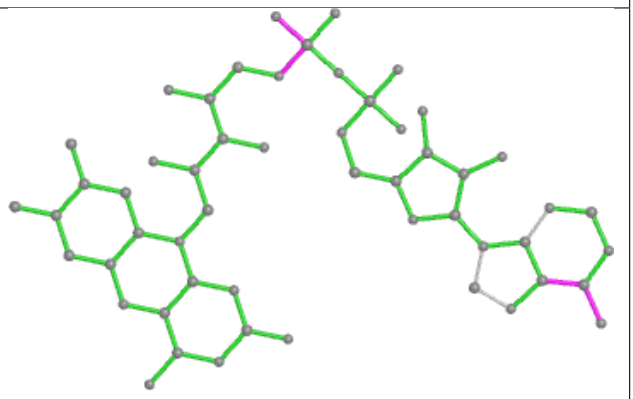


Rings

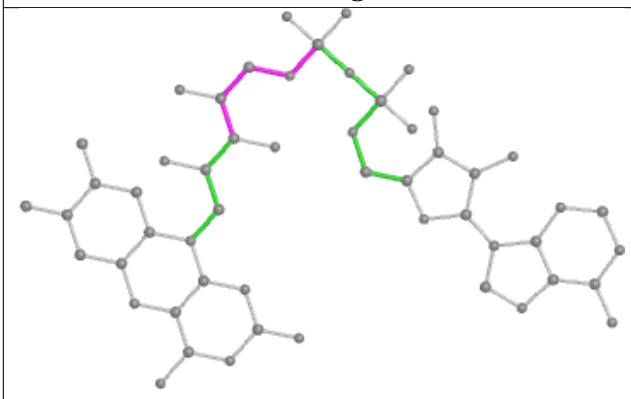
Ligand FAD L 601



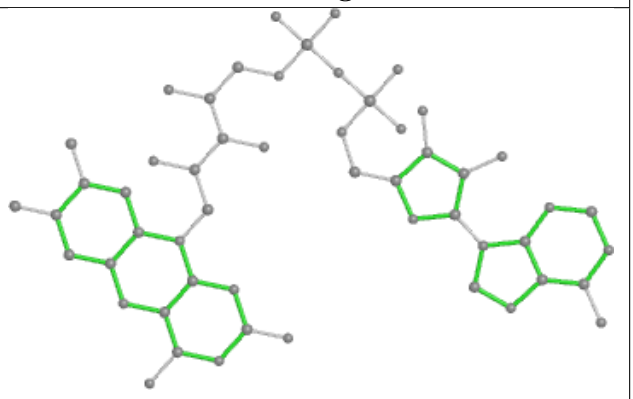
Bond lengths



Bond angles

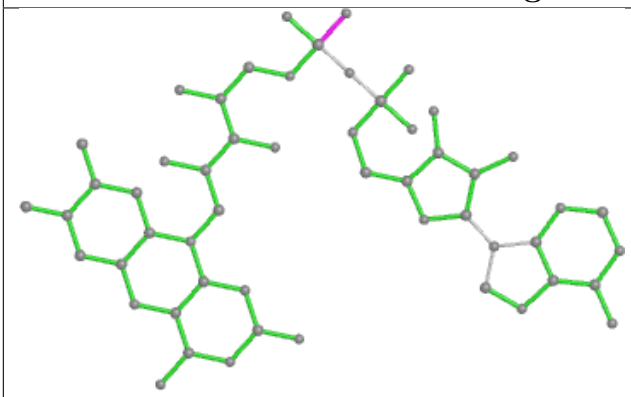


Torsions

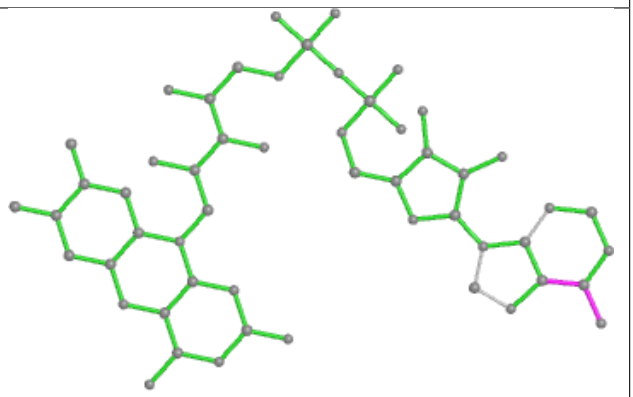


Rings

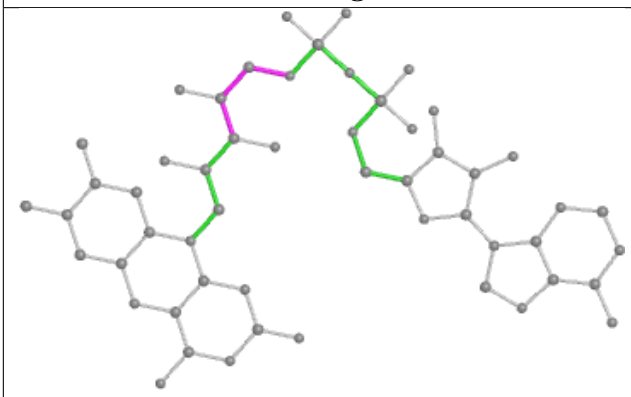
Ligand FAD N 601



Bond lengths



Bond angles



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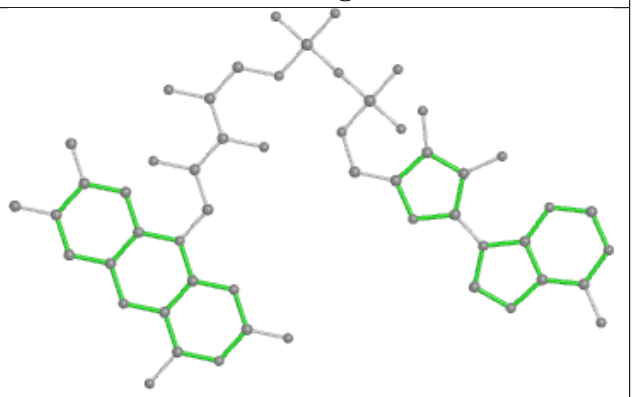
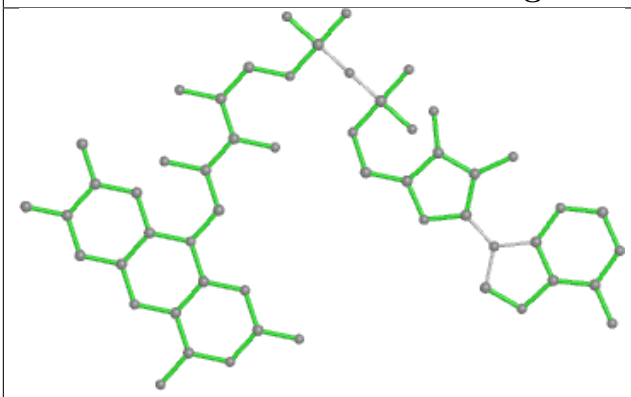
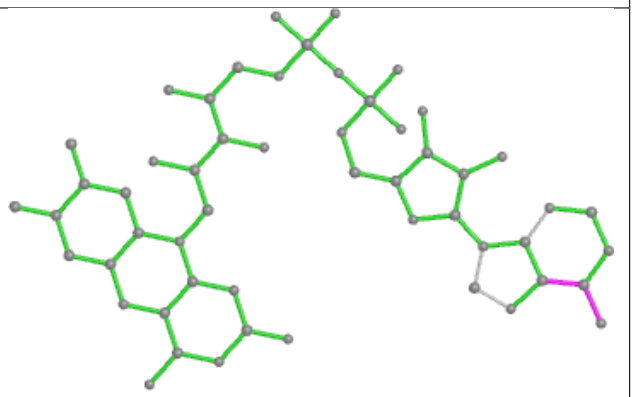


Rings

Ligand FAD K 601



Bond lengths



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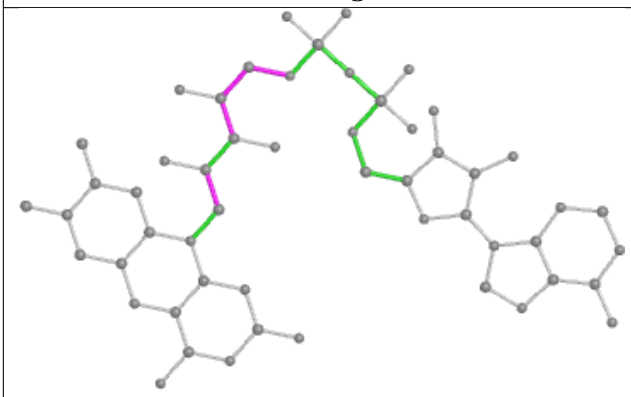

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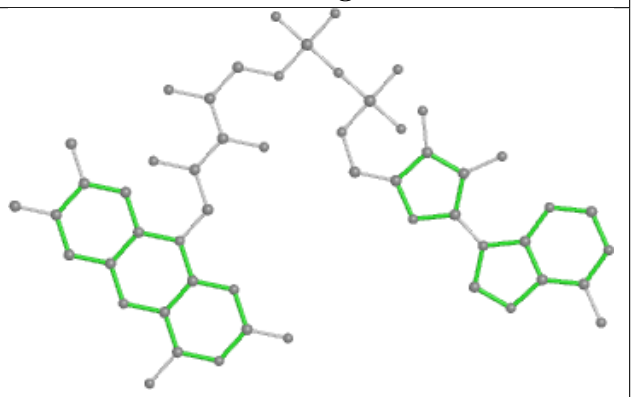
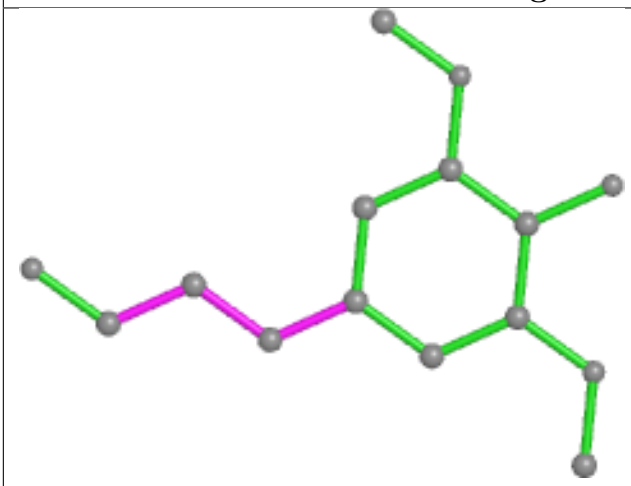


Rings

Ligand 55B D 602



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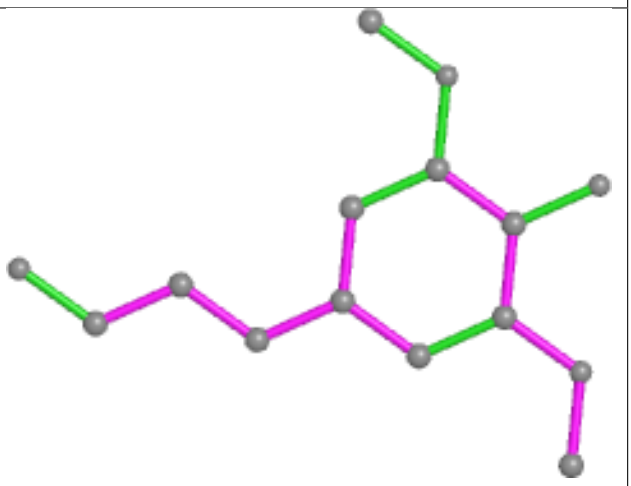

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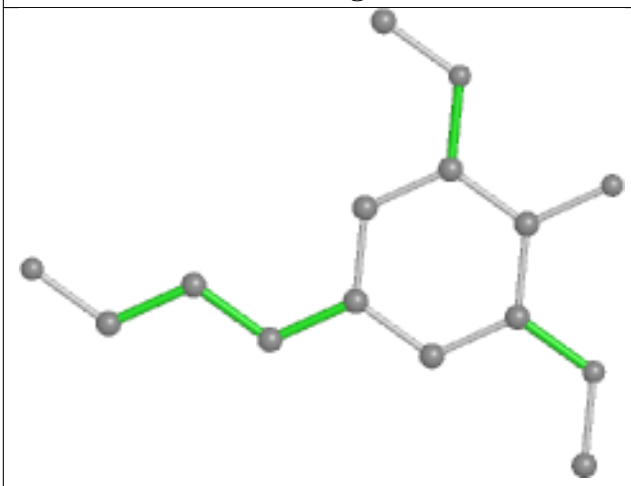

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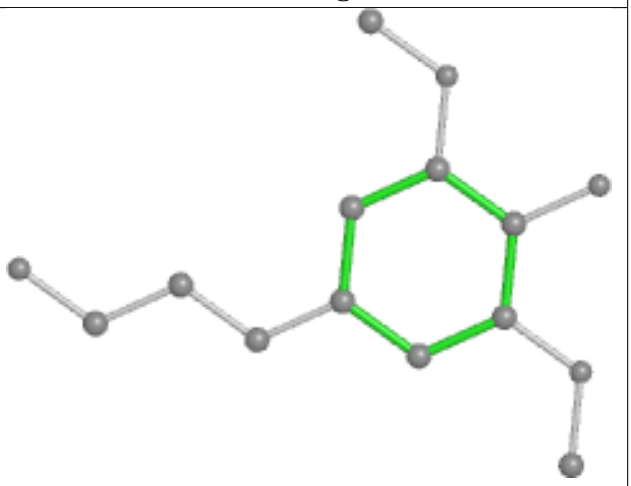

Rings

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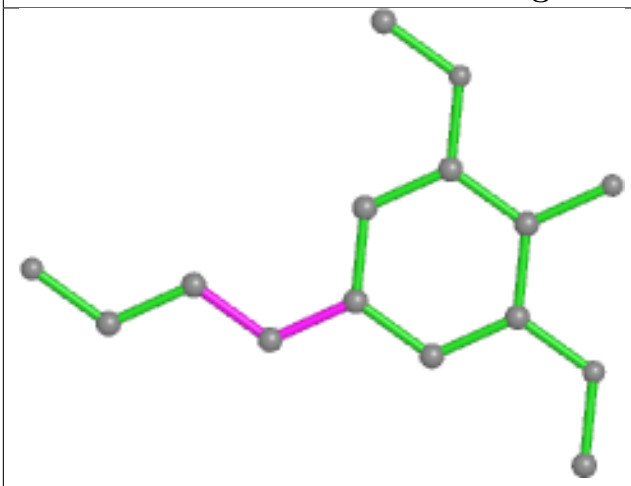

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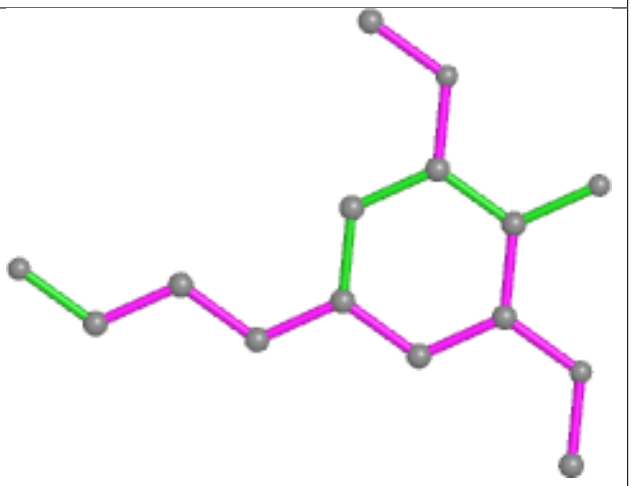

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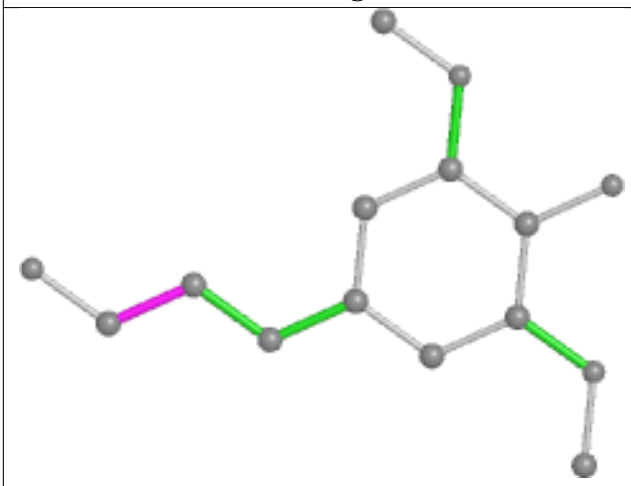

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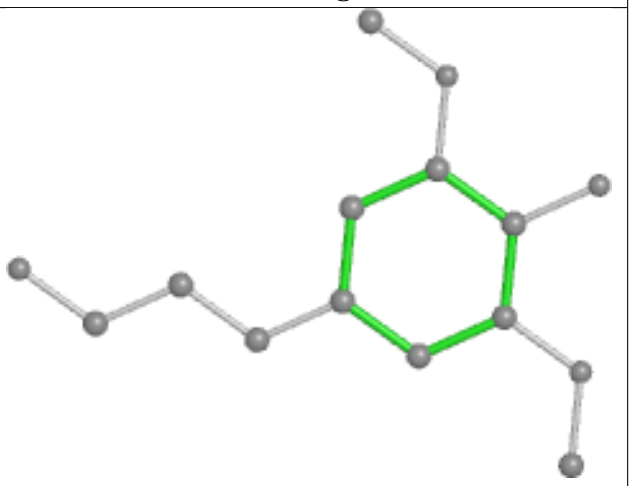
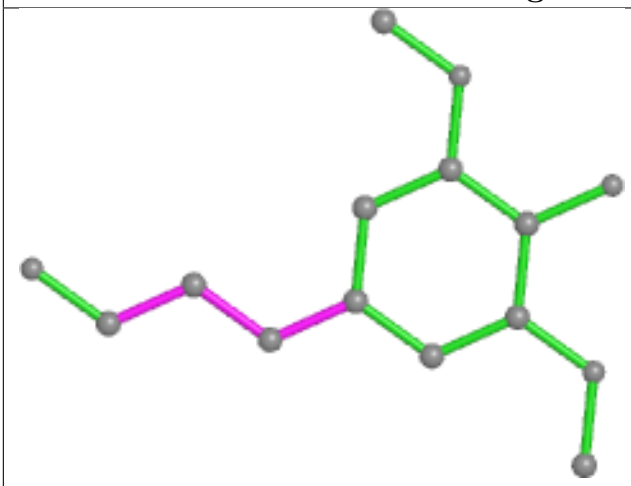


Rings

Ligand 55B M 602



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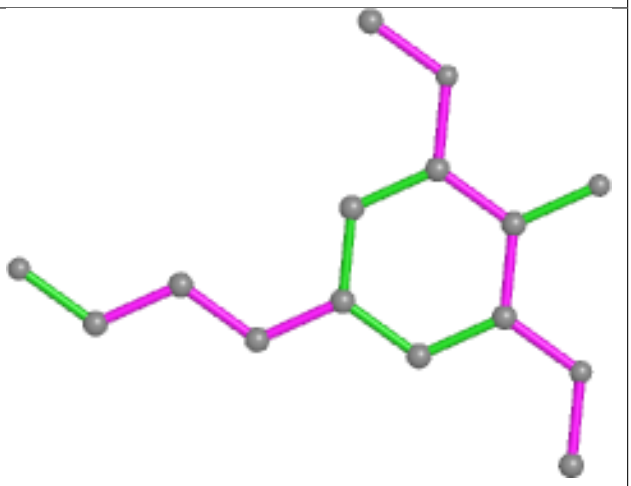

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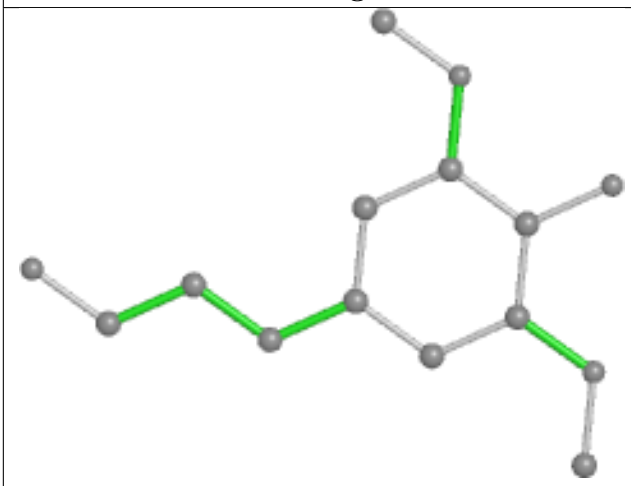

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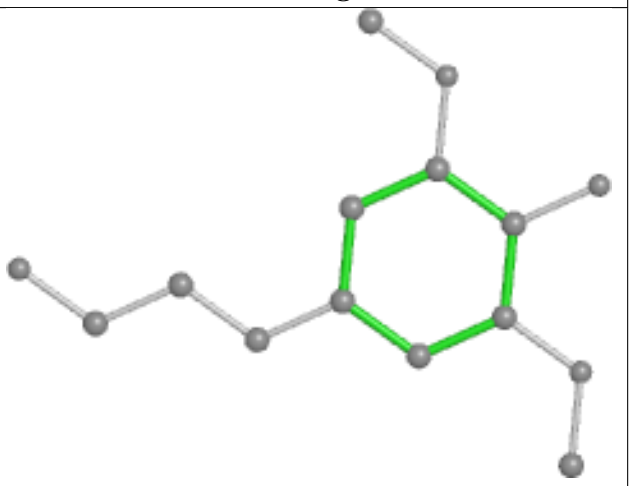

Rings

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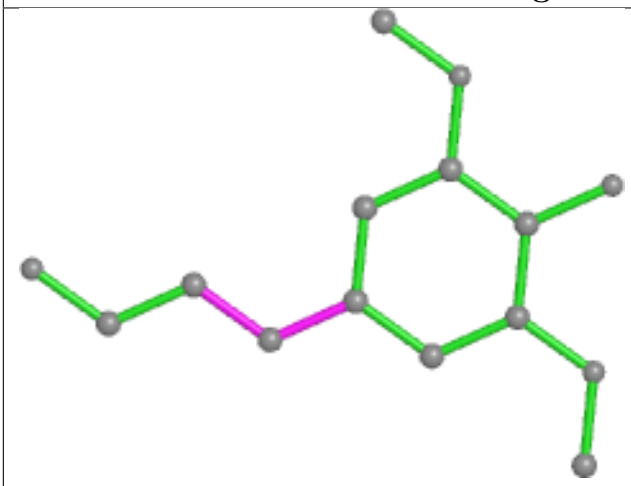

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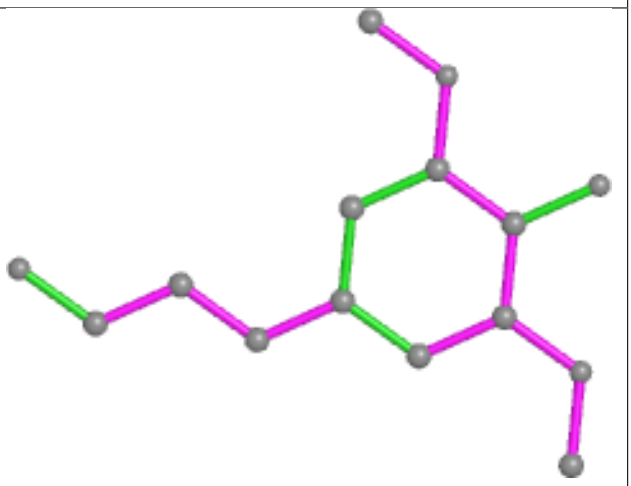

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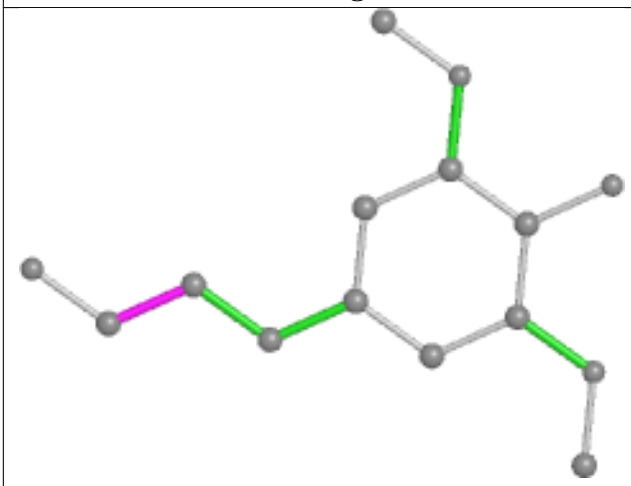

