Full wwPDB X-ray Structure Validation Report (i)

Jul 26, 2023 – 05:07 AM EDT

PDB ID	:	1AI1
Title	:	HIV-1 V3 LOOP MIMIC
Authors	:	Ghiara, J.B.; Wilson, I.A.
Deposited on	:	1996-11-06
Resolution	:	2.80 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 (i) 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 (1)) were used in the production of this report:

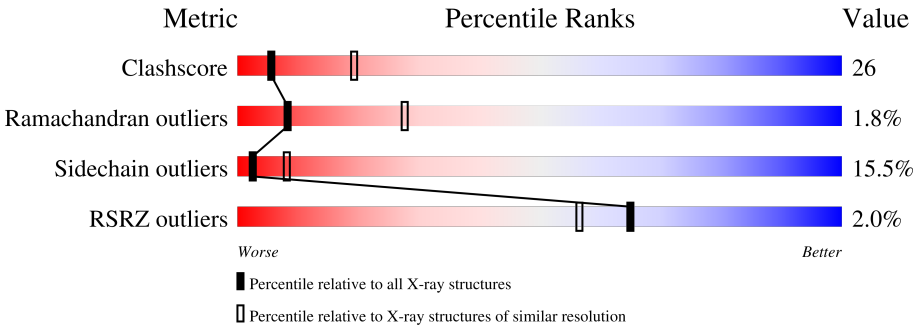
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.34
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.34

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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 <=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	L	215	4%, 56%, 36%, 7%
2	H	221	51%, 42%, 6%
3	P	24	29%, 8%, 58%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 3442 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-KAPPA 59.1 FAB (LIGHT CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	L	215	Total	C	N	O	S	0	0	0
			1662	1031	282	341	8			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	4	MET	LEU	conflict	EMBL AJ272393
L	12	VAL	ALA	conflict	EMBL AJ272393
L	26	SER	ASN	conflict	EMBL AJ272393
L	27C	ASP	TYR	conflict	EMBL AJ272393
L	30	LYS	ASP	conflict	EMBL AJ272393
L	46	VAL	LEU	conflict	EMBL AJ272393
L	50	ILE	LEU	conflict	EMBL AJ272393
L	55	GLU	ALA	conflict	EMBL AJ272393
L	96	PRO	TRP	conflict	EMBL AJ272393
L	100	ALA	GLY	conflict	EMBL AJ272393
L	106	MET	ILE	conflict	EMBL AJ272393
L	107	ARG	LYS	conflict	EMBL AJ272393

- Molecule 2 is a protein called IGG1-KAPPA 59.1 FAB (HEAVY CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	221	Total	C	N	O	S	0	0	0
			1700	1077	283	330	10			

- Molecule 3 is a protein called AIB142.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	P	10	Total	C	N	O	0	0	0
			80	53	15	12			

There is a discrepancy between the modelled and reference sequences:

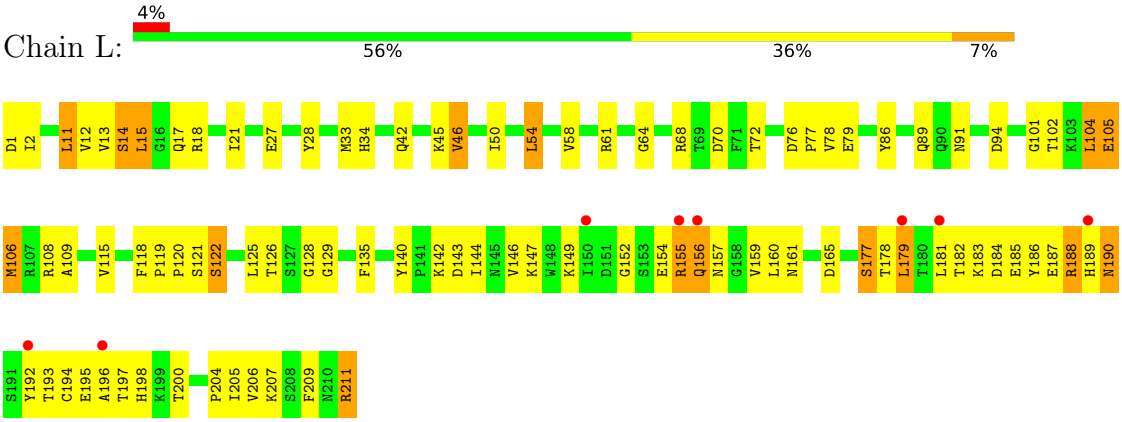
Chain	Residue	Modelled	Actual	Comment	Reference
P	323	AIB	ALA	conflict	UNP P05877

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.

