



# Full wwPDB X-ray Structure Validation Report ⓘ

Apr 16, 2024 – 04:53 PM EDT

PDB ID : 9BDX  
Title : NF-kappaB RelA homo-dimer bound to CG-centric kappaB DNA  
Authors : Biswas, T.; Shahabi, S.; Tsodikov, O.V.; Ghosh, G.  
Deposited on : 2024-04-12  
Resolution : 3.60 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 : 2.36.1  
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

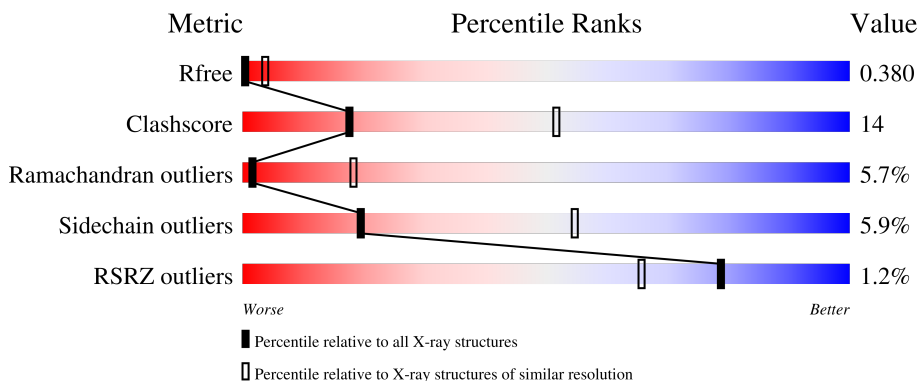
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.60 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	1257 (3.70-3.50)
Clashscore	141614	1353 (3.70-3.50)
Ramachandran outliers	138981	1307 (3.70-3.50)
Sidechain outliers	138945	1307 (3.70-3.50)
RSRZ outliers	127900	1161 (3.70-3.50)

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  $\geq 3$ , 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	287	
1	B	287	
2	C	19	
3	D	19	

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 5080 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 Transcription factor p65.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	276	2197	1369	404	413	11	0	0	0
1	B	274	2185	1363	402	408	12	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	18	MET	-	initiating methionine	UNP Q04207
B	18	MET	-	initiating methionine	UNP Q04207

- Molecule 2 is a DNA chain called DNA (5'-D(P\*AP\*CP\*TP\*GP\*GP\*GP\*AP\*AP\*CP\*TP\*TP\*CP\*CP\*AP\*GP\*TP\*GP\*AP\*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	C	17	351	166	65	103	17	0	0	0

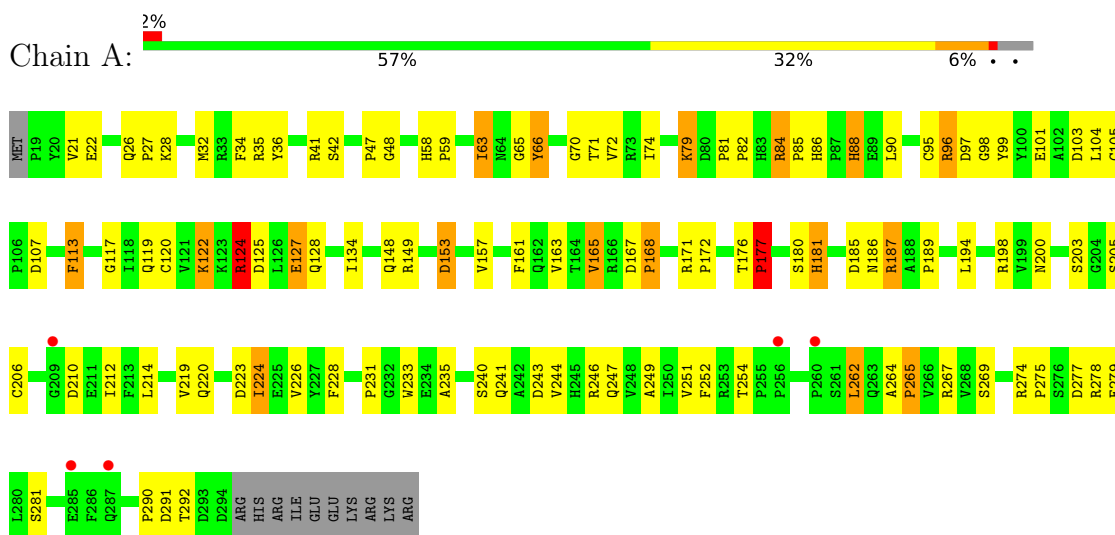
- Molecule 3 is a DNA chain called DNA (5'-D(\*AP\*TP\*CP\*AP\*CP\*TP\*GP\*GP\*AP\*AP\*GP\*TP\*TP\*CP\*CP\*CP\*AP\*GP\*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	D	17	347	165	63	102	17	0	0	0

