WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Aug 21, 2023 – 05:28 PM EDT

PDB ID	:	2Q39
Title	:	Beta-lactoglobulin (low humidity)
Authors	:	Vijayalakshmi, L.; Krishna, R.; Sankaranarayanan, R.; Vijayan, M.
Deposited on	:	2007-05-30
Resolution	:	2.50 Å(reported)

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	:	2.35
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)	:	2.35

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 2.50 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	Percentile Ranks	Value
Rfree		0.306
Clashscore		39
Ramachandran outliers		3.9%
Sidechain outliers		8.4%
RSRZ outliers		9.0%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
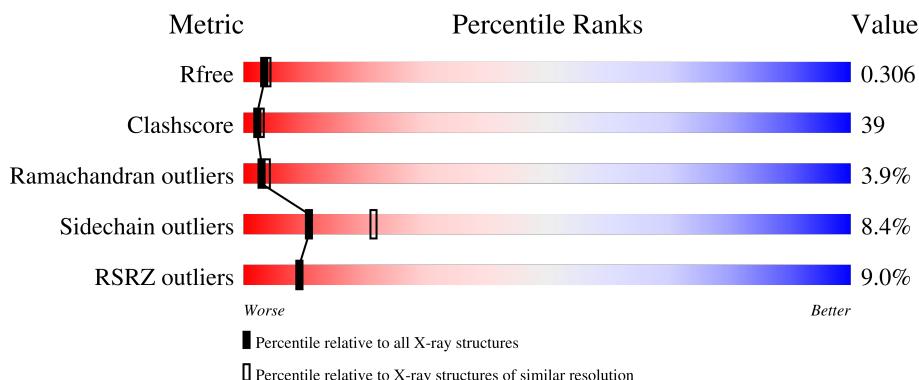
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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 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	162	9% 43% 49% 7% ••
1	B	162	8% 48% 41% •• 7%

Full wwPDB X-ray Structure Validation Report
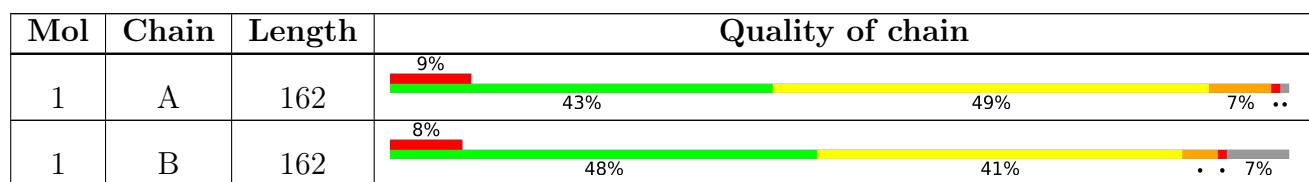
2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 2449 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 Beta-lactoglobulin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	160	Total	C	N	O	S	0	0	0
			1196	767	192	228	9			
1	B	151	Total	C	N	O	S	0	0	0
			1136	729	185	214	8			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	64	ASP	GLY	variant	UNP P02754
A	118	VAL	ALA	variant	UNP P02754
B	264	ASP	GLY	variant	UNP P02754
B	318	VAL	ALA	variant	UNP P02754

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	53	Total	O	0	0
			53	53		
2	B	64	Total	O	0	0
			64	64		

3 Residue-property plots ⓘ

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: Beta-lactoglobulin

Chain A:

• Molecule 1: Beta-lactoglobulin

Chain B:
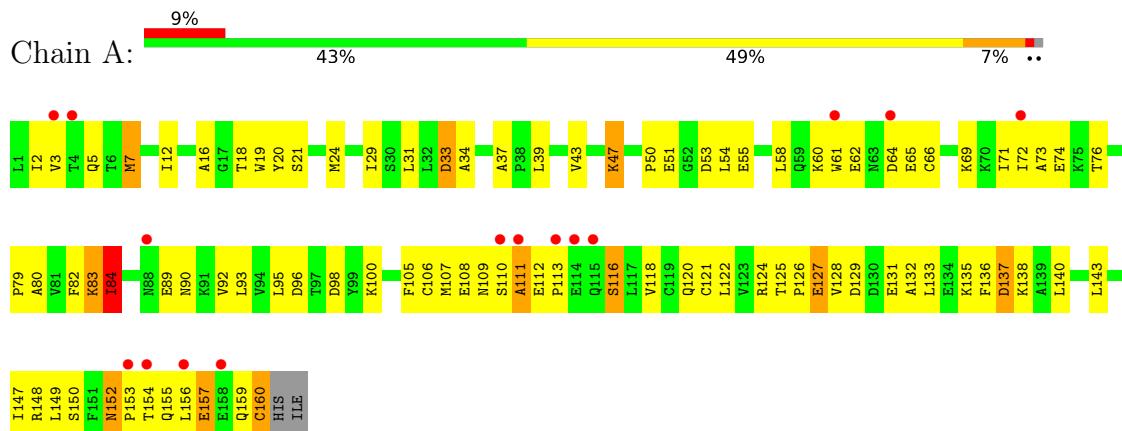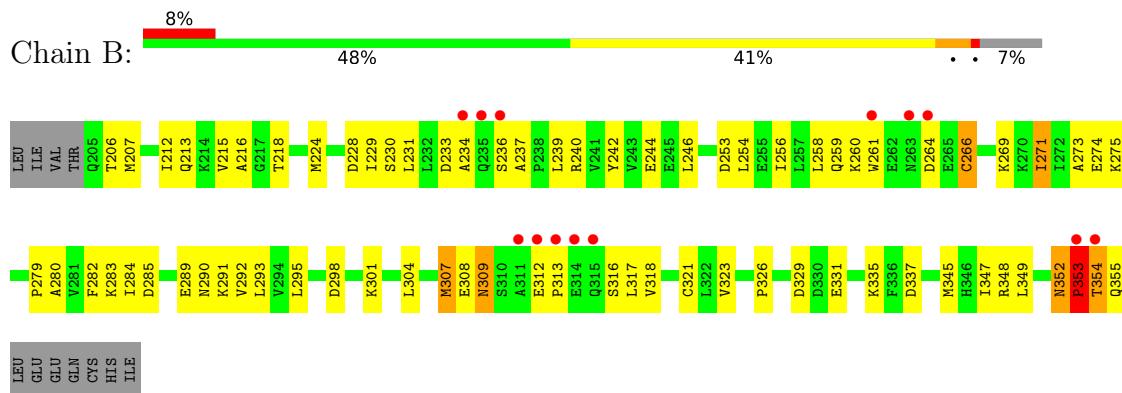
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	63.09Å 80.31Å 56.38Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.72 – 2.50 19.71 – 2.50	Depositor EDS
% Data completeness (in resolution range)	98.9 (19.72-2.50) 99.0 (19.71-2.50)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.18 (at 2.50Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.236 , 0.306 0.236 , 0.306	Depositor DCC
R_{free} test set	1054 reflections (10.31%)	wwPDB-VP
Wilson B-factor (Å^2)	38.7	Xtriage
Anisotropy	0.314	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 71.4	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	2449	wwPDB-VP
Average B, all atoms (Å^2)	39.0	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 31.32 % 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 1.1293e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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[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 (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	0.38	0/1216	0.88	6/1655 (0.4%)
1	B	0.40	0/1154	0.70	2/1569 (0.1%)
All	All	0.39	0/2370	0.80	8/3224 (0.2%)

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	84	ILE	CA-CB-CG2	10.58	132.05	110.90
1	A	84	ILE	N-CA-CB	9.88	133.52	110.80
1	A	84	ILE	CA-CB-CG1	-8.89	94.11	111.00
1	A	84	ILE	CA-C-N	-7.98	99.64	117.20
1	A	83	LYS	C-N-CA	7.80	141.21	121.70
1	A	84	ILE	CA-C-O	6.72	134.21	120.10
1	B	353	PRO	N-CA-CB	6.07	110.58	103.30
1	B	313	PRO	N-CA-CB	5.61	110.03	103.30

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	1196	0	1162	106	0
1	B	1136	0	1113	76	0
2	A	53	0	0	27	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	64	0	0	14	0
All	All	2449	0	2275	178	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 39.

