WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Oct 8, 2024 – 04:18 AM EDT

PDB ID	:	4G80
Title	:	Crystal structure of voltage sensing domain of Ci-VSP with fragment antibody (WT, 3.8 A)
Authors	:	Li, Q.
Deposited on	:	2012-07-20
Resolution	:	3.58 Å(reported)

The following versions of software and data (see references ⓘ) were used in the production of this report:

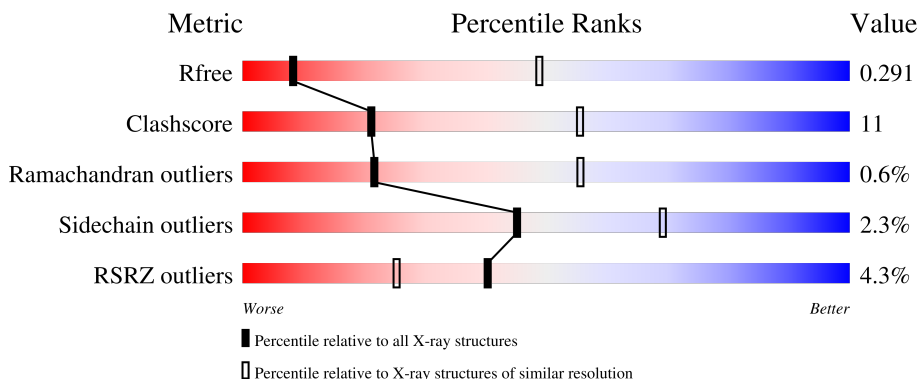|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.58 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		0.291
Clashscore		11
Ramachandran outliers		0.6%
Sidechain outliers		2.3%
RSRZ outliers		4.3%

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$_{free}$	164625	1360 (3.66-3.50)
Clashscore	180529	1456 (3.66-3.50)
Ramachandran outliers	177936	1438 (3.66-3.50)
Sidechain outliers	177891	1438 (3.66-3.50)
RSRZ outliers	164620	1360 (3.66-3.50)

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 >=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	I	155	6% 68% 21% • 10%
1	J	155	5% 72% 16% • 10%
1	S	155	6% 65% 17% • 17%
1	T	155	5% 70% 16% • • 10%
2	A	224	4% 70% 28% ••

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	C	224	2% 72% 25%
2	E	224	3% 73% 25%
2	G	224	8% 72% 26%
3	B	211	% 77% 22%
3	D	211	4% 78% 21%
3	F	211	4% 76% 24%
3	H	211	3% 80% 20%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 17446 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 Voltage-sensor containing phosphatase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	S	128	Total	C	N	O	S	0	0	0
			1020	677	165	173	5			
1	T	139	Total	C	N	O	S	0	0	0
			1111	734	181	190	6			
1	I	139	Total	C	N	O	S	0	0	0
			1111	734	181	190	6			
1	J	139	Total	C	N	O	S	0	0	0
			1111	734	181	190	6			

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S	90	MET	-	expression tag	UNP Q4W8A1
S	91	ARG	-	expression tag	UNP Q4W8A1
S	92	GLY	-	expression tag	UNP Q4W8A1
S	93	SER	-	expression tag	UNP Q4W8A1
S	94	HIS	-	expression tag	UNP Q4W8A1
S	95	HIS	-	expression tag	UNP Q4W8A1
S	96	HIS	-	expression tag	UNP Q4W8A1
S	97	HIS	-	expression tag	UNP Q4W8A1
S	98	HIS	-	expression tag	UNP Q4W8A1
S	99	HIS	-	expression tag	UNP Q4W8A1
S	100	GLY	-	expression tag	UNP Q4W8A1
S	101	GLU	-	expression tag	UNP Q4W8A1
S	102	ASN	-	expression tag	UNP Q4W8A1
S	103	LEU	-	expression tag	UNP Q4W8A1
S	104	TYR	-	expression tag	UNP Q4W8A1
S	105	PHE	-	expression tag	UNP Q4W8A1
T	90	MET	-	expression tag	UNP Q4W8A1
T	91	ARG	-	expression tag	UNP Q4W8A1
T	92	GLY	-	expression tag	UNP Q4W8A1
T	93	SER	-	expression tag	UNP Q4W8A1
T	94	HIS	-	expression tag	UNP Q4W8A1

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
T	95	HIS	-	expression tag	UNP Q4W8A1
T	96	HIS	-	expression tag	UNP Q4W8A1
T	97	HIS	-	expression tag	UNP Q4W8A1
T	98	HIS	-	expression tag	UNP Q4W8A1
T	99	HIS	-	expression tag	UNP Q4W8A1
T	100	GLY	-	expression tag	UNP Q4W8A1
T	101	GLU	-	expression tag	UNP Q4W8A1
T	102	ASN	-	expression tag	UNP Q4W8A1
T	103	LEU	-	expression tag	UNP Q4W8A1
T	104	TYR	-	expression tag	UNP Q4W8A1
T	105	PHE	-	expression tag	UNP Q4W8A1
I	90	MET	-	expression tag	UNP Q4W8A1
I	91	ARG	-	expression tag	UNP Q4W8A1
I	92	GLY	-	expression tag	UNP Q4W8A1
I	93	SER	-	expression tag	UNP Q4W8A1
I	94	HIS	-	expression tag	UNP Q4W8A1
I	95	HIS	-	expression tag	UNP Q4W8A1
I	96	HIS	-	expression tag	UNP Q4W8A1
I	97	HIS	-	expression tag	UNP Q4W8A1
I	98	HIS	-	expression tag	UNP Q4W8A1
I	99	HIS	-	expression tag	UNP Q4W8A1
I	100	GLY	-	expression tag	UNP Q4W8A1
I	101	GLU	-	expression tag	UNP Q4W8A1
I	102	ASN	-	expression tag	UNP Q4W8A1
I	103	LEU	-	expression tag	UNP Q4W8A1
I	104	TYR	-	expression tag	UNP Q4W8A1
I	105	PHE	-	expression tag	UNP Q4W8A1
J	90	MET	-	expression tag	UNP Q4W8A1
J	91	ARG	-	expression tag	UNP Q4W8A1
J	92	GLY	-	expression tag	UNP Q4W8A1
J	93	SER	-	expression tag	UNP Q4W8A1
J	94	HIS	-	expression tag	UNP Q4W8A1
J	95	HIS	-	expression tag	UNP Q4W8A1
J	96	HIS	-	expression tag	UNP Q4W8A1
J	97	HIS	-	expression tag	UNP Q4W8A1
J	98	HIS	-	expression tag	UNP Q4W8A1
J	99	HIS	-	expression tag	UNP Q4W8A1
J	100	GLY	-	expression tag	UNP Q4W8A1
J	101	GLU	-	expression tag	UNP Q4W8A1
J	102	ASN	-	expression tag	UNP Q4W8A1
J	103	LEU	-	expression tag	UNP Q4W8A1
J	104	TYR	-	expression tag	UNP Q4W8A1

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
J	105	PHE	-	expression tag	UNP Q4W8A1

- Molecule 2 is a protein called fragment antibody heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	221	Total	C	N	O	S	0	0	0
			1661	1052	276	327	6			
2	C	219	Total	C	N	O	S	0	0	0
			1646	1044	274	322	6			
2	E	221	Total	C	N	O	S	0	0	0
			1661	1052	276	327	6			
2	G	221	Total	C	N	O	S	0	0	0
			1661	1052	276	327	6			

- Molecule 3 is a protein called fragment antibody light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	B	211	Total	C	N	O	S	0	0	0
			1616	1011	272	328	5			
3	D	211	Total	C	N	O	S	0	0	0
			1616	1011	272	328	5			
3	F	211	Total	C	N	O	S	0	0	0
			1616	1011	272	328	5			
3	H	211	Total	C	N	O	S	0	0	0
			1616	1011	272	328	5			

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.

