



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 08:14 PM GMT

PDB ID : 4R89  
Title : Crystal structure of paFAN1 - 5' flap DNA complex with Manganese  
Authors : Cho, Y.; Gwon, G.H.; Kim, Y.R.  
Deposited on : 2014-08-30  
Resolution : 4.00 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

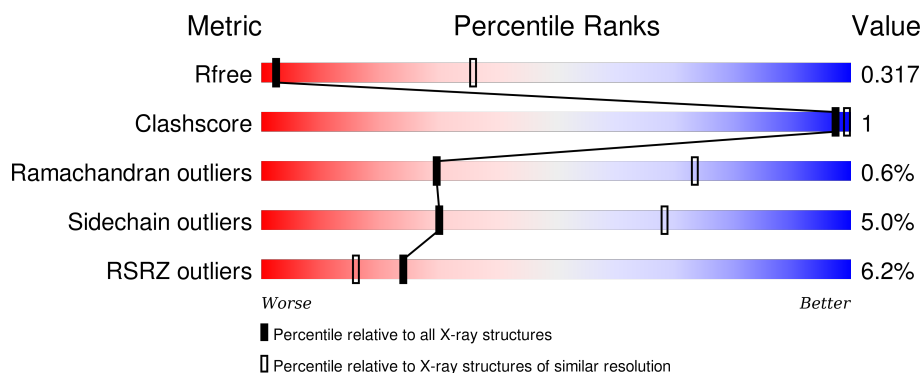
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 4.00 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.



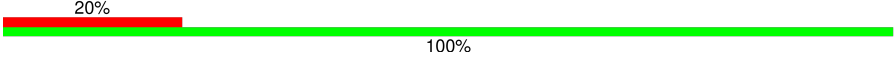


Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	91344	1010 (4.42-3.56)
Clashscore	102246	1052 (4.40-3.60)
Ramachandran outliers	100387	1005 (4.40-3.60)
Sidechain outliers	100360	1013 (4.42-3.58)
RSRZ outliers	91569	1013 (4.42-3.56)

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	559	<div> <div>5%</div> <div>88%</div> <div>8%</div> <div>• •</div> </div>
1	E	559	<div> <div>5%</div> <div>89%</div> <div>7%</div> <div>•</div> </div>
2	B	15	<div> <div>13%</div> <div>67%</div> <div>27%</div> <div>7%</div> </div>
2	F	15	<div> <div>20%</div> <div>73%</div> <div>20%</div> <div>7%</div> </div>
3	C	10	<div> <div>90%</div> <div>10%</div> </div>

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Mol	Chain	Length	Quality of chain
3	G	10	 20% 100%
4	D	22	 23% 82% 18%
4	H	22	 14% 86% 14%

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 10676 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 Uncharacterized protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	537	Total	C	N	O	S	0	0	0
			4375	2795	791	769	20			
1	E	537	Total	C	N	O	S	0	0	0
			4375	2795	791	769	20			

- Molecule 2 is a DNA chain called DNA (5'-D(P\*AP\*CP\*CP\*AP\*GP\*AP\*CP\*AP\*CP\*AP\*CP\*AP\*TP\*TP\*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	15	Total	C	N	O	P	0	0	0
			302	144	57	86	15			
2	F	15	Total	C	N	O	P	0	0	0
			302	144	57	86	15			

- Molecule 3 is a DNA chain called DNA (5'-D(P\*GP\*TP\*TP\*GP\*GP\*GP\*AP\*TP\*TP\*G)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	10	Total	C	N	O	P	0	0	0
			211	100	38	63	10			
3	G	10	Total	C	N	O	P	0	0	0
			211	100	38	63	10			

- Molecule 4 is a DNA chain called DNA (5'-D(P\*GP\*AP\*AP\*TP\*GP\*TP\*GP\*TP\*GP\*TP\*CP\*TP\*CP\*AP\*AP\*TP\*CP\*CP\*CP\*AP\*AP\*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	22	Total	C	N	O	P	0	0	0
			448	214	80	132	22			
4	H	22	Total	C	N	O	P	0	0	0
			448	214	80	132	22			

