wwPDB X-ray Structure Validation Summary Report (i)

Aug 5, 2026 – 08:14 PM EDT

PDB ID	:	3P1M / pdb_00003p1m
Title	:	Crystal structure of human ferredoxin-1 (FDX1) in complex with iron-sulfur cluster
Authors	:	Chaikuad, A.; Johansson, C.; Krojer, T.; Yue, W.W.; Phillips, C.; Bray, J.E.; Pike, A.C.W.; Muniz, J.R.C.; Vollmar, M.; Weigelt, J.; Arrowsmith, C.H.; Edwards, A.M.; Bountra, C.; Kavanagh, K.; Oppermann, U.; Structural Genomics Consortium (SGC)
Deposited on	:	2010-09-30
Resolution	:	2.54 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

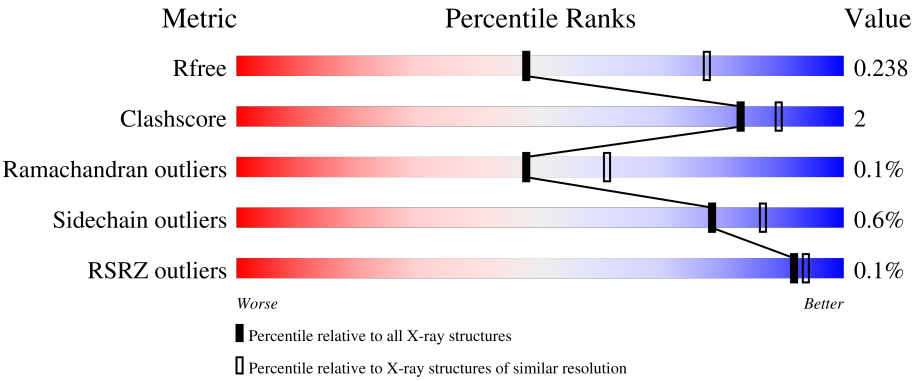
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.54 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}	180053	1091 (2.54-2.54)
Clashscore	190562	1120 (2.54-2.54)
Ramachandran outliers	187476	1106 (2.54-2.54)
Sidechain outliers	187428	1106 (2.54-2.54)
RSRZ outliers	180081	1091 (2.54-2.54)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	132	89% 5% • 5%
1	B	132	90% 5% 5%
1	C	132	89% 7% •
1	D	132	% 89% 7% •

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Mol	Chain	Length	Quality of chain
1	E	132	92%
1	F	132	95%
1	G	132	94%
1	H	132	90% 7%

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	FLC	D	2	-	X	-	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 8161 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 Adrenodoxin, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	126	Total	C	N	O	S	0	0	0
			966	595	161	202	8			
1	B	126	Total	C	N	O	S	0	0	0
			959	591	160	200	8			
1	C	127	Total	C	N	O	S	0	0	0
			971	598	162	203	8			
1	D	127	Total	C	N	O	S	0	0	0
			963	594	160	201	8			
1	E	127	Total	C	N	O	S	0	0	0
			959	593	161	197	8			
1	F	128	Total	C	N	O	S	0	0	0
			974	601	161	204	8			
1	G	128	Total	C	N	O	S	0	0	0
			977	602	163	204	8			
1	H	128	Total	C	N	O	S	0	0	0
			964	595	160	201	8			

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	60	MET	-	expression tag	UNP P10109
A	185	ALA	-	expression tag	UNP P10109
A	186	GLU	-	expression tag	UNP P10109
A	187	ASN	-	expression tag	UNP P10109
A	188	LEU	-	expression tag	UNP P10109
A	189	TYR	-	expression tag	UNP P10109
A	190	PHE	-	expression tag	UNP P10109
A	191	GLN	-	expression tag	UNP P10109
B	60	MET	-	expression tag	UNP P10109
B	185	ALA	-	expression tag	UNP P10109
B	186	GLU	-	expression tag	UNP P10109
B	187	ASN	-	expression tag	UNP P10109
B	188	LEU	-	expression tag	UNP P10109

