



wwPDB X-ray Structure Validation Summary Report ⓘ

Aug 8, 2023 – 08:33 PM EDT

PDB ID : 1PN0
Title : Phenol hydroxylase from *Trichosporon cutaneum*
Authors : Enroth, C.
Deposited on : 2003-06-12
Resolution : 1.70 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35
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) : 2.35

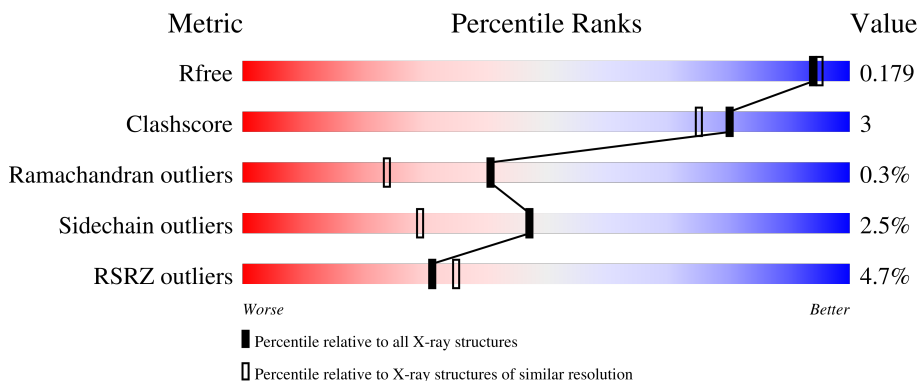
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION


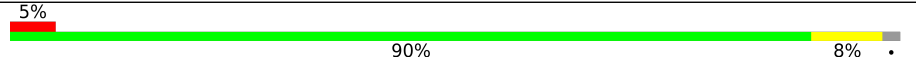
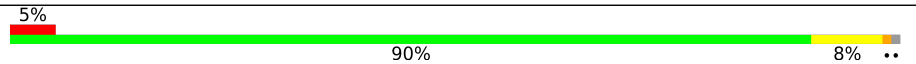
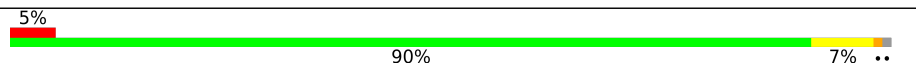
The reported resolution of this entry is 1.70 Å.

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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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 $\leq 5\%$. 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	665	
1	B	665	
1	C	665	
1	D	665	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 23772 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 Phenol 2-monooxygenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	652	5187	3259	912	992	24	15	0	0
1	B	652	5193	3263	913	993	24	21	0	0
1	C	656	5230	3284	923	999	24	5	0	0
1	D	656	5230	3284	923	999	24	5	0	0

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	123	ARG	HIS	SEE REMARK 999	UNP P15245
A	171	GLU	ASP	SEE REMARK 999	UNP P15245
A	172	ASP	HIS	SEE REMARK 999	UNP P15245
A	186	GLY	SER	SEE REMARK 999	UNP P15245
A	189	ARG	HIS	SEE REMARK 999	UNP P15245
A	265	ARG	PRO	SEE REMARK 999	UNP P15245
A	405	GLN	HIS	SEE REMARK 999	UNP P15245
A	406	PRO	ALA	SEE REMARK 999	UNP P15245
A	532	ALA	SER	SEE REMARK 999	UNP P15245
A	544	ARG	LEU	SEE REMARK 999	UNP P15245
A	549	GLY	VAL	SEE REMARK 999	UNP P15245
A	550	ALA	SER	SEE REMARK 999	UNP P15245
B	123	ARG	HIS	SEE REMARK 999	UNP P15245
B	171	GLU	ASP	SEE REMARK 999	UNP P15245
B	172	ASP	HIS	SEE REMARK 999	UNP P15245
B	186	GLY	SER	SEE REMARK 999	UNP P15245
B	189	ARG	HIS	SEE REMARK 999	UNP P15245
B	265	ARG	PRO	SEE REMARK 999	UNP P15245
B	405	GLN	HIS	SEE REMARK 999	UNP P15245
B	406	PRO	ALA	SEE REMARK 999	UNP P15245
B	532	ALA	SER	SEE REMARK 999	UNP P15245

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Chain	Residue	Modelled	Actual	Comment	Reference
B	544	ARG	LEU	SEE REMARK 999	UNP P15245
B	549	GLY	VAL	SEE REMARK 999	UNP P15245
B	550	ALA	SER	SEE REMARK 999	UNP P15245
C	123	ARG	HIS	SEE REMARK 999	UNP P15245
C	171	GLU	ASP	SEE REMARK 999	UNP P15245
C	172	ASP	HIS	SEE REMARK 999	UNP P15245
C	186	GLY	SER	SEE REMARK 999	UNP P15245
C	189	ARG	HIS	SEE REMARK 999	UNP P15245
C	265	ARG	PRO	SEE REMARK 999	UNP P15245
C	405	GLN	HIS	SEE REMARK 999	UNP P15245
C	406	PRO	ALA	SEE REMARK 999	UNP P15245
C	532	ALA	SER	SEE REMARK 999	UNP P15245
C	544	ARG	LEU	SEE REMARK 999	UNP P15245
C	549	GLY	VAL	SEE REMARK 999	UNP P15245
C	550	ALA	SER	SEE REMARK 999	UNP P15245
D	123	ARG	HIS	SEE REMARK 999	UNP P15245
D	171	GLU	ASP	SEE REMARK 999	UNP P15245
D	172	ASP	HIS	SEE REMARK 999	UNP P15245
D	186	GLY	SER	SEE REMARK 999	UNP P15245
D	189	ARG	HIS	SEE REMARK 999	UNP P15245
D	265	ARG	PRO	SEE REMARK 999	UNP P15245
D	405	GLN	HIS	SEE REMARK 999	UNP P15245
D	406	PRO	ALA	SEE REMARK 999	UNP P15245
D	532	ALA	SER	SEE REMARK 999	UNP P15245
D	544	ARG	LEU	SEE REMARK 999	UNP P15245
D	549	GLY	VAL	SEE REMARK 999	UNP P15245
D	550	ALA	SER	SEE REMARK 999	UNP P15245