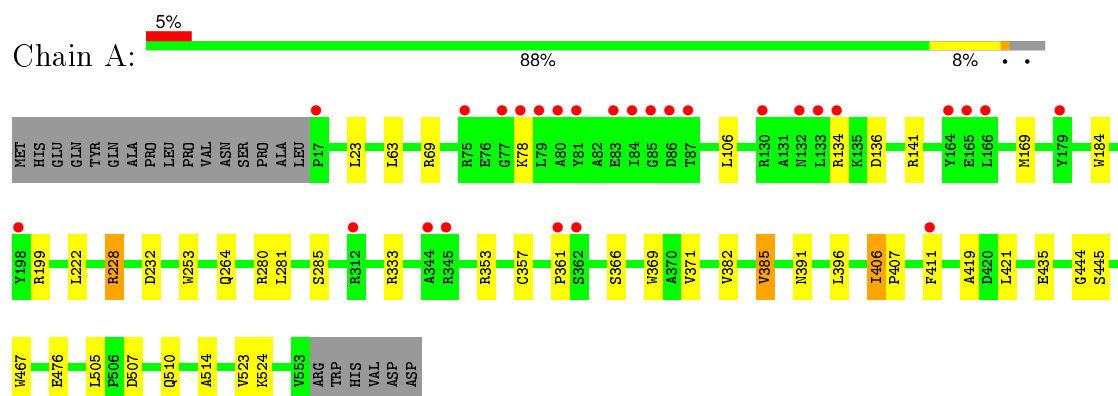
- Molecule 5 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	2	Total 2	Mn 2	0	0
5	E	2	Total 2	Mn 2	0	0

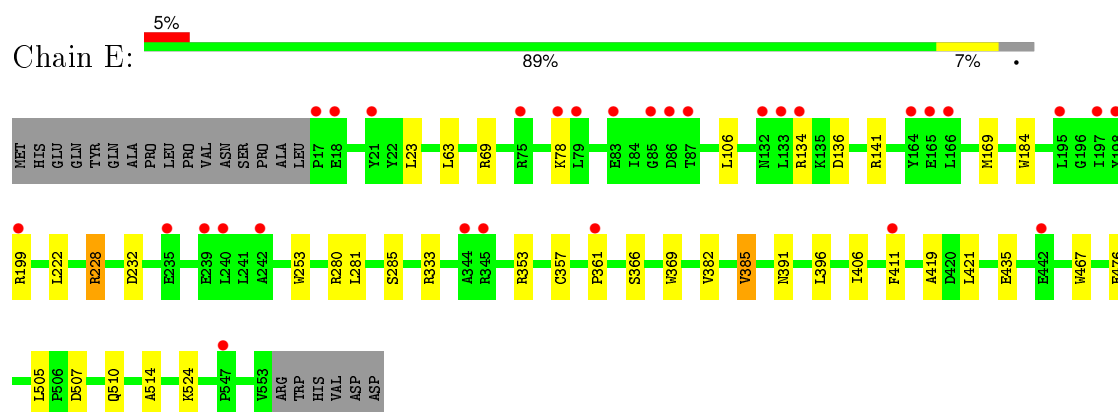
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of 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.

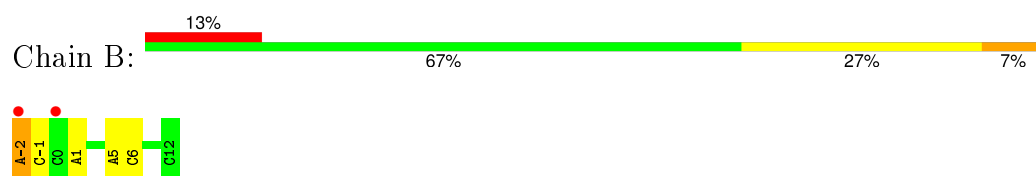
#### • Molecule 1: Uncharacterized protein



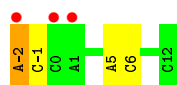
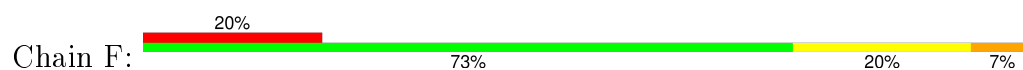
#### • Molecule 1: Uncharacterized protein



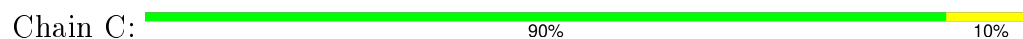
#### • Molecule 2: DNA (5'-D(P\*AP\*CP\*CP\*AP\*GP\*AP\*CP\*AP\*CP\*AP\*CP\*AP\*TP\*TP\*C)-3')



