



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 14, 2026 – 10:46 AM UTC

PDB ID : 3FE3 / pdb_00003fe3
Title : Crystal structure of the kinase MARK3/Par-1: T211A-S215A double mutant
Authors : Nugoor, C.; Marx, A.; Panneerselvam, S.; Mandelkow, E.-M.; Mandelkow, E.
Deposited on : 2008-11-27
Resolution : 1.90 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	:	4-5-2 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

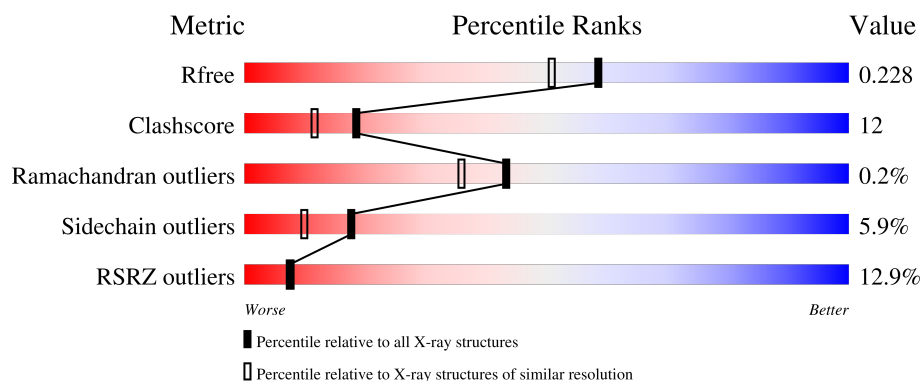
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.90 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))
R_{free}	180053	7789 (1.90-1.90)
Clashscore	190562	8410 (1.90-1.90)
Ramachandran outliers	187476	8333 (1.90-1.90)
Sidechain outliers	187428	8333 (1.90-1.90)
RSRZ outliers	180081	7790 (1.90-1.90)

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 $\leq 5\%$. 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	328	8% 71% 21% • •
1	B	328	17% 76% 17% • •

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 5597 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 MAP/microtubule affinity-regulating kinase 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	317	Total	C	N	O	S	0	4	0
			2601	1669	450	469	13			
1	B	317	Total	C	N	O	S	0	4	0
			2598	1668	449	468	13			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	40	GLY	-	expression tag	UNP P27448
A	211	ALA	THR	engineered mutation	UNP P27448
A	215	ALA	SER	engineered mutation	UNP P27448
B	40	GLY	-	expression tag	UNP P27448
B	211	ALA	THR	engineered mutation	UNP P27448
B	215	ALA	SER	engineered mutation	UNP P27448

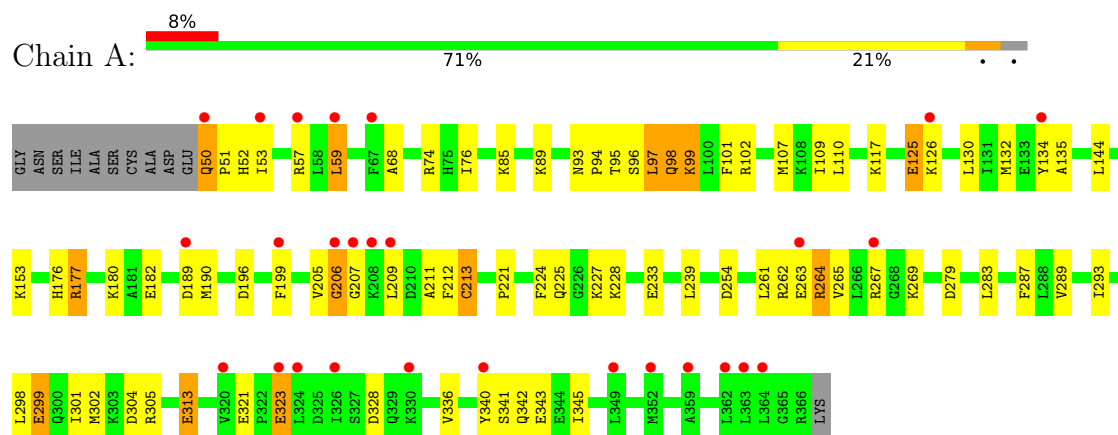
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	192	Total	O	0	0
			192	192		
2	B	206	Total	O	0	0
			206	206		

