



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 08:51 AM GMT

PDB ID : 3G6K  
Title : Crystal Structure of Candida glabrata FMN Adenylyltransferase in complex with FAD and Inorganic Pyrophosphate  
Authors : Huerta, C.; Machius, M.; Zhang, H.  
Deposited on : 2009-02-06  
Resolution : 1.35 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](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 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
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) : trunk26865

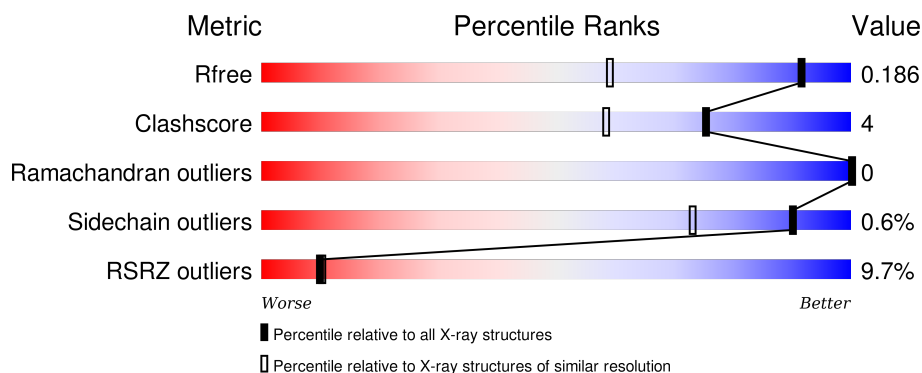
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.35 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))
$R_{free}$	91344	2199 (1.40-1.32)
Clashscore	102246	2337 (1.40-1.32)
Ramachandran outliers	100387	2280 (1.40-1.32)
Sidechain outliers	100360	2279 (1.40-1.32)
RSRZ outliers	91569	2199 (1.40-1.32)

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	308	<div> <div>8%</div> <div>92%</div> <div>5%</div> </div>
1	B	308	<div> <div>13%</div> <div>86%</div> <div>12%</div> </div>
1	C	308	<div> <div>7%</div> <div>89%</div> <div>6%</div> <div>5%</div> </div>
1	D	308	<div> <div>9%</div> <div>89%</div> <div>8%</div> </div>
1	E	308	<div> <div>13%</div> <div>86%</div> <div>7%</div> <div>6%</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	308	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	FAD	E	306	-	-	-	X
5	SO4	F	311	-	-	-	X

## 2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 17255 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 FMN adenylyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	299	Total	C	N	O	S	0	18	0
			2514	1616	408	481	9			
1	B	305	Total	C	N	O	S	0	17	0
			2576	1659	422	487	8			
1	C	292	Total	C	N	O	S	0	11	0
			2446	1575	400	463	8			
1	D	301	Total	C	N	O	S	0	12	0
			2534	1632	413	482	7			
1	E	288	Total	C	N	O	S	0	13	0
			2419	1561	388	463	7			
1	F	297	Total	C	N	O	S	0	15	0
			2479	1595	403	472	9			

There are 24 discrepancies between the modelled and reference sequences:

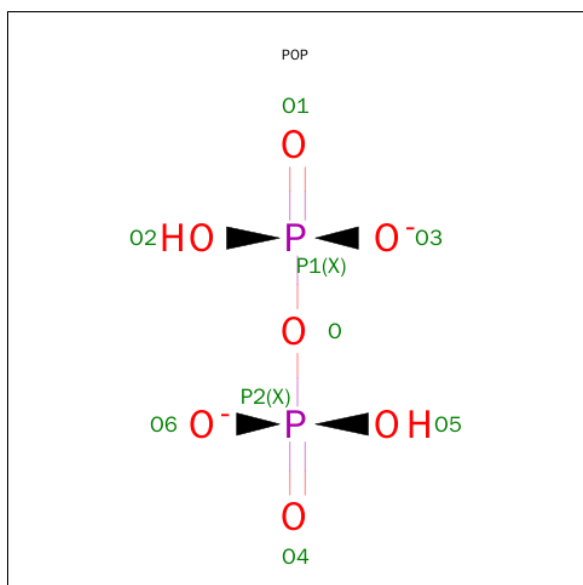
Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	EXPRESSION TAG	UNP Q6FNA9
A	-2	ALA	-	EXPRESSION TAG	UNP Q6FNA9
A	-1	MET	-	EXPRESSION TAG	UNP Q6FNA9
A	0	VAL	-	EXPRESSION TAG	UNP Q6FNA9
B	-3	GLY	-	EXPRESSION TAG	UNP Q6FNA9
B	-2	ALA	-	EXPRESSION TAG	UNP Q6FNA9
B	-1	MET	-	EXPRESSION TAG	UNP Q6FNA9
B	0	VAL	-	EXPRESSION TAG	UNP Q6FNA9
C	-3	GLY	-	EXPRESSION TAG	UNP Q6FNA9
C	-2	ALA	-	EXPRESSION TAG	UNP Q6FNA9
C	-1	MET	-	EXPRESSION TAG	UNP Q6FNA9
C	0	VAL	-	EXPRESSION TAG	UNP Q6FNA9
D	-3	GLY	-	EXPRESSION TAG	UNP Q6FNA9
D	-2	ALA	-	EXPRESSION TAG	UNP Q6FNA9
D	-1	MET	-	EXPRESSION TAG	UNP Q6FNA9
D	0	VAL	-	EXPRESSION TAG	UNP Q6FNA9
E	-3	GLY	-	EXPRESSION TAG	UNP Q6FNA9