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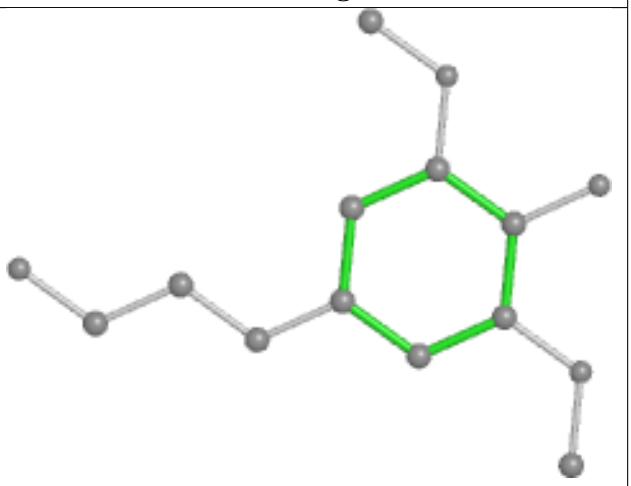

Rings

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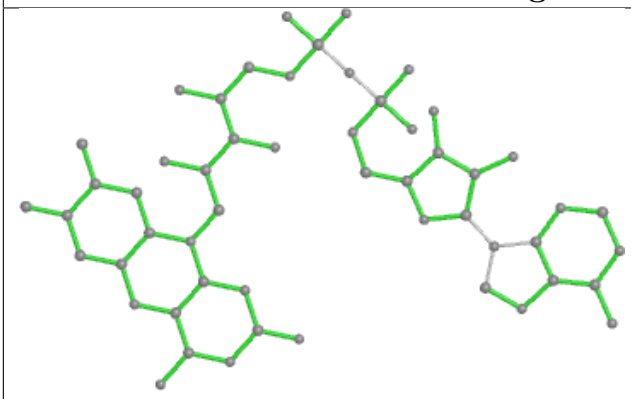

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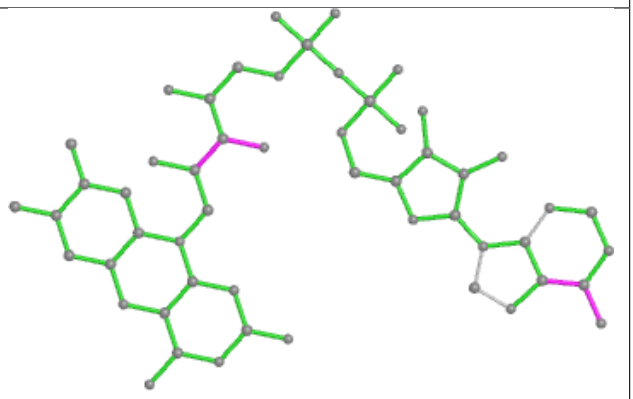

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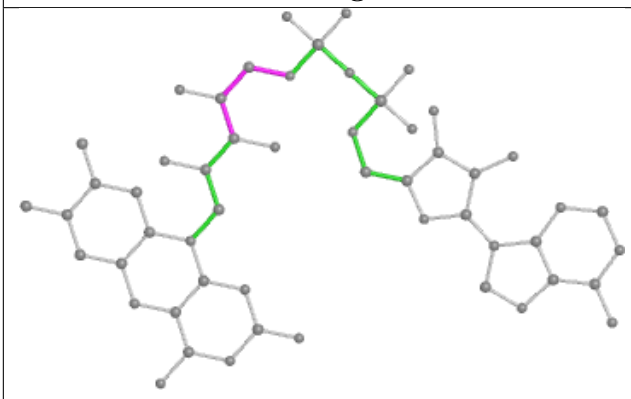

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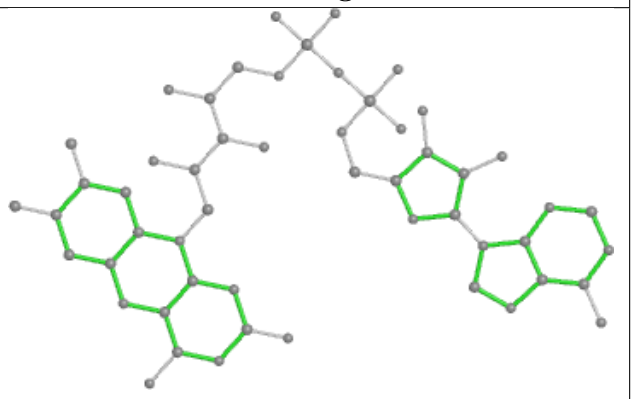

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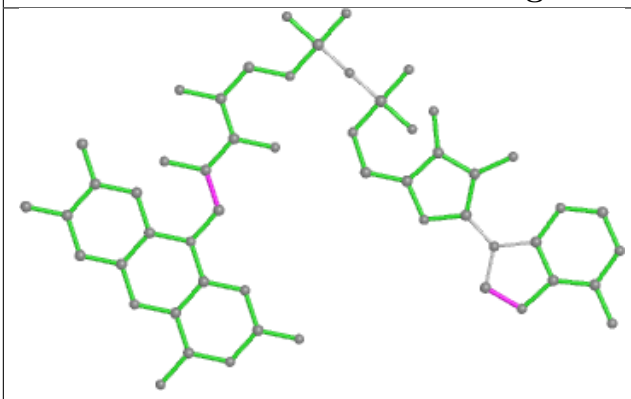

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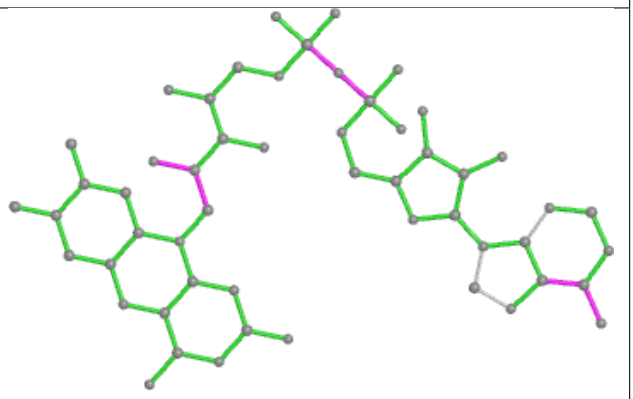

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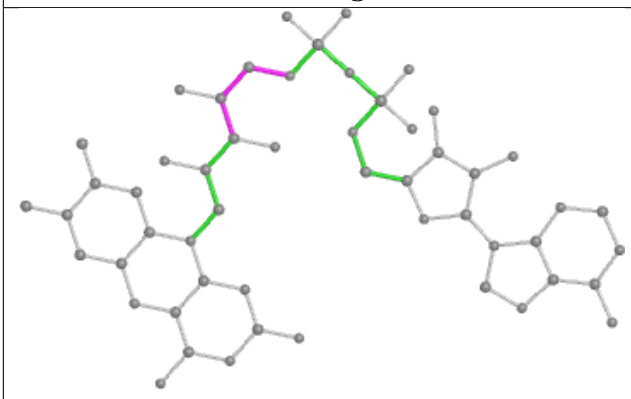

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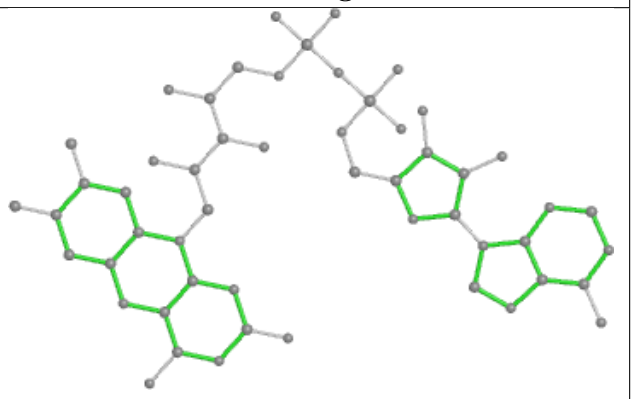
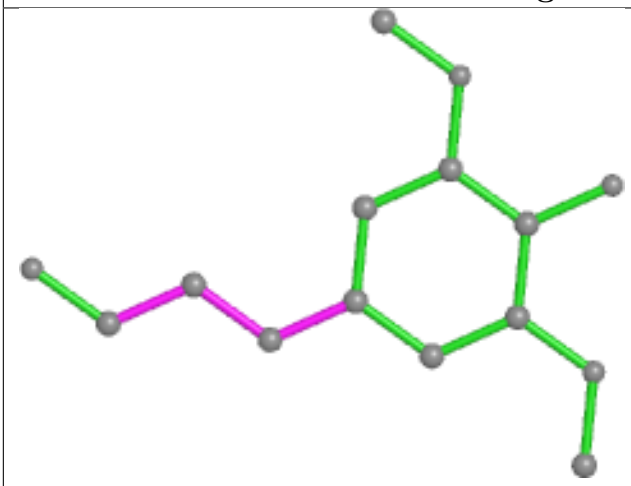


Rings

Ligand 55B I 602



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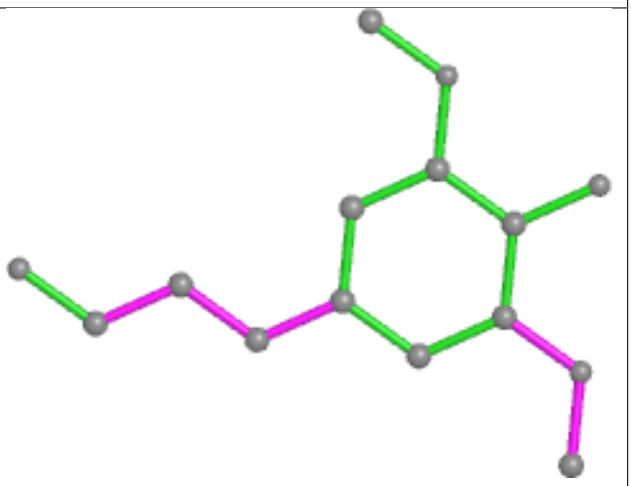

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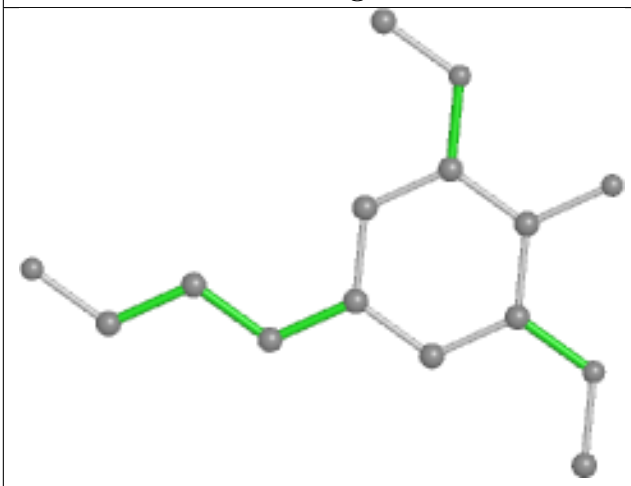

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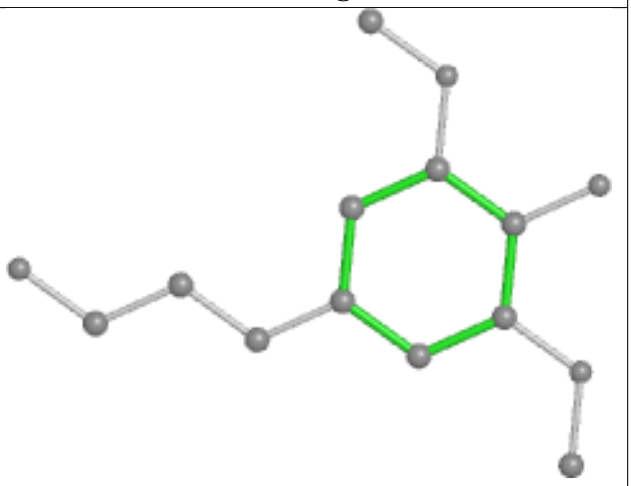

Rings

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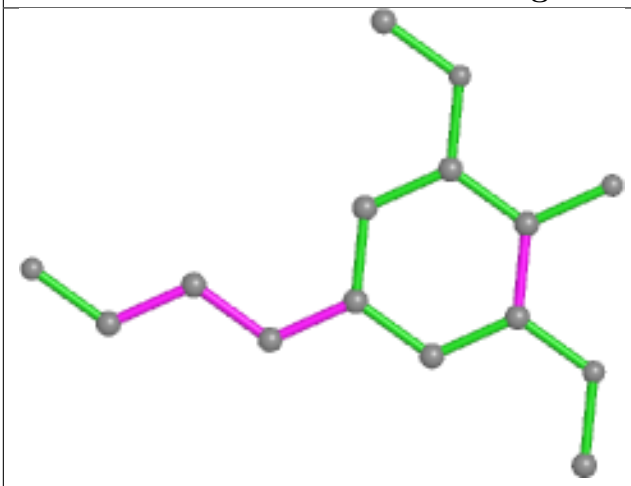

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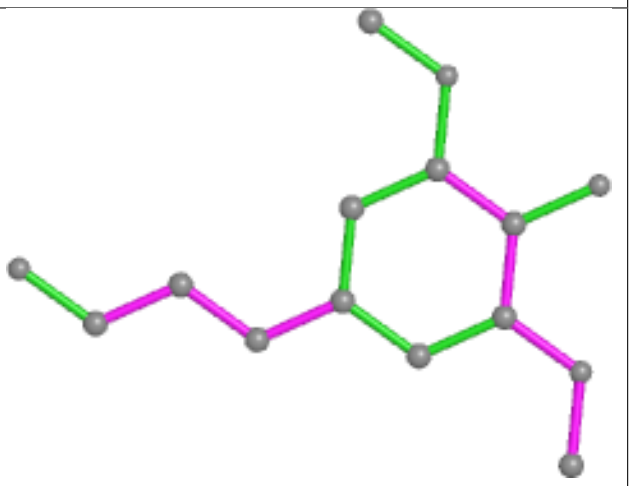

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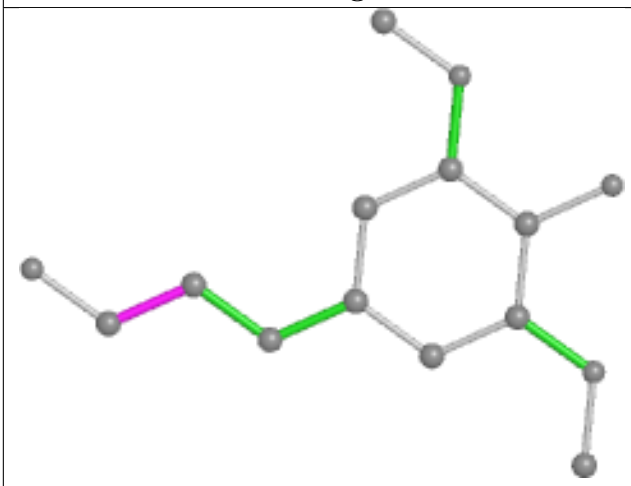

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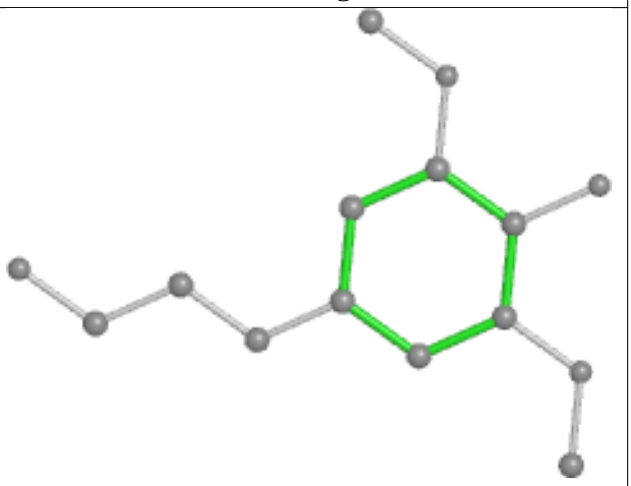

Rings

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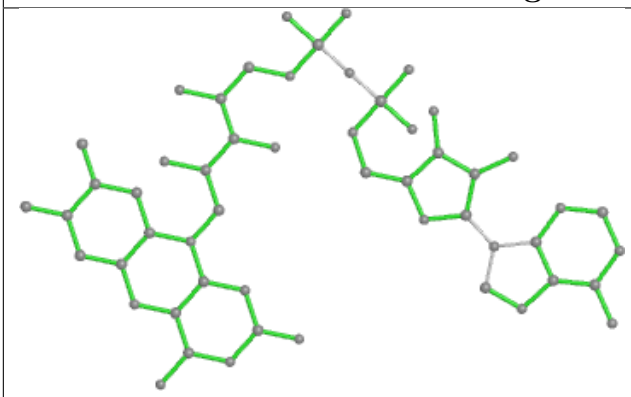

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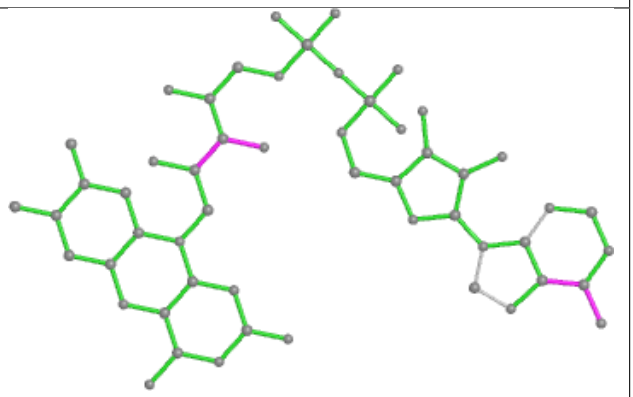

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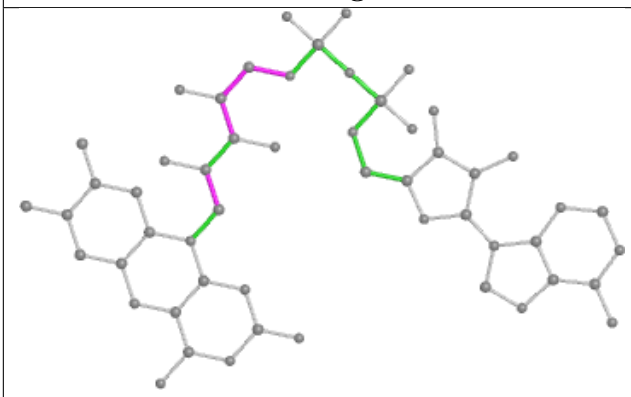

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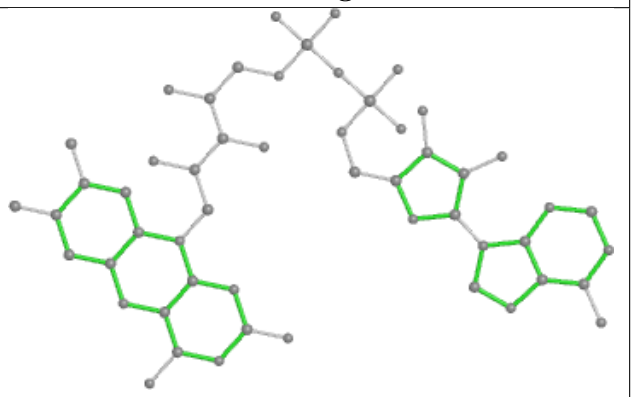

Rings

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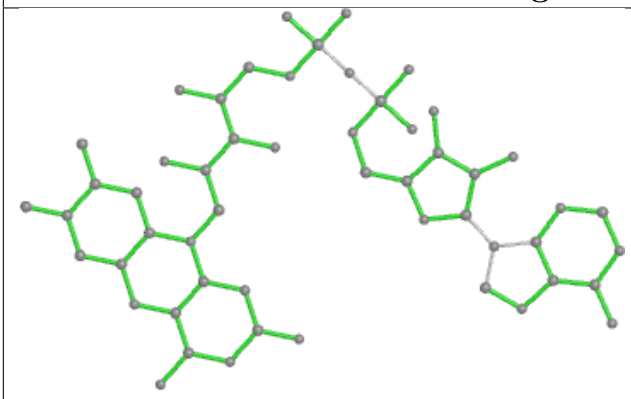

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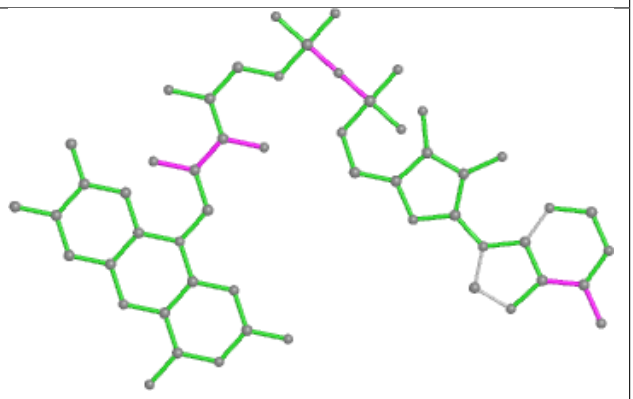

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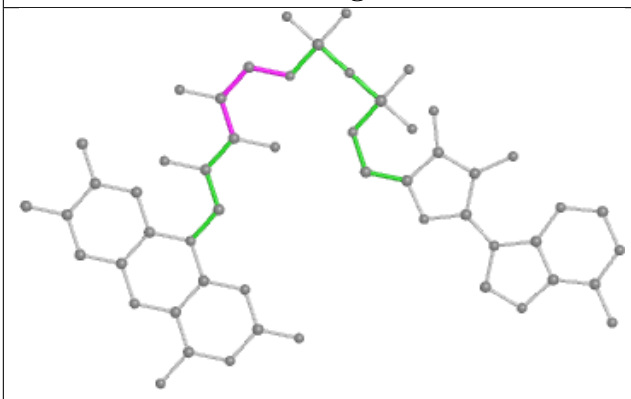

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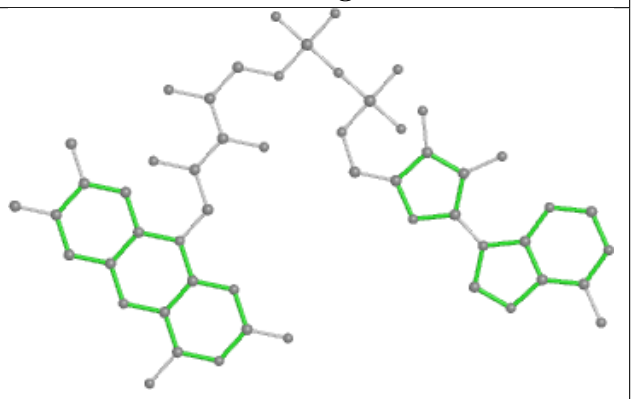

Rings

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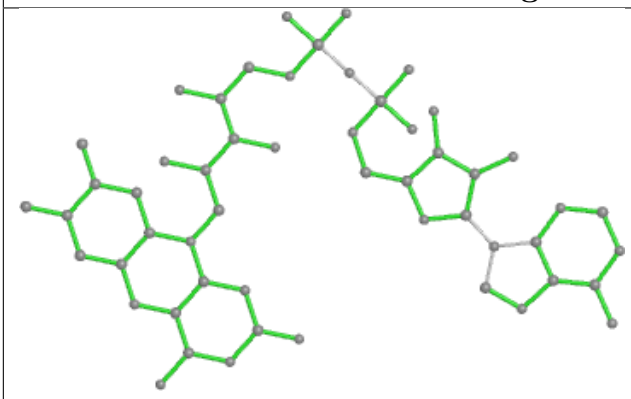

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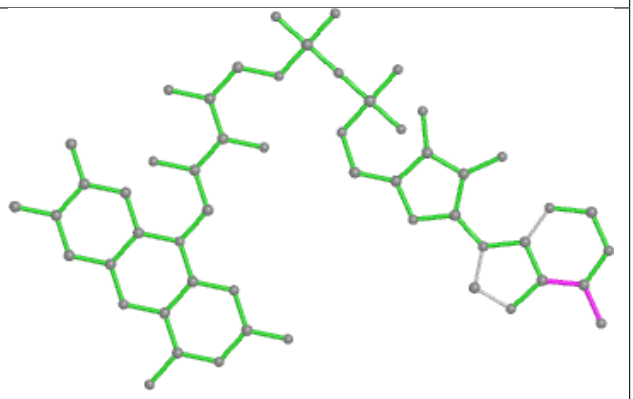

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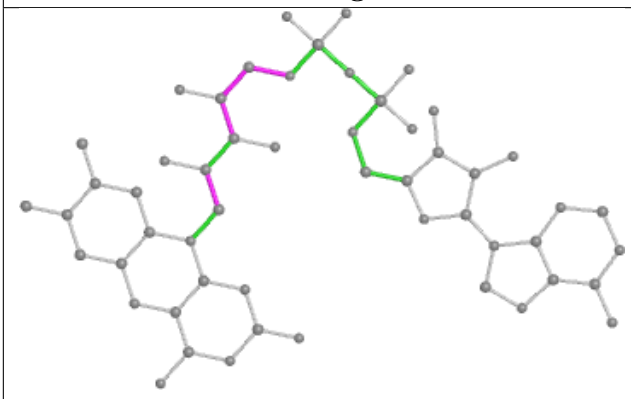

