



Full wwPDB X-ray Structure Validation Report ⓘ

May 26, 2020 – 07:13 am BST

PDB ID : 1UKH
Title : Structural basis for the selective inhibition of JNK1 by the scaffolding protein JIP1 and SP600125
Authors : Heo, Y.-S.; Kim, Y.K.; Sung, B.-J.; Lee, H.S.; Lee, J.I.; Seo, C.I.; Park, S.-Y.; Kim, J.H.; Hyun, Y.-L.; Jeon, Y.H.; Ro, S.; Lee, T.G.; Cho, J.M.; Hwang, K.Y.; Yang, C.-H.
Deposited on : 2003-08-23
Resolution : 2.35 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

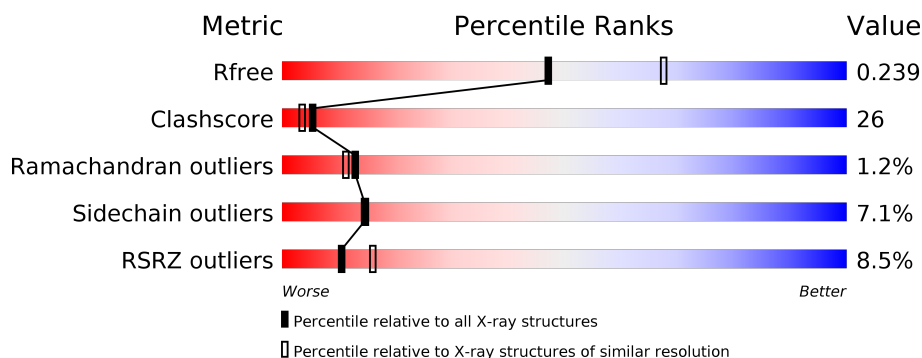
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 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	1164 (2.36-2.36)
Clashscore	141614	1232 (2.36-2.36)
Ramachandran outliers	138981	1211 (2.36-2.36)
Sidechain outliers	138945	1212 (2.36-2.36)
RSRZ outliers	127900	1150 (2.36-2.36)

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	369	<div> <div>7%</div> <div>46%</div> <div>37%</div> <div>•</div> <div>13%</div> </div>
2	B	11	<div> <div>18%</div> <div>36%</div> <div>55%</div> <div>9%</div> </div>

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 2767 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 Mitogen-activated protein kinase 8 isoform 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	321	Total	C	N	O	S	0	0	0
			2588	1670	431	468	19			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	364	HIS	-	EXPRESSION TAG	UNP P45983
A	365	HIS	-	EXPRESSION TAG	UNP P45983
A	366	HIS	-	EXPRESSION TAG	UNP P45983
A	367	HIS	-	EXPRESSION TAG	UNP P45983
A	368	HIS	-	EXPRESSION TAG	UNP P45983
A	369	HIS	-	EXPRESSION TAG	UNP P45983

- Molecule 2 is a protein called 11-mer peptide from C-jun-amino-terminal kinase interacting protein 1.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	B	10	Total	C	N	O	0	0	0
			84	55	15	14			

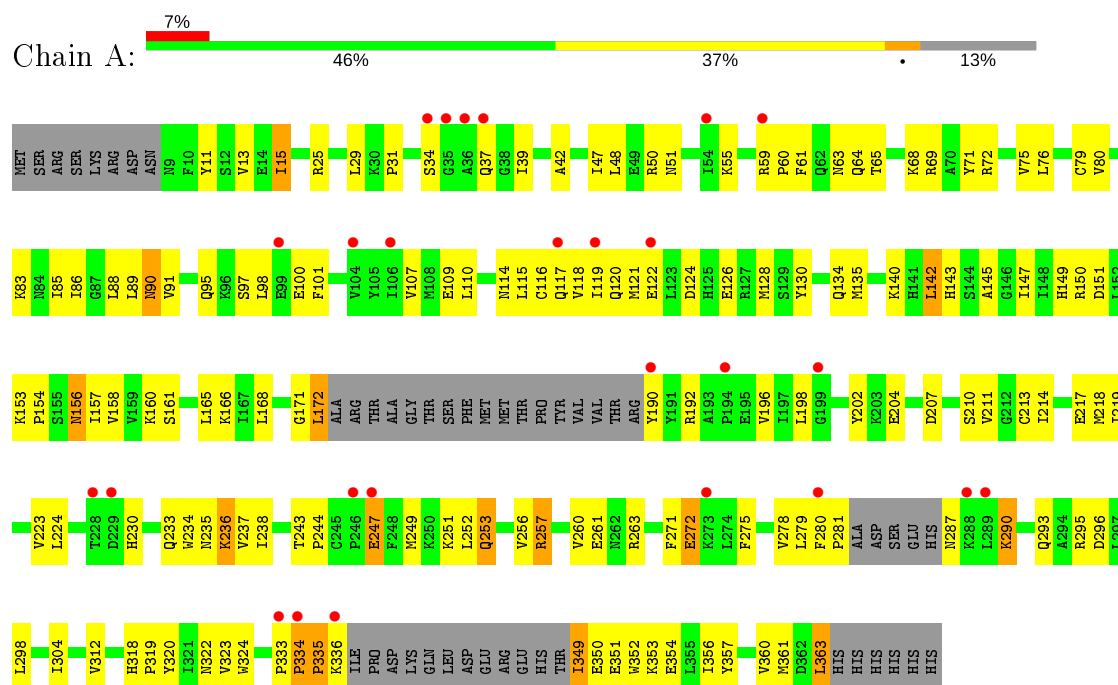
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	91	Total	O	0	0
			91	91		
3	B	4	Total	O	0	0
			4	4		