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

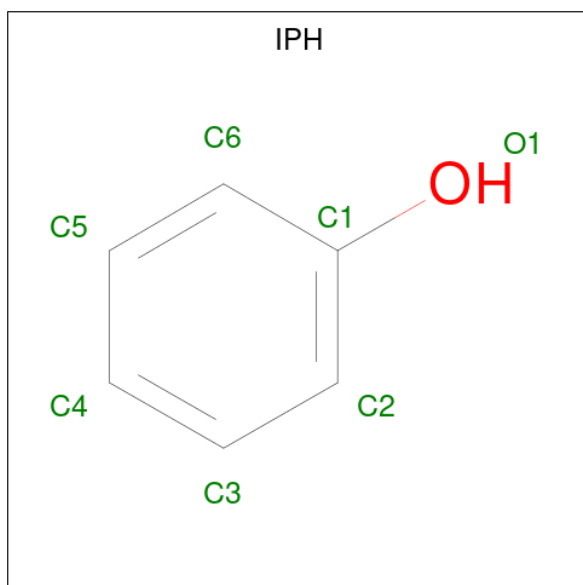
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Cl 1 1	0	0
2	B	1	Total Cl 1 1	0	0
2	C	1	Total Cl 1 1	0	0
2	D	1	Total Cl 1 1	0	0

- Molecule 3 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: C₂₇H₃₃N₉O₁₅P₂).



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

- Molecule 4 is PHENOL (three-letter code: IPH) (formula: C₆H₆O).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			7	6	1		
4	B	1	Total	C	O	0	0
			7	6	1		
4	C	1	Total	C	O	0	0
			7	6	1		
4	D	1	Total	C	O	0	0
			7	6	1		

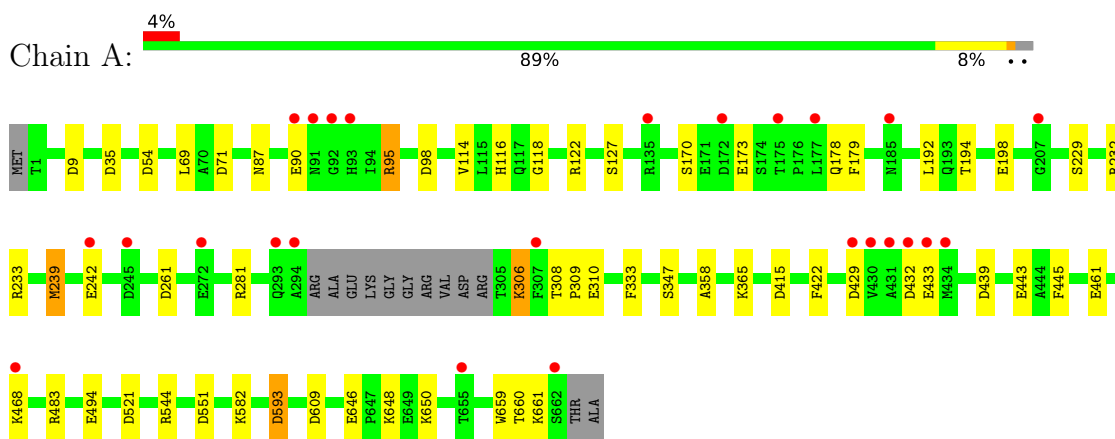
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	668	Total	O	0	0
			668	668		
5	B	686	Total	O	0	0
			686	686		
5	C	674	Total	O	0	0
			674	674		
5	D	660	Total	O	0	0
			660	660		

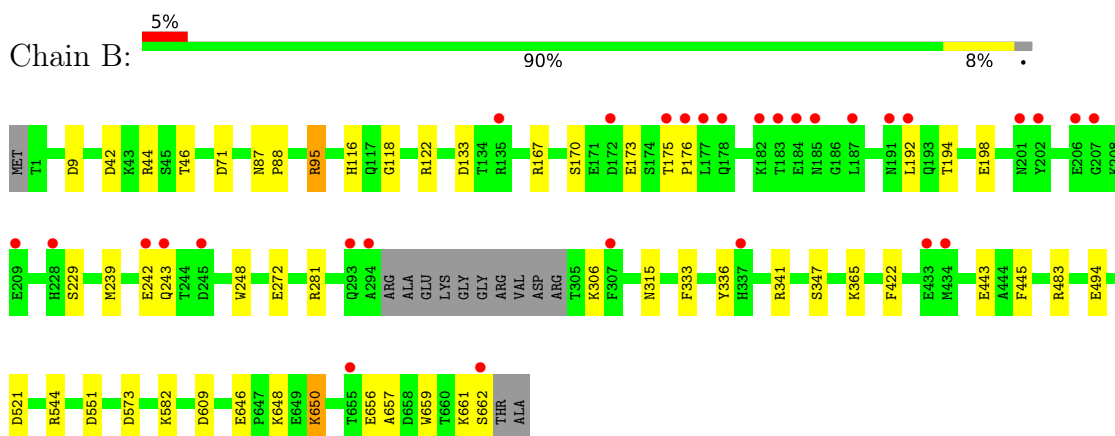
3 Residue-property plots [i](#)

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.