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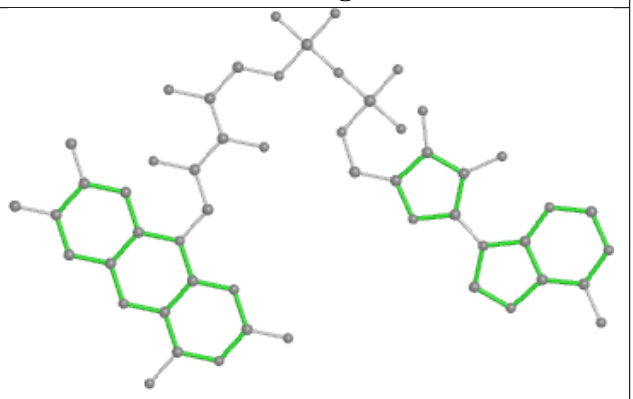

Rings

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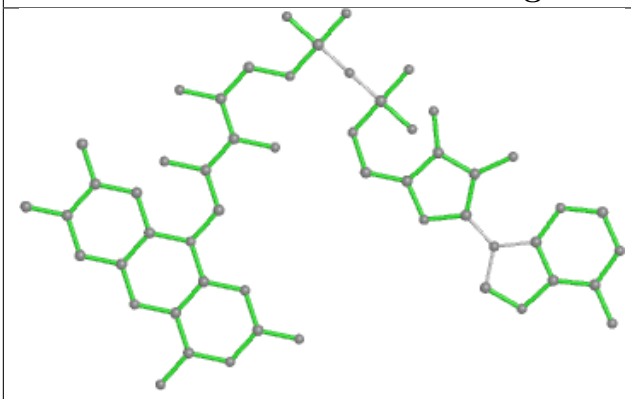

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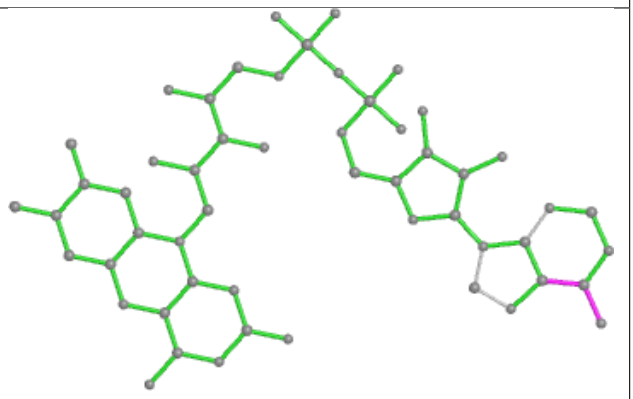

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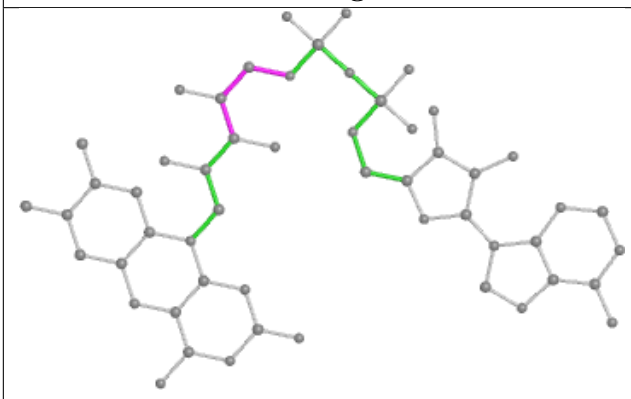

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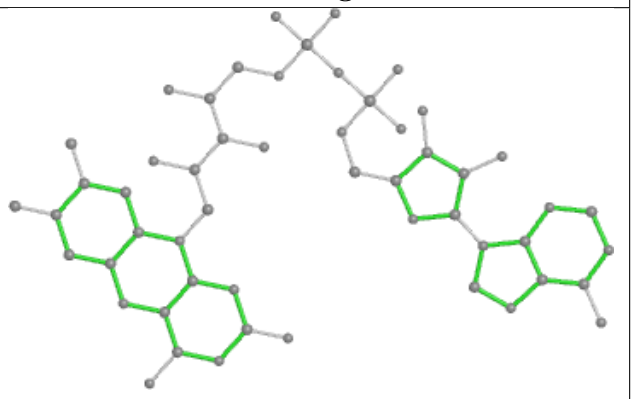
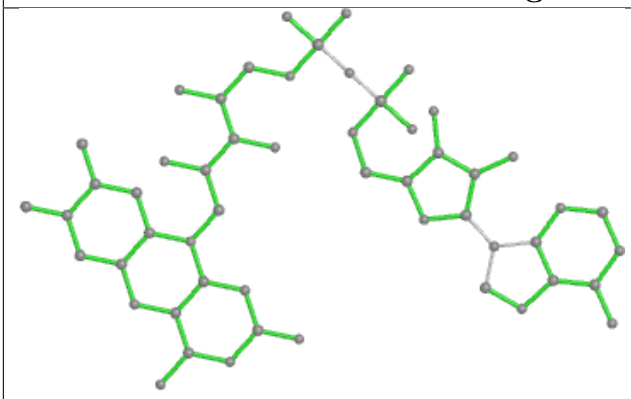


Rings

Ligand FAD P 601



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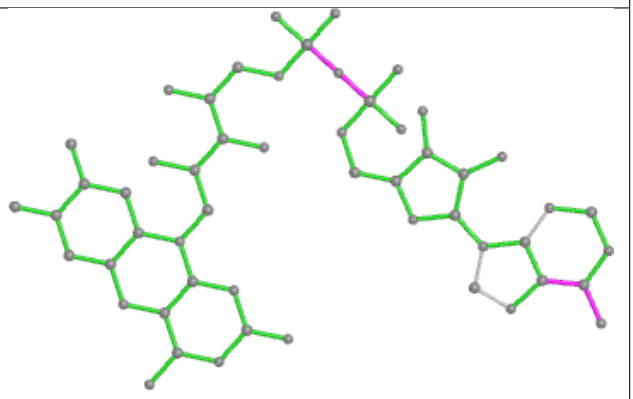

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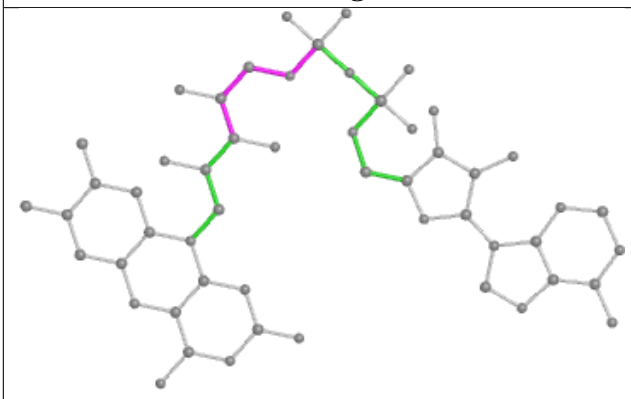

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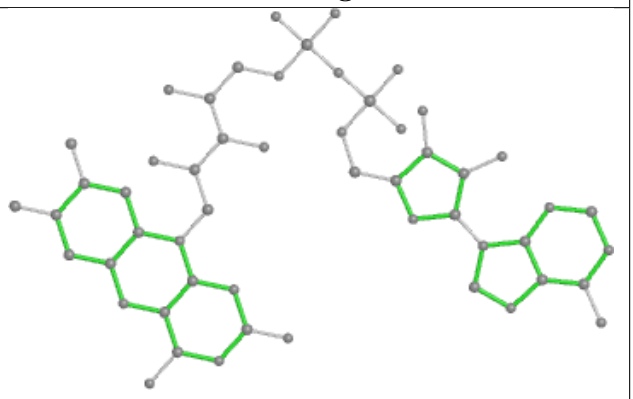
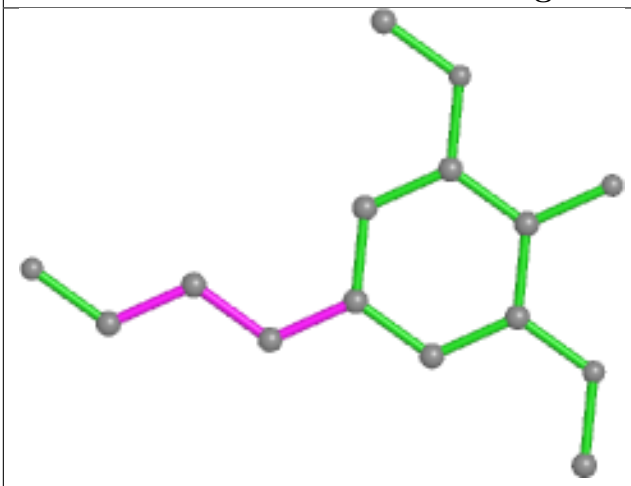


Rings

Ligand 55B J 602



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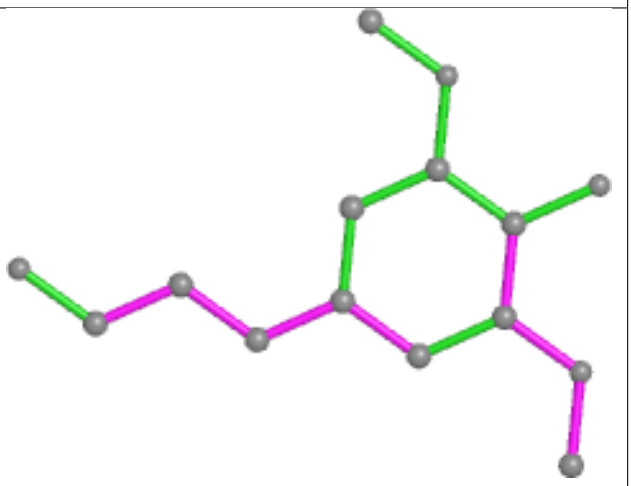
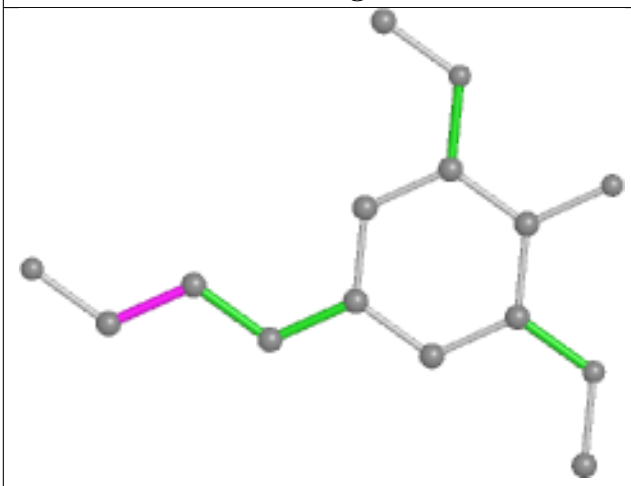
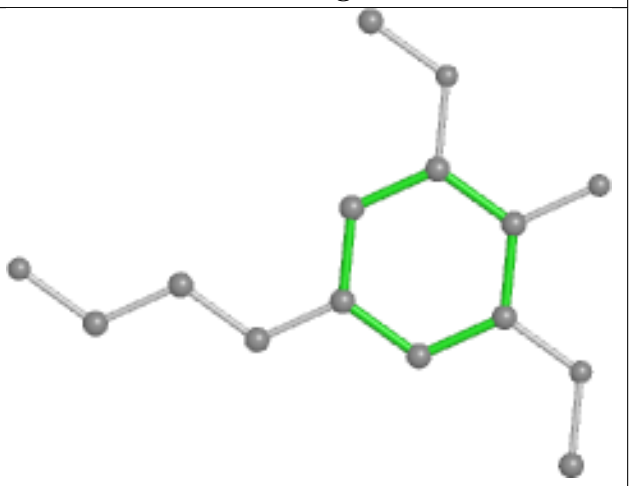


Bond angles

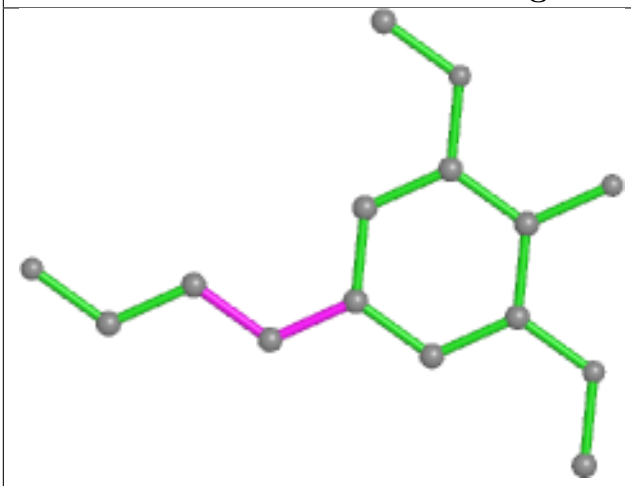


Torsions

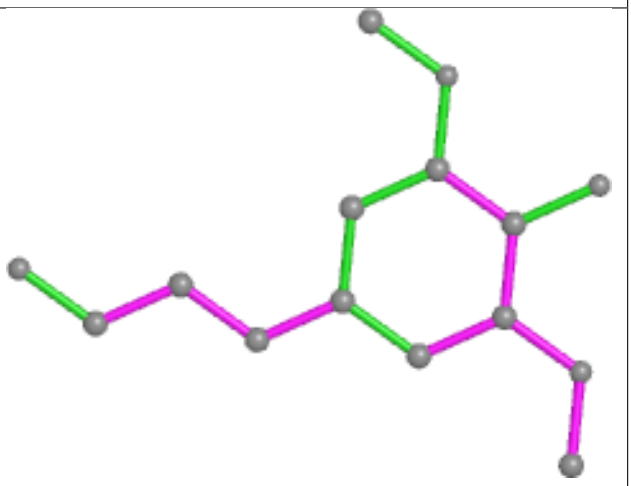


Rings

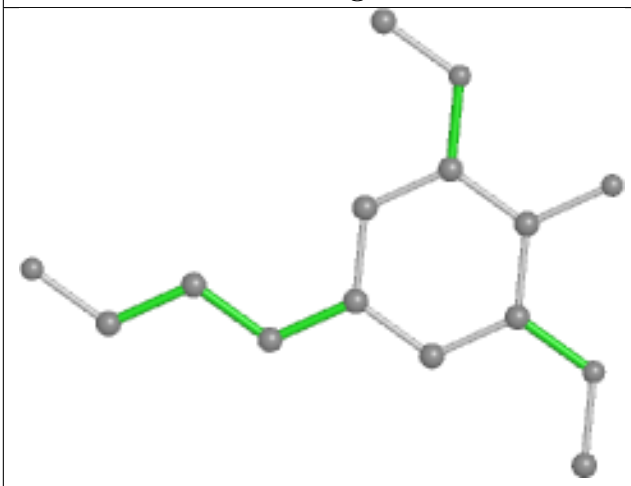
Ligand 55B K 602



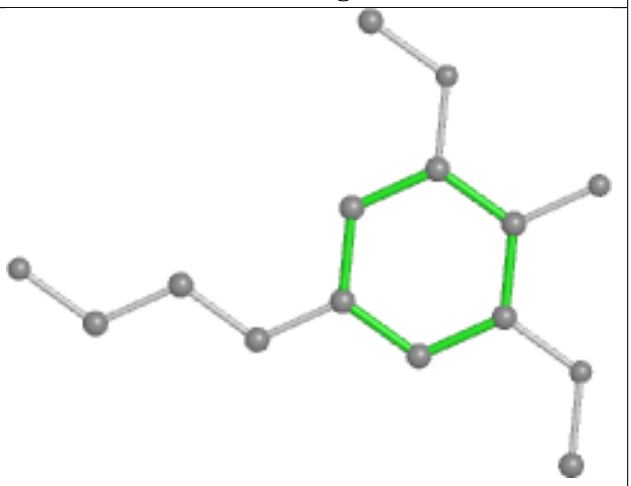
Bond lengths



Bond angles

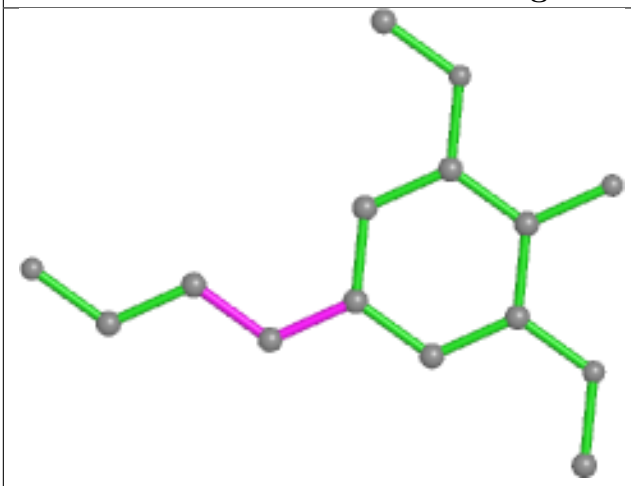


Torsions



Rings

Ligand 55B O 602



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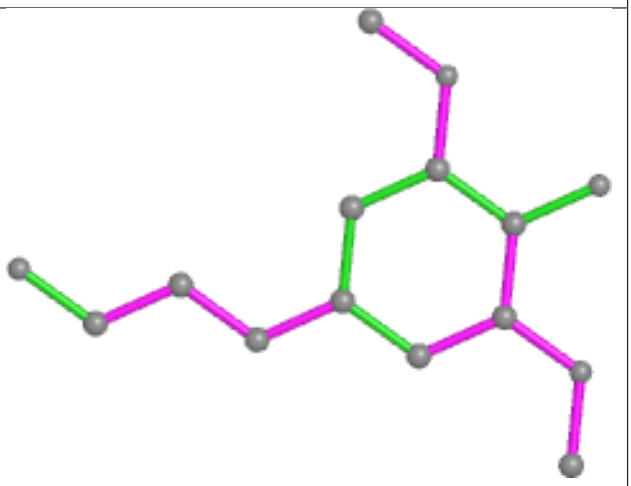
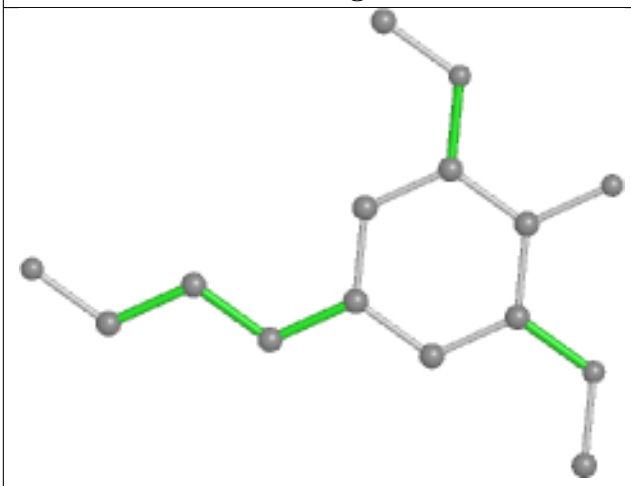
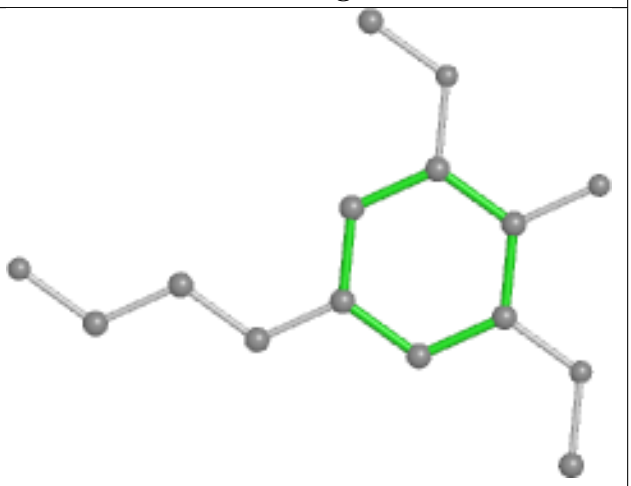


