



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 27, 2014 – 12:49 PM GMT

PDB ID : 3IBY
Title : Structure of cytosolic domain of L. pneumophila FeoB
Authors : Petermann, N.; Hansen, G.; Hilgenfeld, R.
Deposited on : 2009-07-17
Resolution : 2.50 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

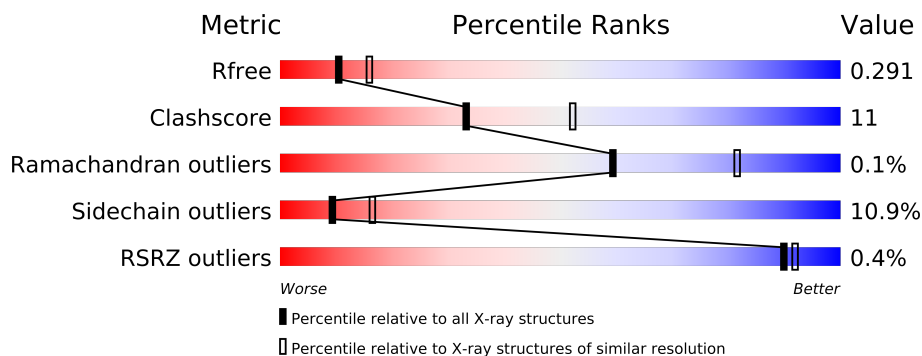
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.50 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}	66092	2784 (2.50-2.50)
Clashscore	79885	3562 (2.50-2.50)
Ramachandran outliers	78287	3480 (2.50-2.50)
Sidechain outliers	78261	3482 (2.50-2.50)
RSRZ outliers	66119	2785 (2.50-2.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	256	
1	B	256	
1	C	256	
1	D	256	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 7608 atoms, of which 0 are hydrogen and 0 are deuterium.

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 Ferrous iron transport protein B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	245	Total	C	N	O	S	0	0	0
			1917	1220	324	366	7			
1	B	234	Total	C	N	O	S	0	0	0
			1818	1155	310	346	7			
1	C	230	Total	C	N	O	S	0	0	0
			1796	1141	307	341	7			
1	D	251	Total	C	N	O	S	0	0	0
			1960	1246	332	375	7			

- Molecule 2 is water.

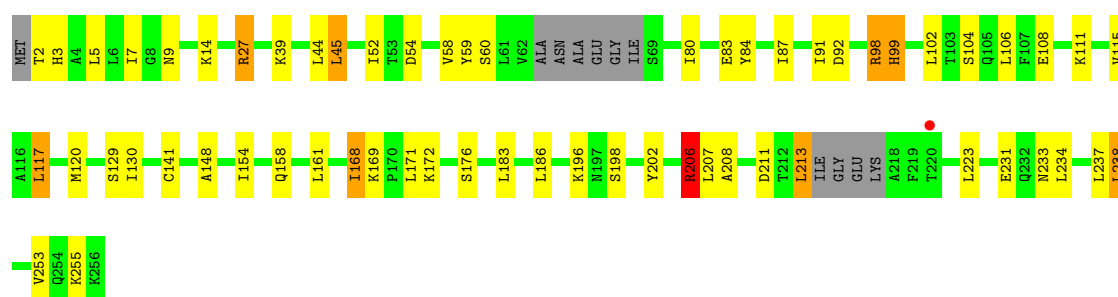
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	27	Total	O	0	0
			27	27		
2	B	30	Total	O	0	0
			30	30		
2	C	23	Total	O	0	0
			23	23		
2	D	37	Total	O	0	0
			37	37		

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 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.

