Full wwPDB X-ray Structure Validation Report ⓘ

Aug 25, 2025 – 12:34 PM JST

PDB ID	:	9K1N / pdb_00009k1n
Title	:	Crystal structure of family 11 xylanase in complex with inhibitor (OsXIP)
Authors	:	Ohnuma, T.; Takeshita, D.
Deposited on	:	2024-10-16
Resolution	:	2.21 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:

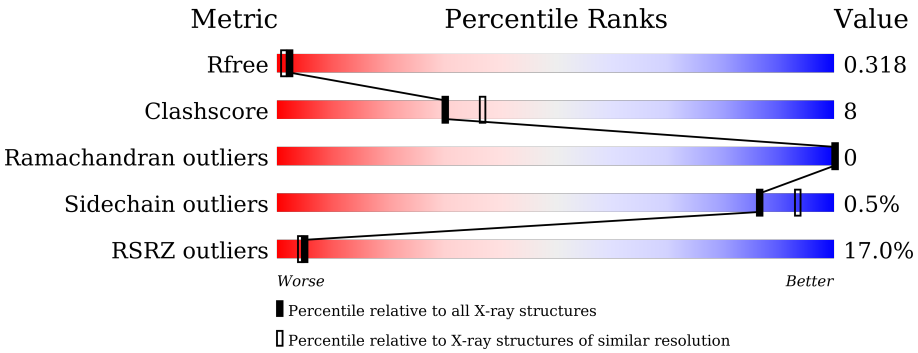
MolProbity	:	4-5-2 with Phenix2.0rc1
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 2.21 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}	164625	5791 (2.20-2.20)
Clashscore	180529	6634 (2.20-2.20)
Ramachandran outliers	177936	6560 (2.20-2.20)
Sidechain outliers	177891	6561 (2.20-2.20)
RSRZ outliers	164620	5791 (2.20-2.20)

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	C	204	7% 81% 13% 6%
1	D	204	9% 78% 15% 6%
2	A	279	16% 79% 18% .
2	B	279	29% 77% 18% .

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 7452 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 Endo-1,4-beta-xylanase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	192	Total	C	N	O	S	0	0	0
			1469	913	257	295	4			
1	D	191	Total	C	N	O	S	0	0	0
			1460	907	255	294	4			

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-6	MET	-	initiating methionine	UNP W0HJ53
C	-5	HIS	-	expression tag	UNP W0HJ53
C	-4	HIS	-	expression tag	UNP W0HJ53
C	-3	HIS	-	expression tag	UNP W0HJ53
C	-2	HIS	-	expression tag	UNP W0HJ53
C	-1	HIS	-	expression tag	UNP W0HJ53
C	0	HIS	-	expression tag	UNP W0HJ53
D	-6	MET	-	initiating methionine	UNP W0HJ53
D	-5	HIS	-	expression tag	UNP W0HJ53
D	-4	HIS	-	expression tag	UNP W0HJ53
D	-3	HIS	-	expression tag	UNP W0HJ53
D	-2	HIS	-	expression tag	UNP W0HJ53
D	-1	HIS	-	expression tag	UNP W0HJ53
D	0	HIS	-	expression tag	UNP W0HJ53

- Molecule 2 is a protein called Xylanase inhibitor protein XIP.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	267	Total	C	N	O	S	0	0	0
			2111	1341	373	388	9			
2	A	271	Total	C	N	O	S	0	0	0
			2136	1356	377	394	9			

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	0	MET	-	initiating methionine	UNP Q5WMW5
B	273	HIS	-	expression tag	UNP Q5WMW5
B	274	HIS	-	expression tag	UNP Q5WMW5
B	275	HIS	-	expression tag	UNP Q5WMW5
B	276	HIS	-	expression tag	UNP Q5WMW5
B	277	HIS	-	expression tag	UNP Q5WMW5
B	278	HIS	-	expression tag	UNP Q5WMW5
A	0	MET	-	initiating methionine	UNP Q5WMW5
A	273	HIS	-	expression tag	UNP Q5WMW5
A	274	HIS	-	expression tag	UNP Q5WMW5
A	275	HIS	-	expression tag	UNP Q5WMW5
A	276	HIS	-	expression tag	UNP Q5WMW5
A	277	HIS	-	expression tag	UNP Q5WMW5
A	278	HIS	-	expression tag	UNP Q5WMW5

- Molecule 3 is water.

