



# Full wwPDB X-ray Structure Validation Report

Dec 17, 2023 – 01:27 PM EST

PDB ID : 1B9N  
Title : REGULATOR FROM ESCHERICHIA COLI  
Authors : Hall, D.R.; Gourley, D.G.; Hunter, W.N.  
Deposited on : 1999-02-12  
Resolution : 2.09 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](mailto: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>.

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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

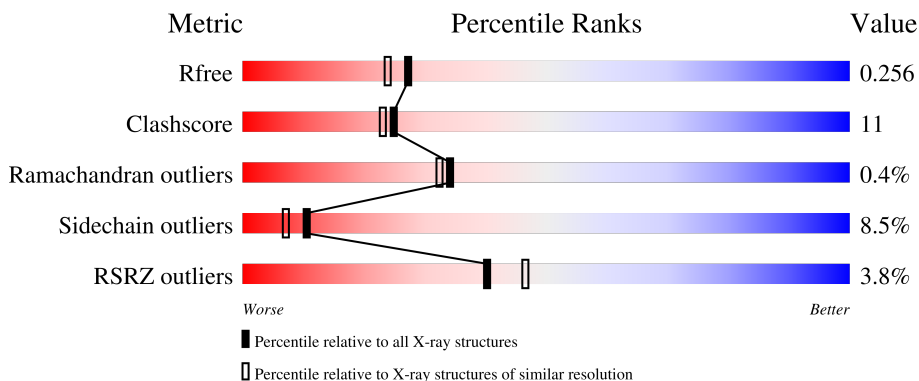
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.09 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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  $\geq 3$ , 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	265	 4% 70% 19% 8% ..
1	B	265	 3% 65% 21% 6% • 8%

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 4132 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 PROTEIN (MODE).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	258	1957	1232	344	375	6	0	3	0
1	B	245	1865	1174	321	363	7	0	4	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	SEE REMARK 999	UNP P0A9G8
A	-2	SER	-	SEE REMARK 999	UNP P0A9G8
A	-1	HIS	-	SEE REMARK 999	UNP P0A9G8
B	-3	GLY	-	SEE REMARK 999	UNP P0A9G8
B	-2	SER	-	SEE REMARK 999	UNP P0A9G8
B	-1	HIS	-	SEE REMARK 999	UNP P0A9G8

- Molecule 2 is NICKEL (II) ION (three-letter code: NI) (formula: Ni).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Ni	0	0
			1	1		

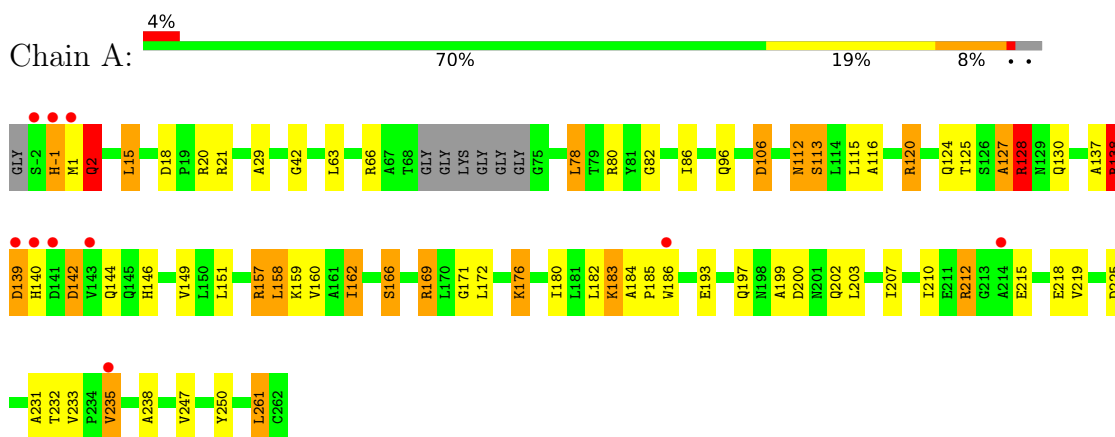
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	171	Total	O	0	0
			171	171		
3	B	138	Total	O	0	0
			138	138		

