



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 13, 2018 – 10:52 pm GMT

PDB ID : 2R6H
Title : Crystal structure of the domain comprising the NAD binding and the FAD binding regions of the NADH:ubiquinone oxidoreductase, Na translocating, F subunit from Porphyromonas gingivalis
Authors : Kim, Y.; Mulligan, R.; Moy, S.; Joachimiak, A.; Midwest Center for Structural Genomics (MCSG)
Deposited on : 2007-09-05
Resolution : 2.95 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk31020
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk31020

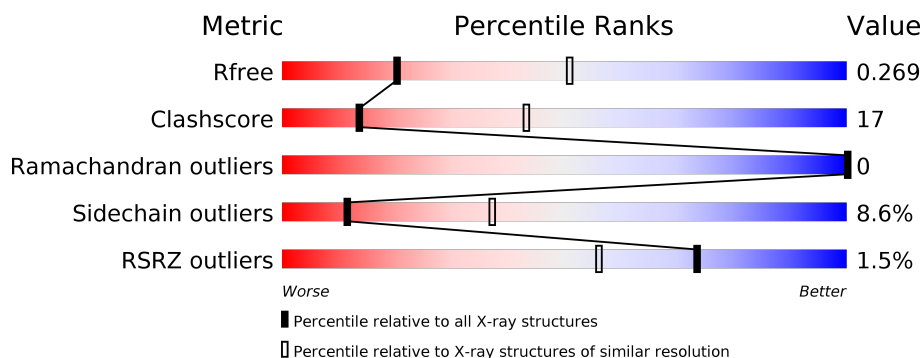
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.95 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}	111664	2641 (3.00-2.92)
Clashscore	122126	2988 (3.00-2.92)
Ramachandran outliers	120053	2892 (3.00-2.92)
Sidechain outliers	120020	2895 (3.00-2.92)
RSRZ outliers	108989	2527 (3.00-2.92)

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 ≥ 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	290	<div> <div style="width: 2%; background-color: red;"></div> <div style="width: 69%; background-color: green;"></div> <div style="width: 27%; background-color: yellow;"></div> <div style="width: 2%; background-color: orange;"></div> <div style="width: 2%; background-color: grey;"></div> </div> <div>69% 27% . .</div>
1	B	290	<div> <div style="width: 2%; background-color: red;"></div> <div style="width: 64%; background-color: green;"></div> <div style="width: 29%; background-color: yellow;"></div> <div style="width: 6%; background-color: orange;"></div> <div style="width: 1%; background-color: grey;"></div> </div> <div>2% 64% 29% 6% .</div>
1	C	290	<div> <div style="width: 2%; background-color: red;"></div> <div style="width: 66%; background-color: green;"></div> <div style="width: 30%; background-color: yellow;"></div> <div style="width: 2%; background-color: orange;"></div> <div style="width: 1%; background-color: grey;"></div> </div> <div>66% 30% .</div>
1	D	290	<div> <div style="width: 2%; background-color: red;"></div> <div style="width: 64%; background-color: green;"></div> <div style="width: 29%; background-color: yellow;"></div> <div style="width: 2%; background-color: orange;"></div> <div style="width: 2%; background-color: grey;"></div> </div> <div>2% 64% 29% . .</div>

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

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	SO4	A	10	-	-	-	X

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 9919 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 NADH:ubiquinone oxidoreductase, Na translocating, F subunit.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	285	Total	C	N	O	S	Se	0	4	0
			2349	1505	394	436	3	11			
1	B	286	Total	C	N	O	S	Se	0	1	0
			2331	1499	384	434	3	11			
1	C	289	Total	C	N	O	S	Se	0	6	0
			2397	1538	402	443	3	11			
1	D	284	Total	C	N	O	S	Se	0	2	0
			2321	1489	384	434	3	11			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	123	SER	-	EXPRESSION TAG	UNP Q7MT22
A	124	ASN	-	EXPRESSION TAG	UNP Q7MT22
A	125	ALA	-	EXPRESSION TAG	UNP Q7MT22
B	123	SER	-	EXPRESSION TAG	UNP Q7MT22
B	124	ASN	-	EXPRESSION TAG	UNP Q7MT22
B	125	ALA	-	EXPRESSION TAG	UNP Q7MT22
C	123	SER	-	EXPRESSION TAG	UNP Q7MT22
C	124	ASN	-	EXPRESSION TAG	UNP Q7MT22
C	125	ALA	-	EXPRESSION TAG	UNP Q7MT22
D	123	SER	-	EXPRESSION TAG	UNP Q7MT22
D	124	ASN	-	EXPRESSION TAG	UNP Q7MT22
D	125	ALA	-	EXPRESSION TAG	UNP Q7MT22