Bond angles

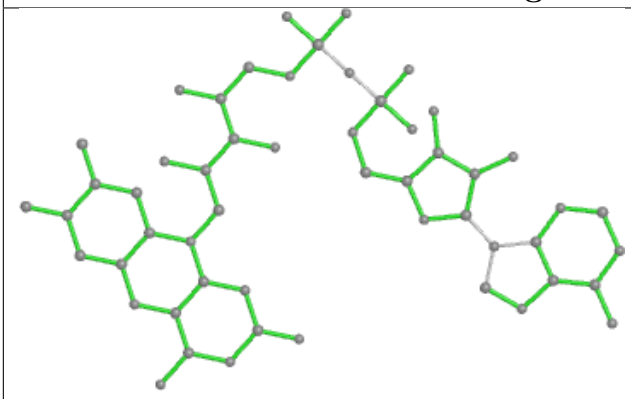


Torsions

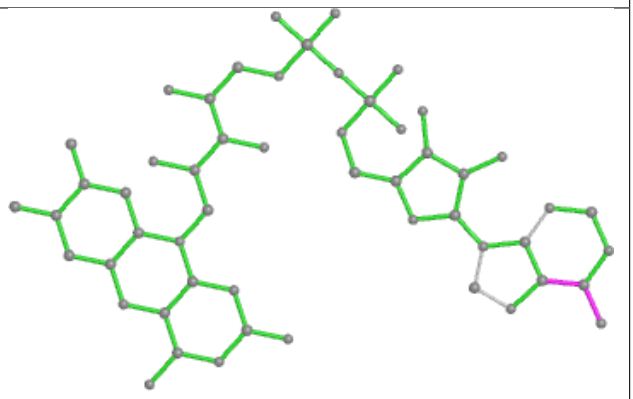


Rings

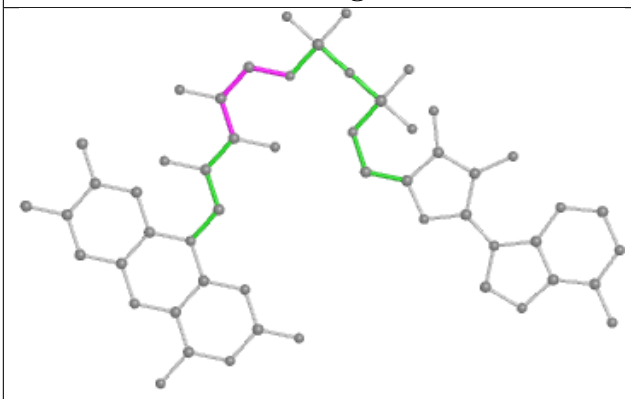
Ligand FAD B 601



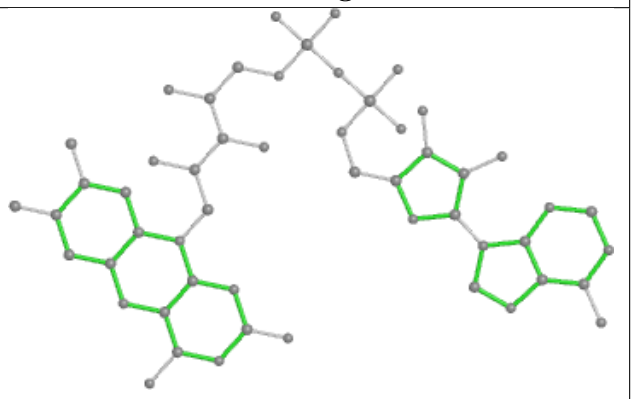
Bond lengths



Bond angles

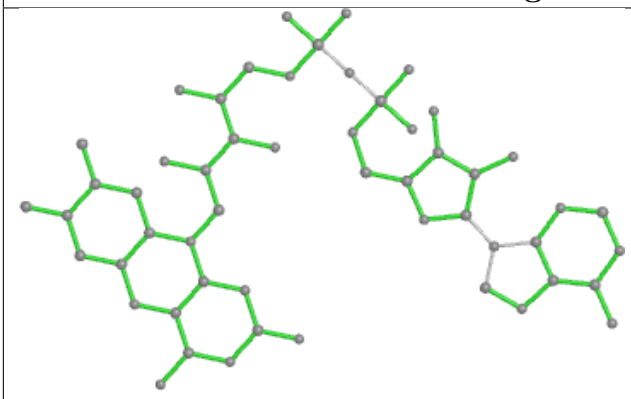


Torsions

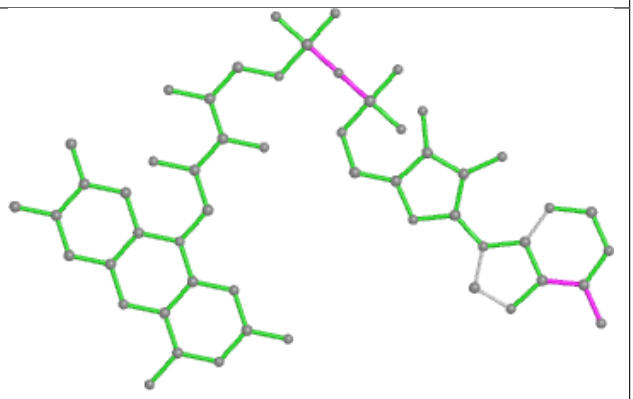


Rings

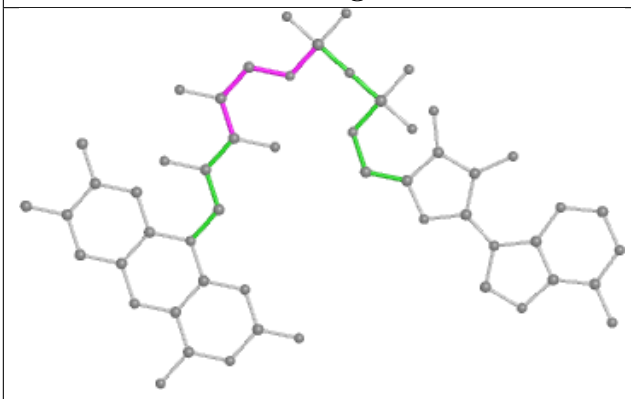
Ligand FAD O 601



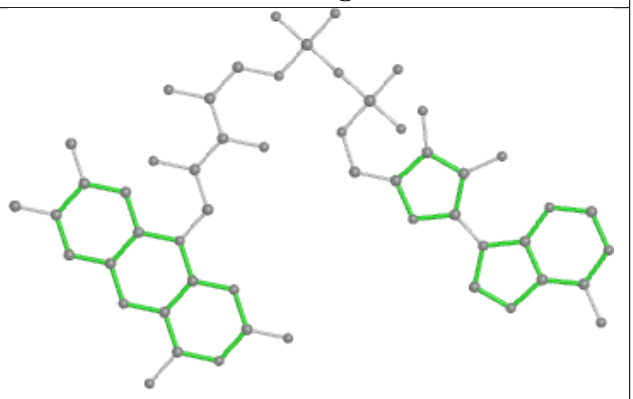
Bond lengths



Bond angles

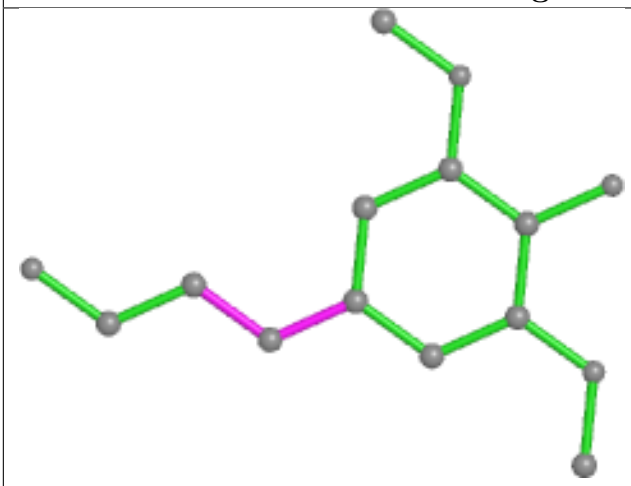


Torsions

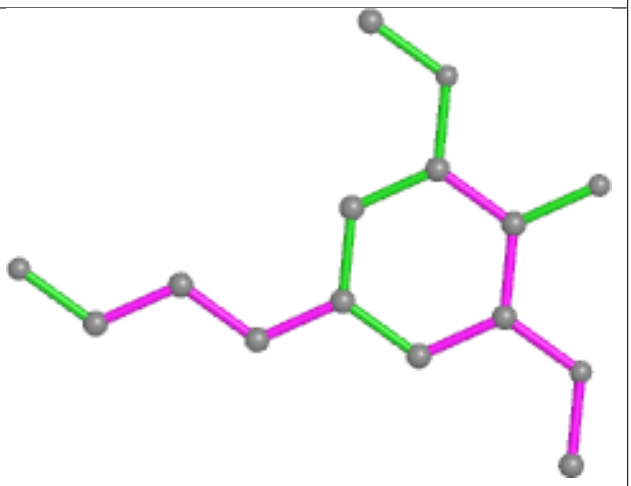


Rings

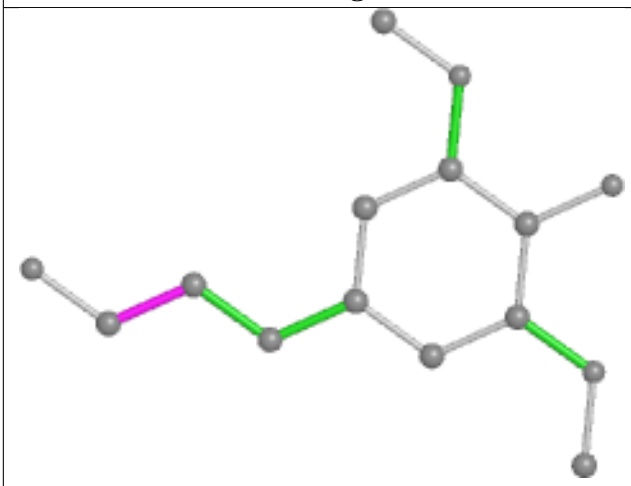
Ligand 55B P 602



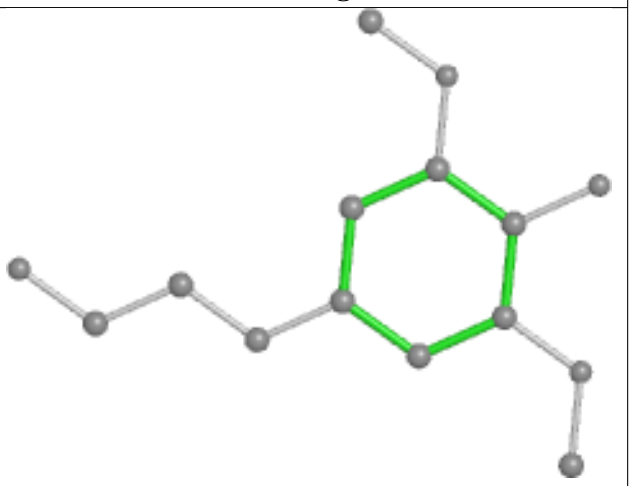
Bond lengths



Bond angles

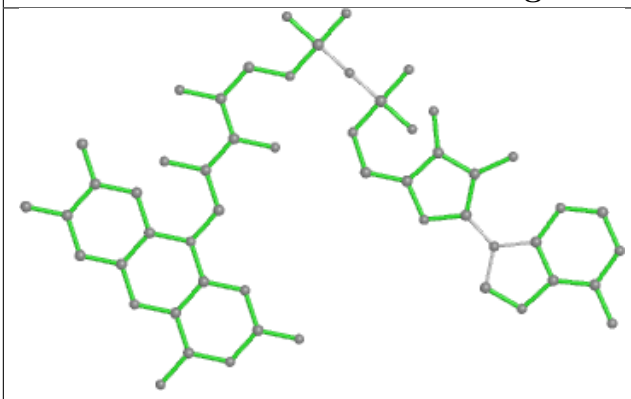


Torsions

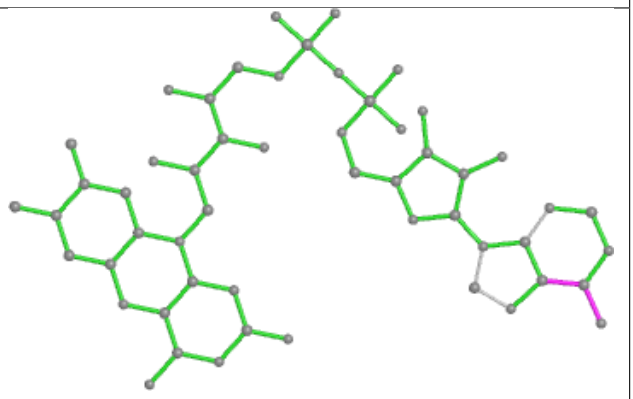


Rings

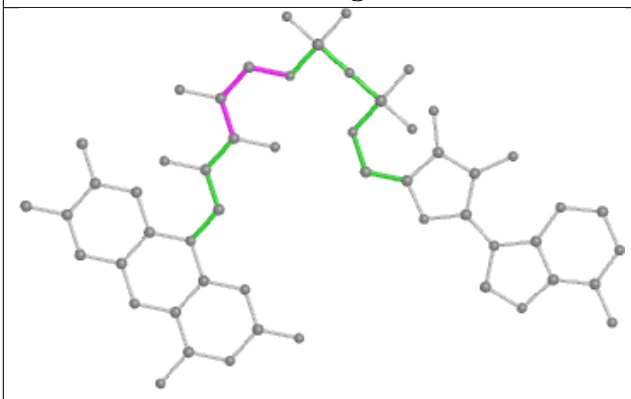
Ligand FAD A 601



Bond lengths



Bond angles



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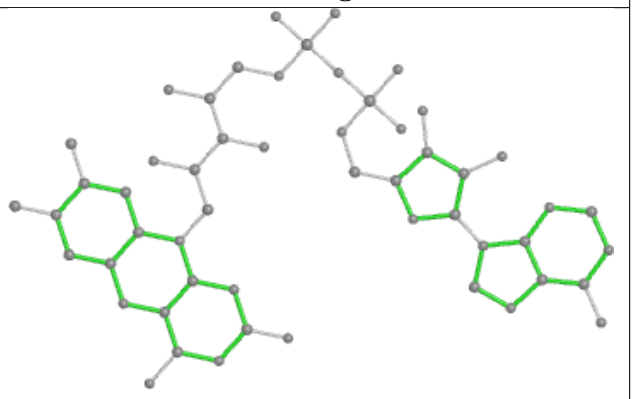
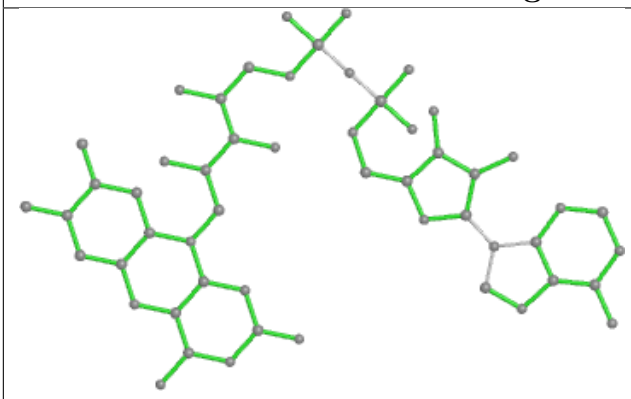
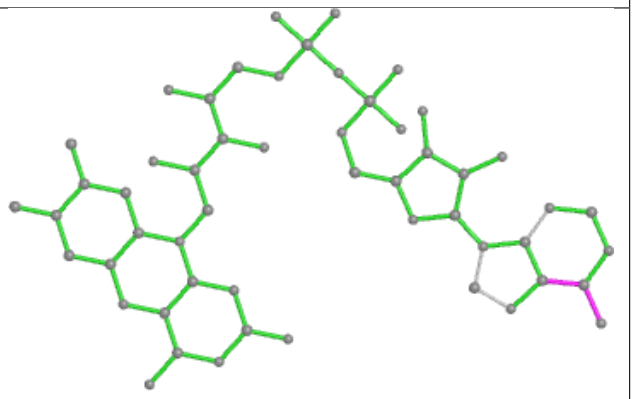