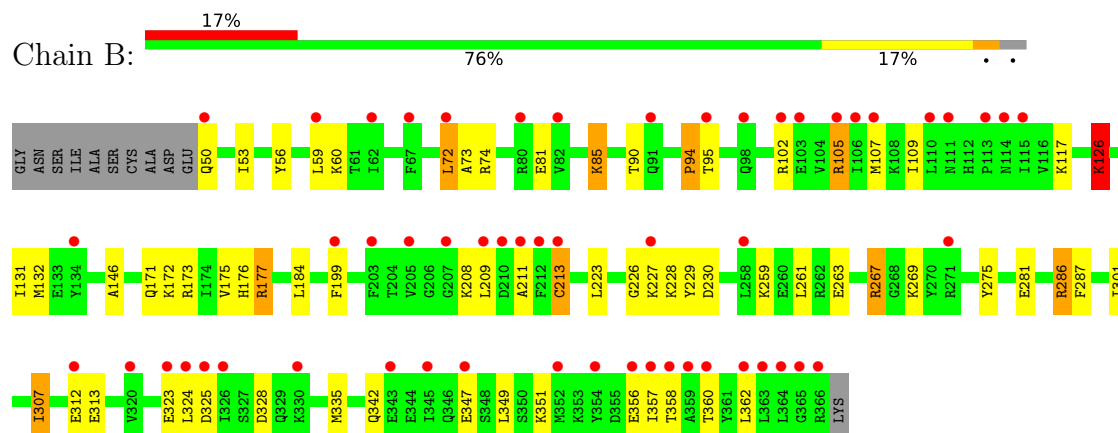
3 Residue-property plots [i](#)

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: MAP/microtubule affinity-regulating kinase 3



- Molecule 1: MAP/microtubule affinity-regulating kinase 3



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	96.52Å 95.33Å 111.08Å 90.00° 106.39° 90.00°	Depositor
Resolution (Å)	51.85 – 1.90 51.85 – 1.90	Depositor EDS
% Data completeness (in resolution range)	99.9 (51.85-1.90) 99.9 (51.85-1.90)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.32 (at 1.90Å)	Xtriage
Refinement program	REFMAC refmac_5.4.0073	Depositor
R, R_{free}	0.197 , 0.233 0.193 , 0.228	Depositor DCC
R_{free} test set	3856 reflections (5.08%)	wwPDB-VP
Wilson B-factor (Å ²)	35.7	Xtriage
Anisotropy	0.443	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 44.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	5597	wwPDB-VP
Average B, all atoms (Å ²)	38.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.48% 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	1.27	10/2656 (0.4%)	1.13	4/3570 (0.1%)
1	B	1.27	7/2656 (0.3%)	1.19	7/3570 (0.2%)
All	All	1.27	17/5312 (0.3%)	1.16	11/7140 (0.2%)

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	135	ALA	N-CA	6.73	1.54	1.46
1	B	211	ALA	CA-CB	6.39	1.63	1.53
1	A	213	CYS	CB-SG	-5.97	1.61	1.81
1	B	56	TYR	N-CA	5.96	1.53	1.46
1	B	281	GLU	C-O	5.84	1.30	1.24
1	A	265	VAL	CA-CB	5.65	1.61	1.54
1	B	184	LEU	CA-CB	5.44	1.60	1.53
1	A	221	PRO	CA-CB	5.37	1.61	1.53
1	A	144	LEU	N-CA	5.35	1.52	1.46
1	B	356	GLU	N-CA	5.22	1.52	1.46
1	A	53	ILE	CA-CB	5.22	1.61	1.54
1	A	293	ILE	CA-CB	5.19	1.61	1.54
1	A	134	TYR	CA-C	5.19	1.59	1.52
1	A	289	VAL	C-O	5.15	1.29	1.24
1	A	233	GLU	N-CA	5.14	1.52	1.46
1	B	275	TYR	CA-C	5.13	1.59	1.52
1	B	53	ILE	CA-C	-5.09	1.46	1.52