All (178) 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:39:LEU:HD13	1:A:118:VAL:HG21	1.33	1.07
1:A:129:ASP:HB3	2:A:171:HOH:O	1.60	1.02
1:A:71:ILE:HG21	1:A:84:ILE:HG22	1.41	1.02
1:A:29:ILE:HG22	1:A:147:ILE:HB	1.44	0.98
1:A:152:ASN:H	1:A:153:PRO:HD3	1.26	0.97
1:A:152:ASN:H	1:A:153:PRO:CD	1.81	0.94
1:A:43:VAL:HG12	2:A:203:HOH:O	1.68	0.92
1:A:152:ASN:C	1:A:154:THR:H	1.74	0.90
1:A:39:LEU:HD13	1:A:118:VAL:CG2	2.04	0.88
1:A:39:LEU:HG	2:A:208:HOH:O	1.74	0.87
1:A:107:MET:HB2	2:A:206:HOH:O	1.76	0.84
1:B:256:ILE:HB	1:B:271:ILE:HG23	1.58	0.84
1:A:89:GLU:HG2	1:A:107:MET:HB3	1.64	0.79
1:A:5:GLN:HG2	1:A:95:LEU:HD13	1.65	0.79
1:A:152:ASN:C	1:A:154:THR:N	2.36	0.78
1:B:347:ILE:HG12	2:B:417:HOH:O	1.84	0.77
1:A:131:GLU:HB2	2:A:212:HOH:O	1.84	0.77
1:B:312:GLU:HG3	1:B:316:SER:HB2	1.68	0.76
1:B:258:LEU:HB2	1:B:269:LYS:HB2	1.68	0.75
1:A:148:ARG:O	1:B:347:ILE:HD12	1.89	0.73
1:A:116:SER:HB2	2:A:209:HOH:O	1.87	0.72
1:A:71:ILE:CG2	1:A:84:ILE:HG22	2.17	0.72
1:A:152:ASN:N	1:A:153:PRO:CD	2.52	0.72
1:A:24:MET:HB3	1:A:120:GLN:HG2	1.70	0.72
1:A:154:THR:CG2	1:A:156:LEU:HG	2.20	0.72
1:A:149:LEU:HD23	1:B:347:ILE:HD13	1.70	0.71
1:B:229:ILE:O	1:B:233:ASP:HB2	1.89	0.71
1:A:133:LEU:HD22	2:A:181:HOH:O	1.89	0.71
1:A:118:VAL:HB	2:A:206:HOH:O	1.91	0.70
1:B:261:TRP:CZ2	1:B:264:ASP:HA	2.26	0.70
1:A:84:ILE:HD12	1:A:89:GLU:HB3	1.73	0.69
1:A:125:THR:OG1	1:A:127:GLU:HG2	1.92	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:260:LYS:HG2	1:B:261:TRP:H	1.57	0.69
1:A:157:GLU:HA	2:A:215:HOH:O	1.92	0.69
1:B:284:ILE:HD11	1:B:292:VAL:HG23	1.77	0.67
1:A:5:GLN:HB3	1:A:95:LEU:HD22	1.77	0.66
1:B:348:ARG:NH1	1:B:348:ARG:HB3	2.11	0.66
1:A:61:TRP:CH2	1:A:64:ASP:HA	2.31	0.66
1:B:273:ALA:HB2	1:B:284:ILE:HD13	1.77	0.65
1:B:309:ASN:HB2	2:B:375:HOH:O	1.95	0.65
1:B:260:LYS:O	1:B:266:CYS:HA	1.96	0.65
1:B:213:GLN:HB2	2:B:402:HOH:O	1.94	0.65
1:A:160:CYS:SG	2:A:168:HOH:O	2.54	0.65
1:A:136:PHE:O	1:A:140:LEU:HG	1.97	0.65
1:A:62:GLU:N	2:A:178:HOH:O	2.22	0.64
1:A:12:ILE:HD11	1:A:54:LEU:HB2	1.80	0.64
1:B:279:PRO:HG2	2:B:366:HOH:O	1.98	0.63
1:A:47:LYS:CG	1:A:55:GLU:HB3	2.29	0.63
1:A:71:ILE:HG21	1:A:84:ILE:CG2	2.25	0.62
1:A:137:ASP:CG	1:A:148:ARG:HH22	2.03	0.62
1:A:154:THR:HG22	1:A:156:LEU:HG	1.81	0.62
1:A:84:ILE:CD1	1:A:89:GLU:HB3	2.29	0.61
1:B:308:GLU:HG3	1:B:317:LEU:HD13	1.81	0.61
1:A:137:ASP:OD1	1:A:148:ARG:NH2	2.34	0.61
1:A:131:GLU:HB3	2:A:171:HOH:O	1.99	0.60
1:A:127:GLU:HG3	1:A:128:VAL:N	2.17	0.60
1:B:239:LEU:HD22	1:B:307:MET:HE1	1.81	0.60
1:B:279:PRO:O	1:B:280:ALA:HB3	2.01	0.60
1:B:244:GLU:CD	1:B:259:GLN:HE21	2.05	0.60