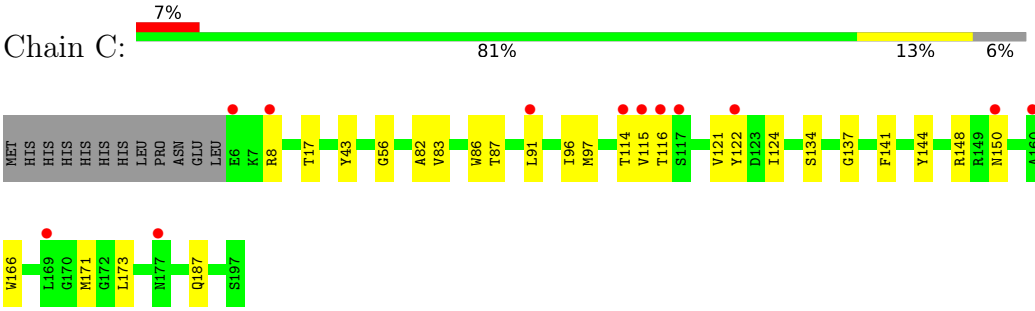
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	67	Total O 67 67	0	0
3	D	60	Total O 60 60	0	0
3	B	69	Total O 69 69	0	0
3	A	80	Total O 80 80	0	0

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.

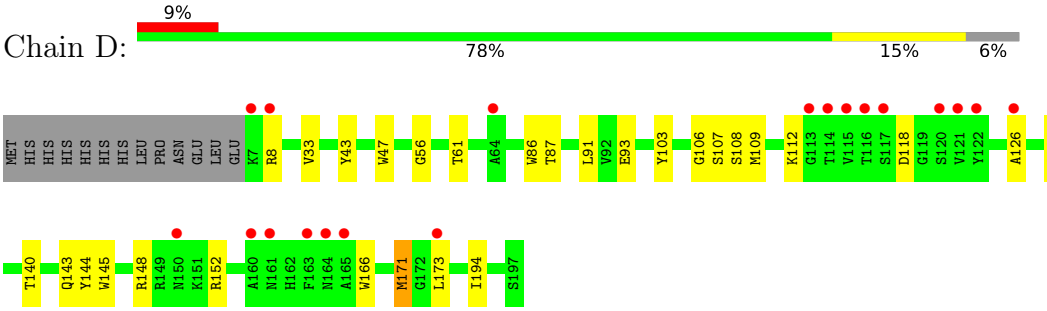
• Molecule 1: Endo-1,4-beta-xylanase 2

Chain C:



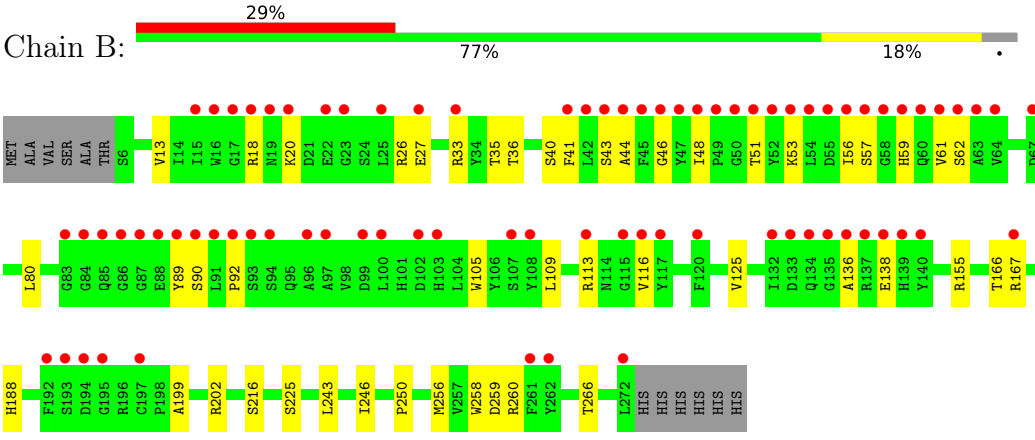
• Molecule 1: Endo-1,4-beta-xylanase 2

Chain D:



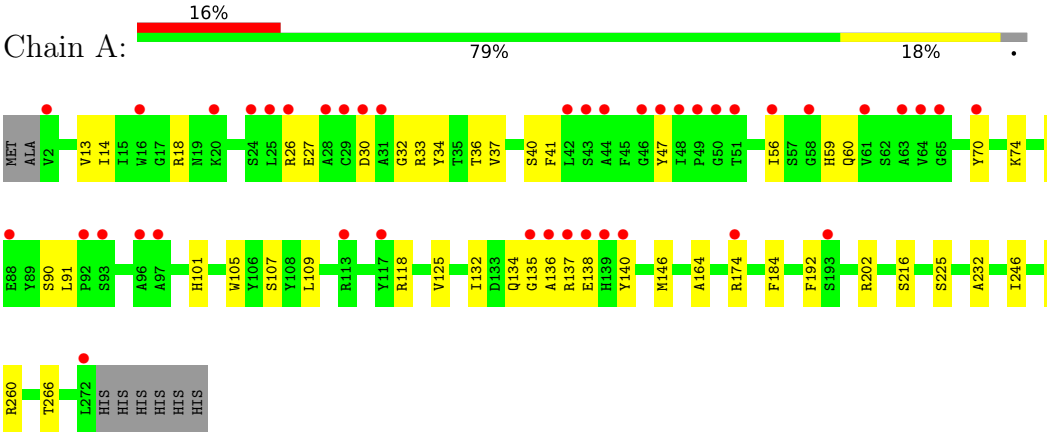
• Molecule 2: Xylanase inhibitor protein XIP

Chain B:



• Molecule 2: Xylanase inhibitor protein XIP

Chain A:


16%
79%
18%
MET ALA V2 V13 I14 I15 W16 G17 R18 N19 K20 S24 L25 R26 E27 A28 C29 D30 A31 G32 R33 Y34 T35 T36 V37 S40 F41 L42 S43 A44 F45 G46 Y47 I48 P49 G50 T51 I56 S57 G58 H59 Q60 V61 S62 A63 V64 G65 Y70 K74 L77 G86 G87
E88 Y89 S90 L91 P92 S93 A96 A97 H101 W105 Y106 S107 Y108 L109 R113 Y117 R118 V125 I132 D133 Q134 G135 A136 R137 E138 H139 Y140 M146 A164 R174 F184 F192 S193 R202 S216 S225 A232 I246 P250 W258 D259
R260 T266 L272 HIS HIS HIS HIS HIS HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 4 2 2	Depositor
Cell constants a, b, c, α, β, γ	197.56Å 197.56Å 136.32Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.91 – 2.21 19.91 – 2.21	Depositor EDS
% Data completeness (in resolution range)	100.0 (19.91-2.21) 99.8 (19.91-2.21)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.43 (at 2.21Å)	Xtriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
R, R_{free}	0.267 , 0.317 0.268 , 0.318	Depositor DCC
R_{free} test set	3429 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	42.6	Xtriage
Anisotropy	0.069	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 42.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	7452	wwPDB-VP
Average B, all atoms (Å^2)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 12.05% 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	C	0.09	0/1510	0.30	0/2052
1	D	0.09	0/1501	0.30	0/2041
2	A	0.12	0/2192	0.35	0/2970
2	B	0.12	0/2167	0.36	0/2935
All	All	0.11	0/7370	0.33	0/9998

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	C	1469	0	1334	22	0
1	D	1460	0	1321	21	0
2	A	2136	0	2062	47	0
2	B	2111	0	2036	31	0
3	A	80	0	0	2	0
3	B	69	0	0	3	0
3	C	67	0	0	3	0
3	D	60	0	0	1	0
All	All	7452	0	6753	115	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 8.