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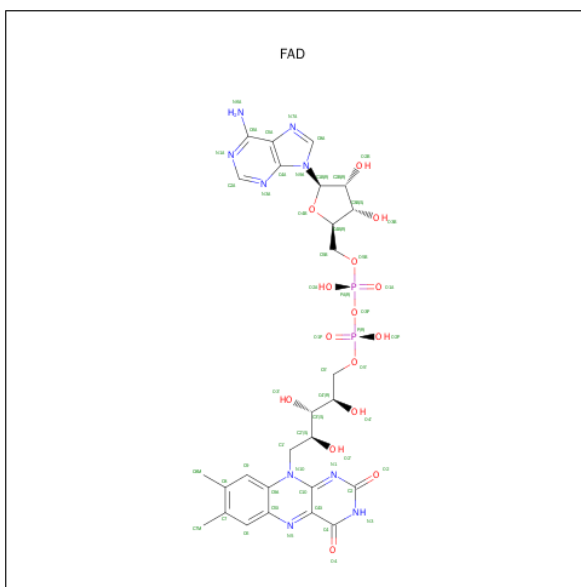
Chain	Residue	Modelled	Actual	Comment	Reference
E	-2	ALA	-	EXPRESSION TAG	UNP Q6FNA9
E	-1	MET	-	EXPRESSION TAG	UNP Q6FNA9
E	0	VAL	-	EXPRESSION TAG	UNP Q6FNA9
F	-3	GLY	-	EXPRESSION TAG	UNP Q6FNA9
F	-2	ALA	-	EXPRESSION TAG	UNP Q6FNA9
F	-1	MET	-	EXPRESSION TAG	UNP Q6FNA9
F	0	VAL	-	EXPRESSION TAG	UNP Q6FNA9

- Molecule 2 is PYROPHOSPHATE 2- (three-letter code: POP) (formula:  $\text{H}_2\text{O}_7\text{P}_2$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O P 9 7 2	0	0
2	B	1	Total O P 9 7 2	0	0
2	C	1	Total O P 9 7 2	0	0
2	D	1	Total O P 9 7 2	0	0
2	E	1	Total O P 9 7 2	0	0
2	F	1	Total O P 9 7 2	0	0

- Molecule 3 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula:  $\text{C}_{27}\text{H}_{33}\text{N}_9\text{O}_{15}\text{P}_2$ ).

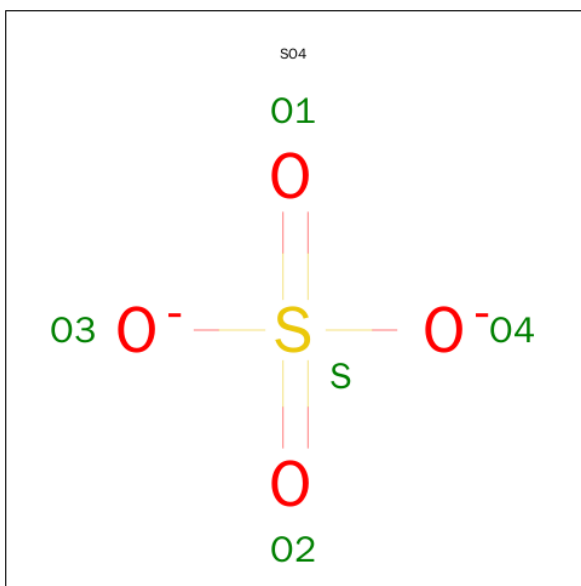


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	C	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	D	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	E	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
3	F	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

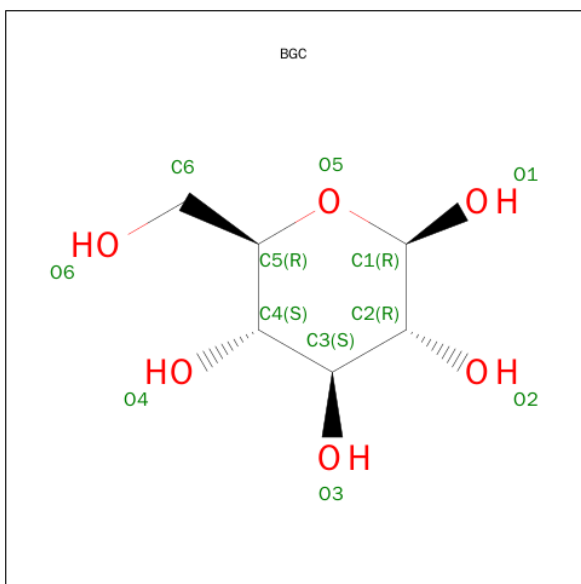
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	D	1	Total	Mg	0	0
			1	1		
4	E	1	Total	Mg	0	0
			1	1		
4	B	3	Total	Mg	0	0
			3	3		
4	C	1	Total	Mg	0	0
			1	1		
4	A	3	Total	Mg	0	0
			3	3		
4	F	4	Total	Mg	0	0
			4	4		

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	O	S	0	0
			5	4	1		
5	D	1	Total	O	S	0	0
			5	4	1		
5	D	1	Total	O	S	0	0
			5	4	1		
5	F	1	Total	O	S	0	0
			5	4	1		

- Molecule 6 is SUGAR (BETA-D-GLUCOSE) (three-letter code: BGC) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	B	1	Total	C	O	0	0
			12	6	6		

- Molecule 7 is water.

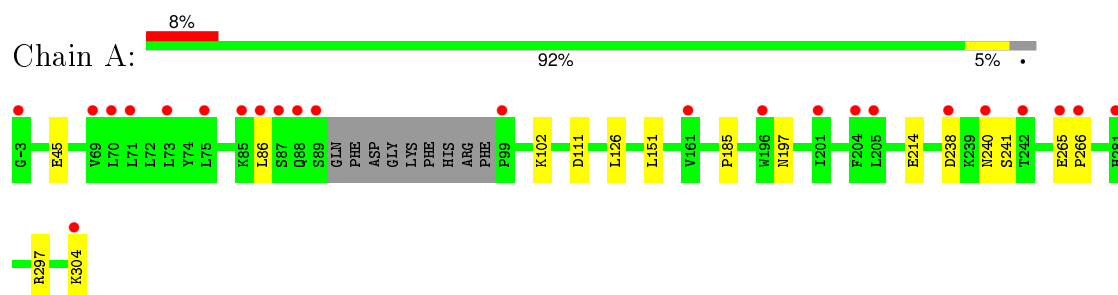
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	343	Total	O	0	0
			343	343		
7	B	308	Total	O	0	0
			308	308		
7	C	309	Total	O	0	0
			309	309		
7	D	326	Total	O	0	0
			326	326		
7	E	239	Total	O	0	0
			239	239		
7	F	345	Total	O	0	0
			345	345		

