Full wwPDB X-ray Structure Validation Report ⓘ

Apr 28, 2024 – 08:56 pm BST

PDB ID	:	1OJX
Title	:	Crystal structure of an Archaeal fructose 1,6-bisphosphate aldolase
Authors	:	Lorentzen, E.; Zwart, P.; Stark, A.; Hensel, R.; Siebers, B.; Pohl, E.
Deposited on	:	2003-07-16
Resolution	:	1.90 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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

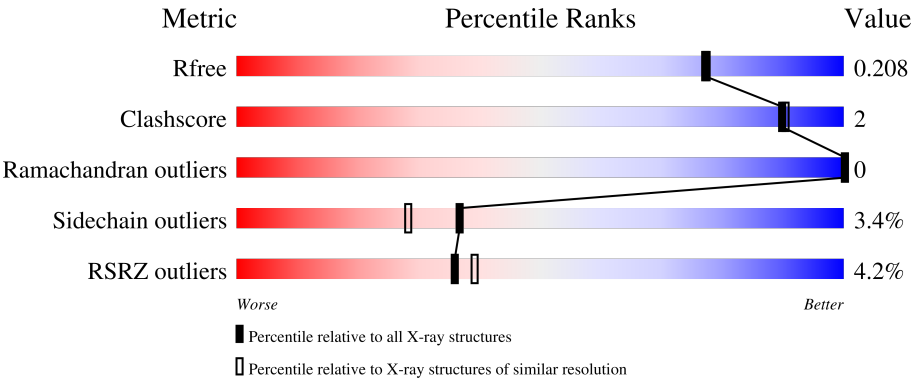
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 1.90 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	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

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	263	7% 89% 6% 5%
1	B	263	2% 89% 7% 5%
1	C	263	7% 90% 5% 5%
1	D	263	6% 87% 7% • 5%
1	E	263	3% 92% • •

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Mol	Chain	Length	Quality of chain
1	F	263	6% 91% • 5%
1	G	263	2% 89% 6% • 5%
1	H	263	4% 87% 7% • 5%
1	I	263	3% 88% 7% 5%
1	J	263	% 89% 7% 5%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 21474 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 FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	B	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	C	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	D	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	E	253	Total	C	N	O	S	0	0	1
			1944	1251	331	357	5			
1	F	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	G	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	H	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	I	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			
1	J	251	Total	C	N	O	S	0	0	1
			1936	1247	329	355	5			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	208	Total	O	0	0
			208	208		
2	B	237	Total	O	0	0
			237	237		
2	C	173	Total	O	0	0
			173	173		
2	D	182	Total	O	0	0
			182	182		

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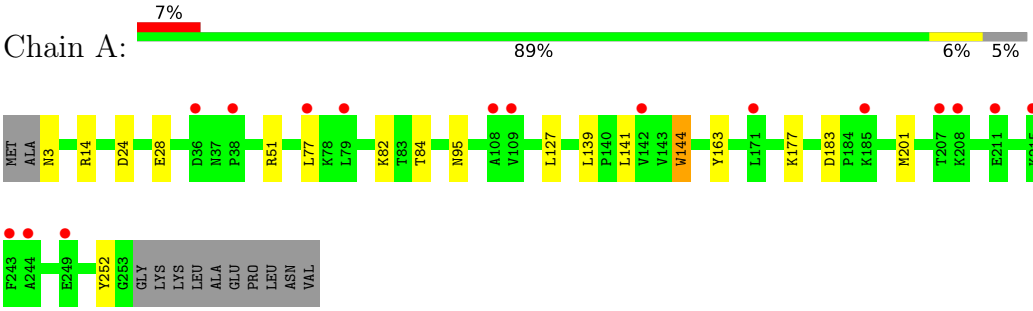
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	E	230	Total O 230 230	0	0
2	F	189	Total O 189 189	0	0
2	G	216	Total O 216 216	0	0
2	H	216	Total O 216 216	0	0
2	I	210	Total O 210 210	0	0
2	J	245	Total O 245 245	0	0

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.