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	S	0	0
			5	4	1		
2	A	1	Total	O	S	0	0
			5	4	1		
2	A	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	C	1	Total	O	S	0	0
			5	4	1		
2	C	1	Total	O	S	0	0
			5	4	1		
2	C	1	Total	O	S	0	0
			5	4	1		
2	D	1	Total	O	S	0	0
			5	4	1		
2	D	1	Total	O	S	0	0
			5	4	1		

- Molecule 3 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$).



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

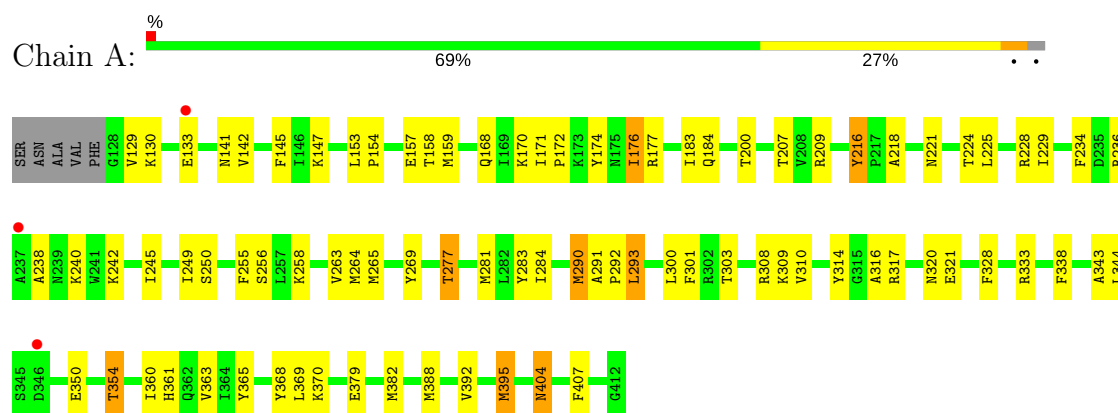
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	58	Total	O	0	0
			58	58		
4	B	51	Total	O	0	0
			51	51		
4	C	80	Total	O	0	0
			80	80		
4	D	65	Total	O	0	0
			65	65		

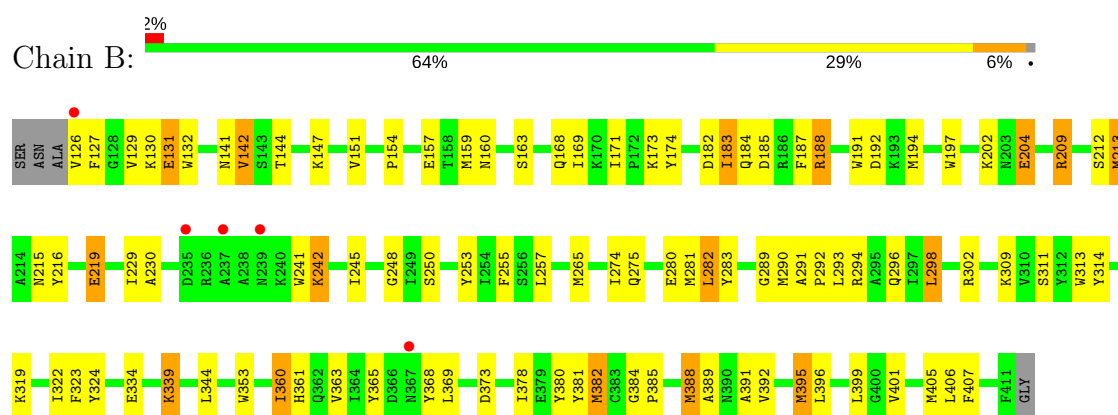
3 Residue-property plots

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.