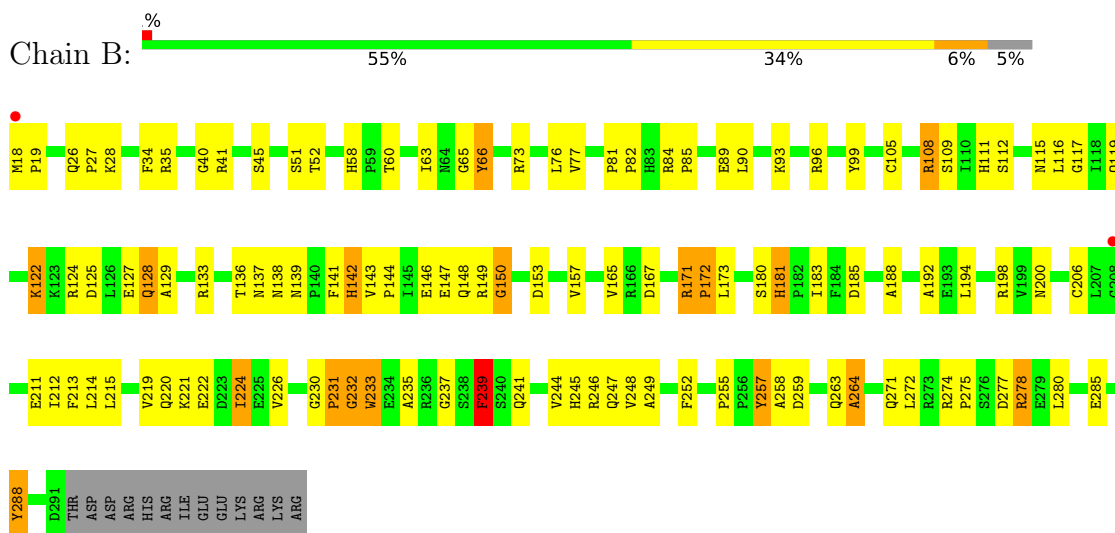
### 3 Residue-property plots

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: Transcription factor p65



- Molecule 1: Transcription factor p65



- Molecule 2: DNA (5'-D(P\*AP\*CP\*TP\*GP\*GP\*GP\*AP\*AP\*CP\*TP\*TP\*CP\*CP\*AP\*GP\*T P\*GP\*AP\*T)-3')





- Molecule 3: DNA (5'-D(\*AP\*TP\*CP\*AP\*CP\*TP\*GP\*GP\*AP\*AP\*GP\*TP\*TP\*CP\*CP\*CP\*AP\*GP\*T)-3')

Chain D: 58% 26% 5% 11%



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	113.95Å 132.18Å 66.58Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.75 – 3.60 29.73 – 3.60	Depositor EDS
% Data completeness (in resolution range)	96.5 (29.75-3.60) 96.7 (29.73-3.60)	Depositor EDS
$R_{merge}$	0.47	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.31 (at 3.65Å)	Xtrriage
Refinement program	REFMAC 5.8.0352	Depositor
R, $R_{free}$	0.321 , 0.374 0.332 , 0.380	Depositor DCC
$R_{free}$ test set	585 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.3	Xtrriage
Anisotropy	0.130	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.18 , 15.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.39$ , $\langle L^2 \rangle = 0.21$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.80	EDS
Total number of atoms	5080	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	114.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.52% 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

