



Full wwPDB X-ray Structure Validation Report

Oct 30, 2023 – 06:31 PM JST

PDB ID : 4XLX
Title : Crystal structure of BJKS from Bradyrhizobium japonicum
Authors : Hu, Y.; Zheng, Y.; Ko, T.P.; Liu, W.; Guo, R.T.
Deposited on : 2015-01-14
Resolution : 2.00 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

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
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

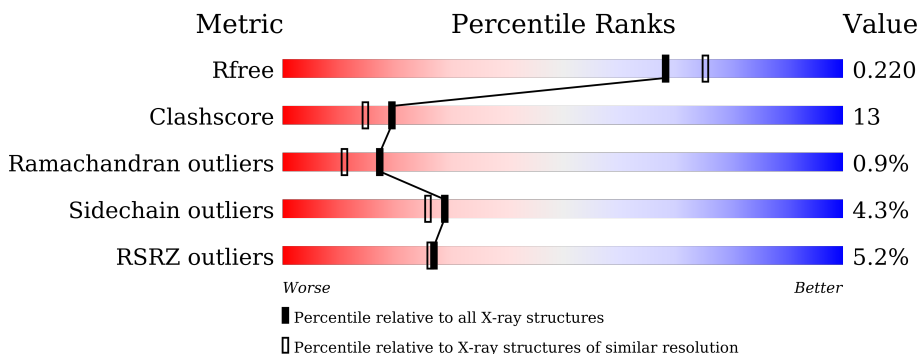
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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}	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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 $\leq 5\%$. 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	300	 5% 78% 14% • •
1	B	300	 6% 70% 21% • 7%
1	C	300	 4% 76% 14% • 6%
1	D	300	 4% 66% 19% • 11%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 9417 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 blr2150.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	288	Total 2263	C 1421	N 413	O 417	S 12	0	0	0
1	B	279	Total 2189	C 1379	N 398	O 400	S 12	0	0	0
1	C	281	Total 2211	C 1394	N 402	O 403	S 12	0	0	0
1	D	267	Total 2103	C 1334	N 379	O 379	S 11	0	0	0

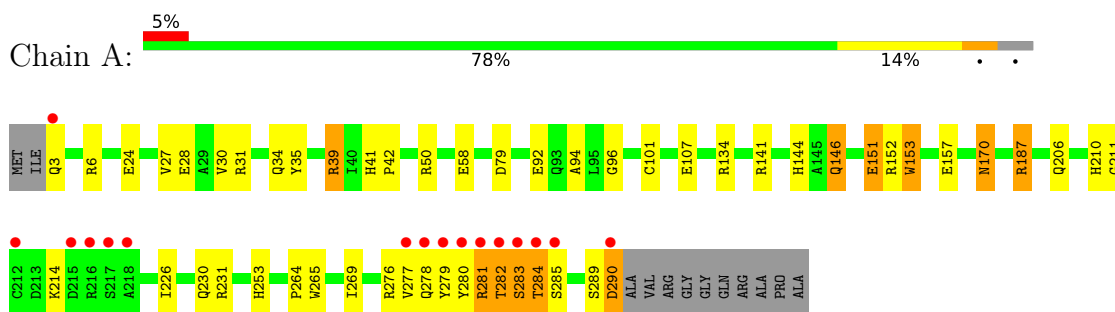
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	188	Total 188	O 188	0	0
2	B	137	Total 137	O 137	0	0
2	C	183	Total 183	O 183	0	0
2	D	143	Total 143	O 143	0	0