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	50	GLN	CA-C-N	-12.31	107.21	119.64
1	B	50	GLN	C-N-CA	-12.31	107.21	119.64
1	A	211	ALA	N-CA-C	6.12	119.58	111.75
1	A	213	CYS	CB-CA-C	-5.58	101.89	110.81
1	A	213	CYS	N-CA-C	5.53	117.75	111.11

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	126	LYS	N-CA-C	5.36	120.09	113.50
1	A	264	ARG	CA-CB-CG	-5.22	103.66	114.10
1	B	230	ASP	N-CA-C	5.17	121.81	110.80
1	B	211	ALA	CA-C-N	-5.09	113.47	120.28
1	B	211	ALA	C-N-CA	-5.09	113.47	120.28
1	B	146	ALA	N-CA-C	5.03	116.84	111.36

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	2601	0	2669	65	0
1	B	2598	0	2670	62	0
2	A	192	0	0	10	0
2	B	206	0	0	16	0
All	All	5597	0	5339	127	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 12.

All (127) 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:B:227:LYS:HG2	2:B:397:HOH:O	1.22	1.27
1:A:323:GLU:HA	1:A:323:GLU:OE1	1.47	1.11
1:B:105[A]:ARG:HH11	1:B:105[A]:ARG:HG2	0.98	1.06
2:A:414:HOH:O	1:B:259:LYS:HE3	1.56	1.04
1:A:125:GLU:H	1:A:125:GLU:CD	1.66	1.03
1:A:57[A]:ARG:NH2	1:A:74:ARG:HD2	1.74	1.02
1:B:105[A]:ARG:HG2	1:B:105[A]:ARG:NH1	1.67	1.00
1:A:57[A]:ARG:HH21	1:A:74:ARG:HD2	1.26	0.99
1:A:225:GLN:HG2	2:A:392:HOH:O	1.62	0.97
1:B:286:ARG:HH11	1:B:286:ARG:HG2	1.27	0.97

