



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 09:42 AM UTC

PDB ID : 7MFA / pdb_00007mfa
Title : Crystal structure of antibody 10E8v4-P100fA+P100gA Fab
Authors : Kwon, Y.D.; Kwong, P.D.
Deposited on : 2021-04-08
Resolution : 2.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

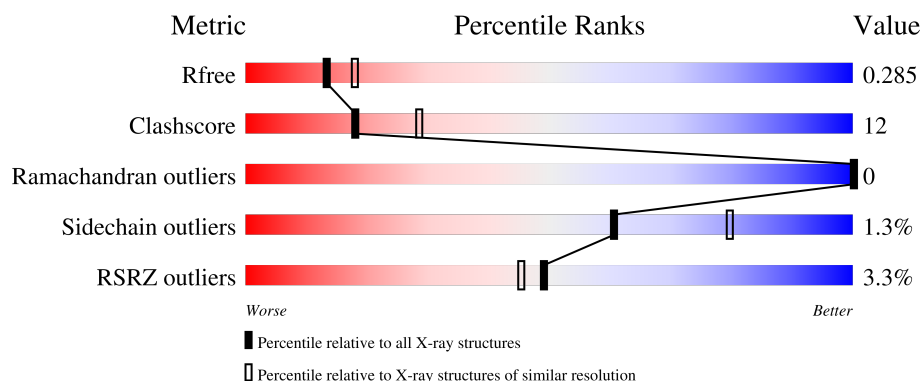
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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}	180053	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	C	233	2% 76% 19% .
1	G	233	4% 67% 29% .
1	H	233	3% 69% 27% .
1	M	233	3% 66% 30% .
1	Q	233	6% 63% 33% .

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Mol	Chain	Length	Quality of chain
1	U	233	4% 63% 32% • •
2	D	215	3% 81% 16% •
2	I	215	3% 82% 15% •
2	L	215	2% 77% 20% •
2	N	215	2% 75% 22% •
2	R	215	3% 73% 24% •
2	V	215	3% 76% 21% •

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 19719 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 Antibody 10E8v4 Fab heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	H	224	Total	C	N	O	S	0	0	0
			1708	1085	284	333	6			
1	C	225	Total	C	N	O	S	0	0	0
			1720	1094	286	334	6			
1	G	224	Total	C	N	O	S	0	0	0
			1711	1088	285	332	6			
1	M	224	Total	C	N	O	S	0	0	0
			1697	1077	284	330	6			
1	Q	223	Total	C	N	O	S	0	0	0
			1707	1087	284	330	6			
1	U	224	Total	C	N	O	S	0	0	0
			1699	1076	285	332	6			

- Molecule 2 is a protein called Antibody 10E8v4 Fab light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	L	209	Total	C	N	O	S	0	0	0
			1569	978	271	316	4			
2	D	209	Total	C	N	O	S	0	0	0
			1569	978	271	316	4			
2	I	210	Total	C	N	O	S	0	0	0
			1575	981	272	318	4			
2	N	209	Total	C	N	O	S	0	0	0
			1573	981	272	316	4			
2	R	209	Total	C	N	O	S	0	0	0
			1550	963	269	314	4			
2	V	209	Total	C	N	O	S	0	0	0
			1559	967	272	316	4			

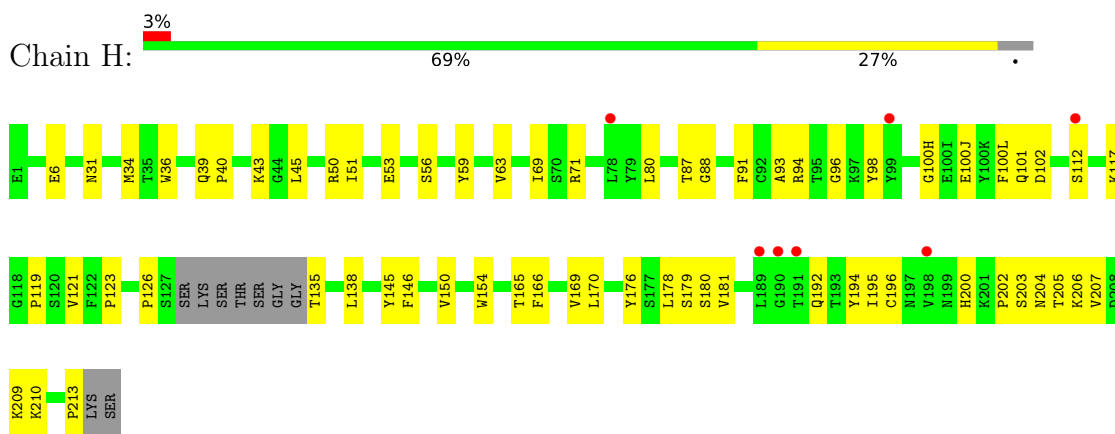
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	H	9	Total 9	O 9	0	0
3	L	14	Total 14	O 14	0	0
3	C	17	Total 17	O 17	0	0
3	D	10	Total 10	O 10	0	0
3	G	7	Total 7	O 7	0	0
3	I	6	Total 6	O 6	0	0
3	M	4	Total 4	O 4	0	0
3	N	10	Total 10	O 10	0	0
3	Q	3	Total 3	O 3	0	0
3	U	1	Total 1	O 1	0	0
3	V	1	Total 1	O 1	0	0

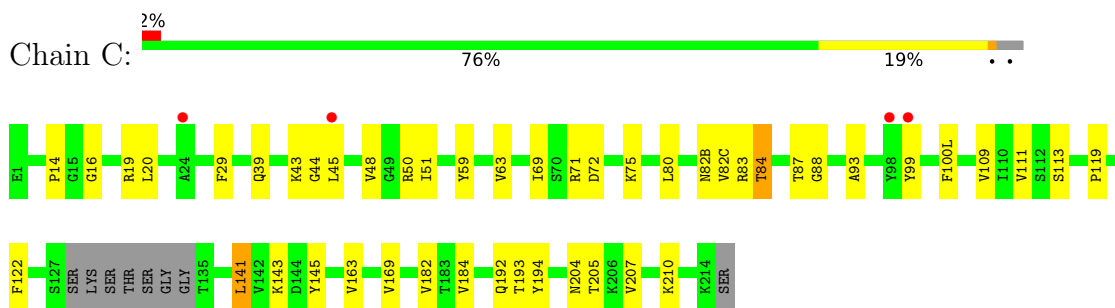
3 Residue-property plots [i](#)

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.

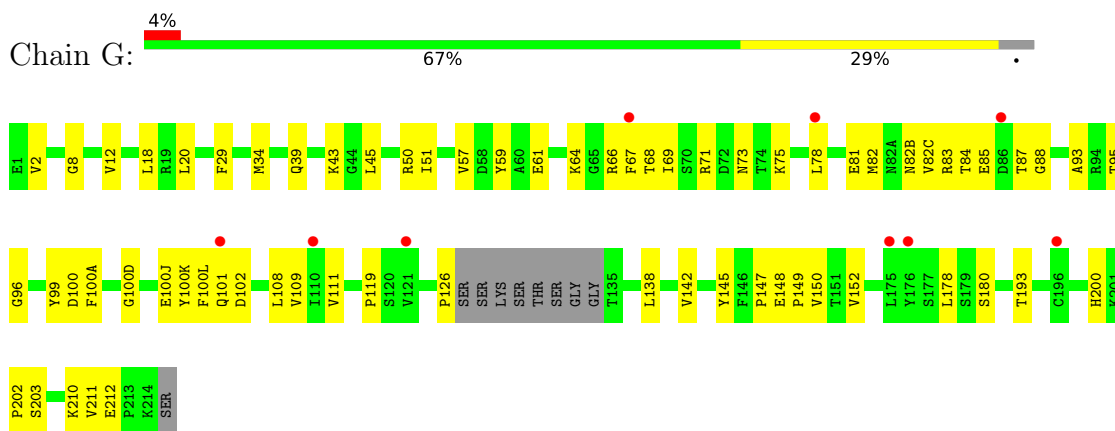
- Molecule 1: Antibody 10E8v4 Fab heavy chain