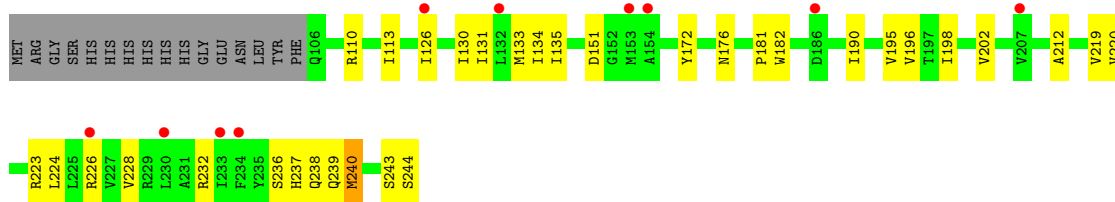• Molecule 1: Voltage-sensor containing phosphatase

Chain S:

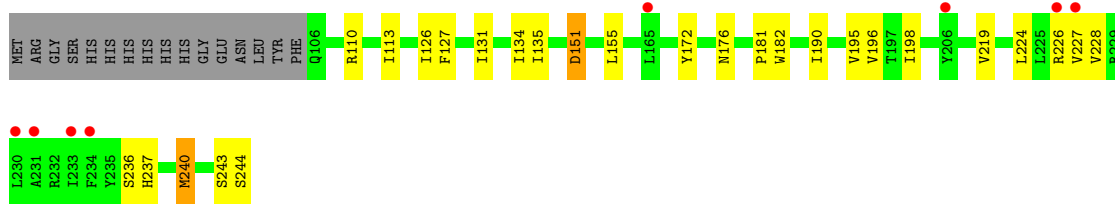• Molecule 1: Voltage-sensor containing phosphatase

Chain T:

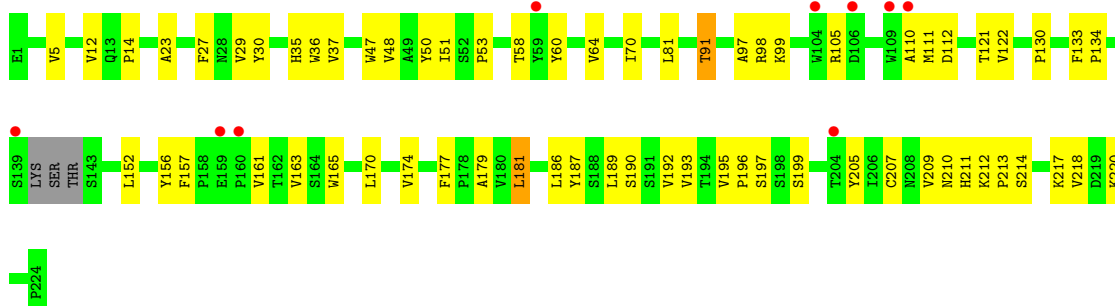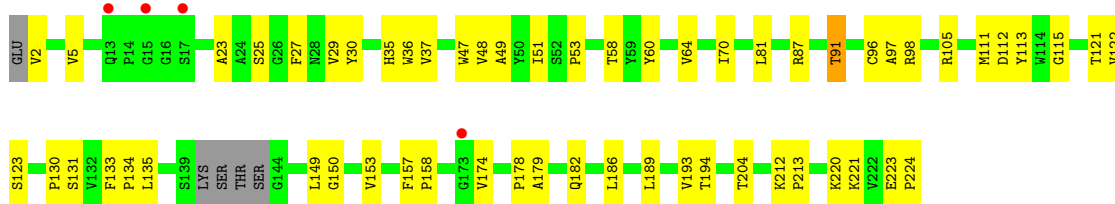
• Molecule 1: Voltage-sensor containing phosphatase

Chain I:

• Molecule 1: Voltage-sensor containing phosphatase

Chain J:

MET ARG GLY SER HIS HIS HIS HIS HIS GLY GLU ASN LEU TYR PHE Q106 R110 I113 I126 F127 I131 I134 I135 D151 L155 L165 Y172 N176 P181 W182 I190 V195 V196 T197 I198 Y206 V219 L224 L225 R226 V227 V228 R229

L230 A231 R232 I233 F234 Y235 S236 H237 M240 S243 S244

• Molecule 2: fragment antibody heavy chain

Chain A:

E1 V5 V12 Q13 P14 A23 F27 N28 V29 Y30 H35 W36 V37 W47 V48 A49 Y50 I51 S52 P53 T58 Y59 Y60 V64 I70 L81 T91 A97 R98 K99 W104 R105 D106 W109 A110 M111 D112 T121 V122 P130 F133 F134

S139 LYS SER THR S143 L152 Y156 F157 P158 E159 P160 V161 T162 V163 S164 W165 L170 V174 F177 P178 A179 V180 L181 L186 Y187 S188 L189 S190 S191 V192 V193 T194 V195 P196 S197 S198 S199 T204 Y205 I206 C207 N208 V209 N210 H211 K212 P213 S214 K217 V218 D219 K220

P224

• Molecule 2: fragment antibody heavy chain

Chain C:

GLU V2 V5 Q13 P14 G15 G16 S17 A23 A24 S25 G26 F27 N28 V29 Y30 H35 W36 V37 W47 V48 A49 Y50 I51 S52 P53 T58 Y59 Y60 V64 I70 L81 R87 T91 C96 A97 R98 R105 M111 D112 Y113 W114 G115 T121 V122

S123 P130 S131 V132 F133 P134 L135 S139 LYS SER THR SER G144 L149 G150 V153 F157 P158 G173 V174 P178 A179 Q182 L186 L189 V193 T194 T204 K212 P213 K220 K221 V222 E223 P224

• Molecule 2: fragment antibody heavy chain

Chain E:

E1 V5 A23 F27 N28 V29 Y30 H35 W36 V37 W47 V48 A49 Y50 I51 S52 P53 T58 D62 S63 V64 I70 T91 C96 A97 R98 K99 R105 D106 W109 A110 M111 D112 Y113 W114 G115 T121 P130 P134 S139 LYS SER THR S143

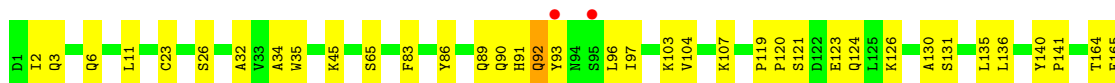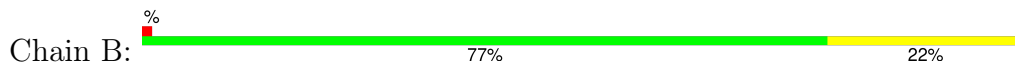T146 A147 A148 D155 Y156 P160 V161 W165 L170 V174 V180 L181 Q182 Y187 S188 L189 V192 V193 T194 V195 P196 S199 C207 N208 V209 K212 P213 D219 K220 E223 P224

• Molecule 2: fragment antibody heavy chain

Chain G:

E1 V2 V5 A23 A24 S25 G26 F27 N28 V29 Y30 H35 W36 V37 W47 V48 A49 Y50 I51 S52 P53 T58 Y59 Y60 A61 D62 S63 V64 I70 L81 T91 C96 A97 R98 Y103 W104 R105 M111 D112 Y113 W114 G115 T121 P130 S131 V132 F133

P134 L135 A136 P137 S138 S139 LYS SER THR S143 A147 G150 C151 L152 V153 S154 D155 Y156 F157 P158 W165 N166 T171 S172 G173 V174 H175 T176 F177 P178 A179 L186 Y187 S188 L189 S190 V193 T194 V195 S198 T204 Y205 I206 C207 K212 P213 K221 V222 E223 P224

- Molecule 3: fragment antibody light chain

Chain B:

%

77%	22%

D1 I2 Q3 Q6 L11 C23 S26 A32 V33 A34 W35 K45 S65 F83 Y86 Q89 Q90 H91 Q92 Y93 N94 S95 L96 I97 K103 V104 K107 P119 P120 S121 D122 E123 Q124 L125 K126 A130 S131 L135 L136 Y140 P141 T164 E165
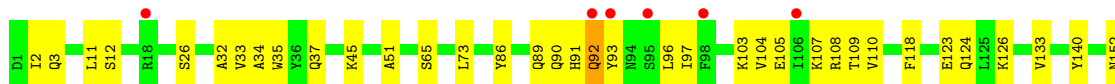
Q166 K169 Y173 S174 L175 S176 Y186 K190 V191 Y192 F209 N210 R211

- Molecule 3: fragment antibody light chain

Chain D:

4%

78%	21%

D1 I2 Q3 L11 S12 R18 S26 A32 V33 A34 W35 Y36 Q37 K45 A51 S65 L73 Y86 Q89 Q90 H91 Q92 Y93 N94 S95 L96 I97 F98 K103 V104 E105 I106 K107 R108 T109 V110 F118 E123 Q124 L125 K126 V133 Y140 N152
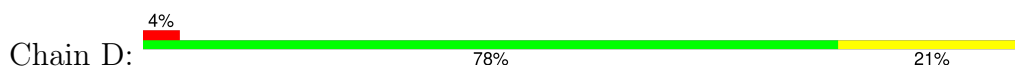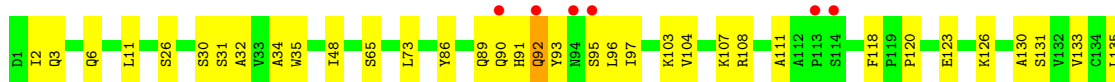
Q160 E161 S162 E165 Q166 D167 S168 S171 Y186 Y192 N210 R211

- Molecule 3: fragment antibody light chain

Chain F:

4%

76%	24%

D1 I2 Q3 Q6 L11 S26 S30 S31 A32 V33 A34 W35 I48 S65 L73 Y86 Q89 Q90 H91 Q92 Y93 N94 S95 L96 I97 K103 V104 K107 R108 A111 A112 P113 S114 F118 P119 P120 E123 K126 A130 S131 V132 V133 C134 L135

L136 Y140 P141 K145 Q160 V163 T164 E165 L175 S176 Y186 Y192 A193 T197 H198 Q199 S208 F209 N210 R211

- Molecule 3: fragment antibody light chain

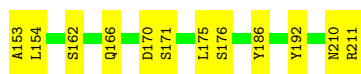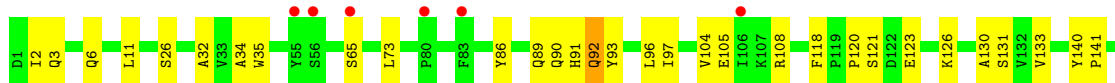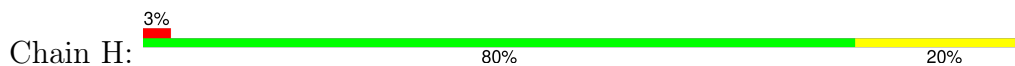Chain H:

3%

80%	20%

D1 I2 Q3 Q6 L11 S26 A32 V33 A34 W35 Y55 S56 S65 L73 P80 F83 Y86 Q89 Q90 H91 Q92 Y93 L96 I97 V104 E105 I106 K107 R108 F118 P119 P120 S121 D122 E123 K126 A130 S131 V132 V133 Y140 P141

A153 L154 S162 Q166 D170 S171 L175 S176 Y186 Y192 Y192 N210 R211

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	77.29Å 94.24Å 193.95Å 102.63° 93.45° 105.25°	Depositor
Resolution (Å)	50.00 – 3.58 50.00 – 3.58	Depositor EDS
% Data completeness (in resolution range)	92.6 (50.00-3.58) 92.6 (50.00-3.58)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.14	Depositor
$<I/\sigma(I)>$ [1]	1.52 (at 3.57Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, R_{free}	0.248 , 0.292 0.245 , 0.291	Depositor DCC
R_{free} test set	2803 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	130.0	Xtriage
Anisotropy	0.142	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 75.1	EDS
L-test for twinning[2]	$<|L|> = 0.46, <L^2> = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	17446	wwPDB-VP
Average B, all atoms (Å^2)	149.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.27% 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	I	0.34	0/1135	0.34	0/1536
1	J	0.35	0/1135	0.36	0/1536
1	S	0.40	1/1041 (0.1%)	0.37	0/1411
1	T	0.89	3/1135 (0.3%)	0.55	3/1536 (0.2%)
2	A	0.45	0/1705	0.39	0/2326
2	C	0.45	0/1690	0.39	0/2306
2	E	0.45	0/1705	0.38	0/2326
2	G	0.44	0/1705	0.37	0/2326
3	B	0.35	0/1650	0.37	0/2240
3	D	0.34	0/1650	0.37	0/2240
3	F	0.34	0/1650	0.36	0/2240
3	H	0.34	0/1650	0.36	0/2240
All	All	0.44	4/17851 (0.0%)	0.38	3/24263 (0.0%)

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	T	0	1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	T	232	ARG	CZ-NH2	18.55	1.57	1.33
1	T	232	ARG	NE-CZ	17.79	1.56	1.33
1	T	232	ARG	CD-NE	11.31	1.65	1.46
1	S	232	ARG	CZ-NH2	7.54	1.42	1.33

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	T	232	ARG	NE-CZ-NH2	14.69	127.64	120.30
1	T	232	ARG	CD-NE-CZ	5.25	130.95	123.60
1	T	232	ARG	NH1-CZ-NH2	-5.06	113.84	119.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	T	232	ARG	Sidechain

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	I	1111	0	1140	25	0
1	J	1111	0	1140	16	0
1	S	1020	0	1057	16	0
1	T	1111	0	1140	38	0
2	A	1661	0	1598	55	0
2	C	1646	0	1584	41	0
2	E	1661	0	1598	38	0
2	G	1661	0	1598	39	0
3	B	1616	0	1576	37	0
3	D	1616	0	1576	37	0
3	F	1616	0	1576	37	0
3	H	1616	0	1576	33	0
All	All	17446	0	17159	375	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 (375) 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:T:182:TRP:CH2	1:T:240:MET:HA	1.82	1.12
1:T:182:TRP:CZ3	1:T:240:MET:HA	1.89	1.07

Continued on next page...