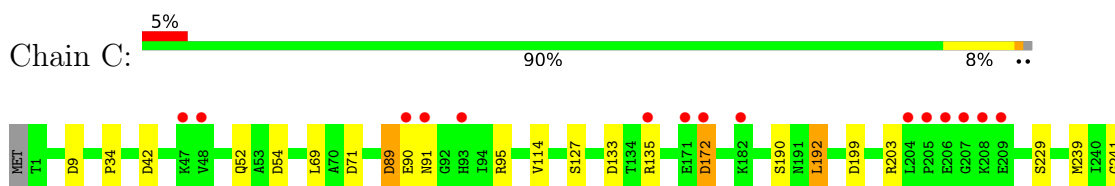
- Molecule 1: Phenol 2-monoxygenase

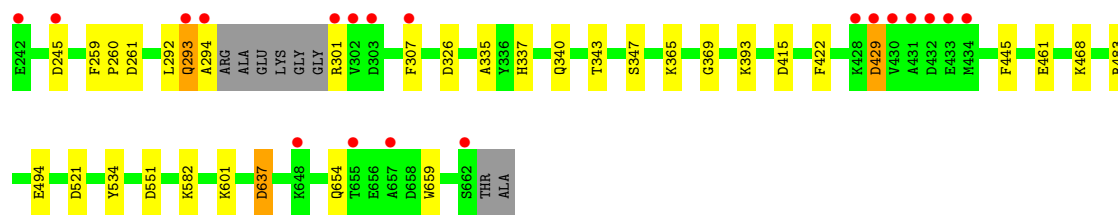


- Molecule 1: Phenol 2-monoxygenase

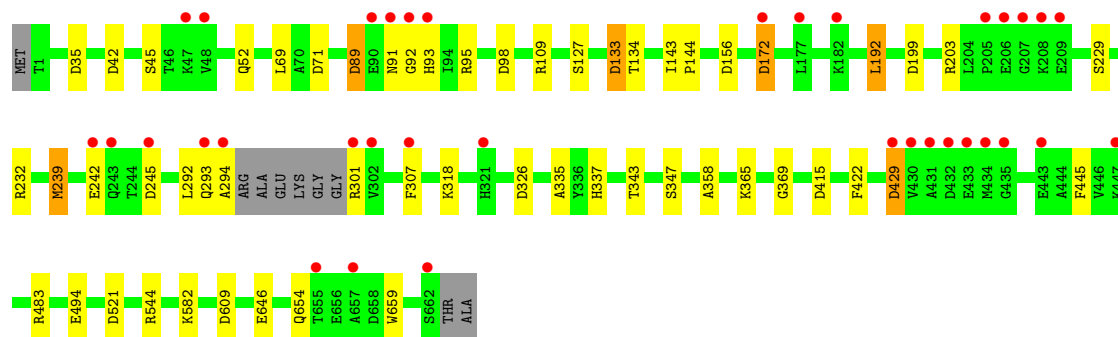
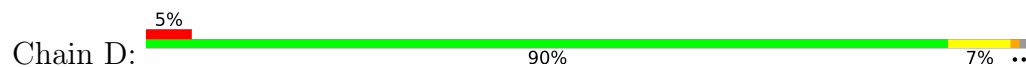


- Molecule 1: Phenol 2-monoxygenase





● Molecule 1: Phenol 2-monoxygenase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	100.00Å 150.95Å 114.96Å 90.00° 114.63° 90.00°	Depositor
Resolution (Å)	19.96 – 1.70 18.64 – 1.70	Depositor EDS
% Data completeness (in resolution range)	86.1 (19.96-1.70) 86.1 (18.64-1.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.02	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.84 (at 1.70Å)	Xtrriage
Refinement program	REFMAC 5.0	Depositor
R, R_{free}	0.157 , 0.180 0.156 , 0.179	Depositor DCC
R_{free} test set	14784 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å ²)	21.7	Xtrriage
Anisotropy	0.947	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 53.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.013 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	23772	wwPDB-VP
Average B, all atoms (Å ²)	12.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.15% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.54	0/5302	0.81	12/7171 (0.2%)
1	B	0.56	0/5308	0.83	12/7178 (0.2%)
1	C	0.58	0/5345	0.81	13/7227 (0.2%)
1	D	0.56	1/5345 (0.0%)	0.82	17/7227 (0.2%)
All	All	0.56	1/21300 (0.0%)	0.82	54/28803 (0.2%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	203	ARG	CG-CD	7.22	1.70	1.51

The worst 5 of 54 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	306	LYS	O-C-N	9.53	137.95	122.70
1	B	306	LYS	CA-C-N	-7.94	99.73	117.20
1	B	306	LYS	C-N-CA	-7.25	103.57	121.70
1	D	71	ASP	CB-CG-OD2	7.25	124.82	118.30
1	B	71	ASP	CB-CG-OD2	6.98	124.58	118.30

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	5187	0	5055	36	1
1	B	5193	0	5071	31	1
1	C	5230	0	5110	21	0
1	D	5230	0	5110	23	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	53	0	31	0	0
3	B	53	0	31	0	0
3	C	53	0	31	1	0
3	D	53	0	31	1	0
4	A	7	0	6	0	0
4	B	7	0	6	0	0
4	C	7	0	6	0	0
4	D	7	0	6	0	0
5	A	668	0	0	4	1
5	B	686	0	0	3	1
5	C	674	0	0	2	0
5	D	660	0	0	0	0
All	All	23772	0	20494	111	2

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 3.

The worst 5 of 111 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:D:544:ARG:NE	1:D:646:GLU:OE2	1.96	0.98
1:A:95:ARG:HH11	1:A:95:ARG:HG3	1.25	0.97
1:B:95:ARG:HH11	1:B:95:ARG:HG3	1.27	0.97
1:A:646:GLU:OE1	1:A:650:LYS:HE2	1.70	0.92
1:A:87:ASN:O	1:A:95:ARG:HD3	1.72	0.90

All (2) 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:A:233:ARG:NH2	1:B:272:GLU:OE2[2_746]	2.15	0.05
5:A:6078:HOH:O	5:B:733:HOH:O[1_454]	2.17	0.03

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	648/665 (97%)	631 (97%)	15 (2%)	2 (0%)	41	24
1	B	648/665 (97%)	633 (98%)	14 (2%)	1 (0%)	47	30
1	C	652/665 (98%)	637 (98%)	13 (2%)	2 (0%)	41	24
1	D	652/665 (98%)	636 (98%)	14 (2%)	2 (0%)	41	24
All	All	2600/2660 (98%)	2537 (98%)	56 (2%)	7 (0%)	41	24

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	306	LYS
1	C	52	GLN
1	D	52	GLN
1	A	229	SER
1	C	229	SER

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	560/571 (98%)	546 (98%)	14 (2%)	47	29
1	B	562/571 (98%)	551 (98%)	11 (2%)	55	38
1	C	566/571 (99%)	551 (97%)	15 (3%)	44	26
1	D	566/571 (99%)	550 (97%)	16 (3%)	43	25
All	All	2254/2284 (99%)	2198 (98%)	56 (2%)	47	29

