Full wwPDB X-ray Structure Validation Report ⓘ

Oct 26, 2023 – 01:41 PM EDT

PDB ID	:	3ALQ
Title	:	Crystal structure of TNF-TNFR2 complex
Authors	:	Mukai, Y.; Nakamura, T.; Yamagata, Y.; Tsutsumi, Y.
Deposited on	:	2010-08-06
Resolution	:	3.00 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:

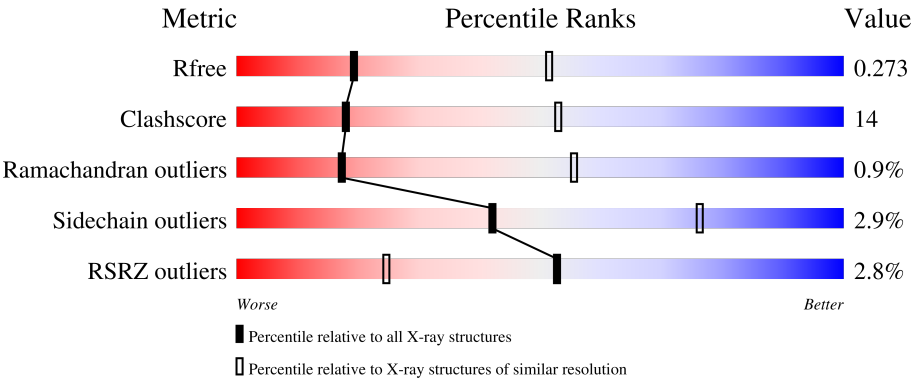
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	157	61% 29% • 10%
1	B	157	62% 27% • 10%
1	C	157	57% 31% • 10%
1	D	157	60% 29% • 10%
1	E	157	61% 29% 10%

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Mol	Chain	Length	Quality of chain
1	F	157	60% 29% • 10%
2	R	173	6% 69% 22% • 6%
2	S	173	5% 63% 30% • 5%
2	T	173	68% 25% • 6%
2	U	173	% 70% 22% • 7%
2	V	173	10% 63% 29% • 7%
2	W	173	3% 66% 27% • 6%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 13927 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 Tumor necrosis factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	141	Total	C	N	O	S	0	0	0
			1097	700	188	206	3			
1	B	141	Total	C	N	O	S	0	0	0
			1097	700	188	206	3			
1	C	141	Total	C	N	O	S	0	0	0
			1097	700	188	206	3			
1	D	141	Total	C	N	O	S	0	0	0
			1097	700	188	206	3			
1	E	141	Total	C	N	O	S	0	0	0
			1097	700	188	206	3			
1	F	141	Total	C	N	O	S	0	0	0
			1097	700	188	206	3			

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	11	MET	LYS	engineered mutation	UNP P01375
A	65	SER	LYS	engineered mutation	UNP P01375
A	90	PRO	LYS	engineered mutation	UNP P01375
A	98	ARG	LYS	engineered mutation	UNP P01375
A	112	ASN	LYS	engineered mutation	UNP P01375
A	128	PRO	LYS	engineered mutation	UNP P01375
B	11	MET	LYS	engineered mutation	UNP P01375
B	65	SER	LYS	engineered mutation	UNP P01375
B	90	PRO	LYS	engineered mutation	UNP P01375
B	98	ARG	LYS	engineered mutation	UNP P01375
B	112	ASN	LYS	engineered mutation	UNP P01375
B	128	PRO	LYS	engineered mutation	UNP P01375
C	11	MET	LYS	engineered mutation	UNP P01375
C	65	SER	LYS	engineered mutation	UNP P01375
C	90	PRO	LYS	engineered mutation	UNP P01375
C	98	ARG	LYS	engineered mutation	UNP P01375
C	112	ASN	LYS	engineered mutation	UNP P01375

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Chain	Residue	Modelled	Actual	Comment	Reference
C	128	PRO	LYS	engineered mutation	UNP P01375
D	11	MET	LYS	engineered mutation	UNP P01375
D	65	SER	LYS	engineered mutation	UNP P01375
D	90	PRO	LYS	engineered mutation	UNP P01375
D	98	ARG	LYS	engineered mutation	UNP P01375
D	112	ASN	LYS	engineered mutation	UNP P01375
D	128	PRO	LYS	engineered mutation	UNP P01375
E	11	MET	LYS	engineered mutation	UNP P01375
E	65	SER	LYS	engineered mutation	UNP P01375
E	90	PRO	LYS	engineered mutation	UNP P01375
E	98	ARG	LYS	engineered mutation	UNP P01375
E	112	ASN	LYS	engineered mutation	UNP P01375
E	128	PRO	LYS	engineered mutation	UNP P01375
F	11	MET	LYS	engineered mutation	UNP P01375
F	65	SER	LYS	engineered mutation	UNP P01375
F	90	PRO	LYS	engineered mutation	UNP P01375
F	98	ARG	LYS	engineered mutation	UNP P01375
F	112	ASN	LYS	engineered mutation	UNP P01375
F	128	PRO	LYS	engineered mutation	UNP P01375

- Molecule 2 is a protein called Tumor necrosis factor receptor superfamily member 1B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	R	162	Total	C	N	O	S	0	0	0
			1222	735	222	241	24			
2	S	164	Total	C	N	O	S	0	0	0
			1232	740	224	244	24			
2	T	162	Total	C	N	O	S	0	0	0
			1222	735	222	241	24			
2	U	161	Total	C	N	O	S	0	0	0
			1215	731	221	239	24			
2	V	161	Total	C	N	O	S	0	0	0
			1215	731	221	239	24			
2	W	162	Total	C	N	O	S	0	0	0
			1222	735	222	241	24			

- Molecule 3 is COBALT (II) ION (three-letter code: CO) (formula: Co).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	R	1	Total	Co	0	0
			1	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	S	1	Total Co 1 1	0	0
3	T	1	Total Co 1 1	0	0
3	U	1	Total Co 1 1	0	0
3	V	1	Total Co 1 1	0	0
3	W	1	Total Co 1 1	0	0

- Molecule 4 is water.

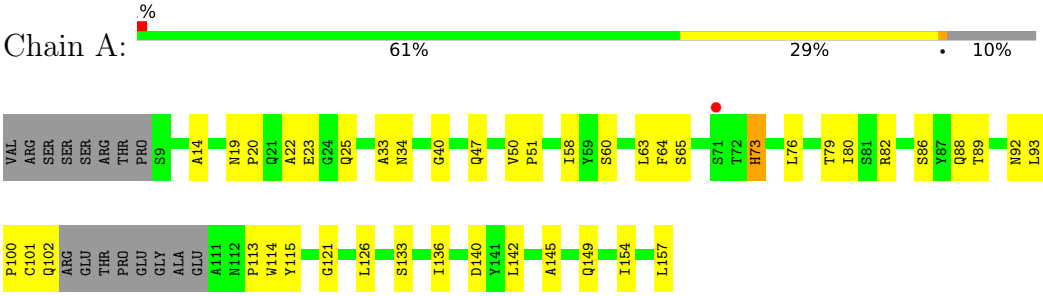
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O 1 1	0	0
4	B	1	Total O 1 1	0	0
4	C	1	Total O 1 1	0	0
4	D	2	Total O 2 2	0	0
4	E	1	Total O 1 1	0	0
4	F	1	Total O 1 1	0	0
4	R	1	Total O 1 1	0	0
4	T	1	Total O 1 1	0	0
4	U	2	Total O 2 2	0	0

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.

