



Full wwPDB X-ray Structure Validation Report ⓘ

May 29, 2024 – 02:20 PM EDT

PDB ID : 1HIM
Title : STRUCTURAL EVIDENCE FOR INDUCED FIT AS A MECHANISM FOR ANTIBODY-ANTIGEN RECOGNITION
Authors : Schulze-Gahmen, U.; Wilson, I.A.
Deposited on : 1992-07-08
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 types of validation reports are described at

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

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

MolProbity : 4.02b-467
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

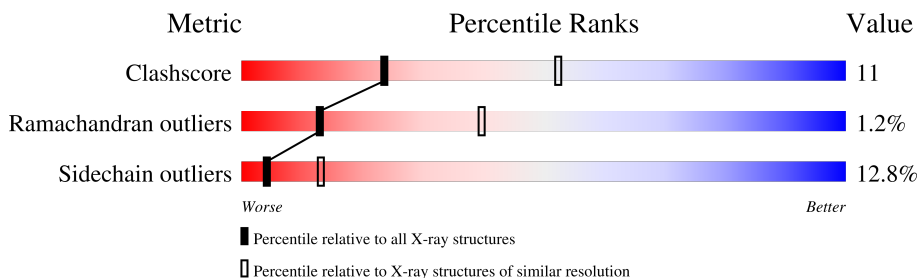
1 Overall quality at a glance

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))
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (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 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	H	217	
1	J	217	
2	L	220	
2	M	220	
3	P	9	
4	R	10	

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 6742 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 IGG2A-KAPPA 17/9 FAB (LIGHT CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	H	217	1680	1047	279	347	7	0	0	0
1	J	217	1680	1047	279	347	7	0	0	0

- Molecule 2 is a protein called IGG2A-KAPPA 17/9 FAB (HEAVY CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	L	215	1621	1024	268	322	7	0	0	1
2	M	215	1621	1024	268	322	7	0	0	1

- Molecule 3 is a protein called INFLUENZA HEMAGGLUTININ HA1 (STRAIN X47) (RESIDUES 100-108).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	P	9	66	42	9	15	0	0	1

- Molecule 4 is a protein called INFLUENZA HEMAGGLUTININ HA1 (STRAIN X47) (RESIDUES 100-108).

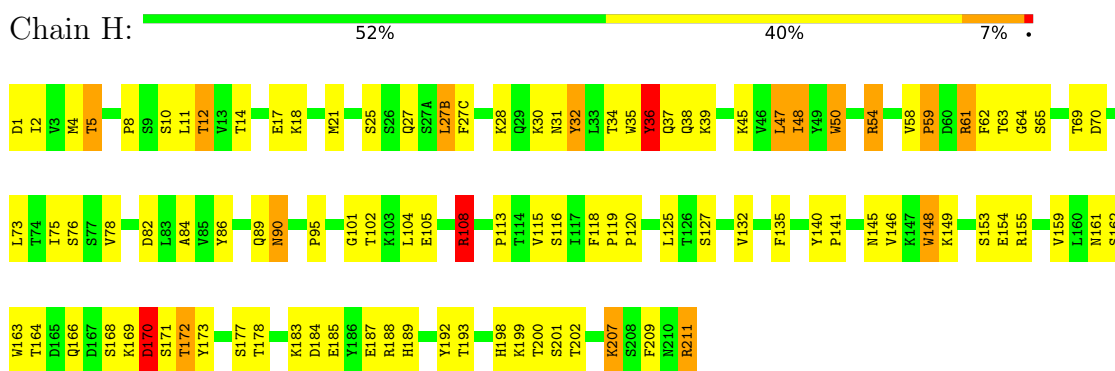
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	R	10	74	48	10	16	0	0	1

3 Residue-property plots [i](#)

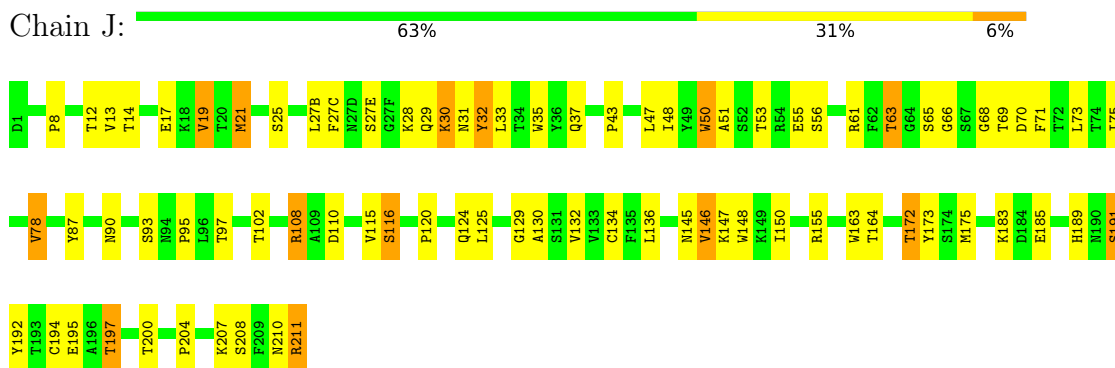
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS was not executed.