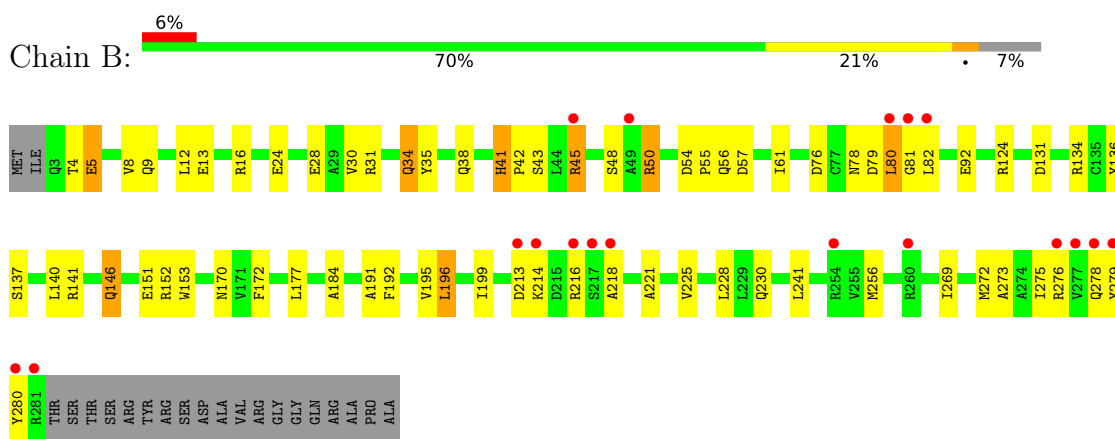
3 Residue-property plots [i](#)

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.

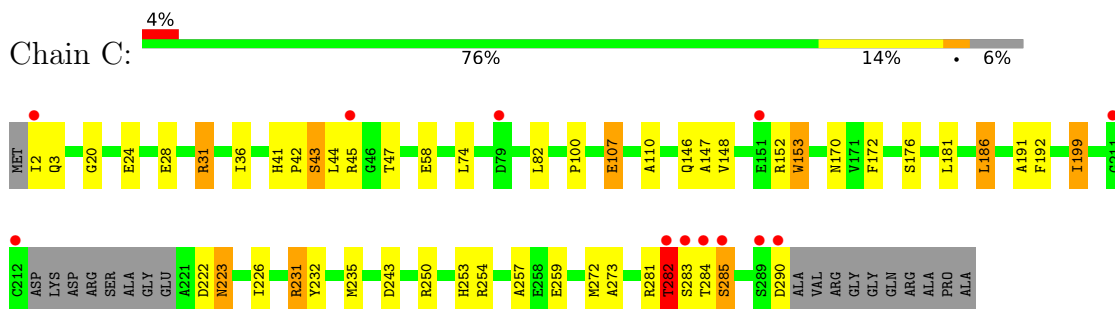
- Molecule 1: Uncharacterized protein blr2150



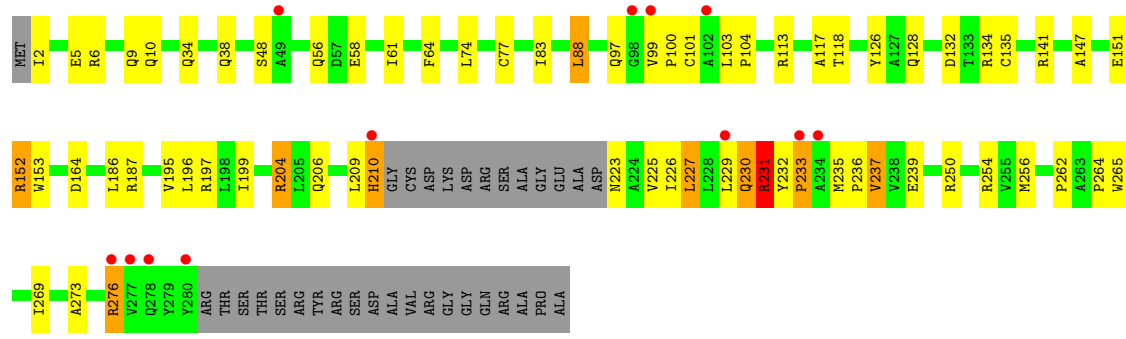
- Molecule 1: Uncharacterized protein blr2150



- Molecule 1: Uncharacterized protein blr2150



- Molecule 1: Uncharacterized protein blr2150



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	65.03Å 130.07Å 66.39Å 90.00° 95.62° 90.00°	Depositor
Resolution (Å)	25.00 – 2.00 24.81 – 2.00	Depositor EDS
% Data completeness (in resolution range)	98.0 (25.00-2.00) 95.4 (24.81-2.00)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	8.02 (at 1.99Å)	Xtrriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.176 , 0.220 0.176 , 0.220	Depositor DCC
R_{free} test set	3582 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å ²)	20.7	Xtrriage
Anisotropy	0.424	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 57.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.028 for l,-k,h	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	9417	wwPDB-VP
Average B, all atoms (Å ²)	27.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.53% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.97	0/2310	0.86	2/3138 (0.1%)
1	B	0.89	0/2235	0.83	0/3037
1	C	0.95	0/2257	0.89	2/3067 (0.1%)
1	D	0.92	2/2148 (0.1%)	0.85	2/2921 (0.1%)
All	All	0.93	2/8950 (0.0%)	0.86	6/12163 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	256	MET	CG-SD	-6.49	1.64	1.81
1	D	64	PHE	CE2-CZ	5.28	1.47	1.37