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:182:TRP:HZ3	1:I:243:SER:HG	1.01	0.99
1:J:237:HIS:O	1:J:240:MET:HG3	1.65	0.95
1:T:182:TRP:CE3	1:T:240:MET:HB2	2.11	0.85
2:E:182:GLN:HA	3:F:160:GLN:HE22	1.42	0.83
1:T:232:ARG:NH1	1:T:236:SER:HB2	1.96	0.81
3:D:108:ARG:HG2	3:D:109:THR:H	1.46	0.80
2:E:170:LEU:HD21	2:E:193:VAL:HG21	1.63	0.79
1:T:182:TRP:CZ3	1:T:240:MET:CA	2.65	0.79
3:D:210:ASN:O	3:D:211:ARG:HB2	1.83	0.78
3:D:108:ARG:CG	3:D:109:THR:H	2.00	0.75
1:T:182:TRP:CE3	1:T:240:MET:CB	2.72	0.73
3:B:175:LEU:HD23	3:B:176:SER:N	2.05	0.72
1:T:232:ARG:NH1	1:T:236:SER:CB	2.52	0.71
1:J:182:TRP:CE3	1:J:240:MET:HB2	2.26	0.70
3:B:107:LYS:HA	3:B:140:TYR:OH	1.92	0.69
2:A:181:LEU:HD12	2:A:187:TYR:CZ	2.27	0.69
3:B:210:ASN:O	3:B:211:ARG:HB2	1.93	0.69
2:G:97:ALA:HB3	2:G:111:MET:HE2	1.75	0.68
1:I:237:HIS:HA	1:I:240:MET:CG	2.23	0.68
3:F:210:ASN:O	3:F:211:ARG:HB2	1.92	0.68
3:B:96:LEU:HD23	3:B:96:LEU:H	1.59	0.68
2:E:97:ALA:HB3	2:E:111:MET:HE2	1.76	0.67
3:D:89:GLN:HG2	3:D:90:GLN:H	1.59	0.67
3:D:12:SER:OG	3:D:107:LYS:HB2	1.95	0.67
3:F:96:LEU:HD23	3:F:96:LEU:H	1.61	0.66
1:T:232:ARG:HG3	1:T:232:ARG:HH11	1.61	0.65
3:H:96:LEU:H	3:H:96:LEU:HD23	1.62	0.65
2:A:97:ALA:HB3	2:A:111:MET:HE2	1.79	0.65
1:I:182:TRP:CZ3	1:I:240:MET:HA	2.31	0.64
2:A:134:PRO:HD3	2:A:220:LYS:HE2	1.78	0.64
1:T:237:HIS:O	1:T:240:MET:HG3	1.98	0.63
3:D:89:GLN:NE2	3:D:96:LEU:HD12	2.13	0.63
2:A:110:ALA:HB2	3:B:91:HIS:CE1	2.33	0.63
2:A:152:LEU:HD12	2:A:190:SER:HB3	1.81	0.62
3:B:89:GLN:HG2	3:B:90:GLN:H	1.63	0.62
2:C:97:ALA:HB3	2:C:111:MET:HE2	1.80	0.62
3:D:96:LEU:HD23	3:D:96:LEU:H	1.64	0.62
3:D:108:ARG:HG2	3:D:109:THR:N	2.14	0.62
1:T:237:HIS:O	1:T:240:MET:CG	2.47	0.62
1:T:237:HIS:HA	1:T:240:MET:HG2	1.82	0.61
3:F:89:GLN:HG2	3:F:90:GLN:H	1.64	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:178:PRO:HG2	3:D:162:SER:OG	2.00	0.61
3:B:11:LEU:HD11	3:B:104:VAL:HG22	1.83	0.60
2:A:47:TRP:CD1	3:B:96:LEU:HD11	2.36	0.60
2:A:27:PHE:CZ	2:A:98:ARG:HD3	2.36	0.60
1:T:182:TRP:CH2	1:T:240:MET:CA	2.74	0.60
2:A:98:ARG:NH2	2:A:112:ASP:OD1	2.35	0.59
2:A:170:LEU:HD21	2:A:193:VAL:HG21	1.84	0.59
2:A:218:VAL:HG22	3:H:154:LEU:HB3	1.82	0.59
1:I:172:TYR:O	1:I:176:ASN:ND2	2.36	0.59
1:I:236:SER:O	1:I:240:MET:HG2	2.02	0.59
2:G:174:VAL:HG22	2:G:193:VAL:HB	1.84	0.58
1:I:237:HIS:O	1:I:240:MET:HG3	2.03	0.58
1:S:172:TYR:O	1:S:176:ASN:ND2	2.36	0.58
2:A:211:HIS:ND1	2:A:214:SER:OG	2.16	0.58
2:C:204:THR:HG23	2:C:221:LYS:HE3	1.86	0.58
3:F:107:LYS:HA	3:F:140:TYR:OH	2.04	0.58
2:A:212:LYS:N	2:A:213:PRO:CD	2.67	0.58
3:H:32:ALA:HB1	3:H:91:HIS:HB2	1.86	0.58
1:T:172:TYR:O	1:T:176:ASN:ND2	2.37	0.57
2:A:157:PHE:HB2	2:A:186:LEU:HD22	1.85	0.57
3:F:34:ALA:HB2	3:F:91:HIS:HE1	1.68	0.57
2:A:91:THR:HG23	2:A:121:THR:HA	1.86	0.57
3:H:210:ASN:O	3:H:211:ARG:HB2	2.03	0.57
3:H:89:GLN:HG2	3:H:90:GLN:H	1.69	0.57
1:J:236:SER:O	1:J:240:MET:HB3	2.04	0.57
2:C:134:PRO:HD3	2:C:220:LYS:HE2	1.87	0.56
1:T:195:VAL:O	1:T:198:ILE:HG22	2.06	0.56
3:D:108:ARG:HD3	3:D:109:THR:O	2.05	0.56
1:T:182:TRP:CD2	1:T:240:MET:HB3	2.41	0.56
2:G:221:LYS:HE2	2:G:223:GLU:OE1	2.05	0.56
1:J:172:TYR:O	1:J:176:ASN:ND2	2.38	0.56
3:B:6:GLN:NE2	3:B:86:TYR:O	2.34	0.56
2:C:212:LYS:N	2:C:213:PRO:CD	2.68	0.56
2:C:182:GLN:HA	3:D:160:GLN:HE22	1.69	0.56
3:B:34:ALA:HB2	3:B:91:HIS:HE1	1.70	0.55
1:T:232:ARG:CZ	1:T:236:SER:HB2	2.36	0.55
1:I:237:HIS:HA	1:I:240:MET:SD	2.46	0.55
1:T:240:MET:HG3	1:T:241:LYS:H	1.72	0.55
3:D:108:ARG:CG	3:D:109:THR:N	2.70	0.55
2:E:27:PHE:CZ	2:E:98:ARG:HD3	2.41	0.55
2:G:179:ALA:HA	2:G:189:LEU:HB3	1.88	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:179:ALA:HB2	2:G:189:LEU:HD23	1.88	0.55
2:G:157:PHE:HB2	2:G:186:LEU:HD22	1.88	0.55
2:E:110:ALA:HB2	3:F:91:HIS:CE1	2.42	0.55
3:D:32:ALA:HB1	3:D:91:HIS:HB2	1.88	0.55
1:S:217:ARG:HH11	1:T:139:LEU:HD21	1.72	0.54
2:E:165:TRP:CH2	2:E:207:CYS:HB3	2.43	0.54
3:F:123:GLU:HA	3:F:126:LYS:HD3	1.90	0.54
2:A:217:LYS:HE3	3:H:153:ALA:HB2	1.88	0.54
2:C:37:VAL:HG22	2:C:47:TRP:HA	1.89	0.54
2:C:91:THR:HG23	2:C:121:THR:HA	1.89	0.54
3:F:11:LEU:HD11	3:F:104:VAL:HG22	1.88	0.54
2:E:29:VAL:HG12	2:E:53:PRO:HG3	1.90	0.54
2:A:196:PRO:O	2:A:199:SER:OG	2.23	0.54
2:A:133:PHE:CE1	3:B:124:GLN:HG3	2.43	0.54
3:H:34:ALA:HB2	3:H:91:HIS:HE1	1.72	0.54
1:I:110:ARG:HA	1:I:113:ILE:HG22	1.90	0.54
2:A:212:LYS:N	2:A:213:PRO:HD2	2.23	0.53
3:H:11:LEU:HD11	3:H:104:VAL:HG22	1.89	0.53
1:I:182:TRP:CD2	1:I:240:MET:HB3	2.42	0.53
1:S:110:ARG:HA	1:S:113:ILE:HG22	1.89	0.53
2:G:98:ARG:HH21	2:G:113:TYR:HD2	1.56	0.53
2:A:60:TYR:CE1	2:A:70:ILE:HG22	2.43	0.53
2:C:60:TYR:CE1	2:C:70:ILE:HG22	2.43	0.53
3:H:105:GLU:OE1	3:H:166:GLN:NE2	2.41	0.53
2:A:35:HIS:CE1	3:B:93:TYR:HD2	2.27	0.53
2:A:163:VAL:HG22	2:A:209:VAL:HG22	1.90	0.53
3:D:89:GLN:HE21	3:D:96:LEU:HD12	1.74	0.53
3:F:6:GLN:NE2	3:F:86:TYR:O	2.34	0.53
2:E:98:ARG:HH21	2:E:113:TYR:HD2	1.57	0.53
3:H:108:ARG:HD2	3:H:170:ASP:O	2.08	0.53
1:T:110:ARG:HA	1:T:113:ILE:HG22	1.90	0.53
2:E:91:THR:HG23	2:E:121:THR:HA	1.90	0.53
3:F:34:ALA:HB2	3:F:91:HIS:CE1	2.43	0.53
2:C:123:SER:HB3	2:C:157:PHE:CZ	2.43	0.53
1:T:240:MET:HG3	1:T:241:LYS:N	2.23	0.53
2:A:30:TYR:HA	2:A:53:PRO:HG2	1.91	0.53
2:E:181:LEU:HD12	2:E:187:TYR:CZ	2.44	0.52
1:J:110:ARG:HA	1:J:113:ILE:HG22	1.90	0.52
2:C:179:ALA:HB2	2:C:189:LEU:HD23	1.91	0.52
2:C:212:LYS:N	2:C:213:PRO:HD2	2.24	0.52
1:T:182:TRP:CZ3	1:T:240:MET:CB	2.91	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:37:VAL:HG22	2:G:47:TRP:HA	1.91	0.52
2:G:135:LEU:HB2	2:G:150:GLY:O	2.10	0.52
1:T:133:MET:SD	1:T:220:VAL:HG13	2.49	0.52
3:H:175:LEU:HD23	3:H:176:SER:N	2.24	0.52
3:D:105:GLU:OE1	3:D:140:TYR:HE2	1.92	0.52
2:G:204:THR:HG23	2:G:221:LYS:HE3	1.91	0.52