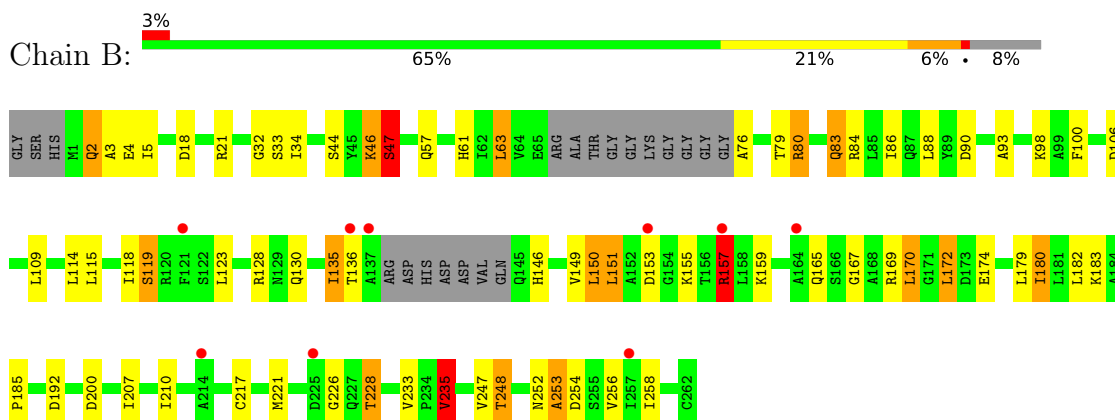
### 3 Residue-property plots [i](#)

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: PROTEIN (MODE)



- Molecule 1: PROTEIN (MODE)



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	81.11Å 127.36Å 62.95Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.63 – 2.09 28.59 – 2.09	Depositor EDS
% Data completeness (in resolution range)	99.0 (28.63-2.09) 98.8 (28.59-2.09)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.41 (at 2.10Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, $R_{free}$	0.214 , 0.286 0.199 , 0.256	Depositor DCC
$R_{free}$ test set	1934 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	31.2	Xtrriage
Anisotropy	0.269	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 63.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	4132	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	38.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.68% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: NI

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	0/1999	1.72	35/2715 (1.3%)
1	B	0.77	0/1909	1.66	31/2590 (1.2%)
All	All	0.79	0/3908	1.69	66/5305 (1.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	9
1	B	0	7
All	All	0	16

There are no bond length outliers.