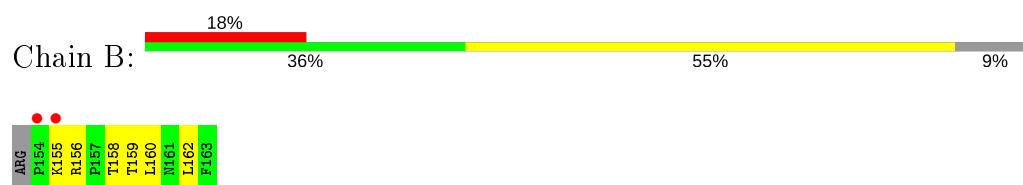
3 Residue-property plots [i](#)

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: Mitogen-activated protein kinase 8 isoform 4



- Molecule 2: 11-mer peptide from C-jun-amino-terminal kinase interacting protein 1



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	62.40Å 80.84Å 83.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.82 – 2.35 19.81 – 2.34	Depositor EDS
% Data completeness (in resolution range)	(Not available) (19.82-2.35) 91.4 (19.81-2.34)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.97 (at 2.35Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.226 , 0.245 0.234 , 0.239	Depositor DCC
R_{free} test set	818 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å ²)	49.7	Xtriage
Anisotropy	0.263	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 57.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.031 for -h,l,k	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	2767	wwPDB-VP
Average B, all atoms (Å ²)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.88% 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	0.42	0/2644	0.61	0/3571
2	B	0.55	0/86	0.68	0/114
All	All	0.42	0/2730	0.61	0/3685

There are no bond length outliers.

There are no bond angle outliers.