Rings

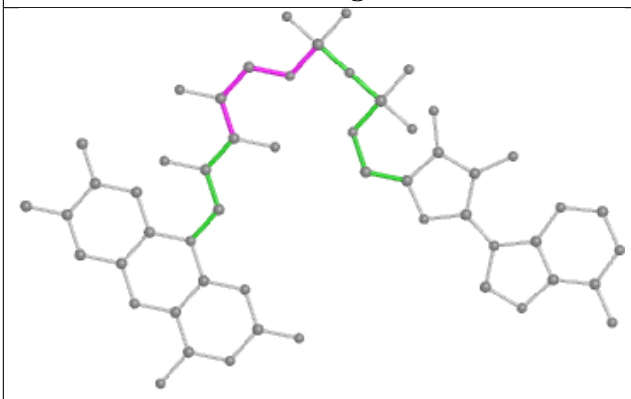
Ligand FAD G 601



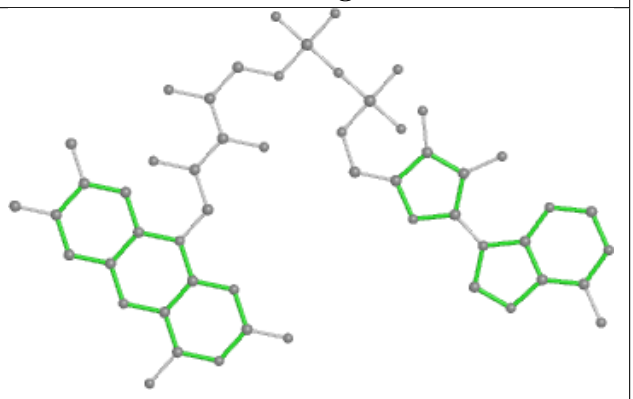
Bond lengths



Bond angles

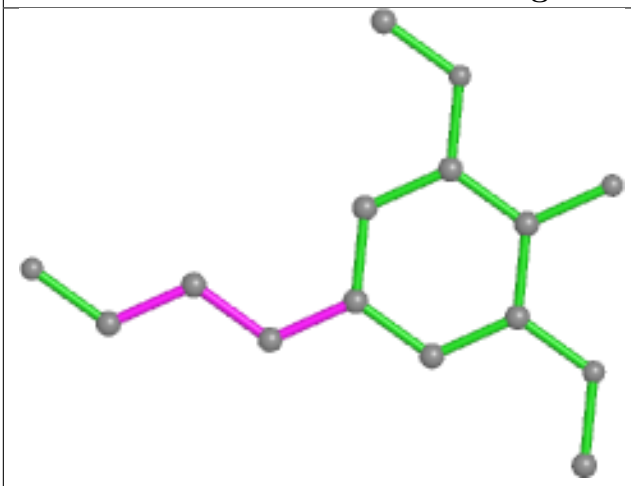


Torsions

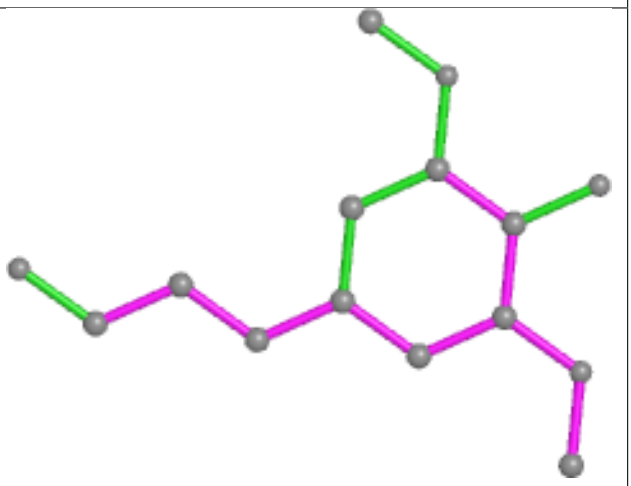


Rings

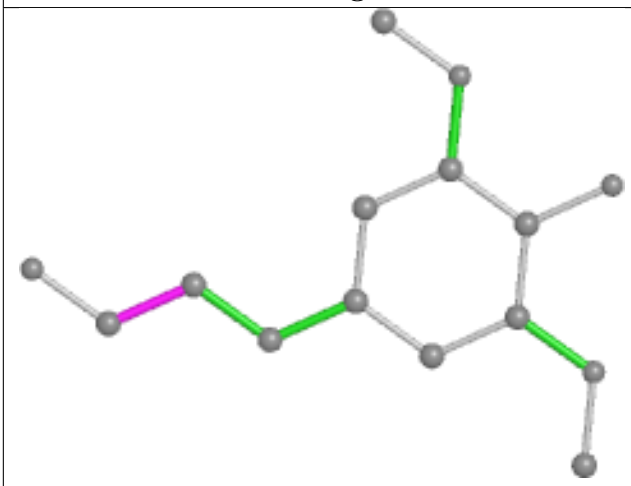
Ligand 55B B 602



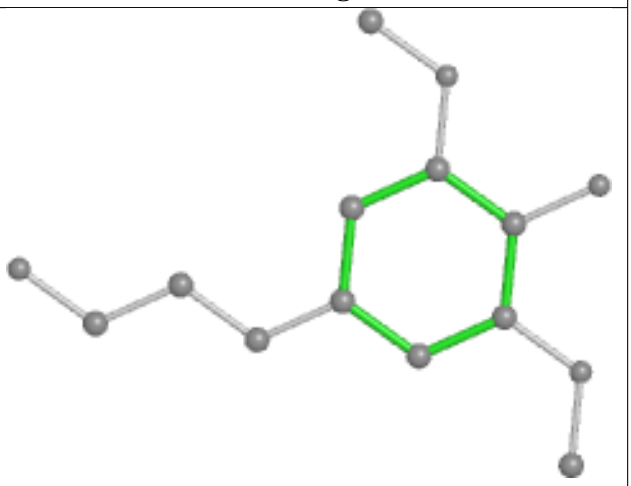
Bond lengths



Bond angles

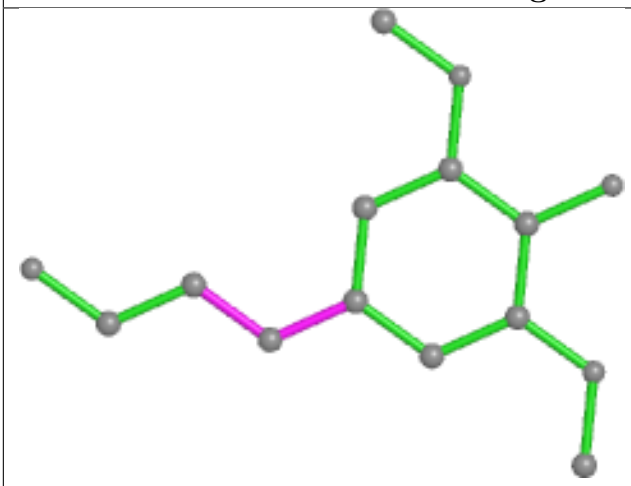


Torsions

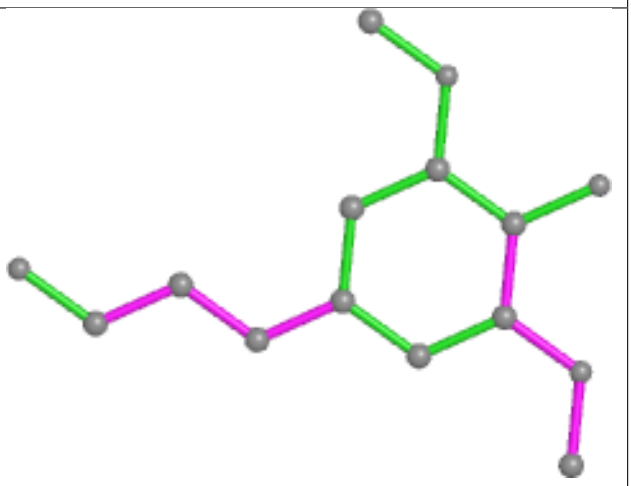


Rings

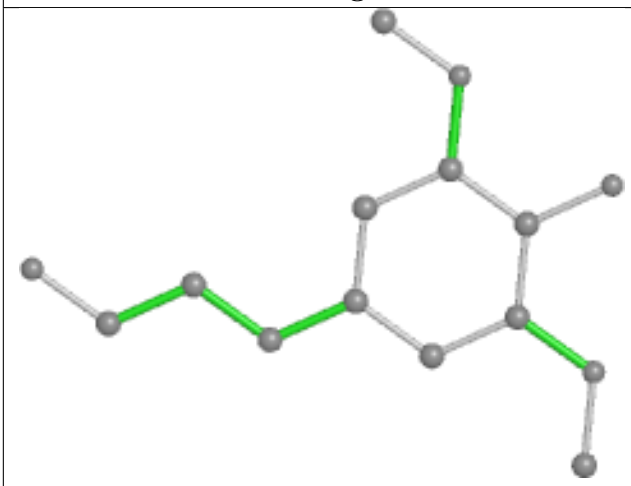
Ligand 55B N 602



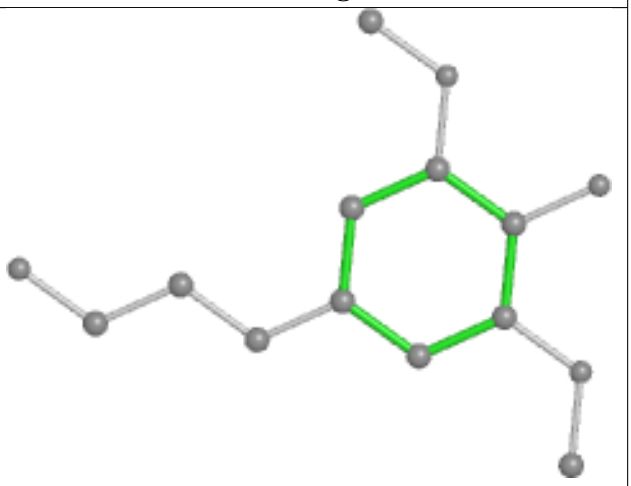
Bond lengths



Bond angles

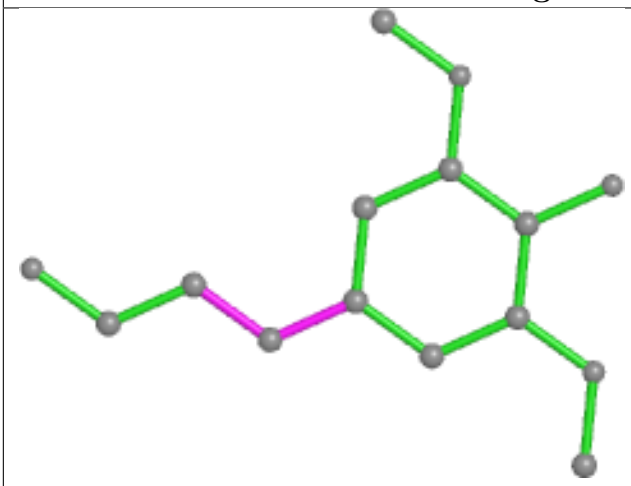


Torsions

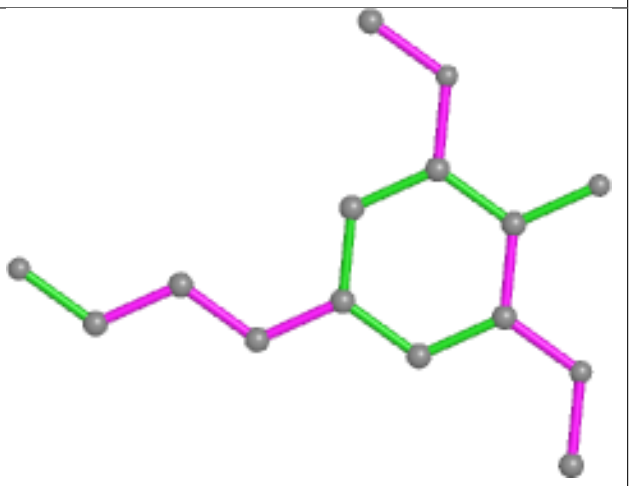


Rings

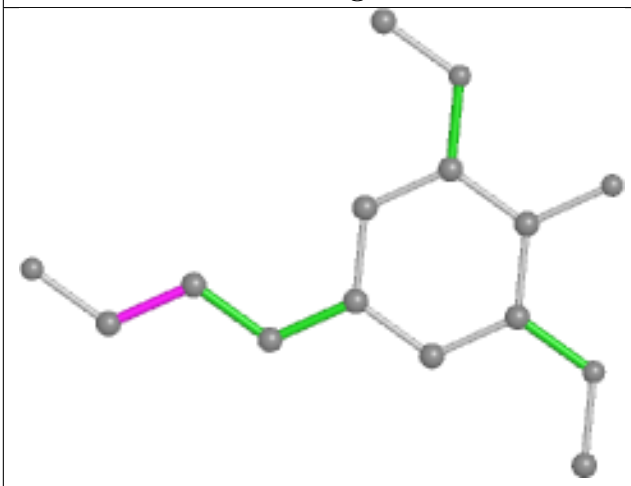
Ligand 55B L 602



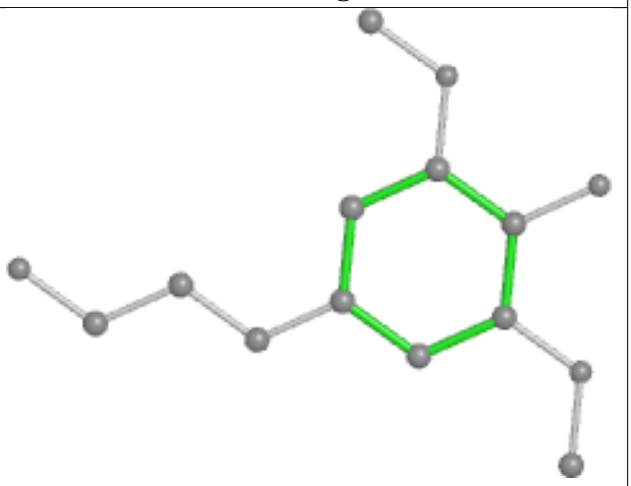
Bond lengths



Bond angles

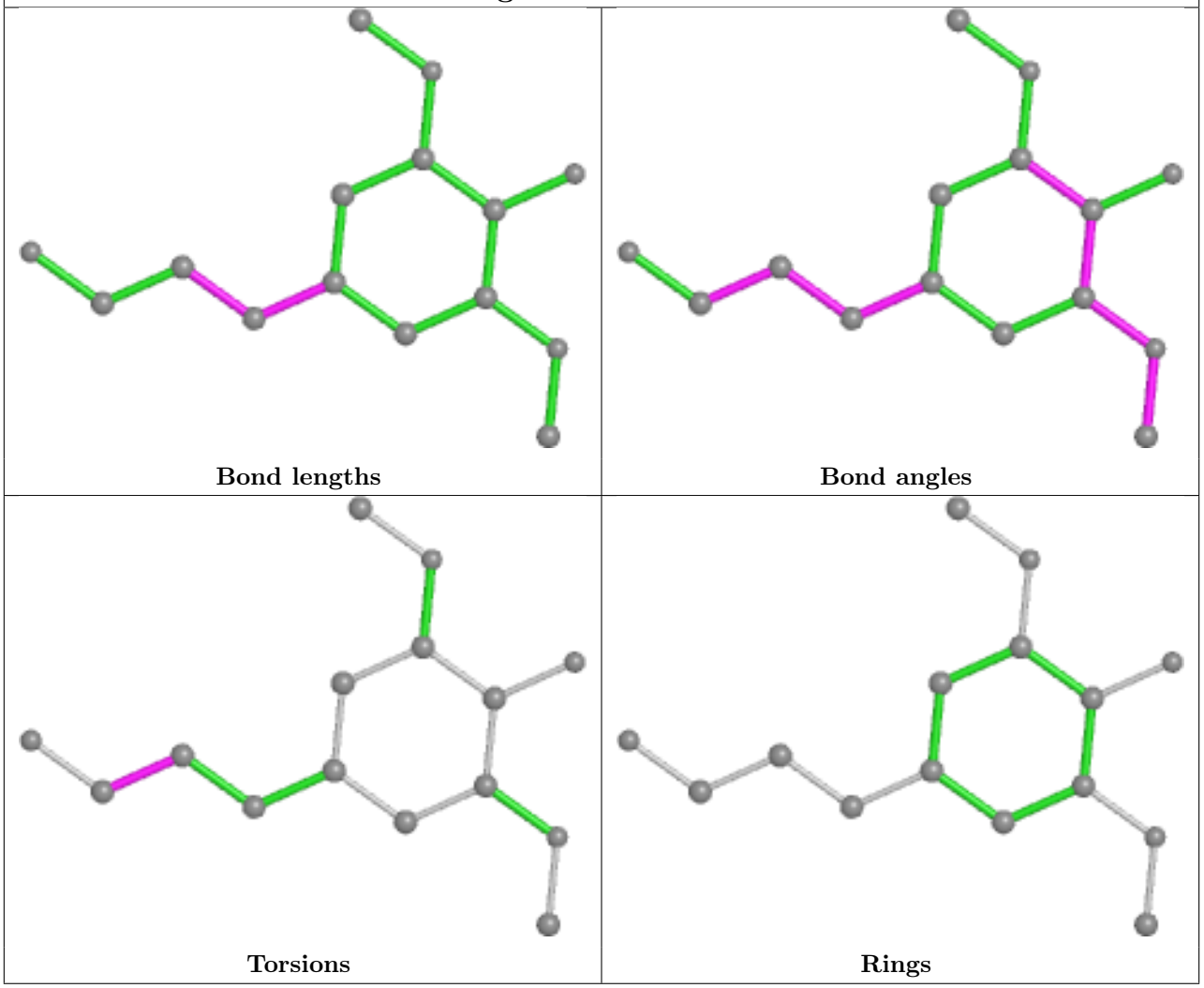


Torsions



Rings

Ligand 55B H 602



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	525/526 (99%)	-0.21	6 (1%) 80 85	17, 25, 43, 71	0
1	B	525/526 (99%)	-0.24	3 (0%) 89 92	16, 24, 40, 77	0
1	C	525/526 (99%)	-0.26	6 (1%) 80 85	15, 24, 41, 79	0
1	D	525/526 (99%)	-0.29	4 (0%) 86 89	16, 25, 44, 70	0
1	E	525/526 (99%)	-0.16	6 (1%) 80 85	17, 27, 44, 85	0
1	F	525/526 (99%)	-0.21	4 (0%) 86 89	18, 28, 48, 85	0
1	G	525/526 (99%)	-0.14	6 (1%) 80 85	18, 31, 50, 79	0
1	H	525/526 (99%)	-0.22	7 (1%) 77 81	17, 24, 42, 70	0
1	I	525/526 (99%)	-0.19	7 (1%) 77 81	16, 29, 46, 84	0
1	J	525/526 (99%)	-0.15	6 (1%) 80 85	18, 29, 51, 80	0
1	K	525/526 (99%)	0.07	12 (2%) 60 67	21, 34, 54, 89	0
1	L	525/526 (99%)	0.15	26 (4%) 28 35	20, 36, 64, 98	0
1	M	525/526 (99%)	0.19	19 (3%) 42 49	24, 41, 61, 96	0
1	N	525/526 (99%)	0.05	15 (2%) 51 58	24, 39, 58, 101	0
1	O	525/526 (99%)	0.52	50 (9%) 8 11	28, 48, 73, 91	0
1	P	525/526 (99%)	0.76	70 (13%) 3 4	26, 51, 79, 109	0
All	All	8400/8416 (99%)	-0.02	247 (2%) 51 58	15, 31, 59, 109	0

All (247) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	P	297	ASP	12.5
1	N	525	ASN	7.7
1	J	297	ASP	7.3
1	K	297	ASP	7.3
1	E	297	ASP	6.8

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Mol	Chain	Res	Type	RSRZ
1	N	297	ASP	6.7
1	M	297	ASP	6.7
1	F	297	ASP	6.5
1	P	50	GLU	6.3
1	H	297	ASP	6.3
1	B	297	ASP	6.2
1	L	297	ASP	6.1
1	P	76	TYR	6.0
1	C	525	ASN	5.9
1	L	295	ASP	5.9
1	I	2	THR	5.5
1	P	298	GLY	5.5
1	P	48	ALA	5.4
1	M	525	ASN	5.4
1	P	26	GLY	5.3
1	O	526	LEU	5.3
1	N	523	GLY	5.2
1	G	297	ASP	5.1
1	L	525	ASN	5.0
1	A	297	ASP	5.0
1	P	523	GLY	4.9
1	O	295	ASP	4.9
1	O	297	ASP	4.9
1	I	297	ASP	4.8
1	C	2	THR	4.7
1	P	78	ILE	4.7
1	F	2	THR	4.7
1	N	295	ASP	4.6
1	P	21	PHE	4.6
1	D	297	ASP	4.6
1	I	526	LEU	4.5
1	O	14	PHE	4.4
1	M	526	LEU	4.4
1	O	525	ASN	4.3
1	O	76	TYR	4.2
1	A	525	ASN	4.2
1	P	419	ASN	4.2
1	G	523	GLY	4.2
1	I	525	ASN	4.2
1	M	295	ASP	4.1
1	M	523	GLY	4.1
1	P	35	ASP	4.1

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Mol	Chain	Res	Type	RSRZ
1	H	525	ASN	4.0
1	O	311	ASP	4.0
1	O	15	ASP	4.0
1	G	525	ASN	4.0
1	P	18	LEU	4.0
1	O	523	GLY	3.9
1	E	523	GLY	3.8
1	G	2	THR	3.8
1	C	297	ASP	3.8
1	O	9	VAL	3.7
1	C	523	GLY	3.7
1	J	523	GLY	3.7
1	N	526	LEU	3.7
1	A	523	GLY	3.6
1	M	298	GLY	3.6
1	O	16	ALA	3.6
1	M	524	GLN	3.6
1	N	524	GLN	3.6
1	J	526	LEU	3.6
1	J	34	ALA	3.5
1	O	301	PRO	3.5
1	L	420	LYS	3.5
1	P	8	GLY	3.5
1	P	2	THR	3.5
1	O	32	SER	3.5
1	H	2	THR	3.5
1	M	291	THR	3.5
1	P	75	GLU	3.5
1	L	294	PHE	3.4
1	N	2	THR	3.4
1	P	17	ALA	3.4
1	H	296	GLY	3.3
1	P	356	ASP	3.3
1	O	13	ARG	3.3
1	K	303	GLU	3.3
1	H	523	GLY	3.3
1	A	526	LEU	3.3
1	O	78	ILE	3.3
1	P	281	PHE	3.3
1	P	14	PHE	3.2
1	L	302	ALA	3.2
1	P	5	LEU	3.2

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Mol	Chain	Res	Type	RSRZ
1	E	525	ASN	3.2
1	H	524	GLN	3.2
1	E	295	ASP	3.2
1	K	295	ASP	3.1
1	P	30	VAL	3.1
1	O	50	GLU	3.1
1	O	294	PHE	3.1
1	P	15	ASP	3.1
1	P	301	PRO	3.1
1	O	48	ALA	3.1
1	P	47	GLY	3.1
1	O	17	ALA	3.0
1	I	523	GLY	3.0
1	O	12	GLU	3.0
1	O	21	PHE	3.0
1	K	13	ARG	3.0
1	A	524	GLN	3.0
1	P	526	LEU	2.9
1	P	525	ASN	2.9
1	L	526	LEU	2.9
1	P	31	LEU	2.9
1	O	35	ASP	2.9
1	P	289	LYS	2.9
1	L	293	TRP	2.9
1	K	526	LEU	2.9
1	M	356	ASP	2.9
1	L	303	GLU	2.9
1	L	301	PRO	2.8
1	G	471	TYR	2.8
1	P	38	GLU	2.8
1	M	50	GLU	2.8
1	N	303	GLU	2.8
1	J	361	HIS	2.8
1	L	300	MET	2.7
1	M	419	ASN	2.7
1	P	23	ASP	2.7
1	P	100	GLY	2.7
1	O	444	ALA	2.7
1	O	524	GLN	2.7
1	O	447	GLU	2.7
1	P	307	ARG	2.7
1	L	296	GLY	2.7

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Mol	Chain	Res	Type	RSRZ
1	N	304	ALA	2.7
1	O	41	ARG	2.6
1	B	295	ASP	2.6
1	F	356	ASP	2.6
1	O	36	GLU	2.6
1	P	11	ASP	2.6
1	P	444	ALA	2.6
1	K	294	PHE	2.6
1	P	9	VAL	2.6
1	I	471	TYR	2.6
1	P	521	PHE	2.6
1	M	444	ALA	2.6
1	P	294	PHE	2.6
1	M	418	TYR	2.6
1	M	417	GLU	2.6
1	N	419	ASN	2.6
1	O	419	ASN	2.6
1	P	72	ILE	2.6
1	O	38	GLU	2.5
1	O	40	PHE	2.5
1	P	34	ALA	2.5
1	P	524	GLN	2.5
1	P	3	ARG	2.5
1	O	20	ARG	2.5
1	P	293	TRP	2.5
1	L	250	LYS	2.5
1	P	19	GLN	2.5
1	O	422	TYR	2.5
1	N	331	GLU	2.5
1	O	59	SER	2.5
1	P	13	ARG	2.5
1	M	296	GLY	2.5
1	E	2	THR	2.4
1	O	4	THR	2.4
1	H	526	LEU	2.4
1	O	26	GLY	2.4
1	P	188	GLY	2.4
1	J	295	ASP	2.4
1	K	525	ASN	2.4
1	P	16	ALA	2.4
1	M	423	MET	2.4
1	O	446	PRO	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	2	THR	2.4
1	D	2	THR	2.4
1	L	310	LYS	2.4
1	C	526	LEU	2.4
1	L	304	ALA	2.4
1	P	303	GLU	2.4
1	O	10	SER	2.4
1	O	299	PRO	2.3
1	P	29	TRP	2.3
1	P	53	LEU	2.3
1	N	307	ARG	2.3
1	P	386	PRO	2.3
1	L	447	GLU	2.3
1	L	299	PRO	2.3
1	P	7	PRO	2.3
1	N	305	ILE	2.3
1	K	298	GLY	2.3
1	P	71	ARG	2.3
1	P	461	ARG	2.3
1	D	295	ASP	2.3
1	O	39	ALA	2.3
1	O	5	LEU	2.3
1	P	441	TYR	2.3
1	P	176	MET	2.3
1	L	421	ASP	2.3
1	N	48	ALA	2.3
1	G	356	ASP	2.2
1	P	290	ARG	2.2
1	P	27	ASP	2.2
1	P	447	GLU	2.2
1	K	296	GLY	2.2
1	L	419	ASN	2.2
1	N	361	HIS	2.2
1	O	80	LEU	2.2
1	K	421	ASP	2.2
1	L	305	ILE	2.2
1	L	417	GLU	2.2
1	O	103	ILE	2.2
1	L	453	LEU	2.2
1	O	27	ASP	2.2
1	D	525	ASN	2.1
1	O	8	GLY	2.2

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Mol	Chain	Res	Type	RSRZ
1	L	307	ARG	2.1
1	P	313	ASP	2.1
1	B	176	MET	2.1
1	L	298	GLY	2.1
1	O	24	VAL	2.1
1	M	415	ALA	2.1
1	P	33	THR	2.1
1	P	519	GLN	2.1
1	P	296	GLY	2.1
1	O	2	THR	2.1
1	P	24	VAL	2.1
1	M	311	ASP	2.1
1	K	301	PRO	2.1
1	P	451	GLU	2.1
1	I	295	ASP	2.1
1	P	36	GLU	2.1
1	P	40	PHE	2.1
1	O	23	ASP	2.1
1	O	19	GLN	2.1
1	P	295	ASP	2.1
1	F	525	ASN	2.1
1	L	48	ALA	2.1
1	C	301	PRO	2.1
1	E	423	MET	2.0
1	P	10	SER	2.0
1	O	7	PRO	2.0
1	L	311	ASP	2.0
1	P	28	LYS	2.0
1	O	448	ALA	2.0
1	K	461	ARG	2.0
1	M	461	ARG	2.0
1	P	311	ASP	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 monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	CA	L	603	1/1	0.82	0.09	37,37,37,37	0
3	55B	P	602	15/15	0.92	0.18	40,44,56,61	0
3	55B	M	602	15/15	0.92	0.15	37,43,50,57	0
3	55B	O	602	15/15	0.93	0.18	49,52,63,66	0
3	55B	K	602	15/15	0.93	0.15	29,33,45,58	0
4	CA	F	603	1/1	0.93	0.12	35,35,35,35	0
3	55B	N	602	15/15	0.93	0.14	33,40,49,58	0
2	FAD	M	601	53/53	0.94	0.13	31,38,46,51	0
3	55B	L	602	15/15	0.94	0.16	30,32,47,56	0
2	FAD	O	601	53/53	0.94	0.14	36,46,57,61	0
2	FAD	P	601	53/53	0.94	0.15	36,43,50,53	0
3	55B	A	602	15/15	0.95	0.16	22,27,36,44	0
3	55B	D	602	15/15	0.95	0.13	19,26,35,44	0
3	55B	E	602	15/15	0.95	0.14	27,29,34,39	0
3	55B	F	602	15/15	0.95	0.13	23,28,39,49	0
3	55B	I	602	15/15	0.95	0.16	22,25,35,50	0
4	CA	A	603	1/1	0.95	0.14	42,42,42,42	0
3	55B	J	602	15/15	0.95	0.12	28,30,36,42	0
4	CA	J	603	1/1	0.95	0.17	39,39,39,39	0
2	FAD	N	601	53/53	0.95	0.12	31,37,40,42	0
4	CA	N	603	1/1	0.95	0.14	51,51,51,51	0
3	55B	B	602	15/15	0.96	0.13	21,24,37,44	0
3	55B	C	602	15/15	0.96	0.14	23,26,33,38	0
2	FAD	B	601	53/53	0.96	0.13	17,22,26,55	0
2	FAD	J	601	53/53	0.97	0.12	17,24,28,32	0
3	55B	G	602	15/15	0.97	0.14	19,24,35,40	0
3	55B	H	602	15/15	0.97	0.16	21,25,28,39	0
2	FAD	K	601	53/53	0.97	0.13	22,27,33,36	0
4	CA	B	603	1/1	0.97	0.12	32,32,32,32	0
4	CA	C	603	1/1	0.97	0.09	32,32,32,32	0
4	CA	D	603	1/1	0.97	0.15	33,33,33,33	0
4	CA	E	603	1/1	0.97	0.12	31,31,31,31	0
2	FAD	L	601	53/53	0.97	0.12	18,29,36,40	0
2	FAD	A	601	53/53	0.97	0.12	17,22,27,30	0
2	FAD	E	601	53/53	0.97	0.12	17,23,27,28	0
2	FAD	F	601	53/53	0.97	0.11	19,23,26,30	0
2	FAD	D	601	53/53	0.98	0.12	15,21,26,29	0

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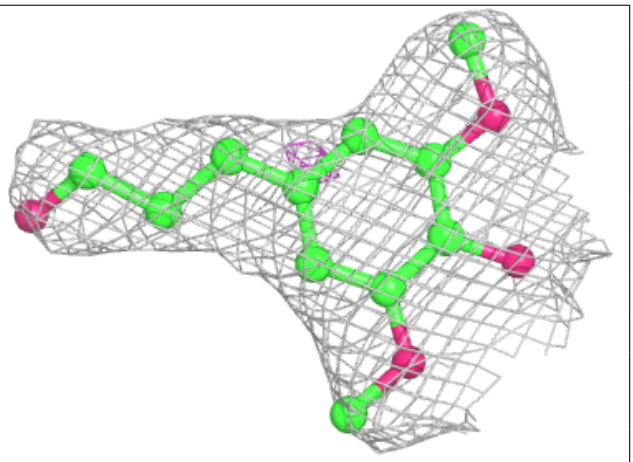
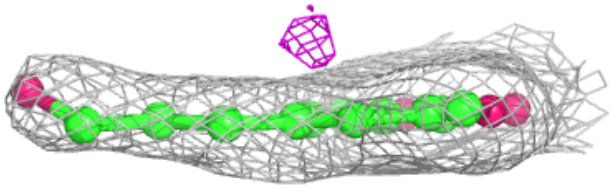
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FAD	G	601	53/53	0.98	0.11	15,23,28,33	0
2	FAD	H	601	53/53	0.98	0.13	15,21,25,27	0
4	CA	A	604	1/1	0.98	0.11	32,32,32,32	0
2	FAD	I	601	53/53	0.98	0.12	18,22,26,27	0
2	FAD	C	601	53/53	0.98	0.12	15,20,27,30	0
4	CA	O	603	1/1	0.98	0.10	38,38,38,38	0
4	CA	M	603	1/1	0.99	0.15	41,41,41,41	0

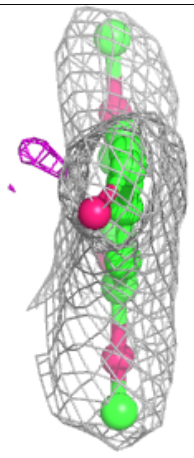
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around 55B P 602:

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

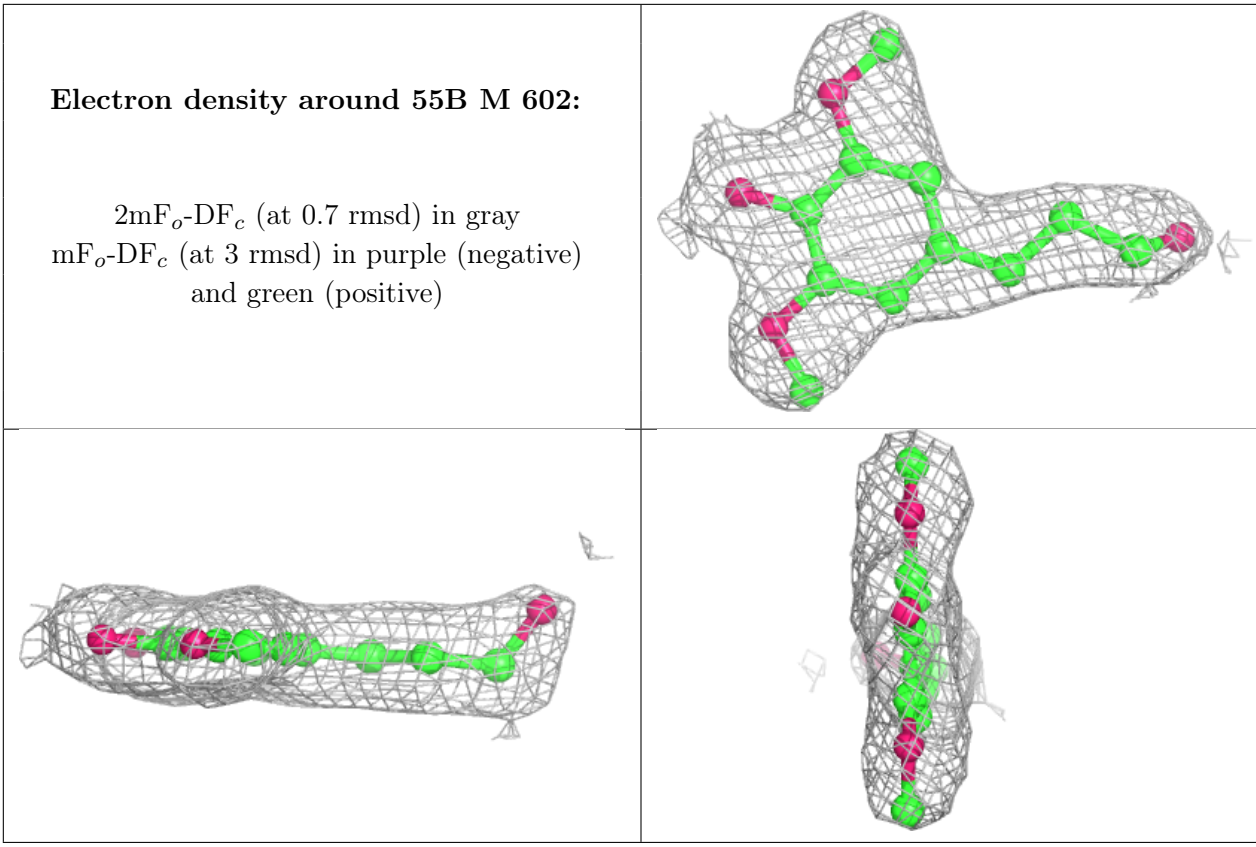






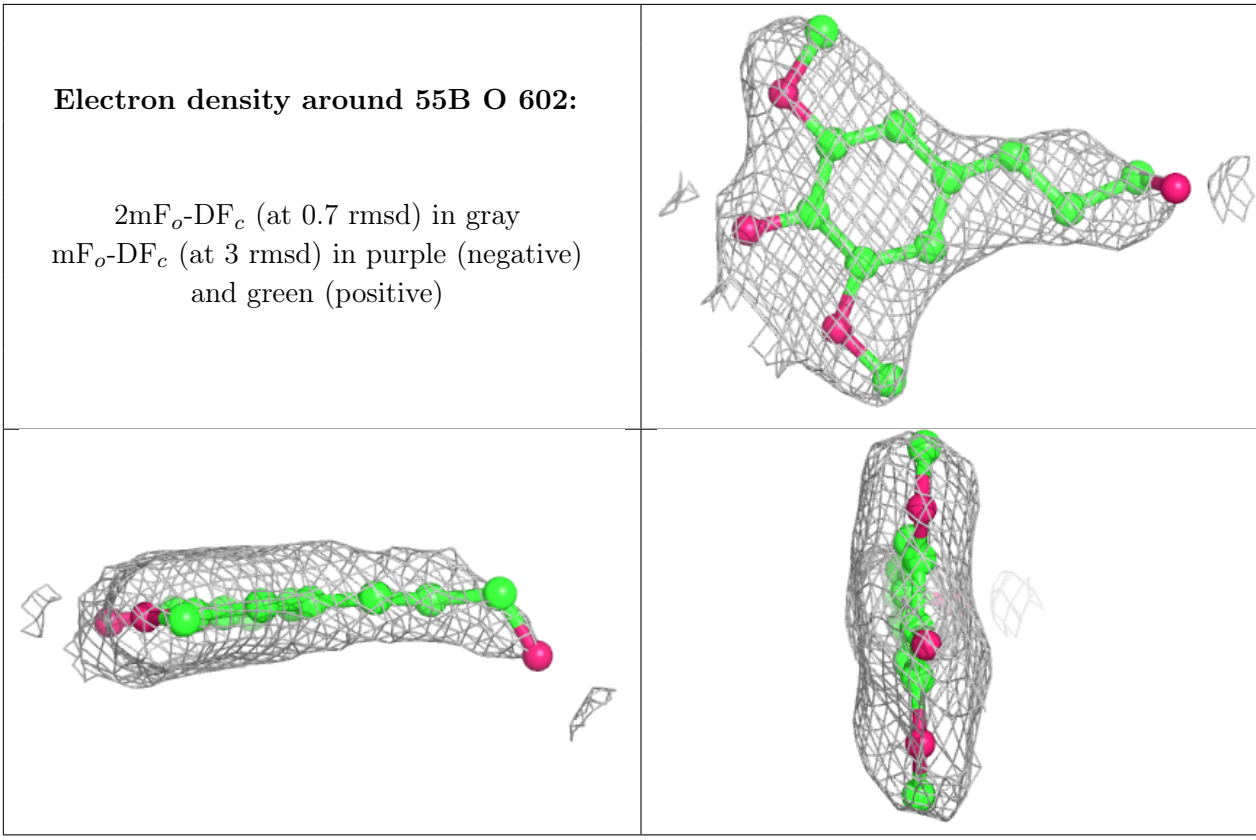
Electron density around 55B M 602:

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



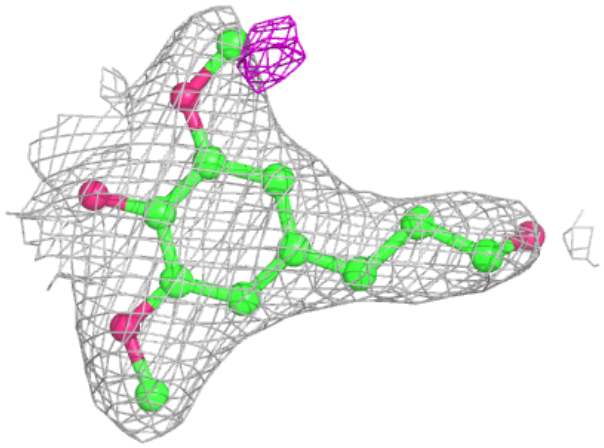
Electron density around 55B O 602:

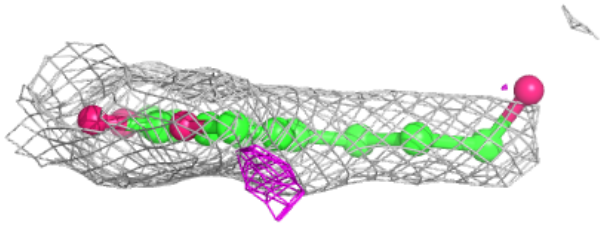
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

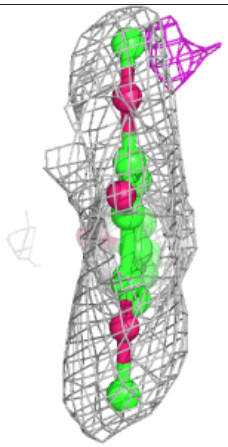


Electron density around 55B K 602:

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

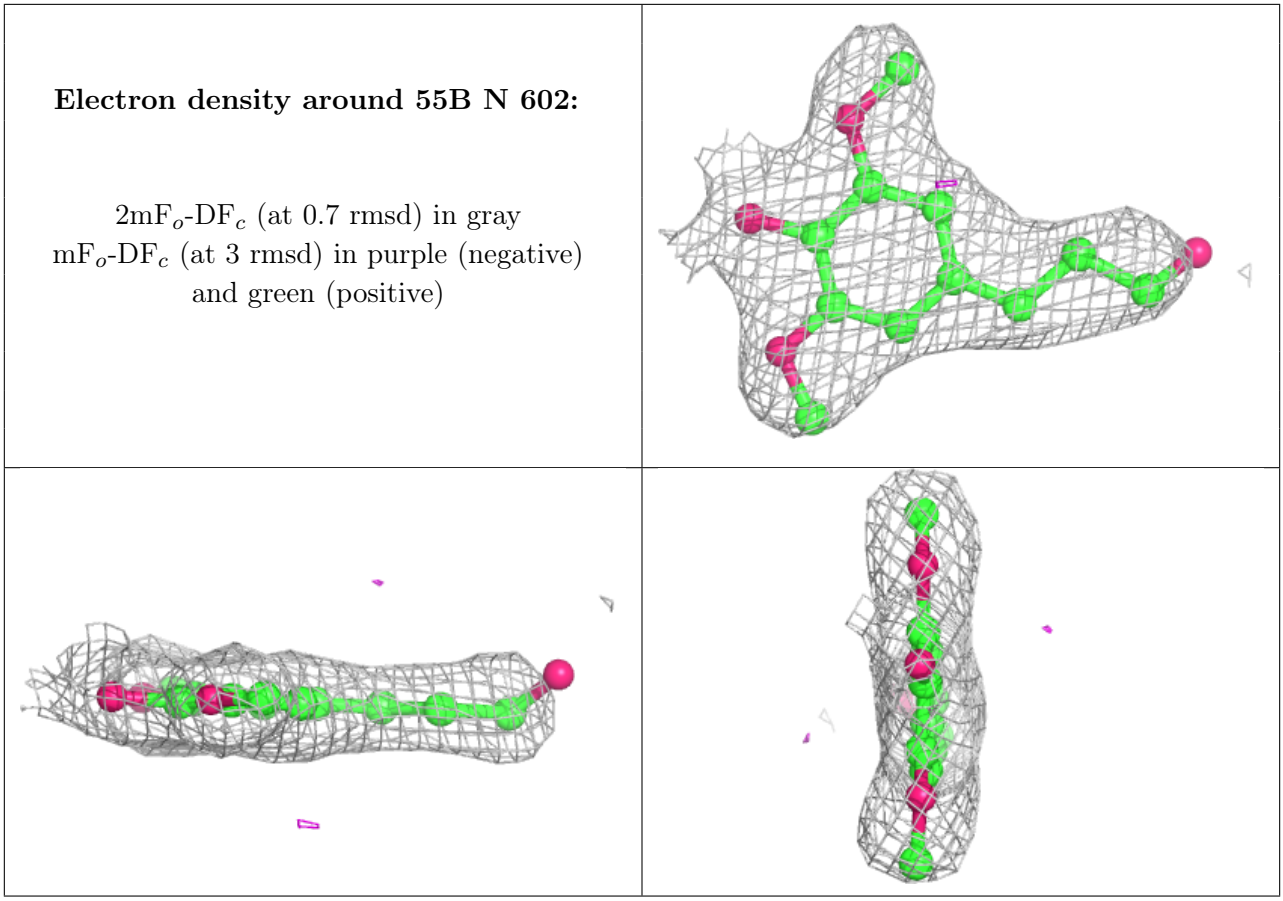






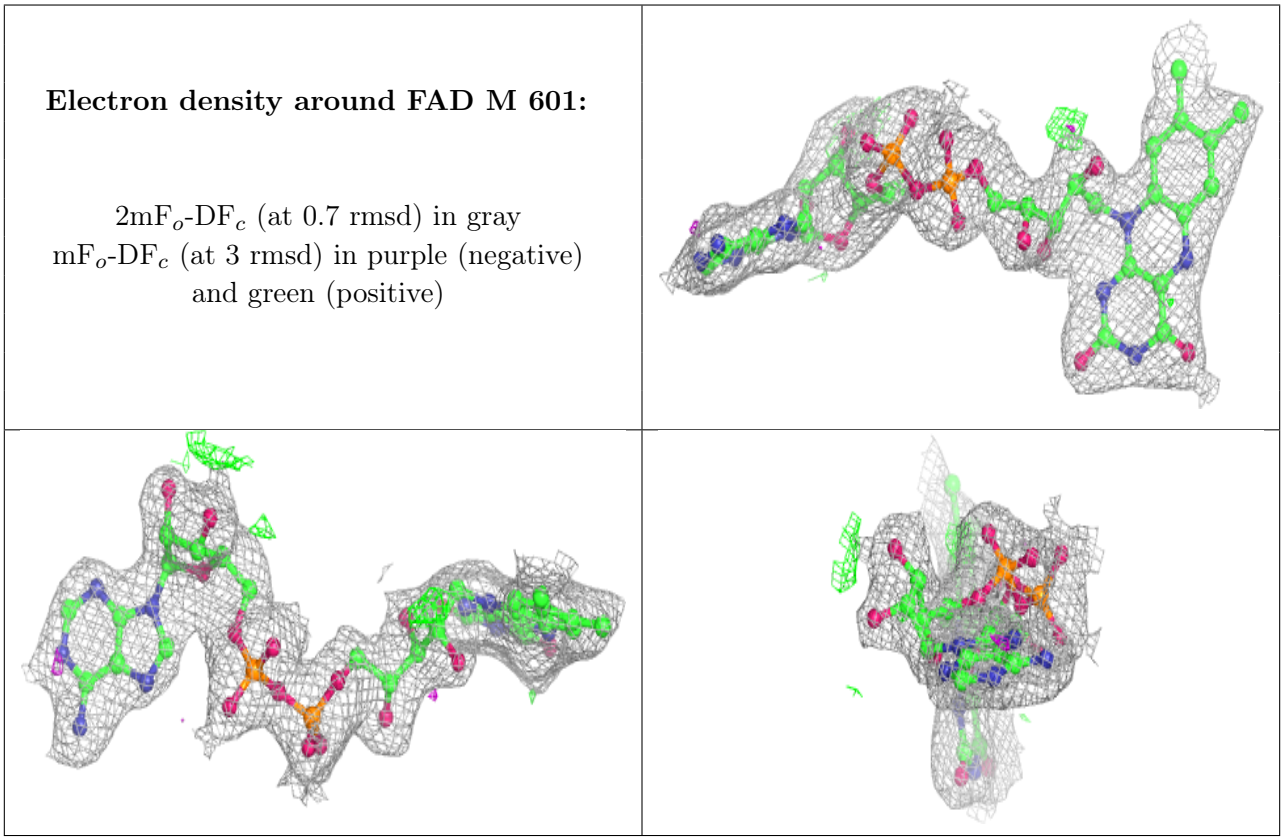
Electron density around 55B N 602:

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



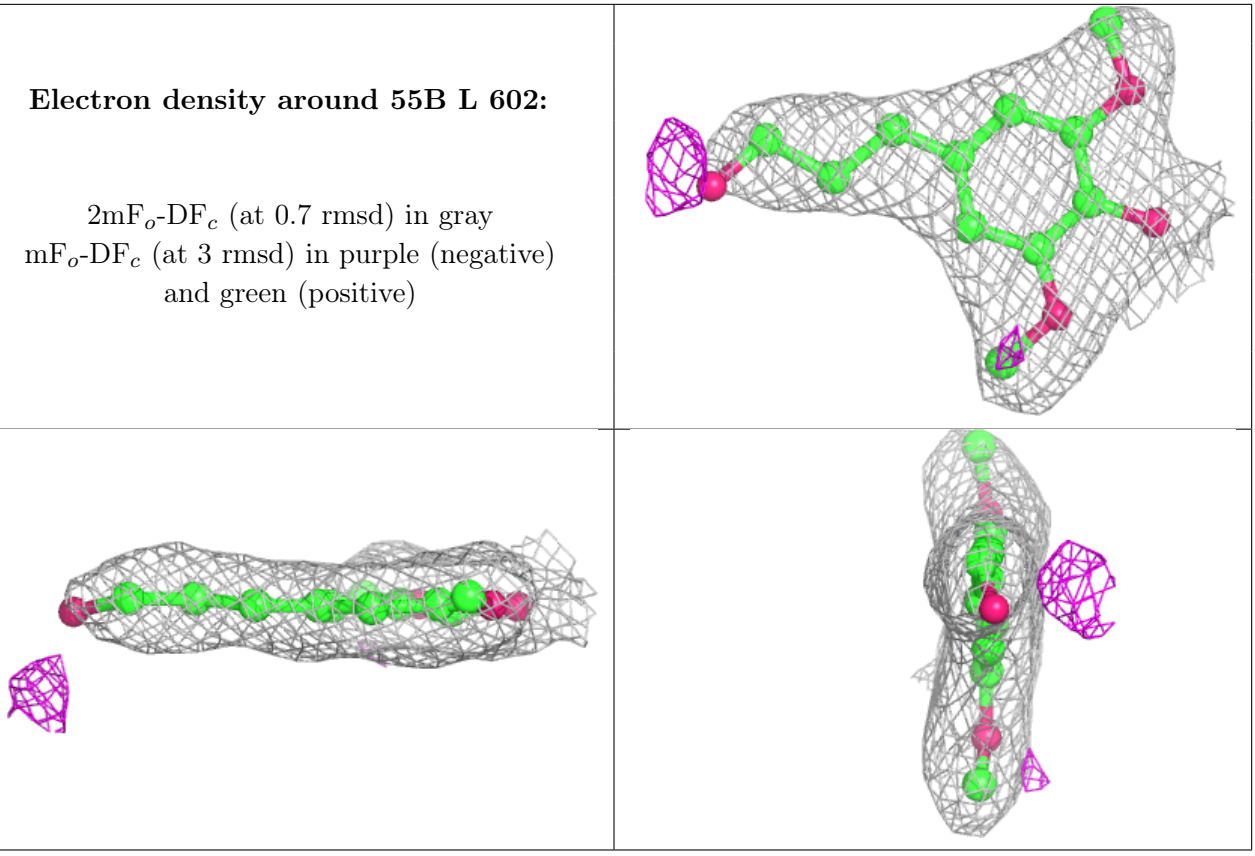
Electron density around FAD M 601:

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



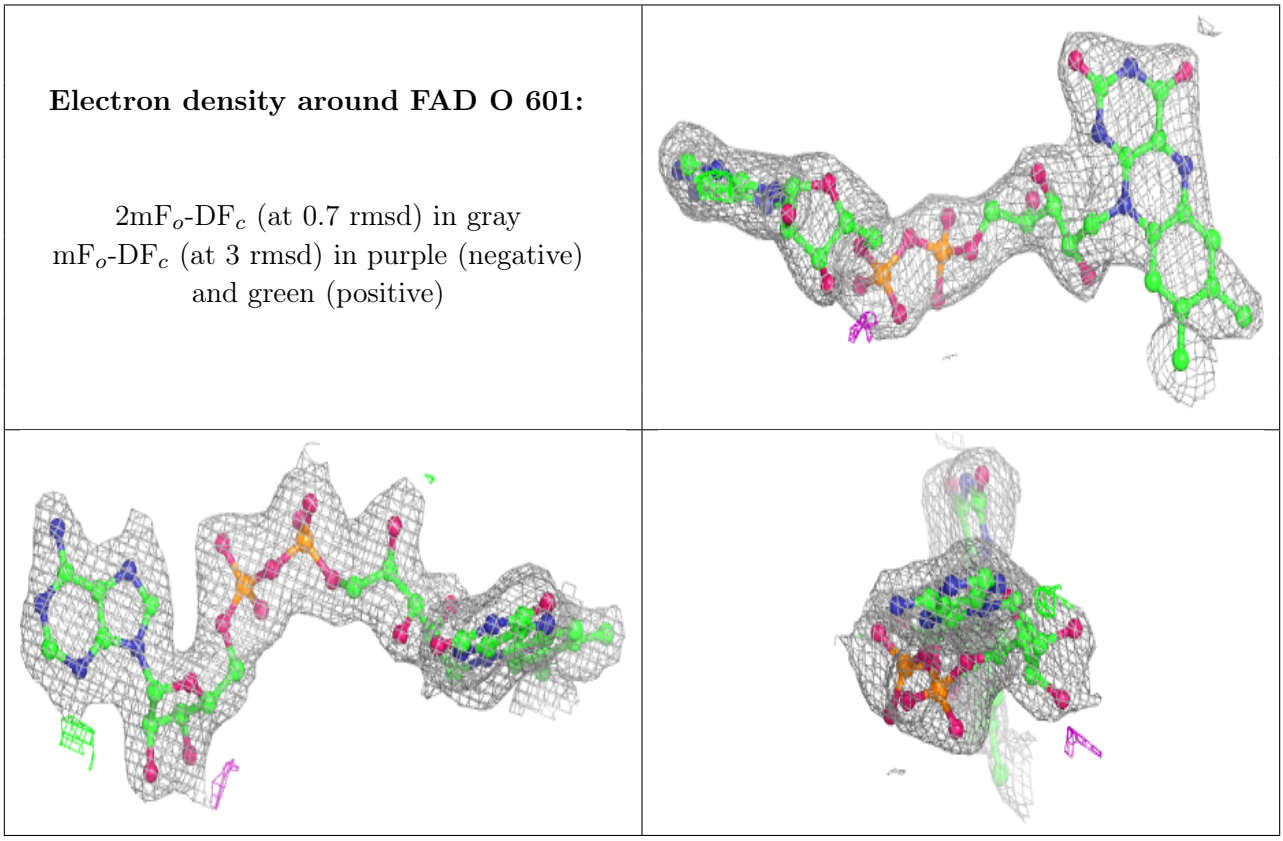
Electron density around 55B L 602:

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



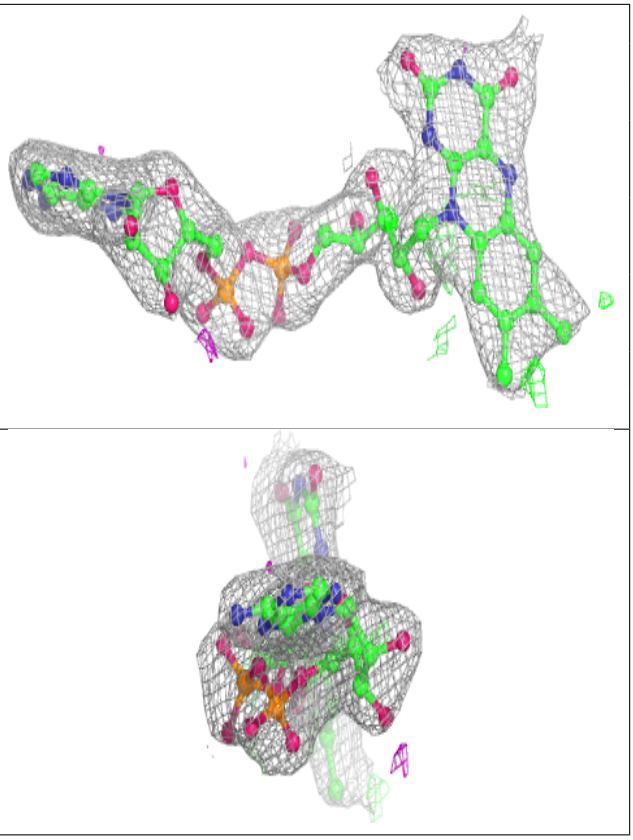
Electron density around FAD O 601:

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



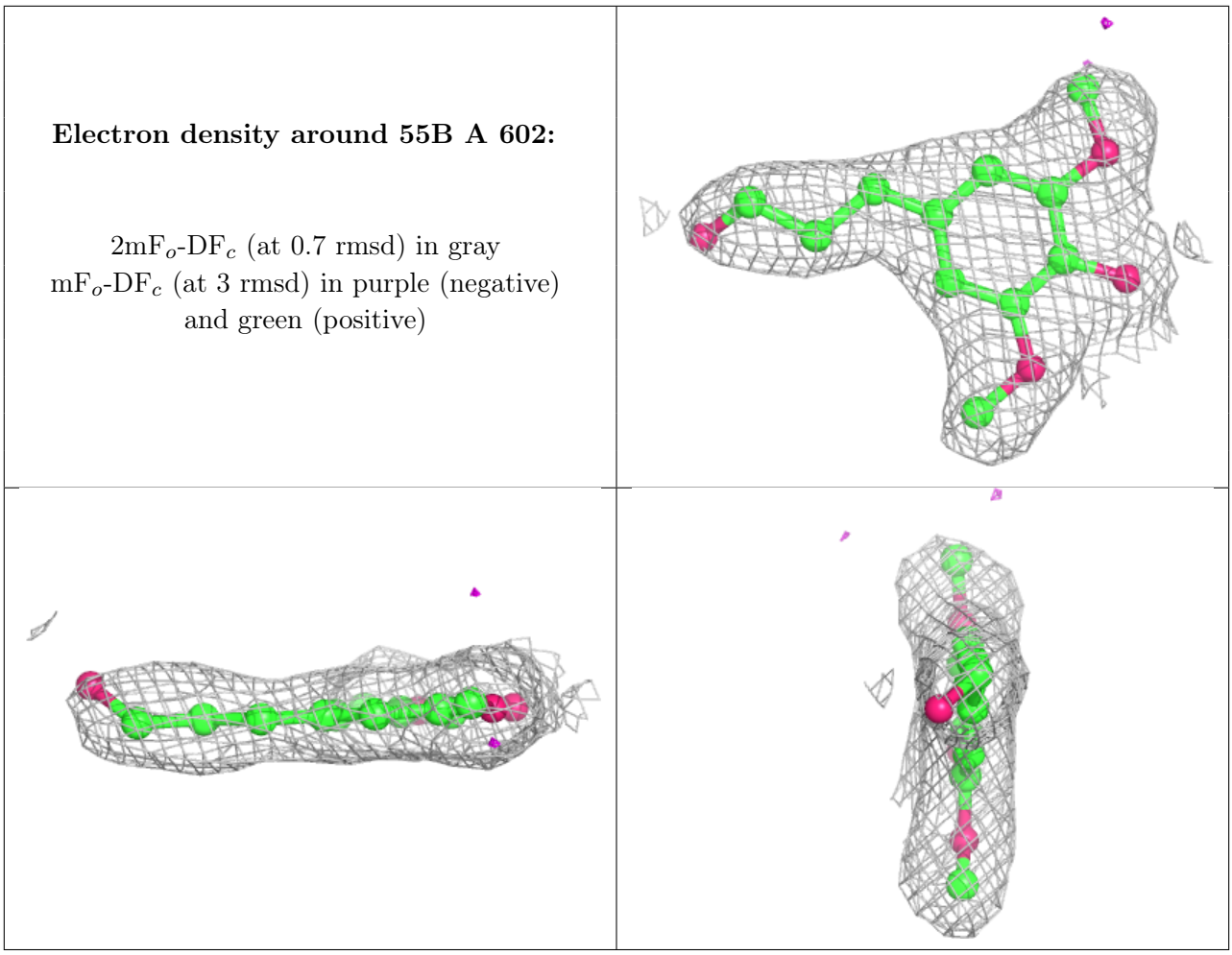
Electron density around FAD P 601:

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



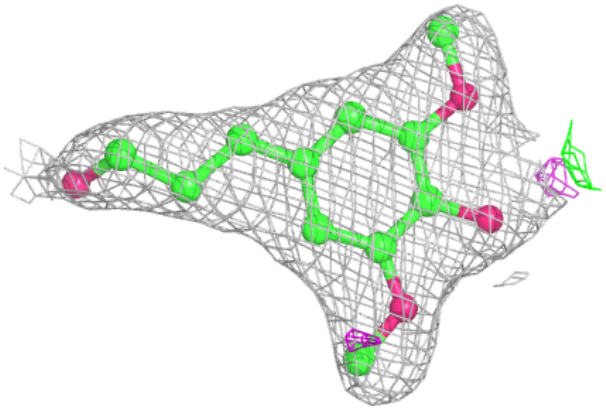
Electron density around 55B A 602:

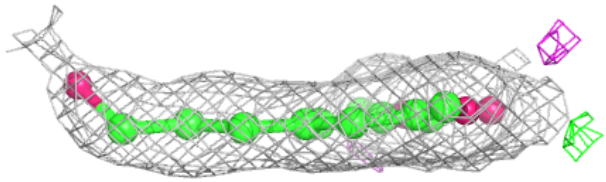
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

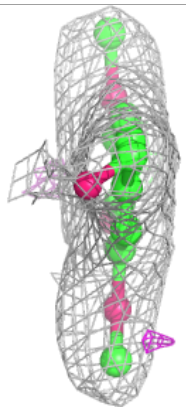


Electron density around 55B D 602:

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

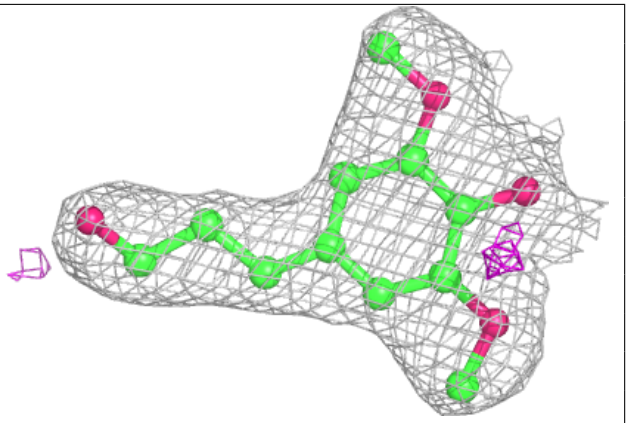


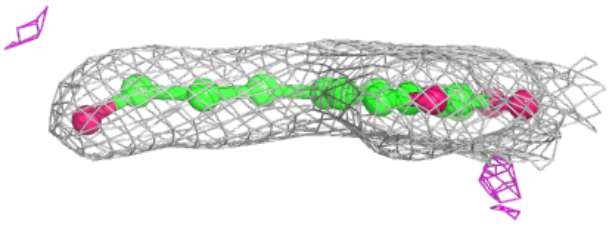


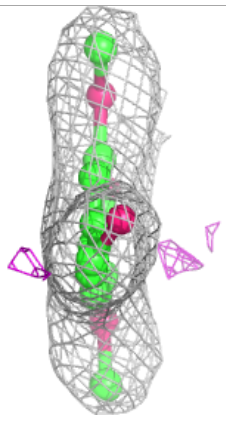


Electron density around 55B E 602:

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

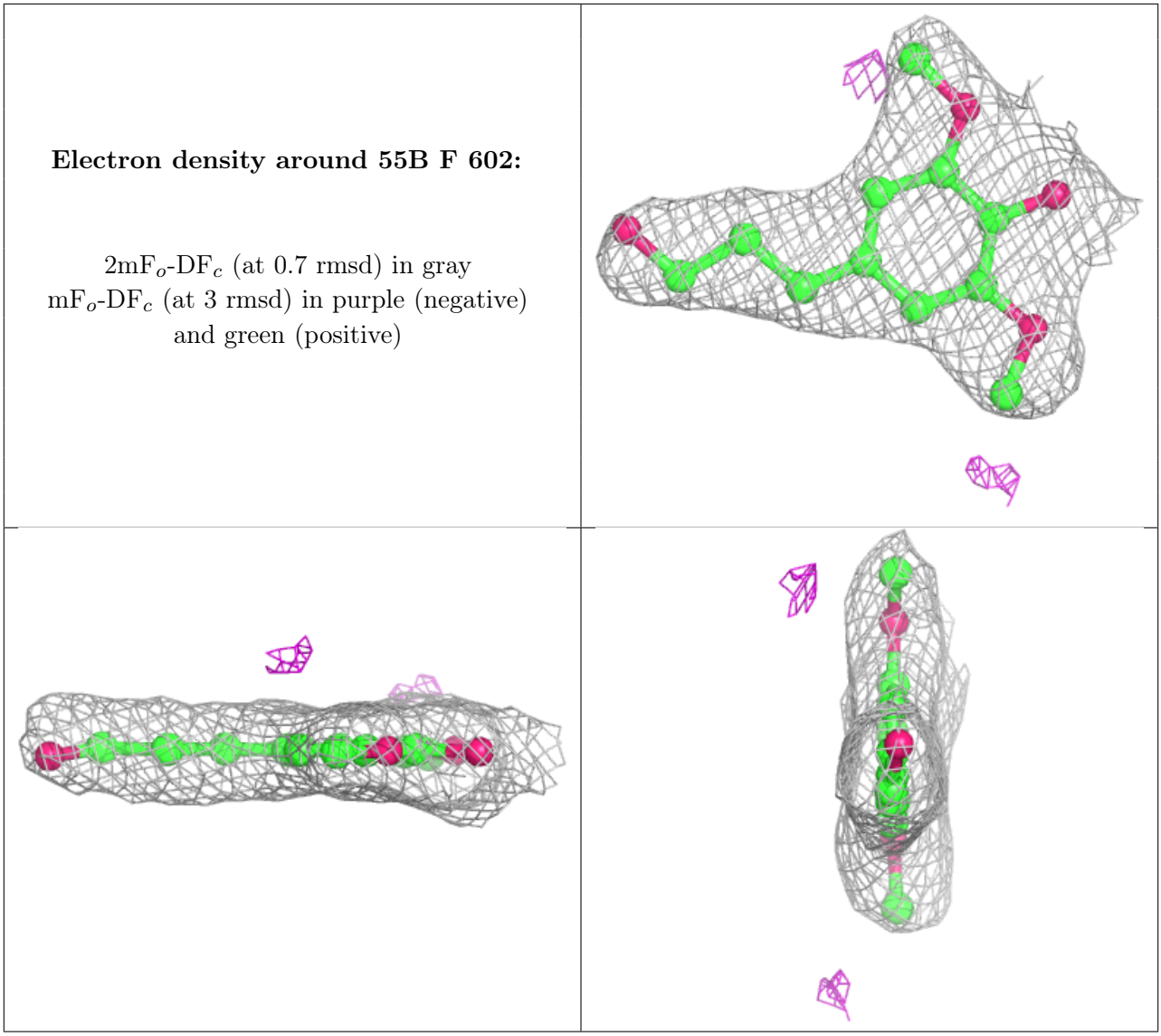






Electron density around 55B F 602:

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



Electron density around 55B I 602:

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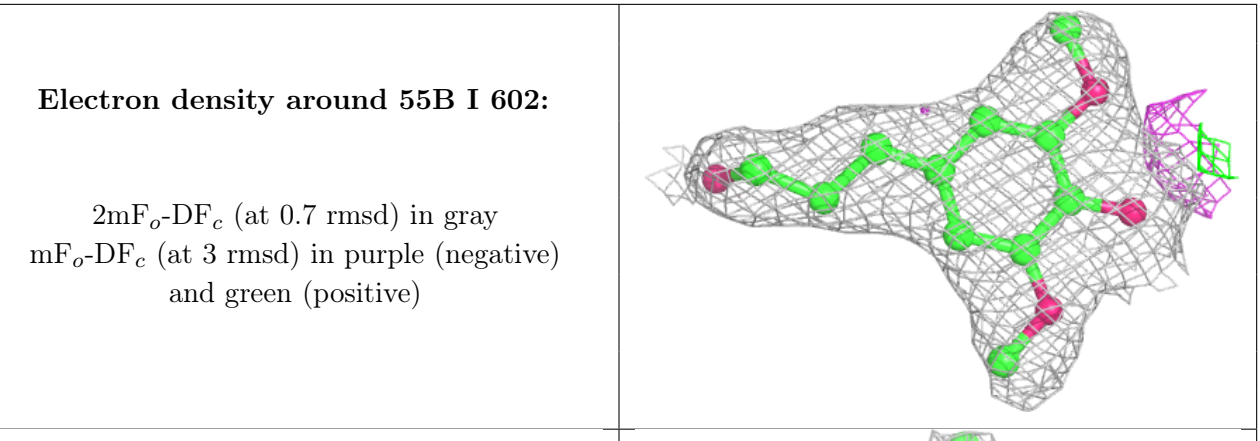
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around 55B J 602:

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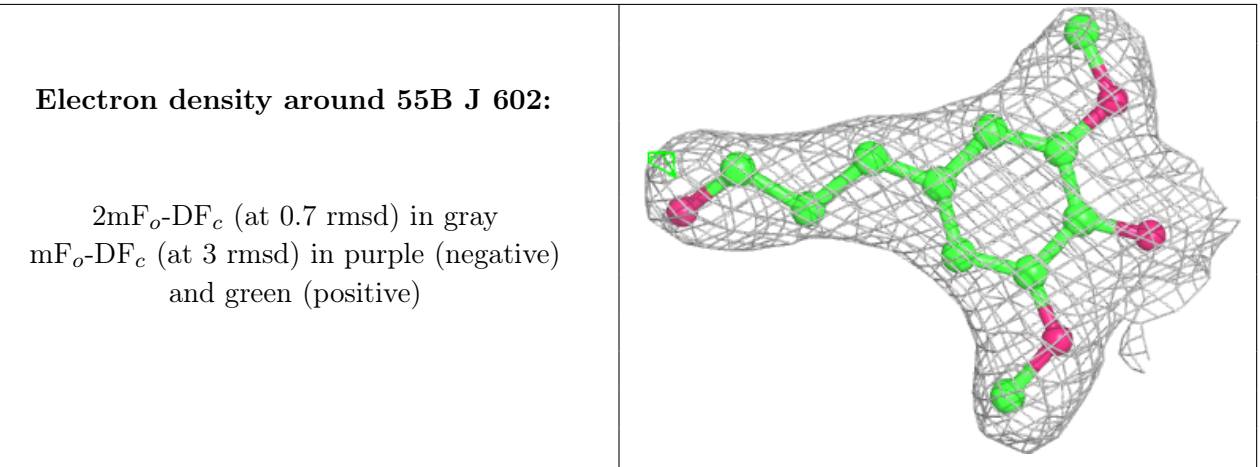
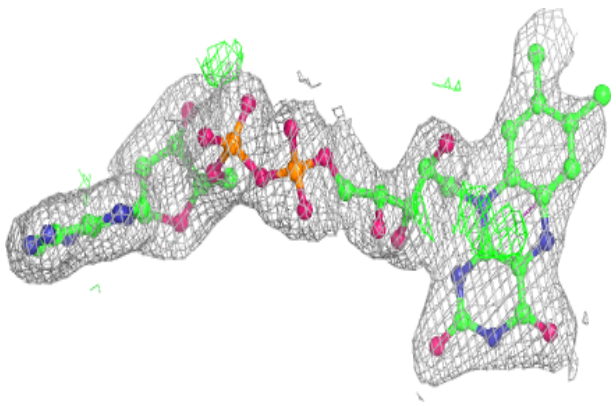
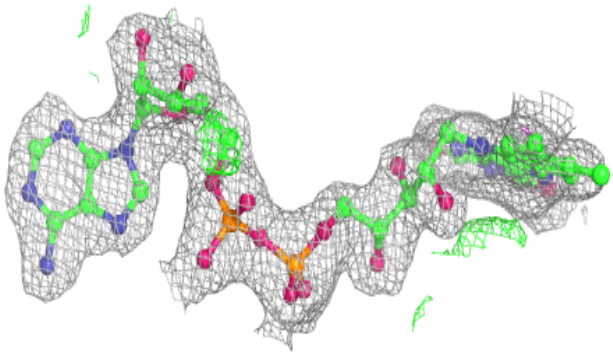
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

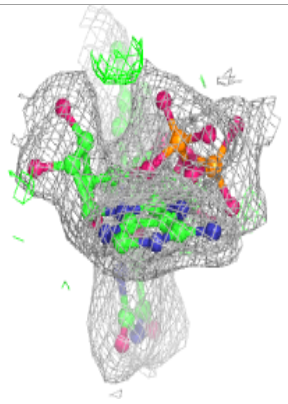


Electron density around FAD N 601:

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

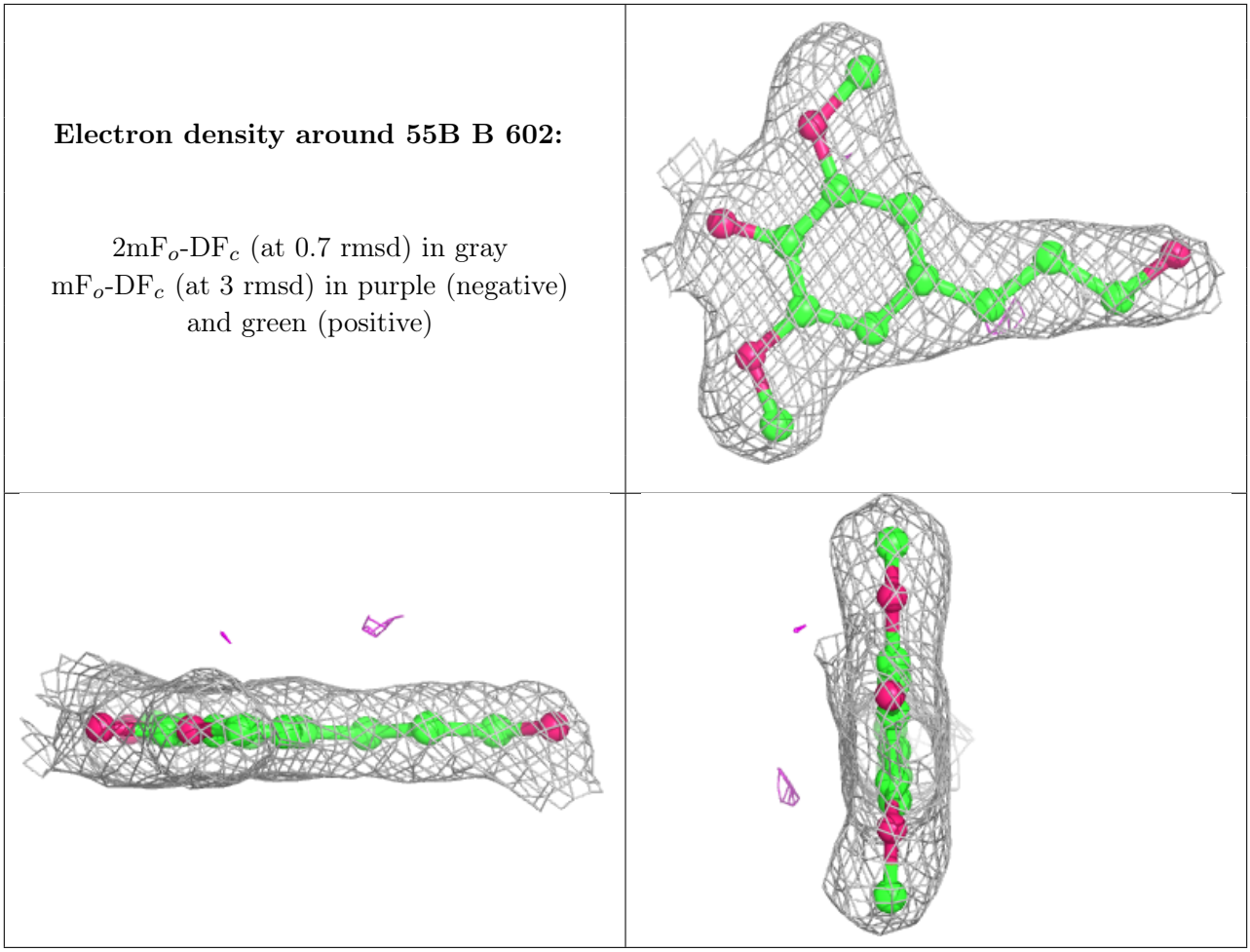






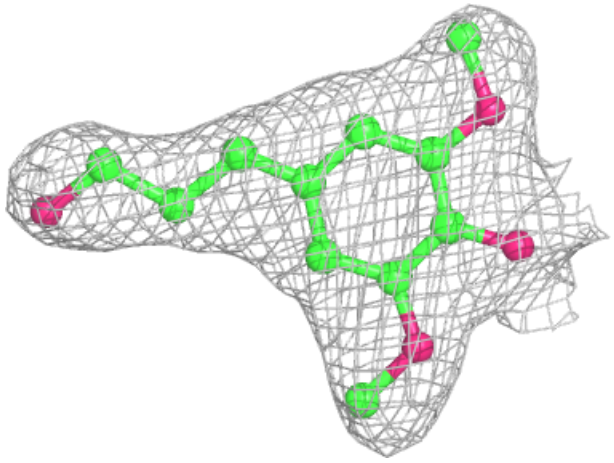
Electron density around 55B B 602:

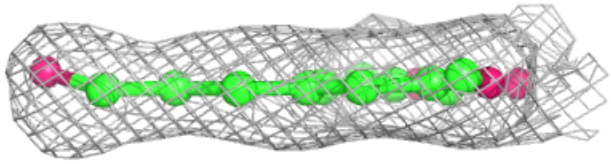
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

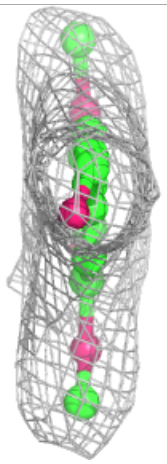


Electron density around 55B C 602:

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

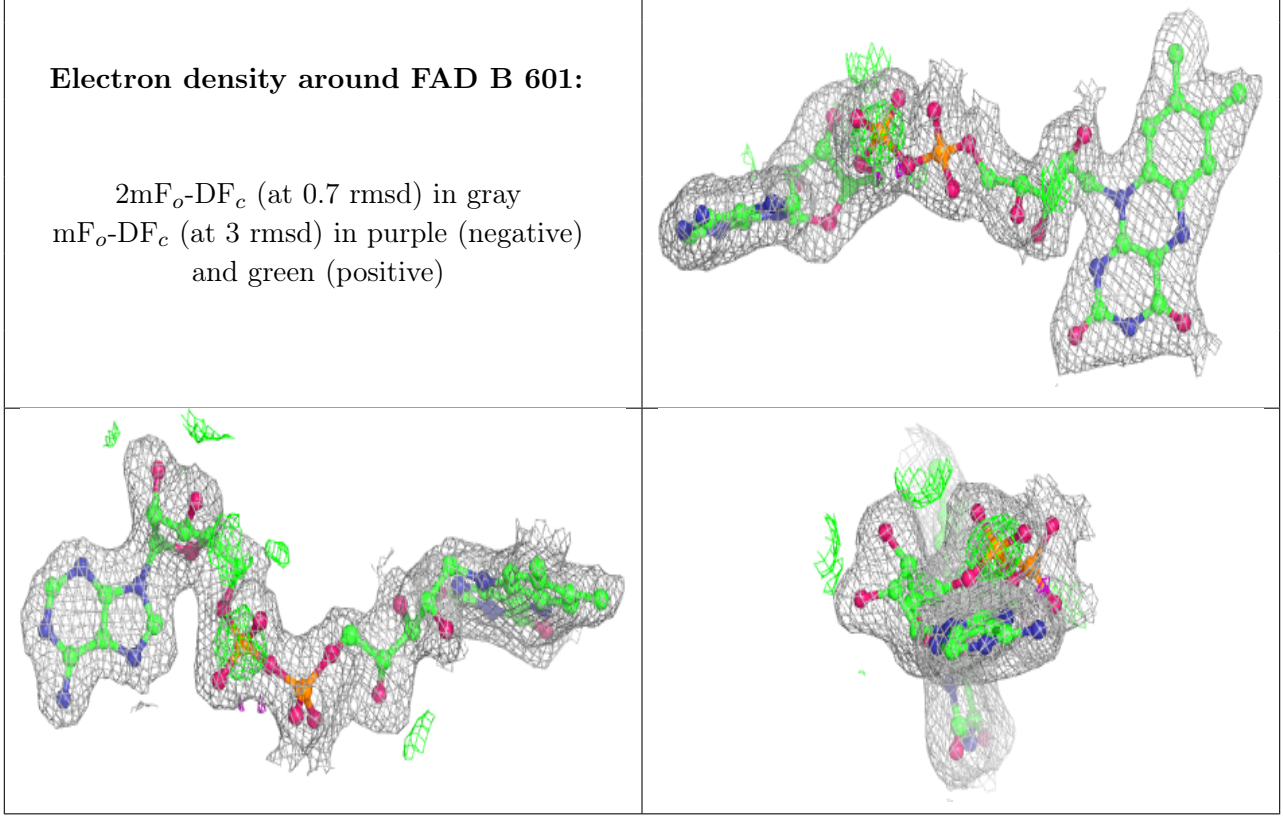






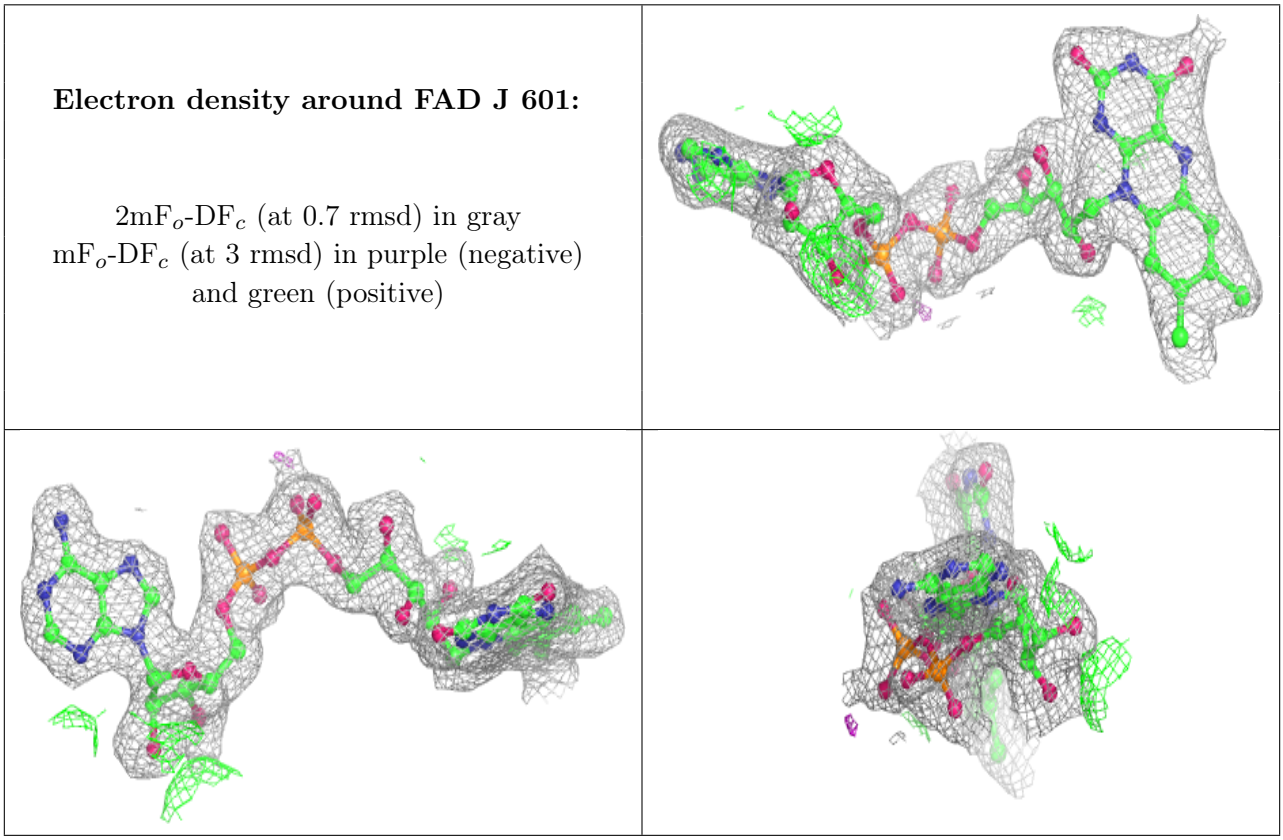
Electron density around FAD B 601:

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



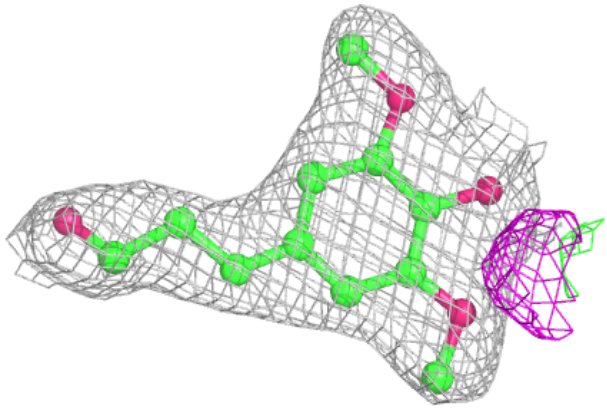
Electron density around FAD J 601:

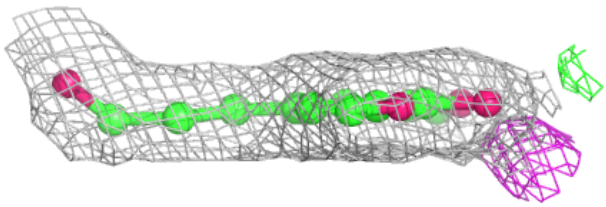
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

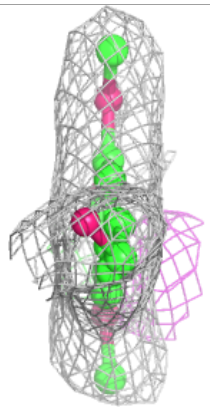


Electron density around 55B G 602:

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

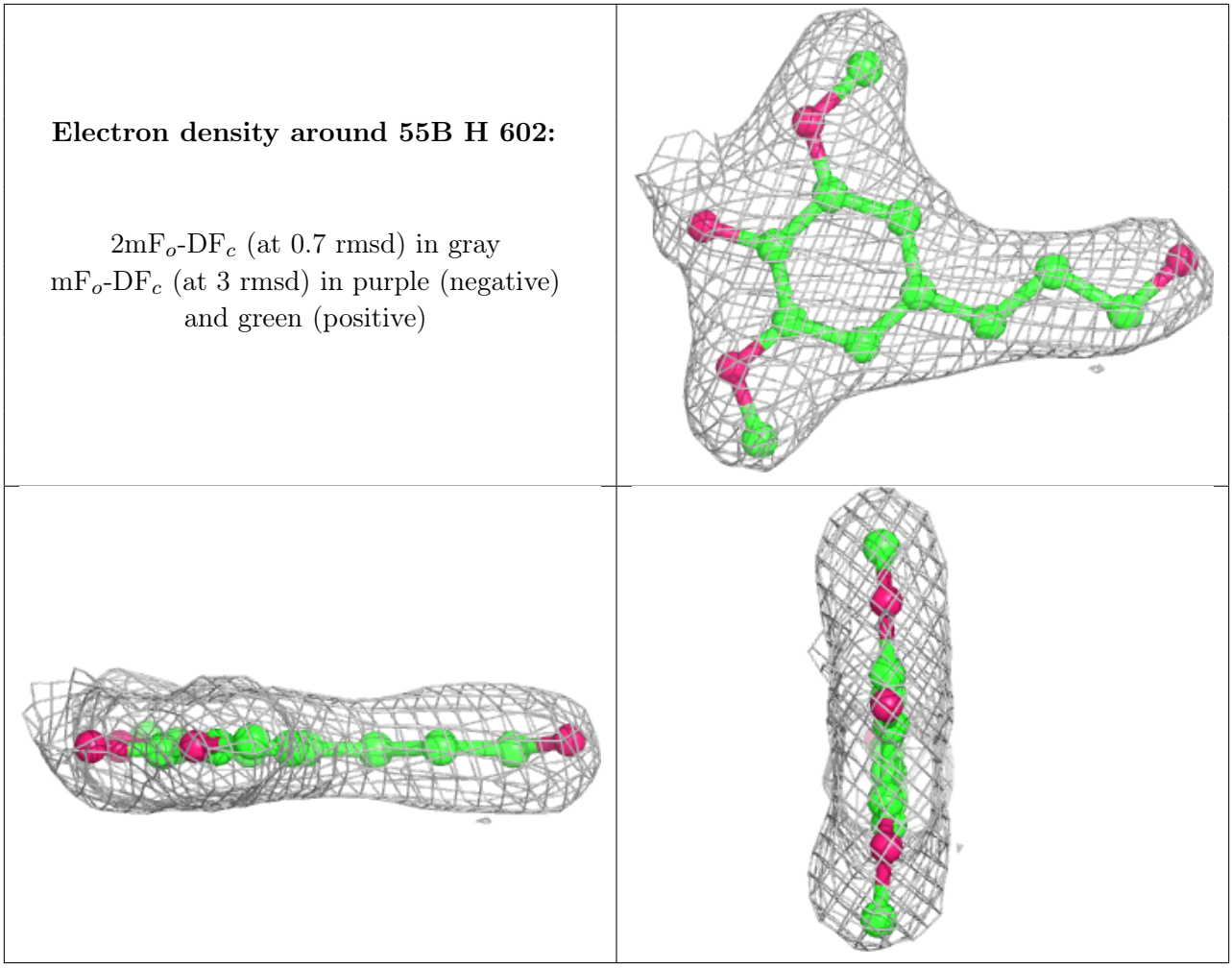






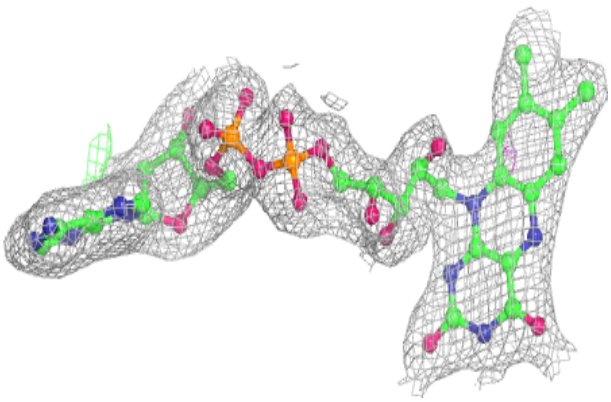
Electron density around 55B H 602:

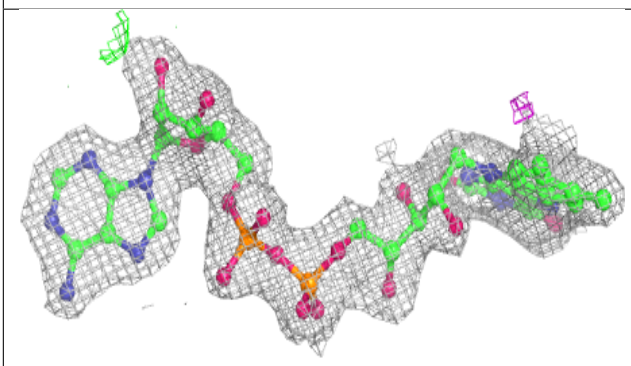
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

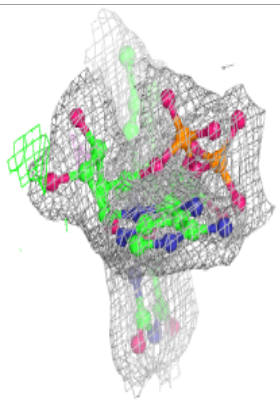


Electron density around FAD K 601:

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

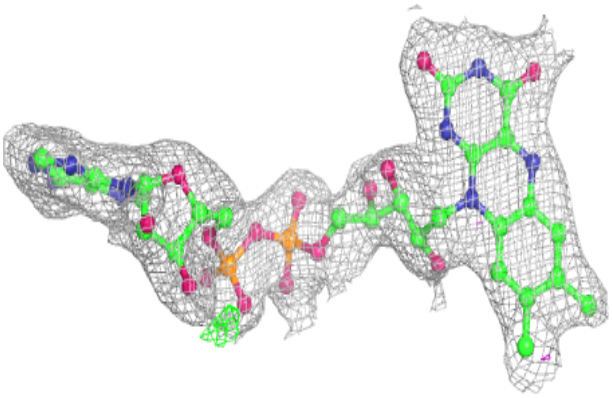


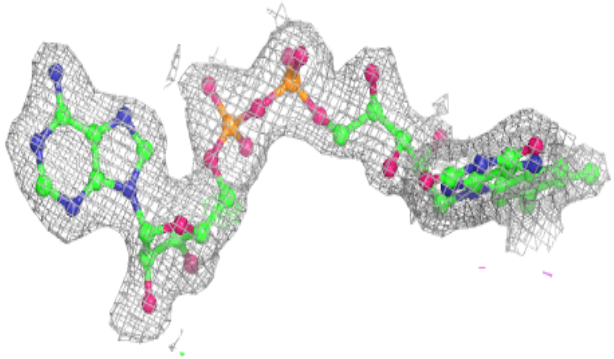


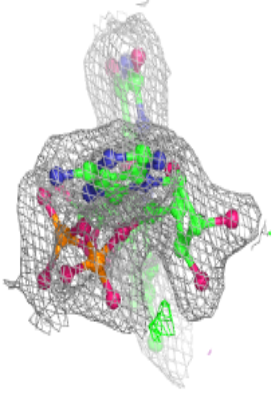


Electron density around FAD L 601:

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

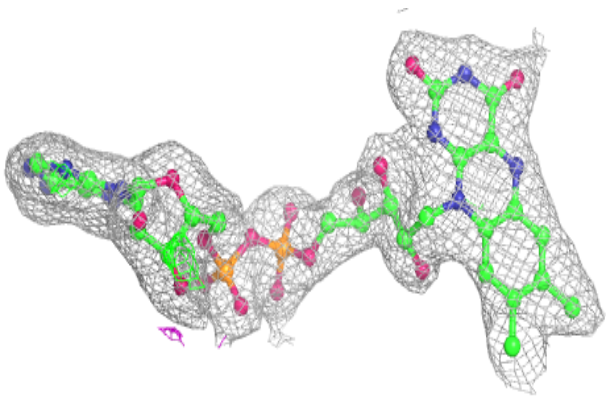


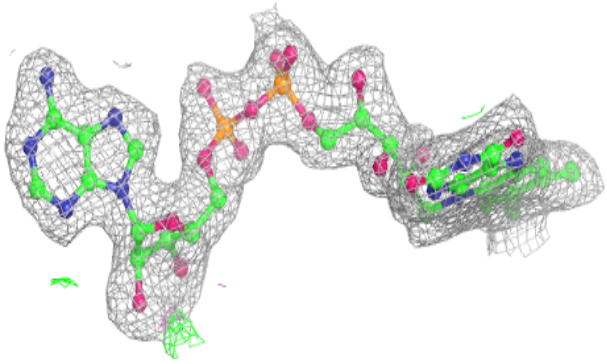


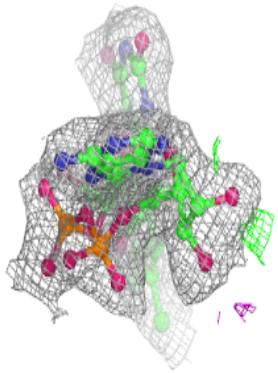


Electron density around FAD A 601:

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

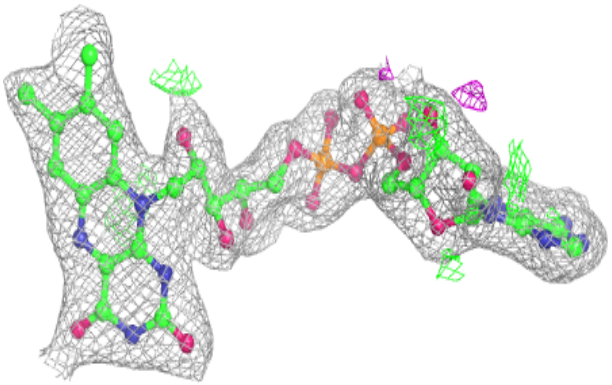


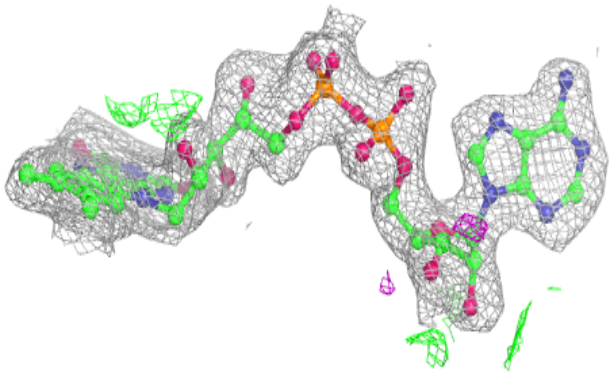


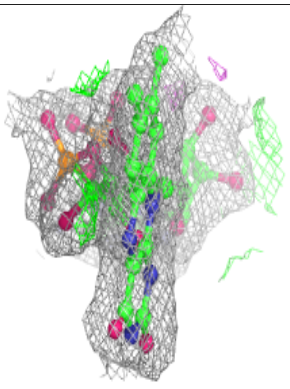


Electron density around FAD E 601:

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

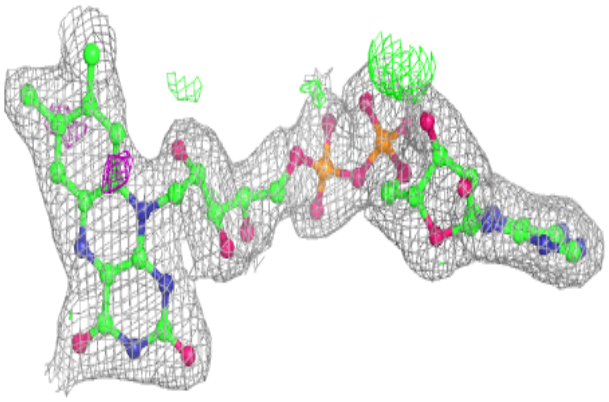


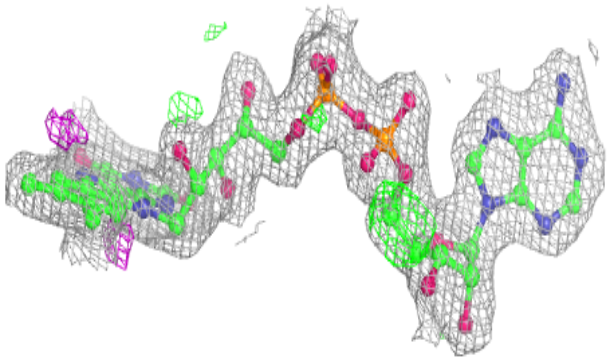


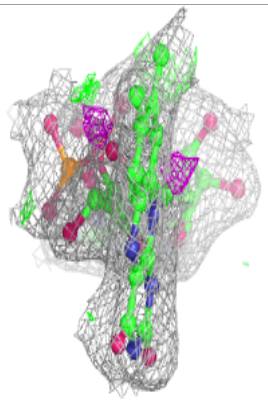


Electron density around FAD F 601:

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

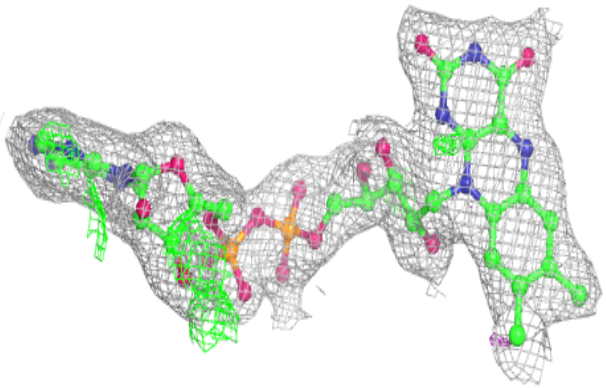


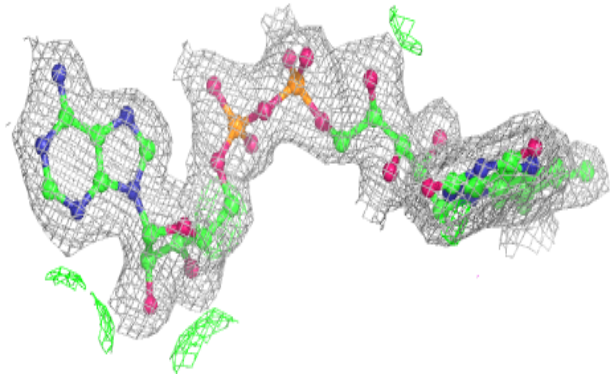


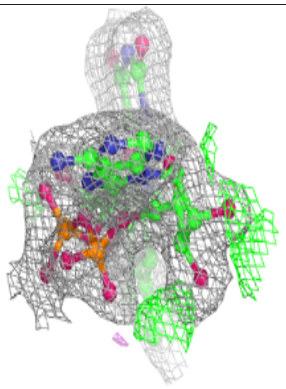


Electron density around FAD D 601:

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

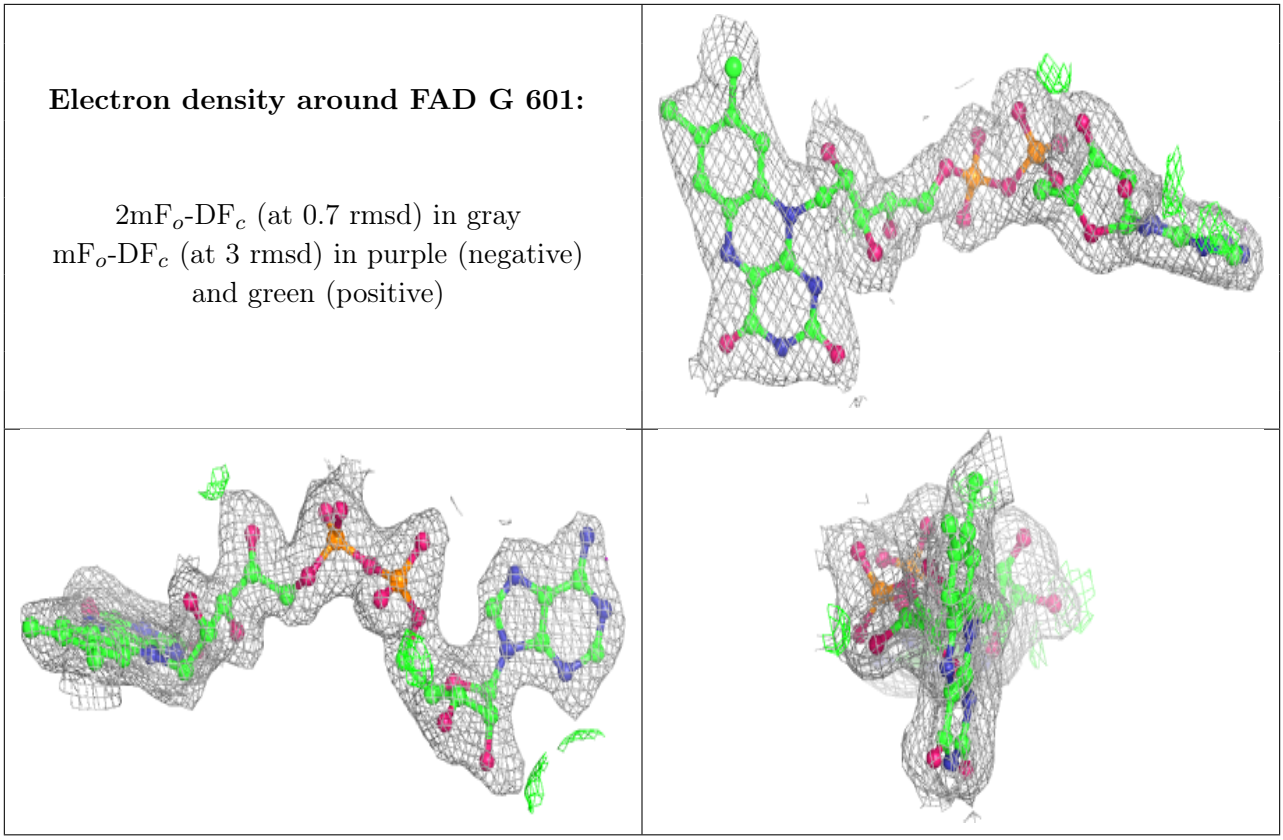






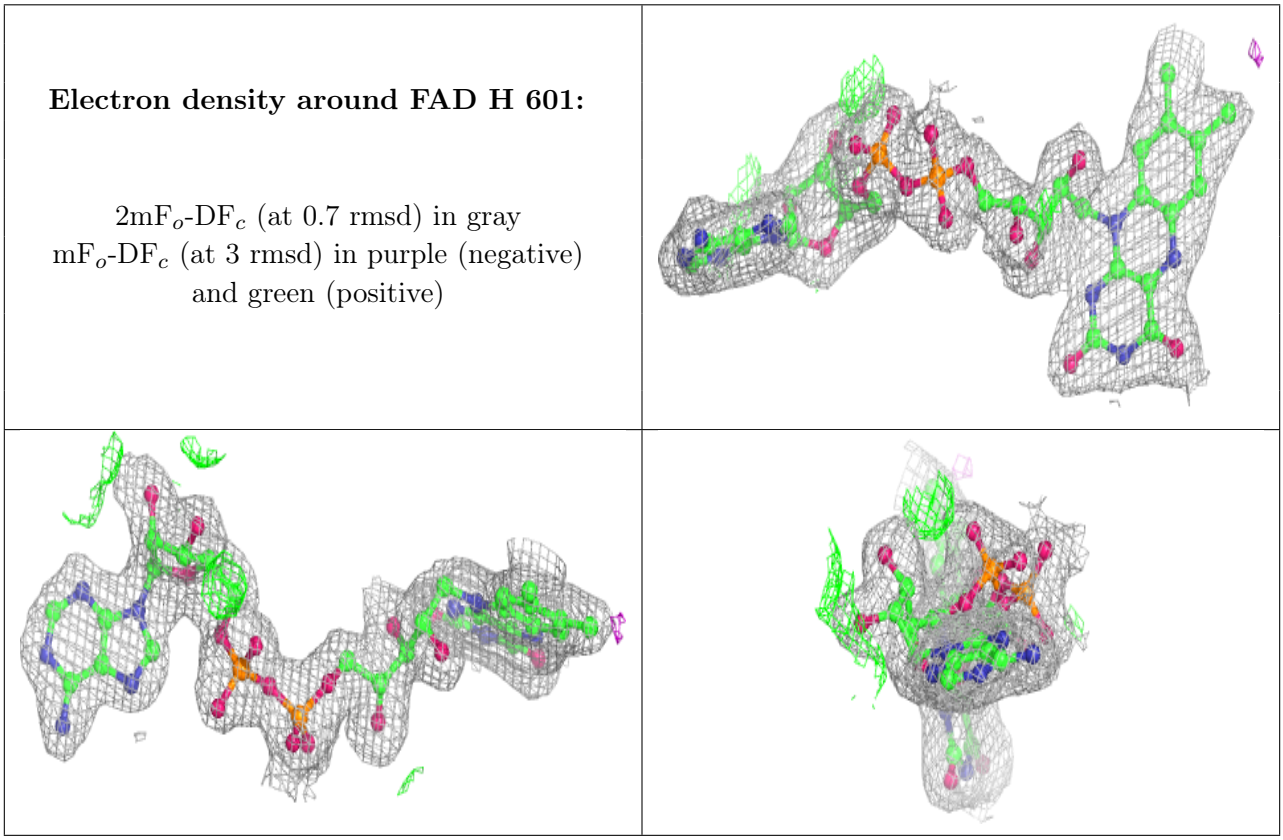
Electron density around FAD G 601:

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



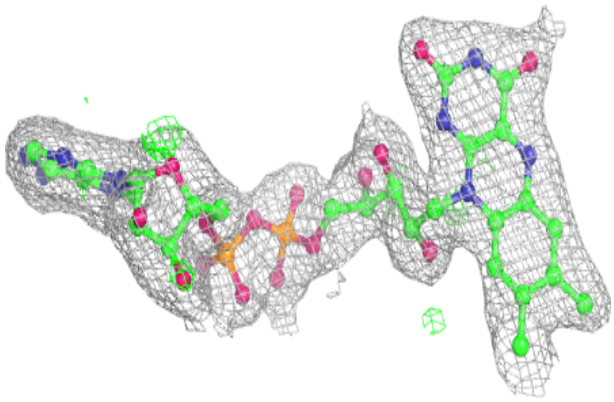
Electron density around FAD H 601:

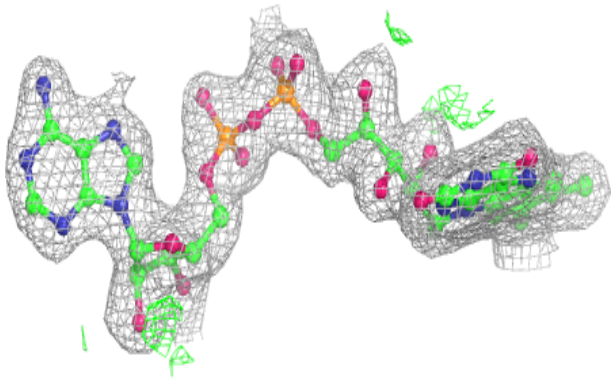
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

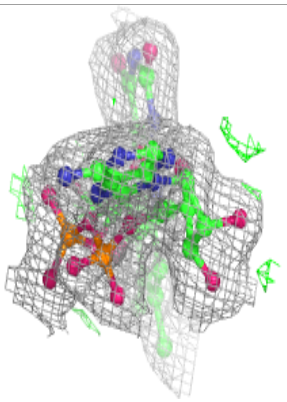


Electron density around FAD I 601:

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

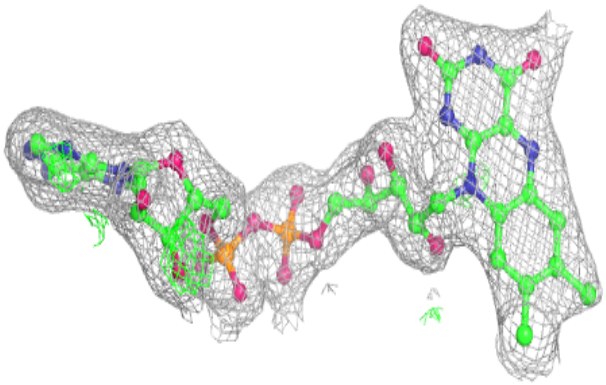


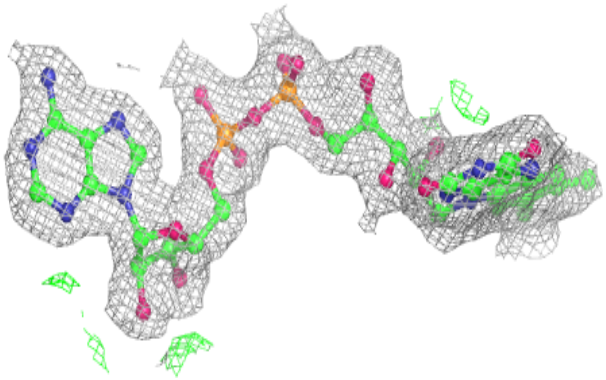


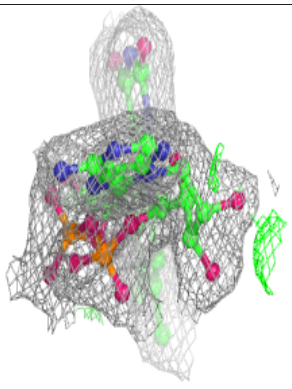


Electron density around FAD C 601:

$2mF_o$-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.