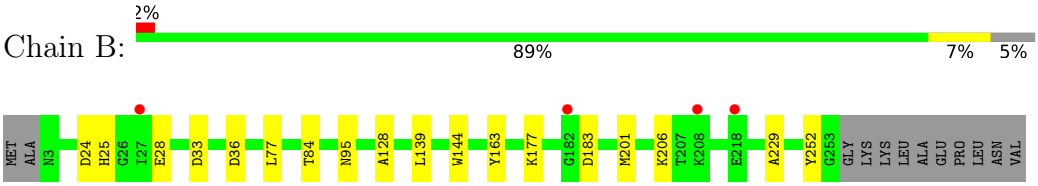
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain A:



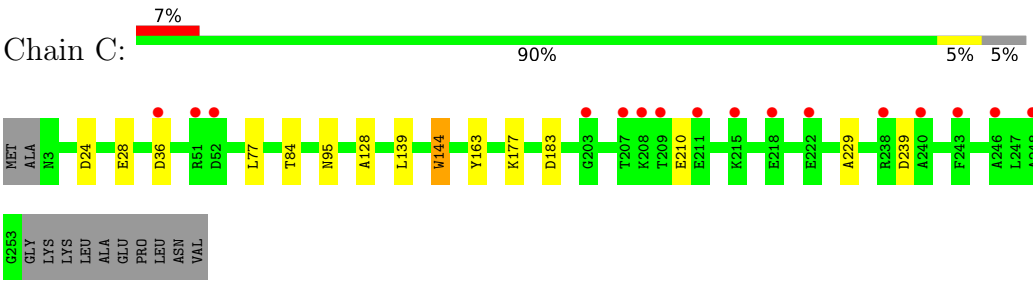
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain B:



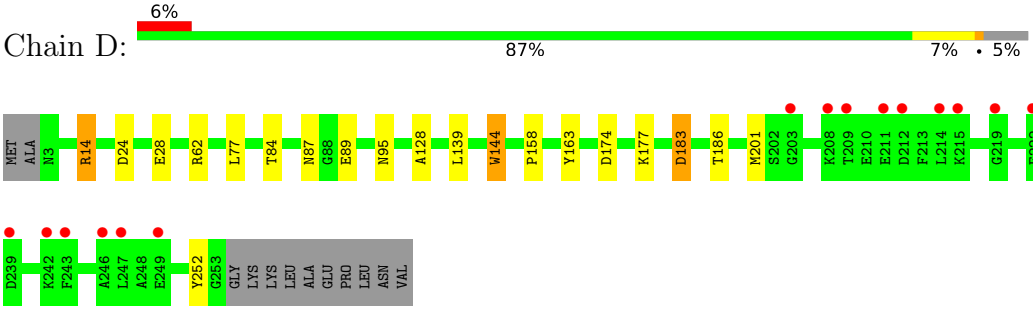
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain C:



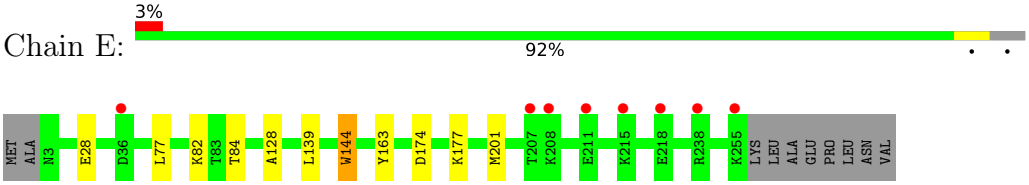
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain D:



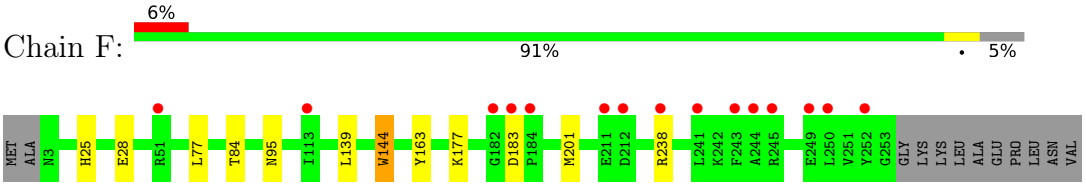
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain E:



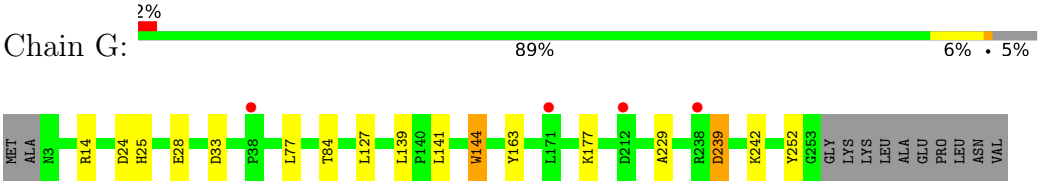
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain F:



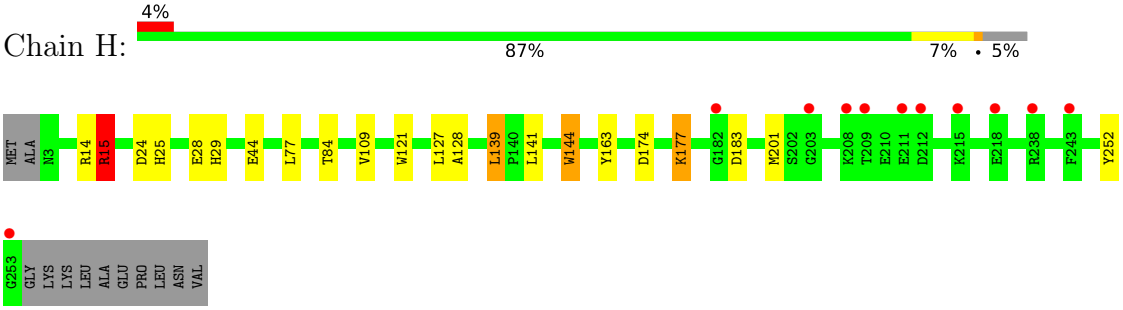
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain G:



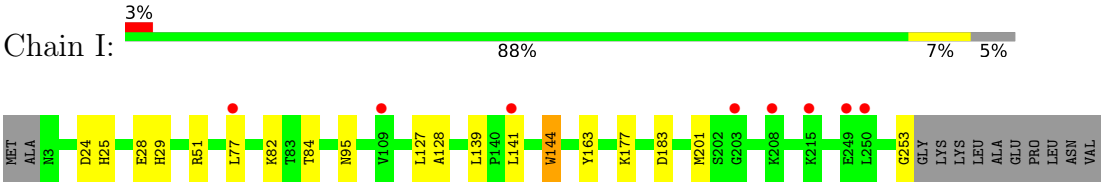
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain H:



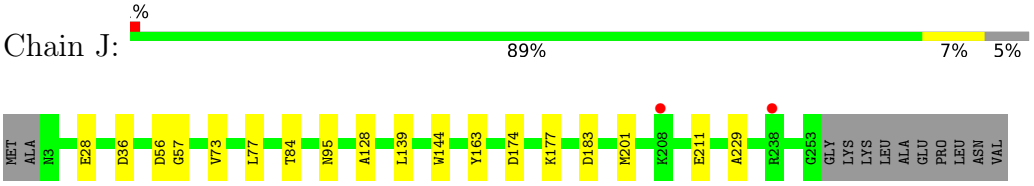
• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain I:



• Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

Chain J:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	83.30Å 158.97Å 102.99Å 90.00° 108.11° 90.00°	Depositor
Resolution (Å)	40.00 – 1.90 38.41 – 1.90	Depositor EDS
% Data completeness (in resolution range)	94.5 (40.00-1.90) 94.8 (38.41-1.90)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.09 (at 1.91Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.149 , 0.179 0.191 , 0.208	Depositor DCC
R_{free} test set	4723 reflections (2.51%)	wwPDB-VP
Wilson B-factor (Å^2)	22.2	Xtriage
Anisotropy	0.023	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 52.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	21474	wwPDB-VP
Average B, all atoms (Å^2)	15.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.55% 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

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	0.55	1/1979 (0.1%)	0.77	2/2680 (0.1%)
1	B	0.55	0/1979	0.76	2/2680 (0.1%)
1	C	0.54	0/1979	0.77	3/2680 (0.1%)
1	D	0.55	1/1979 (0.1%)	0.75	4/2680 (0.1%)
1	E	0.55	0/1987	0.76	1/2690 (0.0%)
1	F	0.53	0/1979	0.75	1/2680 (0.0%)
1	G	0.55	1/1979 (0.1%)	0.77	2/2680 (0.1%)
1	H	0.55	1/1979 (0.1%)	0.77	3/2680 (0.1%)
1	I	0.56	0/1979	0.76	2/2680 (0.1%)
1	J	0.58	0/1979	0.79	3/2680 (0.1%)
All	All	0.55	4/19798 (0.0%)	0.76	23/26810 (0.1%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	252	TYR	C-N	-5.11	1.23	1.33
1	A	252	TYR	C-N	-5.07	1.24	1.33
1	D	252	TYR	C-N	-5.04	1.24	1.33
1	G	252	TYR	C-N	-5.01	1.24	1.33