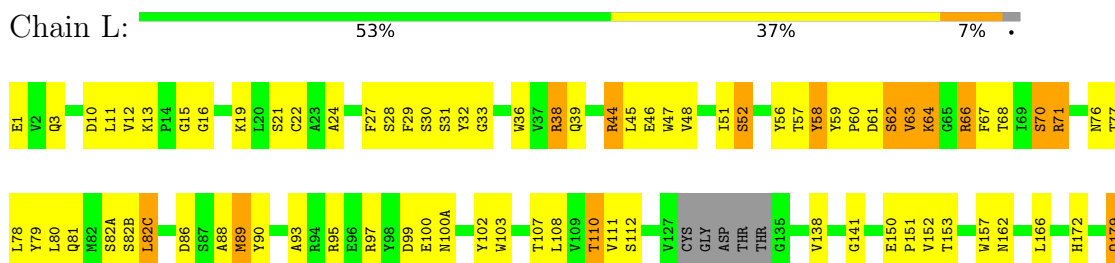
- Molecule 1: IGG2A-KAPPA 17/9 FAB (LIGHT CHAIN)



- Molecule 1: IGG2A-KAPPA 17/9 FAB (LIGHT CHAIN)



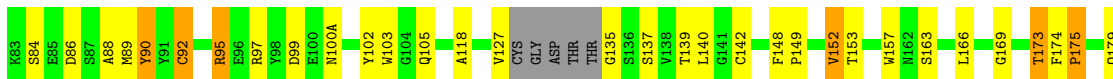
- Molecule 2: IGG2A-KAPPA 17/9 FAB (HEAVY CHAIN)





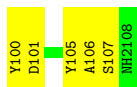
- Molecule 2: IGG2A-KAPPA 17/9 FAB (HEAVY CHAIN)

Chain M: 58% 31% 8% ..



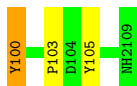
- Molecule 3: INFLUENZA HEMAGGLUTININ HA1 (STRAIN X47) (RESIDUES 100-108)

Chain P: 44% 56%



- Molecule 4: INFLUENZA HEMAGGLUTININ HA1 (STRAIN X47) (RESIDUES 100-108)

Chain R: 70% 20% 10%



4 Data and refinement statistics

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

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	60.08Å 67.07Å 73.24Å 89.90° 101.80° 96.50°	Depositor
Resolution (Å)	8.00 – 2.90	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-2.90)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.200 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	6742	wwPDB-VP
Average B, all atoms (Å ²)	14.0	wwPDB-VP

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: NH2

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	H	0.90	0/1718	1.77	33/2334 (1.4%)
1	J	0.90	0/1718	1.75	28/2334 (1.2%)
2	L	0.94	1/1661 (0.1%)	1.86	42/2263 (1.9%)
2	M	0.97	1/1661 (0.1%)	1.86	38/2263 (1.7%)
3	P	1.04	0/67	1.94	3/92 (3.3%)
4	R	1.08	0/75	1.93	3/103 (2.9%)
All	All	0.93	2/6900 (0.0%)	1.81	147/9389 (1.6%)

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	H	0	1
1	J	0	1
2	M	0	1
All	All	0	3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	M	52	SER	CA-CB	-5.93	1.44	1.52
2	L	52	SER	CA-CB	-5.24	1.45	1.52