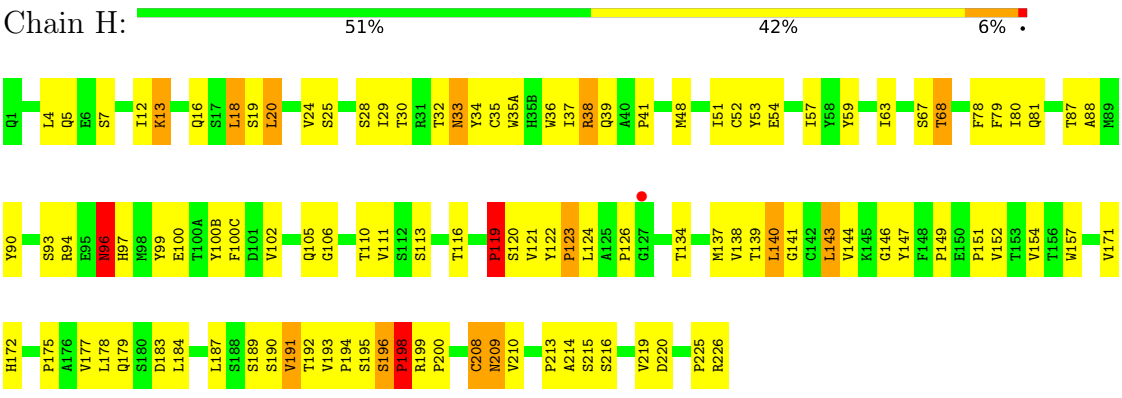
• Molecule 1: IGG1-KAPPA 59.1 FAB (LIGHT CHAIN)

Chain L:



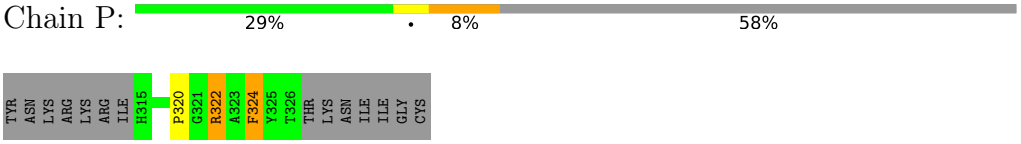
• Molecule 2: IGG1-KAPPA 59.1 FAB (HEAVY CHAIN)

Chain H:



• Molecule 3: AIB142

Chain P:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	89.93Å 154.43Å 121.46Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	12.00 – 2.80 65.46 – 2.80	Depositor EDS
% Data completeness (in resolution range)	91.0 (12.00-2.80) 90.5 (65.46-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$< I/\sigma(I) >$ [1]	3.55 (at 2.81Å)	Xtriage
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.220 , (Not available) 0.194 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å^2)	53.1	Xtriage
Anisotropy	0.280	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 91.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.015 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.024 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	3442	wwPDB-VP
Average B, all atoms (Å^2)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.76% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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

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

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	0.69	0/1700	0.90	1/2310 (0.0%)
2	H	0.67	0/1746	0.89	1/2385 (0.0%)
3	P	0.67	0/77	1.00	0/103
All	All	0.68	0/3523	0.90	2/4798 (0.0%)

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	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	L	106	MET	CB-CG-SD	-5.78	95.05	112.40
2	H	96	ASN	N-CA-C	-5.19	96.99	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	L	140	TYR	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	1662	0	1586	106	0
2	H	1700	0	1672	79	0
3	P	80	0	75	9	0
All	All	3442	0	3333	174	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 26.