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	24	ASP	CB-CG-OD2	6.27	123.94	118.30
1	H	24	ASP	CB-CG-OD2	6.09	123.78	118.30
1	I	24	ASP	CB-CG-OD2	5.77	123.49	118.30
1	G	24	ASP	CB-CG-OD2	5.73	123.46	118.30
1	F	183	ASP	CB-CG-OD2	5.69	123.42	118.30
1	D	174	ASP	CB-CG-OD2	5.63	123.36	118.30
1	G	239	ASP	CB-CG-OD2	5.62	123.36	118.30
1	B	24	ASP	CB-CG-OD2	5.62	123.36	118.30
1	E	174	ASP	CB-CG-OD2	5.59	123.33	118.30
1	J	174	ASP	CB-CG-OD2	5.44	123.19	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	183	ASP	CB-CG-OD2	5.37	123.13	118.30
1	C	183	ASP	CB-CG-OD2	5.35	123.11	118.30
1	D	62	ARG	NE-CZ-NH2	-5.29	117.65	120.30
1	B	252	TYR	O-C-N	-5.24	114.30	123.20
1	D	183	ASP	CB-CG-OD2	5.23	123.01	118.30
1	J	36	ASP	CB-CG-OD2	5.23	123.01	118.30
1	C	36	ASP	CB-CG-OD2	5.21	122.98	118.30
1	H	174	ASP	CB-CG-OD2	5.19	122.97	118.30
1	H	15	ARG	NE-CZ-NH2	-5.16	117.72	120.30
1	D	24	ASP	CB-CG-OD2	5.08	122.87	118.30
1	J	56	ASP	CB-CG-OD2	5.06	122.86	118.30
1	A	24	ASP	CB-CG-OD2	5.05	122.85	118.30
1	I	183	ASP	CB-CG-OD2	5.02	122.82	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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	1936	0	1949	7	0
1	B	1936	0	1949	8	0
1	C	1936	0	1949	8	0
1	D	1936	0	1949	10	0
1	E	1944	0	1955	6	0
1	F	1936	0	1949	4	0
1	G	1936	0	1949	9	0
1	H	1936	0	1949	12	0
1	I	1936	0	1949	9	0
1	J	1936	0	1949	5	0
2	A	208	0	0	1	0
2	B	237	0	0	1	0
2	C	173	0	0	0	0
2	D	182	0	0	3	0
2	E	230	0	0	1	0
2	F	189	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	G	216	0	0	1	0
2	H	216	0	0	5	0
2	I	210	0	0	1	0
2	J	245	0	0	0	0
All	All	21474	0	19496	71	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.