All (66) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	120	ARG	NE-CZ-NH1	15.22	127.91	120.30
1	B	84[A]	ARG	NE-CZ-NH2	-13.10	113.75	120.30
1	B	84[B]	ARG	NE-CZ-NH2	-13.10	113.75	120.30
1	A	21	ARG	NE-CZ-NH2	-12.53	114.03	120.30
1	B	80	ARG	NE-CZ-NH2	12.39	126.50	120.30
1	A	20	ARG	NE-CZ-NH2	12.27	126.44	120.30
1	A	20	ARG	CD-NE-CZ	11.51	139.72	123.60
1	B	84[A]	ARG	NE-CZ-NH1	11.20	125.90	120.30
1	B	84[B]	ARG	NE-CZ-NH1	11.20	125.90	120.30
1	B	21	ARG	NE-CZ-NH1	10.89	125.74	120.30
1	B	106	ASP	CB-CG-OD1	9.83	127.15	118.30
1	A	128	ARG	NE-CZ-NH1	8.98	124.79	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	21	ARG	NE-CZ-NH2	-8.78	115.91	120.30
1	A	212	ARG	NE-CZ-NH2	-8.74	115.93	120.30
1	A	212	ARG	NE-CZ-NH1	7.90	124.25	120.30
1	B	169	ARG	NE-CZ-NH2	-7.41	116.60	120.30
1	A	138	ARG	NE-CZ-NH1	7.29	123.95	120.30
1	A	66	ARG	NE-CZ-NH1	7.25	123.92	120.30
1	A	18	ASP	CB-CG-OD1	7.07	124.67	118.30
1	A	15	LEU	CA-CB-CG	6.78	130.88	115.30
1	B	233	VAL	N-CA-CB	-6.77	96.61	111.50
1	B	128	ARG	NE-CZ-NH1	6.58	123.59	120.30
1	A	-1	HIS	C-N-CA	6.54	138.04	121.70
1	B	235	VAL	CB-CA-C	-6.52	99.02	111.40
1	A	15	LEU	CB-CG-CD1	6.42	121.91	111.00
1	A	80	ARG	NE-CZ-NH2	-6.35	117.13	120.30
1	A	21	ARG	NE-CZ-NH1	6.32	123.46	120.30
1	A	157	ARG	NE-CZ-NH1	6.28	123.44	120.30
1	A	120	ARG	CD-NE-CZ	6.21	132.29	123.60
1	B	248	THR	N-CA-CB	5.93	121.58	110.30
1	A	159	LYS	CA-CB-CG	5.91	126.40	113.40
1	B	200	ASP	CB-CG-OD2	5.83	123.55	118.30
1	B	248	THR	CA-CB-OG1	5.82	121.23	109.00
1	B	235	VAL	CA-CB-CG2	5.79	119.59	110.90
1	A	-1	HIS	N-CA-C	5.79	126.63	111.00
1	A	96	GLN	CB-CA-C	-5.79	98.83	110.40
1	B	170	LEU	CB-CG-CD2	5.76	120.80	111.00
1	A	231	ALA	N-CA-CB	5.70	118.08	110.10
1	A	183	LYS	CA-CB-CG	5.68	125.89	113.40
1	A	200	ASP	CB-CG-OD1	-5.65	113.21	118.30
1	A	127	ALA	O-C-N	-5.54	113.84	122.70
1	B	170	LEU	CA-CB-CG	5.53	128.02	115.30
1	B	157	ARG	NE-CZ-NH1	-5.43	117.58	120.30
1	A	160	VAL	CA-CB-CG1	-5.42	102.76	110.90
1	B	149	VAL	O-C-N	5.40	131.34	122.70
1	A	169	ARG	NE-CZ-NH2	5.35	122.97	120.30
1	B	18	ASP	CB-CG-OD1	5.34	123.11	118.30
1	A	159	LYS	CB-CA-C	-5.30	99.80	110.40
1	B	4	GLU	OE1-CD-OE2	-5.28	116.96	123.30
1	A	128	ARG	NE-CZ-NH2	-5.28	117.66	120.30
1	A	106	ASP	CB-CG-OD2	5.25	123.03	118.30
1	B	192	ASP	CB-CG-OD1	5.22	123.00	118.30
1	A	138	ARG	NE-CZ-NH2	-5.21	117.69	120.30
1	A	2	GLN	CB-CG-CD	5.20	125.12	111.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	80	ARG	CD-NE-CZ	-5.19	116.34	123.60
1	B	47	SER	N-CA-CB	-5.18	102.74	110.50
1	B	228	THR	N-CA-CB	5.17	120.12	110.30
1	A	138	ARG	N-CA-CB	5.15	119.87	110.60
1	B	18	ASP	CB-CG-OD2	-5.14	113.67	118.30
1	B	226	GLY	N-CA-C	5.13	125.92	113.10
1	A	250	TYR	O-C-N	5.12	130.88	122.70
1	B	90	ASP	CB-CG-OD2	5.11	122.90	118.30
1	A	172	LEU	O-C-N	-5.06	114.61	122.70
1	B	253	ALA	N-CA-CB	5.05	117.17	110.10
1	B	63	LEU	CB-CG-CD2	5.04	119.56	111.00
1	A	139	ASP	CB-CG-OD1	5.03	122.83	118.30

There are no chirality outliers.

All (16) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	113	SER	Mainchain
1	A	127	ALA	Mainchain
1	A	128	ARG	Mainchain
1	A	130	GLN	Mainchain
1	A	158	LEU	Mainchain
1	A	162	ILE	Mainchain
1	A	2	GLN	Mainchain
1	A	219	VAL	Mainchain
1	A	42	GLY	Mainchain
1	B	135	ILE	Mainchain
1	B	172	LEU	Mainchain
1	B	182	LEU	Mainchain
1	B	34	ILE	Mainchain
1	B	5	ILE	Mainchain
1	B	83	GLN	Mainchain
1	B	93	ALA	Mainchain

