Full wwPDB X-ray Structure Validation Report ⓘ

May 25, 2020 – 04:02 am BST

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 X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see references ①) were used in the production of this report:

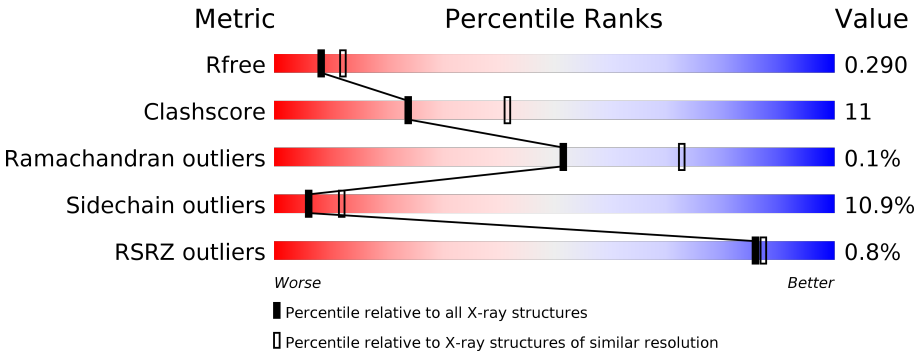
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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 2.50 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}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (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 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	256	72% 20%
1	B	256	% 70% 18% 9%
1	C	256	% 64% 24% 10%
1	D	256	% 67% 27%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 7608 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 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.

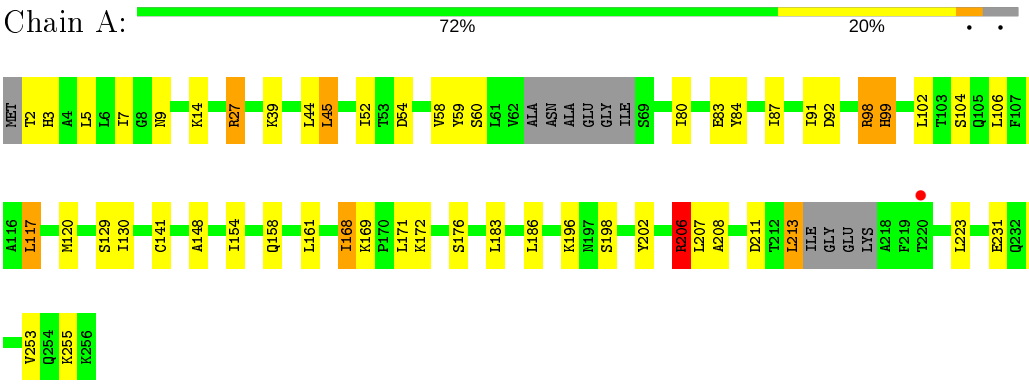
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	27	Total	O	0	0
			27	27		
2	B	30	Total	O	0	0
			30	30		
2	C	23	Total	O	0	0
			23	23		
2	D	37	Total	O	0	0
			37	37		

3 Residue-property plots (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 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.

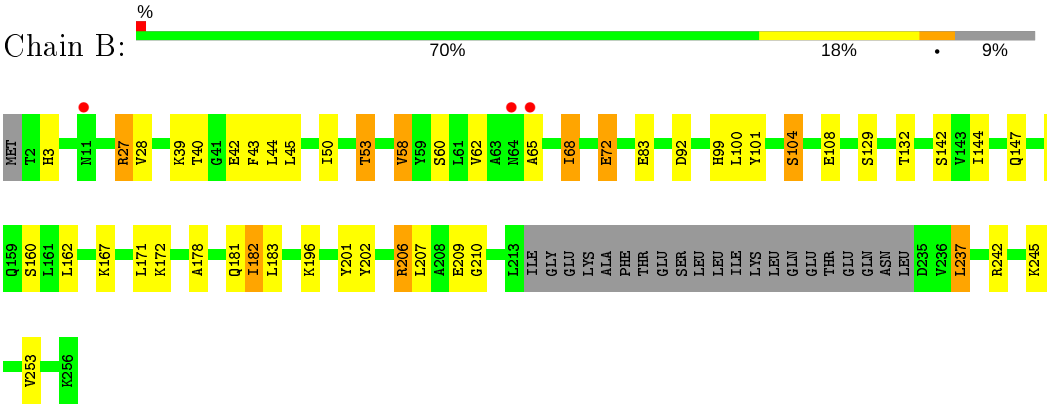
- Molecule 1: Ferrous iron transport protein B

Chain A:



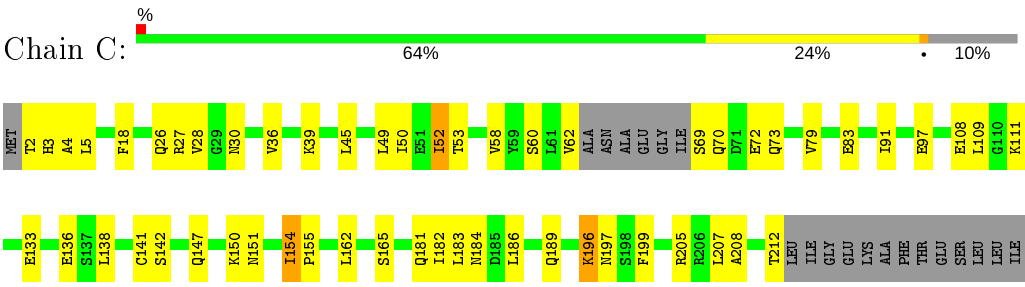
- Molecule 1: Ferrous iron transport protein B

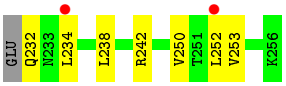
Chain B:



- Molecule 1: Ferrous iron transport protein B

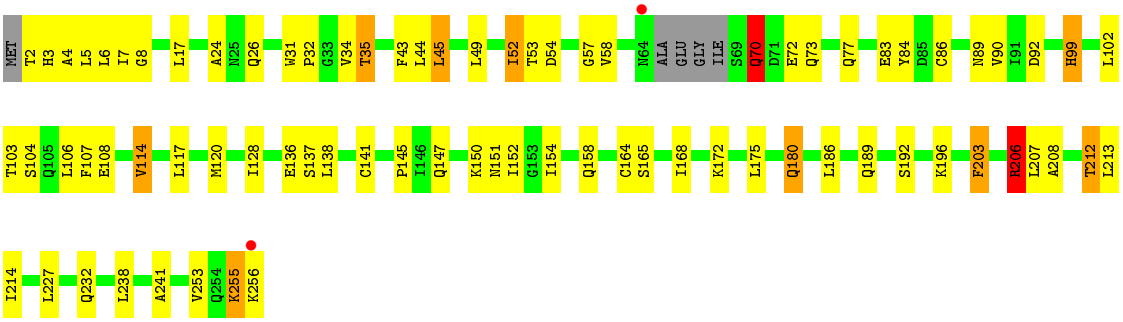
Chain C:





• Molecule 1: Ferrous iron transport protein B

Chain D:



4 Data and refinement statistics (i)

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
$< I/\sigma(I) >$ [1]	2.43 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.5.0088	Depositor
R, R_{free}	0.212 , 0.288 0.221 , 0.290	Depositor DCC
R_{free} test set	1813 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	34.4	Xtriage
Anisotropy	0.085	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 38.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	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.*

[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

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(^{o})	Ideal(^{o})
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 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	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

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 11.

All (168) 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: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:B:62:VAL:HG21	1:B:209:GLU:OE2	1.97	0.65
1:D:117:LEU:HG	1:D:120:MET:HE1	1.79	0.65
1:B:147:GLN:OE1	1:B:150:LYS:HE2	1.97	0.64