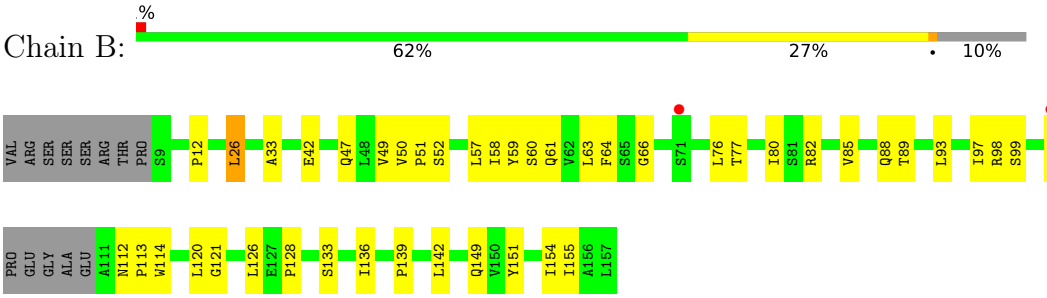
• Molecule 1: Tumor necrosis factor

Chain A:



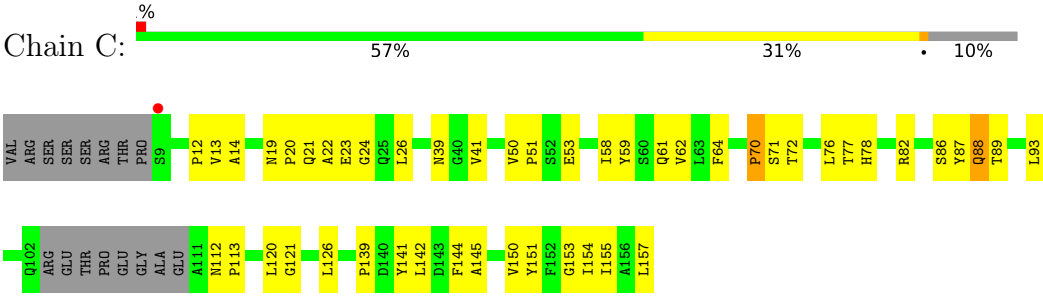
• Molecule 1: Tumor necrosis factor

Chain B:



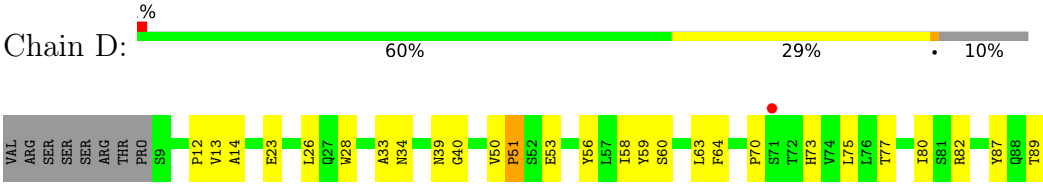
• Molecule 1: Tumor necrosis factor

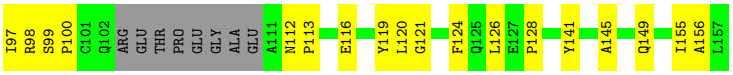
Chain C:



• Molecule 1: Tumor necrosis factor

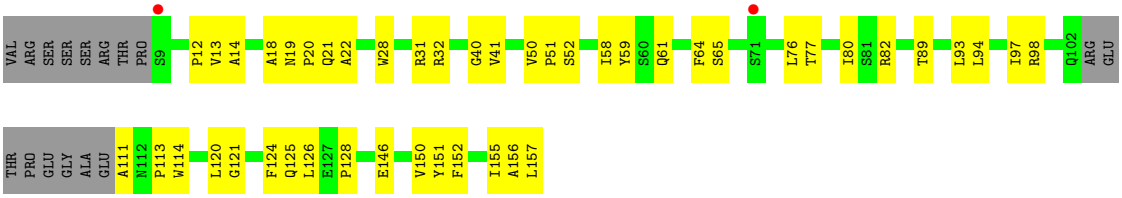
Chain D:





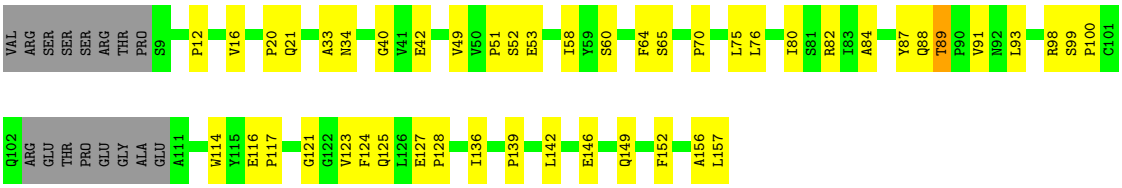
• Molecule 1: Tumor necrosis factor

Chain E:



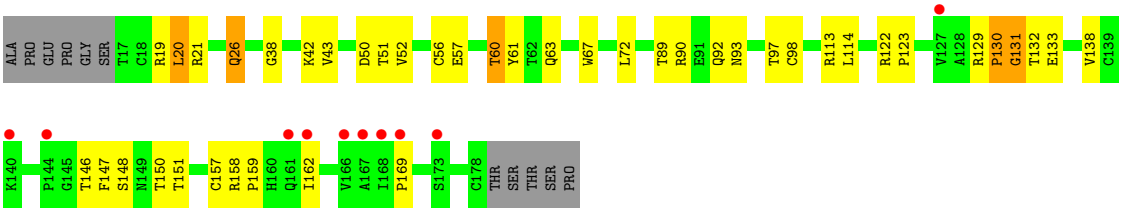
• Molecule 1: Tumor necrosis factor

Chain F:



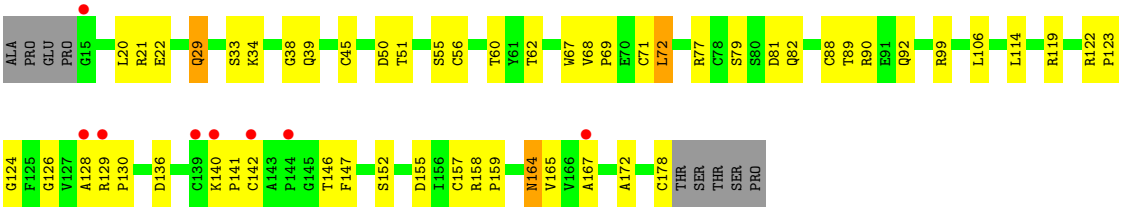
• Molecule 2: Tumor necrosis factor receptor superfamily member 1B

Chain R:



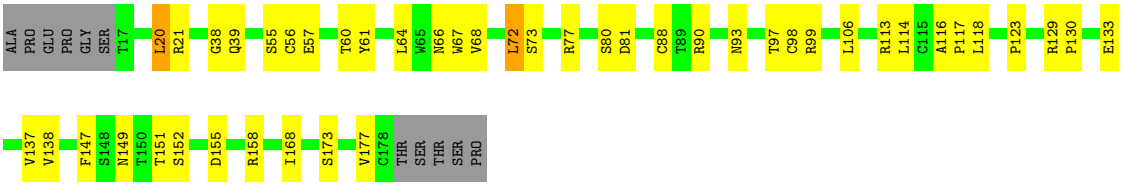
• Molecule 2: Tumor necrosis factor receptor superfamily member 1B

Chain S:



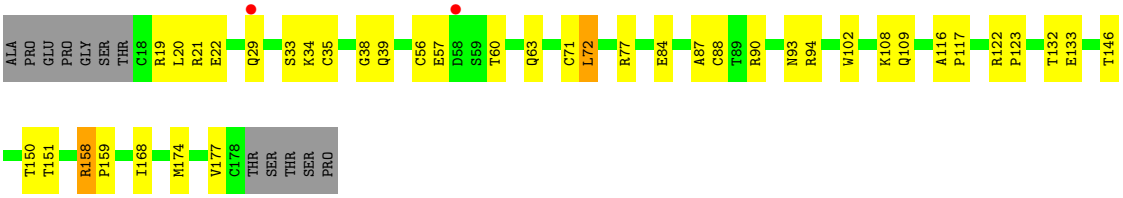
• Molecule 2: Tumor necrosis factor receptor superfamily member 1B

Chain T:



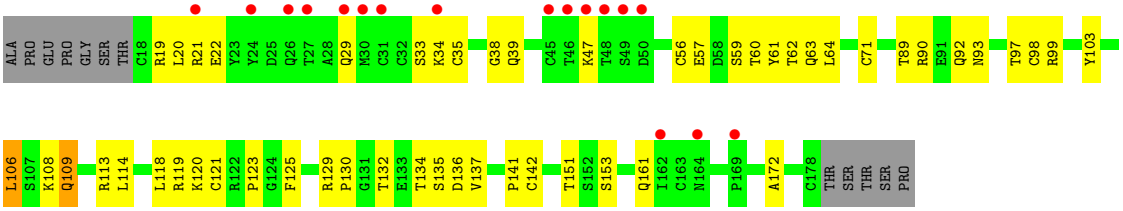
• Molecule 2: Tumor necrosis factor receptor superfamily member 1B

Chain U:



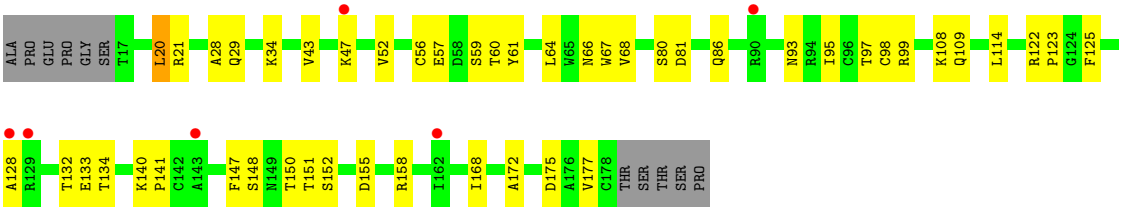
• Molecule 2: Tumor necrosis factor receptor superfamily member 1B

Chain V:



• Molecule 2: Tumor necrosis factor receptor superfamily member 1B

Chain W:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	74.47Å 117.36Å 246.84Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.96 – 3.00 49.96 – 2.95	Depositor EDS
% Data completeness (in resolution range)	99.5 (49.96-3.00) 98.6 (49.96-2.95)	Depositor EDS
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.04 (at 2.96Å)	Xtriage
Refinement program	PHENIX 1.5_2	Depositor
R, R_{free}	0.213 , 0.281 0.206 , 0.273	Depositor DCC
R_{free} test set	4618 reflections (10.07%)	wwPDB-VP
Wilson B-factor (Å^2)	54.6	Xtriage
Anisotropy	0.561	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 42.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	13927	wwPDB-VP
Average B, all atoms (Å^2)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.50% 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

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

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	0.26	0/1123	0.46	0/1534
1	B	0.26	0/1123	0.46	0/1534
1	C	0.25	0/1123	0.45	0/1534
1	D	0.25	0/1123	0.46	0/1534
1	E	0.24	0/1123	0.44	0/1534
1	F	0.24	0/1123	0.44	0/1534
2	R	0.26	0/1246	0.44	0/1692
2	S	0.30	0/1256	0.47	0/1705
2	T	0.28	0/1246	0.46	0/1692
2	U	0.25	0/1239	0.46	0/1682
2	V	0.25	0/1239	0.44	0/1682
2	W	0.25	0/1246	0.45	0/1692
All	All	0.26	0/14210	0.45	0/19349

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	A	1097	0	1073	32	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	1097	0	1073	34	0
1	C	1097	0	1073	37	0
1	D	1097	0	1073	34	0
1	E	1097	0	1073	37	0
1	F	1097	0	1073	33	0
2	R	1222	0	1143	34	0
2	S	1232	0	1151	33	0
2	T	1222	0	1143	25	0
2	U	1215	0	1136	33	0
2	V	1215	0	1136	42	0
2	W	1222	0	1143	33	0
3	R	1	0	0	0	0
3	S	1	0	0	0	0
3	T	1	0	0	0	0
3	U	1	0	0	0	0
3	V	1	0	0	0	0
3	W	1	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	2	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	R	1	0	0	0	0
4	T	1	0	0	0	0
4	U	2	0	0	0	0
All	All	13927	0	13290	368	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 14.

