



# wwPDB X-ray Structure Validation Summary Report

Feb 15, 2017 – 02:13 am GMT

PDB ID : 2XLR  
Title : JOINT-FUNCTIONS OF PROTEIN RESIDUES AND NADP(H) IN OXYGEN-ACTIVATION BY FLAVIN-CONTAINING MONOOXYGENASE: ASN78ASP MUTANT  
Authors : Orru, R.; Fraaije, M.W.; Mattevi, A.  
Deposited on : 2010-07-21  
Resolution : 2.55 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the  symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : trunk28620  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : recalc28949

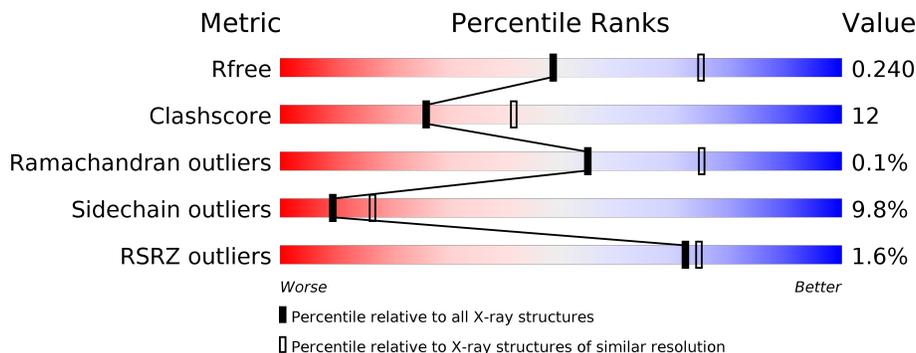
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.55 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))
$R_{free}$	100719	4993 (2.58-2.50)
Clashscore	112137	5755 (2.58-2.50)
Ramachandran outliers	110173	5652 (2.58-2.50)
Sidechain outliers	110143	5654 (2.58-2.50)
RSRZ outliers	101464	5026 (2.58-2.50)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	461	
1	B	461	
1	C	461	
1	D	461	

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 15348 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 FLAVIN-CONTAINING MONOOXYGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	446	3652	2341	605	685	21	0	0	0
1	B	447	3661	2347	607	686	21	0	0	0
1	C	452	3700	2373	612	694	21	0	0	0
1	D	447	3658	2344	606	687	21	0	0	0

There are 32 discrepancies between the modelled and reference sequences:

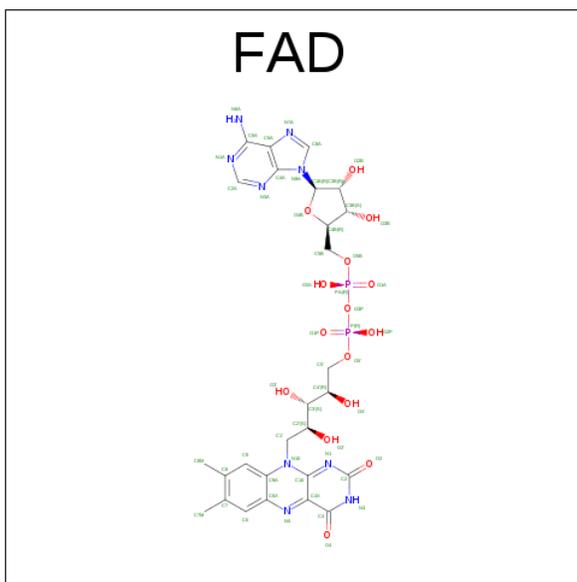
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	EXPRESSION TAG	UNP Q83XK4
A	2	ALA	-	EXPRESSION TAG	UNP Q83XK4
A	3	MET	-	EXPRESSION TAG	UNP Q83XK4
A	4	GLY	-	EXPRESSION TAG	UNP Q83XK4
A	5	SER	-	EXPRESSION TAG	UNP Q83XK4
A	78	ASP	ASN	ENGINEERED MUTATION	UNP Q83XK4
A	158	ALA	GLU	CONFLICT	UNP Q83XK4
A	159	ALA	GLU	CONFLICT	UNP Q83XK4
B	1	GLY	-	EXPRESSION TAG	UNP Q83XK4
B	2	ALA	-	EXPRESSION TAG	UNP Q83XK4
B	3	MET	-	EXPRESSION TAG	UNP Q83XK4
B	4	GLY	-	EXPRESSION TAG	UNP Q83XK4
B	5	SER	-	EXPRESSION TAG	UNP Q83XK4
B	78	ASP	ASN	ENGINEERED MUTATION	UNP Q83XK4
B	158	ALA	GLU	CONFLICT	UNP Q83XK4
B	159	ALA	GLU	CONFLICT	UNP Q83XK4
C	1	GLY	-	EXPRESSION TAG	UNP Q83XK4
C	2	ALA	-	EXPRESSION TAG	UNP Q83XK4
C	3	MET	-	EXPRESSION TAG	UNP Q83XK4
C	4	GLY	-	EXPRESSION TAG	UNP Q83XK4
C	5	SER	-	EXPRESSION TAG	UNP Q83XK4