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Chain	Residue	Modelled	Actual	Comment	Reference
B	189	TYR	-	expression tag	UNP P10109
B	190	PHE	-	expression tag	UNP P10109
B	191	GLN	-	expression tag	UNP P10109
C	60	MET	-	expression tag	UNP P10109
C	185	ALA	-	expression tag	UNP P10109
C	186	GLU	-	expression tag	UNP P10109
C	187	ASN	-	expression tag	UNP P10109
C	188	LEU	-	expression tag	UNP P10109
C	189	TYR	-	expression tag	UNP P10109
C	190	PHE	-	expression tag	UNP P10109
C	191	GLN	-	expression tag	UNP P10109
D	60	MET	-	expression tag	UNP P10109
D	185	ALA	-	expression tag	UNP P10109
D	186	GLU	-	expression tag	UNP P10109
D	187	ASN	-	expression tag	UNP P10109
D	188	LEU	-	expression tag	UNP P10109
D	189	TYR	-	expression tag	UNP P10109
D	190	PHE	-	expression tag	UNP P10109
D	191	GLN	-	expression tag	UNP P10109
E	60	MET	-	expression tag	UNP P10109
E	185	ALA	-	expression tag	UNP P10109
E	186	GLU	-	expression tag	UNP P10109
E	187	ASN	-	expression tag	UNP P10109
E	188	LEU	-	expression tag	UNP P10109
E	189	TYR	-	expression tag	UNP P10109
E	190	PHE	-	expression tag	UNP P10109
E	191	GLN	-	expression tag	UNP P10109
F	60	MET	-	expression tag	UNP P10109
F	185	ALA	-	expression tag	UNP P10109
F	186	GLU	-	expression tag	UNP P10109
F	187	ASN	-	expression tag	UNP P10109
F	188	LEU	-	expression tag	UNP P10109
F	189	TYR	-	expression tag	UNP P10109
F	190	PHE	-	expression tag	UNP P10109
F	191	GLN	-	expression tag	UNP P10109
G	60	MET	-	expression tag	UNP P10109
G	185	ALA	-	expression tag	UNP P10109
G	186	GLU	-	expression tag	UNP P10109
G	187	ASN	-	expression tag	UNP P10109
G	188	LEU	-	expression tag	UNP P10109
G	189	TYR	-	expression tag	UNP P10109
G	190	PHE	-	expression tag	UNP P10109

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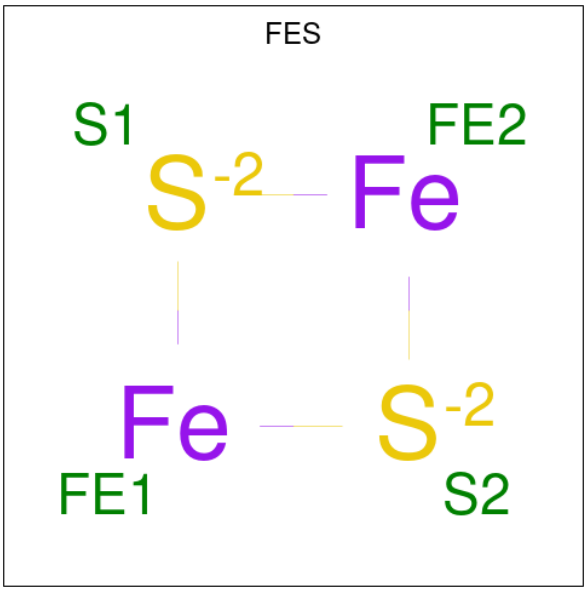
Chain	Residue	Modelled	Actual	Comment	Reference
G	191	GLN	-	expression tag	UNP P10109
H	60	MET	-	expression tag	UNP P10109
H	185	ALA	-	expression tag	UNP P10109
H	186	GLU	-	expression tag	UNP P10109
H	187	ASN	-	expression tag	UNP P10109
H	188	LEU	-	expression tag	UNP P10109
H	189	TYR	-	expression tag	UNP P10109
H	190	PHE	-	expression tag	UNP P10109
H	191	GLN	-	expression tag	UNP P10109

- Molecule 2 is FE2/S2 (INORGANIC) CLUSTER (CCD ID: FES) (formula: Fe_2S_2).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	Fe	S	0	0
			4	2	2		
2	B	1	Total	Fe	S	0	0
			4	2	2		
2	C	1	Total	Fe	S	0	0
			4	2	2		
2	D	1	Total	Fe	S	0	0
			4	2	2		
2	E	1	Total	Fe	S	0	0
			4	2	2		
2	F	1	Total	Fe	S	0	0
			4	2	2		
2	G	1	Total	Fe	S	0	0
			4	2	2		

