Full wwPDB X-ray Structure Validation Report (i)

Nov 13, 2023 – 04:04 PM JST

|		
PDB ID	:	5XP1
Title	:	Structure of monomeric mutant of REI immunoglobulin light chain variable domain crystallized at pH 6
Authors	:	Mine, S.; Nakamura, T.; Uegaki, K.; Hamada, D.
Deposited on	:	2017-05-31
Resolution	:	2.88 Å(reported)

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 2.88 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		0.298
Clashscore		13
Ramachandran outliers		0.9%
Sidechain outliers		2.4%
RSRZ outliers		1.8%

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	2691 (2.90-2.86)
Clashscore	141614	2947 (2.90-2.86)
Ramachandran outliers	138981	2868 (2.90-2.86)
Sidechain outliers	138945	2871 (2.90-2.86)
RSRZ outliers	127900	2629 (2.90-2.86)

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	109	75% 22% •
1	B	109	73% 25% •
1	C	109	.% 84% 14% •
1	D	109	.% 73% 26% •
1	E	109	74% 25% •
1	F	109	78% 20% •

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WORLDWIDE PDB
PROTEIN DATA BANK

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Mol	Chain	Length	Quality of chain
1	G	109	6% 62% 31% ⋅ ⋅ ⋅
1	H	109	6% 68% 28% 5%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 6669 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 Immunoglobulin kappa variable 1D-33.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	109	Total 834	C 524	N 136	O 171	S 3	0	0	0
1	B	109	Total 834	C 524	N 136	O 171	S 3	0	0	0
1	C	109	Total 840	C 527	N 139	O 171	S 3	0	0	0
1	D	109	Total 840	C 527	N 139	O 171	S 3	0	0	0
1	E	109	Total 834	C 524	N 136	O 171	S 3	0	0	0
1	F	109	Total 840	C 527	N 139	O 171	S 3	0	0	0
1	G	107	Total 808	C 505	N 134	O 166	S 3	0	0	0
1	H	109	Total 827	C 515	N 139	O 170	S 3	0	0	0

There are 184 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	ALA	CYS	see sequence details	UNP P01593
A	30	ILE	SER	see sequence details	UNP P01593
A	31	LYS	ASN	see sequence details	UNP P01593
A	39	THR	LYS	see sequence details	UNP P01593
A	50	GLU	ASP	see sequence details	UNP P01593
A	55	GLN	GLU	see sequence details	UNP P01593
A	56	ALA	THR	see sequence details	UNP P01593
A	71	TYR	PHE	see sequence details	UNP P01593
A	92	GLN	ASP	see sequence details	UNP P01593
A	93	SER	ASN	see sequence details	UNP P01593
A	96	LYS	-	expression tag	UNP P01593
A	97	THR	-	expression tag	UNP P01593
A	98	PHE	-	expression tag	UNP P01593

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Chain	Residue	Modelled	Actual	Comment	Reference
A	99	GLY	-	expression tag	UNP P01593
A	100	GLN	-	expression tag	UNP P01593
A	101	GLY	-	expression tag	UNP P01593
A	102	THR	-	expression tag	UNP P01593
A	103	LYS	-	expression tag	UNP P01593
A	104	LEU	-	expression tag	UNP P01593
A	105	GLN	-	expression tag	UNP P01593
A	106	ILE	-	expression tag	UNP P01593
A	107	THR	-	expression tag	UNP P01593
A	108	ARG	-	expression tag	UNP P01593
B	0	ALA	CYS	see sequence details	UNP P01593
B	30	ILE	SER	see sequence details	UNP P01593
B	31	LYS	ASN	see sequence details	UNP P01593
B	39	THR	LYS	see sequence details	UNP P01593
B	50	GLU	ASP	see sequence details	UNP P01593
B	55	GLN	GLU	see sequence details	UNP P01593
B	56	ALA	THR	see sequence details	UNP P01593
B	71	TYR	PHE	see sequence details	UNP P01593
B	92	GLN	ASP	see sequence details	UNP P01593
B	93	SER	ASN	see sequence details	UNP P01593
B	96	LYS	-	expression tag	UNP P01593
B	97	THR	-	expression tag	UNP P01593
B	98	PHE	-	expression tag	UNP P01593
B	99	GLY	-	expression tag	UNP P01593
B	100	GLN	-	expression tag	UNP P01593
B	101	GLY	-	expression tag	UNP P01593
B	102	THR	-	expression tag	UNP P01593
B	103	LYS	-	expression tag	UNP P01593
B	104	LEU	-	expression tag	UNP P01593
B	105	GLN	-	expression tag	UNP P01593
B	106	ILE	-	expression tag	UNP P01593
B	107	THR	-	expression tag	UNP P01593
B	108	ARG	-	expression tag	UNP P01593
C	0	ALA	CYS	see sequence details	UNP P01593
C	30	ILE	SER	see sequence details	UNP P01593
C	31	LYS	ASN	see sequence details	UNP P01593
C	39	THR	LYS	see sequence details	UNP P01593
C	50	GLU	ASP	see sequence details	UNP P01593
C	55	GLN	GLU	see sequence details	UNP P01593
C	56	ALA	THR	see sequence details	UNP P01593
C	71	TYR	PHE	see sequence details	UNP P01593
C	92	GLN	ASP	see sequence details	UNP P01593

