



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 02:24 AM UTC

PDB ID : 2IG2 / pdb_00002ig2
Title : DIR PRIMAERSTRUKTUR DES KRISTALLISIERBAREN MONOKLONALEN IMMUNOGLOBULINS IGG1 KOL. II. AMINOSAEURESEQUENZ DER L-KETTE, LAMBDA-TYP, SUBGRUPPE I (GERMAN)
Authors : Marquart, M.; Huber, R.
Deposited on : 1989-04-18
Resolution : 3.00 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

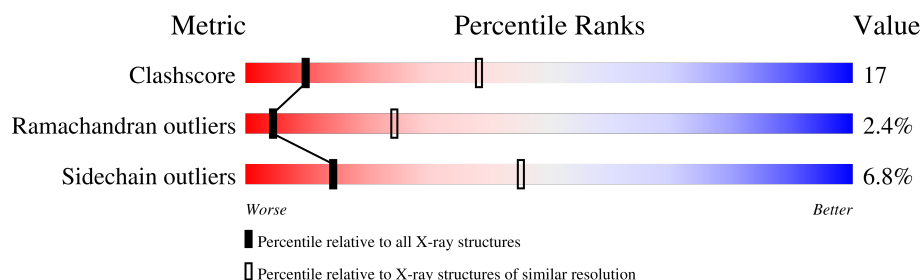
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	190562	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	L	216	
2	H	455	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 3379 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 IGG1-LAMBDA KOL FAB (LIGHT CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	L	216	Total	C	N	O	S	54	0	0
			1602	999	269	327	7			

- Molecule 2 is a protein called IGG1-LAMBDA KOL FAB (HEAVY CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	239	Total	C	N	O	S	53	0	1
			1777	1113	305	348	11			

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	6	GLN	GLU	conflict	UNP P01772
H	23	SER	ALA	conflict	UNP P01772
H	24	SER	ALA	conflict	UNP P01772
H	28	ILE	THR	conflict	UNP P01772
H	31	SER	ASN	conflict	UNP P01772
H	33	ALA	GLY	conflict	UNP P01772
H	35	TYR	HIS	conflict	UNP P01772
H	50	ILE	ALA	conflict	UNP P01772
H	53	ASP	TYR	conflict	UNP P01772
H	57	ASP	ASN	conflict	UNP P01772
H	58	GLN	LYS	conflict	UNP P01772
H	59	HIS	TYR	conflict	UNP P01772
H	73	ASN	ASP	conflict	UNP P01772
H	74	ASP	ASN	conflict	UNP P01772
H	80	PHE	TYR	conflict	UNP P01772
H	81	LEU	MET	conflict	UNP P01772
H	84	ASP	ASN	conflict	UNP P01772
H	88	PRO	ALA	conflict	UNP P01772
H	92	GLY	ALA	conflict	UNP P01772
H	95	PHE	TYR	conflict	UNP P01772

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Chain	Residue	Modelled	Actual	Comment	Reference
H	99	ASP	GLU	conflict	UNP P01772
H	101	GLY	ARG	conflict	UNP P01772
H	101A	HIS	TRP	conflict	UNP P01772
H	101B	GLY	VAL	conflict	UNP P01772
H	101C	PHE	ARG	conflict	UNP P01772
H	101D	CYS	TYR	conflict	UNP P01772
H	102	SER	THR	conflict	UNP P01772
H	103	SER	THR	conflict	UNP P01772
H	104	ALA	VAL	conflict	UNP P01772
H	104A	SER	THR	conflict	UNP P01772
H	104B	CYS	THR	conflict	UNP P01772
H	104C	PHE	ILE	conflict	UNP P01772
H	?	-	TYR	deletion	UNP P01772
H	?	-	TYR	deletion	UNP P01772
H	105	PRO	PHE	conflict	UNP P01772
H	113	PRO	LEU	conflict	UNP P01772
H	153	GLN	GLU	conflict	UNP P01772
H	273	GLN	GLU	conflict	UNP P01772
H	284	GLN	GLU	conflict	UNP P01772
H	295	GLN	GLU	conflict	UNP P01772
H	313	ASN	ASP	conflict	UNP P01772
H	316	ASP	ASN	conflict	UNP P01772