## 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	1957	0	1955	42	0
1	B	1865	0	1877	43	0
2	A	1	0	0	0	0
3	A	171	0	0	3	0
3	B	138	0	0	1	0
All	All	4132	0	3832	83	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 (83) 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:167:GLY:HA2	1:B:172:LEU:HD12	1.53	0.90
1:A:112:ASN:HD22	1:A:112:ASN:H	1.25	0.85
1:B:180:ILE:HD12	1:B:256:VAL:HG13	1.59	0.82
1:A:158:LEU:HD12	1:A:180:ILE:HD13	1.71	0.73
1:A:183:LYS:HE2	3:A:347:HOH:O	1.87	0.72
1:A:183:LYS:HB2	1:A:186[B]:TRP:CE3	2.24	0.72
1:B:44:SER:OG	1:B:47:SER:HB2	1.89	0.71
1:B:183:LYS:HB3	1:B:185:PRO:HD2	1.72	0.70
1:A:151:LEU:HD21	1:A:158:LEU:HD11	1.72	0.70
1:B:114:LEU:O	1:B:118:ILE:HG12	1.92	0.68
1:B:180:ILE:HD12	1:B:256:VAL:CG1	2.24	0.68
3:A:277:HOH:O	1:B:61:HIS:HE1	1.75	0.67
1:B:135:ILE:HD11	1:B:172:LEU:HD22	1.77	0.67
1:A:29:ALA:HB2	1:A:78:LEU:HD22	1.77	0.66
1:A:149:VAL:HG11	1:A:180:ILE:HD11	1.79	0.65
1:B:146:HIS:CG	1:B:159:LYS:HE2	2.32	0.65
1:A:199:ALA:O	1:A:202:GLN:NE2	2.31	0.63
1:B:136:THR:CG2	1:B:150:LEU:HB2	2.28	0.62
1:A:139:ASP:HB3	1:A:157:ARG:CZ	2.30	0.61
1:A:184:ALA:CB	1:A:232:THR:HG23	2.31	0.61
1:A:215:GLU:O	1:A:235:VAL:HG22	2.02	0.60
1:A:233:VAL:HG23	1:A:238:ALA:HB2	1.84	0.60
1:A:184:ALA:HB1	1:A:232:THR:HG23	1.83	0.59
1:A:139:ASP:HB3	1:A:157:ARG:NH1	2.18	0.59
1:A:158:LEU:HD22	1:A:203:LEU:HD21	1.88	0.55
1:A:171:GLY:O	1:A:176:LYS:HG3	2.07	0.55
1:B:32:GLY:O	1:B:76:ALA:N	2.41	0.55
1:B:115:LEU:O	1:B:119:SER:HB3	2.07	0.54
1:A:142:ASP:CG	1:A:144:GLN:HE21	2.11	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:158:LEU:CD2	1:A:203:LEU:HD21	2.38	0.53
1:B:167:GLY:CA	1:B:172:LEU:HD12	2.35	0.53
1:A:138:ARG:HD2	1:A:140:HIS:CE1	2.45	0.52
1:A:183:LYS:HB3	1:A:185:PRO:HD2	1.91	0.51
1:A:115:LEU:HB2	1:A:261:LEU:HD22	1.91	0.51
1:A:151:LEU:HB3	1:A:225:ASP:OD2	2.11	0.50
1:A:157:ARG:O	1:A:158:LEU:HD23	2.11	0.50
1:A:112:ASN:HD22	1:A:112:ASN:N	1.96	0.50
1:B:151:LEU:N	1:B:151:LEU:HD23	2.27	0.50
1:B:235:VAL:HG12	3:B:343:HOH:O	2.12	0.50
1:B:88:LEU:HD23	1:B:88:LEU:C	2.32	0.49
1:A:63:LEU:HD13	1:A:82:GLY:HA2	1.95	0.48
1:A:158:LEU:HD12	1:A:180:ILE:CD1	2.42	0.48
1:B:109:LEU:HD22	1:B:109:LEU:N	2.28	0.48
1:A:212:ARG:NH2	1:A:238:ALA:O	2.47	0.48
1:B:109:LEU:N	1:B:109:LEU:CD2	2.76	0.48
1:B:155:LYS:O	1:B:157:ARG:NH2	2.47	0.47
1:B:210:ILE:HG23	1:B:217:CYS:SG	2.54	0.47
1:A:158:LEU:CD1	1:A:180:ILE:HD13	2.44	0.47
1:A:207:ILE:HG21	1:A:210:ILE:HG13	1.97	0.47
1:B:2:GLN:H	1:B:2:GLN:CD	2.18	0.47
1:A:162:ILE:HG13	1:A:166:SER:OG	2.15	0.46
1:A:140:HIS:NE2	1:A:146:HIS:CE1	2.83	0.46
1:B:130:GLN:HG2	1:B:179:LEU:HD11	1.96	0.46
1:B:167:GLY:HA2	1:B:172:LEU:CD1	2.37	0.45
1:A:233:VAL:CG2	1:A:238:ALA:HB2	2.46	0.45
1:B:98:LYS:HB3	1:B:118:ILE:CG2	2.46	0.45
1:A:139:ASP:CB	3:A:378:HOH:O	2.64	0.45
1:A:142:ASP:OD1	1:A:144:GLN:NE2	2.49	0.45
1:A:124:GLN:HB3	1:B:170:LEU:HD22	1.98	0.45
1:A:112:ASN:H	1:A:112:ASN:ND2	2.03	0.45
1:A:106:ASP:OD2	1:B:80:ARG:NH1	2.42	0.44
1:B:79:THR:O	1:B:83:GLN:HG3	2.17	0.44
1:B:118:ILE:HD13	1:B:118:ILE:HG21	1.79	0.44
1:B:258:ILE:HD13	1:B:258:ILE:HG21	1.72	0.44
1:B:221:MET:HE2	1:B:221:MET:HB2	1.78	0.43
1:A:128:ARG:NH2	1:A:218:GLU:OE1	2.45	0.43
1:B:136:THR:HG21	1:B:150:LEU:HB2	2.01	0.43
1:B:98:LYS:HB3	1:B:118:ILE:HG22	2.01	0.43
1:B:207:ILE:HD11	1:B:247:VAL:HG11	2.01	0.42
1:B:3:ALA:HB1	1:B:100:PHE:CE2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:151:LEU:N	1:B:151:LEU:CD2	2.82	0.42
1:A:86:ILE:HG21	1:A:86:ILE:HD13	1.82	0.42
1:A:183:LYS:HB2	1:A:186[B]:TRP:CZ3	2.54	0.41
1:B:136:THR:HG23	1:B:150:LEU:HB2	2.01	0.41
1:A:137:ALA:O	1:A:138:ARG:C	2.57	0.41
1:A:116:ALA:O	1:A:120:ARG:HG3	2.21	0.41
1:B:109:LEU:CD2	1:B:109:LEU:H	2.33	0.41
1:B:146:HIS:CD2	1:B:159:LYS:HG3	2.56	0.40
1:B:159:LYS:HD3	1:B:253:ALA:HB2	2.03	0.40
1:B:86:ILE:HG21	1:B:86:ILE:HD13	1.78	0.40
1:B:46:LYS:HG3	1:B:47:SER:N	2.37	0.40
1:B:252:ASN:HB3	1:B:254:ASP:OD1	2.21	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	257/265 (97%)	243 (95%)	12 (5%)	2 (1%)	19	15
1	B	243/265 (92%)	233 (96%)	10 (4%)	0	100	100
All	All	500/530 (94%)	476 (95%)	22 (4%)	2 (0%)	34	32