All (368) 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:V:132:THR:HG22	2:V:134:THR:H	1.27	0.99
2:S:56:CYS:HB3	2:S:60:THR:HG23	1.50	0.93
2:W:56:CYS:HB3	2:W:60:THR:HG23	1.47	0.93
2:V:56:CYS:HB3	2:V:60:THR:HG23	1.56	0.84
2:U:56:CYS:HB3	2:U:60:THR:HG23	1.59	0.84
1:B:112:ASN:HD21	1:C:72:THR:HB	1.43	0.83
2:U:132:THR:HG22	2:U:133:GLU:H	1.46	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:U:22:GLU:HG2	2:U:33:SER:HA	1.66	0.77
2:U:20:LEU:HD23	2:U:21:ARG:HG3	1.67	0.76
2:R:43:VAL:HB	2:R:52:VAL:HB	1.71	0.73
2:T:56:CYS:HB3	2:T:60:THR:HG23	1.70	0.73
2:U:88:CYS:HB2	2:U:94:ARG:HB2	1.72	0.72
2:W:132:THR:HG22	2:W:133:GLU:H	1.55	0.72
2:W:128:ALA:HB2	2:W:140:LYS:HB3	1.71	0.72
2:W:86:GLN:HB3	2:W:95:ILE:HB	1.70	0.71
1:F:20:PRO:HB2	1:F:21:GLN:NE2	2.06	0.71
1:A:98:ARG:HH11	1:A:99:SER:H	1.39	0.70
2:W:43:VAL:HB	2:W:52:VAL:HB	1.72	0.70
1:F:82:ARG:HB2	1:F:93:LEU:HD11	1.74	0.70
1:A:58:ILE:HD11	1:A:126:LEU:HD11	1.73	0.70
1:C:77:THR:HG22	1:C:97:ILE:HG12	1.73	0.70
2:R:19:ARG:HB2	2:R:19:ARG:NH1	2.05	0.70
1:C:113:PRO:HG2	2:T:114:LEU:HD21	1.74	0.70
1:D:60:SER:HB2	1:D:80:ILE:HD11	1.74	0.69
2:V:38:GLY:HA2	2:V:90:ARG:O	1.93	0.69
1:E:77:THR:HG22	1:E:97:ILE:HG12	1.75	0.69
2:V:118:LEU:HD22	2:V:137:VAL:HG23	1.75	0.69
2:U:56:CYS:HB2	2:U:90:ARG:HG3	1.74	0.69
2:S:60:THR:OG1	2:S:71:CYS:HB2	1.92	0.68
2:W:133:GLU:HG3	2:W:134:THR:HG23	1.75	0.68
2:U:57:GLU:O	2:U:60:THR:HG22	1.94	0.67
2:U:35:CYS:HB3	2:U:39:GLN:HG3	1.77	0.67
1:B:47:GLN:HG2	1:B:133:SER:HB3	1.77	0.66
2:W:20:LEU:HD22	2:W:21:ARG:HD2	1.77	0.66
2:T:38:GLY:HA2	2:T:90:ARG:O	1.95	0.65
1:A:98:ARG:NH1	1:A:99:SER:H	1.93	0.65
1:A:113:PRO:HG2	2:R:114:LEU:HD21	1.78	0.64
1:F:75:LEU:HD11	2:V:114:LEU:HD23	1.80	0.64
1:D:58:ILE:O	1:D:121:GLY:HA2	1.97	0.64
1:A:114:TRP:HB3	1:B:102:GLN:HE22	1.63	0.64
1:B:112:ASN:ND2	1:C:72:THR:HB	2.10	0.64
1:D:82:ARG:HB2	1:D:93:LEU:HD11	1.79	0.63
1:D:98:ARG:HH11	1:D:99:SER:H	1.47	0.63
2:T:20:LEU:O	2:T:21:ARG:HB2	1.98	0.63
1:B:12:PRO:HB3	1:B:51:PRO:HG2	1.82	0.62
1:F:98:ARG:NH1	1:F:99:SER:H	1.97	0.62
2:R:56:CYS:HB3	2:R:60:THR:HG23	1.81	0.62
1:E:113:PRO:HG2	2:V:114:LEU:HD21	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:S:146:THR:HG22	2:S:159:PRO:HA	1.81	0.62
1:B:98:ARG:HH11	1:B:99:SER:H	1.47	0.62
1:A:82:ARG:HB2	1:A:93:LEU:HD11	1.83	0.61
2:W:128:ALA:HB2	2:W:140:LYS:CB	2.30	0.61
2:R:56:CYS:HB3	2:R:60:THR:CG2	2.29	0.61
1:F:52:SER:HA	1:F:128:PRO:HG3	1.83	0.61
1:F:98:ARG:HH11	1:F:99:SER:H	1.47	0.61
2:V:21:ARG:HA	2:V:34:LYS:HE2	1.83	0.61
1:D:98:ARG:NH1	1:D:99:SER:H	1.99	0.60
2:V:61:TYR:CZ	2:V:93:ASN:HB2	2.36	0.60
2:W:125:PHE:CE1	2:W:141:PRO:HG3	2.36	0.60
1:B:52:SER:HA	1:B:128:PRO:HG3	1.83	0.60
2:V:63:GLN:HG3	2:V:64:LEU:HD12	1.83	0.60
2:W:150:THR:HG22	2:W:158:ARG:HH22	1.65	0.60
2:W:61:TYR:CZ	2:W:93:ASN:HB2	2.37	0.60
1:C:50:VAL:HG21	1:C:126:LEU:HD13	1.84	0.60
1:D:94:LEU:HB3	1:D:120:LEU:HB3	1.84	0.59
1:B:64:PHE:CG	1:B:76:LEU:HD13	2.38	0.59
2:V:60:THR:OG1	2:V:71:CYS:HB2	2.03	0.58
2:T:168:ILE:HB	2:T:177:VAL:HB	1.85	0.58
2:R:150:THR:HG22	2:R:158:ARG:HH22	1.68	0.58
2:S:129:ARG:HD3	2:S:130:PRO:HD2	1.86	0.58
2:T:66:ASN:OD1	2:T:68:VAL:HG22	2.04	0.58
2:V:103:TYR:CZ	2:V:136:ASP:HB2	2.39	0.58
2:R:123:PRO:HD3	2:R:151:THR:OG1	2.04	0.57
2:U:72:LEU:N	2:U:72:LEU:HD23	2.19	0.57
1:B:113:PRO:HG2	2:S:114:LEU:HD21	1.86	0.57
1:B:26:LEU:HD22	1:B:142:LEU:HD11	1.86	0.57
2:W:34:LYS:HD3	2:W:67:TRP:HZ3	1.70	0.57
1:E:52:SER:HA	1:E:128:PRO:HG3	1.87	0.57
1:E:64:PHE:CG	1:E:76:LEU:HD13	2.40	0.57
1:D:40:GLY:C	1:D:51:PRO:HG3	2.24	0.57
2:V:123:PRO:HD3	2:V:151:THR:OG1	2.04	0.56
2:R:122:ARG:HB3	2:R:123:PRO:HD2	1.87	0.56
2:V:22:GLU:HG2	2:V:33:SER:HA	1.87	0.56
1:E:125:GLN:O	1:E:126:LEU:HD23	2.05	0.56
2:R:38:GLY:HA2	2:R:90:ARG:O	2.05	0.56
2:U:84:GLU:OE1	2:U:87:ALA:HA	2.06	0.56
1:B:82:ARG:HB2	1:B:93:LEU:HD11	1.88	0.55
1:B:63:LEU:HD23	1:B:149:GLN:NE2	2.21	0.55
2:S:165:VAL:O	2:S:178:CYS:HA	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:59:TYR:CZ	1:C:153:GLY:HA3	2.41	0.55
2:R:146:THR:HG22	2:R:159:PRO:HA	1.89	0.55
2:R:20:LEU:HD23	2:R:21:ARG:H	1.71	0.55
2:S:20:LEU:O	2:S:21:ARG:HB2	2.07	0.55
2:S:122:ARG:HB3	2:S:123:PRO:CD	2.36	0.55
1:F:12:PRO:HB3	1:F:51:PRO:HG2	1.89	0.54
1:E:94:LEU:HB3	1:E:120:LEU:HB3	1.88	0.54
1:F:58:ILE:HD12	1:F:124:PHE:CD1	2.43	0.54
1:C:64:PHE:CG	1:C:76:LEU:HD13	2.43	0.54
1:F:146:GLU:HB2	1:F:149:GLN:OE1	2.06	0.54
2:V:142:CYS:HB2	2:V:172:ALA:HB1	1.90	0.54
1:E:18:ALA:O	1:E:20:PRO:HD3	2.08	0.54
1:F:53:GLU:HG3	1:F:127:GLU:OE1	2.08	0.54
2:T:57:GLU:O	2:T:60:THR:HG22	2.08	0.53
1:C:58:ILE:O	1:C:121:GLY:HA2	2.07	0.53
2:R:131:GLY:C	2:R:133:GLU:H	2.12	0.53
1:E:61:GLN:HB3	1:E:151:TYR:CZ	2.44	0.53
2:R:19:ARG:HB2	2:R:19:ARG:HH11	1.73	0.53
2:U:20:LEU:CD2	2:U:21:ARG:HG3	2.37	0.53
2:S:124:GLY:HA2	2:S:172:ALA:O	2.08	0.53
2:V:21:ARG:CA	2:V:34:LYS:HE2	2.39	0.53
2:U:19:ARG:HG2	2:U:20:LEU:H	1.74	0.53
2:W:34:LYS:HD3	2:W:67:TRP:CZ3	2.43	0.53
1:B:136:ILE:HD11	1:B:139:PRO:HA	1.91	0.52
1:B:58:ILE:O	1:B:121:GLY:HA2	2.09	0.52
2:V:29:GLN:HA	2:V:29:GLN:HE21	1.74	0.52
2:W:152:SER:HB3	2:W:155:ASP:HB2	1.91	0.52
1:C:12:PRO:HA	1:C:39:ASN:HB2	1.91	0.52
1:D:75:LEU:HD11	2:W:114:LEU:HD22	1.92	0.52
2:W:125:PHE:HE1	2:W:141:PRO:HG3	1.73	0.52
1:E:12:PRO:HD2	1:E:156:ALA:HB3	1.92	0.52
1:F:20:PRO:HB2	1:F:21:GLN:HE22	1.73	0.52
1:F:100:PRO:HG3	1:F:116:GLU:HG3	1.91	0.52
2:T:152:SER:HB3	2:T:155:ASP:HB2	1.92	0.51
2:V:89:THR:OG1	2:V:92:GLN:HG2	2.10	0.51
1:A:101:CYS:O	1:A:102:GLN:HG3	2.09	0.51
2:S:21:ARG:HA	2:S:34:LYS:HE3	1.92	0.51
2:V:121:CYS:O	2:V:151:THR:HA	2.11	0.51
