



Full wwPDB X-ray Structure Validation Report ⓘ

May 25, 2020 – 10:24 am BST

PDB ID : 4A6Y
Title : CRYSTAL STRUCTURE OF FAB FRAGMENT OF ANTI-(4-HYDROXY-3-NITROPHENYL) -ACETYL MURINE GERMLINE ANTIBODY BBE6.12H3
Authors : Khan, T.; Salunke, D.M.
Deposited on : 2011-11-10
Resolution : 2.90 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 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	:	2.11
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)	:	2.11

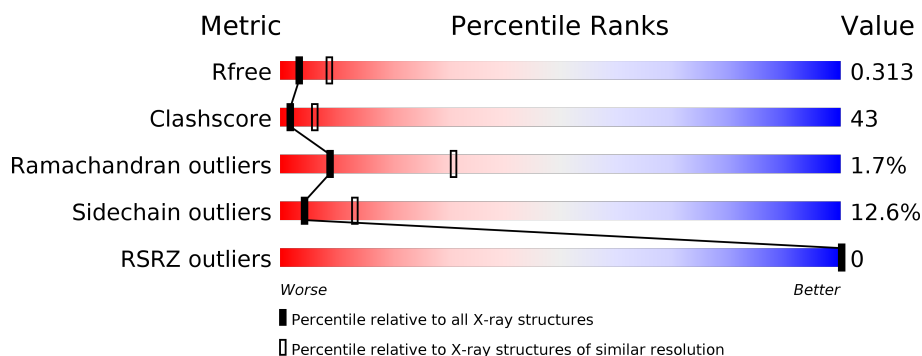
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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 on 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	A	211	
2	B	220	
3	H	220	
4	L	211	

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 6593 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 BBE6.12H3 LIGHT CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	211	Total	C	N	O	S	0	0	0
			1595	996	269	324	6			

- Molecule 2 is a protein called ANTIBODY BBE6.12H3 HEAVY CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	214	Total	C	N	O	S	0	0	0
			1632	1042	265	318	7			

- Molecule 3 is a protein called ANTIBODY BBE6.12H3 HEAVY CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	H	215	Total	C	N	O	S	0	0	0
			1640	1047	266	320	7			

- Molecule 4 is a protein called ANTIBODY BBE6.12H3 LIGHT CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	L	211	Total	C	N	O	S	0	0	0
			1596	999	268	323	6			

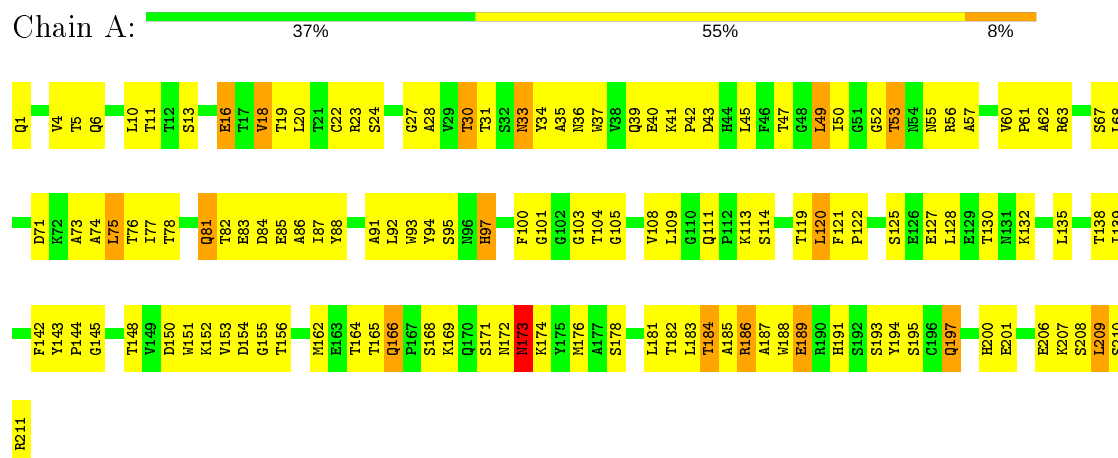
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	46	Total	O	0	0
			46	46		
5	B	30	Total	O	0	0
			30	30		
5	H	28	Total	O	0	0
			28	28		
5	L	26	Total	O	0	0
			26	26		

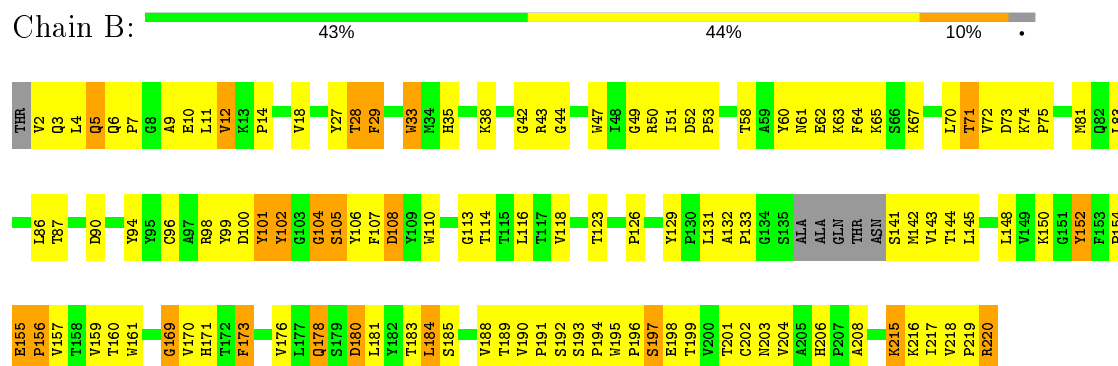
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA 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.

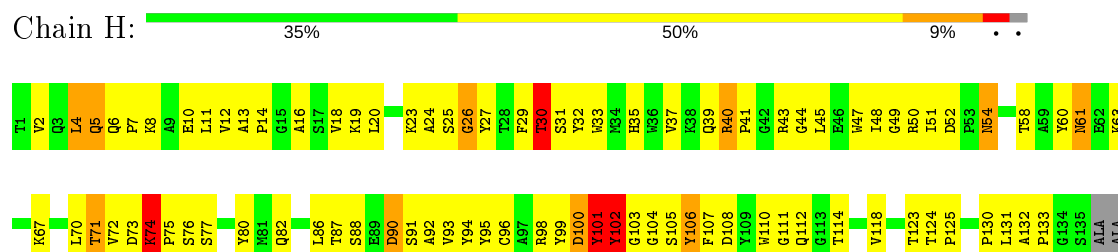
• Molecule 1: ANTIBODY BBE6.12H3 LIGHT CHAIN

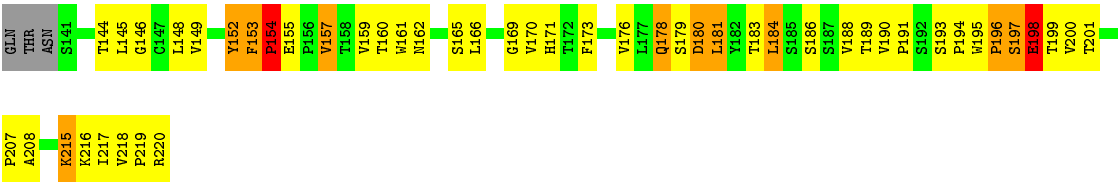


• Molecule 2: ANTIBODY BBE6.12H3 HEAVY CHAIN

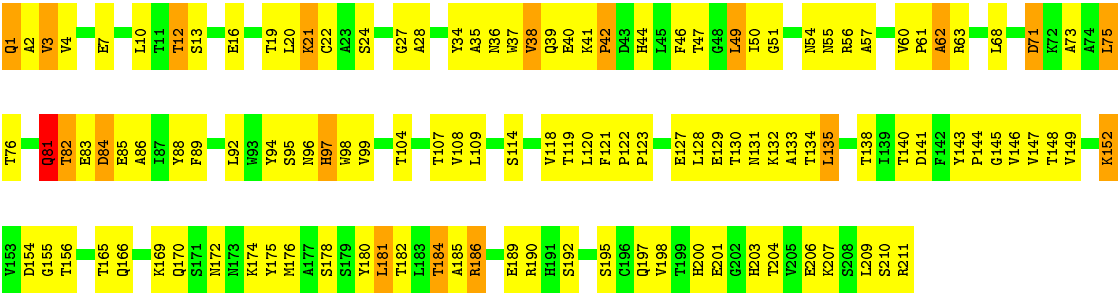


• Molecule 3: ANTIBODY BBE6.12H3 HEAVY CHAIN





• Molecule 4: ANTIBODY BBE6.12H3 LIGHT CHAIN



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	86.28Å 81.42Å 128.91Å 90.00° 90.50° 90.00°	Depositor
Resolution (Å)	23.02 – 2.90 23.02 – 2.90	Depositor EDS
% Data completeness (in resolution range)	84.5 (23.02-2.90) 83.4 (23.02-2.90)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.49 (at 2.89Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.240 , 0.260 0.257 , 0.313	Depositor DCC
R_{free} test set	1841 reflections (9.88%)	wwPDB-VP
Wilson B-factor (Å ²)	32.8	Xtriage
Anisotropy	0.515	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 21.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.417 for -h,-k,l	Xtriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	6593	wwPDB-VP
Average B, all atoms (Å ²)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.96% 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 ⓘ