5 of 56 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	192	LEU
1	D	654	GLN
1	C	445	PHE
1	D	494	GLU
1	D	365	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	337	HIS
1	C	449	ASN
1	D	449	ASN
1	D	243	GLN
1	D	337	HIS

5.3.3 RNA [i](#)

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 12 ligands modelled in this entry, 4 are monoatomic - leaving 8 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	FAD	B	6021	-	53,58,58	1.13	4 (7%)	68,89,89	1.35	7 (10%)
4	IPH	C	6032	-	7,7,7	0.70	0	8,8,8	0.58	0
4	IPH	D	6042	-	7,7,7	0.75	0	8,8,8	0.43	0
3	FAD	C	6031	-	53,58,58	1.20	4 (7%)	68,89,89	1.39	6 (8%)
4	IPH	B	6022	-	7,7,7	0.48	0	8,8,8	1.08	1 (12%)
3	FAD	A	6011	-	53,58,58	1.09	4 (7%)	68,89,89	1.38	9 (13%)
4	IPH	A	6012	-	7,7,7	0.68	0	8,8,8	1.20	0
3	FAD	D	6041	-	53,58,58	1.15	4 (7%)	68,89,89	1.35	8 (11%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	FAD	B	6021	-	-	3/30/50/50	0/6/6/6
4	IPH	C	6032	-	-	-	0/1/1/1
4	IPH	D	6042	-	-	-	0/1/1/1
3	FAD	C	6031	-	-	5/30/50/50	0/6/6/6
4	IPH	B	6022	-	-	-	0/1/1/1
3	FAD	A	6011	-	-	3/30/50/50	0/6/6/6
4	IPH	A	6012	-	-	-	0/1/1/1
3	FAD	D	6041	-	-	2/30/50/50	0/6/6/6

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	6031	FAD	C4X-N5	4.53	1.39	1.30
3	D	6041	FAD	C2A-N3A	3.92	1.38	1.32
3	C	6031	FAD	C2A-N3A	3.83	1.38	1.32
3	A	6011	FAD	C4X-N5	3.78	1.38	1.30
3	B	6021	FAD	C2A-N3A	3.73	1.38	1.32

The worst 5 of 31 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	6031	FAD	N3A-C2A-N1A	-7.03	117.70	128.68
3	B	6021	FAD	N3A-C2A-N1A	-6.69	118.22	128.68
3	D	6041	FAD	N3A-C2A-N1A	-6.45	118.60	128.68
3	A	6011	FAD	N3A-C2A-N1A	-5.83	119.57	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	6011	FAD	C5X-C9A-N10	2.96	121.02	117.95

There are no chirality outliers.

5 of 13 torsion outliers are listed below:

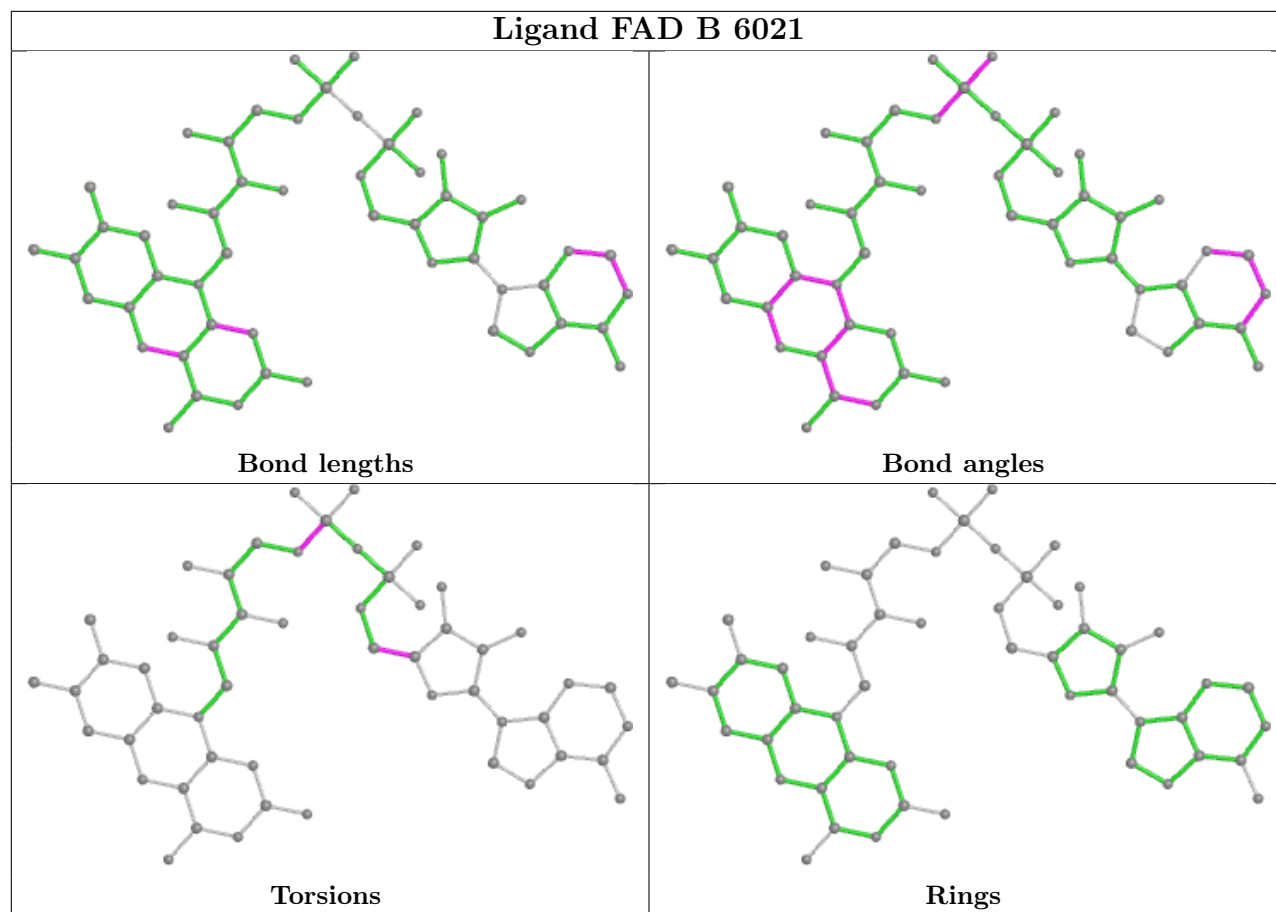
Mol	Chain	Res	Type	Atoms
3	A	6011	FAD	C5'-O5'-P-O3P
3	B	6021	FAD	C5'-O5'-P-O3P
3	C	6031	FAD	PA-O3P-P-O5'
3	D	6041	FAD	PA-O3P-P-O5'
3	A	6011	FAD	C5'-O5'-P-O1P