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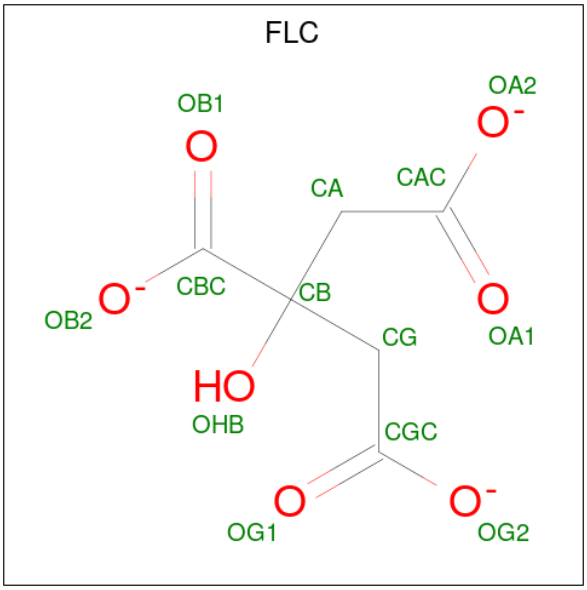
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	H	1	Total Fe S 4 2 2	0	0

- Molecule 3 is CITRATE ANION (CCD ID: FLC) (formula: $C_6H_5O_7$).

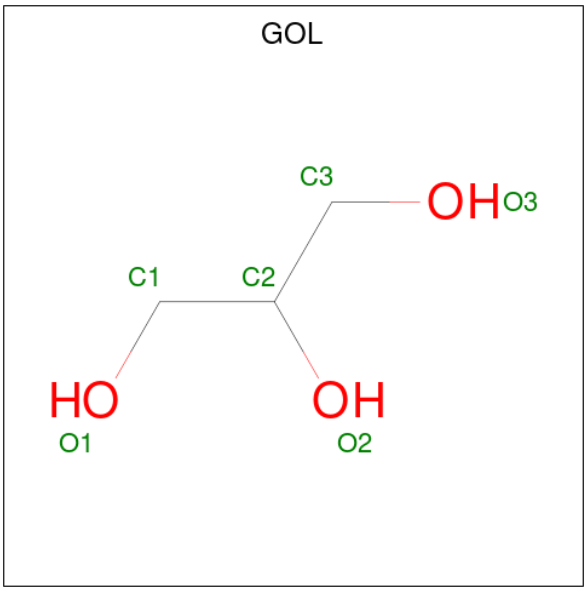


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 13 6 7	0	0
3	B	1	Total C O 13 6 7	0	0
3	C	1	Total C O 13 6 7	0	0
3	C	1	Total C O 13 6 7	0	0
3	D	1	Total C O 13 6 7	0	0
3	D	1	Total C O 13 6 7	0	0
3	E	1	Total C O 13 6 7	0	0
3	G	1	Total C O 13 6 7	0	0
3	H	1	Total C O 13 6 7	0	0

- Molecule 4 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total K 1 1	0	0
4	B	1	Total K 1 1	0	0
4	C	1	Total K 1 1	0	0
4	D	1	Total K 1 1	0	0
4	E	1	Total K 1 1	0	0
4	F	1	Total K 1 1	0	0
4	G	1	Total K 1 1	0	0
4	H	1	Total K 1 1	0	0

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	F	1	Total C O 6 3 3	0	0
5	G	1	Total C O 6 3 3	0	0

- Molecule 6 is water.

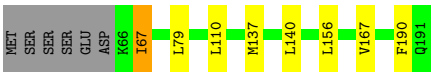
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	42	Total O 42 42	0	0
6	B	22	Total O 22 22	0	0
6	C	53	Total O 53 53	0	0
6	D	29	Total O 29 29	0	0
6	E	24	Total O 24 24	0	0
6	F	26	Total O 26 26	0	0
6	G	33	Total O 33 33	0	0
6	H	30	Total O 30 30	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Adrenodoxin, mitochondrial

Chain A:



• Molecule 1: Adrenodoxin, mitochondrial

Chain B:

• Molecule 1: Adrenodoxin, mitochondrial

Chain C:

• Molecule 1: Adrenodoxin, mitochondrial

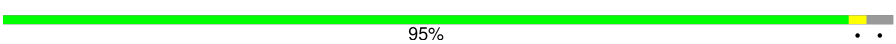
Chain D:

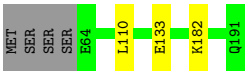
• Molecule 1: Adrenodoxin, mitochondrial

Chain E:

• Molecule 1: Adrenodoxin, mitochondrial

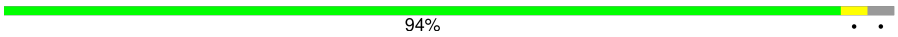
Chain F:





• Molecule 1: Adrenodoxin, mitochondrial

Chain G:



• Molecule 1: Adrenodoxin, mitochondrial

Chain H:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 32	Depositor
Cell constants a, b, c, α, β, γ	76.58Å 76.58Å 234.41Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	43.91 – 2.54 43.91 – 2.54	Depositor EDS
% Data completeness (in resolution range)	99.7 (43.91-2.54) 99.8 (43.91-2.54)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.79 (at 2.54Å)	Xtriage
Refinement program	REFMAC 5.5.0110	Depositor
R, R_{free}	0.204 , 0.241 0.205 , 0.238	Depositor DCC
R_{free} test set	1971 reflections (3.88%)	wwPDB-VP
Wilson B-factor (Å^2)	47.0	Xtriage
Anisotropy	0.022	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 28.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.44$, $< L^2 > = 0.27$	Xtriage
Estimated twinning fraction	0.048 for -h,-k,l 0.479 for h,-h-k,-l 0.049 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	8161	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.95% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: FES, FLC, K, GOL

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	0.93	0/976	1.01	2/1321 (0.2%)
1	B	0.78	0/969	0.82	1/1313 (0.1%)
1	C	0.98	0/981	1.03	0/1328
1	D	0.78	0/973	0.85	0/1319
1	E	0.77	0/969	0.84	0/1313
1	F	0.81	0/984	0.85	0/1332
1	G	0.79	0/987	0.84	0/1336
1	H	0.77	0/974	0.83	0/1321
All	All	0.83	0/7813	0.89	3/10583 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	167	VAL	CA-C-O	5.18	122.02	119.12
1	B	67	ILE	N-CA-C	5.15	117.02	108.99
1	A	190	PHE	N-CA-C	5.12	119.02	112.26

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	966	0	928	6	0
1	B	959	0	915	4	0
1	C	971	0	930	5	0
1	D	963	0	912	7	0
1	E	959	0	915	7	0
1	F	974	0	928	2	0
1	G	977	0	934	2	0
1	H	964	0	908	5	0
2	A	4	0	0	0	0
2	B	4	0	0	0	0
2	C	4	0	0	0	0
2	D	4	0	0	0	0
2	E	4	0	0	0	0
2	F	4	0	0	0	0
2	G	4	0	0	0	0
2	H	4	0	0	0	0
3	A	13	0	4	1	0
3	B	13	0	4	2	0
3	C	26	0	8	0	0
3	D	26	0	9	0	0
3	E	13	0	4	1	0
3	G	13	0	5	0	0
3	H	13	0	5	0	0
4	A	1	0	0	0	0
4	B	1	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	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	0	0
5	F	6	0	8	1	0
5	G	6	0	8	1	0
6	A	42	0	0	0	0
6	B	22	0	0	0	0
6	C	53	0	0	0	0
6	D	29	0	0	1	0
6	E	24	0	0	2	0
6	F	26	0	0	0	0
6	G	33	0	0	0	0
6	H	30	0	0	1	0
All	All	8161	0	7425	36	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 2.

The worst 5 of 36 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:67:ILE:HD11	1:A:156:LEU:HD22	1.45	0.97
1:D:188:LEU:HD11	1:E:72:ILE:HD11	1.58	0.86
1:C:67:ILE:HD11	1:C:156:LEU:HD22	1.64	0.79
1:C:140:LEU:O	5:F:1:GOL:H2	1.92	0.69
3:E:4:FLC:HA2	6:E:202:HOH:O	1.94	0.68

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	124/132 (94%)	119 (96%)	5 (4%)	0	100	100
1	B	124/132 (94%)	121 (98%)	3 (2%)	0	100	100
1	C	125/132 (95%)	118 (94%)	7 (6%)	0	100	100
1	D	125/132 (95%)	122 (98%)	3 (2%)	0	100	100
1	E	125/132 (95%)	121 (97%)	3 (2%)	1 (1%)	16	22
1	F	126/132 (96%)	124 (98%)	2 (2%)	0	100	100
1	G	126/132 (96%)	123 (98%)	3 (2%)	0	100	100
1	H	126/132 (96%)	122 (97%)	4 (3%)	0	100	100
All	All	1001/1056 (95%)	970 (97%)	30 (3%)	1 (0%)	48	61