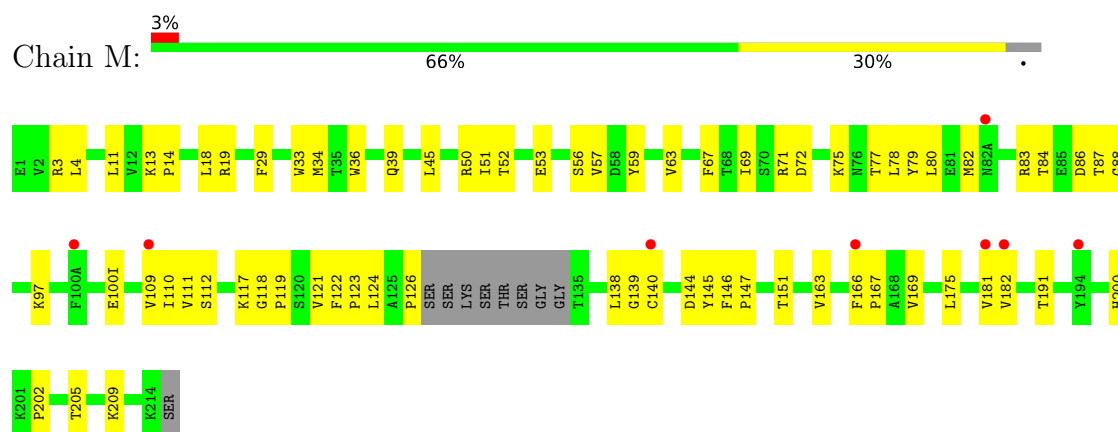
- Molecule 1: Antibody 10E8v4 Fab heavy chain



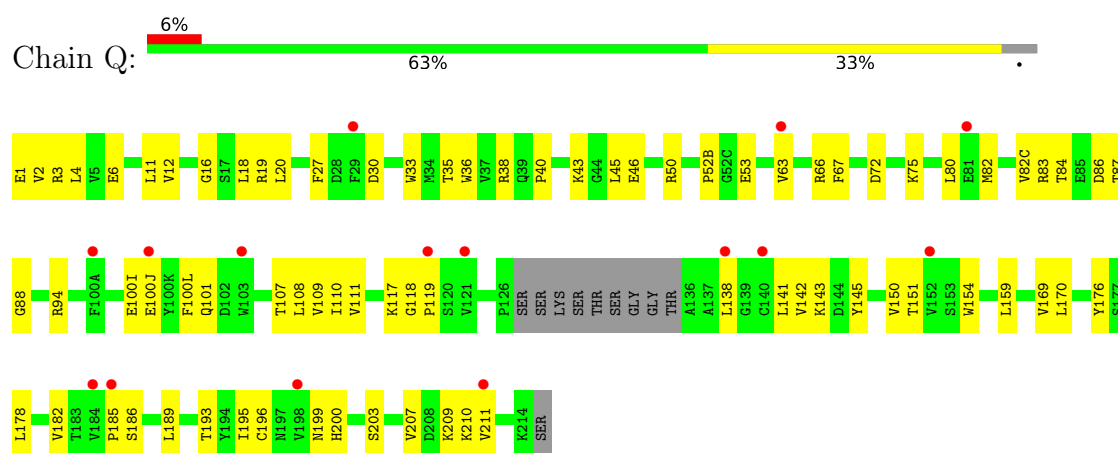
- Molecule 1: Antibody 10E8v4 Fab heavy chain



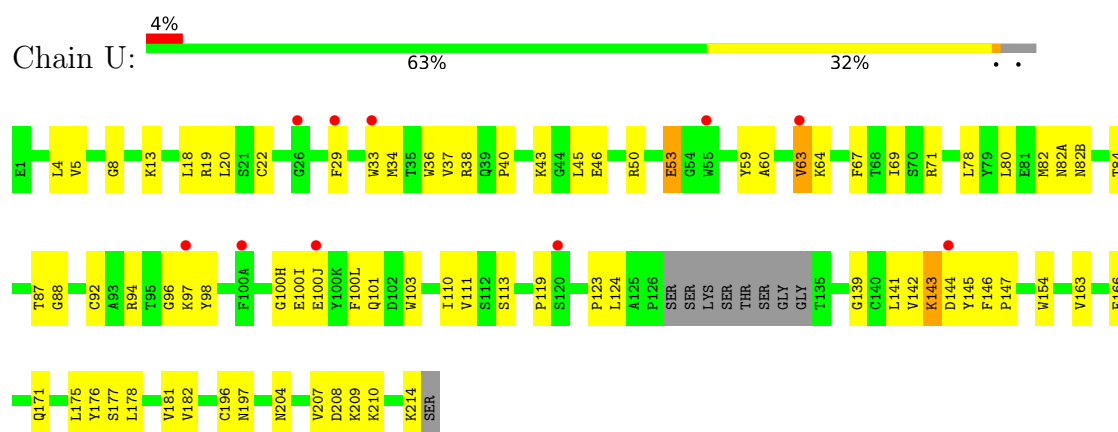
- Molecule 1: Antibody 10E8v4 Fab heavy chain



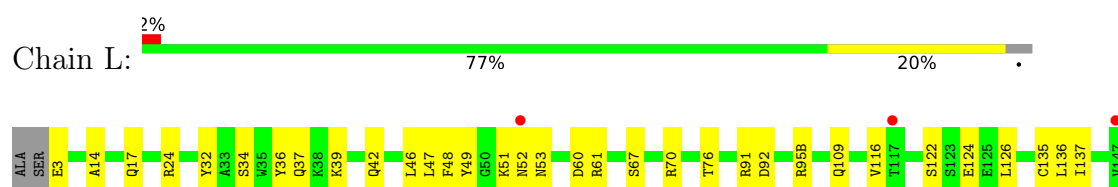
- Molecule 1: Antibody 10E8v4 Fab heavy chain

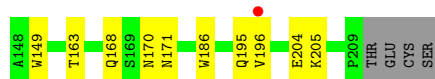


- Molecule 1: Antibody 10E8v4 Fab heavy chain

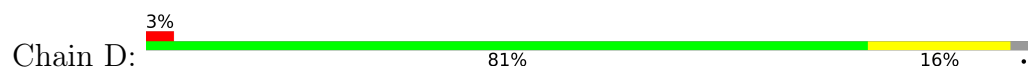


- Molecule 2: Antibody 10E8v4 Fab light chain

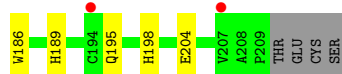
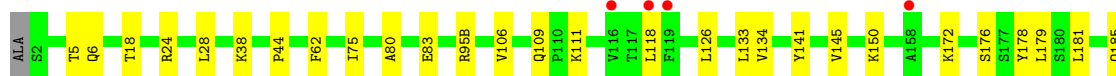
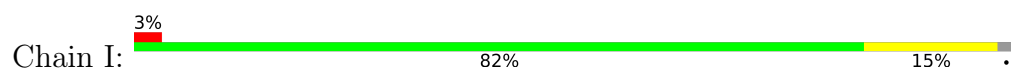




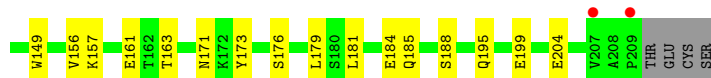
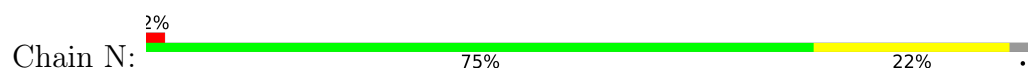
- Molecule 2: Antibody 10E8v4 Fab light chain



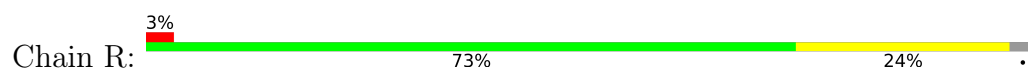
- Molecule 2: Antibody 10E8v4 Fab light chain



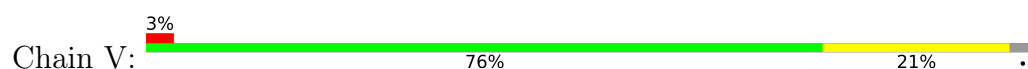
- Molecule 2: Antibody 10E8v4 Fab light chain