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	282	THR	N-CA-C	7.39	130.95	111.00
1	A	39	ARG	NE-CZ-NH1	-6.31	117.14	120.30
1	D	132	ASP	CB-CG-OD1	5.65	123.39	118.30
1	A	187	ARG	NE-CZ-NH2	-5.26	117.67	120.30
1	D	204	ARG	NE-CZ-NH2	-5.26	117.67	120.30
1	C	31	ARG	NE-CZ-NH1	5.11	122.85	120.30

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	2263	0	2220	46	0
1	B	2189	0	2152	67	0
1	C	2211	0	2177	51	0
1	D	2103	0	2079	66	0
2	A	188	0	0	6	0
2	B	137	0	0	8	0
2	C	183	0	0	3	0
2	D	143	0	0	3	0
All	All	9417	0	8628	223	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 13.

All (223) 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:B:199:ILE:HD11	1:B:273:ALA:HA	1.29	1.12
1:D:135:CYS:HB2	2:D:513:HOH:O	1.57	1.05
1:C:235:MET:HE1	1:D:235:MET:HG3	1.41	1.01
1:C:281:ARG:HG3	1:C:282:THR:HG23	1.45	0.95
1:B:199:ILE:HD11	1:B:273:ALA:CA	1.99	0.92
1:C:28:GLU:OE2	1:C:281:ARG:HD3	1.70	0.92
1:D:152:ARG:HH11	1:D:231:ARG:HD2	1.31	0.91
1:D:34:GLN:O	1:D:38:GLN:HG2	1.74	0.86
1:D:226:ILE:O	1:D:230:GLN:HB2	1.74	0.86
1:B:131:ASP:OD1	1:B:134:ARG:NH2	2.11	0.84
1:B:199:ILE:CD1	1:B:273:ALA:HA	2.07	0.82
1:C:235:MET:CE	1:D:235:MET:HG3	2.09	0.82
1:B:81:GLY:O	2:B:506:HOH:O	1.96	0.81
1:C:281:ARG:HG3	1:C:282:THR:N	1.96	0.80
1:B:31:ARG:HD2	1:B:280:TYR:HA	1.62	0.79
1:B:131:ASP:HB3	2:B:529:HOH:O	1.82	0.79
1:D:152:ARG:NH1	1:D:231:ARG:HD2	1.97	0.79
1:A:24:GLU:O	1:A:28:GLU:HG3	1.82	0.78
1:C:31:ARG:NH2	1:C:283:SER:OG	2.17	0.77
1:C:281:ARG:CG	1:C:282:THR:HG23	2.16	0.76
1:C:235:MET:HE1	1:D:235:MET:CG	2.15	0.76
1:C:281:ARG:HG3	1:C:282:THR:H	1.51	0.76
1:A:3:GLN:HG2	1:A:6:ARG:H	1.50	0.75
1:B:24:GLU:O	1:B:28:GLU:HG3	1.87	0.75
1:A:170:ASN:HD22	1:A:170:ASN:H	1.34	0.74
1:B:13:GLU:OE2	1:B:16:ARG:HD2	1.88	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:31:ARG:NH1	1:A:283:SER:HB2	2.03	0.73
1:C:172:PHE:CE1	1:C:272:MET:HG3	2.23	0.72
1:D:152:ARG:HD2	1:D:231:ARG:NE	2.06	0.69
1:D:250:ARG:O	1:D:254:ARG:HG3	1.92	0.69
1:C:152:ARG:HG3	1:C:231:ARG:HD2	1.74	0.69
1:D:204:ARG:O	1:D:204:ARG:HD3	1.92	0.68
1:D:229:LEU:CA	1:D:237:VAL:HG21	2.23	0.68