All (71) 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:H:44:GLU:OE1	2:H:2059:HOH:O	2.06	0.73
1:D:89:GLU:OE1	2:D:2080:HOH:O	2.07	0.71
1:C:144:TRP:NE1	1:C:177:LYS:HE3	2.09	0.67
1:D:28:GLU:O	1:D:84:THR:HG23	1.96	0.65
1:I:253:GLY:N	2:I:2210:HOH:O	2.29	0.65
1:C:177:LYS:HD2	1:C:229:ALA:HB3	1.80	0.63
1:D:144:TRP:NE1	1:D:177:LYS:HE3	2.15	0.62
1:A:3:ASN:N	2:A:2001:HOH:O	2.35	0.60
1:B:144:TRP:NE1	1:B:177:LYS:HE3	2.17	0.60
1:C:144:TRP:CD1	1:C:177:LYS:HE3	2.37	0.60
1:G:28:GLU:O	1:G:84:THR:HG23	2.03	0.58
1:E:144:TRP:HE1	1:E:177:LYS:HZ3	1.51	0.57
1:A:28:GLU:O	1:A:84:THR:HG23	2.05	0.57
1:B:144:TRP:CE2	1:B:177:LYS:HE3	2.42	0.55
1:H:28:GLU:O	1:H:84:THR:HG23	2.07	0.54
1:G:25:HIS:HE1	1:G:33:ASP:HB2	1.74	0.53
1:G:144:TRP:CD1	1:G:177:LYS:HE3	2.44	0.53
1:A:144:TRP:NE1	1:A:177:LYS:HE3	2.25	0.52
1:H:121:TRP:HD1	2:H:2129:HOH:O	1.91	0.52
1:G:144:TRP:NE1	1:G:177:LYS:HE3	2.26	0.51
1:J:57:GLY:HA2	1:J:73:VAL:HG12	1.93	0.51
1:C:28:GLU:O	1:C:84:THR:HG23	2.11	0.50
1:D:177:LYS:HD2	1:D:229:ALA:HB3	1.93	0.50
1:H:25:HIS:HE1	2:H:2045:HOH:O	1.93	0.50
1:I:28:GLU:O	1:I:84:THR:HG23	2.11	0.50
1:I:144:TRP:NE1	1:I:177:LYS:HE3	2.27	0.50
1:C:144:TRP:NE1	1:C:177:LYS:CE	2.75	0.50
1:G:144:TRP:NE1	1:G:177:LYS:CE	2.75	0.49
1:D:14:ARG:NH1	2:D:2020:HOH:O	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:15:ARG:HD3	2:H:2075:HOH:O	2.14	0.48
1:A:144:TRP:CD1	1:A:177:LYS:HE3	2.49	0.48
1:F:144:TRP:NE1	1:F:177:LYS:HE3	2.29	0.48
1:B:28:GLU:O	1:B:84:THR:HG23	2.13	0.48
1:E:144:TRP:HE1	1:E:177:LYS:NZ	2.12	0.47
1:I:144:TRP:CD1	1:I:177:LYS:HE3	2.49	0.47
1:A:127:LEU:HD11	1:A:141:LEU:HD21	1.96	0.47
1:I:25:HIS:CE1	1:I:29:HIS:HB2	2.49	0.47
1:G:25:HIS:CE1	1:G:33:ASP:HB2	2.49	0.47
1:H:144:TRP:NE1	1:H:177:LYS:HE3	2.29	0.47
1:E:82:LYS:HE2	2:E:2102:HOH:O	2.15	0.47
1:I:144:TRP:NE1	1:I:177:LYS:CE	2.79	0.46
1:G:239:ASP:OD2	2:G:2207:HOH:O	2.21	0.46
1:F:28:GLU:O	1:F:84:THR:HG23	2.15	0.46
1:E:28:GLU:O	1:E:84:THR:HG23	2.15	0.45
1:H:144:TRP:CE2	1:H:177:LYS:HE3	2.51	0.45
1:C:210:GLU:OE2	1:C:239:ASP:OD2	2.33	0.45
1:I:127:LEU:HD11	1:I:141:LEU:HD21	1.98	0.45
1:A:144:TRP:NE1	1:A:177:LYS:CE	2.80	0.45
1:H:127:LEU:HD11	1:H:141:LEU:HD21	1.98	0.45
1:C:95:ASN:HA	1:D:128:ALA:HB2	1.98	0.44
1:D:95:ASN:HA	1:E:128:ALA:HB2	1.99	0.44
1:D:144:TRP:CD1	1:D:177:LYS:HE3	2.53	0.44
1:F:25:HIS:HB2	2:F:2026:HOH:O	2.18	0.44
1:J:28:GLU:O	1:J:84:THR:HG23	2.19	0.43
1:H:25:HIS:HB2	2:H:2035:HOH:O	2.17	0.43
1:E:144:TRP:NE1	1:E:177:LYS:NZ	2.63	0.43
1:D:177:LYS:NZ	2:D:2148:HOH:O	2.52	0.43
1:A:95:ASN:HA	1:B:128:ALA:HB2	2.00	0.43
1:B:206:LYS:NZ	2:B:2211:HOH:O	2.45	0.42
1:G:127:LEU:HD11	1:G:141:LEU:HD21	2.02	0.42
1:J:177:LYS:CD	1:J:229:ALA:HB3	2.50	0.42
1:I:128:ALA:HB2	1:J:95:ASN:HA	2.02	0.42
1:F:95:ASN:HA	1:J:128:ALA:HB2	2.02	0.41
1:B:177:LYS:HD2	1:B:229:ALA:HB3	2.02	0.41
1:H:128:ALA:HB2	1:I:95:ASN:HA	2.02	0.41
1:B:25:HIS:NE2	1:B:33:ASP:HB2	2.36	0.41
1:D:158:PRO:HB3	1:D:186:THR:HB	2.03	0.41
1:G:177:LYS:HD2	1:G:229:ALA:HB3	2.02	0.41
1:H:109:VAL:HG13	1:H:139:LEU:HD23	2.03	0.41
1:B:95:ASN:HA	1:C:128:ALA:HB2	2.01	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:25:HIS:CE1	1:H:29:HIS:HB2	2.56	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	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	B	249/263 (95%)	243 (98%)	6 (2%)	0	100	100
1	C	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	D	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	E	251/263 (95%)	246 (98%)	5 (2%)	0	100	100
1	F	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	G	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	H	249/263 (95%)	242 (97%)	7 (3%)	0	100	100
1	I	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	J	249/263 (95%)	243 (98%)	6 (2%)	0	100	100
All	All	2492/2630 (95%)	2438 (98%)	54 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	197/206 (96%)	189 (96%)	8 (4%)	30	21
1	B	197/206 (96%)	191 (97%)	6 (3%)	41	33
1	C	197/206 (96%)	193 (98%)	4 (2%)	55	51
1	D	197/206 (96%)	189 (96%)	8 (4%)	30	21
1	E	197/206 (96%)	192 (98%)	5 (2%)	47	41
1	F	197/206 (96%)	191 (97%)	6 (3%)	41	33
1	G	197/206 (96%)	191 (97%)	6 (3%)	41	33
1	H	197/206 (96%)	188 (95%)	9 (5%)	27	17
1	I	197/206 (96%)	190 (96%)	7 (4%)	35	26
1	J	197/206 (96%)	190 (96%)	7 (4%)	35	26
All	All	1970/2060 (96%)	1904 (97%)	66 (3%)	37	28