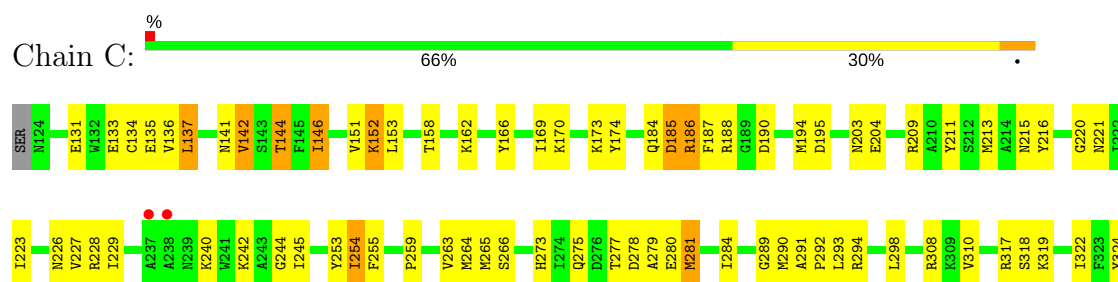
- Molecule 1: NADH:ubiquinone oxidoreductase, Na translocating, F subunit



- Molecule 1: NADH:ubiquinone oxidoreductase, Na translocating, F subunit

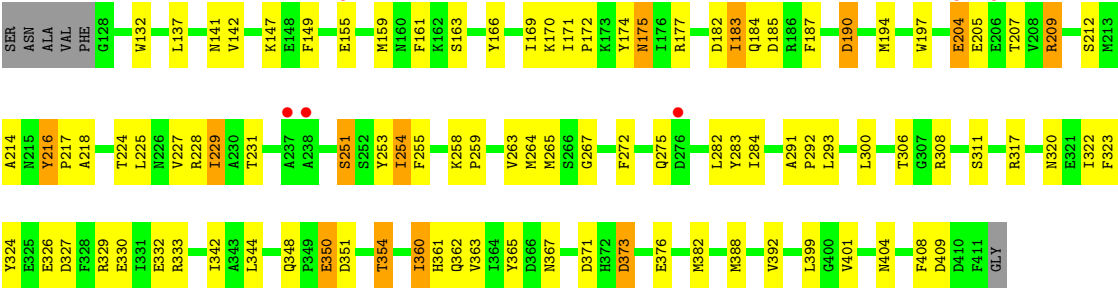


- Molecule 1: NADH:ubiquinone oxidoreductase, Na translocating, F subunit





● Molecule 1: NADH:ubiquinone oxidoreductase, Na translocating, F subunit



4 Data and refinement statistics

Property	Value	Source
Space group	I 41 2 2	Depositor
Cell constants a, b, c, α , β , γ	175.68Å 175.68Å 244.29Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.54 – 2.95 47.54 – 2.95	Depositor EDS
% Data completeness (in resolution range)	93.7 (47.54-2.95) 93.7 (47.54-2.95)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.18	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.06 (at 2.96Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.215 , 0.271 0.209 , 0.269	Depositor DCC
R_{free} test set	3826 reflections (10.10%)	wwPDB-VP
Wilson B-factor (Å ²)	45.1	Xtriage
Anisotropy	0.107	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 40.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.008 for -1/2*h+1/2*k-1/2*l,1/2*h-1/2*k-1/2*l,-h-k 0.015 for -1/2*h-1/2*k+1/2*l,-1/2*h-1/2*k-1/2*l,h-k	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	9919	wwPDB-VP
Average B, all atoms (Å ²)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.94% 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: SO4, 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	0.43	0/2405	0.56	0/3232
1	B	0.46	1/2387 (0.0%)	0.50	0/3210
1	C	0.46	0/2453	0.56	0/3294
1	D	0.42	0/2376	0.53	0/3195
All	All	0.44	1/9621 (0.0%)	0.54	0/12931

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	368	TYR	CD2-CE2	-5.57	1.30	1.39

There are no bond angle outliers.