#### • Molecule 2: DNA (5'-D(P\*AP\*CP\*CP\*AP\*GP\*AP\*CP\*AP\*CP\*AP\*CP\*AP\*TP\*TP\*C)-3')



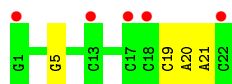
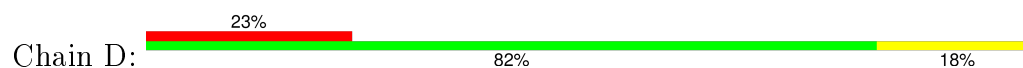
- Molecule 3: DNA (5'-D(P\*GP\*TP\*TP\*GP\*GP\*GP\*AP\*TP\*TP\*G)-3')



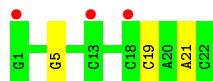
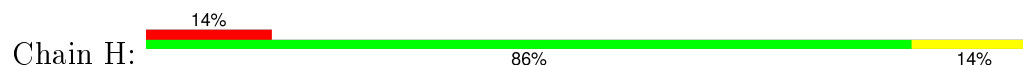
- Molecule 3: DNA (5'-D(P\*GP\*TP\*TP\*GP\*GP\*GP\*AP\*TP\*TP\*G)-3')



- Molecule 4: DNA (5'-D(P\*GP\*AP\*AP\*TP\*GP\*TP\*GP\*TP\*GP\*TP\*CP\*TP\*CP\*AP\*AP\*TP\*CP\*CP\*CP\*AP\*AP\*C)-3')



- Molecule 4: DNA (5'-D(P\*GP\*AP\*AP\*TP\*GP\*TP\*GP\*TP\*GP\*TP\*CP\*TP\*CP\*AP\*AP\*TP\*CP\*CP\*CP\*AP\*AP\*C)-3')



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	81.11Å 106.94Å 107.54Å 90.00° 89.84° 90.00°	Depositor
Resolution (Å)	44.64 – 4.00 48.04 – 4.00	Depositor EDS
% Data completeness (in resolution range)	98.7 (44.64-4.00) 98.8 (48.04-4.00)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.69 (at 4.00Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8_1069)	Depositor
R, $R_{free}$	0.224 , 0.278 0.275 , 0.317	Depositor DCC
$R_{free}$ test set	771 reflections (4.98%)	DCC
Wilson B-factor (Å <sup>2</sup> )	157.6	Xtriage
Anisotropy	0.294	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.27 , 112.9	EDS
Estimated twinning fraction	0.018 for -h,l,k 0.029 for -h,-l,-k 0.418 for h,-k,-l	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	0 of 15490 reflections	Xtriage
$F_o, F_c$ correlation	0.89	EDS
Total number of atoms	10676	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	150.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.16% 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, 0.375 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: MN

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	0.24	0/4489	0.52	1/6077 (0.0%)
1	E	0.25	0/4489	0.53	1/6077 (0.0%)
2	B	0.56	0/338	1.38	3/517 (0.6%)
2	F	0.55	0/338	1.38	3/517 (0.6%)
3	C	0.53	0/236	1.26	0/364
3	G	0.51	0/236	1.24	0/364
4	D	0.52	0/501	1.26	3/770 (0.4%)
4	H	0.52	0/501	1.23	2/770 (0.3%)
All	All	0.32	0/11128	0.76	13/15456 (0.1%)

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	-2	DA	O4'-C1'-N9	10.39	115.27	108.00
2	F	-2	DA	O4'-C1'-N9	10.36	115.25	108.00
2	B	-1	DC	O4'-C4'-C3'	-9.96	100.02	106.00
2	F	-1	DC	O4'-C4'-C3'	-9.90	100.06	106.00
4	D	21	DA	N1-C6-N6	7.68	123.21	118.60
4	H	21	DA	N1-C6-N6	6.34	122.40	118.60
1	E	199	ARG	NE-CZ-NH1	6.18	123.39	120.30
1	A	199	ARG	NE-CZ-NH1	6.09	123.35	120.30
2	F	6	DC	O4'-C4'-C3'	-6.09	102.06	104.50
2	B	6	DC	O4'-C4'-C3'	-5.99	102.10	104.50
4	D	21	DA	C5-C6-N6	-5.62	119.21	123.70
4	D	19	DC	O4'-C1'-N1	5.25	111.68	108.00
4	H	19	DC	O4'-C1'-N1	5.12	111.58	108.00

There are no chirality outliers.