All (115) 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)
2:A:135:GLY:C	2:A:174:ARG:NH2	1.88	1.29
2:A:135:GLY:N	2:A:174:ARG:NH2	1.80	1.29
2:A:135:GLY:CA	2:A:174:ARG:NH2	2.11	1.13
2:A:135:GLY:O	2:A:174:ARG:NH2	1.83	1.09
2:A:135:GLY:N	2:A:174:ARG:HH22	1.50	0.95
2:A:135:GLY:CA	2:A:174:ARG:HH22	1.83	0.86
2:A:135:GLY:CA	2:A:174:ARG:HH21	1.84	0.84
2:A:135:GLY:H	2:A:174:ARG:NH2	1.78	0.80
2:A:135:GLY:N	2:A:174:ARG:HH21	1.81	0.76
1:D:8:ARG:HG2	2:A:250:PRO:HG3	1.65	0.76
1:C:134:SER:OG	3:C:201:HOH:O	1.97	0.75
2:B:20:LYS:NZ	2:B:57:SER:O	2.22	0.72
2:A:135:GLY:C	2:A:174:ARG:HH21	1.83	0.71
2:A:135:GLY:C	2:A:174:ARG:HH22	1.76	0.71
1:C:137:GLY:O	3:C:201:HOH:O	2.10	0.69
2:A:137:ARG:N	2:A:138:GLU:OE1	2.28	0.67
2:B:80:LEU:HB2	2:B:125:VAL:HG11	1.77	0.66
1:D:130:VAL:HA	1:D:140:THR:HG23	1.80	0.64
1:D:118:ASP:O	1:D:148:ARG:NH2	2.30	0.64
2:A:105:TRP:HA	2:A:109:LEU:HB2	1.80	0.64
2:A:134:GLN:C	2:A:174:ARG:HH22	2.04	0.64
2:A:135:GLY:O	2:A:174:ARG:CZ	2.45	0.63
2:B:136:ALA:HB3	2:B:138:GLU:HG2	1.83	0.61
2:A:60:GLN:NE2	3:A:312:HOH:O	2.32	0.61
2:B:44:ALA:HB3	2:B:53:LYS:HB2	1.82	0.60
2:B:33:ARG:NH1	3:B:307:HOH:O	2.34	0.59
1:D:93:GLU:OE1	1:D:143:GLN:NE2	2.32	0.59
2:B:70:TYR:O	2:B:73:SER:OG	2.21	0.58
1:C:122:TYR:CZ	1:C:148:ARG:HG3	2.40	0.57
2:A:26:ARG:HG3	2:A:70:TYR:CE1	2.40	0.57
2:B:27:GLU:HG2	2:B:260:ARG:HH21	1.69	0.57
2:B:105:TRP:HA	2:B:109:LEU:HB2	1.88	0.55
2:A:225:SER:HB2	2:A:266:THR:HG21	1.89	0.55
2:B:199:ALA:HA	2:B:202:ARG:HG3	1.89	0.54
2:B:46:GLY:HA3	2:B:90:SER:O	2.06	0.54
1:C:166:TRP:HB3	1:C:171:MET:HB2	1.88	0.54
2:B:92:PRO:O	3:B:301:HOH:O	2.18	0.54
1:D:131:ASN:ND2	3:D:205:HOH:O	2.41	0.53
1:C:87:THR:HG21	1:C:173:LEU:HB3	1.91	0.53
1:C:122:TYR:CE2	1:C:148:ARG:HG3	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:136:ALA:H	2:A:138:GLU:CD	2.18	0.51
1:D:87:THR:HG21	1:D:173:LEU:HD23	1.93	0.50
2:A:18:ARG:N	3:A:302:HOH:O	2.44	0.50
1:C:148:ARG:NE	1:C:150:ASN:O	2.40	0.50
2:A:14:ILE:HD11	2:A:260:ARG:HA	1.95	0.49
1:C:86:TRP:CZ3	1:C:134:SER:HB2	2.48	0.48
1:D:43:TYR:CZ	1:D:56:GLY:HA2	2.48	0.48
2:A:34:TYR:OH	2:A:260:ARG:NH1	2.46	0.48
2:B:225:SER:HB2	2:B:266:THR:HG21	1.94	0.48
1:C:91:LEU:HB3	1:C:141:PHE:HB3	1.96	0.48
2:B:43:SER:O	2:B:89:TYR:HB3	2.14	0.48
2:B:48:ILE:CD1	2:B:51:THR:HG23	2.45	0.47
2:A:101:HIS:CD2	2:A:146:MET:HB3	2.49	0.47
2:A:14:ILE:HG23	2:A:37:VAL:HG13	1.96	0.47
1:C:187:GLN:HG2	1:D:103:TYR:CZ	2.50	0.47
2:A:56:ILE:HD12	2:A:59:HIS:HB3	1.96	0.47
2:A:202:ARG:HH21	2:A:232:ALA:HA	1.79	0.47
2:B:184:PHE:O	2:B:216:SER:OG	2.26	0.47
2:B:18:ARG:NH1	3:B:314:HOH:O	2.47	0.47
2:A:56:ILE:HD12	2:A:59:HIS:CB	2.45	0.46
1:C:8:ARG:HH11	2:B:250:PRO:HG3	1.79	0.46
1:D:61:THR:OG1	2:A:74:LYS:O	2.28	0.46
2:A:40:SER:HA	2:A:41:PHE:HA	1.64	0.46