All (147) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	J	211	ARG	NE-CZ-NH2	-10.86	114.87	120.30
2	M	185	TYR	CB-CG-CD1	-9.98	115.01	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	32	TYR	CB-CG-CD2	-9.94	115.03	121.00
2	M	95	ARG	NE-CZ-NH2	-9.50	115.55	120.30
2	L	199	TRP	CD1-CG-CD2	9.49	113.89	106.30
2	M	95	ARG	NE-CZ-NH1	9.33	124.97	120.30
1	J	163	TRP	CD1-CG-CD2	9.12	113.59	106.30
2	M	32	TYR	CB-CG-CD1	-8.86	115.69	121.00
2	L	199	TRP	CE2-CD2-CG	-8.83	100.24	107.30
2	M	36	TRP	CD1-CG-CD2	8.67	113.24	106.30
1	J	148	TRP	CD1-CG-CD2	8.40	113.02	106.30
2	M	47	TRP	CD1-CG-CD2	8.38	113.01	106.30
1	H	163	TRP	CD1-CG-CD2	8.36	112.99	106.30
2	L	103	TRP	CD1-CG-CD2	8.28	112.92	106.30
2	L	44	ARG	NE-CZ-NH2	-8.19	116.21	120.30
2	M	58	TYR	CB-CG-CD2	-8.03	116.18	121.00
2	L	36	TRP	CD1-CG-CD2	7.80	112.54	106.30
2	L	185	TYR	CB-CG-CD1	-7.79	116.33	121.00
2	M	36	TRP	CG-CD2-CE3	7.73	140.85	133.90
4	R	100	TYR	CB-CG-CD2	-7.71	116.37	121.00
2	M	90	TYR	CB-CG-CD2	-7.61	116.44	121.00
2	M	157	TRP	CD1-CG-CD2	7.57	112.35	106.30
2	M	36	TRP	CE2-CD2-CG	-7.53	101.28	107.30
2	M	199	TRP	CD1-CG-CD2	7.52	112.31	106.30
2	M	47	TRP	CE2-CD2-CG	-7.46	101.33	107.30
1	H	36	TYR	CB-CG-CD1	-7.45	116.53	121.00
1	J	50	TRP	CD1-CG-CD2	7.44	112.25	106.30
1	J	163	TRP	CE2-CD2-CG	-7.41	101.38	107.30
2	M	103	TRP	CD1-CG-CD2	7.33	112.16	106.30
1	J	148	TRP	CE2-CD2-CG	-7.28	101.47	107.30
1	J	173	TYR	CB-CG-CD2	-7.25	116.65	121.00
1	H	163	TRP	CE2-CD2-CG	-7.23	101.51	107.30
1	H	108	ARG	NE-CZ-NH2	-7.21	116.70	120.30
1	H	35	TRP	CD1-CG-CD2	7.16	112.03	106.30
2	L	179	GLN	CA-CB-CG	7.08	128.99	113.40
2	L	47	TRP	CD1-CG-CD2	7.05	111.94	106.30
2	L	103	TRP	CE2-CD2-CG	-7.04	101.67	107.30
1	J	32	TYR	CB-CG-CD2	-6.95	116.83	121.00
1	J	35	TRP	CD1-CG-CD2	6.92	111.84	106.30
2	M	36	TRP	CB-CG-CD1	-6.89	118.05	127.00
2	L	36	TRP	CE2-CD2-CG	-6.88	101.80	107.30
1	J	50	TRP	CE2-CD2-CG	-6.83	101.84	107.30
2	L	157	TRP	CE2-CD2-CG	-6.81	101.85	107.30
1	H	95	PRO	CA-C-N	-6.62	102.63	117.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	M	157	TRP	CE2-CD2-CG	-6.61	102.02	107.30
1	H	148	TRP	CE2-CD2-CG	-6.59	102.03	107.30
2	L	157	TRP	CD1-CG-CD2	6.57	111.56	106.30
2	L	71	ARG	NE-CZ-NH2	-6.53	117.03	120.30
1	H	148	TRP	CD1-CG-CD2	6.50	111.50	106.30
2	L	193	VAL	N-CA-CB	-6.49	97.23	111.50
3	P	106	ALA	N-CA-CB	-6.47	101.04	110.10
2	M	152	VAL	N-CA-C	-6.47	93.53	111.00
1	H	50	TRP	CE2-CD2-CG	-6.45	102.14	107.30
2	L	63	VAL	CG1-CB-CG2	-6.39	100.67	110.90
1	J	155	ARG	NE-CZ-NH2	-6.38	117.11	120.30
2	L	208	CYS	CA-CB-SG	6.38	125.48	114.00
2	M	103	TRP	CE2-CD2-CG	-6.37	102.20	107.30
2	L	47	TRP	CE2-CD2-CG	-6.37	102.20	107.30
2	M	185	TYR	CD1-CG-CD2	6.37	124.91	117.90
1	H	170	ASP	CA-CB-CG	6.35	127.36	113.40
2	M	69	ILE	CB-CA-C	-6.34	98.92	111.60
2	M	199	TRP	CE2-CD2-CG	-6.33	102.24	107.30
2	L	58	TYR	CB-CG-CD2	-6.30	117.22	121.00
2	L	1	GLU	N-CA-C	-6.29	94.02	111.00
2	M	66	ARG	NE-CZ-NH2	-6.27	117.17	120.30
1	H	192	TYR	CB-CG-CD1	-6.26	117.25	121.00
2	L	38	ARG	CB-CG-CD	-6.25	95.34	111.60
1	J	30	LYS	CA-CB-CG	6.23	127.11	113.40
1	H	61	ARG	NE-CZ-NH1	6.21	123.40	120.30
1	H	35	TRP	CE2-CD2-CG	-6.19	102.35	107.30
1	H	50	TRP	CD1-CG-CD2	6.19	111.25	106.30
1	J	163	TRP	CG-CD1-NE1	-6.17	103.92	110.10