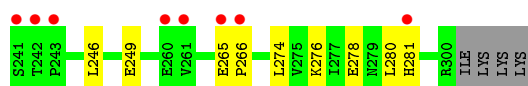


### 3 Residue-property plots [i](#)

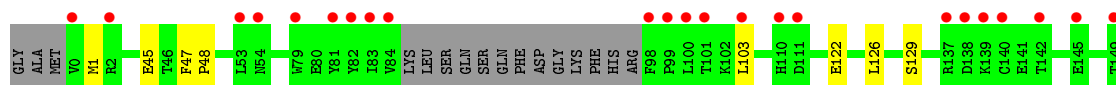
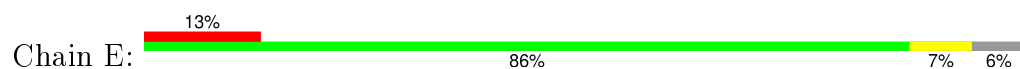
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according 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: FMN adenylyltransferase

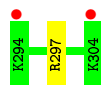




- Molecule 1: FMN adenylyltransferase



- Molecule 1: FMN adenylyltransferase



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	206.58 Å   81.48 Å   136.60 Å 90.00°   129.79°   90.00°	Depositor
Resolution (Å)	32.19 – 1.35 32.18 – 1.35	Depositor EDS
% Data completeness (in resolution range)	99.9 (32.19-1.35) 99.9 (32.18-1.35)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.08	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.33 (at 1.35 Å)	Xtriage
Refinement program	REFMAC 5.3.0037	Depositor
R, $R_{free}$	0.153 , 0.187 0.151 , 0.186	Depositor DCC
$R_{free}$ test set	19043 reflections (5.27%)	DCC
Wilson B-factor (Å <sup>2</sup> )	13.8	Xtriage
Anisotropy	0.112	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.42 , 56.7	EDS
Estimated twinning fraction	0.011 for -h-2*k,l,-k,l	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	4 of 380481 reflections (0.001%)	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	17255	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	18.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 32.02 % of the origin peak, indicating pseudo translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo translational symmetry is equal to 1.0061e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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, 0.375 respectively for untwinned datasets, and 0.333, 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: MG, BGC, SO4, POP, 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	0.69	0/2666	0.74	1/3620 (0.0%)
1	B	0.70	2/2727 (0.1%)	0.76	6/3701 (0.2%)
1	C	0.67	0/2567	0.74	4/3487 (0.1%)
1	D	0.68	0/2657	0.71	2/3611 (0.1%)
1	E	0.65	0/2546	0.68	1/3467 (0.0%)
1	F	0.74	0/2628	0.76	0/3567
All	All	0.69	2/15791 (0.0%)	0.73	14/21453 (0.1%)

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

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

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	227[A]	GLU	CB-CG	5.41	1.62	1.52
1	B	227[B]	GLU	CB-CG	5.41	1.62	1.52

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	137[A]	ARG	NE-CZ-NH2	9.17	124.88	120.30
1	B	137[B]	ARG	NE-CZ-NH2	9.17	124.88	120.30
1	B	137[A]	ARG	NE-CZ-NH1	-8.37	116.11	120.30
1	B	137[B]	ARG	NE-CZ-NH1	-8.37	116.11	120.30
1	C	137[A]	ARG	NE-CZ-NH1	-6.78	116.91	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	137[B]	ARG	NE-CZ-NH1	-6.78	116.91	120.30
1	B	300[A]	ARG	NE-CZ-NH2	-6.20	117.20	120.30
1	B	300[B]	ARG	NE-CZ-NH2	-6.20	117.20	120.30
1	E	217	ARG	NE-CZ-NH2	-5.37	117.61	120.30
1	A	111	ASP	CB-CG-OD1	5.31	123.08	118.30
1	D	165	ARG	NE-CZ-NH1	-5.14	117.73	120.30
1	C	137[A]	ARG	CG-CD-NE	-5.12	101.04	111.80
1	C	137[B]	ARG	CG-CD-NE	-5.12	101.04	111.80
1	D	189	ARG	NE-CZ-NH2	-5.03	117.78	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	240	ASN	Peptide

## 5.2 Too-close contacts ⓘ

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	2514	0	2465	18	0
1	B	2576	0	2503	47	0
1	C	2446	0	2380	17	0
1	D	2534	0	2451	18	0
1	E	2419	0	2349	19	0
1	F	2479	0	2415	9	0
2	A	9	0	0	0	0
2	B	9	0	0	0	0
2	C	9	0	0	0	0
2	D	9	0	0	0	0
2	E	9	0	0	0	0
2	F	9	0	0	0	0
3	A	53	0	31	0	0
3	B	53	0	31	0	0
3	C	53	0	31	0	0
3	D	53	0	31	0	0
3	E	53	0	31	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	F	53	0	31	0	0
4	A	3	0	0	0	0
4	B	3	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	4	0	0	0	0
5	B	5	0	0	0	0
5	D	10	0	0	0	0
5	F	5	0	0	0	0
6	B	12	0	12	0	0
7	A	343	0	0	7	0
7	B	308	0	0	23	0
7	C	309	0	0	9	0
7	D	326	0	0	3	0
7	E	239	0	0	7	0
7	F	345	0	0	2	0
All	All	17255	0	14761	118	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 4.