1:A:30:VAL:O	1:A:34:GLN:HG3	1.93	0.68
1:B:131:ASP:CB	2:B:529:HOH:O	2.38	0.68
1:D:206:GLN:NE2	1:D:276:ARG:HH22	1.93	0.67
1:D:210:HIS:ND1	1:D:210:HIS:C	2.48	0.67
1:D:153:TRP:O	1:D:231:ARG:NH2	2.28	0.66
1:D:229:LEU:HA	1:D:237:VAL:HG21	1.78	0.66
1:A:24:GLU:HG3	1:A:284:THR:HB	1.78	0.64
1:A:146:GLN:HG2	1:A:153:TRP:CE2	2.33	0.63
1:C:24:GLU:HG3	1:C:284:THR:CG2	2.27	0.63
1:C:172:PHE:HE1	1:C:272:MET:HG3	1.63	0.63
1:B:50:ARG:HG3	1:B:50:ARG:HH11	1.62	0.63
1:B:79:ASP:O	1:B:81:GLY:N	2.32	0.63
1:C:148:VAL:HG12	1:C:148:VAL:O	1.98	0.63
1:A:31:ARG:HG2	1:A:280:TYR:HA	1.80	0.62
1:A:152:ARG:HD2	1:A:231:ARG:HG2	1.82	0.62
1:C:31:ARG:HH22	1:C:283:SER:HG	1.45	0.62
1:D:227:LEU:O	1:D:231:ARG:HB2	1.98	0.62
1:A:289:SER:O	1:A:290:ASP:HB2	2.00	0.62
1:A:277:VAL:HG22	1:A:281:ARG:HB3	1.81	0.61
1:A:28:GLU:OE2	1:A:281:ARG:HD3	1.99	0.61
1:C:232:TYR:HB2	1:C:235:MET:HG2	1.82	0.61
1:C:2:ILE:HD12	1:C:58:GLU:HG3	1.81	0.60
1:C:3:GLN:OE1	2:C:579:HOH:O	2.16	0.60
1:C:43:SER:HB2	2:C:455:HOH:O	2.00	0.60
1:A:35:TYR:O	1:A:39:ARG:HG2	2.00	0.60
1:D:225:VAL:O	1:D:229:LEU:HB3	2.02	0.60
1:B:79:ASP:C	1:B:81:GLY:N	2.52	0.60
1:B:81:GLY:HA3	2:B:506:HOH:O	2.01	0.59
1:C:24:GLU:HG3	1:C:284:THR:HG22	1.84	0.59
1:D:152:ARG:HD2	1:D:231:ARG:CD	2.34	0.58
1:B:276:ARG:HB2	1:B:279:TYR:CE1	2.39	0.57
1:B:230:GLN:HG2	2:C:563:HOH:O	2.04	0.57
1:B:41:HIS:HB3	1:B:42:PRO:HD3	1.87	0.57
1:A:6:ARG:NH1	1:A:58:GLU:OE1	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:152:ARG:HD2	1:D:231:ARG:HE	1.68	0.57
1:A:226:ILE:O	1:A:230:GLN:HG3	2.05	0.56
1:A:96:GLY:O	1:A:134:ARG:NH1	2.38	0.56
1:D:88:LEU:HD23	1:D:141:ARG:HG3	1.87	0.56
1:C:41:HIS:HB3	1:C:42:PRO:HD3	1.87	0.56
1:A:276:ARG:HB3	1:A:278:GLN:HG2	1.88	0.55
1:C:146:GLN:HG3	1:C:153:TRP:CE2	2.41	0.55
1:B:199:ILE:CD1	1:B:273:ALA:CA	2.77	0.55
1:B:50:ARG:HH11	1:B:50:ARG:CG	2.19	0.55
1:D:101:CYS:O	1:D:103:LEU:N	2.37	0.55
1:B:16:ARG:CZ	2:B:402:HOH:O	2.55	0.55
1:D:77:CYS:HB2	1:D:83:ILE:HD12	1.90	0.54
1:C:199:ILE:HD11	1:C:273:ALA:N	2.23	0.54
1:A:107:GLU:CD	1:A:107:GLU:H	2.11	0.53
1:B:79:ASP:C	1:B:81:GLY:H	2.11	0.53
1:B:177:LEU:HD23	1:B:177:LEU:C	2.28	0.53