1:B:254:LEU:CD2	1:B:256:ILE:HD11	2.32	0.60
1:A:157:GLU:HG2	2:A:215:HOH:O	2.01	0.60
1:A:39:LEU:CD1	1:A:118:VAL:HG21	2.23	0.60
1:B:284:ILE:HD11	1:B:292:VAL:CG2	2.31	0.60
1:A:129:ASP:HB2	2:A:183:HOH:O	2.03	0.59
1:A:154:THR:HG21	1:A:156:LEU:HG	1.84	0.59
1:B:254:LEU:HD23	1:B:256:ILE:HD11	1.84	0.58
1:A:152:ASN:HA	2:A:213:HOH:O	2.04	0.58
1:A:29:ILE:HD13	2:B:418:HOH:O	2.05	0.57
1:A:110:SER:O	1:A:111:ALA:HB2	2.03	0.57
1:A:47:LYS:HG2	1:A:55:GLU:HB3	1.87	0.57
1:B:271:ILE:C	1:B:271:ILE:HD13	2.24	0.57
1:B:298:ASP:C	1:B:298:ASP:OD1	2.43	0.57
1:A:7:MET:HG2	1:A:96:ASP:HA	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:128:VAL:HA	2:A:204:HOH:O	2.06	0.56
1:B:230:SER:HA	1:B:233:ASP:HB2	1.87	0.56
1:A:156:LEU:O	1:A:157:GLU:HB2	2.06	0.56
1:B:253:ASP:OD1	1:B:274:GLU:HG2	2.05	0.56
1:A:7:MET:CG	1:A:96:ASP:HA	2.35	0.56
1:B:233:ASP:O	1:B:234:ALA:HB3	2.04	0.55
1:A:19:TRP:HB2	2:A:203:HOH:O	2.07	0.55
1:A:60:LYS:HD2	1:A:61:TRP:O	2.07	0.55
1:B:260:LYS:HG2	1:B:261:TRP:N	2.22	0.55
1:B:246:LEU:HD22	1:B:256:ILE:HD12	1.89	0.55
1:A:112:GLU:N	1:A:113:PRO:HD3	2.22	0.54
1:B:331:GLU:O	1:B:335:LYS:HG2	2.07	0.54
1:A:149:LEU:CD2	1:B:347:ILE:HD13	2.36	0.54
1:B:207:MET:HB2	1:B:295:LEU:O	2.07	0.54
1:A:72:ILE:HD12	1:A:72:ILE:N	2.23	0.53
1:B:242:TYR:HB2	1:B:259:GLN:HB2	1.90	0.53
1:A:65:GLU:C	2:A:178:HOH:O	2.47	0.53
1:A:84:ILE:HG12	1:A:92:VAL:HG23	1.90	0.53
1:B:228:ASP:HB3	1:B:231:LEU:HG	1.90	0.53
1:B:329:ASP:CB	2:B:387:HOH:O	2.56	0.53
1:B:348:ARG:HB3	1:B:348:ARG:CZ	2.38	0.53
1:B:239:LEU:HD22	1:B:307:MET:CE	2.39	0.52
1:B:246:LEU:CD2	1:B:256:ILE:HD12	2.39	0.52
1:A:47:LYS:HG3	1:A:55:GLU:HB3	1.90	0.52
1:A:66:CYS:CB	1:A:160:CYS:HG	2.23	0.52
1:A:152:ASN:C	2:A:182:HOH:O	2.48	0.52
1:B:355:GLN:CB	2:B:371:HOH:O	2.58	0.51
1:B:239:LEU:HD13	1:B:318:VAL:HG21	1.92	0.51
1:B:353:PRO:HA	2:B:383:HOH:O	2.12	0.50
1:A:21:SER:HA	1:A:122:LEU:HD23	1.93	0.50
1:B:298:ASP:HB2	2:B:405:HOH:O	2.12	0.50
1:A:76:THR:HG22	1:A:83:LYS:HE3	1.92	0.50
1:B:239:LEU:CD1	1:B:318:VAL:HG21	2.42	0.49
1:A:60:LYS:HD3	1:A:61:TRP:N	2.27	0.49
1:A:140:LEU:HA	1:A:143:LEU:HD12	1.93	0.49
1:A:108:GLU:HG2	1:A:109:ASN:N	2.27	0.49
1:A:106:CYS:HA	1:A:118:VAL:O	2.13	0.48
1:B:212:ILE:O	1:B:215:VAL:HG22	2.13	0.48
1:B:304:LEU:HD23	1:B:321:CYS:HA	1.95	0.48
1:A:155:GLN:O	1:A:157:GLU:HG3	2.13	0.48
1:A:34:ALA:H	1:A:37:ALA:HB2	1.79	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:152:ASN:O	1:A:154:THR:N	2.46	0.47
1:B:275:LYS:C	2:B:421:HOH:O	2.53	0.47
1:A:79:PRO:O	1:A:80:ALA:HB3	2.14	0.47
1:B:284:ILE:HB	1:B:290:ASN:HB2	1.95	0.47
1:B:348:ARG:C	1:B:349:LEU:HD12	2.35	0.47
1:A:90:ASN:CB	2:A:180:HOH:O	2.63	0.47