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Chain	Residue	Modelled	Actual	Comment	Reference
C	93	SER	ASN	see sequence details	UNP P01593
C	96	LYS	-	expression tag	UNP P01593
C	97	THR	-	expression tag	UNP P01593
C	98	PHE	-	expression tag	UNP P01593
C	99	GLY	-	expression tag	UNP P01593
C	100	GLN	-	expression tag	UNP P01593
C	101	GLY	-	expression tag	UNP P01593
C	102	THR	-	expression tag	UNP P01593
C	103	LYS	-	expression tag	UNP P01593
C	104	LEU	-	expression tag	UNP P01593
C	105	GLN	-	expression tag	UNP P01593
C	106	ILE	-	expression tag	UNP P01593
C	107	THR	-	expression tag	UNP P01593
C	108	ARG	-	expression tag	UNP P01593
D	0	ALA	CYS	see sequence details	UNP P01593
D	30	ILE	SER	see sequence details	UNP P01593
D	31	LYS	ASN	see sequence details	UNP P01593
D	39	THR	LYS	see sequence details	UNP P01593
D	50	GLU	ASP	see sequence details	UNP P01593
D	55	GLN	GLU	see sequence details	UNP P01593
D	56	ALA	THR	see sequence details	UNP P01593
D	71	TYR	PHE	see sequence details	UNP P01593
D	92	GLN	ASP	see sequence details	UNP P01593
D	93	SER	ASN	see sequence details	UNP P01593
D	96	LYS	-	expression tag	UNP P01593
D	97	THR	-	expression tag	UNP P01593
D	98	PHE	-	expression tag	UNP P01593
D	99	GLY	-	expression tag	UNP P01593
D	100	GLN	-	expression tag	UNP P01593
D	101	GLY	-	expression tag	UNP P01593
D	102	THR	-	expression tag	UNP P01593
D	103	LYS	-	expression tag	UNP P01593
D	104	LEU	-	expression tag	UNP P01593
D	105	GLN	-	expression tag	UNP P01593
D	106	ILE	-	expression tag	UNP P01593
D	107	THR	-	expression tag	UNP P01593
D	108	ARG	-	expression tag	UNP P01593
E	0	ALA	CYS	see sequence details	UNP P01593
E	30	ILE	SER	see sequence details	UNP P01593
E	31	LYS	ASN	see sequence details	UNP P01593
E	39	THR	LYS	see sequence details	UNP P01593
E	50	GLU	ASP	see sequence details	UNP P01593

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Chain	Residue	Modelled	Actual	Comment	Reference
E	55	GLN	GLU	see sequence details	UNP P01593
E	56	ALA	THR	see sequence details	UNP P01593
E	71	TYR	PHE	see sequence details	UNP P01593
E	92	GLN	ASP	see sequence details	UNP P01593
E	93	SER	ASN	see sequence details	UNP P01593
E	96	LYS	-	expression tag	UNP P01593
E	97	THR	-	expression tag	UNP P01593
E	98	PHE	-	expression tag	UNP P01593
E	99	GLY	-	expression tag	UNP P01593
E	100	GLN	-	expression tag	UNP P01593
E	101	GLY	-	expression tag	UNP P01593
E	102	THR	-	expression tag	UNP P01593
E	103	LYS	-	expression tag	UNP P01593
E	104	LEU	-	expression tag	UNP P01593
E	105	GLN	-	expression tag	UNP P01593
E	106	ILE	-	expression tag	UNP P01593
E	107	THR	-	expression tag	UNP P01593
E	108	ARG	-	expression tag	UNP P01593
F	0	ALA	CYS	see sequence details	UNP P01593
F	30	ILE	SER	see sequence details	UNP P01593
F	31	LYS	ASN	see sequence details	UNP P01593
F	39	THR	LYS	see sequence details	UNP P01593
F	50	GLU	ASP	see sequence details	UNP P01593
F	55	GLN	GLU	see sequence details	UNP P01593
F	56	ALA	THR	see sequence details	UNP P01593
F	71	TYR	PHE	see sequence details	UNP P01593
F	92	GLN	ASP	see sequence details	UNP P01593
F	93	SER	ASN	see sequence details	UNP P01593
F	96	LYS	-	expression tag	UNP P01593
F	97	THR	-	expression tag	UNP P01593
F	98	PHE	-	expression tag	UNP P01593
F	99	GLY	-	expression tag	UNP P01593
F	100	GLN	-	expression tag	UNP P01593
F	101	GLY	-	expression tag	UNP P01593
F	102	THR	-	expression tag	UNP P01593
F	103	LYS	-	expression tag	UNP P01593
F	104	LEU	-	expression tag	UNP P01593
F	105	GLN	-	expression tag	UNP P01593
F	106	ILE	-	expression tag	UNP P01593
F	107	THR	-	expression tag	UNP P01593
F	108	ARG	-	expression tag	UNP P01593
G	0	ALA	CYS	see sequence details	UNP P01593