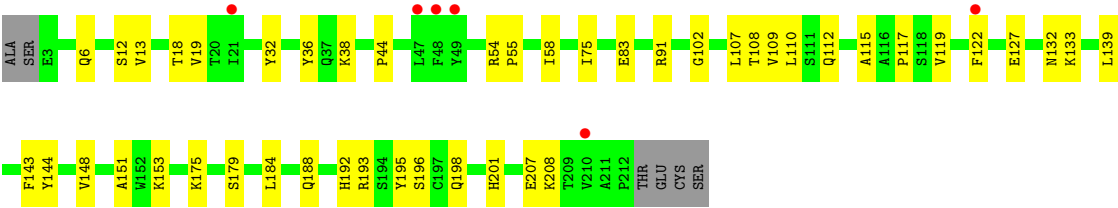


- Molecule 2: Antibody 10E8v4 Fab light chain



- Molecule 2: Antibody 10E8v4 Fab light chain





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	95.78Å 53.80Å 328.53Å 90.00° 90.60° 90.00°	Depositor
Resolution (Å)	35.01 – 2.40 35.01 – 2.40	Depositor EDS
% Data completeness (in resolution range)	78.3 (35.01-2.40) 79.2 (35.01-2.40)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.08 (at 2.39Å)	Xtriage
Refinement program	PHENIX 1.19.1_4122	Depositor
R, R_{free}	0.238 , 0.286 0.241 , 0.285	Depositor DCC
R_{free} test set	1983 reflections (1.48%)	wwPDB-VP
Wilson B-factor (Å ²)	68.3	Xtriage
Anisotropy	0.369	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 52.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.022 for h,-k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	19719	wwPDB-VP
Average B, all atoms (Å ²)	99.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.81% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	C	0.15	0/1767	0.39	1/2406 (0.0%)
1	G	0.20	0/1758	0.38	0/2394
1	H	0.16	0/1755	0.36	1/2391 (0.0%)
1	M	0.16	0/1743	0.38	0/2374
1	Q	0.15	0/1754	0.35	0/2388
1	U	0.22	0/1744	0.46	2/2376 (0.1%)
2	D	0.14	0/1605	0.33	0/2186
2	I	0.13	0/1611	0.30	0/2194
2	L	0.20	0/1605	0.36	0/2186
2	N	0.14	0/1609	0.31	0/2190
2	R	0.14	0/1586	0.34	0/2161
2	V	0.16	0/1593	0.36	0/2169
All	All	0.16	0/20130	0.36	4/27415 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	99	TYR	N-CA-C	7.25	119.39	110.91
1	U	143	LYS	CA-CB-CG	5.57	125.23	114.10
1	U	63	VAL	N-CA-CB	-5.52	100.06	111.76
1	H	63	VAL	N-CA-C	-5.07	108.89	113.71

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1720	0	1655	35	0
1	G	1711	0	1641	53	0
1	H	1708	0	1633	49	0
1	M	1697	0	1619	52	0
1	Q	1707	0	1643	68	0
1	U	1699	0	1627	75	0
2	D	1569	0	1529	19	0
2	I	1575	0	1534	20	0
2	L	1569	0	1529	33	0
2	N	1573	0	1540	32	0
2	R	1550	0	1477	38	0
2	V	1559	0	1519	40	0
3	C	17	0	0	2	0
3	D	10	0	0	2	0
3	G	7	0	0	2	0
3	H	9	0	0	5	0
3	I	6	0	0	0	0
3	L	14	0	0	1	0
3	M	4	0	0	1	0
3	N	10	0	0	2	0
3	Q	3	0	0	0	0
3	U	1	0	0	0	0
3	V	1	0	0	0	0
All	All	19719	0	18946	472	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 12.