1	H	163	TRP	CG-CD2-CE3	6.17	139.46	133.90
4	R	100	TYR	N-CA-C	-6.10	94.53	111.00
1	J	35	TRP	CE2-CD2-CG	-6.03	102.48	107.30
1	J	211	ARG	NE-CZ-NH1	6.03	123.31	120.30
1	J	21	MET	CA-CB-CG	6.02	123.54	113.30
2	L	66	ARG	NE-CZ-NH1	6.02	123.31	120.30
2	L	89	MET	CA-CB-CG	6.00	123.50	113.30
1	J	146	VAL	CG1-CB-CG2	-5.99	101.31	110.90
2	M	100(A)	ASN	N-CA-C	5.98	127.15	111.00
1	H	108	ARG	NE-CZ-NH1	5.98	123.29	120.30
1	H	173	TYR	CB-CG-CD2	-5.94	117.43	121.00
2	M	53	GLY	CA-C-N	5.89	127.97	116.20
1	H	170	ASP	CB-CG-OD2	5.88	123.59	118.30
2	L	86	ASP	CB-CG-OD2	-5.88	113.01	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	L	71	ARG	NE-CZ-NH1	5.77	123.19	120.30
1	H	145	ASN	CA-C-N	5.76	129.88	117.20
1	J	172	THR	N-CA-CB	-5.76	99.36	110.30
2	M	67	PHE	CB-CG-CD2	-5.75	116.77	120.80
2	L	56	TYR	CA-CB-CG	5.75	124.33	113.40
1	H	145	ASN	N-CA-CB	-5.74	100.27	110.60
1	J	87	TYR	CB-CG-CD1	-5.72	117.57	121.00
2	L	112	SER	CA-C-N	-5.71	104.63	117.20
1	H	116	SER	N-CA-CB	-5.69	101.97	110.50
1	H	32	TYR	CB-CG-CD1	5.68	124.41	121.00
1	H	211	ARG	NE-CZ-NH2	-5.68	117.46	120.30
3	P	100	TYR	CB-CG-CD2	-5.65	117.61	121.00
2	L	70	SER	N-CA-CB	-5.64	102.04	110.50
2	L	110	THR	CA-CB-OG1	-5.64	97.16	109.00
2	M	102	TYR	CB-CG-CD2	-5.61	117.63	121.00
2	M	157	TRP	CG-CD1-NE1	-5.61	104.50	110.10
1	H	27(B)	LEU	CB-CG-CD1	-5.59	101.50	111.00
2	L	44	ARG	NE-CZ-NH1	5.59	123.09	120.30
2	L	100(A)	ASN	CB-CG-ND2	-5.54	103.39	116.70
2	L	48	VAL	CA-CB-CG2	-5.54	102.59	110.90
4	R	105	TYR	CA-CB-CG	5.54	123.93	113.40
1	J	175	MET	CG-SD-CE	-5.52	91.37	100.20
2	L	138	VAL	CG1-CB-CG2	-5.50	102.09	110.90
1	J	87	TYR	CD1-CG-CD2	5.48	123.93	117.90
2	L	152	VAL	N-CA-C	-5.47	96.23	111.00
2	M	103	TRP	CG-CD1-NE1	-5.46	104.64	110.10
1	H	5	THR	CA-CB-CG2	-5.45	104.77	112.40
1	H	95	PRO	O-C-N	5.43	131.39	122.70
1	J	50	TRP	CG-CD2-CE3	5.43	138.79	133.90
2	M	89	MET	N-CA-C	-5.41	96.40	111.00
1	H	163	TRP	CB-CG-CD1	-5.33	120.07	127.00
2	M	38	ARG	NE-CZ-NH2	-5.33	117.64	120.30
1	J	50	TRP	CG-CD1-NE1	-5.32	104.78	110.10
3	P	106	ALA	CB-CA-C	5.30	118.05	110.10
2	L	89	MET	CG-SD-CE	5.29	108.67	100.20
2	L	100(A)	ASN	N-CA-C	5.29	125.29	111.00
2	L	103	TRP	CG-CD1-NE1	-5.26	104.83	110.10
1	H	127	SER	N-CA-CB	-5.24	102.63	110.50
2	L	150	GLU	CA-CB-CG	-5.24	101.87	113.40
2	L	90	TYR	CB-CG-CD1	5.23	124.14	121.00
2	M	56	TYR	CA-CB-CG	5.22	123.33	113.40
1	H	155	ARG	NE-CZ-NH1	5.22	122.91	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	M	36	TRP	CG-CD1-NE1	-5.20	104.91	110.10
2	M	86	ASP	CB-CG-OD1	5.19	122.97	118.30
2	M	58	TYR	CB-CG-CD1	5.18	124.11	121.00
2	M	47	TRP	CG-CD1-NE1	-5.17	104.93	110.10
2	L	97	ARG	NE-CZ-NH1	5.17	122.89	120.30
2	L	219	VAL	CG1-CB-CG2	-5.17	102.64	110.90
2	M	97	ARG	NE-CZ-NH1	5.14	122.87	120.30
1	J	32	TYR	CB-CG-CD1	5.14	124.08	121.00
2	M	71	ARG	NE-CZ-NH2	-5.13	117.73	120.30
1	H	163	TRP	CG-CD1-NE1	-5.13	104.97	110.10
1	H	54	ARG	NE-CZ-NH2	-5.11	117.75	120.30
2	M	69	ILE	CB-CG1-CD1	-5.10	99.62	113.90
1	H	113	PRO	N-CA-C	5.07	125.28	112.10
2	L	44	ARG	CA-CB-CG	5.06	124.53	113.40
2	L	185	TYR	CD1-CG-CD2	5.06	123.46	117.90
1	J	116	SER	CA-C-N	5.04	128.28	117.20
1	J	148	TRP	CG-CD1-NE1	-5.03	105.07	110.10
1	J	108	ARG	NE-CZ-NH2	-5.02	117.79	120.30
1	J	150	ILE	N-CA-C	-5.02	97.45	111.00