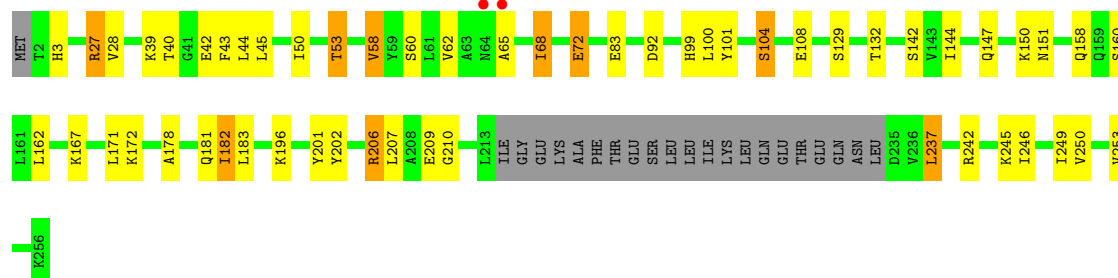
- Molecule 1: Ferrous iron transport protein B

Chain A:



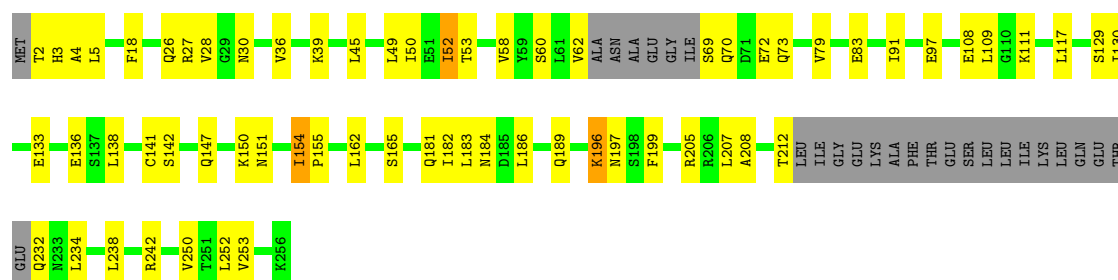
- Molecule 1: Ferrous iron transport protein B

Chain B:



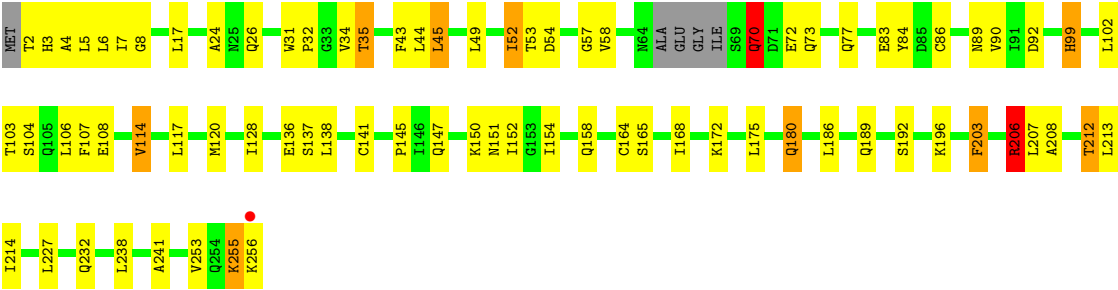
- Molecule 1: Ferrous iron transport protein B

Chain C:



- Molecule 1: Ferrous iron transport protein B

Chain D: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	53.06Å 130.70Å 157.62Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	78.81 – 2.50 78.81 – 2.50	Depositor EDS
% Data completeness (in resolution range)	93.0 (78.81-2.50) 93.0 (78.81-2.50)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.43 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.5.0088	Depositor
R, R_{free}	0.212 , 0.288 0.221 , 0.291	Depositor DCC
R_{free} test set	1813 reflections (5.28%)	DCC
Wilson B-factor (Å ²)	34.4	Xtriage
Anisotropy	0.085	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 11.3	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtriage
Outliers	5 of 36132 reflections (0.014%)	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	7608	wwPDB-VP
Average B, all atoms (Å ²)	12.0	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 43.86 % 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 1.6582e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

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	0.81	0/1944	0.84	4/2631 (0.2%)
1	B	0.80	0/1845	0.83	1/2499 (0.0%)
1	C	0.78	0/1822	0.83	2/2466 (0.1%)
1	D	0.82	1/1988 (0.1%)	0.85	1/2691 (0.0%)
All	All	0.80	1/7599 (0.0%)	0.83	8/10287 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	31	TRP	CB-CG	-5.41	1.40	1.50