5.1 Standard geometry ⓘ

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.86	9/1633 (0.6%)	0.85	3/2232 (0.1%)
2	B	0.53	2/1681 (0.1%)	0.90	5/2297 (0.2%)
3	H	1.00	11/1689 (0.7%)	1.07	16/2309 (0.7%)
4	L	0.65	5/1634 (0.3%)	1.00	9/2232 (0.4%)
All	All	0.78	27/6637 (0.4%)	0.96	33/9070 (0.4%)

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
2	B	0	1
3	H	0	2
All	All	0	3

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	16	GLU	CD-OE1	-18.18	1.05	1.25
3	H	153	PHE	CE1-CZ	-15.52	1.07	1.37
3	H	153	PHE	CE2-CZ	-15.48	1.07	1.37
3	H	153	PHE	CG-CD2	-12.90	1.19	1.38
3	H	153	PHE	CG-CD1	-11.39	1.21	1.38
3	H	30	THR	CA-CB	-9.59	1.28	1.53
2	B	180	ASP	C-O	-8.48	1.07	1.23
1	A	16	GLU	CD-OE2	-8.46	1.16	1.25
1	A	16	GLU	CG-CD	-8.25	1.39	1.51
3	H	153	PHE	CD1-CE1	-7.91	1.23	1.39
4	L	2	ALA	C-O	-7.83	1.08	1.23
1	A	173	ASN	C-O	-7.71	1.08	1.23
3	H	153	PHE	CD2-CE2	-7.54	1.24	1.39
1	A	173	ASN	CG-OD1	-6.99	1.08	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	H	54	ASN	C-O	-6.83	1.10	1.23
4	L	84	ASP	CG-OD1	-6.72	1.09	1.25
1	A	53	THR	C-O	-6.70	1.10	1.23
4	L	84	ASP	C-O	-6.69	1.10	1.23
4	L	84	ASP	CG-OD2	-6.58	1.10	1.25
1	A	16	GLU	CB-CG	-6.50	1.39	1.52
3	H	54	ASN	CG-OD1	-6.17	1.10	1.24
3	H	153	PHE	C-O	-5.97	1.12	1.23
4	L	2	ALA	CA-CB	-5.88	1.40	1.52
1	A	53	THR	CB-CG2	-5.84	1.33	1.52
3	H	54	ASN	CB-CG	-5.71	1.38	1.51
1	A	16	GLU	C-O	-5.33	1.13	1.23
2	B	180	ASP	CA-C	-5.06	1.39	1.52

All (33) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	198	GLU	N-CA-CB	16.94	141.09	110.60
2	B	101	TYR	CB-CA-C	16.59	143.59	110.40
4	L	83	GLU	CB-CA-C	-11.73	86.95	110.40
3	H	198	GLU	N-CA-C	-11.71	79.37	111.00
4	L	1	GLN	O-C-N	10.93	140.18	122.70
3	H	153	PHE	C-N-CD	-10.14	98.30	120.60
3	H	197	SER	N-CA-C	-9.53	85.26	111.00
2	B	101	TYR	N-CA-C	-8.89	87.00	111.00
4	L	1	GLN	CA-C-N	-8.16	99.24	117.20
1	A	33	ASN	N-CA-C	-8.09	89.17	111.00
4	L	84	ASP	CB-CG-OD2	7.63	125.16	118.30
3	H	196	PRO	CB-CA-C	-7.27	93.81	112.00
3	H	75	PRO	N-CA-C	6.95	130.16	112.10
4	L	84	ASP	OD1-CG-OD2	-6.85	110.28	123.30
4	L	84	ASP	CB-CG-OD1	6.69	124.32	118.30
2	B	104	GLY	N-CA-C	-6.62	96.54	113.10
1	A	16	GLU	CG-CD-OE2	6.51	131.32	118.30
4	L	3	VAL	N-CA-C	6.39	128.26	111.00
4	L	81	GLN	CB-CA-C	5.97	122.34	110.40
3	H	154	PRO	CB-CA-C	5.93	126.81	112.00
2	B	9	ALA	CB-CA-C	-5.79	101.41	110.10
3	H	153	PHE	CB-CG-CD1	5.68	124.78	120.80
4	L	42	PRO	N-CA-C	5.68	126.87	112.10
3	H	54	ASN	N-CA-CB	-5.59	100.54	110.60
3	H	44	GLY	N-CA-C	-5.55	99.22	113.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	61	ASN	N-CA-C	-5.32	96.65	111.00
1	A	105	GLY	N-CA-C	-5.28	99.89	113.10
3	H	157	VAL	N-CA-C	-5.23	96.87	111.00
3	H	196	PRO	N-CA-C	5.19	125.60	112.10
3	H	54	ASN	N-CA-C	5.17	124.95	111.00
3	H	152	TYR	O-C-N	-5.17	114.44	122.70
3	H	153	PHE	CD1-CG-CD2	-5.16	111.59	118.30
2	B	169	GLY	N-CA-C	-5.12	100.30	113.10

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	152	TYR	Sidechain
3	H	102	TYR	Sidechain
3	H	74	LYS	Peptide

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	1595	0	1535	137	0
2	B	1632	0	1586	145	0
3	H	1640	0	1598	176	0
4	L	1596	0	1543	131	0
5	A	46	0	0	4	0
5	B	30	0	0	0	0
5	H	28	0	0	3	0
5	L	26	0	0	0	0
All	All	6593	0	6262	546	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 43.