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	H	36	TYR	Sidechain
1	J	192	TYR	Sidechain
2	M	56	TYR	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	H	1680	0	1612	43	0
1	J	1680	0	1612	33	0
2	L	1621	0	1576	39	0
2	M	1621	0	1576	37	0
3	P	66	0	51	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	R	74	0	62	1	0
All	All	6742	0	6489	148	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 11.

All (148) 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:J:120:PRO:HD3	1:J:132:VAL:HG22	1.65	0.77
2:M:51:ILE:HB	2:M:69:ILE:HD12	1.69	0.74
2:L:193:VAL:HG13	2:L:198:THR:HB	1.70	0.71
1:H:149:LYS:HB2	1:H:193:THR:HB	1.78	0.66
1:H:82:ASP:O	1:H:104:LEU:HD12	1.98	0.64
2:L:162:ASN:HD21	2:L:205:ILE:HA	1.62	0.63
2:L:70:SER:HB3	2:L:79:TYR:HB2	1.81	0.63
2:L:39:GLN:HB2	2:L:45:LEU:HD23	1.81	0.61
2:L:61:ASP:HA	2:L:64:LYS:HE3	1.82	0.61
1:J:63:THR:O	1:J:73:LEU:HD12	2.01	0.61
2:M:63:VAL:HG13	2:M:67:PHE:HB2	1.83	0.61
2:M:24:ALA:HB1	2:M:27:PHE:CE1	2.36	0.60
2:L:28:SER:HB3	2:L:31:SER:OG	2.01	0.60
2:M:39:GLN:O	2:M:88:ALA:HB1	2.00	0.60
1:H:27(C):PHE:HA	1:H:31:ASN:HA	1.83	0.59
1:H:14:THR:O	1:H:17:GLU:HG2	2.01	0.59
1:J:48:ILE:HA	1:J:53:THR:O	2.02	0.59
2:L:52:SER:HB3	3:P:101:ASP:OD1	2.02	0.59
1:J:25:SER:O	1:J:69:THR:HG23	2.03	0.58
2:L:11:LEU:HD12	2:L:110:THR:HB	1.86	0.58
1:H:12:THR:HA	1:H:105:GLU:O	2.04	0.57
1:H:37:GLN:HB2	1:H:47:LEU:HD21	1.86	0.57
2:M:179:GLN:HG2	2:M:184:LEU:O	2.05	0.57
1:H:25:SER:O	1:H:69:THR:HG23	2.05	0.56
2:M:39:GLN:HA	2:M:44:ARG:O	2.05	0.56
1:H:125:LEU:O	1:H:183:LYS:HD2	2.06	0.55
1:J:31:ASN:HD21	1:J:68:GLY:H	1.54	0.55
2:L:59:TYR:OH	2:L:68:THR:HA	2.07	0.54
1:H:108:ARG:HD2	1:H:140:TYR:CG	2.42	0.54
1:H:198:HIS:HD2	1:H:200:THR:OG1	1.89	0.54
1:H:159:VAL:HA	1:H:178:THR:O	2.07	0.54
1:H:185:GLU:O	1:H:189:HIS:HD2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:27(C):PHE:HA	1:J:31:ASN:HA	1.90	0.54
1:J:13:VAL:HB	1:J:78:VAL:HG11	1.90	0.54
1:H:37:GLN:HG3	1:H:86:TYR:CE1	2.42	0.53
1:H:54:ARG:HG2	1:H:58:VAL:HB	1.89	0.53
1:J:164:THR:HG23	2:M:174:PHE:CD1	2.43	0.53
1:H:2:ILE:HG13	1:H:27:GLN:OE1	2.09	0.53
2:L:58:TYR:CE2	3:P:107:SER:HB2	2.43	0.53
2:M:71:ARG:HB3	2:M:78:LEU:HD12	1.90	0.52
2:L:172:HIS:HB2	2:L:190:SER:OG	2.09	0.52
1:H:166:GLN:HG2	1:H:171:SER:HA	1.92	0.52
1:H:170:ASP:OD1	1:H:172:THR:HB	2.10	0.52
1:J:90:ASN:HB3	1:J:97:THR:H	1.75	0.52
2:L:66:ARG:HG2	2:L:82(B):SER:HB2	1.90	0.52