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Chain	Residue	Modelled	Actual	Comment	Reference
G	30	ILE	SER	see sequence details	UNP P01593
G	31	LYS	ASN	see sequence details	UNP P01593
G	39	THR	LYS	see sequence details	UNP P01593
G	50	GLU	ASP	see sequence details	UNP P01593
G	55	GLN	GLU	see sequence details	UNP P01593
G	56	ALA	THR	see sequence details	UNP P01593
G	71	TYR	PHE	see sequence details	UNP P01593
G	92	GLN	ASP	see sequence details	UNP P01593
G	93	SER	ASN	see sequence details	UNP P01593
G	96	LYS	-	expression tag	UNP P01593
G	97	THR	-	expression tag	UNP P01593
G	98	PHE	-	expression tag	UNP P01593
G	99	GLY	-	expression tag	UNP P01593
G	100	GLN	-	expression tag	UNP P01593
G	101	GLY	-	expression tag	UNP P01593
G	102	THR	-	expression tag	UNP P01593
G	103	LYS	-	expression tag	UNP P01593
G	104	LEU	-	expression tag	UNP P01593
G	105	GLN	-	expression tag	UNP P01593
G	106	ILE	-	expression tag	UNP P01593
G	107	THR	-	expression tag	UNP P01593
G	108	ARG	-	expression tag	UNP P01593
H	0	ALA	CYS	see sequence details	UNP P01593
H	30	ILE	SER	see sequence details	UNP P01593
H	31	LYS	ASN	see sequence details	UNP P01593
H	39	THR	LYS	see sequence details	UNP P01593
H	50	GLU	ASP	see sequence details	UNP P01593
H	55	GLN	GLU	see sequence details	UNP P01593
H	56	ALA	THR	see sequence details	UNP P01593
H	71	TYR	PHE	see sequence details	UNP P01593
H	92	GLN	ASP	see sequence details	UNP P01593
H	93	SER	ASN	see sequence details	UNP P01593
H	96	LYS	-	expression tag	UNP P01593
H	97	THR	-	expression tag	UNP P01593
H	98	PHE	-	expression tag	UNP P01593
H	99	GLY	-	expression tag	UNP P01593
H	100	GLN	-	expression tag	UNP P01593
H	101	GLY	-	expression tag	UNP P01593
H	102	THR	-	expression tag	UNP P01593
H	103	LYS	-	expression tag	UNP P01593
H	104	LEU	-	expression tag	UNP P01593
H	105	GLN	-	expression tag	UNP P01593

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Chain	Residue	Modelled	Actual	Comment	Reference
H	106	ILE	-	expression tag	UNP P01593
H	107	THR	-	expression tag	UNP P01593
H	108	ARG	-	expression tag	UNP P01593
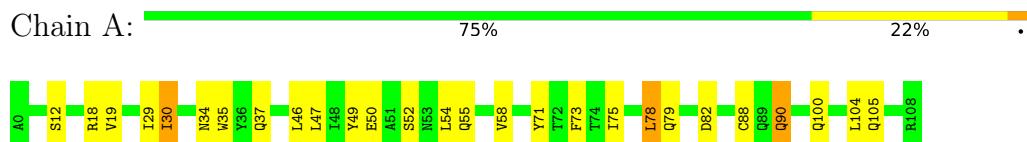
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	6	Total 6	O 6	0	0
2	B	2	Total 2	O 2	0	0
2	C	2	Total 2	O 2	0	0
2	E	1	Total 1	O 1	0	0
2	F	1	Total 1	O 1	0	0
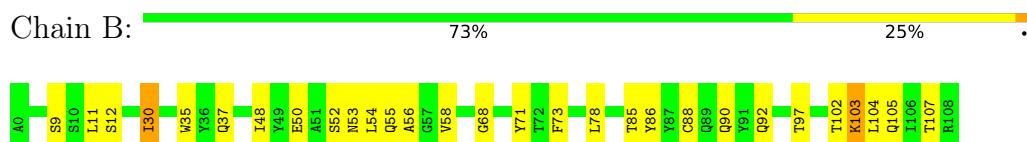
3 Residue-property plots ⓘ