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	0.68	0/2250	1.12	6/3053 (0.2%)
1	B	0.66	0/2238	1.14	5/3036 (0.2%)
2	C	0.93	1/393 (0.3%)	1.15	1/603 (0.2%)
3	D	0.74	0/388	1.10	2/596 (0.3%)
All	All	0.70	1/5269 (0.0%)	1.13	14/7288 (0.2%)

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	8
1	B	0	5
All	All	0	13

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	101	DA	OP3-P	-6.19	1.53	1.61

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	41	ARG	NE-CZ-NH2	10.98	125.79	120.30
1	A	153	ASP	CB-CG-OD2	-7.28	111.75	118.30
1	A	96	ARG	NE-CZ-NH2	-6.56	117.02	120.30
1	B	153	ASP	CB-CG-OD2	-6.12	112.80	118.30
1	A	124	ARG	NE-CZ-NH1	6.02	123.31	120.30
1	A	84	ARG	NE-CZ-NH2	-5.50	117.55	120.30
1	A	96	ARG	CG-CD-NE	-5.40	100.47	111.80
1	B	41	ARG	CD-NE-CZ	5.33	131.06	123.60
1	B	239	PHE	CB-CG-CD1	5.31	124.52	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	124	ARG	NE-CZ-NH2	-5.31	117.65	120.30
2	C	117	DG	C8-N9-C4	-5.23	104.31	106.40
1	B	172	PRO	N-CA-CB	-5.17	96.92	102.60
3	D	218	DG	C5-C6-O6	-5.17	125.50	128.60
3	D	203	DC	OP1-P-OP2	-5.15	111.87	119.60

There are no chirality outliers.

All (13) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	113	PHE	Peptide
1	A	122	LYS	Peptide
1	A	124	ARG	Sidechain
1	A	149	ARG	Sidechain
1	A	177	PRO	Peptide
1	A	186	ASN	Peptide
1	A	246	ARG	Sidechain
1	A	41	ARG	Peptide
1	B	122	LYS	Peptide
1	B	171	ARG	Sidechain
1	B	18	MET	Peptide
1	B	237	GLY	Peptide
1	B	264	ALA	Peptide

## 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	2197	0	2153	65	0
1	B	2185	0	2148	67	0
2	C	351	0	192	3	0
3	D	347	0	192	3	0
All	All	5080	0	4685	134	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 14.