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	2588	0	2620	135	0
2	B	84	0	91	8	0
3	A	91	0	0	9	0
3	B	4	0	0	1	0
All	All	2767	0	2711	141	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 (141) 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:A:151:ASP:HB2	1:A:172:LEU:HD21	1.51	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:63:ASN:ND2	1:A:65:THR:HB	1.90	0.85
1:A:72:ARG:HH22	1:A:172:LEU:HA	1.44	0.81
1:A:172:LEU:N	1:A:172:LEU:HD23	2.00	0.75
1:A:64:GLN:HE21	1:A:352:TRP:HE1	1.34	0.74
1:A:161:SER:HA	2:B:162:LEU:HD21	1.69	0.74
1:A:217:GLU:HB2	3:A:397:HOH:O	1.89	0.72
1:A:76:LEU:HD22	1:A:147:ILE:HD11	1.72	0.72
1:A:356:ILE:O	1:A:360:VAL:HG23	1.91	0.71
1:A:119:ILE:HG13	1:A:218:MET:HG2	1.72	0.70
1:A:97:SER:OG	1:A:100:GLU:HG3	1.93	0.69
1:A:119:ILE:HD11	1:A:217:GLU:HB3	1.73	0.68
2:B:162:LEU:HD22	2:B:162:LEU:H	1.57	0.68
1:A:118:VAL:HG11	2:B:160:LEU:HD21	1.74	0.68
1:A:253:GLN:HB2	1:A:256:VAL:HG12	1.78	0.65
1:A:37:GLN:HB3	1:A:55:LYS:NZ	2.11	0.65
1:A:140:LYS:HB2	1:A:312:VAL:HG11	1.79	0.64
1:A:235:ASN:HD21	1:A:263:ARG:NE	1.96	0.62
1:A:114:ASN:OD1	1:A:116:CYS:HB2	2.00	0.62
2:B:162:LEU:N	2:B:162:LEU:HD22	2.13	0.61
1:A:190:TYR:N	3:A:376:HOH:O	2.33	0.61
1:A:117:GLN:HG3	1:A:121:MET:HE3	1.83	0.60
1:A:234:TRP:CH2	1:A:238:ILE:HD11	2.36	0.60
1:A:63:ASN:HD22	1:A:65:THR:HB	1.63	0.60
1:A:233:GLN:O	1:A:237:VAL:HG23	2.01	0.59
1:A:235:ASN:HD21	1:A:263:ARG:HE	1.47	0.59
1:A:349:ILE:HG22	1:A:350:GLU:H	1.67	0.59
1:A:192:ARG:HG3	1:A:192:ARG:HH11	1.68	0.59
1:A:63:ASN:HD21	1:A:65:THR:HB	1.67	0.58
1:A:135:MET:HE2	1:A:211:VAL:HG22	1.84	0.58
1:A:361:MET:C	1:A:363:LEU:H	2.06	0.58
1:A:15:ILE:HD11	1:A:39:ILE:HG21	1.84	0.57
1:A:219:ILE:HG22	1:A:279:LEU:HD13	1.85	0.57
1:A:336:LYS:O	1:A:336:LYS:HD3	2.04	0.57
1:A:153:LYS:O	1:A:157:ILE:HG12	2.06	0.56
1:A:68:LYS:HG2	1:A:352:TRP:CH2	2.41	0.56
1:A:143:HIS:HE1	1:A:207:ASP:OD2	1.88	0.56
1:A:120:GLN:C	1:A:121:MET:HE2	2.25	0.56
1:A:68:LYS:HE3	1:A:352:TRP:HH2	1.71	0.56
1:A:210:SER:O	1:A:214:ILE:HG13	2.06	0.55
1:A:15:ILE:HG13	1:A:15:ILE:O	2.05	0.55
1:A:234:TRP:HE1	1:A:260:VAL:HG22	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:119:ILE:HD13	1:A:217:GLU:OE2	2.07	0.54
1:A:63:ASN:HD22	1:A:65:THR:CB	2.20	0.54
1:A:243:THR:HG23	1:A:244:PRO:HD2	1.89	0.54
1:A:86:ILE:HG23	1:A:86:ILE:O	2.07	0.54
1:A:118:VAL:HA	1:A:121:MET:HG2	1.89	0.54
1:A:95:GLN:HG2	1:A:100:GLU:O	2.08	0.54
1:A:51:ASN:HB3	1:A:110:LEU:HD23	1.89	0.54
1:A:11:TYR:CE2	1:A:13:VAL:HG23	2.43	0.54
1:A:153:LYS:HG2	1:A:156:ASN:HB2	1.89	0.54
2:B:155:LYS:HD3	2:B:156:ARG:N	2.23	0.53
1:A:237:VAL:HG12	1:A:304:ILE:HD11	1.90	0.53
1:A:249:MET:O	1:A:252:LEU:HB2	2.08	0.53
1:A:91:VAL:HG12	1:A:360:VAL:HG13	1.90	0.53
1:A:15:ILE:HD13	1:A:31:PRO:HB3	1.89	0.53
1:A:149:HIS:O	1:A:150:ARG:HB2	2.08	0.53
1:A:192:ARG:HG3	1:A:192:ARG:NH1	2.23	0.53
1:A:72:ARG:HH22	1:A:172:LEU:CA	2.18	0.51
1:A:150:ARG:HD3	1:A:202:TYR:CE2	2.45	0.51
1:A:213:CYS:HA	1:A:224:LEU:HD12	1.93	0.51
1:A:153:LYS:HE2	1:A:156:ASN:HD22	1.75	0.51
1:A:29:LEU:HA	1:A:42:ALA:O	2.10	0.51
1:A:119:ILE:HG13	1:A:218:MET:CG	2.41	0.50
1:A:151:ASP:CB	1:A:172:LEU:HD21	2.33	0.50
1:A:219:ILE:HD13	1:A:280:PHE:CE1	2.47	0.49
1:A:219:ILE:HD12	1:A:298:LEU:HD11	1.95	0.49
2:B:155:LYS:HD3	2:B:156:ARG:H	1.76	0.49
1:A:153:LYS:HB2	1:A:154:PRO:CD	2.42	0.48