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.
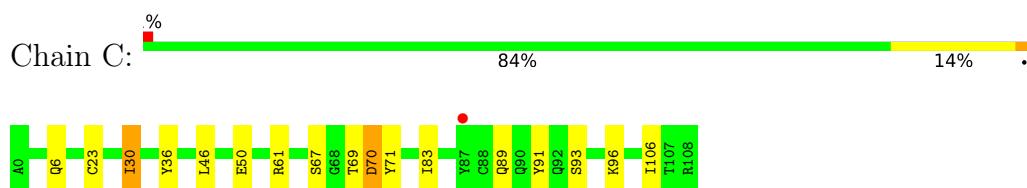
- Molecule 1: Immunoglobulin kappa variable 1D-33
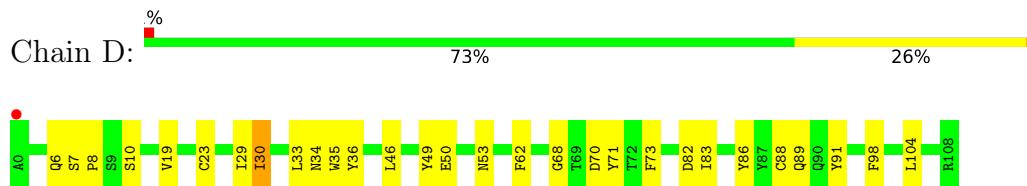
Chain A:

- Molecule 1: Immunoglobulin kappa variable 1D-33

Chain B:

- Molecule 1: Immunoglobulin kappa variable 1D-33

Chain C:

- Molecule 1: Immunoglobulin kappa variable 1D-33

Chain D:

- Molecule 1: Immunoglobulin kappa variable 1D-33

Chain E:

- Molecule 1: Immunoglobulin kappa variable 1D-33

Chain F:

78%   20%

A0 V15 Q24 I30 K31 Y32 L33 N34 W35 Y36 Q37 Q38 T39 K42 L46 L47 L54 V58 D70 Y71 T72 F73 L78 Q79 C88 T102 K103 L104 R108

• Molecule 1: Immunoglobulin kappa variable 1D-33

6%

Chain G:

62%   31%   • • •

A0 D1 I2 Q3 M4 T5 Q6 S12 V15 T20 Q24 A25 S26 Q27 D28 I29 I30 K31 Y32 L33 N34 W35 Y36 G41 L46 L47 I48 Y49 N53 L54 Q55 V58 Y71 T74 P80 I83 Q89 Q90 Y91 Q92 S93 L94 P95 K96 T97 Q100
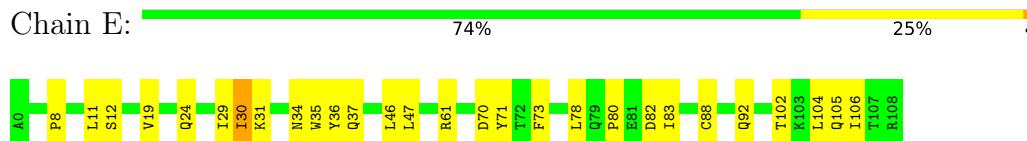
G101 T102 K103 L104 Q105 I106 THR ARG

• Molecule 1: Immunoglobulin kappa variable 1D-33

6%

Chain H:

68%   28%   5%

A0 D1 I2 Q3 M4 T5 Q6 L11 S12 A13 S14 V15 I21 T22 C23 Q24 A25 S26 Q27 D28 I29 I30 K31 Y32 L33 N34 W35 P40 G41 N53 L54 Q55 R61 Y71 S76 S77 L78 C88 Q89 Q90 Y91 Q92 S93 L94 P95 K96 T97 Q100 G101 T102

R108

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 4	Depositor
Cell constants a, b, c, α, β, γ	130.76Å 130.76Å 92.14Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	17.96 – 2.88 17.96 – 2.88	Depositor EDS
% Data completeness (in resolution range)	99.9 (17.96-2.88) 99.9 (17.96-2.88)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	4.02 (at 2.87Å)	Xtriage
Refinement program	PHENIX (1.11_2567: ???)	Depositor
R, R_{free}	0.257 , 0.297 0.257 , 0.298	Depositor DCC
R_{free} test set	1763 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	67.8	Xtriage
Anisotropy	0.149	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 20.3	EDS
L-test for twinning[2]	$<|L|> = 0.51, <L^2> = 0.34$	Xtriage
Estimated twinning fraction	0.488 for h,-k,-l	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	6669	wwPDB-VP
Average B, all atoms (Å^2)	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.48% of the height of the origin peak. No significant pseudotranslation is detected.*

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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 ⓘ

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	A	0.28	0/851	0.50	0/1156
1	B	0.30	0/851	0.59	1/1156 (0.1%)
1	C	0.28	0/857	0.52	0/1163
1	D	0.28	0/857	0.50	0/1163
1	E	0.26	0/851	0.51	0/1156
1	F	0.29	0/857	0.58	1/1163 (0.1%)
1	G	0.44	0/823	0.75	2/1119 (0.2%)
1	H	0.31	0/842	0.65	1/1143 (0.1%)
All	All	0.31	0/6789	0.58	5/9219 (0.1%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	24	GLN	CA-CB-CG	-8.42	94.87	113.40
1	B	103	LYS	CB-CG-CD	7.40	130.84	111.60
1	G	94	LEU	CA-CB-CG	7.07	131.56	115.30
1	F	24	GLN	CA-CB-CG	5.18	124.79	113.40
1	H	11	LEU	CA-CB-CG	5.09	127.01	115.30