All (472) 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:M:169:VAL:HG11	2:N:161:GLU:HB3	1.39	1.03
2:V:112:GLN:HE22	2:V:175:LYS:HD3	1.32	0.94
1:U:97:LYS:HE2	1:U:100(J):GLU:HG2	1.50	0.92
1:M:100(I):GLU:OE1	3:M:301:HOH:O	1.87	0.91
2:D:70:ARG:NH1	3:D:301:HOH:O	2.04	0.90
1:Q:195:ILE:HD11	1:Q:210:LYS:HG2	1.54	0.89
1:H:135:THR:N	3:H:302:HOH:O	2.07	0.88
1:U:59:TYR:HE1	1:U:69:ILE:HG13	1.40	0.86
1:G:193:THR:HB	1:G:210:LYS:HZ1	1.40	0.86
1:Q:141:LEU:HD21	1:Q:143:LYS:HG3	1.57	0.84
1:M:123:PRO:HD3	1:M:209:LYS:HD3	1.60	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:U:181:VAL:HG21	2:V:139:LEU:HD11	1.61	0.79
1:Q:20:LEU:HD11	1:Q:107:THR:HG21	1.65	0.78
1:Q:169:VAL:HG21	2:R:161:GLU:HB3	1.66	0.78
1:H:50:ARG:NH2	3:H:301:HOH:O	2.02	0.77
1:U:33:TRP:HE3	1:U:97:LYS:HZ3	1.32	0.77
1:U:197:ASN:ND2	1:U:208:ASP:OD2	2.17	0.77
1:Q:94:ARG:HD3	1:Q:101:GLN:HE21	1.49	0.76
1:H:195:ILE:HG12	1:H:210:LYS:HG2	1.66	0.76
2:L:3:GLU:N	3:L:301:HOH:O	2.19	0.76
2:R:141:TYR:HD1	2:R:142:PRO:HA	1.50	0.76
1:G:210:LYS:NZ	1:G:212:GLU:OE1	2.21	0.73
1:M:56:SER:OG	2:N:95(B):ARG:NH2	2.20	0.73
1:U:63:VAL:HG13	1:U:67:PHE:HD1	1.54	0.72
1:C:48:VAL:O	3:C:301:HOH:O	2.06	0.72
1:Q:117:LYS:NZ	1:Q:118:GLY:O	2.23	0.71
1:H:169:VAL:HB	2:L:163:THR:HG22	1.72	0.71
2:R:38:LYS:HD3	2:R:44:PRO:HG3	1.72	0.71
2:R:181:LEU:HD22	2:R:185:GLN:HB2	1.71	0.70
1:Q:40:PRO:HB2	1:Q:43:LYS:HD2	1.73	0.70
1:H:31:ASN:OD1	3:H:303:HOH:O	2.10	0.69
1:H:207:VAL:HG22	1:Q:207:VAL:HG22	1.75	0.69
2:D:167:LYS:NZ	2:D:173:TYR:OH	2.25	0.69
1:G:95:THR:HG22	1:G:100(L):PHE:HD1	1.57	0.69
1:M:51:ILE:HG13	1:M:57:VAL:HG22	1.73	0.69
2:N:69:ASN:OD1	2:N:70:ARG:NH1	2.25	0.69
1:U:100(L):PHE:N	2:V:36:TYR:OH	2.25	0.69
2:I:83:GLU:HB2	2:I:106:VAL:HG22	1.75	0.68
1:G:101:GLN:OE1	3:G:301:HOH:O	2.10	0.68
1:M:121:VAL:HG12	1:M:209:LYS:HD2	1.75	0.68
1:U:13:LYS:HG3	1:U:113:SER:HA	1.76	0.68
2:V:83:GLU:HG3	2:V:109:VAL:H	1.58	0.68
2:V:192:HIS:CE1	2:V:195:TYR:HH	2.10	0.68
1:M:126:PRO:HG3	1:M:138:LEU:HB3	1.76	0.68
1:M:167:PRO:HG2	2:N:163:THR:HB	1.76	0.67
2:R:141:TYR:CD1	2:R:142:PRO:HA	2.30	0.67
1:U:100(I):GLU:HA	2:V:91:ARG:HH21	1.60	0.67
1:H:93:ALA:HB1	1:H:100(L):PHE:HB3	1.77	0.67
1:G:39:GLN:HB2	1:G:45:LEU:HD23	1.75	0.67
1:M:63:VAL:HG13	1:M:67:PHE:CD1	2.30	0.66
2:I:150:LYS:HD3	2:I:195:GLN:HE21	1.59	0.66
1:H:200:HIS:ND1	1:H:203:SER:OG	2.26	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:166:PHE:HE1	1:M:181:VAL:HG12	1.60	0.66
2:V:55:PRO:HG2	2:V:58:ILE:HD13	1.77	0.66
1:U:67:PHE:CD2	1:U:82:MET:HA	2.30	0.66
1:G:100(J):GLU:O	3:G:302:HOH:O	2.15	0.65
1:H:165:THR:HG23	1:H:180:SER:HB2	1.77	0.65
1:H:209:LYS:NZ	2:L:124:GLU:OE1	2.30	0.65
2:V:188:GLN:O	2:V:192:HIS:ND1	2.30	0.65
1:U:59:TYR:CE1	1:U:69:ILE:HG13	2.28	0.64
1:U:97:LYS:HE2	1:U:100(J):GLU:CG	2.27	0.64
2:R:55:PRO:HB2	2:R:58:ILE:HD13	1.78	0.64
1:U:20:LEU:HD12	1:U:80:LEU:HD23	1.79	0.64
1:C:192:GLN:OE1	1:C:193:THR:N	2.29	0.64
1:U:50:ARG:HE	1:U:97:LYS:HZ1	1.46	0.64
2:I:24:ARG:HG3	2:I:24:ARG:HH11	1.63	0.64
1:G:68:THR:OG1	1:G:81:GLU:OE2	2.10	0.64
2:N:62:PHE:CE2	2:N:75:ILE:HD11	2.32	0.64
1:U:94:ARG:O	1:U:101:GLN:N	2.31	0.63
2:N:89:SER:OG	3:N:301:HOH:O	2.15	0.63
2:L:14:ALA:HB3	2:L:17:GLN:HG3	1.79	0.63
1:M:122:PHE:CD2	2:N:124:GLU:HG2	2.34	0.63
1:Q:63:VAL:HG13	1:Q:67:PHE:HD1	1.63	0.63
2:D:195:GLN:HG2	2:D:204:GLU:HB2	1.82	0.62
2:N:37:GLN:HB2	2:N:47:LEU:HD11	1.82	0.62
1:U:142:VAL:HB	1:U:178:LEU:HG	1.82	0.62
1:M:122:PHE:HD2	2:N:124:GLU:HG2	1.63	0.62
1:U:33:TRP:CZ2	1:U:53:GLU:HG2	2.35	0.61
2:R:29:ARG:NH1	2:R:69:ASN:HB3	2.16	0.61
1:G:29:PHE:O	1:G:71:ARG:NH2	2.33	0.61
2:I:134:VAL:HG13	2:I:178:TYR:HE1	1.64	0.61
2:N:181:LEU:HG	2:N:185:GLN:HB2	1.82	0.61
1:U:100(J):GLU:HG3	2:V:91:ARG:NH2	2.16	0.61
1:M:18:LEU:HD12	1:M:19:ARG:H	1.66	0.60
1:M:117:LYS:NZ	1:M:118:GLY:O	2.34	0.60
1:U:63:VAL:HG13	1:U:67:PHE:CD1	2.36	0.60
2:L:168:GLN:NE2	2:L:170:ASN:OD1	2.35	0.60
1:H:100(J):GLU:OE1	2:L:91:ARG:NH2	2.31	0.60
1:U:100(I):GLU:OE2	2:V:32:TYR:N	2.35	0.60
1:H:40:PRO:HB2	1:H:43:LYS:HG3	1.84	0.60
2:N:47:LEU:HD23	2:N:58:ILE:HD12	1.83	0.60
1:H:59:TYR:CE1	1:H:69:ILE:HD12	2.37	0.60
1:M:119:PRO:HB3	1:M:145:TYR:HB3	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:R:150:LYS:HE3	2:R:155:PRO:HD3	1.83	0.60
2:N:157:LYS:HD3	2:N:157:LYS:N	2.17	0.59
1:M:39:GLN:HB2	1:M:45:LEU:HD23	1.84	0.59
2:N:38:LYS:NZ	2:N:42:GLN:O	2.35	0.59
1:M:166:PHE:CE1	1:M:181:VAL:HG12	2.37	0.59
2:R:18:THR:HG22	2:R:76:THR:HA	1.83	0.59
2:I:80:ALA:HA	2:I:106:VAL:HG21	1.85	0.59
1:U:67:PHE:HD2	1:U:82:MET:HA	1.68	0.59
1:U:50:ARG:HE	1:U:97:LYS:NZ	2.01	0.59
2:V:12:SER:HB2	2:V:110:LEU:HD21	1.85	0.59
2:V:193:ARG:HD2	2:V:193:ARG:N	2.18	0.59
1:G:119:PRO:HB3	1:G:145:TYR:HB3	1.85	0.58
1:U:34:MET:HB3	1:U:78:LEU:HD22	1.84	0.58
1:C:210:LYS:HB3	1:U:204:ASN:HB3	1.85	0.58
1:U:98:TYR:HB3	1:U:100(H):GLY:HA3	1.86	0.58
2:L:37:GLN:HB2	2:L:47:LEU:HD11	1.86	0.58
1:H:98:TYR:HB3	1:H:100(H):GLY:HA3	1.86	0.58
1:U:96:GLY:O	1:U:97:LYS:HG3	2.04	0.58
2:L:46:LEU:HD11	2:L:49:TYR:HD1	1.68	0.57
1:M:59:TYR:HE1	1:M:69:ILE:HG13	1.69	0.57
1:Q:84:THR:HA	1:Q:111:VAL:HG13	1.86	0.57
1:U:29:PHE:O	1:U:71:ARG:NH2	2.37	0.57
1:G:66:ARG:HH21	1:G:83:ARG:HG2	1.69	0.57
2:L:67:SER:HB2	2:L:70:ARG:NH2	2.20	0.57
1:U:82:MET:C	1:U:82(A):ASN:HD22	2.13	0.57
2:I:185:GLN:O	2:I:189:HIS:ND1	2.38	0.57
2:I:62:PHE:CE2	2:I:75:ILE:HD11	2.40	0.57
2:I:118:LEU:HD11	2:I:133:LEU:HD12	1.87	0.57
1:M:84:THR:HA	1:M:111:VAL:HG13	1.87	0.57
1:Q:67:PHE:CD2	1:Q:82:MET:HA	2.39	0.57
1:U:124:LEU:HB3	2:V:122:PHE:CD1	2.39	0.57