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	27	ARG	NE-CZ-NH1	5.76	123.18	120.30
1	A	206	ARG	NE-CZ-NH1	5.58	123.09	120.30
1	A	98	ARG	NE-CZ-NH1	5.56	123.08	120.30
1	C	5	LEU	CB-CG-CD1	-5.55	101.57	111.00
1	D	206	ARG	NE-CZ-NH2	-5.35	117.62	120.30
1	A	206	ARG	NE-CZ-NH2	-5.16	117.72	120.30
1	B	237	LEU	CA-CB-CG	5.09	127.02	115.30
1	A	27	ARG	NE-CZ-NH2	-5.08	117.76	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the

chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1917	0	1960	35	0
1	B	1818	0	1856	41	0
1	C	1796	0	1833	31	0
1	D	1960	0	2005	67	0
2	A	27	0	0	1	0
2	B	30	0	0	1	0
2	C	23	0	0	1	0
2	D	37	0	0	2	0
All	All	7608	0	7654	168	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 11.

All (168) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:128:ILE:HG12	1:D:256:LYS:HD3	1.37	1.07
1:B:3:HIS:HE1	1:B:53:THR:HG23	1.14	1.05
1:B:3:HIS:HE1	1:B:53:THR:CG2	1.75	0.99
1:B:245:LYS:O	1:B:249:ILE:HD13	1.64	0.95
1:B:3:HIS:CE1	1:B:53:THR:HG23	2.03	0.91
1:D:6:LEU:HB2	1:D:52:ILE:HD11	1.55	0.89
1:C:208:ALA:HB1	1:C:238:LEU:HD11	1.54	0.87
1:D:117:LEU:HD23	1:D:120:MET:CE	2.08	0.84
1:D:6:LEU:HB2	1:D:52:ILE:CD1	2.08	0.82
1:B:3:HIS:CE1	1:B:53:THR:CG2	2.62	0.81
1:D:117:LEU:HD23	1:D:120:MET:HE1	1.69	0.74
1:D:117:LEU:CG	1:D:120:MET:HE1	2.19	0.73
1:B:245:LYS:O	1:B:249:ILE:CD1	2.38	0.70
1:B:27:ARG:NH2	1:B:42:GLU:OE2	2.25	0.70
1:A:3:HIS:HD2	1:A:83:GLU:O	1.74	0.69
1:A:141:CYS:HB3	1:A:168:ILE:HD13	1.74	0.69
1:D:34:VAL:HG22	1:D:35:THR:H	1.56	0.69
1:D:117:LEU:CD2	1:D:120:MET:HE1	2.24	0.68
1:D:117:LEU:HD23	1:D:120:MET:HE3	1.74	0.68
1:B:172:LYS:NZ	1:B:172:LYS:HA	2.09	0.68
1:C:60:SER:OG	1:C:62:VAL:HG23	1.95	0.66
1:B:108:GLU:OE1	1:B:206:ARG:NH1	2.28	0.66
1:D:17:LEU:HD23	1:D:90:VAL:HG22	1.78	0.65
1:D:117:LEU:HG	1:D:120:MET:HE1	1.79	0.65
1:B:62:VAL:HG21	1:B:209:GLU:OE2	1.97	0.65