4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	135.60 Å 135.60 Å 82.10 Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	6.00 – 3.00	Depositor
% Data completeness (in resolution range)	(Not available) (6.00-3.00)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	EREF	Depositor
R, R_{free}	0.207 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	3379	wwPDB-VP
Average B, all atoms (Å ²)	14.0	wwPDB-VP

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	L	1.37	9/1640 (0.5%)	1.86	29/2238 (1.3%)
2	H	1.43	16/1825 (0.9%)	1.88	36/2486 (1.4%)
All	All	1.40	25/3465 (0.7%)	1.87	65/4724 (1.4%)

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
1	L	0	24
2	H	0	22
All	All	0	46

All (25) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	225	HIS	CE1-NE2	10.44	1.43	1.32
1	L	190	HIS	CE1-NE2	10.36	1.43	1.32
2	H	169	HIS	CE1-NE2	9.67	1.42	1.32
2	H	108	TRP	NE1-CE2	-9.64	1.26	1.37
2	H	52	TRP	NE1-CE2	-9.55	1.26	1.37
2	H	225	HIS	ND1-CE1	9.54	1.42	1.32
2	H	47	TRP	NE1-CE2	-9.47	1.27	1.37
1	L	190	HIS	ND1-CE1	9.33	1.41	1.32
1	L	90	TRP	NE1-CE2	-9.26	1.27	1.37
1	L	199	HIS	ND1-CE1	9.09	1.41	1.32
1	L	150	TRP	NE1-CE2	-9.05	1.27	1.37
2	H	159	TRP	NE1-CE2	-8.98	1.27	1.37
2	H	169	HIS	ND1-CE1	8.97	1.41	1.32
2	H	101(A)	HIS	ND1-CE1	8.94	1.41	1.32
2	H	36	TRP	NE1-CE2	-8.90	1.27	1.37
2	H	205	HIS	CE1-NE2	8.83	1.41	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	101(A)	HIS	CE1-NE2	8.82	1.41	1.32
1	L	34	TRP	NE1-CE2	-8.75	1.27	1.37
1	L	187	TRP	NE1-CE2	-8.48	1.28	1.37
2	H	205	HIS	ND1-CE1	8.43	1.41	1.32
2	H	59	HIS	ND1-CE1	7.89	1.40	1.32
2	H	59	HIS	CE1-NE2	7.62	1.40	1.32
1	L	199	HIS	CE1-NE2	7.27	1.39	1.32
1	L	59	ASP	CA-CB	6.33	1.64	1.53
2	H	6	GLN	C-N	-5.28	1.27	1.33