1:G:67:PHE:CZ	1:G:82:MET:HE3	2.40	0.56
2:R:21:ILE:HG12	2:R:102:THR:HG21	1.88	0.56
3:H:301:HOH:O	2:L:95(B):ARG:O	2.17	0.56
2:D:139:ASP:OD1	2:D:170:ASN:ND2	2.39	0.56
1:Q:100(I):GLU:CD	1:Q:100(I):GLU:H	2.13	0.56
2:R:37:GLN:HB2	2:R:47:LEU:HD11	1.87	0.56
2:D:133:LEU:HB2	2:D:179:LEU:HB3	1.87	0.55
1:Q:185:PRO:HG2	1:U:82(B):ASN:ND2	2.21	0.55
1:Q:18:LEU:HD12	1:Q:19:ARG:H	1.72	0.55
2:R:38:LYS:HB3	2:R:85:ASP:OD1	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:U:163:VAL:HG12	1:U:182:VAL:HG12	1.87	0.55
1:M:83:ARG:O	1:M:111:VAL:HG11	2.07	0.55
1:Q:170:LEU:HD13	1:Q:176:TYR:CE2	2.42	0.55
1:M:36:TRP:NE1	1:M:80:LEU:HB2	2.22	0.55
2:N:82:ASP:O	2:N:86:TYR:OH	2.17	0.54
1:G:61:GLU:HA	1:G:64:LYS:HE2	1.89	0.54
2:N:156:VAL:C	2:N:157:LYS:HD3	2.33	0.54
2:V:119:VAL:HG12	2:V:208:LYS:HD2	1.90	0.54
1:H:36:TRP:CE2	1:H:80:LEU:HB2	2.43	0.54
1:C:119:PRO:HB3	1:C:145:TYR:HB3	1.90	0.54
1:C:39:GLN:HB2	1:C:45:LEU:HD23	1.88	0.54
2:I:24:ARG:HG3	2:I:24:ARG:NH1	2.22	0.54
1:C:141:LEU:HD21	1:C:143:LYS:HD3	1.90	0.53
1:G:200:HIS:HD1	1:G:203:SER:HG	1.55	0.53
1:C:43:LYS:HE3	1:C:44:GLY:H	1.72	0.53
2:D:123:SER:HA	2:D:126:LEU:HD13	1.90	0.53
1:Q:145:TYR:OH	1:Q:178:LEU:HD23	2.09	0.53
1:G:138:LEU:HB2	1:G:211:VAL:HG11	1.90	0.53
1:M:88:GLY:O	1:M:109:VAL:N	2.40	0.53
1:G:71:ARG:HE	1:G:73:ASN:HD21	1.57	0.53
2:V:132:ASN:O	2:V:133:LYS:HE2	2.09	0.53
2:D:12:SER:HB2	2:D:107:LEU:HD11	1.90	0.53
1:G:147:PRO:HD2	1:G:202:PRO:HB3	1.91	0.53
2:R:148:ALA:HB3	2:R:195:GLN:HE21	1.73	0.53
1:M:200:HIS:CD2	1:M:202:PRO:HD2	2.44	0.52
1:Q:45:LEU:HD12	2:R:87:TYR:CD1	2.44	0.52
2:V:83:GLU:HG3	2:V:108:THR:HA	1.90	0.52
1:C:205:THR:HG22	1:U:209:LYS:HG2	1.92	0.52
1:H:31:ASN:HA	3:H:303:HOH:O	2.10	0.52
1:Q:63:VAL:HG13	1:Q:67:PHE:CD1	2.42	0.52
1:Q:6:GLU:OE1	1:Q:6:GLU:N	2.43	0.52
1:U:50:ARG:NH2	1:U:100(J):GLU:OE2	2.43	0.52
2:L:46:LEU:HD11	2:L:49:TYR:CD1	2.45	0.52
1:U:67:PHE:CE2	1:U:82:MET:HB3	2.45	0.52
2:V:184:LEU:HD21	2:V:195:TYR:OH	2.10	0.52
2:N:133:LEU:HD12	2:N:179:LEU:HD23	1.92	0.51
1:M:36:TRP:CE2	1:M:80:LEU:HB2	2.45	0.51
1:M:77:THR:OG1	1:M:79:TYR:HE1	1.92	0.51
2:V:119:VAL:HA	2:V:139:LEU:O	2.10	0.51
1:G:148:GLU:HB3	1:G:149:PRO:HA	1.92	0.51
2:N:18:THR:HA	2:N:75:ILE:O	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:166:PHE:HE1	1:H:181:VAL:HG12	1.75	0.51
1:Q:83:ARG:O	1:Q:111:VAL:HG11	2.10	0.51
1:Q:154:TRP:CH2	1:Q:196:CYS:HB3	2.46	0.51
1:U:154:TRP:CH2	1:U:196:CYS:HB3	2.46	0.51
2:V:119:VAL:O	2:V:208:LYS:NZ	2.23	0.51
1:Q:4:LEU:HD21	1:Q:27:PHE:HZ	1.76	0.51
1:H:126:PRO:HD2	1:H:213:PRO:HA	1.93	0.51
1:H:170:LEU:HD12	1:H:176:TYR:CZ	2.46	0.50
2:I:172:LYS:HZ2	2:I:172:LYS:HB3	1.75	0.50
1:U:119:PRO:HB3	1:U:145:TYR:HB3	1.94	0.50
1:Q:35:THR:HG21	1:Q:100(L):PHE:CD1	2.46	0.50
2:R:38:LYS:NZ	2:R:39:LYS:O	2.43	0.50
1:H:138:LEU:HD21	1:H:194:TYR:CD1	2.46	0.50
2:L:36:TYR:CE2	2:L:46:LEU:HD23	2.46	0.50
1:H:6:GLU:OE2	1:H:91:PHE:HA	2.10	0.50
1:M:59:TYR:CE1	1:M:69:ILE:HG13	2.45	0.50
1:Q:119:PRO:HB3	1:Q:145:TYR:HB3	1.92	0.50
1:U:60:ALA:O	1:U:64:LYS:N	2.44	0.50
2:V:38:LYS:HD3	2:V:44:PRO:HG3	1.93	0.50
2:R:54:ARG:CZ	2:R:60:ASP:HA	2.42	0.50
1:U:33:TRP:NE1	1:U:53:GLU:OE1	2.44	0.50
1:Q:67:PHE:HD2	1:Q:82:MET:HA	1.77	0.50
1:C:122:PHE:HB2	1:C:141:LEU:HD22	1.94	0.50
1:Q:200:HIS:ND1	1:Q:203:SER:OG	2.33	0.49
2:N:184:GLU:OE1	2:N:188:SER:HB3	2.11	0.49
2:R:68:GLY:HA3	2:R:70:ARG:NH1	2.27	0.49
1:G:193:THR:HB	1:G:210:LYS:NZ	2.19	0.49
1:U:84:THR:HA	1:U:111:VAL:HB	1.95	0.49
2:V:115:ALA:HB3	2:V:144:TYR:N	2.26	0.49
1:G:93:ALA:HB1	1:G:100(L):PHE:HB3	1.94	0.49
2:I:38:LYS:HD3	2:I:44:PRO:HG3	1.95	0.49
2:I:195:GLN:OE1	2:I:204:GLU:HB3	2.12	0.49
1:M:166:PHE:CD2	2:N:176:SER:HB3	2.48	0.49
1:Q:141:LEU:HD12	2:R:134:VAL:HG21	1.95	0.49
2:V:6:GLN:HE21	2:V:102:GLY:HA3	1.78	0.49
2:V:188:GLN:HB3	2:V:192:HIS:HE1	1.77	0.49
1:H:56:SER:HB2	2:L:95(B):ARG:HH21	1.76	0.49
1:Q:82:MET:HE1	1:Q:109:VAL:HG21	1.95	0.49
1:Q:185:PRO:HG2	1:U:82(B):ASN:HD21	1.78	0.49
1:U:33:TRP:HZ2	1:U:53:GLU:HG2	1.78	0.49
2:V:13:VAL:HG21	2:V:19:VAL:HG22	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:63:VAL:HG13	1:Q:67:PHE:HB2	1.95	0.48
1:U:22:CYS:HB3	1:U:78:LEU:HB3	1.94	0.48
2:V:151:ALA:HB3	2:V:198:GLN:HB2	1.95	0.48
1:Q:2:VAL:C	1:Q:3:ARG:HD3	2.37	0.48
1:H:192:GLN:HB3	1:H:194:TYR:CE2	2.49	0.48
1:M:3:ARG:HB2	1:M:3:ARG:CZ	2.43	0.48
2:L:116:VAL:O	2:L:205:LYS:HE3	2.14	0.48
2:D:111:LYS:HD2	2:D:111:LYS:O	2.13	0.48
2:R:6:GLN:HE21	2:R:99:GLY:HA3	1.78	0.48
2:L:60:ASP:OD1	2:L:60:ASP:N	2.45	0.48
2:D:32:TYR:OH	2:D:51:LYS:HE2	2.13	0.48
1:G:50:ARG:NH2	2:I:95(B):ARG:O	2.46	0.48
2:N:92:ASP:OD1	2:N:92:ASP:N	2.44	0.48
1:G:99:TYR:CE1	1:G:100(D):GLY:HA2	2.49	0.48
1:M:13:LYS:HG3	1:M:14:PRO:HD2	1.95	0.48
1:C:141:LEU:HD12	2:D:134:VAL:HG21	1.95	0.48
1:M:87:THR:HG23	1:M:110:ILE:HA	1.96	0.48
1:Q:186:SER:HA	1:Q:189:LEU:HG	1.95	0.48
1:U:181:VAL:HG21	2:V:139:LEU:CD1	2.40	0.48
2:I:133:LEU:HB2	2:I:179:LEU:HB3	1.96	0.48
2:N:143:GLY:HA3	2:N:173:TYR:CD2	2.49	0.48
1:U:50:ARG:HH21	1:U:100(J):GLU:CD	2.22	0.48
1:G:150:VAL:HG12	1:G:200:HIS:CD2	2.48	0.48
1:Q:53:GLU:N	1:Q:53:GLU:OE2	2.47	0.48
2:L:39:LYS:HB2	2:L:42:GLN:HE21	1.79	0.47
2:L:137:ILE:HG12	2:L:196:VAL:HG21	1.96	0.47
1:Q:141:LEU:CD2	1:Q:143:LYS:HG3	2.37	0.47
1:Q:159:LEU:HD21	1:Q:182:VAL:HG11	1.96	0.47
2:R:137:ILE:HD12	2:R:175:ALA:HB3	1.96	0.47
1:H:56:SER:HB2	2:L:95(B):ARG:NH2	2.29	0.47
1:G:100:ASP:O	1:G:100(A):PHE:HB3	2.14	0.47
1:U:4:LEU:HD12	1:U:103:TRP:C	2.39	0.47
1:G:34:MET:HE3	1:G:34:MET:HA	1.96	0.47