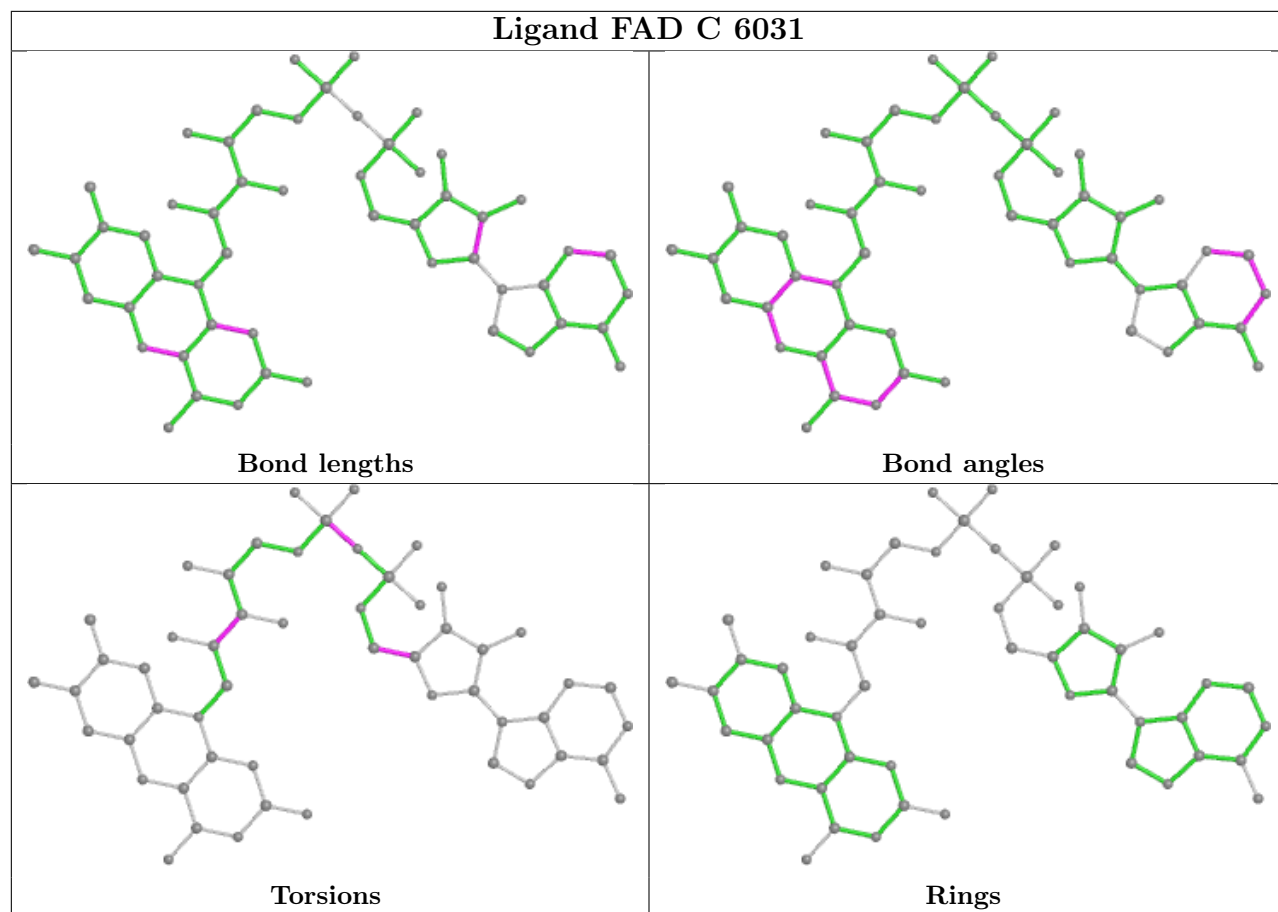
There are no ring outliers.