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	130	ASN	CA-CB-CG	-10.96	101.64	112.60
1	L	171	ASN	N-CA-C	-10.92	99.62	113.16
2	H	209	ASN	CA-CB-CG	-10.41	102.19	112.60
2	H	62	ASP	CA-CB-CG	-9.22	103.38	112.60
1	L	59	ASP	CA-CB-CG	9.09	121.69	112.60
2	H	12	VAL	CA-C-N	7.76	131.07	120.67
2	H	12	VAL	C-N-CA	7.76	131.07	120.67
1	L	170	SER	O-C-N	7.73	133.37	122.08
2	H	57	ASP	CA-CB-CG	-7.67	104.93	112.60
1	L	169	GLN	CA-C-N	-7.61	108.19	122.27
1	L	169	GLN	C-N-CA	-7.61	108.19	122.27
1	L	153	ASP	CA-CB-CG	-7.46	105.14	112.60
2	H	207	PRO	N-CA-CB	7.43	110.58	103.52
1	L	169	GLN	O-C-N	-7.26	114.01	123.16
2	H	147	VAL	N-CA-C	7.25	113.97	106.21
2	H	195	GLY	CA-C-N	-6.92	109.47	121.66
2	H	195	GLY	C-N-CA	-6.92	109.47	121.66
1	L	190	HIS	CA-CB-CG	-6.71	107.09	113.80
1	L	39	PRO	N-CA-CB	6.68	109.20	103.19
2	H	217	GLU	CA-C-N	6.44	126.82	119.93
2	H	217	GLU	C-N-CA	6.44	126.82	119.93
2	H	204	ASN	CA-CB-CG	-6.38	106.22	112.60
2	H	216	VAL	N-CA-C	6.37	116.58	106.32
2	H	167	GLY	CA-C-N	6.11	129.40	120.91
2	H	167	GLY	C-N-CA	6.11	129.40	120.91
1	L	122	PRO	N-CA-CB	6.04	108.68	103.31
2	H	74	ASP	CA-CB-CG	-6.00	106.60	112.60
2	H	62	ASP	O-C-N	5.96	128.97	122.11
2	H	90	ASP	CA-CB-CG	-5.90	106.70	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	170	SER	N-CA-CB	5.88	119.07	110.25
2	H	221	CYS	O-C-N	5.87	128.37	122.08
1	L	201	GLY	CA-C-N	-5.83	113.97	122.19
1	L	201	GLY	C-N-CA	-5.83	113.97	122.19
2	H	218	PRO	N-CA-CB	5.74	108.35	103.19
2	H	14	PRO	N-CA-CB	5.72	108.26	103.17
1	L	185	GLU	CB-CA-C	5.66	118.89	109.56
2	H	130	ALA	CA-C-N	5.63	125.54	119.85
2	H	130	ALA	C-N-CA	5.63	125.54	119.85
2	H	105	PRO	N-CA-CB	5.58	108.13	103.17
1	L	9	SER	N-CA-C	5.54	117.60	109.24
1	L	166	PRO	N-CA-CB	5.52	108.23	103.27
1	L	47	ILE	N-CA-C	5.49	115.60	108.35
1	L	156	PRO	CA-C-N	5.43	130.41	123.13
1	L	156	PRO	C-N-CA	5.43	130.41	123.13
2	H	88	PRO	N-CA-CB	5.39	108.47	103.41
1	L	183	THR	CA-C-O	-5.33	115.71	120.19
2	H	5	VAL	N-CA-C	5.32	115.77	108.12
2	H	15	GLY	N-CA-C	-5.28	107.72	114.85
2	H	218	PRO	CA-C-N	5.25	129.75	121.56
2	H	218	PRO	C-N-CA	5.25	129.75	121.56
2	H	140	THR	N-CA-C	5.25	115.77	108.00
1	L	111	PRO	N-CA-CB	5.23	107.97	103.31
1	L	110	GLN	CA-C-N	5.22	125.14	119.76
1	L	110	GLN	C-N-CA	5.22	125.14	119.76
2	H	221	CYS	CB-CA-C	-5.22	102.63	110.92
1	L	120	PHE	CA-C-N	5.20	125.73	120.38
1	L	120	PHE	C-N-CA	5.20	125.73	120.38
1	L	59	ASP	CB-CA-C	-5.18	100.11	110.42
2	H	136	THR	CA-C-N	5.14	131.35	121.54
2	H	136	THR	C-N-CA	5.14	131.35	121.54
1	L	192	SER	N-CA-C	5.13	116.73	108.32
1	L	108	LEU	N-CA-C	5.10	117.76	110.68
2	H	204	ASN	N-CA-C	5.08	116.58	107.80
2	H	209	ASN	N-CA-CB	5.08	119.43	111.71
2	H	223	LYS	N-CA-C	-5.04	105.44	112.45

There are no chirality outliers.

All (46) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	H	101(A)	HIS	Mainchain

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Mol	Chain	Res	Type	Group
2	H	106	ASP	Sidechain
2	H	109	GLY	Mainchain
2	H	118	SER	Peptide,Mainchain
2	H	147	VAL	Mainchain
2	H	151	PHE	Mainchain
2	H	152	PRO	Mainchain
2	H	166	SER	Mainchain
2	H	176	GLN	Sidechain
2	H	181	TYR	Sidechain
2	H	194	LEU	Mainchain
2	H	196	THR	Mainchain
2	H	197	GLN	Sidechain
2	H	230	CYS	Mainchain
2	H	35	TYR	Mainchain
2	H	53	ASP	Sidechain
2	H	54	ASP	Sidechain
2	H	57	ASP	Sidechain
2	H	6	GLN	Sidechain
2	H	62	ASP	Sidechain
2	H	7	SER	Mainchain
1	L	1	GLN	Mainchain
1	L	107	VAL	Mainchain
1	L	114	ASN	Sidechain
1	L	116	THR	Mainchain
1	L	126	GLU	Sidechain
1	L	128	GLN	Sidechain
1	L	130	ASN	Sidechain
1	L	154	GLY	Mainchain
1	L	167	SER	Mainchain
1	L	172	ASN	Sidechain
1	L	177	SER	Mainchain
1	L	182	LEU	Mainchain
1	L	185	GLU	Sidechain,Mainchain
1	L	196	GLN	Sidechain
1	L	205	GLU	Sidechain
1	L	213	CYS	Mainchain
1	L	37	GLN	Sidechain
1	L	38	LEU	Mainchain
1	L	53	ARG	Mainchain
1	L	56	GLY	Mainchain
1	L	6	GLN	Sidechain
1	L	65	LYS	Mainchain