All (546) 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)
3:H:132:ALA:HB2	3:H:217:ILE:CG2	1.67	1.25
3:H:52:ASP:OD1	3:H:54:ASN:HB2	1.34	1.24
3:H:74:LYS:HD2	3:H:74:LYS:O	1.37	1.21
2:B:18:VAL:HG22	2:B:86:LEU:HD11	1.31	1.07
2:B:176:VAL:HG23	2:B:178:GLN:HE22	1.19	1.06
3:H:170:VAL:HG22	3:H:188:VAL:HG23	1.33	1.05
2:B:2:VAL:CG2	2:B:27:TYR:HD1	1.69	1.03
1:A:127:GLU:O	1:A:130:THR:HG22	1.57	1.03
4:L:41:LYS:HG3	4:L:42:PRO:HD2	1.38	1.03
2:B:160:THR:HG22	2:B:203:ASN:HB2	1.38	1.02
2:B:2:VAL:HG23	2:B:27:TYR:CD1	1.95	1.02
2:B:191:PRO:O	2:B:194:PRO:HD2	1.56	1.01
3:H:132:ALA:HB2	3:H:217:ILE:HG23	1.38	1.00
3:H:100:ASP:O	3:H:101:TYR:HB2	1.58	0.99
1:A:185:ALA:HB3	1:A:186:ARG:HH12	1.28	0.98
1:A:172:ASN:O	1:A:173:ASN:HB2	1.62	0.97
1:A:150:ASP:HB2	1:A:197:GLN:HG2	1.44	0.97
2:B:2:VAL:CG2	2:B:27:TYR:CD1	2.48	0.96
2:B:99:TYR:CE2	2:B:101:TYR:O	2.19	0.95
3:H:14:PRO:HG3	3:H:118:VAL:HG12	1.48	0.94
1:A:68:LEU:HD23	1:A:73:ALA:HA	1.50	0.93
4:L:170:GLN:HE21	4:L:176:MET:HB3	1.30	0.92
3:H:32:TYR:CD2	3:H:100:ASP:HA	2.03	0.92
2:B:159:VAL:HG22	2:B:204:VAL:HG22	1.51	0.92
3:H:35:HIS:HD2	3:H:47:TRP:HE1	1.00	0.91
2:B:155:GLU:HG3	2:B:156:PRO:HB3	1.52	0.91
3:H:35:HIS:CD2	3:H:47:TRP:HE1	1.90	0.90
3:H:191:PRO:HG2	3:H:194:PRO:HG2	1.51	0.89
1:A:55:ASN:HD22	2:B:104:GLY:HA2	1.37	0.89
3:H:31:SER:O	3:H:101:TYR:HB2	1.74	0.88
3:H:220:ARG:HH21	4:L:122:PRO:HG3	1.37	0.88
4:L:209:LEU:HD12	4:L:209:LEU:O	1.77	0.85
3:H:162:ASN:HB2	3:H:165:SER:HB2	1.57	0.84
4:L:82:THR:C	4:L:84:ASP:H	1.81	0.83
1:A:39:GLN:HB2	1:A:49:LEU:HD21	1.61	0.83
1:A:130:THR:HG23	1:A:132:LYS:HB2	1.59	0.82
3:H:71:THR:HG22	3:H:80:TYR:HB2	1.60	0.82
4:L:97:HIS:CD2	4:L:97:HIS:H	1.99	0.81
1:A:209:LEU:HD23	1:A:209:LEU:O	1.81	0.81
3:H:105:SER:O	4:L:51:GLY:HA3	1.80	0.81
4:L:135:LEU:HB2	4:L:181:LEU:HB3	1.61	0.80
1:A:68:LEU:CD2	1:A:73:ALA:HA	2.12	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:94:TYR:HB2	4:L:97:HIS:CD2	2.16	0.79
3:H:195:TRP:CH2	3:H:219:PRO:HG3	2.17	0.79
3:H:12:VAL:HG21	3:H:18:VAL:HG21	1.64	0.79
3:H:100:ASP:O	3:H:101:TYR:CB	2.31	0.78
2:B:155:GLU:HG3	2:B:156:PRO:CB	2.13	0.78
3:H:35:HIS:HD2	3:H:47:TRP:NE1	1.80	0.78
2:B:155:GLU:CG	2:B:156:PRO:HB3	2.13	0.77
4:L:81:GLN:O	4:L:108:VAL:HG11	1.83	0.77
3:H:110:TRP:CZ2	4:L:38:VAL:HG21	2.21	0.76
1:A:166:GLN:HE22	2:B:42:GLY:CA	1.99	0.75
3:H:193:SER:HB2	3:H:194:PRO:HD3	1.67	0.74
3:H:18:VAL:HG23	3:H:86:LEU:HD11	1.69	0.74
1:A:34:TYR:HB3	1:A:52:GLY:HA2	1.68	0.74
2:B:145:LEU:HB3	2:B:217:ILE:HD13	1.69	0.74
1:A:127:GLU:HG2	1:A:132:LYS:O	1.87	0.74
2:B:83:LEU:HB2	2:B:86:LEU:HD21	1.68	0.73
4:L:97:HIS:H	4:L:97:HIS:HD2	1.32	0.73
2:B:2:VAL:HG21	2:B:27:TYR:HD1	1.52	0.73
4:L:81:GLN:O	4:L:84:ASP:HB2	1.88	0.73
4:L:141:ASP:H	4:L:170:GLN:HE22	1.36	0.72
4:L:38:VAL:HG12	4:L:89:PHE:HB2	1.71	0.72
3:H:110:TRP:HZ2	4:L:38:VAL:HG21	1.55	0.72
1:A:200:HIS:O	1:A:201:GLU:HB2	1.90	0.71
2:B:99:TYR:CD2	2:B:101:TYR:O	2.44	0.70
2:B:2:VAL:HG23	2:B:27:TYR:CE1	2.26	0.70
3:H:19:LYS:HE3	3:H:80:TYR:CD2	2.27	0.70
1:A:184:THR:HG23	1:A:187:ALA:H	1.56	0.70
2:B:33:TRP:HE1	2:B:52:ASP:HB2	1.56	0.70
4:L:68:LEU:HD23	4:L:73:ALA:HA	1.72	0.70
1:A:130:THR:CG2	1:A:132:LYS:HB2	2.20	0.70
4:L:7:GLU:OE1	4:L:21:LYS:HG3	1.92	0.70
2:B:35:HIS:CE1	2:B:99:TYR:HB2	2.27	0.70
3:H:99:TYR:CE2	3:H:104:GLY:HA2	2.27	0.69
2:B:169:GLY:O	2:B:188:VAL:HA	1.92	0.69
4:L:130:THR:HG22	4:L:130:THR:O	1.91	0.69
1:A:182:THR:O	1:A:183:LEU:HD23	1.93	0.69
3:H:100:ASP:C	3:H:100:ASP:OD1	2.30	0.69
3:H:131:LEU:O	4:L:121:PHE:CD1	2.46	0.69
3:H:52:ASP:OD1	3:H:54:ASN:CB	2.27	0.69
3:H:153:PHE:CD1	3:H:154:PRO:HB3	2.28	0.69
3:H:74:LYS:CD	3:H:74:LYS:O	2.30	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:162:ASN:CB	3:H:165:SER:HB2	2.22	0.68
2:B:160:THR:CG2	2:B:203:ASN:HB2	2.19	0.68
2:B:193:SER:HB2	2:B:194:PRO:HD3	1.75	0.68
3:H:102:TYR:O	3:H:104:GLY:N	2.26	0.68
4:L:107:THR:HG21	4:L:144:PRO:HB3	1.76	0.68
3:H:8:LYS:HG2	3:H:8:LYS:O	1.93	0.67
2:B:62:GLU:OE1	2:B:65:LYS:HE2	1.93	0.67
2:B:155:GLU:HG3	2:B:156:PRO:CA	2.24	0.67
2:B:180:ASP:O	2:B:181:LEU:HD12	1.94	0.67
1:A:172:ASN:HD21	1:A:174:LYS:HD2	1.60	0.67
2:B:145:LEU:HD22	2:B:217:ILE:HG21	1.75	0.67
3:H:132:ALA:CB	3:H:217:ILE:CG2	2.59	0.67
2:B:170:VAL:HG22	2:B:188:VAL:HG23	1.76	0.67
1:A:166:GLN:NE2	2:B:42:GLY:HA2	2.10	0.66
3:H:12:VAL:HG21	3:H:18:VAL:CG2	2.25	0.66
3:H:4:LEU:H	3:H:4:LEU:HD12	1.61	0.66
3:H:30:THR:CG2	3:H:31:SER:N	2.56	0.66
3:H:7:PRO:O	3:H:114:THR:HG23	1.95	0.66
3:H:132:ALA:HB2	3:H:217:ILE:HG22	1.69	0.66
3:H:133:PRO:HD2	3:H:145:LEU:HD23	1.77	0.66
3:H:199:THR:HB	3:H:216:LYS:HD2	1.76	0.66
1:A:172:ASN:ND2	1:A:174:LYS:HD2	2.11	0.65
4:L:51:GLY:O	4:L:55:ASN:HB2	1.96	0.65
1:A:91:ALA:HB2	1:A:100:PHE:CE1	2.31	0.65
3:H:95:TYR:OH	4:L:44:HIS:HB3	1.96	0.65
1:A:121:PHE:HZ	2:B:144:THR:HG22	1.60	0.65
4:L:41:LYS:HG3	4:L:42:PRO:CD	2.24	0.65
2:B:176:VAL:HG23	2:B:178:GLN:NE2	2.03	0.65
3:H:30:THR:HG22	3:H:31:SER:N	2.11	0.65
2:B:154:PRO:HD2	2:B:208:ALA:HB1	1.79	0.64
4:L:184:THR:HB	4:L:186:ARG:CG	2.27	0.64
1:A:188:TRP:CE2	1:A:211:ARG:HD2	2.32	0.64
3:H:194:PRO:O	3:H:198:GLU:HB2	1.96	0.64
3:H:195:TRP:CG	3:H:196:PRO:HA	2.32	0.64
3:H:190:VAL:HG13	3:H:191:PRO:HD2	1.78	0.64
1:A:186:ARG:HH11	1:A:186:ARG:N	1.94	0.64
4:L:94:TYR:O	4:L:96:ASN:N	2.31	0.64
2:B:12:VAL:HG11	2:B:18:VAL:HG13	1.77	0.64
2:B:87:THR:HG22	4:L:189:GLU:HG2	1.80	0.64
4:L:82:THR:HA	4:L:108:VAL:HG11	1.80	0.64
1:A:77:ILE:H	1:A:77:ILE:HD12	1.62	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:82:THR:HG21	5:A:2019:HOH:O	1.97	0.63
1:A:143:TYR:HA	1:A:144:PRO:C	2.18	0.63
2:B:35:HIS:HD2	2:B:47:TRP:HE1	1.46	0.63
2:B:155:GLU:HG3	2:B:156:PRO:HA	1.81	0.63
1:A:154:ASP:HA	1:A:193:SER:HB3	1.81	0.63
2:B:195:TRP:CH2	2:B:219:PRO:HG3	2.33	0.63
1:A:122:PRO:HB3	1:A:209:LEU:HD12	1.80	0.62
4:L:97:HIS:CD2	4:L:97:HIS:N	2.66	0.62
3:H:99:TYR:HE2	3:H:104:GLY:HA2	1.63	0.62
4:L:114:SER:CB	4:L:174:LYS:HE2	2.30	0.62
1:A:166:GLN:NE2	2:B:42:GLY:CA	2.62	0.62
1:A:42:PRO:O	1:A:43:ASP:HB2	1.98	0.62