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	187	ASN

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	109/116 (94%)	108 (99%)	1 (1%)	70 82
1	B	107/116 (92%)	105 (98%)	2 (2%)	50 69
1	C	109/116 (94%)	108 (99%)	1 (1%)	70 82
1	D	106/116 (91%)	106 (100%)	0	100 100
1	E	105/116 (90%)	105 (100%)	0	100 100
1	F	108/116 (93%)	108 (100%)	0	100 100
1	G	109/116 (94%)	108 (99%)	1 (1%)	70 82
1	H	105/116 (90%)	105 (100%)	0	100 100
All	All	858/928 (92%)	853 (99%)	5 (1%)	78 87

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	67	ILE
1	B	82	LYS
1	B	95	GLU
1	C	68	THR
1	G	182	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
1	E	135	ASN
1	G	96	ASN
1	H	122	HIS
1	H	96	ASN
1	D	122	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 27 ligands modelled in this entry, 8 are monoatomic - leaving 19 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	$\#\|Z\| > 2$
5	GOL	G	194	-	5,5,5	0.48	0	5,5,5	0.90	0
3	FLC	B	192	4	12,12,12	1.19	1 (8%)	17,17,17	1.24	1 (5%)
3	FLC	E	4	4	12,12,12	1.20	1 (8%)	17,17,17	1.68	5 (29%)
3	FLC	A	6	4	12,12,12	1.36	2 (16%)	17,17,17	1.64	5 (29%)
2	FES	F	7	1	0,4,4	-	-	-		
2	FES	H	8	1	0,4,4	-	-	-		
2	FES	B	3	1	0,4,4	-	-	-		
3	FLC	H	7	4	12,12,12	1.16	0	17,17,17	1.24	2 (11%)
5	GOL	F	1	-	5,5,5	0.45	0	5,5,5	0.80	0
2	FES	C	4	1	0,4,4	-	-	-		
3	FLC	D	2	4	12,12,12	1.65	3 (25%)	17,17,17	1.77	5 (29%)
2	FES	D	5	1	0,4,4	-	-	-		
3	FLC	C	8	4	12,12,12	1.21	1 (8%)	17,17,17	1.17	1 (5%)
2	FES	A	2	1	0,4,4	-	-	-		
2	FES	E	6	1	0,4,4	-	-	-		
2	FES	G	1	1	0,4,4	-	-	-		
3	FLC	C	5	4	12,12,12	1.42	2 (16%)	17,17,17	1.18	1 (5%)
3	FLC	D	9	-	12,12,12	1.13	0	17,17,17	1.01	1 (5%)
3	FLC	G	192	4	12,12,12	1.27	1 (8%)	17,17,17	1.40	2 (11%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	G	194	-	-	0/4/4/4	-
3	FLC	B	192	4	-	7/16/16/16	-
3	FLC	E	4	4	-	11/16/16/16	-
3	FLC	A	6	4	-	0/16/16/16	-
2	FES	F	7	1	-	-	0/1/1/1
2	FES	H	8	1	-	-	0/1/1/1
3	FLC	G	192	4	-	8/16/16/16	-
2	FES	B	3	1	-	-	0/1/1/1
3	FLC	H	7	4	-	0/16/16/16	-
5	GOL	F	1	-	-	2/4/4/4	-
2	FES	C	4	1	-	-	0/1/1/1
3	FLC	D	2	4	-	10/16/16/16	-
3	FLC	C	8	4	-	6/16/16/16	-
2	FES	A	2	1	-	-	0/1/1/1
2	FES	E	6	1	-	-	0/1/1/1
2	FES	G	1	1	-	-	0/1/1/1
3	FLC	C	5	4	-	7/16/16/16	-
3	FLC	D	9	-	-	6/16/16/16	-
2	FES	D	5	1	-	-	0/1/1/1

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	2	FLC	CB-CBC	-3.02	1.50	1.53
3	D	2	FLC	CG-CB	2.88	1.57	1.54
3	A	6	FLC	CB-CBC	-2.69	1.50	1.53
3	B	192	FLC	OG2-CGC	-2.44	1.22	1.30
3	C	5	FLC	CG-CB	2.31	1.56	1.54

The worst 5 of 23 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	6	FLC	OB1-CBC-CB	-3.39	115.53	122.09
3	D	2	FLC	CB-CG-CGC	3.38	123.17	113.92
3	D	2	FLC	OHB-CB-CBC	-3.33	104.23	108.96
3	B	192	FLC	OB2-CBC-CB	3.32	119.50	113.14
3	E	4	FLC	OB2-CBC-CB	3.21	119.29	113.14

There are no chirality outliers.