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	A	834	0	811	20	0
1	B	834	0	811	21	0
1	C	840	0	822	7	0
1	D	840	0	822	19	0
1	E	834	0	811	18	0
1	F	840	0	822	16	0
1	G	808	0	788	44	0
1	H	827	0	808	34	0
2	A	6	0	0	1	0
2	B	2	0	0	1	0
2	C	2	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
All	All	6669	0	6495	171	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 (171) 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:G:89:GLN:OE1	1:G:90:GLN:O	1.80	1.00
1:G:80:PRO:O	1:G:83:ILE:CD1	2.12	0.97
1:G:80:PRO:O	1:G:83:ILE:HD12	1.69	0.93
1:G:24:GLN:HG3	1:G:25:ALA:N	1.92	0.85
1:H:2:ILE:HG23	1:H:27:GLN:HE21	1.38	0.85
1:G:94:LEU:HD22	1:G:95:PRO:HA	1.58	0.84
1:G:6:GLN:OE1	1:G:102:THR:OG1	1.98	0.81
1:F:24:GLN:NE2	1:F:70:ASP:OD1	2.14	0.81
1:G:30:ILE:O	1:G:71:TYR:OH	1.99	0.81
1:E:78:LEU:HD11	1:E:104:LEU:HD21	1.65	0.78
1:C:83:ILE:HD11	1:C:106:ILE:HG12	1.65	0.78
1:G:89:GLN:OE1	1:G:90:GLN:C	2.22	0.78
1:G:30:ILE:HG13	1:G:31:LYS:H	1.50	0.77
1:G:90:GLN:HE21	1:G:97:THR:HG22	1.50	0.76
1:B:85:THR:OG1	1:B:103:LYS:HG3	1.88	0.74
1:H:90:GLN:OE1	1:H:92:GLN:HB3	1.89	0.73
1:H:21:ILE:HD11	1:H:35:TRP:HZ3	1.54	0.72
1:G:90:GLN:O	1:G:90:GLN:HG3	1.88	0.72
1:F:30:ILE:O	1:F:71:TYR:OH	2.08	0.71
1:E:30:ILE:O	1:E:71:TYR:OH	2.09	0.71
1:D:6:GLN:HB2	1:D:23:CYS:SG	2.31	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:55:GLN:HA	1:G:55:GLN:HE22	1.56	0.69
1:E:11:LEU:HD11	1:E:19:VAL:HG23	1.75	0.69
1:F:78:LEU:HD11	1:F:104:LEU:HD21	1.73	0.69
1:D:19:VAL:HG11	1:D:104:LEU:HD21	1.77	0.67
1:G:90:GLN:HG2	1:G:97:THR:HG22	1.77	0.66
1:C:30:ILE:O	1:C:71:TYR:OH	2.08	0.66
1:H:30:ILE:O	1:H:71:TYR:OH	2.13	0.66
1:H:90:GLN:OE1	1:H:92:GLN:N	2.29	0.66
1:E:34:ASN:HB3	1:E:46:LEU:HD21	1.79	0.64
1:H:30:ILE:HG23	1:H:31:LYS:H	1.61	0.64
1:A:30:ILE:O	1:A:71:TYR:OH	2.14	0.64
1:B:37:GLN:NE2	2:B:201:HOH:O	2.07	0.63
1:C:6:GLN:HB2	1:C:23:CYS:SG	2.41	0.60
1:E:8:PRO:O	1:E:102:THR:HG22	2.00	0.60
1:G:36:TYR:CZ	1:G:46:LEU:HB2	2.37	0.60
1:A:78:LEU:HD11	1:A:104:LEU:HD21	1.85	0.59
1:G:41:GLY:HA3	1:H:41:GLY:HA3	1.83	0.59
1:D:34:ASN:HD22	1:D:89:GLN:NE2	1.99	0.59
1:H:33:LEU:HD23	1:H:34:ASN:N	2.17	0.59
1:A:55:GLN:HA	1:H:55:GLN:HE22	1.68	0.58
1:D:34:ASN:HD22	1:D:89:GLN:HE21	1.52	0.57
1:H:21:ILE:HD11	1:H:35:TRP:CZ3	2.38	0.57
1:A:37:GLN:NE2	2:A:201:HOH:O	2.37	0.57
1:H:26:SER:OG	1:H:27:GLN:OE1	2.15	0.57
1:C:69:THR:HG23	1:C:70:ASP:OD1	2.06	0.56
1:G:25:ALA:HB1	1:G:27:GLN:OE1	2.06	0.56
1:G:30:ILE:HG13	1:G:31:LYS:N	2.21	0.55
1:E:83:ILE:HD11	1:E:106:ILE:HG23	1.89	0.55
1:H:90:GLN:O	1:H:96:LYS:HB3	2.07	0.55
1:G:33:LEU:HD23	1:G:34:ASN:N	2.22	0.54
1:G:29:ILE:N	1:G:29:ILE:HD12	2.23	0.54
1:A:29:ILE:HG21	1:A:90:GLN:HG3	1.90	0.53
1:G:20:THR:HG22	1:G:74:THR:HG23	1.90	0.53