All (174) 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:L:187:GLU:HA	1:L:211:ARG:HH22	1.17	1.08
2:H:199:ARG:HH11	2:H:199:ARG:HG3	1.28	0.96
1:L:187:GLU:HA	1:L:211:ARG:NH2	1.85	0.90
1:L:144:ILE:HG13	1:L:198:HIS:HB2	1.58	0.84
1:L:188:ARG:HH11	1:L:188:ARG:HG3	1.41	0.82
1:L:149:LYS:HD3	1:L:152:GLY:H	1.50	0.76
1:L:13:VAL:HG12	1:L:104:LEU:HD11	1.67	0.76
1:L:125:LEU:H	1:L:125:LEU:HD12	1.51	0.75
2:H:119:PRO:HB3	2:H:147:TYR:HB3	1.67	0.75
1:L:187:GLU:CA	1:L:211:ARG:HH22	1.98	0.74
1:L:160:LEU:HD22	2:H:177:VAL:HG21	1.72	0.72
1:L:188:ARG:HH11	1:L:188:ARG:CG	2.01	0.72
2:H:199:ARG:HD2	2:H:200:PRO:HA	1.72	0.72
1:L:146:VAL:HG12	1:L:196:ALA:HA	1.72	0.71
1:L:147:LYS:HB2	1:L:195:GLU:HB2	1.74	0.70
1:L:146:VAL:HA	1:L:195:GLU:O	1.93	0.69
1:L:155:ARG:HH21	1:L:156:GLN:HE22	1.41	0.68
1:L:211:ARG:HG2	1:L:211:ARG:HH11	1.59	0.68
1:L:13:VAL:HG11	1:L:78:VAL:HG21	1.76	0.68
1:L:147:LYS:HE3	1:L:195:GLU:HG3	1.77	0.67
1:L:15:LEU:HG	1:L:106:MET:CE	2.24	0.67
2:H:199:ARG:HG3	2:H:199:ARG:NH1	1.96	0.67
1:L:205:ILE:HD12	1:L:205:ILE:H	1.61	0.66
2:H:97:HIS:HB3	3:P:324:PHE:CZ	2.31	0.66