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Mol	Chain	Res	Type	Group
1	L	80	GLU	Sidechain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	1602	0	1559	54	1
2	H	1777	0	1706	62	1
All	All	3379	0	3265	111	1

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 17.

All (111) 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:29:PHE:HE2	2:H:34:MET:HE2	1.35	0.90
2:H:83:MET:HE2	2:H:86:LEU:HD21	1.53	0.90
2:H:9:GLY:HA3	2:H:18:LEU:HD22	1.51	0.90
2:H:164:LEU:HD21	2:H:187:VAL:HG21	1.61	0.83
2:H:29:PHE:CE2	2:H:34:MET:HE2	2.13	0.83
2:H:122:LYS:HD2	2:H:180:LEU:HD21	1.60	0.82
1:L:196:GLN:HB3	1:L:205:GLU:HG2	1.66	0.78
1:L:183:THR:HG22	1:L:185:GLU:HG3	1.66	0.77
2:H:153:GLN:HE21	2:H:154:PRO:HA	1.49	0.77
2:H:6:GLN:HE21	2:H:96:CYS:H	1.30	0.77
1:L:6:GLN:HG2	1:L:22:CYS:HB2	1.66	0.75
1:L:11:SER:HB3	1:L:108:LEU:HD11	1.72	0.71
2:H:64:VAL:HG13	2:H:68:PHE:HB2	1.72	0.70
2:H:140:THR:HB	2:H:190:PRO:HA	1.73	0.70
1:L:1:GLN:N	1:L:94:LEU:HD21	2.07	0.69
2:H:71:SER:HB2	2:H:80:PHE:HB2	1.74	0.69
2:H:178:SER:HB2	2:H:180:LEU:H	1.57	0.68
2:H:3:GLN:HB3	2:H:25:SER:HB3	1.77	0.67
1:L:121:PRO:HA	1:L:134:LEU:HD23	1.77	0.65
1:L:183:THR:HB	1:L:186:GLN:H	1.62	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:34:MET:HB3	2:H:79:LEU:HD22	1.78	0.65
1:L:1:GLN:H1	1:L:94:LEU:HD21	1.62	0.64
2:H:12:VAL:HG21	2:H:86:LEU:HD13	1.80	0.63
1:L:96:ALA:HB1	2:H:47:TRP:CZ3	2.33	0.62
1:L:211:THR:HB	1:L:214:SER:HB2	1.83	0.60
1:L:1:GLN:N	1:L:94:LEU:CD2	2.65	0.59
2:H:161:SER:H	2:H:202:ASN:HD21	1.51	0.59
1:L:169:GLN:C	1:L:171:ASN:H	2.09	0.59
2:H:124:PRO:HD3	2:H:205:HIS:HD2	1.67	0.59
1:L:164:THR:HG23	1:L:177:SER:HB2	1.83	0.58
1:L:26:SER:HA	1:L:28:GLY:HA3	1.86	0.58
2:H:8:GLY:HA3	2:H:20:LEU:HD23	1.86	0.57
2:H:161:SER:H	2:H:202:ASN:ND2	2.02	0.57
2:H:124:PRO:HD3	2:H:205:HIS:CD2	2.39	0.57
2:H:77:ASN:N	2:H:77:ASN:HD22	2.02	0.56
2:H:140:THR:CB	2:H:190:PRO:HA	2.34	0.56
1:L:1:GLN:H3	1:L:94:LEU:CD2	2.17	0.56
2:H:72:ARG:HD3	2:H:74:ASP:OD2	2.06	0.56
1:L:137:LEU:HD13	2:H:186:VAL:HG21	1.87	0.55
1:L:94:LEU:O	1:L:95:ASN:HB2	2.08	0.54
1:L:19:THR:HG22	1:L:73:ALA:CB	2.37	0.54
2:H:178:SER:HB2	2:H:180:LEU:HB2	1.91	0.53
2:H:64:VAL:HG13	2:H:68:PHE:CB	2.37	0.53
1:L:19:THR:HG22	1:L:73:ALA:HB2	1.90	0.53
1:L:132:ALA:HB3	1:L:182:LEU:HB2	1.90	0.53
2:H:159:TRP:HE1	2:H:185:SER:HB3	1.74	0.52
2:H:147:VAL:HG21	2:H:157:VAL:HG21	1.92	0.52
2:H:64:VAL:HG13	2:H:68:PHE:CG	2.45	0.52
2:H:128:PRO:HG3	2:H:214:LYS:HG2	1.92	0.51
2:H:64:VAL:CG1	2:H:68:PHE:HB2	2.40	0.51
1:L:14:PRO:HA	1:L:77:LEU:O	2.11	0.51
2:H:6:GLN:NE2	2:H:96:CYS:H	2.04	0.51
1:L:137:LEU:HD13	2:H:186:VAL:CG2	2.42	0.50