1:J:110:ASP:HB3	1:J:200:THR:HG22	1.91	0.51
2:M:152:VAL:HG13	2:M:210:VAL:HG13	1.93	0.51
2:M:51:ILE:HG13	2:M:57:THR:HG22	1.93	0.51
1:H:118:PHE:CE1	1:H:135:PHE:HD2	2.29	0.51
1:H:17:GLU:O	1:H:78:VAL:HG12	2.11	0.51
1:J:29:GLN:O	1:J:30:LYS:HE2	2.11	0.51
2:L:39:GLN:O	2:L:88:ALA:HB1	2.11	0.50
2:L:66:ARG:HB3	2:L:82(A):SER:O	2.10	0.50
1:J:28:LYS:O	1:J:29:GLN:HB2	2.11	0.50
1:H:132:VAL:HG12	1:H:148:TRP:CH2	2.47	0.49
2:L:19:LYS:HA	2:L:80:LEU:O	2.12	0.49
1:H:39:LYS:HZ3	1:H:84:ALA:HB2	1.77	0.49
1:H:141:PRO:O	1:H:198:HIS:HE1	1.95	0.49
1:H:50:TRP:HZ2	2:L:99:ASP:O	1.95	0.49
1:H:63:THR:O	1:H:73:LEU:HD12	2.13	0.49
1:H:119:PRO:HG3	1:H:209:PHE:CE2	2.48	0.49
2:M:173:THR:HG23	2:M:189:SER:HB2	1.95	0.49
1:H:39:LYS:NZ	1:H:84:ALA:HB2	2.28	0.48
2:M:48:VAL:O	2:M:60:PRO:HD2	2.13	0.48
2:M:139:THR:OG1	2:M:192:THR:HG22	2.13	0.48
2:M:118:ALA:HB1	2:M:217:THR:HG21	1.95	0.48
2:L:39:GLN:HA	2:L:44:ARG:O	2.13	0.48
1:J:191:SER:HA	1:J:210:ASN:HB3	1.96	0.48
1:J:124:GLN:HG2	1:J:129:GLY:O	2.14	0.48
2:L:212:HIS:HB3	2:L:217:THR:HB	1.94	0.48
1:H:62:PHE:CD1	1:H:75:ILE:HG12	2.49	0.48
1:H:199:LYS:HG3	1:H:200:THR:N	2.29	0.48
2:L:162:ASN:ND2	2:L:205:ILE:HA	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:115:VAL:HG12	1:J:207:LYS:HG3	1.96	0.47
2:M:137:SER:HA	2:M:194:THR:HA	1.97	0.47
2:L:199:TRP:CH2	2:L:227:PRO:HB3	2.49	0.47
2:L:89:MET:HE2	2:L:108:LEU:HB2	1.96	0.46
1:J:50:TRP:HZ2	2:M:99:ASP:O	1.98	0.46
1:J:61:ARG:O	1:J:75:ILE:HA	2.15	0.46
1:H:184:ASP:O	1:H:188:ARG:HG3	2.15	0.46
1:J:136:LEU:HD21	1:J:146:VAL:HG22	1.97	0.46
1:H:34:THR:HG22	1:H:36:TYR:CE1	2.50	0.46
2:M:27:PHE:HD2	2:M:32:TYR:CD2	2.34	0.46
1:H:38:GLN:O	1:H:84:ALA:HB1	2.16	0.45
1:H:89:GLN:HG2	1:H:90:ASN:N	2.31	0.45
1:H:118:PHE:CE1	1:H:135:PHE:CD2	3.04	0.45
2:L:95:ARG:HA	2:L:95:ARG:HD2	1.64	0.45
2:L:19:LYS:HB2	2:L:81:GLN:NE2	2.32	0.45
2:M:135:GLY:O	2:M:195:SER:HB3	2.17	0.45
2:M:24:ALA:HB1	2:M:27:PHE:CZ	2.52	0.45
1:H:169:LYS:O	1:H:170:ASP:HB3	2.15	0.45
1:H:18:LYS:HB3	1:H:18:LYS:HE2	1.77	0.45
1:H:48:ILE:HD12	1:H:64:GLY:N	2.31	0.45
2:L:29:PHE:HB2	2:L:76:ASN:ND2	2.31	0.45
1:H:8:PRO:O	1:H:102:THR:HG23	2.17	0.44
2:L:89:MET:CE	2:L:108:LEU:HB2	2.47	0.44
2:L:179:GLN:O	2:L:183:ASP:N	2.50	0.44
1:J:8:PRO:O	1:J:102:THR:HG23	2.17	0.44
1:H:161:ASN:HD22	1:H:177:SER:HA	1.83	0.44
2:L:12:VAL:O	2:L:111:VAL:HA	2.18	0.44
2:M:166:LEU:HD11	2:M:205:ILE:HD12	1.99	0.44