2:A:47:TYR:CZ	2:A:90:SER:HB2	2.50	0.46
2:A:184:PHE:O	2:A:216:SER:OG	2.24	0.46
1:C:86:TRP:CH2	1:C:134:SER:HB2	2.51	0.46
2:A:40:SER:HB2	2:A:41:PHE:CD1	2.51	0.46
1:C:17:THR:HG21	2:B:35:THR:HG21	1.98	0.46
1:C:116:THR:HB	1:C:121:VAL:HG22	1.98	0.46
1:D:144:TYR:CZ	1:D:171:MET:HB2	2.51	0.46
2:B:113:ARG:HB2	2:B:116:VAL:HG22	1.97	0.46
1:D:107:SER:O	1:D:107:SER:OG	2.34	0.45
2:B:13:VAL:HG22	2:B:36:THR:HB	1.98	0.45
1:C:134:SER:HA	2:B:155:ARG:HB3	1.98	0.45
2:B:243:LEU:HD23	2:B:246:ILE:HD11	1.97	0.45
2:A:258:TRP:HA	2:A:259:ASP:HA	1.72	0.45
2:A:40:SER:HB2	2:A:41:PHE:CG	2.52	0.45
1:C:137:GLY:N	3:C:201:HOH:O	2.50	0.45
2:A:134:GLN:C	2:A:174:ARG:NH2	2.64	0.45
1:D:43:TYR:CE2	1:D:194:ILE:HD11	2.53	0.44
2:A:32:GLY:C	2:A:33:ARG:HD2	2.42	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:132:ILE:HG13	2:A:140:TYR:CE2	2.53	0.44
1:C:115:VAL:HG12	1:C:124:ILE:HD11	1.98	0.44
1:C:83:VAL:HB	1:C:96:ILE:HB	2.01	0.43
1:D:87:THR:O	1:D:91:LEU:HA	2.17	0.43
1:D:112:LYS:HE3	1:D:126:ALA:HB3	1.98	0.43
1:D:109:MET:HE1	1:D:145:TRP:NE1	2.33	0.43
2:B:40:SER:HA	2:B:41:PHE:HA	1.65	0.43
2:A:36:THR:HG23	2:A:77:LEU:HB3	1.99	0.43
2:A:192:PHE:HA	2:A:232:ALA:CB	2.49	0.43
1:D:33:VAL:HG22	1:D:47:TRP:HB2	2.01	0.43
2:A:135:GLY:HA3	2:A:138:GLU:OE2	2.18	0.43
2:B:258:TRP:HA	2:B:259:ASP:HA	1.69	0.43
2:B:59:HIS:O	2:B:61:VAL:N	2.52	0.43
2:A:164:ALA:HB2	2:A:184:PHE:CE2	2.54	0.42
2:B:40:SER:O	2:B:56:ILE:HG22	2.19	0.42
2:A:246:ILE:HD13	2:A:246:ILE:HA	1.86	0.42
2:A:13:VAL:HG22	2:A:36:THR:HB	2.01	0.42
2:A:107:SER:HA	2:A:118:ARG:HG2	1.99	0.42
1:D:43:TYR:CE2	1:D:56:GLY:HA2	2.54	0.42
1:C:43:TYR:CZ	1:C:56:GLY:HA2	2.55	0.42
1:D:129:GLN:HB3	1:D:132:GLN:HG3	2.02	0.42
2:B:18:ARG:HA	2:B:18:ARG:HD2	1.89	0.42
2:A:91:LEU:H	2:A:138:GLU:HG3	1.84	0.42
1:C:144:TYR:CZ	1:C:171:MET:HB3	2.55	0.41
2:A:27:GLU:HA	2:A:30:ASP:HB2	2.02	0.41
2:B:26:ARG:HG3	2:B:70:TYR:CD2	2.56	0.41
1:D:86:TRP:CE3	1:D:91:LEU:HD11	2.55	0.41
2:B:166:THR:OG1	2:B:167:ARG:N	2.53	0.41
2:B:188:HIS:CB	2:B:256:MET:HE3	2.51	0.41
2:B:243:LEU:HA	2:B:246:ILE:HG12	2.02	0.41
1:D:166:TRP:O	1:D:171:MET:HG2	2.21	0.41
1:C:82:ALA:HB2	1:C:97:MET:HA	2.03	0.41
1:C:114:THR:HG23	1:C:121:VAL:HG13	2.03	0.41
1:D:106:GLY:C	1:D:108:SER:H	2.30	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	C	190/204 (93%)	180 (95%)	10 (5%)	0	100	100
1	D	189/204 (93%)	177 (94%)	12 (6%)	0	100	100
2	A	269/279 (96%)	261 (97%)	8 (3%)	0	100	100
2	B	265/279 (95%)	249 (94%)	16 (6%)	0	100	100
All	All	913/966 (94%)	867 (95%)	46 (5%)	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	C	153/166 (92%)	153 (100%)	0	100	100
1	D	152/166 (92%)	150 (99%)	2 (1%)	65	78
2	A	223/230 (97%)	222 (100%)	1 (0%)	89	95
2	B	220/230 (96%)	219 (100%)	1 (0%)	86	93
All	All	748/792 (94%)	744 (100%)	4 (0%)	86	93