1:B:170:ASN:H	1:B:170:ASN:HD22	1.55	0.53
1:D:134:ARG:NH2	2:D:513:HOH:O	2.41	0.53
1:B:79:ASP:O	1:B:80:LEU:C	2.47	0.53
1:A:277:VAL:HG22	1:A:281:ARG:CB	2.38	0.53
1:B:192:PHE:O	1:B:195:VAL:HG22	2.09	0.53
1:A:277:VAL:HA	1:A:280:TYR:CE2	2.44	0.53
2:B:477:HOH:O	1:C:253:HIS:HD2	1.92	0.52
1:A:92:GLU:OE2	2:A:546:HOH:O	2.19	0.52
1:B:54:ASP:OD1	1:B:56:GLN:N	2.38	0.52
1:B:172:PHE:CE1	1:B:272:MET:HG3	2.45	0.51
1:B:196:LEU:HD12	1:B:196:LEU:O	2.10	0.51
1:D:2:ILE:HD11	1:D:6:ARG:HG2	1.91	0.51
1:D:229:LEU:N	1:D:237:VAL:HG21	2.26	0.51
1:C:186:LEU:HD13	1:C:192:PHE:CE1	2.46	0.51
1:D:227:LEU:O	1:D:231:ARG:HD3	2.11	0.51
1:B:221:ALA:HB2	1:B:230:GLN:HE22	1.76	0.51
1:D:97:GLN:O	1:D:99:VAL:HG12	2.11	0.51
1:D:6:ARG:NH1	1:D:58:GLU:OE1	2.43	0.51
1:C:146:GLN:HG3	1:C:153:TRP:CD2	2.45	0.50
1:D:195:VAL:HG11	1:D:269:ILE:HD13	1.92	0.50
1:B:214:LYS:H	1:B:214:LYS:HD2	1.76	0.50
1:A:79:ASP:OD1	1:A:144:HIS:CE1	2.64	0.50
1:D:276:ARG:NE	1:D:276:ARG:HA	2.27	0.50
1:B:199:ILE:HD11	1:B:273:ALA:N	2.26	0.49
1:B:256:MET:HE1	1:B:269:ILE:CD1	2.42	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:ASN:HD22	1:A:170:ASN:N	2.07	0.49
1:D:227:LEU:C	1:D:227:LEU:HD12	2.33	0.49
1:B:172:PHE:HE1	1:B:272:MET:HG3	1.78	0.49
1:C:152:ARG:HG3	1:C:231:ARG:HH21	1.77	0.49
1:A:206:GLN:NE2	2:A:527:HOH:O	2.44	0.49
1:A:253:HIS:HD2	2:A:559:HOH:O	1.95	0.49
1:B:92:GLU:OE2	1:B:141:ARG:HD3	2.13	0.48
1:C:42:PRO:O	1:C:45:ARG:HB2	2.12	0.48
1:D:199:ILE:HD11	1:D:273:ALA:CA	2.43	0.48
1:A:211:GLY:HA2	1:A:214:LYS:HD2	1.94	0.48
1:B:276:ARG:HB2	1:B:279:TYR:CD1	2.49	0.48
1:D:56:GLN:HA	1:D:61:ILE:HD11	1.94	0.48
1:C:223:ASN:HB3	1:C:226:ILE:HD12	1.96	0.48
1:D:100:PRO:HA	1:D:113:ARG:NH1	2.29	0.48
1:D:229:LEU:O	1:D:230:GLN:O	2.31	0.48
1:A:170:ASN:H	1:A:170:ASN:ND2	2.05	0.48
1:A:170:ASN:N	1:A:170:ASN:ND2	2.62	0.48
1:B:225:VAL:HG22	1:B:241:LEU:HD12	1.96	0.48
1:B:76:ASP:HB3	1:B:82:LEU:HD11	1.96	0.47
1:D:236:PRO:HB2	1:D:239:GLU:HB3	1.95	0.47
1:D:223:ASN:CB	1:D:226:ILE:HG12	2.45	0.47
1:B:146:GLN:HG2	1:B:153:TRP:CE3	2.49	0.47
1:A:31:ARG:HG2	1:A:279:TYR:O	2.15	0.47
1:B:41:HIS:HE1	1:B:45:ARG:NE	2.13	0.47