2:M:69:ILE:HD13	2:M:69:ILE:HG21	1.62	0.44
2:M:75:LYS:O	2:M:77:THR:HG23	2.18	0.44
2:L:100:GLU:HG2	3:P:105:TYR:CD1	2.53	0.44
2:L:60:PRO:O	2:L:62:SER:N	2.51	0.44
1:J:14:THR:O	1:J:17:GLU:HG2	2.18	0.44
2:L:27:PHE:HD2	2:L:32:TYR:CD1	2.37	0.43
2:L:33:GLY:HA2	2:L:71:ARG:HH12	1.83	0.43
2:L:211:ALA:HB2	2:L:218:LYS:HG2	2.00	0.43
2:M:179:GLN:HG3	2:M:180:SER:N	2.32	0.43
2:L:63:VAL:HG13	2:L:67:PHE:CD2	2.53	0.43
2:M:4:LEU:HB3	2:M:92:CYS:SG	2.59	0.43
1:J:125:LEU:HD22	1:J:183:LYS:HG3	2.01	0.43
1:J:145:ASN:HB2	1:J:197:THR:HB	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:149:PRO:HD2	2:M:214:ALA:HB1	2.00	0.42
2:L:141:GLY:HA2	2:L:189:SER:O	2.18	0.42
2:L:51:ILE:HG23	2:L:71:ARG:HH11	1.84	0.42
1:J:95:PRO:HA	2:M:47:TRP:CZ3	2.54	0.42
1:H:86:TYR:O	1:H:101:GLY:HA2	2.19	0.42
1:H:30:LYS:HD2	1:H:50:TRP:HB3	2.00	0.42
1:J:33:LEU:HD22	1:J:71:PHE:CG	2.54	0.42
1:J:125:LEU:HD21	1:J:130:ALA:HB2	2.00	0.42
1:J:195:GLU:HG3	1:J:204:PRO:HB2	2.02	0.42
2:M:38:ARG:HD3	2:M:90:TYR:CE2	2.54	0.42
2:M:95:ARG:HD2	2:M:95:ARG:HA	1.86	0.42
2:M:148:PHE:CE2	2:M:149:PRO:HB3	2.55	0.42
1:H:28:LYS:HG3	1:H:32:TYR:OH	2.20	0.41
1:J:125:LEU:HD23	1:J:125:LEU:HA	1.88	0.41
2:M:17:SER:OG	2:M:82(A):SER:HA	2.19	0.41
2:M:27:PHE:HD2	2:M:32:TYR:HD2	1.66	0.41
2:M:82(C):LEU:HD23	2:M:82(C):LEU:HA	1.83	0.41
1:H:120:PRO:HD3	1:H:132:VAL:HG22	2.02	0.41
1:J:28:LYS:HB2	1:J:32:TYR:OH	2.20	0.41
1:J:13:VAL:HG12	1:J:19:VAL:HG11	2.02	0.41
1:J:147:LYS:HE3	1:J:147:LYS:HB2	1.64	0.41
2:M:56:TYR:CE2	4:R:103:PRO:HB3	2.55	0.41
2:M:66:ARG:HG2	2:M:82(B):SER:HB2	2.03	0.41
1:J:185:GLU:O	1:J:189:HIS:HD2	2.04	0.41
1:H:115:VAL:HG12	1:H:207:LYS:HG2	2.02	0.41
1:J:110:ASP:HB3	1:J:200:THR:CG2	2.50	0.41
2:L:38:ARG:NH1	2:L:46:GLU:OE1	2.54	0.41
2:L:93:ALA:HA	2:L:102:TYR:O	2.21	0.41
1:J:66:GLY:HA3	1:J:70:ASP:O	2.21	0.41
2:L:3:GLN:O	2:L:24:ALA:HA	2.19	0.41
2:M:169:GLY:O	2:M:191:VAL:HA	2.20	0.40
2:M:29:PHE:CD2	2:M:76:ASN:HA	2.56	0.40
2:M:38:ARG:HD3	2:M:90:TYR:CZ	2.57	0.40
2:L:15:GLY:N	2:L:82(C):LEU:O	2.54	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	H	215/217 (99%)	203 (94%)	10 (5%)	2 (1%)	17	48
1	J	215/217 (99%)	201 (94%)	13 (6%)	1 (0%)	29	61
2	L	211/220 (96%)	191 (90%)	19 (9%)	1 (0%)	29	61
2	M	211/220 (96%)	189 (90%)	16 (8%)	6 (3%)	5	19
3	P	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
4	R	8/10 (80%)	8 (100%)	0	0	100	100
All	All	867/893 (97%)	798 (92%)	59 (7%)	10 (1%)	13	40