1:G:82(B):ASN:OD1	1:G:83:ARG:NH2	2.42	0.47
2:L:61:ARG:HB2	2:L:76:THR:O	2.14	0.47
1:G:8:GLY:O	1:G:18:LEU:HD11	2.15	0.47
2:I:134:VAL:HG13	2:I:178:TYR:CE1	2.48	0.47
2:D:181:LEU:HD11	2:D:192:TYR:CZ	2.50	0.47
1:H:154:TRP:CH2	1:H:196:CYS:HB3	2.49	0.47
2:L:126:LEU:HD21	2:L:186:TRP:HD1	1.79	0.47
1:C:207:VAL:HG13	1:U:207:VAL:HG22	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:48:PHE:CE2	2:N:54:ARG:HB2	2.49	0.47
1:U:144:ASP:OD1	1:U:175:LEU:HG	2.14	0.47
1:H:204:ASN:HB3	1:Q:210:LYS:HG3	1.96	0.47
2:D:122:SER:O	2:D:126:LEU:HD12	2.15	0.47
2:D:173:TYR:OH	3:D:302:HOH:O	2.12	0.47
1:H:200:HIS:CE1	1:H:203:SER:HG	2.28	0.47
1:C:184:VAL:HG11	1:C:194:TYR:OH	2.14	0.47
2:V:193:ARG:HD2	2:V:193:ARG:H	1.79	0.47
1:G:2:VAL:HG11	1:G:102:ASP:OD2	2.14	0.47
1:G:20:LEU:HD21	1:G:82:MET:SD	2.55	0.47
1:Q:94:ARG:HD3	1:Q:101:GLN:NE2	2.24	0.47
2:R:195:GLN:OE1	2:R:197:THR:HG23	2.14	0.47
1:U:143:LYS:HZ1	1:U:144:ASP:CG	2.23	0.47
1:C:141:LEU:HD21	1:C:143:LYS:HG3	1.97	0.46
1:H:200:HIS:NE2	1:H:202:PRO:HG2	2.30	0.46
1:U:18:LEU:HD12	1:U:19:ARG:H	1.80	0.46
1:U:87:THR:HA	1:U:88:GLY:HA2	1.64	0.46
1:C:87:THR:HA	1:C:88:GLY:HA2	1.66	0.46
1:G:87:THR:HA	1:G:88:GLY:HA2	1.64	0.46
1:M:3:ARG:HB2	1:M:3:ARG:NH1	2.29	0.46
2:V:198:GLN:OE1	2:V:207:GLU:HB3	2.15	0.46
1:H:123:PRO:HD3	1:H:209:LYS:HE2	1.97	0.46
2:L:24:ARG:HE	2:L:70:ARG:HG2	1.80	0.46
2:L:48:PHE:CE2	2:L:52:ASN:HA	2.50	0.46
1:C:163:VAL:HG12	1:C:182:VAL:HG22	1.97	0.46
1:Q:87:THR:HG23	1:Q:110:ILE:HA	1.97	0.46
2:L:122:SER:O	2:L:126:LEU:HD12	2.16	0.46
1:G:108:LEU:HD12	1:G:109:VAL:N	2.30	0.46
1:M:50:ARG:HH11	1:M:52:THR:HG23	1.79	0.46
1:Q:100(I):GLU:OE1	2:R:32:TYR:N	2.49	0.46
2:V:153:LYS:HB3	2:V:196:SER:HB2	1.98	0.46
1:C:204:ASN:ND2	1:U:210:LYS:HE2	2.31	0.46
1:M:33:TRP:CE2	1:M:52:THR:HG22	2.50	0.46
1:Q:195:ILE:HD13	1:Q:195:ILE:HA	1.82	0.46
1:U:145:TYR:CZ	1:U:178:LEU:HD23	2.50	0.46
2:L:49:TYR:O	2:L:53:ASN:HB2	2.16	0.46
1:G:34:MET:HB3	1:G:78:LEU:HD22	1.97	0.46
1:Q:33:TRP:NE1	1:Q:53:GLU:OE1	2.47	0.46
2:R:4:LEU:HD12	2:R:4:LEU:H	1.80	0.46
1:H:96:GLY:HA3	1:H:101:GLN:HE21	1.81	0.45
2:L:135:CYS:HB2	2:L:149:TRP:CH2	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:34:MET:HB3	1:M:78:LEU:HD13	1.98	0.45
1:Q:138:LEU:HD13	1:Q:211:VAL:HG11	1.98	0.45
1:Q:150:VAL:HG23	1:Q:200:HIS:HD2	1.81	0.45
1:Q:151:THR:HG23	1:Q:199:ASN:HB3	1.98	0.45
2:N:195:GLN:HG2	2:N:204:GLU:HB2	1.98	0.45
1:Q:154:TRP:CZ3	1:Q:196:CYS:HB3	2.51	0.45
1:U:171:GLN:OE1	1:U:177:SER:OG	2.33	0.45
1:G:84:THR:HA	1:G:111:VAL:HG11	1.99	0.45
1:G:200:HIS:CD2	1:G:202:PRO:HD2	2.52	0.45
2:L:3:GLU:N	2:L:3:GLU:OE1	2.50	0.45
1:G:200:HIS:ND1	1:G:203:SER:OG	2.44	0.45
2:I:18:THR:HA	2:I:75:ILE:O	2.17	0.45
2:N:135:CYS:HB2	2:N:149:TRP:CH2	2.51	0.45
1:U:33:TRP:HE3	1:U:97:LYS:NZ	2.06	0.45
1:U:124:LEU:HD12	1:U:139:GLY:C	2.42	0.45
1:M:200:HIS:HB3	1:M:205:THR:OG1	2.16	0.45
2:D:181:LEU:HD13	2:D:185:GLN:HB2	1.98	0.45
1:M:29:PHE:O	1:M:71:ARG:NH2	2.49	0.45
1:M:53:GLU:N	1:M:53:GLU:OE1	2.50	0.45
1:U:8:GLY:O	1:U:18:LEU:HD11	2.16	0.45
2:R:134:VAL:HG22	2:R:178:TYR:CD1	2.52	0.45
2:R:140:PHE:CE1	2:R:145:VAL:HG13	2.51	0.45
1:U:214:LYS:HE2	1:U:214:LYS:HB3	1.78	0.45
1:H:39:GLN:HB2	1:H:45:LEU:HD23	1.98	0.45
1:H:204:ASN:HB3	1:Q:210:LYS:CG	2.47	0.45
1:U:37:VAL:HG11	1:U:45:LEU:HD13	1.97	0.45
1:U:146:PHE:HA	1:U:147:PRO:HA	1.78	0.45
2:V:54:ARG:HD2	2:V:58:ILE:HG22	1.99	0.45
2:D:135:CYS:HB2	2:D:149:TRP:CH2	2.52	0.45
1:M:146:PHE:HB2	1:M:175:LEU:HD22	1.98	0.45
2:R:85:ASP:HB3	2:R:103:LYS:HD3	1.99	0.45
2:N:4:LEU:HD22	2:N:23:CYS:SG	2.58	0.44
2:N:109:GLN:NE2	2:N:171:ASN:HB3	2.32	0.44
1:Q:143:LYS:HD2	2:R:132:THR:HG21	1.98	0.44
1:U:97:LYS:CE	1:U:100(J):GLU:HG2	2.36	0.44
1:U:123:PRO:HG3	1:U:209:LYS:NZ	2.31	0.44
1:H:121:VAL:HB	1:H:207:VAL:HG11	2.00	0.44
1:H:206:LYS:HB3	1:H:206:LYS:HE3	1.80	0.44
1:M:124:LEU:HD12	1:M:140:CYS:N	2.33	0.44
1:Q:11:LEU:HA	1:Q:110:ILE:O	2.17	0.44
1:Q:66:ARG:NH2	1:Q:86:ASP:OD2	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:U:145:TYR:O	1:U:176:TYR:HB2	2.18	0.44
1:C:29:PHE:O	1:C:71:ARG:NH2	2.51	0.44
2:R:167:LYS:HE2	2:R:167:LYS:HB3	1.56	0.44
1:M:52:THR:OG1	1:M:56:SER:N	2.50	0.44
1:Q:4:LEU:HD21	1:Q:27:PHE:CZ	2.53	0.44
2:R:35:TRP:CH2	2:R:88:CYS:HB3	2.52	0.44
1:G:59:TYR:HB2	1:G:64:LYS:HG3	1.99	0.44
1:G:142:VAL:HB	1:G:178:LEU:HD12	2.00	0.44
1:M:67:PHE:CE2	1:M:82:MET:HE3	2.53	0.44
1:Q:142:VAL:HB	1:Q:178:LEU:HG	1.98	0.44
2:V:83:GLU:CG	2:V:108:THR:HA	2.48	0.44
2:I:109:GLN:HB2	2:I:141:TYR:CE2	2.53	0.44
1:Q:100(J):GLU:HG3	2:R:91:ARG:NH1	2.33	0.44
1:H:87:THR:HA	1:H:88:GLY:HA2	1.72	0.44
1:M:147:PRO:O	1:M:200:HIS:NE2	2.37	0.44
2:V:192:HIS:HD1	2:V:195:TYR:HH	1.53	0.44
1:C:143:LYS:HB3	1:C:143:LYS:HE2	1.72	0.43
1:U:166:PHE:CD2	2:V:179:SER:HB3	2.52	0.43
1:G:96:GLY:HA3	1:G:100(K):TYR:CZ	2.53	0.43
2:L:195:GLN:CG	2:L:204:GLU:HB3	2.48	0.43
1:U:110:ILE:HD13	1:U:176:TYR:OH	2.18	0.43
2:L:36:TYR:CZ	2:L:46:LEU:HD23	2.53	0.43
2:R:140:PHE:HZ	2:R:165:PRO:HB3	1.83	0.43
1:H:119:PRO:HB3	1:H:145:TYR:HB3	2.00	0.43
1:Q:1:GLU:HA	1:Q:3:ARG:NH1	2.33	0.43
1:U:40:PRO:HB2	1:U:43:LYS:HB2	2.01	0.43
1:C:19:ARG:NH1	3:C:309:HOH:O	2.51	0.43
1:H:94:ARG:NH1	1:H:102:ASP:OD2	2.51	0.43
1:M:86:ASP:N	1:M:86:ASP:OD1	2.48	0.43
1:M:138:LEU:O	1:M:182:VAL:HG22	2.19	0.43
1:G:51:ILE:HG13	1:G:57:VAL:HG22	1.99	0.43
2:N:125:GLU:OE2	2:N:132:THR:HG23	2.19	0.43
1:C:14:PRO:HD2	1:C:113:SER:HB3	2.00	0.43
2:R:114:PRO:HB3	2:R:140:PHE:HB3	2.00	0.43
1:U:38:ARG:NE	1:U:46:GLU:OE1	2.31	0.43
1:C:82(B):ASN:O	1:C:83:ARG:HD3	2.18	0.42
1:G:43:LYS:HZ3	1:G:43:LYS:HB2	1.84	0.42