5 of 57 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	192	FLC	CAC-CA-CB-CBC
3	B	192	FLC	CAC-CA-CB-CG
3	B	192	FLC	CAC-CA-CB-OHB
3	C	5	FLC	CG-CB-CBC-OB1
3	C	5	FLC	CG-CB-CBC-OB2

There are no ring outliers.

5 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	G	194	GOL	1	0
3	B	192	FLC	2	0
3	E	4	FLC	1	0
3	A	6	FLC	1	0
5	F	1	GOL	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

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^{th} 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	126/132 (95%)	-1.62	0 100 100	23, 41, 64, 74	0
1	B	126/132 (95%)	-1.49	0 100 100	35, 55, 69, 73	0
1	C	127/132 (96%)	-1.60	0 100 100	23, 39, 63, 73	0
1	D	127/132 (96%)	-1.49	1 (0%) 82 84	36, 50, 67, 89	0
1	E	127/132 (96%)	-1.47	0 100 100	35, 54, 70, 86	0
1	F	128/132 (96%)	-1.51	0 100 100	28, 48, 84, 107	0
1	G	128/132 (96%)	-1.52	0 100 100	28, 51, 73, 98	0
1	H	128/132 (96%)	-1.48	0 100 100	35, 50, 67, 97	0
All	All	1017/1056 (96%)	-1.52	1 (0%) 92 94	23, 48, 69, 107	0

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	65	ASP	2.1

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

There are no oligosaccharides in this entry.

6.4 Ligands

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, 95^{th} 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(Å^2)	Q<0.9
3	FLC	A	6	13/13	0.99	0.03	45,53,58,60	0
3	FLC	B	192	13/13	0.99	0.04	59,67,69,70	0
3	FLC	C	5	13/13	0.99	0.03	49,58,62,64	0
3	FLC	D	2	13/13	0.99	0.04	61,63,65,67	0
3	FLC	D	9	13/13	0.99	0.04	90,93,93,94	0
3	FLC	E	4	13/13	0.99	0.03	64,71,73,73	0
3	FLC	G	192	13/13	0.99	0.03	65,72,74,74	0
3	FLC	H	7	13/13	0.99	0.03	61,65,69,70	0
4	K	B	193	1/1	0.99	0.06	66,66,66,66	0
4	K	C	192	1/1	0.99	0.03	53,53,53,53	0
5	GOL	F	1	6/6	0.99	0.04	48,50,51,53	0
5	GOL	G	194	6/6	0.99	0.06	46,47,50,51	0
2	FES	D	5	4/4	1.00	0.01	42,44,45,45	0
2	FES	E	6	4/4	1.00	0.01	39,41,41,42	0
2	FES	F	7	4/4	1.00	0.01	29,31,34,34	0
2	FES	G	1	4/4	1.00	0.01	30,31,33,35	0
2	FES	H	8	4/4	1.00	0.01	41,42,44,45	0
4	K	A	192	1/1	1.00	0.02	54,54,54,54	0
2	FES	A	2	4/4	1.00	0.01	31,33,34,36	0
2	FES	B	3	4/4	1.00	0.01	38,39,40,43	0
4	K	D	192	1/1	1.00	0.05	58,58,58,58	0
4	K	E	192	1/1	1.00	0.02	72,72,72,72	0
4	K	F	8	1/1	1.00	0.05	42,42,42,42	0
4	K	G	193	1/1	1.00	0.06	50,50,50,50	0
4	K	H	192	1/1	1.00	0.02	70,70,70,70	0
2	FES	C	4	4/4	1.00	0.01	30,31,35,35	0
3	FLC	C	8	13/13	1.00	0.03	63,69,70,71	0

6.5 Other polymers (i)

There are no such residues in this entry.