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	2349	0	2244	79	0
1	B	2331	0	2229	85	0
1	C	2397	0	2303	91	1
1	D	2321	0	2216	81	1
2	A	15	0	0	0	0
2	B	10	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	20	0	0	1	0
2	D	10	0	0	0	0
3	A	53	0	31	1	0
3	B	53	0	31	0	0
3	C	53	0	31	1	0
3	D	53	0	31	1	0
4	A	58	0	0	3	0
4	B	51	0	0	2	0
4	C	80	0	0	6	0
4	D	65	0	0	5	0
All	All	9919	0	9116	321	1

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 17.

The worst 5 of 321 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:277:THR:HG22	1:C:279:ALA:H	1.07	1.09
1:C:382:MSE:HE1	1:C:392:VAL:HG21	1.31	1.05
1:D:382:MSE:HE2	1:D:388:MSE:HE3	1.40	1.02
1:B:242:LYS:HG2	1:B:245:ILE:HD12	1.43	1.01
1:A:291:ALA:HB3	1:A:292:PRO:HD3	1.37	1.00

All (1) 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:C:185[A]:ASP:OD2	1:D:365:TYR:OH[10_655]	1.90	0.30

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	287/290 (99%)	278 (97%)	9 (3%)	0	100	100
1	B	285/290 (98%)	274 (96%)	11 (4%)	0	100	100
1	C	293/290 (101%)	283 (97%)	10 (3%)	0	100	100
1	D	284/290 (98%)	277 (98%)	7 (2%)	0	100	100
All	All	1149/1160 (99%)	1112 (97%)	37 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	247/236 (105%)	229 (93%)	18 (7%)	15	45
1	B	246/236 (104%)	223 (91%)	23 (9%)	10	33
1	C	252/236 (107%)	231 (92%)	21 (8%)	12	39
1	D	245/236 (104%)	222 (91%)	23 (9%)	9	32
All	All	990/944 (105%)	905 (91%)	85 (9%)	11	37

5 of 85 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	382	MSE
1	C	185[B]	ASP
1	D	350	GLU
1	B	388	MSE
1	C	144	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	175	ASN
1	D	404	ASN
1	D	348	GLN

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Mol	Chain	Res	Type
1	A	404	ASN
1	D	367	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

15 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	$\# Z > 2$
3	FAD	A	1	-	51,58,58	1.39	6 (11%)	57,89,89	2.10	6 (10%)
2	SO4	A	10	-	4,4,4	0.18	0	6,6,6	0.37	0
2	SO4	A	2	-	4,4,4	0.11	0	6,6,6	0.25	0
2	SO4	A	8	-	4,4,4	0.16	0	6,6,6	0.14	0
2	SO4	B	1	-	4,4,4	0.21	0	6,6,6	0.24	0
2	SO4	B	11	-	4,4,4	0.23	0	6,6,6	0.12	0
3	FAD	B	2	-	51,58,58	1.34	7 (13%)	57,89,89	2.03	7 (12%)
2	SO4	C	3	-	4,4,4	0.16	0	6,6,6	0.43	0
2	SO4	C	4	-	4,4,4	0.20	0	6,6,6	0.14	0
3	FAD	C	413	-	51,58,58	1.35	7 (13%)	57,89,89	2.02	7 (12%)
2	SO4	C	7	-	4,4,4	0.18	0	6,6,6	0.25	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	SO4	C	9	-	4,4,4	0.14	0	6,6,6	0.31	0
3	FAD	D	4	-	51,58,58	1.31	6 (11%)	57,89,89	2.16	8 (14%)
2	SO4	D	5	-	4,4,4	0.22	0	6,6,6	0.12	0
2	SO4	D	6	-	4,4,4	0.19	0	6,6,6	0.13	0