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:147:GLN:OE1	1:B:150:LYS:HE2	1.97	0.64
1:D:212:THR:HG23	2:D:271:HOH:O	1.97	0.64
1:C:208:ALA:CB	1:C:238:LEU:HD11	2.28	0.64
1:D:17:LEU:HD23	1:D:90:VAL:CG2	2.28	0.63
1:D:43:PHE:HE2	1:D:45:LEU:HD22	1.64	0.63
1:B:144:ILE:HD11	1:B:160:SER:HB2	1.80	0.62
1:D:108:GLU:OE1	1:D:206:ARG:NH2	2.20	0.62
1:C:69:SER:OG	1:C:72:GLU:HB2	1.99	0.62
1:D:70:GLN:O	1:D:73:GLN:N	2.34	0.61
1:D:256:LYS:HG3	1:D:256:LYS:OXT	2.00	0.61
1:D:120:MET:HE2	1:D:145:PRO:HA	1.83	0.60
1:B:150:LYS:HD2	1:D:26:GLN:HG3	1.84	0.60
1:B:144:ILE:HD11	1:B:160:SER:CB	2.31	0.60
1:A:108:GLU:OE1	1:A:206:ARG:NH2	2.35	0.60
1:D:128:ILE:HG12	1:D:256:LYS:CD	2.23	0.59
1:C:181:GLN:NE2	1:C:184:ASN:HD22	2.00	0.59
1:D:45:LEU:HD21	1:D:158:GLN:HB3	1.84	0.59
1:D:3:HIS:HD2	1:D:83:GLU:O	1.87	0.57
1:B:53:THR:HG21	2:B:281:HOH:O	2.03	0.57
1:A:141:CYS:HB3	1:A:168:ILE:CD1	2.34	0.57
1:D:203:PHE:HE1	1:D:207:LEU:HD13	1.71	0.56
1:A:196:LYS:HZ1	1:A:198:SER:CB	2.19	0.55
1:D:8:GLY:O	1:D:57:GLY:HA2	2.06	0.55
1:D:7:ILE:HG22	1:D:102:LEU:HD21	1.88	0.55
1:B:178:ALA:O	1:B:182:ILE:HG22	2.08	0.55
1:A:92:ASP:H	1:A:99:HIS:CD2	2.25	0.54
1:A:196:LYS:NZ	1:A:198:SER:OG	2.33	0.54
1:D:203:PHE:HA	1:D:214:ILE:HD13	1.90	0.54
1:B:58:VAL:HG12	1:B:72:GLU:HA	1.90	0.54
1:C:147:GLN:HE21	1:C:150:LYS:HD3	1.72	0.54
1:D:17:LEU:CD2	1:D:90:VAL:HG22	2.37	0.54
1:C:208:ALA:HB1	1:C:238:LEU:CD1	2.31	0.53
1:D:114:VAL:HG12	1:D:164:CYS:SG	2.48	0.53
1:A:9:ASN:HD22	1:A:98:ARG:HE	1.56	0.53
1:C:138:LEU:HD11	1:C:252:LEU:HD23	1.90	0.53
1:D:208:ALA:HB3	1:D:238:LEU:CD2	2.40	0.52
1:A:211:ASP:OD1	1:A:213:LEU:HD13	2.09	0.52
1:B:206:ARG:HG3	1:B:206:ARG:HH21	1.73	0.52
1:B:58:VAL:CG1	1:B:72:GLU:HA	2.39	0.52
1:B:172:LYS:HZ3	1:B:172:LYS:HA	1.73	0.52
1:D:102:LEU:O	1:D:106:LEU:HG	2.09	0.51
1:A:92:ASP:H	1:A:99:HIS:HD2	1.59	0.51

