



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 07:06 AM UTC

PDB ID : 4KHT / pdb_00004kht
Title : Triple helix bundle of GP41 complexed with fab 8066
Authors : Li, M.; Gustchina, A.; Wlodawer, A.
Deposited on : 2013-05-01
Resolution : 2.82 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

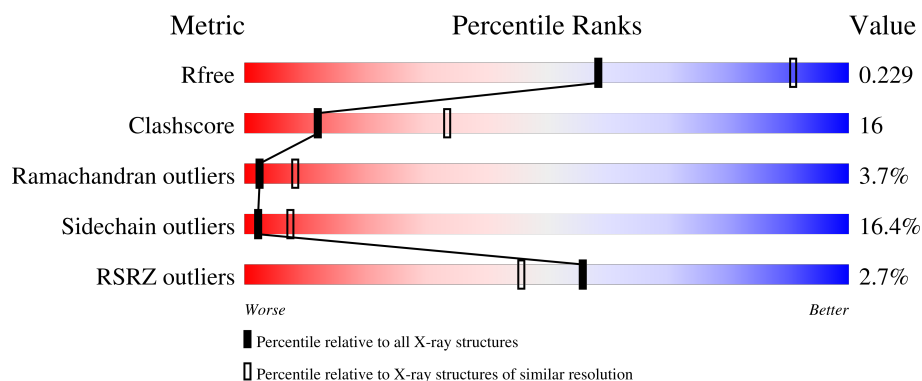
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.82 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	4591 (2.84-2.80)
Clashscore	190562	5010 (2.84-2.80)
Ramachandran outliers	187476	4916 (2.84-2.80)
Sidechain outliers	187428	4918 (2.84-2.80)
RSRZ outliers	180081	4594 (2.84-2.80)

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	A	67	4% 57% 31% 9% ..
2	H	245	2% 55% 28% . 13%
3	L	213	2% 57% 31% 10% .

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 3691 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 Gp41 helix.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	66	Total	C	N	O	S	0	0	0
			525	333	95	95	2			

- Molecule 2 is a protein called 8066 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	214	Total	C	N	O	S	0	1	0
			1603	1017	263	317	6			

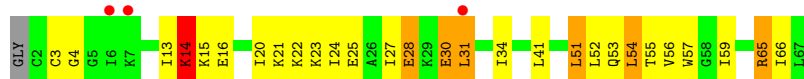
- Molecule 3 is a protein called 8066 light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	L	209	Total	C	N	O	S	0	0	0
			1563	978	258	322	5			

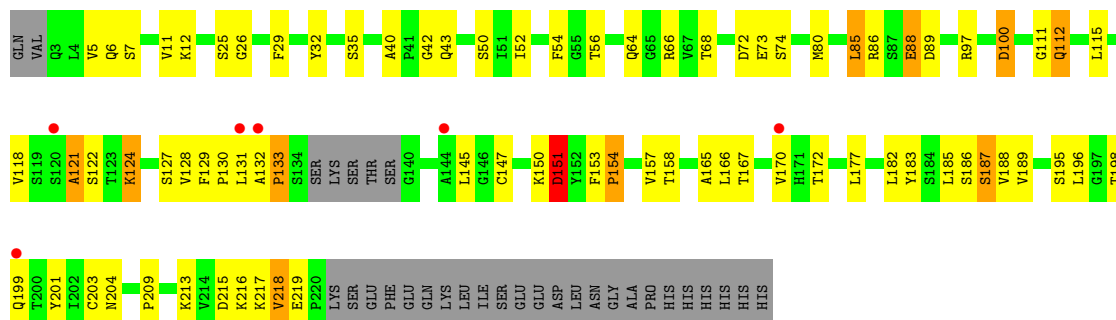
3 Residue-property plots [i](#)

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.