1:A:318:HIS:CD2	1:A:320:TYR:H	2.32	0.48
1:A:118:VAL:HA	1:A:121:MET:CG	2.44	0.48
1:A:122:GLU:HA	3:A:453:HOH:O	2.14	0.47
1:A:290:LYS:NZ	3:A:381:HOH:O	2.47	0.47
1:A:25:ARG:HB2	1:A:47:ILE:HG12	1.94	0.47
1:A:48:LEU:HB3	1:A:50:ARG:HD3	1.96	0.47
1:A:37:GLN:HB3	1:A:55:LYS:HZ1	1.78	0.47
1:A:124:ASP:N	1:A:124:ASP:OD1	2.45	0.47
1:A:247:GLU:O	1:A:251:LYS:HG2	2.14	0.47
1:A:63:ASN:ND2	1:A:65:THR:CB	2.69	0.47
1:A:117:GLN:O	1:A:121:MET:HE3	2.15	0.47
1:A:135:MET:CE	1:A:211:VAL:HG22	2.44	0.47
1:A:350:GLU:OE2	1:A:350:GLU:O	2.32	0.47
1:A:272:GLU:OE1	1:A:272:GLU:N	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:296:ASP:OD1	1:A:318:HIS:HE1	1.98	0.46
1:A:361:MET:C	1:A:363:LEU:N	2.69	0.46
1:A:130:TYR:O	1:A:134:GLN:HG3	2.16	0.45
1:A:249:MET:HA	1:A:252:LEU:HD12	1.98	0.45
1:A:88:LEU:HD12	1:A:107:VAL:O	2.16	0.45
1:A:318:HIS:HD2	1:A:320:TYR:HB3	1.82	0.45
1:A:304:ILE:HG12	3:A:386:HOH:O	2.16	0.45
1:A:172:LEU:H	1:A:172:LEU:HD23	1.81	0.45
1:A:120:GLN:O	1:A:121:MET:HE2	2.16	0.45
1:A:349:ILE:HD12	1:A:349:ILE:N	2.31	0.45
1:A:323:VAL:HG23	1:A:324:TRP:CD2	2.52	0.45
1:A:290:LYS:HD2	1:A:293:GLN:NE2	2.32	0.45
1:A:37:GLN:HB2	3:A:459:HOH:O	2.17	0.44
1:A:86:ILE:HD11	1:A:109:GLU:O	2.17	0.44
1:A:151:ASP:HB2	1:A:172:LEU:CD2	2.37	0.44
1:A:236:LYS:NZ	3:A:412:HOH:O	2.50	0.43
1:A:198:LEU:N	1:A:198:LEU:CD1	2.81	0.43
1:A:85:ILE:HD13	1:A:142:LEU:HD13	2.00	0.43
2:B:158:THR:O	2:B:159:THR:HG23	2.19	0.43
1:A:142:LEU:HA	1:A:142:LEU:HD12	1.89	0.43
1:A:101:PHE:CG	1:A:357:TYR:HD2	2.36	0.43
1:A:150:ARG:HD3	1:A:202:TYR:CZ	2.54	0.43
1:A:318:HIS:CG	1:A:319:PRO:HD2	2.54	0.43
1:A:114:ASN:HA	1:A:158:VAL:HA	2.00	0.42
1:A:98:LEU:HD21	1:A:354:GLU:HG2	2.01	0.42
1:A:89:LEU:O	1:A:90:ASN:HB2	2.18	0.42
1:A:257:ARG:HD3	1:A:261:GLU:CD	2.40	0.42
1:A:29:LEU:N	1:A:29:LEU:HD12	2.35	0.42
1:A:198:LEU:N	1:A:198:LEU:HD12	2.34	0.42
1:A:83:LYS:O	1:A:166:LYS:HG2	2.20	0.42
1:A:350:GLU:HA	3:A:394:HOH:O	2.19	0.42
1:A:72:ARG:NH2	1:A:171:GLY:O	2.53	0.42
1:A:157:ILE:HG21	1:A:165:LEU:HD11	2.02	0.41
1:A:190:TYR:CD2	1:A:223:VAL:HG11	2.55	0.41
1:A:253:GLN:HB3	1:A:253:GLN:HE21	1.58	0.41
1:A:192:ARG:HD2	1:A:196:VAL:HG11	2.01	0.41
1:A:68:LYS:HG2	1:A:352:TRP:CZ2	2.56	0.41
1:A:278:VAL:O	1:A:278:VAL:HG12	2.20	0.41
1:A:281:PRO:HG2	1:A:287:ASN:HD22	1.85	0.41
1:A:80:VAL:HA	1:A:335:PRO:HB3	2.02	0.41
1:A:119:ILE:HG23	1:A:120:GLN:HG3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:143:HIS:C	1:A:145:ALA:H	2.24	0.41
1:A:79:CYS:SG	1:A:80:VAL:N	2.94	0.41
1:A:59:ARG:O	1:A:60:PRO:C	2.58	0.41
1:A:90:ASN:HA	1:A:90:ASN:HD22	1.66	0.41
1:A:172:LEU:HA	3:A:440:HOH:O	2.20	0.41
1:A:115:LEU:HD12	1:A:157:ILE:HB	2.02	0.41
1:A:121:MET:HG3	3:B:13:HOH:O	2.20	0.41
1:A:98:LEU:O	1:A:353:LYS:HE2	2.21	0.41
1:A:271:PHE:O	1:A:295:ARG:HD2	2.22	0.40
1:A:117:GLN:O	1:A:121:MET:HG2	2.21	0.40
1:A:333:PRO:HA	1:A:334:PRO:HD3	1.87	0.40
2:B:162:LEU:CD2	2:B:162:LEU:H	2.30	0.40
1:A:275:PHE:O	1:A:295:ARG:HD2	2.22	0.40
1:A:153:LYS:HB2	1:A:154:PRO:HD2	2.02	0.40
1:A:318:HIS:O	1:A:322:ASN:HB2	2.21	0.40
1:A:190:TYR:HA	1:A:233:GLN:OE1	2.20	0.40
1:A:71:TYR:O	1:A:75:VAL:HG23	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	A	313/369 (85%)	285 (91%)	24 (8%)	4 (1%)	12	10
2	B	8/11 (73%)	8 (100%)	0	0	100	100
All	All	321/380 (84%)	293 (91%)	24 (8%)	4 (1%)	13	11