All (134) 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:149:ARG:O	1:B:150:GLY:O	1.96	0.84
1:A:72:VAL:HG23	1:A:163:VAL:HG22	1.65	0.78
1:A:134:ILE:HD11	1:A:148:GLN:HE22	1.52	0.73
1:A:96:ARG:HH12	1:A:101:GLU:HB3	1.52	0.73
1:A:70:GLY:HA3	1:A:104:LEU:HD12	1.74	0.69
1:A:212:ILE:HD12	1:A:254:THR:HG21	1.75	0.69
1:A:228:PHE:HB2	1:A:235:ALA:HB3	1.74	0.69
1:B:122:LYS:O	1:B:125:ASP:N	2.26	0.68
2:C:107:DA:H2''	2:C:108:DA:C8	2.30	0.66
1:B:245:HIS:O	1:B:246:ARG:HB2	1.94	0.66
1:A:212:ILE:HD12	1:A:254:THR:CG2	2.25	0.66
1:A:267:ARG:HG3	1:A:267:ARG:HH11	1.62	0.65
1:B:230:GLY:O	1:B:232:GLY:N	2.29	0.65
1:B:90:LEU:HD12	1:B:117:GLY:O	1.97	0.64
1:B:19:PRO:HB3	1:B:65:GLY:O	1.96	0.64
1:B:212:ILE:HB	1:B:252:PHE:CE1	2.34	0.63
1:B:81:PRO:HA	1:B:82:PRO:C	2.19	0.63
1:A:194:LEU:O	1:A:281:SER:HB2	2.00	0.62
1:A:21:VAL:HG22	1:A:63:ILE:HG23	1.82	0.62
1:A:35:ARG:O	1:A:119:GLN:HG3	2.00	0.61
1:B:60:THR:HG22	1:B:112:SER:OG	1.99	0.61
1:B:45:SER:HA	1:B:116:LEU:O	2.01	0.61
1:B:27:PRO:HG3	1:B:183:ILE:HD11	1.82	0.61
1:B:206:CYS:HA	1:B:288:TYR:CD1	2.36	0.60
1:B:58:HIS:O	1:B:60:THR:HG23	2.01	0.59
1:A:65:GLY:O	1:A:66:TYR:CB	2.51	0.59
3:D:216:DC:H2''	3:D:217:DA:C8	2.37	0.59
1:A:105:CYS:SG	1:A:107:ASP:OD2	2.60	0.59
1:B:65:GLY:O	1:B:66:TYR:HB2	2.02	0.58
1:B:180:SER:O	1:B:181:HIS:C	2.41	0.58
1:A:223:ASP:O	1:A:224:ILE:HB	2.03	0.58
1:B:220:GLN:HA	1:B:247:GLN:HE21	1.68	0.58
1:A:127:GLU:OE2	1:A:127:GLU:HA	2.04	0.57
1:A:79:LYS:NZ	1:A:153:ASP:OD2	2.38	0.57
3:D:217:DA:H2'	3:D:218:DG:C8	2.40	0.57
1:B:221:LYS:HB3	1:B:244:VAL:HG11	1.87	0.56
1:A:86:HIS:NE2	1:A:157:VAL:HG12	2.20	0.56
1:A:267:ARG:HH11	1:A:267:ARG:CG	2.18	0.56
1:B:85:PRO:HD3	1:B:139:ASN:OD1	2.05	0.56
1:A:58:HIS:HB3	1:A:59:PRO:CD	2.36	0.56
1:B:167:ASP:HB3	1:B:173:LEU:HD11	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:63:ILE:HB	1:B:109:SER:HB2	1.88	0.55
1:A:122:LYS:O	1:A:124:ARG:N	2.39	0.55
1:B:211:GLU:HA	1:B:252:PHE:O	2.06	0.55
1:B:221:LYS:HE3	1:B:222:GLU:OE2	2.06	0.54
1:B:136:THR:O	1:B:137:ASN:HB2	2.07	0.54
1:B:141:PHE:O	1:B:143:VAL:N	2.41	0.54
1:A:267:ARG:CG	1:A:267:ARG:NH1	2.70	0.54
1:A:212:ILE:CD1	1:A:254:THR:HG21	2.37	0.54
1:B:194:LEU:HD21	1:B:274:ARG:NH1	2.23	0.53
1:A:180:SER:O	1:A:181:HIS:C	2.47	0.53
1:A:233:TRP:CH2	1:A:235:ALA:HB2	2.44	0.53
1:B:180:SER:O	1:B:181:HIS:O	2.26	0.52
1:A:36:TYR:CE1	1:A:120:CYS:SG	3.02	0.52
1:A:206:CYS:SG	1:A:262:LEU:HD12	2.50	0.52
1:B:277:ASP:O	1:B:278:ARG:HB2	2.08	0.52
1:B:147:GLU:C	1:B:149:ARG:H	2.12	0.52
1:A:95:CYS:HA	1:A:99:TYR:O	2.10	0.52
1:A:84:ARG:HB3	1:A:85:PRO:HD2	1.91	0.51
1:B:125:ASP:O	1:B:128:GLN:NE2	2.44	0.51
1:B:93:LYS:HB2	1:B:115:ASN:HD22	1.76	0.51
1:A:71:THR:HG22	1:A:103:ASP:OD1	2.11	0.51
1:B:60:THR:HA	1:B:111:HIS:O	2.10	0.51
1:A:219:VAL:O	1:A:247:GLN:HB3	2.11	0.51
1:B:233:TRP:CD1	1:B:258:ALA:HB2	2.46	0.50
1:A:220:GLN:HA	1:A:247:GLN:NE2	2.27	0.50
1:B:232:GLY:O	1:B:233:TRP:HB2	2.12	0.50
1:A:205:SER:HB2	1:A:210:ASP:OD2	2.10	0.50
1:B:89:GLU:HB2	1:B:119:GLN:HE21	1.76	0.50