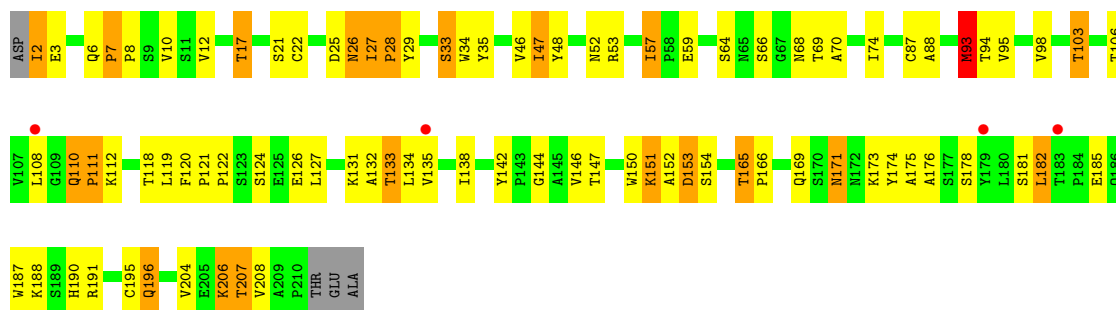
• Molecule 1: Gp41 helix



• Molecule 2: 8066 heavy chain



• Molecule 3: 8066 light chain



4 Data and refinement statistics

Property	Value	Source
Space group	P 3 2 1	Depositor
Cell constants a, b, c, α , β , γ	104.42Å 104.42Å 97.13Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	35.56 – 2.82 35.56 – 2.82	Depositor EDS
% Data completeness (in resolution range)	93.6 (35.56-2.82) 90.1 (35.56-2.82)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.76 (at 2.81Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, R_{free}	0.215 , 0.266 0.232 , 0.229	Depositor DCC
R_{free} test set	720 reflections (4.74%)	wwPDB-VP
Wilson B-factor (Å ²)	78.8	Xtriage
Anisotropy	0.492	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 105.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.045 for -h,-k,l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	3691	wwPDB-VP
Average B, all atoms (Å ²)	134.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.92% 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	0.66	0/527	1.09	4/702 (0.6%)
2	H	0.66	0/1646	0.96	2/2244 (0.1%)
3	L	0.58	0/1603	0.98	9/2195 (0.4%)
All	All	0.63	0/3776	0.99	15/5141 (0.3%)

There are no bond length outliers.

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	24	ILE	N-CA-C	-7.73	105.63	112.12
3	L	7	PRO	CA-C-N	6.68	127.22	119.47
3	L	7	PRO	C-N-CA	6.68	127.22	119.47
1	A	14	LYS	N-CA-C	-6.49	104.55	113.18
3	L	94	THR	N-CA-C	6.10	120.19	112.87
3	L	57	ILE	CA-C-N	5.99	125.93	119.76
3	L	57	ILE	C-N-CA	5.99	125.93	119.76
1	A	56	VAL	CB-CA-C	-5.64	104.66	111.88
1	A	59	ILE	N-CA-C	5.48	115.69	110.42
3	L	69	THR	N-CA-C	5.31	117.06	108.41
3	L	165	THR	CA-C-N	-5.28	114.54	120.14
3	L	165	THR	C-N-CA	-5.28	114.54	120.14
2	H	112	GLN	N-CA-C	-5.28	106.79	113.18
3	L	135	VAL	N-CA-C	5.21	115.01	106.72
2	H	100	ASP	N-CA-C	-5.02	105.70	111.07

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	525	0	571	18	0
2	H	1603	0	1552	47	0
3	L	1563	0	1496	56	0
All	All	3691	0	3619	114	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 16.