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:58:VAL:CG1	1:D:72:GLU:HA	2.40	0.51
1:C:58:VAL:CG1	1:C:72:GLU:HA	2.41	0.50
1:D:208:ALA:CB	1:D:238:LEU:CD2	2.90	0.50
1:C:154:ILE:N	1:C:155:PRO:CD	2.75	0.50
1:B:28:VAL:HG22	1:B:39:LYS:HG3	1.94	0.50
1:B:45:LEU:HD21	1:B:158:GLN:HB3	1.93	0.49
1:D:255:LYS:CD	1:D:255:LYS:N	2.75	0.49
1:B:182:ILE:HD13	1:B:183:LEU:N	2.28	0.48
1:C:26:GLN:NE2	2:C:277:HOH:O	2.27	0.48
1:C:58:VAL:HG11	1:C:72:GLU:HA	1.93	0.48
1:A:7:ILE:HG13	1:A:87:ILE:HG23	1.95	0.48
1:A:5:LEU:HD11	1:A:84:TYR:CD1	2.48	0.48
1:D:150:LYS:HB2	1:D:152:ILE:HD13	1.94	0.48
1:A:91:ILE:HD12	1:A:115:VAL:HG11	1.95	0.48
1:B:3:HIS:HD2	1:B:83:GLU:O	1.97	0.48
1:A:44:LEU:HD12	1:B:43:PHE:HA	1.95	0.48
1:A:148:ALA:HB3	2:A:260:HOH:O	2.14	0.48
1:A:44:LEU:HD13	1:B:42:GLU:HG2	1.95	0.48
1:D:255:LYS:HD3	1:D:255:LYS:N	2.29	0.48
1:A:130:ILE:HG23	1:A:253:VAL:CG1	2.44	0.48
1:D:58:VAL:HG11	1:D:72:GLU:HA	1.95	0.47
1:B:45:LEU:HD13	1:B:162:LEU:HD22	1.97	0.47
1:A:117:LEU:HD13	1:A:120:MET:SD	2.55	0.47
1:A:59:TYR:CD2	1:A:60:SER:HB2	2.50	0.47
1:A:183:LEU:HD21	1:A:238:LEU:HD11	1.97	0.46
1:A:108:GLU:O	1:A:202:TYR:HB2	2.15	0.46
1:C:182:ILE:HG21	1:C:234:LEU:CD2	2.46	0.46
1:D:77:GLN:HG3	1:D:213:LEU:HD21	1.98	0.46
1:C:208:ALA:CB	1:C:238:LEU:CD1	2.92	0.46
1:B:45:LEU:HD13	1:B:162:LEU:CD2	2.46	0.46
1:C:3:HIS:HD2	1:C:83:GLU:O	1.99	0.45
1:C:79:VAL:HG11	1:C:109:LEU:HD11	1.97	0.45
1:B:202:TYR:CZ	1:B:206:ARG:HD2	2.51	0.45
1:D:103:THR:HG22	1:D:107:PHE:CZ	2.52	0.45
1:D:180:GLN:HE21	1:D:180:GLN:CA	2.29	0.45
1:C:147:GLN:NE2	1:C:150:LYS:HD3	2.31	0.45
1:D:5:LEU:HD11	1:D:84:TYR:CD1	2.51	0.45
1:D:150:LYS:O	1:D:152:ILE:HD12	2.17	0.45
1:A:208:ALA:HB1	1:A:238:LEU:CD1	2.46	0.45
1:A:233:ASN:O	1:A:234:LEU:C	2.55	0.45
1:D:206:ARG:HD3	1:D:206:ARG:HA	1.75	0.45
1:A:206:ARG:HD3	1:A:206:ARG:HA	1.63	0.45