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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:A:108:GLU:OE1	1:A:206:ARG:NH2	2.35	0.60
1:B:144:ILE:HD11	1:B:160:SER:CB	2.31	0.60
1:B:150:LYS:HD2	1:D:26:GLN:HG3	1.84	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:B:58:VAL:HG12	1:B:72:GLU:HA	1.90	0.54
1:D:203:PHE:HA	1:D:214:ILE:HD13	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:A:92:ASP:H	1:A:99:HIS:HD2	1.59	0.51
1:D:102:LEU:O	1:D:106:LEU:HG	2.09	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (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:C:154:ILE:N	1:C:155:PRO:CD	2.75	0.50
1:D:208:ALA:CB	1:D:238:LEU:CD2	2.90	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:A:7:ILE:HG13	1:A:87:ILE:HG23	1.95	0.48
1:C:58:VAL:HG11	1:C:72:GLU:HA	1.93	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:148:ALA:HB3	2:A:260:HOH:O	2.14	0.48
1:A:44:LEU:HD12	1:B:43:PHE:HA	1.95	0.48
1:A:44:LEU:HD13	1:B:42:GLU:HG2	1.95	0.48
1:A:130:ILE:HG23	1:A:253:VAL:CG1	2.44	0.48
1:D:255:LYS:HD3	1:D:255:LYS:N	2.29	0.48
1:D:58:VAL:HG11	1:D:72:GLU:HA	1.95	0.47
1:A:117:LEU:HD13	1:A:120:MET:SD	2.55	0.47
1:B:45:LEU:HD13	1:B:162:LEU:HD22	1.97	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:B:45:LEU:HD13	1:B:162:LEU:CD2	2.46	0.46
1:C:208:ALA:CB	1:C:238:LEU:CD1	2.92	0.46
1:C:79:VAL:HG11	1:C:109:LEU:HD11	1.97	0.45
1:C:3:HIS:HD2	1:C:83:GLU:O	1.99	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:A:206:ARG:HD3	1:A:206:ARG:HA	1.63	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:206:ARG:HD3	1:D:206:ARG:HA	1.75	0.45
1:C:49:LEU:CD1	1:D:44:LEU:HD21	2.46	0.45
1:B:104:SER:HB3	1:B:171:LEU:HD12	1.97	0.45
1:D:89:ASN:HD22	1:D:103:THR:HG23	1.81	0.45
1:D:175:LEU:HD23	1:D:241:ALA:HB2	1.99	0.44
1:A:158:GLN:O	1:A:161:LEU:HB2	2.17	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:208:ALA:CB	1:A:238:LEU:CD1	2.96	0.44
1:D:147:GLN:HE21	1:D:150:LYS:HD3	1.83	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:A:186:LEU:HD11	1:A:223:LEU:HD13	2.00	0.43
1:D:180:GLN:CA	1:D:180:GLN:NE2	2.81	0.43
1:D:208:ALA:CB	1:D:238:LEU:HD22	2.49	0.43
1:C:91:ILE:HG22	1:C:117:LEU:HD12	2.00	0.43
1:D:92:ASP:H	1:D:99:HIS:HD2	1.65	0.43
1:B:207:LEU:O	1:B:210:GLY:N	2.47	0.43
1:B:101:TYR:CZ	1:B:242:ARG:HD2	2.54	0.42
1:B:104:SER:HB2	1:B:242:ARG:HH11	1.83	0.42
1:C:196:LYS:HG3	1:C:199:PHE:HB3	2.01	0.42
1:B:150:LYS:HB3	1:D:24:ALA:HA	2.00	0.42
1:D:4:ALA:HA	1:D:86:CYS:O	2.19	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:C:182:ILE:HG21	1:C:234:LEU:HD22	2.02	0.42
1:D:6:LEU:HB3	1:D:54:ASP:HA	2.01	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:C:130:ILE:HG23	1:C:253:VAL:HG13	2.02	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:B:201:TYR:C	1:B:201:TYR:CD2	2.93	0.41
1:C:154:ILE:N	1:C:154:ILE:HD13	2.35	0.41
1:D:3:HIS:HE1	1:D:53:THR:OG1	2.03	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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
1:A:14:LYS:NZ	1:A:54:ASP:OD1	2.46	0.41
1:D:154:ILE:O	1:D:158:GLN:HG3	2.20	0.41
1:C:18:PHE:HD1	1:C:52:ILE:HD11	1.86	0.41
1:C:2:THR:HB	1:C:50:ILE:HD13	2.02	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:183:LEU:HD13	1:C:205:ARG:NE	2.36	0.41
1:D:208:ALA:HB3	1:D:238:LEU:HD21	2.03	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:A:58:VAL:HG23	1:A:58:VAL:O	2.21	0.40
1:B:100:LEU:HD23	1:B:100:LEU:HA	1.95	0.40
1:A:104:SER:CB	1:A:171:LEU:HD12	2.51	0.40
1:D:99:HIS:CD2	2:D:260:HOH:O	2.74	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 (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	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%)	34	54
All	All	940/1024 (92%)	914 (97%)	25 (3%)	1 (0%)	51	73

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	70	GLN

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	215/222 (97%)	193 (90%)	22 (10%)	7	14
1	B	202/222 (91%)	182 (90%)	20 (10%)	8	15
1	C	201/222 (90%)	178 (89%)	23 (11%)	5	11
1	D	219/222 (99%)	193 (88%)	26 (12%)	5	10
All	All	837/888 (94%)	746 (89%)	91 (11%)	6	12

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

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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
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

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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
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

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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
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 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

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, 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	245/256 (95%)	-0.15	1 (0%)	92	93	4, 12, 18, 24	0
1	B	234/256 (91%)	-0.13	3 (1%)	77	79	6, 13, 18, 22	0
1	C	230/256 (89%)	-0.13	2 (0%)	84	86	4, 12, 18, 22	0
1	D	251/256 (98%)	-0.18	2 (0%)	86	87	6, 12, 18, 25	0
All	All	960/1024 (93%)	-0.15	8 (0%)	86	87	4, 12, 18, 25	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	65	ALA	4.9
1	D	256	LYS	3.6
1	A	220	THR	3.3
1	B	64	ASN	2.5
1	D	64	ASN	2.2
1	C	234	LEU	2.1
1	B	11	ASN	2.1
1	C	252	LEU	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 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.