1:C:62:VAL:HG22	1:C:78:HIS:CD2	2.46	0.50
2:V:125:PHE:CE1	2:V:141:PRO:HG3	2.47	0.50
2:S:122:ARG:HB3	2:S:123:PRO:HD2	1.91	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:40:GLY:C	1:F:51:PRO:HG3	2.32	0.50
1:E:146:GLU:HG3	2:V:113:ARG:NH1	2.27	0.50
2:S:77:ARG:HH22	2:U:174:MET:HB3	1.75	0.50
1:D:63:LEU:HD23	1:D:149:GLN:NE2	2.27	0.50
2:U:132:THR:HG22	2:U:133:GLU:N	2.23	0.50
2:S:20:LEU:HD23	2:S:21:ARG:N	2.27	0.50
2:V:20:LEU:HD23	2:V:21:ARG:N	2.27	0.50
1:B:61:GLN:HB3	1:B:151:TYR:CZ	2.47	0.50
2:R:122:ARG:HB3	2:R:123:PRO:CD	2.42	0.50
2:V:132:THR:HB	2:V:135:SER:OG	2.12	0.50
2:U:60:THR:OG1	2:U:71:CYS:HB2	2.11	0.49
2:W:20:LEU:O	2:W:21:ARG:HB2	2.10	0.49
1:D:98:ARG:HH21	1:E:98:ARG:NH2	2.09	0.49
2:V:119:ARG:O	2:V:153:SER:HB3	2.13	0.49
1:D:13:VAL:HG22	1:D:14:ALA:N	2.28	0.49
1:F:42:GLU:HB2	1:F:49:VAL:HB	1.94	0.49
2:V:106:LEU:HD13	2:V:113:ARG:HD3	1.95	0.49
2:R:26:GLN:HA	2:R:26:GLN:HE21	1.78	0.49
2:V:20:LEU:HD23	2:V:21:ARG:H	1.78	0.49
2:S:119:ARG:HB2	2:S:136:ASP:OD1	2.13	0.49
2:U:168:ILE:N	2:U:168:ILE:HD12	2.28	0.49
1:B:42:GLU:HB2	1:B:49:VAL:HB	1.95	0.48
1:C:154:ILE:HG13	1:C:154:ILE:O	2.13	0.48
2:V:108:LYS:HG2	2:V:109:GLN:N	2.29	0.48
1:A:22:ALA:O	1:A:25:GLN:HG3	2.14	0.48
1:C:53:GLU:HA	1:C:126:LEU:O	2.13	0.48
2:V:120:LYS:HD3	2:V:153:SER:N	2.29	0.48
1:E:111:ALA:HB2	2:R:122:ARG:NH1	2.28	0.48
1:A:114:TRP:HB3	1:B:102:GLN:NE2	2.26	0.48
1:B:57:LEU:O	1:B:154:ILE:HA	2.12	0.48
2:U:20:LEU:O	2:U:21:ARG:HB2	2.14	0.48
2:U:122:ARG:HB3	2:U:123:PRO:HD2	1.96	0.48
1:C:145:ALA:HB3	2:T:113:ARG:NH1	2.28	0.48
2:V:19:ARG:HG3	2:V:19:ARG:HH11	1.77	0.48
1:F:89:THR:O	1:F:91:VAL:HG23	2.13	0.48
1:B:59:TYR:HA	1:B:120:LEU:O	2.13	0.48
2:T:20:LEU:H	2:T:20:LEU:HD12	1.78	0.48
2:R:61:TYR:CZ	2:R:93:ASN:HB2	2.48	0.48
2:W:108:LYS:HG2	2:W:109:GLN:N	2.29	0.48
2:S:152:SER:HB3	2:S:155:ASP:HB2	1.96	0.48
1:B:60:SER:HB2	1:B:80:ILE:HD11	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:S:72:LEU:HD23	2:S:72:LEU:N	2.29	0.47
2:U:122:ARG:HB3	2:U:123:PRO:CD	2.44	0.47
2:W:66:ASN:OD1	2:W:68:VAL:HG22	2.14	0.47
2:W:123:PRO:HA	2:W:148:SER:O	2.14	0.47
1:D:100:PRO:HG3	1:D:116:GLU:HG3	1.96	0.47
1:F:136:ILE:CD1	1:F:142:LEU:HG	2.45	0.47
2:W:147:PHE:CE1	2:W:158:ARG:HG3	2.49	0.47
1:A:136:ILE:HD13	1:A:142:LEU:HD21	1.96	0.47
1:A:60:SER:CB	1:A:80:ILE:HD11	2.45	0.47
1:B:112:ASN:HA	1:B:113:PRO:HD3	1.72	0.47
2:S:29:GLN:HA	2:S:29:GLN:HE21	1.78	0.47
1:A:40:GLY:C	1:A:51:PRO:HG3	2.35	0.47
1:B:77:THR:HG22	1:B:97:ILE:HG23	1.96	0.47
1:D:33:ALA:O	1:D:34:ASN:HB2	2.15	0.47
2:R:147:PHE:O	2:R:157:CYS:HA	2.15	0.47
2:S:128:ALA:HB2	2:S:140:LYS:HG2	1.96	0.47
1:A:63:LEU:HD23	1:A:149:GLN:NE2	2.29	0.47
1:D:119:TYR:O	1:D:120:LEU:HD23	2.13	0.47
1:E:13:VAL:HG23	1:E:155:ILE:HB	1.97	0.47
2:V:20:LEU:O	2:V:21:ARG:HB2	2.14	0.47
2:V:29:GLN:HB2	2:V:47:LYS:NZ	2.30	0.47
1:F:60:SER:HB3	1:F:80:ILE:HD11	1.96	0.47
2:S:39:GLN:HB3	2:S:55:SER:HA	1.97	0.47
1:C:64:PHE:HA	1:C:141:TYR:O	2.15	0.47
1:D:155:ILE:HD13	1:E:157:LEU:CD1	2.45	0.47
2:U:146:THR:HG22	2:U:159:PRO:HA	1.97	0.47
1:E:82:ARG:HB2	1:E:93:LEU:HD11	1.96	0.47
1:E:58:ILE:O	1:E:121:GLY:HA2	2.15	0.46
1:A:19:ASN:HA	1:A:20:PRO:HD3	1.77	0.46
1:E:40:GLY:C	1:E:51:PRO:HG3	2.36	0.46
1:A:86:SER:HB3	2:T:67:TRP:CE2	2.50	0.46
1:A:157:LEU:HD12	1:C:155:ILE:HD13	1.96	0.46
2:S:77:ARG:NH2	2:U:174:MET:HB3	2.30	0.46
2:T:80:SER:O	2:T:81:ASP:HB2	2.15	0.46
1:F:136:ILE:HD11	1:F:139:PRO:HA	1.97	0.46
2:T:118:LEU:HD22	2:T:137:VAL:HG23	1.97	0.46
2:U:21:ARG:C	2:U:34:LYS:HG3	2.35	0.46
1:A:65:SER:HA	1:A:114:TRP:O	2.16	0.46
1:E:80:ILE:HD12	1:E:94:LEU:HD12	1.96	0.46
2:S:22:GLU:HG2	2:S:33:SER:HA	1.98	0.46
2:S:50:ASP:CG	2:S:51:THR:H	2.19	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:R:89:THR:OG1	2:R:92:GLN:HG2	2.16	0.46
2:U:38:GLY:HA2	2:U:90:ARG:O	2.15	0.46
2:V:97:THR:HG22	2:V:98:CYS:N	2.30	0.46
1:B:50:VAL:HG21	1:B:126:LEU:HD13	1.97	0.46
1:E:13:VAL:HG22	1:E:14:ALA:N	2.30	0.46
2:S:142:CYS:HB3	2:S:146:THR:OG1	2.16	0.46
1:D:93:LEU:HB3	1:D:124:PHE:CE2	2.51	0.46
1:E:31:ARG:O	1:E:32:ARG:HD3	2.16	0.45
1:E:58:ILE:HD11	1:E:126:LEU:HD11	1.98	0.45
1:A:23:GLU:H	1:A:23:GLU:HG2	1.58	0.45
1:C:86:SER:HB3	2:S:67:TRP:CE2	2.50	0.45
2:S:147:PHE:CE1	2:S:158:ARG:HG3	2.50	0.45
1:A:64:PHE:CD2	1:A:76:LEU:HD13	2.52	0.45
1:C:50:VAL:HA	1:C:51:PRO:HD3	1.75	0.45
2:U:123:PRO:HD3	2:U:151:THR:OG1	2.16	0.45
1:E:41:VAL:N	1:E:51:PRO:HG3	2.31	0.45
2:S:79:SER:O	2:S:82:GLN:HB2	2.16	0.45
2:S:126:GLY:HA3	2:S:157:CYS:SG	2.56	0.45
2:U:20:LEU:HD23	2:U:21:ARG:N	2.32	0.45
1:B:88:GLN:O	1:B:89:THR:HG23	2.17	0.45
1:C:58:ILE:HG23	1:C:154:ILE:HG22	1.99	0.45
1:D:26:LEU:HD21	1:D:28:TRP:CZ2	2.52	0.45
2:U:88:CYS:SG	2:U:93:ASN:HA	2.56	0.45
1:B:85:VAL:HG12	2:R:67:TRP:CH2	2.52	0.44
1:C:26:LEU:HB2	1:C:142:LEU:HD11	1.99	0.44
1:F:87:TYR:OH	2:V:63:GLN:HG2	2.17	0.44
2:S:89:THR:OG1	2:S:92:GLN:HG2	2.17	0.44
2:V:125:PHE:HE1	2:V:141:PRO:HG3	1.81	0.44
1:C:41:VAL:HA	1:C:51:PRO:HG3	1.99	0.44
1:C:59:TYR:HA	1:C:120:LEU:O	2.18	0.44
2:T:97:THR:HG22	2:T:98:CYS:N	2.32	0.44
1:A:60:SER:HB3	1:A:80:ILE:HD11	1.98	0.44
1:C:88:GLN:HE21	1:C:88:GLN:HB3	1.52	0.44
2:R:57:GLU:O	2:R:60:THR:HG22	2.17	0.44
2:R:123:PRO:HA	2:R:148:SER:O	2.17	0.44
2:W:150:THR:HG21	2:W:155:ASP:OD2	2.17	0.44
1:A:47:GLN:HE21	1:A:133:SER:HB3	1.82	0.44
1:D:12:PRO:HD2	1:D:156:ALA:HB3	1.99	0.44
2:R:146:THR:HB	2:R:157:CYS:HB3	1.98	0.44
1:E:59:TYR:HE2	1:F:123:VAL:HG23	1.82	0.44
1:C:21:GLN:O	1:C:23:GLU:N	2.45	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:65:SER:HB3	1:A:115:TYR:CD2	2.53	0.44