1:G:126:PRO:HD3	1:G:138:LEU:HB3	2.00	0.42
1:U:34:MET:O	1:U:50:ARG:HG2	2.19	0.42
1:H:138:LEU:HD21	1:H:194:TYR:HD1	1.84	0.42
1:H:205:THR:HG22	1:Q:209:LYS:HE2	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:34:MET:O	1:H:50:ARG:HG2	2.20	0.42
1:H:53:GLU:HB3	1:G:100(A):PHE:HE1	1.84	0.42
1:C:88:GLY:HA2	1:C:109:VAL:O	2.19	0.42
1:M:144:ASP:HA	1:M:175:LEU:HB3	2.01	0.42
1:M:166:PHE:CD1	1:M:166:PHE:N	2.87	0.42
1:C:72:ASP:CG	1:C:75:LYS:HG3	2.44	0.42
1:Q:36:TRP:CE2	1:Q:80:LEU:HB2	2.55	0.42
2:R:6:GLN:NE2	2:R:88:CYS:SG	2.92	0.42
2:L:32:TYR:OH	2:L:51:LYS:HD2	2.20	0.42
1:C:43:LYS:HA	1:C:43:LYS:HD2	1.93	0.42
1:Q:30:ASP:O	1:Q:52(B):PRO:HD3	2.20	0.42
1:Q:195:ILE:HD13	1:Q:210:LYS:HA	2.02	0.42
1:C:84:THR:HA	1:C:111:VAL:HB	2.01	0.42
1:G:59:TYR:HE1	1:G:69:ILE:HG13	1.83	0.42
2:I:133:LEU:HD23	2:I:181:LEU:HD23	2.01	0.42
2:N:199:GLU:OE2	2:N:199:GLU:HA	2.19	0.42
1:Q:108:LEU:HD12	1:Q:109:VAL:N	2.34	0.42
1:U:34:MET:HE3	1:U:34:MET:HA	2.02	0.42
1:G:51:ILE:HD13	1:G:71:ARG:HD2	2.02	0.42
2:V:117:PRO:HD3	2:V:201:HIS:CD2	2.55	0.42
2:V:193:ARG:H	2:V:193:ARG:CD	2.32	0.42
2:L:195:GLN:HG2	2:L:204:GLU:HB3	2.01	0.42
1:G:145:TYR:CE1	1:G:150:VAL:HG13	2.55	0.42
1:M:87:THR:HA	1:M:88:GLY:HA2	1.64	0.42
1:U:124:LEU:HD21	1:U:141:LEU:HB2	2.02	0.42
1:C:169:VAL:HB	2:D:163:THR:HG22	2.02	0.42
2:I:145:VAL:HG12	2:I:198:HIS:HB2	2.01	0.41
1:Q:87:THR:HA	1:Q:88:GLY:HA2	1.67	0.41
1:Q:170:LEU:HD13	1:Q:176:TYR:HE2	1.85	0.41
1:U:5:VAL:O	1:U:22:CYS:HA	2.20	0.41
1:H:154:TRP:CZ3	1:H:196:CYS:HB3	2.55	0.41
1:C:82(B):ASN:OD1	1:C:83:ARG:NH1	2.53	0.41
2:V:193:ARG:N	2:V:193:ARG:CD	2.83	0.41
1:H:112:SER:HB3	1:H:146:PHE:HE2	1.85	0.41
2:D:182:THR:OG1	2:D:185:GLN:HG3	2.20	0.41
1:M:146:PHE:HA	1:M:147:PRO:HA	1.80	0.41
1:H:112:SER:CB	1:H:146:PHE:HE2	2.33	0.41
1:M:75:LYS:HB2	1:M:77:THR:HG23	2.03	0.41
1:Q:50:ARG:HB3	1:Q:50:ARG:CZ	2.50	0.41
2:N:32:TYR:OH	2:N:51:LYS:HE2	2.21	0.41
1:Q:16:GLY:O	1:Q:82(C):VAL:HG23	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:124:LEU:HD12	1:M:139:GLY:C	2.45	0.41
2:N:51:LYS:NZ	3:N:302:HOH:O	2.21	0.41
2:R:26:ASP:O	2:R:29:ARG:HG3	2.20	0.41
1:C:16:GLY:O	1:C:82(C):VAL:HG23	2.20	0.41
1:C:59:TYR:CE2	1:C:69:ILE:HD12	2.55	0.41
2:D:37:GLN:HB2	2:D:47:LEU:HD11	2.02	0.41
1:G:84:THR:HA	1:G:111:VAL:CG1	2.50	0.41
1:M:4:LEU:HA	1:M:4:LEU:HD23	1.80	0.41
1:M:72:ASP:OD1	1:M:75:LYS:HG3	2.21	0.41
1:U:18:LEU:HD12	1:U:19:ARG:N	2.36	0.41
2:L:136:LEU:HD23	2:L:136:LEU:HA	1.91	0.41
2:N:47:LEU:HD22	2:N:62:PHE:CE2	2.56	0.41
2:N:136:LEU:HD23	2:N:136:LEU:HA	1.68	0.41
2:L:92:ASP:OD1	2:L:92:ASP:N	2.48	0.41
1:C:83:ARG:HD3	1:C:83:ARG:N	2.36	0.41
1:C:93:ALA:HB1	1:C:100(L):PHE:HB3	2.02	0.41
1:C:204:ASN:HD22	1:U:210:LYS:HE2	1.86	0.41
2:D:180:SER:O	2:D:181:LEU:HD23	2.20	0.41
1:G:85:GLU:N	1:G:85:GLU:CD	2.79	0.41
1:G:119:PRO:HB2	1:G:142:VAL:HG13	2.03	0.41
1:Q:72:ASP:OD1	1:Q:75:LYS:N	2.48	0.41
1:Q:82:MET:CE	1:Q:109:VAL:HG21	2.51	0.41
2:R:95(B):ARG:H	2:R:95(B):ARG:HG2	1.56	0.41
1:U:209:LYS:NZ	2:V:127:GLU:OE2	2.48	0.41
2:L:109:GLN:OE1	2:L:171:ASN:HB3	2.21	0.41
1:G:152:VAL:HG11	1:G:180:SER:OG	2.20	0.41
1:Q:40:PRO:CB	1:Q:43:LYS:HD2	2.47	0.41
2:V:18:THR:HA	2:V:75:ILE:O	2.21	0.41
1:H:101:GLN:H	1:H:101:GLN:HG3	1.64	0.40
1:H:126:PRO:HG3	1:H:138:LEU:CD2	2.51	0.40
2:I:126:LEU:HD11	2:I:186:TRP:CD1	2.56	0.40
1:Q:38:ARG:NE	1:Q:46:GLU:OE1	2.53	0.40
2:R:181:LEU:HD11	2:R:192:TYR:OH	2.21	0.40
2:V:83:GLU:HG2	2:V:107:LEU:O	2.20	0.40
1:H:117:LYS:HE2	1:H:117:LYS:HB3	1.82	0.40
1:C:43:LYS:CE	1:C:44:GLY:H	2.33	0.40
1:G:12:VAL:O	1:G:111:VAL:HA	2.21	0.40
1:Q:12:VAL:O	1:Q:111:VAL:HA	2.22	0.40
1:U:36:TRP:CZ3	1:U:92:CYS:HB3	2.56	0.40
1:U:50:ARG:NE	1:U:97:LYS:NZ	2.69	0.40
1:H:51:ILE:HD13	1:H:71:ARG:HD2	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:150:VAL:HG21	1:H:178:LEU:HD21	2.03	0.40
1:C:50:ARG:HG2	1:C:51:ILE:N	2.35	0.40
1:G:82(B):ASN:CG	1:G:83:ARG:HH21	2.28	0.40
1:G:82(C):VAL:C	1:G:83:ARG:HD3	2.47	0.40
2:R:109:GLN:CD	2:R:141:TYR:HE2	2.30	0.40
1:C:20:LEU:HD12	1:C:80:LEU:HD23	2.02	0.40
1:G:75:LYS:HB2	1:G:75:LYS:HE2	1.69	0.40
1:G:147:PRO:HD2	1:G:202:PRO:CB	2.49	0.40
1:Q:100(I):GLU:OE2	2:R:32:TYR:HB2	2.21	0.40
2:V:117:PRO:HA	2:V:143:PHE:HB3	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	221/233 (95%)	216 (98%)	5 (2%)	0	100	100
1	G	220/233 (94%)	214 (97%)	6 (3%)	0	100	100
1	H	220/233 (94%)	216 (98%)	4 (2%)	0	100	100
1	M	220/233 (94%)	218 (99%)	2 (1%)	0	100	100
1	Q	219/233 (94%)	217 (99%)	2 (1%)	0	100	100
1	U	220/233 (94%)	216 (98%)	4 (2%)	0	100	100
2	D	207/215 (96%)	203 (98%)	4 (2%)	0	100	100
2	I	208/215 (97%)	198 (95%)	10 (5%)	0	100	100
2	L	207/215 (96%)	201 (97%)	6 (3%)	0	100	100
2	N	207/215 (96%)	202 (98%)	5 (2%)	0	100	100
2	R	207/215 (96%)	204 (99%)	3 (1%)	0	100	100
2	V	207/215 (96%)	203 (98%)	4 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	2563/2688 (95%)	2508 (98%)	55 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	C	188/194 (97%)	185 (98%)	3 (2%)	55	76
1	G	186/194 (96%)	186 (100%)	0	100	100
1	H	186/194 (96%)	185 (100%)	1 (0%)	81	91
1	M	183/194 (94%)	177 (97%)	6 (3%)	33	55
1	Q	186/194 (96%)	185 (100%)	1 (0%)	81	91
1	U	184/194 (95%)	183 (100%)	1 (0%)	81	91
2	D	174/180 (97%)	168 (97%)	6 (3%)	32	54
2	I	175/180 (97%)	170 (97%)	5 (3%)	37	60
2	L	174/180 (97%)	173 (99%)	1 (1%)	78	89
2	N	175/180 (97%)	173 (99%)	2 (1%)	65	82
2	R	167/180 (93%)	165 (99%)	2 (1%)	63	81
2	V	172/180 (96%)	171 (99%)	1 (1%)	78	89
All	All	2150/2244 (96%)	2121 (99%)	29 (1%)	61	80