3:H:39:GLN:HB2	3:H:45:LEU:HD23	1.82	0.62
3:H:76:SER:O	3:H:77:SER:HB2	2.00	0.62
1:A:11:THR:HG23	1:A:109:LEU:HD13	1.81	0.61
2:B:12:VAL:HG21	2:B:116:LEU:HD11	1.81	0.61
1:A:185:ALA:HB3	1:A:186:ARG:NH1	2.11	0.61
1:A:37:TRP:CD2	1:A:75:LEU:HB2	2.35	0.61
4:L:186:ARG:HG3	4:L:186:ARG:HH11	1.65	0.61
4:L:197:GLN:NE2	4:L:204:THR:HG21	2.16	0.61
1:A:143:TYR:CD1	1:A:144:PRO:HA	2.35	0.61
3:H:24:ALA:O	3:H:25:SER:C	2.38	0.61
2:B:152:TYR:CE1	2:B:157:VAL:HG13	2.36	0.61
3:H:131:LEU:O	4:L:121:PHE:HD1	1.82	0.61
1:A:119:THR:HG21	2:B:144:THR:CG2	2.30	0.60
2:B:47:TRP:CH2	2:B:49:GLY:HA2	2.36	0.60
1:A:122:PRO:HB3	1:A:209:LEU:CD1	2.32	0.60
1:A:34:TYR:O	1:A:35:ALA:C	2.38	0.60
2:B:87:THR:CG2	4:L:189:GLU:HG2	2.32	0.60
1:A:185:ALA:CB	1:A:186:ARG:HH12	2.09	0.60
2:B:18:VAL:CG2	2:B:86:LEU:HD11	2.21	0.60
4:L:195:SER:HB2	4:L:206:GLU:OE2	2.01	0.60
4:L:57:ALA:O	4:L:60:VAL:HG23	2.02	0.60
4:L:20:LEU:HD12	4:L:75:LEU:HD13	1.84	0.60
3:H:111:GLY:O	3:H:112:GLN:HG2	2.02	0.60
2:B:195:TRP:CZ2	2:B:219:PRO:HG3	2.36	0.59
3:H:123:THR:HG21	3:H:208:ALA:O	2.01	0.59
1:A:151:TRP:O	1:A:152:LYS:HG3	2.01	0.59
2:B:98:ARG:NE	2:B:108:ASP:OD1	2.32	0.59
3:H:144:THR:HG22	4:L:121:PHE:HZ	1.67	0.59
2:B:73:ASP:OD1	2:B:75:PRO:HG2	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:91:ALA:O	1:A:92:LEU:HD23	2.02	0.59
4:L:119:THR:HB	4:L:138:THR:OG1	2.02	0.59
2:B:71:THR:HG23	2:B:72:VAL:N	2.18	0.58
2:B:195:TRP:CG	2:B:196:PRO:HA	2.38	0.58
3:H:133:PRO:HD3	4:L:121:PHE:HE1	1.68	0.58
3:H:220:ARG:NH2	4:L:122:PRO:HG3	2.14	0.58
4:L:127:GLU:OE1	4:L:134:THR:N	2.36	0.58
2:B:150:LYS:HA	2:B:183:THR:HG23	1.86	0.58
3:H:33:TRP:HB2	3:H:99:TYR:HB3	1.85	0.58
4:L:19:THR:OG1	4:L:76:THR:HG23	2.04	0.58
1:A:35:ALA:HA	1:A:91:ALA:O	2.03	0.58
2:B:184:LEU:C	2:B:184:LEU:HD23	2.24	0.57
3:H:47:TRP:CH2	3:H:49:GLY:HA2	2.39	0.57
4:L:184:THR:HB	4:L:186:ARG:HG2	1.85	0.57
1:A:166:GLN:HE22	2:B:42:GLY:HA2	1.68	0.57
1:A:111:GLN:NE2	1:A:174:LYS:HE3	2.19	0.57
1:A:24:SER:HB3	1:A:27:GLY:O	2.03	0.57
2:B:51:ILE:HA	2:B:58:THR:HG22	1.85	0.57
3:H:4:LEU:HD23	3:H:24:ALA:HB2	1.86	0.57
4:L:24:SER:HB3	4:L:27:GLY:O	2.05	0.57
1:A:45:LEU:HD22	5:A:2008:HOH:O	2.04	0.57
3:H:166:LEU:HD13	3:H:190:VAL:HG21	1.87	0.57
1:A:81:GLN:O	1:A:84:ASP:HB2	2.04	0.57
4:L:7:GLU:CD	4:L:21:LYS:HG3	2.25	0.56
3:H:73:ASP:C	3:H:73:ASP:OD1	2.43	0.56
1:A:63:ARG:HB2	1:A:78:THR:O	2.05	0.56
2:B:141:SER:O	2:B:192:SER:HB3	2.05	0.56
1:A:154:ASP:C	1:A:156:THR:H	2.09	0.56
1:A:5:THR:HB	1:A:23:ARG:HB2	1.85	0.56
3:H:130:PRO:HG3	3:H:215:LYS:HD3	1.87	0.56
3:H:184:LEU:HD23	3:H:184:LEU:C	2.26	0.56
4:L:184:THR:HB	4:L:186:ARG:HG3	1.88	0.56
4:L:40:GLU:O	4:L:86:ALA:HB1	2.05	0.56
1:A:94:TYR:HB2	1:A:97:HIS:CD2	2.40	0.56
2:B:33:TRP:NE1	2:B:52:ASP:HB2	2.20	0.56
3:H:63:LYS:HD2	5:H:2009:HOH:O	2.05	0.56
2:B:102:TYR:O	2:B:105:SER:HB2	2.06	0.56
2:B:194:PRO:O	2:B:198:GLU:N	2.25	0.56
3:H:179:SER:O	3:H:180:ASP:C	2.43	0.56
3:H:31:SER:O	3:H:101:TYR:CB	2.52	0.56
4:L:12:THR:HG23	4:L:13:SER:O	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:152:TYR:OH	2:B:157:VAL:HG22	2.05	0.55
4:L:39:GLN:HG3	4:L:88:TYR:CE1	2.42	0.55
2:B:71:THR:CG2	2:B:72:VAL:N	2.69	0.55
4:L:20:LEU:HD12	4:L:75:LEU:CD1	2.37	0.55
3:H:105:SER:O	4:L:51:GLY:CA	2.53	0.55
3:H:179:SER:O	3:H:181:LEU:N	2.40	0.55
4:L:149:VAL:HG22	4:L:198:VAL:HG22	1.87	0.55
4:L:141:ASP:H	4:L:170:GLN:NE2	2.03	0.55
2:B:102:TYR:O	2:B:105:SER:CB	2.56	0.54
2:B:220:ARG:NH1	2:B:220:ARG:HG2	2.20	0.54
1:A:119:THR:HG21	2:B:144:THR:HG21	1.88	0.54
2:B:173:PHE:CD1	2:B:173:PHE:N	2.74	0.54
3:H:45:LEU:HD11	4:L:46:PHE:CE2	2.43	0.54
1:A:184:THR:HG23	1:A:187:ALA:CB	2.38	0.54
1:A:11:THR:CG2	1:A:109:LEU:HD13	2.36	0.54
4:L:200:HIS:O	4:L:201:GLU:CB	2.55	0.54
1:A:195:SER:HB3	1:A:208:SER:OG	2.07	0.54
4:L:49:LEU:HB3	4:L:60:VAL:HG11	1.90	0.54
3:H:19:LYS:CE	3:H:80:TYR:CD2	2.91	0.54
3:H:23:LYS:HE2	5:H:2003:HOH:O	2.08	0.54
3:H:35:HIS:CG	3:H:107:PHE:HE1	2.25	0.53
4:L:13:SER:HB2	4:L:16:GLU:OE2	2.08	0.53
1:A:10:LEU:HD12	1:A:20:LEU:HD22	1.90	0.53
3:H:176:VAL:HG23	3:H:176:VAL:O	2.08	0.53
3:H:191:PRO:HG2	3:H:194:PRO:CG	2.31	0.53
3:H:191:PRO:O	3:H:194:PRO:HD2	2.09	0.53
4:L:131:ASN:HA	4:L:185:ALA:CB	2.39	0.53
4:L:34:TYR:O	4:L:35:ALA:C	2.46	0.53
1:A:153:VAL:HG11	1:A:191:HIS:CD2	2.43	0.53
1:A:41:LYS:HE3	1:A:86:ALA:HB2	1.91	0.53
2:B:193:SER:O	2:B:194:PRO:C	2.47	0.53
3:H:24:ALA:O	3:H:26:GLY:N	2.42	0.53
2:B:188:VAL:HG13	2:B:188:VAL:O	2.08	0.53
2:B:83:LEU:CB	2:B:86:LEU:HD21	2.36	0.53
1:A:56:ARG:HG2	1:A:60:VAL:HB	1.90	0.52
1:A:68:LEU:HB2	5:A:2016:HOH:O	2.08	0.52
3:H:179:SER:C	3:H:181:LEU:N	2.58	0.52
3:H:98:ARG:HE	3:H:108:ASP:CG	2.13	0.52
3:H:39:GLN:HB2	3:H:45:LEU:CD2	2.39	0.52
3:H:8:LYS:CG	3:H:8:LYS:O	2.57	0.52
1:A:91:ALA:HB2	1:A:100:PHE:CD1	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:194:TYR:HB2	1:A:209:LEU:CD2	2.40	0.52
4:L:209:LEU:HD12	4:L:209:LEU:C	2.30	0.52
3:H:76:SER:O	3:H:77:SER:CB	2.57	0.52
1:A:114:SER:HB2	1:A:174:LYS:HE2	1.91	0.52
3:H:215:LYS:HZ3	3:H:216:LYS:H	1.58	0.52
1:A:154:ASP:O	1:A:156:THR:N	2.43	0.51
3:H:29:PHE:CE2	3:H:77:SER:HA	2.44	0.51
1:A:194:TYR:HB2	1:A:209:LEU:HD23	1.92	0.51
1:A:71:ASP:N	1:A:71:ASP:OD1	2.43	0.51
2:B:154:PRO:HD2	2:B:208:ALA:CB	2.40	0.51
3:H:32:TYR:HD2	3:H:100:ASP:HA	1.66	0.51
3:H:2:VAL:HA	3:H:26:GLY:HA3	1.92	0.51
1:A:197:GLN:HG3	1:A:197:GLN:O	2.09	0.51
1:A:41:LYS:HB2	1:A:45:LEU:HB2	1.92	0.51
2:B:12:VAL:HG21	2:B:18:VAL:HG11	1.92	0.51
3:H:32:TYR:CE2	3:H:100:ASP:HA	2.45	0.51
3:H:43:ARG:HB3	5:H:2008:HOH:O	2.11	0.51
4:L:140:THR:HG22	4:L:141:ASP:OD1	2.10	0.51
1:A:111:GLN:HE22	1:A:174:LYS:HE3	1.75	0.51
2:B:102:TYR:CD1	2:B:102:TYR:N	2.79	0.51
2:B:126:PRO:HB3	2:B:152:TYR:HB3	1.91	0.51
2:B:143:VAL:HG12	2:B:190:VAL:O	2.10	0.51
2:B:35:HIS:CE1	2:B:99:TYR:CB	2.93	0.51
3:H:178:GLN:O	3:H:178:GLN:HG2	2.09	0.51
4:L:172:ASN:OD1	4:L:174:LYS:HB2	2.11	0.51
4:L:145:GLY:HA3	4:L:175:TYR:CG	2.46	0.51
4:L:37:TRP:CD2	4:L:75:LEU:HB2	2.46	0.51
2:B:145:LEU:HB3	2:B:217:ILE:CD1	2.39	0.51