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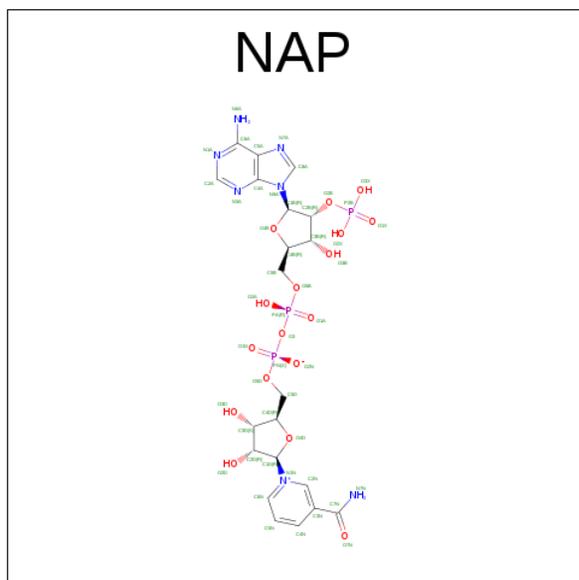
Chain	Residue	Modelled	Actual	Comment	Reference
C	78	ASP	ASN	ENGINEERED MUTATION	UNP Q83XK4
C	158	ALA	GLU	CONFLICT	UNP Q83XK4
C	159	ALA	GLU	CONFLICT	UNP Q83XK4
D	1	GLY	-	EXPRESSION TAG	UNP Q83XK4
D	2	ALA	-	EXPRESSION TAG	UNP Q83XK4
D	3	MET	-	EXPRESSION TAG	UNP Q83XK4
D	4	GLY	-	EXPRESSION TAG	UNP Q83XK4
D	5	SER	-	EXPRESSION TAG	UNP Q83XK4
D	78	ASP	ASN	ENGINEERED MUTATION	UNP Q83XK4
D	158	ALA	GLU	CONFLICT	UNP Q83XK4
D	159	ALA	GLU	CONFLICT	UNP Q83XK4

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula:  $C_{27}H_{33}N_9O_{15}P_2$ ).



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

- Molecule 3 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula:  $C_{21}H_{28}N_7O_{17}P_3$ ).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
3	A	1	Total 48	C 21	N 7	O 17	P 3	0	0
3	B	1	Total 48	C 21	N 7	O 17	P 3	0	0
3	C	1	Total 48	C 21	N 7	O 17	P 3	0	0
3	D	1	Total 48	C 21	N 7	O 17	P 3	0	0

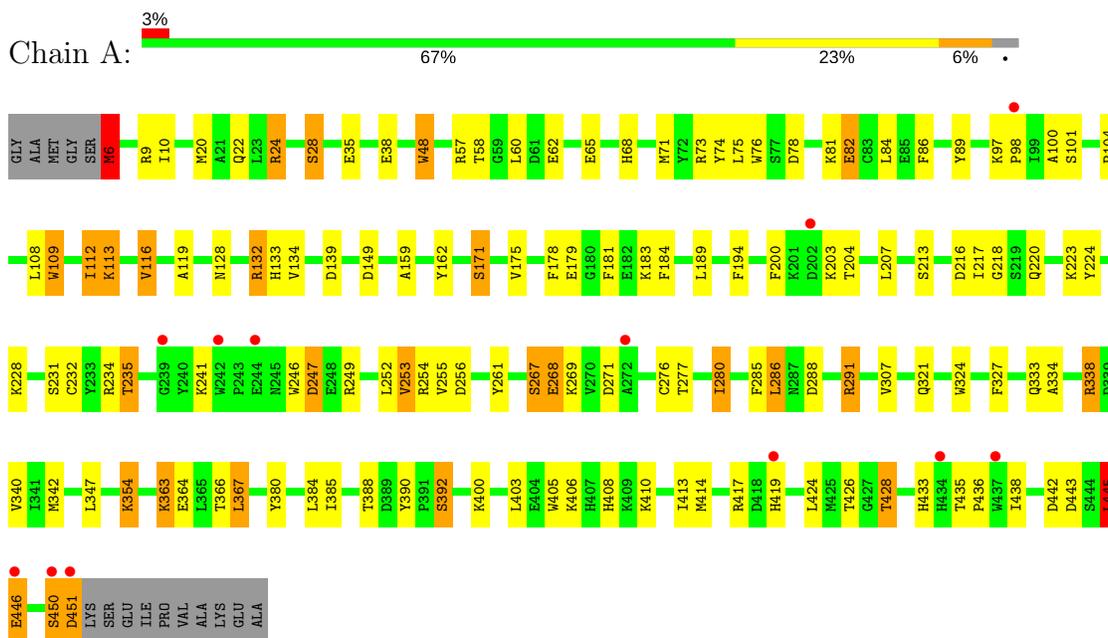
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	53	Total 53	O 53	0	0
4	B	85	Total 85	O 85	0	0
4	C	91	Total 91	O 91	0	0
4	D	44	Total 44	O 44	0	0

### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

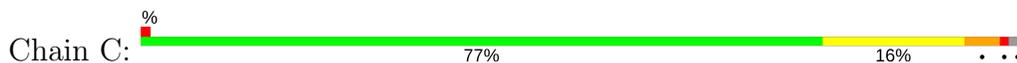
- Molecule 1: FLAVIN-CONTAINING MONOOXYGENASE

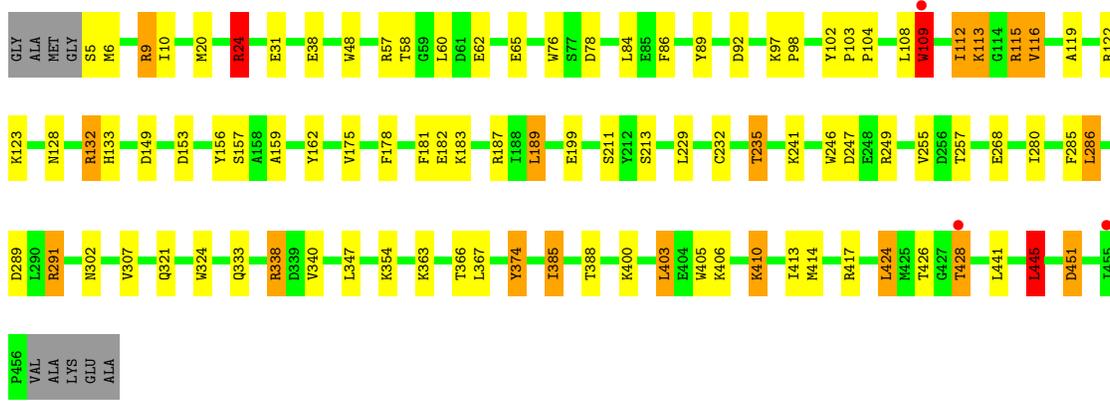


- Molecule 1: FLAVIN-CONTAINING MONOOXYGENASE

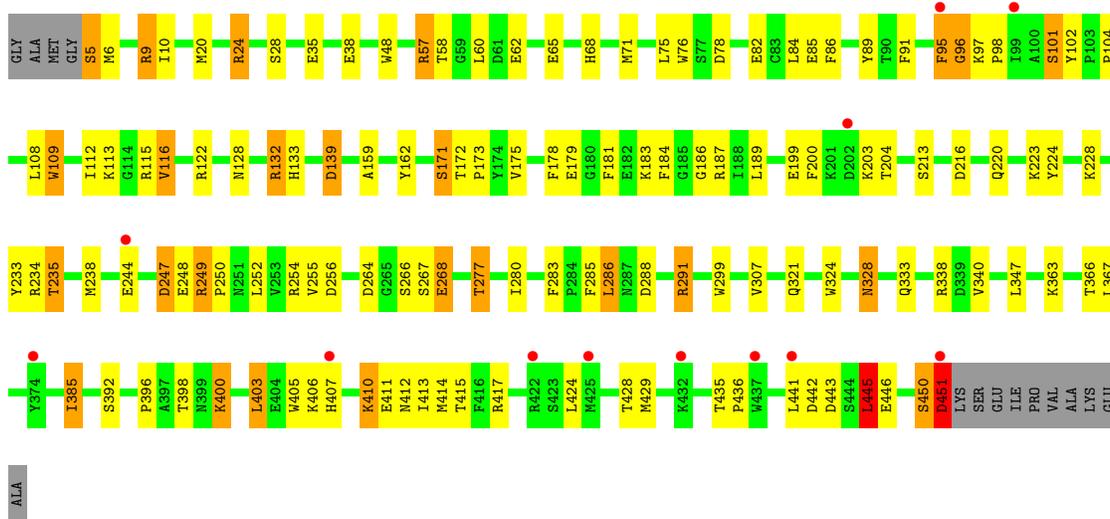


- Molecule 1: FLAVIN-CONTAINING MONOOXYGENASE





● Molecule 1: FLAVIN-CONTAINING MONOOXYGENASE



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 61	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	214.06Å 214.06Å 152.81Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	53.51 – 2.55 51.64 – 2.55	Depositor EDS
% Data completeness (in resolution range)	99.9 (53.51-2.55) 99.9 (51.64-2.55)	Depositor EDS
$R_{merge}$	0.10	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.36 (at 2.55Å)	Xtrriage
Refinement program	REFMAC 5.5.0109	Depositor
R, $R_{free}$	0.214 , 0.244 0.213 , 0.240	Depositor DCC
$R_{free}$ test set	6422 reflections (5.23%)	DCC
Wilson B-factor (Å <sup>2</sup> )	45.1	Xtrriage
Anisotropy	0.026	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 30.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.028 for h,-h-k,-l	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	15348	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.83% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: NAP, 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	1.30	11/3765 (0.3%)	1.13	24/5112 (0.5%)
1	B	1.11	8/3774 (0.2%)	0.93	8/5123 (0.2%)
1	C	1.19	16/3815 (0.4%)	0.99	19/5180 (0.4%)
1	D	1.18	7/3771 (0.2%)	1.00	16/5120 (0.3%)
All	All	1.20	42/15125 (0.3%)	1.01	67/20535 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

The worst 5 of 42 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	451	ASP	CB-CG	-26.44	0.96	1.51
1	C	109	TRP	CE3-CZ3	-19.23	1.05	1.38
1	C	451	ASP	CB-CG	-13.89	1.22	1.51
1	B	451	ASP	CB-CG	-12.51	1.25	1.51