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	34	SER

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Mol	Chain	Res	Type
1	A	230	HIS
1	A	334	PRO
1	A	335	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	287/331 (87%)	266 (93%)	21 (7%)	14	14
2	B	10/11 (91%)	10 (100%)	0	100	100
All	All	297/342 (87%)	276 (93%)	21 (7%)	14	15

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	ILE
1	A	61	PHE
1	A	69	ARG
1	A	90	ASN
1	A	126	GLU
1	A	128	MET
1	A	142	LEU
1	A	156	ASN
1	A	160	LYS
1	A	168	LEU
1	A	172	LEU
1	A	204	GLU
1	A	236	LYS
1	A	247	GLU
1	A	253	GLN
1	A	257	ARG
1	A	272	GLU
1	A	290	LYS
1	A	349	ILE
1	A	351	GLU

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Mol	Chain	Res	Type
1	A	363	LEU

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

Mol	Chain	Res	Type
1	A	63	ASN
1	A	64	GLN
1	A	66	HIS
1	A	82	HIS
1	A	90	ASN
1	A	143	HIS
1	A	156	ASN
1	A	235	ASN
1	A	253	GLN
1	A	287	ASN
1	A	293	GLN
1	A	317	GLN
1	A	318	HIS

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

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, 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	321/369 (86%)	0.31	26 (8%) 12 17	34, 58, 91, 104	0
2	B	10/11 (90%)	1.40	2 (20%) 1 2	54, 63, 70, 75	0
All	All	331/380 (87%)	0.34	28 (8%) 10 16	34, 59, 91, 104	0

All (28) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	154	PRO	6.3
1	A	288	LYS	4.4
1	A	122	GLU	4.3
1	A	199	GLY	4.2
1	A	59	ARG	3.8
1	A	246	PRO	3.7
1	A	333	PRO	3.4
1	A	289	LEU	3.0
1	A	104	VAL	3.0
1	A	54	ILE	3.0
1	A	34	SER	2.9
1	A	36	ALA	2.9
1	A	229	ASP	2.9
1	A	273	LYS	2.8
1	A	119	ILE	2.8
1	A	247	GLU	2.8
2	B	155	LYS	2.5
1	A	106	ILE	2.4
1	A	99	GLU	2.3
1	A	194	PRO	2.2
1	A	336	LYS	2.2
1	A	280	PHE	2.1
1	A	35	GLY	2.1
1	A	334	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	37	GLN	2.1
1	A	228	THR	2.0
1	A	117	GLN	2.0
1	A	190	TYR	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 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.