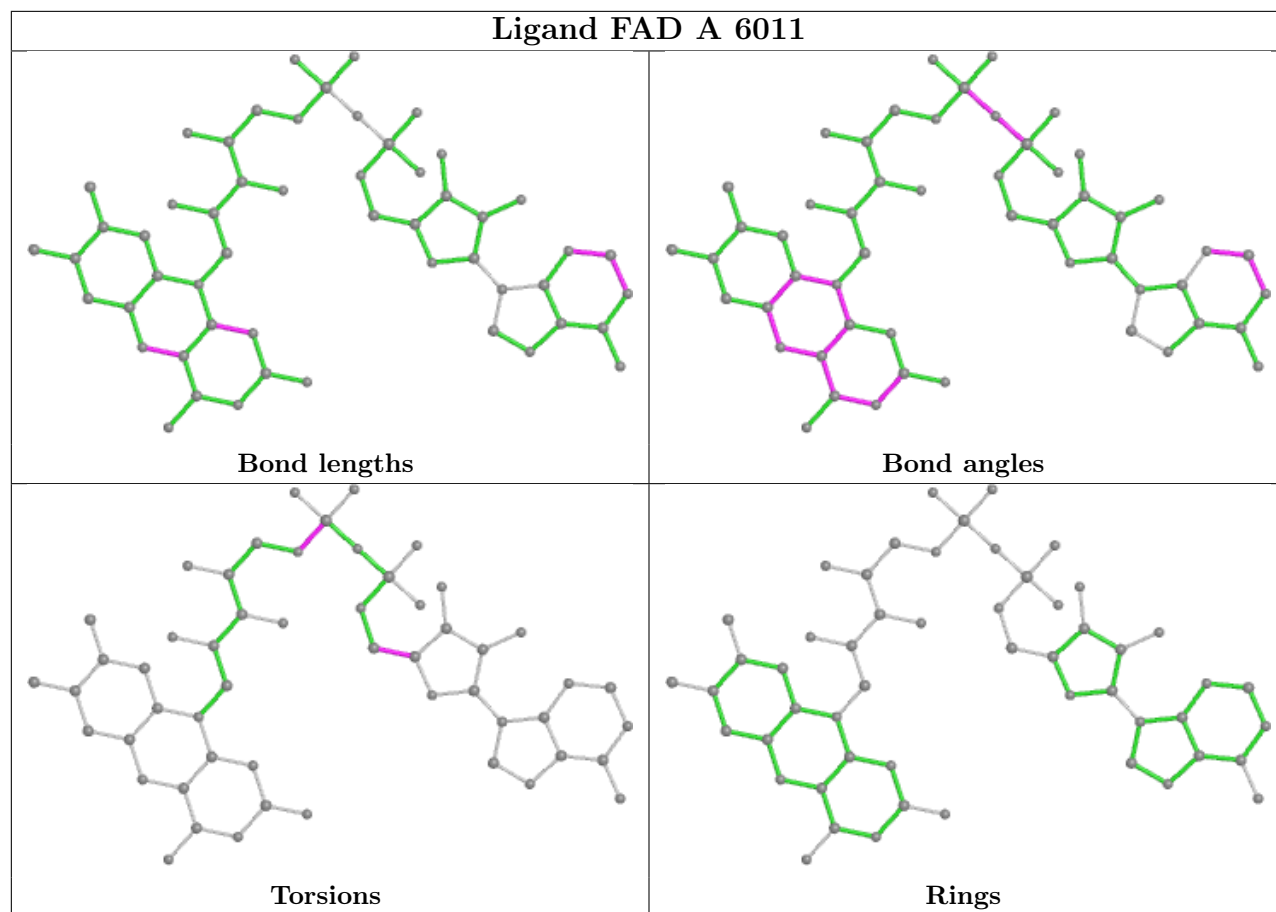
2 monomers are involved in 2 short contacts:

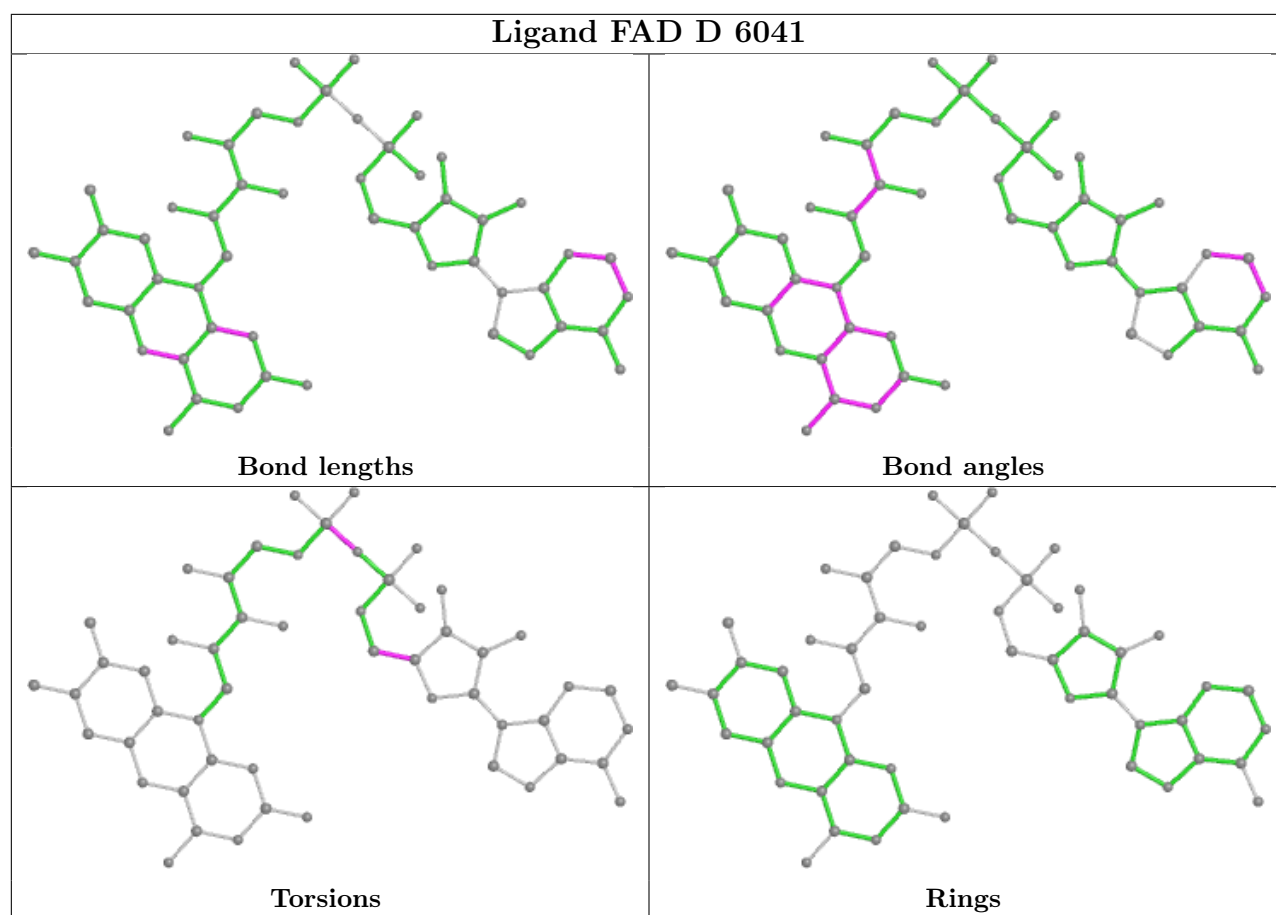
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	6031	FAD	1	0
3	D	6041	FAD	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 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.