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	M	214	ALA
2	L	16	GLY
2	M	163	SER
1	H	170	ASP
1	J	51	ALA
2	M	28	SER
2	M	73	ASN
2	M	175	PRO
1	H	59	PRO
2	M	9	GLY

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	H	194/194 (100%)	163 (84%)	31 (16%)	2	7
1	J	194/194 (100%)	171 (88%)	23 (12%)	5	15
2	L	182/187 (97%)	161 (88%)	21 (12%)	5	17
2	M	182/187 (97%)	160 (88%)	22 (12%)	5	15
3	P	7/7 (100%)	7 (100%)	0	100	100
4	R	8/8 (100%)	7 (88%)	1 (12%)	4	14
All	All	767/777 (99%)	669 (87%)	98 (13%)	4	13

All (98) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	1	ASP
1	H	4	MET
1	H	5	THR
1	H	10	SER
1	H	11	LEU
1	H	12	THR
1	H	21	MET
1	H	27(B)	LEU
1	H	45	LYS
1	H	47	LEU
1	H	48	ILE
1	H	59	PRO
1	H	61	ARG
1	H	65	SER
1	H	70	ASP
1	H	76	SER
1	H	90	ASN
1	H	108	ARG
1	H	146	VAL
1	H	153	SER
1	H	154	GLU
1	H	162	SER
1	H	164	THR
1	H	168	SER
1	H	170	ASP
1	H	172	THR
1	H	187	GLU
1	H	201	SER
1	H	202	THR
1	H	207	LYS

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Mol	Chain	Res	Type
1	H	211	ARG
2	L	10	ASP
2	L	13	LYS
2	L	21	SER
2	L	22	CYS
2	L	30	SER
2	L	57	THR
2	L	62	SER
2	L	64	LYS
2	L	77	THR
2	L	78	LEU
2	L	82(C)	LEU
2	L	107	THR
2	L	151	PRO
2	L	153	THR
2	L	166	LEU
2	L	183	ASP
2	L	186	THR
2	L	187	LEU
2	L	193	VAL
2	L	196	SER
2	L	223	ILE
1	J	12	THR
1	J	19	VAL
1	J	21	MET
1	J	27(B)	LEU
1	J	27(E)	SER
1	J	37	GLN
1	J	43	PRO
1	J	47	LEU
1	J	55	GLU
1	J	56	SER
1	J	63	THR
1	J	65	SER
1	J	78	VAL
1	J	93	SER
1	J	108	ARG
1	J	116	SER
1	J	134	CYS
1	J	172	THR
1	J	191	SER
1	J	194	CYS

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Mol	Chain	Res	Type
1	J	197	THR
1	J	208	SER
1	J	211	ARG
2	M	1	GLU
2	M	21	SER
2	M	28	SER
2	M	30	SER
2	M	40	THR
2	M	52	SER
2	M	63	VAL
2	M	69	ILE
2	M	70	SER
2	M	84	SER
2	M	92	CYS
2	M	105	GLN
2	M	127	VAL
2	M	140	LEU
2	M	142	CYS
2	M	153	THR
2	M	173	THR
2	M	175	PRO
2	M	187	LEU
2	M	217	THR
2	M	219	VAL
2	M	222	LYS
4	R	100	TYR

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

Mol	Chain	Res	Type
1	H	90	ASN
1	H	161	ASN
1	H	189	HIS
1	H	198	HIS
2	L	39	GLN
2	L	76	ASN
2	L	162	ASN
1	J	29	GLN
1	J	31	ASN
1	J	37	GLN
1	J	161	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 monosaccharides 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

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.