1:G:27:GLN:OE1	1:G:27:GLN:N	2.42	0.52
1:H:90:GLN:OE1	1:H:93:SER:N	2.39	0.52
1:G:25:ALA:CB	1:G:29:ILE:HD11	2.38	0.52
1:G:2:ILE:HB	1:G:90:GLN:NE2	2.25	0.52
1:D:82:ASP:O	1:D:86:TYR:OH	2.22	0.52
1:D:33:LEU:HD11	1:D:88:CYS:HB2	1.92	0.52
1:F:36:TYR:CZ	1:F:46:LEU:HD23	2.45	0.52
1:G:80:PRO:O	1:G:83:ILE:HD13	2.06	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:34:ASN:HB3	1:G:46:LEU:HD13	1.93	0.51
1:B:11:LEU:HD11	1:B:104:LEU:HD13	1.93	0.50
1:G:2:ILE:HA	1:G:27:GLN:NE2	2.26	0.50
1:H:94:LEU:HD12	1:H:95:PRO:HA	1.92	0.50
1:D:83:ILE:HD12	1:D:83:ILE:O	2.12	0.50
1:F:39:THR:HG23	1:F:42:LYS:HB2	1.94	0.50
1:E:37:GLN:HB2	1:E:47:LEU:HD11	1.94	0.50
1:H:29:ILE:HG21	1:H:90:GLN:HG2	1.94	0.50
1:H:90:GLN:OE1	1:H:92:GLN:CB	2.59	0.49
1:F:15:VAL:HG13	1:F:79:GLN:HA	1.95	0.49
1:C:50:GLU:HG2	1:C:91:TYR:OH	2.12	0.49
1:H:2:ILE:HG23	1:H:27:GLN:NE2	2.17	0.49
1:H:29:ILE:HG22	1:H:29:ILE:O	2.12	0.49
1:D:30:ILE:O	1:D:71:TYR:OH	2.17	0.49
1:B:35:TRP:CE2	1:B:73:PHE:HB2	2.48	0.49
1:E:36:TYR:CZ	1:E:46:LEU:HD23	2.48	0.49
1:H:6:GLN:HB2	1:H:23:CYS:SG	2.52	0.48
1:H:2:ILE:O	1:H:97:THR:HG21	2.13	0.48
1:A:35:TRP:CD2	1:A:73:PHE:HB2	2.49	0.48
1:A:35:TRP:CE2	1:A:73:PHE:HB2	2.49	0.48
1:C:89:GLN:NE2	1:C:96:LYS:HD2	2.29	0.48
1:G:35:TRP:O	1:G:46:LEU:HD12	2.14	0.48
1:F:33:LEU:HD21	1:F:88:CYS:HB2	1.96	0.47
1:D:36:TYR:CZ	1:D:46:LEU:HD23	2.49	0.47
1:A:35:TRP:CZ3	1:A:88:CYS:HB3	2.49	0.47
1:G:90:GLN:NE2	1:G:95:PRO:O	2.48	0.47
1:A:37:GLN:HB3	1:A:47:LEU:HD11	1.97	0.47
1:G:3:GLN:O	1:G:25:ALA:HA	2.13	0.47
1:H:90:GLN:OE1	1:H:92:GLN:CA	2.62	0.47
1:G:2:ILE:HB	1:G:90:GLN:HE22	1.80	0.47
1:D:68:GLY:O	1:D:71:TYR:OH	2.32	0.47
1:H:15:VAL:HA	1:H:78:LEU:HD11	1.96	0.47
1:C:36:TYR:CZ	1:C:46:LEU:HD23	2.50	0.47
1:B:35:TRP:CZ3	1:B:88:CYS:HB3	2.50	0.46
1:F:54:LEU:HD11	1:F:58:VAL:HB	1.97	0.46
1:G:4:MET:SD	1:G:25:ALA:HB2	2.56	0.46
1:D:49:TYR:O	1:D:53:ASN:HB2	2.16	0.46
1:G:4:MET:HE1	1:G:25:ALA:HB2	1.98	0.46
1:F:35:TRP:CE2	1:F:73:PHE:HB2	2.50	0.46
1:E:61:ARG:NH1	1:E:82:ASP:OD2	2.44	0.46
1:B:30:ILE:HD12	1:B:92:GLN:HG3	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:90:GLN:NE2	1:G:97:THR:HG22	2.25	0.45
1:F:35:TRP:CZ3	1:F:88:CYS:HB3	2.51	0.45
1:H:4:MET:HE3	1:H:4:MET:HB2	1.95	0.45
1:A:34:ASN:HB3	1:A:46:LEU:HD21	1.98	0.45
1:H:33:LEU:HD13	1:H:71:TYR:CG	2.52	0.45
1:D:29:ILE:HD11	1:D:71:TYR:HE2	1.81	0.45
1:B:35:TRP:CD2	1:B:73:PHE:HB2	2.52	0.45
1:D:35:TRP:CE2	1:D:73:PHE:HB2	2.51	0.45
1:F:35:TRP:CD2	1:F:73:PHE:HB2	2.52	0.45
1:A:19:VAL:CG1	1:A:75:ILE:HB	2.47	0.44
1:A:54:LEU:H	1:H:53:ASN:HB3	1.81	0.44
1:G:90:GLN:HG2	1:G:97:THR:H	1.82	0.44
1:A:54:LEU:N	1:H:53:ASN:HB3	2.32	0.44
1:F:30:ILE:HG22	1:F:31:LYS:N	2.32	0.44
1:B:35:TRP:HB2	1:B:48:ILE:HB	1.99	0.44