All (118) 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:214[A]:GLU:OE2	7:C:1853:HOH:O	1.57	1.20
1:A:197[B]:ASN:ND2	7:A:1822:HOH:O	1.70	1.19
1:E:214:GLU:OE2	7:E:1716:HOH:O	1.65	1.10
1:E:197[B]:ASN:ND2	7:E:1278:HOH:O	1.85	1.07
1:B:227[A]:GLU:HG2	1:D:197[A]:ASN:ND2	1.77	1.00
1:E:45:GLU:OE2	7:E:753:HOH:O	1.86	0.93
1:B:227[A]:GLU:OE1	7:B:1079:HOH:O	1.89	0.89
1:A:238[A]:ASP:OD2	1:A:241:SER:OG	1.92	0.87
1:B:175[A]:LYS:CD	7:B:1221:HOH:O	2.26	0.82
1:B:45:GLU:OE2	7:B:1076:HOH:O	1.98	0.81
1:A:297[A]:ARG:NE	7:A:1823:HOH:O	1.74	0.81
1:B:58[A]:SER:OG	7:B:1388:HOH:O	1.98	0.81
1:C:214[B]:GLU:OE2	7:C:948:HOH:O	1.99	0.79
1:D:276:LYS:HD3	7:D:1588:HOH:O	1.84	0.79
1:A:297[A]:ARG:CZ	7:A:1823:HOH:O	2.27	0.74
1:D:265:GLU:HB2	1:D:266:PRO:HD2	1.68	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:297[A]:ARG:NH1	7:A:1823:HOH:O	2.21	0.74
1:B:271:ASP:HB3	7:B:816:HOH:O	1.86	0.73
1:E:181[B]:ASP:OD1	1:E:183:ASN:OD1	2.08	0.71
1:B:175[A]:LYS:HD3	7:B:1221:HOH:O	1.89	0.71
1:F:214[B]:GLU:OE2	7:F:1507:HOH:O	2.10	0.69
1:B:271:ASP:OD2	7:B:1709:HOH:O	2.09	0.69
1:B:214[B]:GLU:OE1	7:B:1298:HOH:O	2.09	0.69
1:B:175[A]:LYS:HD2	7:B:1396:HOH:O	1.92	0.68
1:A:126[B]:LEU:HD21	1:F:126[B]:LEU:HD21	1.74	0.68
1:B:0:VAL:HB	7:E:1328:HOH:O	1.94	0.68
1:C:253:GLU:HG3	7:C:1632:HOH:O	1.94	0.67
7:B:1249:HOH:O	1:E:126:LEU:HD21	1.93	0.67
7:B:1249:HOH:O	1:E:126:LEU:CD2	2.43	0.66
1:B:114:PHE:HA	1:B:226[B]:VAL:CG1	2.26	0.65
1:C:45:GLU:OE1	7:C:401:HOH:O	2.14	0.64
1:B:245:LYS:HG2	7:B:857:HOH:O	1.98	0.61
1:A:304:LYS:HD3	1:C:245:LYS:HB3	1.83	0.61
1:D:109:ASP:OD1	1:D:118[B]:GLU:OE2	2.19	0.60
1:B:271:ASP:OD1	1:E:271:ASP:OD2	2.19	0.59
1:A:238[A]:ASP:CG	1:A:241:SER:OG	2.39	0.59
1:D:181[B]:ASP:OD1	1:D:183:ASN:OD1	2.21	0.59
1:B:246:LEU:HD23	1:B:249:GLU:HG2	1.85	0.58
1:D:265:GLU:CB	1:D:266:PRO:HD2	2.34	0.58
1:C:273:ASP:O	1:C:277:ILE:HD12	2.04	0.57
1:E:268:PRO:HD2	7:E:1134:HOH:O	2.04	0.57
1:B:111:ASP:HA	1:B:137[B]:ARG:HG3	1.87	0.57
1:B:50:TRP:CD1	1:B:158:LYS:HE2	2.39	0.57
1:A:238[B]:ASP:OD1	1:A:240:ASN:OD1	2.23	0.57
1:D:280:LEU:O	1:D:281:HIS:HB2	2.04	0.56
1:E:173[B]:HIS:HE1	7:E:1272:HOH:O	1.89	0.56
1:C:297[B]:ARG:NH1	7:C:641:HOH:O	2.31	0.56
1:A:45:GLU:OE2	7:A:555:HOH:O	2.18	0.55
1:B:85:LYS:HE2	7:B:1414:HOH:O	2.08	0.54
1:D:173[B]:HIS:HB3	1:E:268:PRO:HG3	1.90	0.54
1:B:151:LEU:HD12	1:B:185:PRO:HB2	1.89	0.54
1:D:102:LYS:HE3	7:D:391:HOH:O	2.09	0.53
1:F:114:PHE:HA	1:F:226[B]:VAL:CG1	2.38	0.53
1:B:52:PRO:HB2	1:B:78[B]:LEU:HD21	1.88	0.53
1:B:137[B]:ARG:NH2	7:B:1820:HOH:O	2.25	0.52
1:B:292:ASP:OD1	1:B:294:LYS:HG2	2.09	0.52
1:C:175:LYS:HE3	1:F:269:ILE:O	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:183:ASN:HB3	7:D:774:HOH:O	2.10	0.51
1:E:1:MET:O	1:E:129:SER:OG	2.23	0.51
1:B:227[A]:GLU:HG2	1:D:197[A]:ASN:CG	2.29	0.50
1:D:183:ASN:HA	1:E:252:ILE:CG2	2.42	0.49
1:D:265:GLU:HB2	1:D:266:PRO:CD	2.41	0.49
1:B:123:GLU:OE2	1:E:122:GLU:OE1	2.30	0.49
1:B:110:HIS:C	1:B:137[B]:ARG:HG3	2.33	0.48