1:J:181:PRO:HG3	1:J:244:SER:HB2	1.92	0.52
2:C:27:PHE:CZ	2:C:98:ARG:HD3	2.45	0.52
3:D:34:ALA:HB2	3:D:91:HIS:HE1	1.75	0.52
3:D:118:PHE:HB2	3:D:133:VAL:HB	1.91	0.52
2:G:29:VAL:HG12	2:G:53:PRO:HG3	1.92	0.52
2:G:36:TRP:CG	2:G:81:LEU:HD22	2.45	0.52
2:G:91:THR:HG23	2:G:121:THR:HA	1.90	0.52
3:B:186:TYR:HA	3:B:192:TYR:OH	2.10	0.51
2:G:165:TRP:CH2	2:G:207:CYS:HB3	2.45	0.51
1:J:182:TRP:CZ3	1:J:240:MET:HB2	2.45	0.51
2:G:36:TRP:HB2	2:G:49:ALA:HB3	1.92	0.51
2:C:30:TYR:HA	2:C:53:PRO:HG2	1.91	0.51
2:C:29:VAL:HG12	2:C:53:PRO:HG3	1.93	0.51
2:E:47:TRP:CD1	3:F:96:LEU:HD11	2.46	0.51
2:E:5:VAL:HG23	2:E:23:ALA:HB3	1.93	0.51
1:S:195:VAL:O	1:S:198:ILE:HG22	2.11	0.51
2:E:182:GLN:HA	3:F:160:GLN:NE2	2.20	0.51
3:D:11:LEU:HD11	3:D:104:VAL:HG22	1.92	0.50
1:J:195:VAL:O	1:J:198:ILE:HG22	2.11	0.50
2:C:36:TRP:HD1	2:C:70:ILE:HD12	1.77	0.50
1:J:196:VAL:HB	1:J:219:VAL:HG21	1.94	0.50
2:A:177:PHE:CD1	3:B:164:THR:HG23	2.46	0.50
3:B:123:GLU:HA	3:B:126:LYS:HD3	1.94	0.50
3:H:34:ALA:HB2	3:H:91:HIS:CE1	2.47	0.50
2:E:196:PRO:HG2	2:E:199:SER:OG	2.12	0.50
3:F:186:TYR:HA	3:F:192:TYR:OH	2.12	0.50
1:J:131:ILE:O	1:J:135:ILE:HG13	2.12	0.50
3:F:32:ALA:HB1	3:F:91:HIS:HB2	1.94	0.50
2:C:133:PHE:CE1	3:D:124:GLN:HG3	2.47	0.50
3:D:34:ALA:HB2	3:D:91:HIS:CE1	2.47	0.50
2:E:212:LYS:N	2:E:213:PRO:CD	2.73	0.50
1:S:151:ASP:OD2	2:A:105:ARG:HD2	2.11	0.49
2:E:30:TYR:HA	2:E:53:PRO:HG2	1.94	0.49
2:E:165:TRP:CZ3	2:E:207:CYS:HB3	2.47	0.49
2:G:30:TYR:HA	2:G:53:PRO:HG2	1.94	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:182:TRP:HZ3	1:T:243:SER:HG	1.60	0.49
2:C:48:VAL:HG13	2:C:64:VAL:HG21	1.95	0.49
3:H:91:HIS:O	3:H:92:GLN:HB3	2.13	0.49
2:A:156:TYR:CE2	2:A:161:VAL:HG23	2.47	0.49
2:A:210:ASN:HD21	2:A:212:LYS:HE2	1.77	0.49
3:B:34:ALA:HB2	3:B:91:HIS:CE1	2.48	0.49
1:T:182:TRP:CD2	1:T:240:MET:CB	2.94	0.49
2:G:135:LEU:N	2:G:150:GLY:O	2.46	0.49
1:I:196:VAL:HB	1:I:219:VAL:HG21	1.93	0.49
2:C:36:TRP:HB2	2:C:49:ALA:HB3	1.95	0.48
1:I:237:HIS:ND1	1:I:240:MET:SD	2.86	0.48
2:C:179:ALA:HA	2:C:189:LEU:HB3	1.95	0.48
1:T:196:VAL:HB	1:T:219:VAL:HG21	1.95	0.48
2:G:178:PRO:HG2	3:H:162:SER:OG	2.14	0.48
3:B:83:PHE:HE1	3:B:165:GLU:HB3	1.79	0.48
2:G:212:LYS:HB2	2:G:213:PRO:HD3	1.96	0.48
3:H:6:GLN:NE2	3:H:86:TYR:O	2.37	0.48
2:A:99:LYS:HZ1	3:B:92:GLN:H	1.60	0.48
2:A:165:TRP:CH2	2:A:207:CYS:HB3	2.49	0.48
3:D:186:TYR:HA	3:D:192:TYR:OH	2.13	0.48
2:A:177:PHE:HE1	3:B:174:SER:O	1.96	0.48
3:D:35:TRP:CD2	3:D:73:LEU:HB2	2.49	0.48
2:G:27:PHE:CZ	2:G:98:ARG:HD3	2.49	0.48
1:J:190:ILE:HA	1:J:226:ARG:NH2	2.29	0.48
2:C:87:ARG:O	2:C:122:VAL:HG11	2.14	0.48
2:E:196:PRO:O	2:E:199:SER:OG	2.32	0.48
1:T:110:ARG:HD3	1:T:171:ALA:O	2.14	0.48
3:B:3:GLN:HB2	3:B:26:SER:HB3	1.95	0.47
2:E:98:ARG:NH2	2:E:112:ASP:OD1	2.47	0.47
2:A:211:HIS:CE1	2:A:214:SER:HG	2.30	0.47
2:G:35:HIS:CE1	3:H:93:TYR:HD2	2.32	0.47
3:H:89:GLN:NE2	3:H:96:LEU:HD12	2.29	0.47
3:B:96:LEU:H	3:B:96:LEU:CD2	2.26	0.47
2:E:99:LYS:HZ1	3:F:91:HIS:HB3	1.79	0.47
1:I:182:TRP:CH2	1:I:240:MET:HA	2.49	0.47
2:A:179:ALA:HB2	2:A:189:LEU:HD23	1.97	0.47
3:B:32:ALA:HB1	3:B:91:HIS:HB2	1.95	0.47
2:A:181:LEU:HD12	2:A:187:TYR:CE1	2.49	0.47
2:C:47:TRP:CD1	3:D:96:LEU:HD11	2.50	0.47
3:F:89:GLN:NE2	3:F:96:LEU:HD12	2.28	0.47
2:G:130:PRO:HB3	2:G:156:TYR:HB3	1.97	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:91:HIS:O	3:F:92:GLN:HB3	2.15	0.47
2:A:14:PRO:HG2	3:D:152:ASN:HD21	1.79	0.47
1:T:190:ILE:HA	1:T:226:ARG:NH2	2.30	0.47
1:T:232:ARG:HH12	1:T:236:SER:HB2	1.78	0.47
3:F:175:LEU:HD23	3:F:176:SER:N	2.29	0.47
3:H:3:GLN:HB2	3:H:26:SER:HB3	1.97	0.47
1:I:195:VAL:O	1:I:198:ILE:HG22	2.14	0.47
1:I:237:HIS:C	1:I:240:MET:HG3	2.35	0.47
1:S:131:ILE:O	1:S:135:ILE:HG13	2.14	0.47
1:S:196:VAL:HB	1:S:219:VAL:HG21	1.97	0.47
2:A:192:VAL:HG11	3:B:135:LEU:HD22	1.96	0.47
2:C:51:ILE:HG13	2:C:58:THR:HG22	1.95	0.47
2:E:134:PRO:HD3	2:E:220:LYS:HE2	1.95	0.47
2:A:36:TRP:CG	2:A:81:LEU:HD22	2.50	0.47
3:D:123:GLU:HA	3:D:126:LYS:HD3	1.96	0.47
3:F:136:LEU:HB2	3:F:175:LEU:HB3	1.96	0.47
2:A:133:PHE:HB3	3:B:121:SER:OG	2.15	0.46
3:B:91:HIS:O	3:B:92:GLN:HB3	2.15	0.46
3:D:89:GLN:HG2	3:D:90:GLN:N	2.28	0.46
2:E:35:HIS:CE1	3:F:93:TYR:HD2	2.33	0.46
2:E:179:ALA:HB2	2:E:189:LEU:HD23	1.97	0.46
3:B:166:GLN:HB2	3:B:173:TYR:CE2	2.50	0.46
1:T:151:ASP:OD2	2:E:105:ARG:HD2	2.14	0.46
3:H:123:GLU:HA	3:H:126:LYS:HD3	1.98	0.46
2:A:195:VAL:HG21	2:A:205:TYR:CE2	2.51	0.46
3:H:35:TRP:CD2	3:H:73:LEU:HB2	2.51	0.46
2:A:130:PRO:HB3	2:A:156:TYR:HB3	1.96	0.46
2:A:161:VAL:HG11	2:A:209:VAL:HG13	1.98	0.46
2:C:98:ARG:HH21	2:C:113:TYR:HD2	1.64	0.46
2:C:133:PHE:CG	3:D:124:GLN:HB2	2.51	0.46
3:D:37:GLN:HB2	3:D:86:TYR:CE1	2.51	0.46
2:E:192:VAL:HG11	3:F:135:LEU:HD22	1.97	0.46
1:S:155:LEU:HD11	1:S:198:ILE:HD12	1.98	0.46
2:A:99:LYS:HD3	3:B:93:TYR:CE2	2.50	0.46
3:B:140:TYR:CG	3:B:141:PRO:HA	2.50	0.46
2:G:36:TRP:HD1	2:G:70:ILE:HD12	1.80	0.46
2:A:165:TRP:CZ3	2:A:207:CYS:HB3	2.50	0.46
2:E:208:ASN:HD22	2:E:219:ASP:CG	2.19	0.46
2:G:154:LYS:HA	2:G:188:SER:OG	2.15	0.46
3:H:105:GLU:OE1	3:H:140:TYR:HE2	1.99	0.46
3:D:91:HIS:O	3:D:92:GLN:HB3	2.15	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:118:PHE:HB2	3:H:133:VAL:HB	1.97	0.46
2:A:174:VAL:HG22	2:A:193:VAL:HB	1.97	0.46
3:H:166:GLN:NE2	3:H:171:SER:HB3	2.31	0.46
2:A:48:VAL:HG13	2:A:64:VAL:HG21	1.98	0.45
3:F:34:ALA:HB3	3:F:89:GLN:HB3	1.98	0.45
3:H:140:TYR:CG	3:H:141:PRO:HA	2.51	0.45
1:I:130:ILE:HD11	1:I:223:ARG:O	2.16	0.45
2:A:210:ASN:ND2	2:A:212:LYS:HE2	2.31	0.45
2:C:5:VAL:HG23	2:C:23:ALA:HB3	1.98	0.45
1:T:237:HIS:O	1:T:240:MET:HG2	2.15	0.45
1:I:181:PRO:HG3	1:I:244:SER:OG	2.16	0.45
2:C:157:PHE:HB2	2:C:186:LEU:HD22	1.98	0.45
1:T:131:ILE:O	1:T:135:ILE:HG13	2.16	0.45