1:H:3:GLN:HA	1:H:97:THR:HG21	1.99	0.44
1:H:61:ARG:HB2	1:H:76:SER:OG	2.18	0.44
1:H:11:LEU:HD23	1:H:12:SER:N	2.32	0.44
1:A:79:GLN:N	1:A:82:ASP:OD1	2.37	0.44
1:B:56:ALA:HA	1:G:49:TYR:CE2	2.53	0.44
1:E:80:PRO:O	1:E:83:ILE:HG12	2.18	0.44
1:H:6:GLN:N	1:H:100:GLN:OE1	2.33	0.44
1:E:30:ILE:HG22	1:E:31:LYS:N	2.33	0.43
1:G:47:LEU:HA	1:G:58:VAL:HG21	2.01	0.43
1:B:86:TYR:CE2	1:B:104:LEU:HD23	2.53	0.43
1:G:89:GLN:CD	1:G:96:LYS:HE2	2.39	0.43
1:F:34:ASN:HB3	1:F:46:LEU:HD21	2.01	0.43
1:H:91:TYR:CB	1:H:96:LYS:HD2	2.48	0.43
1:E:12:SER:HA	1:E:105:GLN:O	2.19	0.43
1:A:55:GLN:O	1:A:58:VAL:HG22	2.19	0.43
1:G:36:TYR:CE2	1:G:46:LEU:HB2	2.53	0.43
1:D:62:PHE:HD2	1:D:73:PHE:CZ	2.36	0.43
1:D:89:GLN:HB2	1:D:98:PHE:CD1	2.54	0.43
1:E:29:ILE:HA	1:E:92:GLN:HG3	2.01	0.43
1:H:6:GLN:NE2	1:H:102:THR:OG1	2.51	0.43
1:A:50:GLU:O	1:A:52:SER:N	2.47	0.42
1:F:36:TYR:CE1	1:F:46:LEU:HD23	2.53	0.42
1:A:12:SER:HA	1:A:105:GLN:O	2.19	0.42
1:B:68:GLY:O	1:B:71:TYR:OH	2.37	0.42
1:B:55:GLN:O	1:B:58:VAL:HG22	2.20	0.42
1:G:26:SER:N	1:G:27:GLN:OE1	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:27:GLN:HG2	1:H:29:ILE:HD11	2.01	0.42
1:G:32:TYR:HD1	1:G:91:TYR:CE2	2.37	0.42
1:G:2:ILE:HA	1:G:27:GLN:HE22	1.85	0.42
1:B:53:ASN:HB3	1:G:54:LEU:H	1.85	0.41
1:B:12:SER:HA	1:B:105:GLN:O	2.20	0.41
1:B:90:GLN:HE21	1:B:97:THR:H	1.68	0.41
1:D:33:LEU:HD22	1:D:71:TYR:CD2	2.55	0.41
1:D:35:TRP:CD2	1:D:73:PHE:HB2	2.55	0.41
1:B:9:SER:O	1:B:102:THR:HA	2.20	0.41
1:A:46:LEU:HD13	1:A:55:GLN:HG3	2.02	0.41
1:B:12:SER:HB3	1:B:107:THR:HG22	2.03	0.41
1:B:78:LEU:CD1	1:B:104:LEU:HD21	2.50	0.41
1:F:102:THR:O	1:F:102:THR:OG1	2.38	0.41
1:D:7:SER:HA	1:D:8:PRO:HA	1.94	0.41
1:F:37:GLN:HB2	1:F:47:LEU:HD11	2.03	0.41
1:B:54:LEU:N	1:G:53:ASN:HB3	2.35	0.41
1:E:24:GLN:HG3	1:E:70:ASP:OD1	2.21	0.41
1:E:35:TRP:CE2	1:E:73:PHE:HB2	2.56	0.41
1:B:50:GLU:O	1:B:52:SER:N	2.47	0.41
1:D:50:GLU:HG2	1:D:91:TYR:OH	2.21	0.41
1:E:35:TRP:CD2	1:E:73:PHE:HB2	2.56	0.41
1:E:36:TYR:CE1	1:E:46:LEU:HD23	2.55	0.41
1:H:29:ILE:HD12	1:H:29:ILE:N	2.36	0.41
1:G:12:SER:CB	1:G:105:GLN:HG3	2.50	0.40
1:A:34:ASN:OD1	1:A:49:TYR:HA	2.22	0.40
1:A:90:GLN:HE21	1:A:90:GLN:HB3	1.72	0.40
1:E:35:TRP:CZ3	1:E:88:CYS:HB3	2.56	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	107/109 (98%)	101 (94%)	5 (5%)	1 (1%)	17	45
1	B	107/109 (98%)	102 (95%)	4 (4%)	1 (1%)	17	45
1	C	107/109 (98%)	96 (90%)	10 (9%)	1 (1%)	17	45
1	D	107/109 (98%)	99 (92%)	7 (6%)	1 (1%)	17	45
1	E	107/109 (98%)	103 (96%)	3 (3%)	1 (1%)	17	45
1	F	107/109 (98%)	103 (96%)	3 (3%)	1 (1%)	17	45
1	G	105/109 (96%)	94 (90%)	10 (10%)	1 (1%)	15	42
1	H	107/109 (98%)	98 (92%)	8 (8%)	1 (1%)	17	45
All	All	854/872 (98%)	796 (93%)	50 (6%)	8 (1%)	17	45