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	152	ARG
1	D	171	MET

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Mol	Chain	Res	Type
2	B	62	SER
2	A	125	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	161	ASN
1	C	177	ASN
1	C	187	GLN
1	D	78	ASN
1	D	131	ASN
1	D	187	GLN
2	B	85	GLN

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 oligosaccharides 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, 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	C	192/204 (94%)	0.49	14 (7%) 22 20	25, 42, 59, 95	0
1	D	191/204 (93%)	0.67	19 (9%) 14 12	26, 43, 64, 89	0
2	A	271/279 (97%)	0.95	44 (16%) 5 4	29, 49, 74, 87	0
2	B	267/279 (95%)	1.37	80 (29%) 1 1	27, 57, 90, 104	0
All	All	921/966 (95%)	0.92	157 (17%) 5 4	25, 47, 79, 104	0

All (157) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	136	ALA	8.5
2	B	46	GLY	6.6
2	B	48	ILE	6.3
2	A	50	GLY	6.1
2	B	138	GLU	5.0
2	B	47	TYR	4.8
2	B	51	THR	4.6
2	B	96	ALA	4.6
2	A	47	TYR	4.6
2	B	62	SER	4.6
2	B	86	GLY	4.5
2	B	193	SER	4.5
2	B	83	GLY	4.4
2	B	92	PRO	4.3
2	B	44	ALA	4.3
1	D	116	THR	4.3
2	A	49	PRO	4.3
2	B	16	TRP	4.2
2	B	135	GLY	4.2
2	B	63	ALA	4.2
2	A	117	TYR	4.2