1:A:214[A]:GLU:OE1	7:A:1622:HOH:O	2.20	0.48
1:E:274:LEU:HD11	1:E:278:GLU:OE2	2.14	0.47
1:D:11:TYR:HA	1:D:76[B]:SER:HB2	1.96	0.47
1:B:265:GLU:HG3	1:B:266:PRO:HD2	1.96	0.47
1:A:151:LEU:CD1	1:A:185:PRO:HB2	2.45	0.47
1:B:297[A]:ARG:NE	7:B:1870:HOH:O	2.26	0.47
1:B:178:GLN:HB3	7:B:1396:HOH:O	2.14	0.46
1:B:137[B]:ARG:NE	7:B:1820:HOH:O	2.35	0.46
1:A:238[A]:ASP:OD1	1:A:241:SER:OG	2.33	0.46
1:B:52:PRO:HB2	1:B:78[B]:LEU:CD2	2.45	0.46
7:B:1079:HOH:O	1:D:199:ALA:HB3	2.15	0.46
1:C:249:GLU:O	1:C:253:GLU:HG3	2.16	0.46
1:F:276:LYS:HE2	1:F:276:LYS:HB2	1.71	0.46
1:C:269:ILE:HD11	1:C:277:ILE:HD13	1.98	0.45
1:B:158:LYS:HE3	7:B:348:HOH:O	2.16	0.45
1:A:151:LEU:HD12	1:A:185:PRO:HB2	1.99	0.44
1:F:169:PRO:HD3	1:F:297[B]:ARG:NH1	2.32	0.44
1:B:53:LEU:HD11	1:B:86:LEU:HD11	1.99	0.44
1:D:53:LEU:HD11	1:D:86:LEU:HD11	1.99	0.44
1:C:258[B]:HIS:HD2	7:C:1676:HOH:O	2.00	0.44
1:B:245:LYS:HE3	7:B:1784:HOH:O	2.18	0.44
1:C:297[B]:ARG:NH2	7:C:1824:HOH:O	2.45	0.43
1:D:274:LEU:HD11	1:D:278:GLU:OE2	2.19	0.43
1:F:175:LYS:NZ	7:F:440:HOH:O	2.47	0.43
1:B:175[A]:LYS:HE3	7:B:1221:HOH:O	2.19	0.43
1:B:151:LEU:HD11	1:B:187:PHE:CD1	2.54	0.43
1:C:126:LEU:HD21	7:C:1098:HOH:O	2.19	0.42
1:B:114:PHE:CD1	1:B:226[B]:VAL:HG12	2.55	0.42
1:B:111:ASP:HA	1:B:137[B]:ARG:CG	2.48	0.42
1:A:102:LYS:NZ	7:A:1522:HOH:O	2.52	0.41
1:C:214[A]:GLU:CD	1:C:268:PRO:HA	2.40	0.41
1:B:114:PHE:HA	1:B:226[B]:VAL:HG12	2.01	0.41
1:F:274:LEU:HD11	1:F:278:GLU:OE2	2.20	0.41
1:B:267:ILE:HA	1:B:268:PRO:HD3	1.80	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:151:LEU:HD11	1:B:187:PHE:HD1	1.85	0.41
1:B:169:PRO:HD3	1:B:297[B]:ARG:NH2	2.35	0.41
1:E:275:VAL:HG13	7:E:1830:HOH:O	2.20	0.41
1:C:53:LEU:HD21	1:C:82:TYR:CE2	2.56	0.41
1:B:151:LEU:HD12	1:B:185:PRO:CB	2.50	0.41
1:C:101:THR:CG2	7:C:443:HOH:O	2.69	0.41
1:B:261:VAL:HG13	7:B:1611:HOH:O	2.21	0.40
1:D:246:LEU:HD23	1:D:249[A]:GLU:HG2	2.02	0.40
1:B:151:LEU:CD1	1:B:185:PRO:HB2	2.50	0.40
1:F:114:PHE:HA	1:F:226[B]:VAL:HG12	2.03	0.40
1:A:151:LEU:HD12	1:A:185:PRO:CB	2.51	0.40
1:A:265:GLU:HG3	1:A:266:PRO:HD2	2.02	0.40
1:A:304:LYS:HD2	1:C:246:LEU:O	2.21	0.40
1:B:297[A]:ARG:NH1	7:B:1870:HOH:O	2.44	0.40
1:E:47:PHE:N	1:E:48:PRO:CD	2.85	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	313/308 (102%)	311 (99%)	2 (1%)	0	100	100
1	B	320/308 (104%)	316 (99%)	4 (1%)	0	100	100
1	C	299/308 (97%)	296 (99%)	3 (1%)	0	100	100
1	D	311/308 (101%)	309 (99%)	2 (1%)	0	100	100
1	E	297/308 (96%)	294 (99%)	3 (1%)	0	100	100
1	F	308/308 (100%)	305 (99%)	3 (1%)	0	100	100
All	All	1848/1848 (100%)	1831 (99%)	17 (1%)	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	291/281 (104%)	290 (100%)	1 (0%)	94	83
1	B	295/281 (105%)	293 (99%)	2 (1%)	88	68
1	C	279/281 (99%)	279 (100%)	0	100	100
1	D	288/281 (102%)	286 (99%)	2 (1%)	88	68
1	E	277/281 (99%)	274 (99%)	3 (1%)	80	53
1	F	286/281 (102%)	284 (99%)	2 (1%)	88	68
All	All	1716/1686 (102%)	1706 (99%)	10 (1%)	90	73