5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	650/665 (97%)	-0.14	25 (3%) 40 45	3, 9, 25, 40	1 (0%)
1	B	650/665 (97%)	-0.10	30 (4%) 32 36	3, 9, 23, 40	1 (0%)
1	C	656/665 (98%)	-0.09	34 (5%) 27 30	3, 9, 26, 44	1 (0%)
1	D	656/665 (98%)	0.02	35 (5%) 26 29	3, 9, 25, 40	1 (0%)
All	All	2612/2660 (98%)	-0.08	124 (4%) 31 35	3, 9, 25, 44	4 (0%)

The worst 5 of 124 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	294	ALA	9.5
1	C	430	VAL	9.0
1	D	430	VAL	8.7
1	C	662	SER	8.3
1	D	294	ALA	8.2

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](#)

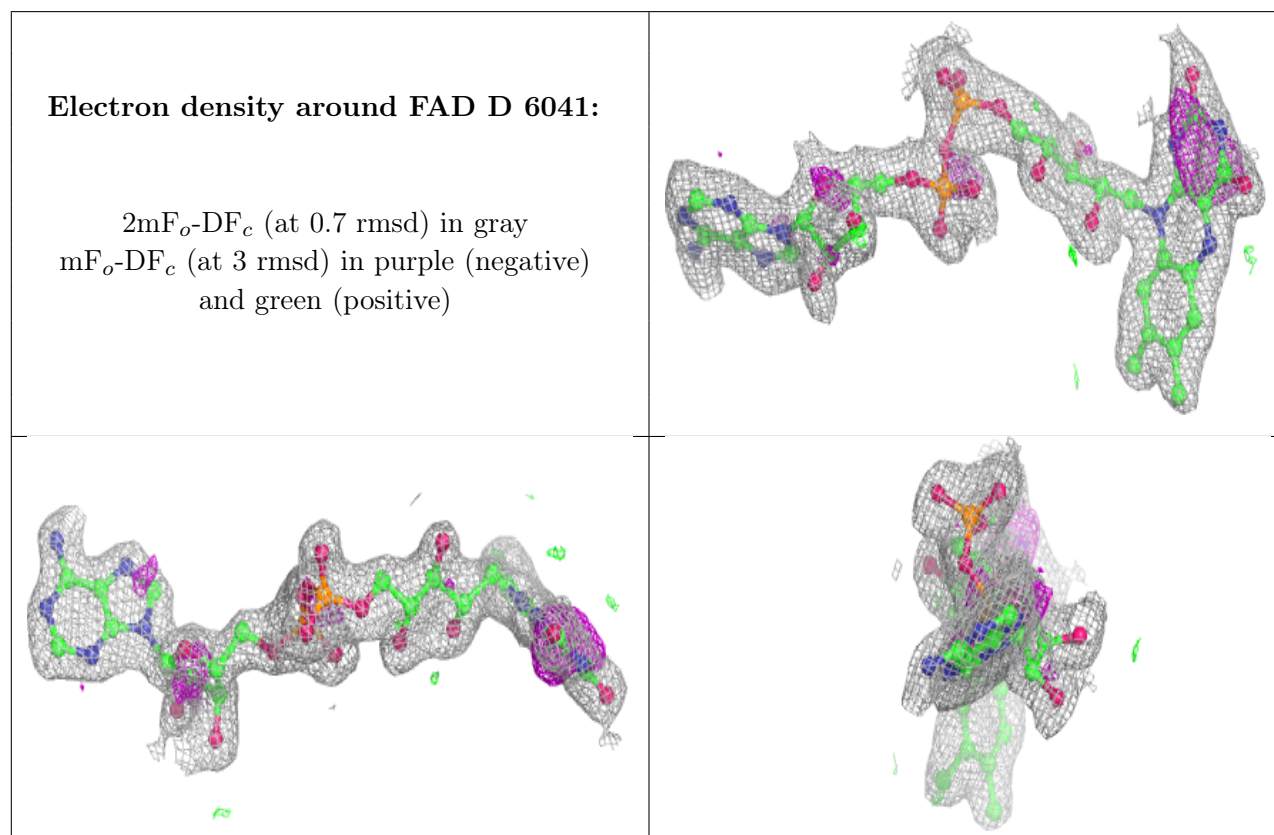
There are no monosaccharides in this entry.

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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists the number of atoms with occupancy less than 0.9.

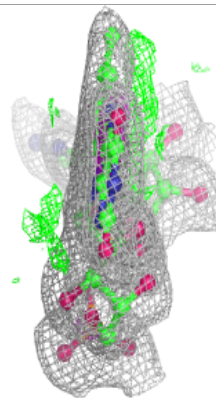
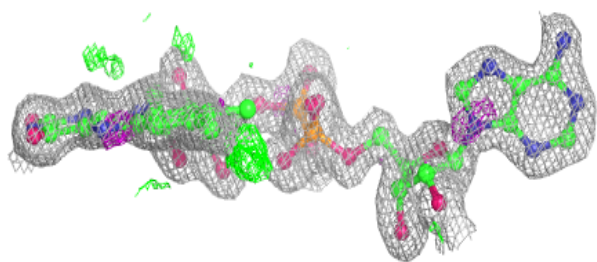
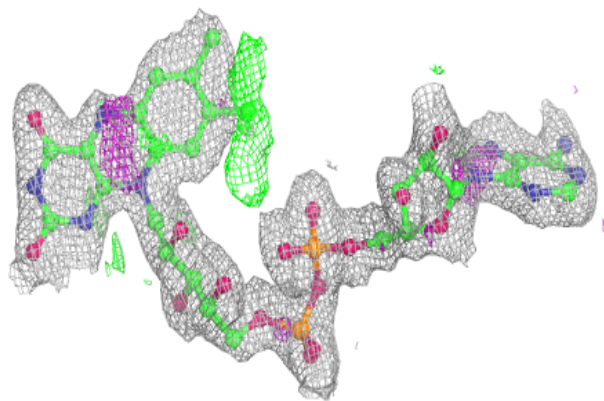
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	IPH	D	6042	7/7	0.92	0.09	29,33,35,35	0
4	IPH	A	6012	7/7	0.94	0.08	22,24,29,30	0
4	IPH	C	6032	7/7	0.94	0.09	23,28,31,32	0
3	FAD	D	6041	53/53	0.94	0.12	6,11,14,15	0
4	IPH	B	6022	7/7	0.95	0.08	22,27,29,30	0
3	FAD	B	6021	53/53	0.96	0.10	4,8,13,17	0
3	FAD	C	6031	53/53	0.97	0.10	7,11,14,15	0
3	FAD	A	6011	53/53	0.98	0.06	4,8,11,13	0
2	CL	C	6003	1/1	0.99	0.09	13,13,13,13	0
2	CL	A	6001	1/1	0.99	0.06	12,12,12,12	0
2	CL	B	6002	1/1	0.99	0.07	12,12,12,12	0
2	CL	D	6004	1/1	1.00	0.08	13,13,13,13	0