1:L:183:THR:C	1:L:185:GLU:H	2.19	0.49
2:H:140:THR:HB	2:H:191:SER:H	1.78	0.49
2:H:124:PRO:HD2	2:H:210:THR:HG21	1.93	0.49
2:H:97:ALA:HB1	2:H:105:PRO:HB3	1.95	0.48
1:L:134:LEU:HD12	1:L:182:LEU:HD11	1.96	0.48
1:L:141:PHE:O	1:L:173:LYS:HB3	2.13	0.48
1:L:57:VAL:HG13	1:L:58:PRO:HD2	1.95	0.48
1:L:187:TRP:CD1	1:L:188:LYS:HG3	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:131:PRO:HB2	2:H:194:LEU:HD21	1.95	0.47
2:H:98:ARG:O	2:H:105:PRO:HA	2.14	0.47
2:H:223:LYS:HB3	2:H:227:CYS:SG	2.55	0.47
1:L:79:SER:HA	1:L:107:VAL:HG11	1.95	0.46
1:L:38:LEU:HD13	1:L:83:THR:HG22	1.97	0.46
2:H:209:ASN:HD22	2:H:209:ASN:HA	1.45	0.46
2:H:14:PRO:HD3	2:H:117:SER:O	2.16	0.46
1:L:134:LEU:HB2	1:L:180:LEU:HB3	1.98	0.46
2:H:69:THR:HB	2:H:82:GLN:HB3	1.99	0.45
2:H:153:GLN:HG3	2:H:154:PRO:HA	1.99	0.45
2:H:153:GLN:NE2	2:H:154:PRO:HA	2.26	0.45
2:H:6:GLN:HG3	2:H:22:CYS:HB2	1.99	0.45
2:H:50:ILE:HG22	2:H:59:HIS:HB2	1.98	0.44
2:H:57:ASP:CG	2:H:58:GLN:H	2.25	0.44
1:L:38:LEU:HD12	1:L:38:LEU:HA	1.86	0.44
1:L:160:GLY:O	1:L:180:LEU:HA	2.16	0.44
2:H:175:LEU:HD13	2:H:181:TYR:CZ	2.53	0.44
1:L:6:GLN:HG2	1:L:22:CYS:CB	2.44	0.44
2:H:228:PRO:HA	2:H:229:PRO:HD3	1.88	0.44
2:H:130:ALA:HA	2:H:131:PRO:HD3	1.93	0.43
2:H:205:HIS:HB3	2:H:210:THR:HB	1.99	0.43
1:L:27(A):ASN:HD22	1:L:27(B):ILE:HG13	1.83	0.43
1:L:163:THR:HA	1:L:178:SER:HA	1.99	0.43
1:L:169:GLN:O	1:L:171:ASN:N	2.51	0.43
1:L:187:TRP:HD1	1:L:188:LYS:HG3	1.82	0.43
2:H:126:VAL:O	2:H:214:LYS:HD3	2.18	0.43
2:H:12:VAL:CG2	2:H:86:LEU:HD13	2.49	0.43
2:H:122:LYS:HE3	2:H:122:LYS:HB2	1.92	0.43
1:L:27(B):ILE:HG12	1:L:32:VAL:HG22	2.00	0.43
1:L:138:ILE:HG22	1:L:141:PHE:CD2	2.54	0.43
1:L:4:LEU:HD23	1:L:4:LEU:HA	1.60	0.43
1:L:166:PRO:HB2	1:L:174:TYR:HD2	1.83	0.43
1:L:141:PHE:CE1	1:L:146:VAL:HG13	2.54	0.42
1:L:183:THR:HG22	1:L:184:PRO:HD2	2.01	0.42
2:H:13:GLN:CB	2:H:16:ARG:HD2	2.49	0.42
1:L:90:TRP:HB2	2:H:104(B):CYS:SG	2.59	0.42
1:L:57:VAL:CG1	1:L:58:PRO:HD2	2.50	0.42
1:L:91:ASP:OD2	1:L:93:SER:HB2	2.20	0.42
2:H:73:ASN:ND2	2:H:75:SER:HB3	2.35	0.42
2:H:13:GLN:HB2	2:H:16:ARG:HD2	2.02	0.42
1:L:43:PRO:HG2	2:H:108:TRP:CD2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:167:SER:HB3	1:L:168:LYS:H	1.58	0.41
1:L:183:THR:C	1:L:185:GLU:N	2.78	0.41
2:H:123:GLY:HA2	2:H:124:PRO:HD3	1.89	0.41
1:L:27(B):ILE:HD13	1:L:27(B):ILE:HG21	1.78	0.41
1:L:127:LEU:HD22	1:L:184:PRO:HB3	2.03	0.41
2:H:48:VAL:HG13	2:H:64:VAL:HG21	2.03	0.41
1:L:49:ARG:HH11	1:L:49:ARG:HD2	1.66	0.40
1:L:144:GLY:HA3	1:L:174:TYR:CD2	2.55	0.40
1:L:110:GLN:HA	1:L:111:PRO:HD3	1.93	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:191:ARG:NH2	2:H:101:GLY:O[6_666]	2.16	0.04