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	86	LEU
1	B	185	PRO
1	B	240	ASN
1	D	97	ARG
1	D	151	LEU
1	E	151	LEU
1	E	282[A]	GLU
1	E	282[B]	GLU
1	F	151	LEU
1	F	265	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	62	ASN
1	E	62	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 ⓘ

Of 30 ligands modelled in this entry, 13 are monoatomic - leaving 17 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	$\# Z  > 2$
2	POP	A	305	4	8,8,8	0.93	0	13,13,13	0.73	0
3	FAD	A	306	4	48,58,58	1.43	8 (16%)	54,89,89	1.97	7 (12%)
2	POP	B	305	4	8,8,8	0.53	0	13,13,13	0.28	0
3	FAD	B	306	4	48,58,58	1.43	7 (14%)	54,89,89	2.18	9 (16%)
5	SO4	B	310	-	4,4,4	0.24	0	6,6,6	0.22	0
6	BGC	B	311	-	12,12,12	0.48	0	17,17,17	1.59	3 (17%)
2	POP	C	305	4	8,8,8	0.57	0	13,13,13	0.51	0
3	FAD	C	306	4	48,58,58	1.21	6 (12%)	54,89,89	2.06	6 (11%)
2	POP	D	305	4	8,8,8	0.48	0	13,13,13	0.53	0
3	FAD	D	306	4	48,58,58	1.27	7 (14%)	54,89,89	1.66	7 (12%)
5	SO4	D	308	-	4,4,4	0.32	0	6,6,6	0.71	0
5	SO4	D	309	-	4,4,4	0.28	0	6,6,6	0.22	0
2	POP	E	305	4	8,8,8	0.73	0	13,13,13	0.69	0
3	FAD	E	306	4	48,58,58	1.41	5 (10%)	54,89,89	2.43	6 (11%)
2	POP	F	305	4	8,8,8	0.93	0	13,13,13	0.73	0
3	FAD	F	306	4	48,58,58	1.25	6 (12%)	54,89,89	1.84	4 (7%)
5	SO4	F	311	-	4,4,4	0.27	0	6,6,6	0.55	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
2	POP	A	305	4	-	0/6/6/6	0/0/0/0
3	FAD	A	306	4	-	0/30/50/50	0/6/6/6
2	POP	B	305	4	-	0/6/6/6	0/0/0/0
3	FAD	B	306	4	-	0/30/50/50	0/6/6/6
5	SO4	B	310	-	-	0/0/0/0	0/0/0/0
6	BGC	B	311	-	-	0/2/22/22	0/1/1/1
2	POP	C	305	4	-	0/6/6/6	0/0/0/0
3	FAD	C	306	4	-	0/30/50/50	0/6/6/6
2	POP	D	305	4	-	0/6/6/6	0/0/0/0
3	FAD	D	306	4	-	0/30/50/50	0/6/6/6
5	SO4	D	308	-	-	0/0/0/0	0/0/0/0
5	SO4	D	309	-	-	0/0/0/0	0/0/0/0
2	POP	E	305	4	-	0/6/6/6	0/0/0/0
3	FAD	E	306	4	-	0/30/50/50	0/6/6/6
2	POP	F	305	4	-	0/6/6/6	0/0/0/0
3	FAD	F	306	4	-	0/30/50/50	0/6/6/6
5	SO4	F	311	-	-	0/0/0/0	0/0/0/0

All (39) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	306	FAD	P-O1P	-3.49	1.38	1.51
3	F	306	FAD	C6-C5X	-2.48	1.38	1.41
3	B	306	FAD	C9A-C5X	-2.24	1.38	1.42
3	D	306	FAD	C10-N10	-2.23	1.36	1.39
3	D	306	FAD	C6-C5X	-2.21	1.38	1.41
3	C	306	FAD	P-O1P	-2.13	1.43	1.51
3	A	306	FAD	C10-N10	-2.10	1.36	1.39
3	C	306	FAD	C6-C5X	-2.08	1.38	1.41
3	B	306	FAD	C2A-N1A	2.05	1.37	1.33
3	D	306	FAD	C5X-N5	2.14	1.38	1.35
3	C	306	FAD	O4B-C1B	2.15	1.43	1.41
3	B	306	FAD	C4-N3	2.20	1.37	1.33
3	C	306	FAD	C5X-N5	2.27	1.38	1.35
3	A	306	FAD	C2A-N3A	2.30	1.36	1.32
3	D	306	FAD	C4-N3	2.41	1.37	1.33
3	F	306	FAD	O4B-C1B	2.47	1.44	1.41
3	B	306	FAD	C1'-N10	2.62	1.51	1.48
3	A	306	FAD	O4B-C1B	2.78	1.44	1.41
3	A	306	FAD	C4-N3	2.83	1.38	1.33
3	E	306	FAD	C1'-N10	2.87	1.51	1.48
3	F	306	FAD	C4X-N5	2.90	1.37	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	306	FAD	C4-N3	2.94	1.38	1.33
3	A	306	FAD	C1'-N10	2.98	1.51	1.48
3	C	306	FAD	C2A-N3A	2.99	1.37	1.32
3	F	306	FAD	C2A-N3A	3.00	1.37	1.32
3	D	306	FAD	C4X-N5	3.03	1.38	1.33
3	E	306	FAD	C5X-N5	3.09	1.40	1.35
3	F	306	FAD	C5X-N5	3.15	1.40	1.35
3	D	306	FAD	C1'-N10	3.27	1.51	1.48
3	B	306	FAD	C4X-N5	3.36	1.38	1.33
3	D	306	FAD	C2A-N3A	3.61	1.38	1.32
3	A	306	FAD	C4X-N5	3.66	1.39	1.33
3	E	306	FAD	C4X-N5	3.72	1.39	1.33
3	A	306	FAD	C5X-N5	4.04	1.41	1.35
3	E	306	FAD	C4-N3	4.14	1.40	1.33
3	B	306	FAD	C5X-N5	4.23	1.42	1.35
3	B	306	FAD	C2A-N3A	4.25	1.39	1.32
3	C	306	FAD	C4X-N5	4.38	1.40	1.33
3	E	306	FAD	C2A-N3A	4.43	1.40	1.32

All (42) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	306	FAD	N3A-C2A-N1A	-14.83	117.54	128.89
3	C	306	FAD	N3A-C2A-N1A	-11.30	120.24	128.89
3	B	306	FAD	N3A-C2A-N1A	-10.02	121.22	128.89
3	F	306	FAD	N3A-C2A-N1A	-9.42	121.68	128.89
3	A	306	FAD	N3A-C2A-N1A	-7.61	123.07	128.89
3	D	306	FAD	N3A-C2A-N1A	-6.52	123.90	128.89
3	B	306	FAD	C4X-C10-N10	-4.44	117.90	120.52
3	A	306	FAD	C4X-C4-N3	-3.89	118.28	123.59
3	F	306	FAD	C4X-C4-N3	-3.60	118.67	123.59
3	D	306	FAD	C4X-C4-N3	-3.33	119.03	123.59
3	B	306	FAD	C1B-N9A-C4A	-3.11	122.25	126.94
3	C	306	FAD	C4X-C4-N3	-3.04	119.43	123.59
3	D	306	FAD	C4A-C5A-N7A	-2.82	106.89	109.48
3	E	306	FAD	C4X-C4-N3	-2.81	119.75	123.59
3	B	306	FAD	C9A-C5X-N5	-2.75	118.29	122.36
3	B	306	FAD	C4X-C4-N3	-2.74	119.84	123.59
3	A	306	FAD	C4A-C5A-N7A	-2.57	107.12	109.48
3	A	306	FAD	O5'-P-O1P	-2.43	100.18	109.62
3	D	306	FAD	P-O3P-PA	-2.41	125.96	132.73
3	C	306	FAD	C4A-C5A-N7A	-2.29	107.37	109.48