1	A	451	ASP	CA-C	-11.92	1.22	1.52

The worst 5 of 67 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	451	ASP	CB-CG-OD1	-20.38	99.96	118.30
1	D	249	ARG	NE-CZ-NH2	18.22	129.41	120.30
1	A	451	ASP	CB-CA-C	-17.26	75.88	110.40
1	A	6	MET	CA-C-N	14.04	148.09	117.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	451	ASP	CB-CG-OD2	11.30	128.47	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	450	SER	Peptide

## 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	3652	0	3436	118	0
1	B	3661	0	3450	64	0
1	C	3700	0	3487	86	0
1	D	3658	0	3442	93	0
2	A	53	0	31	0	0
2	B	53	0	31	1	0
2	C	53	0	31	0	0
2	D	53	0	31	0	0
3	A	48	0	25	7	0
3	B	48	0	25	5	0
3	C	48	0	25	4	0
3	D	48	0	25	7	0
4	A	53	0	0	7	0
4	B	85	0	0	4	0
4	C	91	0	0	6	0
4	D	44	0	0	0	0
All	All	15348	0	14039	343	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 12.

The worst 5 of 343 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:C:109:TRP:CH2	1:C:113:LYS:HD3	1.24	1.64
1:C:109:TRP:CZ3	1:C:113:LYS:HD3	1.16	1.63
1:C:109:TRP:CH2	1:C:113:LYS:CD	2.01	1.40
1:C:109:TRP:CZ3	1:C:113:LYS:CD	2.03	1.39
1:A:204:THR:N	1:A:271:ASP:OD2	1.57	1.38

There are no symmetry-related clashes.

### 5.3 Torsion angles [i](#)

#### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	444/461 (96%)	426 (96%)	18 (4%)	0	100	100
1	B	445/461 (96%)	434 (98%)	11 (2%)	0	100	100
1	C	450/461 (98%)	438 (97%)	12 (3%)	0	100	100
1	D	445/461 (96%)	430 (97%)	13 (3%)	2 (0%)	38	57
All	All	1784/1844 (97%)	1728 (97%)	54 (3%)	2 (0%)	55	75

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	96	GLY
1	D	450	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	386/397 (97%)	347 (90%)	39 (10%)	9	15
1	B	387/397 (98%)	352 (91%)	35 (9%)	11	20
1	C	392/397 (99%)	355 (91%)	37 (9%)	10	18
1	D	387/397 (98%)	346 (89%)	41 (11%)	8	14
All	All	1552/1588 (98%)	1400 (90%)	152 (10%)	9	16