2:V:129:ARG:HA	2:V:130:PRO:HD3	1.83	0.44
1:B:57:LEU:HD12	1:B:58:ILE:N	2.33	0.44
1:B:66:GLY:HA3	1:B:114:TRP:CZ2	2.52	0.44
2:R:19:ARG:HB2	2:R:19:ARG:CZ	2.48	0.44
2:U:168:ILE:HB	2:U:177:VAL:HG23	1.99	0.44
1:B:50:VAL:HA	1:B:51:PRO:HD3	1.76	0.44
2:W:168:ILE:N	2:W:168:ILE:HD12	2.33	0.44
1:D:12:PRO:HA	1:D:39:ASN:HB2	2.00	0.43
1:E:28:TRP:CH2	1:E:152:PHE:HB2	2.53	0.43
1:F:16:VAL:HG22	1:F:152:PHE:O	2.17	0.43
2:T:72:LEU:N	2:T:72:LEU:HD23	2.32	0.43
1:A:86:SER:O	2:T:66:ASN:HB2	2.18	0.43
1:D:98:ARG:HH21	1:E:98:ARG:HH21	1.66	0.43
1:F:65:SER:HA	1:F:114:TRP:O	2.18	0.43
2:T:20:LEU:O	2:T:21:ARG:CB	2.66	0.43
1:C:13:VAL:HG22	1:C:14:ALA:N	2.32	0.43
1:C:24:GLY:O	1:C:139:PRO:HB2	2.18	0.43
1:D:56:TYR:CE2	1:D:156:ALA:HB2	2.54	0.43
1:E:59:TYR:CE2	1:F:123:VAL:HG23	2.53	0.43
1:E:50:VAL:HA	1:E:51:PRO:HD3	1.79	0.43
2:V:35:CYS:HB3	2:V:39:GLN:HG3	2.00	0.43
1:D:112:ASN:HA	1:D:113:PRO:HD3	1.77	0.43
1:E:93:LEU:HB3	1:E:124:PHE:CZ	2.53	0.43
1:E:155:ILE:HD13	1:F:157:LEU:HD13	2.01	0.43
2:S:164:ASN:OD1	2:S:164:ASN:N	2.51	0.43
1:A:136:ILE:CD1	1:A:142:LEU:HD21	2.48	0.43
1:B:64:PHE:CB	1:B:76:LEU:HD13	2.48	0.43
2:T:147:PHE:CE1	2:T:158:ARG:HG3	2.53	0.43
1:B:77:THR:HG22	1:B:97:ILE:HG12	2.00	0.43
2:U:102:TRP:CH2	2:U:117:PRO:HG3	2.54	0.43
2:W:80:SER:O	2:W:81:ASP:HB2	2.19	0.43
1:B:98:ARG:NH1	1:B:99:SER:H	2.14	0.43
1:E:19:ASN:ND2	1:E:22:ALA:HB2	2.33	0.43
1:E:50:VAL:HG21	1:E:126:LEU:HD13	2.01	0.43
2:W:147:PHE:CZ	2:W:175:ASP:HB2	2.54	0.43
2:V:19:ARG:HG3	2:V:19:ARG:NH1	2.34	0.43
2:V:57:GLU:O	2:V:60:THR:HG22	2.19	0.42
2:W:147:PHE:HA	2:W:172:ALA:O	2.19	0.42
1:A:79:THR:HG21	1:A:92:ASN:ND2	2.34	0.42
2:R:97:THR:HG22	2:R:98:CYS:N	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:S:38:GLY:HA2	2:S:90:ARG:O	2.20	0.42
1:C:61:GLN:HB3	1:C:151:TYR:CE2	2.53	0.42
1:C:142:LEU:HD13	1:C:144:PHE:CE2	2.55	0.42
2:T:61:TYR:CZ	2:T:93:ASN:HB2	2.54	0.42
1:E:21:GLN:HG3	2:V:59:SER:CB	2.49	0.42
2:R:72:LEU:N	2:R:72:LEU:HD23	2.34	0.42
1:D:82:ARG:HB2	1:D:93:LEU:CD1	2.47	0.42
2:V:103:TYR:CE2	2:V:136:ASP:HB2	2.54	0.42
1:C:97:ILE:HG22	1:C:98:ARG:N	2.35	0.42
1:D:23:GLU:HB3	2:U:77:ARG:NH2	2.34	0.42
2:T:77:ARG:HD3	2:W:177:VAL:HG21	2.02	0.42
1:D:58:ILE:HD11	1:D:126:LEU:HD11	2.01	0.42
2:W:28:ALA:O	2:W:47:LYS:HD2	2.19	0.42
2:W:147:PHE:CE2	2:W:175:ASP:HB2	2.55	0.42
1:A:94:LEU:HD13	1:A:121:GLY:N	2.34	0.42
1:D:53:GLU:HB2	1:D:128:PRO:HD3	2.02	0.42
1:B:33:ALA:CB	2:S:72:LEU:HD22	2.50	0.42
1:C:20:PRO:HG2	2:T:73:SER:HB3	2.02	0.42
2:R:158:ARG:H	2:R:158:ARG:HG2	1.73	0.42
2:U:116:ALA:HA	2:U:117:PRO:HD3	1.91	0.42
1:C:112:ASN:HA	1:C:113:PRO:HD3	1.88	0.41
2:R:129:ARG:HA	2:R:130:PRO:HD3	1.73	0.41
2:V:99:ARG:H	2:V:99:ARG:HG2	1.63	0.41
2:V:108:LYS:HG2	2:V:109:GLN:H	1.83	0.41
1:A:33:ALA:O	1:A:34:ASN:HB2	2.19	0.41
2:T:116:ALA:HA	2:T:117:PRO:HD3	1.84	0.41
2:T:123:PRO:HD3	2:T:151:THR:OG1	2.20	0.41
2:W:97:THR:HG22	2:W:98:CYS:N	2.35	0.41
2:W:61:TYR:CE2	2:W:93:ASN:HB2	2.54	0.41
1:C:62:VAL:HA	1:C:150:VAL:HG22	2.03	0.41
1:D:87:TYR:CZ	2:W:64:LEU:HD12	2.56	0.41
1:B:155:ILE:HD13	1:C:157:LEU:HD13	2.02	0.41
1:D:23:GLU:CG	2:U:77:ARG:HH22	2.33	0.41
1:E:65:SER:HA	1:E:114:TRP:O	2.20	0.41
1:F:12:PRO:HD2	1:F:156:ALA:HB3	2.02	0.41
1:F:64:PHE:CG	1:F:76:LEU:HD13	2.55	0.41
1:D:59:TYR:HA	1:D:120:LEU:O	2.20	0.41
1:E:18:ALA:HB2	1:E:150:VAL:CG1	2.50	0.41
2:S:68:VAL:HA	2:S:69:PRO:HD3	1.87	0.41
1:A:50:VAL:HA	1:A:51:PRO:HD3	1.68	0.41
1:C:70:PRO:HB2	1:C:71:SER:H	1.61	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:58:ILE:O	1:F:121:GLY:HA2	2.21	0.41
2:U:158:ARG:HG3	2:U:159:PRO:HD2	2.01	0.41
2:V:63:GLN:HG3	2:V:64:LEU:CD1	2.51	0.41
1:A:14:ALA:HB3	1:A:154:ILE:HG12	2.02	0.41
1:A:73:HIS:CD2	1:A:73:HIS:H	2.37	0.41
1:C:98:ARG:HH11	1:C:99:SER:H	1.68	0.41
1:D:77:THR:HG22	1:D:97:ILE:HG23	2.02	0.41
1:F:142:LEU:HD23	1:F:142:LEU:HA	1.85	0.41
2:W:123:PRO:HD3	2:W:151:THR:OG1	2.21	0.41
1:E:155:ILE:HD13	1:F:157:LEU:CD1	2.51	0.41
2:R:42:LYS:HG2	2:R:43:VAL:HG23	2.03	0.41
2:R:129:ARG:O	2:R:138:VAL:HG23	2.21	0.41
2:S:81:ASP:HA	2:S:99:ARG:HD3	2.03	0.41
2:T:39:GLN:HB3	2:T:55:SER:HA	2.02	0.41
2:U:108:LYS:O	2:U:109:GLN:C	2.59	0.41
1:D:50:VAL:HA	1:D:51:PRO:HD3	1.75	0.41
1:C:41:VAL:N	1:C:51:PRO:HG3	2.36	0.40
1:C:82:ARG:HB2	1:C:93:LEU:HD11	2.03	0.40
1:D:155:ILE:HD13	1:E:157:LEU:HD12	2.03	0.40
1:F:33:ALA:O	1:F:34:ASN:HB2	2.20	0.40
2:R:20:LEU:O	2:R:21:ARG:HB2	2.21	0.40
2:T:149:ASN:HB3	2:T:173:SER:O	2.21	0.40
1:A:99:SER:HA	1:A:100:PRO:HD3	1.82	0.40
1:A:145:ALA:HB3	2:R:113:ARG:NH1	2.37	0.40
1:B:60:SER:CB	1:B:80:ILE:HD11	2.51	0.40
1:C:19:ASN:HA	1:C:20:PRO:HD3	1.92	0.40
1:D:97:ILE:O	1:F:117:PRO:HG3	2.22	0.40
1:F:82:ARG:NE	1:F:84:ALA:HB2	2.37	0.40
1:F:88:GLN:HE21	1:F:88:GLN:HB3	1.64	0.40
2:R:50:ASP:OD2	2:R:51:THR:N	2.47	0.40
1:E:12:PRO:HB3	1:E:51:PRO:HG2	2.02	0.40
1:D:64:PHE:HA	1:D:141:TYR:O	2.22	0.40
2:R:162:ILE:HG23	2:R:162:ILE:O	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	137/157 (87%)	134 (98%)	3 (2%)	0	100	100
1	B	137/157 (87%)	128 (93%)	9 (7%)	0	100	100
1	C	137/157 (87%)	126 (92%)	8 (6%)	3 (2%)	6	31
1	D	137/157 (87%)	126 (92%)	8 (6%)	3 (2%)	6	31
1	E	137/157 (87%)	129 (94%)	8 (6%)	0	100	100
1	F	137/157 (87%)	128 (93%)	8 (6%)	1 (1%)	22	60
2	R	160/173 (92%)	139 (87%)	17 (11%)	4 (2%)	5	28
2	S	162/173 (94%)	142 (88%)	18 (11%)	2 (1%)	13	48
2	T	160/173 (92%)	145 (91%)	14 (9%)	1 (1%)	25	64
2	U	159/173 (92%)	143 (90%)	16 (10%)	0	100	100
2	V	159/173 (92%)	146 (92%)	13 (8%)	0	100	100
2	W	160/173 (92%)	148 (92%)	10 (6%)	2 (1%)	12	45
All	All	1782/1980 (90%)	1634 (92%)	132 (7%)	16 (1%)	17	55