There are no planarity outliers.

## 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	4375	0	4283	14	0
1	E	4375	0	4283	10	0
2	B	302	0	168	3	0
2	F	302	0	168	2	0
3	C	211	0	115	1	0
3	G	211	0	115	0	0
4	D	448	0	249	2	0
4	H	448	0	249	1	0
5	A	2	0	0	0	0
5	E	2	0	0	0	0
All	All	10676	0	9630	25	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 1.

All (25) 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:A:419:ALA:O	2:B:-2:DA:N6	2.14	0.81
1:E:419:ALA:O	2:F:-2:DA:N6	2.16	0.78
1:A:435:GLU:N	1:A:435:GLU:OE1	2.39	0.56
1:E:333:ARG:NH1	4:H:5:DG:OP1	2.39	0.56
1:E:435:GLU:OE1	1:E:435:GLU:N	2.39	0.54
1:E:524:LYS:NZ	2:F:5:DA:OP2	2.42	0.53
1:A:228:ARG:NH1	1:A:232:ASP:OD1	2.43	0.52
1:E:228:ARG:NH1	1:E:232:ASP:OD1	2.43	0.51
1:A:333:ARG:NH1	4:D:5:DG:OP1	2.42	0.51
1:A:524:LYS:NZ	2:B:5:DA:OP2	2.44	0.49
3:C:2:DT:O4	4:D:20:DA:N6	2.46	0.48
1:A:134:ARG:NH2	1:A:136:ASP:OD1	2.48	0.47
1:E:134:ARG:NH2	1:E:136:ASP:OD1	2.48	0.45
1:A:385:VAL:N	1:A:507:ASP:O	2.50	0.45
1:A:69:ARG:NH2	1:A:78:LYS:O	2.50	0.45
1:A:444:GLY:O	1:A:445:SER:OG	2.33	0.44
1:E:69:ARG:NH2	1:E:78:LYS:O	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:385:VAL:N	1:E:507:ASP:O	2.51	0.44
1:A:371:VAL:HG11	1:A:523:VAL:HG11	1.99	0.43
1:E:396:LEU:HD21	1:E:467:TRP:CH2	2.55	0.42
1:A:396:LEU:HD21	1:A:467:TRP:CH2	2.56	0.41
1:A:264:GLN:NE2	2:B:1:DA:OP2	2.54	0.41
1:A:406:ILE:HB	1:A:407:PRO:HD2	2.03	0.41
1:A:382:VAL:HG12	1:A:510:GLN:CB	2.51	0.40
1:E:382:VAL:HG12	1:E:510:GLN:CB	2.51	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	535/559 (96%)	481 (90%)	51 (10%)	3 (1%)	30	73
1	E	535/559 (96%)	481 (90%)	51 (10%)	3 (1%)	30	73
All	All	1070/1118 (96%)	962 (90%)	102 (10%)	6 (1%)	30	73

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	361	PRO
1	E	361	PRO
1	A	353	ARG
1	E	353	ARG
1	A	514	ALA
1	E	514	ALA

### 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	440/460 (96%)	418 (95%)	22 (5%)	30	68
1	E	440/460 (96%)	418 (95%)	22 (5%)	30	68
All	All	880/920 (96%)	836 (95%)	44 (5%)	30	68

All (44) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	23	LEU
1	A	63	LEU
1	A	106	LEU
1	A	141	ARG
1	A	169	MET
1	A	184	TRP
1	A	222	LEU
1	A	228	ARG
1	A	253	TRP
1	A	280	ARG
1	A	281	LEU
1	A	285	SER
1	A	357	CYS
1	A	366	SER
1	A	369	TRP
1	A	385	VAL
1	A	391	ASN
1	A	406	ILE
1	A	411	PHE
1	A	421	LEU
1	A	476	GLU
1	A	505	LEU
1	E	23	LEU
1	E	63	LEU
1	E	106	LEU
1	E	141	ARG
1	E	169	MET