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	L	214/216 (99%)	176 (82%)	32 (15%)	6 (3%)	4	21
2	H	237/455 (52%)	203 (86%)	29 (12%)	5 (2%)	5	27
All	All	451/671 (67%)	379 (84%)	61 (14%)	11 (2%)	4	24

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	77	LEU
1	L	213	CYS
2	H	137	SER
2	H	166	SER

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Mol	Chain	Res	Type
1	L	49	ARG
2	H	77	ASN
2	H	121	THR
1	L	159	ALA
1	L	153	ASP
2	H	63	SER
1	L	76	GLY

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	L	180/180 (100%)	170 (94%)	10 (6%)	19	52
2	H	202/402 (50%)	186 (92%)	16 (8%)	11	39
All	All	382/582 (66%)	356 (93%)	26 (7%)	14	45

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	5	THR
1	L	22	CYS
1	L	23	SER
1	L	30	SER
1	L	77	LEU
1	L	107	VAL
1	L	130	ASN
1	L	181	SER
1	L	200	GLU
1	L	204	VAL
2	H	3	GLN
2	H	5	VAL
2	H	11	VAL
2	H	13	GLN
2	H	22	CYS
2	H	58	GLN

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Mol	Chain	Res	Type
2	H	114	VAL
2	H	143	LEU
2	H	170	THR
2	H	178	SER
2	H	185	SER
2	H	197	GLN
2	H	200	ILE
2	H	202	ASN
2	H	214	LYS
2	H	222	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	16	GLN
1	L	27(A)	ASN
1	L	33	ASN
1	L	37	GLN
1	L	128	GLN
2	H	39	GLN
2	H	59	HIS
2	H	73	ASN
2	H	77	ASN
2	H	82	GLN
2	H	153	GLN
2	H	202	ASN
2	H	209	ASN

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

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.