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	-1	HIS
1	A	1	MET

### 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	205/213 (96%)	188 (92%)	17 (8%)	11	7
1	B	201/213 (94%)	184 (92%)	17 (8%)	10	7
All	All	406/426 (95%)	372 (92%)	34 (8%)	10	7

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	GLN
1	A	15	LEU
1	A	78	LEU
1	A	112	ASN
1	A	113	SER
1	A	125	THR
1	A	138	ARG
1	A	142	ASP
1	A	166	SER
1	A	169	ARG
1	A	176	LYS
1	A	182	LEU
1	A	193	GLU
1	A	197	GLN
1	A	235	VAL
1	A	247	VAL
1	A	261	LEU
1	B	2	GLN
1	B	33	SER
1	B	46	LYS
1	B	47	SER
1	B	57	GLN
1	B	63	LEU
1	B	119	SER
1	B	123	LEU
1	B	150	LEU
1	B	151	LEU

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Mol	Chain	Res	Type
1	B	153	ASP
1	B	157	ARG
1	B	165	GLN
1	B	180	ILE
1	B	228	THR
1	B	235	VAL
1	B	248	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	112	ASN
1	A	144	GLN
1	B	236	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](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	258/265 (97%)	-0.02	10 (3%) 39 45	19, 33, 70, 83	0
1	B	245/265 (92%)	-0.07	9 (3%) 41 48	23, 36, 63, 90	0
All	All	503/530 (94%)	-0.04	19 (3%) 40 46	19, 35, 66, 90	0

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	186[A]	TRP	5.3
1	A	143	VAL	3.8
1	A	140	HIS	3.5
1	B	137	ALA	3.4
1	B	136	THR	3.3
1	B	164	ALA	3.1
1	A	214	ALA	3.1
1	B	257	ILE	3.0
1	A	-2	SER	3.0
1	B	214	ALA	2.8
1	A	235	VAL	2.7
1	B	157	ARG	2.6
1	A	1	MET	2.5
1	A	-1	HIS	2.5
1	A	141	ASP	2.3
1	B	121	PHE	2.1
1	B	153	ASP	2.1
1	B	225	ASP	2.1
1	A	139	ASP	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](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	NI	A	263	1/1	0.97	0.19	64,64,64,64	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.