1:I:236:SER:HB2	1:I:239:GLN:HG3	1.98	0.45
2:C:35:HIS:CE1	3:D:93:TYR:HD2	2.35	0.45
2:G:96:CYS:O	2:G:115:GLY:N	2.50	0.45
3:F:89:GLN:HG2	3:F:90:GLN:N	2.31	0.45
3:H:2:ILE:HB	3:H:97:ILE:HD12	1.99	0.45
2:E:51:ILE:HG13	2:E:58:THR:HG22	1.99	0.45
1:J:127:PHE:O	1:J:131:ILE:HG13	2.16	0.45
1:S:190:ILE:HA	1:S:226:ARG:NH2	2.32	0.45
2:C:60:TYR:CZ	2:C:70:ILE:HG22	2.51	0.45
3:H:120:PRO:HG3	3:H:130:ALA:HB1	1.99	0.45
2:C:96:CYS:O	2:C:115:GLY:N	2.50	0.45
2:C:123:SER:HB3	2:C:157:PHE:HZ	1.82	0.45
2:C:135:LEU:N	2:C:150:GLY:O	2.49	0.45
1:I:133:MET:SD	1:I:220:VAL:HG13	2.57	0.45
2:A:37:VAL:HG22	2:A:47:TRP:HA	1.99	0.44
2:G:5:VAL:HG23	2:G:23:ALA:HB3	2.00	0.44
2:G:51:ILE:HG13	2:G:58:THR:HG22	1.99	0.44
3:D:166:GLN:NE2	3:D:171:SER:HB3	2.32	0.44
3:D:3:GLN:HB2	3:D:26:SER:HB3	1.98	0.44
3:F:140:TYR:CG	3:F:141:PRO:HA	2.52	0.44
2:G:152:LEU:CD1	2:G:190:SER:HB3	2.47	0.44
3:H:34:ALA:HB3	3:H:89:GLN:HB3	1.99	0.44
3:F:120:PRO:HB3	3:F:131:SER:H	1.81	0.44
2:A:5:VAL:HG23	2:A:23:ALA:HB3	2.00	0.44
1:I:190:ILE:HA	1:I:226:ARG:NH2	2.32	0.44
2:A:189:LEU:C	2:A:189:LEU:HD12	2.38	0.44
2:G:60:TYR:CE1	2:G:70:ILE:HG22	2.53	0.44
3:B:120:PRO:HB3	3:B:131:SER:H	1.83	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:S:130:ILE:HD11	1:S:223:ARG:O	2.18	0.44
2:G:48:VAL:HG13	2:G:64:VAL:HG21	2.00	0.44
3:H:166:GLN:HG2	3:H:171:SER:HA	1.99	0.44
2:C:130:PRO:HB2	2:C:153:VAL:HG13	2.00	0.44
2:G:112:ASP:OD2	2:G:112:ASP:N	2.46	0.44
2:G:152:LEU:HD12	2:G:190:SER:HB3	2.00	0.44
2:G:103:TYR:HB3	1:I:202:VAL:HG13	2.00	0.43
1:S:133:MET:SD	1:S:220:VAL:HG13	2.58	0.43
2:G:212:LYS:N	2:G:213:PRO:CD	2.81	0.43
2:G:157:PHE:HA	2:G:158:PRO:HA	1.79	0.43
3:B:190:LYS:O	3:B:210:ASN:HA	2.18	0.43
2:E:27:PHE:CE1	2:E:98:ARG:HD3	2.53	0.43
2:E:37:VAL:HG22	2:E:47:TRP:HA	2.01	0.43
1:S:139:LEU:HD21	1:T:217:ARG:HH11	1.83	0.43
1:I:232:ARG:HB3	1:I:236:SER:OG	2.18	0.43
2:A:12:VAL:HG13	2:A:122:VAL:HG22	2.00	0.43
2:A:51:ILE:HG13	2:A:58:THR:HG22	2.01	0.43
2:E:148:ALA:HB2	2:E:194:THR:HG22	2.00	0.43
2:C:36:TRP:CG	2:C:81:LEU:HD22	2.53	0.43
2:E:130:PRO:HB3	2:E:156:TYR:HB3	2.01	0.43
1:J:155:LEU:HD11	1:J:198:ILE:HD12	2.00	0.43
3:D:2:ILE:HB	3:D:97:ILE:HD12	2.00	0.42
3:F:3:GLN:HB2	3:F:26:SER:HB3	2.01	0.42
1:I:131:ILE:O	1:I:135:ILE:HG13	2.19	0.42
2:C:174:VAL:HG22	2:C:193:VAL:HB	2.01	0.42
2:G:47:TRP:CD1	3:H:96:LEU:HD11	2.54	0.42
3:B:23:CYS:HB2	3:B:35:TRP:CH2	2.54	0.42
1:T:232:ARG:HD2	1:T:232:ARG:HA	1.73	0.42
1:I:224:LEU:O	1:I:228:VAL:HG23	2.19	0.42
2:C:2:VAL:HA	2:C:25:SER:O	2.19	0.42
3:B:119:PRO:HB3	3:B:209:PHE:CE1	2.55	0.42
2:C:112:ASP:OD2	2:C:112:ASP:N	2.48	0.42
3:D:33:VAL:O	3:D:51:ALA:N	2.52	0.42
3:D:45:LYS:HD2	3:D:45:LYS:HA	1.87	0.42
1:T:151:ASP:OD1	1:T:151:ASP:N	2.52	0.42
1:S:210:THR:OG1	1:S:213:ASP:HB3	2.20	0.42
3:F:35:TRP:CD2	3:F:73:LEU:HB2	2.54	0.42
3:F:145:LYS:HE2	3:F:197:THR:HB	2.02	0.42
1:J:190:ILE:HA	1:J:226:ARG:HH21	1.85	0.42
2:A:179:ALA:HA	2:A:189:LEU:HB3	2.02	0.42
1:I:182:TRP:CE3	1:I:240:MET:HB3	2.55	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:108:ARG:HH21	3:F:111:ALA:HB2	1.85	0.42
2:G:133:PHE:HB3	3:H:121:SER:OG	2.19	0.42
1:J:224:LEU:O	1:J:228:VAL:HG23	2.19	0.42
3:F:2:ILE:HB	3:F:97:ILE:HD12	2.01	0.41
2:E:48:VAL:HG13	2:E:64:VAL:HG21	2.02	0.41
3:F:35:TRP:HB2	3:F:48:ILE:HB	2.01	0.41
3:H:186:TYR:HA	3:H:192:TYR:OH	2.19	0.41
2:A:27:PHE:CE1	2:A:98:ARG:HD3	2.55	0.41
2:A:36:TRP:NE1	2:A:81:LEU:HB2	2.36	0.41
2:C:223:GLU:HA	2:C:224:PRO:HD3	1.90	0.41
1:T:119:ARG:NH1	1:T:119:ARG:HA	2.35	0.41
3:F:118:PHE:HB2	3:F:133:VAL:HB	2.03	0.41
2:A:29:VAL:HG12	2:A:53:PRO:HG3	2.02	0.41
3:B:136:LEU:HB2	3:B:175:LEU:HB3	2.01	0.41
3:D:34:ALA:HB3	3:D:89:GLN:HB3	2.02	0.41
1:T:190:ILE:HA	1:T:226:ARG:HH21	1.84	0.41
3:F:163:VAL:HG12	3:F:164:THR:O	2.19	0.41
2:G:2:VAL:HA	2:G:25:SER:O	2.19	0.41
2:C:221:LYS:HE2	2:C:223:GLU:OE1	2.21	0.41
3:H:120:PRO:HB3	3:H:131:SER:H	1.85	0.41
3:F:120:PRO:HG3	3:F:130:ALA:HB1	2.03	0.41
3:F:193:ALA:HB2	3:F:208:SER:HB3	2.03	0.41
2:A:36:TRP:HD1	2:A:70:ILE:HD12	1.86	0.41
3:H:96:LEU:H	3:H:96:LEU:CD2	2.32	0.41
1:S:110:ARG:HB2	1:S:171:ALA:HB1	2.03	0.41
2:A:122:VAL:O	2:A:122:VAL:HG12	2.20	0.41
1:T:196:VAL:CB	1:T:219:VAL:HG21	2.51	0.41
2:E:99:LYS:HE3	2:E:109:TRP:O	2.20	0.41
2:E:174:VAL:HG22	2:E:193:VAL:CG2	2.51	0.41
2:E:223:GLU:HA	2:E:224:PRO:HD3	1.94	0.41
2:G:104:TRP:HB3	2:G:105:ARG:H	1.67	0.41
1:S:217:ARG:NH1	1:T:139:LEU:HD21	2.36	0.41
2:C:157:PHE:HA	2:C:158:PRO:HA	1.83	0.41
2:E:96:CYS:O	2:E:115:GLY:N	2.54	0.41
3:F:30:SER:OG	3:F:31:SER:N	2.54	0.41
2:E:161:VAL:HG11	2:E:209:VAL:HG13	2.03	0.40
3:B:89:GLN:HG2	3:B:90:GLN:N	2.32	0.40
2:E:70:ILE:HG23	2:E:70:ILE:O	2.21	0.40
3:B:45:LYS:HD2	3:B:45:LYS:HA	1.89	0.40
3:B:120:PRO:HG3	3:B:130:ALA:HB1	2.02	0.40
2:C:105:ARG:HD2	1:J:151:ASP:OD2	2.22	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:237:HIS:HA	1:I:240:MET:HG2	2.02	0.40
3:D:167:ASP:OD1	3:D:168:SER:N	2.54	0.40
1:S:151:ASP:OD1	1:S:151:ASP:N	2.53	0.40
3:B:2:ILE:HB	3:B:97:ILE:HD12	2.04	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	I	137/155 (88%)	126 (92%)	10 (7%)	1 (1%)	19	53
1	J	137/155 (88%)	126 (92%)	11 (8%)	0	100	100
1	S	126/155 (81%)	115 (91%)	10 (8%)	1 (1%)	16	51
1	T	137/155 (88%)	126 (92%)	10 (7%)	1 (1%)	19	53
2	A	217/224 (97%)	205 (94%)	11 (5%)	1 (0%)	25	59
2	C	215/224 (96%)	200 (93%)	14 (6%)	1 (0%)	25	59
2	E	217/224 (97%)	209 (96%)	5 (2%)	3 (1%)	9	40
2	G	217/224 (97%)	208 (96%)	8 (4%)	1 (0%)	25	59
3	B	209/211 (99%)	194 (93%)	14 (7%)	1 (0%)	25	59
3	D	209/211 (99%)	195 (93%)	13 (6%)	1 (0%)	25	59
3	F	209/211 (99%)	195 (93%)	12 (6%)	2 (1%)	13	46
3	H	209/211 (99%)	195 (93%)	13 (6%)	1 (0%)	25	59
All	All	2239/2360 (95%)	2094 (94%)	131 (6%)	14 (1%)	22	55