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	70	PRO
1	F	70	PRO
2	S	167	ALA
1	C	22	ALA
1	D	51	PRO
2	R	131	GLY
2	R	132	THR
2	T	130	PRO
1	C	87	TYR
1	D	145	ALA
2	R	169	PRO
1	D	70	PRO

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Mol	Chain	Res	Type
2	R	130	PRO
2	W	57	GLU
2	S	141	PRO
2	W	122	ARG

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	119/133 (90%)	115 (97%)	4 (3%)	37	72
1	B	119/133 (90%)	118 (99%)	1 (1%)	81	93
1	C	119/133 (90%)	117 (98%)	2 (2%)	60	85
1	D	119/133 (90%)	117 (98%)	2 (2%)	60	85
1	E	119/133 (90%)	118 (99%)	1 (1%)	81	93
1	F	119/133 (90%)	117 (98%)	2 (2%)	60	85
2	R	143/152 (94%)	139 (97%)	4 (3%)	43	77
2	S	144/152 (95%)	137 (95%)	7 (5%)	25	61
2	T	143/152 (94%)	134 (94%)	9 (6%)	18	51
2	U	142/152 (93%)	137 (96%)	5 (4%)	36	71
2	V	142/152 (93%)	138 (97%)	4 (3%)	43	77
2	W	143/152 (94%)	139 (97%)	4 (3%)	43	77
All	All	1571/1710 (92%)	1526 (97%)	45 (3%)	42	76