1:A:226:VAL:HG11	1:A:252:PHE:CE2	2.47	0.50
1:A:74:ILE:HD13	1:A:161:PHE:HE1	1.78	0.49
1:A:34:PHE:CZ	1:A:185:ASP:HB2	2.48	0.49
1:A:26:GLN:O	1:A:48:GLY:HA2	2.13	0.48
3:D:207:DG:H2''	3:D:208:DG:C8	2.49	0.47
1:B:188:ALA:O	1:B:192:ALA:HB2	2.15	0.47
1:A:194:LEU:HD12	1:A:279:GLU:HG3	1.97	0.47
1:B:233:TRP:NE1	1:B:258:ALA:HB2	2.29	0.47
1:A:171:ARG:HG3	1:A:172:PRO:HD2	1.97	0.46
1:A:189:PRO:HB2	1:A:220:GLN:HG3	1.98	0.46
1:B:73:ARG:NH2	1:B:99:TYR:CZ	2.83	0.46
1:A:90:LEU:HD23	1:A:117:GLY:O	2.16	0.46
1:A:90:LEU:H	1:A:98:GLY:HA2	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:105:CYS:SG	1:B:108:ARG:NH1	2.89	0.46
1:A:214:LEU:HD23	1:A:214:LEU:C	2.36	0.46
1:A:243:ASP:OD1	1:B:198:ARG:NH2	2.37	0.45
1:A:81:PRO:HA	1:A:82:PRO:C	2.38	0.45
1:A:122:LYS:O	1:A:125:ASP:N	2.48	0.44
1:B:85:PRO:HD3	1:B:139:ASN:CG	2.37	0.44
1:B:26:GLN:HB3	1:B:27:PRO:HD2	2.00	0.44
1:A:26:GLN:HB3	1:A:27:PRO:HD2	2.00	0.44
1:B:246:ARG:HH12	2:C:106:DG:P	2.41	0.44
1:A:66:TYR:CE2	1:A:165:VAL:HB	2.53	0.44
1:B:51:SER:O	1:B:52:THR:HG23	2.18	0.44
1:B:257:TYR:C	1:B:259:ASP:H	2.22	0.43
1:A:28:LYS:HB2	1:A:47:PRO:HG2	2.00	0.43
1:A:86:HIS:O	1:A:88:HIS:N	2.43	0.43
1:A:58:HIS:HB3	1:A:59:PRO:HD3	2.00	0.43
1:A:205:SER:CB	1:A:210:ASP:OD2	2.66	0.43
1:B:143:VAL:CG1	1:B:144:PRO:HD2	2.49	0.43
1:A:264:ALA:O	1:A:290:PRO:HG3	2.19	0.43
1:B:248:VAL:HG23	1:B:248:VAL:O	2.18	0.43
1:A:244:VAL:HA	1:A:249:ALA:O	2.19	0.43
1:B:226:VAL:HG11	1:B:252:PHE:CE2	2.53	0.42
1:B:235:ALA:HB1	1:B:255:PRO:CG	2.50	0.42
1:A:97:ASP:HB2	1:A:99:TYR:CE2	2.55	0.42
1:B:34:PHE:CE2	1:B:185:ASP:HB2	2.55	0.42
1:B:221:LYS:NZ	2:C:107:DA:H5'	2.34	0.42
1:A:167:ASP:HB2	1:A:168:PRO:HD2	2.02	0.41
1:B:116:LEU:HD23	1:B:116:LEU:HA	1.94	0.41
1:B:141:PHE:O	1:B:142:HIS:C	2.58	0.41
1:B:219:VAL:HG22	1:B:247:GLN:O	2.20	0.41
1:A:187:ARG:HH11	1:A:187:ARG:CG	2.33	0.41
1:A:264:ALA:HB1	1:A:265:PRO:CD	2.51	0.41
1:A:290:PRO:O	1:A:292:THR:HG23	2.21	0.41
1:A:223:ASP:OD1	1:A:274:ARG:HG2	2.20	0.41
1:B:224:ILE:HD11	1:B:272:LEU:HD22	2.03	0.41
1:A:251:VAL:HB	1:B:198:ARG:NH2	2.35	0.41
1:B:214:LEU:C	1:B:214:LEU:HD23	2.40	0.41
1:B:214:LEU:HD23	1:B:215:LEU:N	2.35	0.41
1:B:222:GLU:HA	1:B:241:GLN:NE2	2.35	0.41
1:A:63:ILE:HD12	1:A:63:ILE:N	2.36	0.41
1:B:129:ALA:O	1:B:133:ARG:HG2	2.21	0.41
1:B:200:ASN:HB3	1:B:213:PHE:HB2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:206:CYS:HA	1:B:288:TYR:CE1	2.55	0.41
1:A:176:THR:HA	1:A:177:PRO:HD3	1.80	0.41
1:A:187:ARG:HG3	1:A:187:ARG:NH1	2.36	0.41
1:A:274:ARG:HA	1:A:275:PRO:HD3	1.81	0.41
1:B:76:LEU:HD11	1:B:90:LEU:HD13	2.03	0.41
1:B:271:GLN:HE22	1:B:280:LEU:HD13	1.86	0.41
1:A:241:GLN:C	1:A:243:ASP:H	2.24	0.40
1:B:239:PHE:CD1	1:B:239:PHE:N	2.88	0.40
1:B:77:VAL:HA	1:B:84:ARG:O	2.21	0.40
1:B:35:ARG:O	1:B:119:GLN:HA	2.21	0.40
1:B:136:THR:O	1:B:137:ASN:CB	2.69	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	274/287 (96%)	219 (80%)	43 (16%)	12 (4%)	2	23
1	B	272/287 (95%)	211 (78%)	42 (15%)	19 (7%)	1	14
All	All	546/574 (95%)	430 (79%)	85 (16%)	31 (6%)	1	18