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	F	95	SER
1	S	212	ALA
2	E	155	ASP
3	F	92	GLN
2	A	91	THR
3	B	92	GLN
2	C	91	THR
3	D	92	GLN
1	T	212	ALA
2	E	91	THR
2	G	91	THR
3	H	92	GLN
1	I	212	ALA
2	E	160	PRO

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	I	120/134 (90%)	115 (96%)	5 (4%)	25	54
1	J	120/134 (90%)	114 (95%)	6 (5%)	20	49
1	S	110/134 (82%)	107 (97%)	3 (3%)	40	65
1	T	120/134 (90%)	110 (92%)	10 (8%)	9	34
2	A	182/187 (97%)	179 (98%)	3 (2%)	58	77
2	C	180/187 (96%)	177 (98%)	3 (2%)	56	76
2	E	182/187 (97%)	180 (99%)	2 (1%)	70	84
2	G	182/187 (97%)	178 (98%)	4 (2%)	47	70
3	B	185/185 (100%)	183 (99%)	2 (1%)	70	84
3	D	185/185 (100%)	182 (98%)	3 (2%)	58	77
3	F	185/185 (100%)	183 (99%)	2 (1%)	70	84
3	H	185/185 (100%)	184 (100%)	1 (0%)	86	93
All	All	1936/2024 (96%)	1892 (98%)	44 (2%)	45	69