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:49:LEU:CD1	1:D:44:LEU:HD21	2.46	0.45
1:D:89:ASN:HD22	1:D:103:THR:HG23	1.81	0.45
1:B:104:SER:HB3	1:B:171:LEU:HD12	1.97	0.45
1:D:175:LEU:HD23	1:D:241:ALA:HB2	1.99	0.44
1:D:150:LYS:CB	1:D:152:ILE:HD13	2.46	0.44
1:D:180:GLN:NE2	1:D:180:GLN:HA	2.32	0.44
1:A:158:GLN:O	1:A:161:LEU:HB2	2.17	0.44
1:D:147:GLN:HE21	1:D:150:LYS:HD3	1.83	0.44
1:A:208:ALA:CB	1:A:238:LEU:CD1	2.96	0.44
1:D:92:ASP:H	1:D:99:HIS:CD2	2.35	0.44
1:C:108:GLU:OE2	1:C:242:ARG:NH2	2.51	0.44
1:A:102:LEU:O	1:A:106:LEU:HG	2.18	0.43
1:A:208:ALA:HB1	1:A:238:LEU:HD12	2.00	0.43
1:D:141:CYS:HB3	1:D:168:ILE:HD12	2.01	0.43
1:D:208:ALA:CB	1:D:238:LEU:HD22	2.49	0.43
1:D:180:GLN:CA	1:D:180:GLN:NE2	2.81	0.43
1:A:186:LEU:HD11	1:A:223:LEU:HD13	2.00	0.43
1:D:92:ASP:H	1:D:99:HIS:HD2	1.65	0.43
1:C:91:ILE:HG22	1:C:117:LEU:HD12	2.00	0.43
1:B:207:LEU:O	1:B:210:GLY:N	2.47	0.43
1:B:150:LYS:HB3	1:D:24:ALA:HA	2.00	0.42
1:B:104:SER:HB2	1:B:242:ARG:HH11	1.83	0.42
1:B:101:TYR:CZ	1:B:242:ARG:HD2	2.54	0.42
1:D:4:ALA:HA	1:D:86:CYS:O	2.19	0.42
1:C:196:LYS:HG3	1:C:199:PHE:HB3	2.01	0.42
1:B:246:ILE:O	1:B:250:VAL:HG23	2.19	0.42
1:D:117:LEU:HA	1:D:117:LEU:HD12	1.90	0.42
1:D:152:ILE:N	1:D:152:ILE:HD12	2.34	0.42
1:D:6:LEU:HB3	1:D:54:ASP:HA	2.01	0.42
1:C:182:ILE:HG21	1:C:234:LEU:HD22	2.02	0.42
1:B:65:ALA:O	1:B:68:ILE:HG23	2.20	0.42
1:A:161:LEU:HA	1:A:161:LEU:HD23	1.81	0.42
1:B:92:ASP:HB3	1:B:99:HIS:CE1	2.54	0.42
1:C:97:GLU:HA	1:C:250:VAL:HG21	2.00	0.42
1:D:120:MET:HE2	1:D:145:PRO:CA	2.49	0.42
1:D:208:ALA:HB1	1:D:238:LEU:HD22	2.01	0.42
1:C:130:ILE:HG23	1:C:253:VAL:HG13	2.02	0.42
1:D:3:HIS:HE1	1:D:53:THR:OG1	2.03	0.41
1:C:154:ILE:N	1:C:154:ILE:HD13	2.35	0.41
1:B:201:TYR:C	1:B:201:TYR:CD2	2.93	0.41
1:B:178:ALA:O	1:B:182:ILE:CG2	2.68	0.41
1:C:36:VAL:HG21	1:C:70:GLN:HG2	2.00	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:154:ILE:O	1:D:158:GLN:HG3	2.20	0.41
1:A:14:LYS:NZ	1:A:54:ASP:OD1	2.46	0.41
1:C:3:HIS:HE1	1:C:53:THR:OG1	2.04	0.41
1:D:175:LEU:CD2	1:D:241:ALA:HB2	2.50	0.41
1:C:2:THR:HB	1:C:50:ILE:HD13	2.02	0.41
1:C:18:PHE:HD1	1:C:52:ILE:HD11	1.86	0.41
1:D:208:ALA:HB3	1:D:238:LEU:HD21	2.03	0.41
1:C:183:LEU:HD13	1:C:205:ARG:NE	2.36	0.41
1:A:45:LEU:CD2	1:A:158:GLN:HB3	2.51	0.41
1:A:44:LEU:HG	1:B:44:LEU:CD1	2.50	0.40
1:D:186:LEU:HA	1:D:189:GLN:HG2	2.03	0.40
1:B:100:LEU:HD23	1:B:100:LEU:HA	1.95	0.40
1:A:58:VAL:HG23	1:A:58:VAL:O	2.21	0.40
1:D:99:HIS:CD2	2:D:260:HOH:O	2.74	0.40
1:A:104:SER:CB	1:A:171:LEU:HD12	2.51	0.40
1:C:4:ALA:O	1:C:52:ILE:HA	2.21	0.40
1:D:17:LEU:HD23	1:D:90:VAL:HG21	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

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	239/256 (93%)	234 (98%)	5 (2%)	0	100	100
1	B	230/256 (90%)	223 (97%)	7 (3%)	0	100	100
1	C	224/256 (88%)	217 (97%)	7 (3%)	0	100	100
1	D	247/256 (96%)	240 (97%)	6 (2%)	1 (0%)	43	66
All	All	940/1024 (92%)	914 (97%)	25 (3%)	1 (0%)	59	81