All (31) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	66	TYR
1	A	181	HIS
1	A	224	ILE
1	B	142	HIS
1	B	150	GLY
1	B	181	HIS
1	B	224	ILE

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Mol	Chain	Res	Type
1	B	231	PRO
1	B	263	GLN
1	A	278	ARG
1	A	291	ASP
1	B	138	ASN
1	B	232	GLY
1	B	233	TRP
1	B	249	ALA
1	A	42	SER
1	A	262	LEU
1	B	148	GLN
1	B	278	ARG
1	A	231	PRO
1	A	265	PRO
1	B	40	GLY
1	B	66	TYR
1	B	165	VAL
1	B	171	ARG
1	B	264	ALA
1	B	275	PRO
1	A	168	PRO
1	A	165	VAL
1	A	177	PRO
1	B	172	PRO

### 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	245/257 (95%)	229 (94%)	16 (6%)	17	51
1	B	244/257 (95%)	231 (95%)	13 (5%)	22	58
All	All	489/514 (95%)	460 (94%)	29 (6%)	19	55

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	22	GLU
1	A	32	MET
1	A	63	ILE
1	A	79	LYS
1	A	88	HIS
1	A	113	PHE
1	A	124	ARG
1	A	127	GLU
1	A	128	GLN
1	A	187	ARG
1	A	198	ARG
1	A	200	ASN
1	A	203	SER
1	A	240	SER
1	A	269	SER
1	A	277	ASP
1	B	28	LYS
1	B	96	ARG
1	B	108	ARG
1	B	124	ARG
1	B	127	GLU
1	B	128	GLN
1	B	146	GLU
1	B	157	VAL
1	B	231	PRO
1	B	239	PHE
1	B	257	TYR
1	B	285	GLU
1	B	288	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	128	GLN
1	A	137	ASN
1	A	148	GLN
1	A	186	ASN
1	A	200	ASN
1	A	247	GLN
1	A	287	GLN
1	B	29	GLN
1	B	114	GLN
1	B	115	ASN

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Mol	Chain	Res	Type
1	B	128	GLN
1	B	135	GLN
1	B	137	ASN
1	B	247	GLN
1	B	271	GLN

### 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 [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	276/287 (96%)	-0.01	5 (1%) 68 53	61, 108, 182, 217	0
1	B	274/287 (95%)	-0.03	2 (0%) 87 78	47, 117, 153, 186	0
2	C	17/19 (89%)	-0.06	0 100 100	58, 84, 137, 156	0
3	D	17/19 (89%)	-0.11	0 100 100	46, 84, 159, 195	0
All	All	584/612 (95%)	-0.02	7 (1%) 79 66	46, 113, 173, 217	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	287	GLN	6.2
1	B	18	MET	3.6
1	A	256	PRO	3.2
1	A	260	PRO	2.7
1	A	209	GLY	2.4
1	A	285	GLU	2.3
1	B	208	GLY	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.