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Mol	Chain	Res	Type	RSRZ
2	A	136	ALA	4.2
2	A	135	GLY	4.1
2	B	91	LEU	4.1
2	A	138	GLU	4.0
2	B	56	ILE	3.9
2	B	59	HIS	3.9
2	B	52	TYR	3.8
2	B	89	TYR	3.8
2	B	85	GLN	3.7
2	B	167	ARG	3.7
2	B	84	GLY	3.7
2	B	45	PHE	3.7
2	B	113	ARG	3.7
2	B	49	PRO	3.6
2	B	97	ALA	3.6
2	B	139	HIS	3.5
2	B	93	SER	3.5
2	A	92	PRO	3.5
1	C	8	ARG	3.5
1	D	121	VAL	3.5
2	A	56	ILE	3.4
2	B	194	ASP	3.4
2	A	58	GLY	3.4
2	B	61	VAL	3.3
2	B	58	GLY	3.3
2	A	44	ALA	3.3
1	C	114	THR	3.3
2	A	48	ILE	3.3
2	B	55	ASP	3.3
1	C	122	TYR	3.3
2	A	70	TYR	3.3
2	B	116	VAL	3.1
2	B	17	GLY	3.1
2	B	120	PHE	3.1
2	B	54	LEU	3.1
2	B	90	SER	3.1
2	B	261	PHE	3.1
2	B	117	TYR	3.1
2	A	63	ALA	3.0
2	B	195	GLY	3.0
2	A	2	VAL	3.0
1	D	117	SER	3.0

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Mol	Chain	Res	Type	RSRZ
2	B	94	SER	3.0
1	D	115	VAL	3.0
2	B	99	ASP	3.0
1	C	116	THR	2.9
1	D	113	GLY	2.9
2	B	140	TYR	2.9
2	A	140	TYR	2.9
2	A	43	SER	2.9
2	A	193	SER	2.9
2	B	173	HIS	2.9
2	B	197	CYS	2.9
1	C	6	GLU	2.9
2	B	25	LEU	2.9
2	B	108	TYR	2.9
2	B	115	GLY	2.8
2	B	41	PHE	2.8
2	B	102	ASP	2.8
2	B	64	VAL	2.8
2	A	61	VAL	2.8
2	B	88	GLU	2.8
2	B	43	SER	2.8
2	A	64	VAL	2.8
2	A	65	GLY	2.8
2	A	88	GLU	2.8
2	A	86	GLY	2.8
1	C	165	ALA	2.7
2	B	23	GLY	2.7
2	B	42	LEU	2.7
2	B	57	SER	2.7
1	D	122	TYR	2.7
2	B	134	GLN	2.7
2	A	46	GLY	2.6
2	A	174	ARG	2.6
2	B	15	ILE	2.6
2	A	96	ALA	2.6
1	D	160	ALA	2.6
2	B	107	SER	2.6
2	B	87	GLY	2.5
2	A	24	SER	2.5
2	B	67	ASP	2.5
2	B	133	ASP	2.5
2	A	93	SER	2.5

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Mol	Chain	Res	Type	RSRZ
2	B	50	GLY	2.5
1	D	7	LYS	2.5
2	A	137	ARG	2.5
2	B	100	LEU	2.4
2	B	103	HIS	2.4
2	B	19	ASN	2.4
1	D	120	SER	2.4
2	B	33	ARG	2.4
2	B	137	ARG	2.4
2	A	26	ARG	2.4
1	D	114	THR	2.3
1	D	150	ASN	2.3
1	C	163	PHE	2.3
2	B	192	PHE	2.3
2	B	132	ILE	2.3
2	A	51	THR	2.3
2	B	262	TYR	2.3
2	B	22	GLU	2.3
1	D	64	ALA	2.3
2	A	16	TRP	2.3
1	C	117	SER	2.3
1	D	161	ASN	2.2
2	A	42	LEU	2.2
2	B	60	GLN	2.2
2	A	30	ASP	2.2
2	A	87	GLY	2.2
2	B	27	GLU	2.2
1	C	160	ALA	2.2
2	A	139	HIS	2.2
1	D	164	ASN	2.2
1	D	126	ALA	2.2
1	D	165	ALA	2.2
2	A	31	ALA	2.2
2	A	97	ALA	2.2
1	C	115	VAL	2.2
2	B	20	LYS	2.2
2	A	20	LYS	2.2
1	C	177	ASN	2.2
2	A	272	LEU	2.2
1	D	163	PHE	2.2
1	D	8	ARG	2.1
1	C	150	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
2	A	29	CYS	2.1
2	A	25	LEU	2.1
2	A	28	ALA	2.1
2	A	113	ARG	2.1
2	B	53	LYS	2.1
2	B	18	ARG	2.1
1	D	173	LEU	2.1
2	B	272	LEU	2.1
1	C	91	LEU	2.0
1	C	169	LEU	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 oligosaccharides 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.