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

Mol	Chain	Res	Type
1	H	179	SER
2	L	34	SER
1	C	63	VAL
1	C	84	THR
1	C	141	LEU
2	D	11	VAL

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Mol	Chain	Res	Type
2	D	56	SER
2	D	115	SER
2	D	168	GLN
2	D	172	LYS
2	D	176	SER
2	I	5	THR
2	I	6	GLN
2	I	28	LEU
2	I	111	LYS
2	I	176	SER
1	M	11	LEU
1	M	97	LYS
1	M	112	SER
1	M	151	THR
1	M	163	VAL
1	M	191	THR
2	N	12	SER
2	N	105	THR
1	Q	193	THR
2	R	105	THR
2	R	137	ILE
1	U	53	GLU
2	V	148	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
2	L	42	GLN
2	L	198	HIS
1	C	76	ASN
2	D	53	ASN
2	D	189	HIS
1	G	73	ASN
2	I	42	GLN
2	I	52	ASN
2	I	195	GLN
2	I	198	HIS
1	M	164	HIS
2	N	79	GLN
2	N	189	HIS
1	Q	31	ASN
1	Q	101	GLN

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Mol	Chain	Res	Type
1	Q	164	HIS
1	Q	171	GLN
2	R	6	GLN
2	R	168	GLN
1	U	39	GLN
1	U	82(A)	ASN
1	U	82(B)	ASN
2	V	6	GLN
2	V	112	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

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	C	225/233 (96%)	0.23	4 (1%) 67 63	49, 84, 114, 128	0
1	G	224/233 (96%)	0.55	9 (4%) 42 38	61, 106, 140, 161	0
1	H	224/233 (96%)	0.27	7 (3%) 51 47	52, 89, 122, 152	0
1	M	224/233 (96%)	0.56	8 (3%) 46 42	59, 104, 130, 148	0
1	Q	223/233 (95%)	0.52	15 (6%) 24 20	80, 104, 130, 153	0
1	U	224/233 (96%)	0.53	10 (4%) 38 34	81, 110, 140, 159	0
2	D	209/215 (97%)	0.18	6 (2%) 53 50	54, 85, 118, 140	0
2	I	210/215 (97%)	0.27	6 (2%) 53 50	49, 88, 142, 169	0
2	L	209/215 (97%)	0.16	4 (1%) 66 62	50, 84, 129, 147	0
2	N	209/215 (97%)	0.22	5 (2%) 59 55	51, 91, 133, 159	0
2	R	209/215 (97%)	0.41	6 (2%) 53 50	88, 119, 151, 174	0
2	V	209/215 (97%)	0.50	6 (2%) 53 50	86, 114, 148, 165	0
All	All	2599/2688 (96%)	0.37	86 (3%) 49 45	49, 100, 138, 174	0

All (86) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	V	48	PHE	5.2
1	C	24	ALA	4.0
1	Q	152	VAL	3.9
1	M	140	CYS	3.8
1	G	196	CYS	3.7
2	R	23	CYS	3.7
1	Q	103	TRP	3.6
1	H	198	VAL	3.5
2	I	118	LEU	3.4
1	Q	63	VAL	3.3
2	I	116	VAL	3.3

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Mol	Chain	Res	Type	RSRZ
2	R	147	VAL	3.3
1	U	29	PHE	3.3
1	G	86	ASP	3.3
1	C	45	LEU	3.2
1	Q	119	PRO	3.2
1	G	101	GLN	3.2
1	H	112	SER	3.2
1	Q	29	PHE	3.1
2	L	52	ASN	3.1
1	G	176	TYR	3.0
2	R	62	PHE	3.0
2	L	147	VAL	2.9
1	U	97	LYS	2.9
1	H	190	GLY	2.9
1	U	100(J)	GLU	2.9
1	Q	138	LEU	2.9
1	G	175	LEU	2.8
1	Q	198	VAL	2.8
2	N	207	VAL	2.7
2	I	207	VAL	2.7
1	Q	211	VAL	2.7
1	C	99	TYR	2.7
2	V	210	VAL	2.6
1	M	166	PHE	2.6
1	U	100(A)	PHE	2.6
2	D	132	THR	2.6
1	C	98	TYR	2.6
1	Q	184	VAL	2.5
2	D	115	SER	2.5
1	H	189	LEU	2.5
1	M	181	VAL	2.5
2	I	158	ALA	2.5
1	Q	140	CYS	2.5
2	R	146	THR	2.5
1	G	121	VAL	2.5
1	Q	81	GLU	2.4
1	M	194	TYR	2.4
2	V	21	ILE	2.4
2	N	136	LEU	2.4
1	M	82(A)	ASN	2.4
1	G	110	ILE	2.4
1	U	144	ASP	2.4

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Mol	Chain	Res	Type	RSRZ
2	D	95(B)	ARG	2.4
2	L	196	VAL	2.4
1	Q	100(A)	PHE	2.3
2	V	49	TYR	2.3
2	V	47	LEU	2.3
2	D	134	VAL	2.3
1	U	26	GLY	2.3
1	Q	185	PRO	2.3
2	D	209	PRO	2.3
1	H	99	TYR	2.3
2	D	159	GLY	2.2
1	U	55	TRP	2.2
1	H	78	LEU	2.2
1	Q	121	VAL	2.2
1	H	191	THR	2.2
1	U	120	SER	2.2
1	U	63	VAL	2.2
1	Q	100(J)	GLU	2.2
2	I	119	PHE	2.1
1	U	33	TRP	2.1
1	M	182	VAL	2.1
2	R	145	VAL	2.1
2	V	122	PHE	2.1
1	G	78	LEU	2.1
2	L	117	THR	2.1
2	R	65	SER	2.1
2	N	23	CYS	2.1
2	N	209	PRO	2.1
1	G	67	PHE	2.0
1	M	100(A)	PHE	2.0
2	I	194	CYS	2.0
1	M	109	VAL	2.0
2	N	56	SER	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.