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	A	1	-	-	0/28/50/50	0/6/6/6
2	SO4	A	10	-	-	0/0/0/0	0/0/0/0
2	SO4	A	2	-	-	0/0/0/0	0/0/0/0
2	SO4	A	8	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1	-	-	0/0/0/0	0/0/0/0
2	SO4	B	11	-	-	0/0/0/0	0/0/0/0
3	FAD	B	2	-	-	0/28/50/50	0/6/6/6
2	SO4	C	3	-	-	0/0/0/0	0/0/0/0
2	SO4	C	4	-	-	0/0/0/0	0/0/0/0
3	FAD	C	413	-	-	0/28/50/50	0/6/6/6
2	SO4	C	7	-	-	0/0/0/0	0/0/0/0
2	SO4	C	9	-	-	0/0/0/0	0/0/0/0
3	FAD	D	4	-	-	0/28/50/50	0/6/6/6
2	SO4	D	5	-	-	0/0/0/0	0/0/0/0
2	SO4	D	6	-	-	0/0/0/0	0/0/0/0

The worst 5 of 26 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	413	FAD	C5X-N5	2.08	1.38	1.35
3	A	1	FAD	C5X-N5	2.13	1.38	1.35
3	C	413	FAD	C1'-N10	2.25	1.50	1.48
3	D	4	FAD	C1'-N10	2.29	1.50	1.48
3	B	2	FAD	C5X-N5	2.36	1.38	1.35

The worst 5 of 28 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	4	FAD	N3A-C2A-N1A	-10.93	119.51	128.86
3	C	413	FAD	N3A-C2A-N1A	-10.63	119.76	128.86
3	A	1	FAD	N3A-C2A-N1A	-10.60	119.79	128.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	2	FAD	N3A-C2A-N1A	-10.46	119.91	128.86
3	A	1	FAD	C4X-C4-N3	-3.76	118.12	123.47

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1	FAD	1	0
2	B	11	SO4	1	0
2	C	3	SO4	1	0
3	C	413	FAD	1	0
3	D	4	FAD	1	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, 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	274/290 (94%)	-0.15	3 (1%) 80 64	23, 42, 77, 129	0
1	B	275/290 (94%)	0.02	5 (1%) 68 50	22, 49, 87, 110	0
1	C	278/290 (95%)	-0.13	2 (0%) 87 75	21, 37, 65, 99	0
1	D	273/290 (94%)	-0.04	6 (2%) 62 43	23, 45, 77, 105	0
All	All	1100/1160 (94%)	-0.07	16 (1%) 73 56	21, 43, 79, 129	0

The worst 5 of 16 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	237	ALA	4.1
1	B	235	ASP	3.4
1	D	237	ALA	3.2
1	D	155	GLU	3.0
1	D	238	ALA	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. 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
2	SO4	A	8	5/5	0.66	0.28	128,128,128,129	0
2	SO4	A	10	5/5	0.72	0.46	130,130,130,130	0
2	SO4	C	4	5/5	0.73	0.37	136,136,137,137	0
2	SO4	D	6	5/5	0.76	0.29	118,119,120,120	0
2	SO4	C	7	5/5	0.81	0.19	117,118,118,118	0
2	SO4	B	11	5/5	0.88	0.41	138,138,138,138	0
2	SO4	C	3	5/5	0.89	0.16	87,89,89,90	0
3	FAD	A	1	53/53	0.93	0.24	30,48,85,85	0
3	FAD	B	2	53/53	0.93	0.22	48,54,75,75	0
3	FAD	D	4	53/53	0.93	0.20	33,43,73,74	0
2	SO4	B	1	5/5	0.94	0.16	80,81,81,83	0
2	SO4	C	9	5/5	0.94	0.26	102,102,102,102	0
3	FAD	C	413	53/53	0.95	0.20	25,37,51,54	0
2	SO4	D	5	5/5	0.96	0.10	84,84,85,85	0
2	SO4	A	2	5/5	0.96	0.10	75,76,77,78	0

6.5 Other polymers [i](#)

There are no such residues in this entry.