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Mol	Chain	Res	Type
1	E	184	TRP
1	E	222	LEU
1	E	228	ARG
1	E	253	TRP
1	E	280	ARG
1	E	281	LEU
1	E	285	SER
1	E	357	CYS
1	E	366	SER
1	E	369	TRP
1	E	385	VAL
1	E	391	ASN
1	E	406	ILE
1	E	411	PHE
1	E	421	LEU
1	E	476	GLU
1	E	505	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	387	ASN
1	A	412	HIS
1	A	415	HIS
1	E	387	ASN
1	E	412	HIS
1	E	415	HIS

### 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 4 ligands modelled in this entry, 4 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

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

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<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	537/559 (96%)	0.24	27 (5%) 32 24	72, 140, 227, 316	0
1	E	537/559 (96%)	0.31	30 (5%) 28 20	65, 141, 232, 306	0
2	B	15/15 (100%)	0.89	2 (13%) 4 5	133, 153, 251, 289	0
2	F	15/15 (100%)	0.95	3 (20%) 1 2	130, 150, 246, 283	0
3	C	10/10 (100%)	1.16	0 100 100	114, 151, 185, 198	0
3	G	10/10 (100%)	1.16	2 (20%) 1 2	117, 151, 192, 194	0
4	D	22/22 (100%)	0.67	5 (22%) 1 2	107, 158, 208, 227	0
4	H	22/22 (100%)	0.64	3 (13%) 4 4	107, 159, 203, 242	0
All	All	1168/1212 (96%)	0.32	72 (6%) 24 16	65, 142, 229, 316	0

All (72) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	165	GLU	6.6
1	A	165	GLU	6.5
1	E	164	TYR	5.4
1	A	164	TYR	5.3
1	A	132	ASN	4.7
1	E	132	ASN	4.6
1	E	17	PRO	4.2
1	A	361	PRO	4.1
2	F	0	DC	4.0
1	A	87	THR	4.0
1	E	87	THR	3.9
1	A	134	ARG	3.9
1	A	166	LEU	3.9
1	A	85	GLY	3.8
2	F	-2	DA	3.8
1	A	79	LEU	3.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	E	166	LEU	3.5
2	B	-2	DA	3.5
1	A	133	LEU	3.5
1	A	130	ARG	3.4
1	E	361	PRO	3.3
4	H	13	DC	3.3
1	A	17	PRO	3.2
4	D	18	DC	3.1
1	E	133	LEU	3.1
1	A	78	LYS	3.1
1	A	86	ASP	3.0
1	E	85	GLY	3.0
1	E	86	ASP	2.9
1	E	79	LEU	2.9
1	A	80	ALA	2.8
1	A	179	TYR	2.8
2	B	0	DC	2.8
1	E	83	GLU	2.7
1	E	21	TYR	2.7
4	D	17	DC	2.7
1	E	242	ALA	2.7
3	G	10	DG	2.7
1	E	198	TYR	2.7
1	A	81	TYR	2.6
1	A	198	TYR	2.6
1	E	345	ARG	2.5
1	E	18	GLU	2.4
1	E	239	GLU	2.4
1	A	411	PHE	2.4
2	F	1	DA	2.4
1	A	83	GLU	2.4
1	A	345	ARG	2.4
4	D	1	DG	2.4
1	E	78	LYS	2.3
1	A	344	ALA	2.3
1	E	195	LEU	2.3
1	A	77	GLY	2.3
3	G	1	DG	2.3
4	H	1	DG	2.3
1	E	442	GLU	2.2
1	E	197	ILE	2.2
1	A	75	ARG	2.2

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Mol	Chain	Res	Type	RSRZ
1	E	235	GLU	2.2
1	E	199	ARG	2.2
1	A	362	SER	2.2
1	E	411	PHE	2.2
4	D	22	DC	2.1
1	E	134	ARG	2.1
1	E	240	LEU	2.1
1	E	547	PRO	2.1
1	A	312	ARG	2.1
1	E	344	ALA	2.1
1	E	75	ARG	2.1
1	A	84	ILE	2.0
4	H	18	DC	2.0
4	D	13	DC	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	MN	E	601	1/1	0.99	0.19	-1.32	95,95,95,95	0
5	MN	A	601	1/1	0.99	0.18	-1.69	88,88,88,88	0
5	MN	E	602	1/1	0.97	0.14	-1.93	113,113,113,113	0
5	MN	A	602	1/1	0.97	0.12	-2.11	105,105,105,105	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.