All (66) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	ARG
1	A	51	ARG
1	A	77	LEU
1	A	82	LYS
1	A	139	LEU
1	A	144	TRP
1	A	163	TYR
1	A	201	MET
1	B	36	ASP
1	B	77	LEU
1	B	139	LEU
1	B	163	TYR
1	B	183	ASP
1	B	201	MET
1	C	77	LEU
1	C	139	LEU
1	C	144	TRP
1	C	163	TYR
1	D	14	ARG
1	D	77	LEU
1	D	87	ASN
1	D	139	LEU
1	D	144	TRP
1	D	163	TYR

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Mol	Chain	Res	Type
1	D	183	ASP
1	D	201	MET
1	E	77	LEU
1	E	139	LEU
1	E	144	TRP
1	E	163	TYR
1	E	201	MET
1	F	77	LEU
1	F	139	LEU
1	F	144	TRP
1	F	163	TYR
1	F	201	MET
1	F	238	ARG
1	G	14	ARG
1	G	77	LEU
1	G	139	LEU
1	G	144	TRP
1	G	163	TYR
1	G	242	LYS
1	H	14	ARG
1	H	15	ARG
1	H	77	LEU
1	H	139	LEU
1	H	144	TRP
1	H	163	TYR
1	H	177	LYS
1	H	183	ASP
1	H	201	MET
1	I	51	ARG
1	I	77	LEU
1	I	82	LYS
1	I	139	LEU
1	I	144	TRP
1	I	163	TYR
1	I	201	MET
1	J	77	LEU
1	J	139	LEU
1	J	144	TRP
1	J	163	TYR
1	J	183	ASP
1	J	201	MET
1	J	211	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	216	GLN
1	D	87	ASN
1	G	25	HIS
1	H	25	HIS
1	I	25	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 monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