1:A:39:LEU:HD11	1:A:89:GLU:OE1	2.15	0.47
1:A:98:ASP:C	1:A:100:LYS:H	2.17	0.47
1:A:16:ALA:O	1:A:124:ARG:NH1	2.43	0.47
1:B:216:ALA:HB3	2:B:367:HOH:O	2.15	0.47
1:A:5:GLN:HG3	1:A:95:LEU:HB3	1.97	0.46
1:A:109:ASN:HB3	2:A:209:HOH:O	2.13	0.46
1:A:157:GLU:OE2	1:A:160:CYS:O	2.33	0.46
1:A:50:PRO:HD2	1:A:51:GLU:OE2	2.16	0.46
1:A:54:LEU:HB3	1:A:73:ALA:HB3	1.98	0.46
1:B:233:ASP:O	1:B:237:ALA:HB2	2.17	0.46
1:B:308:GLU:HG3	1:B:317:LEU:CD1	2.46	0.45
1:A:66:CYS:N	2:A:178:HOH:O	2.50	0.45
1:B:282:PHE:O	1:B:291:LYS:HA	2.16	0.45
1:B:271:ILE:HD11	1:B:273:ALA:HB2	1.98	0.45
1:A:110:SER:O	1:A:111:ALA:CB	2.64	0.45
1:A:154:THR:HG22	1:A:156:LEU:H	1.82	0.44
1:A:20:TYR:CE2	1:A:126:PRO:HD3	2.53	0.44
1:A:66:CYS:HA	2:A:178:HOH:O	2.16	0.44
1:B:289:GLU:O	1:B:309:ASN:HA	2.18	0.44
1:B:274:GLU:OE2	1:B:285:ASP:OD1	2.36	0.43
1:A:12:ILE:HD12	1:A:82:PHE:CE2	2.53	0.43
1:B:301:LYS:O	1:B:323:VAL:HA	2.18	0.43
1:B:256:ILE:HB	1:B:271:ILE:CG2	2.38	0.43
1:B:256:ILE:HG12	1:B:271:ILE:HD12	2.01	0.43
1:A:150:SER:O	1:B:229:ILE:HD11	2.18	0.43
1:A:69:LYS:HA	2:A:184:HOH:O	2.19	0.42
1:B:352:ASN:O	2:B:391:HOH:O	2.22	0.42
1:B:355:GLN:CB	2:B:385:HOH:O	2.67	0.42
1:A:135:LYS:O	1:A:138:LYS:HB3	2.19	0.42
1:B:353:PRO:CA	2:B:383:HOH:O	2.67	0.42
1:A:66:CYS:CA	2:A:178:HOH:O	2.67	0.42
1:A:156:LEU:O	1:A:157:GLU:CB	2.67	0.42
1:A:159:GLN:O	1:A:160:CYS:O	2.38	0.42
1:A:53:ASP:OD1	1:A:74:GLU:HA	2.20	0.42
1:A:79:PRO:HA	2:A:186:HOH:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:51:GLU:H	1:A:51:GLU:CD	2.22	0.42
1:A:148:ARG:NH1	1:A:148:ARG:HG2	2.35	0.42
1:B:256:ILE:HG22	1:B:258:LEU:HD21	2.01	0.42
1:A:121:CYS:SG	1:A:132:ALA:HB1	2.60	0.42
1:A:148:ARG:HG2	1:A:148:ARG:HH11	1.85	0.42
1:B:237:ALA:HB3	1:B:240:ARG:HB2	2.02	0.41
1:A:31:LEU:O	1:A:37:ALA:HB1	2.19	0.41
1:A:105:PHE:HE1	1:A:122:LEU:HD11	1.85	0.41
1:B:233:ASP:O	1:B:234:ALA:CB	2.69	0.41
1:A:98:ASP:O	1:A:100:LYS:N	2.50	0.41
1:B:290:ASN:HD21	1:B:309:ASN:CG	2.24	0.41
1:A:129:ASP:N	2:A:204:HOH:O	2.43	0.41
1:B:271:ILE:CG1	1:B:284:ILE:HD12	2.51	0.41
1:B:239:LEU:HD13	1:B:318:VAL:CG2	2.50	0.41
1:A:61:TRP:CZ2	1:A:64:ASP:HA	2.55	0.41
1:B:261:TRP:CE2	1:B:264:ASP:HA	2.56	0.41
1:B:271:ILE:HG13	1:B:284:ILE:HD12	2.03	0.41
1:B:212:ILE:HD12	1:B:212:ILE:HA	1.89	0.40
1:B:353:PRO:O	1:B:354:THR:CB	2.69	0.40
1:A:112:GLU:N	1:A:113:PRO:CD	2.84	0.40
1:B:274:GLU:OE2	1:B:285:ASP:OD2	2.39	0.40
1:B:234:ALA:C	1:B:236:SER:N	2.74	0.40
1:B:273:ALA:CB	1:B:284:ILE:HD13	2.47	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	158/162 (98%)	130 (82%)	20 (13%)	8 (5%)	2	2
1	B	149/162 (92%)	134 (90%)	11 (7%)	4 (3%)	5	7