1:D:232:TYR:HA	1:D:233:PRO:HD2	1.64	0.47
1:A:210:HIS:CE1	1:A:278:GLN:HE22	2.33	0.47
1:C:147:ALA:HB2	1:C:222:ASP:HB2	1.97	0.47
1:C:36:ILE:HD11	1:C:272:MET:SD	2.55	0.47
1:D:197:ARG:NH1	2:D:540:HOH:O	2.47	0.47
1:D:2:ILE:HD12	1:D:58:GLU:CD	2.36	0.46
1:D:101:CYS:C	1:D:103:LEU:H	2.19	0.46
1:B:136:TYR:CZ	1:B:140:LEU:HD11	2.51	0.46
1:A:141:ARG:HH11	1:A:141:ARG:HB3	1.81	0.46
1:D:134:ARG:HG2	1:D:134:ARG:HH11	1.81	0.46
1:B:56:GLN:HA	1:B:61:ILE:HD11	1.98	0.46
1:B:9:GLN:OE1	1:B:13:GLU:HG2	2.16	0.46
1:B:50:ARG:CG	1:B:50:ARG:NH1	2.78	0.46
1:D:74:LEU:HD23	1:D:83:ILE:HD13	1.98	0.46
1:A:282:THR:HG23	1:A:283:SER:N	2.31	0.45
1:A:27:VAL:HB	1:A:284:THR:HG21	1.99	0.45
1:D:186:LEU:HD11	1:D:265:TRP:CD1	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:48:SER:OG	1:B:55:PRO:HD3	2.15	0.45
1:C:284:THR:O	1:C:285:SER:HB2	2.16	0.45
1:C:36:ILE:CD1	1:C:272:MET:SD	3.05	0.45
1:C:170:ASN:HD22	1:C:170:ASN:H	1.65	0.45
1:B:9:GLN:NE2	1:B:9:GLN:HA	2.33	0.44
1:D:230:GLN:O	1:D:231:ARG:C	2.56	0.44
1:A:187:ARG:NH2	2:A:493:HOH:O	2.23	0.44
1:C:191:ALA:HB1	1:C:259:GLU:HG3	2.00	0.44
1:B:199:ILE:HD13	1:B:273:ALA:HB2	1.99	0.44
1:D:206:GLN:CD	1:D:276:ARG:HH22	2.21	0.44
1:B:34:GLN:O	1:B:38:GLN:HG3	2.17	0.44
1:C:107:GLU:O	1:C:107:GLU:HG3	2.17	0.44
1:D:147:ALA:O	1:D:151:GLU:HG3	2.18	0.44
1:D:5:GLU:OE2	1:D:9:GLN:NE2	2.35	0.44
1:D:117:ALA:HB2	1:D:126:TYR:CE1	2.53	0.44
1:B:218:ALA:O	1:C:253:HIS:HB2	2.18	0.43
1:C:176:SER:HA	1:C:181:LEU:HB2	1.99	0.43
1:D:101:CYS:O	1:D:101:CYS:SG	2.76	0.43
1:D:204:ARG:HD3	1:D:204:ARG:C	2.33	0.43
1:D:231:ARG:CB	1:D:231:ARG:HH11	2.31	0.43
1:B:256:MET:HE1	1:B:269:ILE:HD12	2.00	0.43
1:C:100:PRO:HA	1:C:110:ALA:HB2	2.00	0.43
1:B:131:ASP:CG	2:B:529:HOH:O	2.55	0.43
1:C:172:PHE:HE1	1:C:272:MET:CG	2.31	0.43
1:D:223:ASN:N	1:D:226:ILE:HD11	2.34	0.43
1:A:24:GLU:HA	1:A:284:THR:HG21	2.00	0.43
1:C:44:LEU:O	1:C:47:THR:N	2.47	0.43
1:C:250:ARG:O	1:C:254:ARG:HG3	2.18	0.43
1:A:94:ALA:HB2	1:A:101:CYS:HA	1.99	0.43
1:B:124:ARG:NH2	1:B:184:ALA:HB3	2.34	0.43
1:D:186:LEU:HD21	1:D:262:PRO:CD	2.49	0.43
1:B:35:TYR:CE2	1:B:275:ILE:HG13	2.54	0.43