1:A:135:LEU:HB2	1:A:181:LEU:HB3	1.93	0.51
2:B:50:ARG:C	2:B:50:ARG:HD2	2.30	0.51
2:B:60:TYR:CE2	2:B:70:LEU:HD13	2.46	0.51
3:H:155:GLU:H	3:H:155:GLU:CD	2.14	0.51
3:H:215:LYS:NZ	3:H:216:LYS:H	2.09	0.50
3:H:37:VAL:CG1	3:H:45:LEU:HD22	2.40	0.50
2:B:131:LEU:HD21	2:B:148:LEU:HB2	1.92	0.50
2:B:199:THR:CG2	2:B:216:LYS:HD2	2.41	0.50
3:H:35:HIS:CD2	3:H:107:PHE:HE1	2.29	0.50
3:H:27:TYR:CE2	3:H:98:ARG:HD3	2.46	0.50
2:B:191:PRO:C	2:B:194:PRO:HD2	2.26	0.50
2:B:50:ARG:HD2	2:B:50:ARG:O	2.11	0.50
4:L:20:LEU:CD2	4:L:104:THR:HG21	2.42	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:170:VAL:CG2	2:B:188:VAL:HG23	2.40	0.50
2:B:194:PRO:O	2:B:197:SER:HB2	2.11	0.50
2:B:202:CYS:C	2:B:203:ASN:HD22	2.15	0.50
2:B:220:ARG:HH11	2:B:220:ARG:HG2	1.77	0.50
4:L:147:VAL:CG1	4:L:148:THR:N	2.74	0.50
4:L:85:GLU:OE1	4:L:107:THR:HG23	2.12	0.50
2:B:86:LEU:HA	2:B:90:ASP:OD2	2.11	0.50
3:H:50:ARG:O	3:H:50:ARG:HD2	2.11	0.50
1:A:178:SER:HB3	2:B:173:PHE:CD2	2.47	0.50
4:L:10:LEU:HD12	4:L:20:LEU:HD23	1.94	0.50
3:H:111:GLY:O	3:H:112:GLN:CG	2.61	0.49
3:H:180:ASP:O	3:H:181:LEU:HD13	2.11	0.49
4:L:37:TRP:O	4:L:49:LEU:HD12	2.12	0.49
4:L:135:LEU:HG	4:L:181:LEU:HD12	1.94	0.49
1:A:162:MET:HB3	1:A:181:LEU:HD23	1.93	0.49
1:A:164:THR:HG22	1:A:165:THR:O	2.12	0.49
2:B:60:TYR:HE2	2:B:70:LEU:HD13	1.77	0.49
3:H:50:ARG:HD2	3:H:50:ARG:C	2.32	0.49
1:A:121:PHE:CZ	2:B:144:THR:HG22	2.45	0.49
2:B:67:LYS:O	2:B:83:LEU:HA	2.13	0.49
3:H:111:GLY:C	3:H:112:GLN:HG2	2.33	0.49
3:H:131:LEU:HB2	3:H:146:GLY:O	2.12	0.49
3:H:153:PHE:CE1	3:H:154:PRO:HB3	2.46	0.49
3:H:18:VAL:HG23	3:H:86:LEU:CD1	2.41	0.49
3:H:31:SER:O	3:H:100:ASP:O	2.31	0.49
1:A:49:LEU:CD1	1:A:75:LEU:HD11	2.43	0.49
4:L:50:ILE:HG22	4:L:51:GLY:N	2.28	0.49
1:A:49:LEU:HD12	1:A:75:LEU:HD11	1.94	0.48
4:L:61:PRO:O	4:L:62:ALA:C	2.51	0.48
1:A:108:VAL:O	1:A:109:LEU:C	2.49	0.48
4:L:144:PRO:O	4:L:146:VAL:N	2.46	0.48
2:B:206:HIS:CE1	2:B:208:ALA:HB3	2.49	0.48
2:B:87:THR:HB	4:L:189:GLU:HG2	1.95	0.48
1:A:119:THR:HB	1:A:138:THR:OG1	2.13	0.48
3:H:152:TYR:CE1	3:H:157:VAL:HG13	2.48	0.48
3:H:155:GLU:OE1	3:H:155:GLU:N	2.30	0.48
3:H:35:HIS:O	3:H:96:CYS:HA	2.13	0.48
4:L:3:VAL:O	4:L:3:VAL:HG23	2.14	0.48
4:L:81:GLN:C	4:L:84:ASP:HB2	2.34	0.48
1:A:166:GLN:NE2	2:B:42:GLY:N	2.62	0.48
1:A:61:PRO:HB3	1:A:63:ARG:NH1	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:56:ARG:O	4:L:57:ALA:C	2.52	0.48
3:H:218:VAL:O	3:H:218:VAL:HG13	2.14	0.48
1:A:20:LEU:HD13	1:A:104:THR:HB	1.95	0.48
1:A:36:ASN:ND2	2:B:107:PHE:CD2	2.82	0.48
2:B:14:PRO:HG3	2:B:118:VAL:HG12	1.96	0.48
3:H:105:SER:C	3:H:106:TYR:CG	2.85	0.48
3:H:130:PRO:CG	3:H:215:LYS:HD3	2.44	0.48
3:H:40:ARG:HB3	3:H:92:ALA:HB2	1.96	0.48
1:A:120:LEU:HD22	1:A:120:LEU:C	2.34	0.48
1:A:52:GLY:O	1:A:53:THR:HB	2.13	0.48
2:B:74:LYS:N	2:B:75:PRO:HD2	2.29	0.48
3:H:91:SER:O	3:H:92:ALA:HB2	2.13	0.48
4:L:127:GLU:OE1	4:L:133:ALA:HA	2.13	0.48
4:L:20:LEU:HB2	4:L:75:LEU:HB3	1.96	0.48
2:B:87:THR:CB	4:L:189:GLU:HG2	2.44	0.47
3:H:74:LYS:HD2	3:H:74:LYS:C	2.27	0.47
3:H:132:ALA:HB2	3:H:217:ILE:HG21	1.82	0.47
4:L:61:PRO:O	4:L:63:ARG:N	2.46	0.47
3:H:166:LEU:HD13	3:H:190:VAL:CG2	2.44	0.47
3:H:190:VAL:HG13	3:H:191:PRO:CD	2.44	0.47
3:H:20:LEU:CD2	3:H:94:TYR:HB2	2.44	0.47
4:L:123:PRO:HD3	4:L:135:LEU:HD22	1.95	0.47
1:A:56:ARG:CG	1:A:60:VAL:HB	2.44	0.47
2:B:2:VAL:HG21	2:B:27:TYR:CD1	2.36	0.47
1:A:184:THR:HG23	1:A:187:ALA:HB2	1.97	0.47
4:L:210:SER:O	4:L:211:ARG:NH1	2.42	0.47
3:H:131:LEU:HB2	3:H:146:GLY:C	2.34	0.47
3:H:40:ARG:HB3	3:H:92:ALA:CB	2.45	0.47
4:L:195:SER:CB	4:L:206:GLU:OE2	2.63	0.47
1:A:169:LYS:HD2	1:A:173:ASN:HA	1.96	0.47
1:A:6:GLN:NE2	1:A:88:TYR:O	2.44	0.47
2:B:203:ASN:N	2:B:203:ASN:ND2	2.63	0.47
3:H:124:THR:HG23	3:H:125:PRO:HD2	1.97	0.47
1:A:81:GLN:HB3	1:A:83:GLU:HG3	1.97	0.47
2:B:123:THR:HG21	2:B:208:ALA:O	2.14	0.47
2:B:28:THR:HG22	2:B:29:PHE:H	1.80	0.47
4:L:154:ASP:C	4:L:156:THR:H	2.18	0.47
1:A:61:PRO:O	1:A:62:ALA:C	2.53	0.46
1:A:189:GLU:HG3	1:A:189:GLU:O	2.15	0.46
1:A:49:LEU:HA	1:A:60:VAL:HG21	1.96	0.46
2:B:33:TRP:HE1	2:B:52:ASP:CB	2.24	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:47:TRP:CZ2	2:B:49:GLY:HA2	2.49	0.46
3:H:72:VAL:HG13	3:H:72:VAL:O	2.15	0.46
4:L:114:SER:HB3	4:L:174:LYS:HE2	1.96	0.46
2:B:71:THR:HG23	2:B:72:VAL:H	1.79	0.46
3:H:195:TRP:CZ2	3:H:219:PRO:HG3	2.50	0.46
4:L:131:ASN:HA	4:L:185:ALA:HB3	1.97	0.46
4:L:129:GLU:C	4:L:131:ASN:H	2.18	0.46
4:L:40:GLU:HB2	4:L:46:PHE:CE2	2.51	0.46
1:A:56:ARG:O	1:A:57:ALA:C	2.53	0.46
4:L:184:THR:O	4:L:185:ALA:C	2.54	0.46
2:B:5:GLN:HE21	2:B:5:GLN:HB2	1.53	0.46
3:H:33:TRP:HZ3	3:H:52:ASP:CB	2.29	0.46
1:A:50:ILE:HD13	1:A:56:ARG:HA	1.97	0.46
2:B:161:TRP:HH2	2:B:217:ILE:HD11	1.81	0.46
3:H:193:SER:O	3:H:195:TRP:N	2.49	0.46
4:L:143:TYR:CD1	4:L:144:PRO:HA	2.51	0.46
1:A:13:SER:O	1:A:16:GLU:HB2	2.15	0.46
3:H:37:VAL:HG11	3:H:45:LEU:HD22	1.98	0.46
2:B:180:ASP:C	2:B:181:LEU:HD12	2.35	0.46
1:A:195:SER:CB	1:A:208:SER:OG	2.64	0.46
1:A:40:GLU:HB3	1:A:87:ILE:HB	1.98	0.46
2:B:38:LYS:HD3	2:B:64:PHE:HZ	1.81	0.46
3:H:160:THR:CG2	3:H:161:TRP:N	2.79	0.46
1:A:142:PHE:CE1	1:A:145:GLY:HA2	2.51	0.45
2:B:203:ASN:HD22	2:B:203:ASN:N	2.14	0.45
3:H:193:SER:HB2	3:H:194:PRO:CD	2.41	0.45
1:A:33:ASN:ND2	1:A:93:TRP:O	2.50	0.45
4:L:130:THR:CG2	4:L:130:THR:O	2.60	0.45
1:A:168:SER:HA	5:A:2041:HOH:O	2.17	0.45
1:A:176:MET:SD	2:B:171:HIS:HB3	2.57	0.45
2:B:161:TRP:CH2	2:B:217:ILE:HD11	2.52	0.45
4:L:22:CYS:HB3	4:L:73:ALA:HB3	1.98	0.45
4:L:4:VAL:HG21	4:L:99:VAL:O	2.17	0.45
2:B:62:GLU:HA	2:B:62:GLU:OE1	2.16	0.45
3:H:50:ARG:C	3:H:70:LEU:HD23	2.36	0.45
3:H:29:PHE:CD2	3:H:77:SER:HA	2.52	0.45
1:A:189:GLU:HG2	3:H:87:THR:HB	1.98	0.45
1:A:189:GLU:CG	3:H:87:THR:HG22	2.46	0.45
4:L:81:GLN:O	4:L:108:VAL:HG21	2.16	0.45
4:L:200:HIS:O	4:L:201:GLU:HB3	2.16	0.45
4:L:28:ALA:HB2	4:L:71:ASP:HB3	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:132:ALA:CB	3:H:217:ILE:HG22	2.38	0.45
3:H:40:ARG:HB2	3:H:41:PRO:HD2	1.99	0.45