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:138:VAL:HG23	2:H:195:SER:HA	1.77	0.65
1:L:155:ARG:NE	1:L:155:ARG:HA	2.12	0.65
1:L:121:SER:OG	2:H:122:TYR:HB3	1.98	0.63
1:L:160:LEU:O	1:L:177:SER:HA	1.99	0.62
1:L:104:LEU:HD12	1:L:105:GLU:N	2.14	0.62
2:H:18:LEU:CD2	2:H:20:LEU:HD13	2.30	0.62
1:L:54:LEU:HD23	1:L:58:VAL:HB	1.81	0.62
1:L:160:LEU:HD11	2:H:179:GLN:NE2	2.15	0.61
2:H:35(A):TRP:HB3	2:H:78:PHE:CZ	2.36	0.60
1:L:155:ARG:HG2	1:L:179:LEU:HD21	1.84	0.60
2:H:143:LEU:HD12	2:H:144:VAL:N	2.17	0.59
1:L:106:MET:C	1:L:106:MET:SD	2.81	0.58
2:H:59:TYR:OH	2:H:68:THR:HA	2.04	0.58
2:H:138:VAL:CG2	2:H:195:SER:HA	2.33	0.58
1:L:183:LYS:O	1:L:186:TYR:HB3	2.04	0.58
2:H:93:SER:HB2	2:H:102:VAL:O	2.03	0.58
2:H:53:TYR:CE1	3:P:324:PHE:CD2	2.92	0.57
2:H:97:HIS:HB3	3:P:324:PHE:HZ	1.68	0.57
1:L:198:HIS:CD2	1:L:200:THR:OG1	2.57	0.57
1:L:181:LEU:HD22	1:L:185:GLU:HG2	1.87	0.56
2:H:53:TYR:HE1	3:P:324:PHE:CD2	2.23	0.56
1:L:181:LEU:HD11	1:L:192:TYR:HE2	1.69	0.56
2:H:18:LEU:HD21	2:H:20:LEU:CD1	2.35	0.56
1:L:193:THR:HG23	1:L:207:LYS:O	2.05	0.56
1:L:149:LYS:HE2	1:L:193:THR:HB	1.88	0.56
1:L:13:VAL:CG1	1:L:78:VAL:HG21	2.36	0.56
1:L:183:LYS:O	1:L:187:GLU:HG2	2.04	0.55
2:H:87:THR:HG23	2:H:110:THR:HA	1.88	0.55
1:L:12:VAL:HA	1:L:105:GLU:O	2.07	0.54
1:L:13:VAL:HG12	1:L:104:LEU:CD1	2.35	0.54
1:L:15:LEU:HG	1:L:106:MET:HE3	1.89	0.54
1:L:61:ARG:CZ	1:L:79:GLU:HG3	2.38	0.54
1:L:155:ARG:HD3	1:L:157:ASN:O	2.07	0.54
1:L:181:LEU:HD11	1:L:192:TYR:CE2	2.42	0.54
1:L:21:ILE:HG12	1:L:102:THR:HG21	1.89	0.54
1:L:184:ASP:O	1:L:187:GLU:HB2	2.08	0.54
2:H:18:LEU:C	2:H:18:LEU:HD23	2.28	0.53
2:H:139:THR:C	2:H:140:LEU:HD13	2.29	0.53
1:L:188:ARG:NH1	1:L:189:HIS:CE1	2.77	0.53
2:H:34:TYR:CD2	2:H:94:ARG:HD2	2.43	0.53
1:L:149:LYS:HD2	1:L:149:LYS:C	2.29	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:161:ASN:ND2	1:L:177:SER:HB3	2.23	0.53
2:H:126:PRO:O	2:H:226:ARG:HD3	2.09	0.53
1:L:135:PHE:CE2	2:H:190:SER:HB3	2.43	0.53
2:H:41:PRO:HD3	2:H:88:ALA:HA	1.91	0.52
2:H:53:TYR:CE1	3:P:324:PHE:CE2	2.97	0.52
2:H:172:HIS:O	2:H:189:SER:HA	2.09	0.52
2:H:193:VAL:HG22	2:H:198:PRO:HB2	1.90	0.52
1:L:188:ARG:HH12	1:L:189:HIS:CE1	2.26	0.52
2:H:18:LEU:HD21	2:H:20:LEU:HD13	1.90	0.52
2:H:121:VAL:HG21	2:H:219:VAL:HG22	1.92	0.52
1:L:184:ASP:O	1:L:187:GLU:N	2.43	0.52
1:L:119:PRO:HB3	1:L:209:PHE:CE2	2.45	0.51
2:H:124:LEU:HB2	2:H:141:GLY:O	2.10	0.51
2:H:140:LEU:HD13	2:H:140:LEU:N	2.24	0.51
1:L:142:LYS:NZ	1:L:142:LYS:HB3	2.26	0.51
2:H:51:ILE:HD12	2:H:57:ILE:HD11	1.93	0.51
2:H:96:ASN:C	2:H:96:ASN:HD22	2.14	0.50
1:L:155:ARG:NE	1:L:155:ARG:CA	2.74	0.50
2:H:196:SER:CB	2:H:198:PRO:HD3	2.42	0.50
2:H:171:VAL:HG22	2:H:191:VAL:HG13	1.94	0.50
2:H:18:LEU:HD23	2:H:20:LEU:HD13	1.94	0.49
2:H:157:TRP:CZ3	2:H:208:CYS:HB3	2.46	0.49
2:H:139:THR:OG1	2:H:192:THR:HG23	2.12	0.49
1:L:120:PRO:HB2	1:L:125:LEU:HD11	1.95	0.49
1:L:125:LEU:O	1:L:128:GLY:N	2.45	0.49
2:H:53:TYR:HE1	3:P:324:PHE:CE2	2.31	0.48
1:L:11:LEU:HD12	1:L:11:LEU:N	2.28	0.48
1:L:160:LEU:HD13	2:H:177:VAL:CG1	2.43	0.47
2:H:143:LEU:HD12	2:H:143:LEU:C	2.34	0.47
1:L:128:GLY:HA2	1:L:183:LYS:HE3	1.96	0.47
1:L:193:THR:HG22	1:L:194:CYS:N	2.30	0.47
1:L:190:ASN:O	1:L:211:ARG:N	2.46	0.47
1:L:108:ARG:HG3	1:L:109:ALA:O	2.15	0.47
2:H:200:PRO:HB3	2:H:225:PRO:HG3	1.97	0.47
1:L:34:HIS:CE1	2:H:100(B):TYR:HB3	2.50	0.47
2:H:90:TYR:O	2:H:106:GLY:HA2	2.13	0.47