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:GLU:H	1:A:313:GLU:CD	1.73	0.96
1:A:177:ARG:HH11	1:A:177:ARG:CG	1.78	0.95
1:B:105[A]:ARG:HH11	1:B:105[A]:ARG:CG	1.80	0.93
1:B:313:GLU:HG3	1:B:313:GLU:O	1.71	0.90
1:A:52:HIS:CE1	1:A:57[A]:ARG:HG2	2.08	0.89
1:B:286:ARG:HH11	1:B:286:ARG:CG	1.88	0.85
1:A:57[A]:ARG:HH21	1:A:74:ARG:CD	1.87	0.85
1:B:117:LYS:HD2	2:B:658:HOH:O	1.75	0.85
1:A:177:ARG:HH11	1:A:177:ARG:HG3	1.42	0.84
1:A:57[A]:ARG:HG3	1:A:76:ILE:CG2	2.08	0.84
1:A:117:LYS:HD2	2:A:425:HOH:O	1.85	0.75
1:A:313:GLU:HB3	2:A:432:HOH:O	1.88	0.74
1:B:323:GLU:N	1:B:323:GLU:OE1	2.21	0.73
1:B:228:LYS:C	2:B:504:HOH:O	2.30	0.73
1:A:205:VAL:O	1:A:206:GLY:C	2.31	0.73
1:B:263[A]:GLU:HG3	2:B:427:HOH:O	1.89	0.73
1:B:228:LYS:HG3	2:B:504:HOH:O	1.89	0.71
1:B:109:ILE:O	1:B:172:LYS:NZ	2.23	0.71
1:B:312:GLU:H	1:B:312:GLU:CD	1.97	0.71
1:A:343:GLU:OE1	1:A:343:GLU:HA	1.89	0.70
1:A:57[A]:ARG:HG3	1:A:76:ILE:HG22	1.74	0.70
1:B:286:ARG:HG2	1:B:286:ARG:NH1	1.96	0.69
1:A:177:ARG:HH11	1:A:177:ARG:HG2	1.58	0.68
1:A:57[A]:ARG:NH2	1:A:74:ARG:CD	2.51	0.67
1:A:205:VAL:O	1:A:207:GLY:N	2.28	0.66
1:B:226:GLY:O	2:B:659:HOH:O	2.15	0.65
1:A:68:ALA:HB1	1:A:85:LYS:HD2	1.80	0.64
1:A:180:LYS:HD2	1:A:182[B]:GLU:OE2	1.98	0.64
1:B:267:ARG:HB2	1:B:267:ARG:NH1	2.13	0.64
1:B:267:ARG:HB2	1:B:267:ARG:HH11	1.63	0.64
1:B:335:MET:HE3	1:B:360:THR:HB	1.81	0.63
1:B:102:ARG:HD3	2:B:374:HOH:O	2.01	0.59
1:B:347:GLU:OE2	1:B:351:LYS:HE2	2.03	0.59
1:A:267:ARG:HD3	2:A:391:HOH:O	2.01	0.59
1:A:50:GLN:HB2	1:A:51:PRO:HD3	1.85	0.59
1:B:313:GLU:O	1:B:313:GLU:CG	2.50	0.58
1:B:324:LEU:HD12	1:B:325:ASP:N	2.18	0.58
1:B:72:LEU:HD11	1:B:81:GLU:OE2	2.04	0.57
1:A:212:PHE:C	2:A:401:HOH:O	2.47	0.57
1:B:171:GLN:HB3	2:B:376:HOH:O	2.05	0.57
1:B:59:LEU:HD22	1:B:73:ALA:HA	1.86	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:286:ARG:NH1	2:B:431:HOH:O	2.38	0.56
2:A:407:HOH:O	1:B:208:LYS:HG2	2.05	0.56
1:B:59:LEU:CD2	1:B:73:ALA:HA	2.36	0.56
1:B:175:VAL:HG12	1:B:177:ARG:HG2	1.88	0.56
1:A:180:LYS:CD	1:A:182[B]:GLU:OE2	2.55	0.55
1:B:173:ARG:NH1	2:B:574:HOH:O	2.39	0.55
1:A:177:ARG:HG2	1:A:177:ARG:NH1	2.20	0.54
1:A:176:HIS:O	1:A:177:ARG:HG2	2.07	0.54
1:A:224:PHE:CG	1:A:262:ARG:HG3	2.43	0.54
1:A:313:GLU:OE1	1:A:313:GLU:N	2.37	0.53
1:A:93:ASN:HB2	1:A:94:PRO:CD	2.39	0.53
1:A:125:GLU:CD	1:A:125:GLU:N	2.47	0.52
1:B:208:LYS:NZ	2:B:426:HOH:O	2.42	0.52
1:A:177:ARG:CG	1:A:177:ARG:NH1	2.49	0.52
1:B:228:LYS:HB3	2:B:384:HOH:O	2.09	0.52
1:B:90:THR:HG23	1:B:126:LYS:HB2	1.92	0.51
1:B:105[A]:ARG:HG3	2:B:518:HOH:O	2.10	0.51