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	307/324 (95%)	264 (86%)	31 (10%)	12 (4%)	3 4

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	111	ALA
1	B	353	PRO
1	B	354	THR
1	A	3	VAL
1	A	152	ASN
1	A	157	GLU
1	A	116	SER
1	A	127	GLU
1	A	2	ILE
1	B	326	PRO
1	A	33	ASP
1	B	352	ASN

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	122/145 (84%)	113 (93%)	9 (7%)	13	27
1	B	117/145 (81%)	106 (91%)	11 (9%)	8	17
All	All	239/290 (82%)	219 (92%)	20 (8%)	11	21

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	MET
1	A	18	THR
1	A	33	ASP
1	A	47	LYS
1	A	58	LEU
1	A	84	ILE

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Mol	Chain	Res	Type
1	A	93	LEU
1	A	137	ASP
1	A	160	CYS
1	B	206	THR
1	B	218	THR
1	B	224	MET
1	B	266	CYS
1	B	271	ILE
1	B	283	LYS
1	B	293	LEU
1	B	307	MET
1	B	309	ASN
1	B	337	ASP
1	B	345	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	59	GLN
1	A	115	GLN
1	B	259	GLN
1	B	290	ASN
1	B	309	ASN

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 monosaccharides 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(Å²)	Q<0.9
1	A	160/162 (98%)	0.38	15 (9%)	8	8	21, 39, 74, 89	0
1	B	151/162 (93%)	0.30	13 (8%)	10	10	15, 34, 67, 89	0
All	All	311/324 (95%)	0.34	28 (9%)	9	9	15, 37, 71, 89	0

All (28) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	311	ALA	8.1
1	B	312	GLU	7.7
1	B	313	PRO	7.2
1	B	264	ASP	5.4
1	B	235	GLN	5.2
1	B	354	THR	4.9
1	A	3	VAL	4.7
1	A	153	PRO	4.1
1	B	263	ASN	3.8
1	A	158	GLU	3.6
1	A	111	ALA	3.6
1	A	61	TRP	3.6
1	A	114	GLU	3.5
1	B	261	TRP	3.4
1	B	314	GLU	3.1
1	B	315	GLN	3.0
1	B	234	ALA	2.8
1	A	154	THR	2.8
1	A	113	PRO	2.6
1	B	353	PRO	2.6
1	A	110	SER	2.5
1	A	64	ASP	2.4
1	A	156	LEU	2.4
1	A	4	THR	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	88	ASN	2.2
1	A	115	GLN	2.2
1	A	72	ILE	2.2
1	B	236	SER	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 monosaccharides 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.