1:B:213:ASP:CG	1:B:216:ARG:HH21	2.22	0.43
1:C:243:ASP:OD2	1:D:232:TYR:OH	2.29	0.43
1:B:57:ASP:OD1	1:B:57:ASP:C	2.58	0.43
1:B:230:GLN:NE2	1:C:257:ALA:HB1	2.34	0.42
1:A:276:ARG:C	1:A:278:GLN:N	2.70	0.42
1:C:186:LEU:HD13	1:C:192:PHE:CD1	2.54	0.42
1:B:152:ARG:NE	1:B:230:GLN:OE1	2.41	0.42
1:A:153:TRP:HB2	1:A:157:GLU:HB2	2.02	0.42
1:A:289:SER:O	1:A:290:ASP:CB	2.67	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:279:TYR:CD1	1:B:279:TYR:N	2.87	0.42
1:D:2:ILE:CD1	1:D:10:GLN:NE2	2.83	0.42
1:A:107:GLU:CD	1:A:107:GLU:N	2.74	0.41
1:B:9:GLN:HA	1:B:9:GLN:HE21	1.85	0.41
1:D:206:GLN:CD	1:D:276:ARG:NH2	2.73	0.41
1:A:141:ARG:NH1	1:A:141:ARG:CB	2.83	0.41
1:A:277:VAL:HA	1:A:280:TYR:CZ	2.55	0.41
1:C:20:GLY:O	1:C:82:LEU:HD13	2.20	0.41
1:B:4:THR:O	1:B:8:VAL:HG23	2.20	0.41
1:A:6:ARG:CZ	2:A:530:HOH:O	2.69	0.41
1:A:265:TRP:O	1:A:269:ILE:HG12	2.21	0.41
1:D:103:LEU:HA	1:D:104:PRO:HD3	1.97	0.41
1:B:12:LEU:O	1:B:16:ARG:HG3	2.20	0.41
1:B:30:VAL:O	1:B:34:GLN:HB2	2.21	0.41
1:D:209:LEU:HD23	1:D:209:LEU:HA	1.82	0.41
1:A:41:HIS:HB3	1:A:42:PRO:HD3	2.02	0.41
1:B:5:GLU:OE2	1:B:5:GLU:O	2.39	0.41
1:B:191:ALA:O	1:B:195:VAL:HG13	2.21	0.41
1:C:41:HIS:O	1:C:42:PRO:C	2.57	0.41
1:D:100:PRO:HA	1:D:113:ARG:HH12	1.86	0.41
1:B:78:ASN:HD21	1:B:141:ARG:HG3	1.85	0.41
1:C:147:ALA:CB	1:C:222:ASP:HB2	2.50	0.41
1:C:148:VAL:O	1:C:148:VAL:CG1	2.67	0.41
1:D:199:ILE:HD11	1:D:273:ALA:HA	2.03	0.41
1:B:137:SER:HB2	2:B:520:HOH:O	2.21	0.40
1:B:230:GLN:CD	1:C:257:ALA:O	2.59	0.40
1:B:228:LEU:HA	1:B:228:LEU:HD23	1.84	0.40
1:D:88:LEU:HD12	1:D:88:LEU:HA	1.89	0.40
1:D:101:CYS:C	1:D:103:LEU:N	2.74	0.40
1:C:199:ILE:HD11	1:C:273:ALA:CA	2.51	0.40
1:D:128:GLN:HG2	1:D:187:ARG:NH2	2.37	0.40
1:A:151:GLU:CD	2:A:572:HOH:O	2.59	0.40
1:D:135:CYS:SG	1:D:164:ASP:OD2	2.79	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	286/300 (95%)	281 (98%)	2 (1%)	3 (1%)	15	9
1	B	277/300 (92%)	272 (98%)	4 (1%)	1 (0%)	34	30
1	C	277/300 (92%)	269 (97%)	6 (2%)	2 (1%)	22	16
1	D	263/300 (88%)	252 (96%)	7 (3%)	4 (2%)	10	4
All	All	1103/1200 (92%)	1074 (97%)	19 (2%)	10 (1%)	17	11