1:A:323:GLU:OE1	1:A:323:GLU:CA	2.35	0.51
1:A:57[B]:ARG:HH11	1:A:59:LEU:HD12	1.76	0.50
1:A:267:ARG:HG2	1:A:269:LYS:HG2	1.94	0.50
1:B:209:LEU:O	1:B:213:CYS:HB2	2.12	0.49
1:A:107:MET:HE1	1:A:130:LEU:HD13	1.94	0.49
1:A:57[A]:ARG:CD	1:A:76:ILE:HG22	2.43	0.49
1:A:57[A]:ARG:CG	1:A:76:ILE:HG22	2.41	0.49
1:B:324:LEU:HD12	1:B:324:LEU:C	2.39	0.48
1:A:177:ARG:HG3	1:A:177:ARG:NH1	2.19	0.48
1:A:313:GLU:CD	1:A:313:GLU:N	2.51	0.47
1:A:97:LEU:HD22	1:A:101:PHE:CE2	2.49	0.47
1:A:279:ASP:CG	1:A:305[A]:ARG:HE	2.22	0.47
1:A:98:GLN:NE2	1:A:98:GLN:HA	2.28	0.47
1:B:126:LYS:HB3	1:B:126:LYS:HE3	1.20	0.47
1:A:57[B]:ARG:HH11	1:A:59:LEU:CD1	2.27	0.47
1:B:208:LYS:HE2	2:B:368:HOH:O	2.15	0.46
1:A:57[A]:ARG:NE	1:A:76:ILE:HG22	2.30	0.46
1:A:341:SER:O	1:A:345:ILE:HG13	2.15	0.46
1:B:85:LYS:HB2	1:B:132[B]:MET:CE	2.46	0.46
1:A:298:LEU:O	1:A:302:MET:HG3	2.15	0.46
1:A:328:ASP:OD1	1:A:328:ASP:C	2.58	0.46
1:B:90:THR:CG2	1:B:126:LYS:HB2	2.45	0.46
1:A:153:LYS:HE2	1:A:153:LYS:HB3	1.67	0.46
1:B:85:LYS:HB2	1:B:132[B]:MET:HE1	1.97	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:176:HIS:C	1:B:177:ARG:HG3	2.40	0.46
1:A:196:ASP:HA	1:A:199:PHE:HD2	1.80	0.45
1:A:89:LYS:HD3	1:A:126:LYS:C	2.41	0.45
1:A:212:PHE:HA	2:A:401:HOH:O	2.15	0.45
1:B:126:LYS:HB2	1:B:126:LYS:HE2	1.68	0.45
1:A:107:MET:SD	1:A:132[A]:MET:HE1	2.57	0.45
1:B:328:ASP:OD1	1:B:328:ASP:C	2.60	0.45
1:B:286:ARG:HH11	1:B:286:ARG:CB	2.29	0.45
1:B:347:GLU:HG3	1:B:351:LYS:HD2	1.98	0.44
2:A:407:HOH:O	1:B:208:LYS:CG	2.64	0.44
1:A:224:PHE:CD1	1:A:262:ARG:HG3	2.52	0.44
1:A:254:ASP:O	1:A:264:ARG:HD2	2.18	0.44
1:B:131:ILE:HD12	1:B:131:ILE:N	2.33	0.44
1:A:212:PHE:CA	2:A:401:HOH:O	2.67	0.43
1:A:287:PHE:CZ	1:A:301:ILE:HG21	2.54	0.43
1:B:223:LEU:HB2	1:B:229:TYR:CE1	2.53	0.43
1:B:117:LYS:NZ	1:B:362:LEU:HD13	2.34	0.43
1:B:349:LEU:HD23	1:B:358:THR:HG22	2.00	0.42
1:B:287:PHE:CZ	1:B:301:ILE:HG21	2.55	0.42
1:A:283:LEU:HD13	1:A:304:ASP:CG	2.45	0.42
1:A:96:SER:HA	1:A:99:LYS:HB2	2.02	0.42
1:B:307:ILE:HD13	1:B:307:ILE:HA	1.86	0.42
1:A:336:VAL:HA	1:A:340:TYR:O	2.20	0.41
1:A:189:ASP:O	1:A:190:MET:HB2	2.19	0.41
1:A:298:LEU:N	1:A:299:GLU:OE1	2.54	0.41
1:B:117:LYS:HZ1	1:B:362:LEU:HD13	1.85	0.41
1:A:110:LEU:HD23	1:A:110:LEU:HA	1.84	0.41
1:A:261:LEU:HD13	1:A:261:LEU:C	2.45	0.41
1:B:85:LYS:CB	1:B:132[B]:MET:CE	2.99	0.41
1:B:94:PRO:HA	2:B:377:HOH:O	2.20	0.41
1:B:267:ARG:HG3	1:B:269:LYS:HG3	2.03	0.41
1:A:227:LYS:O	1:A:228:LYS:C	2.63	0.40
1:B:74[B]:ARG:NH1	2:B:588:HOH:O	2.53	0.40
1:B:107:MET:HE3	1:B:199:PHE:CE1	2.56	0.40
1:B:335:MET:HE1	1:B:357:ILE:O	2.22	0.40