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	30	ILE
1	A	30	ILE
1	B	30	ILE
1	C	30	ILE
1	D	30	ILE
1	E	30	ILE
1	F	30	ILE
1	G	30	ILE

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	93/94 (99%)	89 (96%)	4 (4%)	29	60
1	B	93/94 (99%)	93 (100%)	0	100	100
1	C	94/94 (100%)	90 (96%)	4 (4%)	29	60
1	D	94/94 (100%)	92 (98%)	2 (2%)	53	80
1	E	93/94 (99%)	93 (100%)	0	100	100
1	F	94/94 (100%)	93 (99%)	1 (1%)	73	90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	90/94 (96%)	87 (97%)	3 (3%)	38	70
1	H	92/94 (98%)	88 (96%)	4 (4%)	29	60
All	All	743/752 (99%)	725 (98%)	18 (2%)	49	78

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	ARG
1	A	78	LEU
1	A	90	GLN
1	A	100	GLN
1	C	61	ARG
1	C	67	SER
1	C	70	ASP
1	C	93	SER
1	D	10	SER
1	D	70	ASP
1	F	108	ARG
1	G	6	GLN
1	G	24	GLN
1	G	89	GLN
1	H	4	MET
1	H	61	ARG
1	H	88	CYS
1	H	90	GLN

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

Mol	Chain	Res	Type
1	D	6	GLN
1	D	89	GLN
1	D	105	GLN
1	F	24	GLN
1	G	55	GLN
1	G	90	GLN
1	H	6	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 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(Å^2)	Q<0.9
1	A	109/109 (100%)	-0.28	0	100	100	40, 54, 84, 109	0
1	B	109/109 (100%)	-0.24	0	100	100	39, 55, 85, 106	0
1	C	109/109 (100%)	-0.12	1 (0%)	84	84	47, 68, 88, 108	0
1	D	109/109 (100%)	-0.09	1 (0%)	84	84	48, 67, 90, 105	0
1	E	109/109 (100%)	-0.12	0	100	100	47, 62, 81, 96	0
1	F	109/109 (100%)	-0.14	0	100	100	46, 62, 82, 102	0
1	G	107/109 (98%)	0.48	7 (6%)	18	14	56, 99, 127, 137	0
1	H	109/109 (100%)	0.46	7 (6%)	19	15	54, 98, 128, 142	0
All	All	870/872 (99%)	-0.01	16 (1%)	68	67	39, 67, 116, 142	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	15	VAL	6.5
1	H	0	ALA	5.2
1	G	0	ALA	4.4
1	H	40	PRO	3.3
1	G	2	ILE	3.2
1	G	15	VAL	2.9
1	H	25	ALA	2.6
1	H	14	SER	2.6
1	G	100	GLN	2.5
1	H	41	GLY	2.5
1	C	87	TYR	2.4
1	H	26	SER	2.4
1	G	104	LEU	2.4
1	G	92	GLN	2.2
1	D	0	ALA	2.1
1	G	97	THR	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.