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	282	THR
1	C	282	THR
1	D	230	GLN
1	D	233	PRO
1	C	285	SER
1	A	285	SER
1	B	80	LEU
1	A	281	ARG
1	D	231	ARG
1	D	237	VAL

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	230/237 (97%)	221 (96%)	9 (4%)	32	30

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	221/237 (93%)	211 (96%)	10 (4%)	27	24
1	C	225/237 (95%)	216 (96%)	9 (4%)	31	29
1	D	213/237 (90%)	203 (95%)	10 (5%)	26	22
All	All	889/948 (94%)	851 (96%)	38 (4%)	29	26

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	ARG
1	A	146	GLN
1	A	151	GLU
1	A	153	TRP
1	A	170	ASN
1	A	264	PRO
1	A	283	SER
1	A	284	THR
1	A	290	ASP
1	B	5	GLU
1	B	34	GLN
1	B	41	HIS
1	B	43	SER
1	B	45	ARG
1	B	50	ARG
1	B	146	GLN
1	B	151	GLU
1	B	196	LEU
1	B	278	GLN
1	C	43	SER
1	C	74	LEU
1	C	107	GLU
1	C	153	TRP
1	C	186	LEU
1	C	199	ILE
1	C	223	ASN
1	C	231	ARG
1	C	290	ASP
1	D	48	SER
1	D	88	LEU
1	D	118	THR
1	D	152	ARG
1	D	196	LEU

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Mol	Chain	Res	Type
1	D	210	HIS
1	D	227	LEU
1	D	231	ARG
1	D	264	PRO
1	D	276	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	144	HIS
1	A	170	ASN
1	A	206	GLN
1	A	210	HIS
1	B	34	GLN
1	B	41	HIS
1	B	56	GLN
1	B	78	ASN
1	B	93	GLN
1	B	170	ASN
1	B	278	GLN
1	C	10	GLN
1	C	78	ASN
1	C	170	ASN
1	C	210	HIS
1	C	253	HIS
1	D	10	GLN
1	D	34	GLN
1	D	170	ASN

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, 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	288/300 (96%)	-0.10	16 (5%) 24 23	10, 20, 62, 83	0
1	B	279/300 (93%)	0.05	18 (6%) 18 18	12, 26, 54, 79	0
1	C	281/300 (93%)	-0.11	12 (4%) 35 34	11, 21, 48, 74	0
1	D	267/300 (89%)	-0.11	12 (4%) 33 32	11, 24, 51, 62	0
All	All	1115/1200 (92%)	-0.07	58 (5%) 27 26	10, 23, 54, 83	0

All (58) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	284	THR	10.3
1	A	282	THR	8.8
1	A	283	SER	7.2
1	C	282	THR	6.8
1	C	283	SER	6.6
1	A	277	VAL	6.6
1	B	281	ARG	6.1
1	A	284	THR	5.9
1	C	285	SER	5.4
1	B	218	ALA	5.1
1	A	217	SER	4.9
1	B	277	VAL	4.8
1	B	81	GLY	4.8
1	A	281	ARG	4.7
1	A	290	ASP	4.7
1	B	80	LEU	4.2
1	B	217	SER	4.1
1	A	218	ALA	4.1
1	D	229	LEU	4.0
1	C	290	ASP	3.7
1	A	278	GLN	3.6

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Mol	Chain	Res	Type	RSRZ
1	D	233	PRO	3.4
1	A	279	TYR	3.4
1	A	212	CYS	3.3
1	B	82	LEU	3.3
1	A	216	ARG	3.2
1	C	212	CYS	3.0
1	D	277	VAL	3.0
1	C	79	ASP	3.0
1	A	285	SER	3.0
1	B	213	ASP	3.0
1	C	289	SER	2.8
1	B	216	ARG	2.8
1	D	280	TYR	2.8
1	D	210	HIS	2.8
1	D	278	GLN	2.7
1	B	254	ARG	2.6
1	C	151	GLU	2.5
1	B	214	LYS	2.5
1	B	279	TYR	2.5
1	A	3	GLN	2.5
1	B	45	ARG	2.5
1	D	102	ALA	2.5
1	B	260	ARG	2.4
1	B	278	GLN	2.4
1	B	276	ARG	2.4
1	C	2	ILE	2.4
1	C	45	ARG	2.3
1	D	276	ARG	2.3
1	D	98	GLY	2.3
1	B	280	TYR	2.2
1	D	234	ALA	2.2
1	D	99	VAL	2.2
1	A	215	ASP	2.2
1	A	280	TYR	2.1
1	B	49	ALA	2.1
1	D	49	ALA	2.1
1	C	211	GLY	2.0

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 [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.