All (114) 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:H:127:SER:HB2	2:H:150:LYS:HB2	1.61	0.83
3:L:27:ILE:HB	3:L:29:TYR:HE1	1.50	0.76
2:H:199:GLN:HB2	2:H:201:TYR:OH	1.88	0.73
3:L:22:CYS:HB3	3:L:70:ALA:HB3	1.69	0.72
3:L:28:PRO:HB2	3:L:29:TYR:HA	1.71	0.72
1:A:55:THR:HG22	2:H:54:PHE:HZ	1.56	0.71
2:H:199:GLN:HB2	2:H:201:TYR:CZ	2.29	0.68
1:A:3:CYS:SG	1:A:4:GLY:N	2.71	0.62
2:H:172:THR:HG22	2:H:187:SER:HB2	1.82	0.61
2:H:86:ARG:HG3	2:H:88:GLU:HG2	1.84	0.60
3:L:7:PRO:O	3:L:103:THR:OG1	2.17	0.60
2:H:121:ALA:HB1	2:H:122:SER:OG	2.03	0.58
2:H:204:ASN:ND2	2:H:215:ASP:OD1	2.32	0.58
1:A:51:LEU:O	1:A:55:THR:HG23	2.04	0.57
1:A:27:ILE:O	1:A:30:GLU:N	2.37	0.57
2:H:177:LEU:HB2	2:H:183:TYR:CE1	2.40	0.57
1:A:55:THR:HG22	2:H:54:PHE:CZ	2.38	0.56
2:H:128:VAL:O	2:H:216:LYS:NZ	2.39	0.56
3:L:48:TYR:O	3:L:52:ASN:HB2	2.06	0.55
1:A:14:LYS:HD3	1:A:15:LYS:HD2	1.88	0.55
3:L:110:GLN:HE21	3:L:111:PRO:HD2	1.70	0.55
2:H:29:PHE:HA	2:H:32:TYR:CD2	2.41	0.55
3:L:124:SER:HA	3:L:127:LEU:HD12	1.89	0.55
3:L:133:THR:HB	3:L:181:SER:HA	1.89	0.55
3:L:206:LYS:NZ	3:L:207:THR:H	2.05	0.55
3:L:34:TRP:HD1	3:L:47:ILE:CG2	2.20	0.54
2:H:6:GLN:OE1	2:H:111:GLY:HA3	2.07	0.54
2:H:130:PRO:HD3	2:H:216:LYS:NZ	2.22	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:28:PRO:HB2	3:L:29:TYR:CA	2.38	0.54
3:L:152:ALA:O	3:L:154:SER:N	2.39	0.54
3:L:26:ASN:O	3:L:27:ILE:HG13	2.08	0.54
1:A:25:GLU:HA	1:A:28:GLU:CD	2.33	0.53
3:L:34:TRP:CZ3	3:L:87:CYS:HB3	2.43	0.53
3:L:27:ILE:HB	3:L:29:TYR:CE1	2.39	0.53
3:L:2:ILE:HD11	3:L:26:ASN:HB3	1.90	0.53
2:H:203:CYS:N	2:H:216:LYS:O	2.31	0.53
3:L:138:ILE:HD12	3:L:138:ILE:H	1.74	0.52
3:L:34:TRP:HD1	3:L:47:ILE:HG22	1.75	0.52
2:H:145:LEU:HD12	2:H:218:VAL:HB	1.91	0.52
3:L:110:GLN:HG3	3:L:111:PRO:HD2	1.92	0.52
3:L:153:ASP:HB2	3:L:190:HIS:HB3	1.92	0.52
2:H:6:GLN:H	2:H:112:GLN:CD	2.19	0.51
3:L:33:SER:HB2	3:L:35:TYR:CE2	2.45	0.51
2:H:151:ASP:OD2	2:H:151:ASP:N	2.44	0.50
2:H:166:LEU:HD21	2:H:189:VAL:HG11	1.93	0.50
1:A:57:TRP:CD1	2:H:52:ILE:HD11	2.47	0.49
2:H:11:VAL:HG23	2:H:209:PRO:HB3	1.93	0.49
2:H:42:GLY:C	2:H:43:GLN:HG2	2.37	0.49
1:A:57:TRP:HD1	2:H:52:ILE:HD11	1.78	0.48
2:H:66:ARG:HH22	2:H:89:ASP:CG	2.21	0.48
3:L:169:GLN:HE21	3:L:175:ALA:HB2	1.78	0.48
2:H:88:GLU:H	2:H:88:GLU:CD	2.21	0.48
3:L:112:LYS:HG3	3:L:142:TYR:O	2.14	0.48
3:L:171:ASN:C	3:L:173:LYS:H	2.21	0.48
2:H:54:PHE:HB2	2:H:56:THR:HG23	1.94	0.48
3:L:151:LYS:HG3	3:L:196:GLN:HE22	1.79	0.48
2:H:124:LYS:HB3	2:H:124:LYS:HE2	1.70	0.47
2:H:170:VAL:HG22	2:H:189:VAL:HG22	1.96	0.47
3:L:151:LYS:HB3	3:L:151:LYS:HE3	1.64	0.47
3:L:171:ASN:OD1	3:L:171:ASN:N	2.48	0.47