5 of 152 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	428	THR
1	C	116	VAL
1	D	385	ILE
1	B	441	LEU
1	C	48	TRP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 26 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	133	HIS
1	C	45	GLN
1	D	412	ASN
1	B	321	GLN
1	B	407	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 carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

8 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	FAD	A	500	-	51,58,58	1.37	8 (15%)	54,89,89	2.54	11 (20%)
3	NAP	A	501	-	44,52,52	1.49	7 (15%)	51,80,80	3.20	14 (27%)
2	FAD	B	500	-	51,58,58	1.29	5 (9%)	54,89,89	2.16	13 (24%)
3	NAP	B	501	-	44,52,52	1.46	8 (18%)	51,80,80	2.77	12 (23%)
2	FAD	C	500	-	51,58,58	1.51	8 (15%)	54,89,89	2.20	10 (18%)
3	NAP	C	501	-	44,52,52	1.41	6 (13%)	51,80,80	2.72	11 (21%)
2	FAD	D	500	-	51,58,58	1.46	6 (11%)	54,89,89	2.56	12 (22%)
3	NAP	D	501	-	44,52,52	1.70	9 (20%)	51,80,80	2.90	14 (27%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FAD	A	500	-	-	0/28/50/50	0/6/6/6
3	NAP	A	501	-	-	0/27/67/67	0/5/5/5
2	FAD	B	500	-	-	0/28/50/50	0/6/6/6
3	NAP	B	501	-	-	0/27/67/67	0/5/5/5
2	FAD	C	500	-	-	0/28/50/50	0/6/6/6
3	NAP	C	501	-	-	0/27/67/67	0/5/5/5
2	FAD	D	500	-	-	0/28/50/50	0/6/6/6
3	NAP	D	501	-	-	0/27/67/67	0/5/5/5

The worst 5 of 57 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	500	FAD	O2'-C2'	-2.66	1.37	1.43
2	C	500	FAD	C6-C5X	-2.47	1.38	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	500	FAD	C2B-C1B	-2.47	1.49	1.53
2	B	500	FAD	P-O2P	-2.29	1.43	1.55
2	C	500	FAD	P-O2P	-2.28	1.43	1.55

The worst 5 of 97 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	501	NAP	C4D-O4D-C1D	-14.54	94.29	109.77
3	D	501	NAP	C4D-O4D-C1D	-13.36	95.55	109.77
2	D	500	FAD	N3A-C2A-N1A	-12.86	117.66	128.86
3	C	501	NAP	C4D-O4D-C1D	-12.42	96.55	109.77
3	B	501	NAP	C4D-O4D-C1D	-12.22	96.77	109.77

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 24 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	501	NAP	7	0
2	B	500	FAD	1	0
3	B	501	NAP	5	0
3	C	501	NAP	4	0
3	D	501	NAP	7	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	446/461 (96%)	-0.05	12 (2%) 55 59	25, 41, 60, 72	0
1	B	447/461 (96%)	-0.17	1 (0%) 94 95	25, 40, 60, 74	0
1	C	452/461 (98%)	-0.14	3 (0%) 87 89	24, 41, 60, 86	0
1	D	447/461 (96%)	-0.04	12 (2%) 55 59	25, 41, 60, 72	1 (0%)
All	All	1792/1844 (97%)	-0.10	28 (1%) 72 74	24, 41, 60, 86	1 (0%)

The worst 5 of 28 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	244	GLU	3.8
1	A	451	ASP	3.4
1	C	455	ILE	3.2
1	D	202	ASP	3.1
1	B	451	ASP	2.9

### 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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
3	NAP	A	501	48/48	0.94	0.14	0.29	45,55,74,76	0
2	FAD	C	500	53/53	0.99	0.15	0.18	22,29,48,49	0
2	FAD	A	500	53/53	0.98	0.13	0.07	22,30,49,50	0
3	NAP	D	501	48/48	0.96	0.12	-0.17	46,55,74,75	0
2	FAD	B	500	53/53	0.99	0.14	-0.37	22,29,48,50	0
2	FAD	D	500	53/53	0.97	0.12	-0.41	21,30,49,50	0
3	NAP	B	501	48/48	0.96	0.13	-0.59	45,54,74,75	0
3	NAP	C	501	48/48	0.97	0.14	-0.61	44,54,74,75	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.