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	306	FAD	O5'-P-O1P	-2.27	100.80	109.62
6	B	311	BGC	O3-C3-C2	-2.26	105.24	110.34
3	A	306	FAD	C1B-N9A-C4A	-2.21	123.61	126.94
3	E	306	FAD	C4-C4X-C10	-2.17	118.55	119.94
3	D	306	FAD	C4-C4X-C10	-2.13	118.58	119.94
3	B	306	FAD	C4-C4X-C10	-2.05	118.63	119.94
3	D	306	FAD	C4-C4X-N5	2.02	121.17	118.72
3	C	306	FAD	C2A-N1A-C6A	2.15	122.60	118.77
3	F	306	FAD	C5X-C9A-N10	2.33	119.39	117.62
3	E	306	FAD	C2A-N1A-C6A	2.39	123.03	118.77
6	B	311	BGC	O5-C1-C2	2.73	114.15	109.80
3	B	306	FAD	C4X-N5-C5X	3.11	120.34	116.76
3	B	306	FAD	C5X-C9A-N10	3.20	120.05	117.62
3	E	306	FAD	C1'-N10-C9A	3.91	123.25	118.86
6	B	311	BGC	C1-C2-C3	4.09	116.52	110.43
3	A	306	FAD	C5X-C9A-N10	4.82	121.28	117.62
3	E	306	FAD	C4-N3-C2	5.04	119.61	115.25
3	D	306	FAD	C4-N3-C2	6.32	120.71	115.25
3	C	306	FAD	C4-N3-C2	6.33	120.72	115.25
3	F	306	FAD	C4-N3-C2	6.48	120.84	115.25
3	B	306	FAD	C4-N3-C2	7.08	121.37	115.25
3	A	306	FAD	C4-N3-C2	7.83	122.01	115.25

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<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	299/308 (97%)	0.49	24 (8%) 15 15	7, 13, 28, 38	2 (0%)
1	B	305/308 (99%)	0.61	40 (13%) 5 5	9, 16, 31, 49	2 (0%)
1	C	292/308 (94%)	0.34	23 (7%) 15 15	9, 16, 28, 38	1 (0%)
1	D	301/308 (97%)	0.49	27 (8%) 12 12	8, 15, 29, 45	0
1	E	288/308 (93%)	0.73	39 (13%) 4 4	10, 19, 34, 42	3 (1%)
1	F	297/308 (96%)	0.32	20 (6%) 21 21	8, 14, 27, 48	1 (0%)
All	All	1782/1848 (96%)	0.50	173 (9%) 10 10	7, 15, 30, 49	9 (0%)

All (173) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	140	CYS	10.0
1	B	240	ASN	9.7
1	C	261	VAL	9.1
1	B	261	VAL	8.7
1	F	240	ASN	7.9
1	A	86	LEU	7.9
1	C	84	VAL	7.4
1	C	82	TYR	7.3
1	D	140	CYS	7.2
1	F	242	THR	7.1
1	D	240	ASN	6.9
1	D	261	VAL	6.9
1	A	88	GLN	6.9
1	E	261	VAL	6.7
1	B	242	THR	6.4
1	E	53	LEU	6.3
1	E	281[A]	HIS	6.1
1	B	239	LYS	5.9
1	F	86	LEU	5.8

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Mol	Chain	Res	Type	RSRZ
1	F	241	SER	5.7
1	A	-3	GLY	5.6
1	E	84	VAL	5.3
1	B	260	GLU	5.3
1	D	239	LYS	5.3
1	A	89	SER	5.2
1	D	260	GLU	5.1
1	E	100	LEU	5.0
1	E	83	ILE	4.9
1	F	281	HIS	4.8
1	C	99	PRO	4.7
1	B	86	LEU	4.6
1	D	281	HIS	4.6
1	E	98	PHE	4.5
1	B	241	SER	4.5
1	A	240	ASN	4.4
1	F	238	ASP	4.4
1	E	82	TYR	4.3
1	F	239	LYS	4.3
1	A	242	THR	4.2
1	B	238	ASP	4.2
1	E	111	ASP	4.2
1	B	95	PHE	4.2
1	E	242	THR	4.1
1	C	81	TYR	4.0
1	E	170	PHE	4.0
1	D	241	SER	3.9
1	D	53	LEU	3.8
1	D	88	GLN	3.8
1	E	279	ASN	3.8
1	C	304	LYS	3.8
1	D	86	LEU	3.8
1	D	242	THR	3.8
1	A	70	LEU	3.7
1	A	87	SER	3.6
1	B	173	HIS	3.5
1	E	260	GLU	3.5
1	B	88	GLN	3.5
1	A	281[A]	HIS	3.5
1	B	266	PRO	3.5
1	A	265	GLU	3.4
1	C	242	THR	3.4

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Mol	Chain	Res	Type	RSRZ
1	C	53	LEU	3.4
1	B	304	LYS	3.3
1	A	71	LEU	3.3
1	E	274	LEU	3.3
1	E	142	THR	3.3
1	D	85	LYS	3.2
1	C	83	ILE	3.2
1	B	84	VAL	3.2
1	A	99	PRO	3.2
1	E	79	TRP	3.2
1	C	239	LYS	3.1
1	D	238	ASP	3.1
1	F	304	LYS	3.1
1	E	81	TYR	3.1
1	B	302	LYS	3.1
1	F	-3	GLY	3.1
1	D	69	VAL	3.0
1	F	69	VAL	3.0
1	B	69	VAL	3.0
1	A	201	ILE	3.0
1	E	240	ASN	3.0
1	C	98	PHE	3.0
1	B	93	GLY	2.9
1	F	265	GLU	2.9
1	A	69	VAL	2.9
1	D	93	GLY	2.9
1	A	266	PRO	2.8
1	B	82	TYR	2.8
1	B	265	GLU	2.8
1	E	0	VAL	2.8
1	B	70	LEU	2.8
1	E	101	THR	2.8
1	F	243	PRO	2.8
1	B	245	LYS	2.8
1	C	302	LYS	2.8
1	E	110	HIS	2.8
1	B	91	PHE	2.8
1	D	91	PHE	2.8
1	A	161	VAL	2.8
1	C	260	GLU	2.8
1	B	85	LYS	2.8
1	F	87	SER	2.7