2:H:80:MET:HB3	2:H:80:MET:HE3	1.65	0.46
2:H:11:VAL:O	2:H:12:LYS:HD2	2.16	0.46
1:A:65:ARG:C	1:A:66:ILE:HD13	2.40	0.46
3:L:88:ALA:HA	3:L:98:VAL:O	2.16	0.46
3:L:46:VAL:O	3:L:47:ILE:HD12	2.15	0.45
2:H:188:VAL:HG11	3:L:120:PHE:HE2	1.81	0.45
2:H:29:PHE:CD1	2:H:73:GLU:HA	2.51	0.45
2:H:32:TYR:CD1	2:H:97:ARG:HD2	2.51	0.45
3:L:166:PRO:HB2	3:L:174:TYR:HD1	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:150:TRP:HZ2	3:L:178:SER:O	2.00	0.45
3:L:206:LYS:HZ2	3:L:207:THR:H	1.65	0.45
2:H:151:ASP:HB2	2:H:182:LEU:HD13	1.99	0.44
3:L:53:ARG:NH2	3:L:59:GLU:HG3	2.32	0.44
2:H:66:ARG:NH2	2:H:89:ASP:OD1	2.51	0.44
1:A:54:LEU:HD12	1:A:54:LEU:HA	1.86	0.44
3:L:126:GLU:OE2	3:L:133:THR:HG22	2.17	0.44
2:H:85:LEU:HB3	2:H:118:VAL:HG11	2.00	0.44
3:L:131:LYS:HD3	3:L:182:LEU:O	2.18	0.44
2:H:35:SER:OG	2:H:50:SER:OG	2.32	0.44
3:L:122:PRO:HB3	3:L:132:ALA:HB1	1.99	0.44
1:A:20:ILE:C	1:A:22:LYS:H	2.26	0.43
2:H:132:ALA:HB3	3:L:121:PRO:HG2	2.00	0.43
2:H:153:PHE:HA	2:H:154:PRO:HA	1.77	0.43
3:L:196:GLN:HE21	3:L:196:GLN:HB2	1.64	0.43
3:L:121:PRO:HB3	3:L:208:VAL:HG21	2.01	0.43
3:L:7:PRO:HA	3:L:8:PRO:HD3	1.87	0.43
2:H:129:PHE:HE2	2:H:150:LYS:HG3	1.82	0.43
1:A:52:LEU:HD23	1:A:52:LEU:HA	1.55	0.43
2:H:72:ASP:OD2	2:H:74:SER:OG	2.31	0.43
3:L:53:ARG:HB3	3:L:57:ILE:HB	2.01	0.43
3:L:166:PRO:HB2	3:L:174:TYR:CD1	2.53	0.42
2:H:131:LEU:HD13	3:L:120:PHE:CG	2.55	0.42
3:L:28:PRO:CB	3:L:29:TYR:HA	2.45	0.42
3:L:122:PRO:HD3	3:L:134:LEU:HG	2.01	0.42
3:L:110:GLN:HE21	3:L:111:PRO:CD	2.33	0.42
3:L:166:PRO:HA	3:L:175:ALA:O	2.20	0.42
3:L:181:SER:O	3:L:182:LEU:HD23	2.20	0.42
1:A:27:ILE:HA	1:A:30:GLU:OE2	2.20	0.42
3:L:144:GLY:O	3:L:146:VAL:HG12	2.20	0.41
3:L:68:ASN:H	3:L:68:ASN:HD22	1.68	0.41
2:H:121:ALA:HA	2:H:122:SER:HA	1.84	0.41
3:L:138:ILE:HB	3:L:176:ALA:HB3	2.02	0.41
3:L:169:GLN:NE2	3:L:175:ALA:HB2	2.36	0.41
2:H:85:LEU:HD12	2:H:85:LEU:HA	1.91	0.41
2:H:151:ASP:HA	2:H:183:TYR:O	2.21	0.41
1:A:22:LYS:HA	1:A:25:GLU:HB2	2.02	0.41
3:L:93:MET:HE3	3:L:93:MET:HA	2.03	0.41
1:A:31:LEU:O	1:A:34:ILE:HB	2.21	0.40
2:H:40:ALA:HB3	2:H:43:GLN:HG3	2.02	0.40
3:L:17:THR:HA	3:L:74:ILE:O	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:51:LEU:HA	1:A:51:LEU:HD23	1.70	0.40
1:A:65:ARG:O	1:A:66:ILE:HD13	2.21	0.40
2:H:132:ALA:HA	2:H:133:PRO:HD3	1.69	0.40
3:L:110:GLN:NE2	3:L:110:GLN:HA	2.36	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	64/67 (96%)	56 (88%)	6 (9%)	2 (3%)	3	11
2	H	211/245 (86%)	190 (90%)	13 (6%)	8 (4%)	2	8
3	L	207/213 (97%)	172 (83%)	27 (13%)	8 (4%)	2	8
All	All	482/525 (92%)	418 (87%)	46 (10%)	18 (4%)	2	8