All (45) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	73	HIS
1	A	88	GLN
1	A	89	THR
1	A	140	ASP
1	B	26	LEU
1	C	88	GLN

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Mol	Chain	Res	Type
1	C	89	THR
1	D	73	HIS
1	D	89	THR
1	E	89	THR
1	F	89	THR
1	F	125	GLN
2	R	20	LEU
2	R	26	GLN
2	R	60	THR
2	R	63	GLN
2	S	29	GLN
2	S	45	CYS
2	S	62	THR
2	S	72	LEU
2	S	88	CYS
2	S	106	LEU
2	S	164	ASN
2	T	20	LEU
2	T	64	LEU
2	T	72	LEU
2	T	88	CYS
2	T	99	ARG
2	T	106	LEU
2	T	129	ARG
2	T	133	GLU
2	T	138	VAL
2	U	29	GLN
2	U	63	GLN
2	U	72	LEU
2	U	150	THR
2	U	158	ARG
2	V	62	THR
2	V	106	LEU
2	V	109	GLN
2	V	161	GLN
2	W	20	LEU
2	W	29	GLN
2	W	59	SER
2	W	99	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	73	HIS
1	A	88	GLN
1	A	92	ASN
1	A	112	ASN
1	B	88	GLN
1	B	102	GLN
1	B	112	ASN
1	C	21	GLN
1	C	73	HIS
1	C	88	GLN
1	D	88	GLN
1	D	112	ASN
1	F	21	GLN
1	F	88	GLN
2	R	26	GLN
2	R	29	GLN
2	R	63	GLN
2	R	92	GLN
2	R	109	GLN
2	S	29	GLN
2	S	63	GLN
2	S	109	GLN
2	T	29	GLN
2	T	92	GLN
2	T	109	GLN
2	U	29	GLN
2	U	63	GLN
2	U	92	GLN
2	U	109	GLN
2	V	29	GLN
2	V	63	GLN
2	V	92	GLN
2	V	161	GLN
2	W	29	GLN
2	W	63	GLN
2	W	92	GLN
2	W	109	GLN
2	W	164	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

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	A	141/157 (89%)	-0.26	1 (0%) 87 69	30, 40, 76, 105	0
1	B	141/157 (89%)	-0.21	2 (1%) 75 49	29, 40, 75, 111	0
1	C	141/157 (89%)	-0.30	1 (0%) 87 69	31, 40, 73, 92	0
1	D	141/157 (89%)	-0.22	1 (0%) 87 69	32, 44, 75, 95	0
1	E	141/157 (89%)	-0.18	2 (1%) 75 49	34, 52, 81, 99	0
1	F	141/157 (89%)	-0.18	0 100 100	37, 51, 69, 97	0
2	R	162/173 (93%)	0.25	10 (6%) 20 7	32, 68, 108, 117	0
2	S	164/173 (94%)	0.19	8 (4%) 29 11	34, 67, 102, 111	0
2	T	162/173 (93%)	-0.07	0 100 100	38, 58, 73, 84	0
2	U	161/173 (93%)	0.07	2 (1%) 79 54	38, 60, 83, 94	0
2	V	161/173 (93%)	0.54	17 (10%) 6 2	58, 76, 115, 132	0
2	W	162/173 (93%)	0.26	6 (3%) 41 17	46, 68, 87, 97	0
All	All	1818/1980 (91%)	0.00	50 (2%) 53 25	29, 55, 96, 132	0

All (50) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	71	SER	3.7
1	D	71	SER	3.7
2	S	128	ALA	3.7
2	S	139	CYS	3.7
2	R	162	ILE	3.5
1	A	71	SER	3.4
2	S	15	GLY	3.1
2	V	47	LYS	3.1
2	V	24	TYR	3.1
2	S	129	ARG	3.1
2	R	168	ILE	3.0

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Mol	Chain	Res	Type	RSRZ
2	R	167	ALA	3.0
2	S	140	LYS	3.0
2	V	30	MET	2.9
2	V	29	GLN	2.8
2	R	140	LYS	2.8
1	E	71	SER	2.8
2	V	26	GLN	2.7
2	V	31	CYS	2.7
2	R	144	PRO	2.7
2	R	166	VAL	2.7
2	V	48	THR	2.7
2	V	164	ASN	2.7
2	W	90	ARG	2.7
2	S	144	PRO	2.6
2	V	27	THR	2.6
1	E	9	SER	2.6
2	V	46	THR	2.5
2	R	161	GLN	2.5
2	W	128	ALA	2.4
2	R	127	VAL	2.4
2	V	169	PRO	2.4
2	R	169	PRO	2.3
2	V	45	CYS	2.3
2	S	142	CYS	2.3
2	W	143	ALA	2.3
1	B	102	GLN	2.3
2	V	34	LYS	2.3
2	W	129	ARG	2.2
1	C	9	SER	2.2
2	V	49	SER	2.2
2	U	29	GLN	2.1
2	S	167	ALA	2.1
2	V	21	ARG	2.1
2	U	58	ASP	2.1
2	V	162	ILE	2.1
2	V	50	ASP	2.1
2	W	162	ILE	2.0
2	R	173	SER	2.0
2	W	47	LYS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	CO	V	5	1/1	0.90	0.13	71,71,71,71	0
3	CO	T	3	1/1	0.96	0.18	52,52,52,52	0
3	CO	R	2	1/1	0.97	0.20	45,45,45,45	0
3	CO	W	6	1/1	0.97	0.20	63,63,63,63	0
3	CO	S	1	1/1	0.98	0.18	57,57,57,57	0
3	CO	U	4	1/1	0.99	0.17	48,48,48,48	0

6.5 Other polymers (i)

There are no such residues in this entry.