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Mol	Chain	Res	Type	RSRZ
1	E	278	GLU	2.7
1	C	54	ASN	2.7
1	E	183	ASN	2.7
1	C	281	HIS	2.7
1	A	304	LYS	2.7
1	B	161	VAL	2.7
1	B	71	LEU	2.6
1	F	70	LEU	2.6
1	D	111	ASP	2.6
1	D	97	ARG	2.6
1	E	137	ARG	2.6
1	C	240	ASN	2.6
1	E	99	PRO	2.6
1	B	97	ARG	2.6
1	A	238[A]	ASP	2.6
1	E	239	LYS	2.6
1	D	265	GLU	2.6
1	E	139	LYS	2.6
1	B	152	GLN	2.6
1	E	54	ASN	2.5
1	E	282[A]	GLU	2.5
1	B	0	VAL	2.5
1	D	84	VAL	2.5
1	D	243	PRO	2.5
1	E	2	ARG	2.5
1	E	152	GLN	2.5
1	C	170	PHE	2.4
1	B	25	ASP	2.4
1	F	0	VAL	2.4
1	B	170	PHE	2.4
1	D	170	PHE	2.4
1	D	95	PHE	2.4
1	D	266	PRO	2.4
1	B	281	HIS	2.4
1	A	75	LEU	2.3
1	B	226[A]	VAL	2.3
1	C	161	VAL	2.3
1	E	103[A]	LEU	2.3
1	E	151	LEU	2.3
1	B	263	LYS	2.3
1	C	263	LYS	2.2
1	F	162	ILE	2.2

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Mol	Chain	Res	Type	RSRZ
1	F	161	VAL	2.2
1	B	193	LEU	2.2
1	A	85	LYS	2.2
1	B	81	TYR	2.2
1	E	149	THR	2.1
1	D	96	HIS	2.1
1	A	73	LEU	2.1
1	E	259	ASN	2.1
1	A	205	LEU	2.1
1	E	145	GLU	2.1
1	C	241	SER	2.1
1	C	243	PRO	2.1
1	F	294	LYS	2.1
1	A	204	PHE	2.1
1	B	23	GLU	2.1
1	B	201	ILE	2.1
1	C	70	LEU	2.1
1	C	257	LYS	2.1
1	F	266	PRO	2.0
1	E	238	ASP	2.0
1	B	243	PRO	2.0
1	D	70	LEU	2.0
1	D	71	LEU	2.0
1	F	71	LEU	2.0
1	B	21	ALA	2.0
1	E	138	ASP	2.0
1	A	196	TRP	2.0
1	B	96	HIS	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 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
5	SO4	F	311	5/5	0.86	0.18	3.85	21,23,24,25	5
3	FAD	E	306	53/53	0.92	0.16	2.34	15,20,25,29	0
6	BGC	B	311	12/12	0.75	0.18	1.59	25,30,32,33	12
3	FAD	C	306	53/53	0.94	0.10	1.03	12,15,20,22	0
4	MG	A	309	1/1	0.88	0.19	0.72	20,20,20,20	1
3	FAD	B	306	53/53	0.95	0.10	0.03	11,17,22,23	0
4	MG	F	307	1/1	1.00	0.09	-0.20	7,7,7,7	0
4	MG	F	309	1/1	0.82	0.11	-0.37	23,23,23,23	1
4	MG	B	307	1/1	1.00	0.08	-0.48	9,9,9,9	0
2	POP	A	305	9/9	1.00	0.10	-0.50	8,8,9,10	0
2	POP	D	305	9/9	1.00	0.08	-0.50	8,9,9,10	0
3	FAD	A	306	53/53	0.96	0.08	-0.60	9,13,17,22	0
4	MG	A	307	1/1	1.00	0.09	-0.72	7,7,7,7	0
4	MG	D	307	1/1	1.00	0.06	-0.82	8,8,8,8	0
3	FAD	F	306	53/53	0.97	0.07	-0.93	9,13,17,23	0
3	FAD	D	306	53/53	0.96	0.07	-0.93	9,14,20,24	0
2	POP	C	305	9/9	0.99	0.06	-1.01	9,10,11,11	0
2	POP	F	305	9/9	1.00	0.07	-1.11	8,8,10,11	0
2	POP	B	305	9/9	0.99	0.07	-1.22	9,10,12,13	0
5	SO4	D	309	5/5	0.97	0.06	-1.22	28,28,29,29	5
2	POP	E	305	9/9	0.99	0.05	-1.30	12,12,13,14	0
4	MG	C	307	1/1	1.00	0.04	-1.65	9,9,9,9	0
4	MG	E	307	1/1	1.00	0.04	-2.01	11,11,11,11	0
4	MG	F	310	1/1	0.92	0.10	-	15,15,15,15	1
4	MG	B	309	1/1	0.95	0.38	-	17,17,17,17	1
5	SO4	B	310	5/5	0.96	0.09	-	27,27,28,29	5
4	MG	A	308	1/1	0.95	0.12	-	14,14,14,14	1
4	MG	F	308	1/1	0.96	0.12	-	15,15,15,15	1
4	MG	B	308	1/1	0.97	0.09	-	20,20,20,20	1
5	SO4	D	308	5/5	0.95	0.09	-	25,26,26,26	5

## 6.5 Other polymers ⓘ

There are no such residues in this entry.