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	70	GLN

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	215/222 (97%)	193 (90%)	22 (10%)	11	19
1	B	202/222 (91%)	182 (90%)	20 (10%)	11	21
1	C	201/222 (90%)	178 (89%)	23 (11%)	8	15
1	D	219/222 (99%)	193 (88%)	26 (12%)	8	13
All	All	837/888 (94%)	746 (89%)	91 (11%)	9	16

All (91) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	THR
1	A	27	ARG
1	A	39	LYS
1	A	45	LEU
1	A	52	ILE
1	A	80	ILE
1	A	99	HIS
1	A	111	LYS
1	A	117	LEU
1	A	129	SER
1	A	154	ILE
1	A	168	ILE
1	A	169	LYS
1	A	172	LYS
1	A	176	SER
1	A	206	ARG
1	A	207	LEU
1	A	213	LEU
1	A	231	GLU
1	A	237	LEU
1	A	238	LEU
1	A	255	LYS
1	B	27	ARG
1	B	40	THR
1	B	50	ILE
1	B	53	THR

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Mol	Chain	Res	Type
1	B	58	VAL
1	B	60	SER
1	B	68	ILE
1	B	72	GLU
1	B	104	SER
1	B	129	SER
1	B	132	THR
1	B	142	SER
1	B	151	ASN
1	B	167	LYS
1	B	181	GLN
1	B	182	ILE
1	B	196	LYS
1	B	206	ARG
1	B	237	LEU
1	B	253	VAL
1	C	28	VAL
1	C	30	ASN
1	C	39	LYS
1	C	45	LEU
1	C	52	ILE
1	C	73	GLN
1	C	111	LYS
1	C	129	SER
1	C	133	GLU
1	C	136	GLU
1	C	141	CYS
1	C	142	SER
1	C	151	ASN
1	C	154	ILE
1	C	162	LEU
1	C	165	SER
1	C	186	LEU
1	C	189	GLN
1	C	196	LYS
1	C	197	ASN
1	C	207	LEU
1	C	212	THR
1	C	232	GLN
1	D	2	THR
1	D	32	PRO
1	D	35	THR

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Mol	Chain	Res	Type
1	D	45	LEU
1	D	49	LEU
1	D	52	ILE
1	D	70	GLN
1	D	99	HIS
1	D	104	SER
1	D	114	VAL
1	D	136	GLU
1	D	137	SER
1	D	138	LEU
1	D	151	ASN
1	D	165	SER
1	D	172	LYS
1	D	180	GLN
1	D	192	SER
1	D	196	LYS
1	D	203	PHE
1	D	206	ARG
1	D	212	THR
1	D	227	LEU
1	D	232	GLN
1	D	253	VAL
1	D	255	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3	HIS
1	A	9	ASN
1	A	30	ASN
1	A	70	GLN
1	A	89	ASN
1	A	99	HIS
1	A	147	GLN
1	A	233	ASN
1	B	3	HIS
1	B	9	ASN
1	B	26	GLN
1	B	89	ASN
1	B	95	HIS
1	B	181	GLN
1	B	189	GLN

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Mol	Chain	Res	Type
1	B	244	GLN
1	B	254	GLN
1	C	3	HIS
1	C	77	GLN
1	C	89	ASN
1	C	147	GLN
1	C	181	GLN
1	C	189	GLN
1	D	3	HIS
1	D	30	ASN
1	D	73	GLN
1	D	89	ASN
1	D	99	HIS
1	D	147	GLN
1	D	180	GLN

5.3.3 RNA ⓘ

There are no RNA chains 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 ⓘ

There are no ligands in this entry.

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, 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	245/256 (95%)	-0.14	1 (0%) 90 92	4, 12, 18, 24	0
1	B	234/256 (91%)	-0.11	2 (0%) 81 82	6, 13, 18, 22	0
1	C	230/256 (89%)	-0.13	0 100 100	4, 12, 18, 22	0
1	D	251/256 (98%)	-0.18	1 (0%) 90 92	6, 12, 18, 25	0
All	All	960/1024 (93%)	-0.14	4 (0%) 90 92	4, 12, 18, 25	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	256	LYS	3.6
1	B	65	ALA	3.2
1	A	220	THR	2.6
1	B	64	ASN	2.4

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 carbohydrates in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.