2:H:154:VAL:HA	2:H:209:ASN:O	2.15	0.47
2:H:196:SER:O	2:H:199:ARG:N	2.41	0.46
1:L:156:GLN:NE2	1:L:156:GLN:H	2.14	0.46
2:H:96:ASN:ND2	2:H:99:TYR:H	2.13	0.46
1:L:104:LEU:HD12	1:L:104:LEU:C	2.36	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:34:TYR:N	2:H:34:TYR:CD1	2.82	0.46
1:L:211:ARG:HG2	1:L:211:ARG:NH1	2.27	0.46
1:L:156:GLN:HG2	1:L:157:ASN:N	2.31	0.46
1:L:86:TYR:O	1:L:101:GLY:HA2	2.16	0.45
1:L:121:SER:O	1:L:122:SER:C	2.54	0.45
1:L:190:ASN:HA	1:L:211:ARG:CG	2.46	0.45
2:H:36:TRP:C	2:H:37:ILE:HG13	2.36	0.45
1:L:204:PRO:O	1:L:206:VAL:HG23	2.16	0.45
2:H:24:VAL:HG12	2:H:25:SER:N	2.31	0.45
2:H:100(C):PHE:CD1	2:H:100(C):PHE:N	2.81	0.45
1:L:198:HIS:CD2	1:L:200:THR:H	2.35	0.45
1:L:198:HIS:NE2	1:L:200:THR:OG1	2.50	0.45
1:L:188:ARG:O	1:L:189:HIS:CG	2.68	0.45
2:H:19:SER:HA	2:H:80:ILE:O	2.17	0.45
1:L:115:VAL:HA	1:L:135:PHE:O	2.17	0.45
2:H:18:LEU:CD2	2:H:20:LEU:CD1	2.93	0.45
2:H:196:SER:OG	2:H:198:PRO:HD3	2.17	0.45
2:H:193:VAL:CG2	2:H:198:PRO:HB2	2.47	0.44
1:L:147:LYS:HE3	1:L:195:GLU:CG	2.44	0.44
1:L:159:VAL:HA	1:L:178:THR:O	2.17	0.44
1:L:125:LEU:HA	1:L:129:GLY:O	2.18	0.44
1:L:155:ARG:NH2	1:L:156:GLN:HE22	2.13	0.44
1:L:185:GLU:O	1:L:189:HIS:CD2	2.70	0.44
2:H:134:THR:O	2:H:134:THR:HG23	2.17	0.44
1:L:28:TYR:CD2	3:P:320:PRO:HD2	2.53	0.44
2:H:12:ILE:O	2:H:111:VAL:HA	2.17	0.44
1:L:91:ASN:O	3:P:322:ARG:NH2	2.51	0.44
2:H:35:CYS:HA	2:H:52:CYS:HA	1.98	0.44
1:L:195:GLU:OE2	1:L:206:VAL:HG22	2.18	0.44
2:H:13:LYS:HB2	2:H:13:LYS:HE2	1.63	0.44
1:L:50:ILE:O	1:L:50:ILE:HG22	2.18	0.43
2:H:183:ASP:O	2:H:184:LEU:HG	2.19	0.43
1:L:125:LEU:O	1:L:126:THR:C	2.56	0.43
2:H:146:GLY:C	2:H:184:LEU:HD22	2.39	0.43
1:L:118:PHE:HE2	1:L:135:PHE:CD2	2.36	0.43
1:L:160:LEU:HD13	2:H:177:VAL:HG13	2.00	0.43
1:L:64:GLY:HA2	1:L:72:THR:O	2.18	0.43
1:L:188:ARG:NH1	1:L:188:ARG:O	2.52	0.43
2:H:137:MET:HA	2:H:194:PRO:HA	2.00	0.43
2:H:196:SER:C	2:H:199:ARG:H	2.21	0.43
1:L:76:ASP:HA	1:L:77:PRO:HA	1.79	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:160:LEU:HD22	2:H:177:VAL:CG2	2.47	0.43
2:H:119:PRO:CB	2:H:147:TYR:HB3	2.44	0.43
2:H:48:MET:O	2:H:63:ILE:HD11	2.19	0.42
1:L:188:ARG:HG3	1:L:188:ARG:NH1	2.17	0.42
1:L:46:VAL:HG11	2:H:100(B):TYR:CD2	2.53	0.42
1:L:149:LYS:HE2	1:L:193:THR:CB	2.48	0.42
2:H:13:LYS:HE2	2:H:16:GLN:OE1	2.19	0.42
2:H:24:VAL:HG21	2:H:29:ILE:CG2	2.49	0.42
1:L:115:VAL:HG13	1:L:207:LYS:HD3	2.01	0.42
1:L:161:ASN:HD21	1:L:177:SER:HB3	1.84	0.42
1:L:94:ASP:OD1	3:P:322:ARG:NH1	2.53	0.41
1:L:33:MET:HA	1:L:89:GLN:O	2.20	0.41
1:L:121:SER:HB2	2:H:123:PRO:HD2	2.01	0.41
1:L:106:MET:SD	1:L:106:MET:O	2.79	0.41
2:H:67:SER:HB2	2:H:81:GLN:O	2.21	0.41
1:L:125:LEU:O	1:L:183:LYS:HE2	2.20	0.41
2:H:100:GLU:HB3	2:H:100(B):TYR:CE1	2.56	0.41
1:L:2:ILE:HG13	1:L:27:GLU:HB2	2.03	0.41
2:H:38:ARG:HG2	2:H:39:GLN:N	2.31	0.41
1:L:155:ARG:HE	1:L:156:GLN:H	1.69	0.40
1:L:193:THR:CG2	1:L:194:CYS:N	2.83	0.40
2:H:87:THR:O	2:H:88:ALA:HB2	2.20	0.40
1:L:14:SER:O	1:L:17:GLN:HB2	2.21	0.40
1:L:160:LEU:CD1	2:H:179:GLN:NE2	2.84	0.40
1:L:193:THR:CG2	1:L:206:VAL:HG13	2.51	0.40
1:L:33:MET:C	1:L:33:MET:SD	3.00	0.40
2:H:32:THR:O	2:H:33:ASN:HB2	2.22	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	L	213/215 (99%)	189 (89%)	22 (10%)	2 (1%)	17 46
2	H	219/221 (99%)	190 (87%)	23 (10%)	6 (3%)	5 17
3	P	7/24 (29%)	5 (71%)	2 (29%)	0	100 100
All	All	439/460 (95%)	384 (88%)	47 (11%)	8 (2%)	8 28