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	251/263 (95%)	0.31	18 (7%) 15 17	7, 12, 23, 28	0
1	B	251/263 (95%)	-0.05	4 (1%) 72 74	8, 12, 22, 27	0
1	C	251/263 (95%)	0.22	19 (7%) 13 15	8, 12, 22, 27	0
1	D	251/263 (95%)	-0.00	16 (6%) 19 22	8, 12, 22, 28	0
1	E	253/263 (96%)	0.09	8 (3%) 47 50	8, 12, 23, 31	0
1	F	251/263 (95%)	0.10	15 (5%) 21 24	8, 12, 22, 27	0
1	G	251/263 (95%)	-0.14	4 (1%) 72 74	8, 12, 22, 28	0
1	H	251/263 (95%)	0.22	11 (4%) 34 37	8, 12, 22, 27	0
1	I	251/263 (95%)	0.10	8 (3%) 47 50	8, 12, 22, 27	0
1	J	251/263 (95%)	-0.11	2 (0%) 86 87	8, 12, 22, 29	0
All	All	2512/2630 (95%)	0.07	105 (4%) 36 39	7, 12, 22, 31	0

All (105) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	255	LYS	9.7
1	E	208	LYS	5.1
1	J	208	LYS	4.0
1	D	208	LYS	4.0
1	C	243	PHE	3.7
1	H	203	GLY	3.6
1	H	208	LYS	3.5
1	H	243	PHE	3.5
1	F	252	TYR	3.5
1	D	203	GLY	3.5
1	H	182	GLY	3.4
1	C	249	GLU	3.3
1	E	36	ASP	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	238	ARG	3.2
1	A	243	PHE	3.2
1	E	238	ARG	3.1
1	A	79	LEU	3.0
1	C	215	LYS	3.0
1	D	243	PHE	3.0
1	C	209	THR	3.0
1	D	246	ALA	3.0
1	I	215	LYS	3.0
1	C	203	GLY	2.9
1	B	208	LYS	2.9
1	G	238	ARG	2.9
1	D	247	LEU	2.8
1	C	36	ASP	2.8
1	C	218	GLU	2.8
1	D	212	ASP	2.8
1	I	249	GLU	2.8
1	A	208	LYS	2.8
1	D	238	ARG	2.8
1	C	240	ALA	2.7
1	A	36	ASP	2.7
1	C	207	THR	2.7
1	D	215	LYS	2.7
1	F	249	GLU	2.7
1	D	249	GLU	2.7
1	F	243	PHE	2.6
1	C	250	LEU	2.6
1	F	183	ASP	2.6
1	H	209	THR	2.6
1	E	207	THR	2.6
1	I	203	GLY	2.6
1	C	246	ALA	2.6
1	D	211	GLU	2.6
1	C	208	LYS	2.6
1	H	218	GLU	2.5
1	J	238	ARG	2.5
1	E	215	LYS	2.5
1	C	51	ARG	2.5
1	H	211	GLU	2.5
1	B	182	GLY	2.5
1	F	212	ASP	2.5
1	A	109	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	C	52	ASP	2.5
1	H	238	ARG	2.5
1	C	211	GLU	2.4
1	I	208	LYS	2.4
1	C	248	ALA	2.4
1	A	239	ASP	2.4
1	G	212	ASP	2.4
1	A	171	LEU	2.4
1	H	212	ASP	2.4
1	H	215	LYS	2.4
1	A	38	PRO	2.3
1	A	142	VAL	2.3
1	D	209	THR	2.3
1	E	218	GLU	2.3
1	D	239	ASP	2.3
1	F	51	ARG	2.3
1	F	238	ARG	2.3
1	I	77	LEU	2.3
1	C	222	GLU	2.3
1	C	238	ARG	2.3
1	A	108	ALA	2.2
1	A	215	LYS	2.2
1	A	244	ALA	2.2
1	F	241	LEU	2.2
1	I	141	LEU	2.2
1	A	185	LYS	2.2
1	G	171	LEU	2.2
1	C	252	TYR	2.2
1	D	214	LEU	2.2
1	D	219	GLY	2.2
1	B	27	ILE	2.1
1	D	222	GLU	2.1
1	D	242	LYS	2.1
1	I	109	VAL	2.1
1	F	182	GLY	2.1
1	A	77	LEU	2.1
1	I	250	LEU	2.1
1	F	245	ARG	2.1
1	A	211	GLU	2.1
1	F	244	ALA	2.1
1	F	250	LEU	2.1
1	H	253	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	F	211	GLU	2.1
1	F	184	PRO	2.1
1	B	218	GLU	2.0
1	G	38	PRO	2.0
1	E	211	GLU	2.0
1	F	113	ILE	2.0
1	A	207	THR	2.0
1	A	249	GLU	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 monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.