2:B:29:PHE:HA	2:B:29:PHE:HD1	1.67	0.45
2:B:7:PRO:O	2:B:114:THR:HG23	2.15	0.45
1:A:172:ASN:OD1	1:A:174:LYS:HB2	2.17	0.45
2:B:35:HIS:CD2	2:B:47:TRP:HE1	2.29	0.45
3:H:133:PRO:HD3	4:L:121:PHE:CE1	2.49	0.45
4:L:152:LYS:HE3	4:L:197:GLN:OE1	2.17	0.45
4:L:120:LEU:HG	4:L:209:LEU:HD23	1.99	0.45
2:B:191:PRO:O	2:B:194:PRO:CD	2.46	0.44
3:H:18:VAL:O	3:H:82:GLN:HA	2.17	0.44
2:B:110:TRP:N	2:B:110:TRP:CD1	2.85	0.44
3:H:176:VAL:CG1	4:L:165:THR:HG22	2.47	0.44
3:H:171:HIS:HB3	4:L:176:MET:SD	2.57	0.44
4:L:37:TRP:CE3	4:L:75:LEU:HB2	2.52	0.44
2:B:170:VAL:HG22	2:B:188:VAL:CG2	2.44	0.44
3:H:160:THR:HG22	3:H:161:TRP:N	2.32	0.44
3:H:6:GLN:OE1	3:H:96:CYS:N	2.50	0.44
1:A:55:ASN:ND2	2:B:104:GLY:HA2	2.19	0.44
1:A:186:ARG:HD3	1:A:186:ARG:HA	1.72	0.44
3:H:169:GLY:O	3:H:189:THR:N	2.39	0.44
4:L:35:ALA:HA	4:L:92:LEU:HD23	1.98	0.44
3:H:18:VAL:HG12	3:H:19:LYS:N	2.32	0.44
4:L:82:THR:HA	4:L:108:VAL:CG1	2.45	0.44
3:H:51:ILE:HD13	3:H:72:VAL:HB	1.99	0.44
1:A:154:ASP:C	1:A:156:THR:N	2.70	0.43
1:A:207:LYS:HA	1:A:207:LYS:HD3	1.74	0.43
2:B:215:LYS:HA	2:B:215:LYS:HE3	2.00	0.43
2:B:61:ASN:O	2:B:62:GLU:C	2.56	0.43
2:B:87:THR:HG22	4:L:189:GLU:CG	2.46	0.43
1:A:67:SER:O	1:A:74:ALA:N	2.49	0.43
1:A:109:LEU:HD21	1:A:113:LYS:HG3	2.00	0.43
3:H:13:ALA:O	3:H:16:ALA:HB3	2.18	0.43
3:H:33:TRP:HZ3	3:H:52:ASP:HB2	1.83	0.43
3:H:6:GLN:O	3:H:7:PRO:C	2.56	0.43
3:H:90:ASP:O	3:H:91:SER:C	2.55	0.43
1:A:63:ARG:HH11	1:A:63:ARG:HG2	1.83	0.43
2:B:173:PHE:H	2:B:173:PHE:HD1	1.67	0.43
2:B:190:VAL:O	2:B:190:VAL:CG1	2.67	0.43
2:B:176:VAL:CG2	2:B:178:GLN:HE22	2.10	0.43
2:B:94:TYR:O	2:B:113:GLY:HA2	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:170:GLN:NE2	4:L:176:MET:HB3	2.13	0.43
4:L:184:THR:CB	4:L:186:ARG:HG3	2.48	0.43
1:A:186:ARG:NH1	1:A:186:ARG:HG2	2.34	0.43
2:B:81:MET:HE3	2:B:83:LEU:HD11	2.01	0.43
3:H:93:VAL:HA	3:H:114:THR:O	2.19	0.43
3:H:215:LYS:HE2	3:H:215:LYS:HA	2.01	0.43
3:H:50:ARG:CD	3:H:50:ARG:C	2.87	0.43
2:B:38:LYS:HD3	2:B:64:PHE:CZ	2.54	0.43
2:B:61:ASN:O	2:B:63:LYS:N	2.52	0.43
3:H:14:PRO:HG3	3:H:118:VAL:CG1	2.33	0.43
3:H:200:VAL:O	3:H:216:LYS:HG3	2.19	0.43
3:H:173:PHE:CD2	4:L:178:SER:HB3	2.54	0.43
1:A:28:ALA:CB	1:A:71:ASP:HB2	2.48	0.42
2:B:219:PRO:O	2:B:220:ARG:HB2	2.18	0.42
3:H:131:LEU:O	3:H:132:ALA:C	2.56	0.42
2:B:133:PRO:CD	2:B:145:LEU:HD23	2.48	0.42
3:H:58:THR:HG1	3:H:60:TYR:HE1	1.65	0.42
1:A:88:TYR:O	1:A:103:GLY:HA2	2.19	0.42
3:H:130:PRO:HG3	3:H:215:LYS:CG	2.49	0.42
4:L:130:THR:HG22	4:L:132:LYS:HB2	2.01	0.42
3:H:179:SER:C	3:H:181:LEU:H	2.22	0.42
2:B:100:ASP:O	2:B:101:TYR:C	2.57	0.42
2:B:169:GLY:O	2:B:189:THR:N	2.46	0.42
3:H:48:ILE:O	3:H:61:ASN:N	2.51	0.42
4:L:7:GLU:O	4:L:104:THR:HG23	2.20	0.42
1:A:36:ASN:OD1	1:A:50:ILE:O	2.37	0.42
2:B:12:VAL:HG11	2:B:18:VAL:CG1	2.47	0.42
2:B:96:CYS:O	2:B:96:CYS:SG	2.77	0.42
1:A:61:PRO:O	1:A:63:ARG:N	2.52	0.42
2:B:52:ASP:HA	2:B:53:PRO:HD3	1.89	0.42
3:H:173:PHE:N	3:H:173:PHE:CD1	2.88	0.42
3:H:2:VAL:HG12	3:H:2:VAL:O	2.19	0.42
3:H:2:VAL:H	3:H:26:GLY:HA2	1.85	0.42
3:H:47:TRP:CG	4:L:98:TRP:HB2	2.55	0.42
4:L:197:GLN:HB3	4:L:197:GLN:HE21	1.66	0.42
3:H:148:LEU:CD1	4:L:180:TYR:HE2	2.33	0.42
1:A:184:THR:HG23	1:A:187:ALA:N	2.30	0.42
1:A:197:GLN:O	1:A:197:GLN:CG	2.67	0.42
2:B:141:SER:O	2:B:192:SER:CB	2.67	0.42
3:H:153:PHE:HA	3:H:154:PRO:HA	1.94	0.42
4:L:37:TRP:CE2	4:L:75:LEU:HB2	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:109:LEU:HA	1:A:143:TYR:OH	2.20	0.41
4:L:132:LYS:HD2	4:L:132:LYS:HA	1.88	0.41
1:A:184:THR:CG2	1:A:187:ALA:HB2	2.50	0.41
2:B:129:TYR:HB2	2:B:148:LEU:HB3	2.01	0.41
4:L:131:ASN:HA	4:L:185:ALA:HB2	2.02	0.41
1:A:197:GLN:HB2	1:A:197:GLN:HE21	1.63	0.41
2:B:33:TRP:HE1	2:B:52:ASP:CA	2.34	0.41
3:H:8:LYS:HA	3:H:114:THR:HA	2.01	0.41
1:A:4:VAL:O	1:A:101:GLY:HA2	2.21	0.41
2:B:47:TRP:HZ2	2:B:50:ARG:HG3	1.85	0.41
2:B:90:ASP:HB2	2:B:118:VAL:HG21	2.02	0.41
3:H:67:LYS:HE2	3:H:90:ASP:OD1	2.21	0.41
1:A:206:GLU:HG2	1:A:207:LYS:N	2.35	0.41
2:B:132:ALA:HA	2:B:133:PRO:HD3	1.79	0.41
3:H:149:VAL:O	3:H:183:THR:HA	2.21	0.41
3:H:159:VAL:HG11	3:H:186:SER:HB3	2.02	0.41
3:H:2:VAL:HA	3:H:26:GLY:CA	2.50	0.41
3:H:5:GLN:HB2	3:H:5:GLN:HE21	1.55	0.41
4:L:128:LEU:HD23	4:L:128:LEU:HA	1.78	0.41
4:L:61:PRO:HB2	4:L:63:ARG:HG2	2.03	0.41
1:A:50:ILE:CG2	1:A:53:THR:O	2.69	0.41
3:H:178:GLN:O	3:H:179:SER:HB2	2.21	0.41
4:L:41:LYS:CG	4:L:42:PRO:HD2	2.28	0.41
1:A:152:LYS:HA	1:A:156:THR:O	2.21	0.41
2:B:67:LYS:HE2	2:B:67:LYS:HB2	1.95	0.41
3:H:178:GLN:O	3:H:181:LEU:O	2.39	0.41
3:H:47:TRP:HZ2	3:H:50:ARG:HG3	1.85	0.41
4:L:192:SER:HB2	4:L:211:ARG:OXT	2.20	0.41
3:H:27:TYR:C	3:H:27:TYR:CD1	2.93	0.41
4:L:118:VAL:HB	4:L:207:LYS:HG2	2.03	0.41
4:L:129:GLU:C	4:L:131:ASN:N	2.75	0.41
4:L:13:SER:HB2	4:L:16:GLU:CD	2.42	0.41
3:H:171:HIS:HD2	4:L:176:MET:SD	2.44	0.41
1:A:206:GLU:CG	1:A:207:LYS:N	2.84	0.40
1:A:30:THR:OG1	1:A:31:THR:N	2.53	0.40
1:A:75:LEU:HD23	1:A:76:THR:N	2.36	0.40
2:B:51:ILE:CA	2:B:58:THR:HG22	2.51	0.40
3:H:145:LEU:HD22	3:H:217:ILE:HG21	2.03	0.40
3:H:4:LEU:N	3:H:4:LEU:HD12	2.31	0.40
1:A:1:GLN:O	1:A:1:GLN:HG2	2.21	0.40
1:A:52:GLY:N	2:B:105:SER:HB3	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:114:SER:HB2	4:L:174:LYS:HE2	2.03	0.40
1:A:139:ILE:HG22	1:A:142:PHE:CD2	2.57	0.40
1:A:114:SER:CB	1:A:174:LYS:HE2	2.50	0.40
4:L:147:VAL:CG1	4:L:198:VAL:HG13	2.51	0.40
4:L:81:GLN:NE2	4:L:81:GLN:CA	2.85	0.40
1:A:125:SER:HA	1:A:128:LEU:HD12	2.02	0.40
1:A:189:GLU:HG2	3:H:87:THR:CB	2.52	0.40
1:A:22:CYS:HB2	1:A:37:TRP:CH2	2.56	0.40
4:L:12:THR:HG23	4:L:13:SER:N	2.37	0.40
4:L:39:GLN:HB2	4:L:49:LEU:HD21	2.02	0.40
1:A:166:GLN:HE22	2:B:42:GLY:N	2.19	0.40
1:A:18:VAL:CG2	1:A:19:THR:N	2.84	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	209/211 (99%)	190 (91%)	16 (8%)	3 (1%)	11	36
2	B	210/220 (96%)	187 (89%)	21 (10%)	2 (1%)	15	45
3	H	211/220 (96%)	182 (86%)	22 (10%)	7 (3%)	4	15
4	L	209/211 (99%)	186 (89%)	21 (10%)	2 (1%)	15	45
All	All	839/862 (97%)	745 (89%)	80 (10%)	14 (2%)	9	31