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	122	SER
1	L	68	ARG
2	H	214	ALA
2	H	198	PRO
2	H	215	SER
2	H	33	ASN
2	H	216	SER
2	H	119	PRO

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	L	189/189 (100%)	165 (87%)	24 (13%)	4 14
2	H	198/198 (100%)	163 (82%)	35 (18%)	2 5
3	P	7/20 (35%)	5 (71%)	2 (29%)	0 1
All	All	394/407 (97%)	333 (84%)	61 (16%)	2 8

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	1	ASP
1	L	11	LEU
1	L	14	SER
1	L	15	LEU
1	L	18	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	L	42	GLN
1	L	45	LYS
1	L	46	VAL
1	L	54	LEU
1	L	70	ASP
1	L	104	LEU
1	L	105	GLU
1	L	143	ASP
1	L	154	GLU
1	L	155	ARG
1	L	156	GLN
1	L	165	ASP
1	L	177	SER
1	L	179	LEU
1	L	182	THR
1	L	188	ARG
1	L	190	ASN
1	L	197	THR
1	L	211	ARG
2	H	4	LEU
2	H	5	GLN
2	H	7	SER
2	H	13	LYS
2	H	18	LEU
2	H	20	LEU
2	H	28	SER
2	H	30	THR
2	H	38	ARG
2	H	54	GLU
2	H	68	THR
2	H	79	PHE
2	H	96	ASN
2	H	105	GLN
2	H	113	SER
2	H	116	THR
2	H	119	PRO
2	H	120	SER
2	H	123	PRO
2	H	140	LEU
2	H	143	LEU
2	H	149	PRO
2	H	151	PRO

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	H	152	VAL
2	H	175	PRO
2	H	178	LEU
2	H	187	LEU
2	H	191	VAL
2	H	196	SER
2	H	198	PRO
2	H	208	CYS
2	H	209	ASN
2	H	210	VAL
2	H	213	PRO
2	H	220	ASP
3	P	322	ARG
3	P	324	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	156	GLN
1	L	161	ASN
2	H	33	ASN
2	H	96	ASN
2	H	105	GLN
2	H	179	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	AIB	P	323	3	1,5,6	1.22	0	2,7,9	0.03	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	AIB	P	323	3	-	0/2/3/6	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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

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, 95^{th} 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	L	215/215 (100%)	0.06	8 (3%) 41 31	5, 27, 73, 85	0
2	H	221/221 (100%)	-0.25	1 (0%) 91 88	5, 24, 58, 108	0
3	P	9/24 (37%)	0.15	0 100 100	19, 21, 50, 57	0
All	All	445/460 (96%)	-0.09	9 (2%) 65 56	5, 26, 69, 108	0

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	L	181	LEU	3.9
1	L	150	ILE	3.7
1	L	155	ARG	2.6
1	L	189	HIS	2.5
1	L	156	GLN	2.3
1	L	192	TYR	2.1
1	L	179	LEU	2.1
2	H	127	GLY	2.0
1	L	196	ALA	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	AIB	P	323	6/7	0.98	0.14	19,21,26,31	0

6.3 Carbohydrates (i)

There are no monosaccharides 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.