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	H	151	ASP
2	H	196	LEU
3	L	28	PRO
3	L	191	ARG
2	H	26	GLY
2	H	165	ALA
2	H	195	SER
2	H	121	ALA
3	L	93	MET
3	L	153	ASP
1	A	28	GLU
2	H	154	PRO
3	L	111	PRO

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Mol	Chain	Res	Type
1	A	21	LYS
3	L	195	CYS
3	L	27	ILE
3	L	66	SER
2	H	133	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	56/56 (100%)	45 (80%)	11 (20%)	1	4
2	H	178/207 (86%)	155 (87%)	23 (13%)	4	14
3	L	175/178 (98%)	142 (81%)	33 (19%)	1	5
All	All	409/441 (93%)	342 (84%)	67 (16%)	2	7

All (67) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	ILE
1	A	14	LYS
1	A	16	GLU
1	A	23	LYS
1	A	30	GLU
1	A	31	LEU
1	A	41	LEU
1	A	51	LEU
1	A	53	GLN
1	A	54	LEU
1	A	65	ARG
2	H	5	VAL
2	H	7	SER
2	H	25	SER
2	H	64	GLN
2	H	68	THR
2	H	85	LEU

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Mol	Chain	Res	Type
2	H	88	GLU
2	H	100	ASP
2	H	115	LEU
2	H	124	LYS
2	H	147	CYS
2	H	151	ASP
2	H	157	VAL
2	H	158	THR
2	H	167	THR
2	H	185	LEU
2	H	186	SER
2	H	187	SER
2	H	198	THR
2	H	213	LYS
2	H	217	LYS
2	H	218	VAL
2	H	219	GLU
3	L	2	ILE
3	L	3	GLU
3	L	6	GLN
3	L	10	VAL
3	L	12	VAL
3	L	17	THR
3	L	21	SER
3	L	25	ASP
3	L	26	ASN
3	L	33	SER
3	L	47	ILE
3	L	64	SER
3	L	93	MET
3	L	95	VAL
3	L	103	THR
3	L	106	THR
3	L	108	LEU
3	L	110	GLN
3	L	118	THR
3	L	119	LEU
3	L	133	THR
3	L	147	THR
3	L	151	LYS
3	L	165	THR
3	L	171	ASN

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Mol	Chain	Res	Type
3	L	182	LEU
3	L	185	GLU
3	L	187	TRP
3	L	188	LYS
3	L	196	GLN
3	L	204	VAL
3	L	206	LYS
3	L	207	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	38	GLN
1	A	40	ASN
1	A	61	GLN
2	H	58	ASN
2	H	104	ASN
2	H	171	HIS
2	H	178	GLN
3	L	68	ASN
3	L	110	GLN
3	L	169	GLN
3	L	196	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 [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	66/67 (98%)	0.22	3 (4%)	38 30	48, 126, 237, 268	0
2	H	214/245 (87%)	0.05	6 (2%)	55 44	47, 106, 221, 263	1 (0%)
3	L	209/213 (98%)	0.25	4 (1%)	66 57	60, 156, 221, 283	0
All	All	489/525 (93%)	0.16	13 (2%)	56 46	47, 131, 225, 283	1 (0%)

All (13) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	H	199	GLN	5.7
2	H	131	LEU	3.1
3	L	135	VAL	3.1
1	A	7	LYS	3.1
1	A	6	ILE	3.0
3	L	183	THR	2.4
2	H	132	ALA	2.3
3	L	179	TYR	2.3
3	L	108	LEU	2.2
2	H	144	ALA	2.1
1	A	31	LEU	2.1
2	H	120	SER	2.0
2	H	170	VAL	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.