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	156	PRO
3	H	101	TYR
3	H	103	GLY

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Mol	Chain	Res	Type
3	H	198	GLU
1	A	155	GLY
4	L	62	ALA
1	A	85	GLU
2	B	44	GLY
1	A	173	ASN
3	H	90	ASP
3	H	26	GLY
3	H	207	PRO
4	L	155	GLY
3	H	154	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	A	178/178 (100%)	160 (90%)	18 (10%)	7	23
2	B	184/188 (98%)	157 (85%)	27 (15%)	3	9
3	H	185/188 (98%)	164 (89%)	21 (11%)	5	17
4	L	178/178 (100%)	153 (86%)	25 (14%)	3	10
All	All	725/732 (99%)	634 (87%)	91 (13%)	4	13

All (91) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	VAL
1	A	30	THR
1	A	47	THR
1	A	49	LEU
1	A	75	LEU
1	A	81	GLN
1	A	95	SER
1	A	97	HIS
1	A	120	LEU
1	A	148	THR

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Mol	Chain	Res	Type
1	A	166	GLN
1	A	171	SER
1	A	184	THR
1	A	186	ARG
1	A	189	GLU
1	A	197	GLN
1	A	209	LEU
1	A	210	SER
2	B	3	GLN
2	B	4	LEU
2	B	5	GLN
2	B	6	GLN
2	B	10	GLU
2	B	11	LEU
2	B	12	VAL
2	B	28	THR
2	B	29	PHE
2	B	33	TRP
2	B	43	ARG
2	B	71	THR
2	B	102	TYR
2	B	105	SER
2	B	106	TYR
2	B	108	ASP
2	B	142	MET
2	B	155	GLU
2	B	173	PHE
2	B	178	GLN
2	B	184	LEU
2	B	185	SER
2	B	197	SER
2	B	201	THR
2	B	215	LYS
2	B	218	VAL
2	B	220	ARG
3	H	4	LEU
3	H	5	GLN
3	H	10	GLU
3	H	11	LEU
3	H	30	THR
3	H	40	ARG
3	H	71	THR