All (44) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	S	126	ILE
1	S	134	ILE
1	S	151	ASP
2	A	50	TYR
2	A	181	LEU
2	A	197	SER
3	B	65	SER
3	B	103	LYS
2	C	131	SER
2	C	149	LEU
2	C	194	THR
3	D	65	SER
3	D	103	LYS
3	D	110	VAL
1	T	126	ILE
1	T	134	ILE
1	T	151	ASP
1	T	182	TRP
1	T	227	VAL
1	T	232	ARG
1	T	240	MET
1	T	241	LYS
1	T	243	SER
1	T	244	SER
2	E	50	TYR
2	E	194	THR
3	F	65	SER
3	F	103	LYS
2	G	62	ASP
2	G	131	SER
2	G	194	THR
2	G	198	SER
3	H	65	SER
1	I	126	ILE
1	I	134	ILE
1	I	151	ASP
1	I	238	GLN
1	I	240	MET
1	J	126	ILE
1	J	134	ILE
1	J	151	ASP
1	J	227	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	J	240	MET
1	J	243	SER

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

Mol	Chain	Res	Type
2	A	210	ASN
3	D	160	GLN
2	E	182	GLN
3	F	94	ASN
3	F	160	GLN
2	G	182	GLN
1	J	237	HIS

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, 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	I	139/155 (89%)	0.50	10 (7%)	23	16	160, 217, 278, 289	0
1	J	139/155 (89%)	0.37	8 (5%)	30	19	146, 202, 271, 292	0
1	S	128/155 (82%)	0.17	9 (7%)	24	16	95, 150, 248, 278	0
1	T	139/155 (89%)	0.19	8 (5%)	30	19	106, 157, 255, 293	0
2	A	221/224 (98%)	-0.10	9 (4%)	42	26	70, 104, 159, 214	0
2	C	219/224 (97%)	-0.01	4 (1%)	67	46	66, 135, 208, 261	0
2	E	221/224 (98%)	-0.11	6 (2%)	56	35	68, 113, 171, 223	0
2	G	221/224 (98%)	0.24	18 (8%)	19	13	104, 170, 228, 263	0
3	B	211/211 (100%)	-0.20	3 (1%)	73	51	67, 112, 146, 185	0
3	D	211/211 (100%)	-0.08	8 (3%)	44	28	70, 125, 186, 237	0
3	F	211/211 (100%)	0.01	8 (3%)	44	28	90, 135, 178, 201	0
3	H	211/211 (100%)	-0.02	6 (2%)	55	34	91, 157, 212, 269	0
All	All	2271/2360 (96%)	0.05	97 (4%)	40	25	66, 140, 239, 293	0

All (97) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	F	95	SER	7.6
2	C	17	SER	6.9
2	G	174	VAL	6.9
1	S	228	VAL	6.0
1	T	114	ASP	5.6
1	I	226	ARG	5.4
3	F	114	SER	4.9
1	I	153	MET	4.9
3	D	95	SER	4.7
1	S	206	TYR	4.6
2	E	62	ASP	4.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	G	194	THR	4.5
1	J	226	ARG	4.4
1	T	172	TYR	4.4
1	I	233	ILE	4.4
1	T	170	PHE	4.2
2	E	143	SER	4.2
1	J	230	LEU	4.1
3	F	199	GLN	4.0
1	T	206	TYR	4.0
2	C	15	GLY	3.8
1	J	227	VAL	3.7
2	G	175	HIS	3.7
3	H	55	TYR	3.6
1	S	229	ARG	3.6
2	A	160	PRO	3.5
1	S	225	LEU	3.5
3	D	92	GLN	3.5
1	I	234	PHE	3.4
2	A	59	TYR	3.4
3	D	168	SER	3.3
2	G	195	VAL	3.3
2	A	110	ALA	3.3
3	D	18	ARG	3.3
1	I	230	LEU	3.2
2	A	139	SER	3.2
3	D	165	GLU	3.1
2	C	13	GLN	3.1
3	F	92	GLN	3.1
1	I	154	ALA	3.1
1	S	226	ARG	3.0
1	T	110	ARG	3.0
1	J	234	PHE	3.0
3	H	80	PRO	2.9
2	G	173	GLY	2.7
2	E	111	MET	2.7
2	A	109	TRP	2.7
3	F	165	GLU	2.7
1	I	126	ILE	2.7
2	G	193	VAL	2.6
1	S	224	LEU	2.6
2	G	138	SER	2.6
2	A	204	THR	2.6

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	J	233	ILE	2.6
2	G	171	THR	2.5
2	G	111	MET	2.5
3	F	94	ASN	2.5
1	T	109	VAL	2.5
1	J	231	ALA	2.4
2	G	136	ALA	2.4
3	H	83	PHE	2.4
2	G	147	ALA	2.4
3	B	95	SER	2.4
1	T	113	ILE	2.4
2	C	173	GLY	2.4
3	F	113	PRO	2.4
2	A	106	ASP	2.4
2	E	110	ALA	2.3
2	A	159	GLU	2.3
3	H	56	SER	2.3
1	I	186	ASP	2.3
2	G	166	ASN	2.3
2	G	176	THR	2.3
2	G	179	ALA	2.3
3	D	98	PHE	2.3
2	G	112	ASP	2.3
2	G	172	SER	2.3
1	J	206	TYR	2.2
2	E	106	ASP	2.2
1	I	207	VAL	2.2
1	I	132	LEU	2.2
1	T	111	ALA	2.2
3	H	106	ILE	2.2
3	B	169	LYS	2.2
1	S	230	LEU	2.2
3	F	90	GLN	2.2
1	S	231	ALA	2.2
1	J	165	LEU	2.2
2	E	146	THR	2.2
2	G	206	ILE	2.1
2	A	104	TRP	2.1
3	D	106	ILE	2.1
3	B	93	TYR	2.1
3	D	93	TYR	2.1
3	H	65	SER	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	S	227	VAL	2.1
2	G	204	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.