There are no symmetry-related clashes.

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	A	319/328 (97%)	306 (96%)	12 (4%)	1 (0%)	36	29
1	B	319/328 (97%)	308 (97%)	11 (3%)	0	100	100
All	All	638/656 (97%)	614 (96%)	23 (4%)	1 (0%)	43	36

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	206	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	A	283/287 (99%)	264 (93%)	19 (7%)	15	7
1	B	283/287 (99%)	268 (95%)	15 (5%)	20	12
All	All	566/574 (99%)	532 (94%)	34 (6%)	18	9

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	GLN
1	A	59	LEU
1	A	95	THR
1	A	97	LEU
1	A	98	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	99	LYS
1	A	102	ARG
1	A	109	ILE
1	A	125	GLU
1	A	177	ARG
1	A	209	LEU
1	A	213	CYS
1	A	239	LEU
1	A	263	GLU
1	A	299	GLU
1	A	313	GLU
1	A	321	GLU
1	A	323	GLU
1	A	342	GLN
1	B	60	LYS
1	B	72	LEU
1	B	85	LYS
1	B	94	PRO
1	B	95	THR
1	B	105[A]	ARG
1	B	105[B]	ARG
1	B	126	LYS
1	B	177	ARG
1	B	213	CYS
1	B	261	LEU
1	B	267	ARG
1	B	286	ARG
1	B	307	ILE
1	B	342	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	50	GLN
1	A	52	HIS
1	A	147	HIS
1	A	225	GLN
1	A	329	GLN
1	A	342	GLN
1	B	52	HIS
1	B	98	GLN
1	B	167	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	171	GLN
1	B	201	ASN
1	B	342	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

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	317/328 (96%)	0.85	27 (8%) 16 17	16, 33, 50, 70	21 (6%)
1	B	317/328 (96%)	1.16	55 (17%) 4 4	17, 37, 50, 66	16 (5%)
All	All	634/656 (96%)	1.00	82 (12%) 7 7	16, 35, 50, 70	37 (5%)

All (82) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	206	GLY	9.8
1	B	324	LEU	9.4
1	A	207	GLY	8.1
1	A	209	LEU	6.3
1	B	199	PHE	4.8
1	B	211	ALA	4.8
1	B	363	LEU	4.7
1	A	208	LYS	4.3
1	B	330	LYS	3.8
1	A	363	LEU	3.8
1	A	324	LEU	3.7
1	B	95	THR	3.6
1	A	199	PHE	3.6
1	B	105[A]	ARG	3.5
1	B	110	LEU	3.4
1	B	209	LEU	3.3
1	B	359	ALA	3.2
1	A	59	LEU	3.2
1	B	59	LEU	3.2
1	A	362	LEU	3.1
1	B	213	CYS	3.1
1	B	72	LEU	3.0
1	B	62	ILE	3.0
1	A	359	ALA	2.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	366	ARG	2.7
1	B	323	GLU	2.7
1	A	320	VAL	2.7
1	B	354	TYR	2.7
1	B	352	MET	2.7
1	A	126	LYS	2.7
1	B	347	GLU	2.6
1	B	364	LEU	2.6
1	A	53	ILE	2.6
1	A	326	ILE	2.5
1	B	115	ILE	2.5
1	A	57[A]	ARG	2.5
1	A	340	TYR	2.4
1	B	212	PHE	2.4
1	B	102	ARG	2.4
1	B	320	VAL	2.4
1	B	50	GLN	2.4
1	B	134	TYR	2.4
1	B	358	THR	2.3
1	A	349	LEU	2.3
1	A	67	PHE	2.3
1	B	343	GLU	2.3
1	B	356	GLU	2.3
1	B	107	MET	2.3
1	B	271	ARG	2.3
1	B	82	VAL	2.3
1	B	114	ASN	2.3
1	B	207	GLY	2.2
1	B	210	ASP	2.2
1	B	91	GLN	2.2
1	B	98	GLN	2.2
1	B	325	ASP	2.2
1	B	205	VAL	2.2
1	B	360	THR	2.2
1	B	362	LEU	2.2
1	B	67	PHE	2.2
1	B	326	ILE	2.2
1	B	113	PRO	2.2
1	A	352	MET	2.1
1	A	323	GLU	2.1
1	A	364	LEU	2.1
1	A	134	TYR	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	106	ILE	2.1
1	B	227	LYS	2.1
1	B	312	GLU	2.1
1	A	330	LYS	2.1
1	B	103	GLU	2.1
1	B	365	GLY	2.1
1	A	189	ASP	2.1
1	A	267	ARG	2.1
1	B	80	ARG	2.1
1	B	345	ILE	2.0
1	B	111	ASN	2.0
1	B	258	LEU	2.0
1	A	263	GLU	2.0
1	B	203	PHE	2.0
1	B	357	ILE	2.0
1	A	50	GLN	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.