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Mol	Chain	Res	Type
3	H	74	LYS
3	H	88	SER
3	H	100	ASP
3	H	101	TYR
3	H	102	TYR
3	H	106	TYR
3	H	178	GLN
3	H	180	ASP
3	H	181	LEU
3	H	184	LEU
3	H	197	SER
3	H	198	GLU
3	H	201	THR
3	H	215	LYS
4	L	1	GLN
4	L	12	THR
4	L	21	LYS
4	L	36	ASN
4	L	38	VAL
4	L	47	THR
4	L	49	LEU
4	L	54	ASN
4	L	71	ASP
4	L	75	LEU
4	L	81	GLN
4	L	82	THR
4	L	95	SER
4	L	97	HIS
4	L	109	LEU
4	L	135	LEU
4	L	152	LYS
4	L	166	GLN
4	L	169	LYS
4	L	181	LEU
4	L	182	THR
4	L	184	THR
4	L	186	ARG
4	L	190	ARG
4	L	203	HIS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	33	ASN
1	A	36	ASN
1	A	54	ASN
1	A	55	ASN
1	A	81	GLN
1	A	111	GLN
1	A	166	GLN
1	A	197	GLN
2	B	5	GLN
2	B	54	ASN
2	B	178	GLN
3	H	5	GLN
3	H	35	HIS
3	H	54	ASN
3	H	112	GLN
3	H	178	GLN
4	L	81	GLN
4	L	97	HIS
4	L	160	GLN
4	L	170	GLN
4	L	197	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates 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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	211/211 (100%)	-0.87	0 100 100	10, 26, 41, 52	1 (0%)
2	B	214/220 (97%)	-0.73	0 100 100	14, 32, 59, 71	0
3	H	215/220 (97%)	-0.76	0 100 100	14, 32, 58, 69	0
4	L	211/211 (100%)	-0.88	0 100 100	9, 26, 42, 52	2 (0%)
All	All	851/862 (98%)	-0.81	0 100 100	9, 29, 55, 71	3 (0%)

There are no RSRZ outliers to report.

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 carbohydrates 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.