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

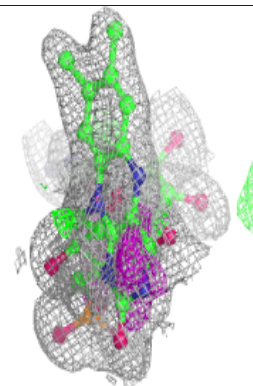
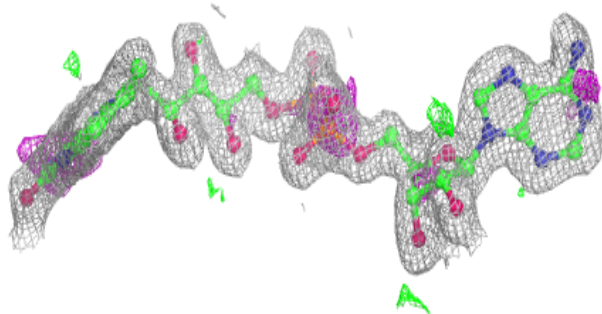
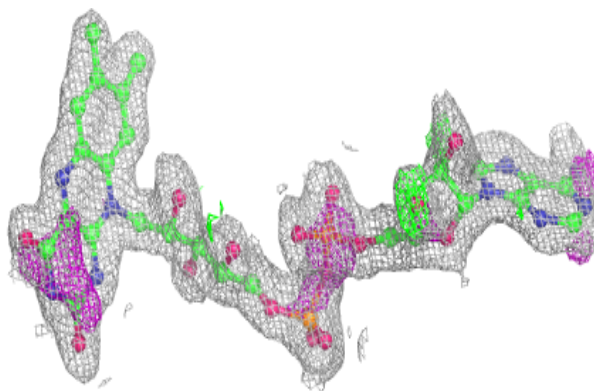


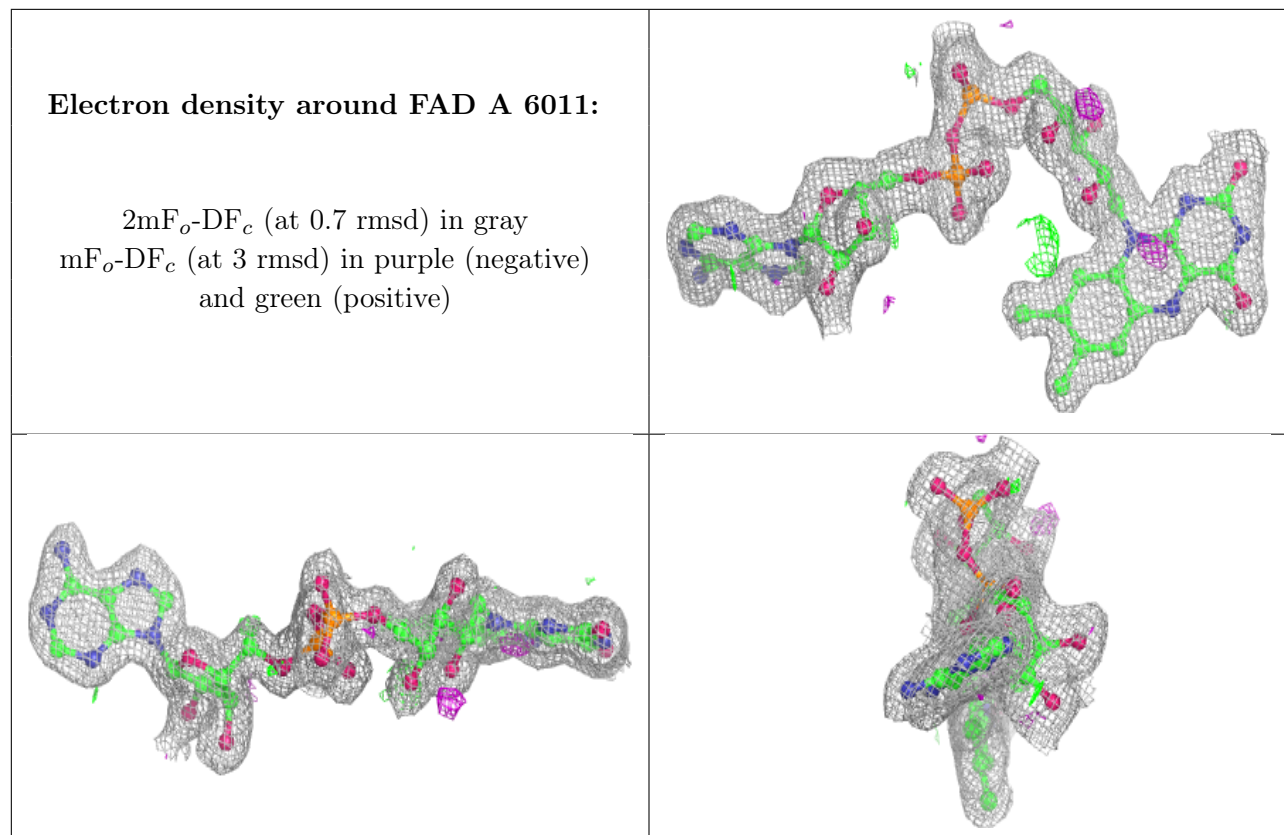
Electron density around FAD B 6021:

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

**Electron density around FAD C 6031:**

$2mF_o-DF_c$ (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.